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Capital flows and economic performance in South Africa

Pasquale Scaramozzino*

Abstract

This paper assesses the role of foreign investment in the economic performance of South Africa. Although the evidence is inconclusive about how foreign capital flows affect aggregate variables, there is clear evidence of their positive and significant long-run effects at the sectoral level. Foreign direct investment has a positive impact on economic performance and is in turn attracted to sectors with stronger performance. Debt instruments tend to display stronger long-run relationships with economic performance indicators than equity and investment fund shares. Overall, the analysis in this paper confirms the beneficial effects of foreign direct investment on the South African economy. The design of capital flow management policies should thus take into account the sectoral impact of direct investment and its potential to stimulate sectors' economic performance.

JEL classification

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Keywords

Capital flow management, foreign direct investment, South Africa

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1. Introduction¹

The role and effects of international capital flows in emerging economies are still contentious issues. As the South African Reserve Bank (SARB) Governor Kganyago (2023) put it, while global investors stress the importance of capital flows to encourage investment, policy authorities tend to be mindful of the risks associated with their impact on the exchange rate and with the possibility of sudden reversals. South Africa is in the process of liberalising its system of capital controls. The basis for these reforms is the capital flow management framework, announced by National Treasury in 2020 in line with International Monetary Fund (IMF) (2018) recommendations. The reforms will involve a shift from a negative to a positive bias and intend to eliminate most remaining restrictions of capital flows applicable to residents. The rationale behind the policy is that capital flows can bring substantial benefits to the domestic economy and to employment and should therefore be encouraged. At the same time, some capital flow management restrictions may still be useful, provided they are not meant as a substitute for sound macroeconomic policies and do not hamper financial stability or generate negative externalities to the economy.

Foreign capital flows clearly have both benefits and costs. Standard economic theory emphasises that the global allocation of resources is more efficient when capital is allowed to flow where its marginal return is higher. These gains are analogous to those in the theory of international trade, where the free movement of goods and services is associated with enhanced production efficiency and can be conducive to improvement in social welfare (Milne 2014). The role of capital movements can be particularly salient for emerging and developing economies, whose levels of investment are often inadequate relative to the potential benefits to the country (Lucas 1990).

Foreign capital flows can thus help to relax the constraint from domestic savings when these fall short of what would be required to fund existing investment opportunities. At the same time, however, capital flows could have potentially destabilising effects on financial markets. Portfolio flows are easily reversed, thus exacerbating cyclical

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fluctuations in economic fundamentals. Furthermore, capital flows may distort market incentives and even induce complacency in the governance of domestic institutions.

Capital controls and macroprudential policies have often been called for to contain the potential negative impact of volatile capital flows. The empirical evidence on the effects of capital flows and policies aimed at controlling them is usually based on cross-country comparisons, and relies on the timing of liberalisation episodes and on the nature and intensity of the policy. A common finding in existing studies is that a stable macroeconomic environment; deep, well-developed and regulated financial markets; and sound governance can be effective in reducing the potential downside of a regime of liberalised capital flows.

This paper aims to assess the effects of foreign investment on some aspects of South Africa's economic performance since 1990. Saving and investment rates in the country lag behind levels in comparable economies. Foreign investment could therefore be instrumental in enhancing South Africa's investment possibilities. The paper presents an analysis at the macroeconomic level, which distinguishes between direct and portfolio investment, and then conducts a more detailed examination at the sectoral level to assess the role of direct investment, funded by either equity or debt instruments.

The structure of the paper is as follows. Section 2 discusses the main opportunities and risks that capital flows pose for emerging market economies (EMEs). Section 3 briefly considers the South African external sector. Section 4 looks at the relationship between capital flows and economic performance in South Africa at the aggregate level. Sections 5 and 6 examine the effect of foreign direct investment (FDI) at the sectoral level. Section 7 concludes.

2. Capital flows in EMEs

EMEs face significant opportunities, but also challenges, from foreign capital flows. Their domestic pool of savings is often insufficient to support the investment effort necessary for development and growth, and foreign capital flows could help provide

the required funding by relaxing the credit constraint faced by firms.² An additional benefit of capital flows is their potential for enhanced risk diversification and for achieving a more efficient allocation of resources. On the other hand, capital inflows could lead to an appreciation of the exchange rate and a deterioration of international competitiveness.³ Financial markets that are not fully developed are also more exposed to global factors and external shocks, which might trigger sudden stops or even reversals of capital movements and which could not be offset by purchases of securities from non-residents by local institutional investors. A higher perceived country risk may contribute to greater volatility of capital flows. Furthermore, their procyclical pattern could exacerbate the fluctuations of output and employment and could thus destabilise the levels of economic activity.

The contribution of capital flows is particularly critical when investment spending is directly associated with a higher economic growth rate, as in standard endogenous growth models (Aghion and Howitt 1998). A recent World Bank report on strategies for escaping the middle-income trap explicitly stresses the crucial role of investment, technology transfers, and the development and implementation of innovations to create an environment conducive to sustainable long-run growth (World Bank 2024).

Calvo, Leiderman and Reinhart's (1993) and Fernandez-Arias's (1996) early characterisation of the determinants of capital flows as being relatable to push (external) and pull (domestic) factors can still be usefully applied to study their economic effects and their impact. Koepke's (2019) meta-analysis identified the main cyclical components of trade flows in the literature. A distinction was made between debt and equity flows, with banking flows also included in the analysis. The main push factors found to have an influence on portfolio flows into EMEs were global risk

² The saving rate by households in South Africa has historically been very low: apart from the COVID-affected years 2021 and 2022, households have been net borrowers, and net savings have only been generated by financial and non-financial corporations (South African Reserve Bank 2025a).

³ In the context of India, Sen (2007) had warned against the risks from a premature opening up of the capital account of the balance of payments when the financial sector is not fully developed and government finances are vulnerable. Arezki and Sen (2025) argue that capital inflows in India have resulted in a form of 'Dutch diseases' and stunted the process of industrialisation. South Africa does not, however, appear to have experienced an appreciation of the real effective exchange rate following increased capital inflows.

aversion and interest rates in mature economies: the latter were particularly relevant for debt instruments. Among the pull factors, domestic output growth was consistently significant for all types of capital flows, whereas the evidence for country risk was not as robust. Moreover, FDI flows were mostly tied to strategic decisions by multinational companies.⁴

The recent empirical literature on capital flows in EMEs has mostly been based on longitudinal analyses of countries. Liberalisation events, or the cross-country variations in size and dynamics of capital flows, have been used to identify their determinants and measure their economic consequences. These studies have also sought to assess the effectiveness of strategies to reduce the risks associated with the volatility of the flows, such as capital controls or macroprudential regulation. The existing literature is not, however, conclusive on the relative effectiveness of these strategies, although on balance it tends to be more supportive of macroprudential policies. Nevertheless, there seems to be consensus on the importance of 'good institutions', which promote and enforce effective domestic governance and provide a stable environment for investment. Effective financial regulation is also crucial in supporting confidence – for instance, by protecting investors against market abuse, which could affect the listed debt and equity instruments used for portfolio flows.⁵

Harris (2009) showed that the Mundell-Fleming model can usefully be applied to demonstrate the impossibility of simultaneously achieving the three objectives of perfect capital mobility, autonomous monetary policy and a fixed exchange rate, described as the Impossible Trinity. He discussed the implementation of capital controls in Chile, China and Malaysia, arguing that it would be difficult to draw general lessons from these countries because of the specificity of their experiences. He also appears to be doubtful about the effectiveness of capital controls given the

⁴ Section 6 of this paper shows that FDI decisions are also endogenously related to the economic performance of the sector to which FDI is directed.

⁵ Acemoglu et al. (2019) show that transitions from autocracies to democratic regimes are associated with faster economic growth; conversely, transitions to autocratic regimes tend to lead to slower growth. The institutions that characterise electoral democracies include the rule of law, free and fair elections, controls on executive power and inclusive political processes.

administrative costs involved and their potentially negative long-run impact on the economic growth rate.

Beck et al. (2023) carried out a useful meta-analysis of the empirical literature on capital flow management policies. Most of the papers included in the analysis were published before 2020 and examine the relative effectiveness of these policies vis-à-vis monetary policy, and specifically whether they significantly reduce financial stability risks, whether the joint use of several policies may enhance their effectiveness, and what their likely long-run consequences could be. Apart from foreign exchange intervention, the analysis specifically includes the effects of capital controls and other capital flow management measures to influence capital flows. The majority of the evidence appears to show that capital controls may not be the most suitable policy tool for macroeconomic management, and that some macroprudential tools with cross-border effects may be more useful. On the other hand, capital controls can be effective in changing the composition of capital flows to reduce the risks to financial stability, and this could indeed be more important than their possible impact on the overall volume of flows. Capital flow management policies could also generate external spillovers and redirect capital flows towards other borrowing economies. Furthermore, the joint implementation of several policy instruments can be more effective than the use of a single tool: notably, macroprudential tightening alongside monetary accommodation can be more effective than macroprudential policy alone.

Among the more recent empirical studies, Fabiani et al. (2021), Juhro, lyke and Narayan (2024), and Lovchikova and Matschke (2024) have specifically investigated whether capital controls can be effective in decreasing the risks associated with the volatility of foreign investment flows. Fabiani et al. (2021) exploit the introduction of a tax on debt inflows in Colombia to examine changes in the financial exposure of credit-constrained firms and show that capital controls did boost their export during the subsequent global financial crisis. Juhro, lyke and Narayan (2024) investigate the timing and amplitude of capital flow cycles and of financial and business cycles in a cross-section of EMEs. The former are shown to spearhead and be more volatile than the latter, but sound fundamentals and capital control can help shield the economies from global shocks. Lovchikova and Matschke (2024) present evidence that risk

aversion by investors and market volatility lead some EMEs to heighten their capital inflow controls during periods of intense international financial distress.

Recent studies that specifically investigated the effectiveness of macroprudential policies include García López and Stracca (2021), Cavallino and Hofman (2022), Bergant et al. (2024) and De Villiers, Hollander and van Lill (2024). García López and Stracca (2021) note that the distinction between developed economies and EMEs is not always evident or clear-cut. They find that some policy tools, in particular macroprudential measures and foreign exchange intervention, can be useful for mitigating the risks associated with capital flows even in economies with developed financial markets and sound fundamentals and policies. Cavallino and Hofman (2022) set out a theoretical model to examine how monetary authorities can deploy macroprudential and balance sheet policies to reduce the risk and the adverse consequences of a sudden capital outflow caused by an external shock. They show that a weaker fiscal policy entails greater risks and could lead to more severe outcomes from a financial crisis.

Nguyen, Nasir and Vo (2021) explore how capital inflows and outflows have an impact on exchange rates by stressing the importance of distinguishing between FDI and foreign portfolio investment (FPI). They find that FPI has a greater impact than FDI on the real exchange rate, and that capital outflows have a bigger effect than capital inflows. Phiri and Doku (2024) investigate whether FDI helps address carbon emissions in a cross-section of 51 African states. Their results are inconclusive since the number of countries that experienced a positive association was about the same as those that experienced a negative association. They recommend using industry data to assess more accurately the potential role of FDI in identifying the sectors that would potentially benefit most from directed FDI.

Blouin, Ghosal and Mukand (2025) emphasise the importance of domestic governance. They argue that the government has limited ability to compel public sector managers, local governments and financial regulators to implement efficient policies. Foreign capital flows are sensitive to the country's productivity and governance, but foreign investors too can face a commitment problem because they are unable to credibly commit themselves to retain their investment in the host country. The threat

of capital flight therefore acts as a discipline-enforcing factor in the absence of effective domestic governance. This threat is all the more credible when foreign investment is funded by debt instruments rather than equity, because of the former's need to be rolled over.

Villamizar-Villegas et al. (2024) specifically address the potential role of central banks in EMEs in attracting or redirecting capital flows via their monetary policy decisions. Output growth, the amount of foreign exchange reserves and a more flexible exchange regime are significant pull factors that attract capital flows; by contrast, local and global risks tend to discourage capital flows. Banking flows are especially responsive to monetary policy, which instead tends to have a limited influence on FDI.

End (2024) observes that, consistent with the Mundell-Fleming model, in the short run capital inflows mostly affect the economy via the two channels of currency appreciation and cheaper financing.⁶ The former exerts a contractionary effect on the economy, whereas the latter has an expansionary effect, which may result in an overall ambiguous effect on output. He also observes that foreign capital may not always be allocated to the most productive activities.⁷ His evidence shows that bond inflows have a significantly positive effect on output,⁸ and that sound underlying fundamentals of the economy significantly contribute to the effectiveness of capital inflows. Sufficiently developed financial markets also help absorb the volatility of the flows.

Capital flow management policies can mitigate the risks from financial integration and sudden reversals of capital flows. The empirical literature is unclear on the effects of the policies on the long-run performance of the economy. There is consensus, however, that sound fundamentals, deep and developed financial markets, and credible monetary and fiscal policies are important for an economy to benefit from foreign capital flows and for reducing the need to resort to capital controls or macroprudential policies. Ultimately, whether specific policies are required to reduce the potential risks associated with capital flows is an issue that would depend on their

⁶ On this, see also Harris (2009).

⁷ See also Kganyago (2023).

⁸ See section 6 for supporting evidence from South Africa.

net effects on the economy. It is therefore important to establish the direction and size of these effects.

3. The external sector in South Africa

South Africa's current account balance has been in deficit over the past two decades, with the notable exception of the years affected by the COVID-19 pandemic. These deficits were funded by corresponding surpluses in the capital account (Amaral, Knox and Mercier 2024). The current profile of export specialisation is dominated by commodity products and depends on a limited number of export markets.⁹ Some sectors of the domestic markets are still protected by entry barriers, with incumbent firms shielded from foreign competition. These include import tariffs and quotas on several agricultural products, restrictions or controls on the export of raw minerals to support jobs in downstream industries, and policies to encourage local vehicle production such as the Automotive Production and Development Programme.¹⁰ Investment in gross fixed capital formation, however, lags behind the levels experienced by comparable emerging economies, with systemic barriers to investment – including crucially in infrastructure – still present in numerous sectors (Driver and Harris 2021). Capital inflows can help reduce the high cost of investment and trading across borders, especially when they are complemented by policies to encourage investment and support export finance and promotion (Cramer, Sender and Oqubay 2020; Stern and Ramkolowan 2021).

Makrelov et al. (2020) develop a stock-flow consistent model of the South African economy that integrates the real and the financial sectors. They estimate fiscal multiplier and financial accelerator effects through their overall impact on the economy. A notable finding is that inflows of foreign capital increase the multipliers in the economy by relaxing the constraint from domestic savings. Makrelov, Davies and Harris (2021) extend the analysis to explicitly include the role of expectations in the financial accelerator mechanism. They apply their model to examine the impact of

⁹ The main merchandise export items are gold, diamonds, platinum, other metals and minerals, machinery and equipment; the main export markets are China, Germany and the United States.

¹⁰ The South African Revenue Service's updated list of prohibited or limited imports and exports as of 27/08/2025 can be accessed here: <https://www.sars.gov.za/latest-news/updated-prohibited-and-restricted-imports-and-exports-list-7/>

capital flow reversal shocks, which affected the South African economy during the COVID-19 crisis. They show that the main effects of these reversals on the economy were through domestic liquidity, risk-taking behaviour in the financial sector and the demand for assets.

South Africa is gradually liberalising exchange controls and capital flows, in line with IMF recommendations (IMF 2022, 2023). This process is taking place as some pre-emptive capital flow management measures are still being implemented, but without substituting for reforms aimed at ensuring macroeconomic and financial stability and without generating significant negative spillovers to the economy. The key principles that informed the original Institutional View of the IMF were that capital flows can bring substantial benefits, and that although capital flow management policies can be helpful under specific circumstances, they should not be considered as an alternative to sound macroeconomic conduct (IMF 2018). The recent revision of the Institutional View resulted in an Integrated Policy Framework, which explicitly models the interactions of capital flow management policies with monetary policy, foreign exchange intervention and macroprudential policies. The Integrated Policy Framework maintains that capital flow management policies can be used pre-emptively to prevent some financial stability risks where traditional macroeconomic policies would not be effective.

The current process of liberalising exchange controls in South Africa involves a gradual sequencing of reforms to protect the economy against the risk of large capital outflows and reduce excessive reliance on foreign capital. South Africa has not imposed capital controls on non-residents since the advent of democracy and the abolishing of the Financial Rand in 1995. Current controls are only on residents. The capital flow management framework announced in 2020 by National Treasury intends to eliminate most remaining controls on capital flows applicable to residents and is characterised by a shift from a negative to a positive bias. The framework, once implemented, aims to further reduce red tape. Its main aims are to support the stability of financial markets and institutions, the management of cross-border capital flows and macroeconomic risk, and the growth of South African companies – both domestically and in international markets – from a domestic base. The detection, disruption and combating of illicit financial flows, including anti-money laundering and countering the financing of terrorism global standards, will become more important for cross-border financial

surveillance as South Africa transitions from exchange controls to the capital flow management framework.

The next sections examine how foreign capital flows may have contributed to the performance of significant economic indicators, both at the aggregate and the sectoral level, and to assess their potential benefits to the South African economy. If this proves to be the case, and if capital flows (and specifically FDI) were to increase as a result of the reforms, then they would be likely to yield economic benefits for domestic firms and local employment.

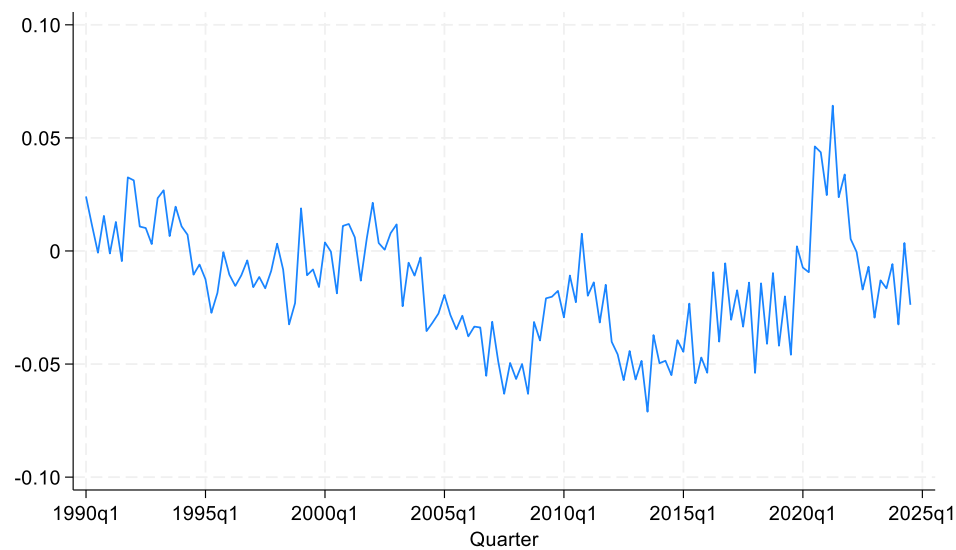
4. Capital flows in South Africa: an aggregative analysis

A potentially beneficial role of international capital flows is to relax the constraints on investment due to an insufficient pool of domestic savings, as well as to enhance the risk-sharing possibilities open to investors. Encouraging domestic capital formation is crucial for the South African economy, particularly given its low level of investment relative to other emerging economies.¹¹ It is therefore important to establish whether capital flows were able to exert a positive effect on key macroeconomic indicators, such as the overall level of economic activity or employment.

The variables used in the analysis are listed in Table A1a in the annexures. Figure 1 illustrates the balance of payments as a ratio to gross domestic product (GDP). The sample period for the analysis uses quarterly data from 1990Q1 to 2024Q3. The foreign position of South Africa over this period was heavily influenced by high imports of oil and capital goods, and by the changes in the prices of commodities in global markets. The balance of payments recorded a deficit for most of the period considered. The run-up to the transition to democracy in the early 1990s was, however, notable for the balance experiencing a surplus; similarly, in the early 2000s it benefited from an increase in the export of commodities. The COVID-19 pandemic was responsible for a collapse in imports, which moved the balance into surplus, also aided by an increase in gold prices.

¹¹ See also Calitz (2025) on the importance of capital investment and employment generation for the South African economy.

Figure 1: Ratio of balance of payments to gross domestic output



FDI averaged 0.81% of GDP over the sample period, and about half the time it was in the range between -0.85% and 4.07% (Table A2 and Figure 2). Significant outliers were the large capital inflows experienced in 2001Q2 and 2021Q3, due to single large events.¹² FPI often behaved as the mirror image of FDI (Figure 3): the correlation coefficient between the two ratios was -0.75. In addition to the two large FPI outflows corresponding to the FDI inflows mentioned above, there was a large outflow in 2008Q4 as a consequence of the global financial crisis and the fall in global commodity prices.

¹² In 2001Q2 Anglo American plc acquired 40% of De Beers (the FDI-GDP ratio reached 32.4%), while 2021Q3 saw a share exchange between Naspers and Prosus.

Figure 2: Ratio of net direct investment to gross domestic output

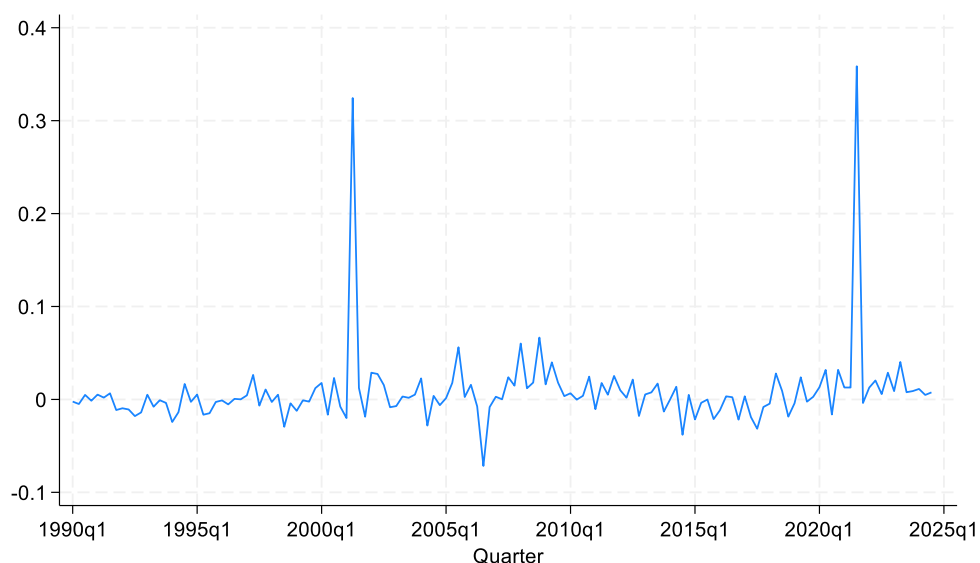
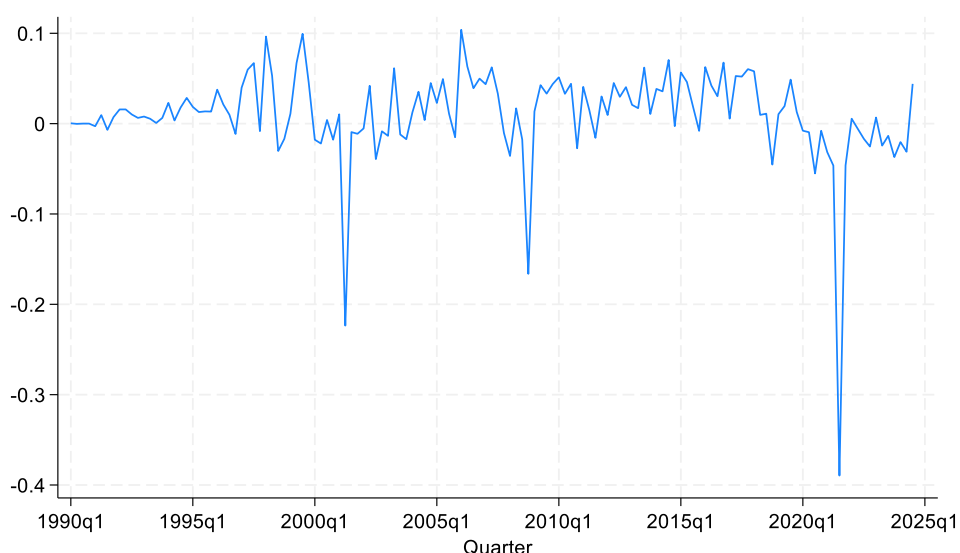


Figure 3: Ratio of net portfolio investment to gross domestic output



Our empirical analysis sought to establish whether FDI and FPI exerted a positive influence on saving, gross capital formation and other relevant macroeconomic variables. To assess the effects of foreign capital flows, dynamic models have been estimated from which one can retrieve both their impact effects and their long-run consequences. As a preliminary to the econometric analysis, some tests have been carried out to ensure consistency in the estimation and that the findings are not spurious. Table 1 reports the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests for unit roots to check whether the variables have comparable long-run properties. The null hypothesis for both tests is that the time series variable has a unit

root and is therefore non-stationary. The variables in GDP-ratio form are stationary in levels (possible exceptions could be gross capital formation and balance of payments for ADF, which are, however, clearly stationary according to PP). GDP and non-agricultural employment are non-stationary in levels but are stationary in first differences.

Table 1: Unit root tests

Variable	ADF statistic	ADF p-value	PP statistic	PP p-value	Stationary
Ln(GDP)	-0.018	0.9940	-0.877	0.9585	No
D.Ln(GDP)	-6.069	0.0000	-19.201	0.0000	Yes
FDI_GDP	-4.478	0.0016	-11.771	0.0000	Yes
FPI_GDP	-3.682	0.0236	-9.066	0.0000	Yes
GCF_GDP	-2.206	0.4864	-5.140	0.0001	No/Yes
BoP_GDP	-2.664	0.2515	-5.261	0.0001	No/Yes
PROD_GDP	-3.602	0.0296	-7.552	0.0000	Yes
S_GDP	-3.612	0.0288	-8.540	0.0000	Yes
Ln(EMP)	-1.646	0.7740	-1.422	0.8543	No
D.Ln(EMP)	-4.661	0.0008	-10.189	0.0000	Yes

Note: The null hypothesis for both tests is that the variable has a unit root. All specifications include intercept, trend and four lags.

Table 2 reports the results of estimates of a dynamic error correction model of both FDI and FPI on the saving-GDP ratio. There is no evidence that either form of investment had a significant effect on the aggregate saving ratio. The coefficients on the lagged values of FDI and FPI, which capture the long-run effects on saving, are not statistically significant. Likewise, the coefficients on the lagged differences of these variables are not statistically significant, either individually or jointly ($F^{(2)}$ test). There is no evidence that the regression residuals are non-stationary (the ADF test rejects the null hypothesis of unit root in the residuals), and one cannot reject the hypothesis of no residual serial correlation (the Durbin test statistic is not statistically significant).

Similar results are obtained for capital formation. Table 3 shows the estimates for the gross capital formation (GCF)-GDP ratio: apart from some weak evidence (but with the wrong sign) at the 10% significance level of some dynamic effects of FDI on the GCF-GDP ratio, all the other variables are statistically insignificant. These findings are confirmed by Tables 4 and 5, which report results for (log of) GDP and (log of) non-agricultural employment: none of these variables appear to be significantly affected by FDI or FPI.

Slightly different results are obtained for FDI in the labour productivity regressions in Table 6. There is evidence that direct investment can have positive effects in the short run, as confirmed by the statistical significance of individual coefficients and by the joint $F^{(2)}$ test on FDI, but this effect tends to disappear in the long run (and there is some evidence that it may even turn slightly negative). Possible explanations for some of these effects could lie in the technology transfers or in the managerial improvements associated with FDI, although these effects appear to be short-lived and not to last after their initial impact.

Table 2: Foreign direct investment and foreign portfolio investment on saving

	(1)	(2)
L.S_GDP	-0.287** (0.109)	-0.281* (0.112)
L.FDI_GDP	0.029 (0.049)	—
L.FPI_GDP	—	-0.003 (0.032)
LD.S_GDP	-0.413** (0.124)	-0.427** (0.127)
L2D.S_GDP	-0.362** (0.120)	-0.392** (0.124)
L3D.S_GDP	-0.356** (0.116)	-0.389** (0.117)
L4D.S_GDP	0.181+ (0.099)	0.149 (0.100)
LD.FDI_GDP	-0.006 (0.045)	—
L2D.FDI_GDP	-0.023 (0.043)	—
L3D.FDI_GDP	-0.030 (0.026)	—
L4D.FDI_GDP	-0.001 (0.021)	—
LD.FPI_GDP	—	-0.014 (0.031)
L2D.FPI_GDP	—	-0.025 (0.030)
L3D.FPI_GDP	—	-0.016 (0.020)
L4D.FPI_GDP	—	-0.027 (0.019)
Intercept	0.042* (0.016)	0.042* (0.017)
N	134	134
F ⁽¹⁾	11.71***	10.76***
F ⁽²⁾	1.90	0.60
ADF	-5.539***	-5.625***
Durbin	0.371	0.005

Note: *** p<0.001, ** p<0.01, * p<0.05, + p<0.1. Dependent variable: saving/GDP. F⁽¹⁾ = joint significance of lagged saving/GDP. F⁽²⁾ = joint significance of lagged investment variables. ADF = stationarity of residuals. Durbin = residual autocorrelation.

Table 3: Foreign direct investment and foreign portfolio investment on gross capital formation

	(1)	(2)
L.GCF_GDP	-0.136 (0.085)	-0.175* (0.083)
L.FDI_GDP	0.041 (0.058)	—
L.FPI_GDP	—	0.032 (0.039)
LD.GCF_GDP	-0.377** (0.132)	-0.323* (0.131)
L2D.GCF_GDP	-0.391** (0.129)	-0.343** (0.126)
L3D.GCF_GDP	-0.208+ (0.125)	-0.161 (0.126)
L4D.GCF_GDP	0.183+ (0.096)	0.229* (0.099)
LD.FDI_GDP	-0.049 (0.050)	—
L2D.FDI_GDP	-0.056 (0.040)	—
L3D.FDI_GDP	-0.051+ (0.027)	—
L4D.FDI_GDP	-0.001 (0.015)	—
LD.FPI_GDP	—	-0.025 (0.036)
L2D.FPI_GDP	—	-0.007 (0.032)
L3D.FPI_GDP	—	-0.004 (0.028)
L4D.FPI_GDP	—	-0.042+ (0.022)
Intercept	0.022 (0.015)	0.028* (0.014)
N	134	134
F ⁽¹⁾	5.98***	6.80***
F ⁽²⁾	2.16+	1.87
ADF	-4.136***	-4.041**
Durbin	3.864+	4.878*

Note: *** p<0.001, ** p<0.01, * p<0.05, + p<0.1. Dependent variable: gross capital formation/GDP. F⁽¹⁾ = joint significance of lagged gross capital formation/GDP. F⁽²⁾ = joint significance of lagged investment variables. ADF = stationarity of residuals. Durbin = residual autocorrelation.

Table 4: Foreign direct investment and foreign portfolio investment on GDP

	(1)	(2)
L.LGDP	-0.015*** (0.003)	-0.015*** (0.003)
L.FDI_GDP	-0.037 (0.046)	—
L.FPI_GDP	—	-0.018 (0.049)
LD.LGDP	-0.469*** (0.125)	-0.491*** (0.123)
L2D.LGDP	-0.433*** (0.090)	-0.419*** (0.098)
L3D.LGDP	-0.306** (0.115)	-0.312** (0.112)
L4D.LGDP	0.101 (0.182)	0.055 (0.169)
LD.FDI_GDP	-0.025 (0.032)	—
L2D.FDI_GDP	-0.056 (0.036)	—
L3D.FDI_GDP	-0.049 (0.045)	—
L4D.FDI_GDP	-0.003 (0.039)	—
LD.FPI_GDP	—	0.047 (0.037)
L2D.FPI_GDP	—	0.073+ (0.039)
L3D.FPI_GDP	—	-0.010 (0.041)
L4D.FPI_GDP	—	-0.038 (0.037)
Intercept	0.241*** (0.045)	0.252*** (0.044)
N	134	134
F ⁽¹⁾	9.59***	6.49***
F ⁽²⁾	0.83	1.45
ADF	-5.037***	-5.098***
Durbin	0.438	1.074

Note: *** p<0.001, ** p<0.01, * p<0.05, + p<0.1. Dependent variable: logarithm of GDP at market prices. F⁽¹⁾ = joint significance of lagged GDP. F⁽²⁾ = joint significance of lagged investment variables. ADF = stationarity of residuals. Durbin = residual autocorrelation.

Table 5: Foreign direct investment and foreign portfolio investment on employment

	(1)	(2)
L.LEMP	-0.013 (0.012)	-0.013 (0.012)
L.FDI_GDP	-0.001 (0.010)	–
L.FPI_GDP	–	-0.008 (0.010)
LD.LEMP	0.123 (0.094)	0.130 (0.098)
L2D.LEMP	0.084 (0.076)	0.071 (0.073)
L3D.LEMP	0.005 (0.076)	0.022 (0.078)
L4D.LEMP	0.069+ (0.039)	0.066 (0.040)
LD.FDI_GDP	0.003 (0.008)	–
L2D.FDI_GDP	0.005 (0.011)	–
L3D.FDI_GDP	0.004 (0.010)	–
L4D.FDI_GDP	-0.014+ (0.007)	–
LD.FPI_GDP	–	0.007 (0.012)
L2D.FPI_GDP	–	-0.003 (0.011)
L3D.FPI_GDP	–	-0.003 (0.010)
L4D.FPI_GDP	–	0.005 (0.007)
Intercept	0.062 (0.053)	0.062 (0.054)
N	133	133
F ⁽¹⁾	2.03+	1.81
F ⁽²⁾	1.44	0.50
ADF	-5.245***	-5.083***
Durbin	0.071	0.369

Note: *** p<0.001, ** p<0.01, * p<0.05, + p<0.1. Dependent variable: logarithm of non-agricultural employment. F⁽¹⁾ = joint significance of lagged employment/GDP. F⁽²⁾ = joint significance of lagged investment variables. ADF = stationarity of residuals. Durbin = residual autocorrelation.

Table 6: Foreign direct investment and foreign portfolio investment on labour productivity

	(1)	(2)
L.PROD_GDP	-0.026** (0.009)	-0.025** (0.009)
L.FDI_GDP	-3.01E-06* (1.21E-06)	—
L.FPI_GDP	—	1.60E-06 (9.73E-06)
LD.PROD_GDP	-0.100 (0.131)	-0.108 (0.132)
L2D.PROD_GDP	-0.255* (0.111)	-0.263* (0.113)
L3D.PROD_GDP	-0.016 (0.085)	-0.022 (0.084)
L4D.PROD_GDP	0.435*** (0.103)	0.437*** (0.103)
LD.FDI_GDP	2.07E-06+ (1.12E-06)	—
L2D.FDI_GDP	2.72E-06** (1.01E-06)	—
L3D.FDI_GDP	1.39E-06 (8.74E-06)	—
L4D.FDI_GDP	7.32E-06 (5.45E-06)	—
LD.FPI_GDP	—	-7.94E-06 (1.05E-05)
L2D.FPI_GDP	—	-7.43E-06 (8.98E-06)
L3D.FPI_GDP	—	-1.20E-06 (8.18E-06)
L4D.FPI_GDP	—	-3.67E-06 (6.07E-06)
Intercept	1.83E-06* (8.90E-07)	1.26E-06 (8.79E-07)
N	133	133
F ⁽¹⁾	10.29***	10.17***
F ⁽²⁾	2.78*	0.37
ADF	-6.685***	-6.616***
Durbin	0.195	0.190

Note: *** p<0.001, ** p<0.01, * p<0.05, + p<0.1. Dependent variable: labour productivity/GDP. F⁽¹⁾ = joint significance of lagged labour productivity/GDP. F⁽²⁾ = joint significance of lagged investment variables. ADF = stationarity of residuals. Durbin = residual autocorrelation.

5. The effects of capital flows: a sectoral analysis

The results of the previous section on the aggregate analysis of the effects of foreign capital flows on the real economy were mostly inconclusive as they were unable to establish a positive (or indeed a negative) role of these flows on the macroeconomic variables considered. An aggregate analysis presents limitations insofar as it does not allow for the possibility that capital flows have heterogeneous effects across the different sectors of the economy and that they can have a correspondingly differential impact. This section thus looks at the specific flows of FDI in the main economic sectors and examines whether they may have had a significant positive long-run relationship within the sectors to which they were directed. No data on FPI were available at the sectoral level, so the analysis was limited to considering the effects of FDI.

The investigation is based on annual data from 2001 to 2023 for the nine broad sectors of the economy: agriculture, forestry and fishing; community, social and personal services; construction; electricity, gas and water; finance, insurance, real estate and business services; manufacturing; mining and quarrying; transport, storage and communication; and wholesale and retail trade, catering and accommodation. The analysis distinguishes between equity and investment fund shares and debt instruments (respectively equity and debt, in short) to assess whether these two types of flows may have had a different effect on sector performance.

Figure 4 shows total FDI (TDI) by sector. Historically, TDI was mostly concentrated in finance, insurance, real estate and business services. Important flows were also directed towards mining and quarrying and manufacturing: these two sectors, especially manufacturing, experienced large inflows in 2022. Significant flows, albeit on a smaller scale, were channelled towards transport, storage and communication and towards wholesale and retail trade, catering and accommodation.

Figures 5 to 13 illustrate the flows that were directed towards each individual sector. They also provide a breakdown between equity and debt. The former is by far the most relevant investment in most sectors, but with some notable exceptions: debt instruments were historically important in agriculture and construction, the latter in particular exhibiting negative correlation between equity and debt. It is also important to note the increasing importance of debt in recent periods in finance and

manufacturing, and its decreasing importance in mining and quarrying and wholesale and retail trade.

Figure 4: Total foreign direct investment by sector

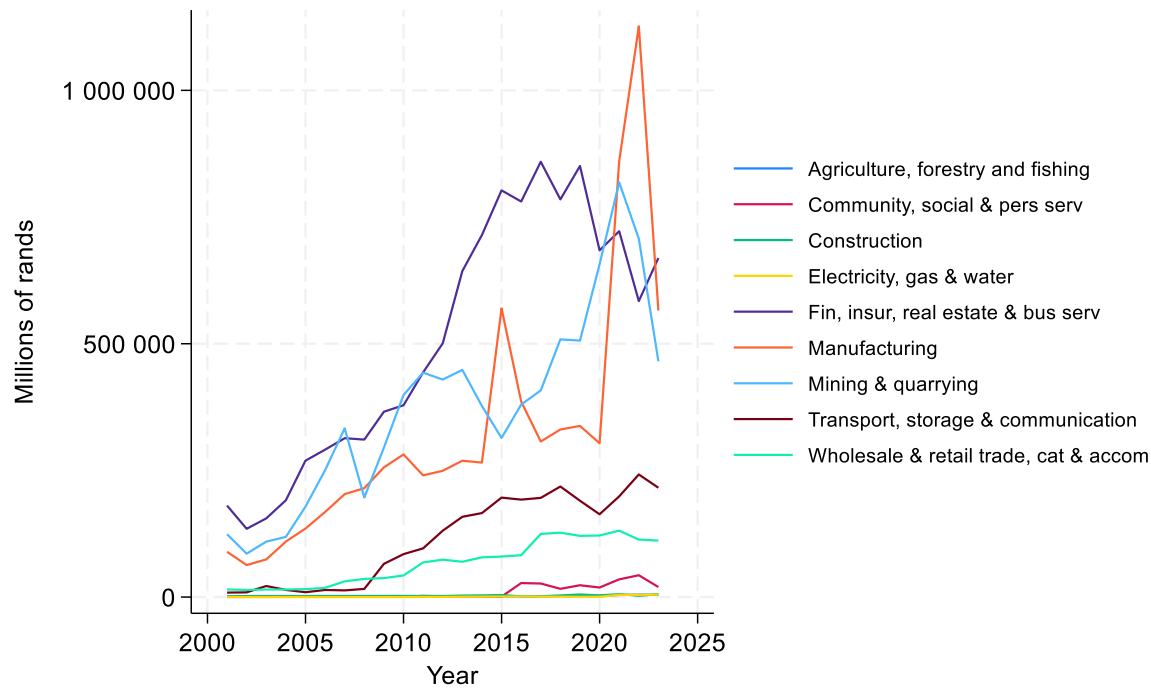


Figure 5: Agriculture, forestry and fishing

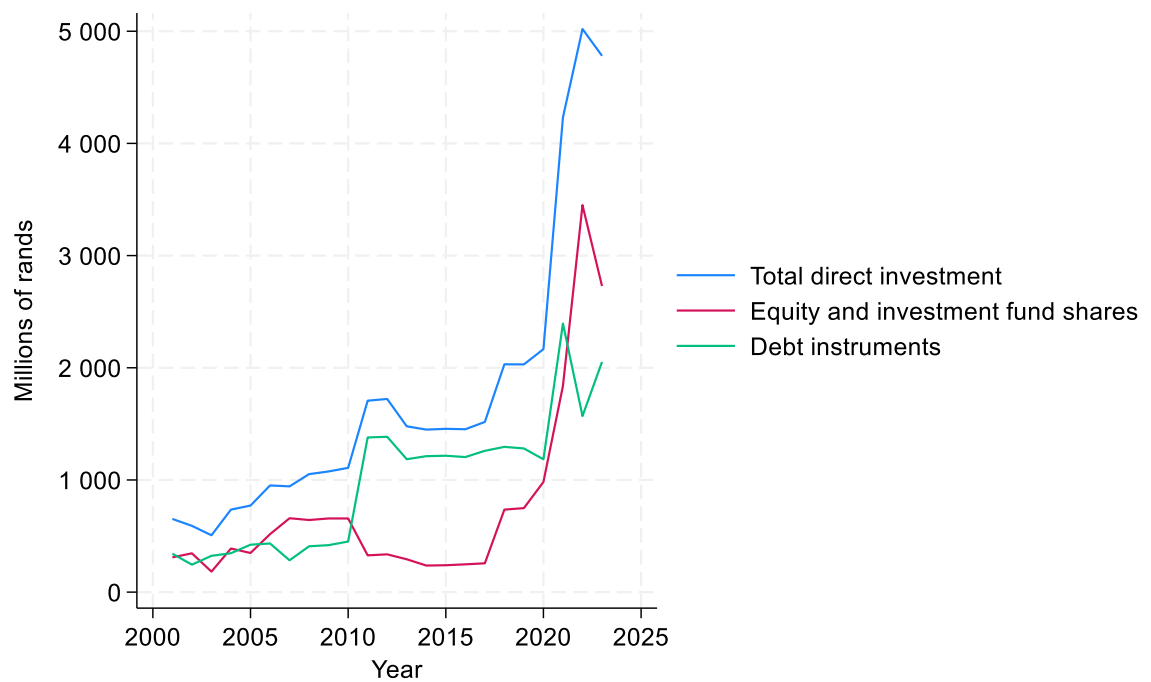


Figure 6: Community, social and personal services

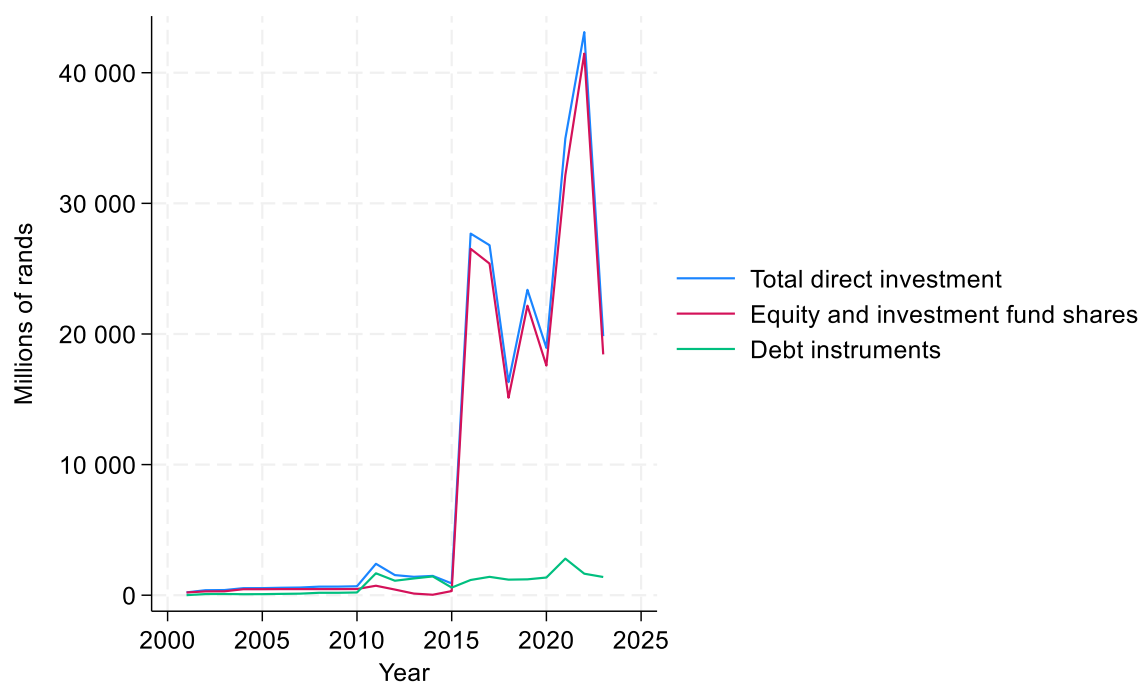


Figure 7: Construction

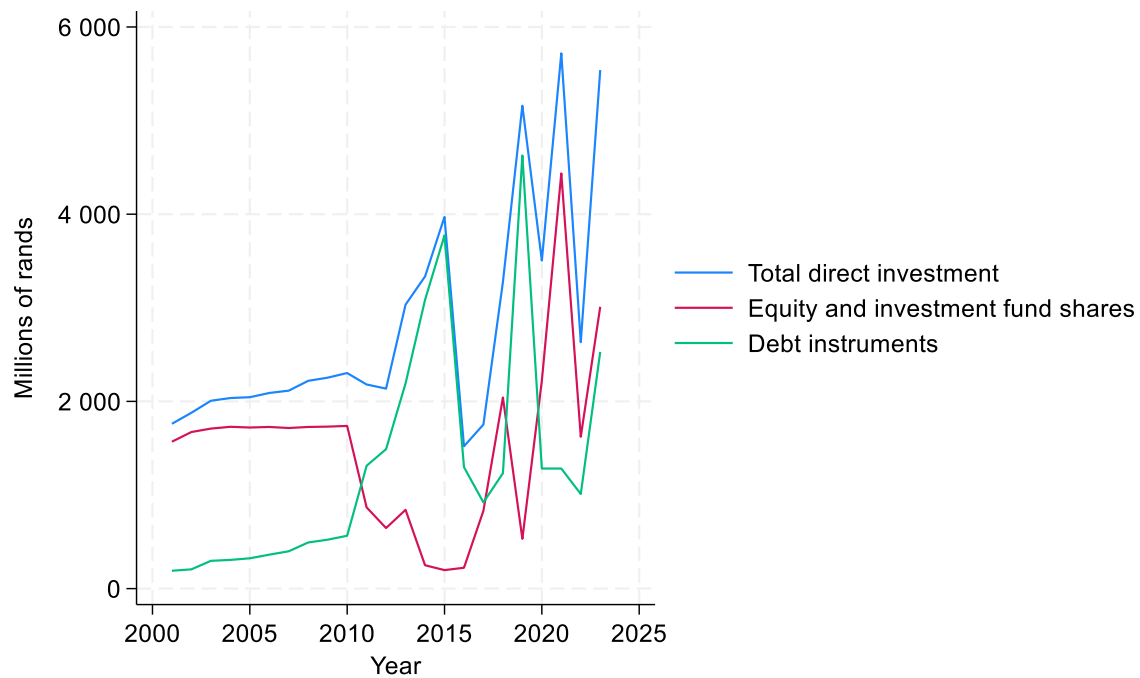


Figure 8: Electricity, gas and water

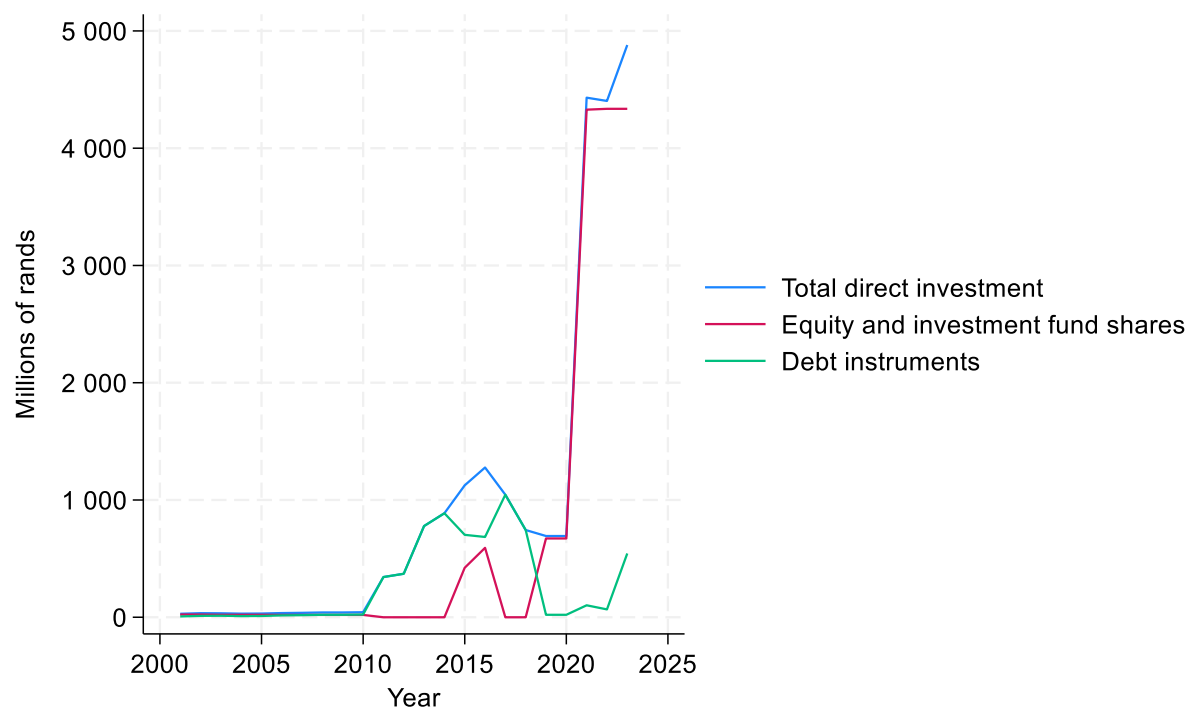


Figure 9: Finance, insurance, real estate and business services

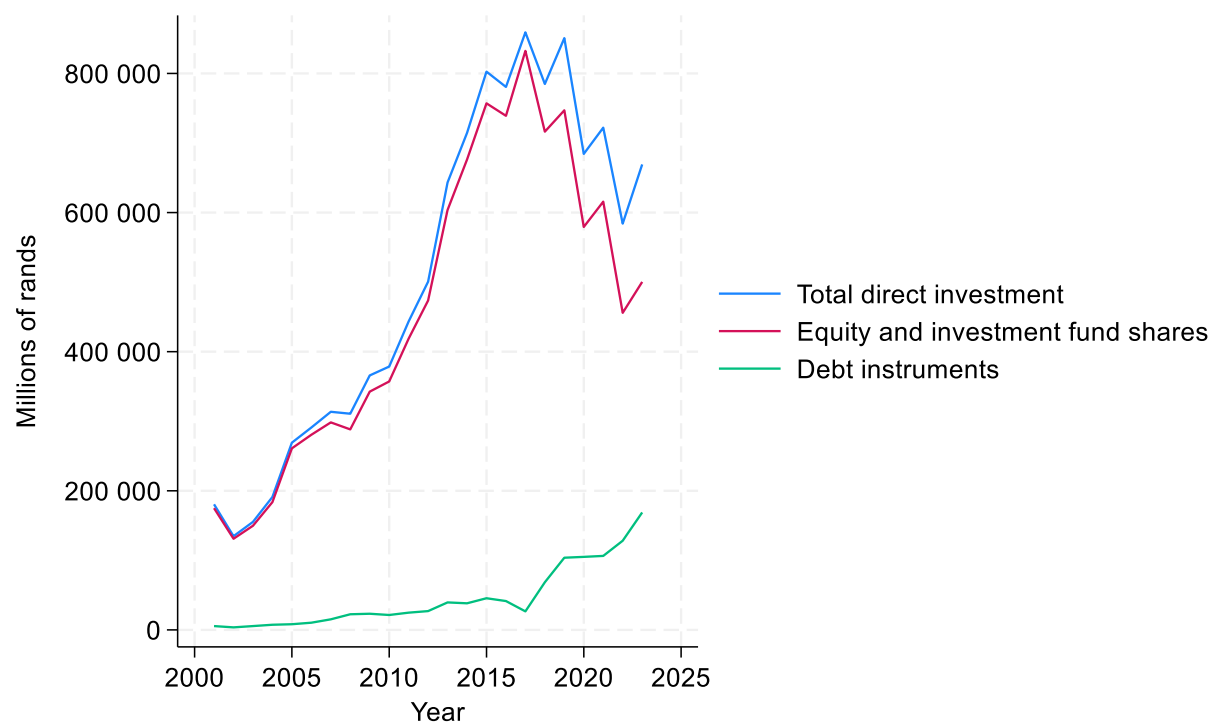


Figure 10: Manufacturing

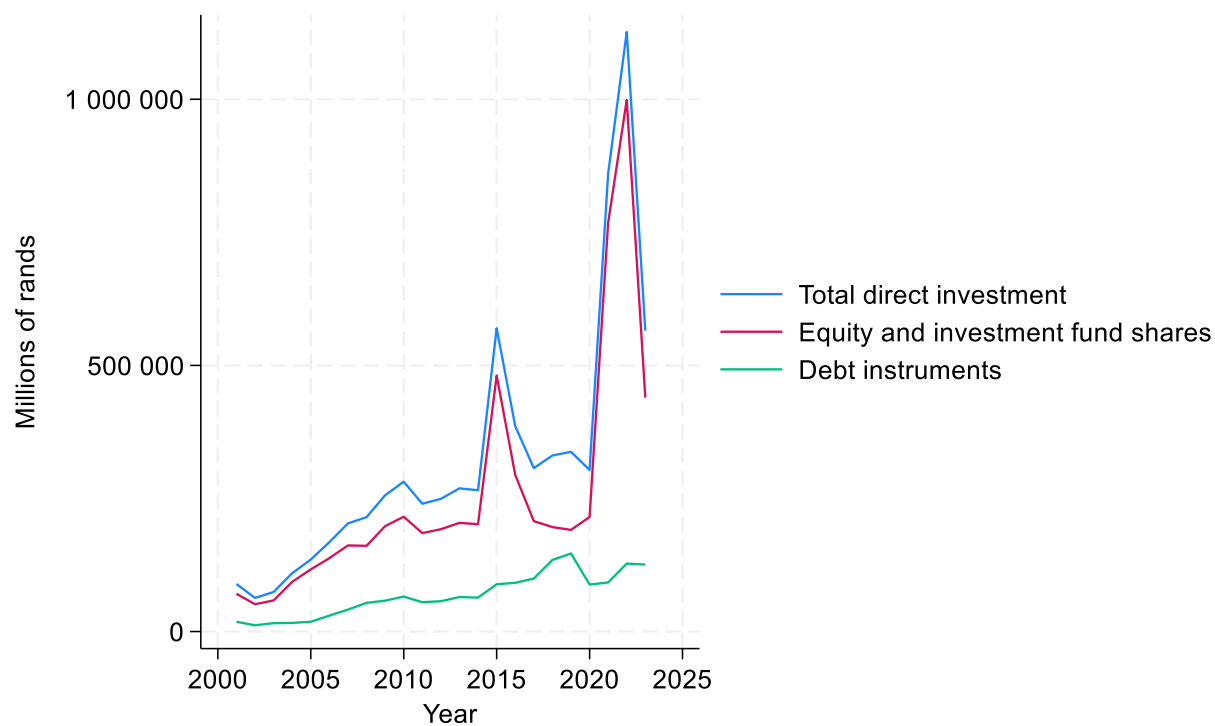


Figure 11: Mining and quarrying

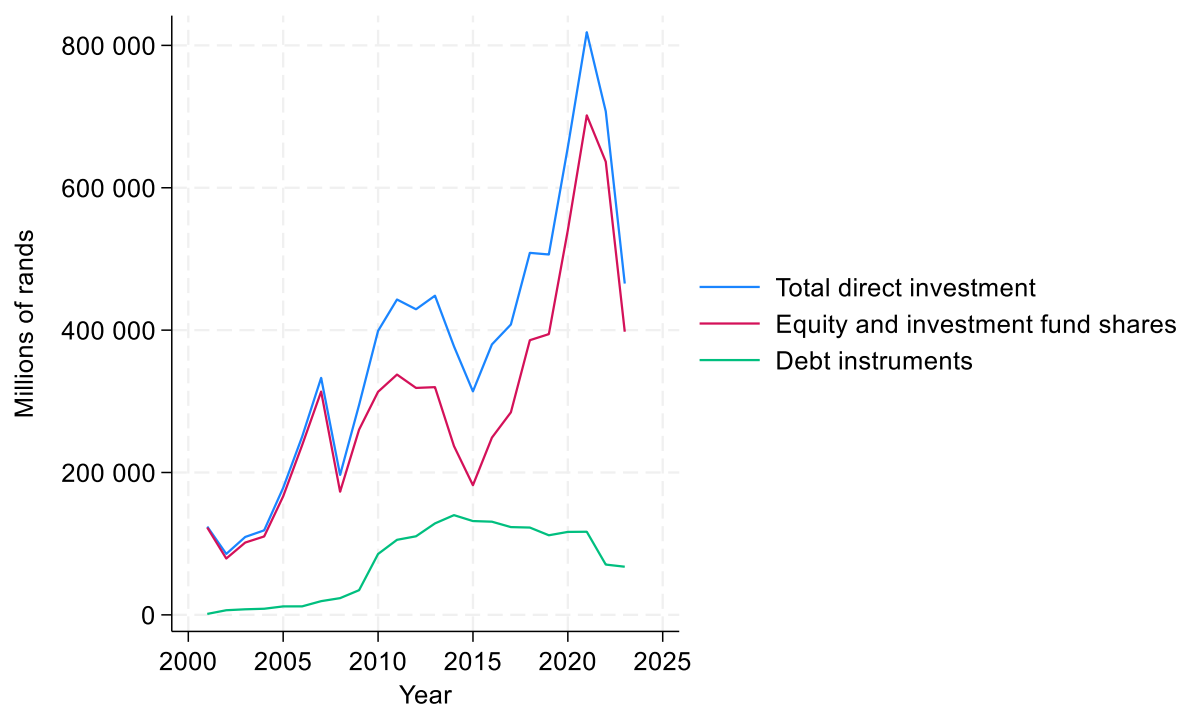


Figure 12: Transport, storage and communication

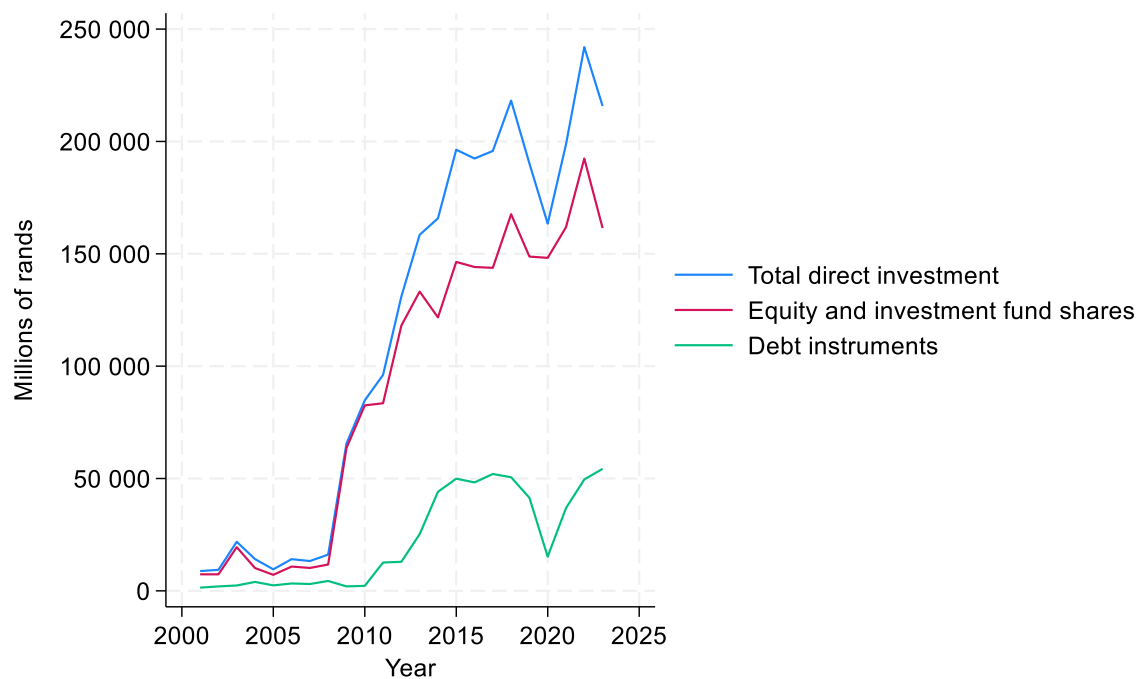
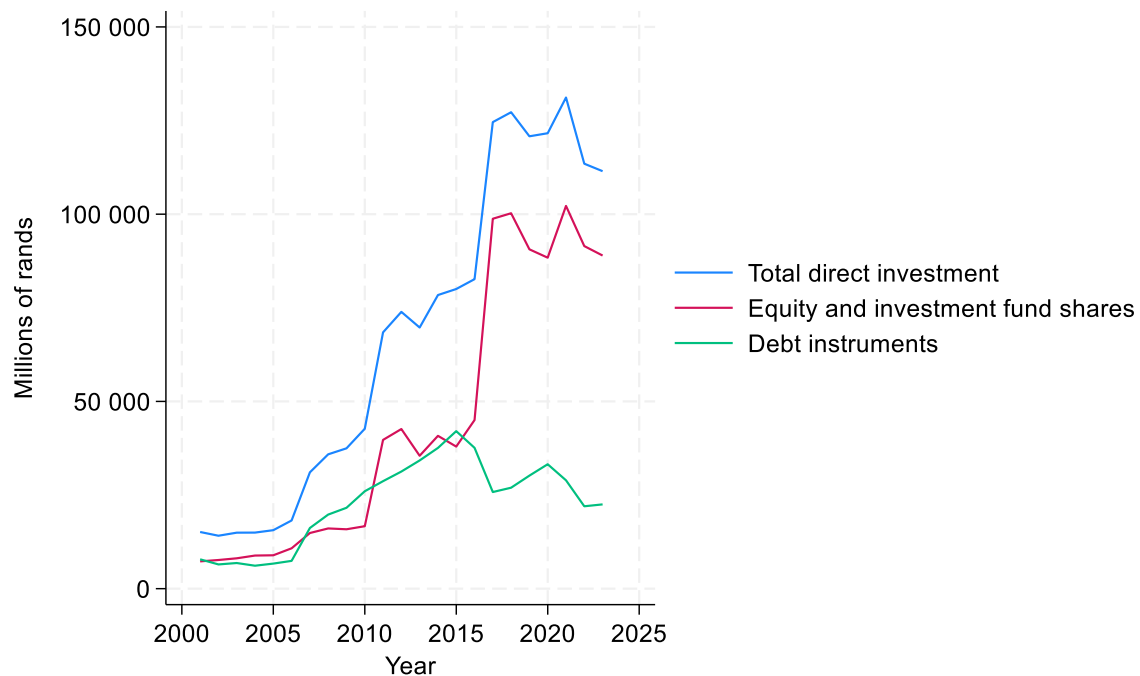


Figure 13: Wholesale and retail trade, catering and accommodation



Figures 14 to 16 display changes in the sectoral allocation of capital over the period 2001–2023. Figure 14 shows the breakdown of TDI. The main beneficiaries were finance, manufacturing and mining. The share of TDI in finance is quite cyclical, but saw some decline since 2017. The share of investment in mining has also fallen since the beginning of the period considered, whereas the share of manufacturing has increased significantly since 2020 in the aftermath of the COVID-19 shock. Figure 15 illustrates the equity investment by sector: this saw a decline in mining and especially finance and an increase in manufacturing, although starting from a lower base relative to mining and finance, especially since 2020. The flows of debt investment by sector are shown in Figure 16. These have seen a large fall in mining, some decline in manufacturing, but a very large increase in finance. This was, however, insufficient to compensate for the overall decline in capital flows to the sector (see Figure 9).

Figure 14: Total direct investment by sector

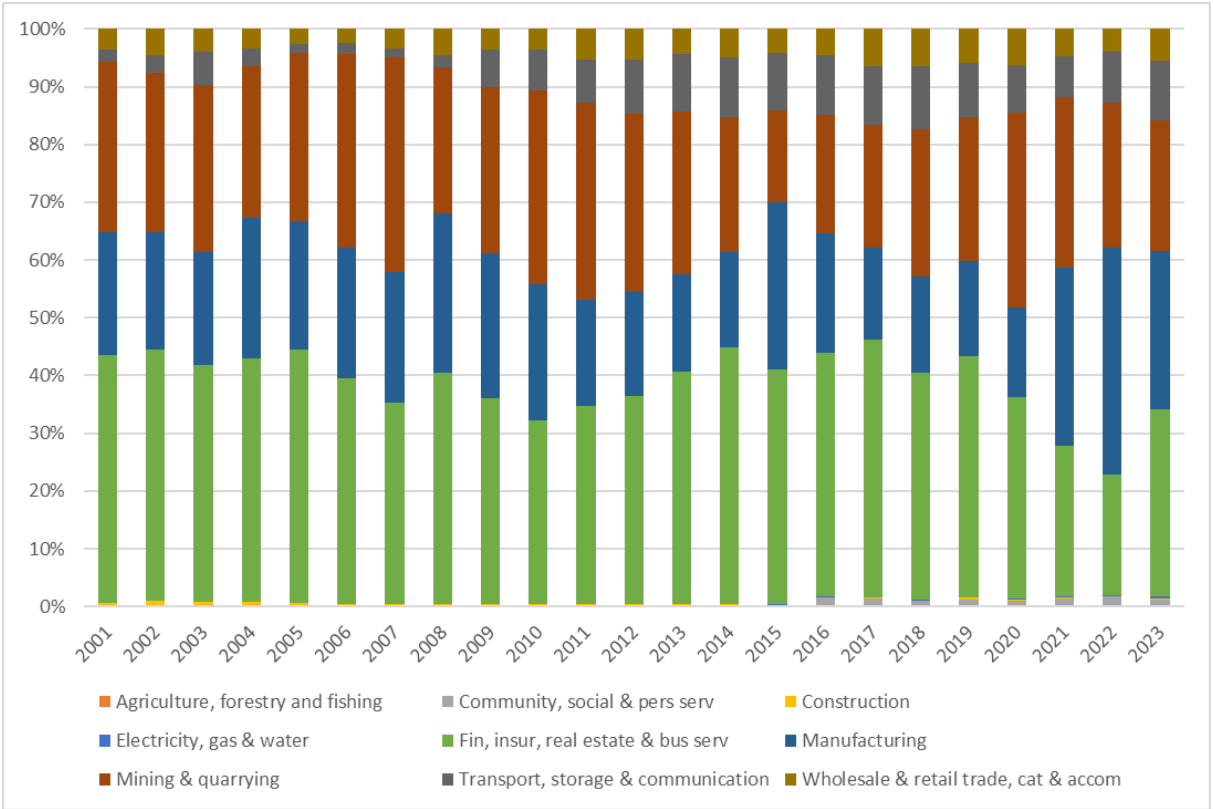


Figure 15: Equity investment by sector

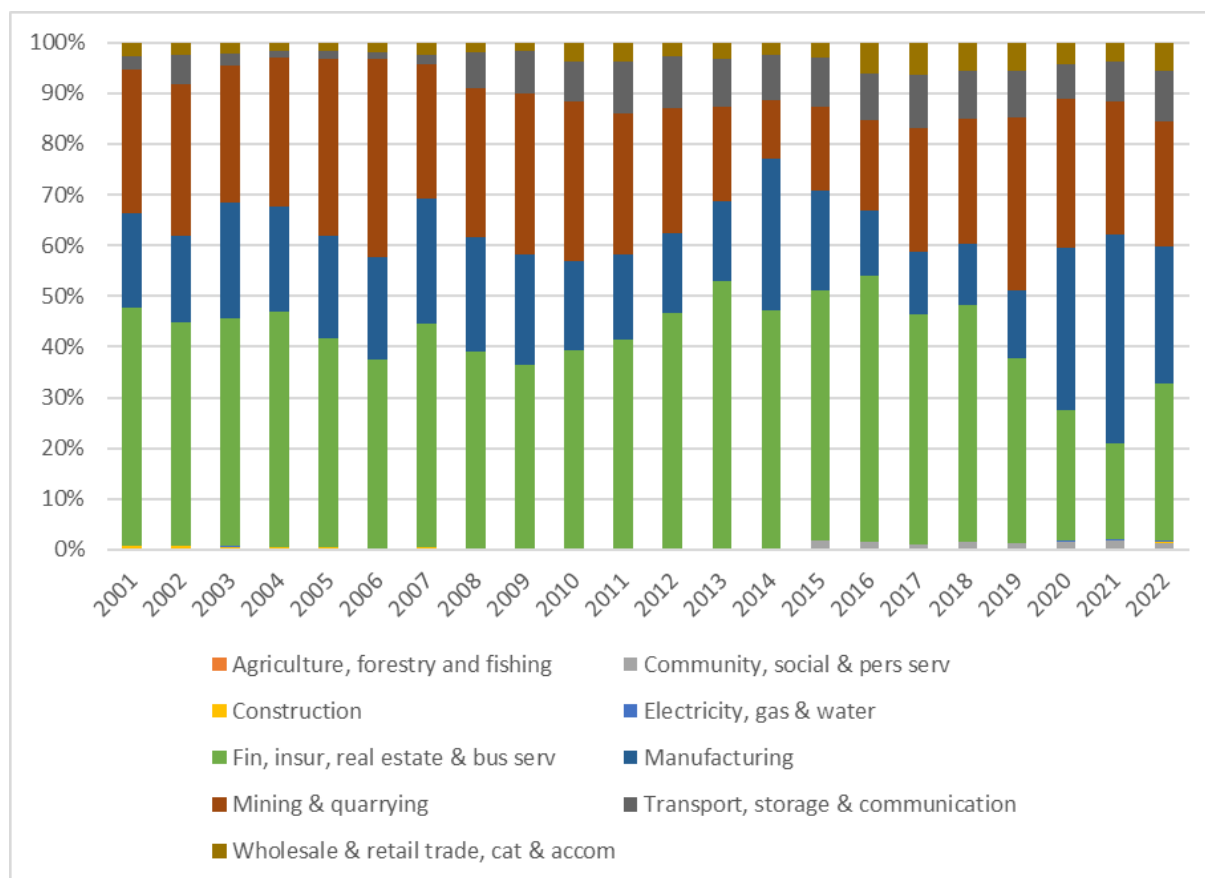
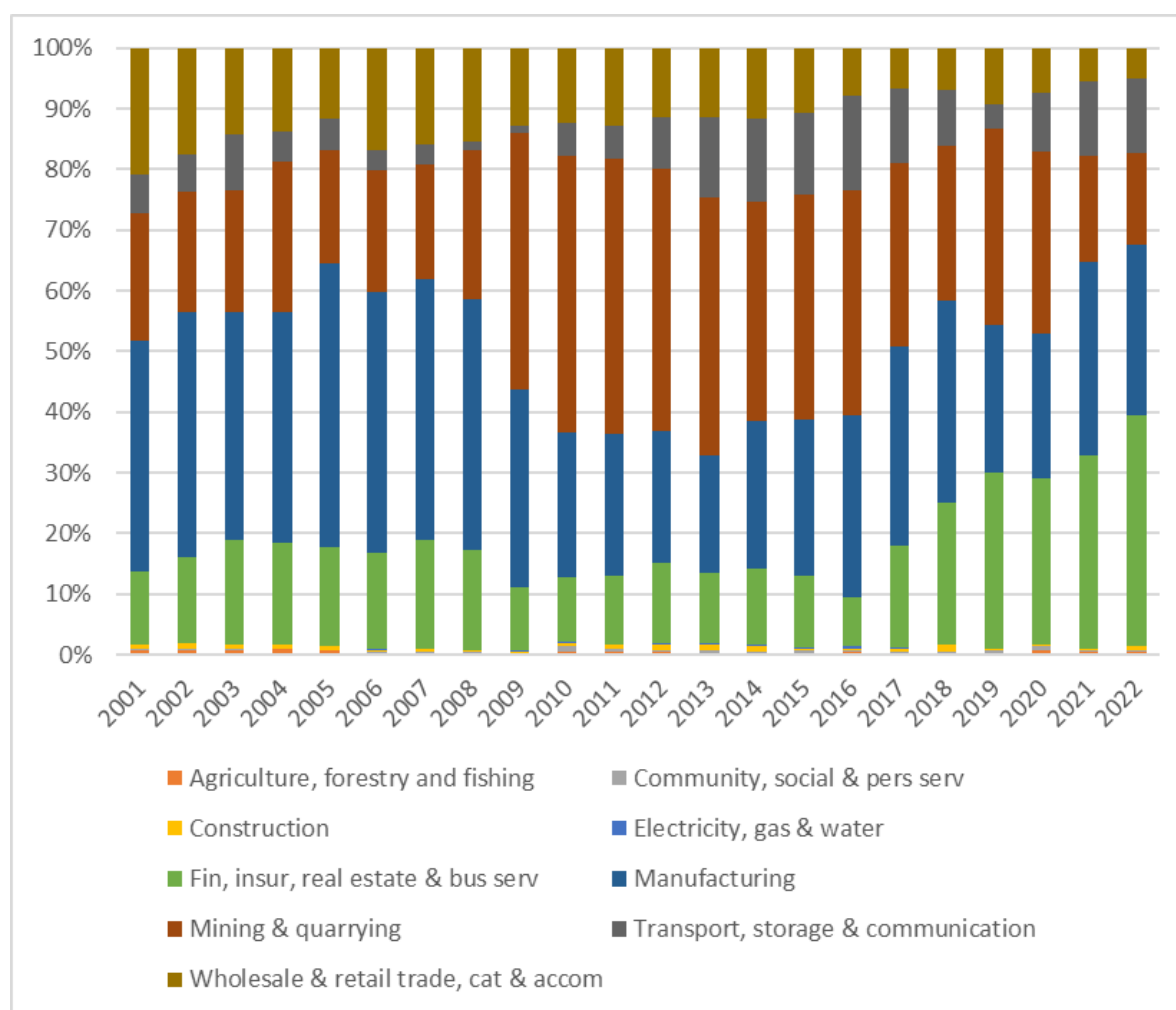


Figure 16: Debt investment by sector



6. Foreign direct investment and sectoral economic performance

The relationship between TDI and sectoral economic performance is assessed using panel data. The variables used in the analysis are defined in Table A1b and listed in Table A3 in the annexures together with selected descriptive statistics: they include gross value added (GVA), fixed capital stock (FCS), gross fixed capital formation (GFCF), gross operating surplus (GOS), employment (EMP) and employee compensation (COMP). These variables were chosen to capture relevant aspects of sectoral economic performance in terms of their output, investment, profitability and employment.

Figures 17 to 25 (in the annexures) present some estimates to check whether the elasticities of the key economic indicators by sector with respect to TDI, equity and debt have been constant or changed over the sample period. This has been established using Kalman filter methods, which implement an iterative updating

estimation procedure to allow for the possibility that the regression coefficients may have changed over time. The figures report the elasticity parameter estimated by the Kalman smoother, which makes use of all the available data for the estimation and is therefore more efficient than the more traditional Kalman filter, which only uses the information contained in past and current observations (Durbin and Koopman 2012). Most coefficients are constant over the sample period, although there are a few notable exceptions. In agriculture, forestry and fishing the elasticity of GVA and GOS with respect to debt turns from negative to about zero. Similarly, in construction the elasticity of GVA, GFCF, GOS and COMP with respect to equity increases from negative and becomes about zero. In manufacturing, the elasticity of GOS with respect to TDI and debt becomes even more positive in the more recent period. Likewise, the elasticities of GVA and GOS with respect to TDI and equity become larger in mining and quarrying. Overall, however, there is little evidence that the sensitivity of the sectoral economic indicators considered in the analysis with respect to capital flows may have changed substantially during the sample period considered.

A formal analysis of capital flows and sectoral indicators is conducted by estimating panel data regressions. These make full use of the longitudinal feature of the data and explore both the time-series and the cross-sectional variability of the observations. They are more powerful than estimation methods that use aggregate data and therefore ignore the potential heterogeneity across the units of observation. Unit root tests for longitudinal data were carried out prior to the econometric analysis to establish the long-run properties of the variables and ensure consistency of the estimates. The results of these tests are shown in Table 7. For each variable (including TDI, equity and debt) the Im-Pesaran-Shin (IPS) test statistic is reported for levels and (if the series is not stationary in levels) first differences. IPS offers greater flexibility than other tests as it allows for panel-specific autoregressive parameters. The null hypothesis is that all panels contain unit roots, while the alternative hypothesis is that some panels are stationary. The tests include both panel means and time trends, and allow for two lags in the ADF regressions. Most variables are not stationary in levels, but are stationary when first differences are computed. The only exceptions are employment, which is already stationary in levels, and gross operating surplus, which is not stationary at the 5% significance level even in first differences (although it is so at the 10% significance level).

Table 7: Sectoral panel unit root (Im-Pesaran-Shin) tests

Variable	IPS statistic (level)	p-value (level)	Conclusion (level)	IPS statistic (first diff)	p-value (first diff)	Conclusion (first diff)
Ln(TDI)	0.3161	0.6240	Non-stationary	-3.1276	0.0009	Stationary
Ln(EQUITY)	1.5871	0.9438	Non-stationary	-1.9182	0.0275	Stationary
Ln(DEBT)	1.8429	0.9673	Non-stationary	-2.8012	0.0025	Stationary
Ln(GVA)	-0.3210	0.3741	Non-stationary	-2.4500	0.0071	Stationary
Ln(FCS)	1.2736	0.8986	Non-stationary	-1.9135	0.0278	Stationary
Ln(GFCF)	-0.1250	0.4503	Non-stationary	0.4503	0.0006	Stationary
Ln(GOS)	-0.1178	0.4531	Non-stationary	-1.3870	0.0827	Non-stationary
Ln(EMP)	-2.2590	0.0119	Stationary	—	—	—
Ln(COMP)	3.3729	3.3729	Non-stationary	-3.1289	0.0009	Stationary

Note: IPS statistic: $W-t\text{-bar}$. H_0 : all panels contain unit roots; number of panels = 9. H_1 : some panels are stationary; number of periods = 22. AR parameter: panel-specific, ADF regressions, 2 lags. Panel means: included. Time trend: included.

Table A4 reports Westerlund's (2007) sectoral cointegration tests for the variables included in the analysis to check whether there may be genuine long-run relationships between the variables of interest. These tests are based on a dynamic error correction model specification to consider both short- and long-run effects, and can accommodate cross-sectional dependence. The null hypothesis for the tests is that there is no cointegration – that is, no long-run relationship between the variables considered. Four test statistics are reported: two of them are group-mean (G_T , G_α) and two are panel-mean (P_T , P_α). Rejection of the null hypothesis can be read as evidence of cointegration. In particular, the alternative hypothesis for the group-mean tests is that at least one unit is cointegrated, whereas for panel-group tests the alternative hypothesis is that the entire panel is cointegrated. If the group-mean tests reject the null hypothesis but panel-mean tests do not, there is evidence of cointegration but not uniformly across all units. Conversely, if the panel-mean tests reject the null hypothesis but the group-mean tests do not, this is evidence of a marginally common structure of cointegration.¹³

¹³ The τ -statistics are based on the t -ratio of the error correction term from the error correction model, whereas the α -statistics are based on the level of the estimated error correction coefficient. In practice, the panel-mean tests P_T , P_α are more powerful under the assumption of a common cointegration relationship, while the group-mean tests G_T , G_α allow for heterogeneity across units although at the cost of a loss in statistical power.

From the results in Table A4, there is evidence of a cointegrating relationship for at least one of the test statistics for most variables. The one exception is between gross fixed capital formation and debt. For all the other relationships considered, one cannot rule out a cointegrating relationship either for the entire panel or for at least some of the units. We therefore proceed with the estimation of cointegrating regressions for the variables at the sectoral level.

Tables 8–13 present the results of panel cointegration regressions at the level of sectors of economic activity. The regressions give estimates of the long-run equilibrium relationships between foreign investment and the economic variables of interest. In all the tables, columns (1) and (2) show the results for the whole sample period 2001–2023, columns (3) and (4) give the results for the pre-COVID-19 period 2001–2020 only, while columns (5) and (6) introduce a dummy variable for the post-2021 period, interacted with investment to test for the possibility of a structural break in the coefficients after 2020, which could be associated with the COVID-19 shock. The regressions reported in the tables were estimated by random effects since the Breusch-Pagan tests indicate that this estimation method is appropriate for all the specifications.

Table 8 shows that FDI had a positive and statistically significant relationship with sectoral gross value added. From columns (1) and (2), the coefficients are positive for TDI as a whole and also for equity and debt separately considered. It is interesting that the coefficient on debt is about three times as large as the coefficient on equity, which would suggest a much stronger relationship of value added with debt instruments than with equity and investment fund shares. TDI appears to have a stronger effect after 2021, as confirmed by comparing the estimated coefficients in columns (3) and (5). In particular, the interaction of TDI with the post-2021 dummy is positive and statistically significant. The coefficient on equity is also larger when the most recent observations are included in the sample, which suggests a stronger relationship of equity investment with gross value added in the more recent period.

Table 8: Sectoral panel cointegration regressions: gross value added

	(1)	(2)	(3)	(4)	(5)	(6)
L.TDI	0.415*** (0.021)	–	0.411*** (0.024)	–	0.968*** (0.021)	–
L.EQUITY	–	0.113*** (0.015)	–	0.059*** (0.017)	–	0.110*** (0.015)
L.DEBT	–	0.340*** (0.018)	–	0.347*** (0.017)	–	0.336*** (0.018)
L.TDI_2021	–	–	–	–	3.84E-07 * (1.64E-07)	–
L.EQUITY_2021	–	–	–	–	–	2.99E-07 (5.69E-07)
L.DEBT_2021	–	–	–	–	–	5.76E-07 (3.67E-07)
Intercept	8.362*** (0.328)	8.576*** (0.293)	8.365*** (0.350)	8.959*** (0.305)	8.435*** (0.340)	8.625*** (0.326)
Sample period	2001–2023	2001–2023	2001–2020	2001–2020	2001–2023	2001–2023
N	198	198	171	171	198	198
χ^2	392.0209***	523.6938***	289.5365***	482.1102***	409.5848***	550.3177***
ρ	0.852	0.856	0.865	0.887	0.870	0.894
Breusch-Pagan	1 221.78***	1 222.12***	948.18***	1 022.13***	1 245.39***	1 233.09***

Note: *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Dependent variable: gross value added. All variables in logarithms. Random effects estimates. χ^2 : Wald statistic on joint significance of regressors. ρ : fraction of variance due to individual effects. Breusch-Pagan LM test for RE (H_0 =RE insignificant, rejection: RE appropriate).

The impact of direct investment on gross fixed capital formation is shown in Table 9. TDI is again significant, but its effect seems to be due entirely to debt instruments, having a positive and significant sign in all specifications. The coefficient on equity is either not significant or weakly significant but with a negative sign. There is no evidence of a structural break after 2021. Given the critical role of capital investment for the performance of the South African economy, these results are potentially important because they suggest that debt instruments can be associated with enhanced capital investment.

Table 9: Sectoral panel cointegration regressions: gross fixed capital formation

	(1)	(2)	(3)	(4)	(5)	(6)
L.TDI	0.136*** (0.018)	–	0.187*** (0.021)	–	0.140*** (0.018)	–
L.EQUITY	–	-0.018 (0.013)	–	-0.008* (0.016)	–	-0.017* (0.013)
L.DEBT	–	0.164*** (0.015)	–	0.174*** (0.016)	–	0.169*** (0.015)
L.TDI_2021	–	–	–	–	-1.46E-07 (1.39E-07)	–
L.EQUITY_2021	–	–	–	–	–	4.51E-07 (4.75E-07)
L.DEBT_2021	–	–	–	–	–	-4.14E-06 (3.06E-06)
Intercept	9.621*** (0.304)	9.764*** (0.262)	9.149*** (0.325)	9.599*** (0.299)	9.588*** (0.315)	9.720*** (0.282)
Sample period	2001–2023	2001–2023	2001–2020	2001–2020	2001–2023	2001–2023
N	198	198	171	171	198	198
χ^2	59.53964***	125.8568***	83.10052***	126.1317***	60.66179***	130.9214***
ρ	0.888	0.882	0.898	0.901	0.897	0.903
Breusch-Pagan	1 540.10***	1 473.03***	1 161.15***	1 110.37***	1 540.14***	1 460.00***

Note: *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Dependent variable: gross fixed capital formation. All variables in logarithms. Random effects estimates. χ^2 : Wald statistic on joint significance of regressors ρ : fraction of variance due to individual effects. Breusch-Pagan LM test for RE (H_0 =RE insignificant, rejection: RE appropriate).

The relationship between foreign investment and fixed capital stock is illustrated in Table 10. TDI has a positive and statistically significant coefficient throughout the sample period, but the breakdown between equity and debt reveals that the former only gained significance in the more recent period. Prior to 2020, debt instruments were the only form of investment able to exert a positive influence on capital stock.

Table 10: Sectoral panel cointegration regressions: fixed capital stock

	(1)	(2)	(3)	(4)	(5)	(6)
L.TDI	0.160*** (0.011)	–	0.172*** (0.013)	–	0.164*** (0.011)	–
L.EQUITY	–	0.028*** (0.009)	–	-0.0003 (0.010)	–	0.030*** (0.009)
L.DEBT	–	0.136*** (0.010)	–	0.149*** (0.009)	–	0.138*** (0.010)
L.TDI_2021	–	–	–	–	-1.27E-07 (8.42E-08)	–
L.EQUITY_2021		–	–	–	–	-9.50E-08 (3.21E-07)
L.DEBT_2021	–	–	–	–	–	-3.37E-07 (2.06E-06)
Intercept	11.597*** (0.388)	11.787*** (0.351)	11.489*** (0.397)	11.921*** (0.375)	11.568*** (0.411)	11.756*** (0.393)
Sample period	2001–2023	2001–2023	2001–2020	2001–2020	2001–2023	2001–2023
N	198	198	171	171	198	198
χ^2	217.3775***	230.1583***	178.7879***	260.334***	221.8959***	235.3416***
ρ	0.980	0.975	0.980	0.983	0.982	0.981
Breusch-Pagan	1 970.49***	1 787.63***	1 459.32***	1 349.05***	1 969.25***	1 764.14***

Note: *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Dependent variable: fixed capital stock. All variables in logarithms. Random effects estimates. χ^2 : Wald statistic on joint significance of regressors ρ : fraction of variance due to individual effects. Breusch-Pagan LM test for RE (H_0 =RE insignificant, rejection: RE appropriate).

Table 11 presents the cointegration regressions on gross operating surplus. The results mirror some from the previous tables. TDI is effective, but the coefficients on debt are about three times as large as those on equity, with the latter appearing to gain effectiveness in the post-2020 period.

Table 11: Sectoral panel cointegration regressions: gross operating surplus

	(1)	(2)	(3)	(4)	(5)	(6)
L.TDI	0.430*** (0.022)	–	0.416*** (0.025)	–	0.424*** (0.022)	–
L.EQUITY	–	0.110*** (0.018)	–	0.039+ (0.020)	–	0.110*** (0.018)
L.DEBT	–	0.337*** (0.021)	–	0.352*** (0.020)	–	0.335*** (0.022)
L.TDI_2021	–	–	–	–	3.53E-07* (1.80E-07)	–
L.EQUITY_2021	–	–	–	–	–	1.75E-07 (6.96E-07)
L.DEBT_2021	–	–	–	–	–	1.39E-06 (4.48E-06)
Intercept	7.486*** (0.278)	7.895*** (0.268)	7.589*** (0.304)	8.365*** (0.276)	7.538*** (0.287)	7.909*** (0.295)
Sample period	2001–2023	2001–2023	2001–2020	2001–2020	2001–2023	2001–2023
N	198	198	171	171	198	198
χ^2	376.8355***	371.2187***	268.1846***	347.0777***	388.3246***	384.4724***
ρ	0.691	0.681	0.716	0.740	0.720	0.761
Breusch-Pagan	705.09***	757.95***	585.72***	733.32***	725.07***	753.25***

Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$. Dependent variable: gross operating surplus. All variables in logarithms. Random effects estimates. χ^2 : Wald statistic on joint significance of regressors ρ : fraction of variance due to individual effects. Breusch-Pagan LM test for RE (H_0 =RE insignificant, rejection: RE appropriate).

Employment is also positively related to foreign investment, as shown in Table 12, but the long-run elasticities are now much smaller than for the other outcome variables considered previously. Debt again attracts a much larger coefficient, but there seems to be no appreciable difference in the most recent period relative to the previous years of the panel.

Table 12: Sectoral panel cointegration regressions: employment

	(1)	(2)	(3)	(4)	(5)	(6)
L.TDI	0.092*** (0.008)	–	0.099*** (0.009)	–	0.091*** (0.008)	–
L.EQUITY	–	0.028*** (0.006)	–	0.027*** (0.007)	–	0.029*** (0.006)
L.DEBT	–	0.076*** (0.007)	–	0.074*** (0.007)	–	0.074*** (0.007)
L.TDI_2021	–	–	–	–	1.29E-08 (5.89E-08)	–
L.EQUITY_2021	–	–	–	–	–	-3.46E-07 (2.11E-07)
L.DEBT_2021	–	–	–	–	–	2.28E-06+ (1.36E-06)
Intercept	5.626*** (0.405)	5.644*** (0.406)	5.554*** (0.406)	5.661*** (0.398)	5.629*** (0.417)	5.650*** (0.448)
Sample period	2001–2023	2001–2023	2001–2020	2001–2020	2001–2023	2001–2023
N	176	176	152	152	176	176
χ^2	142.7722***	187.6396***	119.9385***	141.1855***	142.2627***	192.4725***
ρ	0.990	0.991	0.990	0.991	0.991	0.993
Breusch-Pagan	1 725.49***	1 680.02***	1 292.58***	1 224.91***	1 717.93***	1 671.38***

Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$. Dependent variable: employment. All variables in logarithms. Random effects estimates. χ^2 : Wald statistic on joint significance of regressors. ρ : fraction of variance due to individual effects. Breusch-Pagan LM test for RE (H_0 =RE insignificant, rejection: RE appropriate).

Finally, Table 13 gives the results from the estimation of cointegrated regressions for the compensation of employees. Debt again displays a stronger association with higher compensation, and columns (5) and (6) reveal that equity became more significant after 2020.

Table 13: Sectoral panel cointegration regressions: compensation of employees

	(1)	(2)	(3)	(4)	(5)	(6)
L.TDI	0.394*** (0.022)	–	0.405*** (0.026)	–	0.384*** (0.022)	–
L.EQUITY	–	0.109*** (0.014)	–	0.081*** (0.017)	–	0.105*** (0.014)
L.DEBT	–	0.347*** (0.016)	–	0.349*** (0.016)	–	0.343*** (0.016)
L.TDI_2021	–	–	–	–	4.12E-07 * (1-70E.7)	–
L.EQUITY_2021	–	–	–	–	–	4.92E-07 (5.12E-07)
L.DEBT_2021	–	–	–	–	–	-7.62E-07 (3.30E-06)
Intercept	7.779*** (0.387)	7.771*** (0.335)	7.649*** (0.408)	7.978*** (0.350)	7.863*** (0.402)	7.833*** (0.363)
Sample period	2001–2023	2001–2023	2001–2020	2001–2020	2001–2023	2001–2023
N	198	198	171	171	198	198
χ^2	324.568***	649.5322***	250.9415***	553.3449***	340.7618***	680.6087***
ρ	0.895	0.92	0.900	0.931	0.908	0.937
Breusch-Pagan	1 438.17***	1 438.35***	1 070.85***	1 110.67***	1 458.25***	1 451.32***

Note: *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Dependent variable: compensation of employees. All variables in logarithms. Random effects estimates. χ^2 : Wald statistic on joint significance of regressors. ρ : fraction of variance due to individual effects. Breusch-Pagan LM test for RE (H_0 =RE insignificant, rejection: RE appropriate).

These cointegration results indicate that there is a strong long-run relationship between foreign investment (both equity and debt) and the economic variables of interest at the sectoral level. In principle, however, it could be argued that investment is endogenous and can be related to the profitability prospect of the economic sectors. There could thus be two-directional causality between foreign investment and the economic variables of interest. Table 14 therefore presents the results of Granger causality tests between investment (TDI, equity and debt) and the sectoral indicators. Equity and debt are included both separately and jointly in the analysis. From the tests, foreign investment both helps predict and is predicted by the sectoral variables. Causality goes fully in both directions for gross fixed capital formation and fixed capital stock: these variables are affected by foreign investment (TDI, but also equity and debt separately) and in turn attract foreign investment of all types. Gross value added and gross operating surplus do not predict total direct investment, but do predict equity and debt, both separately and when they are jointly considered. Employment compensation is affected by equity, both separately and jointly with debt, and by total investment, whereas debt investment appears to flow towards sectors characterised by higher compensation levels. The only variable that is not directly influenced by foreign investment is employment: the relationship of causality goes unidirectionally from employment towards TDI, equity and debt.

There is therefore strong evidence of two-way causality between foreign investment and sectoral economic variables for most of the indicators that have been considered.

Table 14: Granger causality

Direction of Granger causality	HPJ Wald test	p-value	Granger causality
TDI → GVA	10.3842	0.0056	Yes
GVA → TDI	1.4006	0.4964	No
EQUITY, DEBT → GVA	33.4068	0.0000	Yes
EQUITY → GVA	39.4213	0.0000	Yes
GVA → EQUITY	26.3133	0.0000	Yes
DEBT → GVA	32.3292	0.0000	Yes
GVA → DEBT	11.9680	0.0025	Yes
TDI → GFCF	57.0681	0.0000	Yes
GFCF → TDI	53.3082	0.0000	Yes
EQUITY, DEBT → GFCF	95.4925	0.0000	Yes
EQUITY → GFCF	109.5989	0.0000	Yes
GFCF → EQUITY	150.6184	0.0000	Yes
DEBT → GFCF	55.3446	0.0000	Yes
GFCF → DEBT	30.0980	0.0000	Yes
TDI → FCS	8.7326	0.0127	Yes
FCS → TDI	37.5190	0.0000	Yes
EQUITY, DEBT → FCS	72.4749	0.0000	Yes
EQUITY → FCS	41.5674	0.0000	Yes
FCS → EQUITY	24.4351	0.0000	Yes
DEBT → FCS	101.3015	0.0000	Yes
FCS → DEBT	34.8973	0.0000	Yes
TDI → GOS	6.8160	0.0331	Yes
GOS → TDI	3.5163	0.1724	No
EQUITY, DEBT → GOS	34.6526	0.0000	Yes
EQUITY → GOS	11.5569	0.0031	Yes
GOS → EQUITY	28.2210	0.0000	Yes
DEBT → GOS	55.3219	0.0000	Yes
GOS → DEBT	11.2406	0.0036	Yes
TDI → EMPL	0.6943	0.7067	No
EMPL → TDI	28.3768	0.0000	Yes
EQUITY, DEBT → EMPL	9.2446	0.0553	No
EQUITY → EMPL	0.2607	0.8778	No
EMPL → EQUITY	23.5360	0.0000	Yes
DEBT → EMPL	1.4532	0.4835	No
EMPL → DEBT	22.4727	0.0000	Yes
TDI → EMPCOMP	10.3573	0.0056	Yes
EMPCOMP → TDI	2.6653	0.2638	No
EQUITY, DEBT → EMPCOMP	122.1238	0.0000	Yes
EQUITY → EMPCOMP	140.8535	0.0000	Yes
EMPCOMP → EQUITY	5.7521	0.0564	No
DEBT → EMPCOMP	4.8354	0.0891	No
EMPCOMP → DEBT	11.9937	0.0025	Yes

Note: All variables in logarithms. Juodis, Karavias and Sarafidis (2021) Granger test with two lags. Half-panel jackknife (HPJ) Wald test. Null hypothesis: non-causality.

7. Conclusion

Foreign capital flows can have positive effects on the economy because they can help relax the constraint from domestic savings, enhance international risk-sharing opportunities and lead to increased investment. On the other hand, they could potentially destabilise financial markets and the level of economic activity. This paper sought to assess the role of foreign investment in economic performance in South Africa. The evidence is inconclusive about the impact of foreign capital flows on aggregate variables, possibly reflecting their heterogeneity across sectors. There is, however, clear evidence of positive and significant beneficial effects for the local economy at the sectoral level. Dynamic regression analysis points to positive long-run relationships, with debt instruments displaying stronger long-run relationships with economic performance than equity investment. There is also evidence of two-directional causality: foreign investment has a positive impact on economic performance, but it is also attracted to sectors with stronger underlying performance. Overall, the analysis in this paper provides evidence of beneficial net effects of FDI on the economic sectors in South Africa.

These findings have potential implications for the design of capital flow management policies, especially regarding FDIs funded by debt instruments. These flows have a beneficial effect on key performance variables at the sectoral level, including capital investment and employment generation. Capital flows are in turn sensitive to the economic performance of sectors: 'success breeds success'. The design of capital flow management policies could thus consider the impact of flows on the sectors involved and possibly also encourage the flow of capital towards those sectors deemed to be of greater strategic importance for the South African economy. At the same time, strong economic performance could be an important factor to attract direct investments, which could stimulate sectoral growth, to the extent that domestic investment encourages foreign investment. The importance of adequate levels of investment for the economy's prospects cannot be overstated, since they directly affect the long-run growth rates of output and employment (Aghion and Howitt 1998; World Bank 2024).

The recent turmoil in global markets could render it necessary to adopt policies that pre-empt sudden capital outflows, even in the presence of sound macroeconomic policies. Shocks can be transmitted across economies via trade flows, financial

spillovers and global confidence. The Integrated Policy Framework of the IMF leaves the door open to the adoption of capital flow management measures to prevent financial instability (IMF 2022). At the same time, rigorous macroeconomic policies can help anchor expectations and reduce the need to resort to capital flow management tools or macroprudential measures. The recent downward revision of the inflation target by the SARB (2025b) contributes to strengthening the macroeconomic framework and generating both stability and growth gains.¹⁴

¹⁴ See Loewald, Steinbach and Rakgalakane (2025).

Annexures

Table A1a: Data definitions and sources: aggregate data

Symbol	Definition	SARB code
GDP	Gross domestic product at market prices	KBP6006K
BoP	Balance of payments: balance on current account	KBP5007K
S	Gross saving – total	KBP6203K
FDI	Direct investment: net direct investment	KBP5683K
PROD	Manufacturing: labour productivity	KBP7079L
FPI	Net portfolio investment	KBP5684K

Source: South African Reserve Bank

Table A1b: Data definitions and sources: sectoral data

Symbol	Definition
GVA	Gross value added at basic prices
FCS	Fixed capital stock
GFCF	Gross fixed capital formation
GOS	Gross operating surplus
EMPLOYMENT (QES)	Employment (Quarterly Employment Statistics)
EMPLOYEE COMPENSATION	Compensation of employees
TDI	Total direct investment
EQUITY	Equity and investment fund shares
DEBT	Debt instruments

Sources: National Accounts and Statistics South Africa; Quarterly Employment Statistics

Table A2: Time series: descriptive statistics

	Mean	Standard deviation	Q1	Q3	Skewness	Kurtosis
GDP rate of growth	0.0233	0.0317	0.0046	0.0441	-0.8088	8.9745
BoP/GDP	-0.0151	0.0254	-0.0334	0.0030	0.2225	2.8940
S/GDP	0.1521	0.0191	0.1407	0.1635	0.3498	3.4704
FDI/GDP	0.0081	0.0443	-0.0072	0.0131	6.1832	47.5508
FPI/GDP	0.0100	0.0529	-0.0085	0.0407	-3.8684	27.9391

Table A3: Sectoral data: descriptive statistics

	Mean	Standard deviation	Q1	Q3	Skewness	Kurtosis
GVA	375 847.7	350 879.7	121 245.9	515 936.8	1.420	4.467
FCS	819 981.8	740 924.0	288 624.6	933 772.1	1.181	3.152
GFCF	73 539.86	48 634.85	28 857.66	98 916.7	0.567	2.459
GOS	174 098.1	152 714.7	60 688.14	245 198.1	1.576	5.987
EMPLOYMENT (QES)	1 125.369	858.6381	453.5	1 888	0.436	1.812
EMPLOYEE COMPENSATION	194 756.9	228 450	47 516.87	260 143.5	2.239	8.370
TDI	155 104.8	227 322	1 722	240 154	1.781	5.694
EQUITY	128 888.6	198 400.7	657	183 653	1.993	6.673
DEBT	26 216.27	39 116.53	778	37 595	1.700	4.883

Table A4: Sectoral cointegration tests (Westerlund 2007)

The null hypothesis is absence of cointegration.

Gross value added and total direct investment

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-3.528	-4.379	0.000	Reject H₀	Group-mean
Gα	-36.768	-11.216	0.000	Reject H₀	Group-mean
Pτ	-6.118	-0.257	0.602	Do not reject H ₀	Panel-mean
Pα	-18.114	-4.601	0.000	Reject H₀	Panel-mean

Gross value added and equity

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-2.161	-0.729	0.767	Do not reject H ₀	Group-mean
Gα	-31.332	-8.765	0.000	Reject H₀	Group-mean
Pτ	-6.968	-0.734	0.232	Do not reject H ₀	Panel-mean
Pα	-21.489	-6.296	0.000	Reject H₀	Panel-mean

Gross value added and debt

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-2.532	-0.656	0.256	Do not reject H ₀	Group-mean
Gα	-24.486	-5.677	0.000	Reject H₀	Group-mean
Pτ	-7.653	-1.531	0.063	Do not reject H ₀	Panel-mean
Pα	-24.436	-7.776	0.000	Reject H₀	Panel-mean

Fixed capital stock and total direct investment

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-2.118	0.890	0.813	Do not reject H ₀	Group-mean
Gα	-11.494	0.182	0.572	Do not reject H ₀	Group-mean
Pτ	-4.038	2.679	0.996	Do not reject H ₀	Panel-mean
Pα	-12.693	-1.878	0.030	Reject H₀	Panel-mean

Fixed capital stock and equity

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-1.502	3.192	0.999	Reject H₀	Group-mean
Gα	-9.692	0.995	0.840	Reject H₀	Group-mean
Pτ	-6.435	-0.112	0.455	Do not reject H ₀	Panel-mean
Pα	-18.974	-5.032	0.000	Reject H₀	Panel-mean

Fixed capital stock and debt

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-2.664	-1.149	0.125	Do not reject H_0	Group-mean
Gα	-20.944	-4.080	0.000	Reject H_0	Group-mean
Pτ	-6.397	-0.068	0.473	Do not reject H_0	Panel-mean
Pα	-41.926	-16.560	0.000	Reject H_0	Panel-mean

Gross fixed capital formation and total direct investment

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-2.887	-1.984	0.024	Reject H_0	Group-mean
Gα	-12.916	-0.459	0.323	Do not reject H_0	Group-mean
Pτ	-3.970	2.759	0.997	Do not reject H_0	Panel-mean
Pα	-5.481	1.744	0.959	Do not reject H_0	Panel-mean

Gross fixed capital formation and equity

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-3.489	-4.232	0.000	Reject H_0	Group-mean
Gα	-11.618	0.126	0.550	Do not reject H_0	Group-mean
Pτ	-5.998	0.396	0.654	Do not reject H_0	Panel-mean
Pα	-12.161	-1.611	0.054	Do not reject H_0	Panel-mean

Gross fixed capital formation and debt

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-2.656	-1.119	0.132	Do not reject H_0	Group-mean
Gα	-7.103	2.163	0.985	Do not reject H_0	Group-mean
Pτ	-3.089	3.785	1.000	Do not reject H_0	Panel-mean
Pα	-6.051	1.458	0.928	Do not reject H_0	Panel-mean

Gross operating surplus and total direct investment

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-3.014	-2.459	0.007	Reject H_0	Group-mean
Gα	-19.204	-3.295	0.001	Reject H_0	Group-mean
Pτ	-5.626	0.830	0.797	Do not reject H_0	Panel-mean
Pα	-13.484	-2.275	0.011	Reject H_0	Panel-mean

Gross operating surplus and equity

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
G_T	-2.294	0.231	0.591	Do not reject H ₀	Group-mean
G_α	-17.031	-2.315	0.010	Reject H₀	Group-mean
P_T	-7.521	-1.378	0.084	Do not reject H ₀	Panel-mean
P_α	-17.569	-4.327	0.000	Reject H₀	Panel-mean

Gross operating surplus and debt

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
G_T	-3.286	-3.473	0.000	Reject H₀	Group-mean
G_α	-15.015	-1.406	0.080	Reject H₀	Group-mean
P_T	-7.725	-1.616	0.053	Do not reject H ₀	Panel-mean
P_α	-18.419	-4.754	0.000	Reject H₀	Panel-mean

Employment and total direct investment

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
G_T	-5.350	-10.545	0.000	Reject H₀	Group-mean
G_α	-18.907	-2.980	0.001	Reject H₀	Group-mean
P_T	-10.504	-5.274	0.000	Reject H₀	Panel-mean
P_α	-24.953	-7.576	0.000	Reject H₀	Panel-mean

Employment and equity

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
G_T	-4.987	-9.266	0.000	Reject H₀	Group-mean
G_α	-21.851	-4.232	0.000	Reject H₀	Group-mean
P_T	-11.566	-6.511	0.000	Reject H₀	Panel-mean
P_α	-20.926	-5.669	0.000	Reject H₀	Panel-mean

Employment and debt

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
G_T	-4.444	-7.355	0.000	Reject H₀	Group-mean
G_α	-18.543	-2.826	0.002	Reject H₀	Group-mean
P_T	-9.937	-4.614	0.000	Reject H₀	Panel-mean
P_α	-22.870	-6.590	0.000	Reject H₀	Panel-mean

Compensation of employees and total direct investment

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-1.386	3.624	1.000	Do not reject H_0	Group-mean
Gα	-13.172	-0.575	0.283	Do not reject H_0	Group-mean
Pτ	-4.097	2.610	0.996	Do not reject H_0	Panel-mean
Pα	-13.666	-2.367	0.009	Reject H_0	Panel-mean

Compensation of employees and equity

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-2.374	-0.068	0.473	Do not reject H_0	Group-mean
Gα	-18.007	-2.755	0.003	Reject H_0	Group-mean
Pτ	-4.936	1.633	0.949	Do not reject H_0	Panel-mean
Pα	-17.407	-4.246	0.000	Reject H_0	Panel-mean

Compensation of employees and debt

Test statistic	Value	Z-value	P-value	Decision (5%)	Type
Gτ	-1.944	1.540	0.938	Do not reject H_0	Group-mean
Gα	-20.955	-4.085	0.000	Reject H_0	Group-mean
Pτ	-5.329	1.176	0.880	Do not reject H_0	Panel-mean
Pα	-18.927	-5.009	0.000	Reject H_0	Panel-mean

Figure 17: Agriculture, forestry and fishing: Kalman Smoother estimates

Figure 17a: Gross value added

Agriculture, forestry and fishing – dependent variable: $\ln gva$

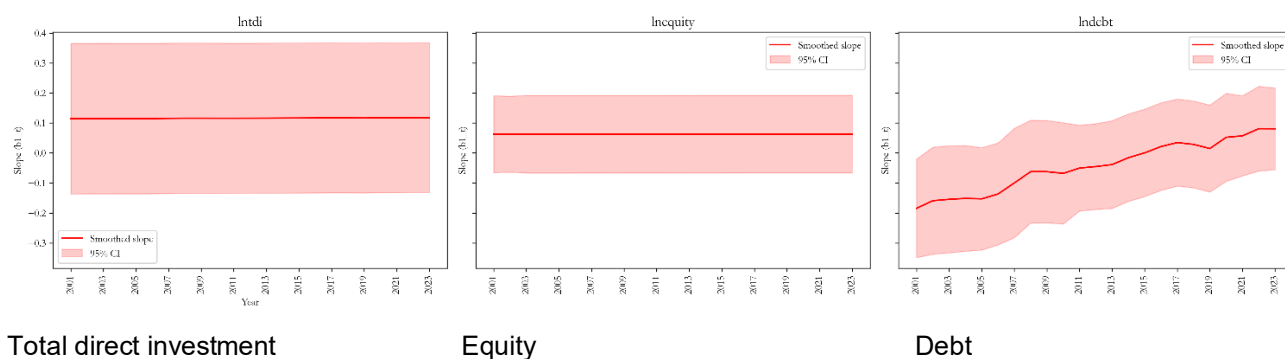


Figure 17b: Gross fixed capital formation

Agriculture, forestry and fishing – dependent variable: $\ln gfcf$

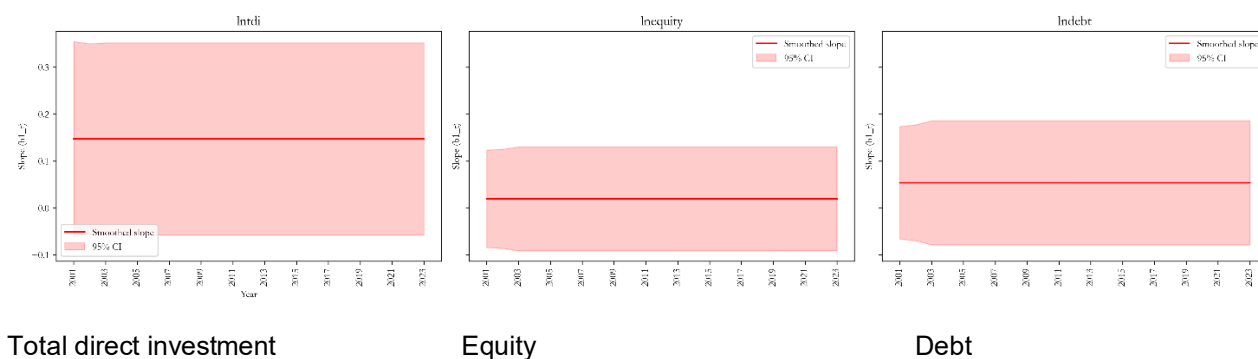


Figure 17c: Fixed capital stock

Agriculture, forestry and fishing – dependent variable: $\ln fcs$

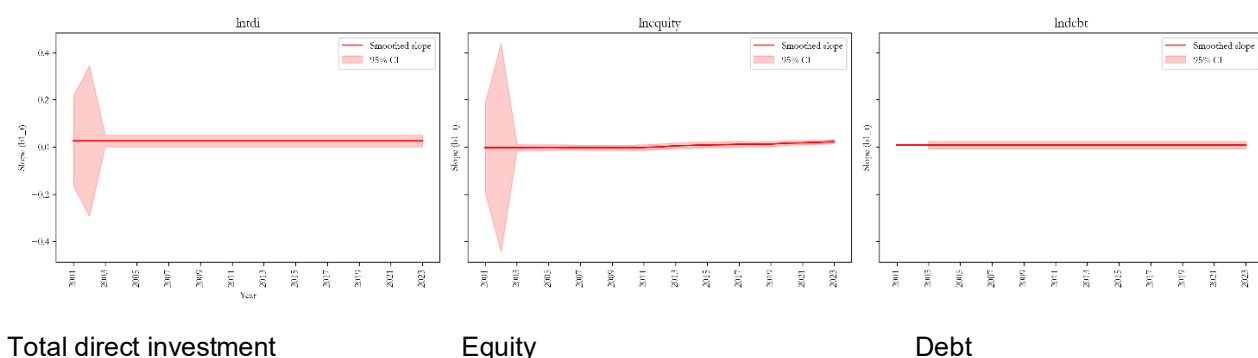


Figure 17d: Gross operating surplus

Agriculture, forestry and fishing – dependent variable: lngos

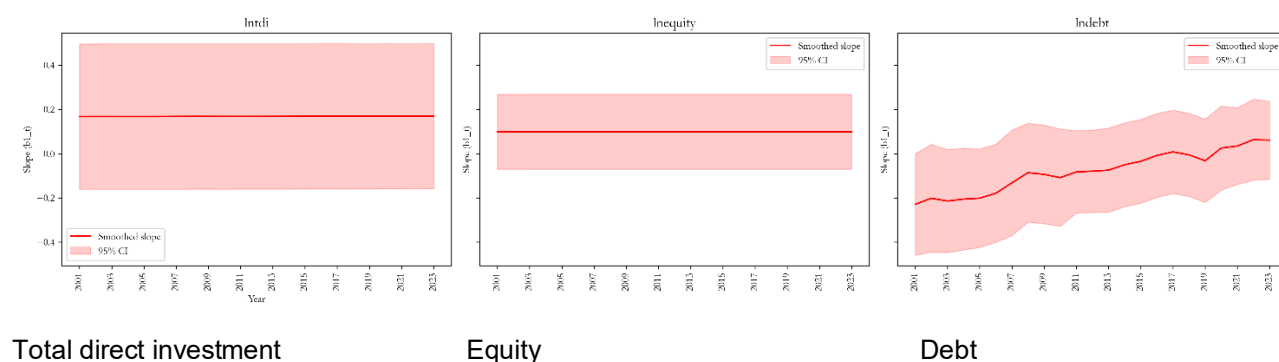


Figure 18: Community, social and personal services: Kalman Smoother estimates

Figure 18a: Gross value added

Sector: community, social & pers serv – dependent variable: lngva

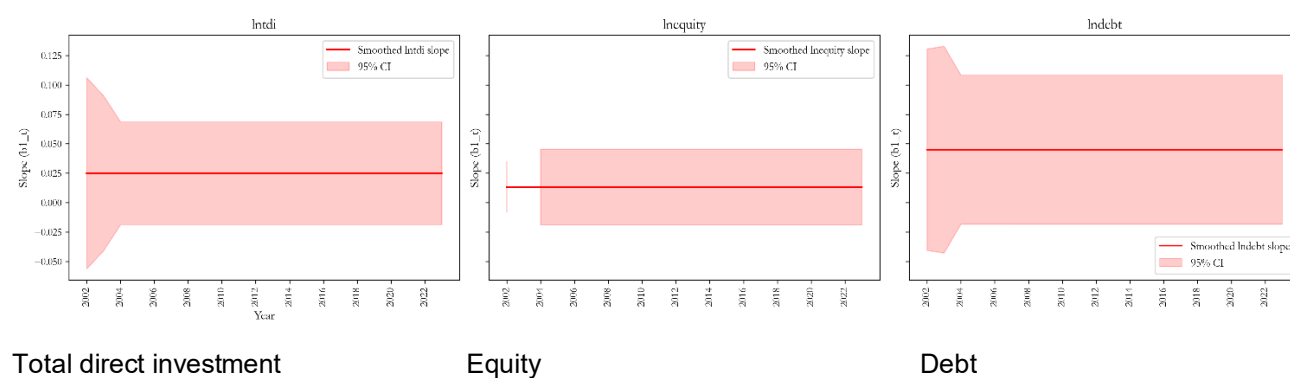


Figure 18b: Gross fixed capital formation

Sector: community, social & pers serv – dependent variable: lngfcf

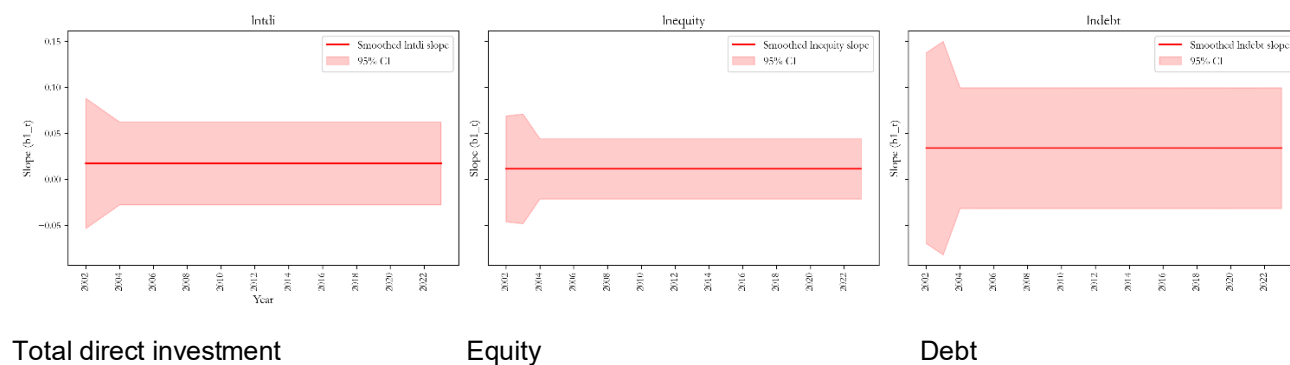
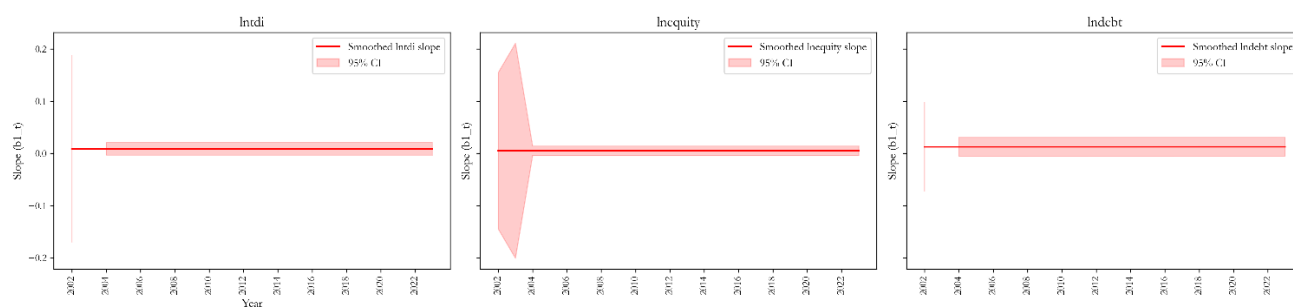


Figure 18c: Fixed capital stock

Sector: community, social & pers serv – dependent variable: Infcs



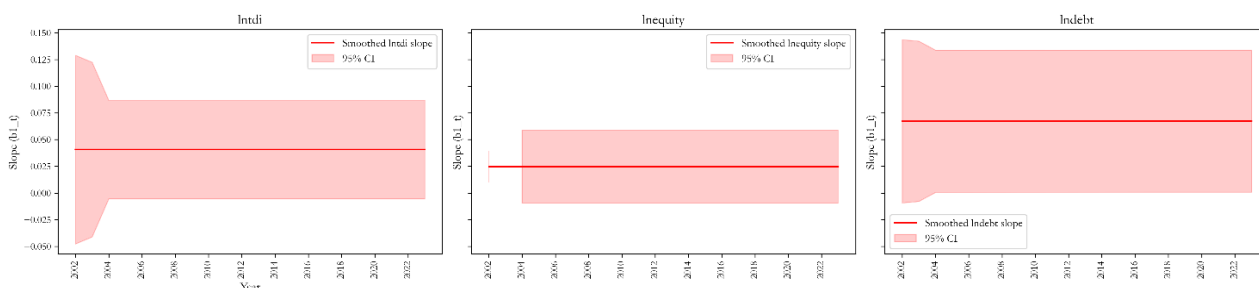
Total direct investment

Equity

Debt

Figure 18d: Gross operating surplus

Sector: community, social & pers serv – dependent variable: lngos



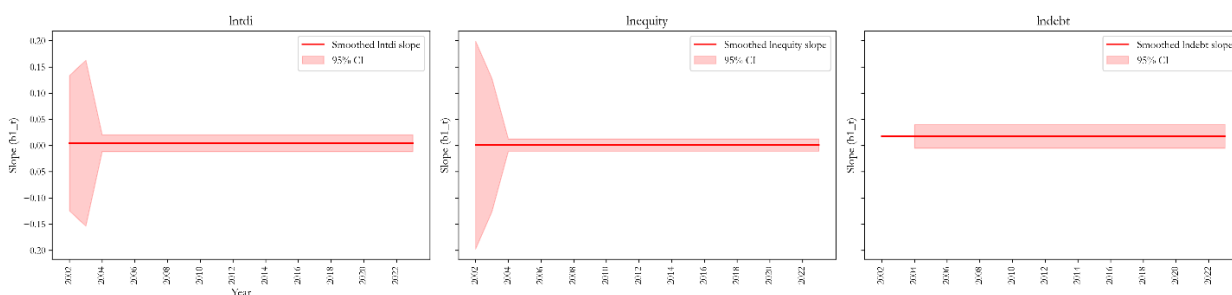
Total direct investment

Equity

Debt

Figure 18e: Employment

Sector: community, social & pers serv – dependent variable: Inemp



Total direct investment

Equity

Debt

Figure 18f: Compensation of employees

Sector: community, social & pers serv – dependent variable: lnempcomp

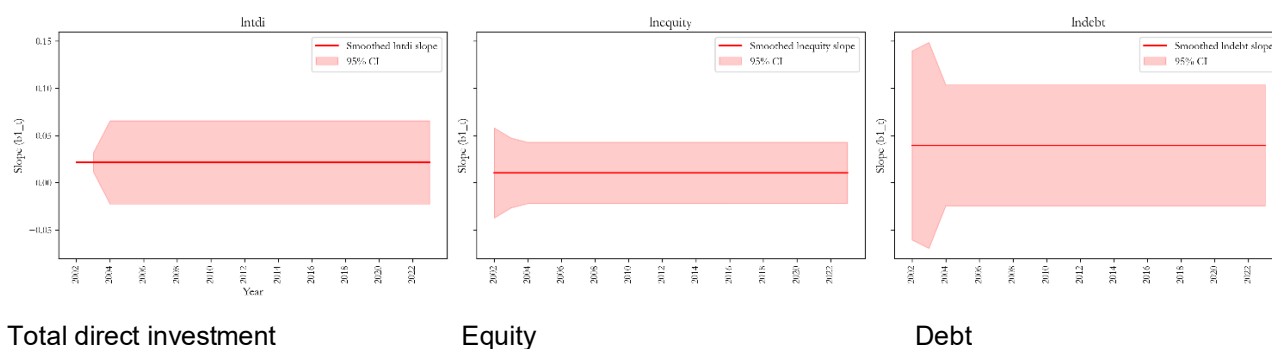


Figure 19: Construction: Kalman Smoother estimates

Figure 19a: Gross value added

Sector: construction – dependent variable: lngva

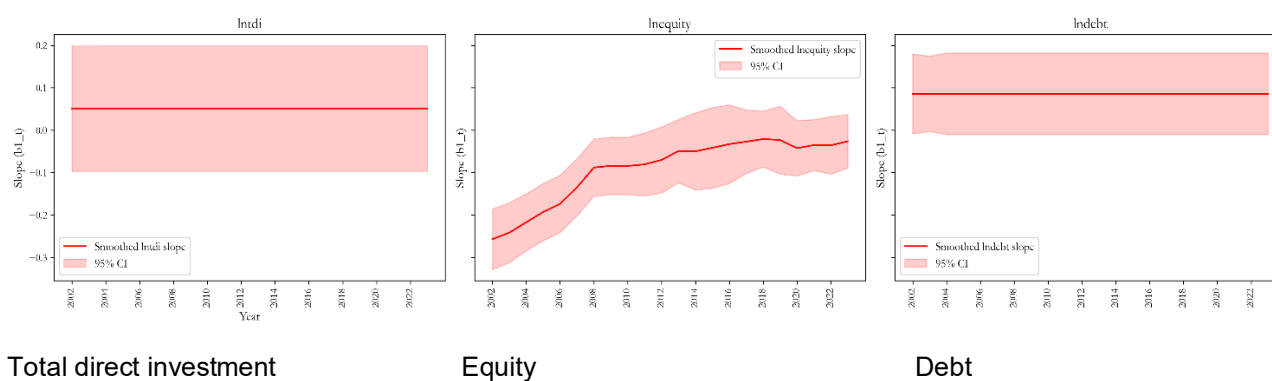


Figure 19b: Gross fixed capital formation

Sector: construction – dependent variable: lngfcf

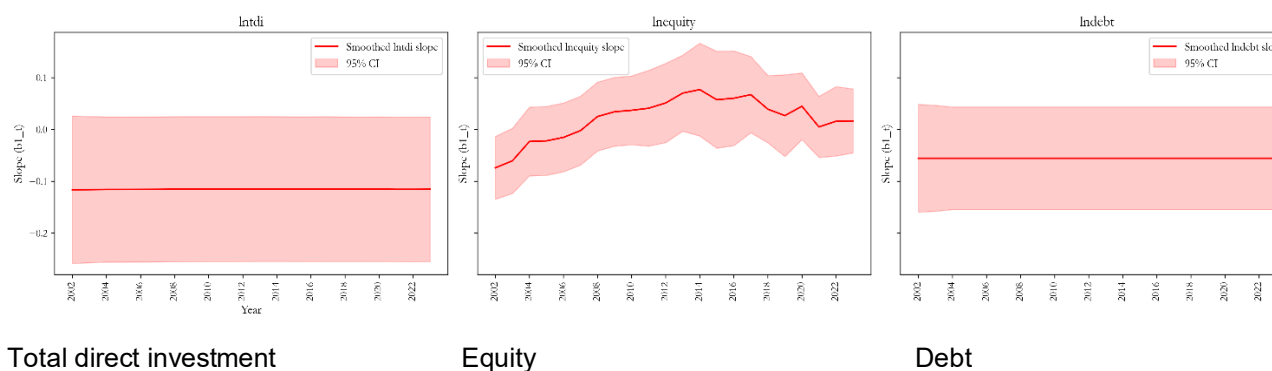


Figure 19c: Fixed capital stock

Sector: construction – dependent variable: Infcs

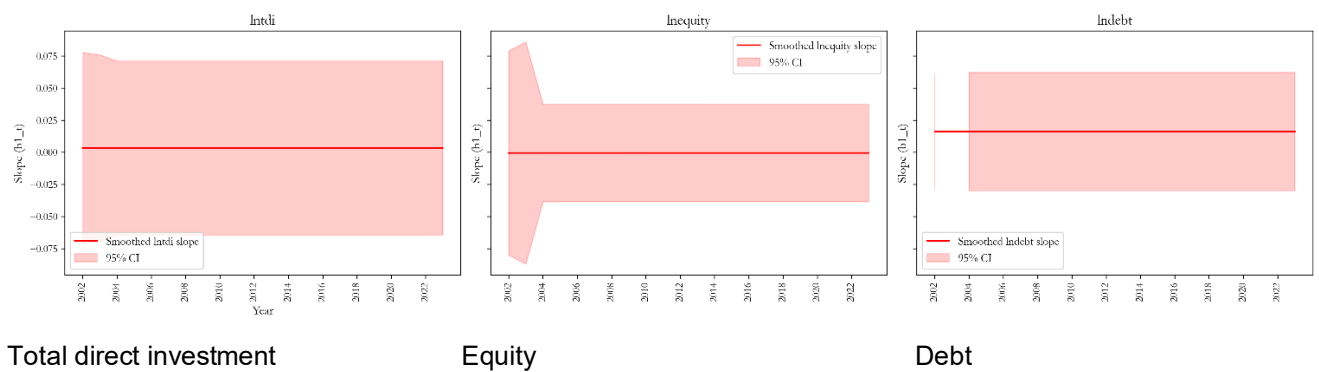


Figure 19d: Gross operating surplus

Sector: construction – dependent variable: lngos

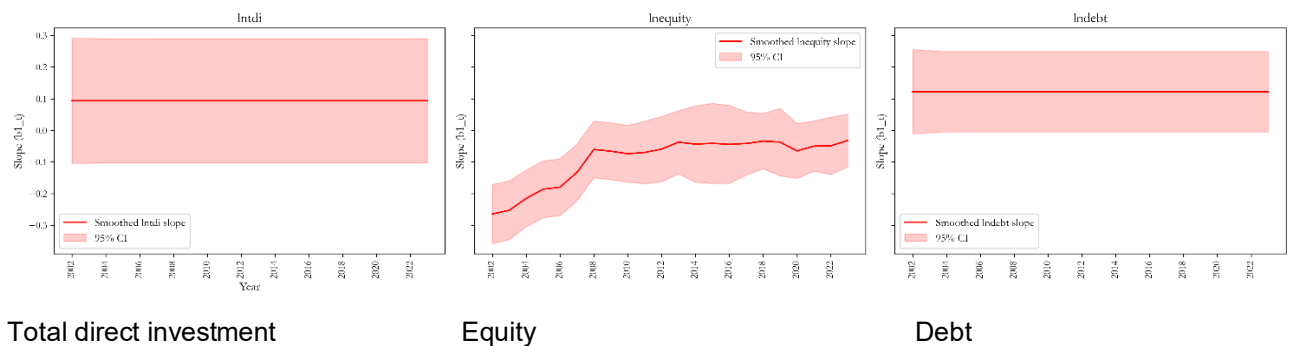


Figure 19e: Employment

Sector: construction – dependent variable: Inemp

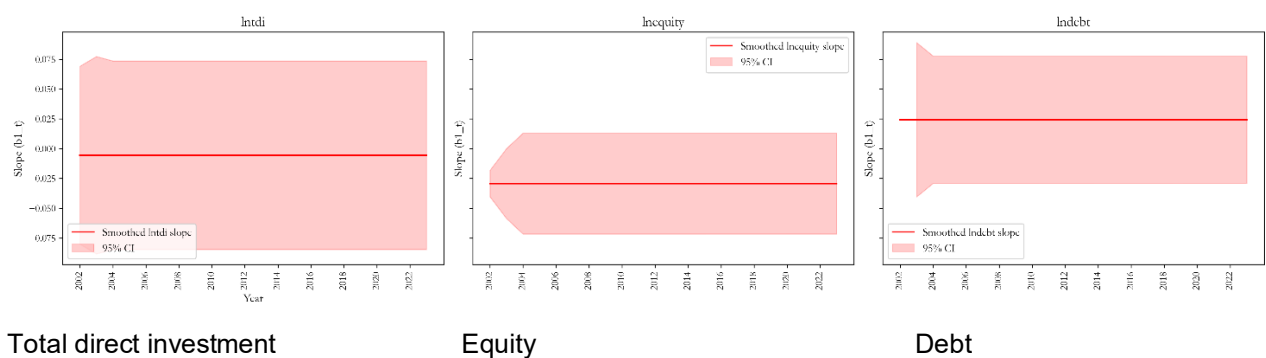
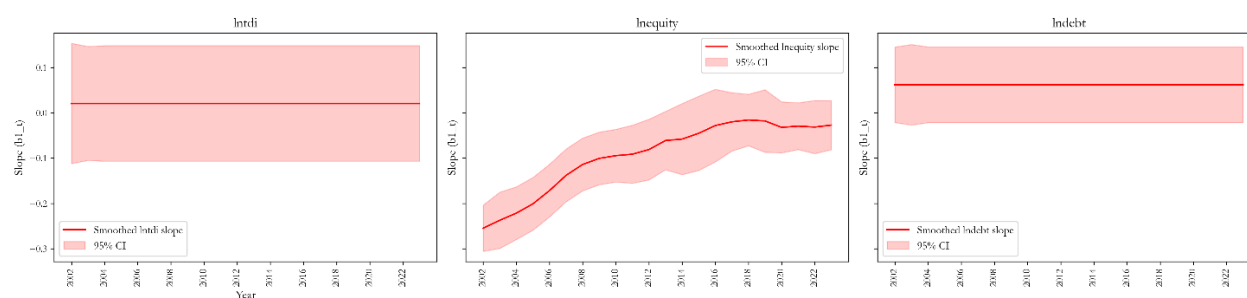


Figure 19f: Compensation of employees

Sector: construction – dependent variable: lnempcomp



Total direct investment

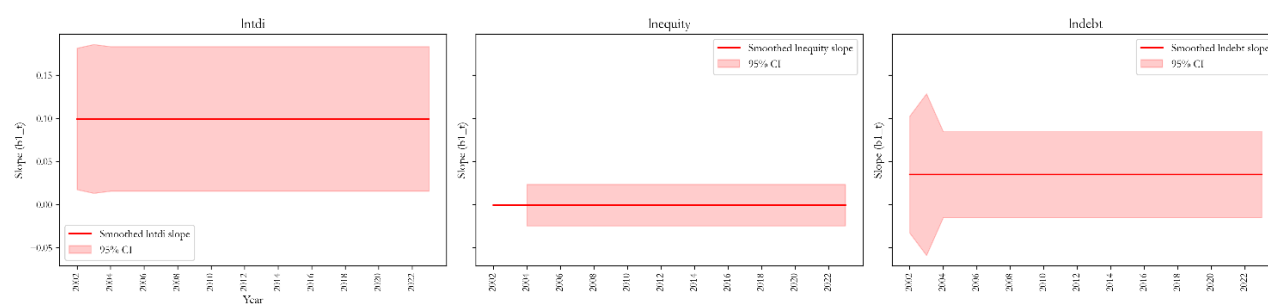
Equity

Debt

Figure 20: Electricity, gas and water: Kalman Smoother estimates

Figure 20a: Gross value added

Sector: electricity, gas & water – dependent variable: lngva



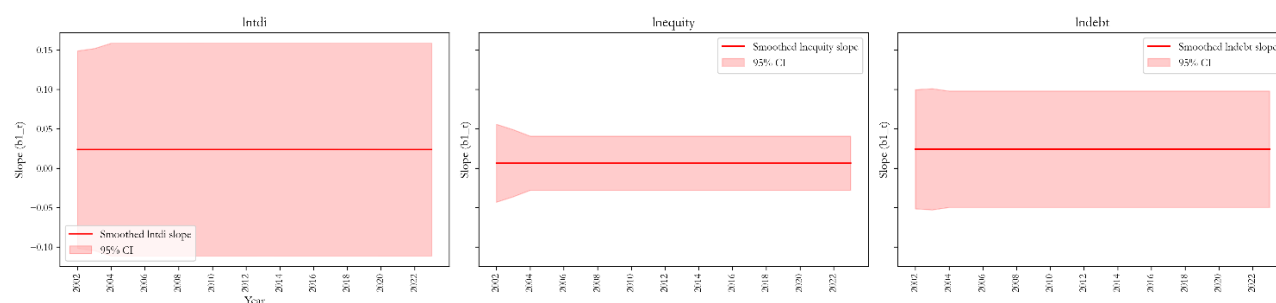
Total direct investment

Equity

Debt

Figure 20b: Gross fixed capital formation

Sector: electricity, gas & water – dependent variable: lngfcf



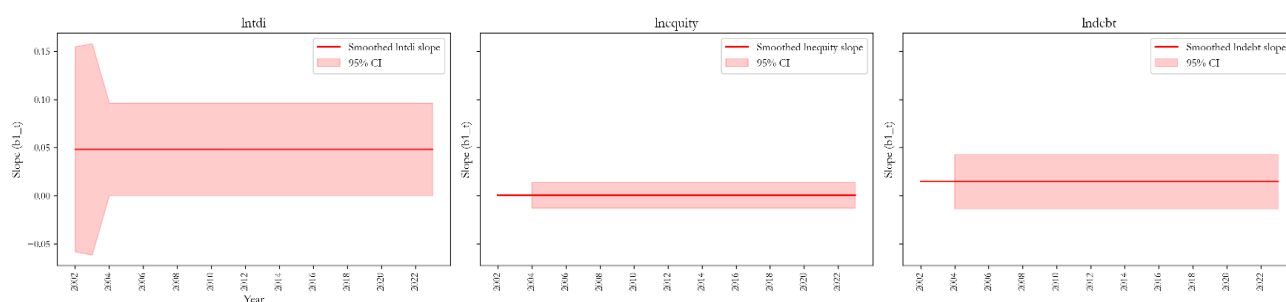
Total direct investment

Equity

Debt

Figure 20c: Fixed capital stock

Sector: electricity, gas & water – dependent variable: Infcs



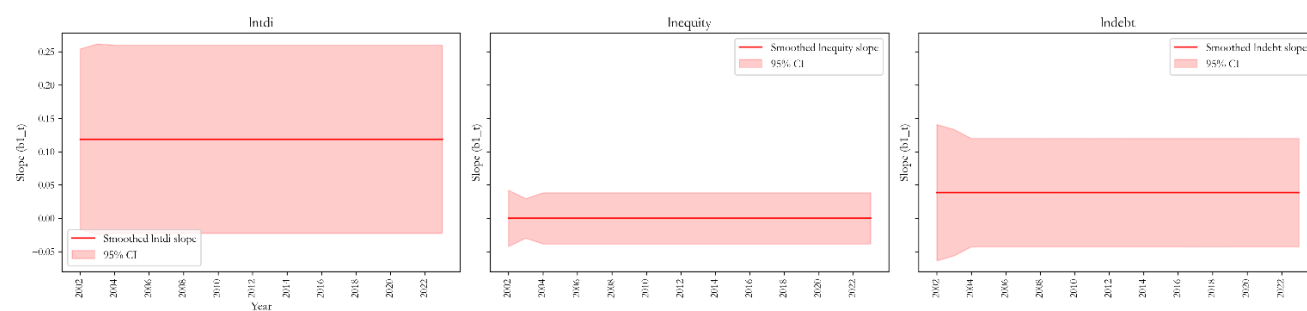
Total direct investment

Equity

Debt

Figure 20d: Gross operating surplus

Sector: electricity, gas & water – dependent variable: Ingos



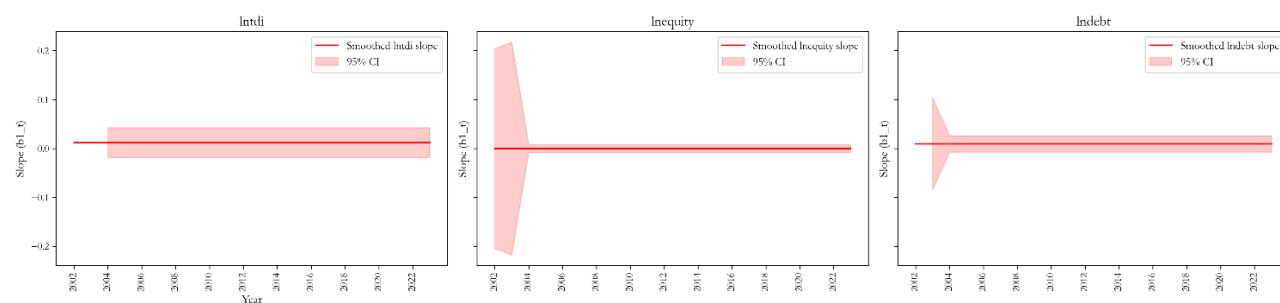
Total direct investment

Equity

Debt

Figure 20e: Employment

Sector: electricity, gas & water – dependent variable: Inemp



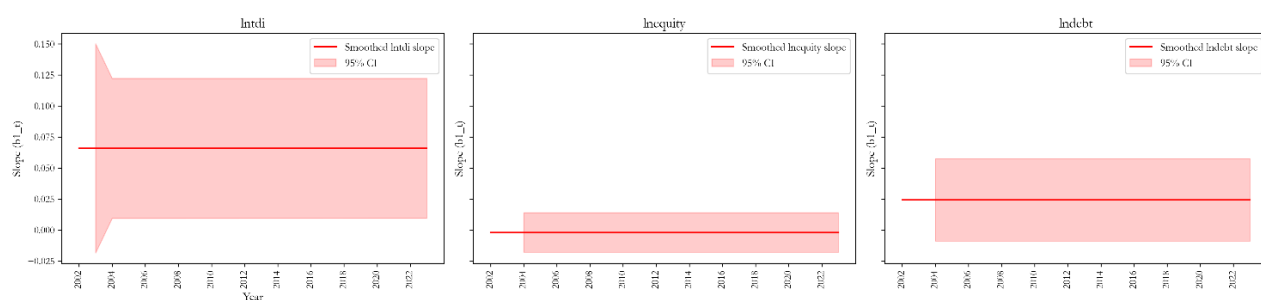
Total direct investment

Equity

Debt

Figure 20f: Compensation of employees

Sector: electricity, gas & water – dependent variable: lnempcomp



Total direct investment

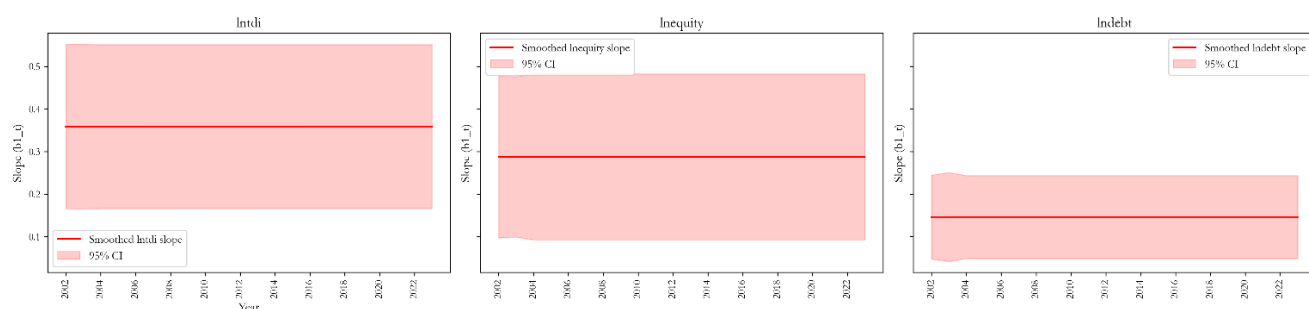
Equity

Debt

Figure 21: Finance, insurance, real estate and business services: Kalman Smoother estimates

Figure 21a: Gross value added

Sector: fin, insur, real estate & bus serv – dependent variable: lngva



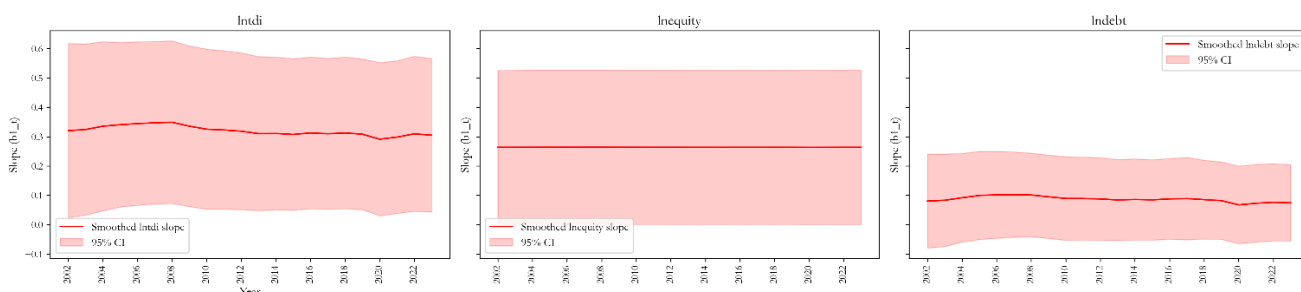
Total direct investment

Equity

Debt

Figure 21b: Gross fixed capital formation

Sector: fin, insur, real estate & bus serv – dependent variable: lngfcf



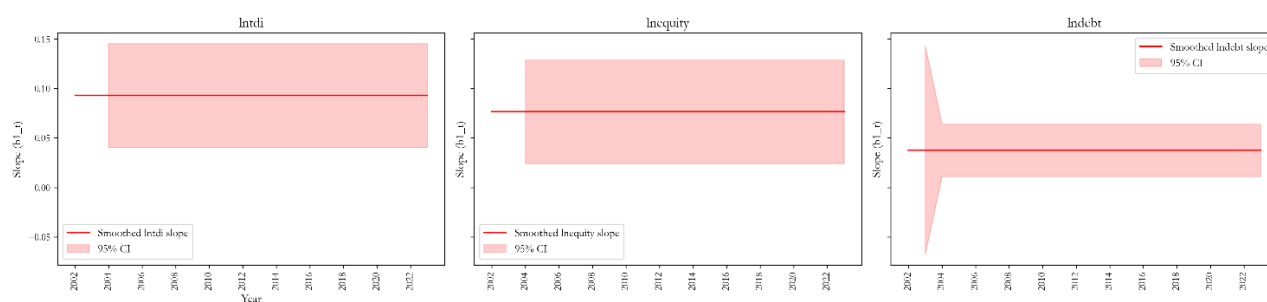
Total direct investment

Equity

Debt

Figure 21c: Fixed capital stock

Sector: fin, insur, real estate & bus serv – dependent variable: Infces



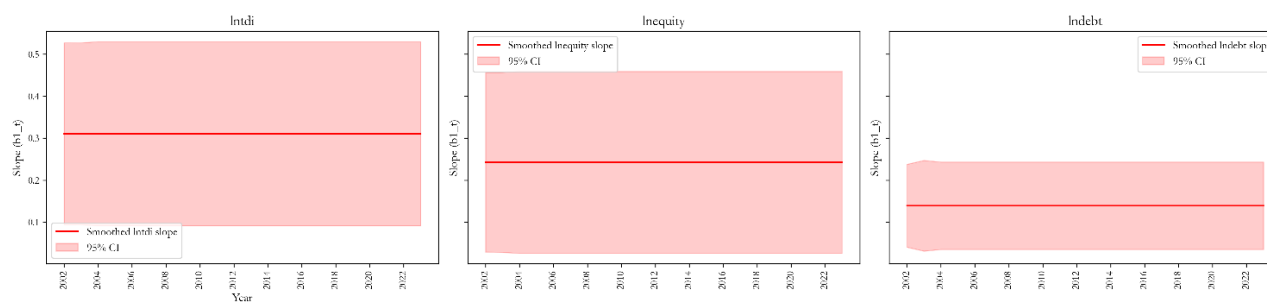
Total direct investment

Equity

Debt

Figure 21d: Gross operating surplus

Sector: fin, insur, real estate & bus serv – dependent variable: Ingos



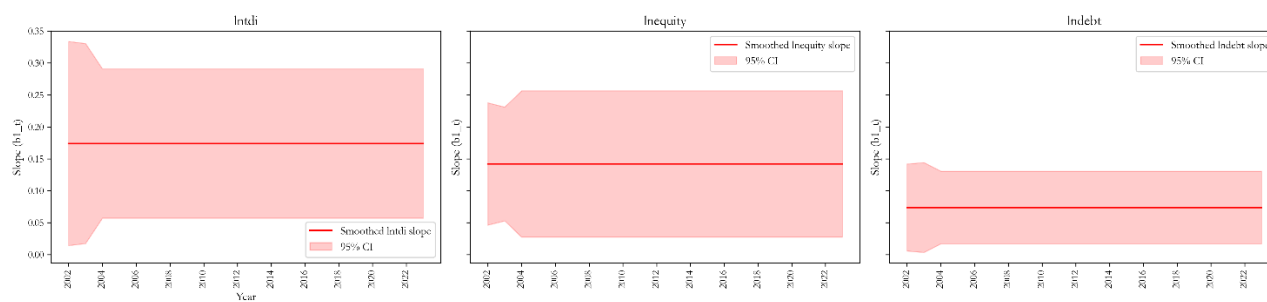
Total direct investment

Equity

Debt

Figure 21e: Employment

Sector: fin, insur, real estate & bus serv – dependent variable: Inemp



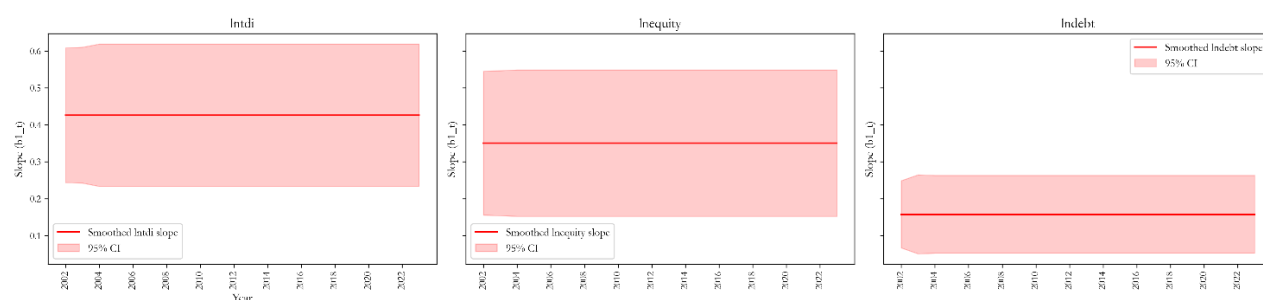
Total direct investment

Equity

Debt

Figure 21f: Compensation of employees

Sector: fin, insur, real estate & bus serv – dependent variable: lnempcomp



Total direct investment

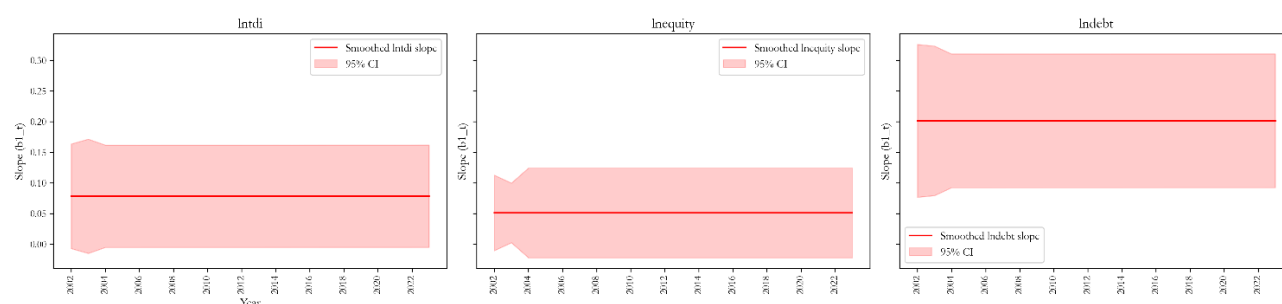
Equity

Debt

Figure 22: Manufacturing: Kalman Smoother estimates

Figure 22a: Gross value added

Sector: manufacturing – dependent variable: lngva



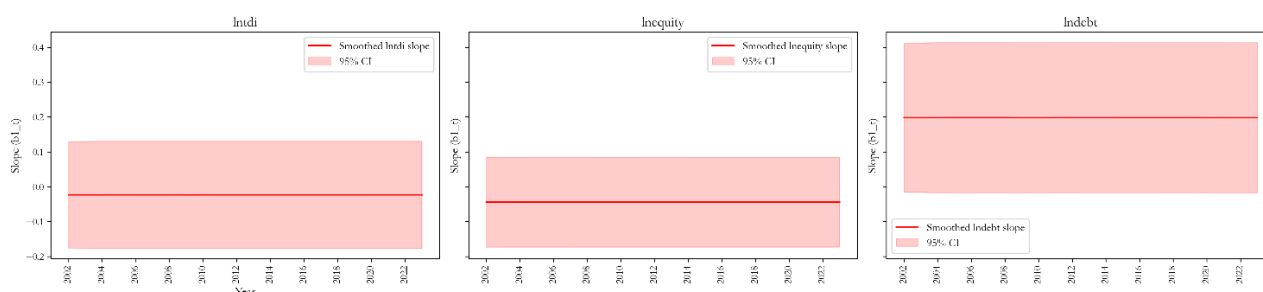
Total direct investment

Equity

Debt

Figure 22b: Gross fixed capital formation

Sector: manufacturing – dependent variable: lngfcf



Total direct investment

Equity

Debt

Figure 22c: Fixed capital stock

Sector: manufacturing – dependent variable: Infcs

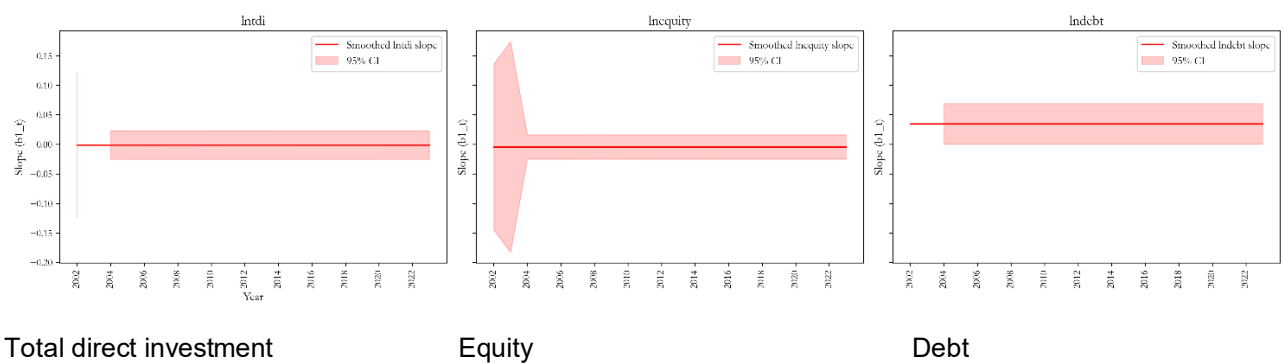


Figure 22d: Gross operating surplus

Sector: manufacturing – dependent variable: Ingos

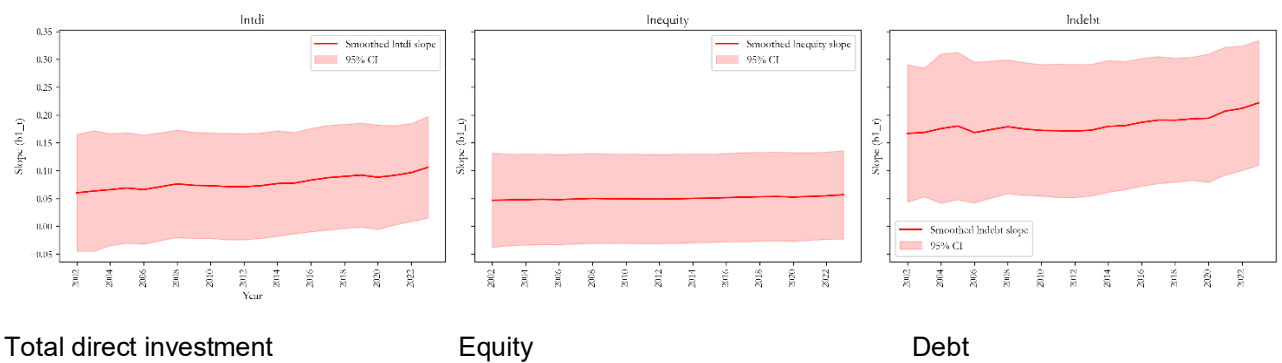


Figure 22e: Employment

Sector: manufacturing – dependent variable: Inemp

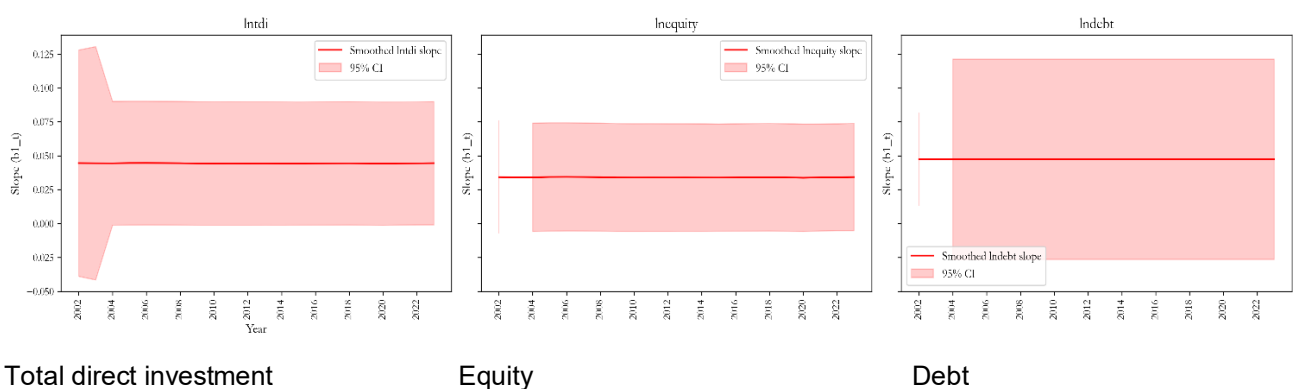


Figure 22f: Compensation of employees

Sector: manufacturing – dependent variable: lnempcomp

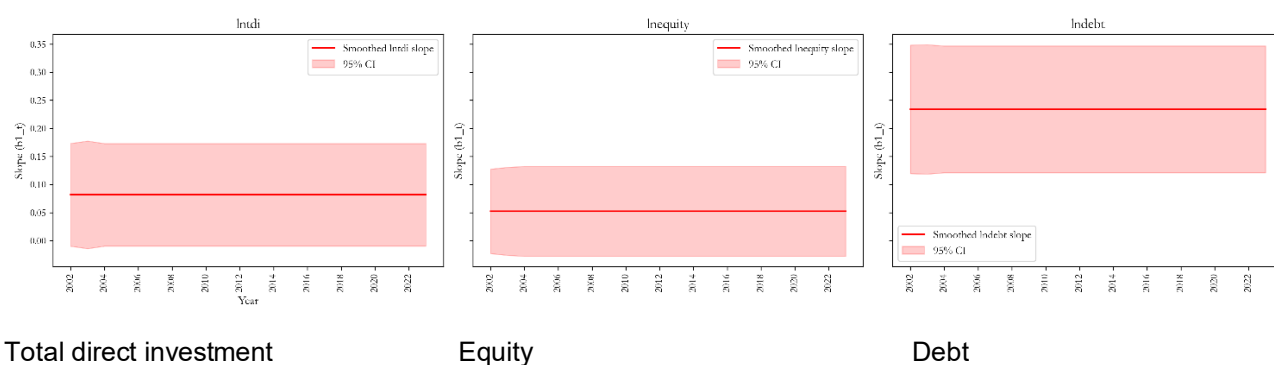


Figure 23: Mining and quarrying: Kalman Smoother estimates

Figure 23a: Gross value added

Sector: mining & quarrying – dependent variable: lngva

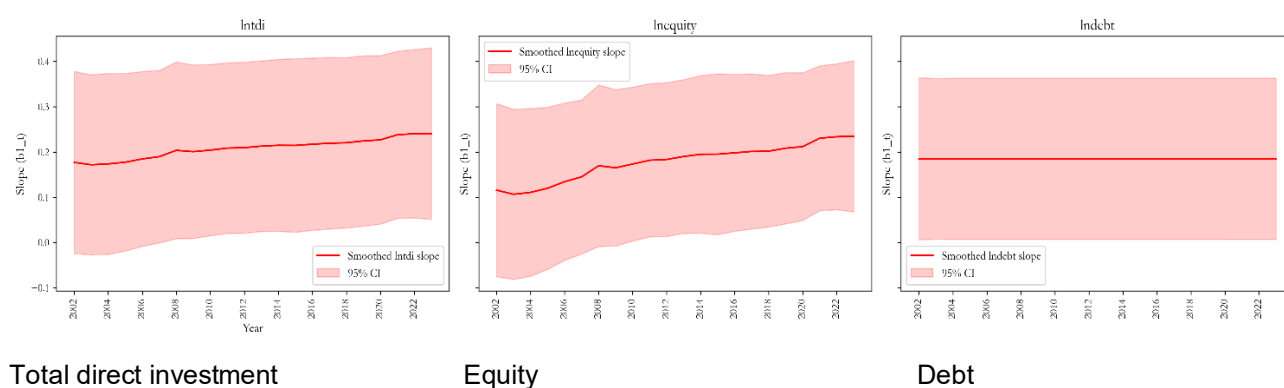


Figure 23b: Gross fixed capital formation

Sector: mining & quarrying – dependent variable: lngfcf

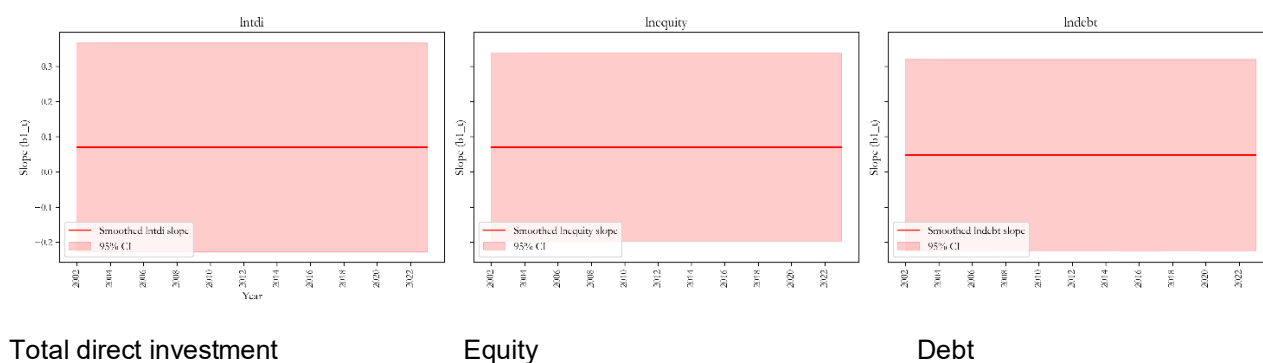
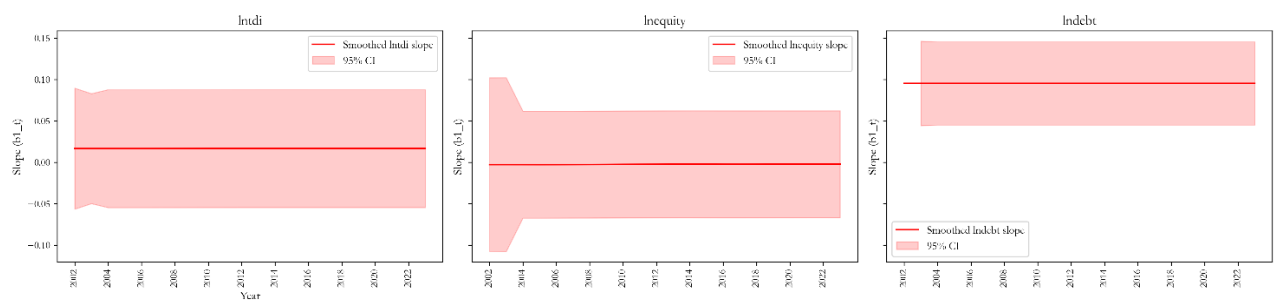


Figure 23c: Fixed capital stock

Sector: mining & quarrying – dependent variable: Infcs



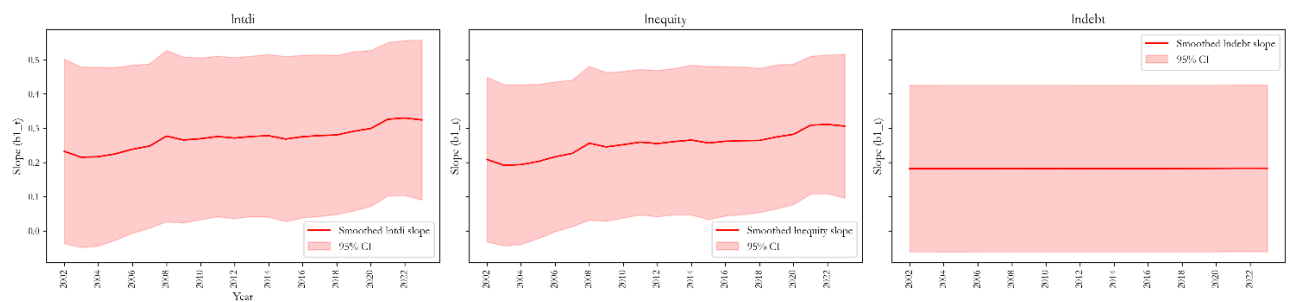
Total direct investment

Equity

Debt

Figure 23d: Gross operating surplus

Sector: mining & quarrying – dependent variable: Ingos



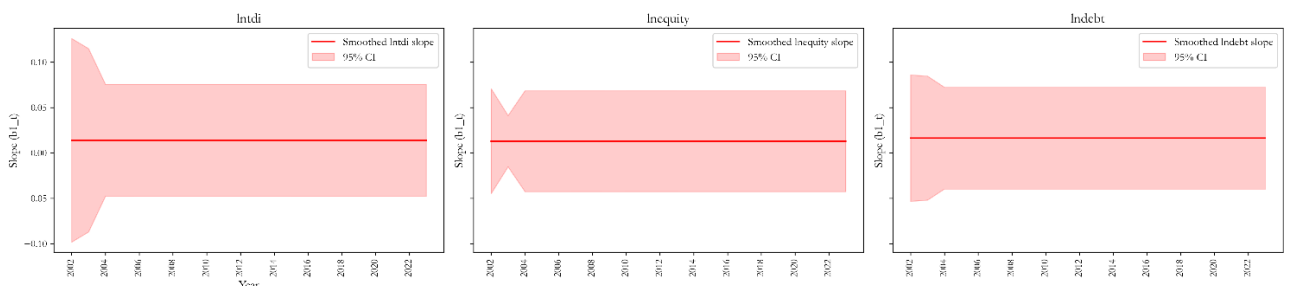
Total direct investment

Equity

Debt

Figure 23e: Employment

Sector: mining & quarrying – dependent variable: Inemp



Total direct investment

Equity

Debt

Figure 23f: Compensation of employees

Sector: mining & quarrying – dependent variable: lnempcomp

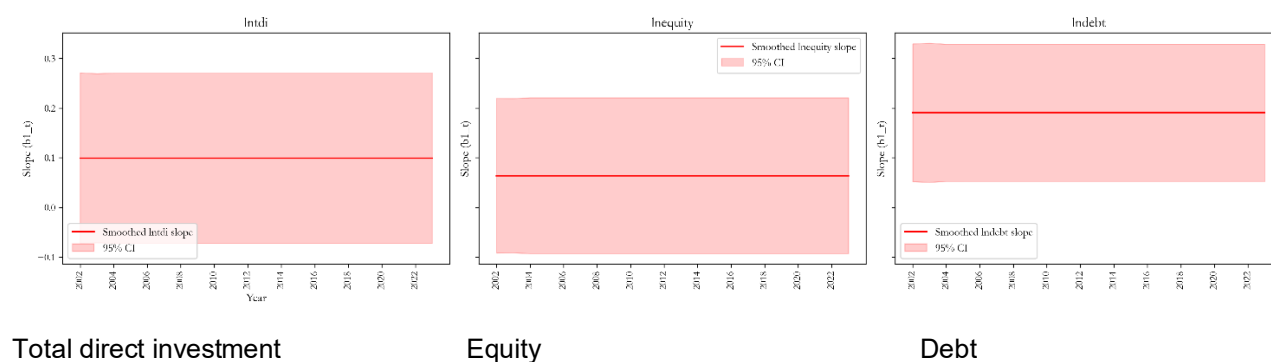


Figure 24: Transport, storage and communication: Kalman Smoother estimates

Figure 24a: Gross value added

Sector: transport, storage & communication – dependent variable: lngva

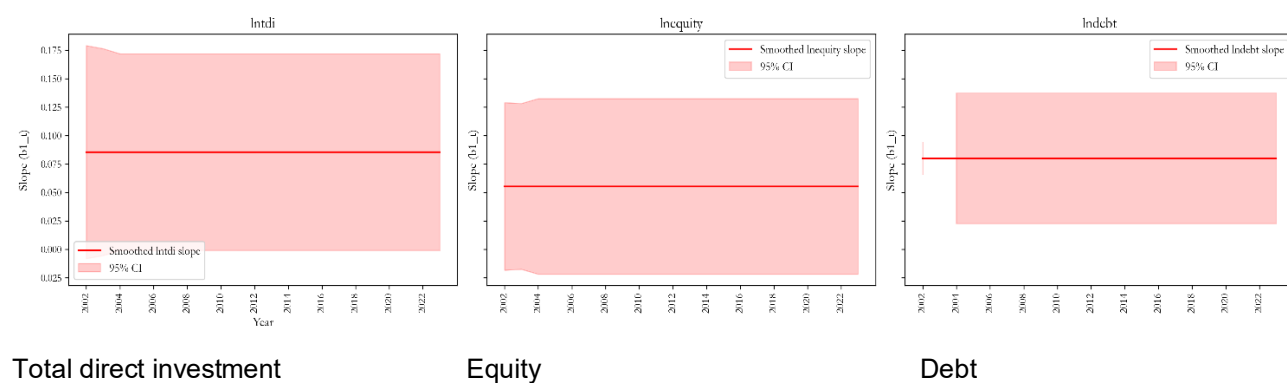


Figure 24b: Gross fixed capital formation

Sector: transport, storage & communication – dependent variable: lngfcf

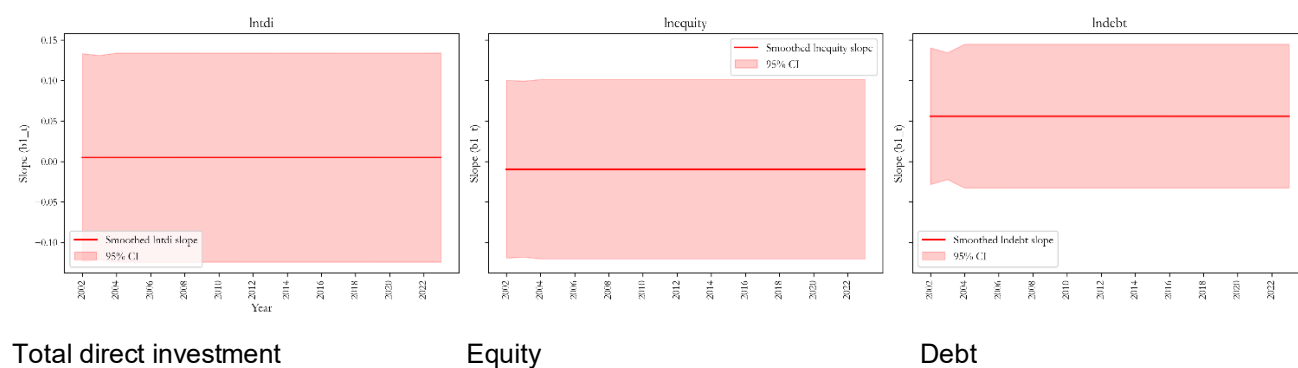


Figure 24c: Fixed capital stock

Sector: transport, storage & communication – dependent variable: lnfc

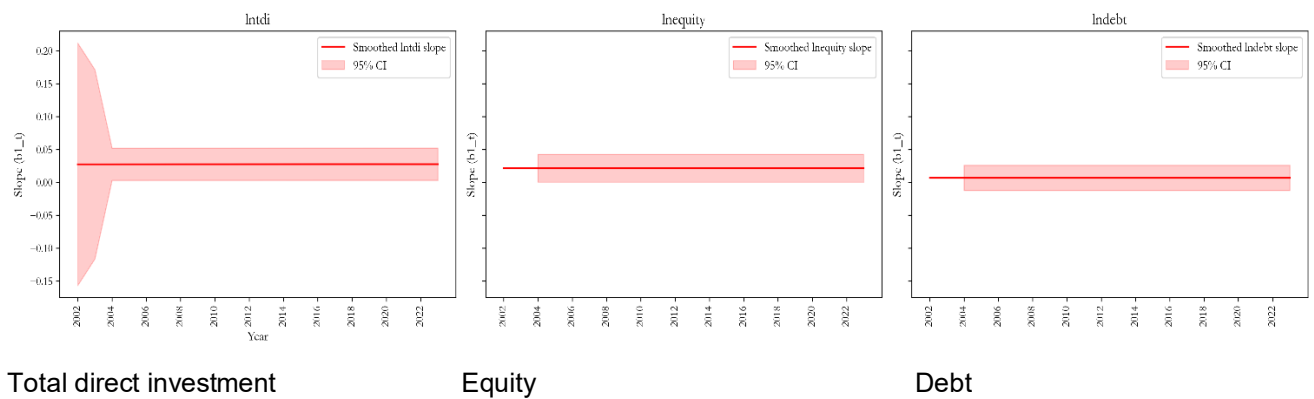


Figure 24d: Gross operating surplus

Sector: transport, storage & communication – dependent variable: lngo

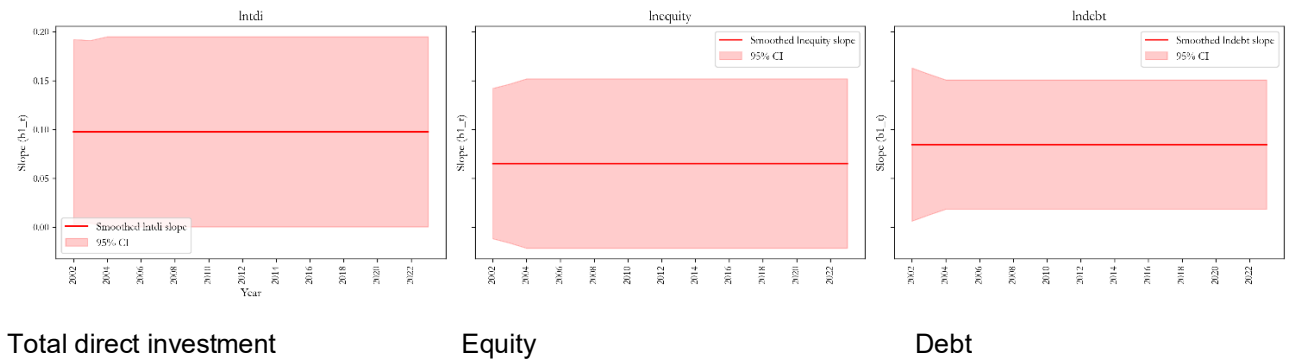


Figure 24e: Employment

Sector: transport, storage & communication – dependent variable: lnemp

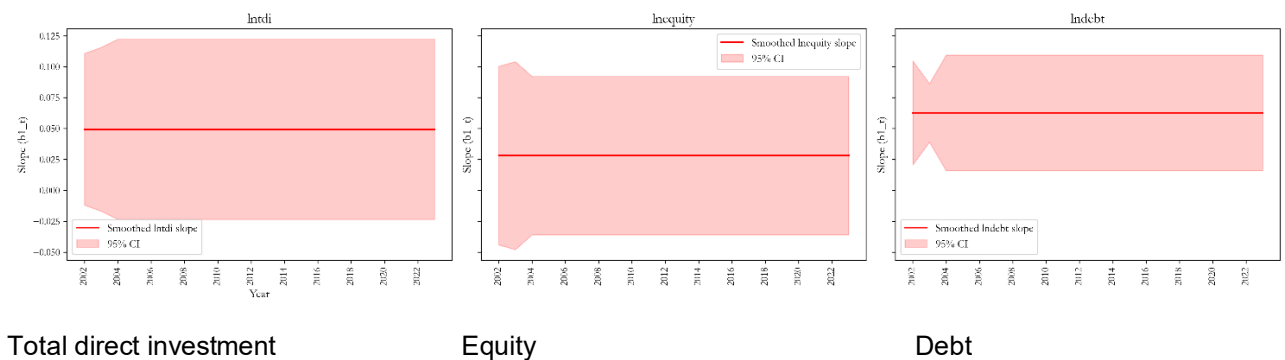


Figure 24f: Compensation of employees

Sector: transport, storage & communication – dependent variable: lnempcomp

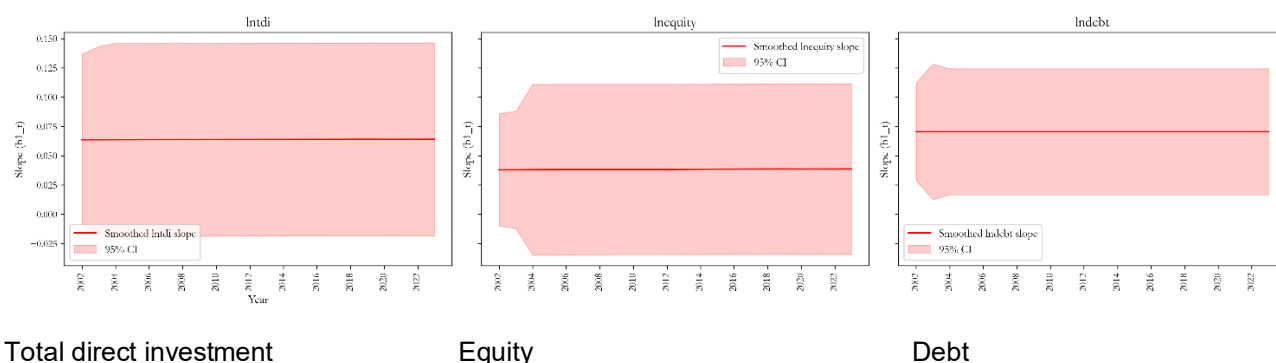


Figure 25: Wholesale and retail trade, catering and accommodation: Kalman Smoother estimates

Figure 25a: Gross value added

Sector: wholesale & retail trade, cat & accom – dependent variable: lngva

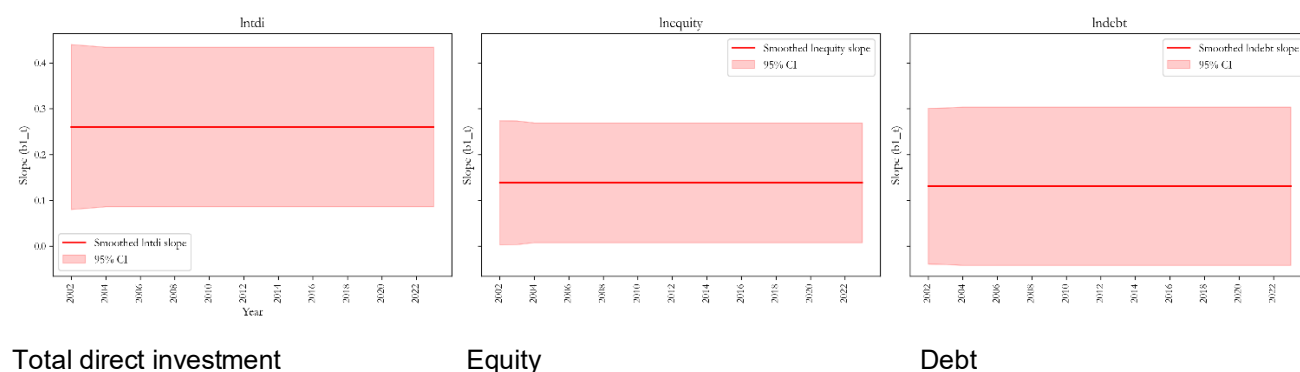


Figure 25b: Gross fixed capital formation

Sector: wholesale & retail trade, cat & accom – dependent variable: lngfcf

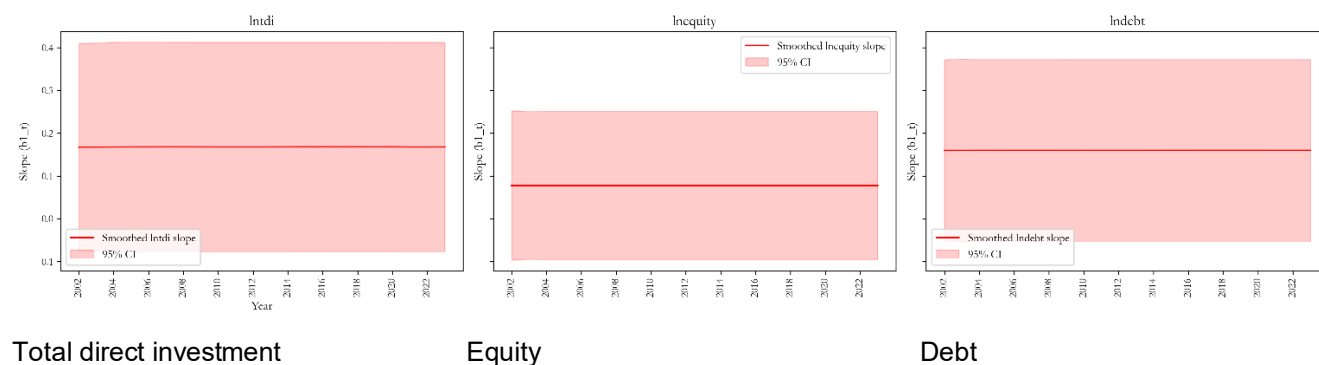


Figure 25c: Fixed capital stock

Sector: wholesale & retail trade, cat & accom – dependent variable: Infcs

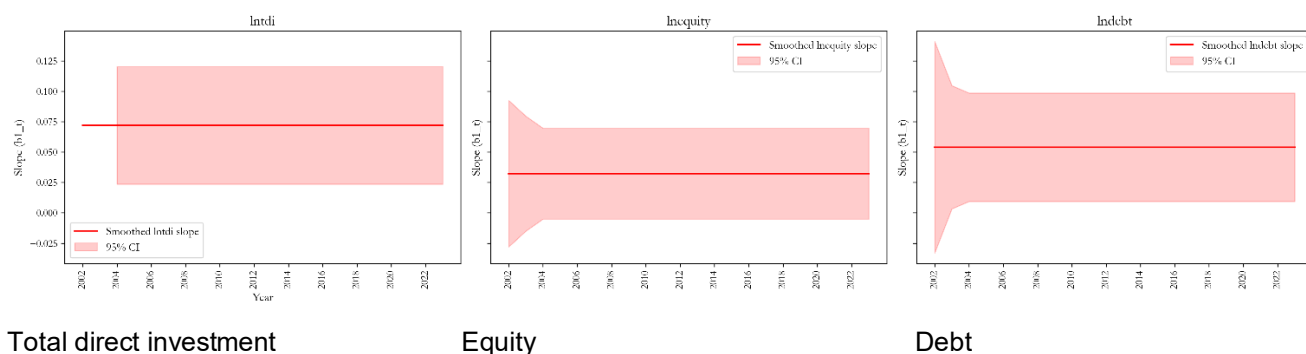


Figure 25d: Gross operating surplus

Sector: wholesale & retail trade, cat & accom – dependent variable: Ingos

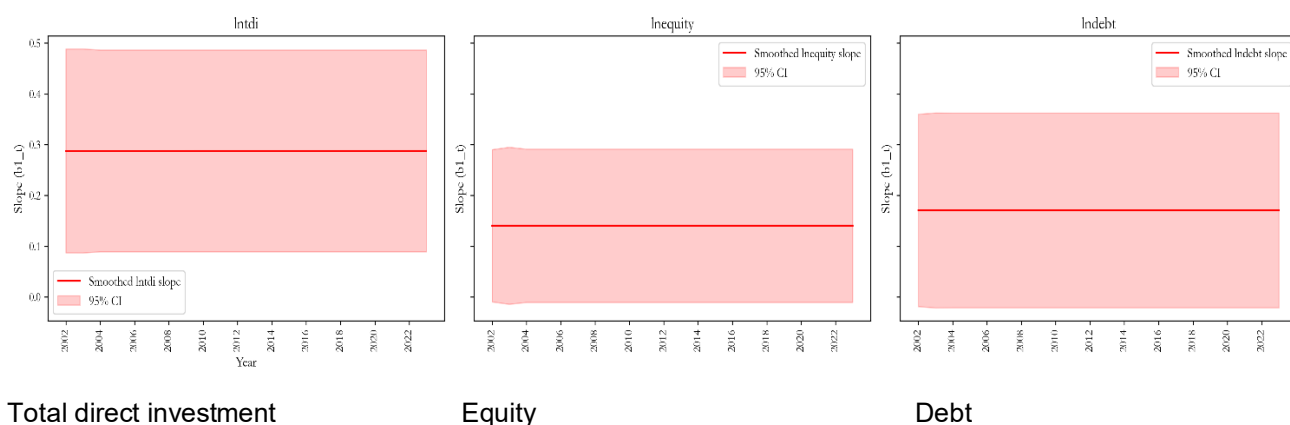


Figure 25e: Employment

Sector: wholesale & retail trade, cat & accom – dependent variable: Inemp

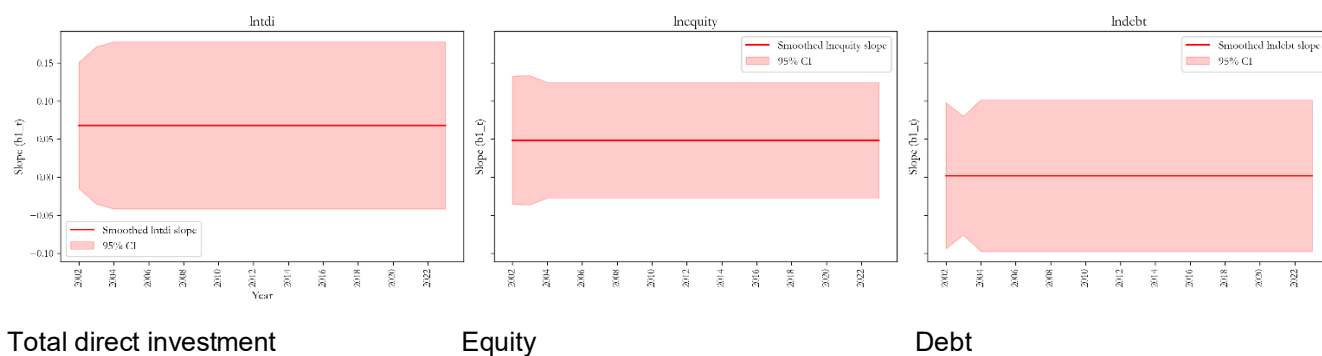
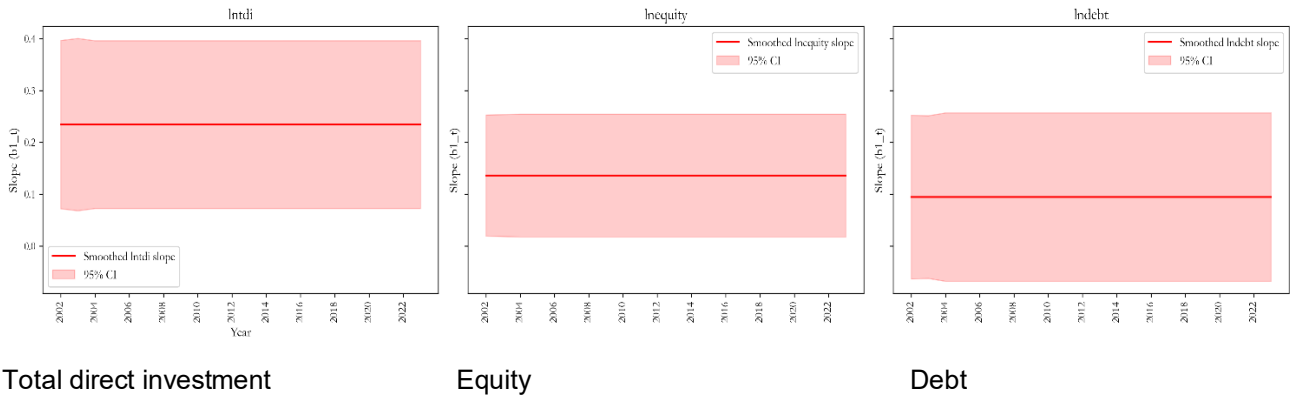


Figure 25f: Compensation of employees

Sector: wholesale & retail trade, cat & accom – dependent variable: lnempcomp



References

Acemoglu, D, Naidu, S, Restrepo, P and Robinson, J A. 2019. 'Democracy does cause growth'. *Journal of Political Economy* 127(1): 47–100.

Aghion, P and Howitt, P. 1998. *Endogenous growth theory*. Cambridge, Massachusetts, and London: MIT Press.

Amaral, A, Knox, S and Mercier, J-F. 2024. 'Whips that weren't cracked: capital flows, market oversight and government spending'. Seminar presented at the South African Reserve Bank, 9 May.

Arezki, R and Sen, P. 2025. 'Solving India's industrialization puzzle'. *Project Syndicate*, 23 January.

Beck, R, Berganza, J C, Brüggemann, A, Cezar, R, Eijking, C, Eller, M, Fuentes, A, Alves, J G, Kreitz, L, Marsilli, C, Moder, I, Sánchez, L M, Naef, A, Landi, V N, Scheubel, B, Theofilakou, A, van den Hove, F and Wesołowski, G. 2023. 'Recent advances in the literature on capital flow management'. Occasional Paper Series No. 317, September. European Central Bank.

Bergant, K, Grigoli, F, Hansen, N-J and Sandri, D. 2024. 'Dampening global financial shocks: can macroprudential regulation help (more than capital controls)?' *Journal of Money, Credit and Banking* 56(6): 1405–1438.

Blouin, A, Ghosal, S and Mukand, S W. 2025. 'Globalization of capital flows and the (in)disciplining of nations'. *Journal of Comparative Economics* 53(1): 209–226.

Calitz, E. 2025. 'Fiscal policy in South Africa: from 1994 to now'. Economic Research Southern Africa, Policy Paper 35, March.

Calvo, G A, Leiderman, L and Reinhart, C M. 1993. 'Capital inflows and real exchange rate appreciation in Latin America: the role of external factors'. *IMF Staff Papers* 40(1): 108–151.

Cavallino, P and Hofmann, B. 2022. 'Capital flows and monetary policy trade-offs in emerging market economies'. Available at SSRN.

Cramer, C, Sender, J and Oqubay, A. 2020. *African economic development: evidence, theory, policy*. Oxford: Oxford University Press.

De Villiers, D, Hollander, H and van Lill, D. 2024. 'The effectiveness of macroprudential policies in managing extreme capital flow episodes'. *South African Journal of Economics* 92(1): 31–46.

Driver, C and Harris, L. 2021. 'Investment in South Africa'. In *The Oxford handbook of the South African economy*, edited by A Oqubay, F Tregenna and I Valodia (Oxford: Oxford University Press), 441–466.

Durbin, J and Koopman, S J. 2012. *Time series analysis by state space methods*. 2nd ed. Oxford: Oxford University Press.

End, N. 2024. 'Fueling or following growth? Causal effects of capital inflows on recipient economies'. International Monetary Fund Working Paper No. 2024/015.

Fabiani, A, López Piñeros, M, Peydró, J-L and Soto, P E. 2021. 'Capital controls, corporate debt and real effects'. Barcelona School of Economics Working Paper No. 1339, September.

Fernandez-Arias, E. 1996. 'The new wave of private capital inflows: push or pull?' *Journal of Development Economics* 48(2): 389–418.

García López, G and Stracca, L. 2021. 'Changing patterns of capital flows'. CGFS Papers No. 66, May. Bank for International Settlements.

Harris, L. 2009. 'Capital flows and policy in emerging-market economies'. *Challenges for monetary policy-makers in emerging markets*. South African Reserve Bank Conference Series 2008. 47–57.

IMF. 2018. 'The IMF's institutional view on capital flows in practice'. Prepared by IMF staff for the *Group of Twenty*.

IMF. 2022. 'Review of the institutional view on the liberalization and management of capital flows'. IMF Policy Paper, March.

IMF. 2023. 'Guidance note on the liberalization and management of capital flows'. IMF Policy Paper, December.

Juhro, S M, Iyke, B N and Narayan, P K. 2024. 'Capital flow dynamics and the synchronization of financial cycles and business cycles in emerging market economies'. *Journal of International Financial Markets, Institutions and Money* 92, 101980.

Juodis, A, Karavias, Y and Sarafidis, V. 2021. 'A homogeneous approach to testing for Granger non-causality in heterogeneous panels'. *Empirical Economics* 60: 93–112.

Kganyago, L. 2023. 'The contribution of capital flows to sustainable growth in emerging markets'. 2023 Michel Camdessus Central Banking Lecture, IMF, Washington, DC, 11 July.

Koepke, R. 2019. 'What drives capital flows to emerging markets? A survey of the empirical literature'. *Journal of Economic Surveys* 33(2): 516–540.

Loewald, C, Steinbach, R and Rakgalakane, J. 2025. 'Less risk and more reward: revising South Africa's inflation target'. *South African Reserve Bank Working Paper Series*, WP/25/05.

Lovchikova, M and Matschke, J. 2024. 'Capital controls and the global financial cycle'. *European Economic Review* 163, 104684.

Lucas, R E Jr. 1990. 'Why doesn't capital flow from rich to poor countries?' *American Economic Review* 80(2): 92–96.

Makrelov, K, Amdt, C, Davies, R and Harris, L. 2020. 'Balance sheet changes and the impact of financial sector risk-taking on fiscal multipliers'. *Economic Modelling* 87: 322–343.

Makrelov, K, Davies, R and Harris, L. 2021. 'The impact of capital flow reversal shocks in South Africa: a stock- and-flow-consistent analysis'. *International Review of Applied Economics* 35(3–4): 475–501.

Milne, A. 2014. 'The control and management of international capital flows: a review of the literature'.

https://assets.publishing.service.gov.uk/media/5a7d5e82e5274a7b50cce8bc/The_Control_and_Management_of_International_Capital_Flows_-_A_Review_of_the_Literature.pdf

Nguyen, T T, Nasir, M A and Vo, X V. 2021. 'Exchange rate dynamics of emerging and developing economies: not all capital flows are alike'. *International Journal of Financial Economics* 29(1): 1115–1124.

Phiri, A and Doku, I. 2024. 'Does foreign capital flow into “greener pastures”? Exploring the potential of FDI in mitigating carbon emissions in African states'. *International Journal of Sustainable Energy* 43(1).

Sen, P. 2007. 'Capital inflows, financial repression, and macroeconomic policy in India since the reforms'. *Oxford Review of Economic Policy* 23(2): 292–310.

South African Reserve Bank. 2025a. *Quarterly bulletin*, June.

South African Reserve Bank. 2025b. 'Statement of the Monetary Policy Committee', 31 July.

Stern, M and Ramkolowan, Y. 2021. 'Understanding South Africa's trade policy and performance'. *South African Reserve Bank Working Paper Series*, WP/20/17.

Villamizar-Villegas, M, Arango-Lozano, L, Castelblanco, G, Fajardo-Baquero, N and Ruiz-Sanchez, M A. 2024. 'The effects of monetary policy on capital flows: an emerging market survey'. *Emerging Markets Review* 62, 101167.

Westerlund, J. 2007. 'Testing for error correction in panel data'. *Oxford Bulletin of Economics and Statistics* 69(6): 709–748.

World Bank. 2024. *World development report 2024: the middle-income trap*. Washington, DC: International Bank for Reconstruction and Development/World Bank.