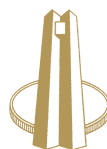


# Monetary Policy and the Challenge of Economic Growth

South African Reserve Bank  
Conference Series  
2012



South African Reserve Bank

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## Foreword

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The theme of the fourth biennial policy conference of the South African Reserve Bank (the Bank) held in 2012 was “Monetary Policy and the Challenge of Economic Growth”. As was the case in the past, economists from the policy arena, private sector and academia stimulated a lively debate. We were particularly fortunate to have a number of well-respected local and international economists, and central bank governors and officials present.

The theme of the conference reflected our concern that the global financial crisis, precipitated by the collapse of Lehman Brothers, remains unresolved. Globally, what was a systemic banking crisis in much of the advanced economies mutated into a sovereign debt crisis, and unemployment increased and remains a grave concern in many countries of the world. Growth in the eurozone in particular has remained weak and there are downside risks to the more favourable prospects in the United States. More recently, we have seen extraordinary fiscal and monetary policy stimuli in Japan in an attempt to get the economy going again.

It is also clear that emerging-market economies, which were acting to some degree as a counter to the slowdown in advanced economies, are also being affected. China and India are showing signs of slowing, and although prospects for Africa are more positive, there is unlikely to be complete decoupling from global trends.

The imperative to regenerate global growth has resulted in more pressure being put on monetary policy, particularly against the backdrop of fiscal consolidation in many countries. While price stability remains a core objective of central banks, the persistence of the global crisis has raised expectations about what central banks can and should do and, in particular, how their expanding mandates regarding economic growth and financial stability should interact with their core objective.

While many parts of the world face the prospect of a “lost decade”, much has been learnt about the global crisis, and many global organisations, regions and individual countries are grappling with how to act, and what needs to be done to break this synchronised downturn. Solutions are still being sought in uncharted territory.

Although we did not solve the problems of the world, our interactions over the two days of the conference contributed to a better understanding of the issues.

I should like to thank the contributors for giving of their valuable time to contribute to the conference. I also wish to thank the participants who engaged vigorously and ensured a lively, considered discussion throughout.

Gill Marcus  
Governor  
South African Reserve Bank

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Tamim Bayoumi is a graduate of Cambridge University (BA) and Stanford University (PhD). He joined the International Monetary Fund (IMF), where he has had a varied career. Earlier roles have included running the divisions responsible for analysis of the United States and Canada; exchange rate analysis across IMF members' economic modelling of the global economy; and the division responsible for producing the semi-annual *World Economic Outlook*. He is currently working in the IMF's Strategy, Policy and Review Department where he is responsible for the department's work on IMF surveillance. In this capacity he takes a leading role in the IMF's Early Warning Exercise and analysis of a range of issues, including the IMF's work on spillovers and on macro-financial issues.

He has published almost 100 academic papers on a wide range of topics, including whether Europe is an optimum area, financial integration across countries and measuring cross-country macrofinancial linkages.

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Willem Buiter graduated with a BA in Economics from Cambridge University and a PhD in Economics from Yale University. He is a distinguished macroeconomist and has been a member of the British Academy since 1998 and was awarded the CBE (Commander of the Order of the British Empire) in 2000 for his services to economics. He joined Citi in January 2010 as Chief Economist. He was previously Professor of Political Economy at the London School of Economics (LSE). He was an adviser to Goldman Sachs (2005–10), advising clients on a global basis. He was Chief Economist for the European Bank for Reconstruction and Development (2000–05), and a founder external member of the Monetary Policy Committee of the Bank of England (1997–2000). He has been a consultant to the International Monetary Fund, the World Bank, the Inter-American Development Bank, the Asian Development Bank and the European Commission, and an adviser to many central banks and finance ministries.

He has held a number of leading academic positions, including Cassel Professor of Money and Banking at the LSE (1982–84), professorships in Economics at Yale University (1985–1994), and Professor of International Macroeconomics at Cambridge University (1994–2000). He has published widely on economics in books, professional journals and in the media.

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Stan du Plessis studied at the Universities of Cambridge (MPhil) and Stellenbosch (PhD). He is a macroeconomist at Stellenbosch University in South Africa where he is a professor in the Department of Economics, Vice Dean (research) in the Faculty of Economics and Management Sciences, and Head of Research at the Bureau for Economic Research. He is also an economist for Prescient Securities and a past President of the Economic Society of South Africa. He was a member of the Harvard Group of economists who has advised the South African government on policy since 2006.

His scholarly publications have focused on monetary policy and the business cycle but he has also written on a wide range of related topics. He is a South African National Research Foundation-rated researcher.

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Johannes Fedderke obtained a BCom (Honours) degree from the University of Natal (Durban) and a PhD in Economics at the University of Cambridge. He is a leading South African economist whose research interests focus on technology and innovation, macroeconomics, economic development, political economy, institutions, and trade. His most recent works study the allocation of aid, institutional development, aid policy and labour market flexibility in South Africa.

He frequently speaks on education policy in South Africa, human capital and growth, infrastructure, and foreign direct investment in Africa. As a consultant to the World Bank, he has been invited to address the African Union, the United Nations Development Program, and the Group of Twenty. He has been the Director of Econometric Research Southern Africa from 1999, and is an honorary research fellow of the Helen Suzman Foundation. He is a former president of the African Econometrics Society.

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Laurence Harris is Professor of Economics at the University of London from which he obtained a BSc (Economics) and an MSc (Economics) degree. He has held posts at the London School of Economics; University of California, Berkeley; Birkbeck College; the Open University and SOAS, and visiting posts at the University of Cambridge, Harvard University, University of Rome, Kobe University (Japan), the International Monetary Fund, University of Zimbabwe and elsewhere. He has worked on South African economic issues, most recently as Economic Adviser to the South African Minister of Finance (2010–12).

Books he has published or co-authored include *Monetary Theory; New Perspectives on the Financial System; Peculiarities of the British Economy; City of Capital: London's Role as a Financial Centre*; and *Making Democracy Work: A Framework for Macroeconomic Policy in South Africa*.

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He recently served at the African Development Bank as Chief Economist. Previously, he held the position of Alternate Executive Director and later as Executive Director at the World Bank for Africa Group 1, which included 22 countries, mostly from anglophone sub-Saharan Africa. At the Bank of Uganda he served as Deputy Governor (1999–2002), Executive Director Research and Policy (1994–99), and Director of the Research Department (1992–94).

He is a member of the United Nations Group of Eminent Persons for the Least Developed Countries, and was recently appointed to the Financial Stability Board taskforce on Emerging Markets and Developing Economies.

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He is a member of the Committee of Ten (C10) comprising African finance ministers and central bank governors representing the five regions of Africa. This committee was mandated to look into ways of mitigating the global financial crisis through appropriate African policy responses, communication and required global reforms, especially in the world's financial architecture.

He is a researcher in various fields of economics. He has published widely in journals and chapters in volumes on inflation, exchange rate, economic growth and poverty reduction. In recognition of his role in national economic development in Kenya, he received the Award of Chief of the Order of the Burning Spear.

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Adair Lord Turner of Ecchinswell has combined careers in business, public policy and academia. He studied History and Economics at Gonville and Caius College, Cambridge (1974–78). In September 2008 he became Chairman of the Financial Services Authority, and chaired the Climate Change Committee (2008–12). He became a cross-bench member of the House of Lords in 2005, and chaired the Pensions Commission (2003–06) and the Low Pay Commission (2002–06).

Before September 2008 he was a Non-Executive Director at Standard Chartered Bank, United British Media and Siemens; Vice-Chairman of Merrill Lynch Europe (2000–06), and Director-General of the Confederation of British Industry (1995–99). He was Director with McKinsey & Company (1982–95), building its practice in Eastern Europe and Russia. He was previously Chair of the Overseas Development Institute (2007–10).

He is a Visiting Professor at the London School of Economics and at Cass Business School, City University, and is the author of two books: *Just Capital: The Liberal Economy* published by Macmillan in 2001, and *Economics after the Crisis: Objectives and Means* published by the MIT Press in 2012.



# Introduction

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## *Conference Organising Committee*

The world has yet to recover from the global financial crisis and subsequent recession. Economic growth has been subdued and unemployment has increased sharply in most advanced economies. The crisis began with a private debt problem but became a sovereign debt problem as governments moved to take over debt burdens built up by private-sector agents. The magnitude of the collapse of financial activity, in turn, initiated a severe economic downturn, with trade falling alongside demand. Some parts of the world economy – emerging markets and developing countries in particular – weathered the crisis relatively well. They suffered from few of the financial debilitations affecting the advanced economies at the centre of the storm, and their economies had wider bases of economic activity, including more positive exposure to high commodity prices and South–South trade linkages. Emerging and developing economies were, however, affected by the loss of trade, and experienced large inflows of capital and appreciated exchange rates. These factors put their accustomed growth models under stress and suggested the need for new ways of thinking about economic growth. For both advanced and emerging economies, major policy issues were raised, although quite different questions were asked.

In this environment of divergent global trends and challenges, the application of monetary policy has been tested. As a consequence, the South African Reserve Bank (the Bank) organised a conference entitled: “Monetary Policy and the Challenge of Economic Growth”. Three key themes emerged from the conference papers, discussions and remarks.

First, in his paper, Willem Buiter from Citi Group raises the question of the end game for debt: With the massive increases in private and public debt levels today, how would advanced economies find the right policies to reduce debt while maintaining some positive growth? Some of the adverse consequences that large-scale debt reduction would bring about are unavoidable. He highlights the danger of deleveraging as it would impact on aggregate demand, output and employment, and may have long-run – or even permanent – effects on potential, especially if it is poorly co-ordinated by markets and governments. He elaborates on the reasons why the substantial debt in advanced economies remains a concern as excessive debt can cause systemic crisis that may have potentially long-term effects

on actual and potential output, employment and capacity use. In addition, the process of bringing down debt can be long-lasting and painful. With few unambiguously positive policy sets to choose from, Buiter suggests that creditors in coming years will end up bearing the brunt of the debt crisis.

Tamim Bayoumi of the International Monetary Fund (IMF) emphasise the implications of financial spillovers across countries, showing that correctly accounted cross-border macroeconomic models would help to explain observed outcomes in the crisis. Spillovers from financial markets are potentially larger than through more traditional trade channels and less well understood, suggesting the need for major efforts to include these spillovers in macro models. A key challenge is to work on explaining why financial market outcomes in one country impact so forcefully on those in other economies.

Jean-Pierre Landau, Princeton University, focuses his attention on the problem of capital flows to emerging-market economies. In the wake of the Asian crisis, emerging economies worked to deepen financial markets to enable them to better handle large-scale capital inflows and outflows. At the same time, macroeconomic policy was meant to lean further against the wind of capital flow as needed, including via the accumulation of self-insuring reserves of foreign currency. These policies, however, did not take into account the full impact of increased financial integration, which implied much stronger spillover effects. As spillovers increased in the crisis from policy choices made in advanced economies, emerging-market economies found themselves exposed to new and stronger shocks. Responding to these shocks has become a key focus of monetary policy, macroprudential policy and financial stability across the emerging-market universe.

Second, although some emerging-market economies have been relatively successful in escaping from the global recession, many countries have seen the performance of the manufacturing and tradable goods sector affected negatively. Johannes Fedderke, from Pennsylvania State University, Economic Research Southern Africa and the University of the Witwatersrand, compares pricing conduct in manufacturing sectors in South Africa, China and India to see how these economies have adjusted to pressure on the tradable goods sectors. Compared to China and India, South African manufacturing industries feature high and persistent mark-ups of price over the marginal cost of production, which have, in turn, contributed to weak export performance by South African industries. State-owned enterprises in China have lower mark-ups, suggesting that one focus of state intervention may have been to contribute to more competitive industries.

Njuguna Ndung'u, Governor of the Central Bank of Kenya, indicates in his paper how structural constraints to economic growth interact with macroeconomic policies to reinforce a low growth trap. He alludes to the slow pace of reforms on policies and institutions, coupled with low commodity prices in the 1980s and 1990s, and how they worked together to contribute to weak economic performance in a range of African countries.

Despite the travails of advanced economies, finance and financial-sector development remain critical to growth in much of Africa and the developing world. Laurence Harris of the School of Oriental and African Studies, University of London, examines the relationship between financial development and economic growth. He elaborates on the relationship linking general saving and investment through intermediation, arguing that specialised finance such as venture finance and regional banks benefit the industrial sector specifically, and generate positive shocks to the economy. The evidence suggests that financial development stimulates economic growth but needs to be treated with some caution. Joseph Masawe, Economic Research and Policy, Bank of Tanzania, also describes the role that finance plays in growth and development. He raises concerns about the pace and level of development of the financial sector in Africa, suggesting that financial-sector reforms need to remain one of the key pillars of sustainable growth and poverty reduction.

On the monetary policy front, Louis Kasekende, Deputy Governor: Bank of Uganda, highlights the fact that the evolution of policy in African economies is continuing at pace. Key concerns about dilemmas in monetary policy and inflation targeting need to be addressed by African policymakers. In particular, Kasekende raises the issue of the vulnerability of African countries to supply shocks, and the short-term trade-offs they can entail between growth and inflation targets.

The third theme of the conference focused on monetary policy and growth in South Africa. Stan du Plessis, Stellenbosch University and Bureau for Economic Research, considers the return of balance-sheet considerations for monetary policy: "As the international financial crisis drove policy interest rates to the zero lower bound in the developed world, though, the balance-sheet policy re-emerged from its decades-long dormancy." This development stands in stark contrast to policy in recent years, which has centred on the role of expectations about future price formation. Thinking about monetary policy as an outcome of balance-sheet adjustments is needed in a deflationary and zero-bound context, and may prove necessary in coming years as monetary authorities deal with macropudential policy.

The conference was concluded with a paper by Adair Turner of the Financial Services Authority who focuses on the need to assess carefully the impact of financial deepening and appropriate regulatory responses. Turner's argument for careful, but robust, regulation hinges on the perspective that before the crisis the regulatory approach allowed the private financial system to undergo too much maturity transformation, thereby creating too much private credit and money. As this bubble bursts, societies and their policymakers are left with soaring risk aversion and a pervasive deleveraging that generates deflation. Responding to this with further credit stimulation and money creation runs further risks, even if they form necessary parts of the crisis toolkit. The near-term challenge is to support demand stimulus, while minimising future risks. In general, advanced and emerging economies should seek to grow financial systems that meet the true needs of the real economy, while avoiding the excessive leverage and complexity that led to the crisis.

The papers in this volume engage with monetary policy and the challenge of economic growth in the wake of the global crisis. The lessons contained in the work are varied, with a sharp contrast drawn between regions going through financial crisis and others with more straightforward macroeconomic challenges. For the former, monetary policy will need to remain focused on keeping inflation stable – neither deflation nor higher inflation – while building the policy and institutional tools to address financial and macroprudential concerns. For the latter – mostly emerging and developing economies – inflation targeting, capital inflows management, and effective microeconomic and structural policies remain the keys to sustainable economic growth.

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# Keynote address:

## Debt, financial crisis and economic growth

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*Willem H Buiter and Ebrahim Rahbari*

### Abstract

Private and public debt in advanced economies have risen substantially over the past three decades, initially driven by private debt, and in most recent years mostly driven by increases in public debt. Debt reductions in recent years in the aftermath of the financial crisis have been limited in most countries, hampered by low-income growth and frequently the absence of adequate institutions for debt restructuring and resolution. Deleveraging has large and long-lived effects on output, particularly after financial crises. In the absence of more extensive restructuring of debt, public and private, many years of deleveraging lie ahead in a number of advanced economies.

### 1. Introduction

There is a lot more private and public debt today in the advanced economies than has been the norm during peacetime periods. In 1980 the total non-financial-sector gross debt in 17 developed markets amounted to US\$12,3 trillion or 168 per cent of the gross domestic product (GDP) of these countries. In 2011 the total stood at just over ten times that value (US\$128,5 trillion), amounting to 315 per cent of GDP.

Debt is attractive to holders because it offers, or appears to offer, a predictable, safe income stream. It is attractive to issuers because, among other advantages, it provides leverage, in the economic sense of the word: “leverage exists whenever an entity is exposed to changes in the value of an asset over time without having first disbursed cash equal to the value of that asset at the beginning of the period.”<sup>1</sup> Debt has the further advantage to the issuer that, as long as the borrower adheres to the terms of the debt contract, the creditor has fewer control rights over the use of the borrowed funds than would be the case with equity-type liabilities.

Debt has grown in most countries and in most sectors. Private debt, both household debt and that of businesses, grew strongly from the 1980s until quite recently. Public debt grew more modestly until the North Atlantic financial crisis that erupted in August 2007 confronted governments with large revenue losses, and the need for fiscal stimuli and banking-sector bailouts. Public debt growth has now overtaken the growth in private debt.

In 1980, 27 per cent of the debt of advanced economies was household debt, 47 per cent non-financial corporation debt and 26 per cent general government debt. By 2011, the share of general government debt had grown to 37 per cent of the total. It is likely to continue rising in the coming years, with the share of non-financial corporation debt strongly down (to 37 per cent) and the share of household debt only slightly down (26 per cent).

Now that debt levels are perceived to be excessive in many places, debt and credit growth from here on is likely to be low in most developed markets for the foreseeable future. Real growth in gross debt in developed markets since 2008 has been roughly one third lower than it was between 2001 and 2008. Nominal debt growth has roughly halved from the pre-crisis average.

Even though credit growth has generally fallen, the years since the North Atlantic financial crisis of 2007–09 have, on average, only seen a modest degree of private-sector deleveraging: from a peak of around 205 per cent of GDP in 2009 to maybe 5 percentage points of GDP less in Q2 2012. Total non-financial-sector gross debt continues to increase, as public debt has generally risen strongly in nominal and real terms. As a share of GDP, it has gone up by 30 percentage points in the space of less than four years since 2008.

Debt reductions are expected to have a lot further to run in many countries. Deleveraging pressures are likely to be particularly severe in Cyprus, Ireland, Portugal and Spain. In most other countries private-sector credit growth is likely to remain sharply below the growth rates of previous years. In addition, real GDP growth is likely to be low during this period of deleveraging due to an increase in desired net saving and its adverse effect on the level of economic activity resulting from the paradox of thrift.

Some of the adverse consequences that large-scale debt reduction brings with it are probably unavoidable. However, policy responses should be focused on minimising the avoidable costs of deleveraging. First among those should be measures to allow gross deleveraging (i.e., shrinking balance sheets through equal reductions in assets and liabilities, without the need to raise financial net worth by running financial surpluses or “saving”) to take place in an orderly and co-ordinated fashion.

Creating institutions or arrangements to help heterogeneous, decentralised, independent and unco-ordinated private and public entities to co-ordinate the netting of gross financial assets and liabilities in complex networks of creditors and debtors should help too. Clearing houses for a much wider range of financial claims should therefore be considered.

Additionally, debt restructuring will often be needed to bring about timely net deleveraging, that is, adding to the net worth of financially fragile sectors by running financial surpluses or by saving. Where gross debt is excessive and net worth inadequate, socially efficient deleveraging will in many cases require establishing orderly and efficient debt restructuring mechanisms and

procedures for banks and sovereigns (where they generally do not exist), and improving insolvency and bankruptcy procedures for households and non-financial corporations.

## 2. The great leveraging

Figure 1: Advanced economies:  
Gross debt by sector,  
1980 to 2012Q2

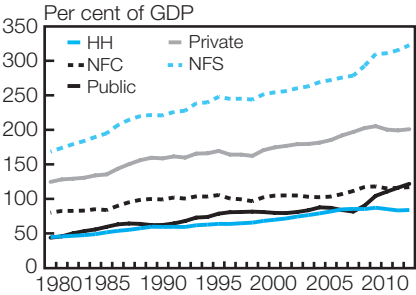
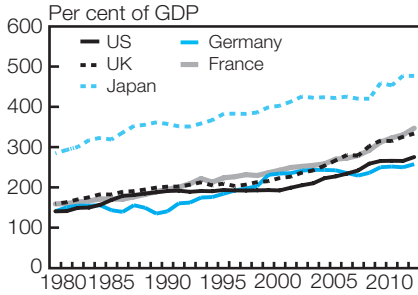


Figure 2: Selected countries:  
Non-financial-sector  
gross debt, 1980 to  
2012Q2



CG: general government; HH: household; NFC: non-financial corporation; NFS: non-financial sector; UK: United Kingdom; US: United States

Note: Advanced economy gross debt by sector is constructed as gross debt weighted by the time-varying shares of nominal GDP in 17 countries (Australia, Austria, Belgium, Canada, Finland, France, Germany, Greece, Italy, Japan, Korea, the Netherlands, Portugal, Spain, Sweden, UK and US). NFS is the non-financial sector (sum of HHs, NFCs and the GG). Gross debt is equal to total financial liabilities for HH and the public sector, and to total financial liabilities less shares and other equities for NFC. Values are on a non-consolidated basis except for Portugal and Australia.

Sources: IMF, OECD, national sources and Citi Research

Debt has risen over the past few decades, almost everywhere in the advanced economies and according to most measures (McKinsey Global Institute 2010, 2012; Cecchetti et al. 2011; BIS 2012; Tang and Upper 2010). Take gross non-financial-sector debt (the sum of the gross debt of households, non-financial corporations, and the general government) in advanced economies.

In a sample of 26 countries, gross non-financial-sector debt relative to GDP rose in every single one between 1995 and today.<sup>2</sup> For the 17 countries for which data are available since 1980, debt rose substantially in all.<sup>3</sup> For these 17 countries, the average non-financial-sector gross debt-to-GDP ratio weighted by GDP shares (which is, of course, the same as aggregate non-financial-sector gross debt as a share of aggregate GDP) almost doubled since 1980 (Figure 1), rising by just under 5 percentage points of GDP each year, on average.<sup>4</sup>

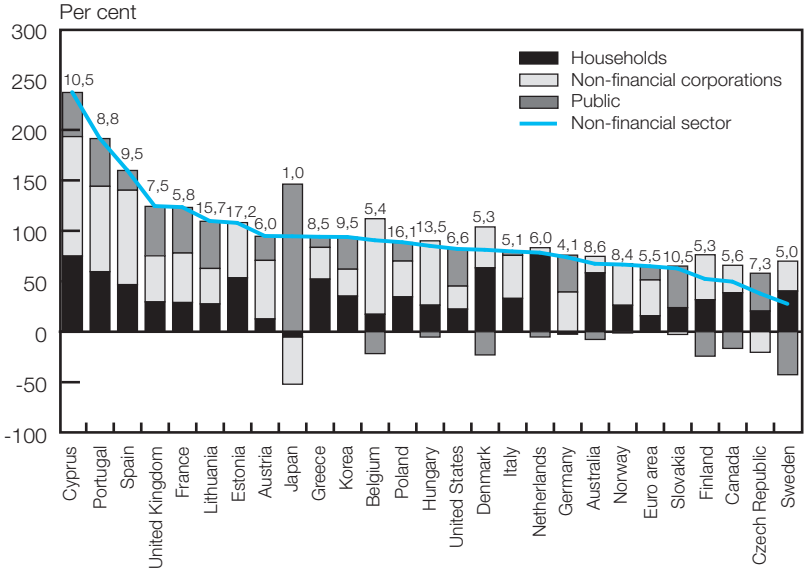
Since 1995, this aggregate debt-to-aggregate GDP ratio still rose by 75 percentage points of GDP (4,5 percentage points of GDP per annum, on average).<sup>5</sup> Over this period, real GDP, measured in constant USD at market exchange rates, grew by 37 per cent (2,3 per cent per annum) in the 17 countries, and nominal GDP (measured in current USD) by 95 per cent (5,9 per cent per annum), so the growth in real and nominal debt levels was even larger than the growth in debt-to-GDP ratios. In terms of the increase in the gross non-financial-sector debt to GDP ratio, the United States (US) was squarely in the middle of the pack, the United Kingdom (UK) was in the top quartile, while Germany was in the group of countries with the smallest increases.

The aggregate picture conceals much diversity. First, there is a difference between smaller and larger countries: in our sample, larger countries, on average, had smaller proportional increases in their gross non-financial-sector debt-to-GDP ratio and more of the total debt increase was accounted for by increases in public debt. Thus, the simple average (not GDP-weighted) increase in the gross non-financial-sector debt-to-GDP ratio across the sample of 26 countries between 1995 and H1 2012 was 94 percentage points of GDP (5,7 percentage points of GDP per year) compared to the GDP-weighted average increase of 5,3 percentage points; it was 89 percentage points for the 17 countries with longer data series – countries that were, on average, still larger.<sup>6</sup> These data do not even include some of the small countries with the largest increases in debt, as data for the earlier period are not available for them; for example, for Ireland and Latvia, the data are only available from 2001 and 1998 respectively, but between these dates and today their total non-financial debt as a share of GDP increased by 307 percentage points (19 percentage points per year) and 93 percentage points (5,6 percentage points) respectively.

Cyprus, Portugal and Spain were the countries in our sample that had the largest increases in non-financial-sector gross debt-to-GDP ratios, with non-financial-sector gross debt-to-GDP ratios rising by at least 150 percentage points (or almost 10 percentage points per annum). Ireland and Latvia would likely also have been in this category, if the data had been available for the entire period. The countries which saw the largest increase in debt often shared certain characteristics, including being an emerging European country (i.e., the Baltic countries, Hungary), being a financial centre (i.e., Cyprus, UK, Ireland) or having had a housing boom (i.e., Baltics, Ireland, Spain). Despite similarities in economic development and structure, some regional differences exist; for example, the Czech Republic and Slovakia had among the smallest increases in their gross non-financial-sector debt ratio (while Hungary did not), and gross non-financial-sector debt ratios in

Finland and Sweden also grew only modestly, while the debt ratio increase in Norway was larger.<sup>7</sup>

Figure 3: Selected countries: Non-financial sector debt-to-GDP ratio, change 1995 to latest



Note: Public is the general government. For the euro area, change corresponds to 1999–2011. Latest values are for June 2012, except for Italy, the Netherlands, Ireland (all March 2012) and Cyprus (December 2011). Numbers above the columns are average growth rates of the nominal stock of gross debt in local currency between 1995 and the latest observation. All values are expressed on a non-consolidated basis except for Australia and Portugal.

Sources: National sources, Eurostat, OECD and Citi Research

Gross debt ratios increased, on average, in each one of the household, non-financial corporations and general government sectors. Of the 89 percentage-point increase in the GDP-share-weighted gross non-financial-sector debt ratio between 1995 and today, fairly little (less than 25 percentage points) was due to increases in the non-financial corporations' gross debt ratio. Households added 23 percentage points and general governments the rest – just over 43 percentage points. However, again, small and large countries differed: in the simple cross-section of countries the contribution of the household and non-financial corporations sectors to the increase in the total non-financial gross debt ratio was much higher, on average, at 36 percentage points of GDP and 40 percentage points respectively, while general government debt increased the total non-financial debt ratio by a mere 19 percentage points.

## 2.1 Debt and debt service relative to debt-servicing capacity

Relative to disposable income, household gross debt also increased strongly in most countries, and the relative ranking of countries is also broadly similar. The level of household gross debt currently exceeds annual disposable income in the majority of advanced economies, and is more than twice annual disposable income in Denmark, the Netherlands, Norway, Ireland and Switzerland.

Increases in debt-service ratios (interest and principal repayment) relative to disposable income for private sectors (household and non-financial businesses) were more muted, on average, as increases in indebtedness were at least partly (and in some cases fully or more than 100 per cent) offset by reductions in interest rates (see Figure 4). In Canada, where gross debt has fallen relative to GDP since 1995, private-sector debt-service ratios have fallen roughly by half since the peak in the early 1990s. In Germany and Switzerland private-sector debt-service ratios also fell, and in France ratios rose only modestly. In many countries, however, private-sector debt-service ratios also increased substantially in the decade leading up to the financial crisis, including in Ireland, Spain, the UK and the US, but also Denmark, Italy, Australia and Norway, despite falls in nominal and real interest rates over this period.

Debt in the banking sector, and in the financial sector generally, has increased enormously over the past few decades (see Figure 5). In fact, in some financial centres, including Ireland and the UK, increases in debt in the financial sector dwarfed increases elsewhere, and increases in simple, unweighted, measures of gross debt and total balance-sheet size generally suggest much larger increases in debt than more complex (or esoteric) measures such as risk-weighted asset ratios, net debt/net worth, or different definitions of leverage based on (non-independently verifiable) risk weights or on net debt ratios.

Figure 4: Selected countries: Private-sector and household debt-service ratios, 1980–2011

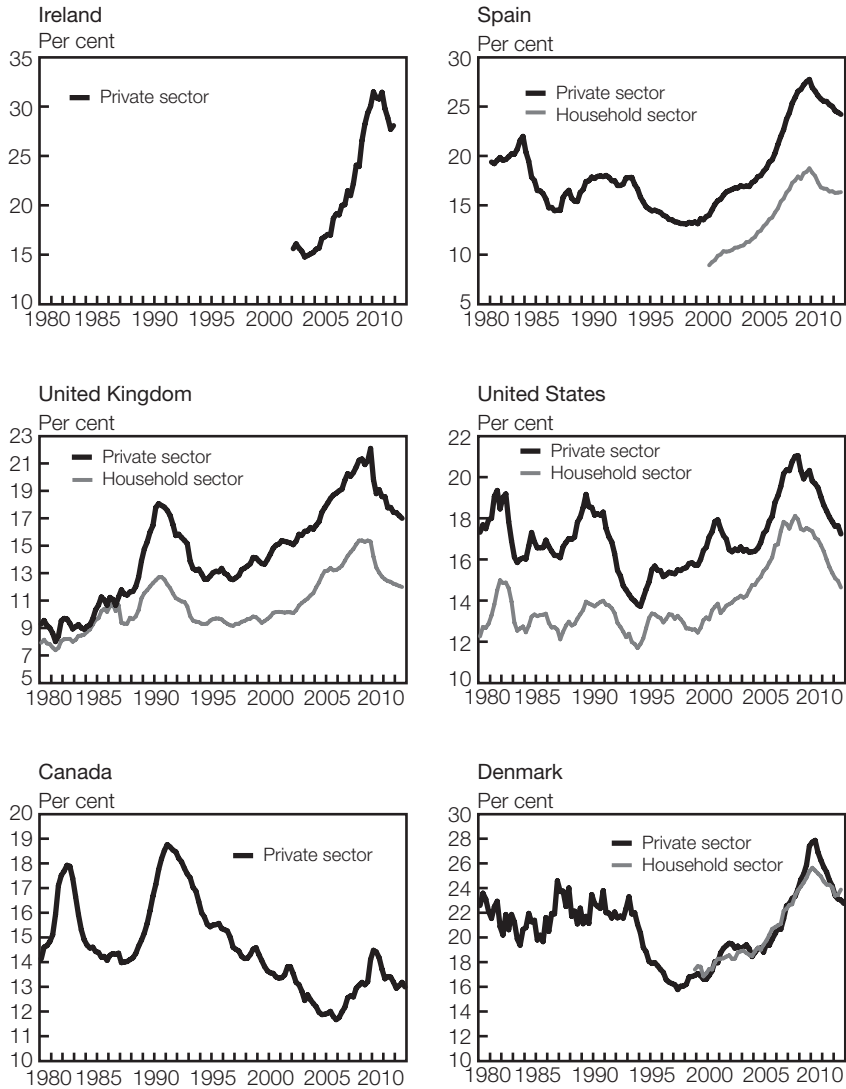
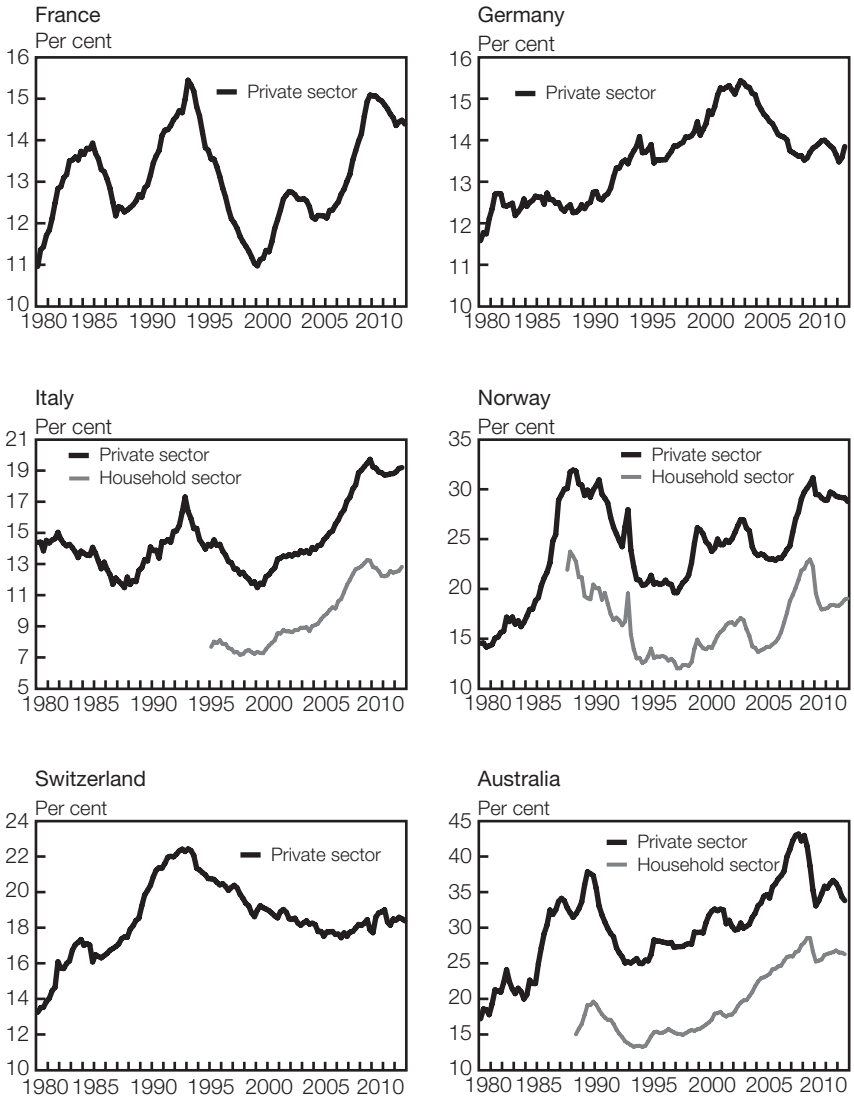


Figure 4: Selected countries (continued)

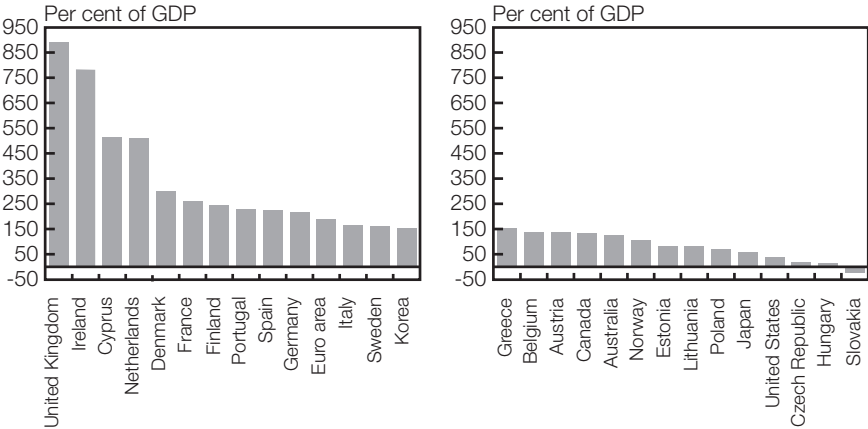


Note: The debt-service ratio is the sum of interest payments and debt repayments, divided by disposable income.

Sources: BIS 82nd Annual Report (2012) and Citi Research



Figure 5: Selected countries: Financial corporation debt-to-GDP ratio, 1995–2011 change



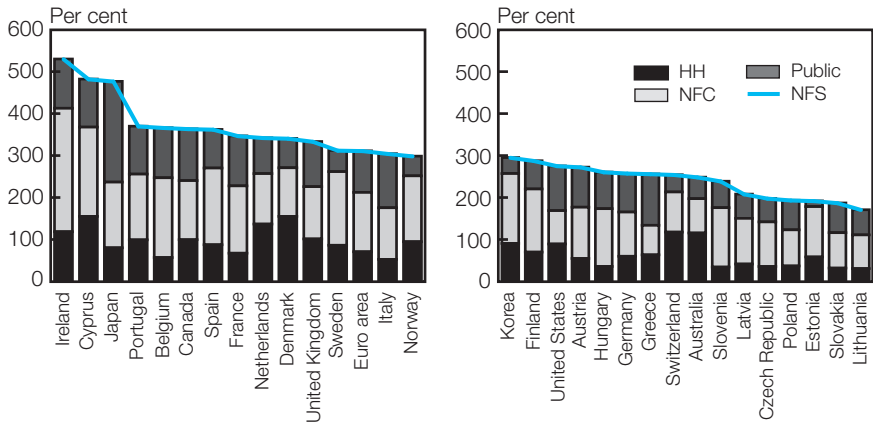
Note: Financial corporations include monetary financial institutions, the national central bank, other financial intermediaries, financial auxiliaries, insurance corporations and pension funds. Gross debt is equal to total financial liabilities less shares and other equities from national balance-sheet statistics. For the United States, financial corporations' debt is "credit market instruments" and does not include the central bank. For the euro area, the change is between 1999 and 2011, and between 2001 and 2011 for Ireland. All values are expressed on a non-consolidated basis except for Australia and Portugal.

Sources: OECD, Eurostat, national sources and Citi Research

In terms of the *levels* of non-financial-sector gross debt, in our sample of 30 countries, Ireland, Cyprus and Japan are the mostly highly indebted countries, with non-financial-sector gross debt in each case amounting to close to or more than five times GDP (Figure 6). Portugal and Spain also have very high levels of gross non-financial-sector debt. The average level of gross non-financial-sector debt across the countries in our sample is three times the level of GDP (301 per cent of GDP). The US (275 per cent of GDP), but also Italy (304 per cent), find themselves in the middle of the pack, and countries such as Greece (256 per cent), Germany (258 per cent), but also the Baltics and most Central and Eastern European (CEE) countries, are at the lower end of the spectrum. Lithuania is the country with the lowest level of (non-financial-sector gross) debt in our sample at 171 per cent of GDP.

The composition of debt levels across sectors also varies greatly between countries. In many countries, including Belgium, Ireland, Spain, but also Sweden, the Baltics and the CEE countries, non-financial corporations account for most of the gross debt. Only in a few cases is public debt the major contributor to total non-financial-sector gross debt, the most notable case being Japan, but also in Greece, Italy and the US. In some countries, including Ireland, Cyprus, Portugal and Spain, all three non-financial sectors have relatively high levels of gross debt.

Figure 6: Non-financial-sector gross debt-to-GDP ratio, latest



GG: general government; HH: household; NFC: non-financial corporation; NFS: non-financial sector

Note: NFS is the sum of HHs, NFCs and GG. Latest values are for June 2012, except for Italy, the Netherlands, Ireland (March 2012), Cyprus, the euro area (December 2011) and Switzerland (December 2009).

Sources: National sources, OECD, Eurostat and Citi Research

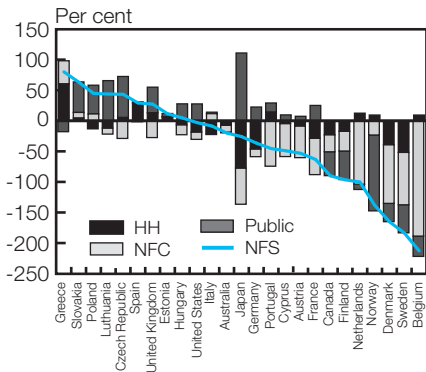
## 2.2 The other side of the balance sheet: Changes in net debt and net worth

Households, non-financial corporations and the public sector also have assets that could potentially be sold to reduce debt or generate income used to service debt. It therefore makes sense to consider these asset holdings when assessing debt sustainability, even though the potential liquidity, currency or maturity mismatch between assets and liabilities suggests that netting assets and liabilities may not generally be advisable.

For broad measures of *net* debt which only reflect liquid asset holdings, such as gross debt minus holdings of currency and deposits, the picture is often qualitatively and quantitatively quite similar to that for gross debt (Figure 8).<sup>8</sup> Such levels of net debt have generally increased across most countries across all three sectors, and the relative ranking of countries according to the broad net debt increase is similar to the case of gross debt. The size of the increase is smaller, as holdings of currency and deposits have generally increased – a simple average of narrow net debt increased by 62 percentage points of GDP against 93 percentage points of GDP for gross debt. In relative terms, the UK in particular looks somewhat better once we allow for currency and deposit accumulation.

Narrow measures of net debt did not increase to the same extent as gross debt, and often fell; for example, a narrow measure of net debt that accounts for all financial assets (i.e., including equity and fixed-income claims and pension fund assets, but not ownership claims on land and real estate or unfunded pension entitlements) *fell* by 37 per cent of GDP between 1995 and 2011 (or 23,1 per cent in GDP-weighted terms), most of it due to the fact that net debt of non-financial corporations decreased, on average (Figure 7), even though household net debt also fell. However, the reduction, or at least moderation in levels of net debt, was not generally driven by an increase in private saving rates, but rather an increase in asset values, mainly on stocks, in the 1990s.

Figure 7: Selected countries:  
Non-financial-sector  
narrow financial net debt,  
1995–2011 change

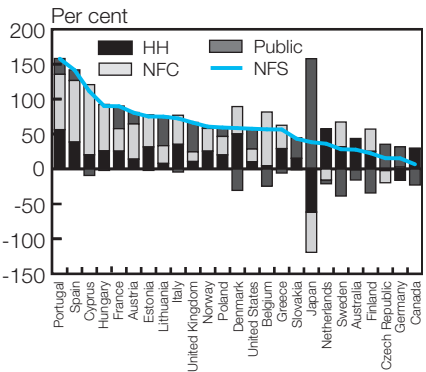


HH: household; NFC: non-financial corporation; NFS: non-financial sector

Note: Narrow financial net debt is defined as gross debt minus total financial assets. All values are expressed on a non-consolidated basis except for Australia and Portugal. Countries missing include Ireland (data start only from 2001), Latvia (1998), Slovenia (2001) and Switzerland (1999).

Sources: National sources, OECD and Citi Research

Figure 8: Selected countries:  
Non-financial-sector  
broad financial net debt,  
1995–2011 change



HH: household; NFC: non-financial corporation; NFS: non-financial sector

Note: Broad financial net debt is defined as gross debt minus holdings of currency and deposits. All values are expressed on a non-consolidated basis except for Australia and Portugal. Countries missing include Ireland (data start only from 2001), Latvia (1998), Slovenia (2001) and Switzerland (1999).

Sources: National sources, OECD and Citi Research

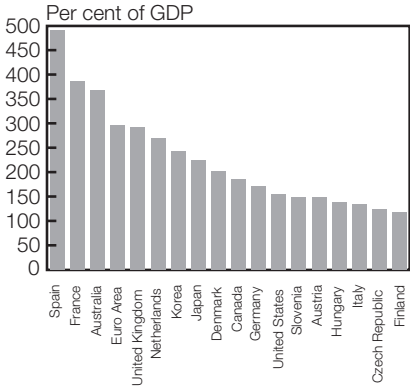
### 2.3 Non-financial assets are significant

Our discussion above misses some substantial components of wealth and net worth, notably ownership claims to real estate or land. Unfortunately, the availability of data on holdings of real estate and other real assets is quite limited, and measurement and definitional issues make cross-country comparisons tricky. However, the available data indicate that these non-financial assets are sometimes of a similar order of magnitude for households alone as total financial assets for the entire non-financial sector; for example, in Spain household non-financial assets were valued at almost 500 per cent of GDP in 2011 (Figure 9), and in France at just under 400 per cent of GDP in 2010. By contrast, in Germany (2009) or the US (2011) non-financial assets of households were valued just at around 150 per cent of GDP, although for both countries this excludes land. There is also at least a suspicion that the prices at which Spanish real assets (and possibly French real assets as well) were valued in these data err on the side of generosity.

As real-estate prices have risen, the value of non-financial assets has generally increased over the past few decades, often supported further by a boom in real-estate construction. Changes in the value of these assets can easily overwhelm other changes on household and business balance sheets. Many countries with long and large real-estate booms have seen large falls in household net worth in recent years. In the case of Spain, household net worth has fallen by around 100 per cent of GDP since 2007, mostly driven by a reduction in the value of non-financial assets. However, in those same countries, household net worth is often still above the levels seen in the early 2000s. The fall in real-estate valuations in Spain has brought household net worth back to the levels of around 2004, with large increases in the years prior to 2004. Of course, continuing falls in house prices in Spain are likely to erode household net worth in Spain substantially further in the years ahead.

In the US household net worth also fell along with house prices by about 100 per cent of GDP in 2007 and 2008, but has recently stabilised. In countries that have not seen a major housing bust, household net worth is generally close to previous peaks, with the exception of Japan, where household net worth is still down substantially from the peak in the early 1990s and has continued falling at a gradual and slowing pace since then (Figure 10).

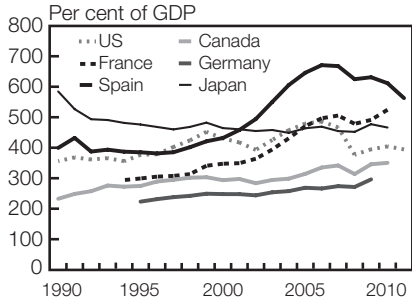
Figure 9: Selected countries:  
Holdings of non-  
financial assets  
by households, latest



Note: Values correspond to holdings of total non-financial assets by households. Non-financial assets include fixed assets, inventories, fisheries, and land. For Italy, values correspond to total dwellings, while for the United Kingdom and Hungary values exclude land. For the United States, Germany, Slovenia, Austria, Denmark, Finland and Spain, values exclude land and inventories due to data availability. Latest is end-2011 except for Japan, Canada, Australia, France, Czech Republic, Korea, Netherlands and Slovenia (2010), and Germany, Italy and Hungary (2009).

Sources: National sources and Citi Research

Figure 10: Selected countries:  
Household net worth,  
1990–2011



Note: Net worth is defined as total assets (financial and non-financial) minus total financial liabilities.

Sources: OECD, IMF, the Fed, Bank of Spain and Citi Research

### 3. The drivers of the great leveraging

There were many drivers of the increase in debt in the last few decades (starting around 1980 in the UK and the US), including financial-sector liberalisation, financial ‘innovation’, a boom in real estate prices and construction (themselves fed by the growing debt issuance), a fall in lending standards, a global fall in real interest rates (often associated with the *ex ante* saving glut produced by China and other high-saving emerging markets and oil-producing countries), and the perception of a fall in macroeconomic volatility and of enduring faster growth – the Great Moderation.

Of course, the profligacy of many governments in the run-up to the financial crisis, which was partly fed by a misidentification of highly cyclical, or at least unsustainable, revenue increases as permanent, played a role too.

The recent global recession and financial crisis clearly played a major role in the build-up of sovereign debt through the collapse of certain sources of unsustainable tax revenues the sovereigns had grown dependent on (especially taxes on real estate and on financial-sector earnings). Other sources of public debt growth were the operation of the automatic fiscal stabilisers during the downturn caused by the crises, the discretionary measures to provide fiscal stimuli and the bailouts of banks, other financial institutions and sometimes non-financial companies deemed too systemically significant or too politically well-connected to be allowed to fail. In Europe, and especially the euro area, this migration of bad and impaired private-sector assets to the public balance sheet continues. That there are limits to this migration because at some point 'too big to fail' gives way 'to too big to bail' should have been clear since the collapse of Iceland's banking sector in the autumn of 2008, with recent reminders from Greece, Ireland, Spain, Portugal, Cyprus and Slovenia.

These factors implied that both the supply curve and the demand curve for credit shifted outwards in the two or three decades leading up to the financial crisis. Some of the drivers, such as the reduction in global real interest rates and a perception of greater macroeconomic stability, likely affected both private and public debt accumulation. The rise in real estate prices and the fall in lending standards likely had a stronger effect on private debt than on public debt. Many of the drivers were also inter-related and often reinforced each other. For much of this period, there was what seemed to be a virtuous circle where credit growth boosted demand which, in turn, boosted economic growth and asset prices, which both improved superficial mark-to-market measures of balance-sheet health and underpinned further increases in credit and demand.

One arithmetically obvious candidate as a driver of the increases in debt-to-GDP ratios can plead "not guilty": the rise in debt-to-GDP ratios was not generally due to a fall in or weak growth of the denominator, that is, a lack of (real) GDP growth. Real (and also nominal) GDP growth was generally positive in most countries in recent decades, and was often higher in the 1995–2008 period than in the one or two decades before that – although, not surprisingly, lower-than-real and nominal GDP growth in the 'Golden Age' for the advanced economies between 1946 and 1973. Indeed, the countries with the highest rates of nominal or real GDP growth between 1995 and 2008 generally tended to have *larger* increases in (non-financial-sector gross) debt ratios and the relationship was pretty tight.

Likewise, rising asset prices in recent decades, and rising real estate prices in particular, contributed to the credit boom. As asset prices continued to

increase, many households and corporations interpreted these higher asset prices as sustainable. Even more extravagantly, particularly for housing, many extrapolated the growth in house prices into the indefinite future. Some of the debt was explicitly linked to asset price increases – mortgages became larger (in absolute terms or relative to income or GDP) as the price of houses increased. In other cases, the increase in asset values was leveraged by withdrawing equity from homes to finance consumption and other spending.

Financial liberalisation, that is, the deregulation of financial markets both domestically and for cross-border transactions, spurred what was at the time often referred to as ‘financial innovation’ and ‘financial engineering’, but today is more often called ‘financial excesses’ and, sometimes worse, including regulatory and tax arbitrage. Deregulation affected a number of areas, including the reduction of credit and interest rate controls, the reduction of entry barriers into the financial sector and of restrictions on cross-border capital account transactions, a lowering of prudential regulations and an easing of supervision in the banking sector and in securities markets. There were also many reductions in reserve requirements for financial institutions, and reductions in effective capital requirements through disintermediation out of more tightly regulated financial intermediaries, products and activities into more loosely regulated ones, such as the shadow-banking sector.

Macroeconomic factors also played a role, besides the effect that adaptive or extrapolative expectations likely implied that robust current economic growth and rising asset prices fed into higher expectations of future growth and further increases in asset prices. Real interest rates were low in many countries, as nominal interest rates fell by more than inflation. The so-called Great Moderation phase of low macroeconomic volatility (see Stock and Watson 2003; Bernanke 2004) may also have contributed to an increase in credit demand and supply, as both debtors and creditors, and supervisors, regulators and those in charge of financial legislation underestimated the degree of riskiness of economic activity, as actual volatility fell. In Europe the introduction of the euro gave an additional boost, through reductions in interest rates in many countries, rapid financial integration and rapid (if with hindsight unsustainable) economic growth in some of the countries. The fact that from the launch of the euro from 1999 to 2008, spreads over ten-year Bunds of Irish, Portuguese, Spanish and Italian sovereign debt rarely rose above 25 basis points, and that the same extraordinarily low spread prevailed for the Greek 10-year sovereign bond from 2001 to 2008 bears testimony to the wholesale loss of common sense in the markets, and the resulting massive underpricing of differences in euro area sovereign risk (see Buiter and Sibert 2006).

## 4. Why debt matters today

There are at least two specific and concrete reasons why debt matters in advanced economies today. The first is that excessive debt can cause systemic crises, and such systemic crises can have very large and potentially long-lasting effects on actual and potential output, unemployment, and capacity use. The second reason is that if debt is considered excessive, the process of bringing down debt can be long-lasting and painful, even if it does not create a financial crisis or even after the crisis phase has passed. Co-ordination problems in the process of debt reduction often substantially increase the private and social cost of debt reduction, as agents attempt to raise their saving rates in response to the excessive level of their debt without a matching increase in planned investment (capital expenditure) by either the agents planning to raise their saving rates or by other agents at home or abroad. This can give rise to Keynes's so-called paradox of thrift.

### 4.1 What is deleveraging?

Language use is non-uniform when it comes to debt and deleveraging, something that can create confusion in a discussion of their significance. It pays to be precise.

The flow-of-funds account of a sector defines its financial surplus – the excess of its saving over its capital formation (capital expenditure or investment in real reproducible capital) as the value of its net acquisitions of financial assets minus the value of the additional net financial liabilities it incurs over some period. The change in a sector's net worth (net worth is also called 'financial wealth', 'capital' or 'equity', although all these terms have multiple different meanings as well), is its saving plus the capital gains, (or minus the capital losses) on its existing assets and liabilities, real and financial.

*Gross balance sheet contraction or gross deleveraging* is a reduction in the size of the balance sheet (real and financial) without a change in net worth (i.e., net saving plus capital gains for the entity or sector in question is zero). Gross deleveraging can be the result of capital losses on real and financial assets and liabilities, which we shall describe as passive gross deleveraging, as well as of active gross deleveraging, that is, a reduction in the size of the balance sheet through equal value reductions in stocks of assets and liabilities at given prices. Active gross deleveraging does not require any change in either the flow of saving or the flow of investment spending by any individual agent or sector. However, active gross deleveraging does require *co-ordination* of gross sales and purchases



of assets or of gross lending and borrowing across agents and sectors. Either asset markets or some other mechanism must co-ordinate the planned transactions in each of the assets and liabilities and translate them into actual sales and purchases.

However, the problems associated with the paradox of thrift discussed below need not strike if all that is required is passive or active gross deleveraging by one, several or all sectors of the economy.

*Active gross financial balance sheet contraction or active gross financial deleveraging* is a reduction in the size of the financial balance sheet alone, that is, excluding the physical capital assets, but with the value of financial assets and liabilities shrinking by the same amount (at current prices). Capital gains are excluded.

*Net wealth accumulation* or net deleveraging by a sector means an increase in the net worth of that sector, either through saving or through capital gains. *Active net wealth accumulation or active net deleveraging* by a sector, which ignores capital gains or losses, is therefore just another name for positive saving by that sector. Although higher saving is good news from the point of view of the future growth of actual and potential output if a planned increase in saving is matched by an equal planned increase in investment, the paradox of thrift warns us about co-ordination failures between those who would raise their saving and those who would boost their investment. These co-ordination failures can result in short-run and medium term negative impacts on output and employment from a poorly co-ordinated saving boost by one or more sectors. *Active net financial wealth accumulation* or active net financial deleveraging means running a financial surplus, that is, saving exceeding investment.

Note that the terms 'gross' and 'net' are not used to denote saving or investment inclusive of capital depreciation or excluding it. Gross debt is all liabilities. Net debt is liabilities minus assets.

## 4.2 Debt causes systemic crises

High debt held by some agents or institutions can make them vulnerable to shocks and unanticipated (by them) changes in their economic environments. It enhances the fragility of these agents and institutions. High indebtedness of many agents or institutions, especially if the economic-financial network is characterised by a high degree of complexity, can result in opacity of that network and in widespread ignorance (throughout the network and among supervisors and regulators) about the distribution of exposures and

counterparty risk, risk chains and clusters across the network. This can create systemic fragility.

The high debt burdens in the developed markets brought with them vulnerabilities that have recently triggered systemic financial crises. The first was a (mainly) private-sector financial crisis – especially in the banking and shadow-banking sectors of the North Atlantic region – that started in August 2007 and lasted until the end of 2009. The second crisis is the sovereign debt and banking-sector crisis that erupted in the euro area at the beginning of 2010, and is still ongoing.

Both the North Atlantic financial crisis, and the euro area sovereign debt and banking crises have impacted more severely on output and employment because in many developed market national economies (the main exceptions have been Germany, Italy and Japan), the private sector too has become highly indebted.

A few simple scatter plots can illustrate the role that debt has played in recent poor economic performance. Figure 11 plots the difference between what the level of real GDP in 2011 would have been had real GDP continued to grow at its pre-recession (1997–2004) trend growth rate and actual GDP in 2011 (the ‘GDP loss’) against the change in the ratio of non-financial-sector gross debt to GDP between 2001 and 2007. The relationship between the recent growth performance and the extent of the prior build-up in non-financial-sector gross debt is strongly negative – for a 10 percentage points larger increase in the pre-crisis non-financial-sector gross debt-to-GDP ratio, the GDP loss has been 2.2 percentage points higher, on average, in our sample of 30 industrial countries. The increase in debt alone can ‘explain’ – in a purely statistical sense – almost 40 per cent of the variation in GDP performance relative to trend.

Interestingly, there is very little evidence of a statistical relationship between the GDP loss and the *levels* of the gross debt to GDP ratio at the end of 2007 – the beginning of the North Atlantic financial crisis (Figure 12). Although we do not want to over-emphasise the significance of this simple (possibly simplistic) statistical exercise, to us the finding that changes in non-financial-sector gross debt ratios are significant in explaining the variation in cross-country experience suggests both that country-specific factors are very important (so cross-country comparisons of levels of debt cannot tell the whole story) and that some of the increase in the non-financial-sector gross debt ratios in the years of the great leveraging was excessive and is therefore likely to result in some mean reversion towards historical averages. The pre-crisis increase in debt ratios may also be a

better guide to the extent of *desired* deleveraging than the realised debt reduction or the level of debt since the beginning of the crisis – as the process of deleveraging is nowhere complete, and in many countries and sectors has not yet started. The reason is that in an environment where there has been a widespread increase in the (precautionary) desire to save, the paradox of thrift can exert powerful effects and actual saving may well fall short of desired saving, a point we will discuss below in more detail.

Figure 11: Selected countries:  
GDP loss in 2011 (per cent versus trend) and prior increase in debt

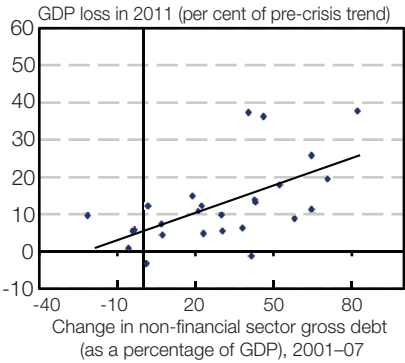
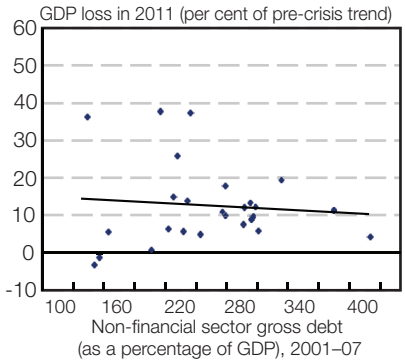


Figure 12: Selected countries:  
GDP loss in 2011 (per cent versus trend) and 2007 debt levels



Note: GDP loss is the deviation of real GDP from its pre-recession trend. The pre-recession trend is calculated as the average growth in real GDP between 1997 and 2004.

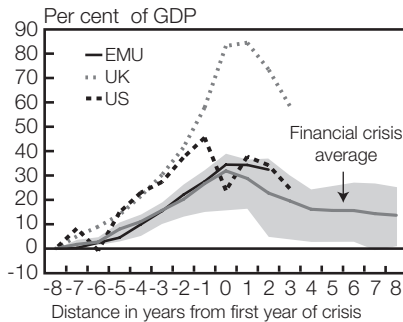
Sources: OECD, World Bank, national sources and Citi Research

Previous episodes of deleveraging after financial crises have also generally been associated with poorer economic performance.<sup>9</sup> Figures 13 to 17 depict the behaviour of several macroeconomic variables (relative to their pre-crisis trend) in response to financial crises that were associated with deleveraging in 86 countries between 1960 and 2006.<sup>10</sup> There were 18 episodes of financial crisis associated with deleveraging in our sample, starting with Chile in 1981 and ending with the Dominican Republic in 2003.<sup>11</sup>

On average in this sample of episodes, the stock of private-sector credit as a share of GDP grew by 30 percentage points in the eight years preceding the financial crisis and fell by around 15–20 percentage points over the following eight years (Figure 13). The effect of financial crises on real GDP was fairly dramatic: GDP fell by around 10 percentage points relative to

the pre-crisis trend, on average, in the first two years and made up very little ground in subsequent years. Compared to this historical average of financial crises, the GDP performance of the US, the UK and the euro area to date have actually been broadly similar, with the UK underperforming the historical average of our 18 episodes moderately. The increase in private-sector credit in the UK before the financial crisis much exceeded those in the US or euro area, and that of the average in the 18 countries in our past financial crises sample, which may partly account for the UK's sub-par economic performance since 2007.

**Figure 13: Selected countries:  
Change in domestic  
credit to the private  
sector, 2007–11**

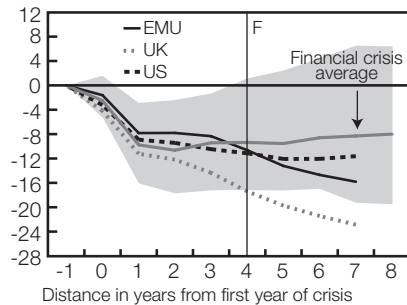


EMU: European Monetary Union; UK: United Kingdom; US: United States.

Note: Accumulated change in domestic credit to the private sector from T-8 to T+8, where T is the beginning of the banking crisis. For the US, the crisis is dated (T=0) in 2007, for the UK in 2008 and for the euro area in 2009. The shaded area covers the interquartile range of previous episodes, which indicates the middle 50 per cent of all crises.

Sources: IMF and Citi Research

**Figure 14: Selected countries:  
Real GDP versus  
pre-crisis trend,  
2007–16F**



EMU: European Monetary Union; UK: United Kingdom; US: United States.

Note: The shaded area corresponds to the interquartile range of previous episodes, which indicates the middle 50 per cent of all crises. From T+4 (2012), real GDP corresponds to Citi Research forecasts.

Source: IMF, World Bank, Bureau of Economic Analysis, Eurostat and Citi Research

As Figures 15 and 16 show, both private consumption and investment fall sharply in the aftermath of financial crises with deleveraging. The fall in consumption is similar to the fall in GDP, but the fall in investment is more than three times as large – an example of the investment accelerator at work. By contrast, net exports add substantially to GDP growth, but the contribution is almost entirely due to import compression, while exports were, on average, flat in these episodes.

Figure 15: Selected countries: Real private consumption versus pre-crisis trend, 2007–11

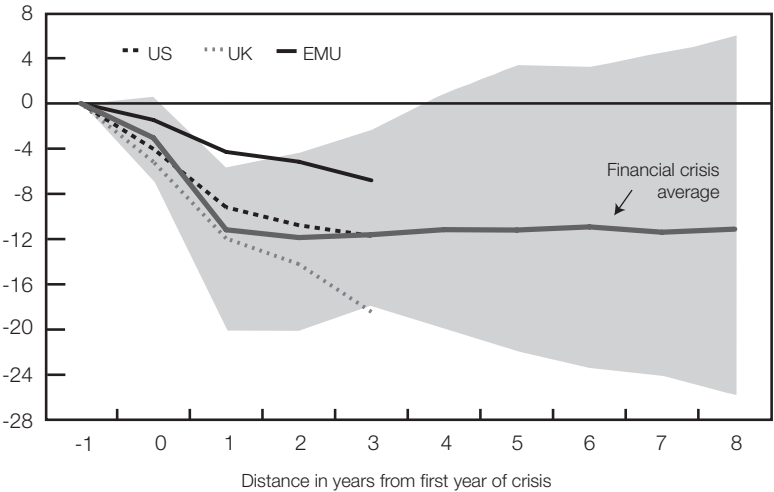
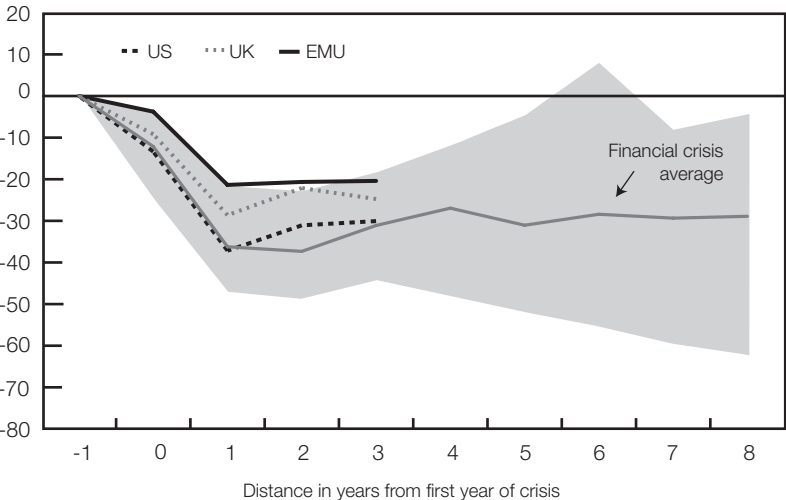


Figure 16: Selected countries: Real investment versus pre-crisis trend, 2007–11

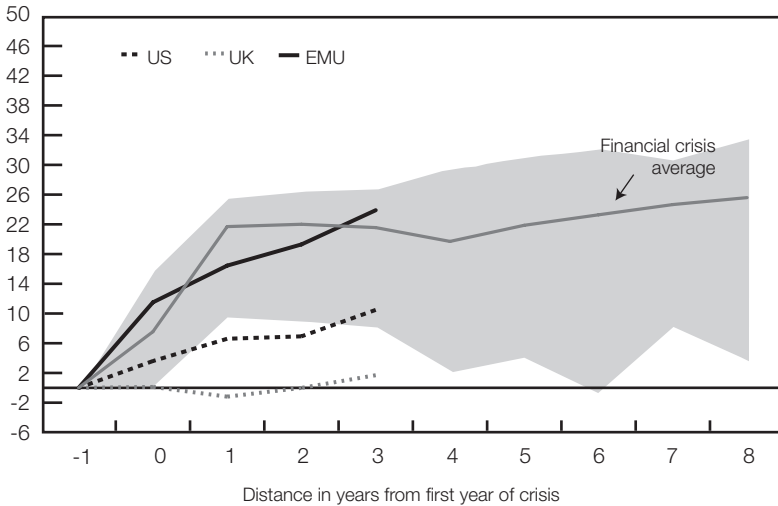


EMU: European Monetary Union; UK: United Kingdom; US: United States

Note: The shaded area corresponds to the interquartile range of previous episodes, which indicates the middle 50 per cent of all crises.

Sources: IMF, World Bank, Bureau of Economic Analysis, Eurostat and Citi Research

Figure 17: Selected countries: Real net exports versus pre-crisis trend, 2007–11



EMU: European Monetary Union; UK: United Kingdom; US: United States

Note: The shaded area corresponds to the interquartile range of previous episodes, which indicates the middle 50 percent of all crises.

Sources: IMF, World Bank, Bureau of Economic Analysis, Eurostat and Citi Research

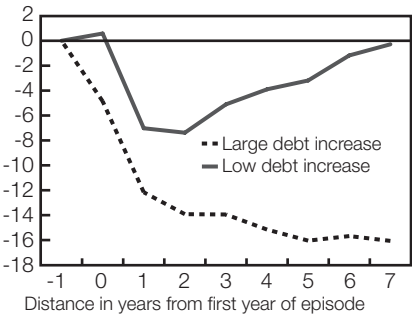
This suggests that the gains in external competitiveness and real exchange rate depreciations experienced by many of the countries in the sample (those that had a floating exchange rate, devalued a currency peg or had abandoned a currency board) following their financial crises, boosted the trade balance in much the same way as fiscal austerity would at a constant real exchange rate: by depressing demand and lowering living standards. The improvement in external competitiveness was often associated with a worsening in the terms of trade that acted like a tax by lowering household real income (measured in terms of the consumption bundle).

Excessive debt not only creates the vulnerabilities that lead to financial crises. It also increases the cost of financial crises, as Figures 18 and 19 show. In these figures we divide the sample into two groups, depending on the increase in debt before the financial crisis during the four years before the crisis.<sup>12</sup> The average increase in the debt-to-GDP ratio was 18 percentage

points of GDP for the group with the larger debt increases, while this debt ratio actually fell by 3,5 percentage points in the other group, on average, in the four years before the financial crisis.<sup>13</sup> As shown in Figure 18, the fall in GDP for the larger-debt increase group was almost twice what it was in the other group two years after the crisis. Even worse, it continued to fall relative to the trend, while the “smaller debt increase” group crept back to trend. The fall in private-sector debt post-crisis, however, was much steeper for the large debt increase group, while private-sector credit fell modestly. The falls in investment and consumption were larger and more persistent, and so were the increases in savings rates for the countries where debt had risen more ahead of the financial crisis.

For the many countries that had large increases in private debt up until the North Atlantic financial crisis, the outlook may therefore be even gloomier than the average experience depicted in Figure 19 would suggest. Out of the 30 countries in our sample, all but 6 (i.e., Germany, the Netherlands, Canada, Japan, Slovakia and Czech Republic) had increases in non-financial-sector gross debt in the three years leading up to the crisis that would have put them into the ‘larger debt increase’ group of the financial crisis sample.

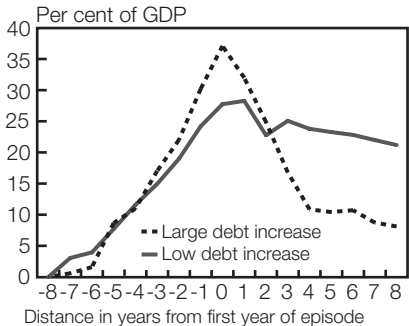
Figure 18: Real GDP versus pre-crisis trend after banking crises, 1980–2011



Note: “Large debt increase” group includes countries with above-median increases in gross debt in the three years leading up to the crisis.

Sources: IMF, World Bank and Citi Research

Figure 19: Change in domestic credit to the private sector after banking crises, 1980–2011



Sources: IMF and Citi Research

### 4.3 Even orderly deleveraging is likely to be costly: Co-ordination failures and the paradox of thrift

Systemic crises are particularly painful, as they often combine impairments to credit availability with an additional desire to increase saving. However, debt reduction can impose heavy costs even outside episodes that feature a weak banking system and widespread restrictions on credit availability.

Increased planned saving implies lower spending on goods and services, and lower net income from the production of these goods and services for somebody unless that shortfall in demand is somehow replaced with increased spending elsewhere. However, the main reason that heavy economic, social and human costs are often associated with deleveraging by the public and private sectors is the fundamental co-ordination problem faced by decentralised capitalist market economies with large financial sectors and significant financial intermediation. This co-ordination problem can arise from an increased desire to save, no matter whether this was driven by liquidity or solvency concerns. This co-ordination problem has preoccupied macroeconomists since Keynes, and probably before Keynes also.

In a closed system (e.g., the world economy) it has to be the case that system-wide aggregate saving has to equal system-wide aggregate investment. Even though this relationship holds identically *ex post*, that is, for realised saving and investment flows, and for actual purchases and sales of financial instruments, it need not hold *ex ante*, for planned investment and saving, and for planned financial asset accumulation and decumulation. It can therefore be viewed, *ex ante*, as a co-ordination constraint. Failure for it to hold *ex ante* can result in the revenge of the paradox of thrift.

Unlike in a subsistence peasant economy, where a decision to save (i.e., a decision to abstain from consumption of current goods and services), constitutes *ipso facto* an identical decision to invest (i.e., to add to the stock of real reproducible capital – by adding the grain that is not consumed to the stock of grain to be used in sowing for the next harvest), in a decentralised financially developed economy households save (abstain from consumption) but invest very little in the form of capital expenditure. Instead, household saving flows into a range of financial instruments. Likewise, firms do most of the capital expenditure, but when they cut their investment, they do not raise corporate consumption demand by the same amount. Instead, they either retain profits or distribute their disposable income to households and other beneficial owners. This physical, institutional and legal separation of the



saving and investment decisions places a big co-ordination burden on the financial markets linking households and non-financial corporations, and, in a more complex world, households, non-financial corporations, financial institutions, the government and the rest of the world. Much of the time, financial markets do a reasonable job of performing the task of balancing saving and investment at levels of employment close to full employment. However, as the years since 2007 remind us, there can be spectacular (financial) market failures, sometimes aided and abetted by labour market failures and by policy failures.

In the Keynesian textbook model, the *paradox of thrift* described a situation where a planned increase in saving by households (i.e., a planned or ex ante reduction in household consumption demand at a given level of household disposable income) weakens output and employment to the point that actual, realised or ex post saving instead of rising as planned, rises less, stays constant or even falls because lower consumption demand lowers production and thus household disposable income. We can see variants of these destructive feedback loops at work throughout the periphery of the euro area, in the UK and in core euro area countries such as the Netherlands, where the realisation in 2011 by households that they had excessive gross (i.e., mortgage debt) and illiquid assets that were falling in value contributed to a major slowdown in private consumption demand and a recession.

It is key to recognise that the paradox of thrift is not restricted to the consequences of fiscal austerity implemented by governments that are trying to reduce their debt burdens or deficits. It applies to the adverse feedback loops created by any economic agent, or sector, whose individually rational defensive actions when faced with an unsustainable debt and deficit configuration (or with any other reason for boosting its individual saving) create negative income or demand externalities for other agents in the economy by cutting its consumption, and thus the effective demand for output and actual output – externalities that are not effectively captured by the price signals, quantity signals or other information conveyed by these actions. Indeed, the original paradox of thrift does not involve fiscal austerity at all. Instead, it analysed the consequences of a “spontaneous” decision by the private sector to raise the household savings rate.

Financial markets, and financial asset prices and yields are supposed to co-ordinate the spending and savings plans of producers, consumers and other economic agents. Unfortunately, they do so least effectively when it is most needed. Allocation over time and the pooling, sharing, pricing and trading of

risk are the areas of economics where both markets and governments are weakest. The incompleteness of markets (due to private and asymmetric information and costly contract enforcement; poor governance of private and public enterprises; the inability of governments to commit their successors and, indeed, often even themselves for any length of time; a pervasive lack of trust in people and institutions; and a scarcity of all key ingredients of social capital) is a major obstacle to the efficient allocation of resources over time and across states of nature.

## 5. How to reduce debt over time – mostly for sovereigns, but with lessons for other sectors

To guide our discussion of the various ways to bring down sovereign debt (or indeed the debt of any economic agent), an accounting identity is useful:<sup>14</sup>

$$\begin{aligned}\Delta d &= (r - g)d - s \\ &= (i - \pi - g)d - s\end{aligned}\tag{1}$$

Here  $d$  is the net debt-to-GDP ratio,  $i$  is the one-period (strictly the instantaneous) nominal interest rate,  $g$  is the growth rate of real GDP,  $r$  is the *ex post* (actual or realised) one-period real interest rate,  $\pi$  is the actual rate of inflation and  $s$  is the primary (non-interest) surplus as a share of GDP. To get from the first identity in equation (1) to the second, we use the fact that the *ex post* real interest rate equals the nominal interest rate minus the actual rate of inflation ( $r = i - \pi$ ). Equation (1) says that the change in the net debt-to-GDP ratio is given by the primary surplus (as a percentage of GDP) and a “snowball” factor that depends on the difference between the real interest rate and the growth rate of real GDP.

Now let  $\tilde{r}$  be the *ex ante* or expected real interest rate. The nominal interest rate equals the *ex ante* real interest rate plus the expected rate of inflation,  $\pi^e$ , that is,  $i = \tilde{r} + \pi^e$ . It follows that:

$$\Delta d \equiv (\tilde{r} + \pi^e - \pi - g)d - s\tag{2}$$

From equations (1) and (2) we can see that there are five distinct ways to deleverage (strictly to engage in net deleveraging), that is, to reduce  $d$ . When we list these five modalities, we are strictly keeping all else constant, even if this may make no sense in practice because there are other economic relationships linking the variables in equations (1) and (2). The five ways to deleverage are:

### 5.1 Practice fiscal austerity (increase $s$ by increasing the numerator of $s$ , tax revenues minus non-interest public spending in the case of the public sector)

This approach – fiscal pain through cuts in public spending or tax increases – is painful and unpopular. This is partly because, even holding constant the level of economic activity (GDP and employment), public spending cuts deprive the beneficiaries of public spending of some of the benefits they receive, whether in cash or in kind, and because tax increases reduce disposable income or wealth. In addition, since the real world is Keynesian, at least in the short run, fiscal tightening almost always depresses economic activity. The expansionary contractionary fiscal policy paradigm of Giavazzi and Pagano (1996), and Alesina and Ardagna (2010) is a theoretical *curiosum*. The announcement effects, today, of a credible commitment to future fiscal austerity may be expansionary (because it lowers long-term interest rates), but when the pre-announced fiscal tightening occurs, it will almost surely depress aggregate demand and economic activity. There is also no empirical evidence of a Keynesian “Laffer curve” where tax increases or cuts in public spending reduce economic activity to such an extent that the tax base shrinks to the point that the deficit increases despite the fiscal tightening (see Cottarelli and Jaramillo 2012), although excessive and misdirected fiscal zeal can do lasting damage to potential output, by depressing capital formation and through hysteresis in the unemployment rate.

### 5.2 Reduce the effective nominal interest rate on the public debt, $i$

This can be done (i) by influencing the market equilibrium interest rate (say through quantitative easing (QE) or other large-scale asset purchases of sovereign debt or private debt), (ii) by ensuring the funding of the sovereign by the private sector (typically in the primary markets) at a cost below the market equilibrium interest rate, that is, through financial repression, or (iii) by getting access to sovereign funding at below-market interest rates from external official entities, as Greece, Portugal and Ireland do through their access to the concessional and conditional funding of the International Monetary Fund (IMF), the Greek Loan Facility, the European Financial Stability Facility (EFSF) and soon also the European Stability Mechanism (ESM). Holding constant the actual inflation rate,  $\pi$ , this is equivalent to lowering the *ex post* real interest rate,  $r$ . In the post-World War II sovereign debt deleveraging in the US and the UK, as well as in many other countries, this has been an important mechanism for deleveraging (see Sheets 2011, 2012). Reinhart and Sbrana (2011) found that between 1945 and 1980 financial repression,

working through a reduction in the real rate of interest on public debt, was a major contributor to the reduction in public debt seen in many countries.

### 5.3 Pursue policies that raise the actual rate of inflation, $\pi$

From equation (1), this will work provided these policies do not raise the nominal interest rate,  $i$ , do not lower the growth rate of real GDP,  $g$ , and do not raise the primary deficit,  $-s$ , too much. The most obvious problem is raising inflation without raising the nominal interest rate. Consider equation (2). If the equilibrium or *ex ante* real interest rate  $\tilde{r}$  is not affected by the inflation-raising policy (this is sometimes referred to as the ‘Fisher hypothesis’), then higher actual inflation lowers the debt-to-GDP ratio only if, and to the extent to which it is, unanticipated (if  $\pi$  rises by more than  $\pi^e$ ). If anticipated inflation rises as much as actual inflation, the nominal interest rate will rise one-for-one with the expected and actual inflation rate, and there is no deleveraging. Financial repression can come to the rescue here too, of course. If the authorities stop the nominal interest rate on the public debt from rising with expected inflation, there is a *de facto* reduction in the *ex ante* real interest rate,  $\tilde{r}$  and deleveraging will occur regardless of whether the inflation is anticipated or not.

Unanticipated inflation (or anticipated inflation combined with financial repression that keeps nominal yields from rising in line with anticipated inflation) can always be used to inflate away the real burden of servicing a given outstanding stock of (public) debt that is denominated in domestic currency (but not, of course, inflation-linked debt or foreign currency-denominated debt).

Temporary inflation can solve a fiscal unsustainability problem when the proximate cause of the fiscal unsustainability is a very large stock of debt and when the real value of the flow (primary) deficit does not present a material problem. Italy fits that category. If the general government debt burden is more modest but the (primary) general government deficit is large – which was the situation in Ireland and Spain in early 2008 before bad private assets began their migration to the public-sector balance sheet – a short, sharp burst of inflation cannot solve the fiscal unsustainability problem by itself. If both the public debt burden and the public-sector primary deficit are large in real terms and as a share of GDP, as is the case in the US and in Japan, inflation can only provide relief on the stock component of the fiscal unsustainability conundrum. The bulk of the real flow primary deficit will have to be eliminated some other way.

## 5.4 Raise the growth rate of real GDP, $g$

This, of course, is everyone's favourite deleveraging option because it is effectively painless, especially if it means raising output by reducing economic slack and involuntary idleness of resources rather than by raising potential output along with actual output, which will, in general, require sacrificing valued leisure and/or private or public consumption to boost capital expenditure. Raising the level and/or growth rate of real GDP increases the real resources available for public debt service without the need for fiscal austerity – cuts in public spending or tax increases. Some of the writings of the “growth instead of austerity” school make it look as though the governments of the euro area member states, the UK and other countries, who engaged in fiscal austerity either do not recognise that fiscal austerity hurts output and employment in the short and medium run or somehow forgot to push the “growth button”. The problem with this view is that unlike fiscal austerity, which is a policy (or rather a set of two broad categories of policies: (i) public spending cuts and (ii) tax increases), growth is not a policy. Growth is an outcome that a country enjoys if it has (i) the right policies, (ii) the right institutions and culture, (iii) the right initial conditions, (iv) the right external environment, (v) a bit of luck and (vi) affordable funding for the sovereign and other systemically important institutions.

## 5.5 Write down the debt or mutualise it

The final deleveraging option is default (restructuring) or mutualisation – effectively making the debt (or part of it) jointly and severally guaranteed by a wider community.

Debt default or debt restructuring takes two canonical forms from an economic perspective. The first is equitisation: part or all of the debt is turned into equity. This option is rarely applied even in part to sovereign debt, although it is common in the financial sector and the corporate non-financial sector. The second is a writedown. Repudiation is a 100 per cent writedown. From an economic perspective, what matters is the net present discounted value (NPV) of a writedown relative to the value of servicing the debt in full according to the letter of the debt contract. Whether the restructuring is voluntary or coercive and the details of the restructuring (i.e., maturity extension, lower interest payments, writedown of face value or notional value of the debt) is of interest to lawyers, credit rating agencies, the ISDA Determinations Committees and politicians who do not understand the difference between face value and NPV and/or hope that their voters do not understand the difference either, but is of secondary economic significance.

## 6. When is deleveraging most harmful?

The most damaging forms of deleveraging, from the point of view of their short-to-medium-run impact on aggregate demand, output and employment, as well as possible long-run or even permanent effects on potential output, occur when the *ex ante* desire to increase saving rises sharply and when the co-ordination of decisions on saving, investment and on sales and purchases of financial instruments are poorly co-ordinated by markets and governments. These conditions generally are more likely to arise in the following circumstances:

- *If the state is among the sectors that need to deleverage:* As discussed before, the government is often tasked with stabilising the economy when the non-financial private-sector deleverages. If, however, the government is preoccupied with its own debt burden, it is often constrained in its ability to support the private economy. It is also less effective as a focal point for co-ordinating private-sector decisions. Furthermore, as noted earlier, the state is usually the ultimate source of financial support for the banking sector. Weak banking sectors can exacerbate the harm done by non-financial-sector or government deleveraging. Finally, debt restructuring for sovereigns, while far from rare in a historical context, is often done inefficiently, as timely and orderly debt restructuring is often impeded by the lack of clear (contractual and/or statutory) procedures and by partisan political considerations.
- *If the banking sector is in poor shape:* Weak banking sectors strengthen precautionary savings motives of households and non-financial corporations, and often lead to liquidity hoarding behaviour by banks themselves. What is more, as discussed above, the risks of disorderly and contagious bank deleveraging and bank runs (encouraged by the “sequential service constraint” on bank deposits when it is feared available reserves are insufficient to meet likely deposit withdrawals) are larger than for other sectors, not only owing to the banking sector’s higher leverage, but also because of the lack of clear and efficient procedures for bank debt restructuring in many countries – even though both excessive banking-sector leverage and a lack of orderly resolution regimes for banks could be solved through collective action.
- *If more/larger sectors are attempting to deleverage at the same time:* Co-ordination becomes more complex and finding a sector that is willing to reduce its financial surplus, while others are attempting to raise theirs, more difficult.

- *If the objective is to increase net wealth/reduce net debt* rather than to bring down gross balance-sheet size or levels of debt, that is, if there is a desire to increase active net financial deleveraging (a larger planned sectoral financial surplus) or to increase active net deleveraging (a higher-planned sectoral saving rate). The capital-adequacy ratio of an agent or sector can be raised and its leverage ratio reduced without this requiring either active net deleveraging (“saving”) or active net financial deleveraging: the agent or sector does not have to raise its saving or reduce its investment. All that is required is that assets and liabilities be reduced by the same amount. This is true even if there are no capital gains or losses. The co-ordination problem is not eliminated – distressed asset sales to pay off maturing debt can set in motion damaging feedback loops between lack of market liquidity and lack of funding liquidity – but is, in principle, simpler than when saving and investment decisions have to be co-ordinated as well.

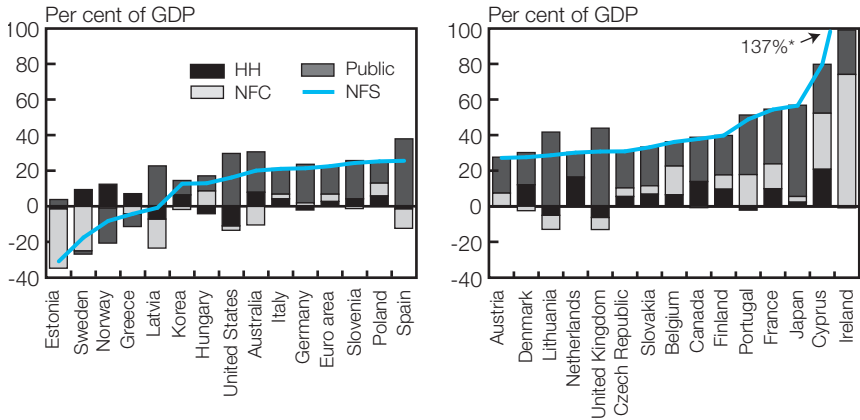
## 7. How much deleveraging has taken place?

The leverage party has mostly stopped. Growth in debt and credit has fallen in most developed markets, sometimes precipitously. In the period 1995–2006, gross non-financial-sector debt grew by 9,3 per cent per annum in nominal terms, on average, but nominal non-financial-sector debt growth fell to 3,8 per cent per annum between 2008 and Q2 2012.<sup>15</sup> The fall in real credit growth is somewhat smaller, on average, than the drop in nominal credit growth rates, as inflation rates have also fallen in many countries recently (relative to pre-2006 growth rates), but real credit growth still fell in the post-2008 period relative to the pre-crisis trend in all but four countries in the sample (i.e., Belgium, Canada, Czech Republic and Japan). With very few (and small) exceptions, the most recent data do not indicate any pickup in the rate of non-financial-sector credit growth.

The pace of deleveraging, in what follows mostly measured by the change in the stock of debt relative to GDP, has been very uneven across countries in recent years. Substantial deleveraging has taken place in some countries and sectors. Ten countries (Italy, Poland, Netherlands, Czech Republic, Slovakia, Belgium, Finland, France, Japan and Cyprus) have not seen any decrease at all in the non-financial-sector gross debt to GDP ratio by Q2 2012. In many countries, gross debt as a share of GDP has increased further since 2008, mostly through increases in the public debt ratio, while the private debt ratio has fallen more often (Figure 20). Thus, in 14 out of 28 countries the latest data indicate a reduction in gross debt-to-GDP ratios of non-financial

corporations relative to 2008 and in 11 countries for households, while only three countries had decreases in public debt – one of which is Greece as a result of its debt restructuring. Public debt ratios peaked only very recently in some countries and were in fact still rising in almost half of our sample (in 13 out of 28 countries).

**Figure 20: Selected countries: Non-financial-sector gross debt-to-GDP ratio, change 2008 to 2012Q2**



HH: household; NFC: non-financial corporation; NFS: non-financial sector

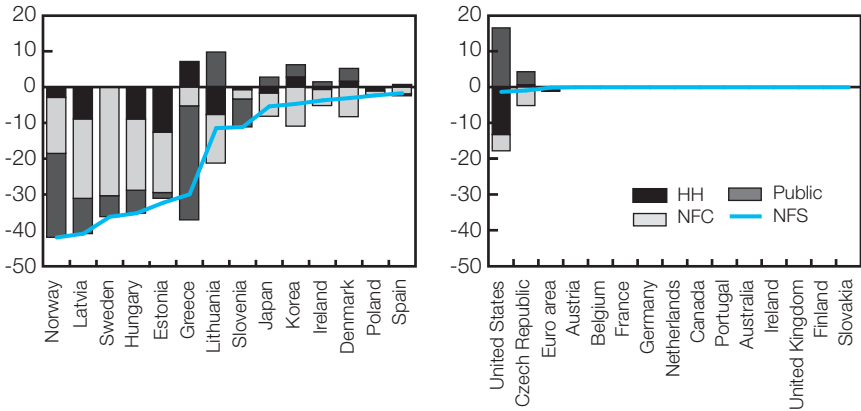
Note: Total NFS gross debt equals the sum of HHs, NFCs and general government (public) gross debt. All values are expressed on a non-consolidated basis except for Australia and Portugal. For Italy, the Netherlands and Ireland latest data correspond to 2012Q1, while the euro area and Cyprus correspond to 2011. In Ireland\*, HH gross debt-to-GDP ratio declined by 1 percentage point, NFC debt to GDP increased by 74 percentage points, while GG gross debt to GDP increased by 64 percentage points.

Sources: OECD, Eurostat, national sources and Citi Research

However, the most recent data suggest that private debt ratios at least have peaked in most countries – in all but two (i.e., Belgium and Portugal) for non-financial corporations, and in all but four (i.e., Belgium, Canada, Slovakia and Czech Republic) for households, even though in many cases the peaks were very recent. Across countries, gross deleveraging in recent years seems to have been a “Nordic” phenomenon. In the Baltic and Scandinavian countries gross debt ratios have fallen strongly from their respective recent (post-2006) peaks (Figure 21). In many other countries, including the UK, Ireland, Portugal or France, non-financial-sector gross debt ratios have not fallen at all. In some countries, including the US and Spain, the aggregate amount of deleveraging has been rather small, but as noted, more substantial private-sector deleveraging has been met with increases in public debt.



Figure 21: Selected countries: Non-financial-sector gross debt-to-GDP ratio, peak to 2012Q2



HH: household; NFC: non-financial corporation; NFS: non-financial sector

Note: Peak corresponds to maximum since 2006 for NFS gross debt. All values are expressed on a non-consolidated basis except for Australia and Portugal. For Italy, the Netherlands and Ireland the latest data correspond to 2012Q1, while the euro area and Cyprus correspond to 2011.

Sources: OECD, Eurostat, national sources and Citi Research

Where it occurred, deleveraging seems to have been driven by differential economic growth or default rather than variations in credit growth, that is, the countries with the largest debt reductions were not generally the ones with the largest reductions in (nominal or real) credit growth. As noted above, nominal and real credit growth has fallen quite substantially in many countries, and particularly so in highly leveraged economies. Growth rates in debt-to-GDP ratios have also fallen quite substantially. However, the fact that real and nominal GDP growth have been very weak in recent years has made the job of deleveraging much harder – the average yearly rate of nominal GDP growth between 2008 and 2011 was a whopping 5,5 percentage points lower than for 2000–08, while nominal debt growth fell by 4,7 percentage points.

## 8. How much more deleveraging is to come?

Likely and desirable levels of sectoral debt are likely to be lower than prior to 2007. Economic theory, however, provides little guidance on optimal levels of debt and leverage. In the absence of fundamentally based criteria for debt sustainability, focal points can be useful benchmarks:

- For public debt, the Maastricht Treaty of the European Union (EU) provides one such focal point with a threshold of 60 per cent for general government gross debt-to-GDP ratios

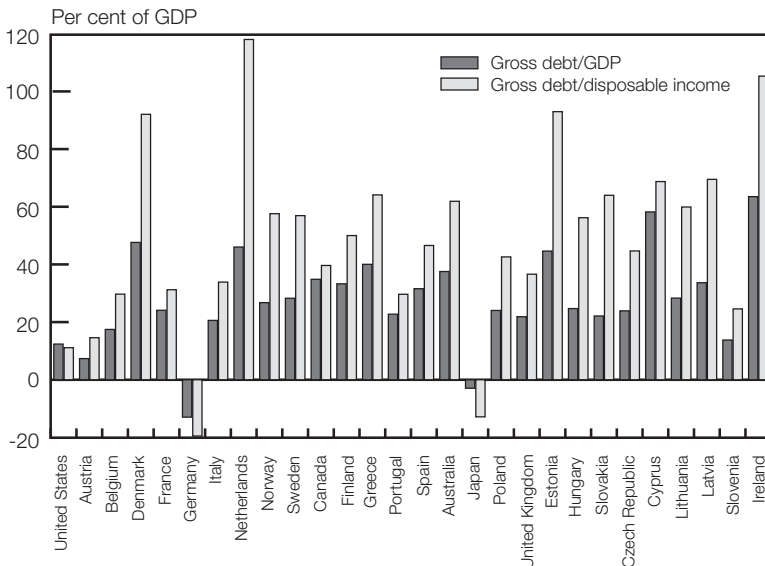
- Cecchetti et al. (2011) find that, on average, debt is associated with lower GDP growth when gross debt-to-GDP ratios exceed 85 per cent for the public sector (close to the Reinhart and Rogoff (2009) threshold of 90 per cent of GDP), 90 per cent for the non-financial corporation sector and 85 per cent of GDP for households (even though the threshold was not statistically significant in the case of households).

Debt levels experienced during a period for which there is general agreement that financial excesses were absent may also provide useful benchmarks.

### 8.1 Households are likely to require plenty of additional deleveraging

Figure 22 highlights the difference between household gross debt levels (relative to GDP and disposable income) today and in 2001. On (an unweighted) average, households would need to reduce their gross debt by around 30 percentage points of GDP to get back to 2001 levels, not a small order given that debt only fell by around 1,5 percentage points of GDP on average in the two-and-a-half years since the end of 2009. While the magnitudes differ, the picture painted by ratios of household gross debt relative to household disposable income is very similar.

**Figure 22: Selected countries: Household change in gross indebtedness required to return to 2001 levels**



Note: Values correspond to the difference between household gross debt divided by GDP or disposable income at the latest available date and in 2001.

Sources: OECD, Eurostat, national sources and Citi Research

If we distinguish the countries in our sample according to the pressures for households to deleverage, we observe the following regularities:

First, there are countries with unambiguously large and likely long-lived deleveraging pressures for households. This group includes countries that have had very large increases in gross debt over the past decade, substantial increases in most measures of net debt and recent (or likely future) substantial reductions in net worth (financial and non-financial). Levels of gross and net debt are also often relatively high in these countries, and the degree of deleveraging achieved in recent years has been modest. Among the countries in this group are Cyprus, Greece, Ireland, Spain and Portugal, where household gross debt relative to GDP are 58 percentage points of GDP, 40 percentage points, 63 percentage points, 32 percentage points and 23 percentage points respectively; higher than in 2001 and where house prices have fallen in recent years (generally leading to falls in household net worth, including non-financial assets where data are available), even though in Portugal by rather little to date.<sup>16</sup> The latest available data indicate that household nominal gross debt is falling at an annual rate of around 2,5 per cent in Spain, 4–4,5 per cent in Portugal and Ireland, and 7 per cent in Greece but is still increasing in Cyprus. Assuming that deleveraging continues at this pace, bringing gross debt back to their 2001 levels would, under our assumptions for nominal GDP growth, take around or above another decade in these five countries.<sup>17</sup>

Second, there are countries with more moderate, but still deleveraging pressures, at least in the medium term. This group includes countries with relatively large increases in household gross debt (and usually high levels of gross debt) but where household net worth (often reflecting a combination of financial and non-financial wealth) has remained relatively robust. This group of countries includes Australia, Canada, Denmark, Korea, Norway, Sweden, the Netherlands and the UK. In our view, the large increases (and often high levels) of gross indebtedness and the fact that house prices are often high in these countries suggest that at least some gross deleveraging will likely be necessary in these countries in coming years. In some, such as Denmark, house prices have already fallen substantially, which has led to some pressures to reduce debt. In most other countries (except the UK), deleveraging has not yet started in earnest.

The group of countries with moderate deleveraging pressures on households also includes countries such as Belgium, France (where increases in gross debt have been sizeable but smaller, and where household net worth has held up) and Italy (where household gross debt is low, but has also risen quite a bit in the past decade, and where household net worth has suffered) – where deleveraging has also not yet started. This group also includes the US (where household deleveraging has gone quite a long way, but household

net worth has fallen), and a number of Eastern European countries (where household debt and house prices have fallen after sizeable prior increases, but where levels of debt remain low).

In the group of countries with moderate deleveraging pressures the time horizon over which the deleveraging will play out is difficult to pin down – precisely, because there is no significant deleveraging process in place by now, with some exceptions.

Third, there is a small and select circle of countries with very modest increases in household gross debt and no need for net deleveraging either. This select circle includes Austria, Germany and Japan, and maybe Switzerland. Germany and Japan are, in fact, the only countries among the 30 countries in our sample where gross debt-to-GDP ratios for households at the latest available date (usually Q2 2012) were below those in 2001.

## 8.2 Non-financial corporations

For non-financial corporations, gross debt, is, on average, (unweighted) 26 percentage points of GDP higher than it was in 2001, but with greater differences between the countries – in Ireland, gross debt levels of non-financial corporations are 165 percentage points of GDP higher. In a number of countries, non-financial corporations' gross debt has fallen relative to GDP since 2001 (in at least five countries: the Netherlands, Sweden, Japan, Poland and the Czech Republic). Accounting for currency and deposit accumulation leaves the picture broadly unchanged, but considering narrower measures of net debt (i.e., netting out broader sets of assets) suggests lower increases in indebtedness.

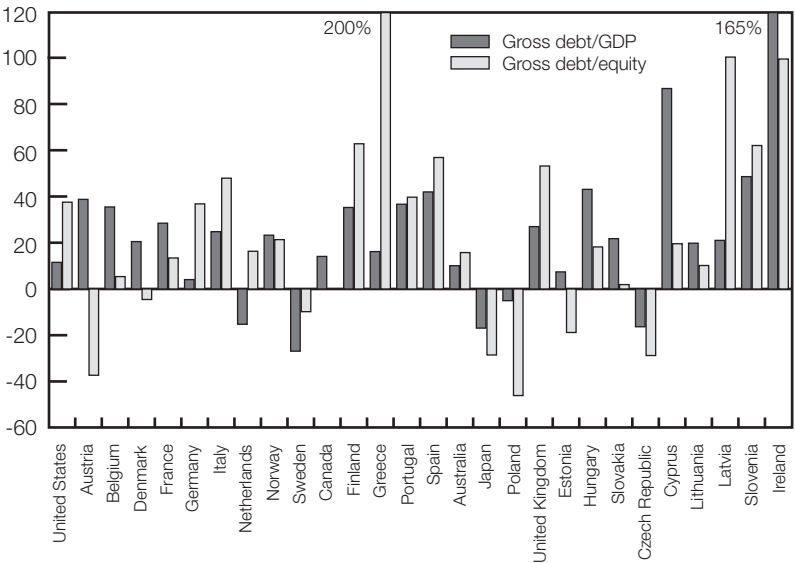
Generally, the list of countries where prior debt increases (and therefore future deleveraging needs) were high is rather similar to that for households: gross non-financial corporations debt increased strongly in Cyprus, Ireland, Portugal and Spain, but also in Belgium and the UK and a number of countries in Emerging Europe. In few of these countries have levels of gross debt to GDP come down substantially from the peak. However, even in these countries non-financial corporations' financial net worth is often still substantially higher than it was in 2001, including in Portugal, Spain and Ireland. This truly highlights the roles of gross debt and access to liquidity in creating acute deleveraging pressures.

In Greece the levels of gross debt and broad measures of net debt are low in the cross-country comparison, and the increases have been below the cross-country average. However, equity has fallen even more steeply, so that debt-to-equity ratios have seen among the largest rises in our sample

(Figure 23). In the US, non-financial corporations gross debt-to-GDP ratios have recently come down and registered below-average increases in the previous decade.

However, we consider the argument that developed-market corporates generally have a strong balance-sheet position to be overplayed. First, Figure 23 highlights that debt-to-equity ratios, while very volatile, have risen, not fallen, in many countries since 2001. Second, corporate profit margins are high and are unlikely to rise further in many countries, and could well fall over time, putting pressure on measures of corporate leverage that are based on earnings or profits. Third, in an environment where public sectors are under pressure to consolidate finances, cash-rich corporate balance sheets may offer an opportune source of revenue for fiscal consolidation. A number of countries, including Spain and France, have already raised corporate taxes in recent years against a year-long trend of falling corporate tax rates. Of course, the opposite holds in the few countries that currently have substantial fiscal space – Sweden decided to lower its corporate tax rate to stimulate a slowing economy.

Figure 23: Selected countries: Change in leverage required to return to 2001 levels



Note: Values correspond to the difference between non-financial corporations gross debt to GDP and gross debt to equity at the latest available date and in 2001.

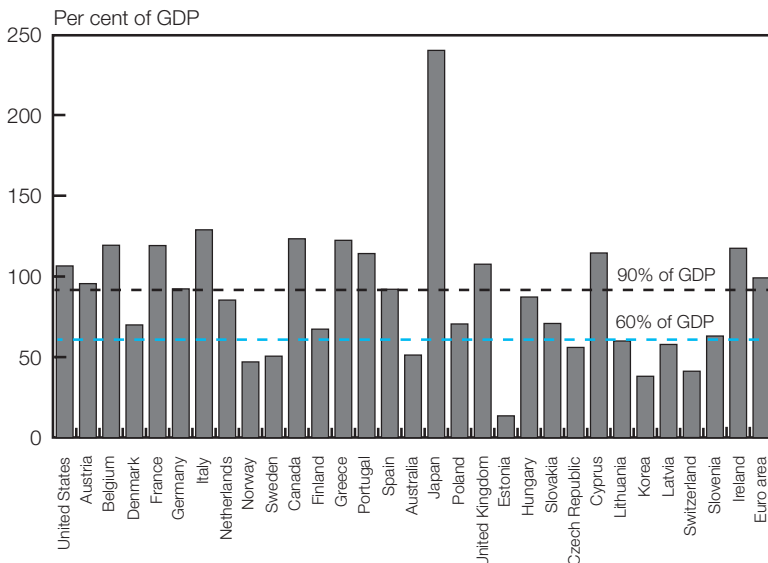
Sources: OECD, Eurostat, national sources and Citi Research

Taking the Cecchetti et al. suggested value of 88 per cent of GDP as a benchmark, many countries (23) could raise potential GDP growth by achieving a lower level of corporate debt. Only in Australia, the US, Germany, Greece, Slovakia, Poland and Lithuania did non-financial corporations remain below that threshold, with Irish non-financial corporations at 206 percentage points above the benchmark.

### 8.3 Public debt

Figure 24 presents the levels of general government gross liabilities to GDP for our sample of countries in Q2 2012.<sup>18</sup> Of the 30 countries in the sample, 21 were above the 60 per cent of GDP benchmark. Among those that were below 60 per cent of GDP, four (e.g., Estonia, Czech Republic, Lithuania and Latvia) are emerging markets. Of the 30 countries, 14 were above the 90 per cent of GDP benchmark too, by only a small margin for Spain and Germany (both at 92 per cent of GDP) but with Japan carrying general government liabilities of a staggering 240 per cent of GDP. The US and the UK have both recently crossed even the higher threshold. These numbers are not what one would expect for safe haven countries, a designation used not just for the US but also for the UK these past two years.

Figure 24: Selected countries: General government liabilities, 2012Q2



Note: For Italy, the Netherlands and Ireland the latest data correspond to 2012Q1, while for Cyprus and the euro area they correspond to 2011.

Sources: OECD, Eurostat, national sources and Citi Research

What is more, as indicated above, public debt levels and ratios to GDP are still rising in many countries, including the US, Japan and the UK.

Now that the illusion of the existence of risk-free sovereign debt is broken, probably beyond repair, we doubt that private investors will continue to finance or refinance such levels of government debt even in the safe havens, for very much longer at anything near current levels of yields, without much friendly or not-so-friendly encouragement (also known as financial repression) by the relevant national authorities (usually a combination of the national/federal treasuries, central banks and regulators/supervisors). Financial repression and/or continued activity by the central bank as the buyer of last resort may for a while still maintain the appearance of easy “market access” for many of these sovereigns. High levels of private saving and limited capital mobility make the job of financial repression somewhat easier, but many fiscally weak euro area countries do not have either. For private investors to stay or to return voluntarily, sustainably and with confidence, a long and painful period of gradual public debt reduction through fiscal pain is likely to be needed in many countries. In countries where government debt is above 90 per cent of GDP and still rising, the period of fiscal pain needed to bring debt down to sustainable levels is likely to cover most of the rest of this decade, unless sovereign debt restructuring is resorted to. In a number of countries, including Greece, Ireland and Portugal, and potentially Spain, Italy, Cyprus and Slovenia, sovereign debt restructuring is most likely necessary to restore the solvency of the sovereign. In others, a short period of swift and, one hopes, orderly sovereign debt restructuring may be a benign alternative to years of fiscal pain.

## 9. Conclusion: What lies ahead?

There remains far too much debt on the balance sheets of most advanced economies. Reducing this debt burden to more tolerable levels will take many years unless recourse is had to debt restructuring on a much greater scale than currently contemplated. Higher real growth is neither a policy nor a realistic expectation as a means to deliver painless deleveraging in the excessively indebted advanced economies. As regards the growth of potential output, most of these economies are at, or close to, the technology frontier and have unfavourable demographics. More-open immigration policies could ease the demographic crunch. Even under favourable circumstances, in the absence of excessive leverage, the growth rates of potential output would be modest (see Gordon 2012). Clearly, many of the most afflicted economies in the euro area have deeply distorted and dysfunctional labour

markets, closed-shop professions, badly managed and poorly regulated utilities, excessive state ownership of productive resources and a host of other man-made supply-side distortions whose removal could lift potential output significantly. Unfortunately, the reforms are slow in coming and will often require considerable time to be implemented. And even when they have been implemented, the benefit in the form of higher actual output still requires demand to come from somewhere. Animal spirits alone are unlikely to do the job with acceptable speed (Shiller 2000).

In addition, net deleveraging by sovereigns and banks (in most countries), by households in many countries, and by the non-financial corporate sector in some countries means that these sectors attempt to run financial surpluses without matching increases in planned financial deficits by other sectors, except possibly the central banks. The result is that the paradox of thrift strikes and activity is well below its potential level.

An inflationary solution to the excessive leverage problem is all but impossible in the euro area, highly unlikely in Japan, unlikely in the US and quite unlikely in the UK. The reason for this is the much-increased independence of central banks in the advanced economies and their commitment to price stability. Financial repression will play a modest role in the deleveraging process of the developed markets. This will occur partly through central bank purchases of sovereign debt in the primary markets (except for the ECB which cannot engage in primary market purchases of sovereign debt because of Article 123 of the Treaty) at yields below those prevailing in the secondary markets.<sup>19</sup> Sovereign and private debtors can also benefit from purchases in the secondary markets that drive down yields there – sovereign bond markets are inefficient and the supply of, and demand for, sovereign debt influences its yield. Banks and other regulated financial intermediaries will be cajoled by the national authorities to hold more sovereign debt than they would choose to hold voluntarily at yields lower than what they would accept voluntarily, with financial repression sometimes masquerading as prudential probity, as in the case of the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR). In the absence of at least moderately high inflation (say 5 per cent or more per annum), financial repression only has a modest effect on real bond yields, however.

Private and public austerity will continue to be important mechanisms for deleveraging in the years to come. In the euro area so will mutualisation of sovereign debt, and restructuring of sovereign debt and bank debt. Restructuring of household debt (especially mortgage debt) would be



desirable in many countries with excessive gross household debt (e.g., the Netherlands, Denmark, Ireland and Spain) but is, for political reasons, unlikely on a large scale.

In our view, debt restructuring, for sovereigns in the periphery and for banks in both periphery and core, is inevitable during the next two or three years. This is likely to start with another sovereign debt restructuring for Greece, regardless of whether it exits the euro (as we expect to happen during 2013 or 2014). Portugal, with its inexorably rising sovereign debt burden, poor growth prospects and growing austerity fatigue will likely have to restructure its sovereign debt; most likely when its current troika programme terminates, in the second half of 2014. Unless Ireland achieves ample retroactive mutualisation of public debt incurred as a result of its banking-sector bailouts since 2008, it too will have to restructure its sovereign debt.

In Spain the consolidated sovereign and banking sector (allowing for likely rapidly rising residential mortgage losses and a deep and long recession) is most likely insolvent, in our view, so the operational question is what combination of debt mutualisation through the euro area sovereigns or the Eurosystem, bank debt restructuring and sovereign debt restructuring will be used? Cyprus will require bank debt restructuring unless the bad assets of the bank are transferred to the sovereign, in which case Cyprus will require sovereign debt restructuring. Slovenia faces a similar conundrum. Finally, Italy despite its strategic sovereign default-inviting combination of a very large public debt and a primary general government surplus (actual and structural) is certainly able to service its sovereign debt in full (following accession to a programme that grants it access to outright monetary transaction (OMT) support). One key risk in Italy is that the next elections (no later than April 2013) could produce an anti-euro, nostalgia-for-the-lira, let's-restructure-sovereign-debt-held-by-banks-and-foreigners, populist coalition government.

In addition to, and where possible instead of, reducing the size of gross liabilities of sovereigns, banks, and in many cases also households and non-financial corporations through haircuts or writedowns, a change in the *composition* of these liabilities away from debt-type instruments and towards more equity-type instruments is highly desirable. In the case of banks, we would hope that bailing in unsecured creditors would not take the form of haircuts but of a mandatory partial or complete conversion of unsecured debt into equity. For households, the equitisation of existing mortgages, when a non-performing household has negative equity, plus a much greater future issuance of equity-type mortgage products would make sense.

Islamic or joint-equity-type mortgages have much better risk-sharing properties than conventional Western repayment or interest-only mortgages, whose inflexible debt contract features are most inappropriate for households – typically entities with very limited financial flexibility whose main asset, their human capital, cannot be sold or used as security. With a stylised Islamic mortgage, the seller of a residential home sells it to the bank. When the bank deals with a would-be buyer, the mortgage-equivalent contract consists of two parts. The first is a contract between the bank and the buyer to establish joint ownership. The buyer commits himself, herself or itself to buying, typically in a sequence of purchases over time, the share of the bank (which could be 100 per cent initially). At the same time, the bank leases its share to the buyer – effectively a rental contract for the share of the property not (yet) owned by the buyer. As the buyer over time purchases additional fractions of the bank’s equity, the stream of rental payments from the buyer to the bank diminishes. If the household cannot make these rental or lease payments, it can be evicted, like any tenant who does not pay the rent.

Finally, sovereigns should not only incur fewer liabilities, their liabilities should be more equity-like. Real GDP growth warrants or a long-term floating rate instrument where the “interest rate” is some constant plus the growth rate of nominal GDP, are examples. When the government’s ability to service its debt is lower, its debt service is likely to be lower too. There are practical problems: inflation and real GDP data can be manipulated by unscrupulous governments. One would hope that an agency such as Eurostat in the EU would be able to prevent the opportunistic deliberate manipulation of macroeconomic price and quantity data in future.

The sequence of crises the advanced economies have inflicted on themselves and on the rest of the world since 2007 is by no means over. Entire new chapters remain to be written. Mr Micawber’s recipe for happiness deserves to be on the wall in every financial kitchen.<sup>20</sup>

## Appendix A

### A1. Non-financial-sector debt

#### A1.1 Financial accounts by sector

The time series constructed are taken either from national balance-sheet statistics (flow of funds) from the Organisation for Economic Co-operation and Development (OECD) or national sources (usually national central banks) at an annual and quarterly frequency. The 30 countries included in the sample are Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, South Korea, Latvia, Lithuania, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, the UK and the US. These countries accounted for 62,3 per cent of world GDP at market exchange rates in 2011.

On average, annual data start around 1995, but the data go back to 1950 (US), 1980 (Spain, Canada, Korea, Japan) and 1990 (Germany, Netherlands, Hungary) for some countries, and generally end in 2011. Annual data going back to 1980 were extended/backdated<sup>21</sup> using data from Cecchetti, Mohanty and Zampolli (2011) for Austria (for which data from the original source start in 1995), Belgium (1994), France (1994), Germany (1992), Italy (1995), the Netherlands (1999), Sweden (1995), Finland (1995), Greece (1995), Portugal (1995), Australia (1990) and the UK (1987).

Quarterly data start as early as 1952 (US), 1964 (Japan), 1975 (Korea), 1980 (Spain), 1987 (UK), 1990 (Canada), 1991 (Germany) and 1993 (Belgium). For all other countries, quarterly data start after 1995. The quarterly data generally end in Q2 2012. Data for Cyprus and Switzerland are not available quarterly and these countries are therefore not included in any analysis that relies on quarterly data. For Ireland the data start in 2001, for Switzerland in 1999, for Slovenia in 2001, and for Latvia in 1998, hence these countries are not included in the comparisons of debt levels between 1995 and today.

The sectors covered are (i) households and non-profit institutions serving households, (ii) non-financial corporations and (iii) general government. Following Cecchetti et al. (2011), 'debt' is defined as the following: gross liabilities for households and general government, and total liabilities less shares and other equities for non-financial corporations. For US non-financial corporations, "credit market instruments" is used as a measure of gross debt.<sup>22</sup>

OECD countries missing in the general analysis include Chile (data start in 2005), Iceland (no data for the household sector available), Israel (data only for 2010), Luxembourg (data start in 2006), Mexico (data from 1997), New Zealand (no data for the household and non-financial sector), and Turkey (no data for the household and non-financial sector).

For household disposable income (net), we use OECD and Eurostat data that define it as the sum of household final consumption expenditure and saving (minus the change in net equity of households in pension funds). These values are equivalent to the sum of wages and salaries, mixed income, net property income, net current transfers and social benefits other than social transfers in kind, less taxes on income and wealth and social security contributions paid by employees, the self-employed and the unemployed. Owing to data availability, values for the UK, Portugal and Spain are taken from respective national sources. For the UK and Portugal, values are for gross disposable income, which do not discount the change in net equity of households in pension funds

## A1.2 Other data used in the analysis

*Domestic credit to the private sector (IMF)*: total domestic credit provided by domestic banks to resident private sectors of the economy (e.g., other financial corporations – insurance companies, pension funds and the like – non-financial corporations and households). Domestic banks include all deposit-issuing financial institutions operating within the country. They include domestic banks and domestic branches of foreign banks.

## A1.3 Deleveraging episodes

### A1.3.1 Identification

Based on our data for non-financial-sector gross debt across 86 countries for the period 1960–2006 (constructed as the sum of private-sector credit and public-sector debt, both provided by the IMF), we identify deleveraging episodes, following McKinsey Global Institute (2010) episodes, where either the ratio of total debt to GDP declined for at least three consecutive years and fell by 10 percentage points of GDP or more OR an episode in which the total stock of nominal debt declined by 10 percentage points or more.

These exercise provided 31 deleveraging episodes, of which 18 were preceded by a financial crisis.<sup>23</sup>

Table A1: Deleveraging episodes: Overview

	Deleveraging		Non-financial sector debt (percentage of GDP)		Domestic credit (percentage of GDP)		Public debt (percentage of GDP)		Financial crisis	
	Start	End	Start	End	Start	End	Start	End	Start	End
Argentina.....	2003	2009	150,2	72,6	10,8	13,5	139,4	59,0	2001	
Bolivia .....	1998	2008	125,2	72,2	64,1	34,7	61,2	37,5	1994	
Chile.....	1986	1994	227,7	89,1	62,7	48,1	165,0	41,0	1981	
Dominican Republic.....	2004	2008	60,3	46,2	23,4	20,9	36,9	25,3	2003	
Ecuador .....	2000	2008	112,6	47,4	29,9	26,3	82,6	21,1	1998	
Finland .....	1993	1999	135,1	99,0	80,8	53,3	54,2	45,7	1991	
Indonesia .....	1998	2008	125,8	59,8	53,2	26,6	72,5	33,2	1997	
Japan.....	2000	2003	361,3	354,7	219,3	187,6	142,1	167,2	1997	
Korea .....	1998	1999	82,8	91,0	68,6	74,7	14,3	16,3	1997	
Malaysia .....	1998	2008	194,6	143,2	158,5	100,3	36,1	42,8	1997	
Mexico .....	1995	1999	86,0	72,0	29,2	20,4	56,8	51,6	1994	
Nicaragua .....	2002	2008	255,3	113,8	19,6	37,6	235,7	76,2	2000	
Norway .....	1994	1996	106,1	95,3	54,7	58,1	51,4	37,2	1991	
Paraguay.....	1999	2005	69,6	55,6	30,4	17,6	39,2	38,0	1995	
Philippines.....	2004	2007	102,0	76,7	32,2	28,9	69,7	47,8	1997	
Sweden.....	1993	2000	189,8	107,0	111,7	42,3	78,2	64,7	1991	
Thailand .....	1998	2001	206,2	154,1	155,9	96,9	50,3	57,2	1997	
Uruguay .....	2003	2007	142,5	86,4	43,2	23,4	99,3	63,0	2002	

Note: The list corresponds to deleveraging episodes that were preceded by a financial crisis

Sources: IMF and Citi Research

### A1.3.2 Estimating macroeconomics responses

We estimate responses in macroeconomic variables following a deleveraging episode for real GDP, private consumption, gross capital formation, net exports, the stock of domestic credit to the private sector (from IMF, see above), and public debt.

Responses were approximated by estimating deviations from the pre-recession (pre-deleveraging) trend after the episode, following IMF (2009). This approach consists of comparing the medium-term level of the variable to the level it would have reached following the pre-crisis (pre-deleveraging) trend, with the medium term defined as seven years after the crisis.

First, we estimate a linear trend through the actual (output) series during a seven-year pre-crisis period that ends three years before the onset of the crisis (e.g., between  $t-10$  and  $t-3$ ,  $t$  being the year of the crisis). This trend is then applied to values from  $t$  onwards to construct a (output) series trend (e.g.,  $GDP_t = GDP_{t-1} \cdot (1 + \text{trend})$ , with  $GDP_t = \text{GDP trend at } t$ ). The (output) series is then subtracted from the (output) series trend.

## Notes

<sup>1</sup> See Counterparty Risk Management Group II (2005). Clearly debt can be used to leverage equity, but many other financial instruments other than debt can be used to create leverage. This includes initial margin in futures contracts, and embedded leverage through options. These broader forms of leverage played a role in the North Atlantic financial crisis, but will not be part of our focus.

<sup>2</sup> The countries are Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Japan, Lithuania, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, South Korea, Sweden, UK, and US. In addition to these countries, we often consider four countries for which data are only available for a shorter sample period: Ireland (from 2001), Latvia (from 1998), Slovenia (from 2001) and Switzerland (1999 to 2009).

<sup>3</sup> These countries are Japan, Italy, UK, Portugal, Spain, Belgium, Greece, France, Finland, Netherlands, US, Korea, Australia, Austria, Sweden, Germany and Canada.

Let  $D_i$  : Gross debt of country  $i$  (measured in a common currency) and  $Y_i$  : GDP of country  $i$

<sup>4</sup>

(measured in a common currency), then,

$$\frac{\sum_{i=1}^N D_i}{\sum_{i=1}^N Y_i} \equiv \sum_{i=1}^N \frac{D_i}{Y_i} \left( \frac{Y_i}{\sum_{j=1}^N Y_j} \right)$$

Elsewhere we also use the unweighted (or rather, equally weighted average) debt-to-GDP ratio,

$$\frac{1}{N} \sum_{i=1}^N \frac{D_i}{Y_i}$$

<sup>5</sup> For the broader sample of 26 countries, the GDP-weighted increase in gross debt since 1995 was 89 per cent of GDP.

<sup>6</sup> The GDP-weighted average increase in real GDP (measured in constant USD) was 39 per cent (2,4 per cent per annum), and nominal GDP grew on average by 100,4 per cent (6,3 per cent per annum) since 1995.

<sup>7</sup> In Norway public gross debt remained relatively stable over this period, while it fell sharply in Sweden, Finland and Denmark. The differential between the Central and Eastern European (CEE) countries was mostly driven by differential increases in non-financial corporation gross debt.

<sup>8</sup> We call a measure of net debt that only deducts currency and deposits from gross debt 'broad' as only a narrow range of assets is deducted from gross debt. Narrow net debt therefore reflects a broader range of assets.

<sup>9</sup> See also Michael Saunders (2011), "What's the Damage? Debt and Growth in Deleveraging", "Global Economic Outlook and Strategy: Prospects for Economies and Financial Markets in 2012 and Beyond"; "What's the Damage? Medium-Term Output Dynamics after Financial Crisis", *IMF World Economic Outlook*, September 2009. See also Cecchetti et al. (2012).

<sup>10</sup> Episodes of deleveraging are identified, following McKinsey (2010), as episodes where the ratio of gross non-financial-sector debt to GDP has fallen for at least three years and by at least 10 percentage points of GDP, or where the stock of nominal debt declined by 10 percentage points or more. Unlike in other parts of this study, non-financial-sector debt is defined as the sum of private-sector credit and public-sector debt (both provided by the IMF), due to data availability for this longer sample period. Financial crises are taken from Laeven and Valencia (2008) and episodes of financial crises-cum-deleveraging are the interface of the two lists. The exercise provided a total of 31 deleveraging episodes, of which 18 were preceded by a financial crisis. These 18 episodes were Argentina (2001), Bolivia (1994), Chile (1981), Dominican Republic (2003), Ecuador (1998), Finland (1991), Indonesia (1997), Japan (1997), Korea (1997), Malaysia (1997), Mexico (1994), Nicaragua (2000), Norway (1991), Paraguay (1995), Philippines (1997), Sweden (1991), Thailand (1997), and Uruguay (2002). Please see Appendix A for further details.

<sup>11</sup> Our filter rules out ongoing and very recent deleveraging episodes by construction. Our filter also excludes transition economies during the period of the transition (e.g., Russia and Ukraine) because the output developments in these economies were strongly related to the shift away from central planning rather than to financial crises per se.

<sup>12</sup> We define a 'large' increase in debt as an increase above the median of all episodes over the three years leading up to the crisis (between T-4 to T-1), as in IMF (2012).

<sup>13</sup> The cutoff increase in non-financial-sector debt was 8,8 percentage points of GDP.

<sup>14</sup> The identities hold only in continuous time. For discrete periods, slightly messier expressions exist.

<sup>15</sup> In both cases these values are GDP-weighted growth rates in local currency.

<sup>16</sup> Generally, in countries with very long housing booms, even after recent falls in house prices, house price levels are still up from the levels of the later 1990s or early 2000s, with the level of non-financial asset holdings up by more still, as supply has increased.

<sup>17</sup> Our assumption for nominal GDP growth is based on the average Citi forecasts (IMF for Cyprus) for 2012–2016 for real GDP and CPI inflation. Under these assumptions, returning HH gross debt to GDP to its 2001 levels would take 6 years in Portugal, 7 years in Greece, 11 years in Ireland and 13 years in Spain. These assumptions would not suggest any deleveraging in Cyprus but assuming that HH gross debt to GDP falls by 3 percentage points per annum, it would take 16 years there.

<sup>18</sup> We use the general government gross liabilities as presented in flow of funds accounts rather than the more commonly used measures for general government debt for the following reasons: first, it often paints a more accurate and timely picture of government indebtedness. Conventional measures of general government debt, such as those under the EU's Excessive Deficit Procedure Definition, exclude some items, such as accounts payable, which later transition into recognised items under even the Excessive Deficit Procedure (EDP) measures, but with a lag. Second, these data are available quarterly for most countries, while the general government debt data can often only be obtained on an annual basis.

<sup>19</sup> It would, of course, be possible for the ECB to engage in de facto primary market purchases of sovereign debt by arranging “back-to-back” purchases of sovereign debt in the primary markets at below-fair yields by commercial banks who then sell on that sovereign debt “in the secondary market” to the ECB at the same (favourable to the sovereign) price.

<sup>20</sup> Mr Micawber's principle states: “Annual income twenty pounds, annual expenditure nineteen pounds nineteen and six, result happiness. Annual income twenty pounds, annual expenditure twenty pounds ought and six, result misery.” From Charles Dickens's novel, *David Copperfield*, 1850.

<sup>21</sup> By extrapolating the time series, for which the level of the new series and growth rates of the reference series are reflected in the final time series.

<sup>22</sup> Credit market instruments include the following financial liabilities for non-financial corporations: (i) commercial papers, (ii) municipal securities, (iii) corporate bonds, (iv) total loans and (v) mortgages.

<sup>23</sup> Financial crisis list episodes are from Laeven and Valencia (2008).

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# Macroeconomic model spillovers and their discontents

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## Abstract

The Great Recession underlined the fact that policies in some countries can have profound spillovers elsewhere. Sadly, the solution of simulating large macroeconomic models to measure these spillovers has been found wanting. Typical models generate lower international correlations of output and financial asset prices than are seen in even pre-crisis data. Imposing higher financial market correlations creates more reasonable cross-country spillovers, and is likely to become the norm in policy modelling despite weak theoretical underpinnings, as is already true of sticky wages. This paper also proposes using event studies to calibrate market reactions to particular policy announcements and report results for United States monetary and fiscal policy announcements in 2009 and 2010 that are plausible and event-specific.

**Keywords:** growth spillovers; international financial links; macroeconomic models

**JEL classification numbers:** E44, F42, F47, G15

## 1. Introduction

The size and composition of spillovers across countries are of the many issues that have resurfaced in the wake of the Great Recession. It is now apparent that events in some countries can have profound spillovers elsewhere that are not limited to their immediate neighbours but can ricochet around the globe. This prompts many questions about the advantages of international co-operation and the inadvisability of allowing countries to focus solely on their own domestic stability. Such considerations pertain both to systemic countries and to the aggregate behaviour of smaller countries if they are following similar policies.

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At first blush, the solution to measuring spillovers across countries would seem to be fairly easy. Why not simply feed relevant shocks into existing large empirically estimated macroeconomic models? After all, these models are designed to capture complex policy-dependent interactions across different sectors and countries. In addition, such models have gained increasing respect in the economics profession as they have become more theory-based.

Sadly, this strategy has been found wanting. As currently constructed, most large macroeconomic models have weak spillovers across countries. The reason for this is that the main apparent source of large spillovers is close linkages across financial markets. However, the financial sectors in large macro models are poorly developed and, at an even more basic level, there are no strong theories as to why financial markets are as closely linked as they appear to be in the data. Assuming such links exist creates what look to be sensible results, but at the cost of theoretical rigour. In a sense, this is a rerun of the sticky prices debate, which also pitted – and continues to pit – the ability to explain the data against the desire for a sound theoretical substructure.

The rest of this paper explains why standard macroeconomic models fail to deliver the financial market results seen in the data, discusses how this limits measured spillovers, and offers an (imperfect) short-term fix that can be used while the deeper theoretical issues are being sorted out.

## 2. Large models: Theory

There are three major potential conduits for global spillovers: (i) trade, (ii) commodity prices, and (iii) financial markets. Large macroeconomic models typically model trade linkages quite well. The demand elasticities of trade with respect to domestic output (for imports) and foreign output (for exports) are relatively well known, as is the sensitivity of trade to exchange rate fluctuations. As a result, trade spillovers are typically fairly similar across large models (Bryant 1988). While not quite as homogenous, links through commodity prices (which tend to be second-order effects outside of commodity producers) show similar patterns.

The least-developed area in these models is financial markets. The underlying financial structure of most macroeconomic models comprises a monetary policy rule that explains the short-term interest rate backed by a Phillips curve that links inflation to the domestic cycle and an expectations hypothesis that translates the path of short-term rates into a long-term interest rate. There may also be an equity price, based on the expected discounted value of future profits. Cross-country holdings of assets are generally modelled very

simply – either all assets are priced in a single currency, or cross-country asset holdings are held in fixed proportions – given the difficulties in modelling portfolio choice in an already complex model.

Breaking down each of these components in turn, monetary policy is generally assumed to follow a Taylor rule in which the short-term policy interest rate is driven by the deviation of inflation from its desired level, the output gap and the lagged value of the interest rate (the exchange rate can also be included as a target, but does not make much difference to the basic argument). Hence:

$$si_t = \alpha + \beta (pi_t - pi^*) + \gamma (y_t - y_t^*) + \theta si_{t-1} + \varepsilon_t \quad (1)$$

where  $si$  is the short-term interest rate,  $pi$  is inflation,  $pi^*$  is the target inflation rate,  $y$  is output,  $y^*$  is potential output,  $\varepsilon$  is an error term, other Greek letters are coefficients, and subscript  $t$  reflects time. Numerous equations of this type have been estimated, and the empirical evidence for them is strong.

Inflation, in turn, is generally assumed to be a function of past and expected future inflation, current and past output gaps, as well as the exchange rate and commodity prices; for example, ignoring leads and lags for the sake of simplicity:

$$pi_t = \alpha' + \beta' (y_t - y_t^*) + \gamma' (cp_t - cp_{t-1}) + \theta' (er_t - er_{t-1}) + \varepsilon'_t \quad (2)$$

where  $cp$  represents commodity prices and  $er$  the exchange rate. Again, this Phillips curve has a long empirical pedigree and is generally accepted as a strong empirical regularity.

Substituting this into the Taylor rule, short-term interest rates are largely driven by current, past and expected future output gaps, and by commodity prices and the exchange rate. In practice, the impact of commodity prices is generally limited as the weight in the overall consumption basket is often small and the commodity prices are assumed to approximately follow a random walk. Also note that while changes in commodity prices induce a common shock in inflation rates across countries, this impact is dissipated by the exchange rate response which, by definition, creates a divergent shock (if one exchange rate appreciates, another needs to depreciate). In short, unless there is a large commodity shock, the external factors are unlikely to create significant co-movements in inflation across countries.

The expectations theory says that the long-term interest rate is the implied average value of the short-term interest rate over the term of the security plus a country-specific liquidity premium that is generally modelled as a constant term.

Mathematically:

$$lr_{it} = \alpha''_i + E(\text{average}(si_{it} \text{ to } si_{it+n})) \quad (3)$$

where  $lr_{it}$  is the long-term interest rate in country,  $\alpha$  is the term premium, and  $E$  is the expectations operator conditional on information available at time  $t$ . There is considerable evidence that expected future domestic monetary policy does impact the bond rate, even if the effects are not always of the size that one might expect from first principles (Gürkenyak, Sack and Swanson 2005; Bernanke, Reinhart and Sack 2004; Swiston 2007).

It is clear from the third equation that the correlation of short- and long-term interest rates across countries should be very similar as one is simply an average of the expected future path of the other. If short-term interest rates across countries are highly (lowly) correlated, then long-term interest rates will also be highly (lowly) correlated.

As short-term interest rates are driven by the output gap, it follows that financial markets will only be closely linked in response to real shocks if output across countries is correlated through non-financial links. A similar basic story can be told about the correlation of equity prices across countries. Equity prices reflect the expected future discounted earnings of firms and are again driven by the business cycle in each country. Home bias in equity holdings implies that co-movements in equity wealth across countries are limited. Hence, equity prices will again only be closely linked if non-financial factors drive an international business cycle.

Furthermore, the correlations with regard to monetary policy and other interest rate shocks can even be perverse. Consider a loosening of monetary policy in any one country that drives down domestic bond yields. As this tends to boost activity both at home and abroad, monetary policy, and hence bond yields, will tend to rise elsewhere. Thus, standard models predict a negative relationship across bond markets in response to monetary policy shocks.

### 3. Large models: Practice

In their unadulterated form, large models of the type described above exhibit low correlations of output across countries except between extremely close trading partners (such as the United States (US) and Canada). The reason for this is that the main route through which spillovers can occur is trade, but the co-mingling of countries' output via trade is small. While a country can be quite open to trade (often as much as 30 per cent of output is imported and exported), this reflects trade across a wide range of partners. Trade with individual countries is rarely particularly large, especially for large countries whose trade patterns tend to be highly diversified.



To illustrate these limited spillovers, the first column of Table 1, and Figure 1 report the peak impact on output compared to the impact on the US from a short-term monetary loosening in a fairly typical large macro model (Vitek 2012).<sup>1</sup> There are notable positive output spillovers on the two close North American Free Trade Agreement (NAFTA) trading partners (i.e., Canada and Mexico) where the peak output gains comprise around one-fifth of those in the US – slightly more for Canada and less for Mexico.

**Table 1: Spillovers from United States monetary policy: Typical model**

Ratio to impact on the US and peak losses in output

Market	Growth	Bond yields	Equity prices
United States .....	1,00	-1,00	1,00
Other NAFTA (Canada and Mexico) .....	0,22	0,67	0,18
World, excluding NAFTA .....	0,07	0,20	0,07
Advanced economies .....	0,09	0,21	0,08
Europe (Euro area, United Kingdom, Switzerland and Nordics) .....	0,04	0,18	0,04
Asia (Japan and Korea) .....	0,05	0,11	0,03
Commodity (Australia and New Zealand) .....	0,08	0,22	0,05
Emerging markets .....	0,05	0,06	0,03
Financially open <sup>1</sup> .....	0,11	0,40	0,08
Financially closed (China, India and Argentina) .....	0,00	0,00	0,00

\* Brazil, Czech Republic, Indonesia, Poland, Russia, Saudi Arabia, South Africa and Turkey

Note: GDP – weighted averages

Outside of NAFTA, the spillover coefficient is small – it averages 7 cents per United States dollar (USD). The only other group of countries with a spillover coefficient of over 10 cents is for emerging markets with closed capital accounts (comprising China, India and Argentina), reflecting the close trading links between China and the US. Elsewhere, the spillover coefficient of 9 cents for advanced Europe (comprising the euro area, United Kingdom (UK), Switzerland, Sweden and Denmark) is notably larger than the 4 cents for advanced Asia (i.e., Japan and Korea) or the 5 cents for advanced commodity exporters (i.e., Australia and New Zealand) and financially open emerging markets (i.e., Brazil, the Czech Republic, Indonesia, Poland, Russia, Saudi Arabia, South Africa and Turkey). Strikingly, the impact on the UK – with its close financial and cultural ties – is also only 7 cents, while the impact on South Africa is 6 cents.

illustrated by the fact that the spillover to equity market performance in financially closed emerging markets (0,08 per cent) is well over double the impact on their financially open brethren (0,03 per cent).

Table 2 and Figure 2 report the same exercise for a temporary increase in US government spending that dies away quickly. Unsurprisingly, the peak impact on output is almost immediate. In addition, the spillovers are much larger for major trading partners – more like 50 cents on the USD for NAFTA and 15 cents for closed emerging markets. But outside of NAFTA, the average spillover is slightly larger than for the monetary policy case but remains small at only 9 cents for every USD gain of output in the US. (The spillovers are 10 cents for the UK and 8 cents for South Africa.)

**Table 2: Spillovers from United States fiscal policy: Typical model**

Ratio to impact on the US and peak losses in output

Market	Growth	Bond yields	Equity prices
United States .....	1,00	1,00	1,00
NAFTA (Canada and Mexico) .....	0,50	0,50	0,18
World, excluding NAFTA .....	0,09	0,08	0,03
Advanced economies .....	0,08	0,10	0,04
Europe (Euro area, United Kingdom, Switzerland and Nordics) .....	0,08	0,10	0,03
Asia (Japan and Korea) .....	0,11	0,10	0,04
Commodity (Australia and New Zealand) .	0,05	0,01	0,00
Emerging markets .....	0,11	0,01	0,02
Financially open* .....	0,07	0,07	0,01
Financially closed (China, India and Argentina).....	0,15	-0,06	0,03

\* Brazil, Czech Republic, Indonesia, Poland, Russia, Saudi Arabia, South Africa and Turkey

Note: GDP – weighted averages

As the fiscal policy expansion is a shock to real spending, bond yields rise both in the US and in other countries, but spillovers are still relatively weak outside close trading partners. For every percentage point that US bond yields rise in response to a fiscal expansion, yields on NAFTA partners rise by around half a percentage point. Elsewhere, however, the impact averages one-tenth of a percentage point. The spillovers for equity markets are not materially different from those seen in the monetary policy simulation.

Figure 1: United States monetary policy spillovers: Typical model

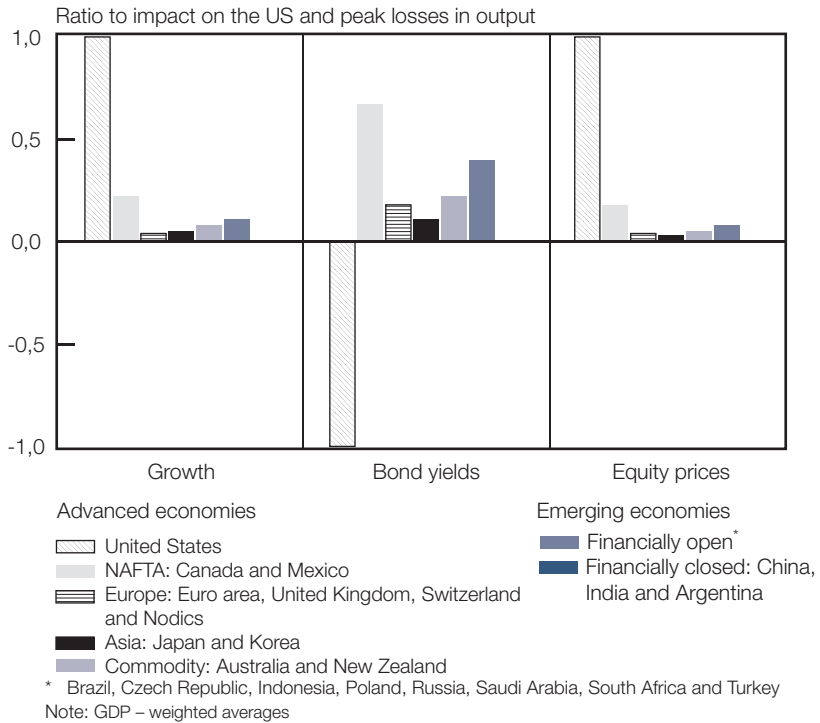
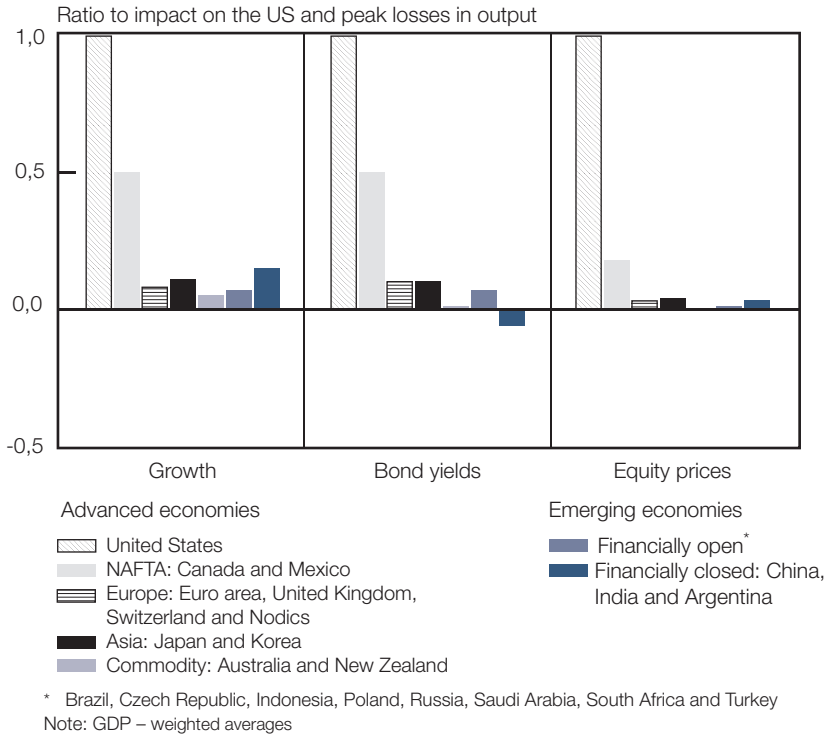


Table 1 and Figure 1 also report the resulting changes in bond yields and equity prices across these groups of countries, measured as a ratio of the impact on the US markets. As predicted in the earlier discussion of the structure of large macroeconomic models, the results suggest that a US monetary loosening and the associated fall in bond yields will lead to a rise in bond yields in the rest of the world. Indeed, the largest rises are found for the NAFTA countries that are most economically and financially integrated with the US. For every percentage point that bond yields fall in the US, yields rise by two-thirds of a percentage point in her NAFTA partners (with a somewhat larger impact on Canada than on Mexico). Elsewhere, the rise is smaller but still significant; more like one-fifth of a percentage point.

Finally, equity markets show weak positive spillovers. For every 1 per cent increase in US equity markets, the model predicts that NAFTA equity prices will increase by almost 0,2 per cent and those in the rest of the world by only 0,07 per cent. The dominance of real spillovers in these models is vividly

Figure 2: United States fiscal policy spillovers: Typical model



The larger output spillovers in response to a fiscal expansion compared to a monetary one partly reflects these bond market links. Whereas in the monetary policy simulation the positive spillovers through trade are being partly reversed by the brakes coming from monetary tightening in (say) Canada, in the case of a fiscal expansion monetary tightening occurs in both the US and Canada. Since the offsetting support from monetary policy to the initial shock to domestic demand is similar in both countries, the spillovers more closely reflect the degree to which the Canadian economy is dependent on US demand.

It is striking that these generally small growth spillovers pertain to the world's largest economy. Certainly, other countries may be more open and trade links may be stronger in some regions (such as within Asia and Europe), but no other country has the global reach of the US – with the possible exception of the euro area. In addition, these spillovers are low even by the standards of the pre-crisis cycle. Between 1980 and 2012 the correlation of quarterly output growth between the US and two other major regions (the

euro area and the UK) was around 0,5 (Table 3) and showed only a modest correlation with trade links. The correlation between the euro area and the UK with which it has close trade links is 0,53, while the correlation with the US, where trade links are much more limited as a ratio to GDP, is only slightly smaller at 0,44.

**Table 3: Correlations of quarterly output growth, 1980–2012**

	Euro area	United Kingdom	United States
Euro area .....	1		
United Kingdom .....	0,53	1	
United States .....	0,44	0,48	1

This incongruity between the spillovers in models and the correlation evident in the international business cycle was known before the crisis. However, the typical justification was that the global business cycle was driven by common global shocks. Focusing on recessions rather than overall correlations, it was often argued that recessions were highly correlated in the 1970s and early 1980s as a result of major global oil price shocks, and that, subsequently, recessions have been more staggered. In particular, the US recession of the early 1990s was followed only with a lag of a couple of years by recessions in the world's second and third largest economies, namely Japan and Germany. Support for the idea that the world was being driven by global events could also be found in factor analysis, which did indeed suggest that a few global factors dominated the business cycle (Bordo and Helbling 2004; Stock and Watson 2005; Kose, Otrok and Whiteman 2003; Monfort et al. 2003)

However, this analysis ignored the strong correlations throughout the cycle and the fact that the delay in the early 1990s was caused by powerful domestic factors – a property bubble in Japan and reunification in Germany. As for factor analysis, the results were ambiguous as the global factor could equally reflect pervasive spillovers from one region on another (Bayoumi and Swiston 2007).

In any case, the events over the crisis have made it abundantly clear that spillovers can be large and virulent. After the collapse of Lehman Brothers – an event clearly linked to domestic US decisions rather than a global factor – the world went into a simultaneous and deep recession. While some regions such as Asia and northern Europe recovered much faster than others, such as the US and the UK, nobody can doubt the size and generality of the initial shock.

While the Lehman shock was at its core a financial market disturbance, the impact on other countries presented itself in different ways across the globe. In the advanced economies there was little doubt that the main impact was through financial markets. In many emerging markets, however, the proximate cause of the recession was a fall in trade. The last-mentioned, however, reflected the anatomy of a financial crisis. Typically, in such a crisis there is a sudden stop in spending on durable goods, which have a high trade and commodity intensity (Bems, Robert and Yi 2011). This explains how a financial shock to most advanced economies “looked” like a trade shock to others. In the case of South Africa and other commodity producers, a significant part of the shock came through the fall in the demand for, and the price of, commodities. Again, the underlying financial shock presented itself largely as a terms-of-trade disturbance. However, it appears clear that the root cause was a highly correlated shock across global financial markets.

Even in typical times international correlations across financial markets are high. Table 4 reports the average link between a percentage point change in US 10-year bond yields on bond yields and real effective exchange rates in the rest of the world within a single day.<sup>2</sup> Pre-crisis the impact on bond yields was estimated at 0,4 percentage points for most advanced economies (slightly higher for commodity producers and lower for Japan), some 0,6 for financially open emerging markets, and virtually zero for emerging markets with relatively closed financial markets. For all but financially closed emerging markets, this was also accompanied by the expected depreciation of the currency against the dollar.<sup>3</sup> In addition, there was no clear difference in the size of the response between NAFTA members and other countries.

**Table 4: Spillovers from United States bond and equity shocks to other countries**

Daily data, 2003–2007

Market	Bond market	Equity market
United States .....	1,00	1,00
Europe and Korea .....	0,39	0,76
Advanced commodity exporters (Australia and New Zealand) .....	0,66	0,48
Japan .....	0,16	0,58
Emerging markets: Financially open (Brazil, Mexico, Turkey and South Africa) .....	0,69	0,87
Emerging markets: Financially semi-open (Russia and Indonesia)	0,53	0,51
Emerging markets: Financially closed (China and India) .....	0,01	0,24

Note: From Bayoumi and Bui (2011) Tables 2A and 5A

Equity returns are generally found to be even more highly correlated than bond returns. For every percentage point that US equity prices rise, the typical response of advanced economies is estimated at half or three-quarters of a percentage point; for financially open emerging markets the range is one-half to nine-tenths of a percentage point; and for financially closed emerging markets around one-fifth of a percentage point.

For advanced economies and financially open emerging markets these positive, estimated financial market spillovers are generally much larger, or even of an opposite sign, from those coming out of the macroeconomic model simulations reported above. The question that naturally arises is what spillovers would look like if the macroeconomic model contained the kind of spillovers on financial markets that we see in the empirical data? This is relatively easy to do. One can replace the fixed, country-specific, risk premiums in the bond market equation (the  $\alpha''_i$  in equation 3) with a time-varying risk premium ( $\alpha'''_{it}$ ) that includes a large global component with no country subscript  $i$  ( $\alpha'''_t$ ).

We reran the simulations but with bond market spillovers more like those seen in the pre-crisis data. More precisely, we assume that bond market yields in other advanced economies go up by some 40 per cent of the increase in US bond yields. The corresponding ratios for emerging markets with open and closed capital markets are 60 and 20 per cent respectively. The corresponding coefficients for equity markets are 50 per cent for advanced economies, and 75 and 25 per cent for financially open and closed emerging markets respectively.

The spillovers from a typical US monetary policy shock are much larger once these bond and equity links are included. Output spillovers from such a simulation are reported in Table 5 and Figure 3. With the fall in US bond market yields ricocheting around the world, now a typical monetary loosening by the US has spillovers of over one-half on NAFTA countries, compared to one-fifth earlier, and now with a somewhat larger impact on Mexico than Canada (reflecting the larger assumed bond market spillover). The relative impact on other economies leaps by even more. The impact on non-NAFTA economies rises from 7 per cent to around one third for advanced economies and financially closed emerging markets and some 40 per cent for financially open emerging markets.

These data correspond much more closely to the types of correlations reported above for the actual data on the global business cycle. They also correspond to the size of spillovers from US shocks estimated using more sophisticated identification techniques (Bayoumi and Bui 2010).

**Table 5: Spillovers from United States monetary policy: High financial links**

Ratio to impact on the US and peak losses in output

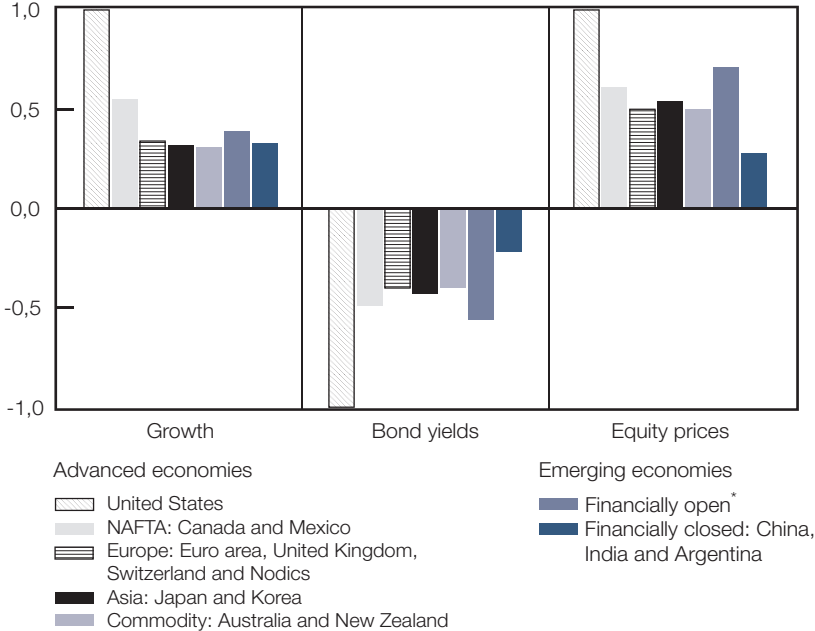
Market	Growth	Bond yields	Equity prices
United States .....	1,00	-1,00	1,00
NAFTA (Canada and Mexico) .....	0,55	-0,49	0,61
World, excluding NAFTA .....	0,34	-0,41	0,51
Advanced economies .....	0,33	-0,41	0,51
Europe (Euro area, United Kingdom, Switzerland and Nordics) .....	0,34	-0,40	0,50
Asia (Japan and Korea) .....	0,32	-0,43	0,54
Commodity (Australia and New Zealand) .....	0,31	-0,40	0,50
Emerging markets .....	0,36	-0,40	0,50
Financially open* .....	0,39	-0,56	0,71
Financially closed (China, India and Argentina) .....	0,33	-0,22	0,28

\* Brazil, Czech Republic, Indonesia, Poland, Russia, Saudi Arabia, South Africa and Turkey

Notes: GDP – weighted averages

**Figure 3: United States monetary policy spillovers: High financial links**

Ratio to impact on the US and peak losses in output



\* Brazil, Czech Republic, Indonesia, Poland, Russia, Saudi Arabia, South Africa and Turkey

Note: GDP – weighted averages



By contrast, the spillovers from a typical fiscal policy shock with higher bond and equity market correlations are quite similar to those reported without these correlations. The impact of a typical fiscal consolidation using these closer bond and equity market links is reported in Table 6 and Figure 4. Overall, the growth spillover coefficients are 52 per cent (versus 50 per cent without financial market correlations) for NAFTA partners and 10 per cent (versus 9 per cent without financial market correlations) for others.

**Table 6: Spillovers from United States fiscal policy: High financial links**

Ratio to impact on the US and peak losses in output

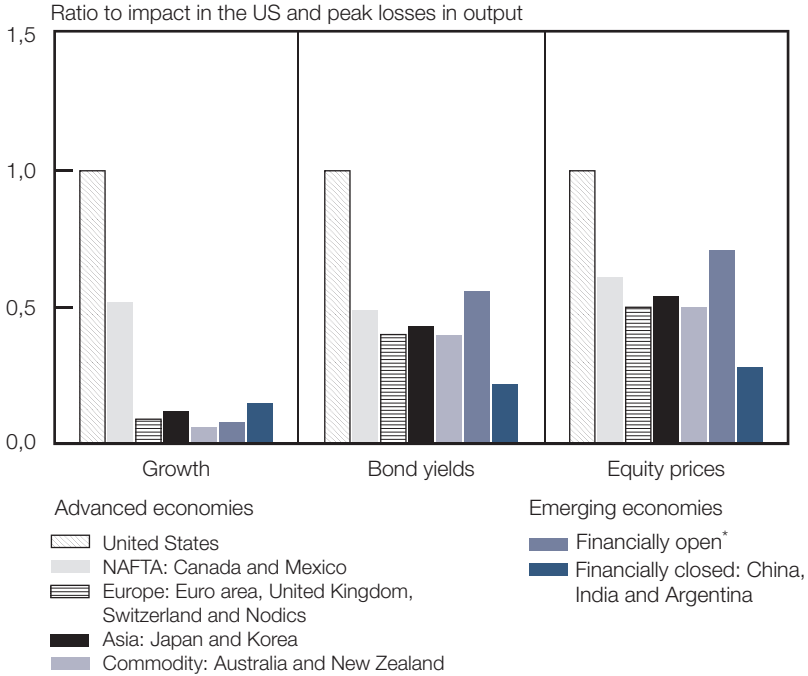
Market	Growth	Bond yields	Equity prices
United States .....	1,00	1,00	1,00
NAFTA (Canada and Mexico) .....	0,52	0,49	0,61
World, excluding NAFTA .....	0,10	0,41	0,51
Advanced economies .....	0,09	0,41	0,51
Europe (Euro area, United Kingdom, Switzerland and Nordics) .....	0,09	0,40	0,50
Asia (Japan and Korea) .....	0,12	0,43	0,54
Commodity (Australia and New Zealand) .....	0,06	0,40	0,50
Emerging markets .....	0,12	0,40	0,50
Financially open* .....	0,08	0,56	0,71
Financially closed (China, India and Argentina) .....	0,15	0,22	0,28

\* Brazil, Czech Republic, Indonesia, Poland, Russia, Saudi Arabia, South Africa and Turkey

Note: GDP – weighted averages

Further analysis demonstrates that the stark difference in results for monetary-versus-fiscal policy shocks from the modified model comes from the fact that high bond and equity market spillovers reinforce each other in the case of monetary policy but tend to cancel out in the case of fiscal policy. In the case of an expansionary monetary policy, the increase in US output raises equity prices even as the cut in short-term interest rates lowers bond yields. The higher financial market correlations raise foreign equity prices and lower foreign bond yields, thereby massively increasing international growth spillovers compared to the baseline model where foreign bond yields rise and equity prices increase by very little. For fiscal policy, by contrast, the rise in US output raises US and global equity prices but also raises US and global bond yields compared to the baseline model. In this scenario these two effects approximately cancel out, leading to small net growth spillovers.

**Figure 4: United States fiscal policy spillovers: High financial links**



\* Brazil, Czech Republic, Indonesia, Poland, Russia, Saudi Arabia, South Africa and Turkey  
 Note: GDP – weighted averages

To demonstrate that this is not a universal result, Table 7 and Figure 5 report the results from simulating a US fiscal expansion assuming high correlations of bond market spillovers but allowing equity market spillovers to be determined endogenously by the model. Strong bond market spillovers act to lower output in the rest of the world, leading to smaller growth spillovers in all country groupings, except the NAFTA partners, where the benefits from higher trade continue to dominate.

One important conclusion from this analysis is that it is easier to obtain the high growth spillovers seen in the data using monetary/financial shocks than fiscal/real shocks (see also IMF 2012). The implication is that the world is more likely dominated by “financial” shocks, in terms of changes in global risk premiums, than real ones such as spending. This does not mean that the world is dominated by financial froth – financial shocks may well reflect anticipation of future developments in the real economy. Rather, it implies that the world is dominated by expectations of the future path of economies rather than changes in current behaviour.

Table 7: Spillovers from United States fiscal policy:  
Only high bond market links

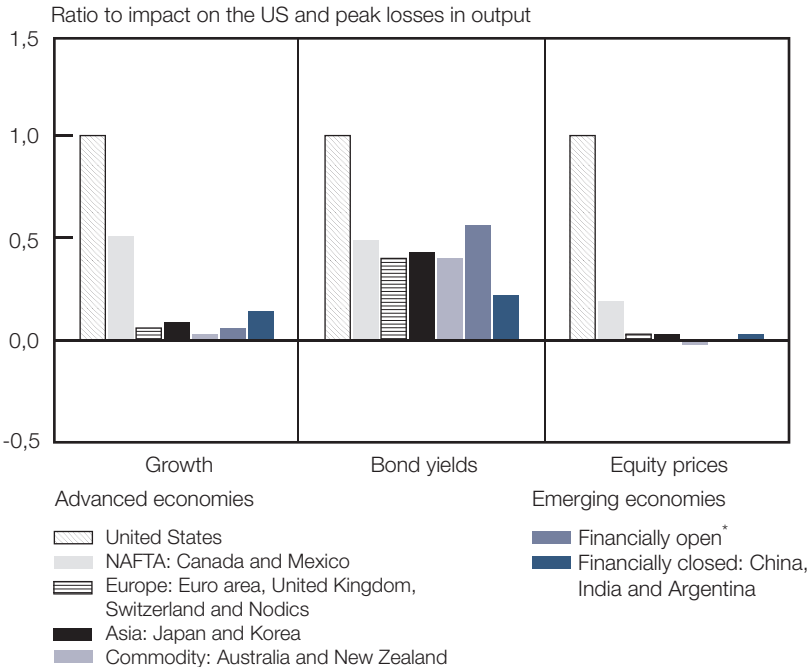
Ratio to impact on the US and peak losses in output

Market	Growth	Bond yields	Equity prices
United States .....	1,00	1,00	1,00
NAFTA (Canada and Mexico) .....	0,51	0,49	0,19
World, excluding NAFTA .....	0,08	0,41	0,02
Advanced economies .....	0,07	0,41	0,03
Europe (Euro area, United Kingdom, Switzerland and Nordics) .....	0,06	0,40	0,03
Asia (Japan and Korea) .....	0,09	0,43	0,03
Commodity (Australia and New Zealand) .....	0,03	0,40	-0,01
Emerging markets .....	0,09	0,40	0,01
Financially open* .....	0,06	0,56	0,00
Financially closed (China, India and Argentina) .....	0,14	0,22	0,03

\* Brazil, Czech Republic, Indonesia, Poland, Russia, Saudi Arabia, South Africa and Turkey

Note: GDP – weighted averages

Figure 5: United States fiscal policy spillovers: High bond market links



\* Brazil, Czech Republic, Indonesia, Poland, Russia, Saudi Arabia, South Africa and Turkey

Note: GDP – weighted averages

## 4. A practical solution

The previous section demonstrated that assumptions about financial market spillovers are crucial for estimated international spillovers in large models. In many respects the situation for an open economy resembles the dilemma faced in deciding on whether or not to assume prices are sticky in a closed economy model. Assuming sticky wages is difficult to justify theoretically but produces results that correspond much more closely to the actual patterns seen in the data. As a result, almost all policy models assume sticky wages. Similarly, assuming the high asset price correlations across countries seen in the data is difficult to justify on theoretical grounds but produces much more believable international growth spillovers.

There is, however, an important difference between assuming sticky wages and high financial-market spillovers, in that financial market reactions can, and do, vary depending on particular circumstances; in other words, while both sticky wages and high financial correlations can in many respects be assumed to be structural parameters, financial market reactions to specific policy announcements are less predictable. It is common to read in the press that markets reacted well or badly to some policy announcement. By contrast, the same is rarely said about wage setters.

How can we translate this market commentary into a response that can be used by a macroeconomic model? The approach we propose is to use event studies on high-frequency data to try and tease out the market reaction to specific events. In the discussion below, we focus on the bond and stock markets, but the approach is equally applicable to other responses: for example, event studies could be used to measure the impact of quantitative easing (QE) on exchange rates and on commodity prices.

Event studies use market reactions to gauge the impact of a particular policy announcement (e.g., monetary easing) on market prices (e.g., bond yields). Identification is achieved through the timing of the data rather than through more generalised time-series techniques (e.g., lags or instruments). In the application we report daily data are used to measure international bond market spillovers. More precisely, dates of announcements associated with particular policies are identified and the reactions of bond markets in different countries are compared.

To be more concrete, we identified key dates associated with announcements of key US monetary and fiscal policies over 2009 and 2010 to QE1, QE2, and the 2009 and 2010 fiscal packages (see IMF 2011a, 2011b). For each of these, we compared the reaction of foreign bond and equity markets in response to changes in US bond and equity markets on these days with

the “typical” reactions seen on other days. Any deviation from the typical reaction was then assumed to be the additional, event-specific impact on foreign bond and equity markets as a result of that policy. These results are reported in Bayoumi and Bui (2011).

The size of the event window is usually a key issue in event studies, as the impact of a given policy move on the market can materialise slowly over time. In this case, however, there are persuasive reasons for using a short window. Recall that the objective here is not to estimate the impact of QE on US bond yields or equity prices. Rather, given that information, the objective is to identify the knock-on impact from changes in US bond yields/equity prices on foreign bond yields/equity prices. Given that foreign markets are also reacting to local information, using a short window makes it more likely that the measured response will reflect the policy move at hand rather than local noise. In addition, to minimise the potential impact of local noise, estimated spillovers for countries with similar underlying characteristics are averaged, for example, advanced country commodity producers and emerging markets with open capital markets.

The results from these scenarios, reported in Tables 8 and 9, and Figures 6 and 7, contain an interesting narrative of how financial market responses can vary depending on (perceived) circumstances. Table 8 and Figure 6 show the estimated growth spillovers of QE1 and QE2 normalised per 1 percentage point reduction in US bond yields.

**Table 8: Growth spillovers from QE1 and QE2 monetary easings**

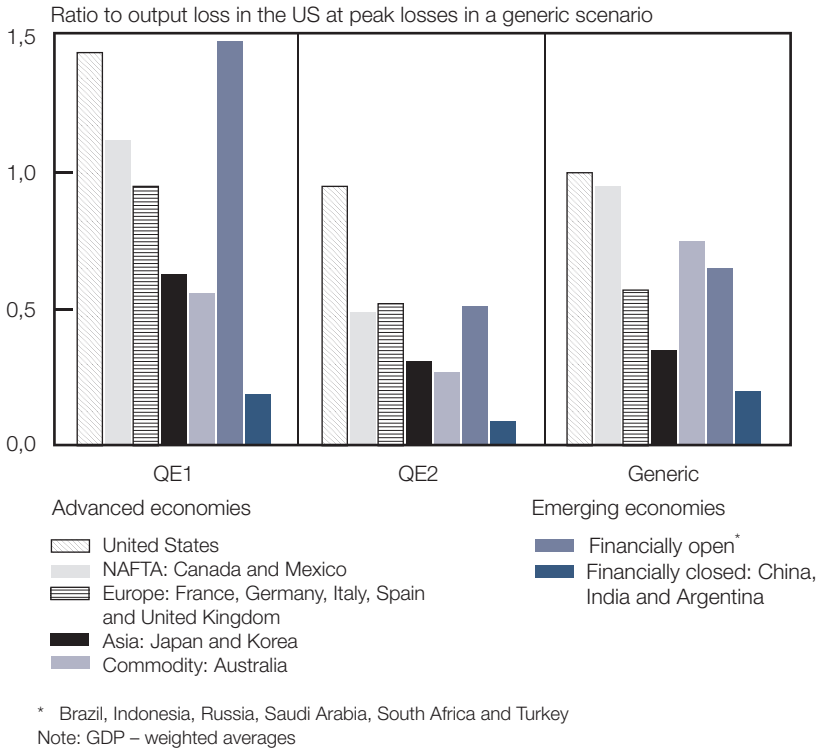
Ratio to output loss in the US at peak losses in a generic scenario

Market	QE1	QE2	Generic
United States .....	1,44	0,95	1,00
NAFTA (Canada and Mexico) .....	1,12	0,49	0,95
World, excluding NAFTA .....	0,82	0,40	0,48
Advanced economies .....	0,81	0,43	0,50
Europe (France, Germany, Italy, Spain and United Kingdom) .....	0,95	0,52	0,57
Asia (Japan, Korea) .....	0,63	0,31	0,35
Commodity (Australia).....	0,56	0,27	0,75
Emerging markets.....	0,81	0,29	0,42
Financially open* .....	1,48	0,51	0,65
Financially closed (China, India and Argentina) .....	0,19	0,09	0,20

\* Brazil, Indonesia, Russia, Saudi Arabia, South Africa and Turkey

Note: GDP – weighted averages

Figure 6: Growth spillovers from QE1 and QE2 monetary easings



For comparison, the results are also reported for a “baseline” scenario where bond and equity market reactions follow their typical patterns. These simulations were done on an earlier version of the model from those reported earlier and using a more persistent shock, so the responses to typical patterns are slightly different (see Vitek 2010)). Because QE1 was estimated to have led to a larger-than-typical fall in foreign bond yields per percentage point reduction in US yields (and also more favourable knock-ons in equity markets), the impact of QE1 on US and foreign growth is estimated to have been significantly more positive than in the baseline simulation. By contrast, QE2 had financial market spillovers that were smaller than was usual and, hence, the spillovers were smaller than in the baseline.

This ordering of spillovers corresponds to the usual narrative about QE1 and QE2, namely that QE1 was a major boost to markets at a time when the crisis seemed to be in full swing, while the impact of QE2 was muted since the policy room was regarded as largely used up. Hence, on some basic level the methodology seems to correspond to the common wisdom about the two policy moves.

The analysis of the 2009 and 2010 fiscal stimulus, reported in Table 9 and Figure 7, involves a similar lesson.<sup>4</sup> Again, the spillovers in global bond and equity markets were much more favourable in 2009 than in 2010, and for similar reasons. In 2009 the US action was seen as a bold move to lower global tail risks, while the 2010 stimulus was seen (wrongly, as it turned out) as questionable, given that the global economy was already recovering and US debt was high. As a result, the 2009 stimulus had positive spillovers on many regions of the world, albeit small except for the NAFTA and financially closed emerging markets. By contrast, the 2010 stimulus is estimated to have had negative growth spillovers in all regions except these two, a result more in line with the generic scenario. This illustrates how, in the case of fiscal expansion, financial market responses can lead to quite different spillovers.

**Table 9: Growth spillovers from 2009 and 2010 United States fiscal expansion**

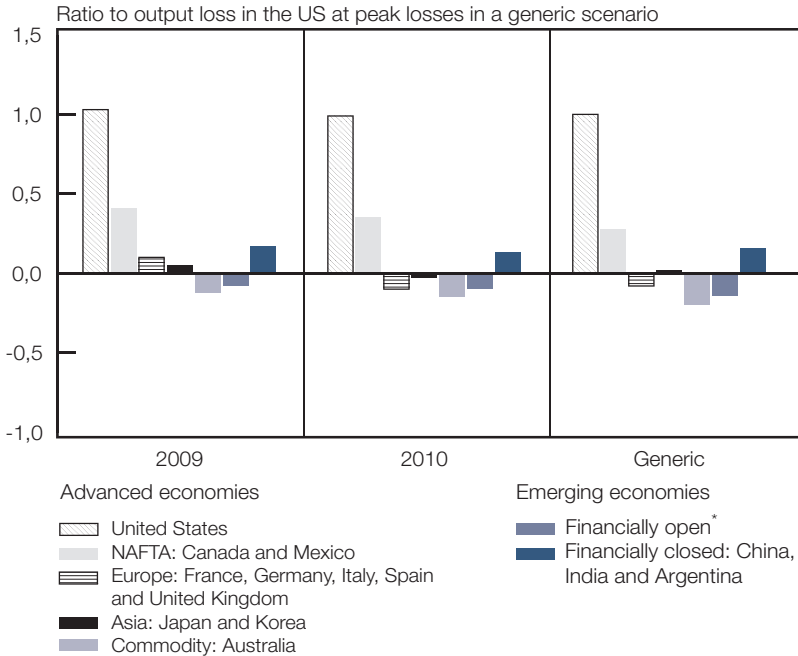
Ratio to output loss in the US at peak losses in a generic scenario

Market	2009	2010	Generic
United States .....	1,03	0,99	1,00
NAFTA (Canada and Mexico) .....	0,41	0,35	0,28
World, excluding NAFTA .....	0,06	-0,05	-0,04
Advanced economies .....	0,07	-0,08	-0,05
Europe (France, Germany, Italy, Spain and United Kingdom) .....	0,10	-0,10	-0,08
Asia (Japan and Korea) .....	0,05	-0,03	0,02
Commodity (Australia).....	-0,12	-0,15	-0,20
Emerging markets.....	0,05	0,02	0,02
Financially open* .....	-0,08	-0,10	-0,14
Financially closed (China, India and Argentina) .....	0,17	0,13	0,16

\* Brazil, Indonesia, Russia, Saudi Arabia, South Africa and Turkey

Note: GDP – weighted averages

**Figure 7: Growth spillovers from 2009 and 2010 United States fiscal expansion**



\* Brazil, Indonesia, Russia, Saudi Arabia, South Africa and Turkey  
 Note: GDP – weighted averages

## 5. Conclusions

This paper has laid out a way of thinking about global growth spillovers. The basic argument is that the spillovers from financial markets are both potentially larger than through trade channels and much less well understood. The structure of a typical large macroeconomic model generates low correlations of output, bond yields and (where modelled) equity prices across countries. This does not correspond to the high correlations actually seen in the data. Imposing these correlations produces estimated spillovers that are much closer to those seen in the data, but we lack a comprehensive model explaining why these correlations are so high.

In many respects, the situation is similar to the assumption of sticky prices in the domestic sector of macroeconomic models. Again, there is a choice between theoretical rectitude and empirical accuracy. Policy models almost uniformly choose sticky wages and empirical accuracy. The same is likely to be true of policy models when it comes to financial market correlations and the associated international growth spillovers.



However, in the case of financial markets there is a further complication. Financial markets are forward-looking, and so their response is not mechanical but depends on the situation. This explains the myriad of market analysts employed in the financial industry to assess and predict reactions. This paper argues that an attractive option is to use event studies to calibrate market reactions to particular policy announcements. Using US monetary and fiscal policy announcements in 2009 and 2010, this paper argues that such a procedure can produce results that are plausible and event-specific.

## Notes

- <sup>1</sup> Other models of this type include NiGEM.
- <sup>2</sup> See Bayoumi and Bui (2011) for more details. Similar results are found in Neely (2010). See also Rigobon and Sack (2004).
- <sup>3</sup> Post-crisis patterns for advanced economies are similar, while for emerging markets the tightening of financial conditions comes less through bond yields and more through the exchange rate channel.
- <sup>4</sup> The baseline results are again different due to the older model and – in this case in particular – the assumption that the fiscal shock is more persistent, which increases the negative impacts on bond markets and causes some growth spillovers to be negative.

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# Global financial volatility and its consequences for small open economies

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*Jean-Pierre Landau*

## Abstract

International financial volatility is nothing new. Emerging economies, in particular, have been periodically exposed to surges and “sudden stops” in capital flows for many decades. What is new, however, is our vision and approach to the issue. Until recently, financial volatility was mainly seen as a result of bad fundamentals or misguided and inconsistent domestic policies. So the main, often unique, policy prescription was “put your house in order”. Good policies would bring stability.

That has changed. It is now recognised that, while absolutely necessary, good macroeconomic policies are not always sufficient to ensure financial stability. Previous conventional wisdom was based on the assumption of financial market efficiency, a creed badly shaken by the financial crisis. Increased financial integration also means that spillover effects and interactions between domestic policies are stronger than before. As a result, countries are exposed to shocks that originated elsewhere or were created by the internal dynamics of global capital markets.

This paper first looks at the drivers and characteristics of financial volatility on the contemporary global market. It then discusses possible policy responses.

## Introduction

All countries are exposed to financial volatility. Emerging economies, in particular, have been periodically affected by surges and “sudden stops” in capital flows for many decades. Interestingly, despite this long and universal experience, attitudes and policy responses still diverge widely; and the policy debate remains intense and sometimes contentious.

Broadly speaking, one can identify two opposite views.

According to one, global volatility is mainly driven by fundamentals. Capital inflows into emerging economies reflect favourable long-term growth prospects and high potential returns on capital. Short-term volatility itself

may help. To some extent, it is a sign of well-functioning financial markets. Movements in asset prices serve as a cushion, an “absorber” of economic shocks. This is welfare-improving since it avoids, or mitigates, adjustment in more rigid goods or labour markets. The best strategy then is to get the fundamental – “put your house in order” – right and, if necessary, let the exchange rate fluctuate in response to temporary financial shocks.

According to a second, and opposite, view, economic policies in major countries are mainly responsible for financial volatility. “A popular narrative among financial commentators is that low interest rates in advanced economies act as a key driver of cross-border capital flows, resulting in overheating and excessive credit growth in the recipient economies. Balance sheet policies have the same effect” (Bruno and Shin 2012c). In short, global volatility is a code word to designate the impact on emerging economies of quantitative easing policies implemented by advanced countries.

Both views are partially correct. They can coexist with reasonable credibility because the nature of financial volatility is multifaceted and changing. As a consequence, policy responses may legitimately differ between countries while, at the same time, the focus of international co-ordination is moving in new directions.

## 1. The changing nature of global financial volatility

International economics are built on the analysis of interdependences between countries, spillovers and contagion effects. A traditional way of looking at financial volatility would be, first, to identify shocks and then describe how they are transmitted across borders. This approach does not fit well with the level of integration and complexity observed in global capital markets today. Rather, there is a “need to take a systemic view of global financial stability” (Obstfeld 2009b) and “the correct perspective nowadays is that the world economy comprises a single, interdependent financial system”. However, that system is incomplete and asymmetric, so its dynamics are extremely complex.

### 1.1 The world as a single financial system<sup>1</sup>

Looking at the world as a single financial system yields important insights. A system is governed by numerous feedback loops and interactions between its components. Exogenous shocks occur. However, once the dynamics have developed, identifying causes and effects is pointless. Rather, what matters is the behaviour of the system as a whole; and, correlatively, it may be impossible to understand the state of one component without considering all the others.

Transformations undergone by capital markets over the past decades have made this systemic approach more and more relevant.

1. Domestic and global financial markets are becoming increasingly interconnected. Those interconnections are best measured by the expansion of gross international asset positions (whereas, of course, the current account only measures evolutions in net positions). This expansion dwarfs the growth of trade in goods or even gross domestic products (GDPs). As a yardstick, the average between gross international assets and liabilities has grown from around 50 per cent of GDP in the United States (US) in the 1990s to 150 per cent today. Some emerging economies, such as Singapore, stand at 200 per cent, while the euro area is somewhere in between. Obviously, the composition, denomination and the maturity of those exposures matter enormously for growth and financial stability.
2. The supply of assets by emerging economies has increased and diversified as a result of strong growth, opening of their capital accounts and remarkable fiscal consolidation. The availability of broader and more diversified asset classes allows financial intermediaries to manage their positions and allocate capital on a global basis. Global funds have become major players in emerging economies' debt and equity markets.
3. The main transformation, however, has been the emergence of global banks. Because they distribute credit and allocate liquidity across borders, global banks form the backbone of the world financial system. Banking activity is a key driver of financial conditions both within and across borders (Bruno and Shin 2012b); for instance, "many European banks use a centralised funding model in which available funds are deployed globally through a centralised portfolio allocation decision" (Shin 2011). Global banks' behaviour can be adequately described by a model where they equalise returns for lending in all countries, adjusted for the risk of default (Bruno and Shin 2012b).

Traditional analysis would distinguish between two determinants of international capital flows: (i) push and (ii) pull. Capital may be "pushed" into one country by an increase in global risk appetite or easier monetary policies abroad. It may be pulled in (or out) as a result of changes in domestic financial conditions or growth. With global banks, however, there is permanent interaction between push and pull factors, and the distinction may be impossible to draw in practice (Bruno and Shin 2012b).

4. Finally, global liquidity has become a key focus of attention and in policy debates (Caruana 2012b). It is hard to define, let alone to measure. To grasp its implications, it is useful to contrast two stylised visions, what could be called the ‘old’ and the ‘new’ world.

In the old world, predating the era of strong capital mobility, international liquidity mainly referred to instruments available to settle payments between monetary authorities. It was publicly created by central banks of reserve currencies. Many analysts still refer to this framework when they talk about global liquidity. In the “new” world of high capital mobility most international liquidity is privately created through cross-border operations of banks and other financial institutions. Interbank markets play a crucial role in this process. The more capital markets become integrated at the short end, the more international liquidity is provided by the private sector.

As a consequence, there is a strong continuity and complementarities between domestic and international liquidity. Both depend on the willingness of counterparties to extend credit to each other. Both are subject to aggregate supply-and-demand shocks with sudden shifts in risk aversion or liquidity preference. Both result from leveraging and deleveraging by private institutions (Adrian and Shin 2008). When markets seize, counterparty risk is perceived as excessive, uncertainty settles in and financial institutions deleverage their positions towards non-residents. International liquidity then dries up and disappears.

This is the essence of private liquidity. One moment it is there, and then it is not. Liquidity shocks cannot be forecast, which creates fundamental uncertainty. The importance of global private liquidity conditions has been apparent during the period that followed Lehman’s failure. Output and trade fell across the world with astonishing simultaneity. At the time, it seemed natural to assume that “traditional” forms of contagion – through goods or capital markets – were at work. Policy-makers were looking to trade finance as a major channel. However, contagion takes time and cannot fully account for the exceptional synchronisation in the drop of output. With hindsight, the phenomenon may best be seen as a global liquidity shock. Net supply of liquidity dried up at the same time everywhere in the world. International banks faced a sudden and ample shortage of dollars. Firms started hoarding liquidity. Investment and, in part, production, abruptly came to a halt (Landau 2010a).

Quantitatively, global private liquidity dominates official liquidity. It displays both an increasing trend and a strong cyclical component. The increasing trend is a result of deeper financial integration between countries and

financial innovation (spurred, among other things, by regulatory changes). However, private global liquidity is also highly cyclical because it is driven by divergences in growth rates, monetary policies and, above all, risk appetite.

There is some interaction between official and private liquidity. In times of stress private liquidity collapses and the supply of global liquidity will depend crucially on official sources. One major objective of most emerging economies is to provide public liquidity to their banks through foreign-exchange reserves.

## 1.2 Asymmetries

As global and integrated as it has become, the world financial system is by no means homogenous. It remains asymmetric and segmented into many currencies. Both characteristics have significant consequences for financial volatility.

Asymmetries in financial development persist, reflecting both differences in history, preferences and institutional capacities. Financial deepening is unequal between economies and so is capital account convertibility. Not all countries have the same tradeoff between efficiency and stability in the financial sector. Financial intermediation may be based on different structures (with, for instance, the share of banking in financial intermediation double in Europe as compared to the US). Finally, the behaviour of financial systems will depend on the soundness of financial intermediaries, which vary across countries and periods of time.

Consequences are generally overlooked. Domestic financial systems are unequally “elastic” to interest rates and react differently to the same external monetary impulse. Taking, for instance, the credit channel of monetary policy into account: well-functioning and capitalised banks in one country will react strongly to small changes in interest rates or financial conditions, while, in other countries, where banks are weaker and deleveraging, the same policy impulse will produce smaller or no result. Now, supposing that those two economies are confronted with the same global environment, they will take widely divergent paths. The resulting volatility is typical of a system where different parts are interconnected but still heterogeneous.

Asymmetry in financial integration also creates a paradox. Cross-border capital mobility is higher, in some cases, than domestic mobility. Hence, there may be greater substitutability between domestic and international assets than between domestic assets themselves. As a consequence,

the exchange rate has to absorb a disproportionate share of international financial shocks which, in turn, increases volatility and complicates policy choices by the authorities.

Another, well-documented, asymmetry comes from countries' different abilities to produce safe financial assets. While the demand for these assets emanates from all over the world, the supply is unevenly distributed across regions, with the US (and, to a lesser extent, Japan and Germany) providing a large chunk of the total. This asymmetry not only drives the volume and composition of capital flows, but also their direction. There is a structural excess demand for dollar-denominated securities, which sustains permanent capital inflows into the US. Episodes of flight to safety benefit some countries to the detriment of others, as the example of Japan repeatedly shows, and as Europe itself has recently experienced for intra-euro area capital movements towards Germany.

### 1.3 Segmentation

The global financial system is still, and will remain, segmented into a multiplicity of currencies. Interestingly, currency segmentation does not reproduce the geography of national jurisdictions. According to the Bank for International Settlements' triennial foreign-exchange survey, one third to three quarters of all foreign-exchange transactions of major emerging-market currencies take place among non-residents (Caruana 2012b). Nor can financial intermediaries be easily identified by the currency of their operations. Major global banks, including those in emerging economies, work in all global currencies. In those countries foreign-exchange reserves have been used extensively to provide domestic institutions with liquidity in foreign currencies during the crisis.

In this increasingly complex panorama, it is not easy to assess the role of exchange rates in fostering, or compromising, financial stability.

The standard recommendation for a country faced with external financial volatility is to absorb it by floating its exchange rate. By doing so, monetary policy is free to pursue domestic objectives (i.e., inflation targeting). Output is also better insulated from real shocks, because the exchange rate can adjust and stabilise demand for domestic goods through expenditure switching.

Reality, however, is more complex. Leaving aside the "real" arguments underpinning the fear of floating, and taking a pure financial stability perspective, there are some reasons why the insulating properties of floating exchange rates do not always materialise.



First, in many emerging countries domestic debt is partially denominated in foreign currency. A substantial stock of foreign currency debt directly transmits the policy of the major central banks to other countries. There is something like US\$7 trillion in US dollar credit to borrowers who reside outside the US (Caruana 2012b). In addition, because of currency mismatches, exchange rate evolutions affect the equity base of domestic banks and corporates, with potential amplification effects on the supply and demand of credit.

Second, the insulating properties of floating are predicated in some form of efficiency in capital markets where movements in exchange rates are self-stabilising; for instance, capital inflows would trigger an appreciation, making domestic assets more expensive; reduce their attractiveness; and stabilise or reverse the initial inflow. Empirical observations suggest, however, that exchange rate movements are often self-reinforcing, fuelling expectations of further moves in the same direction. This is attested to by numerous episodes of carry trades developing and suddenly unwinding in recent years.

Finally, Bruno and Shin (2012c) have recently identified a more subtle and powerful mechanism that links capital flows, exchange rates and the risk-taking behaviour of international banks. If local residents are indebted in foreign currency, appreciation of the domestic exchange rate will improve their creditworthiness (measured in local currency), creating an incentive for local banks to borrow abroad and lend more to the local residents. This, in turn, will appreciate the exchange rate further, setting in motion a powerful feedback loop.

## 1.4 Complex dynamics

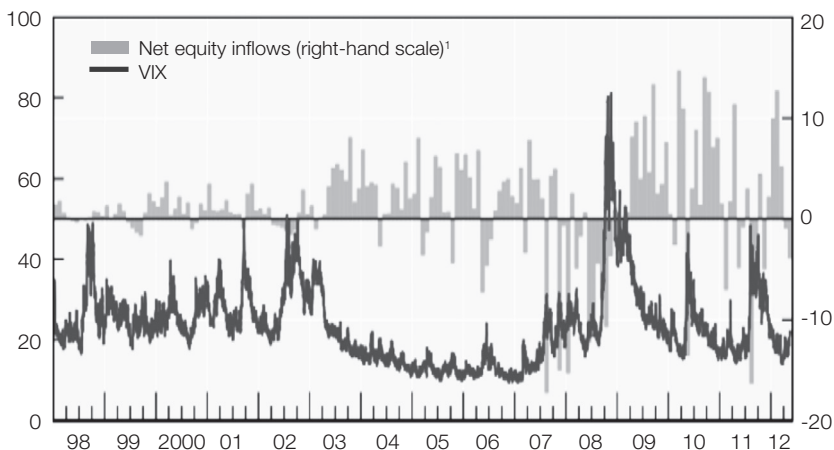
A complex financial system produces equally complex dynamics. Financial volatility is the joint product of a number of forces whose direction intensity and interactions constantly change over time. A list of the main drivers would include monetary policies, risk appetite and the behaviour of central banks along the process of reserves accumulation.

As for monetary policies, greater financial integration naturally brings increased sensitivity of capital flows to differences in interest rates and expectations. Current financial conditions may exacerbate these effects. Interest rates in all three major currency areas are very close to zero and, in some of them, expected to stay there for the foreseeable future. This means that expectations are the sole drivers behind capital flows and exchange rate movements. Basically, we live in a world of multiple equilibriums between major currencies. Carry trades provide a good example. As long as

exchange rate expectations are stable, carry trades will develop based on very small (expected) interest rate differentials. Small shifts in exchange rate expectations, however, could lead to major portfolio rebalancing and capital flows reversals.

In such a world, risk appetite plays an even bigger role than usual in influencing the direction and amplitude of capital flows. Figures 1 and 2 document the close correlation between cross-border capital flows and usual indicators of risk appetite (VIX) over a long period of time. The expansion of international banking is closely correlated with fluctuations in attitudes towards risk. This correlation is even stronger when liquidity is abundant and monetary conditions are easy. The cyclical behaviour of risk appetite is a well-known empirical regularity. Markets will shift rapidly from “risk on” to “risk off” attitudes, leading to abrupt changes in the volume and directions of capital flows to emerging economies. Periods with low policy rates or elevated interest rate differentials across currency areas can be associated with over-optimistic risk perceptions and elevated risk tolerance, leading to a mispricing of assets and excessive easing of lending standards (CGFS 2011).

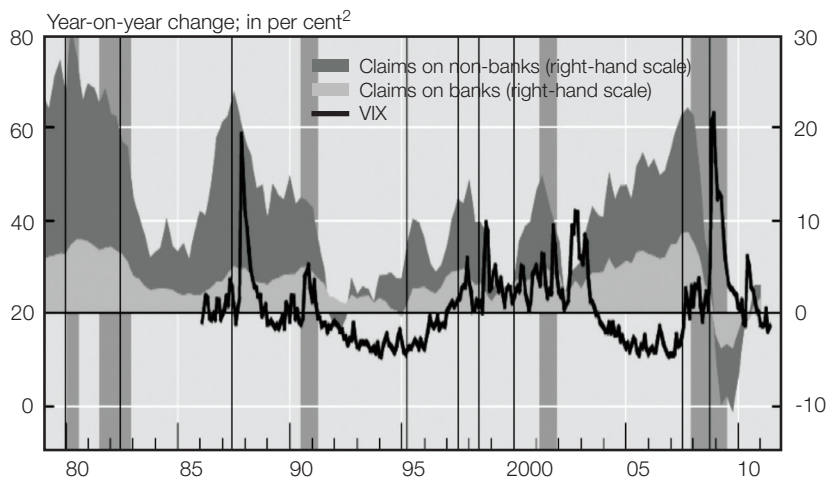
**Figure 1: Global volatility and Asian net portfolio equity inflows**



1 Net foreign purchases of equities in India (data start in 1999); Indonesia; Korea (KOSPI and KOSDAQ); Philippines; Chinese Taipei and Thailand, in billions of US dollars.

Sources: CEIC and Bloomberg

Figure 2: Contributions to growth in total international claims<sup>1</sup> and VIX index readings



The vertical lines mark: 1979 second oil shock; 1982 Mexican default; 1987 stock market correction; 1994 Mexican peso devaluation; 1997 Asian financial crisis; 1998 Russian default and LTCM; 2000 Nasdaq peak; 2007 global financial crisis; 2008 collapse of Lehman Brothers. The shaded areas mark US recessions (NBER definition).

- 1 The stacked areas indicate the contributions to the total year-on-year rate of growth in international claims, which include BIS reporting banks' cross-border in all currencies claims and locally extended foreign currency claims on residents of reporting countries. "Claims on banks" include cross-border claims on own offices.
- 2 Contributions to growth are calculated as the sum of the exchange-rate adjusted changes in claims on sector  $i$  in periods  $t$  to  $t-3$  divided by the stock of claims on all sectors at period  $t-3$ .

There is a reciprocal and self-reinforcing relationship between risk appetite and liquidity. Investors' risk appetite may depend on perceived liquidity constraints. Symmetrically, when risk appetite increases, the availability of liquidity is usually enhanced. That circularity may generate powerful and hard-to-predict, amplification mechanisms and financial cycles.

Finally, faced with volatile and significant capital flows, most emerging countries are accumulating foreign-exchange reserves. These reserves are mainly increasingly being invested in longer-term US Treasuries, (e.g., foreign official holdings of US Treasuries at end-June 2011 were US\$3,5 trillion). There is a very active debate on the ultimate impact of these investments on US long-term interest rates. Supposing such an impact materialises, it would trigger an acceleration of capital inflows into emerging countries by further encouraging investors to search for yield (Kobayashi and Yushino 2011). An alternative, but equivalent, description is given by McCauley (2012):

[C]apital inflows into emerging markets systematically lead to leveraging by central banks there, and . . . capital outflows lead to deleveraging. Given the investment and financing habits of emerging-market central banks, their leveraging tends to remove duration from global bond markets. As a result, their response to risk-on markets tends to put downward pressure on global bond yields, reinforcing the risk-on mode.

Such a feedback loop operating between developed and emerging countries may be a powerful accelerator of other market dynamics.

## 2. Policy responses and the future of the international financial system

### 2.1 Generalities

The cross-border spillovers associated with international capital flows would call, *prima facie*, for increased international co-ordination. For obvious reasons, however, the world will never be managed as a single financial system. The scope for further advances must be assessed by taking account of two fundamental realities.

First, countries are free to conduct monetary policies they deem appropriate. Indeed, when central banks are independent, they are legally obliged to do so. Monetary policies are conducted with domestic objectives in mind with all central banks having the same mandates aimed at price stability. This is true for all countries, whether small or large. The world has benefited enormously from two decades of price stability resulting from monetary regimes based on central bank independence and a focus on internal price stability.

Second, according to the International Monetary Fund (IMF) Articles, countries are free to choose their capital account and exchange rate regimes with the proviso that they do not engage in currency manipulation. Most policy discussions assume that freedom of capital movements is the norm, and controls should be the exception. That is certainly the objective in an integrated world economy. However, this is not the situation today. Attempts to give the IMF increased jurisdiction in this matter have in the past met with strong resistance. Ignoring this reality will only lead to misunderstandings and impasses.

Taken together, those two realities complement each other rather well and leave enough space to find the proper balance between national responses and international co-operation. First, countries should design and implement

for themselves a framework of policies to mitigate the financial risks of cross-border flows at the national level. Second, they should also make sure that those policies complement – and do not contradict or nullify – one another.

## 2.2 A simplified framework for domestic policies

When faced with potential financial shocks inflicted by the external world, a country can, in principle, resort to three strategies: (i) prevention, (ii) anchoring and (iii) cushioning:

- (i) Prevention of financial shocks means that, to some extent, the economy and financial markets are insulated from the external world. Measures can be designed to reduce the elasticity of the domestic financial system to global conditions. To the extent that the causes of volatility are external, prevention may involve some form of capital flow management.
- (ii) A strategy of anchoring would lead authorities to stabilise the value of one specific financial variable, most often the exchange rate.
- (iii) Cushioning strengthens *ex ante* the robustness of the domestic economy and financial system through the building up of shock absorbers. Cushioning can take place at several levels: banks (through higher capital and liquidity requirements), the national budget (through earmarking revenues for future generations or absorbing cyclical fluctuations) and, finally, the whole domestic economy, through the build-up of foreign-exchange reserves.

These strategies are not mutually exclusive. On the contrary, they are additive and countries will find advantage in exploiting their complementarities. Anchoring the exchange rate, for instance, certainly implies accumulating foreign-exchange reserves; it can also be facilitated by some degree of capital control.

By contrast, all strategies have some negative side effects. Anchoring the exchange rate may come at the price of increased volatility on capital flows and interest rates. Prevention measures involve interfering with the functioning of markets, at the risk of creating distortions and rent-seeking. Finally, cushioning sterilises resources and incurs efficiency cost.

An essential policy choice consists in determining the optimal mix. It is necessarily country-specific. It is also informed by the lessons learnt from the crisis from which two conclusions may be drawn:

### 2.2.1 Foreign-exchange reserves

First, it seems that cushioning strategies increasingly “dominate” others as shown by the continual increase in foreign-exchange reserves accumulation.

The facts are well known. Reserves amount to 14 per cent of global GDP and 8 per cent of gross international exposure, doubling from their level in 2000; over half the worldwide reserves holdings are held by only five countries. Emerging-market holdings amount to 32 per cent of their GDP.

This evolution has motivated a new wave of studies aimed at assessing reserve adequacy, mostly based on some form of cost benefit analysis. The standard argument is that reserves are costly, that they lead to resources misallocation and are often accumulated through exchange rate manipulation. There is much truth in these assertions. However, there are also limits to any quantification, let alone normalisation, in the level of reserves.

In a sense, countries face the same dilemma as financial institutions when deciding on their appropriate liquidity position. There is a tradeoff between the costs and benefits. For private financial institutions there may be a tendency to underestimate liquidity needs in normal times, with the expectation that the lender of last resort will bail them out if and when a shortage occurs. For countries the bias goes in the other direction. With no international lender of last resort, precautionary motives will lead to what looks like over-accumulation of liquidity, but is, in fact, a rational response to a fundamental uncertainty.

Yet, the size of reserves has significant spillover effects and systemic implications for the world economy. A huge share of gross international exposure is in the hands of official entities. Reserves holders are already dominant players in key asset markets. This takes us far away from the canonical model of free, atomistic and competitive global capital market.

In terms of stability, movements of even small fractions of reserves could trigger enormous shifts in asset prices and exchange rates, which would negatively affect reserves holders themselves. To quote Obstfeld, (2009a): “[T]o think that the international financial system will necessarily be more stable simply because all countries have more foreign exchange reserves is to subscribe to a fallacy of composition.” The same author notes rightly that reserves are not “outside liquidity” in the sense that they cannot protect their holders against a systemic symmetric shock which would affect all of them at the same time. That could explain the strong desire of countries with important levels of reserves and floating exchange rates nevertheless to gain access, when the crisis strikes, either to IMF facilities and/or central bank swaps.

### 2.2.2 Macroprudential policies

Second, for small open economies there is necessarily a continuum between measures aimed at domestic and external financial stability. The so-called capital flows management measures cannot, and should not, be dissociated from the broader objective of limiting instability.

Most often, the rationale for these measures has not been fully and extensively spelt out. They are seen as second best in the panoply of macroeconomic tools. As a consequence, they often appear as a way to delay necessary adjustments or, worse, as accessories to exchange rate management; not to mention manipulation. Hence, they are tainted with enormous suspicion from the start.

It is commonly accepted that such measures do not impact the volume of flows, only their composition. However, from a financial stability perspective, composition matters. These measures should not be seen, or devised, therefore, as macroeconomic tools, substituting for others in the adjustment process. Rather, they can be part of a continuum of instruments deployed to implement macroprudential policies.

To achieve that objective, however, several conditions must be met: First, in each country there must be full consistency, almost a continuum, between domestic macroprudential measures and those that affect non-residents or cross-border flows; for instance, limiting a boom in foreign currency-denominated domestic lending may imply both higher reserves requirements on foreign currency loans imposed on domestic banks (the “domestic” part) and limits on foreign currency borrowing from non-residents (the “external” part). By the same token, limiting excessive stock market volatility can require a raise in margin requirements as well as a tax or a quota on inflows.

### 2.3 International co-ordination

There must be consistency between policies implemented in “source” and recipient countries as regards international capital movements. There would be little sense in introducing or accepting regulatory incentives to export capital in some countries, while others are deploying measures to prevent capital inflows. A close examination of prudential regimes may show some inconsistencies in this regard. Regulators are aware of this type of spillovers, for instance, when they discuss the implementation of the countercyclical capital buffer under Basel III.

Finally, there must be consistency between measures and policies taken in different recipient countries. There is a good case for, at least, some form of co-ordination between countries using macroprudential tools to ensure that measures taken individually are mutually consistent.

For one given country, regulating capital flows may temporarily reduce the pressure on its capital account or even permanently limit the volatility of its exchange rate. For the whole international system, however, these measures may simply displace the pressure on other countries or asset classes, and exacerbate, rather than reduce, overall volatility. The rapid increase in trade and financial globalisation has amplified spillover effects. As a result, policy actions that affect international capital flows cannot be assessed from the viewpoint of each individual economy only, but should also take the international dimension into consideration to avoid globally sub-optimal results.

### 3. Conclusion

We live in a world of greater interdependence and complexity. International capital flows have made countries truly interconnected. The monetary and financial system has become “multipolar”. An increasing number of countries – both developed and emerging – have become active participants in the global capital market. Spillovers between national monetary and economic policies have multiplied, and no country can truly be indifferent to actions taken by others.

In the current circumstances, divergences in monetary policies are unavoidable, given the uneven paths of recovery across the world. Furthermore, for each country this may be a time where price and financial stability objectives may not coincide. In advanced economies, monetary easing, together with inhibitions on credit growth, creates a potential for further financial imbalances. In many emerging countries, when inflationary pressures warrant monetary tightening, there is a clear risk this would trigger destabilising capital inflows.

In those circumstances, there is a major role for macroprudential policies to play. Advanced economies should aim to spur credit growth, while increasing the resilience of the financial sector. Supervisors should also stand ready to act if bubble-like phenomena appear in some markets. For emerging economies measures aimed at stabilising capital inflows may help and relieve the pressure on domestic financial conditions and prevent further asset bubbles.



## Note

<sup>1</sup> Maurice Obstfeld, “Lenders of Last Resort in a Globalized World”, Keynote speech at the 2009 International Conference, held by the Institute for Monetary and Economic Studies, Bank of Japan (Tokyo, 27–28 May 2009).

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# Competition, industrial structure and economic growth

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*Johannes Fedderke*

## Abstract

This paper takes as its starting point established findings on industrial conduct as measured by pricing power in South African industry. The South African findings are contrasted with recent results derived from firm-level data from China and India. A stark contrast emerges between China, with low mark-ups of price over marginal cost of production, and South Africa and India with high mark-ups. Given the impact of pricing power on productivity growth, the paper shows that lack of competitive pressure in the manufacturing sector contributes one important explanation of why China has a relatively large, while South Africa and India have a relatively small, manufacturing sector. An estimate is provided of foregone employment opportunities due to the presence of pricing power in South Africa. A framework is outlined in terms of which the impact of the success of potential policy intervention in the labour market can be assessed, given the findings on industrial structure. Returning to Chinese firm-level data, the paper examines whether there is a case to be made for differential policy treatment of established, new entrant and struggling firms, and finds that there is little evidence to support such a claim. In the case of China the finding is that state intervention in the manufacturing sector has primarily served to suppress pricing power. The conclusion contains reflections on competitive pressures in other sectors of the economy and final inferences on desirable policy interventions designed to stimulate growth and employment creation.

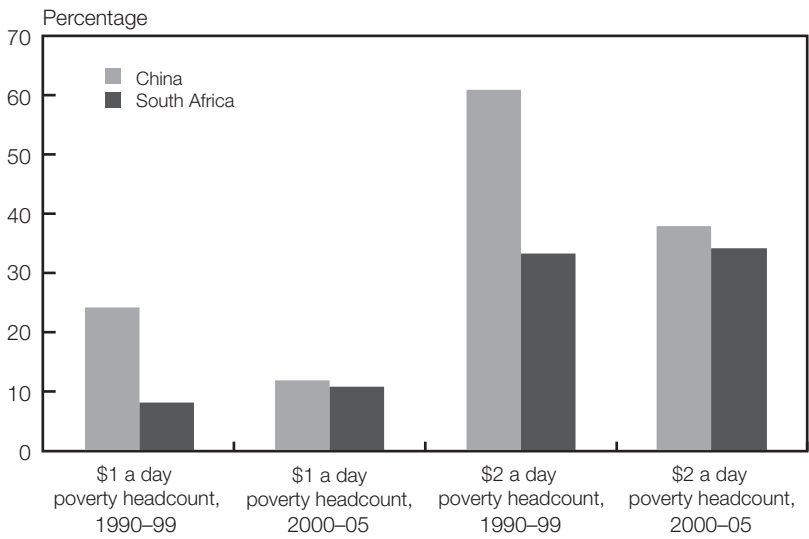
## 1. Introduction: South African exceptionalism

The fundamental concern of this paper is the growth performance of the South African economy.

The reason for this focus is that South Africa has not been successful in addressing poverty. As Figure 1 demonstrates, according to World Bank data in terms of either the US\$1 a day or the US\$2 a day poverty headcount measures, the proportion of the South African population that falls below the poverty lines has not declined significantly from the 1990s through the 2000s.

Indeed, if anything, the proportion has risen. By contrast, China over the same period has been able to halve the proportion of its population that falls under the two poverty measures – though it started from a much higher incidence of poverty than did South Africa. What is more, this differential ability to reduce poverty between the two economies did not arise from closer Chinese focus on welfare policies targeted at the poor.

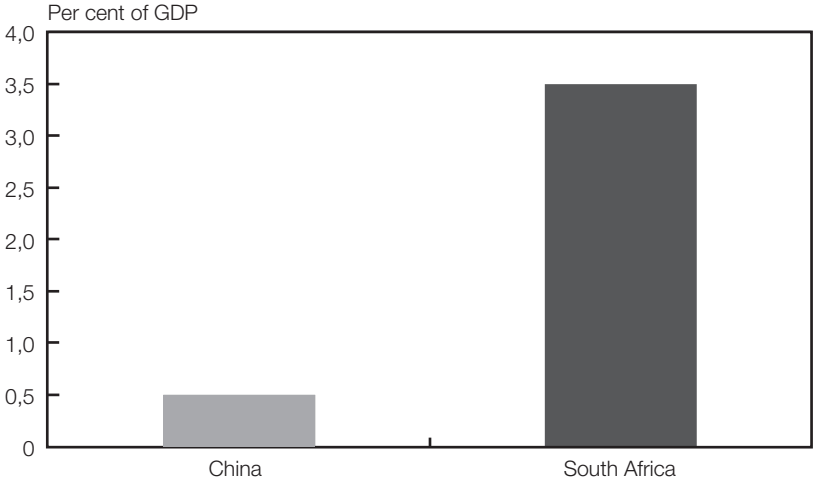
Figure 1: Poverty headcounts: China and South Africa



Source: World Development Indicators

As Figure 2 shows, South African welfare policy allocated a proportion of gross domestic product (GDP) to welfare policy seven times as high as that maintained by China during the 2000s. Instead, the dramatic difference between China and South Africa is that the former maintained growth rates in GDP close to 10 per cent per annum over the past two decades – while that for South Africa has averaged between 2 and 3 per cent per annum. It is difficult to avoid the conclusion that better growth performance in the South African economy is at least part of the answer to any attempt to address, let alone eliminate, poverty.

Figure 2: Percentage of GDP spent on welfare:  
China and South Africa



The aforementioned raises the question of how higher growth for South Africa might be achieved.

Previous work on growth constraints on South Africa raises three broad areas in which higher growth might be constrained. The first is the quantity and quality of human capital in the economy. The second concerns the nature of the labour market and the rigidities to which it is subject. The third concerns the level of competitive pressure and the levels of efficiency realised in South Africa's output markets, which can be linked both to the nature of physical capital accumulation in the economy and to employment creation.

While all three are important, in the present paper it is competitive pressure, and the impact it has on industrial structure and performance that will be the focus of analysis. An immediate means of illustrating that South Africa has peculiarities in terms of industrial performance and structure is to consider the distribution of output across its principal aggregate sectors – as reported in Table 1. What is evident is that over the past four decades, the relative contribution of primary sectors and manufacturing in South Africa has steadily declined. Instead, it is the services sector that has come to contribute more than 50 per cent of GDP. In effect, South Africa's industrial structure has come to resemble that of developed economies, despite the fact that it remains a developing country in the upper middle-income classification.

Table 1: Sectoral share of GDP

		Primary*	Manu- facturing	Electricity, gas, water and construction	Private service sectors	Community and social services	General government
1970–74 .....		16,41	15,53	5,62	29,07	20,65	12,73
1975–79 .....		13,47	16,36	5,48	29,83	21,41	13,44
1980–84 ....		11,79	17,38	5,18	30,50	21,63	13,52
1985–89 ....		11,18	16,49	4,68	30,39	22,99	14,28
1990–94 ....		10,43	15,42	4,60	30,38	24,12	15,04
1995–99 ....		9,40	15,25	4,52	32,78	23,84	14,22
2005–09 ....		7,42	14,73	4,91	39,86	21,46	11,62

\* Primary denotes agriculture, forestry, fishing and mining

In the case of the distribution of employment, the evidence is equally unusual. Table 2 shows that the relative contribution of primary and manufacturing sectors to total employment has declined – and that financial and business services in particular have been the area of the strongest growth.

Table 2: Sectoral share of employment

	Mining	Manu- facturing	Construction	Trade	Financial	Public sector
1970–74 .....	0,18	0,33	0,11	0,05	0,03	0,30
1975–79 .....	0,17	0,33	0,09	0,04	0,03	0,34
1980–84 .....	0,17	0,33	0,09	0,04	0,03	0,34
1985–89 .....	0,17	0,32	0,08	0,04	0,03	0,36
1985–89 .....	0,17	0,32	0,08	0,04	0,03	0,36
1990–94 .....	0,14	0,32	0,08	0,04	0,04	0,38
1995–99 .....	0,12	0,32	0,07	0,05	0,05	0,40
2000–04 .....	0,09	0,28	0,06	0,06	0,15	0,35
2005–09 .....	0,08	0,21	0,07	0,07	0,29	0,28

The concern of this paper is to provide an account of why this unusual industrial structure might have emerged, by considering evidence on industrial conduct in South Africa. The paper starts by considering accumulated evidence on the level of pricing power in the South African economy, and by placing this in the context of similar evidence from China and India. This allows for a counterfactual analysis of how South Africa's industrial structure might have differed, under lower levels of pricing power, and the associated higher growth rates in output and employment that

might have been realised. I demonstrate that under plausible assumptions, industrial structure might have been closer to that of China than that actually reported in Tables 1 and 2.

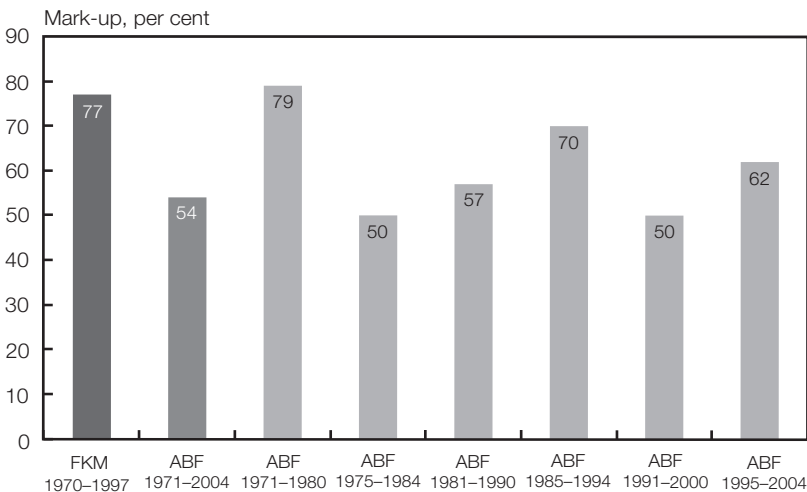
Some policy inferences are then drawn with respect to firms that are new entrants into industry, the impact of mark-ups on international competitiveness and, finally, whether there is evidence to suggest that there is a role for the state in influencing the level of the mark-up.

## 2. Some core findings on industrial conduct

I begin my exposition by noting a number of fundamental results that relate to industrial conduct in South Africa, before turning attention to the implications of this conduct for economic growth.

A number of papers have examined the evidence on the strength of the mark-up over marginal cost of production for South Africa. In all instances the strength of the mark-up was found to be substantial. In Fedderke et al. (2007) the average mark-up of price over the marginal cost of production for South African manufacturing sectors, for the 1970–1997 period, was found to be between 77 and 79 per cent; a mark-up approximately twice as high as that reported for the United States (US).<sup>1</sup> Aghion et al. (2008), repeating the exercise for the 1971–2004 period, reported an average of 54 per cent for South African manufacturing over the full sample period, without evidence of a downward trend over sample sub-periods. Figure 3 summarises the findings.

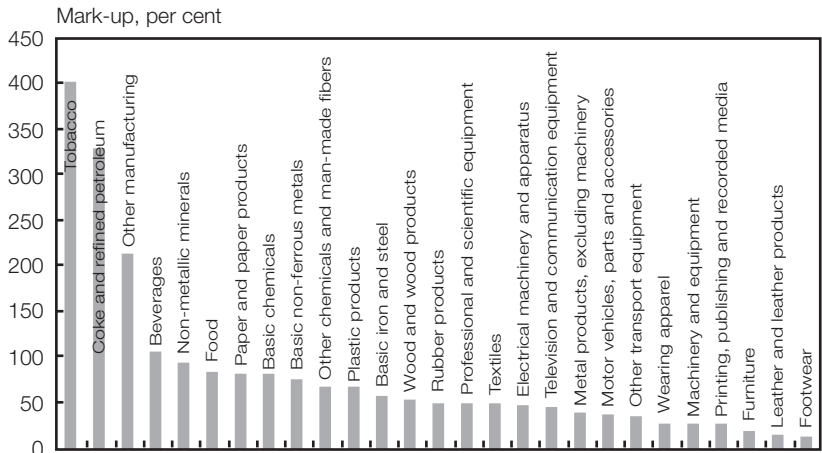
Figure 3: Estimated mark-ups of price over marginal cost of production in South Africa



Note: FKM denotes the Fedderke et al. (2007) study and ABF the Aghion et al. (2008) study. Dates indicate sample periods.

These findings of a high mark-up are not merely an artefact of a few sectors with exceptionally high mark-ups biasing the average mark-up for the manufacturing sector upward. To illustrate this, Figure 4 reports the average estimated mark-up by the three-digit manufacturing sector, over the 1971–2004 period, as reported by the Aghion et al. (2008) study. More than half the sectors have a mark-up in excess of 50 per cent, and approximately a third of the sectors have a mark-up in excess of 77 per cent. What is more, for the majority of manufacturing sub-sectors (18), the magnitude of the mark-up rose from the 1971–1990 to the 1985–2004 period, in some instances dramatically so (see the evidence in Figure 5).

Figure 4: Estimated mark-ups of price over marginal cost of production by three-digit manufacturing sector, 1971–2004

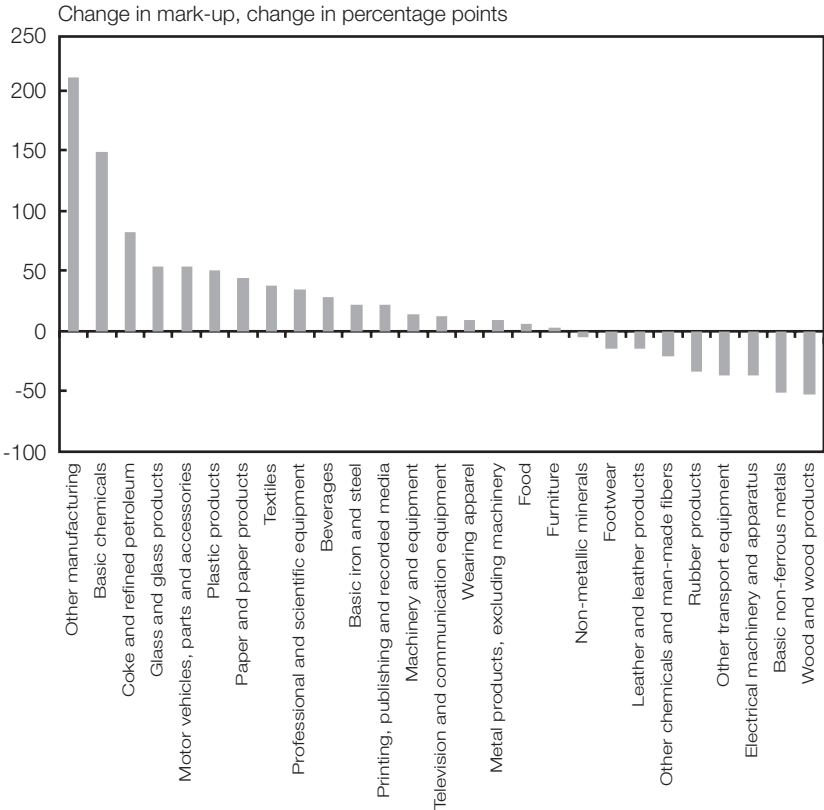


Source: Aghion et al. (2008)

The level of the mark-up of price over marginal cost of production in South African manufacturing is thus high relative to the US, and appears to be rising over time. However, is the level of the mark-up high relative to a more general set of comparators than the US? In short, how does the South African mark-up compare with the rest of the world? Arguably, the level of the South African mark-up may simply be a reflection of the rate of return that is standard for manufacturing sectors internationally and thus lack exceptionalism.



Figure 5: Estimated change in mark-ups of price over marginal cost of production by three-digit manufacturing sector between the 1971–1990 and the 1985–2004 sample subperiods



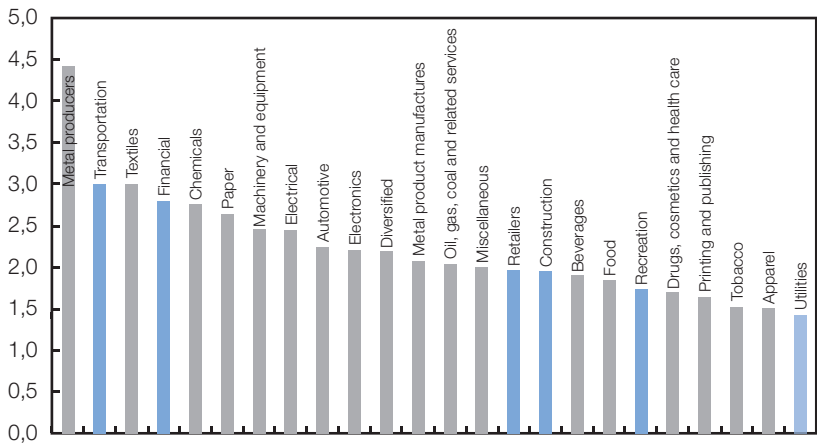
Source: Aghion et al. (2008)

To explore this question, I consider firm-level data both for South Africa and a sample of 56 countries drawn from the Worldscope database. I then compare the ratio of net income to assets of South African-listed firms to that reported on average in the remaining 55 countries in the database. The data covers the 1980–2004 period. Figure 5 reports the ratio of the net income-to-assets ratio for listed South African companies to the same ratio for listed companies across the world, for a range of sectoral classifications, including but not restricted to, the manufacturing sectors.<sup>2</sup> What is striking is that across all sectors of the South African economy, the return on assets is considerably higher than in the rest of the world. For no sector is the ratio lower than 1,42 as high as elsewhere in the world, and in the majority of

sectors the return on assets in South Africa is twice as high as elsewhere in the world. What is more, for a number of sectors, returns on assets are three times as high as elsewhere in the world, and in one instance 4,5 times as high. To the extent that mark-ups are related to the net return on assets therefore, the inference is thus not only that mark-ups are high in South Africa, but that they are high in comparison with other countries.

What is more, the high rates of return on assets are not restricted solely to the manufacturing sectors. Note that the transport and financial sectors return the second and fourth highest rate of return on assets relative to the rest of the world (a return on assets approximately three times as high as elsewhere), while the retail, construction and recreational service sectors all show rates of return on assets approximately twice that observed on average elsewhere in the world. Once again, therefore, not only are South African mark-ups high, but the manufacturing sector does not appear to be exceptional relative to other sectors in the economy.

Figure 6: Ratio of South African net income to asset ratio to world net income to asset ratio



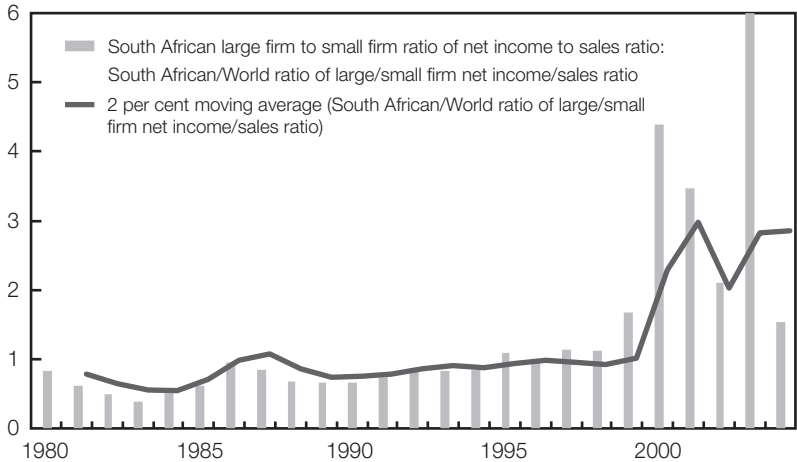
Note: Gray bars denote manufacturing sectors.  
Blue bars denote sectors other than manufacturing.

Source: Aghion et al. (2008)

It is also worth noting that over time, the structure of returns on assets (and by inference the mark-up) in South Africa has changed from favouring small firms to favouring large producers dramatically. Consider by way of evidence the ratio of net income to sales. In Figure 7 I report the ratio of the net income to

sales of large to small South African-listed firms. For most of the sample period the net income-to-sales ratio was lower for large than for small firms in South Africa, with the ratio of ratios consistently below 1 for the 1980–1994 period. However, during the 1990s, the pattern began to reverse. By the 2000s, the rate of return for large relative to small firms in South Africa began to rise dramatically, with net income to sales ratios between two and six times as high for large as for small firms. What is more, this pattern is not simply a reflection of international trends. Figure 7 also reports the large firm-to-small firm ratio of net income to sales between South Africa and the rest of the world in my firm-level dataset. What emerges is that while the net income-to-sales ratio of large to small firms rose, on average, across the world, the increase in South Africa was considerably stronger – with the result that the differential rate of return between large and small firms was three times as great in South Africa relative to the rest of the world by the mid-2000s.

Figure 7: Ratio of large firm to small firm net income to sales ratios



Source: Aghion et al. (2008)

In summary then, the evidence on South African industrial conduct suggests that the mark-up of price over the marginal cost of production is high. Moreover, the mark-up is high, not only in absolute terms, but it is high relative to mark-ups elsewhere in the world – not solely relative to the US. Over time, the structure of mark-ups between large and small firms also appears to have changed, from favouring small firms to favouring large firms.

While there is some evidence to suggest that the move to higher rates of return for large firms is an international phenomenon, the rate of increase for South African large firms has considerably outpaced that of large firms internationally.

### 3. Why does industrial conduct matter for growth?

Why does the evidence on industrial conduct matter – particularly in the context of economic policy formulation?

To address this question, in this section of the paper I consider three separate pieces of evidence. In the first, I note the impact of differential mark-ups of price over the marginal cost of production, on the long-term industrial structure of an economy. I do so on the basis of concrete evidence from China and India.

Second, in order to undertake a set of simulation exercises on some counterfactual scenarios, I consider evidence on the productivity growth impact of mark-ups in South Africa that consider how the South African industrial structure might have been different under lower mark-ups in the manufacturing sector.

Finally, I consider the implications of lower mark-ups on conditions in South African labour markets and consider how the structure of the market might have differed under the alternative industrial conduct assumption.

#### 3.1 An international comparison: China and India

To consider the impact of the size of mark-ups on the long-term industrial structure of an economy, I estimated the size of the mark-up in the Chinese and Indian manufacturing sectors, and considered the differential patterns of industrial structure between China and India. To do so I employed firm-level data sourced from Chinese and Indian official statistical sources.<sup>3</sup>

##### 3.1.1 The methodology

I employ the same methodology as employed for the South African studies reported above, and that have also been applied to the US. Since the method is established, I provide only a brief exposition.

Under constant returns to scale, the primal of the Solow residual (SR, or growth in total factor productivity,  $TFP$ ) is related to the mark-up of prices over marginal cost. Hall (1990) demonstrates that:

$$\begin{aligned} TFP &= SR = \Delta q - \alpha \cdot \Delta l - (1 - \alpha) \cdot \Delta k \\ &= (\mu - 1) \cdot \alpha \cdot (\Delta l - \Delta k) + \theta \end{aligned} \quad (1)$$

where  $\mu = P/MC$ , with  $P$  denoting price, and  $MC$  denoting marginal cost. Under perfect competition  $\mu = 1$ , while imperfectly competitive markets allow  $\mu > 1$ .  $\Delta$  denotes the first difference, lower case denotes the natural log transform,  $q$ ,  $l$ , and  $k$  denote real value-added, labour, and capital input,  $\alpha$  is the labour share in value-added, and  $\theta = \dot{A}/A$  denotes exogenous (Hicks-neutral) technological progress, where  $A$  is the technology parameter.

Estimation of equation (1) faces the difficulty that the explanatory variables  $(\Delta l - \Delta k)$  will be correlated with the productivity shocks  $\theta$ , with resultant bias and inconsistency in the estimates of  $\mu$ . The standard instrumentation solution leads to implausibly high  $\mu$ -estimates.<sup>4</sup> An alternative approach proposed by Roeger (1995) notes that the dual of the Solow residual ( $DSR$ ) provides a symmetrical relation of the price-based productivity measure to the mark-up:

$$\begin{aligned} DSR &= \alpha \cdot \Delta \omega - (1 - \alpha) \cdot \Delta r - \Delta p \\ &= (\mu - 1) \cdot \alpha \cdot (\Delta \omega - \Delta r) + \theta \end{aligned} \quad (2)$$

with  $w$ ,  $r$  denoting the natural logs of the wage rate and rental price of capital respectively. While equation (2) is, of course, subject to the same endogeneity problems as equation (1), subtraction of equation (2) from equation (1) gives the *nominal* Solow residual ( $NSR$ ):

$$\begin{aligned} NSR &= \Delta(p + q) - \alpha \cdot \Delta(w + l) - (1 - \alpha) \cdot \Delta(r + k) \\ &= (\mu - 1) \cdot \alpha \cdot [\Delta(w + l) - \Delta(r + k)] \end{aligned} \quad (3)$$

in which the productivity shocks ( $\theta$ ) have cancelled out, removing the endogeneity problem, and hence the need for instrumentation. The mark-up is now accessible either to simple estimation or computation directly from equation (3).<sup>5</sup>

### 3.1.2 The data

For China the data are obtained from the Chinese National Bureau of Statistics. The Statistical Bureau conducts an annual survey of industrial plants, which includes manufacturing firms, and firms that produce and supply electricity, gas and water. It is firm-level-based, including all state-owned enterprises (SOEs), regardless of size, and non-state-owned enterprises (non-SOEs) with annual sales of more than 5 million yuan. A ten-year unbalanced panel

dataset, from 1998 to 2007, is used. The number of firms per year varies from a low of 162 033 in 1999 to a high of 336 768 in 2007. The sampling strategy is the same throughout the sample period (all firms that are state-owned or have sales of more than 5 million yuan are selected into the sample).

Note that the dataset allows for firm entry and exit. As a consequence, while the maximum number of firms observed in any one period is 336 768, in fact a total of 373 558 firms over the full sample period is observed. In what follows the data on entry and exit are explicitly exploited (see sections 4.1 and 4.3). In the context of China the role of the state is of particular importance, and its influence is deemed to be pervasive. For this reason, in what follows particular attention is paid to the distinction between SOEs and non-SOEs, while recognising that this might not fully capture to full extent of state influence (see the discussion of section 4.3).

For India the data are drawn from the Prowess database, which is constructed by the Centre for Monitoring of the Indian Economy (CMIE). The data have advantages over the Annual Survey of Industries since the ASI is constructed from a repeated cross-section of firms, whereas the Prowess dataset includes a panel of firms. The database contains information on income statements and balance sheets of publicly listed (relatively large firms as in the China dataset). Only manufacturing firms are included in the analysis. The data provides a panel of 6242 publicly listed firms, over the sample period 1991–2011. The panel is constructed over the 1991–2010 period, since 1991 defines the implementation of the liberalising reforms in India.

### 3.1.3 The empirical findings

The empirical specification estimated is given by:

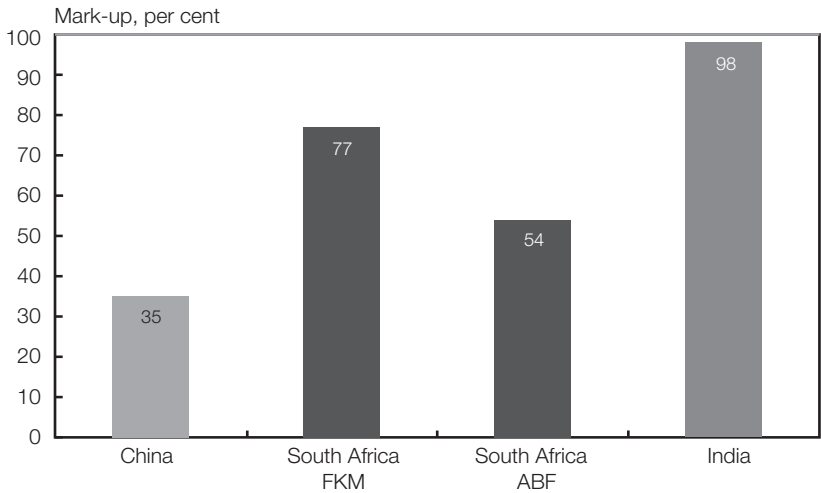
$$NSR_{it} = \gamma_{0i} + \gamma_1 RG R_{it} + \varepsilon_{it}$$

$$\text{where } RG R_{it} = \alpha_{it} \cdot [\Delta(w + l) - \Delta(r + k)] \quad (5)$$

with  $\alpha_{it}$  denoting the share of labour in value-added of sector  $i$ ,  $\Delta(w + l)_{it}$  the log change in nominal labour cost for sector  $i$ ,  $\Delta(r + k)_{it}$  the log change in total capital stock for firm  $i$ , in period  $t$ .  $\gamma_1$  now estimates  $(\mu - 1)$  directly  $\mu = P/MC$  is the mark-up.

What emerges is a stark difference between China and India in terms of the magnitude of the mark-up (see the illustrated mark-ups for the two countries in Figure 8), which contrasts the estimated mark-ups with those found for the South African manufacturing sector. While for China the mark-up is approximately 35 per cent (about half that estimated for South Africa),<sup>6</sup> for India the mark-up in manufacturing is approximately 98 per cent (even higher than in South Africa).<sup>7</sup>

Figure 8: Mark-ups in China and India



Note: Estimation is on firm-level data, correcting for fixed effects.  
Estimation for China is on 373 558 firms and 1 178 670 observations.  
Estimation for India is on 6 242 firms and 38 291 observations.

Source: Own estimations. FKM refers to the Fedderke et al. (2007) study and ABF to the Aghion et al. (2008) study.

This difference has had a profound impact on the industrial structure of the two countries. The empirical observation that the growth performance of China is strongly linked to the manufacturing sector, while that of India is linked to the services sector, is well established in the literature.<sup>8</sup>

Figure 9: Service and manufacturing labour productivity growth, 1991–2005

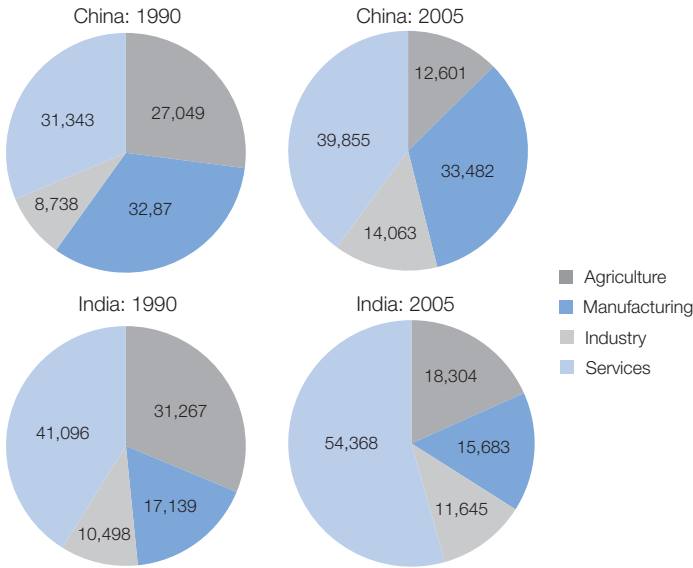


Source: Ghani (2011)

As Figure 9 on page 13 illustrates, China has experienced strong labour productivity growth in manufacturing, while for India productivity growth in manufacturing is effectively zero over the 1991–2005 period. The net result of these differential growth patterns in productivity are revealed in the industrial structure of the two countries.

Figure 10 shows that over the 1990–2005 period China's manufacturing and industrial sectors have either maintained a constant share of GDP or, arguably, have even gained as a proportion of total GDP (primarily at the expense of Agriculture). By contrast, in India the share of GDP that has grown most dramatically has been that of the service sector – with services contributing more than 50 per cent of GDP by the mid-2000s.

Figure 10: China and India: Industry composition, 1990–2005



Source: World Development Indicators

### 3.2 A direct consideration of the growth impact of industrial conduct

The implication of the evidence on the Chinese and Indian manufacturing sectors is that differences in industry mark-ups can come to carry long-term implications for industrial structure. Specifically, the suggestion is that lower mark-ups in Chinese manufacturing supported productivity growth in its



manufacturing sector, which explains the much larger manufacturing base of China relative to India.

In this section I consider more direct evidence on this linkage and do so directly on South African evidence. On the basis of the evidence a symmetrical point to that made for China and India can be made for the South African case.

Two separate studies have explored the impact of the mark-up on productivity growth for the South African manufacturing sector. Both have found the impact to have been not only statistically significant, but substantively large.

In Aghion et al. (2008) the focus of the study was directly on whether the size of the mark-up, computed annually on a three-digit manufacturing sector basis, had an impact on productivity growth (as measured by  $TFP$  growth). The study finds that it does, with coefficients ranging from -0,12 for the full 1970–2004 sample period, to -0,2 for the 1988–2004 sub-sample, and with the finding robust to controlling for possible endogeneity of the mark-up to productivity growth.

One concern with the results of the Aghion et al. (2008) study was that it did not control explicitly for trade liberalisation (though it included fixed and time effects), while estimating the impact of the mark-up on productivity growth over a period in which South Africa liberalised its trade dispensation, such that the growth impact derived in the study may be overstated.<sup>9</sup> Aghion et al. (2012) therefore control for both direct and indirect impacts of the level of trade protection (measured by effective and nominal protection rates), and tests whether the growth impact of pricing power (the mark-up) is in any way affected. The findings of the study are that the coefficient on the mark-up ranges between -0,18 and -0,2 once a comprehensive set of direct and indirect impacts of trade protection is controlled for in estimation.

The inference is that the growth impact is certainly no lower and is potentially up to twice as large in estimations that control for trade liberalisation, relative to those that do not. Specifically, the inference is that an increase in the mark-up of 10 percentage points would result in an annual productivity growth loss of between 1 and 2 percentage points.

The implied long-term impact on the South African economy is dramatic.

To illustrate the point, consider how South Africa's industrial structure might have differed if over the 1970–2004 period it had successfully lowered the level of the mark-up in its manufacturing industries. I noted at the outset of this paper that South Africa's industrial structure was unusual

for a developing country – with the primary and manufacturing industries contributing considerably smaller proportions of GDP than did services, and with declining trends over time (recall Table 1). By the end of the 2000s the proportion of GDP contributed by manufacturing had declined to approximately 15 per cent. In effect, South Africa's industrial structure looks more like that observed for India, than that noted for China in Figure 10.

Now consider the impact of the lower-bound estimate of the productivity growth impact of the mark-up (the 1 per cent impact of a 10 percentage point lowering of the mark-up) under two alternative scenarios. In the first, I allow the mark-up to be consistently 10 percentage points lower than the average 54 per cent mark-up reported in the Aghion et al. (2008) study over the 1970–2009 period, thereby generating a growth rate that is consistently 1 percentage point higher for the manufacturing sector.<sup>10</sup> This can be thought of as lowering the magnitude of the manufacturing sector mark-up in South Africa roughly half-way from the level found by Aghion et al. (2008) for South Africa to that I reported above for the Chinese manufacturing sector (of approximately 30 per cent). The implied impact on the South African industrial structure is noted in Table 3.<sup>11</sup>

Second, I allow the mark-up to be consistently 20 percentage points lower than the Aghion et al. (2008) 54 per cent level over the 1970–2009 period, thereby generating a consistent 2 percentage point gain in productivity growth for the manufacturing sector. This can be thought of as lowering the magnitude of the manufacturing sector mark-up in South Africa from the level found by Aghion et al. (2008) for South Africa approximately to that I reported above for the Chinese manufacturing sector (30 per cent). The implied impact on the South African industrial structure is also noted in Table 3.

Under either scenario, the structure of the South African economy would have been markedly different from that actually observed. Under scenario 1, with a 10 percentage point lowering of the mark-up, the share of manufacturing sector in total South African GDP by the close of the 2000s approximates 30 per cent (see the share of manufacturing under Manufacturing: Simulated in Table 3). Under the more aggressive scenario in which mark-ups are lowered by 20 percentage points manufacturing's share in GDP approximates 40 per cent. In effect, South Africa's industrial structure would be more akin to the Chinese than to the Indian case. What is more, the implied growth impact on the economy is substantial.

**Table 3: Sectoral share of GDP under growth simulation**

1 per cent growth scenario simulation

	Primary*	Manufacturing	Electricity, gas, water and construction	Private service sectors	Community and social services	General government	Manufacturing Actual
1970–74 .....	0,16	0,17	0,06	0,29	0,20	0,13	15,53
1975–79 .....	0,13	0,20	0,05	0,29	0,21	0,13	16,36
1980–84 .....	0,11	0,22	0,05	0,29	0,20	0,13	17,38
1985–89 .....	0,10	0,26	0,04	0,27	0,20	0,13	16,49
1990–94 .....	0,09	0,29	0,04	0,26	0,20	0,13	15,42
1995–99 .....	0,08	0,30	0,04	0,27	0,20	0,12	15,25
2000–04 .....	0,07	0,30	0,04	0,30	0,18	0,10	15,35
2005–09 .....	0,06	0,29	0,04	0,33	0,18	0,10	14,73
2 per cent growth scenario simulation							
1970–74 .....	0,16	0,19	0,05	0,28	0,20	0,12	15,53
1975–79 .....	0,12	0,25	0,05	0,27	0,19	0,12	16,36
1980–84 .....	0,10	0,31	0,04	0,25	0,18	0,11	17,38
1985–89 .....	0,09	0,37	0,04	0,23	0,17	0,11	16,49
1990–94 .....	0,07	0,41	0,03	0,21	0,17	0,10	15,42
1995–99 .....	0,06	0,43	0,03	0,22	0,16	0,10	15,25
2000–04 .....	0,06	0,44	0,03	0,24	0,15	0,08	15,35
2005–09 .....	0,05	0,43	0,03	0,26	0,14	0,08	14,73

\* Primary denotes agriculture, forestry, fishing and mining

In Table 4 I note the difference between actual South African GDP and that implied by the two alternative growth scenarios under a lower mark-up structure in manufacturing. Under either scenario the impact over the past 40 years is substantial – even under the moderate mark-up reduction scenario, aggregate GDP is found to be 21 per cent higher, while under a reduction of mark-ups to Chinese levels, the implication is that GDP would have been 50 per cent higher. The implication of these findings is thus that the structure of mark-ups of prices over the cost of production carries with it direct implications for productivity growth. Using the established findings of the magnitude of this growth impact, and simulating the counterfactual scenario of higher productivity growth in South Africa's manufacturing sector over the 1970–2009 period, demonstrates that one possible reason for the

unusual industrial structure in South Africa that I noted in the introduction may well be due to the high levels of pricing power found in the South African manufacturing sector.

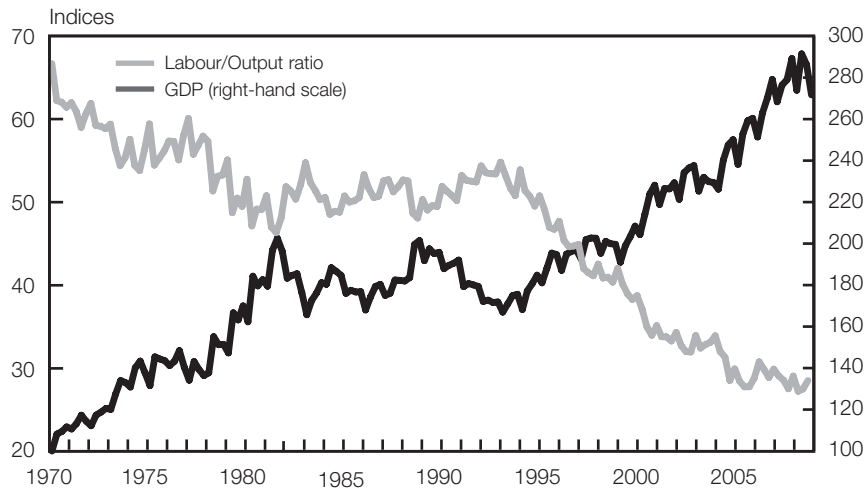
Table 4: Growth impact of lower manufacturing sector mark-ups

	1 per cent growth scenario	2 per cent growth scenario
Actual GDP (R millions) .....	314 814	314 814
Simulated GDP (R millions) .....	381 695	476 443
Percentage simulated GDP higher .....	21	51

3.3 The labour market impact

To mirror the output market simulations, I also consider the possible impact of lower levels of pricing power in the manufacturing sector on employment. I consider only the impact of the lower-bound growth stimulus from lower pricing power (the 1 per cent estimate). Production in the South African manufacturing sector has been significantly labour-saving, particularly since 1990. Figure 12 illustrates. For this reason, I adjust the higher output growth implied by lower pricing power in the manufacturing sector, for the underlying growth in the labour-to-output ratio.

Figure 12: South African manufacturing sector output and labour: Output ratio index series



Source: SARB data

The resultant employment series for the manufacturing sector is reported in Table 5. While employment under the simulation falls below actual manufacturing sector employment during the 1970s, during the second half of the sample period through the end of the 2000s this is reversed. Even taking into account the falling labour to output ratio, the higher growth rate associated with lower pricing power in manufacturing implies a level of employment that is twice that actually observed by 2009. As Table 5 also clarifies, under the projected additional employment creation in manufacturing due to higher output growth under lower mark-ups, the distribution of employment across sectors of the economy would also have deviated substantially from that actually observed. Instead of manufacturing employment declining to approximately 20 per cent of total employment by 2005–2009 (see Table 2), under the higher growth scenario the projections suggest that more than 30 per cent of employment would have remained in manufacturing.

**Table 5: Actual and simulated manufacturing sector employment**

	Actual	Additional 1 per cent growth less labour/output adjustment	Per cent deviation of simulated from actual	Sectoral composition (simulated)					
				Mining	Manufacturing	Construction	Trade	Financial	Public sector
1970–74 .....	1 178 091	1 080 670	-8	0,19	0,31	0,11	0,05	0,03	0,31
1975–79 .....	1 327 987	1 221 690	-8	0,17	0,31	0,10	0,05	0,03	0,35
1980–84 ....	1 503 747	1 359 980	-10	0,17	0,30	0,09	0,04	0,03	0,35
1985–89 ....	1 536 281	1 666 681	8	0,16	0,33	0,08	0,04	0,03	0,35
1990–94 ....	1 535 957	2 068 919	35	0,13	0,39	0,07	0,04	0,04	0,34
1995–99 ....	1 406 340	2 200 818	56	0,10	0,43	0,06	0,04	0,04	0,34
2000–04 ....	1 262 142	2 308 307	83	0,08	0,42	0,05	0,05	0,12	0,29
2005–09 ....	1 275 508	2 564 279	101	0,07	0,35	0,06	0,06	0,24	0,23

I also considered the implications for the unemployment rate in South Africa, and note the results in Table 6. Using the actual unemployment rates reported in Banerjee et al. (2008) over the 1995–2005 period, I considered what the additional manufacturing-sector employment that emerges under my additional 1 per cent growth simulation scenario would have implied for the aggregate unemployment rate in South Africa, under the assumption that the additional employment would have left employment in other sectors

unaffected. The net result is that the narrow unemployment rate would have peaked at approximately 13 per cent in 2000 and would have declined to 10,5 per cent (simulated) rather than the observed value of 26,7 per cent by 2005. The broad unemployment rate would still have been substantial, peaking at 29 per cent but, nonetheless, by 2005 it would have stood at 28 per cent (simulated) rather than the 41 per cent actually observed. In short, while unemployment would have continued to be a substantial concern for the economy, its implied magnitude is considerably lower under the projected additional output growth due to lower pricing power in manufacturing.

**Table 6: Actual and simulated unemployment rates**

	Actual		Simulated	
	Narrow	Broad	Narrow	Broad
1995 .....	15,6	28,2	3,1	17,6
1997 .....	22,1	38	8,6	27,3
1999 .....	24,85	39,9	7,6	26,1
2001 .....	30,3	42,5	12,9	28,1
2003 .....	28,6	42,5	12,1	29,2
2005 .....	26,7	41,1	10,5	28,1

The labour market impact of pricing power in the manufacturing sector does not end here, however. In Fedderke and Hill (2011) we demonstrated that the size of the mark-up and labour market flexibility were linked by means of:

$$\frac{1}{1-\alpha} \left( \frac{\Delta \log \mu - ((\Delta q + \Delta p) - \Delta \omega)}{\bar{\mu}} - \alpha \Delta l \right) = \left( \frac{1}{\sigma} - 1 \right) \Delta k - \frac{1}{\sigma} \frac{L}{L - \bar{L}} \Delta l$$

where  $\sigma$  denotes the elasticity of substitution between capital and labour,  $Q$ ,  $L$ , and  $K$  denote real value added, labour, and capital input,  $\alpha$  is the labour share in value-added,  $\mu = P/MC$ , with  $P$  denoting price, and  $MC$  denoting marginal cost,  $\bar{\mu}$  the steady-state mark-up, and  $W$  denotes the wage rate. Lower case notation denotes log transforms, and  $\Delta$  the first difference operator.  $L / (L - \bar{L})$  is the ratio of total labour employed ( $L$ ) to the employed labour that is not associated with rigidities in the labour market ( $L - \bar{L}$ ), such that  $L$  denotes employment associated with labour market rigidities. Then  $L / (L - \bar{L})$  can be interpreted as an indicator of the degree of downward rigidities in labour adjustment. Its plausible range is from unity (indicating no rigidity) to infinity (complete rigidity); for example, a value of two means that of the total labour employed, half is associated with rigidities in the labour market. Simple manipulation then gives:

$$\frac{L}{L-\bar{L}} = \left[ \frac{((\Delta q + \Delta p) - \Delta \omega) \sigma}{\bar{\mu} (1 - \alpha) \Delta l} + \frac{(1 - \sigma) \Delta k}{\Delta l} - \frac{\sigma \alpha}{1 - \alpha} \right] - \left[ \left( \frac{\sigma}{1 - \alpha} \right) \left( \frac{1}{\Delta l} \right) \right] \left( \frac{\Delta \log \mu}{\bar{\mu}} \right)$$

indicating that pricing power and labour market rigidity are inversely related. The intuition is that with rising pricing power, for any given level of rigid labour input,  $\bar{L}$ , the ability to price above marginal cost of production allows a more ready expansion of flexible labour input into production (since firms have enhanced capacity to pass on costs) and, hence, a fall in the index of labour market inflexibility  $L / (L - \bar{L})$ . Conversely, as competitive pressure on output markets increases, for a given level of rigid labour input, the willingness of firms to employ flexible labour input declines (since there is reduced capacity to pass on the cost) and, hence, the index of labour market inflexibility rises.

Table 7: Labour market inflexibility

Period	Inflexibility index	Per cent inflexible
1972–86 .....	4,25	77
1973–87 .....	3,58	72
1974–88 .....	3,09	68
1975–89.....	2,76	64
1976–90 .....	2,58	61
1977–91 .....	2,51	60
1978–92 .....	2,55	61
1979–93 .....	2,66	62
1980–94 .....	2,84	65
1981–95 .....	3,05	67
1982–96 .....	3,28	70
1983–97 .....	3,51	72
1984–98 .....	3,72	73
1985–99 .....	3,89	74
1986–00 .....	3,99	75
1987–01 .....	4,01	75
1988–02 .....	3,93	75
1989–03 .....	3,72	73

The result from Fedderke and Hill (2011) was that the measure of labour market inflexibility,  $L / (L - \bar{L})$ , in South Africa has been rising over the 1970–2004 period. In Table 7 I report the values of the  $L / (L - \bar{L})$  index found in that study and the implied proportion of the labour force that is subject

to rigidities. The implication is that the proportion of the labour force in manufacturing that has been subject to rigidities has consistently been in the 60–75 per cent range. What is more, while there is some evidence of cyclical variation, and increases in labour market inflexibility towards the end of the sample, there is no evidence of a consistent trend downwards or upwards over the whole sample – consistent with the findings of a constant mark-up reported in Aghion et al. (2008).

A further implication of these findings is that a reduction of the pricing power of industry, in the absence of any lowering of employment associated with rigidities ( $\bar{L}$ ), would serve to raise the proportion of labour that is subject to inflexibilities further, by decreasing  $L$  in relation to  $\bar{L}$ . In Table 8 I detail the impact of incrementally reducing the level of the mark-up from the average found in the Aghion et al. (2008) study in the South African manufacturing sector (0,54), through the range of values to the level of the mark-up found in China (0,34). I consider the impact both for the value of  $\sigma$  actually found in the data (0,875) for South Africa, as well as the higher elasticity value associated with standard Cobb–Douglas production technology under constant returns to scale (1). I also consider the impact both under a labour share in value added of 0,5, and a share of 0,7.

The implication of the simulations is that, in the absence of labour market reform that would serve to change employment associated with rigidities (i.e., which would leave  $\bar{L}$  unchanged), the reduction in the mark-up would be associated with an increase in the labour market inflexibility index from 3,72, the actual value found by Fedderke and Hill (2011) for the 1989–2003 period, to a minimum of 6,1, and a maximum of 8,26. This range of values of the labour market inflexibility index implies a proportion of the total labour force subject to inflexibilities between 84 and 88 per cent.

Given that the falling pricing power of industry is associated with lower employment of flexible labour input (thereby raising the proportion of the labour force that is subject to inflexibilities), the implication is further that the decline in the mark-up of price over marginal cost of production will be associated with job losses in the manufacturing sector. Again, Table 8 details the magnitude of these losses, under the alternative assumptions concerning  $\sigma$  and  $\alpha$ . I find that for the full reduction in the mark-up from 0,54 to 0,34, job losses would range between approximately 185 000 and 242 000, equivalent to 13 per cent and 17 per cent of average total manufacturing employment for the 1989–2003 period, or 15 per cent and 19 per cent of actual employment at the close of 2008.



Table 8: Labour market inflexibility impacts and employment losses under mark-up reductions

$\sigma$ :	0,875				0,875				1				1			
	Inflexibility index	Inflexibility (Per cent)	Employment losses	Inflexibility index	Inflexibility (Per cent)	Employment losses	Inflexibility index	Inflexibility (Per cent)	Employment losses	Inflexibility index	Inflexibility (Per cent)	Employment losses	Inflexibility index	Inflexibility (Per cent)	Employment losses	Inflexibility index
$\alpha$ :	0,5	0,7												0,7		
$\tilde{\mu}$ :	0,34	0,34												0,34		
$\mu$ :																
0,54 ...	3,72	73		3,72	73		3,72	73		3,72	73		3,72	73		
0,53.....	3,82	74	19 178	3,88	74	19 178	3,83	74	19 178	3,83	74	19 178	3,90	74	19 178	
0,52.....	3,91	74	19 178	4,04	75	37 845	3,94	74	19 178	3,94	74	19 178	4,09	76	56 021	
0,51.....	4,01	75	37 845	4,21	76	56 021	4,06	75	37 845	4,06	75	37 845	4,28	77	73 725	
0,50.....	4,12	76	56 021	4,38	77	73 725	4,17	76	56 021	4,17	76	56 021	4,47	77	73 725	
0,49.....	4,22	76	56 021	4,55	78	90 974	4,29	77	73 725	4,29	77	73 725	4,67	78	90 974	
0,48.....	4,33	77	73 725	4,73	79	107 787	4,41	77	73 725	4,41	77	73 725	4,87	79	107 787	
0,47.....	4,33	77	73 725	4,91	79	107 787	4,54	78	90 974	4,54	78	90 974	5,08	80	124 180	
0,46.....	4,55	78	90 974	5,10	80	124 180	4,66	78	90 974	4,66	78	90 974	5,29	81	140 168	
0,45.....	4,66	78	90 974	5,28	81	140 168	4,79	79	107 787	4,79	79	107 787	5,51	82	155 766	
0,44.....	4,77	79	107 787	5,48	82	155 766	4,92	79	107 787	4,92	79	107 787	5,73	83	170 988	
0,43.....	4,89	79	107 787	5,67	83	170 988	5,06	79	107 787	5,06	79	107 787	5,95	83	170 988	
0,42.....	5,01	80	124 180	5,88	83	170 988	5,20	80	124 180	5,20	80	124 180	6,18	84	185 848	
0,41.....	5,14	80	124 180	6,08	84	185 848	5,34	81	140 168	5,34	81	140 168	6,42	85	200 358	
0,40.....	5,26	81	140 168	6,29	84	185 848	5,49	82	155 766	5,49	82	155 766	6,66	85	200 358	
0,39 ...	5,39	81	140 168	6,51	85	200 358	5,63	83	170 988	5,63	83	170 988	6,91	86	214 530	
0,38 ...	5,53	82	155 766	6,73	85	200 358	5,79	83	170 988	5,79	83	170 988	7,17	86	214 530	
0,37.....	5,67	83	170 988	6,96	86	214 530	5,94	83	170 988	5,94	83	170 988	7,43	86	14 530	
0,36 ...	5,81	83	170 988	7,20	86	214 530	6,11	84	185 848	6,11	84	185 848	7,70	87	228 377	
0,35 ...	5,95	83	170 988	7,44	86	214 530	6,27	84	185 848	6,27	84	185 848	7,97	88	241 909	
0,34 ...	6,10	84	185 848	7,69	87	228 377	6,44	85	200 358	6,44	85	200 358	8,26	88	241 909	

The magnitude of these job losses, under the reality of labour market inflexibility in South Africa, may provide the political economy explanation of why pricing power in the manufacturing sector has not been more aggressively pursued by South African policy-makers.

Finally, note that there is a further set of implications that are relevant to policy interventions designed to stimulate employment growth. Fedderke (2012) shows that under a simple growth model in which the production function is homogeneous of degree one, in which equilibrium labour demand sets the marginal product of labour equal to the real wage, and in which labour supply responds to the wage and structural conditions in the labour market:

$$\eta_{NY} = \frac{\varepsilon_{NW}^s \zeta_{NK} \varepsilon_{KY}}{1 - \varepsilon_{NW}^s \zeta_{NN}}$$

$$\eta_{WY} = \frac{\zeta_{NK} \varepsilon_{KY}}{1 - \varepsilon_{NW}^s \zeta_{NN}}$$

where  $\varepsilon_{NW}^s$  denotes the labour supply elasticity with respect to the real wage,  $\zeta_{NK}$  denotes the elasticity of the marginal product of labour with respect to capital,  $\zeta_{NN}$  denotes the elasticity of the marginal product of labour with respect to labour,  $\eta_{NY}$  denotes the employment elasticity with respect to output,  $\eta_{WY}$  denotes the wage elasticity of output growth, and  $\varepsilon_{KY}$  denotes the elasticity of output with respect to capital.

The point is that the elasticity relations associated with the labour market are interdependent, so that findings on one elasticity carry implications for the remaining elasticities that relate to the labour market.

Specifically:

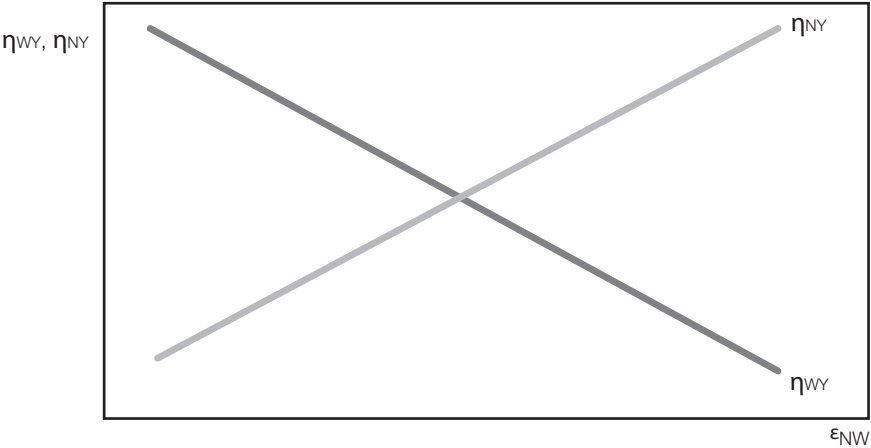
$$\frac{\partial \eta_{NY}}{\partial \varepsilon_{NW}^s} = \frac{\zeta_{NK} \varepsilon_{KY}}{(1 - \varepsilon_{NW}^s \zeta_{NN})^2} > 0$$

$$\frac{\partial \eta_{NY}}{\partial \varepsilon_{NW}^s} = \frac{\zeta_{NK} \varepsilon_{KY} \varepsilon_{NW}^s \zeta_{NN} - \zeta_{NK} \varepsilon_{KY}}{(1 - \varepsilon_{NW}^s \zeta_{NN})^2} < 0$$

$$\text{given } \zeta_{NK} > 0, \varepsilon_{KY} > 0, \zeta_{NN} < 0, \varepsilon_{NW}^s > 0$$

as illustrated in Figure 13.

Figure 13: Labour market elasticity interactions



For my purposes, the interdependencies are relevant in terms of inferring plausible means of stimulating employment creation.

Consider first the implications of the current existing condition of the existence of strong pricing power in output markets. In the presence of a high mark-up (without changing labour market rigidities), the implication is that the labour market has a relatively high proportion of variable cost labour ( $L / (L - \bar{L}) \rightarrow 1$ , which suggests that the elasticity of employment with respect to output is relatively high ( $\eta_{NY}$  is relatively high). Evidence supporting this inference is evident from Figure 14, showing the employment response in South Africa to the downturn in output following the sub-prime financial crisis of 2007/8. The evidence shows that South African output was negatively impacted by the international financial crisis of 2007, with a decline in real output from the middle of 2008 through the middle of 2009. The decline in real aggregate output in South Africa was of the order of 1,5 per cent, while aggregate employment fell by 6,7 per cent. The inference of a high elasticity of employment with respect to output is thus consistent with the evidence. It now follows that if  $\eta_{NY}$  is relatively high, then the elasticity of labour supply with respect to the wage ( $\epsilon_{NW}^S$ ) must also be relatively high, while the responsiveness of wages to changes in output ( $\eta_{WY}$ ) is relatively low (Figure 15 illustrates this).

Figure 14: Employment and output in South Africa

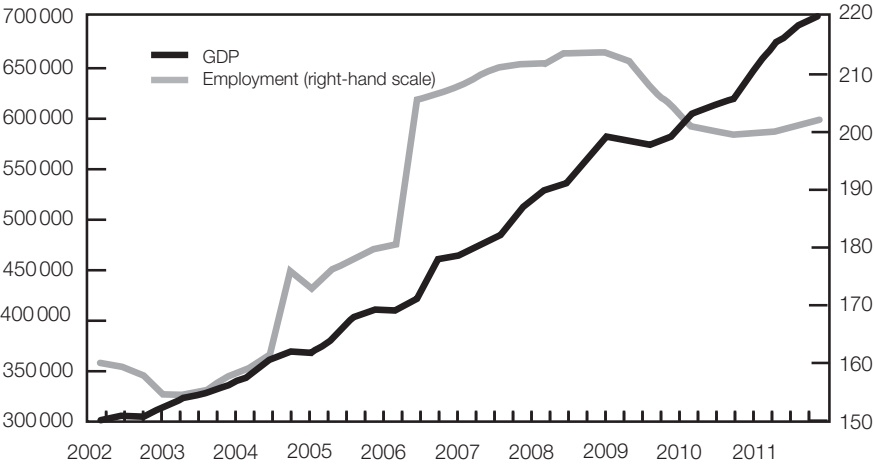
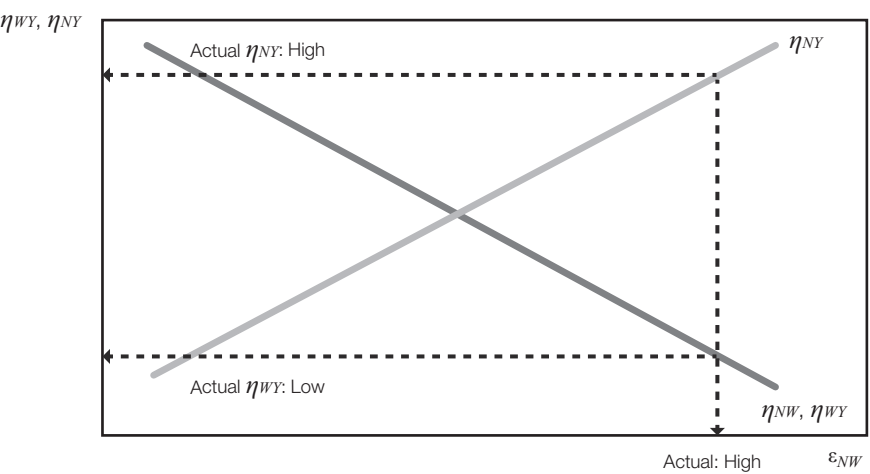


Figure 15: Actual labour market elasticities

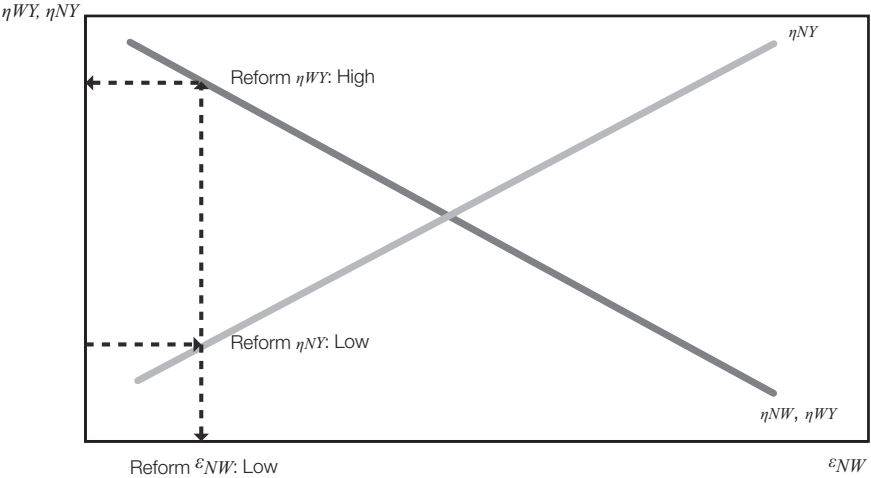


Under these conditions, efficient policies focused on job creation should favour economic growth, since employment responds relatively strongly to economic growth, growth does not generate excessive wage pressure, while labour supply responds strongly to whatever wage increases do emerge.

Now consider the implications of *lowering* the strength of pricing power in South African industry (again without changing labour market rigidities,  $\bar{L}$ ). With reduced pricing power, the labour market has a relatively low proportion

of variable cost labour ( $L/(L-\bar{L}) \rightarrow \infty$ , which suggests that the elasticity of employment with respect to output is relatively low ( $\eta_{NY}$  is relatively low). It now follows that if  $\eta_{NY}$  is relatively low, then the elasticity of labour supply with respect to the wage ( $\epsilon_{NW}^S$ ) must also be relatively low, while the responsiveness of wage to changes in output ( $\eta_{WY}$ ) is relatively high. Figure 16 illustrates.

Figure 16: Labour market elasticities under lowered pricing power



Under the conditions of lowered pricing power (and continued labour market rigidity), policies likely to be efficient at creating employment growth will be changed from those that would be appropriate under high pricing power. Since employment does *not* respond significantly to economic growth, while economic growth generates upward pressure on real wage costs without much of a labour supply response, the policy recourse would be one of moderating real wage growth, or conceivably lowering real wages.

### 3.4 Some preliminary conclusions

In this section of the paper I have considered in some detail the possible consequences of maintaining lower pricing power in manufacturing industry.

I noted that lower pricing power is associated with higher productivity growth. Both international evidence (China and India), and the concrete evidence available for South Africa on the magnitude of the growth impact, suggests that if South Africa had maintained lower pricing power in its manufacturing, both the absolute and the relative size of manufacturing in South Africa would have been substantially larger than it actually was by the close of the 2000s.

What is more, even when taking into account significant labour-saving trends in the manufacturing sector, the additional output growth would nevertheless have generated significant employment. Again, the impact would have been both in absolute terms and in terms of the relative contribution of manufacturing to total employment.

However, I also noted significant caveats to these findings. Reductions in pricing power in manufacturing sector output markets, without changing the extent to which employment is subject to rigidities, would necessitate a shift in policies targeted at employment creation from output growth-generating policies, to policies that emphasise wage restraint, and possibly real wage reductions.

It follows that such policy is likely to face significant political economy constraints. This may provide one account for the relative absence of policies in South Africa targeted at reducing pricing power on the part of producers.

#### 4. Policy and pricing power

The implication of the discussion thus far is that there are significant benefits that follow from the promotion of competitive pressure, thereby limiting the pricing power of producers.

This is austere medicine, embracing a Schumpeterian view of economic development that emphasises a relentless pursuit of efficiency, and the acceptance of the inevitability that growth will be associated with creative destruction that eliminates inefficient producers and allows the entry of new producers that replace established firms.

In this section I consider three possible limits to the need to promote competitive pressure on industry. First, I consider whether there is evidence to suggest that new start-ups are more fragile than established firms, and thus would stand to benefit from a higher mark-up of price over marginal cost as they become established. Second, I consider whether there is any evidence that might suggest that high domestic mark-ups (and industry concentration) improve the ability of firms to export more successfully. Third, I explore the question of whether there is any conceivable role for industrial policy.

Finally, I also turn to the question of whether there are any macroeconomic policy implications from my findings.

## 4.1 Does it harm new firms?

One concern with any policy intervention designed to lower pricing power in industry is that it might destroy the viability of new start-ups.

Entry, growth and the establishment of a new venture might require rates of return that compensate entrepreneurs for risk-taking behaviour. Such arguments are often invoked in order to justify industrial policy designed to maintain high rates of return for new ventures, to maintain rates of return for sectors or firms that are experiencing failing viability and in lieu of raising competitive pressure on industry.

Such concerns appear plausible. To investigate whether they receive empirical support, consider evidence on the magnitude of mark-ups maintained by firms in a successful manufacturing sector, but which accounts for the fact that there is both entry and exit during the sample period. Having data on both entry and exit of firms allows me to differentiate among a range of firm types. It allows me to identify *stable* firms that are present from the outset of the sample period, and remain present at the end of the sample period. It allows for the identification of all firms that fail and, hence, exit during the sample period, irrespective of whether they were previously established in the industry or not. It also allows for the isolation of firms that both enter their industry, but then fail before the close of the sample period – in effect *start-up ventures that fail*. This can distinguish *new ventures* that fail, from those that succeed, in the sense that they enter their industry in the sample period, and stay until the close of the sample.

To do so, return to the sample of Chinese manufacturing firms, over the 1998–2008 period, and re-estimate under equation (5), and distinguish between the following classes of firms:

- All firms: All firms observed in the sample, regardless of whether they were continually present, entered or exited during the sample period. This provides a sample total of 373 558 firms for a total of 1 178 670 observations.
- Stable firms: Firms that were continually present in the sample, that is, that neither entered, nor exited during the sample period. This provides a sample total of 20 850 firms, for a total of 172 024 observations.
- Failing firms: All firms that exited at any point in the sample period, irrespective of whether they were previously established in the industry or not. This provides a sample total of 130 739 firms for a total of 308 781 observations.

- Start-ups that fail: Firms that enter their industry, but exit before the close of the sample period. This provides a sample total of 43 459 firms, for a total of 76 947 observations.
- New ventures that succeed: Firms that enter their industry and do not exit before the close of the sample period. This provides a sample total of 171 645 firms, for a total of 454 740 observations.
- Firms that were present during the first half (1998–2003) of the sample period. This provides a sample total of 86 605 firms for a total of 155 510 observations.

Results are reported in Table 9, with  $\mu - 1$  denoting the estimated magnitude of the mark-up.

**Table 9: Mark-ups in Chinese manufacturing industry across firms that entered and exited: All estimations include fixed, time and industry effects**

	(1)	(2)	(3)	(4)	(5)	(6)
	Firms always present No entry or exit	All firms in sample	Exiting firms only	Firms present 1998– 2003	Firms that entered and exited	Firms that entered and stayed
$\mu - 1$ .....	0,14*** (0,0064)	0,20*** (0,0021)	0,21*** (0,0040)	0,25*** (0,0060)	0,21*** (0,0082)	0,22*** (0,0040)
R2 .....	0,16	0,16	0,11	0,08	0,15	0,19
# Firms.....	20 850	373 558	130 739	86 605	43 459	171 645
N .....	172 024	1 178 670	308 781	155 510	76 947	454 740

Figures in round parentheses denote standard errors, \*\*\* and \*\* denote significance at the 1 per cent and 5 per cent level respectively

These findings do not support any suggestion that new ventures require special support, by virtue of experiencing a lower rate of return on their capital; on the contrary, firms in the Chinese manufacturing sector that were established, and remained in continued existence throughout the sample period, had a mark-up of only 14 per cent. This is considerably lower than the mark-up of firms that exited during the sample period, which report an estimated mark-up of 21 per cent, regardless of whether they exited during the sample period, or both entered and exited during the sample period. What is more, firms that entered, and were successful in the sense that they



did not exit during the sample period, recorded an estimated mark-up of 22 per cent that is not statistically significantly different from that estimated for firms that failed (21 per cent).

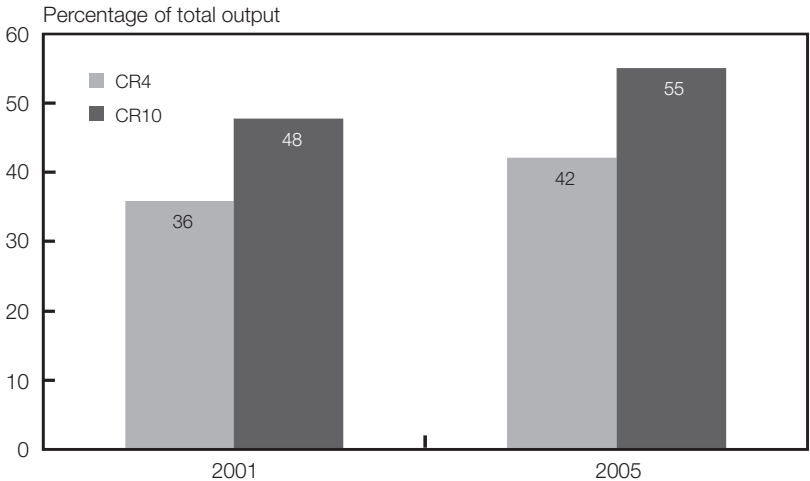
As a result, there is little evidence to suggest that new entrants require higher mark-ups (hence return on capital) in order to be successful.

#### 4.2 Industry structure and possible international competitiveness

But, do firms and industries that have a higher mark-up on marginal cost of production prove to be more successful in export markets?

The presence of significant pricing power in industry carries with it implications for industry structure beyond the sectoral composition of output. Specifically, it also leads to the expectation of significant industry concentration. This is confirmed by the empirical evidence, which documents rising concentration levels over the past three decades of the twentieth century.<sup>12</sup> More recent evidence from the large sample survey of manufacturing firms for 2005 confirms that the trend has continued (see the average levels of concentration as measured by the CR4 and CR10 ratios in Figure 17).<sup>13</sup>

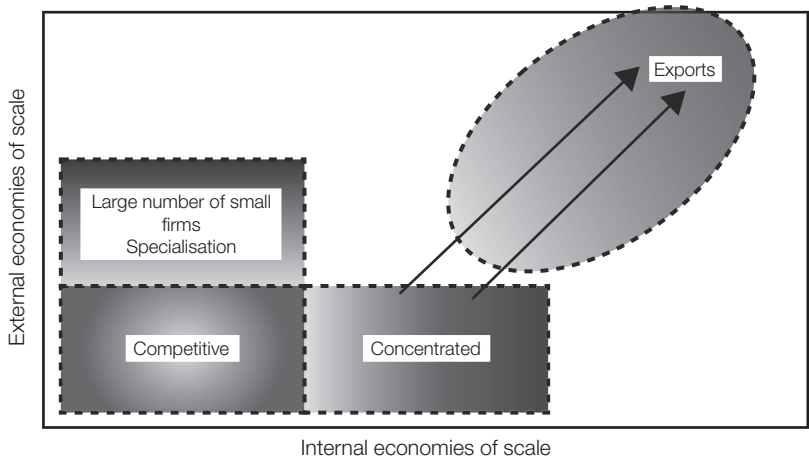
**Figure 17: Concentration ratios (CR) in South African manufacturing, 2001 and 2005**



Note: CR4 and CR10 denote the proportion of output contributed by the largest 4 and 10 firms respectively.

There is, however, an alternative account of the rising industry concentration. This would attribute rising industry concentration in South Africa to the exploitation of productive efficiencies due to *internal* economies of scale in production, which would favour large firms over small firms in efficiency terms. Combining internal scale economies with a domestic South African market that is small relative to efficient scale of production would favour the emergence of concentrated industrial structures. A small market size would also likely limit the extent to which significant *external* scale economies could be realised – with large numbers of small- to moderately sized firms servicing a relatively large market. The net implication is that a break-out by firms into a realisation of efficiencies through scale economies in countries with small domestic markets would, of necessity, require a significant focus on export markets. (Figure 18 provides an illustration of this.)

Figure 18: Internal and external scale economies and market size



Productive efficiency as a function of scale of operation due, for instance, to specialisation of capital stock, impact of setup and downtime costs, and of “learning-by-doing” effects are well documented in the literature.<sup>14</sup> Losses in allocative efficiency due to market concentration through non-competitive pricing, X-inefficiency and potential rent-seeking are, of course, foundational to any microeconomic analysis of market structure, while recent contributions have identified the possibility of negative impacts on the rate of productivity growth.<sup>15</sup> This conflict has been particularly emphasised in the context of small open economies.<sup>16</sup>

The inference drawn for policy purposes has been that for small open economies competition *per se* cannot be regarded as necessarily welfare-enhancing, such that focusing on market structure and market concentration is misleading, and that productive efficiency considerations should be the primary, perhaps sole, focus of competition policy.<sup>17</sup>

However, the evidence does not support that either the presence of pricing power or market concentration has supported the exploitation of scale economies in order to access export markets.

Table 10 reports the impact of both pricing power (as measured by the mark-up) and industry concentration as measured by the Rosenbluth Index of concentration on export, import and net export levels (controlling for output, the exchange rate, anti-export bias, fixed and time effects).<sup>18</sup> Neither pricing power nor industry concentration is statistically significantly associated with any of the trade variables – though pricing power is negatively associated with export, import and net export levels, while concentration levels are positively associated. There is thus no support for the suggestion that significant market power in the domestic market allows South African manufacturers to pursue more aggressive export strategies in international markets. If anything, the reverse is true. Moreover, the negative impact of pricing power on imports suggests that the presence of pricing power in domestic markets may prevent entry into markets by foreign producers, thereby limiting competitive pressures on domestic markets.

**Table 10: Pricing power and concentration, and trade performance; regressions control for the exchange rate, output, and anti-export bias of policy as measured by the implicit export tax**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Exports			Imports			Net exports		
$\mu - 1$	-1430,94 (2764)	–	-955,532 (3827)	-3286,89 (3090)	–	-3592,08 (3186)	-0,045 (0,245)	–	-0,067 (0,265)
CC	–	20 721,1 (2,01e+004)	19 536,9 (1,7e+004)	–	10 547,4 (2,09e+004)	6 095,71 (1,8e+004)	–	-0,846 (0,820)	-0,929 (0,937)
R <sup>2</sup>	0,56	0,60	0,60	0,31	0,34	0,35	0,16	0,24	0,24
N	368	203	203	368	203	203	368	203	203
Within	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Figures in round parentheses denote standard errors, \*\*\* and \*\* denote significance at the 1 per cent and 5 per cent level respectively

### 4.3 Is there a role for industrial policy?

A separate question concerns the issue of whether there is a role for industrial policy.

In general, economics has become very sceptical both of the feasibility and of the desirability of industrial policy – especially in terms of the ability of policy-makers to identify success *ex ante*. However, an alternative conception of industrial policy is that the role of the state is that of ensuring efficiency through the promotion of competitive pressure on industry, in order to ensure maximum efficiency in production.

To explore this possibility, consider again evidence from the Chinese manufacturing sector. The Chinese manufacturing sector is distinguished by the presence of firms that have either a significant level of state ownership of equity, or are under complete state ownership. Therefore, the estimations of the preceding section are repeated, but control both for the presence of state equity holdings, and an interaction term between the presence of state equity holdings and the term that identifies the magnitude of the mark-up. The empirical specification estimated is given by:

$$NSR_{it} = \gamma_{0i} + \gamma_1 RGR_{it} + \gamma_2 S_{it} + \gamma_3 RGR_{it} S_{it} + \varepsilon_{it} \quad (6)$$

*where*  $RGR_{it} = \alpha_{it} \cdot [\Delta(\omega + \iota) - \Delta(r + k)]$

with all notation defined as before, and with  $S_{it}$  denoting the categorical variable for any firm  $i$  in period  $t$  that is an SOE.

Results are reported in Table 9, considering evidence for stable firms, exiting firms and for successful new entrants into the market as defined for section 4.1. The findings are that state equity holdings appear to affect the behaviour of firms in the Chinese manufacturing sector significantly. In particular, state equity holdings appear to *moderate* the size of the mark-up of price over the marginal cost of production, regardless of the class of firms for which I estimate the magnitude of the mark-up.

Thus the finding is that for all firms in the sample (irrespective of entry or exit) the mark-up is 20 per cent over marginal cost of production, while for firms with state equity holdings, the mark-up is lower by 9 per cent, giving a net mark-up of 11 per cent. This is also true for established firms that are present in the sample throughout the sample period. While for all such firms the mark-up is 15 per cent, those with state equity holdings the mark-up is lower by 7 per cent, giving a net mark-up of 8 per cent.

The implication is that the role of the state in Chinese manufacturing has been such as to moderate pricing behaviour, keeping rates of return in manufacturing low (considerably below those observed in South Africa and India) in favour of output growth. What is more, the constrained pricing behaviour of firms with significant state equity holdings may have served to limit the ability of firms without state equity to impose higher mark-ups through direct competition effects.

**Table 11: Mark-ups in Chinese manufacturing industry across firms that entered and exited: All estimations include fixed, time and industry effects**

	(1)	(2)	(3)	(4)	(5)	(6)
	Firms always present No entry or exit	All firms in sample	Exiting firms only	Firms present 1998– 2003	Firms that entered and exited	Firms that entered and stayed
$\mu - 1$ .....	0,15*** (0,0067)	0,20*** (0,0021)	0,21*** (0,0040)	0,27*** (0,0060)	0,22*** (0,0085)	0,22*** (0,0033)
$(\mu - 1) \times S \dots$	-0,07 *** (0,01)	-0,09 *** (0,0062)	-0,11 *** (0,0091)	-0,11 *** (0,0154)	-0,07 *** (0,0285)	-0,01 *** (0,0236)
$S$ .....	0,03*** (0,0085)	0,02*** (0,0059)	0,02*** (0,0111)	0,02*** (0,0190)	0,02*** (0,0421)	0,02*** (0,0192)
$R^2$ .....	0,16	0,16	0,11	0,08	0,15	0,19
# Firms .....	20850	373558	130739	86605	43459	171645
$N$ .....	172024	1178670	308781	155510	76947	454740

Figures in round parentheses denote standard errors, \*\*\* and \*\* denote significance at the 1 per cent and 5 per cent level respectively

The question that then follows is whether this significant degree of policy pressure to moderate mark-ups might explain the incidence of failure in manufacturing firms. Specifically, whether those firms that have experienced failure (exiting their industry) were subject to much more severe disciplining action on the size of their mark-up than firms with state equity holdings, rendering their operation unsustainable.

The evidence does not suggest that failing firms are subject to pressure from firms with state equity holdings of such significance as to have reduced their rate of return below those of firms that remain in the sample. Thus, while all firms that exited had an average mark-up of 21 per cent, and those that exited and had state equity holdings had a mark-up 11 per cent lower and, hence, with a net mark-up of 10 per cent, this is not statistically distinct

from the 11 per cent net mark-up for all firms in the sample, and above the 8 per cent net mark-up for established firms. For firms that both entered and exited in the sample period, the evidence suggests that the mark-up lay above that of all firms in the sample – on average, the mark-up for start-ups that exit is 22 per cent, while those firms with state equity holdings the net mark-up is 7 per cent lower, or 15 per cent in net terms – no lower than the average for established firms. Failing firms thus do not appear to have either lower rates of return, nor do they seem to have been subject to particularly strong pressure from the state to keep their mark-ups low.

However, I do find that for firms that are successful new ventures (enter the sample, and do not exit), the average mark-up is higher than for established firms (22 per cent versus 15 per cent), but also that there is no evidence of statistically significant downward pressure on the mark-up from firms with state equity holdings. Conceivably therefore, new start-ups benefit from lower policy discipline on their pricing behaviour, until they have become established. In contrast, I also note that the level of the mark-up even for the new start-ups remains substantially below the level of the mark-up reported for South Africa (54 per cent as a lower bound, 77 per cent as an upper bound), or India (98 per cent). Therefore, the extent to which the Chinese policy environment favours higher mark-ups on successful start-ups, is strictly limited.<sup>19</sup>

Thus the implication is that one form of state intervention in the Chinese manufacturing sector has been to use state equity holdings to constrain the pricing power of firms. This may be one reason for the rapid growth of Chinese manufacturing. In this rather limited sense therefore, arguably, there is a role for industrial policy: increasing the intensity of competitive pressure, limiting pricing power and thereby raising the potential for sustained productivity growth.

#### 4.4 Are there macroeconomic policy implications?

The concern in this paper with industrial conduct, its impact on industrial structure and economic growth of necessity places its focus in a more microeconomic context. Any inference for macroeconomic policy is therefore of necessity a little forced and potentially speculative. This is exacerbated by the fact that in the South African context, more detailed consideration of related evidence, given the absence of national firm level data, is at present not really possible.

Nonetheless, one way to approach this question is through a framework provided by Acemoglu and Zilibotti (1997). They present an overlapping

generations growth model, subject to uncertainty, in which the intermediate goods sector is subject to minimum size requirements (in effect a minimum scale requirement in production), which renders the realisation of specific projects in the production of intermediate goods uncertain. Savings therefore face a choice between a safe asset with certain return ( $r$ ), and risky assets associated with intermediate goods production projects subject to higher productivity and, hence, return ( $R > r$ ), but subject to uncertainty.<sup>20</sup>

Acemoglu and Zilibotti (1997) demonstrate that under these conditions a number of crucial features relevant to my discussion follow. First, the number of risky assets, hence, the production of intermediate input into production (i) increases in the rate of return on the risky assets, conversely (ii) increases as the rate of return on the safe asset falls and (iii) increases in the level of savings in the economy as a whole. A reason for the third association is that the supply of funds to cover the minimum size requirement of a greater number of risky intermediate good production projects is increased, thereby triggering the necessary investment. They show that the result generalises under the presence of financial intermediation, and the presence of international trade and capital flows.

This framework provides an account of why South Africa may have continued to observe such high mark-ups, despite liberalisation of the economy. Given the limited ability of the South African economy to generate savings (and/or attract sufficient international capital inflows), where investment is subject to minimum-scale requirements, the rate of return on capital (the mark-up over marginal cost of production) has to be high to cover the risk generated by uncertainty.<sup>21</sup>

Second, it provides a possible link to the conduct of macroeconomic policy. The immediate policy implication is to increase the supply of savings (and/or capital flows) to the economy, in order to circumvent the constraint that the high mark-ups represent for the South African economy (in growth and employment creation terms). An alternative would be to divert existing savings from safe assets, to more risky, but high, productivity assets; for instance, by lowering the interest rate on government bonds (through a lower borrowing requirement), thereby lowering the return on safe assets and diverting funds to the more risky asset class.

Finally, note that the inference that follows from the minimum-scale constraint is that policy more widely might have to focus not on small firms and start-ups, but on helping firms to grow sufficiently in order to pass the minimum-scale criterion.

## 5. Conclusions and evaluation

In this paper I explored the implications of accumulated evidence on industrial conduct in South African manufacturing sectors. I noted accumulated findings of high, persistent mark-ups of price over the marginal cost of production, both in absolute terms and in international comparative context.

Comparison of South African evidence with comparable evidence for China and India provides one possible account of the unusual industrial structure of South Africa for its level of development. Simulation exercises, based on evidence detailing the growth impact of pricing power on the South African economy, show that under reduced levels of pricing power the relative contribution of manufacturing in both output and employment terms could have been much closer to the Chinese case with its strong manufacturing sector, than what is actually observed for South Africa, which is much closer to the Indian case with a preponderance of service over manufacturing sectors.

Additional evidence confirms that higher mark-ups have not contributed significantly to export performance in South Africa. Evidence from China does not support the hypothesis that it is lower mark-ups that account for firm failure (in the sense of exit). Moreover, SOEs in China appear to have lowered mark-ups in the Chinese manufacturing sector, suggesting that one role that state intervention can play is to moderate pricing power in industry, as a means of raising productivity growth.

## Notes

<sup>1</sup> See Roeger (1995) and Oliveira Martins and Scarpetta (1999). While the mark-up was found to be considerably lower once intermediate input in production was controlled for, the findings nonetheless confirm a mark-up considerably higher than for the US.

<sup>2</sup> While I report only the net income-to-asset ratio results, note that Aghion et al. (2008) establish that symmetrical results follow for net income to sales, net income to equity, the gross margin, the market value to book asset ratio and the price earnings ratios.

<sup>3</sup> Comparative results on China and India were produced jointly with Chandana Kularatne of the World Bank.

<sup>4</sup> See, for instance, the discussion in Oliveira Martins and Scarpetta (1999).

<sup>5</sup> Trivially, 
$$\mu - 1 = \frac{\Delta(p+q) - \alpha \cdot \Delta(w+l) - (1-\alpha) \cdot \Delta(r+k)}{\alpha \cdot [\Delta(w+l) - \Delta(r+k)]}$$

While problems of endogeneity are addressed by equation (3), there is an additional difficulty arising from the assumption of constant returns to scale, and the use of value-added measures of output. Oliveira Martins and Scarpetta (1999) demonstrate that where the assumption of constant returns to scale is dropped, equation (3) is actually:



$$NSR = (\frac{\lambda}{\lambda} - 1) \cdot \alpha \cdot [\Delta(w + l) - \Delta(r + k)] \quad (4)$$

where  $\lambda > 1$  denotes increasing returns to scale. Thus any estimate of mark-up that follows from Solow residuals should be interpreted as *lower-bound* values if increasing returns to scale are present.

<sup>6</sup> Note that the mark-up reported is that estimated under fixed, but not time, effects. Once time effects are controlled for, the China mark-up is even more moderate at 14 per cent.

<sup>7</sup> Full estimation results including diagnostics are available from the author.

<sup>8</sup> See, for instance, Chaudhuri and Ravallion (2006), Rajan (2006), Pack (2008), and Bosworth and Maertens (2010). See also Kochhar et al. (2006) and the discussion of some of the reasons for the relative strength of the Indian service sector.

<sup>9</sup> This concern was expressed particularly by Rodrik (2008), who noted falling relative manufacturing prices in the South African economy. While falling relative manufacturing prices are not inconsistent with constant mark-ups of price over cost of production, it raised the question of the robustness of the findings.

<sup>10</sup> Note that I do *not* simply project a cumulative growth rate from the starting period. Instead, I consistently allow growth to be 1 per cent higher than actually observed, with a cumulative component on the additional growth in the previous period. Thus:

$$y_t^{\text{sim}} = y_t + \gamma y_t - 1 + \gamma y_{t-2} (1 + \gamma)$$

where  $y_t^{\text{sim}}$  is the simulated value of manufacturing sector GDP in period  $t$ ,  $y_t$  denotes actual GDP, and  $\gamma$  denotes the additional growth due the lower pricing power in the manufacturing sector. As such, simulated output remains tied to actual output levels more closely than under a pure cumulative growth rate from initial starting values, thereby remaining tied to the underlying structural conditions for the sector.

<sup>11</sup> Readers should note that since the simulation models the impact of the higher growth rate on manufacturing without taking into consideration the full set of forward and backward linkages between manufacturing and the rest of the economy, the simulation will likely *overstate* the impact on the industrial structure, but *understate* the growth impact.

<sup>12</sup> See Fedderke and Szalontai (2009), and Fedderke and Naumann (2011).

<sup>13</sup> The summary evidence is not driven by outlier sectors with high concentration levels. Fedderke (2010) presents evidence that confirms that the rise in concentration is general across most manufacturing sectors.

<sup>14</sup> See, for instance, the discussion in Fuss and Gupta (1981) on the former, and Arrow (1962) and Romer (1986) on “learning by doing”.

<sup>15</sup> See Aghion et al. (2004).

<sup>16</sup> For Australia see Caves (1984), on Canada see Kemani (1991), and for New Zealand see Evans and Hughes (2003). In other small and developing country contexts the conflict appears to be less fully understood as affecting competition policy (see Gal (2001) for Israel).

<sup>17</sup> See, for example, Singh and Dhumale (1999), Hoekman (2003) and Gal (2001).

<sup>18</sup> Owing to data constraints in South Africa, I do not employ the more conventional Herfindahl–Hirschman Index (H-Index). The Rosenbluth Index, defined as:

$$RI = \left\{ 2 \sum_{i=1}^n (i.ms_i) - 1 \right\}^{-1}$$

where  $ms_i$  denotes the market share of the  $i$ 'th ranked firm, and  $n$  denotes the number of firms in the market, loads on the same underlying indicators as the H-Index.

<sup>19</sup> State equity holdings under new start-ups might also be projected to be lower than in the historical firm population as a whole. This might also serve to explain the absence of a significant disciplining effect.

<sup>20</sup> Coincidentally, the model also provides a plausible account of the dual economy structure of South Africa, and of why mark-ups have proved persistent despite trade liberalisation. An alternative answer is that the unusually high intensity of regulation in the South African economy favours incumbent firms (see the evidence and discussion in Fedderke (2010)).

<sup>21</sup> This might also account for the high and rising rate of return on assets recorded for large relative to small firms that I noted in section 2 of this paper.

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# Structural constraints on economic growth and macroeconomic interactions in sub-Saharan Africa

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*Njuguna Ndung'u*

## Abstract

The objective of this paper is to show how structural constraints to economic growth interact with macroeconomic policies in sub-Saharan Africa (SSA) to reinforce a low growth trap. The slow reforms on policies and institutions, and low commodities prices in the 1980s and 1990s slowed economic performance. In the 2000s the economic performance improved in SSA on account of institutional reforms and sound economic management supported by favourable commodities prices. However, reliance on high commodity prices is a false hope for future growth due to limited economic diversification.

A literature survey reveals that SSA countries are characterised by an over-reliance on the agricultural sector with a small but growing manufacturing sector. This then produces a pattern of low savings and investment levels since the terms of trade will affect savings directly. Although, these countries are open to international trade “doing business indicators” are still a challenge. So these countries trade less and benefit little from international trade.

A simple framework to show how the binding constraints work through economic interactions is to look at Hausman, Rodrick and Velasco (2005), now commonly known as the ‘HRV framework’. The HRV framework shows that along a balanced growth path consumption and capital per capita grow at the same rate which, in turn, depends on private returns on accumulation. The private returns on accumulation rate is a function of social returns, private appropriability of returns and the cost of financing accumulation. The growth diagnostic framework identifies three binding constraints that interact to reinforce the low growth trap that most countries have experienced or are likely to fall into in future unless they are resolved. The three dimensions are: first; the low returns on private capital manifested through falling total factor productivity, weakness in the quality of public investment that undermines private-sector willingness to participate in development, poor contractual enforcement that weakens the investment

environment and debt overhang, among others. Second, the ability of firms and entrepreneurs to appropriate returns on their investments is limited by high economic distortions. Third, the cost of financing capital is inhibited given the returns and the economic distortions.

It is interesting that most literature identifies macroeconomic policy environment; macroeconomic uncertainty; human capital and regional spillover effects; external shocks; and institutional or political weaknesses as the main factors explaining growth rather than being the results of the above factors identified in the HRV framework. To overcome these challenges, the paper recommends building strong institutions to protect the markets and define the rules of the game; growth of domestic markets to encourage domestic production; macroeconomic stability, including sustainable public finances to improve the quality of public service delivery; regional integration to resolve the small markets; and prudent management of mineral wealth.

## 1. Background

The performance of SSA countries in the past three decades has attracted considerable interest. Indeed, in their dense multidisciplinary analysis involving epidemiology, demography, geography and empirical economics, Bloom and Sachs (1998) concluded that Africa was the largest and the most complex development challenge facing the world today. The complexity of the problem, as noted by Azam, Fosu and Ndung'u (2002), should make experts and policy-makers suspicious about any simple analytical proposition about African growth, and raise concern about any ready-made policy recommendation for claiming the twenty-first century.

The promising performance of African countries at independence is well documented in economic growth literature. In the three volumes of *Asian Drama* published in 1968, Gunnar Myrdal had great expectations about the performance of Africa. According to this author, Africa was promised to grow steadily along an avenue of prosperity, while Asia was doomed to remain stagnant. The subsequent 30 years taught economists to be wary of predicting growth performance for anything but the very close future. Indeed, as shown by Aryeetey et al. (2012), SSA presents the global community with the biggest challenges with poverty levels and other development indicators for the region being some of the most unattractive features of the world economy. Evidence shows that of the world's poorest countries, 33 are in SSA compared to 15 countries in Asia, and 1 country in Latin America and 1 in the Caribbean. In addition, SSA has the fastest population growth

rate, and highest youth dependency ratio arising from both high fertility rate and declining levels of infant and child mortality rates. This scenario has implications for the growth performance of SSA because high dependency is associated with low savings and investment rates, coupled with low productive capacity per capita. It is on account of these factors that the Human Development Index (HDI) shows that 32 out of the 40 countries that rank lowest are in SSA.

During the past three decades, the SSA region has witnessed poor macroeconomic outcomes as well. In the 1980s the per capita income of the region deteriorated by 0,9 per cent on account of both domestic and external factors. Indeed, the 1980s was described as a “lost decade” for SSA. The 1990s was characterised by the implementation of structural adjustment programmes in nearly all the countries in the region whose effect on macroeconomic performance was mixed. Some countries improved macroeconomic outcomes while others deteriorated. In the 2000s most countries had implemented reforms and therefore started to witness growth which, on average, yielded a growth rate of gross domestic product (GDP) per capita of 2,1 per cent, which is preliminary evidence that Africa is on its way to claiming the twenty-first century. This good performance, as pointed out by Adam, Collier and Ndung'u (2010), is on account of the progressive leadership of a new generation of policy-makers.

Although the period 2000–12 shows that some of the macroeconomic outcomes have improved, the region still lags behind other regions of the world such as Latin America and Asia. A number of factors have been identified in explaining the growth performance of Africa (see O'Connell and Ndulu 2000; Aryeetey et al. 2012). Some of the factors identified in these studies include heavy dependence on a small number of low-valued primary exports, external factors, bad policies and economic management, insecurity and political instability, social conditions, poor policies, lack of openness characterised by low level of intra-Africa trade, and low investment rates.

The rest of the paper is structured as follows: the next section reviews economic growth in SSA and compares it with that of Latin America and Caribbean (LAC) and East Asia and the Pacific (EAP). Section 3 discusses the political economy of economic growth in Africa, while section 4 details the structural constraints to economic growth in SSA and explains how to overcome them; section 5 details a neo-classical growth model; section 6 presents the results and section 7 concludes.

## 1.1 A comparative analysis of macroeconomic performance

The poor economic performance of the countries in SSA during the 1980s and the 1990s has been a matter of concern to policy-makers. The improved performance of the region in the 2000s has also attracted some interest. For us to dissect the growth outcome in the region, in this section, I detail the evolution of the key characteristics of SSA countries. In addition, I compare these characteristics with those experienced in the LAC and EAP regions. Such comparison will go a long way towards shedding light on the commonalities and diversity of economic growth episodes in these regions. In this regard, I provide a detailed account of the following: the level of dependence on the agriculture sector, size of the manufacturing sector, growth of savings and investment, and the level of interaction with the rest of the world.

### 1.1.1 Growth of per capita of GDP: 1980–2010

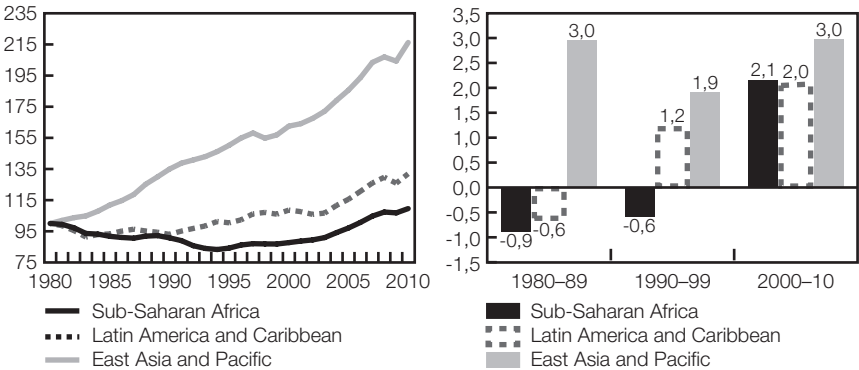
The growth performance of SSA countries has been a matter of concern. In the past three decades SSA has lagged behind in economic performance. Its growth trailed all the regions of the world: LAC and EAP. Figure 1 compares economic performance in SSA, LAC and EAP during the period 1980–2010. SSA countries' economies contracted by 0,9 per cent in the 1980s. During this period (except for 1988–1989, which posted a growth rate of 1,5 per cent and 0,4 per cent respectively) all the other years, 1980–87, posted negative growth, with the lowest decline being in 1983 of 3,74 per cent. The 1980s was declared as the lost decade for Africa. During this time, the SSA region faced a number of challenges. Most of the countries whose economies depended on primary exports of agriculture and minerals had to cope with a sharp decline in commodity prices, for example, economics such as that of Zambia, which heavily relied on copper exports, suffered poor performance when the price of copper declined in the international market. The same was true for those countries that largely depended on agricultural exports. In addition, the level of economic management was poor during this time as most of the countries on the continent had experienced coup d'états, while others were under dictatorial regimes. The size of government during this time tended to be very large compared to the size of the economy and, at the same time, these economies were under economic repression. All this put together explains why SSA countries experienced poor growth of GDP per capita. In view of the poor macroeconomic outcomes, the International Monetary Fund (IMF) and the World Bank at that time embarked on structural reform programmes in a number of countries in the region to help those



countries recover. However, evidence from different countries in SSA was mixed. Most countries posted declining economic performance and a few recorded improved macroeconomic outcomes.

The LAC countries too posted poor performance during this period: their economies contracted by 0,6 per cent with the worst performance also being at -4,3 per cent in 1983. The poor growth performance in the LAC region is attributed largely to macroeconomic instability: hyper-inflation and exchange rate depreciation, and the debt crisis in some member countries. In contrast, during this same period, EAP countries registered good performance at 3,0 per cent on average. The good performance partly reflects improvement to growth of 5,6 per cent in 1988 and 3,7 per cent posted in 1985. For the EAP region economic performance deteriorated in 1982–83 period as manifested in declines of 1,7 per cent and 1,1 per cent in 1982 and 1983 respectively.

Figure 1: Comparison of per capita growth (1980 = 100)



Source: World Bank, World Development Indicators

During the 1990s, the growth of GDP per capita in SSA still remained negative, on average. The average growth rate stood at -0,6 per cent. Except for the period 1995–97, all the other years during that period posted a negative growth rate of GDP per capita. The 1990s appear to be better for SSA compared with the 1980s. During this time most of the countries that had embraced structural adjustment programmes in 1980s had started to reap the benefits. In addition, this is the period immediately after the fall of the Soviet Union that led to a new international political and economic order. During this time, most of the countries in SSA that had followed the socialist and communist ideologies, had abandoned them in favour of market-led

policies. Moreover, multi-party democracy had started to take root in the region, thus heralding in a new style of leadership.

The LAC region, however, recovered from the poor economic show in the 1980s to record an average growth of GDP per capita of 1,2 per cent in the 1990s. Except for 1990 (-1,5 per cent), 1995 (-0,9 per cent) and 1999 (-1,1 per cent), all other years during this decade recorded positive economic growth. This may have been on account of the macroeconomic stability being witnessed in the region during the 1990s. During this period, EAP countries' growth of GDP per capita had declined to 1,9 per cent from a high of 3,0 per cent in the 1980s. The highest growth rate during this period was recorded at 3,8 per cent in 1990. In 1992 economic growth stood at 1,5 per cent, rising gradually to 3,1 per cent in 1996 before plummeting to -2,0 per cent in 1998. The poor performance during the late 1990s was largely on account of the Asian financial crisis which affected most of the countries in the region.

In the 2000s LAC, EAP and SSA recorded positive economic growth. During this period, SSA recovered to record a growth rate of 2,1 per cent, surpassing LAC which recorded a growth rate of 2,0 per cent. Except for 2009 when SSA recorded a 0,5 per cent decline, growth was positive in all the years during the decade. The available literature on economic growth on Africa (see Adam, Collier and Ndungu 2010; Aryeetey et al. 2012) attribute the good performance in Africa during this period to (i) new discoveries of mineral wealth, (ii) strong domestic demand, (iii) increase in the foreign direct investment, (iv) enhanced government expenditures directed at infrastructure, (v) regional integration initiatives and (vi) and export diversification.

The LAC region recorded an average growth of 2,0 per cent, including a decline of 2,9 per cent in 2009 as well. The negative growth in 2009 in the three regions may have been on account of the financial crisis that started in the United States of America (US). The geography and level of integration with the US may have occasioned a higher decline in growth in LAC (at -2,9 per cent) compared with EAP (at -1,3 per cent) and SSA (at 0,5 per cent).

The EAP region also recovered to post growth of GDP per capita of 3,0 per cent, despite a decline of 1,3 per cent in 2009. Nankani (2012) has explained this outcome as follows: (i) the power of following a market-driven export-led strategy, (ii) state-led reforms played the critical role and this was made possible by the non-democratic governments during certain times of the history of these countries, (iii) leadership and its ability to develop a vision and rally society around that vision, trading off short-term sacrifices in favour

of longer-term growth. Overall, during 1980–2010, it has been observed that (i) SSA grew marginally at an average rate of 0,33 per cent compared with LAC at 0,96 per cent and AEP at 2,62 per cent, and (ii) growth in SSA during the 2000s appears to be impressive and comparable to other regions at 2,1 per cent. In view of this, the question that arises is: what has changed in SSA? Has Africa claimed the twenty-first century?

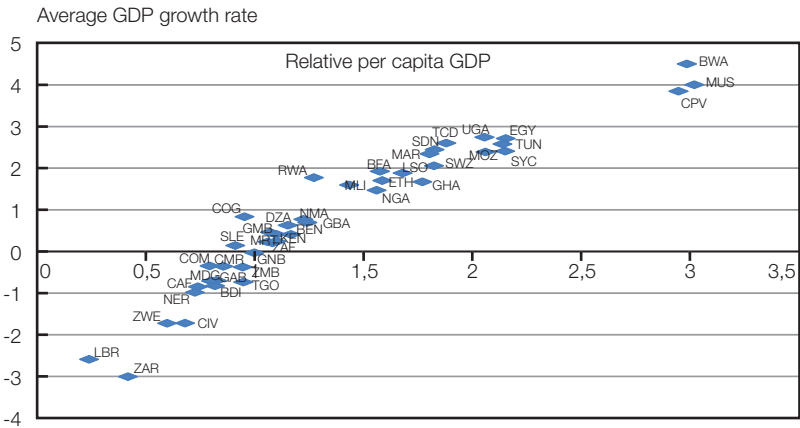
### 1.1.2 Diversity of growth in sub-Saharan Africa

SSA is a diverse region; it is endowed with the largest natural resources in the world. However, in terms of economic growth performance, the region is one of the most unattractive in the global economy. SSA recorded poor growth performance compared to the LAC and EAP countries in the 1980s–1990s. Further analysis reveals that the countries in SSA pursued different growth paths during the past three decades. Figure 2 shows the growth performance of selected countries in SSA for which data are available. These figures illustrate how countries in SSA have distinguished themselves during the period 1980–2010 in terms of the growth of their incomes. It is evident from the figure that these countries exhibited diverse growth paths.

Each country's progress in per capita income since 1982 is measured by the ratio of per capita income in 2010 to that in 1982. If the ratio is less than 1, the income per capita has deteriorated; equal to 1 if it has stagnated and more than 1 if it has progressed. Based on this, 28 countries in the dataset have progressed in per capita terms since 1982. The best-performing countries were Mauritius and Botswana whose per capita income growth in 2010 was three times their levels in 1982, followed by Cape Verde with 2,9 times. In contrast, 16 countries in the dataset posted deteriorating per capita growth during the period. The worst-performing countries in this category are Liberia and Democratic Republic of Congo (DRC), whose per capita income deteriorated to stand at 0,24 and 0,4 levels of their respective per capita in 1982. It is worth noting that Liberia and DRC have endured prolonged periods of conflict which has adversely impacted on economic growth.

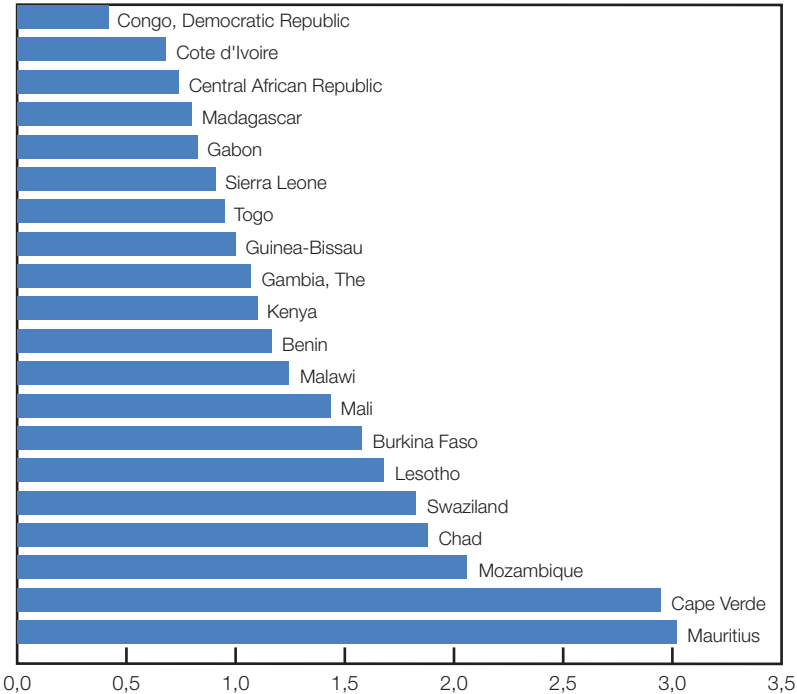
In view of the above, it is evident that the SSA region is on the path of economic recovery, however, a number of countries are still struggling to register per capita growth similar to that witnessed in these countries in the early 1980s. Most of these countries have not been embroiled in any known conflict to warrant stagnation of per capita GDP. Even those that have witnessed growth of per capita income have done so marginally. This therefore suggests that a vast majority of countries in SSA are still fragile states.

Figure 2: Per capita income in 2010 relative to 1982



Country abbreviations included in list of abbreviations on page 312

Relative per capita GDP, 2010 to 1982



## 1.2 Comparative analysis of key economic outcomes

The next section proceeds to investigate whether there are structural constraints to growth of countries in SSA. This is done in the context of a comparison of key features of SSA with the LAC and EAP regions.

### 1.2.1 The over-reliance on the agricultural sector

The contribution of agriculture to both GDP and exports is well documented in the literature on growth. The main characteristic of developing countries is the high agricultural content in both exports and economic growth. High content of the agricultural sector in the GDP has implications for the growth performance. First, high agricultural output relative to the size of the economy tends to frustrate government effort in revenue mobilisation. Most of the agricultural output is not taxed and therefore contributes very little to the tax revenues. In addition, the high level of the agricultural sector component in the GDP shows that the country is predominantly rural. A predominantly rural society tends to be backward. As shown by Collier (2002), a modern society tends to have two main characteristics: (i) it must be based in the urban areas and (ii) integrated with the rest of the world. In terms of the agricultural export content, the exports of agriculture tend to be price inelastic and are susceptible to climatic changes. Given the above drawbacks, for a country to develop it should invest more resources away from the agricultural sector. As shown in the literature, countries that tend to depend heavily on agriculture for exports and economic growth tend to lag behind in development.

As shown in Figure A2 (Appendix A), the share of agriculture in merchandise exports and value added as a ratio of GDP in EAP, LAC and SSA has been declining over time. However, the share of the agricultural sector is high compared to other regions. It averaged 4,8 per cent of exports and 17,4 per cent of the value added in SSA during the period 1980–2010. During the same period, it accounted for 2,6 per cent of exports and 6,3 per cent of the value added in EAP, and 2,3 per cent in exports and 7,6 per cent of the value added in the LAC region; this is a clear indication that agriculture still dominates the performance of the countries in SSA.

Further evidence shows that in the 1990s, the share of agriculture in exports and value added stood at 2,0 per cent and 6,1 per cent respectively in EAP, 2,6 per cent and 7,2 per cent respectively in LAC, and 6,2 per cent and 18,3 per cent in SSA. These shares declined in the 2000s decade for SSA to 4,2 per cent and 15,8 per cent in exports and value added respectively.

### 1.2.2 The size of the manufacturing sector

As shown in the literature, the manufacturing sector is a pillar of any economy that aspires to develop. The importance of the manufacturing sector is founded on Kaldor's fundamental laws. Kaldor's first law states that the manufacturing sector is the engine of growth, while the second law states that there is a positive causal relationship between output and labour productivity in manufacturing (see Kaldor 1966; 1967). All these factors taken together therefore suggests that for economic growth to occur, a substantial amount of resources should be devoted to the manufacturing sector.

Figure A2 (Appendix A) shows the evolution of the manufacturing sector in SSA, LAC and EAP during 1980–2010. During this period, the manufacturing sector contributed an average of 15,5 per cent of GDP and 15,1 per cent of the exports of SSA. Compared with other regions during the same period, the manufacturing sector contributed 21,8 per cent of the GDP and 20,5 per cent of the exports in the LAC region. In EAP the manufacturing sector had a major contribution to the economies of the region, at an average of 30,7 per cent of the GDP and 30,6 per cent of the exports.

Further analysis reveals the following: (i) during the 1980s the contribution of the manufacturing sector to GDP stood at 31,5 per cent, 26,8 per cent and 17,2 per cent of GDP in EAP, LAC and SSA respectively. During the same period, its contribution to exports stood at 30,5 per cent, 23,6 per cent and 16,8 per cent for EAP, LAC and SSA respectively, (ii) in the 1990s the contribution of the manufacturing sector to the GDP in EAP, LAC and SSA declined to stand at respectively 30,4 per cent, 20,5 per cent and 15,9 per cent. In contrast, its contribution to the exports declined to stand at 18,8 per cent in LAC and 14,5 per cent in SSA, (iii) in the 2000s the share of manufacturing in GDP and exports in SSA had declined further to stand at 15,5 per cent and 15,1 per cent respectively. This shows that while EAP countries had a stable share of manufacturing in exports and GDP, SSA's share has been on a declining trend, which is very worrying.

### 1.2.3 The level of savings and investment

The role of savings in economic growth is given prominence in Solow (1956). Here it is shown that savings affect economic growth through its effect on capital accumulation. Higher savings are transmitted to investment, thus encouraging economic growth. This therefore suggests that those countries that post a higher savings rate tend to grow faster compared to those with

a lower savings rate. As shown in Figures A3 and A4 (Appendix A), SSA appears to be doing poorly in terms of savings mobilisation and investment compared with the EAP and LAC regions. During the period 1980–2010, the EAP region posted an average savings to GDP ratio of 37,4 per cent compared with 21,0 per cent in LAC and 17,2 per cent in SSA. This shows that the share of savings in GDP in EAP is double that witnessed in SSA during this period.

Further analysis reveals that during the 1980s the savings-to-GDP ratio averaged 32,9 per cent, compared with 22,8 per cent in LAC and 20,1 per cent in the SSA. In the 1990s the savings-to-GDP ratio in EAP had risen to 37,6 per cent. However, that of LAC and SSA had declined to 19,4 per cent and 15,4 per cent respectively. In the 2000s, while the savings-to-GDP ratio in EAP countries had declined to 37,4 per cent, that of LAC and SSA had increased marginally to 21,0 per cent and 17,2 per cent respectively.

In terms of the growth of the savings rate during 1980–2010, it grew by 12,1 per cent in EAP, 7,0 per cent in LAC and 5,0 per cent in SSA. This therefore shows that in terms of international comparisons the SSA region performs poorly in the growth of savings. Further analysis reveals that during the 1980s the growth rate of the savings in EAP stood at 5,6 per cent compared with 4,7 per cent in the LAC region. However, the SSA region reported a decline in savings rate at -7,0 per cent. In the 1990s, while the growth of savings nearly doubled to 10,73 per cent in EAP, in the LAC region the average rate had declined to 3,9 per cent. In SSA the average savings rate improved to stand at 1,6 per cent during the same period. In the 2000s, while the LAC region posted an average growth rate of 11,7 per cent, surprisingly, the savings rate in SSA had risen to 18,0 per cent compared to EAP for EAP. This is preliminary evidence that in terms of the savings rate, SSA started being competitive.

Turning to investment, during 1980–2010, investment to GDP was on a declining trend. In the 1980s the average investment to GDP stood at 28,7 per cent, 20,0 per cent and 20,1 per cent in EAP, LAC and SSA respectively. In the 1990s, while the investment to GDP rate increased to 29,4 per cent in EAP, that in LAC and SSA declined to stand at 18,9 per cent and 17,1 per cent respectively. The 2000s, however, saw all the regions posting investment-to-GDP ratios lower than those witnessed in the 1980s at 25,9 per cent, 18,8 per cent and 18,7 per cent respectively. Overall, during the entire period 1980–2010, the average investment to GDP in EAP stood at 27,9 per cent compared with 19,2 per cent in LAC and 18,7 per cent in SSA. Therefore, it is evident that the share of investment to GDP was highest in EAP and lowest in SSA; probably the reason why the economic performance in SSA is low.

In terms of the growth rate of investment during the period, it is apparent that the growth rate of investment was highest in EAP. In EAP the growth rate averaged 4,1 per cent during the 1980-2010. In the 1980s it averaged a high of 5,9 per cent, but declined to 2,6 per cent in 1990s. The average growth rate of investment recovered in the 2000s stood at 4,1 per cent. The LAC region registered the lowest average growth of investment in 1980-2010 at 2,5 per cent. In the 1980s the region witnessed a decline in investment at 2,2 per cent. This was, however, reversed in the 1990s when the region posted an average rate of 3,9 per cent, rising to 5,1 per cent in the 2000s. By contrast, SSA posted a declining investment rate at an average of 0,6 per cent in the 1980s. The decline was, however, reversed in the 1990s when the region recorded an average growth rate of investment at 2,4 per cent, rising impressively to an average of 7,0 per cent in the 2000s.

## 2. Level of interaction with the world

As shown in the literature (see Aryeetey et al. 2012), large-scale interaction with the rest of the world is important for growth. However, it requires multi-dimensional integration, covering trade, investment, capital flows and technology, each of which requires different levels and types of strategy. SSA interacts with the rest of the world in a number of respects. First, it interacts with the rest of the world through the export and imports of goods and services. However, its share of international transactions is less than 5 per cent of the total global transactions. Second, SSA interacts with the rest of the world through international migration. Although international migration leads to a brain drain from the region, it is also associated with an upsurge in the remittances inflows to the region. Third, the level of interaction with the rest of the world is evidenced by the growth of development assistance, though there are varied arguments in the literature regarding its effectiveness, which has contributed towards filling the resource gap in the region.

From Figure A5 it is evident that the level of merchandise trade and trade in services, both as a ratio of GDP, show that SSA has been doing well compared to other regions. However, during this period, these ratios have been on a rising trend with the EAP region growing much faster compared to other regions. During 1980-2010, the ratio of merchandise trade to GDP averaged 48,4 per cent, 40,0 per cent and 30,6 per cent in the SSA, EAP and LAC regions respectively. In addition, the ratio of trade in services stood at 11,8 per cent, 7,5 per cent and 6,0 per cent in SSA, EAP and LAC respectively. In the 1980s the ratio of merchandise trade averaged 43,3 per cent, 32,1 per cent and 25,9 per cent in SSA, EAP and LAC respectively. Interestingly,



during this period the merchandise trade to GDP was on a declining trend. It declined in EAP, LAC and SSA from a high of 55,4 per cent, 35,6 per cent and 29,2 per cent respectively in 1980 to respectively 38,1 per cent, 30,6 per cent and 25,4 per cent in 1989. During this period, the trade in services to GDP stood at 9,6 per cent, 5,7 per cent and 5,9 per cent in SSA, EAP and LAC respectively. Trade in services also declined from a high of 11,1 per cent, 6,7 per cent and 6,3 per cent in SSA, EAP and LAC respectively in 1980, to respectively 9,1 per cent, 4,7 per cent and 5,9 per cent in 1989.

In the 1990s the share of merchandise trade to GDP increased to average 45,1 per cent, 34,4 per cent and 26,7 per cent in SSA, EAP and LAC respectively. The trade in services to GDP, also rose to 12,2 per cent, 6,7 per cent and 5,8 per cent in SSA, EAP and LAC. The same trend continued in the 2000s, where the average merchandise exports and trade in service rose to average 55,9 per cent and 13,4 per cent respectively in SSA. In EAP and LAC merchandise exports stood at 52,9 per cent and 38,5 per cent respectively, while the trade in services stood at 9,9 per cent and 6,3 per cent in EAP and LAC respectively. This evidence therefore shows that the SSA is doing well with regard to its interaction with the rest of the world. However, the economic growth witnessed in SSA during the time is much lower compared to the EAP and LAC, which may suggest that a high level of openness is not helping SSA to address its long-run growth potential.

### 3. The economic growth story in Africa: The political economy of growth<sup>1</sup>

As shown by Aryeetey et al. (2012), Africa is a diverse continent. The diversity of Africa should be reflected in the diversity of analytical findings and prescriptions, just as the commonalities should elicit similarities of perspective in these dimensions. As shown by Azam, Fosu and Ndung'u (2002), there are some areas where improvement in policy decisions could enhance growth coupled with openness. Similarly, policies aimed at the development of social capital and of infrastructure probably have huge potential for improving the growth performance of African economies. However, the economies in Africa performed very poorly during this period. Why?

Azam, Fosu and Ndung'u (2002) argue that the first line of response to this issue is that fundamental exogenous determinants affect both growth and the choice of bad policies. The key determinant here is the ethnicity, or ethno-linguistic fractionalisation of African countries. Following Mauro (1995), ethno-linguistic fractionalisation has been identified as one of the factors

that influence economic growth. In 1997 William Easterly and Ross Levine published an article titled "Africa's Growth Tragedy: Policies and Ethnic Divisions" which found a statistically and economically important negative effect of ethnic diversity on economic growth in a cross-section of countries. Here they found that moving from an ethnically homogenous country to one with a diversity of ethnic communities corresponded with a decrease in annual economic growth rates of more than 2 per cent. Applying this reasoning to Africa, a continent with ethnic diversity, the strong link between ethnic heterogeneity and slow growth was quite likely an important part of the explanation for Africa's growth tragedy. They argued that ethnic diversity had a negative effect on growth and the level of income, in particular because it played an important part in determining the choice of bad policies.

Since the work of Easterly and Levine, economists have come to accept ethnic diversity as a key variable in their cross-country growth regressions. Of particular interest is the work by Collier and Hoeffler, and Collier and Gunning, who acknowledge the role of ethnic-fractionalisation but argue that this variable enters into the growth equation in a quadratic form, so that a large value of this variable entails a large positive contribution to growth, while the negative effect is the strongest when there are two or three ethnic groups facing one another in the country, as in Rwanda and Burundi. The explanation for this, as shown by Azam, Fosu and Ndung'u (2002), is that a large number of different ethnic groups in the country reduce the level of political risk by making it more difficult to co-ordinate a rebellion against the government.

Studies have also identified natural resource wealth as a factor in the growth process in Africa. Collier (2010) notes that as of 2000 (the last date for which global statistics were available) the value of known sub-soil assets beneath the average square kilometre in Africa was only around a fifth that of the average square kilometre of the countries of the Organisation for Economic Development (OECD) on account of geological differences and extent of exploration. However, the extent of civil conflicts in Africa cannot be rivalled by any other region in the world. In an article titled "Why are There So Many Civil Wars in Africa" Elbadawi and Sambanis (2000) go beyond factors such as ethnic fractionalisation and suggest three reasons: (i) natural resources, (ii) level of education and (iii) weak democratic institutions. As pointed out in this study, the presence of natural resources, especially minerals that are easy to loot and finance rebellions has contributed to instability, and therefore poor growth performance. Angola, Sierra Leone and DRC may stand out as classic examples of countries whose mineral wealth have been used extensively to finance civil wars.

Geographic factors have also been identified by some studies as being critical to the growth of African countries. The key geographic factors are distance from the markets and the curse of being landlocked. Africa has 15 landlocked countries which, as at 2007, accounted for 30 per cent of the population south of the Sahara living in these countries. This is of particular concern to African countries unlike other regions. As pointed out by Nkurunziza (2012), the landlocked countries in Africa face three major interrelated challenges. First, they cannot rely on their poor neighbours who produce similar primary commodities as viable economic partners. Second, being landlocked diminishes the development benefits of trade (the distance from the markets). In Burundi, for example, to access the coast is a distance of 1 254 kilometres. Third, they depend on their own and transit countries' poor road and rail network. In addition, during the period under study, Burundi continues to experience political instability. Further evidence of geographical factors relate to the location of the large landmass of Africa within the tropics. The tropical environment is detrimental to health, because malaria and other infectious diseases spread easily under these latitudes.

Development of infrastructure has also been added to the regression in growth, for example, Easterly and Levine proxied infrastructure development by the number of telephones per capita. In their view, the low level of infrastructure development is due to ethno-linguistic fractionalisation. However, it can be traced to the high cost of infrastructure development resulting from landlockedness and other geographical determinants. This is collaborated by Nkurunziza's (2012) study which argues that landlocked countries in Africa fail to make strategic choices to trade more with their neighbours in order to reduce trading costs because (i) trade infrastructure is still affected by the colonial legacy which is orientated to Europe and not to other African countries, (ii) very few export opportunities exist in other African countries, given the similarities of the products traded, and (iii) even if opportunities are available, several internal barriers, including domestic transport infrastructure, constraint trade with neighbouring countries.

The extent to which an economy is affected by international developments depends on the extent of its openness.<sup>2</sup> However, as noted by Azam, Fosu and Ndungu (2002), different measures of openness could be contradictory, for instance, export-promoting policies that subsidise exports may enhance openness, and increase growth, by augmenting the size of export sector. However, such policy may distort international prices and this reduces openness. The literature suggests that countries with open economies tend to grow faster than closed economies. This is irrespective of the measure

of openness used, such as exchange rate overvaluation, relative price distortions, tariffs and quotas, share of trade in GDP, and the black market premium. Evidence on Africa regarding the role of openness is of two kinds: (i) those cross-country studies which include African countries as sub-sample of the countries studied and assigns a dummy variable 'Africa' to reflect possible African idiosyncratic differences and (ii) those studies that comprise exclusively of African economies. Though different, the overall conclusion that can be drawn from the studies is that openness tends to be associated with higher economic growth. However, the studies show that open economies are more likely to be vulnerable to terms-of-trade shocks and capital inflow interruptions.

Quality of institutions is also identified as prominent in growth performance, particularly among African countries, for example, theoretical and empirical studies argue that corruption adversely affects investment and economic growth (Myrdal 1989; Shleifer and Vishny 1993; Knack and Keefer 1995; Mauro 1995; Tanzi and Davoodi 2000; Li et al. 2000; Del Monte and Papagni 2001; Rock and Bonnett 2004). Other studies, such as that of Huntington (1968), Friedrich (1972) and Lui (1985) find that some level of corruption is beneficial to economic growth. This therefore suggests that there is controversy in the theoretical and empirical literature regarding the usefulness of corruption in economic performance. Political stability is also regarded as one of the crucial governance matters that influence economic growth, for example, Barro (1991), Alesina and Perotti (1996), and Mo (2001) found that there is an inverse relationship between political instability and economic growth. Alesina and Perotti (1996) used the probability of the opposition taking over (executive political instability) or the turnover of power over a certain period to proxy political instability and arrived at the same inverse relationship. However, the level of voice and accountability has been suggested by some studies as being important with countries with higher levels of voice and accountability posting higher levels of economic growth, for example, Pak Hung Mo (2001) finds a positive relationship between a positive human rights record and economic growth.

#### 4. Structural constraints<sup>3</sup>

A look at the characteristics of the regions compared in the previous section reveals that Africa is not doing well. This therefore calls for further investigation to establish the factors that are responsible for this outcome. These are the factors that may be constraining the growth performance of African countries. A literature survey reveals that there are a number of

structural constraints that have been identified in the empirical literature that prevent shared and sustained growth in Africa. In their paper, “Explaining Slow Growth in Africa”, Azam, Fosu and Ndung’u (2002), identified five factors that drive macroeconomic outcomes in Africa: (i) the macroeconomic policy environment; (ii) macroeconomic instability; (iii) external shocks; (iv) human capital and regional spillover effects; and (v) institutional and political uncertainty. These factors may be summarised as follows:

i. The macroeconomic policy environment

- Reflects the extent of the departure from fundamental macroeconomic balance.
- With respect to fiscal policy, channels of influence include financing implications of deficits; the macroeconomic uncertainty of large fiscal deficits; and the degree of complementarity (or substitutability) between public and private investment. The literature on fiscal policy in SSA suggests that, in the past, fiscal deficits have been high, coupled with slow rates of growth of domestic credit and high cost of borrowing.
- Using the real exchange rate as a measure of international competitiveness: SSA countries have made notable strides. However, the significant deterioration in the terms of trade suggests that the real exchange rate depreciation appears to have been driven by the adverse evolution of the terms of trade. Consequently, the gains in competitiveness in many African countries have been severely compromised.
- The need for structural reforms that go beyond reducing the overall fiscal deficit to more enhanced public infrastructure, communications and transport services, among other things, has been widely acknowledged.

ii. Macroeconomic uncertainty

- This is critical, particularly with respect to investment projects that are irreversible or partially irreversible. It has been shown that under conditions of uncertainty, risk-averse firms associate the latter with greater variability in expected profits, and may curtail their investment altogether, while others may adopt a ‘wait-and-see’ option.
- Economic policy-based risk and uncertainty affecting investment decisions stem from the risk associated with volatility of key economic variables such as the terms of trade, inflation and real exchange rate; and the potential for future policy reversals, or lack of commitment in policy implementation.

### iii. Human capital and regional effects

- Human capital
  - The importance of human capital in enhancing productivity and creating technology-based externalities is well established in the new endogenous growth literature. Stock of human capital has been found to be among the major determinants of cross-country differences in growth in the empirical growth literature.
  - The challenge of enhancing the stock of human capital in SSA countries has mainly been in the area of cost effectiveness and mode of delivery (i.e., public *vis-à-vis* private). Whereas the private sector could play an important role in cases of higher (post-secondary) education and curative medical services, issues of affordability arise. On the contrary, the efficiency of public service delivery in SSA countries is generally lower than in other developing regions. Additionally, higher expenditure on education and health may be required for the state to provide an adequate basic education and health services.
- Regional spillover effects
  - Economic co-operation provides a mechanism for collective commitment to economic reform and, hence, has a potential positive impact on national policy credibility and growth.
  - Additionally, deeper economic integration in a given region can permit expansion of the regional economy to generate the threshold scales necessary to trigger the much needed strategic complementarity, and to attract the adequate levels of investment required for development.
  - However, dismal performance of countries with the longest integration schemes such as the Communauté Financière d'Afrique (CFA) monetary unions has raised much debate.

### iv. External shocks

- External shocks affect SSA economies through several channels such as terms of trade (TOT), capital flows or international interest rates, volatility in the demand and price of commodity shocks, among others. Poor TOT and the associated current account deficits have been a challenge for a number of SSA countries.
- Tight fiscal policies may reduce public investment, while monetary restraint would result in credit rationing, both of which adversely affect private investment and thus growth.

v. Institutional and political instability

- Political instability ranges from rapid government turnover which could affect policy credibility and policy framework, to extreme forms of social and political unrest, all of which lead to uncertainty, collapse of institutions, and the loss of life, physical property or property rights.

#### 4.1 Overcoming growth constraints<sup>4</sup>

The poor macroeconomic performance witnessed in the past requires renewed and focused strategies to overcome. Growth strategies have some generic features and some that are applicable to particular typologies of country characteristics. A useful guide to the generic features of these strategies is the report of the Commission on Growth and Development (2006), led by Nobel laureate Michael Spence. The commission compared all countries that sustained growth rates in excess of 7 per cent. The commission identified four key proximate factors around which country-specific growth strategies may be designed, including (i) the fundamental commitment to market-based resource allocation, coupled with openness to trade, both in goods and in technology, (ii) a policy framework that delivers on a high degree of predictability in macroeconomic policy-making and a stable macroeconomic environment, (iii) strong future orientation: environment that supports high domestic savings to fund a high level of public and private investment and (iv) capable, credible and committed government.

##### 4.1.1 Leadership and governance

Starting from poor economic management any new leadership should show strong commitment to enhancing governance by establishing institutions to fight corruption and undertaking legislative reforms geared towards enhanced transparency and increased efficiency in the public sector. In Kenya a number of governance reforms have been initiated in the past ten years:

- i. The Anti-Corruption and Economic Crimes Act, 2003, which set up the Kenya Anti-Corruption Commission (KACC) as Kenya's premier anti-corruption institution. Although viewed as largely ineffective, it has handled a number of corruption-related crimes, for instance, between September 2004 and June 2007, of the total 19 310 complaints of suspected corruption received from Kenyans, 3 145 cases were fully investigated and presented to the Attorney General for further action. Similarly, by August 2007, 332 complete investigation files were forwarded to the Attorney General with 75 per cent of these cases recommending prosecution (KACC 2007).

- ii. The Public Procurement and Disposal Act, 2005, established an autonomous Public Procurement Oversight Authority (PPOA) responsible for ensuring that the regulations and procedures of procurement as stipulated in the Act are followed in the public sector with the objective of enhancing transparency, integrity, fairness, public confidence and efficiency. This reform was necessary in order to standardise and streamline procurement processes, which were previously open to abuse from government officials.
- iii. The Privatisation Act, 2005, established a privatisation commission charged with responsibility for ensuring transparency in the privatisation of state-owned enterprises, thereby strengthening accountability, reducing rent-seeking behaviour, and improving the efficiency of resource use.
- iv. The National Anti-Corruption Action Plan was implemented through the Governance Action Plan (GAP) from July 2006 to December 2007. The initiative focused on prevention, investigation and recovery of corruptly acquired assets and strengthening of the prosecutorial capacity as provided for in the Public Officer Ethics Act, 2003.

In the light of the above, the tax revenues have continued to grow as a result of increased compliance. Further reflecting the progress in governance, Kenya won the United Nations Public Service Award in the category “Improving Transparency, Accountability and Responsiveness in the Public Service” in 2007. In addition, the 2008 World Bank Doing Business report ranked Kenya among the top ten global reformers in terms of ease of doing business in 2007.

#### 4.1.2 Openness: imports of knowledge and exports to the world market

The level of integration with the rest of the world is an important growth strategy. According to the neoclassical analysis of welfare gains through exploitation of comparative advantage, a reduction in trade barriers increases trade and the level of productivity. GDP therefore increases through the reallocation of resources and capital accumulation. Trade openness may also increase the rate of technological progress through expansion of market for input and output, besides giving domestic producers access to a wider variety of capital goods, effectively enlarging the base of productive knowledge. In addition, total factor productivity increases when a country trades more with research-intensive economies. However, evidence from Kenya and SSA (Table 1) reveals that trade barriers are still high in Africa, for example, it takes 34,7 days and 41,1 days respectively to export and import in SSA compared with 10,7 days



and 11,4 days respectively to export and import in the OECD. Furthermore, the average cost to import a container in SSA stands at US\$2279 compared with US\$1 133 in OECD.

Table 1: Doing Business indicators

Indicator	Kenya	SSA region*	OECD**
Documents for exports (number) .....	9	7,8	4,5
Time for exports (days).....	29	34,7	10,7
Costs to export (US\$ per container).....	2 055	1 879	1 069
Documents for imports (numbers) .....	8	8,8	5,1
Time for imports (days).....	26	41,1	11,4
Costs to import (US\$ per container) .....	2 190	2 279	1 133

\* SSA: Sub-Saharan Africa

\*\* OECD: Organisation for Economic Co-operation and Development

Source: Collier and Ndung'u (2010)

4.1.3 Macroeconomic stability, including sustainable public finances

Macroeconomic stability is key to growth. In this regard African countries should strive to maintain low and stable inflation. High inflation may lead to uncertainty about the future profitability of investment. This is especially true if the high inflation is also associated with increased price variability. Consequently, investors may become more conservative in making investment decisions than would otherwise be the case, ultimately leading to lower levels of investment and economic growth. Inflation may also reduce a country's international competitiveness, by making its exports relatively more expensive, thus impacting on the balance of payments. In addition, the size of the fiscal deficit and public debt need to be addressed as well. In the African context, public debt in excess of 40 per cent of GDP is not sustainable.

4.1.4 Market allocation

The path pursued by a country is critical for economic growth performance as well, for example, at independence, when the philosophy of African socialism was being discussed by the continent's intellectuals, Kwame Nkrumah in Ghana moved towards scientific socialism, while Mwalimu Nyerere in Tanzania moved towards an indigenous Ujamaa. In Kenya, the "Sessional Paper No. 10 of 1966" was crafted with the language of African socialism but ensured that Kenya's foundation was capitalist rather than

Marxist. All these policies had different economic growth outcomes in the respective countries. However, one feature that stands out is that most of the countries in Africa in the 1970s to early 1990s embraced price controls (i.e., goods prices, interest rates, rents, wages and exchange control). These controls effectively killed the spirit of market efficiency.

#### 4.1.5 Future orientation

As Mohamed and Spence (2006) indicate “future orientation” means an effective commitment on the part of government to the long-term development of the economy. In this regard, the most important policy to determine the long-term development of a country is the rate of investment. However, evidence from SSA shows that investment in GDP has been on a downward trend. During 1980–2010, the average investment in GDP in the EAP region stood at 27,9 per cent, compared with 19,2 per cent in the LAC region and 18,7 per cent in SSA.

#### 4.1.6 Regional integration

Economic co-operation provides a mechanism for collective commitment to economic reform and, hence, has a potential positive impact on national policy credibility and growth. Additionally, deeper economic integration in a given region can permit expansion of the regional economy to generate the threshold scales necessary to trigger the much-needed strategic complementarity, and to attract the adequate levels of investment required for development. However, dismal performance of countries with the longest integration schemes such as the CFA monetary unions has raised vigorous debate.

#### 4.1.7 Discoveries of minerals and their management

In his paper “Managing Natural Resource Booms” Anthony Venables (2011) notes that endowments in non-renewable natural resources are unevenly scattered across SSA. Thirteen of SSA countries are classified as resource rich, in eight of these; natural resource revenues account for more than 80 per cent of export earnings; and in seven countries, more than 50 per cent of government revenues. However, Africa’s natural resource endowment is less thoroughly prospected and exploited than that of other regions. World Bank (2006) estimates indicate that subsoil assets per square kilometre in Africa are just 20 per cent of those remaining in OECD countries, which is a reflection of the failure of discovery. Further evidence shows that the rate of discovery in Africa is accelerating, with recent hydrocarbon discoveries in Ghana, Uganda and, more recently, in Kenya. This is an indication that

past exploration was not adequate. Going forward, these discoveries point to a good chance that natural resources will be of increasing importance to Africa in the coming decades.

This therefore takes one to the next level of interlogation. Aware of the resource curse (for a literature survey, see van der Ploeg 2008), the question that arises is how should the mineral wealth be managed to ensure maximum benefit. On average, it was established that resource booms are short lived with negative long-run effects which, to a large extent, depend on the quality of governance. In view of this, Venables (2011) gives three policy recommendations for future booms:

- i. *Transparency and governance*: Noting that much of the mineral wealth in Africa does not go to support the state, Venables suggests that measures need to be taken to improve governance failures in the resource sector. Improving transparency will make the sector more open to public and parliamentary scrutiny.
- ii. *Saving and investing*: This relates to how the mineral revenues will be used to attain an increase in the income and consumption of society. To this end, society has to make a choice on how much to save or consume, and how to allocate savings between domestic investment and foreign asset accumulation.
- iii. *Diversification and economic growth*: While acknowledging that the private sector is the engine of growth, however, government investment is key, especially in mineral-rich countries. Government influence through public investment, such as infrastructure development, that is complementary to private investment is vital. In addition, government may use mineral wealth to reduce its borrowing requirements thus releasing stress on the banking sector to lend to the private sector at low and affordable interest rates.

## 5. Interaction of the constraints and economic growth

### 5.1 The HRV Framework for Growth Diagnostics<sup>5</sup>

Grounded in the basic economics of growth – the incentives of the private sector to invest, adapt new technologies and seek new products – the growth diagnostic heuristics is motivated by three considerations, namely that (i) reform strategies should be growth strategies, (ii) growth strategies are likely to differ according to domestic opportunities and constraints, so considerable knowledge of local specificities is required, and (iii) capital for policy-making is limited, hence, the need to prioritise reforms. Therefore, all

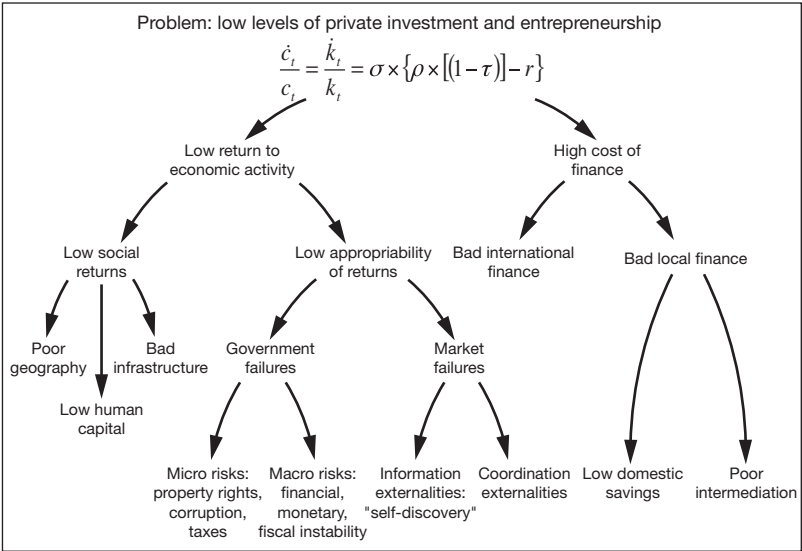
reform efforts should be focused on the main bottlenecks, as opposed to what has been dubbed as a “wholesale” or “spray-painting” reform approach.

The HRV motivates the framework by arguing that along a balanced growth path consumption and capital per capita grow at the same rate, in turn, depends on private returns on accumulation. The private returns on accumulation are a function of social returns ( $p$ ), the private appropriability of social returns ( $1-\tau$ ), (think of  $\tau$  as taxes) and the cost of financing accumulation ( $r$ ).<sup>6</sup>

$$\frac{\dot{c}_t}{c_t} = \frac{\dot{k}_t}{k_t} = \sigma \times \{p \times [(1-\tau)] - r\}$$

In line with the above thinking, the HRV groups the factors (constraints) behind inadequate levels of private investment (both physical and human) and entrepreneurship, into three sets: (i) *Low social returns* on factors of production: insufficient investment in complimentary factors such as human capital, technical know-how, infrastructure, or poor geography, (ii) *poor private appropriability*: high taxation, macro risks such as financial and fiscal crises, poor property rights and contract enforcement, high corruption and crime, labour–capital conflicts or a rigid labour market, or poor learning and co-ordination externalities leading to low product diversification, and (iii) *financing constraints*: low savings, poor intermediation in domestic financial markets, high country risk or poor integration into external financial markets.

Figure 3: Growth diagnostics



The above constraints are organised in a decision tree (see above). All the factors contained in the decision tree are likely to matter for growth and welfare, including the existence of market distortions and policy wedges. The growth diagnostics challenge consists in identifying the one that provides the largest positive direct effect, so that even after taking into account second-best interactions and indirect effects, the net impact of a policy change is beneficial and sizeable.

The growth diagnostic methodology can then proceed in four steps: First, identifying the drivers of, and constraints to, economic growth based on recent growth experience. Second, narrowing the set of likely explanations about the binding constraints to growth by providing one or few hypothesis pertaining each main category of the decision tree, and explaining how they are restraining growth. It is necessary in this point to specify *what specific factor* is constraining growth and *why* this is thought to be the most binding constraint to growth. Third, examining all available evidence, including the rate of returns and shadow prices of production factors, to assess the extent to which a given element is constraining growth. According to the authors, if one of the pinpointed factors is the binding constraint, its rate of return would be very high, driving down the returns on other factors of production. Fourth, this step entails suggesting policy reform that would most likely alleviate the binding constraints.

### 5.1.1 Returns on private capital

Low returns on capital are manifested through various channels, including falling total factor productivity, low returns due to increased competition in the domestic market as a result of lowering of import barriers as part of trade liberalisation; weaknesses in the quality of public investment that undermines the private sector's willingness to participate in development; poor contractual enforcement that weakens the investment environment; a perception of high corruption in Kenya which deters investment; lack of highly skilled human resources which constrains productivity growth; high cost of working capital; and macroeconomic risks related to policy uncertainty and debt overhang.

### 5.1.2 Economic distortion

Transaction costs can constitute a major constraint to growth as they reduce appropriable returns on investment by the private sector. Transaction costs in this paper are regarded as the distortion that prevents economic agents from reaping the full benefits of their investment. They include official

taxation accruing to the state (e.g., taxation costs, licensing fees); money spent on corrupt officials to overcome bureaucratic hurdles and time taken to overcome bureaucratic barriers (to get licences); extra costs on security-related services; extra costs arising from poor infrastructure (i.e., loss of man-hours as a result of frequent power outages, costs on generators to back-up power outages, extra service costs as a result of poor roads, extra cost to dig a borehole or a sewer system delay in delivering input to the firm and output to clients). Such factors can constitute significant costs in production which if reduced can lead to higher investments, savings and hence growth.

### 5.1.3 Cost of financing capital

Cost of financing capital or working capital is deemed to be a major obstacle to growth. This manifests itself in poor governance, especially relating to political lending that led to high non-performing loans in the banking system in the 1980s and 1990s; limited access to foreign borrowing due to Kenya's poor credit worthiness; low savings that is intermediated to private investment; limited assets suitable for collateral and commercial lending; and the availability of high-yielding risk-free government paper.

At the aggregate level, Hausman et al. (2005) shows that using equation 1, one can analyse three different factors that explain the growth outcome in any country: (i) cost of capital is too high, (ii) social returns on investment is too low, or (iii) appropriability is too low.

## 5.2 The model

The next question that I seek to answer relates to how the factors identified in the economic growth literature interact to occasion the observed economic growth in SSA. To address this issue, the starting point is to develop a model in which economic growth is explained by the factors that are identified above. However, all the factors identified in the literature may not be tied together in one model. There are several ways of modelling economic growth in the literature. However, in this study I follow a neo-classical framework in a manner consistent with Barro (1997) as

$$\Delta y_{it} = \beta_0 + (\beta_1 - 1)Y_{t-1} + \beta_2 HUM_{it} + \beta_3 INV_{it} + \beta_4 GOV_{it} + \beta_5 TRAD_{it} + \beta_6 INF_{it} + \mu_i + \varepsilon_{i,t} \quad (1)$$

where  $\Delta Y$  is the growth rate of real GDP per capita,  $Y$  is the real GDP per capita;  $HUM$  is the human development variable;  $INF$  is the gross investment to GDP ratio;  $GOV$  is government consumption-to-GDP ratio;  $TRAD$  is the sum of imports and exports to GDP ratio and  $INF$  is the rate of inflation. In addition,  $\mu_i$  is the time invariant error term, while  $\varepsilon_{i,t}$  is the idiosyncratic error

term. In this equation  $\beta_1 - 1$  is the convergence coefficient. Equation 1 is the standard growth model. However, the model may be extended to include other factors, such as financial development and institutional variables.

In neo-classical growth models the role of human capital formation (*HUM*) stands out as critical in the economic growth process. Here it is argued that human capital formation is critical to the growth process with countries registering higher human capital formation expected to post higher economic growth rates. High human capital formation is associated with two outcomes: (i) a highly specialised labour force and (ii) cheap labour. A high number in the labour force implies that in competitive labour markets labour will be cheap, driving down the per unit cost of labour. In addition, the existence of a highly skilled labour force will be combined with other factors of production through productivity, thus enhancing the level of economic growth. In the literature human capital formation is proxied in two ways: (i) the size of the population and (ii) the school enrolment rates. School enrolment rates are the most widely used and it is shown that higher school enrolment rates tend to be associated with a higher level of skills, which will be transmitted to the labour market. Some studies use secondary school gross enrolment rates, while others use the primary school gross enrolment rate. In both cases such proxies have yielded positive coefficients in support of the theory. A few studies use the population size to proxy human capital formation. However, such proxy has been criticised that if the population structure is such that there is a high dependence ratio, it tends to affect economic growth negatively. In this study I use the gross primary school enrolment rate to proxy human capital formation. I therefore expect gross primary school enrolment to influence growth positively through its effect on productivity (see Barro 1997).

In the literature there is consensus about the positive role of capital accumulation in growth. There is also consensus that inclusion of this variable in the growth model will create an endogeneity problem which may be addressed via instrumental variable estimation techniques. In this study therefore I use investment to capture the role of capital accumulation.

In the neo-classical growth literature the effect of macroeconomic instability is acknowledged. Here it is shown that higher macroeconomic instability tends to be associated with poor economic growth performance. In the literature the studies are unanimous on the use of inflation as a proxy of macroeconomic (in)stability. Inflation in this regard measures the degree of uncertainty about the future market environment and therefore it is negatively related to economic growth. In an uncertain market environment firms

become reluctant to make long-run commitments in the presence of higher price variability. In such an environment investors tend to be conservative in making investment decisions thus impacting on economic growth. However, in the literature there are a number of studies that have investigated the non-linear effects of inflation on economic growth. In these studies it is shown that below a certain threshold inflation affects economic growth positively but as soon as it goes above the threshold, it impacts negatively on growth.

The role of the size of government is also investigated in the growth literature. The role is viewed in two ways: (i) crowding in the private sector and (ii) crowding out the private sector. Government expenditure engaged in the provision of non-rival and non-excludable public services to the economy is complementary to private investment, and is thus expected to impact positively on economic growth. It is also possible that high resource consumption by the public sector would undermine the efficiency of resource allocation or crowd out resource availability to the more efficient sectors of the economy. As shown in the vast literature, government consumption may have a positive or negative impact on economic growth. A negative effect stems from the notion that large governments tend to crowd out the private sector, while the positive effect is founded on the reasoning that higher government expenditure may create an enabling environment that may spur economic growth. However, in Africa where government consumption is mainly wasteful, one expects higher government consumption to impact economic growth negatively.

Openness to trade has been used at length as a major determinant of economic growth performance. Openness affects economic growth through several ways, such as exploitation of comparative advantage, technology transfer, diffusion of knowledge, increasing scale economies and exposure to competition. In view of these benefits, to trade it is widely believed that countries that have higher level of trade openness tend to grow much faster (see Barro (1997)). However, the empirical evidence on SSA is mixed. While most studies find trade openness to be beneficial to economic growth, some studies tend to hold a contrary view. Here it is shown that countries that are too open, particularly in SSA, tended to allow high levels of imports, which eventually occasion the manufacturing sectors to decline, thus impacting on economic growth. In view of the controversy in the literature I do not take a position on the role of trade liberalisation on the performance of economic growth in SSA.



### 5.3 Data sources and type

This study is based on a panel of 42 countries in Africa (see Appendix A). The basic data cover 1980–2009 and is obtained from the World Bank African Development Indicators. In this study I use the growth of real GDP per capita as the dependent variable. The independent variables are as follows: the lagged real income per capita used in this study is real GDP per capita in US dollars based on 2000 prices. The private investment is measured as the ratio of gross capital formation-to-GDP ratio. Inflation is computed from the consumer price index. The human capital formation is proxied by the gross primary school enrolment rate; size of government is proxied by the government consumption-to-GDP ratio, while the level of openness is proxied by the sum of trade in merchandise and services as a ratio of GDP. However, I average these ratios over a period of three non-overlapping periods.

In order for this study to be consistent and comparable to other studies, I have opted not to use the annual observations directly. I have, instead, opted to compute the three-year averages for each of the variables in the dataset. As shown in the literature this takes into account business-cycle fluctuations. In this regard, I split the sample period 1980–2009 into ten non-overlapping three-year periods. Most studies I have come across tend to rely on five-year averages. This study, however, settled on three-year averages in order to avoid losing a substantial number of countries from the study. In this regard, all countries with data points being less than 3 for any key variable, after averaging, were dropped from the study.

## 6. Empirical results<sup>7</sup>

Table A2 (Appendix A) shows a comparative assessment of growth performance for East Asian and other non-SSA sample countries relative to SSA. These results show that growth has been higher for both the East Asian and other non-SSA countries compared to SSA. The most important explanations for the growth differential between Africa and East Asia are the higher export share and investment in the latter. In contrast, the greatest contributor to the growth differential between the other non-East Asian countries and SSA appear to be inflation, which has a positive effect on output.

The estimation results from the model specified in equation 1 are reported in Table 2. Here the results from the pooled, fixed effects and the random effects models are reported. In all these estimations I rely on both the ordinary least squares (OLS) and the two-stage least squares (2SLS). I follow this approach because in the literature it is shown that growth models tend to

include private investment to GDP ratio as an independent variable. However, inclusion of the private investment in the growth model may lead to reverse causality/endogeneity problem. This problem may be addressed by using the instrumental variable estimation procedures such as the 2SLS method. To test for the appropriateness of the estimated models, I use the F-test and the Hausman test. The F-test is used to test for the validity of the fixed effects model relative to the restricted/pooled model, while the validity of the random effects model is conducted using the Hausman test. Both the F-statistic and the Hausman tests, where appropriate, are as reported in Table 2.

The slope coefficients are reported in Table A2. However, the fixed effects associated with the respective models are not reported. At this stage it is important to explain these effects because they are the ones that tend to explain why countries are heterogeneous in SSA and therefore bringing out some of the reasons why some countries were doing well during the period under study, while others were not. In the class of countries that exhibit negative coefficients with respect to the economic growth the following are notable: Burundi, Rwanda, Côte d'Ivoire, Kenya, Malawi, Zambia and Togo. In the case of Burundi and Rwanda, during the period under study, these countries endured political and social problems leading to the genocide that occurred in Rwanda in 1994. As pointed out by Nkurunziza (2012), these are among the poor landlocked countries in Central Africa. These countries face three major interrelated challenges. First, they cannot rely on their poor neighbours who produce similar primary commodities as viable economic partners. Second, being landlocked diminishes the development benefits of trade – the distance from the markets – in Burundi, for example, to access the coast is a distance of 1 254 kilometres. Third, they depend on their own and transit countries' poor road and rail network. In addition, during the period under study, Burundi continued to experience political instability. All these factors may explain the poor performance.

Cote d'Ivoire and Kenya also reported negative country-specific effects across most of the estimations, Cote d'Ivoire endured two major events during the period under study. In the 1980s to 1990s the commodity price of its foreign-exchange earning crop, namely cocoa, declined in the international market. This development may have impacted the growth of Cote d'Ivoire. In the early 2000s the country witnessed political instability as well, which disrupted economic activity in the northern part of the country. This development may have impacted on government programmes in the affected areas and furthermore, investors may have fled the country. The notable case is the relocation of the African Development Bank (ADB) from

Cote d'Ivoire to Tunisia during this period. As for Kenya, the poor growth may have been on account of the following: (i) during the 1980s the commodity prices for Kenya's main export crop, namely coffee, had declined in the international markets and, coupled with economic mismanagement, resulted in poor growth performance; and (ii) in the 1990s the country embraced economic liberalisation: price and exchange controls were removed. The government was not prepared to cushion the poor from the negative effects of such development. In addition, owing to poor policies, the government faced a foreign aid freeze, which led to a collapse in key sectors of the Kenyan economy. While multi-party politics had been reintroduced in the country in the 1990s, the period before the elections, namely 1992, 1997, 2002 and 2007, witnessed heightened political tensions and uncertainty, resulting in subdued economic growth. The notable event was the post-election violence that erupted in early 2008 and which led to a disruption of economic activities.

In the sample, however, there are countries that show positive coefficients in most of the estimations. These countries include Namibia, Botswana, South Africa and Sudan. In the case of Botswana this is a country that is endowed with natural resources and is the best performer in a range of governance matters, for example, according to the Corruption Perceptions Index (CPI) published by Transparency International, Botswana is the least corrupt country in Africa. In terms of all the World Bank's governance indicators (i.e., voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption), Botswana is the best performer on the continent. Namibia is mineral-rich and ranks second to Botswana in terms of the quality of institutions. These conditions may have led to these countries to post positive country-specific effects.

South Africa is mineral-rich; it has large deposits of platinum and gold. The exports of these minerals may have enhanced its growth performance during the period under study. In addition, since 1994 when the apartheid regime was replaced with a democratically elected government, the country took advantage of the international goodwill to advance its growth agenda by focusing on international markets. Sudan too posts positive fixed effects in most of the specifications. Although the country was embroiled in a civil war involving the southern and northern parts of the country during the period under study, large deposits of petroleum were discovered in the country during this same period and appear to have boosted its growth performance.

The main characteristic of the neo-classical growth model is the inclusion of a variable to capture the convergence theory. In this study lagged real GDP per capita is used to measure the level of initial development. Here it is argued that poor countries as measured by their level of initial real GDP tend to grow faster compared to those countries with higher levels of development. In view of this (see Table 2) all the estimated coefficients of lagged GDP per capita) are negative, at the conventional levels of significance. However, it is worth noting that while the estimated coefficients have the expected signs, the magnitude of these coefficients tends to change drastically with the estimation method. Estimations based on the OLS estimation show that the pooled model and the random effects models have comparable results to that of the pooled model estimated using the 2SLS. On balance, however, my findings support the conditional convergence hypothesis, in which case, poor countries grow faster than richer countries as shown in other studies (Barro 1997).

The estimated coefficients of private investment are found to be positive as expected. In the pooled models in Table 2 the ratio of private investment to GDP ratio is positive and significant at the conventional levels of testing. This finding therefore gives support to the notion that a higher level of private investment leads to higher economic growth.

The role of trade openness is also investigated in this study. From the results in Table 1, the findings on the role of trade openness on economic growth appear to be mixed. In Models 1 and 6, where the pooled model is estimated using an OLS and Model 6 where the random effects model is estimated using 2SLS, the estimated coefficients are found to be negative but not significant at the conventional levels of testing. Although weak and insignificant coefficients are reported, it is a sign that trade openness may have not yielded the benefits outlined in the international trade theory. In Models 3 and 4, where the random effects mode (OLS) and pooled models (2SLS) are reported, the estimated coefficients are found to be positive but insignificant at the conventional levels of testing. It is only Models 2 and 5, which are based on fixed effects formulation, that show that the estimated coefficients of openness are positive and significant at a 1 per cent level of significance. These findings therefore show that the role of trade openness is very fragile.

Table 2: Dependent variable: Growth of GDP per capital

	OLS			2SLS		
	PM (1)	FEM (2)	REM (3)	PM (4)	FEM (5)	REM (6)
YPC(-1) .....	-0,183* (-1,832)	-3,872*** (-3,656)	-0,450* (-1,763)	0,213* (-1,887)	-3,283*** (-4,507)	-1,883* (-1,891)
GI .....	1,436*** (2,726)	0,060 (0,099)	0,688 (1,299)	1,110*** (2,879)	0,986*** (2,279)	1,436*** (2,918)
INF .....	-0,009 (-0,893)	-0,019* (-1,881)	-0,017* (-1,798)	-0,019*** (-2,684)	-0,034*** (-5,298)	-0,009 (-0,956)
PRI .....	1,573*** (2,698)	4,036*** (4,896)	2,539*** (3,961)	1,674*** (3,778)	3,765*** (6,373)	1,573*** (2,888)
GOV .....	-1,217** (-1,216)	-2,773*** (-3,874)	-1,947*** (-3,227)	-1,524*** (-3,478)	-2,065*** (4,133)	-1,217** (-2,232)
TR .....	-0,089 (-0,194)	2,300*** (2,824)	0,693 (1,276)	0,291 (0,877)	2,913*** (5,722)	-0,089 (-0,208)
F-statistics.....	-	4,167	-	-	8,055 [35,256]	-
Hausman test (Chi-sq statistic) ...	-	-	40,692	-	-	49,415
R <sup>2</sup> .....	0,08	0,41	0,11	0,16	0,60	0,08
Number of observations .....	298	298	298	298	298	298

\*\*\* significant at 1 per cent; \*\* significant at 5 per cent; \* significant at 10 per cent  
t-values in parentheses

The estimated coefficient of gross primary school enrolment rate in the pooled Model 1 is found to be positive and significant at 1 per cent level of testing. Estimating the fixed effects and random effects in Models 2 and 3 using OLS yields a positive and significant coefficient. Further estimation using the 2SLS (Models 3 to 6) yields results that are similar to those obtained earlier. This shows that the estimated coefficients are not sensitive to the model formulation. This finding therefore gives support to the view that a higher level of human capital formation has growth enhancing effect.

The role of inflation in dampening economic growth is also investigated here. As shown in Table 2, the estimated coefficient of inflation is found to be consistently negative in all the specifications, both under the OLS and the 2SLS estimation approaches. However, it is noted that the estimated coefficients are not unanimously significant at the conventional levels of testing. The negative coefficient supports the traditional view that higher economic growth may only be achieved in an environment of low and stable inflation rate.

The role of government in the economic growth of the countries in the sample is also tested. In Models 1 to 6 it is found that the estimated coefficients of government consumption-to-GDP ratio are unanimously negative and significant in all the specifications. This finding seems to support the notion that higher involvement of government in the economy will have significant negative consequences on the growth performance.

## 7. Conclusion

The present paper investigates the structural constraints on economic growth and macroeconomic interactions drawing on the experiences of countries in Asia, Latin America and Africa. It observes that macroeconomic performance in Africa was dismal in the 1980s to 1990s, largely on account of external shocks and poor macroeconomic management. However, in the 2000s SSA countries posted growth performance that was comparable to other regions of the world, largely on account of improved macroeconomic management. In addition, it is noted that in 2010, while the majority of countries in SSA compared well to where they were in the 1980s, a number still appeared to have performed poorly, which implies that there is diversity of growth in SSA. Comparing the key macroeconomic variables: size of manufacturing and agriculture in the economy; including level of savings and investment; and level of interactions with the rest of the world reveals that SSA countries are doing worse compared to EAP and LAC regions.

A literature survey reveals that SSA countries are characterised by an over-reliance on the agricultural sector, with a small but growing manufacturing sector. This then produces a pattern of low savings and investment levels since the terms of trade will directly affect savings. Although these countries are open to international trade, “doing business indicators” are still a challenge. Hence, these countries trade less and benefit little from international trade.

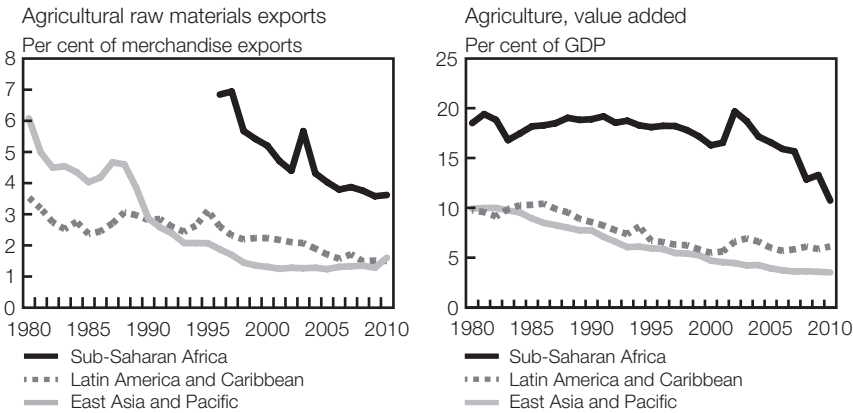
A simple framework to show how the binding constraints work through economic interactions is to look at Hausman, Rodrick and Velasco (2005), now commonly known as the HRV framework. This framework is a growth diagnostic methodology. The HRV framework shows that along a balanced growth path consumption and capital per capita grow at the same rate which, in turn, depends on private returns on accumulation. The private returns on accumulation rate is a function of social returns, private appropriability of returns and the cost of financing accumulation. The growth diagnostic framework identifies three binding constraints that interact to reinforce the low growth trap that most countries have experienced or are likely to fall into in future unless they are resolved. The three dimensions are: first; the low

returns on private capital manifested through falling total factor productivity, weakness in the quality of public investment that undermines private-sector willingness to participate in development, poor contractual enforcement that weakens investment environment and debt overhang, among others. Second, the ability of firms and entrepreneurs to appropriate returns on their investments is limited by high economic distortions. Third, the cost of financing capital is inhibited, given the returns and economic distortions.

It is interesting to note that most literature identifies the following: macro-economic policy environment; macroeconomic uncertainty; human capital and regional spillover effects; external shocks and; institutional or political weaknesses as the main factors explaining growth rather than being the results of the above factors identified in the HRV framework. To overcome these challenges, the paper recommends the following: building strong institutions to protect the markets and define the rules of the game; growth of domestic markets to encourage domestic production; macroeconomic stability, including sustainable public finances to improve the quality of public service delivery; regional integration to resolve small markets; and prudent management of mineral wealth.

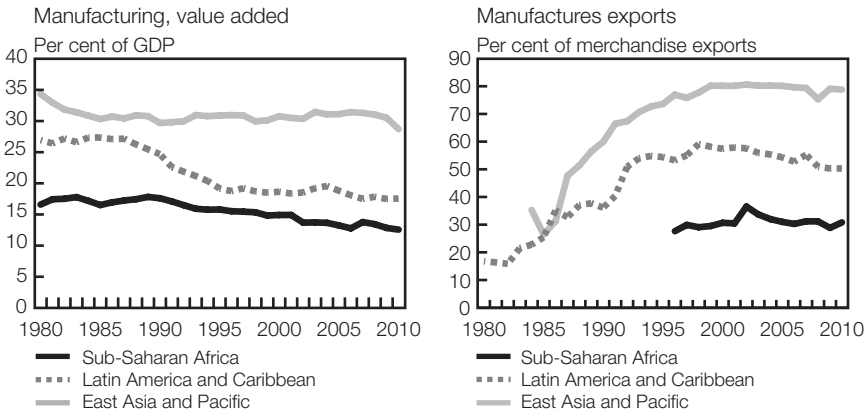
Appendix A

Figure A1: Evolution of the agriculture value added and exports



Source: World Bank, World Development Indicators

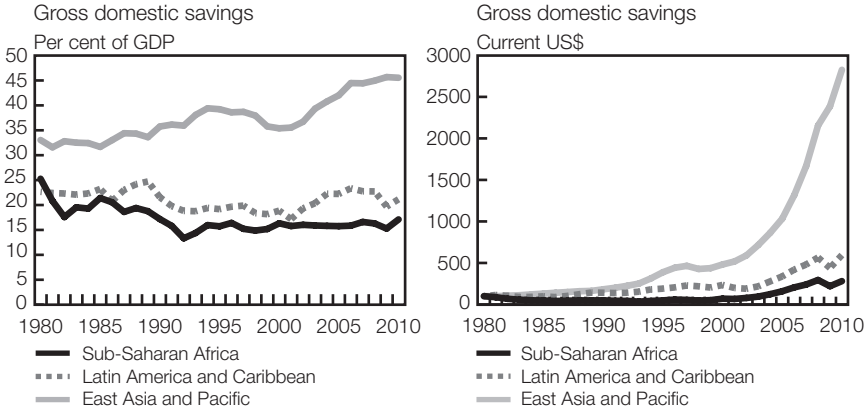
Figure A2: Evolution of manufacturing sector exports and value added



Source: World Bank, World Development Indicators

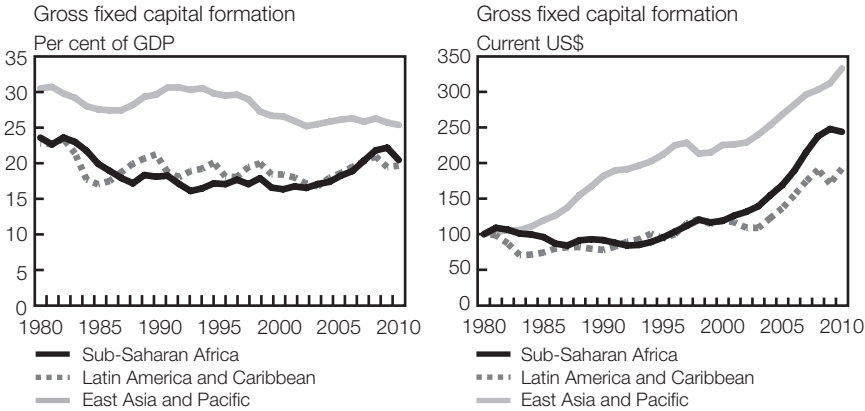


Figure A3: Evolution savings in sub-Saharan Africa, East Asia and Pacific, and Latin America and Caribbean



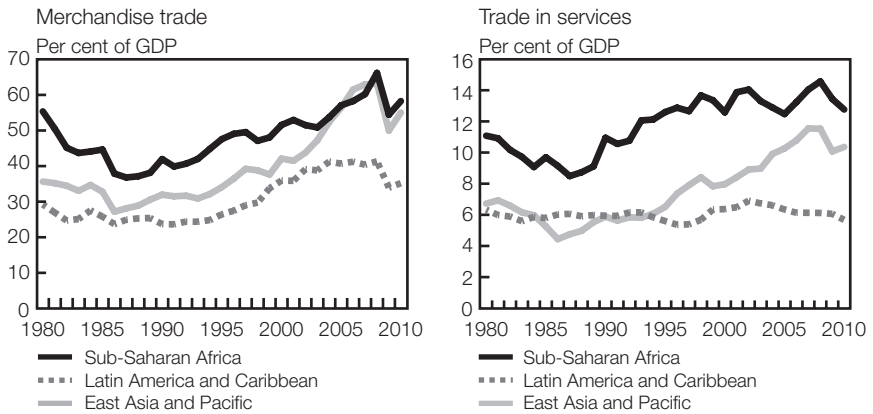
Source: World Bank, World Development Indicators

Figure A4: Evolution of investment



Source: World Bank, World Development Indicators

Figure A5: Regional comparisons of openness



Source: World Bank, World Development Indicators

Table A1: Relative impacts of various variables on per capita GDP growth

Variable	Relative impact (per cent)
Openness .....	100
Life expectancy.....	77,8
Institutional quality .....	66,7
Central government saving .....	66,7
Natural resource abundance.....	55,5
Population growth (economically active relative to dependent).....	44,4
Tropical climate .....	44,4
Land-lockedness .....	33,3

Note: Figures are expressed relative to the impact of openness, using calculations by Sachs and Warner (1997) based on per unit changes in the respective standard deviations of the variables.

Source: Azam, Fosu and Ndung'u (2002) Table 1.

Table A2: Differential effect assessment: Growth equation

Variable	Sample mean	SSA mean	East Asia mean	Coefficient	Sample versus SSA	East Asia versus SSA
Lagged export share.....	0,227	0,203	0,446	0,0959	0,23	2,1
Terms of trade.....	0,778	0,775	0,757	-0,12	-0,036	0,252
Terms of trade shocks ....	0,006	0,0049	0,0338	0,379	0,0379	1,057
Lagged output growth ....	0,0391	0,0343	0,0729	0,314	0,151	1,061
Real exchange rate .....	0,9755	0,9549	0,9806	-0,057	-0,117	-0,0291
External debt flows .....	0,0357	0,0498	0,007	0,03	-0,0423	-0,087
Domestic investment .....	0,208	0,1998	0,279	0,47	0,3854	3,337
Human capital.....	1,297	0,9297	1,678	0,0212	0,779	0,808
Inflation variability .....	0,558	0,696	0,54	-0,117	1,615	0,211
Inflation rate .....	0,494	0,309	0,0838	0,166	3,071	-3,738
Debt service ratio.....	0,155	0,153	0,181	-0,067	-0,0134	-0,174
Overall differential .....					6,061	4,885

SSA: Sub-Saharan Africa

Source: Azam, Fosu and Ndung'u (2002) Table 5.

## Notes

- <sup>1</sup> This section borrows generously from Azam, Fosu and Ndung'u (2002).
- <sup>2</sup> See Table A1 in Appendix A for relative importance of this variable, among other things, in the growth of GDP per capita in Africa.
- <sup>3</sup> This section draws from Azam, Fosu and Ndung'u (2002).
- <sup>4</sup> This section draws heavily on Collier and Ndung'u (2011), and gives examples from Kenya.
- <sup>5</sup> This section borrows from Garrido et al. 2010.
- <sup>6</sup>  $\delta$  is a measure of the inter-temporal elasticity in consumption, which affects how households allocate resources over time in order to maximise welfare.
- <sup>7</sup> To compare the growth performance of SSA with other regions, I have used results, shown in Table A2 (Appendix A) from Azam, Fosu and Ndung'u (2002) in Table 5.

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# Finance, growth and shocks: International evidence and South Africa

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## Abstract

This paper examines the implications for South Africa of research on the relation between financial development and economic growth. It begins with a brief critical review of international evidence on the finance–growth nexus. Going beyond the standard perspective, the paper considers the role of finance in economic shocks and argues that the bad (i.e., the great shocks created by financial crashes) should not obscure the good (i.e., the positive role of finance in economic shocks). The paper then looks beyond the notion of financial intermediation that underpins the finance–growth paradigm, and argues that the roles of different types of finance need to be understood. In total, the paper offers an uncommon conclusion: South Africa's growth might benefit from types of finance that make economic shocks both more common and more productive.

## 1. The finance and economic growth consensus

Until recently, policy in many developing countries was dominated by 'the Washington Consensus' – a mainstream prescription of macroeconomic measures and wide-ranging market liberalisation – and debates over it. Contemporaneously with that general policy perspective, a consensus on a more specialised set of economic relations has developed with support from a large body of empirical research. 'The Finance and Economic Growth Consensus' refers to the extensive evidence that a systematic relationship exists between a country's level of financial development and its economic growth with causation running from finance to growth (although not necessarily in that direction alone).

Following the publication of landmark cross-country studies in the early 1990s Levine (1997, 720) was able to summarise the emerging research consensus as follows:

A growing body of empirical analyses . . . demonstrate a strong positive link between the functioning of the financial system and long-run economic growth. Theory and evidence make it difficult to conclude that the financial system merely – and automatically – responds to industrialisation and economic activity, or that financial development is an inconsequential addendum to the process of economic growth.

The consensus has subsequently been reinforced by a succession of empirical studies using a variety of techniques and data samples as available data have become richer and methods refined.

The great financial crisis of 2007–08 and its aftershocks have led to widespread criticism of banks and financial markets. However, with few exceptions, they have not confounded academic or policy-makers' consensus that financial development has a positive impact on long-term economic growth. Instead, it has prompted two types of response:

- (i) Finance requires better regulation if it is to make a positive contribution to economic growth without counter-productive shocks.
- (ii) Not all types of financial development are equally beneficial for economic growth – the benefits of financial sectors that grow like gas expanding in a speculative bubble are hard to discern and their net value may be negative.

As an example of the latter response, the crisis has led commentators to distinguish between the benefits of commercial banking and the less clear benefits of investment banking arms' proprietary trading – with policy implications for universal banking such as those of the Dodd–Frank Act or those of the Vickers Report.

In this paper I look at the implications of the finance–economic growth consensus for South Africa. The research literature underpinning the consensus on finance and growth relates to empirical studies before the 2007–08 crisis. To evaluate its relevance to South Africa today I focus on the two things that are in our post-crisis minds: (i) *shocks* and (ii) *types* of finance. However, I take them out of their usual context, in the hope that we thereby gain some new perspectives useful for South Africa.

I begin with a brief review of the international evidence supporting the finance – growth consensus (section 1). In section 2 I turn to the role of finance in



economic shocks. There I argue that the bad (i.e., the great shocks created by financial crashes) should not obscure the good (i.e., the positive role of finance in economic shocks). In section 3 I propose that to think about how financial development can benefit growth one needs to understand the potential roles of distinct types of financial activity; and that requires one to look beyond the notion of financial intermediation that underpins the finance–growth consensus. In total, the paper offers an uncommon conclusion: South Africa’s growth might benefit from types of financial development that make economic shocks both more common and more productive.

## 2. International evidence

The foundations for modern research were the observations of economic historians on the roles of banking and other financial intermediation in the growth history of a selection of today’s developed nations (Cameron 1961; Goldsmith 1969). However, the modern finance–growth consensus is underpinned by the application of econometric methods to large datasets. It has been followed by empirical research of two main kinds:

- (i) Estimates of broad association between financial development and economic growth.
- (ii) Estimates of detailed relationships that potentially act as links between financial development and economic growth.

### 2.1 Broad statistical association

A keystone in the edifice of empirical research underlying the finance–growth consensus is King and Levine’s 1993 paper ‘Finance and Growth: Schumpeter Might Be Right’. Following the cross-country growth regressions of Roubini and Sala-i-Martin (1992), which found a negative relationship between financial underdevelopment (financial repression) and growth, King and Levine regressed growth on financial development (measured by proxies related to the size and lending of banks and other financial intermediaries) and other potential growth determinants. The data are for 80 countries from 1960 through 1989 and averaged over time. Estimates, using a lagging measure of financial development to suggest direction of causality, enable King and Levine (1993, 734–735) to conclude: “[I]ndicators of the level of financial development . . . are strongly and robustly correlated with growth . . . and the predetermined components of these financial development indicators significantly predict subsequent values of the growth indicators”.

Cross-country regressions by Levine and Zervos (1998), using data from 41 countries for the period 1976–1993, showed positive relationships between various measures of stock market activity and economic growth, supporting the finding of Atje and Jovanovic (1993) and noting a particularly strong relationship in the developing country subsample. These and other cross-country studies have limitations, but the existence of a broad relationship from finance to growth, while not precluding simultaneity or an effect in the opposite direction as found in other studies, was firmly established on the basis of these, and related models and samples.

Cross-country regressions of that type, widely used in 1990s growth studies, are subject to well-known limitations. Particularly significant is their implicit assumption that countries' growth processes are not influenced by national structural characteristics (structural differences may be assumed to have randomly distributed effects with zero mean). Since the assumption is implausible, the results are presumed to be biased and fail to provide a basis for any individual country's policy.

The effect of country-specific characteristics can be estimated in time series regressions and panel data studies. Early time series regressions for individual countries such as Arestis and Demetriades (1997), and Rousseau and Wachtel (1998) yielded further evidence on the finance and growth association (and its complexity). Subsequently, a broad relationship between financial development and growth has been found in time series and panel data studies of India (Das and Guha-Khasnobis 2007), China (Liang 2006; Shan and Jianhong 2006), other individual countries, and panels covering developing and developed countries or only developing countries (Evans, Green and Murinde 2002; Christopoulos and Tsionas 2004). For South Africa, time series and panel data estimates similarly support the view that between 1981 and 2007 finance (in this case measured by bank intermediation indicators) has had a systematic positive effect on economic growth.

Globally, Khan and Senhadji (2003, 89) summarised the knowledge gained from a number of estimates: "[T]he results indicate that the effect of financial development on growth is positive, [although] the size of the effect varies with different indicators of financial development, estimation method, data frequency and the functional form of the relationship".

## 2.2 Evidence of linkages

The statistical evidence accumulated since the early 1990s supports the existence of an association between financial development, variously measured, and economic growth, and strengthen the consensus on the contribution that the former makes to growth. For several reasons explored below, that alone is not an adequate basis for making policy. One is that broad statistical association between the two variables, even when satisfying statistical criteria for significance, identification, absence of simultaneity bias or Granger causality, does not yield knowledge of economic causality. Advances in knowledge also require a theoretical model of how financial development influences growth and statistically robust evidence that the links through which finance affects growth, according to the theory, do systematically exist. Surprisingly, as the following examples show, although a substantial body of empirical studies of potential links has accumulated they have not yielded strong evidence for one of the main theoretical channels.<sup>1</sup>

*Savings channel:* In the stylised McKinnon–Shaw model of the effect of financial development – financial deepening following liberalisation reforms – the savings rate (usually interpreted as the personal saving rate) is an important channel. Assumed to be interest-elastic, saving increases with the liberalisation of interest rates, thereby increasing the balance sheets of financial intermediaries and their ability to lift credit constraints on investment and misallocation of capital through credit rationing. However, cross-country and time series studies of saving in developing countries or mixed or comparative samples have not found statistically significant coefficients on interest (Loayza, Schmidt-Hebbel and Servén 2000; Bandiera et al. 2000).

Moreover, in economies where businesses and households suffer widespread credit constraints, financial development that alleviates those constraints might discourage saving, for the utility of saving to meet lumpy expenditure or precautionary saving is reduced by increased availability of credit. The evidence that financial liberalisation has not had a positive effect on measures of saving is consistent with the credit constraint hypothesis (Bandiera et al. 2000; Hermes and Lensink, 2005).

In contrast, estimates from large datasets do suggest that financial development does have a positive relation with private investment. Hermes and Lensink (2005), for example, using a 1973–1996 sample of 25 developing countries do find a relationship between financial development and private (but not total)

investment, and Huang (2009) in a panel of 43 developing countries for 1970–1998 finds two-way causality between those two variables.

Whether productivity is enhanced through physical investment promoted by financial development or through the effects finance on corporate governance or other channels, there is evidence of a systematic empirical relation between financial development and total factor productivity growth (Beck, Levine and Loayza 2000). In a sample of 65 countries Kumbhakar and Mavrotas (2005) find that the effect is non-linear, being larger in developing than in developed countries. Using 1955–1996 data for developing and developed countries Arestis, Demetriades and Fattouh (2003) also find a positive relationship between financial development and the average productivity of capital, but considerable diversity between countries in the effects of particular financial policies.

Reviewing the evidence for the finance–economic growth nexus, Victor Murinde ((2012, i45)) assesses the evidence and, from a perspective that, rightly, emphasises the role of companies and their position in the flow of funds as the key to the effects of finance, concludes that

a growing body of empirical work, including firm-level studies, individual country studies, time-series studies, panel investigations and broad cross-country comparisons, finds a strong positive link between the financial system and long-run economic growth. In general, the weight of the evidence is in favour of the argument that financial institutions and markets matter for growth even when controlling for some key factors.

However, there are reasons for thinking the evidence is not so clear cut. The empirical studies that laid the foundations for the consensus used data up to the early 1990s and it is possible that the broad association between financial development and growth is different in recent periods. Using data from 84 countries for 1960 to 2003, Rousseau and Wachtel (2005) find that, while the seminal research of Levine and King (1993) used data for 1960–1989, estimating the model with more recent data yields a weaker relationship between financial development and growth. They report a striking difference between the results with the 1960–1989 sample and the 1989–2003 sample: “The effect of financial depth on growth, which is always significant in the first 30-year period, all but disappears in the next 15” (Rousseau and Wachtel, 2005, 7).

Similarly, using quarterly time series for ten Organisation for Economic Co-operation and Development (OECD) countries plus China over 1985–1998, Shan and Jianhong (2006) estimate impulse response functions in a

vector autoregression (VAR) model and find only weak evidence of financial development leading growth, investment and productivity, accompanied by evidence that causality runs in the opposite direction. For the same period, causality tests on data for 19 OECD countries plus China yield equally weak support for the effect of financial development and evidence of causation in the opposite direction (Shan and Jianhong 2006). The suggestion that the broad association is weaker in more recent periods than in the samples of the benchmark studies weakens confidence in their value as a basis for policy today and it warrants further research.

Most significantly, the evidence supporting the consensus that economic growth is positively related to financial development with finance having a causative role is limited by the linearity of the estimation methods used in many studies. An important recent study by Cecchetti and Kharroubi (2012) finds a robust non-linear relationship such that, beyond a certain level of financial development the marginal impact of the level of financial development on growth diminishes and becomes negative. Beyond a certain level, further increases in the financial sector reduce the trend rate of economic productivity growth. One reason for such a negative effect may be the financial sector's absorption of real resources such as skilled labour (Harris 2012).

## 2.3 Country specificity and implications for South Africa

Economists are easily seduced by large sample econometric studies into drawing conclusions about individual countries. In an otherwise thoughtful landmark study of finance in Africa, Beck et al. (2011, 9–10) are tempted to illustrate the significance of finance in that way:

The effect of finance on growth is not only statistically, but also economically significant. To illustrate the effect of financial deepening, compare Ethiopia with Thailand. Over the period 1980 to 2007, Private Credit to GDP averaged 18% in Ethiopia, but 87% in Thailand. The cross-country comparisons . . . suggest that Ethiopia's real GDP per capita would have grown 1.3 percentage points faster, had it had the same level of financial development as Thailand, or 1.4% instead of the actual 0.1%. This would have resulted in over 40% higher GDP per capita in 2007.

However direct, unqualified lessons for individual countries require caution. Since the effect of financial development on economic growth is conditioned by specific characteristics of each economy, large sample estimates, which provide much of the econometric evidence for the finance–economic growth consensus, do not yield robust knowledge for national policy-makers. The

same problem arises for any attempt to draw policy conclusions for a regional group (e.g., sub-Saharan Africa) from wider samples. The results obtained by Demetriades and James (2011) are a sharp indication that the specific characteristics of their African countries sample give rise to a relationship between financial development and growth that is quite different from the 'consensus' finding found in studies on other country samples.

In the econometric evidence from large sample data the existence of non-linearities, including threshold effects, indicates that the link between financial development and growth in an individual country cannot be deduced from estimates yielded by the predominant linear models. Country specifics include legal institutions, cultural and religious beliefs and practices, and others. La Porta et al. (1997; 1998) provided evidence that legal institutions influenced financial development itself and, hence, the potential effect of policies on financial development, and there are grounds for thinking that they influence the effectiveness of financial institutions in growth-promoting roles. Chinn and Ito (2002), Arestis, Nissanke and Stein (2003), Nissanke and Stein (2003), and others have identified the role that institutions play in conditioning the effects of financial liberalisation policies. On an interpretation of institutions that is broader than customary, countries' predominant culture and religion can be considered as institutional factors, for basic research has found such factors to affect economic behaviour such as saving (Guiso, Sapienza and Zingales 2006; McCleary and Barro 2006). As a hypothetical example, consider a country where the dominant culture rejects interest and debt: this might have high levels of financial development on some measures such as the velocity of broad money or equity market capitalisation but low rates of economic growth because the culture hinders the growth of bank credit to the private sector and associated delegated monitoring.

The general difficulty of drawing direct lessons for individual countries from the global data on finance and growth applies to South Africa as to others. There is merit, instead, in focusing on some particular elements in the finance–growth nexus. The two themes that have come to the fore since the 2007–08 crisis – (i) the relation between finance and shocks; and (ii) the roles of distinct types of financial activity – include important elements of the nexus. Their significance is discussed in the next two sections.

### 3. Finance and shock

The financial crisis of 2007–8 and its aftershocks have given new impetus to the study of the relationship between finance and economic shocks, particularly since the crisis and its aftershocks have been followed by slow

global economic growth and negative growth in several countries. These events have continued the history of recurring financial crises having negative economic effects as the latest big crisis was brewing. Any reckoning of the positive relation between financial development and economic growth has to weigh such negative events in the balance. The effect of the crisis has been to promote analysis of regulatory policies to reduce the negative economic shocks of financial crises.

Those developments treat shocks as being *undesirable* and induced by financial development, sometimes viewed as the ‘wrong type’ of financial development. For some countries, such as South Africa, the gross domestic product (GDP) growth shock is experienced as an exogenous shock resulting from undesirable forms of financial expansion in the United States, United Kingdom and some continental European institutions. Another type of exogenous financial shock with effects on economic growth is exchange rate volatility. Recent research provides strong evidence that countries’ financial development enables them better to absorb and adjust to such shocks and, thereby, strengthen their economic growth trend. Aghion et al. (2009), in a dynamic panel of 83 countries’ data for 1960–2000, find a significant and robust relation between a country’s financial development and the impact of the exchange rate on productivity growth (total factor productivity growth). Real exchange rate volatility has a significant negative impact on productivity growth, but the higher the country’s financial development the lower the negative impact of volatility. Drawing individual country arguments from the large data sample, they use Chile’s experience to illustrate the large potential size of this effect: “For instance, consider Chile, whose level of financial depth ranges from 10% in 1975 to 70% in 2000. This drastic change decreases the negative impact of exchange rate volatility on growth by a factor of five” (Aghion et al. 2009, 498–499).

However, not all shocks are undesirable: *good shocks* promote growth. To understand fully the role of finance in growth, one has to recognise that growth is inseparable from shocks; growth requires economic shocks and *financial development can have a positive role in promoting desirable economic shocks*.

Although economists cannot claim a good record in prescribing specific growth-inducing policies for South Africa or elsewhere, there is universal acceptance that economies’ long-term growth requires productivity growth through innovation. Innovation includes the application of new knowledge through technical change in capital equipment or through the creation of new products but, more broadly, it also includes changes in the organisation,

management and quality of work, and trade such as the ‘self-discovery’ processes and reorganisation considered to be characteristic of successful developing countries (Hausmann and Rodrik 2003).

In a market economy entrepreneurship is the main channel for knowledge and ideas to affect the economy. However, successful change through entrepreneurial activity involves economic shocks. On a large scale, successful entrepreneurs introducing new products or processes may precipitate the rapid decline of an existing industry (think typewriters) as a new one grows rapidly (e.g., digital word processors and printers). Sustainable growth more likely involves a myriad of smaller shocks as entrepreneurs continually try new ways of doing things. Broad evidence of a positive relationship between entrepreneurship and countries’ economic growth is becoming available; Stam and van Stel (2009) and Mueller (2005) find that within sub-national regions entrepreneurial activity is an important channel for new or unused knowledge to enter the economy.

There are at least two ways in which financial development could promote entrepreneurship and the desirable shocks it can produce. One is through the greater availability of finance (i.e., reduction of credit constraints) enabling talented individuals to choose entrepreneurial activities and grow them successfully (Aghion et al. 2009). The second route is that, since entrepreneurship involves risk taking – doing something new – financial development can promote it by reducing information asymmetries and developing financial instruments that efficiently enable entrepreneurs to achieve their desired risk–return combination through enterprise financing (King and Levine 1993).

In addition and complementary to domestic entrepreneurship, in some economies foreign direct investment (FDI) may be expected to raise productivity both directly and through spillovers, and financial development might enhance that effect. There is evidence that inward FDI is positively associated with economic growth and that its effect is enhanced by the host country’s level of financial development. In a 1970–1995 sample of 67 less developed countries, Hermes and Lensink (2003) find a significant but non-linear positive relation between the effect of FDI on economic growth and the level of financial development in the host country. The intuition behind this finding is that a strong local financial system permits local entrepreneurs to invest in ways that take advantage of FDI spillovers such as technology diffusion, but the existence of that channel was not tested.

The potential relationship between finance and entrepreneurship – through which innovation produces growth-enhancing shocks – is relevant to South



Africa. For some three decades South Africa has had both a low trend rate of growth and, despite relatively strong university and industry research bases, a low rate of commercialising its discoveries. The Department of Science and Technology's Ministerial Review Committee (2012, 23) notes the following:

The high rate of reporting of innovative activity in the last two national Innovation Surveys contrasts with the almost static rate of patents awards at the US Patent Office – it seems there is innovation, but few internationally patentable products and processes . . . the low rate of patenting . . . points to a failure to diversify or capitalise on local knowledge generation, despite considerable expertise in sectoral systems of innovation such as mining, pulp and paper, viticulture, chemicals and telemetry.

Low rates of commercialisation of knowledge are paralleled by low rates of entrepreneurship, for in international comparisons South Africa is not ranked as a highly entrepreneurial economy. The *Global Entrepreneurship Monitor* (GEM) annually takes the measure of entrepreneurial activity relative to other countries. The GEM's recent report on its 2011 survey concludes: "South Africa's TEA rate [GEM's principal index for inter-country and intertemporal entrepreneurship comparisons] is, again, far below the average of comparable economies around the world. This therefore remains a matter of grave concern, and presents an opportunity for closer investigation and debate around the factors that impact on entrepreneurial activity in South Africa."

For the transmission of knowledge into new forms of economic activity entrepreneurship to exploit opportunities is more important than entrepreneurship in general (which includes such things as enterprises started out of necessity). Comparing South Africa to the economies of Brazil, Russia, India and China (BRIC)s in the 2006–11 period, GEM (2011, 29) finds that the proportion of entrepreneurial activity accounted for by necessity motives rose faster than any BRIC economy, while Brazil witnessed a large decline accompanied by a large increase in the proportion driven by opportunity.

Although the sources of low entrepreneurial activity are several and complex, access to suitable finance is often considered a prime 'usual suspect', and the report notes that, using GEM's standard survey method for investigating economies' entrepreneurial climate, "a significant number of . . . respondents identified access to financial support as a key factor that limits entrepreneurial activity in South Africa. Specifically, respondents have highlighted the lack of venture capital funding and angel investors, as well as limited availability of 'affordable money' as issues that require dedicated attention."

The findings quoted for South Africa are not conclusive. The existence of liquidity constraints, and the measurement of entrepreneurial activity and innovation are difficult areas of research and much remains to be discovered. However, the findings so far are part of a narrative made plausible by anecdotal and other evidence. In the light of these findings the next section discusses the roles of distinct types of financial development.

#### 4. Types of finance

Early studies on the effect of financial development on growth focused on bank intermediation as the measure of financial development,<sup>2</sup> but the main body of econometric studies that underpin the finance–economic growth consensus measures financial development using a range of variables, including both bank intermediation and stock exchange financial activity. Nonetheless, financial development is generally conceived as a whole, a financial sector comprising formal institutions of two types: (i) banks and stock markets together or (ii) separately (in some cases non-bank financial intermediation firms are included too). The widespread discussion of finance since the 2007–8 crisis has featured distinctions between different types of finance – for example, commercial versus investment banking; socially useful versus socially useless banking; shadow banking and regulated banking – and it would be useful to understand financial development in a more granular way by examining the growth-inducing effects of distinct types of finance.

As persuasively promoted by Beck et al. (2003), one way to go beyond the general concept of financial development is to focus on the role of different financial services irrespective of the formal institutional or informal channels through which they are provided.<sup>3</sup>

A prominent recent example of financial development with strong growth potential for low-income individuals and related business is the development of money transfer systems using mobile telephone technology (Morawczynski and Pickens 2009). For two reasons, conventional studies of the finance–economic growth nexus cannot capture its effects. First, because, at least initially, it developed outside formal financial institutions. Second, because it concerns payments system financial services rather than financial intermediation. The studies underpinning the finance–economic growth consensus are concerned with financial intermediation, channelling savings to investment (whether in the simple Pagano (1993) model or other research frameworks). However, financial services that do not directly involve savings–

investment intermediation – such as money transfer, foreign-exchange, crop insurance, or various risk-sharing transactions – may have systematic growth effects; effects that have not yet been adequately researched.

A second way to go beyond the general concept of financial development is to differentiate between distinct types of formal institutions carrying out financial intermediation. In well-developed financial systems these might include micro-studies of the effects of private equity funds or corporate bond markets, for example. At the other extreme of economic activity, randomised field experiment studies provide useful, testable knowledge of the local effects of micro-finance loans especially in developing countries (Duflo et al. 2009).

The preceding discussion of financing, entrepreneurship, innovation and growth suggests that it is useful to consider whether specialised financial institutions (outside the normal measures of financial development), tailored to fostering the growth of entrepreneurial enterprises and the commercial application of new knowledge, have an impact on economic growth. Two such specialised institutions are considered here: (i) venture capital funds and (ii) regional savings-investment banks.

Specialised finance in support of a firm's entrepreneurial investment is provided by private venture capital funds and public venture capital agencies (or, in very early stage firms, by angel investors). On a number of measures, firms financed by venture capital are more successful and innovate more effectively than others (literature surveyed in Avnimelech and Teubal 2004), suggesting that the effect of the development of venture capital would be found to be significant and positive in broader measures of the finance–economic growth nexus. The paradigmatic example of Silicon Valley's private venture capital funds successfully financing and nurturing entrepreneurial software firms shapes common perceptions of its role, but other models of venture capital are more relevant for policy purposes.

Government attempts in various countries to promote a strong venture capital sector have been spurred by the perceived success of the US's venture capitalism in California, Massachusetts and New York. The most successful has been Israel's venture capital which financed the growth of strong biotech and information technology sectors. That development involved strong direction from, and collaboration with, state initiatives (Avnimelech and Teubal 2004), but the authors argue that the special conditions in which Israel's successful venture capital developed are such that it provides no model for other countries' policy.

More generally, there is no agreement on the effectiveness of government efforts to promote venture capital. Lerner (2002; 2009) documents and analyses the failure of government efforts to promote venture capital finance, but Brander, Du and Hellmann (2010), using an international data set of 20 446 enterprises and 5 693 venture capitalists for 2000–08, find that combinations of public and private venture capital produce better results for enterprise development investment and graduation than private venture capital alone.

South Africa has a range of public agencies designed to provide venture capital and a small, but potentially larger, private venture capital sector. Although private equity funds have grown profitably in the past two decades, their transactions have been dominated by financing black economic empowerment deals while the venture capital subsector has remained underdeveloped (de Beer and Nhleko). At present, the promotion of a private venture capital sector does not have a prominent place in growth strategies; for example, the South African National Development Plan encourages entrepreneurship, as well as research and development spending and commercialisation (p. 110) but does not cover the role of venture capital finance, while the *Department of Science and Technology Ministerial Review Final Report* only briefly touches on possible existing hindrances to private venture capital (p. 48).

The difficult creation of a venture capital sector is not the only type of specialised financial intermediation that can support entrepreneurial shocks. Strong regional banks having deep local roots and practising relationship banking might have similar effects.

In considering the role of specialised finance in creating economic shocks through entrepreneurship, the concept of a lone entrepreneur (or individual firm) entering into financial contracts to support new investment and production decisions fails to engage adequately with the key role that knowledge flows have in industrial development. While modern growth theory pays attention to externalities in knowledge advances, industrial studies of small and medium enterprises in the high growth phases of Taiwan, Italy and other countries have demonstrated how industrial networks give effect to such externalities by knowledge sharing and relations of trust within the networks (Guerrieria and Pietrobelli 2004; Hsu 2004).

Industrial networks have geographical roots rather than being a-spatial or comprising randomly dispersed units. Developments in the ‘new economic geography’, building on Krugman’s initial framework (Krugman 1991)

explain the significance of urban agglomeration and regional concentration in economic growth, and the development of industrial networks as local or regional networks with intra-network knowledge-sharing conforms to that perspective. In a successful region economic, social, educational and other interrelations comprising a “regional innovation system” promote the innovation underpinning that growth (Asheim, Lawton Smith and Oughton 2011). Regional banks potentially have strong abilities to support local industrial networks and their knowledge-sharing contribution to innovation and growth. Their local knowledge and ability to build relationships of trust enables them to act as promoters of intra-network relations and channels for knowledge sharing links. South Africa’s financial legacy does not include strong regional banks; if such banks were to grow on sound local foundations (including intra- and inter-regional mechanisms for risk diversification) they might contribute to sound long-term growth.

## 5. Conclusion

The consensus that financial development has a positive and causative relationship with economic growth is supported by a large volume of econometric research, but the evidence should be regarded with caution.

Confidence in the broad association between finance and growth reflecting a causative relation depends upon one’s confidence in models of growth – the contribution of a range of economic, political, social and cultural factors, of which finance is only one. At present, the growth models underlying studies of the finance–economic growth relation do not command confidence. It might even be the case that, viewing economies from the perspective of complexity theory, the search for an identifiable causative relation between finance and growth is misplaced – growth is an observation generated in a non-linear fashion by agents’ multifarious interactions within a complex system (Foxon 2012).

Additional confidence in the broad association could be gained by understanding the detailed links between finance and growth. We have relatively little tested knowledge of *how* financial development promotes economic growth – the channels through which it works. This paper argues that additional understanding of how finance promotes economic growth – which is required for concrete policies – requires one to go beyond the existing research paradigm. The main body of existing research sees financial institutions principally in their role as linking general saving and investment through intermediation. Starting from the belief that economic growth requires

shocks, the paper argues that specialised finance such as venture finance and regional banks embedded in industrial networks can be important supports for beneficial shocks, and innovations in money transfer systems (rather than financial intermediation) can also generate such positive shocks.

## Notes

<sup>1</sup> The linear  $AK$  growth model used as a heuristic by Pagano (1993) illuminates the channels through which higher financial development might drive a higher growth rate. From the aggregate production function

$$Y_t = AK_t$$

where  $K$  is the aggregate capital stock, and  $A$  is the social marginal productivity of capital, we may derive for a private economy:

$$g = A \frac{I}{Y} - \delta = A\phi s - \delta$$

where  $g$  is the rate of growth of  $Y$ ,  $\delta$  is the depreciation rate of  $K$ ,  $I$  is gross capital formation,  $Y$  is GDP,  $s$  the saving rate, and  $\phi$  is the proportion of saving that is invested ( $1-\phi$  is the proportion of saving somehow extracted as costs of transferring resources from savers to investors, in other words, intermediation).

In this model a higher level of financial development would generate a higher growth rate if it causes a higher savings rate,  $s$ ; if it raises the marginal productivity of capital by, for example, improving the allocation of capital (improving banks' or markets' choice of productive investment projects), or by improving entrepreneurship and innovation; or if it reduces  $(1-\phi)$ , the proportion of savings 'wasted' by inefficient intermediation. If we modify the framework to relate to the medium term with the Keynesian assumption that ex ante saving and investment are not necessarily equal, the effect of financial development on the rate of investment  $I/Y$  instead of the savings rate would be one potential channel. Numerous empirical studies have examined those categories of channels linking financial development and growth but strong evidence for any is scarce.

<sup>2</sup> Although the historical data of Goldsmith (1969) was broader.

<sup>3</sup> Analysing the roles of financial services, irrespective of the institutions (such as banks) that supply them holds promise. As indicated above, there is also merit in the institutional approach to understanding the effect of finance on economic growth. Reconciling the two perspectives remains an open task.

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# The interaction between finance, financial stability and economic growth

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## Abstract

Experiences of financial repression in most developing countries in the 1970s and 1980s, and the studies that followed have brought both policy-makers and academic economists to the general consensus that finance plays a key role in growth and development. These conclusions were behind the financial reforms that were adopted in most developing countries in the 1990s, which have been credited for the positive economic growth observed in many African countries since the second half of 1990s. These developments highlight the importance of furthering financial-sector reforms as one of the key pillars of sustainable growth and poverty reduction in Africa.

History has taught us that financial systems are inherently unstable and that whenever financial instability occurs, growth is likely to suffer. Recent financial crises have also shown us that, with the increase in interdependence of economies across the world, financial crises have become more costly because countries are more exposed to shocks occurring elsewhere in the world. With development of the financial sector comes an increase in the number of channels through which a country can be impacted by shocks occurring in other countries.

This paper therefore argues that financial reforms must go hand in hand with measures to strengthen the prevention of financial crises, through enhancement of prudential supervision and devising means of coping with innovations. Focus needs to be put on system-wide risks that threaten the soundness and safety of the financial system as a whole. Maintenance of stable macroeconomic policies and deepening of regional integration are crucial in enhancing the resilience of African economies to adverse consequences of financial instability. In addition, countries need to build additional buffers in terms of fiscal space and international reserves at times of financial stability. Collective self-insurance through pooling of reserves, as was adopted by Asian countries after the 1997 crisis, is worth considering as means of broadening options available for African countries in times of stress.

## 1. Introduction

The interaction between finance and economic growth has been one of the most researched topics in economics since the early 1960s. Studies have attempted to investigate the finance and economic growth relationship; the direction of causality; and the channels of transmission between finance and growth. There is strong evidence so far suggesting that financial development is crucial for both growth and development. Countries with better-developed financial systems experience faster economic growth, as financial intermediaries mobilise resources, and direct them to their most efficient uses by evaluating alternative investments and monitoring the activities of borrowers. It is hard to find instances where the transformation from a predominantly agriculture economy to a more diversified one has taken place without a well-functioning financial system. There is also a consensus that the financial repression policies of the 1970s and 1980s presented one of the key impediments to strong and sustained growth in developing countries.

These conclusions contributed to the shift in financial policies in developing countries during the early 1990s. Most of these countries introduced financial reforms aimed at developing the financial sector, particularly, through liberalisation policies which, in some countries, played a key role in increasing the level of integration into the international financial markets. At the same time, during the 1990s, financial innovation was gaining momentum in advanced economies, boosted by the rapid development of derivative markets. These financial reforms and innovations are credited to have produced a positive influence on economic growth in many countries; for example, it has been argued that the strong economic growth observed in many African countries, particularly from the mid-1990s to the period before the 2007–08 global financial crisis was partly due to financial-sector development and efficiency, following the reforms of the 1990s.

However, there is no doubt that the financial crises of the past decade have highlighted the importance of financial-sector stability for attaining high and sustained economic growth. During the 2007–08 financial crisis, for instance, growth in both advanced and developing economies slumped, with serious repercussions in employment and household incomes. The important lesson learnt from this crisis is that financial development is a necessary, but not sufficient, condition for economic growth and development. When one looks at the crisis, it is clear that flawed strategies and inadequate risk

management were at the heart of the financial turmoil. Both regulation and supervision were inadequate to prevent institutions from putting themselves at excessive risk. When they failed, the consequences were not limited to them, but were quickly propagated to other countries, largely because of the global interconnectedness. The important policy question facing policy-makers is what measures need to be put in place to avoid future crises or to reduce their impact on the economy when they occur. Is it necessary to initiate fundamental reforms to financial regulation or is it simply necessary to do a much better job of executing current regulations? Is more international co-ordination necessary? Should the reliance on global integration to avoid the impact of crises originating elsewhere be reduced, even though this integration has been credited with enhancing growth in recent years? Answers to these questions can be quite diverse, but these are important policy questions that need to be addressed.

This paper highlights the linkages between financial-sector development, financial stability and economic growth. The paper is structured as follows: section 2 summarises the theoretical literature on the contribution of the financial sector to economic growth and provides some evidence of the importance of finance to growth, based on traditional measures of financial development from advanced and developing countries. Section 3 presents the link between financial-sector stability and economic growth. Section 4 discusses a set of potential measures that could help promote financial-sector development and ensure stability of financial sectors, either by avoiding future crises or reducing the impact of crises when they occur. Section 5 provides a conclusion to the issues discussed.

## 2. Finance and economic growth

### 2.1 The role of the financial sector in economic growth

Before the second half of the nineteenth century the role of financial systems in promoting economic growth was, to a large extent, overlooked: for example, Solow's growth model and all the work that followed in its wake did not contain any financial variables. Consensus views at that time were that economic growth was purely determined by real variables, particularly domestic savings and investment. The role of financial systems in promoting economic growth was first introduced by McKinnon (1973) and Shaw (1973) who pointed out that misguided financial-sector policies had

damaged the economies of many developing countries by reducing savings and encouraging investment in inefficient and unproductive activities. In particular, McKinnon and Shaw argue that an administratively fixed nominal interest rate that holds the real rate below its equilibrium level depresses returns for savers, and so discourages savings. Furthermore, interest rate ceilings discourage financial institutions from charging risk premiums, which may ration out a large number of potential borrowers with high-return projects. Furthermore, they argue that selective or directed credit associated with financial repression results in higher loan defaults and increases the fragility of the banking system.

Many countries learnt these lessons the hard way, particularly through the repressed financial systems in the 1970s and 1980s, which produced distortions in savings and investment decisions, resulting in slow economic growth. By the early 1990s, the consensus among both policy-makers and academic economists had shifted to become much more positive about the potentially growth supportive role of a modern financial system in the process of economic growth and development. Following such consensus, many developing countries introduced reforms aimed at liberalising and promoting the development of their financial sectors.

Several authors have identified a number of specific functions through which the financial sector influences economic growth.<sup>1</sup> On the basis of an extensive survey of the literature, Levine (2005) identified five basic functions that affect savings and allocation decisions, and how these functions then influence economic growth through two channels, namely (i) capital accumulation and (ii) capital productivity:

First, the most obvious and important function of the financial sector is *mobilisation of savings*. The provision of savings facilities enables households to store their money in a secure place, and allows this money to be utilised productively by lending it to individuals or enterprises to finance investments, thus encouraging capital accumulation and promoting private-sector development. Without the pooling of individual savings through financial intermediaries, the scale of investment projects is more likely to be constrained below what might be efficient. Investments, and thus capital accumulation, depend on mobilised savings, which increase with the level of development of the financial sector. Thus, a more developed financial sector will relax credit constraints in an economy, which may improve the investment rate and accelerate economic growth.



Secondly, as noted by Andersen (2003), the basis for accelerating economic growth is the *allocation of resources* to new and higher-return projects. Individual savers are unlikely to have the time or capacity to collect, process and compare information on many different enterprises, managers and market conditions before choosing where to invest. In addition, they will be less keen to invest in activities about which they have little information. Thus, high information costs may prevent capital from flowing to its highest-value use. Financial intermediaries that specialise in acquiring and evaluating information on potential investment projects enable small investors to locate higher-return investments. The improved allocation of savings among investment projects would then enhance growth prospects.

Thirdly, financial institutions *exert corporate control* by monitoring the performance of their borrowers in order to reduce the risk of resource mismanagement. The ability of banks to monitor the performance of enterprises on behalf of many investors, who would not otherwise have the resources to do so individually, and to exercise corporate control helps to ensure that investors receive returns that properly reflect enterprise performance and create the right incentives for the managers of the borrowing enterprises to perform well.

Fourthly, financial institutions help *mitigate risks* associated with different maturity preferences between lenders and borrowers. Many projects or enterprises require a medium- to long-term commitment of capital, whereas most savers prefer to have the option to draw on their savings, or move them into another investment opportunity should the need arise. Banks accept funds from investors who desire to lend for a short term and, in turn, lend to borrowers who desire long-term maturities. Thus borrowers and lenders with different preferred maturities are not compelled to agree on a common maturity. This is possible because banks combine many household savings and, usually, all savers are not expected to withdraw their money at the same time. Furthermore, banks bear the risk of borrowing at volatile, short-term interest rates and lending at stable long-term interest rates. By doing so, they help to ensure that capital is allocated to the best projects, even if they require a long-term financial commitment.

Finally, financial institutions lower the cost of doing business by providing mechanisms to make and receive payments, which in turns, facilitates exchange of goods and services. Through these five functions, financial sector development facilitates economic growth by increasing the supply (volume) of credit in the economy and enhancing the efficiency (productivity) of capital.<sup>2</sup>

## 2.2 Economic development and financial sector indicators

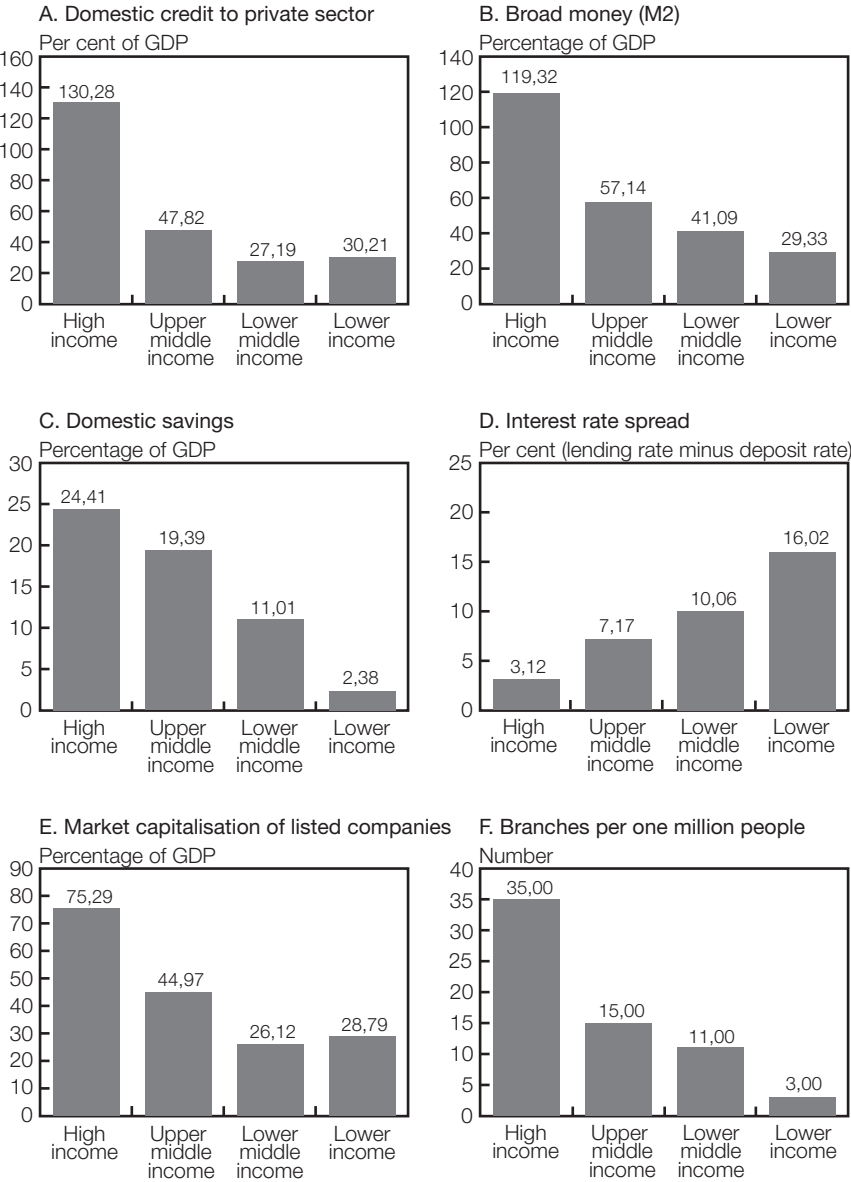
From the above discussion, we would expect countries with more developed financial sectors to sustain high levels of economic development, measured for example by gross domestic product (GDP) per capita. To be able to gauge this relationship with precision, one would need indicators of how well financial sectors across countries fulfill the functions identified above (i.e., mobilise savings, allocate resources, exert corporate control, facilitate trade and manages risks). Unfortunately, such measures are not readily available for all the variables and across countries. We will therefore use traditional measures of financial-sector development to link economic development to the functioning of financial sectors across countries.

Figure 1 presents summary statistics of various measure of financial-sector development by income groups. These are domestic credit to private sector, broad money supply, domestic saving and market capitalisation – all measured as shares of GDP; and interest rate spread and number of bank branches per million people. Evidence from Figure 1 indicates that income per capita increases with the level of financial-sector development, suggesting that financial systems in advanced countries have contributed positively to the prosperity of those economies.

Figure 1A suggests that credit allocated to the private sector as measured by the ratio of private-sector credit to GDP, has a positive relationship with economic development; for example, while private credit in the high-income group is over 100 per cent of GDP, on average, low-income countries have a value of 30 per cent. As noted by Levene (1997), financial systems that allocate more credit to private firms are more engaged in research, exerting corporate control, providing risk management services, mobilising savings and facilitating transactions than financial systems that simply funnel credit to the government or state-owned enterprises.

Furthermore, in terms of the ratio of money and quasi-money to GDP (M2:GDP), low-income countries have the lowest averages. The M2:GDP ratio of about 29 per cent for low-income countries for the period 2000–11 is considerably low than 57 per cent for the upper middle-income group and 119 per cent for the high-income group (Figure 1B). These comparisons are also reflected in the domestic savings averages for the same period, whereby low-income countries score 2,4 per cent against 11,0 per cent for the lower middle-income, 19,4 per cent for the upper middle-income and 24,4 per cent for the high-income group (Figure 1C).

Figure 1: Financial indicators by income group (mean)



Source: World Bank, World Development Indicators database

Interest rate spread is frequently used to measure financial-sector efficiency. The more efficient financial systems are, the more growth they are able to foster. Figure 1D suggests that financial sectors in low-income countries are more inefficient than in the other income groups as indicated by the interest rate spread between the lending and deposit rates, which is widest at 16 per cent compared to 3 per cent for the high-income countries. High interest rate spreads are symptoms of low financial intermediation efficiency, meaning that borrowers have to pay higher prices to borrow and savers do not earn as much as they would in an efficient financial system. This inefficiency adversely affects economic growth by diminishing incentives to save and thus decreasing the resources that banks can pool together to lend. In contrast, the high lending rates discourage borrowers from taking credit, and thus keeping, investment below its potential level.

Stock market capitalisation, the value of listed shares as a percentage of GDP, is widely used to measure the ability of an economy to mobilise savings and diversify risks. As can be seen from Figure 1E, on average, high-income countries' stock market capitalisation is 75 per cent, while that of low-income countries is about 27 per cent. The depth of the capital market has important implications for real economic activity. Stock markets provide financial leverage and ensure efficient allocation of resources. Furthermore, well-developed stock markets compel banks to pay more attention to small firms and households. Low capitalisation of stock markets implies a limited role of the financial sector in facilitating long-term investment for economic growth.

Another important indicator of financial-sector development is the extent to which the majority of the population and businesses can access financial services. One of characteristics of financial sectors in developing economies is low access to financial services. Evidence from Figure 1F suggests that a disproportionately small fraction of the population in low-income countries is served by formal financial institutions. Access to finance can be an engine for economic growth and development, as it allows businesses – especially small and medium enterprises – to capitalise on their growth potential and turn initiatives and ideas into employment opportunities. Without access to finance, small- and medium-sized firms will have to rely on their limited internal resources to run their businesses. This is likely to act as a brake on growth and development.

In a nutshell, the argument in this section supports the view that finance plays an important role in economic growth. A well-functioning financial sector plays a critical role in channelling funds to their most productive uses and allocates risks to those who can bear them best. This shows that having an efficient financial system that can deliver essential services can contribute to a country's economic development.

### 3. Financial stability and economic growth

#### 3.1 Financial stability is a prerequisite for sustainable growth

The role of finance in economic growth described in the preceding section works in the context of financial stability and, indeed, quoting William Dudley (2011 page 1) “a stable financial system is a prerequisite for sustainable economic growth”. History has taught us over and over that financial systems are inherently unstable – booms and busts have occurred in the past, and will recur in future. In our discussion about the importance of financial stability to growth we take note of the fact that measuring the impact of financial stability on growth is less clear than measuring the negative effects of financial instability. Given the difficulty of measuring the impact of financial stability on growth and given the fact that the incidences of instability cannot be avoided, we take the approach of trying to understand financial instability and its implications for growth.

The literature abounds with definitions of ‘financial instability’ but they all put the emphasis on the impact of shocks on the financial system that causes a set of financial asset prices to diverge sharply from the fundamentals with the consequences of impairing the ability of the system to channel financial resources to productive investments or to facilitate smooth payment with eventual adverse consequences for the real economy. In short, financial instability keeps the market from pricing and allocating resources and risks efficiently, and thus drives the economy away from the optimal utilisation of resources, causing growth to be below its potential level.

A typical cycle of financial instability begins with distortions in the financial market that drive asset prices up above what would be permissible, given the fundamentals. The optimism that follows the gains made on capital and the failure of the market to provide prudent information drive the asset prices up even further, creating a bubble that bursts when real developments in the market contradict expectations. In the 2007–08 crisis, for instance, the housing bubble that had been characterised by almost a decade of annual double-digit increases in housing prices in the US, came to the bursting stage in mid-2007, when defaults on mortgages increased substantially, transmitting losses to a whole set of securitised financial products, as it became evident that they were riskier than they had been rated.

The economic costs of instability that come with the bursting of a bubble can be enormous. The bursting of a bubble brings uncertainties that heighten risk aversion, increasing the cost of borrowing and thus reducing financial resources available for investment and consumption. The impact on activity is compounded by weak demand that is transmitted to an even greater reduction in demand as unemployment increases and consumer confidence weakens. Weak cash flows and reduced asset value among firms and households put them in a position where it is even harder to access credit. While the boom side of a financial instability cycle may put growth above its long-term path, it is the costs to society caused by the unwinding of the boom that concern policy-makers.

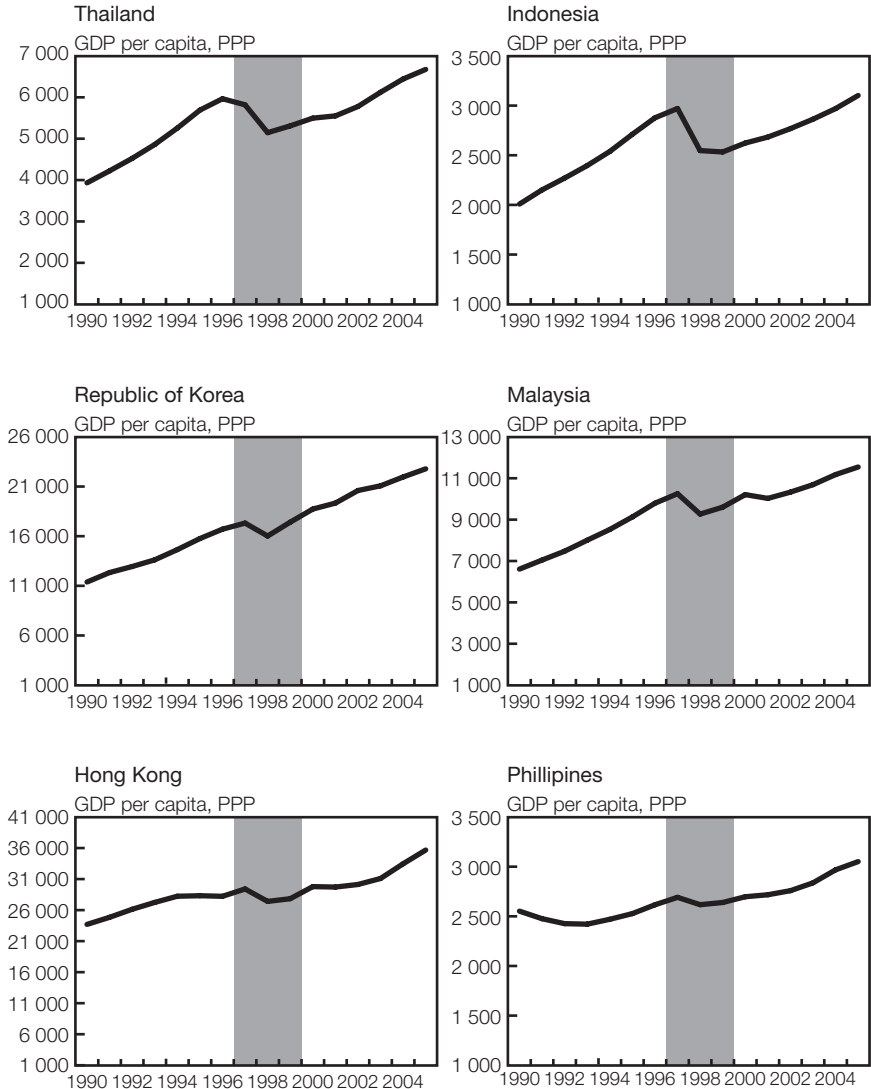
### 3.2 Increasing global interdependence has made financial crises more costly

Without global linkages, the consequences of financial instability would to a large extent, be confined to the country where they originate. With globalisation though, markets have become strongly interlinked across the world and, as a result, the world has seen shocks to the financial system occurring in one country spreading rapidly to other countries across the world. Innovations too have provided means of transmitting shocks from one segment of the financial sector to other segments. The sub-prime mortgage crisis, for instance, began in the housing market, but through the mortgage-backed securities that were sold worldwide, the shock was transmitted to the entire financial sector and across countries, turning the crisis into a fully-fledged financial crisis and giving it a global dimension. With the increase in incidences of contagion, matters of financial instability have become a concern of not only individual countries, but the entire global community.

The extent of inter-linkages and the channels through which economies are interlinked vary and therefore the speed with which the shocks spread and the extent of the damage caused differ from country to country. The financial crises that occurred between 1995 and 2010 have also manifested the significance of the location of the epicentre of a financial-sector shock. If located in a large and significant economy in trade and finance terms, the impact will spread faster and further than if the economy where it originated were small and less significant. The spread of the impact of the 1996–98 East Asian crisis was far more limited than the 2007–08 US sub-prime mortgage crisis. In the case of East Asia the financial crisis began with the collapse of Thai baht in July 1997 but spread quickly to other countries in the region and affected financial markets across the

world. The consequences of the crisis on consumer confidence, demand and employment led to loss of growth in most countries in the region. As indicated in Figure 2, per capita income declined not only in Thailand, but also in Indonesia (where it also caused political unrest), South Korea, Malaysia, Hong Kong and the Philippines.

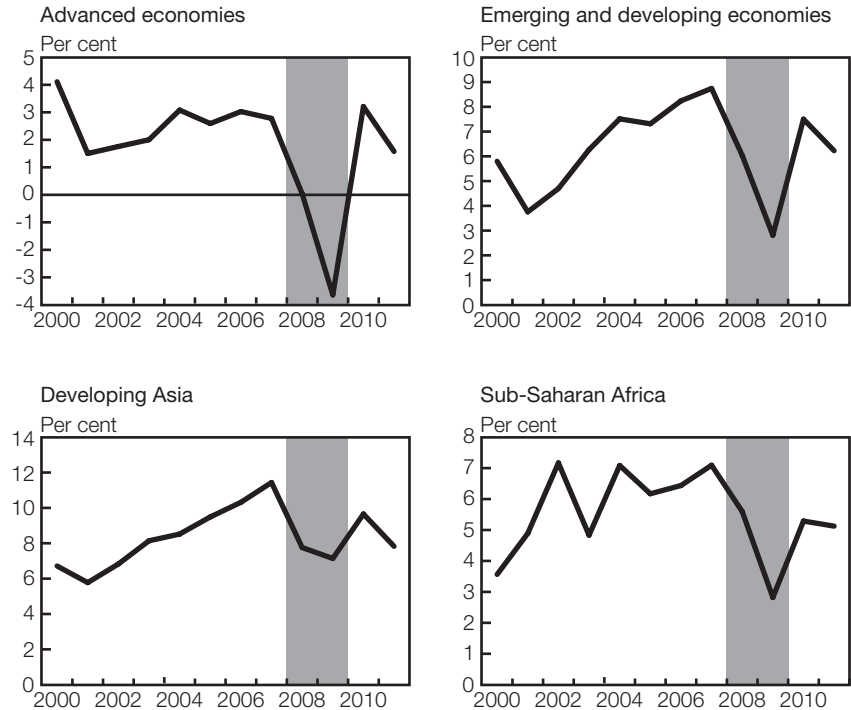
Figure 2: Per capita income (constant 2005 international \$)



Source: World Bank database

The impact of the sub-prime mortgage crisis spread wider partly because it had its origin in a much bigger economy with stronger linkages in the advanced economies. Figure 3 shows that the loss of growth momentum happened in all regions of the world, with that of advanced and emerging economies arriving earlier and more intensely.

Figure 3: Financial instability causes loss in economic growth



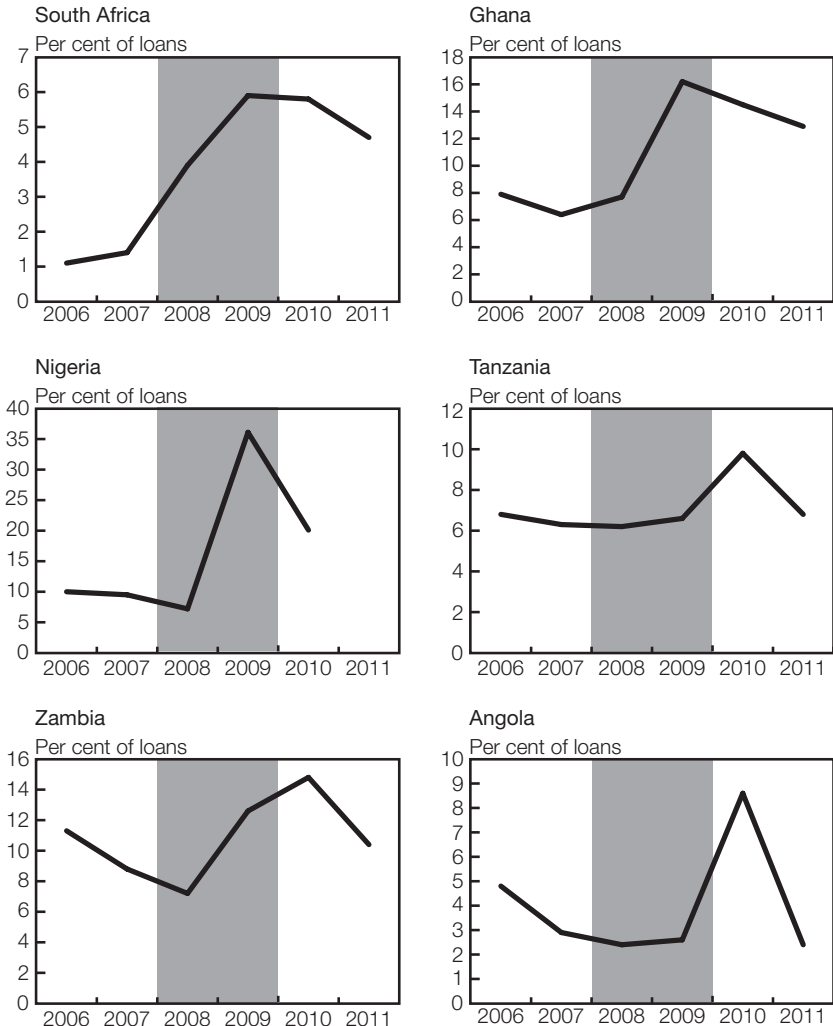
Source: Data from the *Regional Economic Outlook, Sub-Sahara Africa*, April 2012

The fact that financial shocks begin in the financial sector means that countries with a developed financial sector and significant reliance on global financial markets for foreign resources are impacted more quickly and more intensely by shocks coming from outside than countries with less-developed financial sectors and less dependence on global financial markets. In the subprime mortgage crisis the advanced economies whose banks were exposed to what turned out to be toxic assets had their banks hit swiftly by the systemic crisis. For emerging-market economies with well-developed capital flows, stock market investment and exchange rates were important transmission channels.



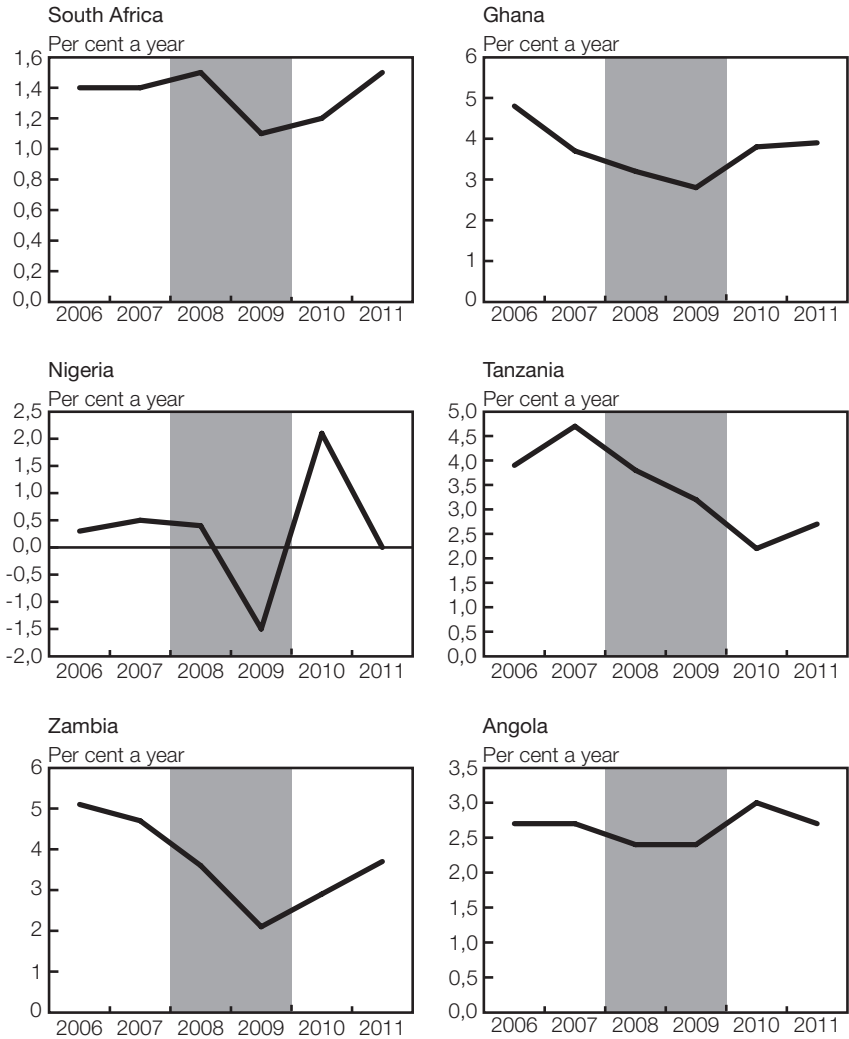
In Africa, for example, South Africa was most affected by the turmoil because its equity market and deep, liquid bond market attracted sizeable amounts of foreign portfolio investment and carry trade. In addition to South Africa, some of the other financially more advanced sub-Saharan Africa markets experienced portfolio capital outflows in late 2008 which eventually turned into inflows in 2009. Nigeria and Ghana were affected, first, through their financial links with other regions of the world and this was manifested in a number of financial-sector soundness indicators (Figures 4 and 5).

Figure 4: Developments in banks' non-performing loans



Source: Data from the *Regional Economic Outlook, Sub-Saharan Africa*, April 2012

Figure 5: Developments in banks' return on assets

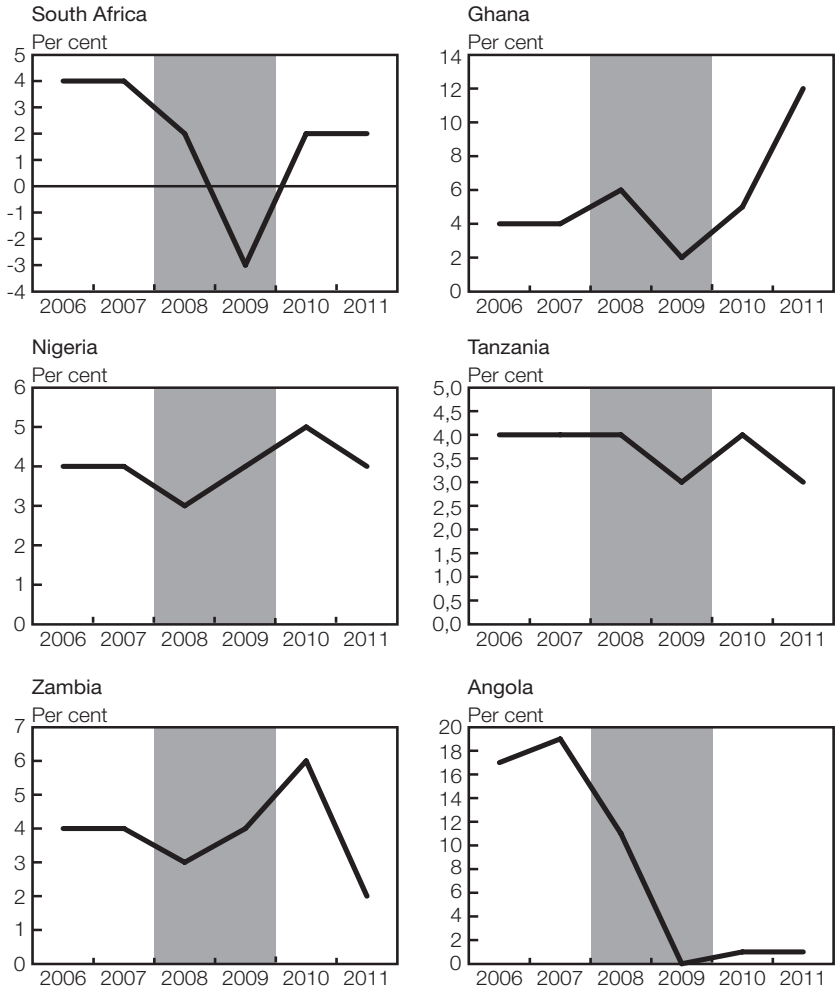


Source: Data from the *Regional Economic Outlook, Sub-Saharan Africa*, April 2012

Although the effect on stock prices and exchange rates was contained, the flight from risky assets did indirectly affect some of the sub-Saharan African frontier markets. Zambia, for instance, saw a sharp reduction in foreign investors' demand for Zambian bonds, which led to a credit crunch when the banking system took over as the primary source of government financing. Foreign direct investment also declined, but remained positive, while exchange reserves fell more markedly in countries with fixed exchange rate regimes (IMF 2012).

The collapse of demand in America and other advanced economies pushed commodity prices down, which led to a reduction in export earnings and government revenue for most African countries. The sub-Saharan Africa financial sector, which had initially been spared from the direct impact because of its limited integration with the global financial markets, received most of the impact though weakening client incomes, which led to difficulties in them servicing their loans. While the impact on Africa's growth as a whole was modest, countries that were more dependent on commodity exports were hit harder. Angola, for instance, whose economy depends largely on oil exports, lost pace in growth of per capita income compared to countries such as Tanzania and Ghana who are less dependent on commodity exports (Figure 6).

Figure 6: Growth in per capita income



Source: World Bank database

This underscores the importance of diversifying the destination of African commodities by increasing the share of exports that goes to regional markets.

We have seen that while financial development is key to high and sustainable economic growth, financial instability impairs growth, irrespective of whether it originates from within the country or from outside. It is imperative, therefore, that in order to preserve the growth gains and be able to deliver the targeted poverty reduction under the Millennium Development Goals, the financial sector needs to be developed more, and measures should be taken to address the risks to growth that may come from financial instability. A framework for preventing financial instabilities should be put in place and mechanisms need to be devised to mitigate the impact when they occur, which is the subject of the next sections.

## 4. Financial-sector development and financial stability in Africa

As argued above, financial development is essential for both growth and development. Well-developed financial systems are associated with rapid growth in per capita incomes. We have also shown that a stable financial system is crucial for the functioning of an economy and is also a prerequisite for sustained economic growth. In this section we offer a set of recommendations that could help promote financial-sector development and ensure the stability of financial sectors, either by avoiding future crises or reducing the impact of crises when they occur.

### 4.1 Measures to promote financial-sector development

#### 4.1.1 Maintaining a conducive macroeconomic environment

Well-functioning financial systems require fiscal discipline and a stable macroeconomic environment. As noted by Asli Demirgüç-Kunt (2006), monetary and fiscal policies affect the taxation of financial intermediaries and the provision of financial services. Large financing requirements of governments crowd out private investment by increasing returns on government securities and absorbing the bulk of the savings mobilised by the financial system. Bank profitability may not necessarily suffer, given the high yields on these securities, but the ability of the financial system to allocate resources efficiently is severely affected. Improved macroeconomic stability has been important in promoting strong and stable financial systems

in Africa prior to the recent global financial crisis. It is therefore important that African countries maintain sound macroeconomic policies so that such gains are not reversed.

#### 4.1.2 Further financial-sector reforms in some countries

As noted in section 2, during the early 1990s many developing countries introduced financial-sector reforms aimed at liberalising and promoting the development of their financial systems. While these reforms have had some positive impacts in these countries, we have, however, learnt that opening the banking sectors to foreigners and privatising state-owned banks do not necessarily lead to efficient banking systems. Many more reform measures are needed along with liberalisation and privatisation in order to achieve the desired efficiency in the financial sector. Such reforms may include improving the legal frameworks and enabling information sharing among financial institutions on the creditworthiness of borrowers and increasing the availability of long-term loanable resources through stock markets, pension funds and insurance companies. These measures would help reduce operating costs and also encourage competition in the banking sector.

#### 4.1.3 Facilitating access to finance

Governments in developing countries have an important role to play in expanding the availability of the range of financial services to a broader set of households, firms and sectors in the economy. One way of improving access to finance, particularly by the poor, is to promote technology in the financial sector and encourage specialised microfinance institutions.

##### 4.1.3.1 Promoting technology in the financial sector

Technological innovation has a potentially transformative role in extending affordable financial services, particularly to the rural population. Technology offers financial institutions the means to reduce transaction costs, allowing financial services to be delivered more rapidly and more conveniently to broad sections of the population; for example, the introduction of automated teller machines (ATMs) in urban centres across many sub-Saharan African countries in recent years has allowed financial institutions to provide services at all times, seven days a week. At the same time, the sharp increase in the number of mobile telephone providers and subscribers in Africa has supported expansion in outreach by providing previously unbanked customers with a range of cash transfer and bill payment services.

It should be noted, however, that in most cases these innovations have come as a result of voluntary decisions by private firms acting in their own interests – mostly profit motives. However, there is no doubt that sizeable initial start-up fixed costs are involved in establishing these schemes and their payoff takes many years to realise. Governments can encourage more technology-driven innovations by putting in place policies that effectively protect property rights so that firms can incur the fixed start-up costs with confidence so that they, and not others, will capture the return on the investment. Furthermore, policy-makers can play a key role in underpinning the public's confidence in the uptake of new technology driven financial products and services. This is important because, unlike many markets in goods and services, financial markets are trust-based markets – in which case, the role of regulators and supervisors in building the public's trust in new innovative financial products is vital.

However, we should also be aware of the challenges that technological advancement presents. One such challenge relates to the supervision and regulatory capacity; for example, cellular telephone banking cuts across various regulatory domains, including banking, telecommunications and payments systems. The challenge here is to put in place a consolidated regulatory framework that allows the regulators to adequately monitor the risk involved in the provision of such services.

#### 4.1.3.2 Encouraging microfinance institutions

Another measure that would help to push the frontiers of financial access is to promote and encourage specialised microfinance institutions. Mainstream banks tend not to serve the poor and small and medium enterprises (SMEs) because of the perceived high risks and high costs involved in small transactions, and the inability of the poor to provide collateral. Microfinance institutions have the potential to bridge this gap by providing more adapted financial services to this segment of the population. Experience from many countries shows that these institutions have used various innovative mechanisms such as group lending and other techniques to overcome the obstacles involved in delivering services to the poor and to small firms. By financing income-generating activities among the poor, microfinance institutions certainly offer a promise to economic growth and poverty alleviation.

### 4.2 Measures to prevent crises from occurring

Weaknesses in financial regulation and supervision have been fundamental causes of financial instability in the past. Therefore, the first line of defence in preventing financial crises is better regulation and supervision of financial

systems. Prudential supervision plays a role in reducing the failures of financial institutions and avoiding financial-sector crises. The concern after the 2007–08 financial crisis has been for countries to undertake a comprehensive review of their regulatory and supervisory regimes with a view to identifying areas for further improvement. The traditional approach to regulation and supervision leaves other financial activity such as derivatives unregulated. This approach is vulnerable to regulatory arbitrage and in need of adjustment. Thus, regulation must be comprehensive, with boundaries determined by the economic functions of financial institutions, not by where they are located.

One of the lessons we learn from the 2007–08 crisis is that risk management and supervisory practices lagged behind financial innovations and emerging new business models. This lesson underscores the need for regulation to stay ahead of the curve, and for continually upgrading the skills and instruments needed for financial regulation and supervision. However, there is a need for a word of caution here. Financial crises and their impact can be suppressed completely only through severe financial-sector repression and autarky policies – and at a clear cost to economic growth and development. There is a distinct risk that in trying to stay ahead of innovation, regulation may become so stringent that it stifles innovation. This is a risk that must be guarded against.

Since there is no guarantee that all practices that expose the financial sector to excessive risk taking can be monitored and regulated properly, regulation will have to put special emphasis on setting right incentives to discourage moral hazards – the idea that people behave recklessly if they do not have to deal with the consequences of their actions. One way of doing this is to force creditors to bear the consequences of their past bad lending practices.

Although there is still a divergence of opinion, there is no doubt that the machinery of global economic governance barely exists. Current global institutions – the International Monetary Fund (IMF), the World Bank and the Bank for International Settlements (BIS) – are not adequately positioned to police the global financial system in a way that will absolutely prevent the excessive risk-taking by profit-driven financial institutions. This calls for a rethink of which global institutions should take up the new global regulatory responsibility. Former British Prime Minister Gordon Brown argued as long ago as January 2007 that global regulation was urgently in need of modernisation and reform, and hence there was a need for a new global architecture to enforce rules that ensure that lessons are learnt and that the actions that brought free markets to the brink of collapse were not repeated.

Past experience has shown that when a systemically important bank fails, it risks failure of the entire financial system. Similarly, when a financial system of a systemically important country fails, the global financial system is put at risk. There is therefore a need to put in place institutional arrangements aimed at minimising systemic risks arising from financial institutions and their interactions, bilaterally and through markets. More focus needs to be put on system-wide risks that threaten the soundness and safety of the financial system as a whole. The IMF needs to strengthen its surveillance activities, paying particular attention to systemically important countries and enhanced disclosure of information from surveillance reports. This needs to include not only establishing an early warning system (EWS) for global crises, but also ensuring even-handedness in dealing with its membership, and developing instruments and policies that are capable of addressing the changing global environment. The agreement reached by the Group of Twenty (G-20) to exchange and assess information about members' respective macroeconomic and structural policies in order to avoid future crises and strengthen future global growth is a welcome move.

Another important lesson that was learnt from the 2007–08 financial crisis was the need to require banks to pay for the cost of the externalities they potentially cause. During the financial crisis, it became evident that most banks' capital holdings were not sufficient to absorb massive losses that had befallen them. In jurisdictions where banks had thicker capital buffers, failures were minimal. This experience justifies the need for imposing higher capital requirements and compelling banks to calculate stressed value at risk. The aim is to increase their ability to withstand stressful situations. This way, banks will essentially bail themselves in to avoid or minimise the need to be bailed out during stressful conditions.

#### 4.3 Measures to strengthen resilience against financial crises

The recurrence of financial crises in the world has generated a deep sense that not only fundamental reforms are required to prevent financial crises from occurring, but also that measures should be put in place, both at national and international levels, to manage them and reduce their impact when they occur. Strengthening the resilience of African economies against the impact of external economic shocks associated with financial crises originating outside the continent could be achieved through a number of measures.



First, as learnt from the recent global financial crisis, resilience to shocks can be supported by stable macroeconomic policies. African countries that entered the crisis with a high level of macroeconomic stability were able to weather the storm with less economic damage. Stable macroeconomics allowed for smooth adjustment to the crisis as governments were able to respond with discretion. To a large extent, these favourable conditions reflect heavy investment in policies of restraint on the macro front, such as cash budgets and prudent monetary policy. African countries should therefore continue to promote macroeconomic stability, with special attention on creating as much additional fiscal space and foreign reserve buffers as possible to reinstate the pre-crisis levels.

Secondly, fostering intra-African trade through regional integration is useful to reduce the vulnerability of African countries' trade from global market shocks. In the face of falling demand in the world market, large economies such as the US, China and India resorted to stimulating domestic demand, taking advantage of their large domestic markets. Small African countries can try to do the same but the smallness of their market will impose limits. This situation suggests the need for exploiting and developing larger regional markets through regional integration and co-operation. In addition, regional efforts to augment liquidity co-operation arrangements can be effective. Collective self-insurance initiative such as was adopted by Asian countries after the 1997 financial crisis is worth considering by African countries. Regionally pooled reserves will increase the options available to African countries at times of stress and enable expeditious resolution of crisis.

## 5. Conclusion

We have argued in this paper that finance makes an important contribution to economic growth, which implies that, in its pursuit of poverty reduction, Africa needs to sustain the financial-sector reforms that began in the mid-1990s. As the African financial sector develops, the benefits to its economies will not come only from the improvement in the efficiency of domestic resource mobilisation and allocation, but also from the increase in access to global financial resources. African countries therefore need to take measures that will develop their financial sectors further, including maintenance of macroeconomic stability; improvement of legal frameworks; facilitation of information sharing among financial institutions; and the enhancement of access to financial services, particularly by promoting technology in the financial sector and encouraging specialised microfinance institutions.

As Africa pursues further development of its financial sector, it is important to be mindful of the fact that financial systems are inherently unstable, and therefore the damaging effect of the more-developed financial-sector instability will also be bigger – for two reasons: first, because, as the financial sector develops, its significance relative to the size of the economy increases, implying that a shock to the sector will affect a larger portion of the economy and be multiplied through larger number of units in the economy. Second, because development of a financial sector entails more integration into the global financial system, which opens more channels for contagion from instabilities occurring elsewhere in the world. Africa countries therefore need to invest in improving the financial-sector regulatory and supervisory practices, including by making them more comprehensive to avoid the arbitrage that has let most crises happen, and by keeping them abreast of the rapidly advancing innovations.

Setting right incentives to discourage moral hazards, say by forcing creditors to bear the consequences of their bad practices, will be crucial in protecting the sector from risky behaviour that may be out of regulators' view. In addition, there is a need to put in place institutional arrangements aimed at minimising systemic risks arising from financial institutions and their interactions, bilaterally and through markets. Special focus needs to be put on system-wide risks, which threaten the soundness and safety of the financial system as a whole both within countries and across the world. This brings in the need for the IMF to increase disclosure of information from surveillance reports, establishing an early warning system and ensuring even-handedness in dealing with its membership. To mitigate the severity of instability when it occurs, African countries need to build additional fiscal space and foreign reserve buffers at times of financial stability, and foster diversification through intra-African trade to reduce vulnerability to shocks happening elsewhere in the world.

## Annex

Table A1: Summary statistics of financial indicators by income group

	Mean	Standard deviation	Minimum	Maximum
<b>High income countries</b>				
Domestic credit to private sector (percentage of GDP)	130,28	60,63	44,49	312,72
Broad money (M2) as a percentage of GDP.....	119,32	98,15	39,47	565,53
Interest rate spread (lending rate minus deposit rate, per cent).....	3,12	7,40	0,32	6,04
Market capitalisation of listed companies (percentage of GDP) .....	75,29	53,44	6,15	247,21
Domestic savings as a percentage of GDP .....	24,41	7,40	11,13	47,54
<b>Upper middle income countries</b>				
Domestic credit to private sector (percentage of GDP)	47,815	33,579	6,804	140,419
Broad money (M2) as a percentage of GDP.....	57,137	40,176	15,928	208,912
Interest rate spread (lending rate minus deposit rate, per cent).....	7,165	10,720	-4,703	25,875
Market capitalisation of listed companies (percentage of GDP) .....	44,972	49,249	0,901	217,003
Domestic savings as a percentage of GDP .....	19,393	10,720	-7,713	51,589
<b>Lower middle income countries</b>				
Domestic credit to private sector (percentage of GDP)	27,19	16,64	3,62	77,85
Broad money (M2) as a percentage of GDP.....	41,09	20,58	15,69	96,84
Interest rate spread (lending rate minus deposit rate, per cent).....	10,06	10,72	1,53	26,17
Market capitalisation of listed companies (percentage of GDP) .....	26,12	24,82	0,59	98,06
Domestic savings as a percentage of GDP .....	11,01	10,72	-40,43	34,82
<b>Low income countries</b>				
Domestic credit to private sector (percentage of GDP)	30,205	37,255	2,053	173,294
Broad money (M2) as a percentage of GDP.....	29,325	23,250	8,196	129,151
Interest rate spread (lending rate minus deposit rate, per cent).....	16,024	9,483	3,783	83,201
Market capitalisation of listed companies (percentage of GDP) .....	28,788	45,470	1,225	128,519
Domestic savings as a percentage of GDP .....	2,384	9,483	-49,521	25,873

Source: World Bank, World Development Indicators database

**Table A2: Banking system soundness indicators for selected African countries**

	2006	2007	2008	2009	2010	2011
<b>Capital adequacy ratio (percentage of risk-weighted assets)</b>						
South Africa .....	12,3	12,8	13,0	14,1	14,9	14,9
Angola.....	18,5	21,9	19,5	19,5	18,6	14,8
Nigeria .....	40,9	23,4	22,6	20,9	7,0	...
Ghana .....	15,8	14,8	13,8	18,2	19,1	17,4
Kenya.....	17,0	18,0	18,9	19,5	20,8	19,4
Tanzania .....	16,3	16,2	17,0	18,3	18,5	17,8
Zambia.....	20,4	18,6	18,6	22,3	22,1	19,2
<b>Non-performing loans (percentage of loans)</b>						
South Africa .....	1,1	1,4	3,9	5,9	5,8	4,7
Angola.....	4,8	2,9	2,4	2,6	8,6	2,4
Nigeria .....	10,0	9,5	7,2	36,1	20,1	...
Ghana .....	7,9	6,4	7,7	16,2	14,5	12,9
Kenya.....	20,2	10,6	9,0	7,9	6,2	4,4
Tanzania.....	6,8	6,3	6,2	6,6	9,8	6,8
Zambia.....	11,3	8,8	7,2	12,6	14,8	10,4
<b>Return on asset (percentage a year)</b>						
South Africa .....	1,4	1,4	1,5	1,1	1,2	1,5
Angola .....	2,7	2,7	2,4	2,4	3,0	2,7
Nigeria .....	0,3	0,5	0,4	-1,5	2,1	...
Ghana .....	4,8	3,7	3,2	2,8	3,8	3,9
Kenya.....	2,7	3,0	2,8	2,9	3,7	3,3
Tanzania.....	3,9	4,7	3,8	3,2	2,2	2,7
Zambia.....	5,1	4,7	3,6	2,1	2,9	3,7
<b>Return on equity (percentage a year)</b>						
South Africa .....	18,3	18,1	26,9	18,0	18,3	21,0
Angola.....	28,8	23,6	26,5	36,5	32,1	27,2
Nigeria .....	1,9	3,0	1,9	-9,6	65,4	...
Ghana .....	39,6	35,8	30,1	23,6	28,6	27,2
Kenya.....	27,2	28,3	25,2	24,8	30,7	32,2
Tanzania.....	26,7	29,0	23,2	18,4	12,1	15,1
Zambia.....	30,6	35,1	20,8	9,4	12,1	25,5

Source: *Regional Economic Outlook, Sub-Saharan Africa*, April 2012

## Note

<sup>1</sup> For a comprehensive survey of the theoretical literature on the finance growth link, see Gertler (1988) and Thakor (1996). See Levine (1997) for a comprehensive overview of theoretical and empirical studies.

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# Monetary policy and the challenge of economic growth in Africa

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*Louis Kasekende*

## Abstract

This paper examines ways in which monetary policy, in the context of low-income economies, might influence long-term real economic growth, in contrast to the standard view that monetary policy only affects nominal variables in the long run. The paper focuses on three sets of issues. The first is the vulnerability of low-income countries to supply-side shocks and the trade-offs such shocks create between the inflation and output objectives of monetary policy. The second is the optimal numerical rate of inflation for central banks to target, which is likely to be higher in low-income economies than in advanced economies. The third issue pertains to exchange rate policy. Maximising long-run economic growth is likely to require maintaining a stable and undervalued real exchange rate over the long term or at least avoiding overvaluation. In economies with less than perfect capital mobility it should be possible to manage the exchange rate to some extent using sterilised intervention while still focusing monetary policy on domestic policy objectives, but this poses challenges for monetary policy.

## 1. Introduction

I want to share with you our thinking in the Bank of Uganda (BOU) about the relationship between monetary policy and economic growth. The conventional view of monetary policy, shared by most in the economics profession, is that over the long run it only affects nominal variables, not real output growth. Instead, the long-run growth of output depends on capital investment, the growth in the size and quality of the workforce, and growth in factor productivity, for which structural policies rather than demand management policies are the crucial policy determinants, with the proviso that poor monetary policy which allows macroeconomic instability could damage growth by deterring capital investment and an efficiency allocation of resources. However, that still leaves scope for monetary policy to have an impact on economic growth in the short run. More controversially, there may also be some channels, beyond merely delivering macroeconomic stability, through which monetary policy, or the combination of monetary and exchange rate policy, could affect economic growth in the long run.

In this paper I will focus on three sets of issues related to the links between monetary policy and growth; issues on which there are important differences between advanced economies and low-income economies, and which have implications for the policy objectives and conduct of monetary policy. The first issue is the challenge facing monetary policy makers in economies that are vulnerable to supply-side shocks, which create a trade-off between the objectives of growth and inflation. The second issue is the numerical target for inflation which is optimal for long-run economic growth. The third issue is that of exchange rate policy and its implications for monetary policy, because cross-country empirical analysis identifies the real exchange rate as an important causal factor in the long-run economic growth of developing countries. I will not discuss issues related to financial stability and financial crises, which could have profound effects on growth, because that is the subject of Benno Ndulu's paper.

## 2. Supply-side shocks and economic growth

Although the primary monetary policy objective of the BOU is to control inflation, a secondary policy objective is to support growth of real output at the economy's potential level; that is, to minimise the output gap. A monetary policy objective that includes stabilising real output will also be beneficial for long-term economic growth. Output volatility has a causal negative relationship with long-term growth; a relationship that is strongest in countries that are poor and have weak institutions (Hnatkovska and Loayza 2005). Output fluctuations have asymmetric effects on long-term growth; the damage caused by downturns is not offset by any benefits from booms (Aizenmann and Pinto 2004). However, the secondary objective poses two challenges for monetary policy: (i) how should monetary policy respond to supply-side shocks and (ii) how does the central bank determine potential output or the potential rate of growth of output?

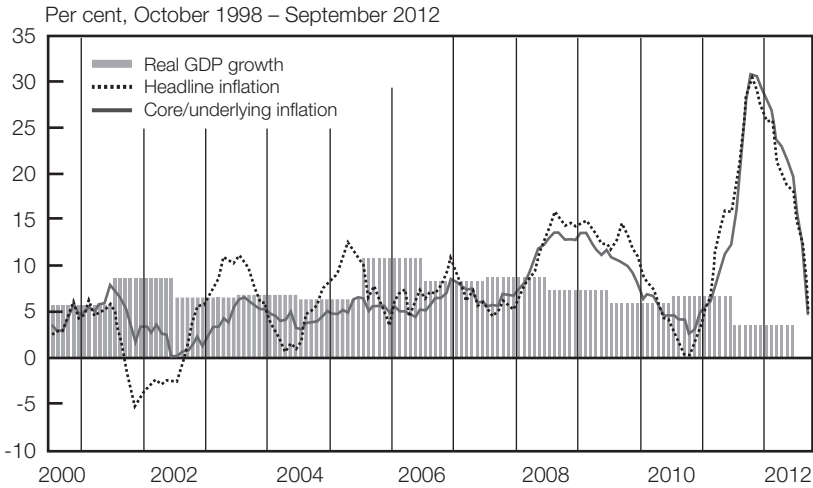
An important difference between advanced and low-income economies is that aggregate supply-side shocks, such as shocks to agricultural harvests or terms of trade shocks, are more common, and have a larger impact on the economy in the latter than in the former. Supply-side shocks pose much more of a challenge for monetary policy than demand-side shocks, because they push real output and prices in opposite directions (Adam 2011). Hence the central bank faces a trade-off between output and inflation objectives, especially when faced with a negative supply-side shock. Some combination of lower output and/or higher inflation is unavoidable, at least temporarily. Furthermore, the direct impact of supply-side shocks on commodity prices such as food and fuel is usually much more rapid than the impact of a change in monetary policy; hence a short-term rise in



inflation following a negative supply shock is almost inevitable irrespective of how strongly monetary policy responds. Uganda faced significant aggregate supply shocks in 2008/09 and in 2011: in the first case the main source of the shock was the rise in global commodity prices and in the second it was a shock to domestic agricultural production because of a drought.

The conflict between output and inflation objectives can be mitigated to some extent by targeting a measure of inflation that excludes those prices that are directly affected by supply shocks. The BOU targets core inflation which excludes food crops and fuel, and comprises 82 per cent of the household consumption basket. However, this is only a partial solution at best. Supply-side shocks still affect core inflation indirectly through several channels. There is a significant pass-through of food crop and fuel prices to the basket of consumer goods which are used to compute the core inflation index, because, for example, food crops and fuel are used as input for the production of other consumer goods and services. Furthermore, rises in food crop and fuel prices affect the public's expectations of future inflation.

Figure 1: Real GDP growth and annual headline and core/underlying inflation



Source: Uganda Bureau of Statistics

The approach that the BOU has taken to supply shocks has been to allow some initial rise in core inflation above the policy target, but then to try and bring it back to the target over a period of one year to 18 months, by tightening monetary policy to reduce domestic demand and so dampen the second-

round effects of the supply shock and to avoid inflationary expectations from gaining ground. As such, the BOU aims to strike a compromise between meeting its inflation objective in the short term and avoiding too sharp a fall in real output growth, provided that this compromise does not undermine medium-term inflationary expectations. In response to the most recent supply-side shock, in 2011 the BOU put more emphasis on curbing inflation than avoiding output losses, by tightening monetary policy sharply in the first half of 2011/12, because the rise in core inflation was much larger than had occurred in previous episodes and hence posed much more of a threat to medium-term inflationary expectations and to the credibility of monetary policy.<sup>1</sup> As a consequence, real output growth in 2011/12 was only approximately half of the average recorded since the beginning of the century (see Figure 1).

### 3. What is the optimal numerical target for inflation?

A numerical target for inflation is integral to the monetary policy of most central banks, unless the exchange rate is used as a nominal anchor for monetary policy. The inflation target is explicit for central banks that implement an inflation-targeting monetary policy framework, as the target itself provides the nominal anchor for monetary policy. For central banks that implement a monetary-targeting framework, an inflation target that is at least implicit is necessary to enable the monetary targets to be constructed, and in many countries the inflation target is made public.

The numerical target for inflation that the central bank chooses has potential implications for economic growth, even in the long term. Too-low a target for inflation might constrain the relative price movements within the economy that are necessary to bring about efficient resource allocation, especially if some prices, such as wages, are sticky downwards. Conversely, too-high a target for inflation might make future relative prices, on which the long-term profitability of businesses depends, too unpredictable and thus discourage private investment. Hence, the challenge facing the central bank is to select a target for inflation that is optimal for growth. Unfortunately, the academic literature does not provide specific recommendations on this issue. Mostly using cross-country regressions, researchers have attempted to find threshold levels of inflation, or bands of inflation, above and below which economic growth is retarded. However, there is no clear consensus on precisely where these thresholds lie for developing economies.<sup>2</sup> Thresholds estimated for developing countries include 3 per cent (Burdekin et al. 2004), 10–12 per cent (Khan and Senhadji 2001; Espinosa, Leon and Prasad 2010),

13–17 per cent (Kremer, Bick and Nautz 2009) and 15–23 per cent (Pollin and Zhu 2005). Most of these studies found higher thresholds in developing economies than in advanced economies, probably because the relative price movements required to maintain efficient resource allocation in a rapidly growing economy are larger than in a slower-growing mature economy.

The BOU has had a medium-term target of 5 per cent for annual core inflation<sup>3</sup> since the 1990s, which is towards the lower end of the range of thresholds for developing countries estimated in most cross-country studies. That real economic growth has been reasonably robust since the turn of the millennium, averaging 7,1 per cent between 2000/01 and 2011/12, suggests that too-low a rate of inflation has probably not been a constraint on growth. However, average inflation outturns have been higher than the BOU's targets; underlying/core inflation averaged 7,6 per cent between the beginning of 2000 and September 2012,<sup>4</sup> largely because of the supply price shocks in 2008/09 and 2011 which drove up average inflation in the last five years. The BOU has tolerated short-term deviations of inflation above the target when the economy has been hit by supply shocks, as discussed in section 3, without attempting to offset fully the impact of this on average inflation over the long term by holding inflation below the policy target of 5 per cent during periods when the economy was not subject to supply price shocks. Attaining an average core inflation rate of 5 per cent over the long term would have required tighter monetary policy in "normal times", and which arguably would have impeded real growth.

#### 4. Monetary policy and exchange rate policy

A freely floating exchange rate is usually regarded as a prerequisite for the successful implementation of an inflation-targeting monetary policy framework, on the grounds that attempts to manage the exchange rate risk undermining the ability and credibility of the central bank to achieve its domestic policy target – inflation. However, this is much less valid for a developing country than an advanced economy. Whereas the role of the exchange rate in a developed economy is mainly restricted to its impact on aggregate demand, in a developing economy the stability and level of the real exchange rate have important implications for long-term growth and development, beyond its short-term impact on aggregate demand. Furthermore, there is greater scope for combining active exchange rate management with an independent monetary policy in developing economies because capital mobility is lower than in advanced economies.

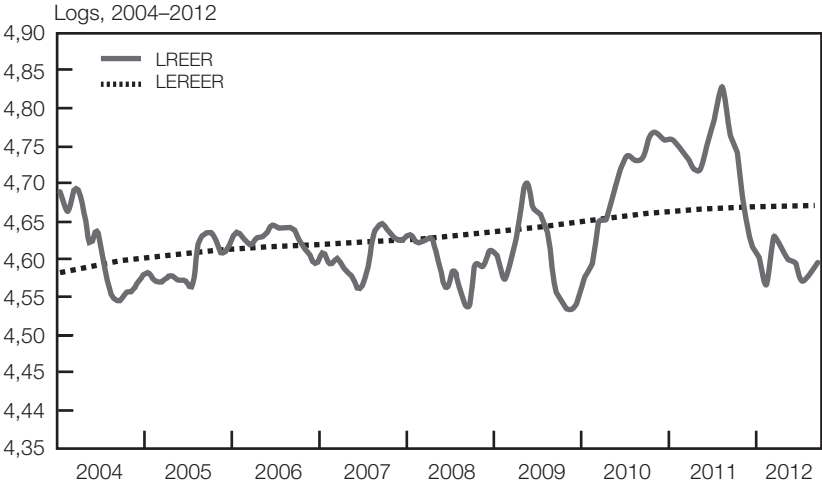
Many cross-country empirical studies have identified a robust correlation between the level of the real exchange rate and economic growth over the long term, with a more depreciated real exchange rate supporting higher long-term growth and/or accelerations in the economic growth rate (e.g., Elbadawi, Kaltani and Soto (2012); Hausmann, Pritchett and Rodrik (2005); Rajan and Subramanian (2005); Rodrik (2007)). Johnson, Ostry and Subramanian (2007) stress two key policy requirements for African development: (i) avoiding real exchange overvaluation and (ii) reducing the regulatory burdens for exporters. The main reason that the real exchange rate matters for long-term economic growth appears to be that the growth of traded goods industries plays a particularly important role in driving productivity that enhances structural change, but that optimal investment in traded goods industries is impeded by market imperfections which are especially prevalent in developing countries (e.g., poorly developed capital markets) and other externalities. An undervalued real exchange rate acts partially to offset these impediments by providing incentives to raise investment in traded goods industries to more optimal levels.

The volatility of the real exchange rate also matters for economic growth. A volatile real exchange rate will deter investment in traded goods industries, because it makes the future profitability of these investments more uncertain. For export industries, the real exchange rate is the most important domestic macroeconomic variable affecting their profitability. Hence, even if the rest of the macroeconomic environment is stable, with low inflation and minimal volatility in domestic output, investment in export industries will be deterred by instability in the real exchange rate. Moreover, periods of overvaluation, even if only transitory, may cause lasting damage to existing traded goods producers if they lack the financial resources, or access to credit, to finance temporary losses. As such, an exclusive focus on the stability of domestic variables is unlikely to be optimal for investment in export industries.

The main source of real exchange rate volatility is volatility in the nominal exchange rate rather than in domestic prices. Nominal exchange rates are volatile in many African counties because foreign-exchange markets are thin. Furthermore, short-term portfolio capital flows to the “frontier markets” such as Uganda, potentially exacerbate this volatility, as the gross value of these flows on a daily basis often comprise a substantial share of total foreign-exchange transactions made through the banking system, even though the net value of portfolio capital flows over a longer period may be small relative to other components of the balance of payments.<sup>5</sup> Figure 2 depicts the monthly average real effective exchange rate (REER) (in logs) for Uganda from

the beginning of 2004 to September 2012, together with an estimate of the equilibrium value. As can be seen in the figure, real exchange rate volatility has increased markedly since the global financial crisis erupted in 2008; since mid-2008, the average absolute rate of misalignment of the REER from its equilibrium has been 6,7 per cent, double that between 1998 and 2008.

Figure 2: The equilibrium and actual real effective exchange rate



Note: LREER denotes log of the real effective exchange rate.  
LEREER denotes log of the equilibrium real effective exchange rate.  
An increase denotes a depreciation.

Source: Bank of Uganda

Central banks that are concerned with the implications of the real exchange rate for long-term economic growth face two related challenges: (i) to avoid volatility in the real exchange rate and (ii) to achieve a level of the real exchange over the long run which is undervalued, or at least not overvalued, relative to some measure of its equilibrium value. Does the central bank have scope for exchange rate management without undermining its targets for domestic inflation? If capital mobility is not perfect, the central bank can use sterilised intervention to influence the nominal exchange rate while leaving the domestic interest rate to target domestic variables (Ostry, Ghosh and Chamon 2012). As such, an inflation-targeting monetary policy framework should be compatible with a degree of exchange rate management in economies where less-than-perfect capital mobility allows the domestic interest rate to move independently of foreign interest rates. Although Uganda is a frontier market and does not

impose controls on the capital account, capital mobility is not perfect because of the small size of domestic financial markets, and limited substitutability between domestic and foreign securities. Hence, sterilised intervention is an option for stabilising short-term volatility in the exchange rate, although its implementation presents challenges.

A major challenge is to determine a sustainable level around which intervention should aim to stabilise the exchange rate, and to recognise when this level needs to be adjusted in response to shocks. Attempting to stabilise the exchange rate at a rate that proves unsustainable is unlikely to be successful in reducing real exchange volatility. One option for avoiding this is to allow the nominal exchange rate to fluctuate within a band around what is perceived to be a sustainable level, but to adjust the band if the exchange rate persistently pushes against the edges of it. The central bank also requires sufficient domestic instruments, such as government securities, to sterilise the impact of foreign-exchange market intervention. To sterilise its foreign-exchange interventions, the BOU is using repos and reverse repos, which are the same instruments that are used for the normal monetary policy operations. My view on this issue is that it is both feasible and desirable to use sterilised intervention to dampen volatility in the nominal exchange rate, provided that the central bank takes a pragmatic approach which allows sufficient flexibility for adjustment to shocks to the BOP.

Implementing a policy that attempts to manage the real exchange rate over the long run at a level that is more depreciated than it would be in the absence of intervention is a fundamentally more difficult challenge for monetary policy than that of stabilising short-term volatility in the exchange rate. In the long run a more depreciated real exchange rate requires a reduction in domestic absorption relative to output; hence, real exchange rate depreciation must be accompanied by a tighter domestic macroeconomic policy stance. For the central bank, this would entail intervening to purchase foreign currency and build foreign-exchange reserves in order to depreciate the exchange rate while at the same tightening monetary policy to curtail domestic demand. Such a combination has costs for the central bank, because it will pay higher interest rates on the securities it issues for sterilisation than it will earn on its foreign-exchange reserves. Furthermore, whether monetary policy alone would be sufficient to bring about the degree of domestic demand restraint required to maintain an undervalued real exchange rate over the long term is doubtful. Instead, monetary policy will probably need to be supported by a tighter long-term fiscal policy stance and structural policies to raise private savings (e.g., mandatory private pension schemes).

Finally, a discussion on the optimal management of the exchange rate cannot ignore the issue of whether some form of control to limit portfolio capital flows might be desirable. In Uganda offshore portfolio capital is mainly invested in government securities and bank deposits, and sometimes used to fund foreign-exchange swaps. Beyond enhancing the liquidity of domestic money and securities markets, it is not evident that these portfolio capital flows contribute to long-term development, whereas they impose costs on the economy to the extent that they exacerbate exchange rate volatility and cause real exchange rate appreciation over the long term. Hence, capital controls that discourage portfolio inflows, or at least discourage those with very short maturities, may have positive net benefits for development. Lengthening the maturity of portfolio investments should serve to reduce their volatility. However, capital controls are often vulnerable to circumvention. Controls on capital inflows have been applied in several emerging markets, although few in Africa, often in response to capital inflow surges. However, the evidence on how effective they have been is mixed and varies across countries and through time. Although they have not always been very effective in reducing the overall magnitude of capital inflows, in some countries they have proved more successful in lengthening the maturity of external debt liabilities and allowing the central bank more scope for an independent monetary policy (Baba and Kokenyne 2011; Magud and Reinhart 2007). I think it is worth exploring how to design a price-based control that would aim to deter short-term portfolio flows in Africa, to supplement sterilised intervention.

## 5. Conclusions

My aim in this paper has been to identify areas in which the conventional premise of monetary policy, namely that it affects only nominal variables in the long run, may not apply in the type of economies that are the norm in Africa. I have highlighted three areas where monetary policy might have lasting effects on the real economy.

The first arises from the nature of major macroeconomic shocks in Africa, which are more likely to emanate from the supply side than from the demand side. Supply-side shocks create a policy dilemma for central banks because they entail a trade-off between growth and inflation targets. A monetary policy with too strong an emphasis on meeting an inflation target in the short term could intensify volatility in output which, in turn, could translate into lower long-run growth.

The second area pertains to the optimal medium-term policy target for inflation. This is likely to be higher in low-income economies than in more-developed economies because of the need to accommodate larger shifts in relative prices which arise as part of the process of structural change, although it is difficult to identify precisely what the optimal numerical target is.

Policy geared towards the real exchange rate is the third area where concerns for long-term economic growth have implications for monetary policy. A stable and, to some extent, an undervalued real exchange rate contributes to long-run growth in developing economies because of the incentives it provides to traded goods industries. Central banks in Africa have the potential to manage their exchange rates through sterilised intervention because capital is less than perfectly mobile across their country's borders. Sterilised intervention need not necessarily compromise the implementation of monetary policy to achieve domestic policy targets, but it does raise the costs of conducting monetary policy and if intervention is large, it may make monetary policy implementation more difficult. Moreover, in the long run a sustained undervalued real exchange rate requires a reorientation of aggregate demand from domestic demand to external demand. Whether the appropriate combination of monetary and exchange rate policy alone will be sufficient to bring about such a reorientation of aggregate demand is doubtful.

## Notes

<sup>1</sup> Annual core inflation rose from 4,8 per cent in December 2010 to 30,8 per cent in October 2011. The initial rise was driven mainly by food prices that were hit by drought in Uganda and neighbouring countries. Non-food prices were then driven up by a sharp nominal exchange rate depreciation in mid-2011.

<sup>2</sup> Attributing causality in the inflation-growth relationship is also problematic.

<sup>3</sup> The specific measure of core inflation was only introduced in 2005/06. Before this, the BOU used a very similar measure termed 'underlying inflation' as the policy target.

<sup>4</sup> This average is derived from two separate series. Between January 2000 and June 2006, the data for underlying inflation are used. From July 2006 to September 2012 the data pertain to core inflation. The Uganda Bureau of Statistics replaced underlying inflation with core inflation in 2005/06. The two measures of inflation are similar but not identical. Both exclude food crops.

<sup>5</sup> Almost all offshore portfolio investment in Uganda is channelled through domestic banks. In the first nine months of 2012, the gross value of transactions involving the sale or purchase of foreign exchange between offshore portfolio investors and domestic banks was nearly \$1,9 billion, which was 33 per cent of the value of all significant foreign exchange transactions (above \$100,000) carried out between the commercial banks and other agents (i.e., agents who are not domestic commercial banks) in this period. The net inflow of portfolio capital during the first nine months of 2012 was estimated at just under \$150 million.



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# A stone under the ocean: How money did not disappear and what we now need to do about it

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Stan du Plessis

## Abstract

This paper considers the remarkable return of balance-sheet considerations in monetary policy. The central bank's balance sheet has become an important additional tool of monetary policy and this paper argues that a new consensus for monetary policy will include a substantial role for balance-sheet policies. This policy approach will require models of the monetary transmission mechanism that are able to identify the emergence of financial fragility with an appropriate role for financial markets. As an additional challenge, a new monetary policy consensus will entail closer collaboration between monetary and fiscal policies with a new understanding of central bank independence. These three challenges are considered in this paper from an emerging-markets economy perspective.

**Keywords:** balance-sheet operations; financial stability; interest rate policy; monetary policy

**JEL codes:** E51, E52, E58

## Introduction

Almost a century ago *The Economic Journal* published an extract from a whimsical story by an anthropologist, William Henry Furness.<sup>1</sup> Many of you will be familiar with it, but the story remains instructive. On the South Pacific island of Yap large stone circles have been used as money for centuries. These stones, called 'rai' or 'fei' stones and still in use for some purposes, do not come from Yap, but have to be quarried some 600 kilometres away on the island of Palua from whence they are shipped by rafts and other small craft. Rai stones are large, up to 12 feet in diameter and, consequently, rarely moved even when exchanged in a transaction. Instead, the transfer of ownership is recorded and added to the list of previous owners that exists for every large stone.<sup>2</sup>

Furness assured his readers that one very fine stone lies under the ocean, that it was quarried somewhere in the early nineteenth century, and that it sank when a violent storm overtook the return journey from Palua. The many companions of the unlucky owner testified to the fine quality and superior size of the stone, and its location has not prevented the stone from entering the money stock of Yap. That money is an asset with balance-sheet implications has never been forgotten on that island whose inhabitants have, as Furness (1915, 281) claimed “ideas on currency [that] are probably more truly philosophical than those of any other country”.

The enduring consciousness of money as an asset on Yap contrasts with the modern theory of monetary policy where money and other assets had largely disappeared from the remarkable pre-crisis consensus. Not quite ten years ago, Mervyn King (2003) observed what he called a “paradox of modern monetary economics”, namely that money itself had disappeared from the consensus monetary policy model and played little, or even no, role in practical policy. It was not just money that had disappeared, but asset markets too, as there was little role for balance sheets in models without the kind of frictions that created a role for money. We have since learnt that what looked like a paradox was probably a mistake and that monetary policy will have to grapple with asset markets more explicitly in the future.

This will not be uncharted territory for monetary authorities though. Policy-makers have been here before, as I will argue in the first part of this paper, and the fundamental research on monetary economics has explored the relevant transmission mechanisms even while policy models largely ignored them, as I will argue in the paper’s second part. I will conclude with a discussion of the consequences of these developments for our understanding of central bank independence.

## 1. A remarkable consensus

To understand the pre-crisis consensus model, it is useful to recall the challenges facing monetary policy by the late 1970s. It had been a miserable decade for monetary authorities in most parts of the world, with inflation creeping up, volatile currencies, and economic output and employment drifting away from earlier estimates of their long-term potential. Arthur Burns (1979), who had been the Chairperson at the United States Federal Reserve System (the Fed) for much of the decade spoke of the “anguish of central banking” (1979), that is, the apparent inability of central bankers to achieve low and stable inflation and economic stability, despite their best intentions and policy efforts.

A happy combination of theoretical developments and practical experience showed the way out of these difficulties (Goodfriend 2007). The practical lessons were first learnt at the Bundesbank, the Swiss National Bank and, later, at the Fed under Chairperson Volcker, and involved taking explicit responsibility for stable inflation and using the tools of monetary policy in a credible and transparent strategy towards that end (see, for example, the account of this episode in Bernanke et al. 1999). The theoretical advances included the theory of inflation and monetary control, rational expectations in policy models, the dynamic theory of price setting, advances in our understanding of the transmission mechanism of monetary policy, and an understanding of how rules and increased transparency could improve the credibility of policy.

The experiment with inflation targeting that started in New Zealand embodies all these lessons in a strategy for monetary policy with the following features: (i) an explicit empirical target for inflation, (ii) a coherent strategy for pursuing that target, (iii) a flexible approach to the implementation of the strategy, (iv) unprecedented transparency for monetary policy, and (v) formal accountability measures to accompany rising central bank independence (Du Plessis 2006). The same system has been in place here in South Africa for more than a decade now.

Meanwhile, non-inflation-targeting central banks had converged, in practice, on much the same system, as Alan Greenspan (2004, 39) argued some years ago: “[T]he actual practice of monetary policy by inflation targeting central banks now closely resembles the practice of those central banks, such as the European Central Bank (ECB), the Bank of Japan, and the Federal Reserve, that have not chosen to adopt the paradigm”.

This remarkable consensus supported economic policy in an era of both high growth and considerable stability internationally. In South Africa the introduction of the system coincided with the longest business cycle expansion on record.

Of course, not all questions had been answered, and chief among the acknowledged open questions was: how, if at all, to respond to potentially destabilising asset price movements? From a monetary policy perspective, our interest in asset prices derives from the risks they pose to financial stability and, although I have not said anything about that yet, the pre-crisis consensus included the maintenance of financial stability as a core component of monetary policy (see, for example, Mishkin 2007). In an open emerging-market economy the exchange rate poses additional challenges to inflation-targeting central banks.

Though financial stability remained on the plate of monetary policy, it was agreed that the pursuit thereof was not the direct task of the policy. The happy fact was, so argued Bernanke and Gertler (1999), that financial and macroeconomic stability (i.e., stable inflation and stable output growth) were highly complementary goals for monetary policy, and a framework such as flexible inflation targeting would help the authorities do as much as they reasonably could to prevent financial imbalances from emerging. Their argument carried the day and became a central plank of the pre-crisis consensus, with the added expectation that should an asset bubble nevertheless emerge and eventually collapse, the inflation-targeting central bank would have the flexibility to “mop up afterwards” with an appropriately accommodating policy to avoid lasting economic fallout (Mishkin 2011).

The consensus also recognised a role for financial regulation, but these regulations were designed and implemented separately from the interest rate deliberations of the bank. As a practical matter, monetary policy had become interest rate policy focused on a narrow and complementary set of macroeconomic stability goals (Buiter 2012, 1), with one exception: foreign-exchange market intervention. Even in countries with floating exchange rates, it was understood that the central bank might use its balance sheet to smooth extreme currency fluctuations.

Of course, in those countries with a fixed nominal exchange rate, the central bank has to maintain the target rate with direct market intervention. However, in such cases the pre-crisis consensus identified a loss of independence for monetary policy in an open economy with a fixed exchange rate. I will argue later that using the central bank’s balance sheet leads to a reinterpretation of central bank independence in a more radical way than anticipated by the literature on the impossible trinity.

## 2. Balance sheets matter

It is because balance sheets matter that there is a role for a differentiated financial sector in a market economy.<sup>3</sup> Financial institutions offer different methods for transforming balance sheets, both for the private and the public sectors. Financial intermediaries achieve this by offering a range of services: they lower the information cost associated with investment and saving, and they provide insurance; and, crucially, intermediaries can issue liabilities (e.g., deposits or interbank loans) and use the financial resources acquired in that way to purchase higher-yielding assets issued by borrowers. This is the process known as intermediation.

In principle, as Goodhart (1975) observed, the public sector can provide all of these intermediary services although, in practice, they have been left largely to the private sector in market economies. Nevertheless, the ability of a government to issue liabilities through a central bank provides an instrument with which government can influence private-sector intermediation. I am not referring to what earlier scholars called ‘credit policy’, which is what we call ‘interest rate policy’ (e.g., Friedman 1964). The central bank, as a bank, has the ability to influence private-sector balance sheets directly when the bank issues its own liabilities. These central bank liabilities include not only notes and coin, but also bank reserves and other liabilities: they are instruments of monetary policy. In addition, these instruments affect the transmission channels of interest rate policy though their impact on private-sector balance sheets.

Before the international financial crisis, the direct use of the central banks’ balance sheets as policy instruments had fallen so definitively out of use that their reintroduction during and after the financial crisis was experienced as “nonconventional” or “unconventional” monetary policy<sup>4</sup> (Borio and Disyatat 2009; Mishkin 2011). It was not always so. In an earlier era, central bankers and scholars of monetary policy regarded balance-sheet policy as central to monetary policy, and financial stability was its explicit objective.

Milton Friedman (1964), for example, distinguished between what he called “credit policy” (i.e., policies that would influence interest rates and credit conditions), on the one hand, from monetary policy, on the other, by which he meant policies that changed the size and composition of central bank liabilities, especially money balances. His distinction was not merely semantic: Friedman argued that monetary policy mistakes were causal to the Great Depression and that the specific mistake was to focus narrowly on interest rate policy to the neglect of the Fed’s balance sheet: the neglect of monetary policy (Friedman and Schwartz 1963; Friedman 1964). From the analysis and the historical evidence, Friedman (1959, 23) deduced that “the central problem is not to construct a highly sensitive instrument that can continuously offset instability introduced by other factors, but rather to prevent monetary arrangements themselves becoming a primary source of instability”.

Friedman (1948, 245) was reacting to a shift in monetary policy during the immediate aftermath of World War II, which he thought was caused by the evolution of macroeconomics along Keynesian lines. It was the rising concern with short-term macroeconomic instability and the design of policy to counter such instability that motivated the shift in policy practice and policy objectives at central banks. The policy reforms he proposed in this era were aimed at refocusing the monetary policy framework towards the achievement of the long-term goal of financial stability.<sup>5</sup> This package of reforms anticipated many

of the modern insights into the relative scope for anti-cyclical fiscal policy and the risks of fiscal dominance for monetary policy.

In the meantime, the Keynesian theory of monetary policy was moving in a different direction. From the start, Keynesian macroeconomic policy was model-based, and in the decades after the war, that meant, especially, versions of the investment savings (IS)-liquidity model (LM) model. William Poole's (1970) solution to the so-called instrument problem for monetary policy in 1970 was an important step in the process by which balance-sheet policies became understood as unconventional. The question on Poole's table was whether central banks should use as policy instruments (i) balance-sheet policy in the form of the money stock, (ii) a short-term interest rate, or (iii) a combination of the two.

His important result, derived with a stochastic IS-LM model, was that the structural parameters of the model (the slopes of the IS and LM curves), and the relative sizes of the stochastic disturbances in the real economy and the asset markets determined the most efficient policy tool. Poole (1970) showed that, in his model, the interest rate was the preferred instrument when shocks to the monetary sector were relatively large compared with shocks to aggregate expenditure. The money stock was preferred when shocks to the monetary sector were relatively smaller.

Poole's argument and our knowledge of the disturbances of modern economies did much to shift modern central banks to a convention of monetary policy as interest rate policy. Conventional monetary policy would, henceforth, be a system for setting the interest rate path to ensure economic stability (for inflation and output relative to long-term potential) over business cycle horizons. Interest rate policy combined with suitable communication (even forward guidance, as I will argue later) is what Lars Svensson (2012b) calls "monetary policy". By contrast, balance-sheet policy, which had earlier been used to pursue financial stability, became unconventional, and Svensson (2012b) calls it "financial policy" to distinguish it from monetary policy.

However, an IS-LM model has no role for balance sheets, whether private or public, and therefore cannot be used to judge their role in financial stability. A second shortcoming of Poole's analysis, as of the literature it inspired, is that it models a central bank's interest rate decision as interchangeable with the choice of a level for the money supply in a monotonic relationship; in other words, these models assume that every level a monetary authority might set for the policy interest rates is associated with a unique composition of the central bank's balance sheet.

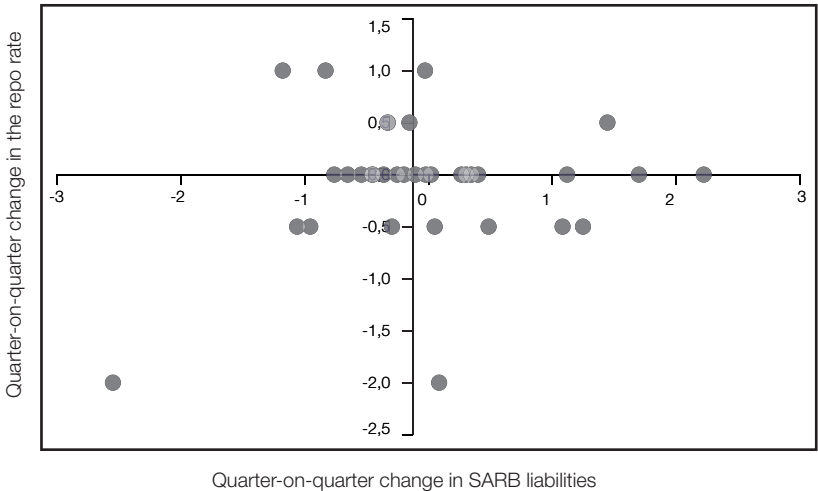
Central bankers have a very different view. The open-market operations associated with the implementation of the target level for the policy interest



are entirely endogenous in those central banks, such as the Fed, that still use them. As Woodford (2003) has argued, the interest rate decision is primary, and is taken at a completely different level in the central bank compared with the operations desk, where liquidity operations are conducted. What is more, the Bank of Canada and others have shown that there is no need to use any open-market operations to implement a target level for the policy interest rate. The “channel” or “corridor” method used at these central banks employs private-sector arbitrage to ensure that the policy rate remains in a narrow band around the target level for the policy rate<sup>6</sup> (Disyatat 2008). This approach has the added advantage of much tighter control over the actual policy rate (Woodford 2003, 31).

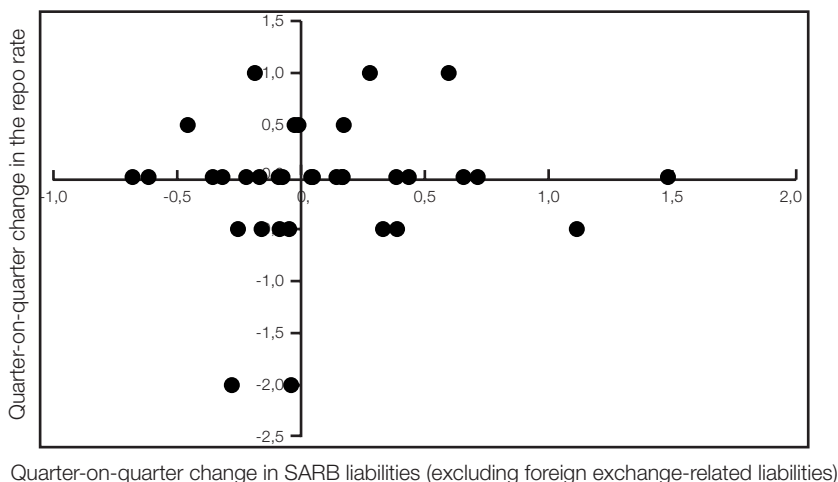
The following two figures use data from the South African Reserve Bank’s (SARB) balance sheet to show the absence of any monotonic relationship between balance-sheet operations and the policy interest rate at a central bank. Figure 1 is a cross plot of changes to the SARB’s liabilities on the x axis and changes to the policy interest rate in South Africa (i.e., repurchase (repo) rate) on the y axis. The frequency of the data is quarterly and was obtained from the SARB. Figure 2 is the same cross plot, except that all foreign-exchange-related liabilities on the SARB’s balance sheet have been left out.

Figure 1: Cross plot between changes to the SARB’s liabilities and the policy interest rate



Source: Data from the SARB

Figure 2: Cross plot between changes to the SARB's liabilities (excluding foreign exchange-related liabilities) and the policy interest rate



Source: Data from the SARB

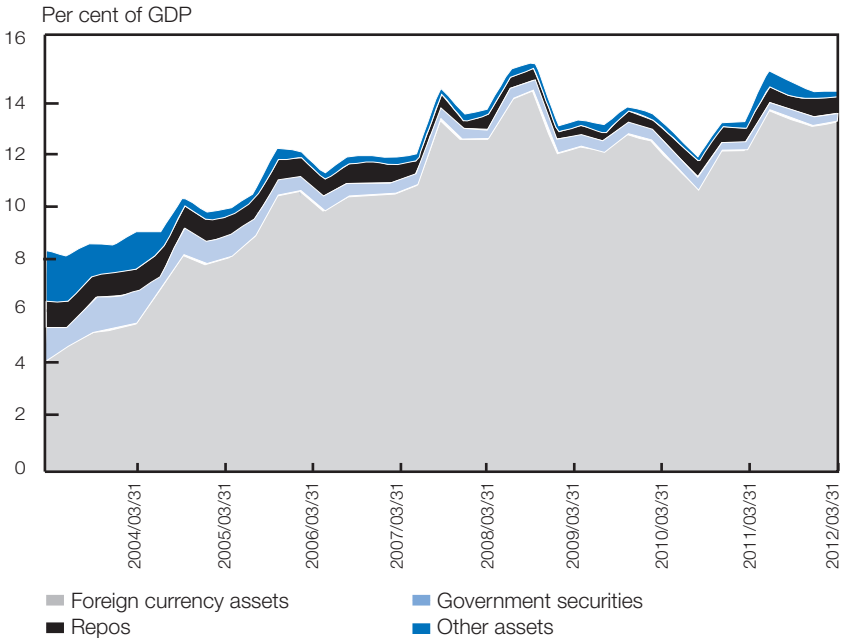
An unambiguous relationship between the SARB's balance sheet and its interest rate policy would at least have placed the majority of the data points in the second and fourth quadrants of these figures. In Figure 1 only 56 per cent of the data points fall along the negative diagonal though and an even lower 44 per cent in Figure 2. In short, neither figure shows a discernable unique relationship between changes to the policy interest rate and balance-sheet operations by the central bank in South Africa.

While a central bank's balance sheet will adjust passively as the private demand for its liabilities evolves, the bank does not intentionally adjust its balance sheet to implement its interest rate policy; a point my colleague Basil Moore (1988) made persuasively many years ago. Figures 1 and 2 demonstrate Borio and Disyatat's (2009) claim that the bank's balance-sheet policies can be decoupled from the bank's interest rate policy (see also Disyatat 2008).

This decoupling leaves space even for the pursuit of different goals under the banner of monetary policy, of which Goodhart (2011, 147) has provided an example: the authorities might use interest rate policy to lean against a currency's depreciation while using their balance sheet to maintain domestic monetary accommodation. It also means that the Fed would not

have to unwind its currently expanded balance sheet before raising the Federal Funds rate from its current low level (Borio and Disyatat 2009, 6). Alternatively, an inflation-targeting central bank could use interest rate policy to anchor inflation expectations while using its balance sheet to intervene in the foreign-exchange market. Figure 3 shows how the SARB did precisely that from 2004 onwards until the onset of the international financial crisis.

Figure 3: Assets on the SARB balance sheet



Note: Foreign currency assets include gold, special drawing right (SDR) holdings and foreign-exchange reserves. Other assets include fixed assets, loans to government, 'other' loans, the marginal lending facility, utilisation of cash reserves and 'other' assets.

Source: Data from the SARB

Of the two shortcomings in William Poole's analysis of the instrument problem in monetary economics – (i) the absence of any role for a financial sector and (ii) balance sheets – was recently corrected by Goodhart, Sunirand and Tsomocos (2011) when they returned to Poole's instrument problem, but in a model updated for the post-financial crisis world. In order to include financial stability as a goal of monetary policy, they used a general equilibrium model with heterogeneous banks, and the possibility of default, incomplete markets

and a role for money. However, the question is the same as Poole's, namely is an interest rate better or worse than a money supply rule in maintaining economic stability; a concept which now includes financial stability?

Their answer is clear: the interest rate rule still emerges as the preferable policy tool because it avoids the inadvertent monetary policy tightening during a financial crisis that vexed Friedman so much. This is not the end of the matter though. Goodhart *et al.* (2011, 72) did not address the second major shortcoming in Poole's analysis, namely the assumption of a monotonic relationship between the interest rate and the central bank's balance sheet. This is somewhat surprising as Goodhart has often observed the lack of such a relationship in modern central banks and without that assumption Goodhart *et al.*'s (2011) result unravels.

The combined effect of the observations that balance sheets matter and that the central bank's balance sheet does not simply reflect the interest rate decision of the bank implies that there is scope for balance-sheet policies distinct from interest rate policy.

### 3. Appropriate goals for balance-sheet policy

In the era when monetary policy meant balance-sheet policy, the objective was financial stability in the first instance. This objective was still on Friedman's agenda when he gave his now famous Presidential Address to the American Economic Association with the title "The Role of Monetary Policy" (Friedman 1968). This paper has become the cornerstone of modern monetary policy<sup>7</sup> and the standard interpretation is that Friedman undermined the belief in an exploitable Phillips curve, in particular, and macroeconomic fine-tuning, in general. In this way he paved the way, so the story goes, for the adoption of systematic monetary policy focused on the maintenance of low and stable inflation over the long run. Of course, the policy instrument was soon changed from Friedman's recommended money growth rule to an interest rate rule, following William Poole's (1970) reasoning.

Friedman was unquestionably pleased with a focus on low and stable inflation, and a systematic approach to monetary policy, and in light of the last four decades of monetary history, it is easy to read the case for these developments in Friedman, and to read only that. But if one reads that lecture in the light of his earlier work with the distinction between monetary and interest rate policy I have already mentioned and the focus on financial stability, his priorities in the "Role of Monetary Policy" assume a new significance. When he gets round to articulating the positive tasks of

monetary policy, he does not lead off with price stability or low and stable inflation; though that would come later. Instead, his agenda for monetary policy started with the promotion of financial stability; in his words:

The monetary machine has gotten out of order even when there has been no central authority with anything like the power now possessed by the Fed. In the United States, the 1907 episode and earlier banking panics are examples of how the monetary machine can get out of order largely on its own. There is therefore a positive and important task for the monetary authority – to suggest improvements in the machine that will reduce the chances that it will get out of order, and to use its own powers so as to keep the machine in good working order. (Friedman 1968, 12-13.)

More than 20 years later, when the modern consensus had already emerged, Friedman (1991, 39) still lamented that “mankind has not succeeded in evolving a satisfactory monetary system”. For Friedman the goal of price stability came only after this focus on long-run financial stability and he expected the central bank’s balance sheet to play a central role in the pursuit of these goals. To see how balance-sheet policy might be used towards this end, it is worth considering how modern banks are funded, that is, not with retail deposits. Modern banks finance their lending activity by borrowing on wholesale markets at a different and typically shorter maturity, and on more favourable terms than they charge their clients. It follows that neither cash reserves nor liquidity constrains the size of private bank balance sheets, though they will affect the cost of loans offered by private banks (Borio and Disyatat 2009, 19). Reserves can be borrowed to the amount required at the central bank, and the same is true for liquid assets on the wholesale market.<sup>8</sup>

The stability of the banking sector depends critically on the continued access to these sources of funding by private-sector banks. In the nineteenth century, when retail deposits funded commercial banks with much higher levels of capital than modern banks, the Bagehot rule was meant to provide stability, whereby the central bank would step in as lender of last resort to prevent the collapse of currently illiquid, but fundamentally solvent, banks.

A modern run on the bank occurs not at bank tellers though, but in the same wholesale market where banks borrow most of their funding (Blanchard 2009). Since 2008, central banks have demonstrated their capacity to respond to this kind of run on the bank by their unique and discretionary ability to expand the liabilities on their balance sheets, and shore up the wholesale markets. They did this by helping banks transform the asset side of their balance sheet, for example, the Fed’s purchase of more than US\$800 billion’s worth of mortgage-backed securities at the start of the unconventional monetary policies that have caused so much controversy.

These policies have been highly controversial, with critics finding comparisons in Goethe's *Faust* or the music of Wagner (e.g., King 2012). However, the controversy is not entirely reasonable. When the central bank uses its balance sheet to preserve private-sector financial stability, it is doing what central banks have always done and is doing this in the manner that only a central bank can, that is, as a special kind of bank. The distinguishing feature of a central bank is, on the one hand, the fact that its liabilities "define the unit of account in a wide range of contracts that other people exchange with one another", as Woodford (2003, 37) said and, on the other hand, that it has the power to create such liabilities at its discretion (Goodhart 2011).

To be a central bank requires taking responsibility for the balance-sheet operations just described. By contrast, determining the level of a policy interest rate is not a necessary function of the central bank (Goodhart 2011), although it has become conventional. "A Central Bank is a bank," said Lord Cobbold, a former Governor of the Bank of England, "not a study group" (Goodhart 2011, 146). The reference to a "study group" need not be derogatory. It refers to a group of people engaged in a common analytical activity and captures what modern monetary policy committees do: they study the current condition and likely unfolding of the economy to determine a proper interest rate path, given the goals of monetary policy.

However, as Goodhart (2011) has observed, the work of a monetary policy committee is not connected in any necessary way with the responsibility for a central bank's balance sheet. It is possible for a private committee, a research bureau or a government department to form the required study group, after which the central bank will implement its decision and retain its responsibility for using its liabilities to provide for financial stability. When one asks "whether a central bank that sets interest rates should also manage financial stability", one is questioning the wrong way round, argues Goodhart (2011, 146). The argument developed here suggests that the appropriate question should be: "whether a central bank that manages both liquidity and financial stability should also be given the task of setting interest rates" (p. 146).

To answer that question, one needs to understand how the central bank's balance sheet affects private-sector balance sheets and how it affects the transmission of interest rate policy through the economy. Balance-sheet policy is not sufficiently described by an expansion of the liability side of a central bank's balance sheet: to complete the description, one needs to discover the market where these liabilities will be deployed and the assets that will be added to the central bank's balance sheet. The latest round of

quantitative easing (QE3) announced by the United States Federal Reserve Board will entail, for example, the creation of central bank liabilities with which to purchase short-dated government debt. In the meantime, the ongoing “operation twist”<sup>9</sup> is a scheme in terms of which the short-dated government debt on the Fed’s balance sheet is traded for longer-dated debt, to drive interest rates down further along the yield curve.

Unlike earlier rounds of quantitative easing, the goal of QE3 is not to support the wholesale market for bank funding, but to maintain low interest rates along the yield curve until the US economy has recovered sufficiently. The potential channels of influence for such policy are typically divided into signalling and portfolio balance effects.

The signalling channel emerges from the realisation that the level of the policy interest rate is not sufficient to identify the stance of monetary policy: a given level of the policy rate is consistent with a potentially wide array of monetary conditions, depending on the shape of the yield curve and asset market conditions. Friedman’s central claim about the role of monetary policy in the Great Depression was that monetary policy, as experienced in asset markets and in the banking sector, had tightened dramatically, despite the belief of economists at the time who focused on interest rates, that policy had been eased aggressively. This is why the same episode that provided Friedman (1968) with his strongest evidence of the importance of monetary policy, was interpreted by contemporaries as evidence of its impotence.

The lesson was well learnt. For the duration of the modern consensus, the need to link the current stance of policy with conditions on forward-looking asset markets more broadly was accepted and achieved via the expectations of future monetary policy. Woodford (2003, 15) articulated this argument with great clarity in *Interest and Prices*, from which the following lines are an extract:

For successful monetary policy is not so much a matter of effective control of overnight interest rates as it is of shaping market *expectations* of the way in which interest rates, inflation, and income are likely to evolve over the coming year and later . . . Not only do expectations about policy matter, but, at least under current conditions, very little *else* matters.

During the international financial crisis, the management of these expectations became increasingly explicit as the Fed (and other central banks) committed themselves to very low interest rates over long horizons, in what has become known as “forward guidance” (Woodford 2012). Some central banks, notably in Sweden, Norway and New Zealand, have used forward guidance for a number of years as part of their normal inflation-targeting approaches.

However, the interest here lies with the balance-sheet operations associated with the forward guidance along the signalling channel of monetary policy, not with the forward guidance itself.

In addition to the signalling channel, balance-sheet operations also affect monetary conditions through their impact on private-sector portfolios, along what are usually called ‘portfolio balance channels’. The most obvious channel is called the ‘portfolio balance effect’ and refers to the impact on relative asset yields following balance-sheet operations, due to imperfect substitutability on the asset side of private balance sheets (Borio and Disyatat 2009, 13; Goodhart 2012, 126).

However, balance-sheet policy can also affect the liability side of private-sector balance sheets through the impact on asset values and, hence, collateral. With imperfect substitutability on the liability side of private balance sheets, the central bank can affect private-sector credit extension and with it the level and structure of economic activity (Borio and Disyatat 2009, 14).

The theoretical and empirical research on these transmission mechanisms is part of a larger effort to understand the role of money and asset markets in modern economies. Information asymmetries, imperfect substitutability of assets, transactions costs and other imperfections are important elements of these models. Theoretical work on modelling financial crises with heterogeneous banks, incomplete markets and the possibility of bank failure in equilibrium has also advanced considerably (e.g., Goodhart et al. 2006). While these theoretical advances had little impact on the consensus policy model (Kocherlakota 2002), the international financial crisis has forced a bridge between the theoretical literature and practical reasoning on monetary policy (Du Plessis 2010).

Forward guidance and the portfolio balance channels also intersect with the more widely known transmission channels of interest rate policy, for example, the ECB’s President Draghi (Wilson et al. 2012, 1) recently argued that balance-sheet operations were required to stabilise conditions on capital markets where the yield curve was undermining the interest rate channel: “To the extent that the size of the sovereign premia hamper the functioning of the monetary policy transmission channels, they come within our mandate.”

Draghi’s argument is in the spirit of the accumulating evidence that portfolio balance channels are important amplifiers of interest rate policy (see Disyatat 2010, for a review of the evidence). At the same time, his argument implies that forward guidance alone had been unequal to the task and that direct



asset market intervention was now required to complement the ECB's interest rate policy.

While none of the components of what I have said here have been particularly controversial, they add up to an important shift in the conceptualisation of modern monetary policy. During the international financial crisis, policy interest rates were pushed close to the zero lower bound in a number of developed countries, and balance-sheet policies emerged as a “poor man's” policy response, to use Willem Buiter's (2012) words. However, there is no reason to suspect that these policies were only effective once the scope had run out for interest rate policy. The earlier discussion of their impact on the transmission mechanism suggests, on the contrary, a role for the central bank's balance sheet at all levels of the policy interest rate.

This does not imply that it will be easy to use balance-sheet operations in the normal course of business. Central banks are but one participant in assets markets and cannot determine market outcomes with anything like the precision it has over the policy interest rate. This problem of control is compounded by an epistemological problem: we know far less – where econometric estimates are concerned – about the potential impact of balance-sheet policies. It is not implausible to argue that the best work by balance-sheet operations might well be done, as during the crisis, when markets are thin or liquidity risk is high. Balance-sheet operations at such a time and in the right market can bring the private sector back in and restore market stability (Borio and Disyatat 2009, 14).

Despite these sobering challenges, balance-sheet policy also offers important advantages with respect to the objective of financial stability. The first among them is the relatively greater precision with which balance-sheet policy can target a particular asset market. Given imperfect substitutability, it matters where policy-makers act and the drawback of interest rate policy in this regard is one of the chief arguments against responding to asset market developments with interest rate policy, as Svensson (2012a, 8) argued: “The policy rate is a blunt, indirect and inappropriate means of influencing financial stability”.

The second advantage is that balance-sheet policy does not suffer from the zero lower bound that hampers the policy interest rate. It is no surprise that Svensson's (2003) foolproof policy recommendation for escaping from deflation starts with a balance-sheet policy or, to be precise, with foreign-exchange market intervention to depreciate the currency.

A third advantage for balance-sheet policy is the extra degree of freedom it gives policy-makers. In an inflation-targeting emerging-market economy the central bank may, for example, use its balance sheet to respond to unexpected international capital flows (Goodhart 2012). Figure 3 shows the considerable extent to which the SARB has already used this extra degree of freedom under inflation targeting in South Africa.

#### 4. Fiscal policy and central bank independence

Notwithstanding the aforementioned benefits, the re-emphasis of balance-sheet policies by central banks undermines one of the most important planks of the modern consensus on monetary policy, namely the agreement on the merits of central bank independence. Irrespective of the market chosen for the balance-sheet policy intervention, there will be distributional consequences that have to be considered and, in most cases, there will be fiscal consequences as well (Goodhart 2011). In the case of South Africa, the cost of the extensive sterilised balance-sheet operations shown in Figure 3 will, for example, ultimately be shouldered by the taxpayer.

These fiscal consequences of monetary policy decisions have always existed (Sargent and Wallace 1981) but are more explicit when balance-sheet operations are used. These policies will affect the terms for government debt, and will also expose a central bank to interest rate and even credit risk; the financial consequences of which will ultimately be carried by the taxpayer. Accordingly, it is useful to view the central bank's balance sheet as part of the consolidated public-sector balance sheet (Borio and Disyatat 2009).

The expectation of a need for closer co-operation between fiscal and monetary authorities in the future, based on the more frequent use of balance-sheet policies, taxes on banks and expanded financial regulation, led Goodhart (2011, 154) to one of the most surprising conclusions in monetary economics for some years, namely that “the idea of a central bank as an independent *institution* will be put aside”. The italics are in the original and they are important. With reference to Lord Cobbold's argument, Goodhart identifies the institution of the central bank with its balance sheet, which has never been, and will never be, independent from fiscal policy. What has been called ‘central bank independence’ for a generation refers to the scope for the monetary authorities to set interest rate policy without political interference.<sup>10</sup>

There is no logical reason why a central bank should not retain instrument independence for the interest rate policy while also collaborating with fiscal authorities in the management of its balance sheet. This argument is fine as far as it goes, but it does not go very far to protect the central bank from political pressure to provide, for example, unlimited cheap finance for an unsustainable fiscal policy. Such risks are non-trivial in a world with substantial fiscal risks in the developed world and potential risks in the developing world.

One can look in either of two directions to manage these kinds of risk: in one direction one might appeal to a principal-agent-type solution, with delegated authority but better incentives than the political process. This solution has been adopted for interest rate policy under the formula of a goal-dependent central bank with instrument independence to pursue the delegated goal (Fischer 1995).

Yet many sceptics doubted the government's ability to enforce a contract with an instrument-independent central bank. Long before Don Brash was given a contract at the Reserve Bank of New Zealand to achieve the world's first inflation target, Milton Friedman (1982) had argued that Brash would not really be fired if the bank missed the target. While Friedman was correct and Don Brash was not fired when the target was breached in New Zealand, Friedman was too sceptical about the long-run outcome of delegated authority on interest rate policy. Instrument-independent interest rate policy has, on the whole, delivered benign results.

Balance-sheet policies pose different problems though: there is no possibility of specifying a separate contract in the tradition of Walsh (1995) where the central bank's balance sheet is concerned. The interconnected nature of the consolidated public-sector balance sheet does not allow a separate sphere of influence for the central bank. Given the reality of the consolidated public-sector balance sheet, there seems little alternative for limiting the political risks to fiscal and monetary policy than the one proposed by Friedman (1948), namely to cut the risk at its fiscal source by placing far tighter controls of fiscal discretion.

## 5. Conclusion

For the last generation, monetary policy has meant interest rate policy, set by a "study group" in an instrument-independent central bank and focused on a macroeconomic stability goal, such as flexible inflation targeting.

Expectations about the future direction of policy provided the unique identification of the policy stance in this project. The central bank's balance sheet – that part of the institution that is truly unique – played little more than a reactive role in this configuration. As the international financial crisis drove policy interest rates to the zero lower bound in the developed world though, the balance-sheet policy re-emerged from its decades-long dormancy.

In the pre-crisis consensus model of monetary policy, money and asset markets had disappeared beneath the equations of the New Keynesian consensus like that famous rai stone off the coast of Yap. Central banks have since shown that money still matters, that balance-sheet operations are a potentially powerful and additional tool of monetary policy, and its use will require a reconsideration of the consensus procedure for monetary policy and its independence under inflation targeting. This is not simply a “poor man's” policy instrument, but can become a powerful, permanent tool of monetary policy, with an influence on the transmission mechanism of interest rate policy. It can also be useful at positive levels of policy interest rates.

A reconsideration of balance-sheet policy as a permanent tool of monetary policy seems warranted as the search for a platform and configuration of instruments to confront the challenges of macroprudential policy continues. However, this development will raise not only serious challenges for theorists and econometricians, but also place considerable strain on the relationship between monetary and fiscal authorities. The solution to these tensions should not be sought on the monetary side alone; on the contrary, fiscal risks require political solutions.

## Notes

<sup>1</sup> The original account is in Furness (1910) with the *The Economic Journal's* extract published as Furness (1915). Goldberg (2005) provides a recent critical discussion of the story.

<sup>2</sup> In the current era Kocherlakota's (1998) has made the connection between money and memory most explicit in a model where enforcement and record-keeping are both imperfect.

<sup>3</sup> There are a number of famous irrelevance results in economics with respect to balance sheets. Given an extremely unlikely set of assumptions, the initial distribution of assets and rights would be irrelevant from an efficiency perspective, argued Ronald Coase (1960). Modigliani and Miller (1958) showed that the structure of a firm's balance sheet also does not matter for the firm's value without distortions and frictions in capital markets. However, these authors were simply marking out

theoretical reference points: since their assumptions did not match the circumstances in actual economies, they all argued that assets and, accordingly, balance sheets mattered greatly (Goodhart 1975, ch 5; Buiter 2012).

<sup>4</sup> These developments and the theory that support them was called “neo-Wicksellian” by Michael Woodford (2003) in honour of Knut Wicksell, an early proponent of, *inter alia*, monetary policy as interest rate policy.

<sup>5</sup> The major components of Friedman’s (1948) programme were: (i) curtailing private-sector money creation, or bank leverage (a theme that sounds familiar today); (ii) curtailing the discretion of the central bank with respect to the monetary policy by adopting a balance-sheet rule and (iii) at the same time, fiscal policy would have to be reformed to remove the possibility of discretionary anti-cyclical fiscal policy, but would include automatic fiscal stabilizers and a transfer programme.

<sup>6</sup> There is some discussion among scholars of monetary economics about the ultimate foundation for the central bank’s ability to set the policy interest rate, with some emphasising the final settlement of payment through the central bank and others the network advantage for central bank liabilities derived from it being the government’s bank. The common ground in this debate is that the foundation for interest rate policy lies in the central bank being the government’s bank (Goodhart 2000).

<sup>7</sup> A committee of the American Economic Association, the Top 20 Committee, recently included Friedman’s paper in the list of top 20 articles in the *American Economic Review*’s first, “The First 100 Years” (Arrow et al. 2011).

<sup>8</sup> Since the liability side of their balance sheets does not limit the expansion of assets at private banks, the only cap on that expansion is their capital. The implicit guarantees offered by governments to deposit holders (often explicitly under deposit insurance schemes) and bond holders under the expanded interpretation of the Bagehot rule (Du Plessis 2012) means that the Modigliani-Miller theorem does not hold for modern banks and biases them towards holding much debt and little capital (Goodhart et al. 2011). Bank leverage rose and, with it, the macroprudential risks that have become a major policy challenge at this time. This is also why the Basel Accords on bank regulation internationally have focused on capital-adequacy ratios. The way in which Basel I and II tried to encourage safer balance sheets was controversial and, in the event, unsuccessful (Goodhart 2010). The case for much higher owned equity – to reduce bank leverage and, with it, the associated macroprudential risks of the current banking system – was recently made by, *inter alia*, Admati et al. (2012).

<sup>9</sup> The Fed pursued a similar strategy under the name “Operation Nudge” in the early 1960s (Beard 1964).

<sup>10</sup> There are also aspects of fiscal policy that benefit from independent assessment analogous to the interest rate policy at the central bank. As a specific example, one might think of the task of identifying the structural budget balance, with which to determine the underlying stance of fiscal policy. Chile uses an independent fiscal council to this end, and it is to this kind of example one might look if the required balance-sheet co-ordination of the central bank undermines the independent ability to set the policy interest rate.

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# Monetary and financial stability: Lessons from the crisis and from classic economics texts

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*Adair Turner*

## Abstract

In 2007–08 the developed world suffered a huge financial crisis, followed by a Great Recession, from which it is only recovering slowly. Ahead of that crisis, the dominant assumption of monetary economics was that achieving low and stable inflation was sufficient to ensure financial and macroeconomic stability. It was also assumed that complex financial innovation and increasing financial intensity were positive developments, fostering improved allocative efficiency and system resilience. These assumptions turned out to be dangerous delusions. The crisis was created by growth of excessive leverage in both the real economy and within the financial system: credit and asset price cycles therefore have to be recognised as crucial macroeconomic phenomena, important independent of their short-term effects on current inflation. In the aftermath of the crisis, the developed economies face a deleveraging challenge which greatly increases deflationary risks: in response, unconventional policies may well be required, integrating monetary and macroprudential tools previously considered separately. For emerging economies, meanwhile, the financial crisis and resulting recession suggest the need to assess carefully the impact of financial deepening, seeking to grow financial systems which meet the true needs of the real economy, while avoiding the excessive leverage and complexity which wreaked havoc in the developed world.

## 1. Introduction

It is a great pleasure to be speaking here at the South African Reserve Bank (SARB) on my first-ever visit to this country. Your conference focuses our attention on underlying issues of financial stability, and fundamental causes of instability, which are relevant in both developed and emerging economies. My remarks today will be focused primarily on features of the developed world's financial system which led to the crisis of 2008 and to the Great Recession that followed, from which we are only slowly and painfully emerging. But I will also draw some implications for optimal policy in emerging countries, posing the question: how should you foster the development of financial systems

which serve the vital needs of your economy, while avoiding some of the mistakes that have wreaked such havoc in the developed world?

The crisis of 2008 was essentially a crisis of excessive leverage, the result of a steady build-up of excessive debt contracts over several preceding decades. That excessive leverage led to a bust, and after the bust, deleveraging created deflationary pressures which cannot be offset by conventional monetary policy alone, since interest rates are at the zero bound.

So, my purpose this afternoon is to explore both the drivers of financial instability which led to the crisis and, more briefly, the challenge of monetary and macroprudential policy in the face of the deleveraging that has followed.

I will argue,

- first, that we must recognise the dangers of a simplistically free market approach to finance, and regulate robustly to prevent a repeat; and,
- second, that in the face of deleveraging we may need to consider innovative and unconventional combinations of policies to offset deflationary risks.

From that you might fear that I will propose a dangerously interventionist rejection of market economics. But before you leap to that conclusion, let me highlight an apparent paradox from the history of economic thought.

The Chicago School of economics is rightly synonymous with the values of the free market, the benefits of competition and suspicion of excessive regulation. The economist Henry Simons lies at the very foundation of the Chicago School. However, Simons and other early free market theorists such as Irving Fisher believed that free markets in banking were such a special and dangerous case that we should so strictly regulate banks as to essentially abolish them.

In order to think straight in economics, we often need to go back to basics; and that sometimes means to some old economic texts. In particular, I should like to go back to the basics of the role of credit and money in our economy, and to the inherent dangers of private credit creation, on which economists such as Fisher, Simons and Milton Friedman, but also Hyman Minsky, focused.<sup>1</sup> I will argue three points in turn.

- First, that optimal regulation of banks and shadow banking must reflect a recognition that the private financial system, left to itself, will tend to create excessive debt contracts and excessive leverage.
- Second, that if we mistakenly allow excessive debt and leverage to develop, and the inevitable bust follows as it did in 2008, the subsequent

challenges of deleveraging are extremely difficult, and are likely to require in response innovative and unconventional policies, and innovative integration of different aspects of policy.

- Third, that there are lessons here for emerging economies, which still have degrees of freedom to avoid the build-up of excessive debt and leverage which has produced the developed world's Great Recession.

## 2. Fundamental causes of the crisis: Debt, banks and asset price cycles

The financial crisis of 2007 to 2008 was caused by excessive credit creation, excessive leverage and too much maturity transformation. The fact that these excesses caused such havoc, and that private incentives and market disciplines failed to check their development, reflects three facts which are fundamental to understanding financial system dynamics and risks (Figure 1):

Figure 1: Three drivers of financial instability

- Debt contracts create specific risks
- Unregulated bank credit and private money creation is inherently unstable
- Lending secured against real assets can be strongly pro-cyclical



Real economy leverage, credit creation dynamics, and credit/asset price cycles are crucial macroeconomic variables, and phenomena

- First, debt contracts create specific financial and economic stability risks; and these risks intensify as the proportion of all contracts which take a debt and, in particular a short-term debt form, increase.
- Second, that the existence of banks as we know them today – fractional reserve banks – exacerbates these risks because banks can create credit and private money and, unless controlled, will tend to create sub-optimally large or sub-optimally unstable quantities of both credit and private money.
- Third, that bank or shadow bank lending secured against real assets which can change in value, can be even more volatile and procyclical, resulting in credit and asset price cycles which end in crashes and subsequent recessions.

As a result, the level of debt and leverage within the real economy, the dynamics of credit creation, and the links between credit creation and asset price cycles need to be recognised – they were not before the crisis – as crucial macroeconomic variables and phenomena.

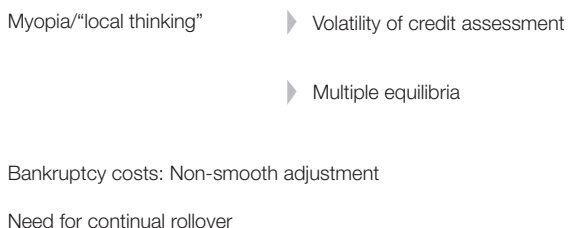
## 2.1 Debt contracts, benefits and risks

A modern market economy needs financial contracts. In theory, these contracts could all take an equity form and, in theory, if they did, economies would suffer less macroeconomic instability. That point was well made in 1934 by the Italian economist Luigi Einaudi (2006), in an elegant short article entitled simply “Debts”. But as Einaudi then went on to argue, in the real world fixed-debt contracts (and indeed fixed-wage contracts) have arisen to meet human desires for greater certainty over future income than would be delivered in a world where all contracts took an equity form.

Therefore, there are debt contracts – both those through which individual savers finance productive investment by businesses, and those that achieve life-cycle consumption smoothing – some households saving and others borrowing, in particular in the form of mortgages to buy houses. The potential for such debt contracts, as well as equity contracts, was almost certainly important to the willingness of savers to commit funds and to the level of capital investment that helped drive the economic transformation of the past 200 years.

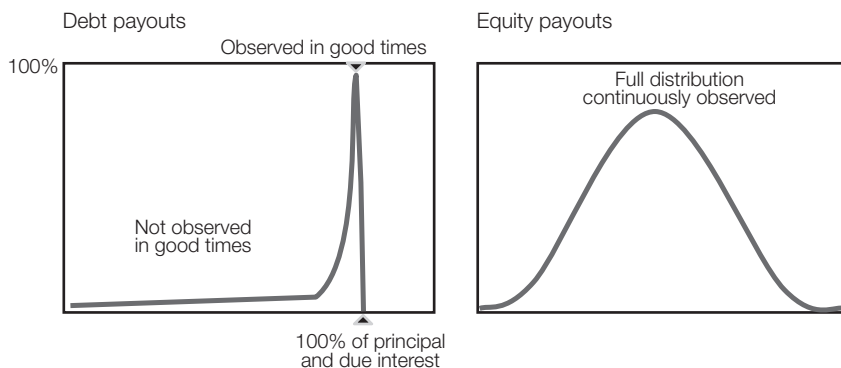
However, alongside these advantages, the presence of debt contracts creates specific risks that derived from three inherent features of debt-versus-equity contracts (Figure 2):

**Figure 2: Rigidities and vulnerabilities of debt contracts**



Debt contracts can create (i) rigidities, (ii) myopia, and (iii) contagion dangers. These dangers derive essentially from the different actual and observed probability distributions of payouts for debt instruments compared with those for equity instruments (Figure 3). Returns on equity can vary significantly above and below the modal expectation and that fact is transparent to the investor on a continual basis. Equity markets can certainly suffer from irrational exuberance, but the fact that equity returns are potentially variable is always transparently clear.

Figure 3: Observed payout distributions for debt and equity



The return on debt contracts, by contrast, has a skewed probability distribution. In most states of the world the return is positive but capped: but there is a small percentage probability of highly negative returns. This has two consequences:

- First, *potential myopia*, since as Gennaioli, Shleifer and Vishny (2010) have argued, investors in debt contracts may suffer from “local thinking” – the assumption that the favourable distribution of payouts which is observed in the good times is the full probability distribution, an assumption which then adjusts rapidly and disruptively at the first sign of bad news, as “neglected risks” are suddenly brought into consciousness (Gennaioli, Shleifer and Vishny 2010). As a result, Gennaioli, Shleifer and Vishny argue, the existence of many credit contracts and securities may “owe their very existence to neglected risk”. As a result, investors/savers in debt instruments may themselves take on liabilities and commitments which only appear sustainable on the basis of incomplete assessments of the risks involved.
- Second, *potential rigidities in default*: Equity losses are typically suffered in a smooth and controlled fashion: the equity price falls and the investor is as a result poorer, but in many cases without a disruptive event. Debt losses, by contrast, occur via disruptive processes of default and bankruptcy. As Ben Bernanke (2004) has pointed out: “[I]n a complete markets world, bankruptcy would never be observed”. However, in the real world bankruptcy and default processes induce fire sales and non-smooth changes in apparent wealth, and if they occur on a large scale simultaneously across the economy, can produce harmful economic shocks.

In addition, debt contracts need to be continually rolled over: as a result, new credit supply is vitally important to the economy. Equity instruments are typically permanent; they do not need to be continually replenished each year. As a result, an economy could function for a period with new equity issue markets completely closed. Debt contracts in contrast have finite terms. Without continual refinancing, many otherwise solvent firms would go bankrupt. Oscillations in new debt supply are therefore potentially far more harmful than oscillations in new equity supply.

2.2 Banks, credit and private money

The risks inherent in debt contracts would be present even if there were no banks, that is, if all debt contracts directly linked end-investors with end-borrowers (e.g., as when a household directly owns a corporate bond). However, fractional reserve banks can both greatly swell the scale of debt contracts in an economy, and introduce maturity transformation between short-term depositors and long-term borrowers. As a result, they can greatly increase the financial and economic stability risks, and can play an important autonomous role in the creation or destruction of spending power, that is, of nominal demand.

They can do this because they create credit and, as a result, private money. A process best understood by stepping through the stages by which goldsmiths became bankers (Werner 2005):<sup>2</sup>

- We begin (Figure 4) with someone (A) who has, let us say, 100 pieces of gold, but who does not like the insecurity and inconvenience of carrying gold around, and so deposits it at the goldsmith in return for a receipt. If that receipt is transferrable and becomes accepted by others as a means of payment, then it is itself money. However, at this stage we have not created any new money; just turned money into a new form.

Figure 4: From Goldsmith to Bank (i)

Liabilities		Assets	
Depositor A ←	100	100	Gold coin in safe
(100 paper money Receipt for if receipt transferable)	gold coin		

- The goldsmith then realises (Figure 5) that since not all depositors demand their gold back simultaneously, he can lend some of it to person B. So that we now have person B holding 50 pieces of gold money, and



person A still holding a receipt for 100 pieces of gold while the goldsmith holds 50 of gold and 50 of loans.

Figure 5: From Goldsmith to Bank (ii)

Liabilities		Assets	
<b>Depositor A</b> ← 100 (100 paper money Receipt for gold coin if receipt transferable)		50 Gold coin in safe	
		50 → <b>Borrower B</b> Loan of gold coin 50 gold coin money	

- However, the goldsmith then realises that the loan which he extends does not need to be the actual gold, that it too could be a receipt for gold, so he lends person B 100 gold receipts rather than 50 of gold coins. We now have 200 of paper money in circulation. Person B, as well as person A, is able to spend that money, as long as he is confident that he can generate future resources to pay back the loan when due (Figure 6).

Figure 6: From Goldsmith to Bank (iii)

Liabilities		Assets	
<b>Depositor A</b> ← 100 (100 paper money) Receipt for gold coin		100 Gold coin in safe	
<b>Borrower/ Depositor B</b> ← 100 (100 paper money) Receipt for gold coin		100 → <b>Borrower B</b> Loan of receipt for gold coin	

The banking system can thus create credit and create spending power – a reality not well captured by many apparently common sense descriptions of the functions that banks perform. Banks, it is often said, take deposits from savers (e.g., households) and lend them to borrowers (e.g., businesses). In fact, they do not just allocate pre-existing savings; collectively, they create both credit and the deposit money which appears to finance that credit.

Thus banks can create credit and private money. As a result, they introduce three potential sources of risk:

1. They increase leverage within the economy, enabling larger aggregate debt contracts relative to household or corporate income or to gross

domestic product (GDP). Increased real economy leverage in itself increases potential economic instability.

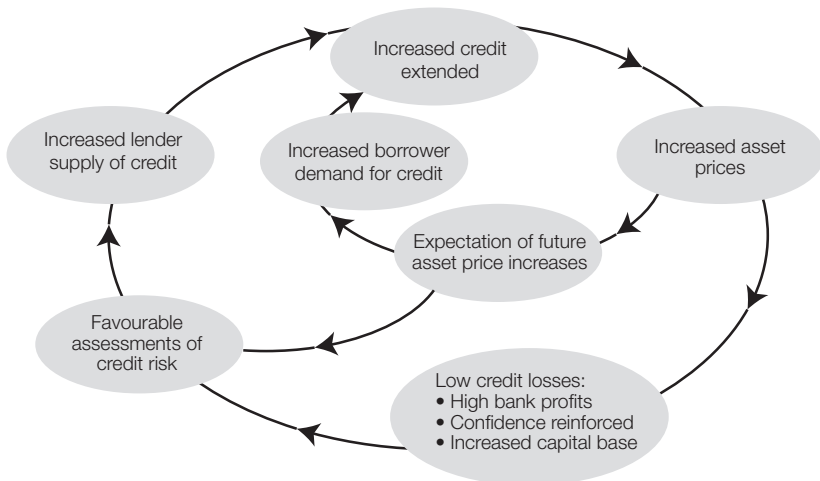
2. They introduce leverage within the financial system itself – extending credit on the basis of small equity buffers; an inherently risky activity.
3. They introduce maturity transformation, with the paper money they issue, or these days, the electronic deposits, creating instantaneous or at least short-term available spending power, even when the loans are long term in nature. With such maturity transformation, inevitably comes risks of deposit runs, contagion and instability.

The impact of fractional reserve banks is thus to make the financial system and the overall economy inherently more vulnerable to instability, creating risks that have to be balanced against the economic advantages that can arise from the risk pooling and maturity transformation that banks perform.

### 2.3 Secured lending, credit and asset price cycles

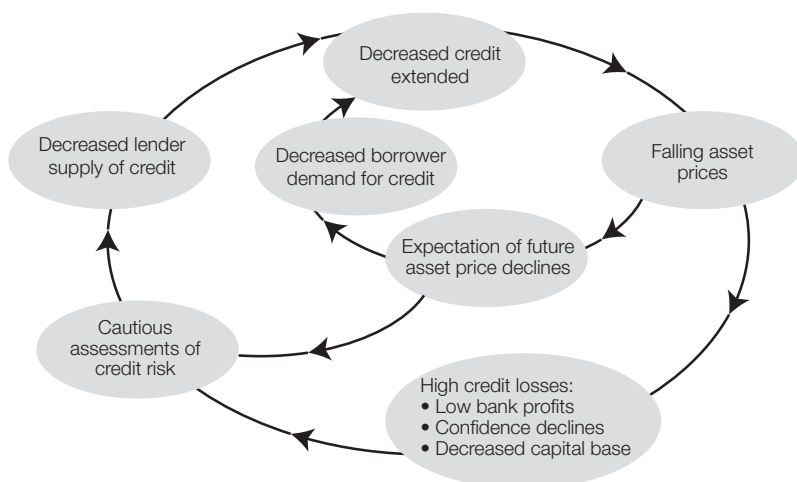
The danger of excessive or volatile bank credit creation is still further increased when credit is extended to finance the purchase of real assets – in particular real estate – whose value is itself dependent on the level of debt-financed demand. Uncontrolled bank credit extension can therefore lead to credit and asset price cycles of the sort that Hyman Minsky (1986) described.

Figure 7: Credit and asset price cycles: The upswing



- In the upswing (Figure 7) increased credit drives
  - increase asset prices, which drive increased expectations of further asset price increases and further borrower demand for credit;
  - but also drive low short-term credit losses, high bank profits and increased capital bases;
  - which, in turn, reinforce favourable assessments of credit risks and support increased supply of credit;
  - which, in turn, drives further asset/price increases.
- Factors which then, in the downswing, work powerfully in reverse (Figure 8).

Figure 8: Credit and asset price cycles: The downswing

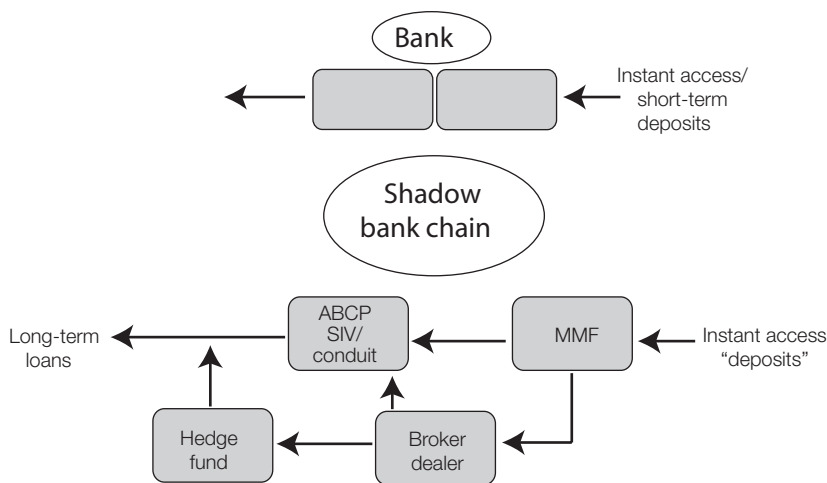


That was what we saw in housing and commercial real-estate markets before the 2008 crisis in the United States (US), Spain, Ireland and the United Kingdom (UK), followed by today's deleveraging and recession. That is what we saw in Japanese commercial real estate in the 1980s, followed by deflation in the 1990s; in Sweden in the late 1980s, followed by the banking crisis of 1992. Indeed, with depressing predictability, at the core of almost every major banking crisis of the past 50 years has been this cycle – with private incentives and foresight providing no guard against repetition, because for each individual banker or bank, it seems rational to keep dancing until the music stops.

Banks that can create credit and money to finance asset price booms are thus inherently dangerous institutions. However, what the latest crisis taught us is that not only banks, but also shadow banking systems can create such cycles. A bank achieves maturity transformation between instant access or

short-term deposits and long-term loans extended to borrowers. However, so too can a multi-step chain of shadow banking institutions and activities – an investor holding an instant access investment in a money market fund, which funds a broker dealer, which, in turn, funds a hedge fund or a special purpose conduit, which buys long-term debt securities (Figure 9).

Figure 9: Maturity transformation in banks and shadow banks



ABCP: asset-backed commercial paper; SIV: structured investment vehicle; MMF: money-market fund

Private risk management incentives make it sensible to seek to make each link in the chain “safe” by securing the funding against assets collateral, marked-to-market daily and with margin called (Figure 10) – risk mitigations which, at the total system level, however, can hardwire the procyclicality potentially present in the formal banking system, both in the upswing (Figure 11) and in the downswing (Figure 12). A dynamic seen powerfully at work in the US repo market in 2007/08 (Figure 13).

Figure 10: Shadow bank credit and creation of secured private money

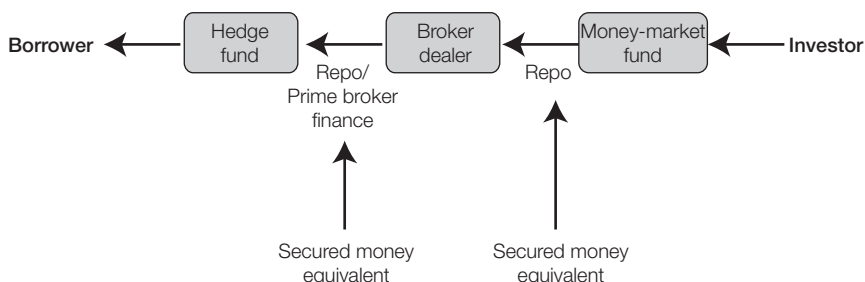


Figure 11: Hardwired procyclicality in secured funding contracts: The upswing

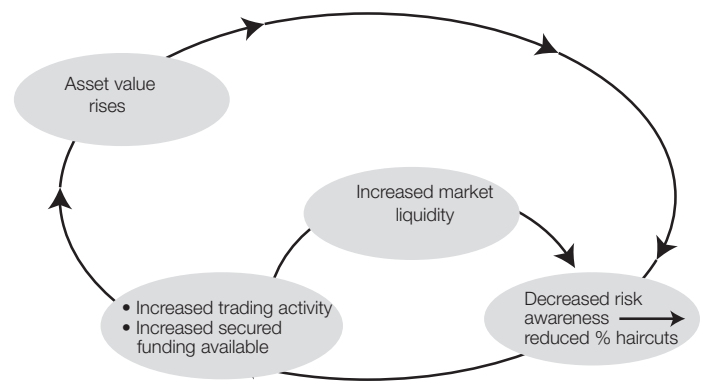


Figure 12: Hardwired procyclicality in secured funding contracts: The downswing

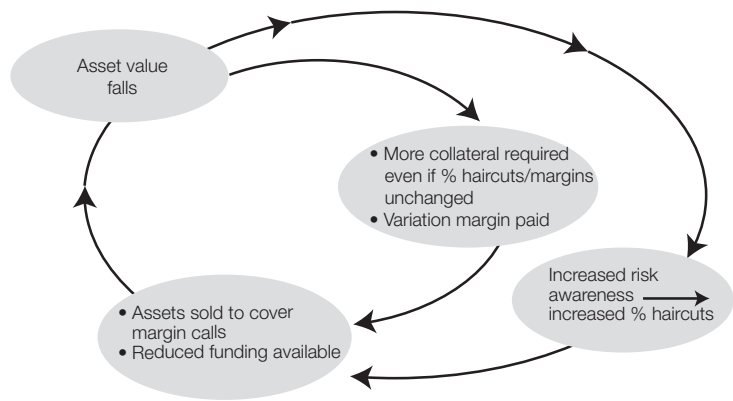
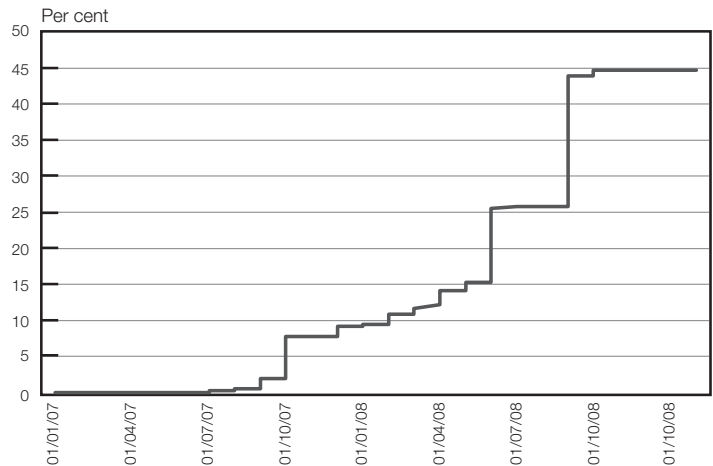


Figure 13: Average repo haircuts: United States bilateral repo market, 2007–2009



## 2.4 Increasing debt: Increasing leverage and increased financialisation

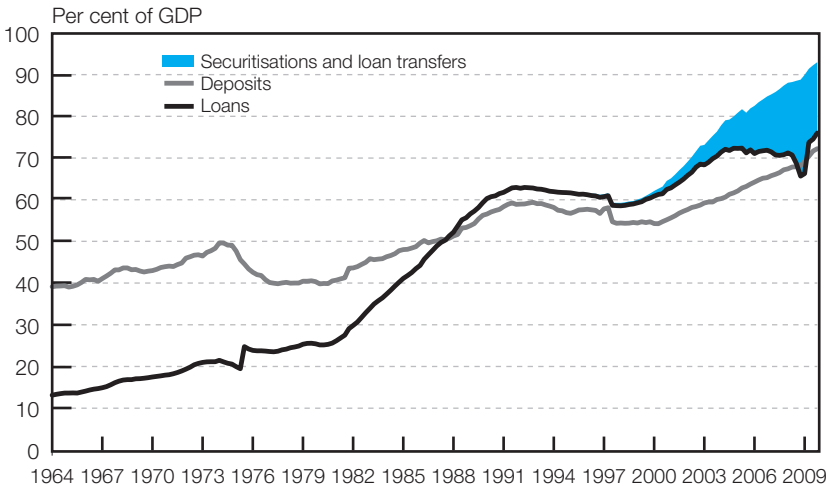
So debt brings with it specific risks not present with equity contracts: fractional reserve banks increase risks still further; and the practice of lending against asset security intensifies yet more the risks of potentially destructive credit and asset price cycles.

The level and growth of real economy leverage, the pace of credit and money creation by banks and shadow banks; and the potential for credit and asset price cycles therefore need to be recognised as parameters and phenomena of crucial relevance to monetary, financial and overall macroeconomic stability.

If we look at the growth of developed economy banking systems over the past half century, it is striking quite how radically the parameters have changed:<sup>3</sup>

- In the UK, credit to household has grown from 15 per cent of GDP in 1964 to about 90 per cent today, with, as a partially matching consequence, household deposits (private money) rising from 40 per cent to 70 per cent<sup>4</sup> (Figure 14).

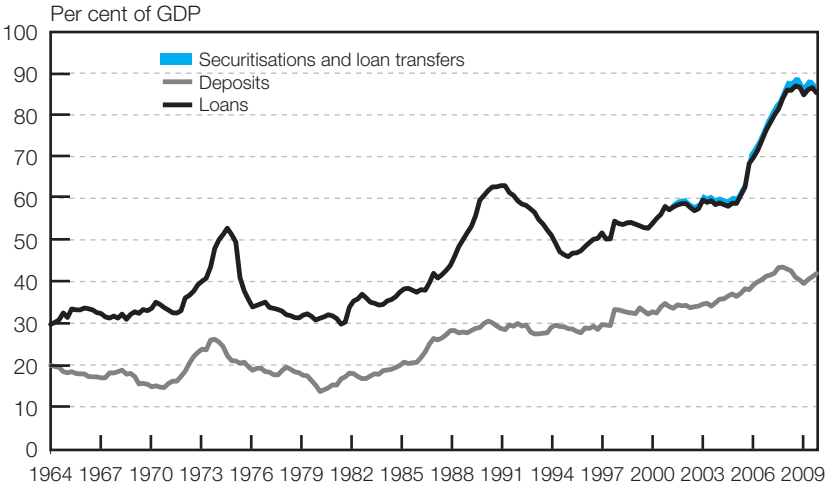
Figure 14: Household deposits and loans: 1964–2009



Source: Bank of England, Tables A4.3, A4.1

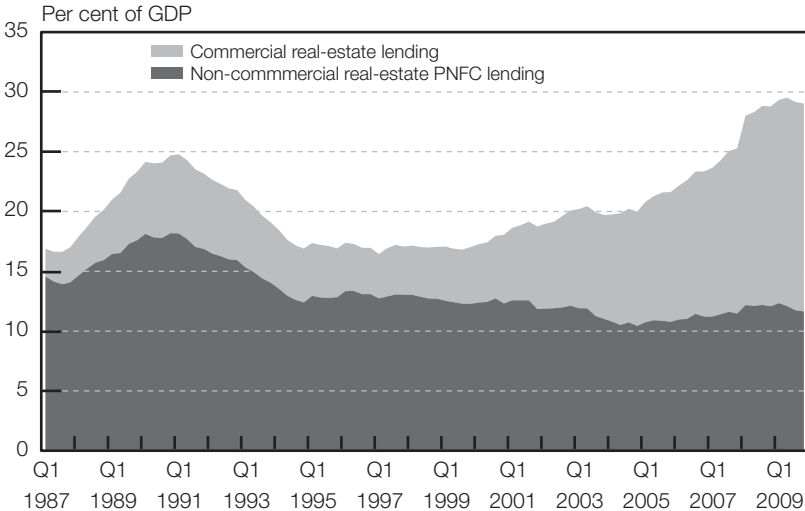
- While UK loans to corporates have risen from 15 per cent to 35 per cent, and deposits from 8 per cent to 17 per cent, and with a dramatic increase in the proportion of these loans extended to the commercial real-estate sector (Figures 15 and 16).

Figure 15: Private non-financial corporate deposits and loans: 1964–2009



Source: Bank of England, Tables A4.3, A4.1

Figure 16: Corporate loans by broad sector: 1987–2008

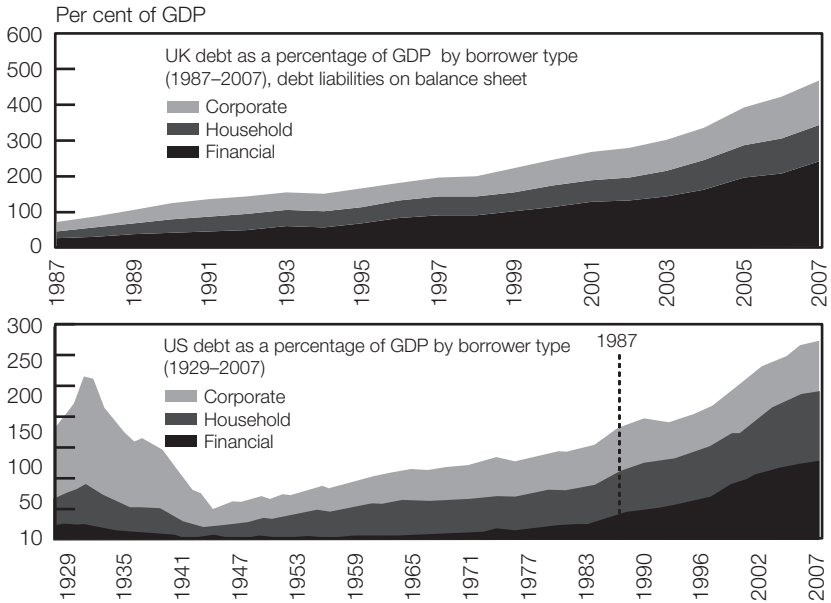


Source: Office for National Statistics, Finstats

Note: Part of the increase in real-estate lending may be due to re-categorisation of corporate lending following sale and lease-back of properties and PFI (public finance initiative) lending, but we do not think these elements are large enough to change the overall picture. Break in series from Q1 2008 due to inclusion of building society data. Sterling borrowing only.

- In both the US and the UK meanwhile, significant growth in real economy leverage (i.e., the debt to GDP of household and corporates) has been accompanied by a dramatic increase in the relative size of the financial sector, as measured by intra-financial assets relative to GDP (Figure 17). This reflects the fact that intermediation processes have become increasingly complex and multi-step in nature.

Figure 17: Growth of the financial sector



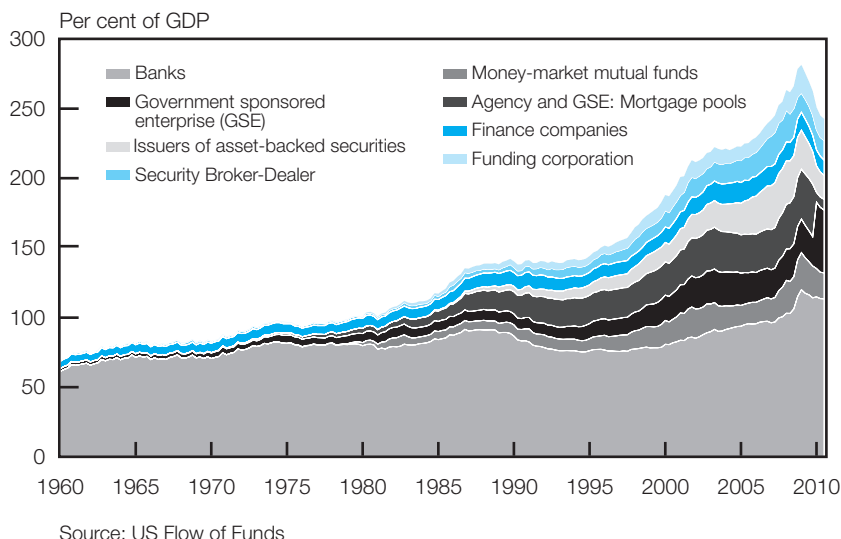
Source: Oliver Wyman

- In addition, in the US in particular, while there has been a significant increase in the scale of the banking system, there has been an even more dramatic increase – until the shock of 2008 – in the multiple complex activities we label ‘shadow banking’ (Figure 18).

Our developed economies have thus become more debt-intensive; more banking system-intensive; with lending more concentrated on real estate finance; and served by an ever-more-complex financial system, which links banks and shadow banks together in complex networks.



**Figure 18: United States financial-sector assets**



## 2.5 Neutrality, financial deepening and increased nominal demand: Pre-crisis errors

In the years running up to the crisis the financial and monetary authorities of the world – finance ministries, central banks, regulators and international authorities such as the International Monetary Fund (IMF), largely failed to identify the dangers inherent in these trends. Indeed, the dominant wisdom at the time was that developments in financial markets, and increases in financial intensity and leverage, whether within the real economy or inside the financial system, could either be ignored or positively welcomed.

Four constituent elements of a dangerous pre-crisis intellectual delusion can now be discerned.

- The first was that, as the IMF Chief Economist Olivier Blanchard commented two weeks ago “We assumed we could ignore the details of the financial system”. As Mervyn King (2010) put it in a lecture at the London School of Economics, the dominant New Keynesian model of monetary economics “lacks an account of financial intermediation, so that money, credit and banking play no meaningful role”. It was explicitly assumed that optimal monetary policy could be defined without a deep theoretical and empirical understanding of the financial intermediation system by which monetary policy is actually transmitted to the real economy. Furthermore, it was implicitly assumed that current monetary

stability – low and stable inflation – was sufficient to ensure financial and macroeconomic stability, with the development of credit and money aggregates not in themselves important. In retrospect these were dangerous mistakes.

- The second was a strong tendency to believe that if the free market financial system generated new activity, new products and increased complexity, this must axiomatically be beneficial, since they were produced by free competition between rational agents. Thus, for instance, in April 2006 the IMF positively welcomed the proliferation of credit derivative and structured credit products, and their distribution through complex multi-chain distribution channels (Figure 19). Such developments, it was confidently believed, improved allocative efficiency and risk management via better “price discovery”: and improved system resilience through dispersion of risks to those best placed to absorb it. Such confidence, however, rested on assumptions of rational behaviour and efficient markets which proved dangerously mistaken. Once more, realistic assumptions are introduced. It is clear that the financial sector – to a far greater extent than other sectors of the economy – has the potential and the incentives to create forms and volumes of activity which are optimal for the private agents involved, but sub-optimal at the social level.<sup>5</sup> In particular, as Jeremy Stein (2012) has argued, there is no certain market mechanism which ensures that the bank or shadow bank systems will create optimal quantities of credit and money: indeed, given inherent market failures, “unregulated private money creation can lead to an externality in which intermediaries issue too much short-term debt and leave the system excessively vulnerable to costly financial crises”.

Figure 19: The conventional wisdom: 2006

*Credit derivatives “enhance the transparency of the markets’ collective view or credit risks.... [and thus] ... provide valuable information about broad credit conditions and increasingly set the marginal price of credit”*

Efficiency via  
price discovery

*“There is growing recognition that the dispersion of credit risk by banks to a broader and more diverse group of investors, rather than warehousing such risk on their balance sheets, has helped make the banking and overall financial system more resilient.”*

Stability via  
risk dispersion

*“The improved resilience may be seen in fewer bank failures and more consistent credit provision. Consequently the commercial banks may be less vulnerable today to credit or economic shocks.”*

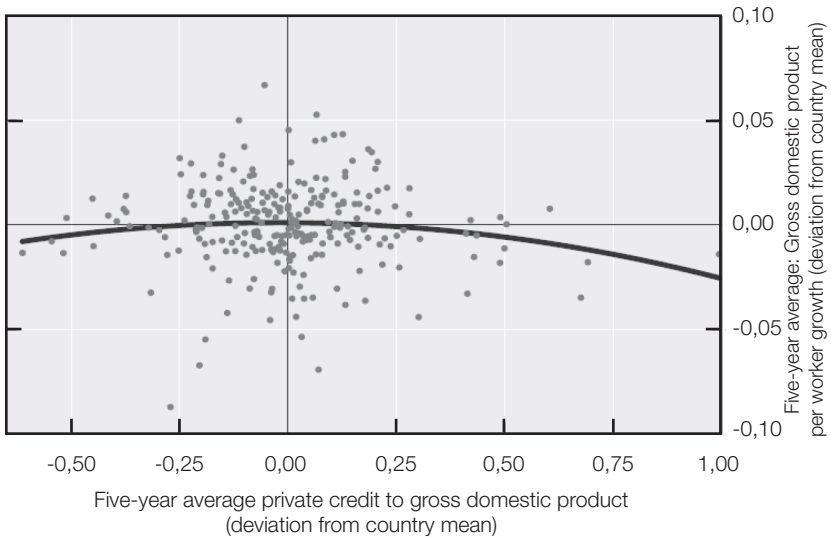
Source: IMF, *Global Financial Stability Report*, April 2006

- The third error, which followed from the axiomatic assumption of rationality and efficient markets, was to assume that increasing financial intensity – a rising share of GDP devoted to financial services or increasing financial assets as a per cent of GDP – “financial deepening” as it is often labelled – was always and limitlessly a good thing. Clearly, this would follow – though only in an intellectually trite sense – from an assumption that markets are always perfect and behaviours rational, since, if they are, whatever happens is for the good. Clearly, also some “financial deepening” is beneficial. Both economic history and good theory make it close to certain that we could not have achieved the economic transformations of the past 200 years without the development of modern financial systems. Equity and capital markets, and banking systems that link savers to investment opportunities are essential to the processes of capital formation and allocation. There are many countries in the world today – South Africa perhaps one – where further financial deepening, for instance, through the extension of basic banking services to all social groups, still has an important role to play in the economic development process. But the fact that “financial deepening” is beneficial across some range of increasing financial intensity, does not mean that it is limitlessly good. For many measures of increasing financial intensity – increased debt or bank assets to GDP, increased levels of trading activity or degrees of inter-financial system complexity and interconnectedness – there are reasons for believing that the social and economic benefits could increase up to some point, but then reach a maximum and decline. In particular, the inherent characteristics of debt contracts make it highly likely that beyond some point, further growth in debt to GDP is likely to have net harmful effects.

It is therefore essential that we reject the pre-crisis assumption that further financial deepening, further financialisation of our economies, is by definition beneficial, and consider far more rigorously the question of optimal financial system size and its relationship to the development process. An important recent paper by Stephen Cecchetti and Enisse Kharroubi (2012) for the Bank of International Settlements (BIS) aims at such a reassessment of the impact of finance on growth. It reaches the tentative conclusion (Figure 20) that private credit to GDP may be related to economic growth in an inverse U function, with a level of debt beyond which further measures in financial deepening have a negative impact on growth. Looking more generally at the size of the financial sector, as measured by share of total employment (Figure 21), they suggest a positive correlation with growth up to an optimal level, but with further financialisation beyond that point harmful to economic growth.<sup>6</sup> Other recent studies have reached similar conclusions, suggesting that when

the ratio of private sector credit to GDP goes above around 80–100 per cent further growth in that ratio can have a negative impact on growth. In most advanced economies the actual current level is significantly higher. As Andrew Haldane (2012) of the Bank of England said in a speech earlier this week: “[T]aken at face value, this evidence suggests that, at its current scale, banking could be acting as a headwind to medium-term growth.”<sup>7</sup>

Figure 20: Private credit-to-GDP ratio and growth

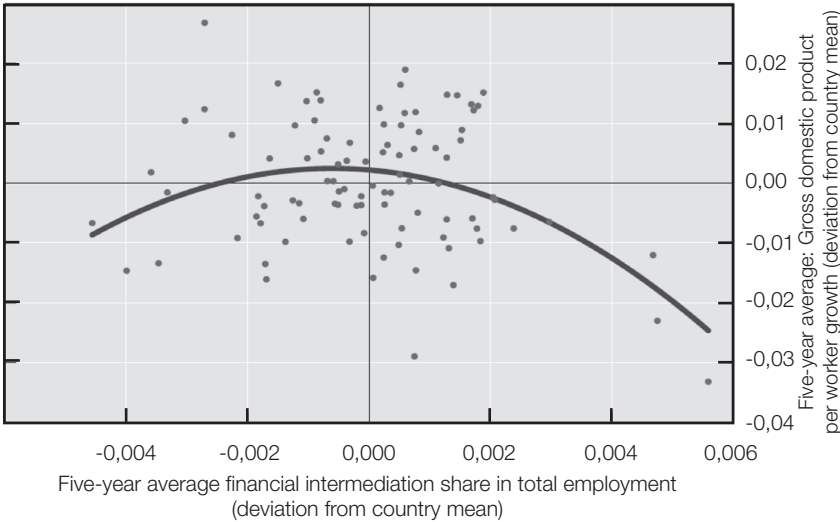


Source: S. Cecchetti, BIS Working Paper No. 381 "Reassessing the impact of finance and growth"

- The fourth error was the belief that we must not restrict the supply of credit, because increased credit was required to stimulate short-term growth. At first sight this seems closely related to the belief that increased financial intensity is axiomatically beneficial but, in fact, it is distinct. Errors two and three rest on the assumption that increased financial intensity will deliver improved allocative efficiency because it completes more markets. The fourth error rests on the more simple beliefs that (i) more credit will ensure higher nominal demand; and (ii) that nominal demand – whether in the form of consumption or investment – would otherwise be insufficient to ensure maximum attainable growth. Such a proposition was asserted as justification by many industry lobbyists arguing ahead of the crisis for light regulation, and received a far more favourable hearing than it deserved.<sup>8</sup> There can, of course, be circumstances in which additional nominal

demand might indeed bring economic activity closer to full capacity levels (closing an output gap) and in which easier private credit and money growth could help stimulate nominal demand. But any proposition that increased nominal demand growth is generally desirable is nonsense: its desirability must depend on the conjuncture, the output gap, and present and prospective inflation. If at some conjunctures additional demand is indeed required, we should be very wary of accepting that as justification for more private credit creation, given the long-term instability risks that additional leverage will bring. If we really have constructed an economic system in which adequate nominal demand growth is only attainable with a continual upward creep in the level of debt to GDP, we have created a dangerous system and should seek to identify less risky ways ensure that demand is adequate.<sup>9</sup>

Figure 21: Financial sector share in employment and growth



Source: S. Cecchetti, BIS Working Paper No. 381 "Reassessing the impact of finance and growth"

## 2.6 Controlling financial risks: Radical schemes and implications for practical policies

The financial crisis of 2007/08 revealed how deeply flawed were the assumptions of the pre-crisis conventional wisdom. Free market finance left to itself will create huge instability – too much leverage in the real economy

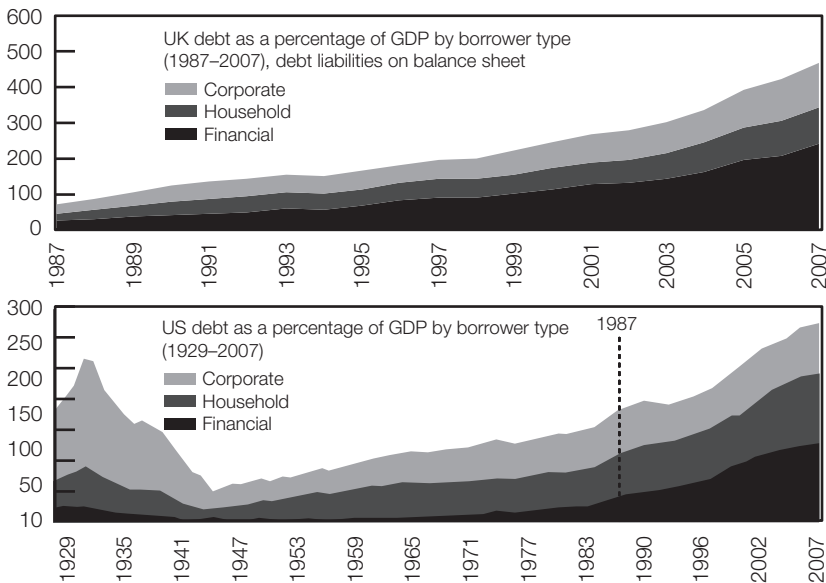
and within the financial system, too volatile a new credit supply, too much complexity and dangerous interconnectedness. Increased financial intensity is not limitlessly beneficial.

In response, we need to regulate finance, and in particular banks and shadow banks – those elements of the financial system that can perform maturity transformation, and which can create credit and private money. The question is: how radical should that regulation be?

The answer the early Chicago theorists gave us was “very radical” – so radical indeed as effectively to abolish leveraged maturity-transforming, fractional reserve banks.

Their beliefs, of course, were formed by the experience of increased financialisation in the 1920s and the crash of the early 1930s – an explosion and then collapse of leverage, particularly in the corporate sector as we can see on the left-hand side of Figure 22. Their conclusion was that debt was inherently dangerous, and that fractional reserve banks even more so. As a result, Henry Simons (1936) had a very clear order of preference for how we should ideally respond (Figure 23).

Figure 22: Growth of the financial sector



Source: Oliver Wyman

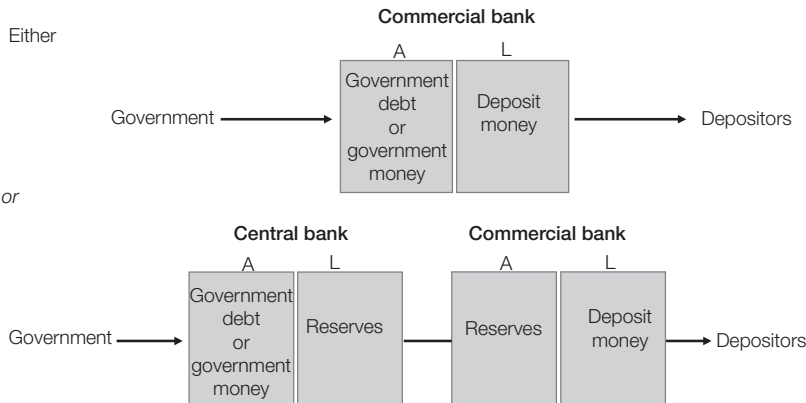
Figure 23: Simon’s order of preference\*

- 1. No debt contracts – only equity contracts
- 2. No short-term debt contracts
- 3. No debt contracts extended by banks
  - ... banks holding 100% money reserves
  - ... no private money creation

\* From “Rules versus Authorities in Monetary Policy”, *Journal of Political Economy*, 1936

- Ideally, he argued (though he recognised this as an unattainable ideal), there should only be equity contracts with no debt allowed. Simons in 1936 thus exactly echoing Einaudi in 1934.
- A bit more pragmatically, Simons hankered after an economy in which short-term debt contracts – the ones that need to be continually rolled over – would be banned, with only long-term debt contracts (he thought of 50 years or so) allowed.
- However, the concrete policy he supported – in the Chicago Plan presented to President Roosevelt – was one that accepted the existence of non-bank debt contracts, but required banks to play no role in private credit extension, becoming simply payment system providers, with all bank money 100 per cent backed by central bank reserves or government debt. Thus in the Chicago Plan and other variants of 100 per cent money banks (Figure 24) no private money is created, since no private credit it is extended but, instead, all money in circulation derives from public debt or money issuance (Fisher 1936). All money is thus absolute fiat money, “outside money” in Gurley and Shaw’s (1960) terms, or “high-powered money” in Friedman and Schwartz’s (1971).

Figure 24: 100 per cent money banks



Essentially, this would mean that banks that provided money services would face a 100 per cent liquid assets requirement: while any institutions that made loans would face a 100 per cent capital requirement, and could hold no deposits; a set of prudential requirements which certainly makes Basel III look like a pretty weak package.

But extreme though it is, there are modern economists who believe that the Chicago Plan is a feasible model for real world policy.<sup>10</sup> Indeed, in an IMF working paper published in August 2012, entitled “The Chicago Plan Revisited” Jaromir Benes and Michael Kumhof (2012) have argued that a transition to a 100 per cent money banking system is both desirable and possible, and that it could and should be accompanied by a dramatic write-down of existing household debts, removing in one fell swoop the vulnerability to financial and macroeconomic instability created by high levels of household leverage.

What should we make of these radical plans? Do most policy-makers instinctively reject them only because we are trapped by an institutional and intellectual path dependency – accepting as given the past suboptimal development of an over-leveraged fractional reserve banking system? Could we ever practically move away from fractional reserve banks, and if we did, would it be desirable to do so? Well, my answer is still no. I do not think that the radicalism of the Chicago Plan and of Benes and Kumhof is practical, or even in principle ideal. But I do think we should take their ideas – rooted as they are in theoretical clarity about the origins of financial instability – as a spur to radicalism in our response to the financial crisis.

There are, I suggest, two reasons for rejecting the extreme radicalism of the Chicago Plan not just on the basis of practicality given today’s starting point, but even in ideal terms:

- The first is that some private credit and money creation may be essential to the effective mobilisation of savings, and that this requires a role for fractional reserve banks. Banks perform risk pooling, enabling the funds of multiple savers indirectly to finance multiple borrowers: in theory at least this function could be performed by non-bank loan funds, but how truly practical that is, particularly in small and medium enterprise (SME) sectors, remains unclear.<sup>11</sup> But more fundamentally, banks perform maturity transformation, enabling households and businesses to hold shorter-term financial assets than liabilities. That is likely to enable greater long-term investment than would otherwise be supported. As Walter



Bagehot (1873) argued persuasively, the development of joint stock fractional reserve banks may well have played an important role in the development of the mid-nineteenth-century British economy, giving it an advantage over other economies where maturity-transforming banking systems were less developed.<sup>12</sup>

- The second is that quite apart from mobilising savings and allocating them to alternative investment projects, the creation of credit and private money can support life-cycle consumption smoothing (with, for example, mortgage debt and matching deposit savings lent to, and borrowed from, people at different points in their life cycles), and that this can be welfare enhancing even if it has no necessary impact on growth rates. Such a benefit, it should be noted, would not show up in analysis of the sort conducted by Cecchetti and Kharroubi or Schularick and Taylor which focuses solely on the impact on GDP growth. Appreciation of the potentially welfare-enhancing role of household credit is indeed largely missing both from the writings of Simons, Fisher, and other early 100 per cent money advocates, and from Benes and Kumhof's paper.

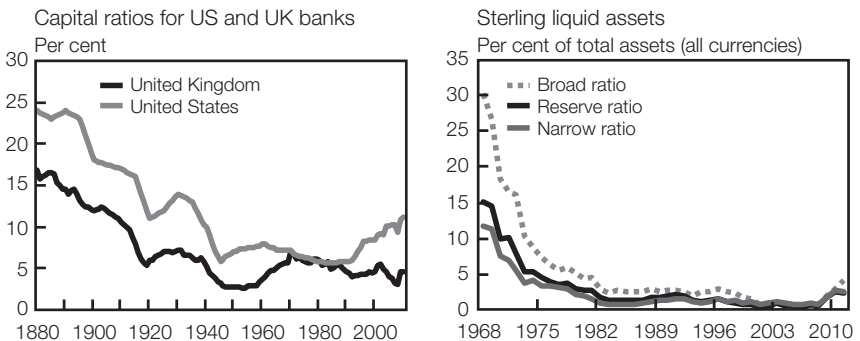
I am therefore not convinced that the Chicago Plan or its modern variants would be socially optimal even in an ideal world; we should, I believe, accept the existence of fractional reserve banks as a given fact of modern economies. But the analysis of risks that motivated these plans is highly perceptive and should guide the design of a real world financial regulation.

Three implications in particular follow from recognition of the inherent nature and risks of debts, banks and secured financing contracts:

- First, that the level, as well as the growth rate of credit and leverage in the real economy, is an important economic variable. Leverage beyond some level – measured by debt to borrower income or to GDP, and whether in the household, corporate and public sectors, is likely to create suboptimal vulnerability to financial and macroeconomic instability. What that level is, is unclear: that should be a key area for future analysis. However, the arguments for believing that free unregulated markets will generate leverage above the optimal level are compelling, particularly if fiscal authorities introduce yet further bias through tax favouritism for debt. Macroprudential authorities cannot therefore avoid a point of view on whether levels, and growth rates of credit and leverage are optimal;<sup>13</sup> and may need directly to constrain debt growth, both via banking system capital and liquidity requirements, and via direct borrower constraints such as loan-to-income or loan-to-value limits.

- Second, that while there is a social welfare case for the existence of fractional reserve banks (i.e., of banks that are somewhat leveraged and that perform some majority transformation), there is no reason to believe that the levels of bank leverage and extent of maturity transformation which developed over the several decades running up to the crisis were even remotely close to optimal levels. It is striking that past banking systems managed to perform their necessary economic functions, with liquidity and capital ratios many times even current Basel III plans, let alone the extremely low levels that we allowed before the crisis (Figure 25). As David Miles (Miles et al. 2011) and Martin Hellweg (Admati et al. 2010) and others have argued, there are good theoretical and empirical reasons for believing that if we are now able to choose bank capital ratios for a greenfield economy (ignoring any transition challenges) we should choose levels significantly above the Basel III standards. Unlike the Chicago school theorists, I do not agree that we made a total mistake in allowing the very existence of fractional reserve banks: but as today's regulators we are inheritors of a half-century-long policy error, in which we have allowed banks to operate with capital and liquidity ratios far below socially optimal levels.

Figure 25: Long-term trends in bank capital and liquidity ratios



Sources: US: Berger, A, Herring, R and Szegő, G (1995) and FDIC. UK: Sheppard, D K (1971), BBA and Bank of England calculations

Source: Bank of England and Bank calculations

Notes:

FDIC: Federal Deposit Insurance Corporation  
BBA: British Bankers Association

- Third, that we need to recognise credit and asset price cycles as crucial economic phenomena, relevant to financial and macroeconomic stability,

even when they appear to have no implications for short- to medium-term inflation prospects.<sup>14</sup> Such credit and asset price cycles cannot, however, be controlled entirely or even primarily by the operation of the classic monetary policy lever of interest rates. Powerful macroprudential levers, such as countercyclical capital requirements, are therefore essential to contain potential financial and macroeconomic instability, and need to be applicable both at whole-bank level or in respect of specific sectors – such as commercial or residential real estate – where the danger of self-reinforcing credit and asset price cycles is greatest. In addition, and crucially, our macroprudential toolkit must enable us to contain procyclicality risks arising in shadow banking and the formal banking sector through, for instance, the regulation of money market funds, and the application of minimum haircuts to secured financing transactions. The package of policy measures to contain shadow banking risks, which the Financial Services Board will present to the Group of Twenty (G-20) next week, is therefore as important as the Basel III reforms to which we are already committed.<sup>15</sup>

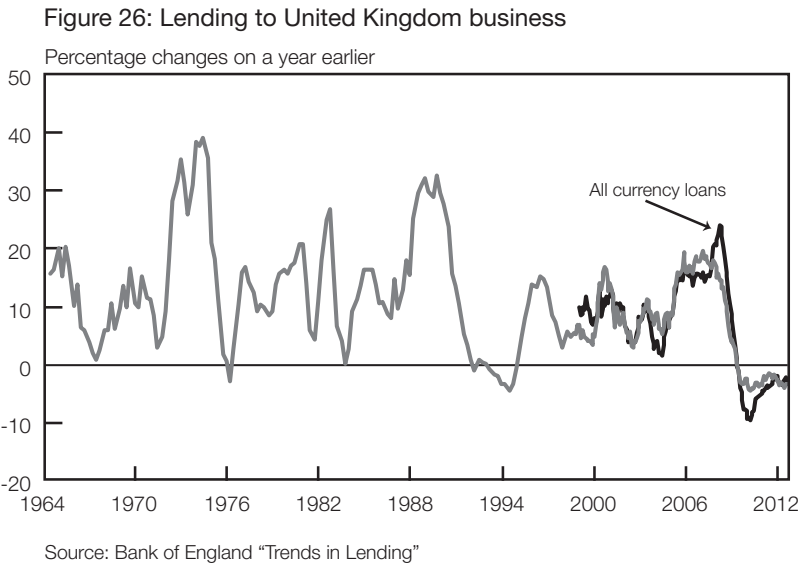
### 3. The challenges of deleveraging: Monetary and macroprudential policy in deflationary times

The financial crisis of 2007/08 occurred because we failed to constrain the private financial system's creation of private credit and money. In future we must do better – constraining by regulation both the absolute level of leverage in the real economy and financial system and the growth rate of leverage, leaning against credit and asset price cycles, taking away the punch bowl before the party gets out of hand.

However, our problem in developed economies today is not an out-of-control party, but a severe hangover; a Great Recession induced by the deleveraging which follows a financial bust. In all the major economies of the developed world – in the US, Japan, the eurozone and the UK – recovery from recession has been far slower than most commentators and all official forecasts anticipated in 2009. That reflects our pre-crisis failure to understand just how harmful excess leverage booms can be: and our only slow recognition of just how difficult the challenge of deleveraging is.

In the aftermath of a financial crisis, attempts to delever – to restore corporate or household balance sheets, to pay down mortgages, to avoid new debt commitments – themselves depress spending and economic activity. Credit growth collapses in both the corporate and household sectors (Figures 26

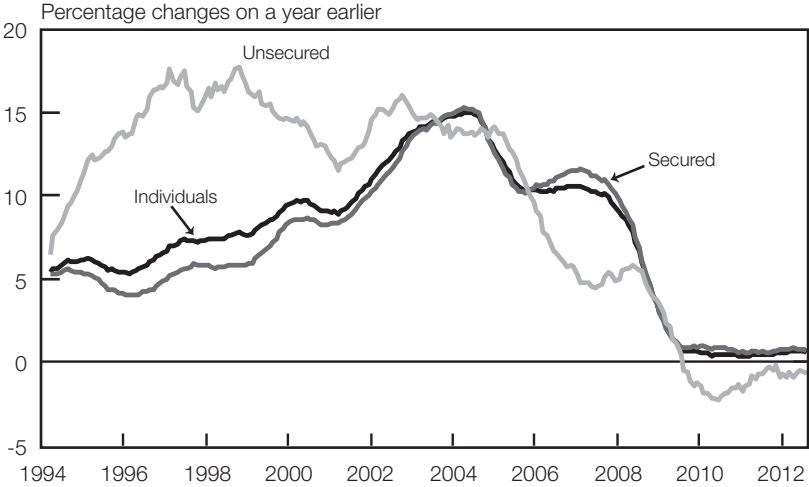
and 27) but depressed nominal demand growth makes it difficult to achieve more than very slow reductions in private leverage. Post-crisis recessions play havoc with public finances, increasing fiscal deficits, so that for many years after the crisis, overall economy leverage does not reduce it all, but simply shifts from the private to public sector. That is the pattern we saw in Japan after the credit boom of the 1980s turned to bust in 1990, and that is what we have seen over the past four years in the US, Spain and the UK (Figure 28), with each percentage point reduction in private leverage more than offset by an increase in public leverage.



In this environment our ability to offset deflationary forces via conventional monetary policy is limited because interest rates are close to the zero bound, and because the transmission of low policy rates to the real economy is hampered by banking system fragility and deleveraging, undermining credit supply. In addition, the freedom to use fiscal stimulus is limited by the need to get rising public debt burdens under control.

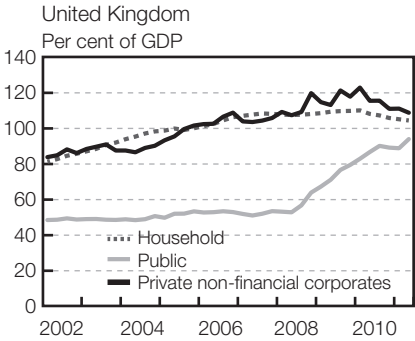
Post-crisis deleveraging is very, very difficult to manage: that is what Japan from 1992 to today demonstrates – and that is what we have increasingly learnt in the past three years. If we do not carefully design the policy response, the deflationary impact on economic growth could extend for many years ahead. As the IMF noted in its latest *World Economic Outlook*, “the risks of recession in the advanced economies are alarmingly high”.

Figure 27: Lending to individuals

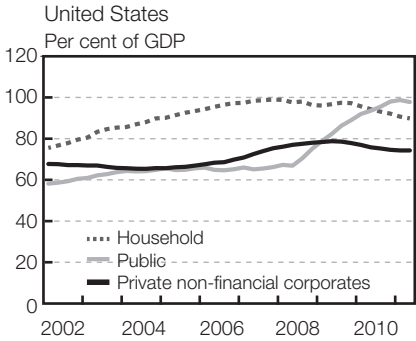


Source: Bank of England "Trends in Lending"

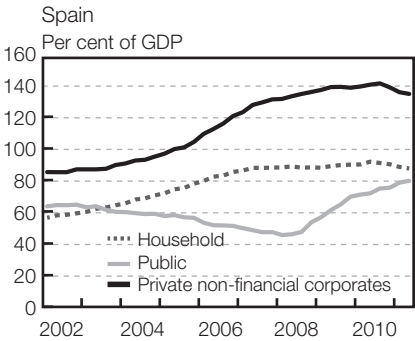
Figure 28: Shifting leverage: Private and public debt to gross domestic product



Source: Office for National Statistics



Source: Bureau of Economic Analysis



Source: European Central Bank

The question is what policy levers can be used to maintain nominal demand, and how to achieve that without building up future vulnerabilities. As Mervyn King (2012), said in a speech last week, the essence of the problem is that – for a combination of borrower demand and lender supply reasons – “banks aren’t creating enough money”. As a result, “we have to do it for them”, so that “[a]s private sector balance sheets contract, public sector (government and central bank) balance sheets have to take the strain”. Public intervention, in other words, has to create new credit and money to compensate for the private financial system’s sudden unwillingness to do so.

Clearly, therefore, the policy response has to include unconventional monetary policy – quantitative easing – which, as best we can tell, has produced a path of real output growth and inflation slightly higher than would otherwise have occurred (see Joyce, Tong and Woods 2011).

However, quantitative easing alone may be subject to declining marginal impact, the economy facing a liquidity trap in which replacing private-sector holdings of bonds with private-sector holdings of money has little impact on behaviour and thus on demand. So we must be willing to employ still more unconventional policies, and to combine multiple policy levers – monetary policy, central bank liquidity and credit provision and prudential regulation – which we used to consider quite separately or, in some cases, avoid entirely.

That integrated approach lay behind the package of measures which the UK authorities recommended this June; a package which combines the following:

- The Bank of England providing greater liquidity insurance through the activation of the Extended Collateral Term Repo Facility, and the Financial Stability Authority adjusting our bank liquidity guidance to reflect greater central bank insurance and to make it easier for banks to use their liquidity buffers when needed.
- The Bank of England launching the Funding for Lending Scheme (FLS) to support new bank lending to the UK economy, while the FSA made adjustments to our capital regime to allow additional FLS lending with no incremental capital requirement – removing a potential impediment to use of the scheme.

This is an innovative combination of policies, and one which lies far outside past orthodoxy. If these measures prove insufficient, we may have to consider further policy innovations, and further integration of different aspects of policy, to overcome the powerful economic headwinds created by deleveraging across the developed world economies.

As we do so, however, we also need to be aware of long-term risks. Ahead of the crisis we allowed the private-sector financial system to perform too much maturity transformation, creating too much private credit and money. Their sudden post-crisis conversion to risk aversion and deleveraging now threatens sustained deflation. The public authorities have therefore stepped in to stimulate credit and money creation. Even if this succeeds in offsetting deflation, it will tend to create new debt contracts which create future vulnerabilities. The challenge of policy design is to support demand stimulus without creating future risks. When our starting point is one of excessive leverage created by pre-crisis policy errors, that is a very difficult combination to achieve.

#### 4. Lessons for emerging economies

I have spoken so far entirely about the developed economies – since that is where the latest financial crisis arose – but the emerging economies are suffering side effects because of the policy errors we have made. But what, if any, of the lessons of what I have said for the emerging economies – such as South Africa? The answer is simply to be cautious of the intellectual errors we made and to be cautious of industry lobbyists peddling too-simple a story of finance's limitless benefits.

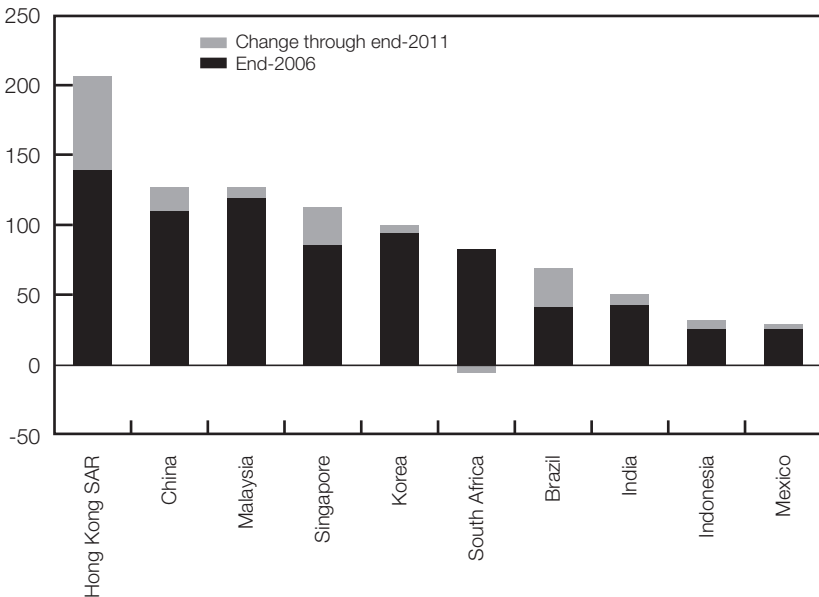
Clearly a vibrant financial system is crucial to a modern market economy. Efficient capital allocation requires debt and equity markets and, I would argue, contrary to the Chicago theorists – well-managed lending banks. Mortgage lending was thought both investment in housing infrastructure – a key need in South Africa as in many emerging economies – and lifecycle consumption smoothing. Insurance services help corporates and individuals to manage risks. Basic banking services, payments and deposits and SME lending, can be essential both to economic development and social inclusion. The argument that “financial deepening” is beneficial across a range of values and, up to a point, is a sound one. Cecchetti and Kharroubi's analysis (Figures 20 and 21) suggests an upward-sloping part of the curve.

However, good economics also tells us that financial service activity, if unregulated, well beyond its socially optimal size, and that the market disciplines which in other sectors align private incentives and socially optimal results work much less certainly in finance. Financial deepening is not limitlessly beneficial and not all forms of financial deepening are equally valuable.

Good economics also tells us that the specific element of finance most likely to run to excess is the creation of debt instruments through maturity transformation and, in particular, of debt contracts secured against assets whose value can rise precisely because of more secured credit extended. Secured credit and asset price cycles are endemic to rebanking or shadow banking markets, and it is a depressing not until now close to iron law of banking – that every ten years or so, somewhere in the world, credit and asset price cycles, usually focused on residential or commercial real estate, end in financial crisis and economic recession. That is what happened in Japan and Scandinavia in the early 1990s, in several of the emerging Asian countries in 1997, and in Europe and the US in 2007/08.

Across many emerging economies, as the latest IMF *Global Financial Stability Review* set out, private credit to GDP is now high and on a rising trend (Figure 29). Across many, house prices are also rising rapidly (Figure 30).

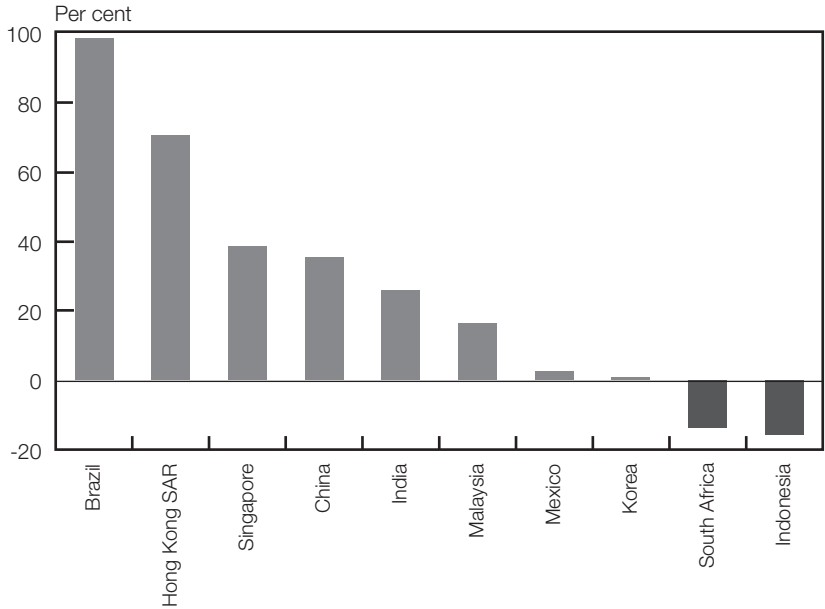
Figure 29: Private-sector credit: 2011 versus 2006



Source: IMF, *Global Financial Stability Report*, October 2012



Figure 30: Cumulative change in real house prices: 2006–2011



Source: IMF, *Global Financial Stability Report*, October 2012

As the developed world economies struggle with deleveraging and potential deflation, emerging markets need to watch carefully to ensure that they do not allow the build-up of excessive leverage, creating the conditions for future crises.

## Notes

<sup>1</sup> The links between Minsky’s beliefs and those of some of the Chicago School of economists are rarely noted but significant. See Charles J. Whalen, “The Minsky–Simons Connection: A Neglected Thread in the History of Economic Thought”, *Journal of Economic Issues* XXII (2) (June 1988): 533–544.

<sup>2</sup> Werner is one among few modern economists who have focused on describing and thinking through the implications of the fundamentals of bank money creation, in the same fashion as did earlier economists such as Irving Fisher or Henry Simons. See also Adair Turner, “Credit Creation and Social Optimality” (speech delivered at Southampton University, 29 September 2011).

<sup>3</sup> See Adair Turner, “What Do Banks Do? Why Do Credit Booms Occur? What Can Public Policy Do About It?”, *The Future of Finance: The LSE Report*, (London: London School of Economics, 2011) Chapter 1 for further detail on the radically changed nature and size of bank balance sheets.

<sup>4</sup> At the level of the whole global economy, covering all sectors (i.e., household, corporate and public) and once account is taken of forms of shadow bank “money equivalent” creation (e.g., accounts at money-market funds (MMFs) which, in turn, fund the banking system) the amount of bank credit and money creation must be equal. In the case of the UK and in particular in the ten years before the crisis, credit growth in the UK was significantly matched by sources of funds from overseas.

<sup>5</sup> See Adair Turner, *Economics After the Crisis: Objectives and Means* (Boston MA: MIT Press, 2012) Chapter 2 for a detailed account of this argument.

<sup>6</sup> A similar conclusion was reached in a recent paper by Moritz Schularick and Alan Taylor, “Credit Booms Gone Bust: Monetary Policy, Leverage Cycles and Financial Crises 1870–2008”, NBER Working Paper No. 15512 (Cambridge MA: National Bureau of Economic Research, November 2009) which analysed the growth of leverage and credit over the past 140 years, but found little empirical support for the proposition that financial deepening had led to a corresponding increase in trend growth rates for the countries in their sample.

<sup>7</sup> Haldane references two recent relevant analyses: (i) Jean-Louis Arcand, Enrico Berkes and Ugo Panizza, “Too Much Finance? IMF Working Paper” WP/12/161 (Washington DC: IMF, 2012); and (ii) William Easterly, Roumeen Islam and Joseph Stiglitz, “Shaken and Stirred: Explaining Growth Volatility”, Annual World Bank Conference on Development Economics (Washington DC: World Bank, 2000). The latter suggests that when credit-to-GDP ratios exceed 100 per cent output, volatility tends to increase.

<sup>8</sup> Thus, for instance, arguments against regulation of the credit default swap (CDS) market were frequently based on assertions of the sort that CDS contracts “facilitated credit creation and thus growth”. In the design of the Basel II standard, the regulatory community erroneously accepted the argument that “economising on the use of scarce bank capital” (i.e., allowing higher levels of leverage on the basis of “sophisticated” internal ratings-based (IRB) capital models) would deliver social rather than simply private benefits.

<sup>9</sup> One possible thesis is that increasing inequality could make it more difficult to maintain adequate nominal demand without credit and leverage growth, given the higher marginal propensity to save of higher-income groups and the reliance of lower-income groups on credit to maintain adequate consumption. See Michael Kumhof and Romain Ranciere, “Inequality, Leverage and Crises”, IMF Working Paper WP/10/268 (Washington DC: IMF, 2010). A related, but somewhat different, argument is that presented by Raghuram G. Rajan, *Fault Lines: How Hidden Fractures Still Threaten the World Economy* (New Jersey NJ: Princeton University Press, 2010) that rising inequality in the US produced a political response of support for rapid credit extension to lower-income groups, which contributed to the sub-prime crisis.

<sup>10</sup> A recent proposal for requiring all lending to be funded by loan funds, not banks and for banks to be solely deposit-takers not lenders, was put forward by Laurence Kotlikoff, *Jimmy Stewart is Dead: Ending the World’s Ongoing Financial Plague with Limited Purpose Banking* (Hoboken NJ: John Wiley and Sons, Inc., 2010).

<sup>11</sup> Banks that develop relationships with companies through the provision of payment services may be inherently better placed than non-bank loan funds to assess the credit prospects of small- and medium-sized companies.

<sup>12</sup> In Chapter 1 of *Lombard Street: A Description of the Money Market* (London: Henry S. King and Co.) Bagehot urges that the development of the British banking

system, by creating bank deposit money, made those resources “borrowable”, and thus investible, in a way that was less true of the cash held outside banks in France and Germany.

<sup>13</sup> This implies that the Basel III guideline for the application of the countercyclical buffer (CCB), if applied too mechanistically, could be inappropriate. This guideline proposes that there should be a presumption in favour of an increase in the CCB when credit growth is running above past trend. This implies, however, that a *continually* rising *level* of credit as a percentage of GDP would be acceptable as long as the growth rate was steady, that is, in line with the trend even if continually above nominal GDP growth.

<sup>14</sup> In some sense this may appear to support the Bundesbank’s long-held belief, reflected in the monetary pillar of the ECB policy framework, that central banks should not focus solely on the current and medium-term prospective rate of inflation, but on ‘money’ aggregates. While, however, the size and growth rates of bank balance sheets clearly matter, it is arguably more fruitful to focus on credit creation as the motive force and to see money creation as the dependent result, agreeing with Benjamin Friedman that “in retrospect the economics profession’s focus on money – meaning various sub-sets of instruments on the liability side of the banking system’s balance sheet in contrast to bank assets . . . turns out to have been a half century long diversion which did not serve our profession well”. See Friedman, “Monetary Policy, Fiscal Policy, and the Efficiency of our Financial System: Lessons from the Financial Crisis”, *International Journal of Central Banking* (January 2012). See also Adair Turner, “Debt and Deleveraging: Long Term and Short Term Challenges”, Presidential Lecture (Centre for Financial Studies, Frankfurt, November 2011).

<sup>15</sup> The final FSB recommendations will be published in mid-November. A progress report was given in April 2012 ‘*Strengthening the Oversight and Regulation of Shadow Banking*’. See also Adair Turner, ‘*Securitisation, Shadow Banking and the Value of the Financial Innovation*’, Rostov Lecture, School of Advanced International Studies, Washington, 19 April 2012.

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## Abbreviations

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ADB	African Development Bank
AEA	American Economic Association
AFA	American Finance Association
ATM	automated teller machine
BDI	Burundi
BEN	Benin
BFA	Burkina Faso
BIS	Bank for International Settlements
BoE	Bank of England
BOU	Bank of Uganda
BRIC	Brazil, Russia, India and China
BWA	Botswana
CAF	Central African Republic
CCB	countercyclical buffer
CCBS	Centre for Central Banking Studies
CDS	credit default swap
CEE	Central and Eastern European [countries]
CEPR	Center for Economic Policy and Research
CEPS	Center for Economic and Policy Studies
CG	general government
CGFS	Committee on the Global Financial System
CIV	Cote d'Ivoire
CMIE	Centre for Monitoring of the Indian Economy
CMR	Cameroon
COG	Republic of Congo
COM	Comoros
CPI	Corruption Perceptions Index
CPV	Cape Verde
CR	concentration ratio
DRC	Democratic Republic of Congo
DZA	Algeria
EAO	East Asia and the Pacific
ECB	European Central Bank
EDP	Excessive Deficit Procedure
EFSS	European Financial Stability Facility
EGY	Arab Republic of Egypt
ESM	European Stability Mechanism
ETH	Ethiopia
EU	European Union
EWS	early warning system
FDI	foreign direct investment
FLS	Funding for Lending Scheme
GAB	Gabon
GAP	Governance Action Plan
GDP	gross domestic product
GEM	<i>Global Entrepreneurship Monitor</i>
GHA	Ghana
GMB	The Gambia



## Abbreviations

GNB	Guinea-Bissau
HDI	Human Development Index
HH	household
HUM	human capital formation
ILO	International Labour Organization
IMF	International Monetary Fund
IS	investment savings
JIMF	Journal of International Money and Finance
KACC	Kenya Anti-Corruption Commission
KEN	Kenya
LAC	Latin America and Caribbean
LBR	Liberia
LCR	liquidity coverage ratio
LM	liquidity model
LSE	London School of Economics
LSO	Lesotho
MAR	Morocco
MDG	Madagascar
MLI	Mali
MOZ	Mozambique
MRT	Mauritania
MUS	Mauritius
MWI	Malawi
NAFTA	North American Free Trade Agreement
NAM	Namibia
NBER	National Bureau of Economic Research
NBER	National Bureau of Economic Research
NER	Niger
NFC	non-financial corporation
NFS	non-financial sector
NGA	Nigeria
NPV	net present discounted value
NSFR	net stable funding ratio
OECD	Organisation for Economic Co-operation and Development
OLS	ordinary least squares
OMT	outright monetary transaction
PPOA	Public Procurement Oversight Authority
QE	quantitative easing
REER	real effective exchange rate
RWA	Rwanda
SARB	South African Reserve Bank's
SDN	Sudan
SDR	special drawing right
SEACEN	South East Asian Central Banks
SEN	Senegal
SLE	Sierra Leone
SME	small and medium enterprises
SOE	state-owned enterprise
SR	Solow residual
SSA	sub-Saharan Africa
SWZ	Swaziland
SYC	Seychelles
TCD	Chad

TGO	Togo
TOT	terms of trade
TUN	Tunisia
UGA	Uganda
UK	United Kingdom
US	United States
USD	United States dollar
VAR	vector autoregression
VIX	Chicago Board options Exchange Market Volatility Index
ZAF	South Africa
ZAR	Democratic Republic of Congo
ZMB	Zambia
ZWE	Zimbabwe

## Glossary

repo	repurchase [rate]
the Bank	South African Reserve Bank
the Fed	United States Federal Reserve System