Notes on inflation*

Double-digit inflation in consumer prices on a year-to-year basis – i.e. increases in the annual average level of consumer prices of more than 10 per cent from one year to the next – has been a disturbing, unhealthy and unpleasant feature of the South African economy uninterruptedly from 1974 to 1989. During this sixteen-year period South African consumer prices increased at an average annual rate of nearly 13,6 per cent; as a result, the average item on the average household's shopping list was some 7,7 times more expensive (in money terms) in 1989 than in 1973. One hundred rand of the average household's family income in 1989 bought as much – or as little – as did R13,02 in 1973.

For reasons referred to below, prolonged inflation – at any level, but certainly at double-digit levels – is now generally accepted to militate against the most effective utilisation of the economy's productive resources, to hold back economic growth and development and therefore to reduce the nation's material well-being. Protracted inflation, moreover, also acts as a constant source of irritation, resentment, ill-feeling and social friction.

Inflation has been recognised by the South African monetary and fiscal authorities as an evil on many occasions. Not surprisingly, therefore, the De Kock Commission in its *Final Report* (entitled *The Monetary System and Monetary Policy in South Africa)*, which was submitted in May 1985, stated that "in the long term the primary objective of monetary policy should be the maintenance of reasonable stability of the domestic price level."[1] In accordance with this and related recommendations in the Commission's *Report*, Article 3 of the new South African Reserve Bank Act, 1989 (Act No. 90 of 1989), which came into effect on 1 August 1989, stipulates that the pursuance of monetary stability and balanced economic growth shall rank as the primary objectives of the Bank's actions in the Bank's exercise of its powers and the performance of its duties.

Shortly after promulgation of the new Reserve Bank Act, the present Governor of the Reserve Bank, Dr C.L. Stals, stated in his first Governor's Address to the Bank's shareholders on 29 August 1989 that the time was now "opportune" for the "serious launching" of an attack on inflation. This attack was to be made on a wide front, but to be spearheaded by appropriately restrictive monetary and fiscal policies. Since August 1989 the Reserve Bank's interest rate and associated policy actions have therefore been predicated, more strongly, explicitly and consistently than before, on the perceived need for counteracting the forces of inflation in the South African economy.

Against the background of this policy orientation, the following "notes" on inflation aim to marshall – in a fairly non-technical manner and for the purpose of reminding, informing and explaining rather than of being polemical – some of the facts and features of inflation as it has manifested itself in South Africa in the post-war period. Introductory paragraphs start off by providing a definition of inflation. Subsequent paragraphs briefly trace the extent and course of inflation in South Africa since 1946 and note the relationship between inflation in South Africa, inflation in the economies of South Africa's main international trading partners, and the effective exchange rate of the rand.

Some evidence is presented suggesting that economic growth does indeed respond unfavourably to protracted inflation, and reasons are given why inflation may be expected to lower the performance of the economy and to be detrimental to economic growth and development. It is then argued that whatever the *causes* of increases in the general price level, inflation is "always and everywhere a monetary phenomenon": inflation appropriately so called will not normally occur in the absence of "excessive" growth in the money supply, and observed inflation rates adhere closely over a period of years to rates of increase in the *relative* money supply.

It is observed in the course of this exposition that although a curbing of growth of the money supply cannot but be part of any comprehensive and successful anti-inflation strategy, a lowering of the rate of monetary expansion will rarely if ever be an entirely painless exercise. Monetary "targets" (or "guidelines") may be introduced in an endeavour to strengthen or facilitate financial discipline; structural features of the economic system – at least one of which seems to be unusually strong in the South African financial environment – may, however, make a targeting operation both more complex and more difficult than it would appear to be at first sight.

Inflation defined

Inflation is best described as a *sustained* rise in the *general level* of prices. The operative words in this definition are "sustained", "rise" and "general level": inflation refers to the *process* or processes of *rising* prices rather than to a *state* of *"high"* prices (which it would be hard to define meaningfully). Described in this manner, inflation can be identified only by observing, over some

* The author of this article is Dr. J.H. Meijer. Valuable assistance in the article's preparation was, however, provided by other members of the Economics Department of the Reserve Bank, notably by Mr. B.L. de Jager (who drafted an earlier version of "notes" on inflation) and by Mr. W.S. Pretorius, Dr. B.E. van der Walt and Mr. P.J. Weideman of the Business Cycle Studies Section of the Economics Department. Assistance in the form of helpful comments and suggestions by various members of the staff of the Reserve Bank is also gratefully acknowledged.

1 Republic of South Africa, Commission of Inquiry into the Monetary System and Monetary Policy in South Africa: *The Monetary System and Monetary Policy in South Africa* (Final Report), RP 70/1984, Government Printer, Pretoria, 1985 par. 13.22.

fairly prolonged period, changes in some aggregate measure of prices, and not by observing changes in the price of a single specific commodity, good or service.

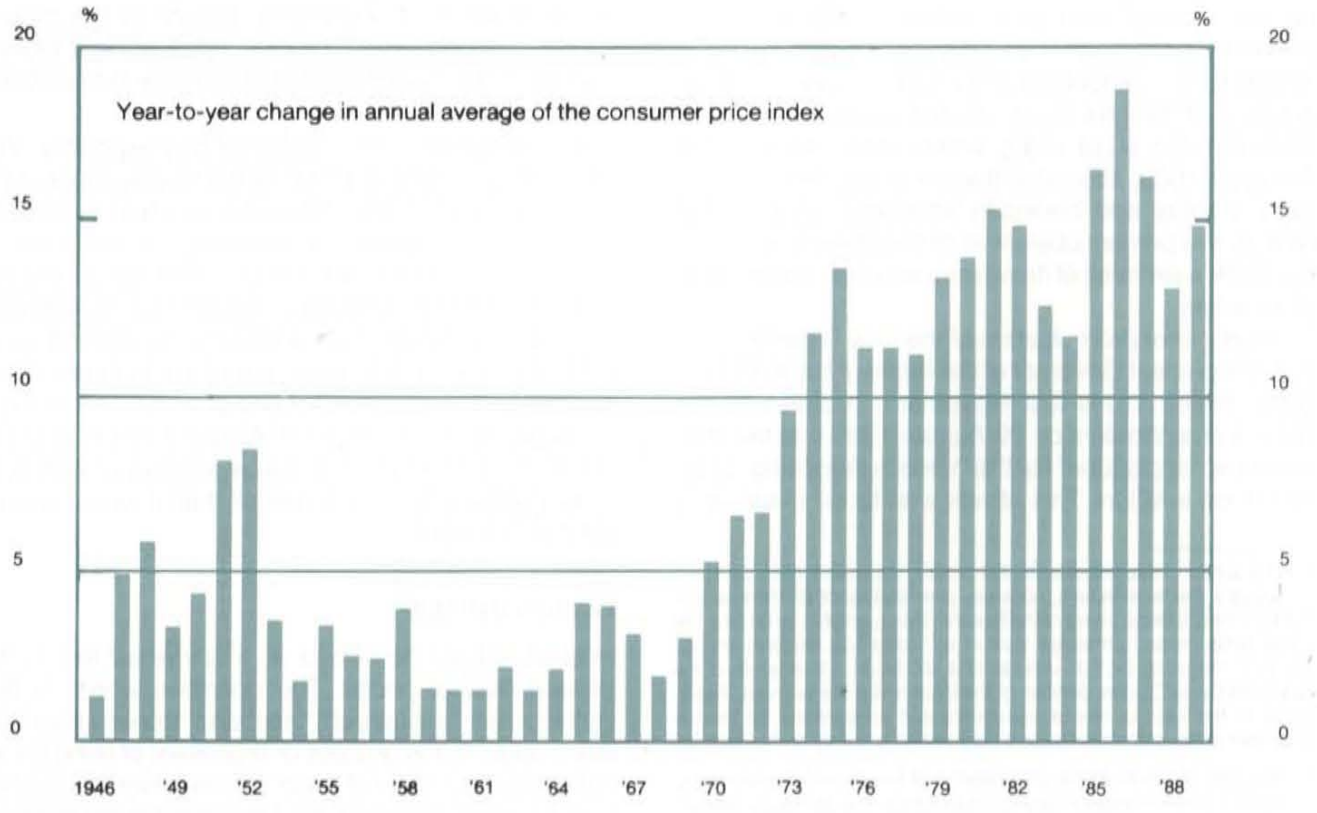
Various comments may be made concerning this definition. Firstly, rates of inflation may be measured with regard to a variety of *sets* of goods and/or services. Different sets of goods and services, their prices and changes in these prices, will be of concern to different groups of people or decision-makers in the economy. Measuring inflation rates with regard to different sets of goods and services may also be helpful in analysing the causes and sources of inflation generally and in shedding light on the nature and dynamics of the inflation process. In South Africa, the more important price indices that are used for measuring inflation include the indices for the prices of imported goods and domestically produced goods, the overall production price index and the consumer price index.

Secondly, inflation refers to the rate of increase in the *average* (normally a *weighted* average) of the prices of the goods and services that are included in the price index or price indices concerned. Although inflation usually means that all or most of the prices included in a certain price index are moving upwards simultaneously, this need not be the case, nor do all the prices covered by a certain price index have to rise in anywhere near the same proportion or to anywhere near the same extent over any given period. As goods and services are becoming more expensive (in money terms) in general, some goods and services may still become either cheap or expensive *relative to others.* Inflation, therefore, normally still allows of *relative* price changes (which will usually be a "good thing"), and will most probably also produce some relative price changes of its own (which is rather less likely to be a "good thing").

Thirdly, inflation has been stated to be a *sustained* rise in the general price level. A purely temporary rise in the price level that soon reverses itself, or a once-and-for-all rise in the price level over a relatively short period, will not normally be regarded as inflation.

Finally, the definition provided above does not have anything to say about the *cause* or causes of inflation. Being silent about the causes of inflation, the definition also contains no hints as to the manner in which inflation may or should be combated or brought under control. More tendentious definitions may, however, be drawn up. Inflation may, for example, be defined – usually by people belonging to some particular school of economic thought – as consisting of price rises that are due to wage increases in excess of productivity increases, or of price increases that arise from preceding, unduly large, increases in an "exogenously determined" money supply.

Graph 1: Changes in consumer prices



The South African inflation record

Graph 1 shows the record of inflation in the South African economy from 1946 (as the first full calendar year in the post-World War II period). Inflation is represented here by the year-to-year percentage change in the annual average of the consumer price index.

A number of observations may again be added. Firstly, *some* increase in the annual average level of consumer prices was recorded in every single year of the post-war period. As displayed by Graph 2, during the forty-four years from 1946 to 1989 (both years inclusive), the average level of consumer prices rose more than twenty-fold, increasing by 1 996 per cent. The average annual rate of increase in consumer prices during these forty-four years accordingly amounted to somewhat more than 7,1 per cent.

Inflation, however, clearly reached considerably higher levels from the mid-1970s onwards than in the first quarter century or so after the War. A dividing line may be drawn at the end of 1973, which marked the last calendar year in which the year-to-year rise in consumer prices did not yet exceed 10 per cent. In fact, the years from 1973 to approximately 1975, which bore the imprint of the first international oil crisis, tend to stand out as watershed years (and sometimes as "quantum jump" years) in analyses of various trends in the South African economy, as well as of trends in the world's major industrial economies and in the international economy as a whole.

In the single-digit inflation years from 1946 through 1973, the annual average level of the South African consumer price index rose by a factor of 2,7, or at an average annual rate of nearly 3,7 per cent. This period, however, can itself be divided into three sub-periods. In the first of these sub-periods, from 1946 through 1952, price changes were still influenced by post-war adjustments (including the devaluation of the South African pound in 1949), as well as by the economic repercussions of the Korean War (which lasted from June 1950 to July 1953, although active hostilities had generally ceased before the end of 1951). The average annual rate of consumer price increases during this seven-year period amounted to very nearly 5,0 per cent; the 5 per cent level of year-to-year inflation was exceeded on three occasions during those years.

A comparatively high degree of price stability prevailed during the remainder of the 1950s and during the 1960s. From 1953 through 1968 the average annual rate of consumer price inflation amounted to a modest 2,4 per cent; at this rate, a doubling of the average level of consumer prices would require a period of more than 29 years. In no year during the sixteen-year period concerned did the year-to-year inflation rate exceed 5 per cent (or even 4 per cent).

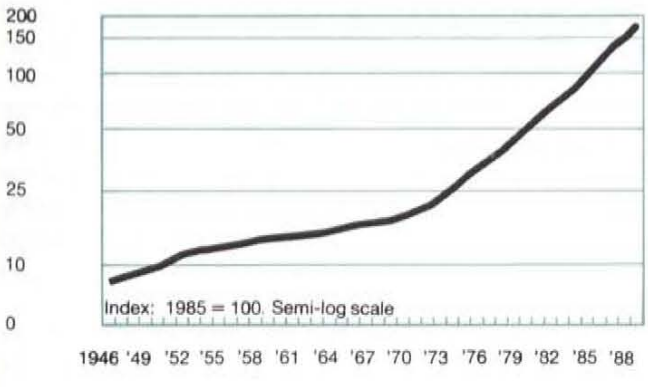
The *"transition* years" from 1969 to 1973 saw the run-up to double-digit inflation. The average annual rate of increase in the general level of consumer prices during those years accelerated to 6,0 per cent. In 1973 the average level of consumer prices was some 34 per cent higher than in 1968.

In the *double-digit* inflation years from 1974 onwards, the average annual rate of consumer price increases amounted to the approximate 13,6 per cent already referred to in the introductory remarks to these notes; inflation at this rate implies a doubling of the general price level approximately every five years, five months and eight days (and, therefore, *multiplication* of the general price level by an astounding *factor* of nearly 7476 during one's Biblical lifespan of 70 years).[2] In 1989 the average level of consumer prices, apart from being more than 20 times higher than at the end of the War, was some 7,7 times higher than in 1973.

Fluctuations of increasing amplitude were displayed by the year-to-year inflation rate during the double-digit inflation period to date. Disturbingly, however, each of the successive upper and lower turning-points in the year-to-year inflation rate – in 1975, 1981 and 1986 and in 1978, 1984 and 1988 respectively – was consistently at a higher level than the immediately preceding one.

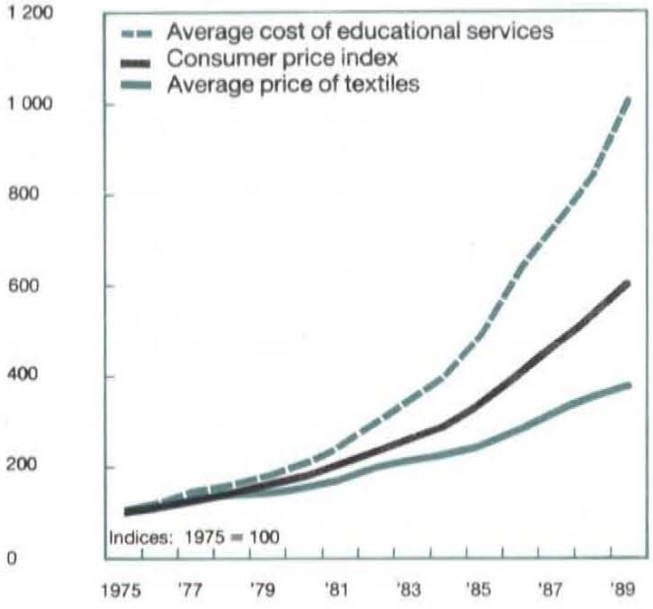
Inflation, however – as was also noted above – does not mean that all prices encompassed by a certain price index have to rise in the same proportion over any particular period. By way of illustration of this statement, Graph 3 shows that the average inflation rate in the prices of "textiles" (as included in the consumer price index) was quite considerably lower than inflation in the cost of "educational services" over any period (up to the present) that has its beginning in 1975. The percentage rise in the cost of educational services also easily outpaced the rise in the consumer price index in nearly all years from 1976 onwards, whereas the year-to-year rate of increase in the prices of textiles has

Graph 2: The consumer price index

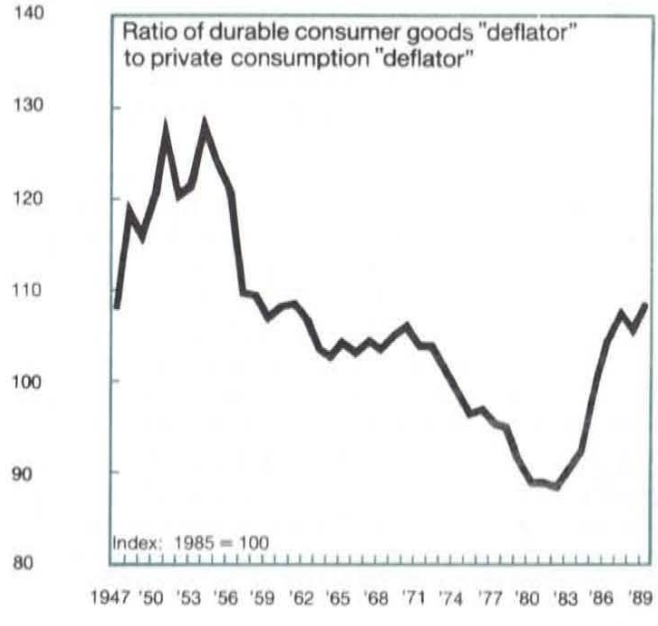


[2] This rises to multiplication by a factor of nearly 8493 if one happens to live for 71 rather than 70 years.

Graph 3: Differences in price movements in components of consumer price index



Graph 4: Relative expensiveness of durable consumer goods



been lower than that in the general price index in every year since 1978. (It may be observed, of course, that this disparity in price behaviour could exist only by virtue of the fact that textiles and educational services can by no stretch of the imagination be considered close *substitutes* for each other in the average family's household spending pattern.)

An interesting and important example of differential rates of price increases over prolonged periods is provided by the behaviour of the prices of durable consumer goods relative to the behaviour of the general level of consumer prices. Graph 4 shows the ratio of the price "deflator" for durable consumer goods relative to the "deflator" for consumer expenditure in general since 1975.

Over the years, major advances in technology and associated improvements in production methods and techniques have allowed savings to be made in the use of materials, labour and capital in production processes. Such savings were clearly of greater relative importance in the manufacturing of consumer durables than in the production of semi- and non-durable goods and in the provision of services; they accordingly held back the rate of price increases in consumer durables relative to the rate of price advances in consumer goods and services in general.

In addition, rising real incomes in the post-war period meant a broadening and deepening of the market for consumer durables and probably allowed manufacturers of these goods more fully to exploit economies of scale in their production. Durable goods in South Africa, however, have a relatively high imported component. This caused the prices of these goods to be affected disproportionately by the weakening of the exchange rate of the rand from 1981 onwards. As a result, the downward trend in the *relative* expensiveness of these goods, which had been in evidence from the mid-1950s up to the early 1980s, appears to have been reversed since approximately 1983.

During most of the 1980s, the double-digit inflation rates in South Africa substantially exceeded the inflation rates in the economies of South Africa's principal international trading partner countries. Such inflation differentials must eventually affect the exchange rate of the rand vis-à-vis other currencies: as the quantity of (internationally tradeable) goods and services that can be bought for one rand in South Africa diminishes relative to the quantities of such goods and services that can be bought for one dollar in the United States or for one Deutsche mark in Germany, people who have the option of buying in any of these countries will clearly become willing to pay – and will normally also *have* to pay – an increased number of rand for one American dollar or for one Deutsche mark.

Conversely, however, an increase – for whatever reason – in the number of rand that has to be paid for one dollar or for one Deutsche mark will obviously tend to raise the rand prices in South Africa of goods that

have been imported from the United States or Germany – and all too often also the rand prices of these goods' South African-made equivalents or substitutes. In principle, of course, an accelerated rise in the rand prices of imported goods and import-competing goods may be counterbalanced by a slower rise in the rand prices of South African-made non-traded goods and services, thereby leaving the South African inflation rates (or at least some of these rates) unaffected. More usually, however, an accelerated rise in import prices will tend to raise the tempo of observed increases in the comprehensive South African production and consumer price indices, and therefore have an "inflationary" effect.

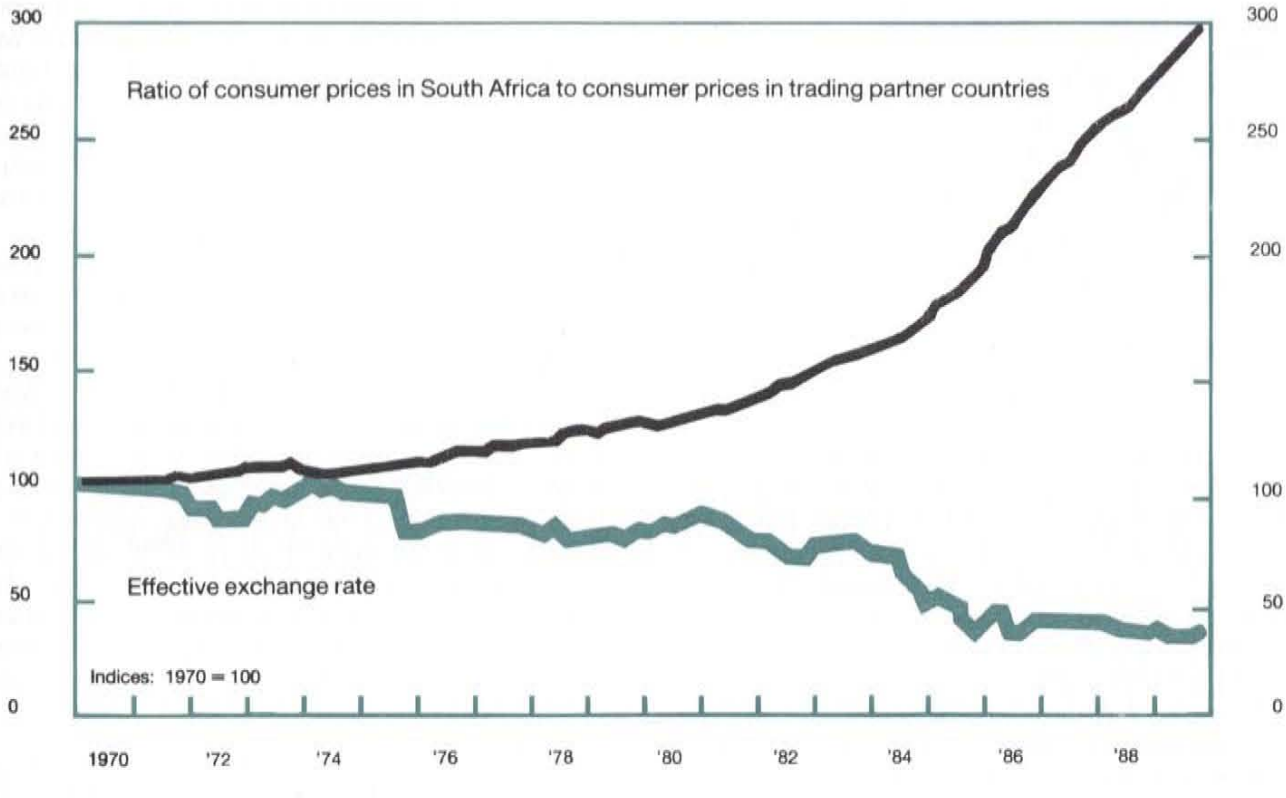
In broad terms and over adequately extensive periods, a *doubling* (say) of the ratio of a comprehensive index of South African goods prices in rand to indices of comparable goods prices in dollars in the USA or in Deutsche mark in Germany, must also mean an approximate *doubling* of the rand "prices" of dollars and Deutsche mark – which means that it must imply a *halving* of the exchange *value* of the rand in terms of units of these other currencies or a 50 per cent *depreciation* of the exchange *rate* of the rand vis-à-vis these other currencies.

In practice, of course, the inflation differentials between South Africa and its various international trading partner countries have themselves differed – to more or less important degrees – from trading partner country to trading partner country; this has contributed to differences in the increases in the rand prices of (units of) the various foreign currencies concerned and in the corresponding declines of the exchange value of the rand in terms of these various currencies.

It must also be noted that over shorter periods at least, the exchange value of the rand in terms of any other currency or in terms of all other currencies may be influenced powerfully by factors that have little to do with the relative *purchasing power* of the rand and of these other currencies in their respective home countries. In addition, the *consumer* price index in South Africa and elsewhere covers many items (goods as well as services) that are not normally traded internationally or cannot be traded internationally.

Graph 5 shows nevertheless how the rise in the ratio of the index of the rand prices of consumer goods and services in South Africa to the (weighted) average index of consumer prices (in dollars, Deutsche mark, yen, etc.) in trading partner countries, has been matched fairly closely by a broadly commensurate weakening of the average effective exchange rate of the rand (i.e. by a decline in the effective exchange *value* of the rand) since approximately 1983 in particular: the near-threefold increase in the ratio of the South African consumer price index to the weighted average index of consumer prices in trading partner

Graph 5: Relative inflation and the exchange rate



countries from 1970 to 1989 has been accompanied by a decrease in the average effective exchange value of the rand to some one-third of its value in 1970.

Why inflation should be combated

Few economists will dispute that, through stimulation of the economy by monetary and/or fiscal policy means, it is possible to reduce unemployment, foster increased degrees of capacity utilisation, raise the real gross domestic product and, therefore, bring about a higher observed rate of real economic growth for some time at least – even if the authorities' stimulatory policies should be expected eventually also to produce an increased rate of inflation. From this generally accepted view, conclusions have been drawn to the effect that some measure of inflation should be tolerated if a satisfactory real economic growth rate is to be attained; that some measure of inflation serves as evidence of the economy's resources being utilised, and its potential for growth being exploited, to the full; and even that inflation itself is to be regarded as beneficial for or conducive to economic growth.

At the same time, observations of historical inverse relationships between inflation and unemployment (higher inflation rates being accompanied by lower unemployment rates and *vice versa*, as embodied in the so-called Phillips curve) for some time suggested the possibility of a quasi-permanent unemployment/inflation "trade-off": societies would apparently have a *choice* of, on the one hand, "going for" lower unemployment and stepped-up economic activity, output, saving and investment (and therefore also for accelerated economic growth) at the price of somewhat higher inflation, *or*, on the other hand, acquiescing in more modest levels of activity and economic growth while enjoying the benefits (such as they would still be) of relative stability of the general price level.

No particular thought was given, at first, to the *sustainability* of any given rate of unemployment at its corresponding inflation rate. The empirical Phillips curves themselves, by merely setting out in schedule form the record of historically observed combinations of inflation rates and unemployment rates, afforded no insight in the adjustment processes that had caused these combinations to come about.

The original Phillips curves, moreover, provided no grounds for doubting the stability of the shapes and positions of these curves; neither did they give reason to suspect that any particular inflation rate/unemployment rate combination should possibly be regarded as unique and as specific to the moment of its occurrence and, for that reason, could not, perhaps, either be reproduced or be maintained "indefinitely." High levels of employment, it seemed at the time, could be enjoyed "forever" at the price of only a little inflation; with memories of the Great Depression still alive, this seemed a price well worth paying.

More recent views have not been able to sustain this early and somewhat innocent optimism. In one current approach (initially a more monetarist approach) to these matters, prolonged inflation at a more or less steady rate will eventually become fully expected and anticipated. As the inflation becomes fully anticipated, adjustments in decision-makers' behaviour will force unemployment back to its so-called "natural" level – as determined by certain basic characteristics of the labour force and by relevant features (essentially structural features) of the labour market and the general economy. Aggregate real output, saving, investment and the real economic growth rate, as well as unemployment, will then revert (at best) to the levels that prevailed in the pre-inflationary period. Society will then still be burdened with its inflation, but the unemployment situation will be no better than it used to be.

A *permanently* (or at least durably) higher level of real economic activity and growth would be attainable, according to these views, only at the price of *ever-accelerating* inflation. Ever-accelerating inflation will, however – in this or any other theoretical approach – eventually result in the abandonment of the use of money for payment purposes and in a breakdown of the monetary system in general; this will inevitably be accompanied by a severe loss of real output and of economic well-being. Permanently higher inflation at a possibly variable but *not* consistently *accelerating* rate, on the other hand, would not only be of no help in durably raising the growth rate of the real economy. It would much more likely also exercise significant deleterious effects on the efficiency of resource allocation and of the economy's production processes. Even if the long-term rate of increase in real output eventually were much the same again as in the pre-inflationary period, this loss of efficiency would cause the *level* of real output to be significantly and permanently lower than it could have been. The level of real output might also for some time be lower than before the inflation experiment was embarked upon.

Graph 6 shows that the relatively low inflation rates in South Africa in most of the 1950s and 1960s were accompanied by relatively high rates of growth in the real economy. It also shows that the high and generally rising double-digit inflation rates from 1974 onwards have been accompanied by a long-term downward trend in the year-to-year rates of real economic growth. Similar findings, on a cross-sectional basis, have been reported by Gylfason (and others) with regard to a large number of "high-inflation and "low-inflation" countries during the period 1980-1986 (or other selected periods).[3] Gylfason's statistical tests "suggest" that output growth was significantly lower on average in the high-inflation economies than in the low-inflation

[3] Gylfason, T.: "Inflation and Economic Decline: A Coincidence?", Skandinaviska Enskilda Banken *Quarterly Review*, 2/1989, pp. 35-40.

economies and that the low rate of economic growth achieved on average by the high-inflation economies almost certainly was "not coincidental".

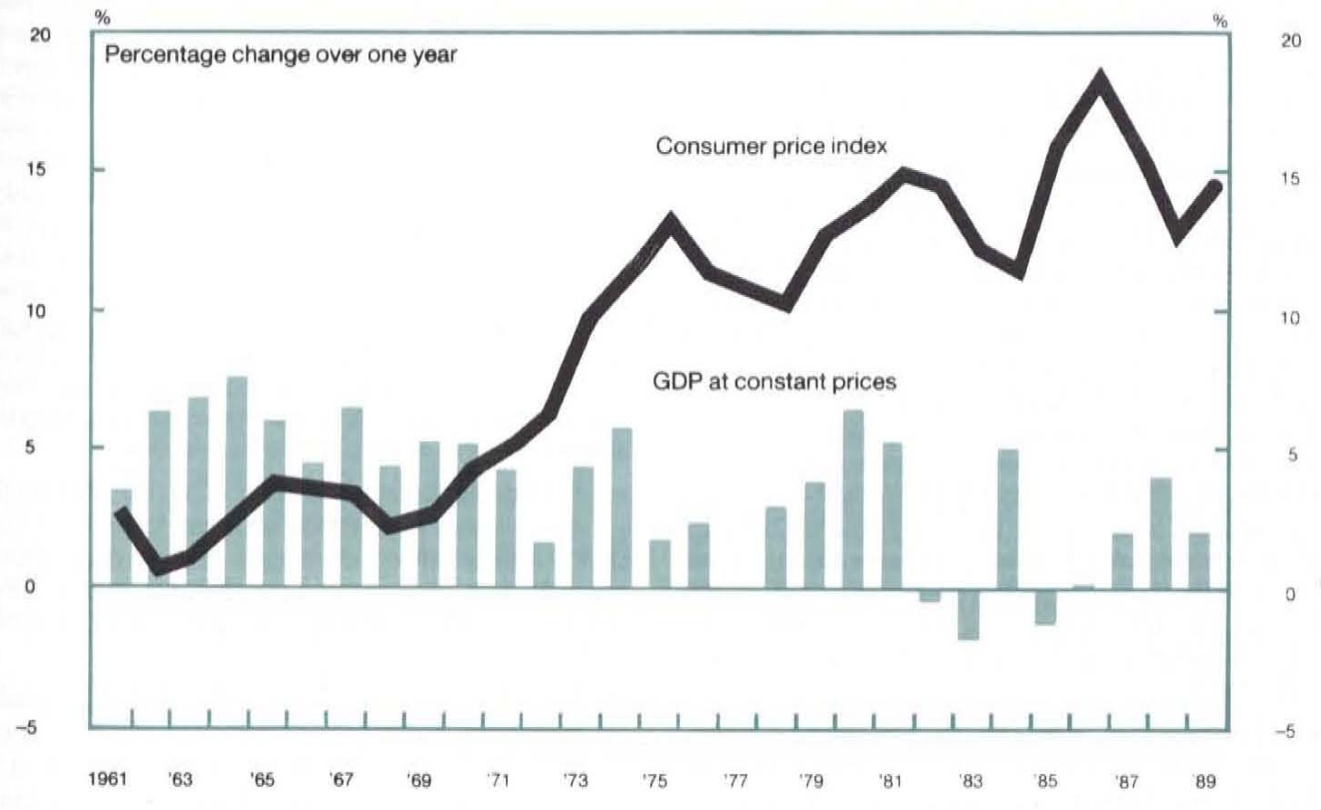
It should be noted, of course, that no "proof" exists that South Africa's real economic growth rate has been declining *because* South Africa's inflation rate has been rising, or that low-growth/high-inflation countries are low-growth countries *by virtue of* their being high-inflation countries. As has also been observed by Gylfason, inflation may be high because real growth is low; various mechanisms can be thought of that would impart an inflationary bias to a (newly) low-growth economy. Alternatively, both low growth and high inflation may be joint and simultaneous results of some third factor or set of factors. In the South African case, moreover, the possibility is not to be ruled out that the retardation of real economic growth and the acceleration of inflation since the mid-1970s have, in fact, been separate results of independently operating factors or sets of factors which, purely by coincidence, have happened to strike the economy at the same time.

Both the South African and the international experience are nevertheless suggestive of the view that prolonged inflation at more than a certain (low) maximum rate almost certainly is "not good for" growth and very probably is "bad for" growth. In the South African case this would mean that the double-digit inflation rates experienced since the mid-1970s have been a factor in bringing about the weakening of the growth performance of the economy during that period as compared with the considerably more impressive growth performances of the 1950s and 1960s. Various reasons may be advanced why inflation impinges unfavourably on the level of real output in the economy and lowers the economy's real growth rate:

- Prolonged high inflation may weaken business and consumer confidence by creating doubts about the authorities' competence in managing the economy or about the authorities' resolve in maintaining sound monetary and financial conditions. Once double-digit inflation is being tolerated, fears and expectations may be aroused concerning "inflation feeding on itself" or of a possible lack of resistance among the authorities against *ever-accelerating* inflation. Against the possibility of ever-accelerating inflation has to be set the possibility of abrupt corrective action by the authorities for bringing the inflation under control.

- Upward price revisions that are part of the inflation process may be mistaken for changes in *relative* prices owing to shifts in demand or supply conditions, which would normally have signalled a need for a reallocation of productive resources among various produc-

Graph 6: Inflation and economic growth



tion activities. Inflation therefore lessens the allocative powers of the market pricing mechanism, meaning that the pricing mechanism becomes less efficient and less effective in ensuring optimal use of all available means of production. *Indexation* of prices (including wages), on the other hand – i.e. the automatic or quasi-automatic adjustment of prices in proportion to changes in a more comprehensive price index – may *prevent* changes in relative prices even where such changes are, in fact, pressingly called for.

- Real resources are absorbed in the constant recalculation and revision of prices, the gathering of information on recent price changes, determining the significance *of* these price changes, and the public justification of unpopular price increases.

- Inflation discourages the use of non-interest-earning forms of money. More generally, it fosters an economising on "real" money balances (i.e. money balances measured in terms of their purchasing power), which serve both as a capital good to businesses and as a durable consumer good to consumers. This implies a loss of business efficiency and of the "convenience, liquidity and security" which real money balances confer on their holders.

Some of these effects (notably the last-mentioned "real balance" effect, which has enjoyed significant attention in the economic literature) would persist even when prolonged inflation at a steady rate has become fully expected and is being fully anticipated. As a practical matter, however, less than fully anticipated and to some extent unpredictable inflations have several further effects which account for most of the general public's resentment of inflation as well as for most of the unfavourable impact of inflation on real economic activity, growth and prosperity:

- Inflationary price increases, made for reasons which the man in the street may have heard about but cannot be expected to appreciate fully, leave a sense of being exploited. They also create opportunities for *unwarranted* price increases that *do* amount to abuse and exploitation. In the resulting climate of mistrust and antagonism, the authorities may feel called upon to introduce administrative arrangements, or create new bureaucratic bodies, for enhanced consumer "protection". (More generally, of course, a period of inflationary price rises may tempt the authorities into imposing more or less comprehensive administrative price *controls*, which place judgements as to the prices that articles should fetch in the market in the hands of government officials rather than leaving the relevant pricing decisions to the market pricing mechanism.)

- More important, inflation is likely to result in an arbitrary and unfair redistribution of income and wealth. Such a redistribution will typically be mostly at the expense of persons or groups of persons (such as pensioners, unemployed workers, and people of limited means and financial sophistication) who are unable, or are no longer able, to "re-contract" with regard to the terms on which they sell their (labour) services or with regard to the returns earned on their real or financial asset holdings, and who often have no or only limited access to inflation-resistant forms of wealth-ownership. Given non-indexation (i.e. "non-inflation-proofing") of most after-tax incomes and the progressivity that is built into most income tax systems, governments – through the well-known processes of "bracket creep" or "fiscal drag" – commonly rank among the beneficiaries of inflation-induced redistributions of income and wealth in all but relatively very severe inflations. This is likely to give rise to an increase in the share of government spending in aggregate real gross domestic expenditure during inflationary periods. A presumption exists, however, that government spending in excess of certain relatively low maxima will be sub-optimal from the point of view of fostering real economic growth and development.

- Inflation, whether as a cause or as an effect, is frequently accompanied by sub-optimally low (and quite possibly negative) *real* interest rates. When allowance is also made for the impact of taxation on business costs and on money earnings (and of bracket creep on taxation), the *effective* real after-tax interest cost of borrowed funds in inflationary periods may be very low to borrowers, while the *effective* real after-tax interest return on financial assets in such periods may be very low for savers. The various untoward results of these distortions may well include a decline in aggregate real domestic saving; they will almost certainly include a misdirection of a part of real investment spending into unduly and sub-optimally capital-intensive production facilities and processes. The demand for labour and the level of the average real wage or real labour remuneration will then be lower than they would, could and should have been; this is likely to find expression in increased unemployment and higher partial or disguised unemployment. At the same time, unduly low real interest rates may give rise to excessively high gearing ratios and related unsound financing practices among business enterprises. Such practices may make these businesses more vulnerable to unfavourable turns in the monetary-financial climate.

- Imperfectly foreseeable inflation complicates wage and related negotiations and may force more frequent *re*negotiations of wages and related labour rewards. This increases the possibility of labour/management conflict, strikes, lock-outs and industrial unrest.

- Inflation invites a search for inflation-resistant assets or inflation "hedges" and for ways of avoiding or evading taxes which – partly because of fiscal drag – may be felt to have become unduly and unfairly burdensome. For various reasons, non-entrepreneurial

private-sector investors are likely to select tangible hedge assets (such as, for example, beach cottages, "second homes" and other forms of easily manageable fixed property) that are likely to lay claim to the economy's real savings for their construction but, as a part of the economy's real fixed capital stock, are likely to be severely sub-optimal from the point of view of more long-lasting employment creation and for economic growth.[4] Inflation and currency depreciation may also encourage capital outflows from the country which may be felt by the authorities to call for the introduction or tightening of exchange controls. More directly, a not-insignificant portion of labour and other productive resources may become tied up in the quest for and exploitation of ways of avoiding the painful consequences of inflation (as evidenced, for example, by a burgeoning of businesses specialising in tax and investment consultancy). It may also cause the financial system to become unduly and disproportionately "sophisticated" with regard to the variety of facilities, services and investment instruments it is able and willing to provide.

- Inflation, by calling forth high *nominal* interest rates, also creates conditions in which monetary policy may readily become highly volatile. A nominal Bank rate of 22 per cent – in response to an (expected) inflation rate of, say, 18 per cent – can obviously be reduced, *in principle*, by anything up to its full 22 percentage points; theoretically, therefore, it allows of a *real* Bank rate that could become negative up to the full extent of the inflation rate, i.e. (in the example used) by up to 18 per cent. The very wide range of *potential* real Bank rate reductions in an inflationary environment may come to be accompanied by high instability of the *actual* real Bank rate in circumstances that appear to call for decisive countervailing action (as well as for frequent policy reversals) by the monetary authorities. The wide swings in the level of real (short-term) interest rates may then, however, become an additional source of uncertainty to the business community that is discouraging to enterprise and initiative.

Inflation as a "monetary" phenomenon

The nature of inflation as being "always and everywhere a monetary phenomenon" may be explained by reference to the well-known *Equation of Exchange*, which states (in the present context) that –

$$MV = Py.$$

In this equation y is the real gross domestic product during any given period of time. P is the average money price level of the goods and services included in the real gross domestic product during the period concerned. Py is, therefore, the gross domestic product at current prices. M is the (average) quantity of money, in terms of any of its various definitions, during the time period concerned. V is the "velocity of circulation" of the money supply, which may be thought of, in the present context, as the average number of times each unit of money in the money supply has had to be used (i.e. "passed from hand to hand") in "paying for" the gross domestic product as it was either being generated or being bought (by households, business enterprises, the government, etc.).

The Equation of Exchange is *not* a theory or derived from any theory. Instead, it is an identity or tautology, the timeless and unassailable truth of which is based on the definition of "velocity".[5] It amounts to a statement that the amount of money "paid for" the gross domestic product at current prices during any period (M.V) is equal to the money value *of* the gross domestic product at current prices (P.y) during that period.[6]

From $MV = Py$, it follows that $P = \frac{MV}{y}$. Stated in this manner, the Equation of Exchange draws attention

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[4] The tendency to invest in debt-financed fixed property during inflationary periods will, however, be counteracted to some extent by the "frontloading" that is present in the fixed monthly instalments payable on a mortgage bond during its lifetime in such periods. "Frontloading" refers to the relatively heavy *real* burden of the fixed monthly instalment in the early years of the mortgage bond; included in these instalments is an unintentionally large element of repayment of the principal debt (in real terms) in addition to interest. At the same time, high *nominal* interest rates in inflationary periods may entail cash-flow problems for debtor groups such as home-owners.

[5] Note that V is calculated as the ratio between the gross domestic product at current prices in any period and the average quantity of money during that period, i.e. V = Py/M. The Equation of Exchange therefore states that M(Py/M) = Py, which can hardly be disputed.

[6] While not amounting to any kind of theory in itself, the Equation of Exchange has historically served as the point of departure for the so-called Quantity Theory of Money, which is to be understood as the quantity-of-money theory of the general price level. This theory sought to explain changes in the general price level *from* changes in the quantity of money. In its most elementary form it postulated strict proportionality between relative changes (percentage changes) in the money supply M and in the price level P: an x per cent increase in the money supply would cause, and therefore be followed or accompanied by, an x per cent increase in the general price level. This result could be obtained by assuming that both y and V are constant over relevant periods and are, therefore, also independent of M. (The real gross domestic product y was assumed to be fixed and constant at the full-employment level of economic activity; velocity V was assumed to change only very slowly over prolonged periods, in response to slow changes in payment habits, payment mechanisms and payment facilities.)

More generally, a quantity-of-money theory of the price level (which allows price level changes to be predicted from changes *in* the money supply, and from changes in the money supply *only*) requires that two conditions be satisfied. Firstly, changes in the money supply must be "exogenous" and must not themselves depend on changes in V, P or y. Exogeneity of the money supply means that "causality", if it exists at all, will run from money supply changes to price level changes, or from the left-hand side of the Equation of Exchange to the right-hand side. Secondly, V and y must be constant during the period to which the analysis applies; alternatively, they must respond only to changes in the money supply, and must do so in a predictable way.

V obviously depends on people's desired money holdings relative to the money value of the gross domestic product. Under fairly typical "monetarist" assumptions, the demand for *nominal* money balances would vary in strict proportionality to the price level. "Real" money balances being taken to be a luxury good, the demand for "real" money balances *per capita* would be an increasing function of real "permanent" income *per capita*; "permanent" income p.c. could be proxied by a (weighted) average of past levels of *measured* real income *p.c.*

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to the fact that, as long as y is constant, an increase in the price level P (which could be part of an inflation) can arise *only* "in association with" (1) an increase in the money supply M, or (2) a rise in money's velocity of circulation V, or (3) some combination of (1) and (2).

It is worth noting that, other things being equal, an x per cent rise in money's velocity of circulation V is *as powerful* in raising the price level P as is an x per cent rise in the money supply M itself. It may also be worth observing again that – whatever the direction of causation between MV and Py – as long as both V and y are constant, the price level P must necessarily rise proportionately to an increase in the money supply M and *vice versa*. A steady rise of 15 per cent p.a. in the money supply will then be accompanied – inevitably and irresistibly – by a 15 per cent rise in the general price level year after dreary inflationary year. Finally, it may be noted that in the *absence* of an increase in the money supply (and assuming that the real gross domestic product y is at least not declining), a rise in the general price level is possible *only* to the extent that the velocity of circulation of money will rise, or will allow itself to be increased.

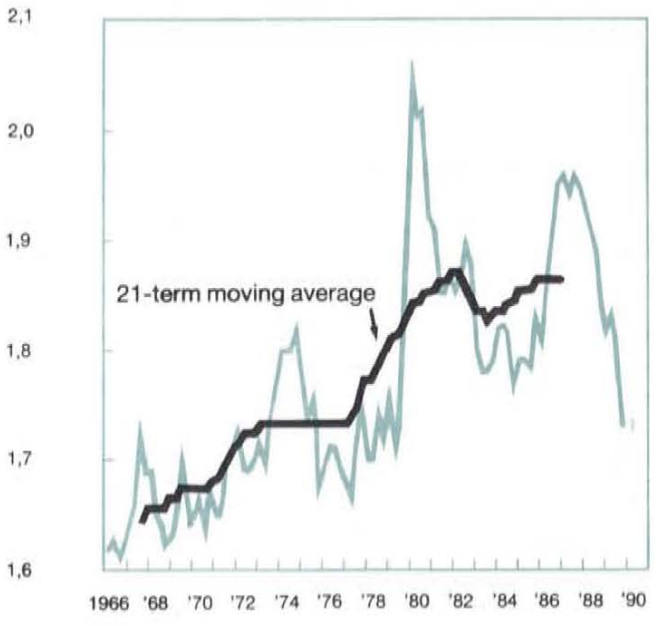
In actual fact, neither the real gross domestic product y nor the velocity of circulation of the money supply V has, of course, been at all constant over the years. P has not, therefore, increased in simple proportionality to M or even to MV; instead, it has moved up in accordance with *MV relative to y*.

As regards the velocity of circulation, it has most definitely *not* been stable in either the short, the medium or the long run. Major forces have been at work at virtually all times and over short- and medium- as well as long-term periods that have influenced people's decisions as to the amount of money they have wished to hold relative to the nominal or money amounts of their incomes and expenditures.

Such forces have included, for example, a variety of ultra-short-term "random" factors, such as purely temporary and incidental money holdings related to new share issues on the stock exchange; the waxing and waning of "window-dressing" practices of private companies over month-ends, which is partly a seasonal phenomenon; the cyclical forces of rising and declining interest rates and the narrowing or widening of banks' lending-rate/deposit-rate margins – provoking "reintermediation" or "disintermediation"; changes in interest rate expectations; interest rate uncertainty as a source of "liquidity preference proper"; changes in the laws, rules and regulations concerning depository institutions, affecting these institutions' willingness and/or ability to pay interest on deposits, on certain kinds of deposits or on deposit substitutes (such as repurchase agreements); credit ceilings and statutory deposit interest rate controls, also as a source of disintermediation; the drawn-out effects of prolonged negative real after-tax rates of return on depository investments; changes in banks' payment and credit facilities offered (e.g. credit cards), in the public's payment habits, and in the degree of monetisation of the overall economy; and rises and declines in the level of real income per person as a possible source of shifts in the demand for real money balances *per capita*.

Graph 7 shows the fluctuations in M3's velocity of circulation over the years since 1965. It also shows the slight long-term upward tendency in M3's velocity of circulation (which may or may not have been flattening

Graph 7: Income velocity of M3



Problems would still remain, however, in predicting how a change in MV, on account of a (duly exogenous) change in M, would "distribute itself" between changes in the real gross domestic product y (with its possible feedback effects on permanent income or wealth and therefore on the velocity of circulation), on the one hand, and changes in the general price level P, on the other hand. This would depend fairly obviously on the elasticity of real output with regard to changes in real *ex ante* effective demand (i.e. the planned or desired increase in MV in real terms). This elasticity, in turn, would very largely be a matter of the prevailing degree of unemployment and of idle resources in general: the higher the prevailing unemployment rate, the more would a planned increase in MV in real terms call forth additional real output rather than inflation (or an acceleration of inflation).

The information required here, however, could be extracted, in principle, from historical "Phillips-curve-type" data. Such data could show – again at least in principle – how given increases in the money supply from its presumed exogenous sources, and the associated increases in *ex ante* effective demand, had been reflected historically in declines in unemployment (and in associated increases in physical production and in real income), on the one hand, and in accelerations of the inflation rate, on the other hand, in any original resource-use situation. For some time, therefore, it was thought that "the" Phillips curve provided the missing link in predicting price level changes from changes in the money supply.

out in the 1980s). Finally, it displays the very limited extent – amounting to some 7 per cent – to which M3's velocity has increased on balance over a 25-year period.

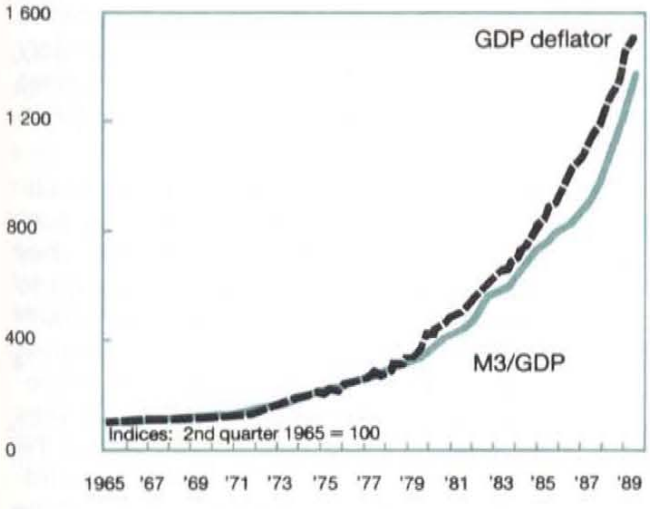
It is important to note, therefore, that however significant the percentage changes in the velocity of circulation over shorter and even over rather longer periods may have been, *they have been of comparatively very minor importance relative to the very large percentage changes that have taken place in the money supply itself* over more extensive periods. This means that – although changes in both M/y and in V have played a part in "accounting for" changes in the general price level, in accordance with the formulation which states that $P = \frac{MV}{y}$ or $P = \frac{M}{y} \cdot V$ – *changes in nominal price level over these more extensive periods have been associated overwhelmingly with the rise in the nominal amount of money per unit of physical production (M/y), rather than with any (net) increase in money's velocity of circulation V.* For example, during the period from the second quarter of 1965 to the first quarter of 1990 (for which a consistent statistical series of the M3 money supply is available), the general price level as measured by the so-called gross domestic product "deflator" (P in MV = Py) rose nearly sixteen-fold, namely by 1 465 per cent. This was "accounted for" by an increase of 2 920 per cent in M3, by an increase of 1 357 per cent in the quantity of M3 per unit of the real gross domestic product, and by a *net* increase of only 7 per cent (or 7,4 per cent, to be exact) in the velocity of circulation of the M3 money supply.

Graph 8 shows that the persistent and accelerating rise in the gross domestic product deflator from 1965 through 1989 adhered relatively closely to the rise in the ratio of M3 to the real gross domestic product, i.e. to the rise in the "relative money supply" M3/y. Growing disparities between the trajectories of these two quantities could be observed, however, in the second half of 1979 and in early 1980, and again in most of 1986 and in early 1987, when the levels of the deflator increasingly rose above the levels "implied" (or at least "suggested") by the then prevailing levels of the concurrent relative money supply. An inspection of Graph 7 duly shows that these two periods were periods of rising velocities of circulation.

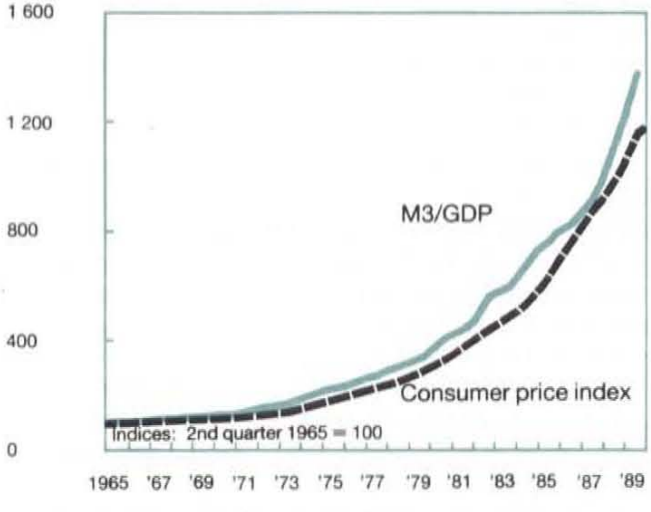
Consumer prices, to be sure, did not rise *quite as* strongly as the gross domestic product deflator over the past 25 years – partly because they were not affected in any direct manner by the rise in the (dollar price and the rand) price of gold. From the second quarter of 1965 to the first quarter of 1990 the consumer price index increased somewhat more than twelve-fold, namely by 1 104 per cent. Graph 9 makes clear, however, that "even" the rise in the consumer price index adhered fairly closely to the rise in the relative money supply.

As was noted earlier, however, the fact that inflation has remained closely linked to changes in the ratio of M3 to y cannot simply be taken to mean that inflation is *caused* by increases in M relative to y (although this is certainly a possibility and does, in fact, describe accurately what has happened in a large number of economies over the centuries). *Inescapable, however, is the fact that growth in the money supply is at least a necessary condition for inflation.* As far as can readily be established, velocity changes by themselves do not appear ever to have either *caused* or *permitted* an inflation appropriately so called. Inflations, therefore, do

Graph 8: The GDP deflator and the "relative money supply"



Graph 9: The consumer price index and the "relative money supply"



not seem ever to have occurred as yet in the absence of rates of increase in the money supply that have been (well) in excess of rates of growth of the real gross domestic product. Conversely, clearly excessive rates of increase in the money supply ($\dot{M} > \dot{y}$) have rarely, if ever, failed to be either followed or accompanied by inflation.

As long as inflation will not occur in the absence of excessive rates of increase in the money supply, but *will* occur in the *presence* of excessive rates of increase in the money supply, it follows that the monetary authorities will not be able to claim victory in their war against inflation as long as the growth rate of the money supply remains unduly high – regardless of the original or current *causes* of inflation and of whatever other steps may be taken by the authorities for bringing the inflation under control. At the same time, the observed rate of increase in the money supply (to the extent that it is not called forth by increases in liquidity preference proper and is not accompanied by declines in the velocity of circulation) remains indicative of the inflationary pressures still present in the economy.

As regards the *causes* of inflation, it has become commonplace to observe that these are likely to be complex. Once inflation is under way, it increasingly involves the fears, hopes, expectations and desires of virtually all decision-makers. As these decision-makers seek to protect themselves against the welfare-eroding effects of inflation on their own income and wealth positions, their defensive actions themselves usually become part of the inflation process. The effect of such actions then is another half-turn of the inflationary screw.

It has been rightly pointed out, however, that it is the *spending* of money, not money itself, that is inflationary. (If newly created money is "hoarded", the effect on MV of the increase in the money supply M will be counterbalanced exactly by a corresponding decline in money's velocity of circulation V.) More often than not, moreover, it is also increases in the *spending* of money that allows organised labour successfully to demand increases in the money rewards for labour services well in excess of increases in labour's physical *productivity* – and to do so with impunity, i.e. without a loss of employment opportunities.

The roots of every inflation (before inflation *expectations* take over as an engine of inflation in their own right) therefore have to be looked for in factors – such as an autonomous increase in debt-financed government spending, too low a level of officially ordained nominal and real interest rates, or various shocks originating in the foreign sector, goods or factor markets – that have caused the nominal monetary *demand* for goods and services at their prevailing prices to be larger than the *supply* of these goods and services forthcoming at these prices in any given period.

Fortunately, however, measures that are aimed at curbing the *spending* of money on current output will normally also discourage the *borrowing* of money, as well as the *creation* of new money by banks that are in the business of making loans for spending purposes. Conversely, measures that seek to restrain the creation of new money will usually also discourage the borrowing and spending of money.

The bad news is then, however, that money cannot usually be made scarcer without also making it more "expensive" for some time at least. If the monetary authorities take steps to reduce the money supply (or to reduce the *actual* rate of increase in the money supply to below the *expected* rate of increase in the money supply), interest rates will rise. If the authorities' actions do not result in higher interest rates, money and credit cannot *effectively* have become scarcer – which means that there will be no good reason for inflation not to continue much as it did before. Conversely, if the authorities raise interest rates, these higher interest rates will not be sustained unless the money supply and the availability of credit are *effectively* reduced. If money and credit have not been made effectively harder to obtain, they cannot effectively have been made more expensive for any great length of time.

When the preceding paragraphs are read in conjunction with one another, it follows that, *technically,* stopping an inflation is no harder than adequately curbing the rate of increase in the money supply. There is no doubt that central banks are technically capable of doing so. As a *practical* matter, however, stopping an inflation is as hard as the economic, social, political, charitable, humanitarian and occasionally strategical arguments against temporarily high interest rates and the accompanying temporary losses of output and employment can make it. Complex sets of economic, social and political conditions, arrangements and considerations may cause the rate of monetary expansion to become too high in different countries in the first place; similar conditions and considerations may then lead the governments in these countries to acquiesce in its being too high. Careful thought has therefore to be given to the ramifications of curbing the monetary growth rate, to the potential victims and beneficiaries of such action, and to the prospects of keeping inflation from returning at a later stage.

Countries that have been notably successful in subduing their inflations in the 1980s, have rarely succeeded as yet in eliminating inflation altogether. They also find that perpetual watchfulness is required to prevent inflation from flaring up again. The South African monetary authorities' current "high" interest rate and related policies, and their endeavours henceforth to ensure appropriately positive real interest rates at all times, represent their best efforts – within the framework of a more comprehensive anti-inflation strategy – to neutralise inflation and its painful consequences while also minimising the pain of doing so.

A final note on monetary targeting

The above notes have sought to deal with certain aspects of inflation and of the role of money in inflation, rather than with monetary target-setting as a tool of monetary policy. Monetary targeting is a subject worthy of a detailed exposition in its own right. However, in the light of the emphasis placed on monetary expansion as a *sine qua non* of inflation, a few observations on monetary targeting with a view to curbing monetary expansion may be appropriate in the present context.

A target with regard to growth in M3 was set in South Africa for the first time in respect of the calendar year 1986. Monetary targeting was therefore slow in coming to South Africa: by 1986, some disillusionment (or "realistic scepticism") with regard to targeting exercises had already set in in several of the world's major economies (most of which, however, had already achieved signal success in bringing their inflation rates down from peak levels in the early 1980s). Elsewhere in the world, therefore, monetary targets were being downgraded or de-emphasised (if not actually discontinued altogether) by the time of their introduction in South Africa.

The late introduction of formal monetary target-setting in South Africa was explained partly by the monetary authorities' having awaited publication of the *Final Report* of the Commission of Inquiry into the Monetary System and Monetary Policy in South Africa (the De Kock Commission). In the Commission's approach, the attainment of ("low-profile" and "flexible") targets for the rate of increase in M3 (or some other monetary aggregate) was to be viewed as an "intermediate objective" of the strongly market-orientated monetary policies that were advocated by the Commission. Little time was spent by the Commission in its *Report* in discussing the reasons for or the merits of the adoption of monetary targets. In subsequent elucidations, however, the Reserve Bank has mostly used arguments such as the following:

- Limits to the growth in the money supply imply *de facto* limits to the inflation rate, at least over somewhat more extensive periods. Inflation rates will be reduced by bringing down the realised rates of increase in the money supply (or, more correctly, by the kinds of actions that are needed *for* bringing down the rate of increase in the money supply). Whatever the *causes* of inflation, and however complex inflation as a socio-politico-economic phenomenon may be, inflation cannot persist unless the money supply is allowed to continue to rise at unduly high rates.

- The existence of targets is helpful in explaining the need for occasionally unpopular measures of a restrictive monetary policy. They may therefore serve to make such measures more generally acceptable.

- The rate of increase in the money supply that is being aimed at or is considered desirable – in comparison with recently observed or expected *actual* rates of monetary expansion – will be indicative of the ease or tightness of the authorities' future monetary policy stance. As such, it will provide guidance to business enterprises in planning their pricing policies and other aspects of their behaviour. It will also serve as a useful input in the formulation of wage and related demands, and in reaching agreement in wage negotiations. More generally, if the target has any credibility at all, it will have a beneficial effect on inflation expectations.

- Monetary targets provide a norm by which the efficacy and adequacy of the authorities' current monetary policies can be judged. They also compel the authorities, on an "on-going" basis, to review, assess and possibly to reconsider the appropriateness of these policies and to justify their policy stance.

With regard to the year 1990, the limits to growth in M3 as propounded by the Reserve Bank were denoted "guidelines" rather than "targets", so as to bring home their nature as an indication of what *should* happen to growth in the money supply in the prevailing conditions, rather than as an authoritative forecast of, or as a binding commitment to, a certain rate of monetary growth that stands to be realised at all costs through the Bank's management of monetary conditions. Fairly limited success had been attained by the Bank in reaching its targets in the preceding years 1986-1989: although the target was hit squarely in 1987, an "undershoot" had been registered in 1986; significant "overshoots" were subsequently recorded in both 1988 and 1989.

Rather more success was attained in reaching the targets in all of these years when allowance is made for changes in M3's velocity of circulation, i.e. when the targets are taken to apply to the "effective" or "velocity-adjusted" money supply (MV rather than "just M"). Such adjustments for velocity changes, however, have failed to impress a number of observers. They have also given rise to the *misunderstanding* that the Bank is in effect targeting MV rather than M3; since MV equals Py (as noted earlier), this would amount to targeting the money value of the gross domestic product at current prices.

Certain arguments may, however, be advanced why velocity changes *should* be taken into account in judging the success or failure of a targeting exercise and in determining the feedback effects that observed rates of money growth should be allowed to have on the authorities' policy actions:

- Changes in M3's velocity of circulation in the South African economy have been indicative, primarily, of major shifts in the "disintermediation" or "reintermediation" of bank credit (i.e. in the *substitution* of *direct lending* between non-banking parties for credit previously or normally extended by banks, and *vice*

versa), and of decreases or increases in deposit holdings by private-sector parties on account of changes in their "liquidity preference proper". Disintermediation and reintermediation phenomena do not in themselves amount to a decrease or increase in the *overall* extension of credit by *both* bank and non-bank lending parties.[7]. At the same time, deposits held for satisfying a need for "liquidity preference proper" by their very nature are not being held for spending purposes. Such deposits, therefore, are not inflationary in themselves, do not foreshadow or accompany an increase in spending, and are not indicative or representative of inflationary developments in the economy.[8].

- Failure to accommodate "liquidity preference proper", or the taking of steps to counteract the effect of increased liquidity preference on the measured money supply, would, therefore, amount to subjecting the economy to unduly and unnecessarily restrictive policies. Such policies would then be needlessly constrictive or unduly damaging to economic activity in the prevailing situation.

Changes in velocity, however, highlight one of at least two structural features that greatly complicate the task of successful targeting in South Africa within a one-year targeting period. Firstly, reintermediation phenomena – causing accelerated growth in the measured money supply and a corresponding decline in money's velocity of circulation – tend to occur during periods of strong credit demand and rising interest rates; these are also periods which customarily show a narrowing of the banks' average lending rate/deposit rate differentials. "Perverse" *accelerations* of money growth rates *in periods of high or rising interest rates* are not unknown in other Western economies with regard to growth rates of the more comprehensive monetary aggregates in particular. The general structure, household/company distribution, and high degree of concentration of deposit holdings in South Africa do, however, seem to make the South African monetary system more strongly pre-disposed to this kind of "perversion" than is true of the monetary systems of these overseas economies.

Secondly, in South Africa as elsewhere, substantial *lags* normally occur in the visible effects of monetary policy measures on real economic activity. The "real" economy may not react observably for some three to five quarters after the introduction of a policy change; the inflation rates customarily respond even more tardily. These lags are long in proportion to the targeting period of one calendar year. During the lags in their "real" effects, moreover, increases in interest rates as part of a tighter money policy may (through various channels, such as distress borrowing and the debiting of interest) actually cause bank credit and the money supply to expand more rapidly than before. Developments of this nature may make the authorities' actions – even when these are wholly appropriate and will eventually succeed in their purpose – look worse than merely ineffective for some time at least and may reflect unfavourably on the authorities' credibility. They also carry a risk of an eventual over-reaction ("overkill", "doing too little in time and too much too late") in the manner in which the authorities conduct their monetary policies.

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7 Note that reintermediation and disintermediation are *substitution* phenomena: "primary lender" A, when reintermediating, in effect elects to extend credit to "ultimate borrower" B *via* a banking institution rather than direct. The bank's lending to B *takes the place* of A's lending to B: there is no net increase in the aggregate lending to ultimate borrowers in the economy. Also note that the reintermediation process, although resulting in an increase in the measured money supply and in total bank credit, actually is *restrictive* in itself: it is restrictive inasmuch as the banks, experiencing an increase in their total assets and in their liabilities to the public, will also experience a shortfall in their statutorily required minimum cash reserve holdings, and may also come to experience a tightness in their liquid asset holdings where no such tightness existed before.

8 In a more extensive discussion of these matters it should be pointed out that, in systems where the money supply is essentially *demand-determined*, such deposit holdings should also not necessarily be regarded as harbouring an inflation *potential*. (A subsequent decline in the demand for such deposits, on account of a waning of "liquidity preference proper", will cause such deposits to be *destroyed* – rather than *spent* – unless *other* factors, which should then be encouraging to spending, are at work at the same time.)