

The Beliefs of Central Bankers about inflation and the business cycle - should we share the faith?

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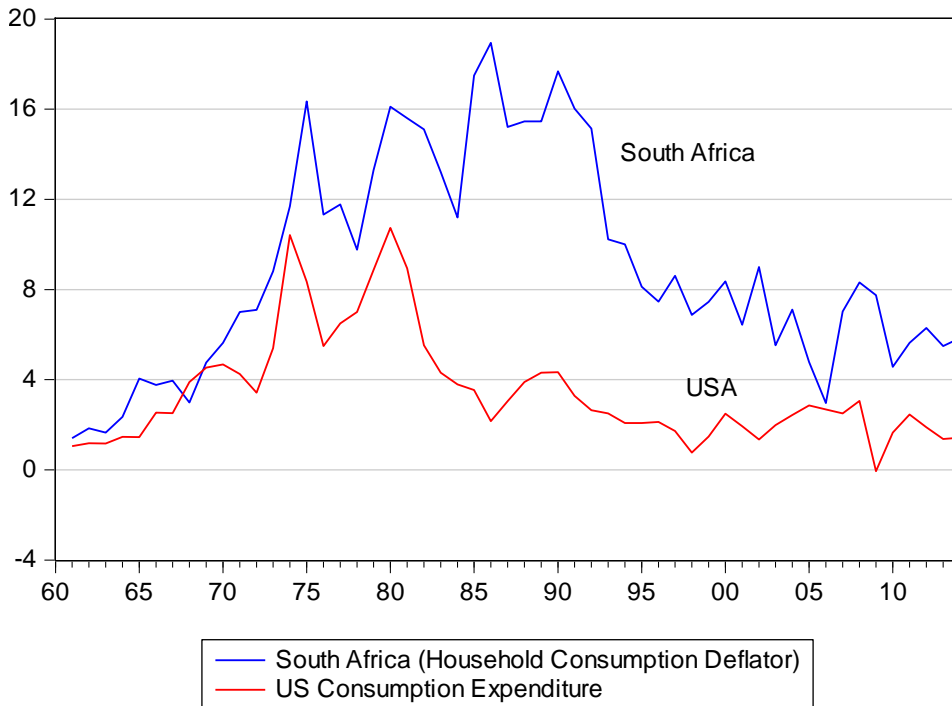
November 2015.

A central bank success story

Modern central bankers accept full responsibility for inflation. Moreover they can claim considerable success in the fight against inflation that began in earnest in the late nineteen seventies after a decade of rising and high inflation rates. Inflation in the US and South Africa picked up markedly in the late sixties and seventies. It reversed course in the US in the eighties and has remained at a very stable about 2% rate in recent years. The reversal of inflation trends in South Africa began later, in the nineties and has seemingly stabilized about the 6% rate.

(see below for the history of inflation in the US and SA calculated as the annual percentage change in the Consumption Goods Deflator, the Federal Reserve Bank's preferred measure of inflation to target)

**Fig1. Consumption Goods Inflation in the US and SA;
Annual Data 1960-2014**



Source; Federal Reserve Bank of St Louis (Fred Data Base) Investec Wealth and Investment

This is as it should be. Independent central banks control the cash reserves (central bank money) they supply to the economy. They are freed from any commitment to convert their currency into bullion or any other currency at a fixed rate of exchange. They hopefully are also able to act independently of their own governments and the political process. With their powers over the money supply, central banks can therefore control inflation, if they are willing to do so.

Central Banks, less directly can also control the supply of money, more broadly defined to include bank deposits that are close substitutes for cash when used to undertake transactions. Banks supplying deposits to households have to be able to convert these

deposits into central bank money on demand of the deposit owner. This convertibility requirement limits the leverage of the banks, their lending to deposit ratios. Given convertibility of deposits into cash, and so the need or requirement of banks to hold cash reserves in their tills, ATM's and in the form of deposit accounts with the central bank, the supply of deposits is restricted to some multiple of the supply of central bank money held by the banks. The more cash reserves the banks hold, the smaller will be this money multiplier- broad money/central bank money.

Banks are usually required by regulation to hold a minimum ratio of central bank cash to their deposit liabilities. This cash reserve requirement sets an upper limit to the supply of bank deposits. However, as we have seen recently, banks may well to hold reserves well in excess of these minima. The recent preferences exercised by US banks for cash reserves, well above required reserves, as an alternative to using the extra cash to make loans and advances, has reduced the money multiplier in the US dramatically as we show below. Loans and advances made by one bank end up as deposits in other banks.

The cash reserves of one bank decline and that of another bank increases as the additional loans and advances are paid out. These additional loans become the source of additional deposits with the banking system as the proceeds of the extra sales made are banked. Hence the money multiplier. Bank deposits become a multiple of the extra cash reserves created.

Though in the final analysis the willingness and ability of banks to make loans and supply deposits will be constrained by the profitability of doing so. This profitability will also be influenced by the regulation of their capital to loan ratios, an increasingly important element of bank regulation introduced after the Global Financial Crisis of 2008. These so called Basel rules are designed to minimize the dangers of bank failures, though if they reduce the

rate of return to the shareholders of banks, the effect might well be to reduce the real role of banks and bank lending (credit) in the economy. Bank balance sheets, their assets and their deposit liabilities, included in definitions of the supply of money, will then grow more slowly relative to the economy.

It is important to recognize that the inflationary danger rests with changes in the supply of money- not with the stock of money that will have evolved over time. It is the additional supplies of money or demands for them that demand the attention of central banks, as does the growth in asset side of the balance sheets of banks, reflecting the supply of bank credit.¹ Additional supplies of money, accompanied by additional supplies of bank credit, can be expected to stimulate aggregate spending. Though simultaneous changes in the demand to hold money will clearly help determine the final outcomes for spending and prices. Unpredictable changes in the demand to hold cash in portfolios of banks and other economic agents must complicate any model of inflation as we consider further below.

The thoughts of two central bankers

For our sense of what modern central bankers actually believe about inflation and what they can do about it, we draw on two recent important and carefully considered speeches, that of Janet Yellen, Chair of the Board of Governors of the US Federal Reserve System (the Fed) of Lesetja Kganyago, Governor of the South African Reserve Bank (Resbank) that raises the inflation issues in an emerging market context. These observations made by the two central bankers will presumably have enjoyed the full attention of

¹ For a full explanation of the money supply process within a South African context see G D I Barr and B S Kantor, Money supply and economic activity in South Africa – the relationship updated to 2011 Journal of Studies in Economics and Econometrics, 2013, 37(2) to be found at www.zaeconomist.com

the powerful research teams employed by the respective central banks. ²

Chair Yellen agrees that central banks are responsible for inflation. In her speech she attributes the failure to limit inflation in the seventies to the lack of focus of the Federal Reserve Bank at that time.

“...Today many economists believe that these features of inflation in the late 1960s and 1970s--its high level and lack of a stable anchor--reflected a combination of factors, including chronically overheated labor and product markets, the effects of the energy and food price shocks, and the emergence of an “inflationary psychology” whereby a rise in actual inflation led people to revise up their expectations for future inflation. Together, these various factors caused inflation--actual and expected--to ratchet higher over time. Ultimately, however, monetary policy bears responsibility for the broad contour of what happened to actual and expected inflation during this period because the Federal Reserve was insufficiently focused on returning inflation to a predictable, low level following the shocks to food and energy prices and other disturbances.”

Defining inflation – the importance of the excess supplies of money

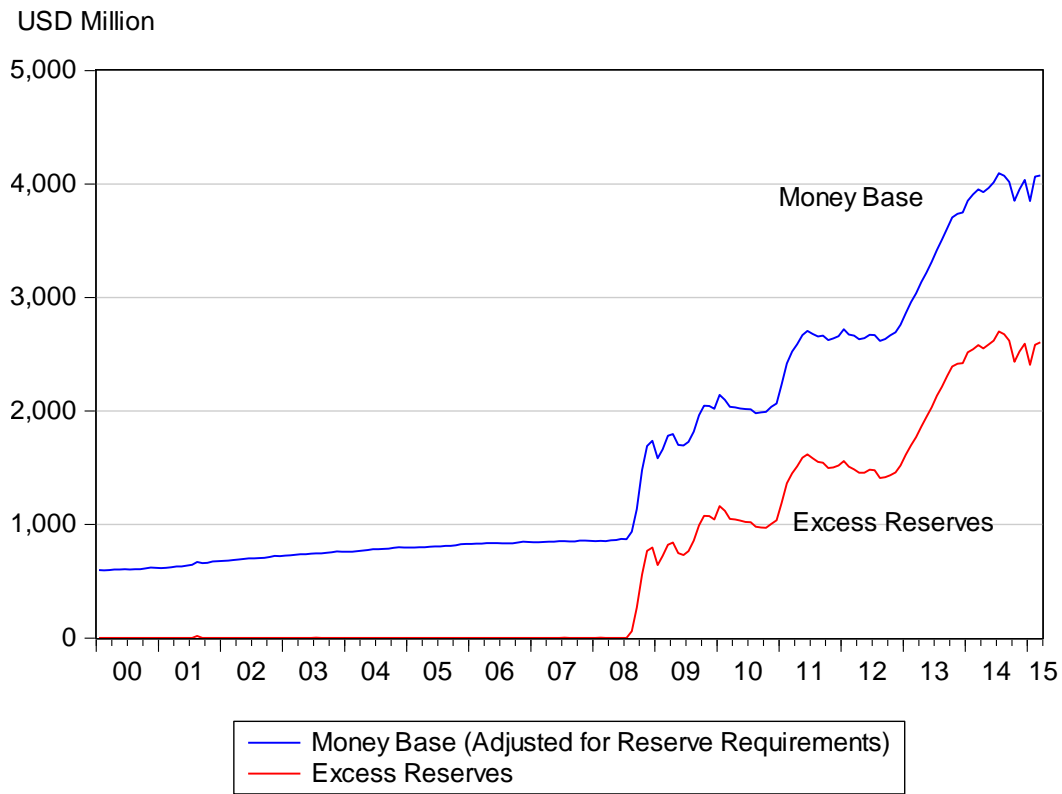
Monetary history tells us that inflation, defined as a continuous increase in the level of prices, is always a monetary phenomenon. Inflation is caused, we might add, by an increase in the supply of money over and above the demand to hold money. This qualification, *over and above the demand to hold money* has

² see, Inflation Dynamics and Monetary Policy, Remarks by Janet L. Yellen
Chair Board of Governors of the Federal Reserve System
at The Philip Gamble Memorial Lecture
University of Massachusetts, Amherst
Amherst, Massachusetts
September 24, 2015. Federal Reserve Bank web site

South Africa’s growth performance and monetary policy
An address by Lesetja Kganyago,
Governor of the South African Reserve Bank
Bureau for Economic Research
Cape Town, SA Reserve Bank web site
22 October 2015

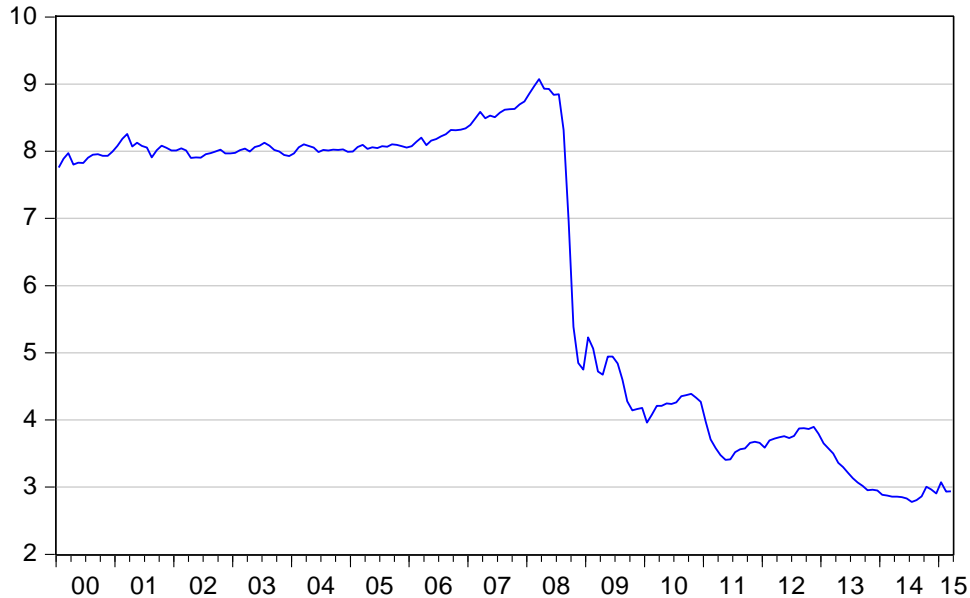
become especially important in the modern age of extraordinary amounts of quantitative easing, (QE) money creation given its new name. The US Fed in recent years has created trillions of extra cash exchanged by the Fed for Treasury Bonds and Mortgage backed securities. This extra cash has not had the usual inflationary implications. This is because the US banks have chosen to hold almost all of the extra cash in the form of deposits with the Fed as an alternative to lending the extra cash received. This preference for holding cash in bank portfolios has helped to emphasise that it is not the supply of money that matters for spending and inflation, but the excess supplies of money. It is the excess of the supply of money over the demand to hold money, that leads to more spending that will drive prices higher.

Fig.2 The supply of central bank money and the demand for it in the US



Source; Federal Reserve Bank of St.Louis (FRED) Investec Wealth and Investment

Fig.3 US Money Multiplier (M2/Money Base)



Source; Federal Reserve Bank of St Louis (Fred Data Base) Investec Wealth and Investment

In its first incarnation, when central bank money in the form of extra currency in circulation or as additional deposits (cash reserves) issued to banks, the central bank is creating wealth. This is a power denied all other economic agents that have to sacrifice consumption, that is save, spend less of their income, to add to their stock of wealth. Central Bankers can do this nominal wealth creation with the stroke of a pen or an electronic signal buying financial securities in the market place from private parties, including private banks.

The sellers of a security will deposit their sales proceeds into a banking account and their banks will be credited with the same amount on their deposit account with the central bank. In the first round the deposit liabilities of the banking system will have increased as will its assets in the form of cash held with the central

bank, by the same amount. When the seller is a bank the bank will be exchanging a security for cash at the central bank- its deposit liabilities will be unaffected by this transaction.

The supply of central bank money, defined as the sum of currency in issue, plus bank deposits held with the central bank, will have increased by the value of these open market purchases. The central bank balance sheet will have expanded accordingly to show an increase in its deposit liabilities matched by an increase in its holding of securities.

When the extra cash so created is exchanged for extra goods or services or for loans and advances made by private banks this additional buying power will tend to push up the prices of goods or services and assets. These price movements work to reverse the initial wealth effect initiated by the increase in the money supply. The real supply of money will decline in proportion to the higher prices. This reversal of the initial wealth (money) creation, in the form of higher prices for goods and services, is known in monetary economics as the real balance effect.

The process of price increases become continuous when central banks add continuously to the supply of money that original money holders dispose of. This further encourages spending and results in a continuous increase in prices generally. This process of rising prices that can only end when the money supply stops increasing. Asset price inflation which is very likely when portfolios adjust to excess supplies of cash and cash is exchanged for other assets, is not included directly in the CPI. House price inflation will be reflected to some degree in higher house rental or lease charges that are included in measures of the CPI.

Keynesian economics and the Phillips curve –expectations augmented

Keynesian economics evolved in response to the structurally high levels of unemployment and persistently slow growth that characterised the economies of the US and Europe in the nineteen thirties. Keynesian models of economic activity presumed a rigidity of nominal wages and prices in the downward direction. The assumed reluctance of workers to accept any reduction in nominal wage rates meant that recessions would be prolonged by this resistance to lower wages. The Keynesians cautioned against relying on market forces, on wage and price flexibility to clear the labour and goods markets of their excess capacity. The Keynesians advocated aggregate demand management. That governments and central banks should react to, or better still, anticipate recessions, by increasing fiscal deficits and lowering interest rates.

The Phillips curve at the heart of these models posited a favourable trade-off, between changes in unemployment, later generalised to changes in output, and changes in prices, that is inflation. More inflation, engineered by stimulatory fiscal and monetary policy, would lead to more employment because more inflation would effectively reduce real wages and encourage additional employment. Given nominal wage rigidities, real wages, wages adjusted for inflation, would decline by stealth so to speak as prices rose. It soon became apparent that that the economic world did not work this way. More inflation in the seventies were associated with higher rather than lower levels of employment. These miserable economic conditions were described as stagflation.

Theory soon followed to explain why rational economic agents would have every reason to anticipate inflation in their forward looking economic decision making. They could not simply be consistently taken in by inflationary surprises. They would soon

learn how inflation reduced real wages and would bargain with inflation in mind. It was explained by Milton Friedman and Edmund Phelps and then later by the Rational Expectations School, led by Robert Lucas, that it was not inflation that stimulated economic activity, but unexpected inflation. Unexpectedly high inflation might stimulate the economy and unexpectedly low inflation might depress an economy.³ Rational Expectations had an additional important conclusion. That economic activity would be unaffected by monetary and fiscal policy intervention, because their intended and expected impact would already have been anticipated by economic agents. The expected influence of stimulatory policies would already be incorporated in market prices and actions. Therefore to move the economy ahead policy interventions would have to take the form of an inflation surprise.

Yellen makes the following observations about the link between inflation and real wages. She denies the popular notion of a wage-push theory of inflation. The price of labour, wages, we would agree are but another price, determined simultaneously with prices generally. One does not, we would argue and Yellen would seem to agree, explain the inflation of one set of prices with another set of prices measured contemporaneously (sometimes called costs) subject to the same set of demand and supply side forces at work in the economy.

To quote fed Chair Yellen on the wage-price connection

“.....An unexpected rise in inflation also tends to reduce the real purchasing power of labor income for a time because nominal wages and salaries are generally slow to adjust to movements in the overall level of prices. Survey data suggest that this effect is probably the number one reason why people dislike inflation so much. In the longer run, however, real wages--that is, wages adjusted for inflation--appear to be largely independent of the average

³ For my interpretation of these analytical developments see, Brian Kantor, Rational Expectations and Economic Thought, Journal of Economic Literature, September 1979, to be found at www.ZAeconomist.com

rate of inflation and instead are primarily determined by productivity, global competition, and other nonmonetary factors.....”

Why unexpected inflation (inflation surprises) matters for real economic activity

The revealed errors in forecasting inflation will have real economic consequences should price setters change their prices or output and employment decisions in response to revealed levels of demand. When inflation is overestimated the revealed demand for goods and services will prove reluctant to absorb the planned price increases. These disappointments may lead to excess inventories and cut backs in output and employment as prices adjust to lower levels. Underestimating inflation may do the opposite. Prices output and employment may well rise in response to unexpectedly strong demands for goods and services produced.

When inflationary expectations become accurate forecasts of inflation, the pricing and wage plans of forward looking economic agents are more easily fulfilled and the growth undermining reactions to inflation surprises can be avoided. Central bank success can then be measured by sustainably low inflation and the absence of inflation surprises.

Inflation targeting modern central bankers, for example Chair Yellen, as we will demonstrate, fully recognise the role expectations of inflation play in the modern economy. In sympathy with this understanding they accord a leading role to inflationary expectations in their analysis of inflation dynamics. For these central bankers inflationary expectations can also cause inflation. The more inflation expected, the more inflation happens.

However this begs a very important question that the rational expectations school first asked. What drives the inflationary expectations of households and firms and participants in financial

markets, who have every reason to forecast inflation as accurately as possible? Accurate forecasts of inflation will help the firm or the household avoid the real losses associated with unexpected inflation or better help them profit from accurate predictions of inflation.

These expectations of inflation will surely be derived from an understanding of the forces expected to drive the (average) price level higher or sometimes even lower. The monetary policy actions and reactions expected of the central bank will play a large role in any working model of the inflationary process that economic agents use to predict inflation. Such monetary models of inflation would also have to include forecasts of the demand for money.

The apparent independent influence of inflationary expectations on inflation – as some kind of self-fulfilling exogenous force driving inflation ever higher, must be seriously questioned. It makes every sense to expect economic agents with price or wage setting powers, firms and trade unions, to budget and bargain with future inflation in mind. Obviously the more inflation they expect over their planning horizons, the more protection they will seek up front in the price and wage demands they make of their customers or employers.

But when they expect more inflation and act accordingly, price setters will also react to market conditions as they are revealed to them. They will have regard to what their markets can bear, as opposed what they were expected to bear, in the form of pre-determined wage and price increases. The expected level of demand for their goods and services at the prices set, influenced as they will have been, by their models of inflation, may not happen in the manner predicted.

Expectations can be wrong. If so realized as opposed to expected prices and wages will adjust to help clear inventories or encourage

more employment (or for prices to rise further than planned if demand proves unexpectedly strong) The inflation expected and the prices set in anticipation of inflation will always be subject to what the market is revealed to bear. Such reactions to market events, as opposed to market expectations, would be consistent with profit maximising or loss avoiding behaviour.

For these good reasons formal models of inflation usually moderate the influence on prices of inflationary expectations themselves. These models add a further explanatory variable, represented by the state of demand and supply in the economy, usually described as the output gap. The output gap in these models of inflation attempts to measure the running differences between the flow of actual demand and potential supply in the economy. Excess demand over supply will add to inflation and excess supply reduce inflation above or below its expected level. The Fed model of inflation adds such a variable that we will examine in some detail below.

Measuring expected inflation- more stable than actual inflation

These expectations of inflation can be measured in surveys of inflation expected by firms and households or continuously by reference to interest rates in the bond market. More inflation expected will tend to come will push up interest rates and reduce the market value of a longer dated bond as investors up-front seek to protect the expected purchasing power of their fixed interest income. Less inflation expected will do the opposite, reduce interest rates and raise bond prices as the buying power of a fixed interest rate is expected to increase as inflation recedes.

Investors in the bond market have a choice. They can hold an inflation protected bond of equivalent duration that provides an income that rises automatically with inflation. The difference

between the higher nominal yield on a conventional bond and the lower real yield on an inflation protected bond, reveals inflation expected. The more inflation protected, the wider the spread between nominal interest rates and the real interest rates provided by the inflation protected alternative. The spread reveals the compensation provided by the market for assuming the risks of inflation when holding a conventional bond.

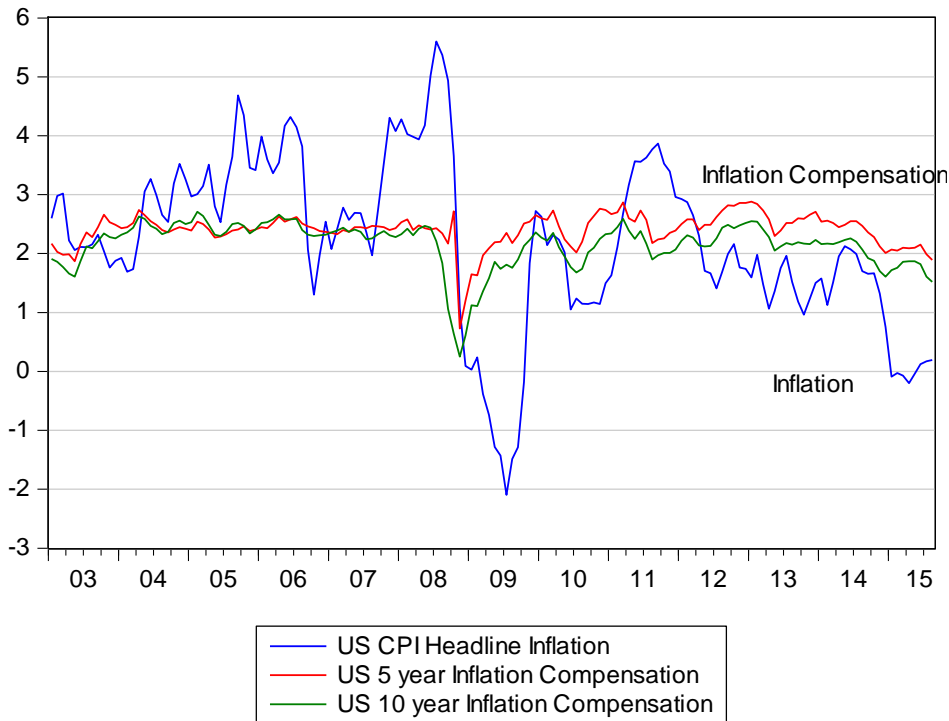
In the figures below we compare Headline Inflation to Inflation Compensation provided by the Bond market in the US and SA since 2003. As may be seen in both economies, inflation compensation or expected inflation inferred in the bond markets, has been much more stable than headline inflation. This stability of expected inflation would be even more apparent if we excluded the volatility associated with the financial crisis of 2008.

Expected inflation in the US, measured on a monthly basis since 2003 has averaged 2.4% p.a for bonds of five year duration and 2.2% p.a for bonds of 10 years duration. Headline inflation average 2.2% p.a. over the same period with a much wider Standard Deviation (SD) about this average. Inflation in SA over the same period was a higher 5.91% p.a over the same period with a SD of 2.91 p.a. compared to a much more stable expected inflation over ten years that averaged 5.74% p.a with a SD of 0.64% p.a. It may therefore be said that inflation expected in both countries has been very well anchored, in the conventional phrase of inflation analysis. Though at over double the level in SA compared to the US.

Realized inflation will only influence expected inflation if the inflationary process itself, the permanent forces expected to drive inflation higher or lower, including the policy actions and reactions of central banks, will have altered for the worse or better. That expected inflation is much more stable than realised inflation,

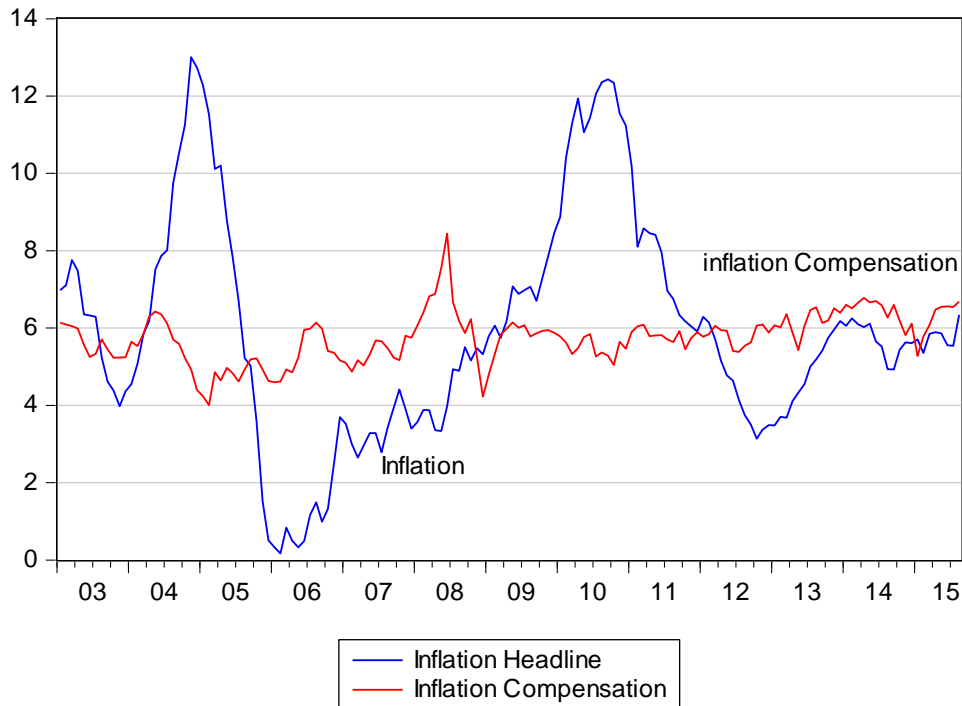
confirms the stability of the structures included in forecasting models of inflation. There should however be no presumption that inflation expected is a simple function of recent trends in inflation. These trends, favourable or unfavourable, will have an economic explanation. The model of inflation may well be subject to a change in direction, should there be good reason to believe that the underlying structure driving inflation has changed. Expectations of inflation may well change well ahead of actual inflation if the objectives of a central bank are thought to have changed. Though if underlying conditions and central bank objectives remain as they were, the inflation trend may well be usefully extrapolated.

Fig 4. Inflation and Inflation Compensation in the US 2003-2015 (Monthly Data)



Source; Federal Reserve Bank of St Louis (Fred Data Base) Investec Wealth and Investment

Fig.5 Inflation and Inflation Compensation in South Africa 2003- 2015. Monthly Data



Source; Federal Reserve Bank of St Louis (Fred Data Base) Investec Wealth and Investment

The quite simple regression model of inflation used by the Fed is consistent with the view that inflation expectations on their own do not drive prices higher or lower. This model forecasts inflation in the US to depend on inflation expected, with a further term to represent the degree of slack in the economy, that is to say the output gap. The forecasting exercise conducted by the FED was outlined in an Appendix to the Yellen paper. Somewhat

surprisingly no statistics were provided in the Appendix to indicate how well this model has been able to forecast US inflation ⁴

Dealing with supply side shocks to inflation- the Fed view

The Fed makes it clear that the actual inflation rate may be affected to an important degree by other idiosyncratic and temporary influences on consumer prices. How a central bank should react to such temporary shocks to prices, is an important chapter in the central bank play book as Chair Yellen emphasized.

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Appendix: The Estimated Inflation Model and Inflation Decomposition Procedure

The inflation model used in the decomposition procedure includes two equations-- an identity for the change in the price index for total personal consumption expenditures (PCE) and a simple reduced-form forecasting equation for core PCE inflation. The identity is

$$\pi_t = \pi_t^c + \omega_t^e RPIE_t + \omega_t^f RPIF_t,$$

where π_t and π_t^c denote growth rates (expressed as annualized log differences) of total and core PCE prices, respectively; $RPIE_t$ and $RPIF_t$ are annualized growth rates for prices of consumer energy goods and services and prices of food and beverages, both expressed relative to core PCE prices; and ω_t^e and ω_t^f are the weights of energy and food in total consumption. The core inflation forecasting equation is

$$\pi_t^c = .41\pi_t^e + .36\pi_{t-1}^c + .23\pi_{t-2}^c - .08SLACK_t + .57RPIM_t + \epsilon_t,$$

where π_t^e is expected long-run inflation; $SLACK_t$ denotes the level of resource utilization; $RPIM_t$ controls for the effect of changes in the relative price of core imported goods; ϵ_t is a white-noise error term; and the coefficients are ordinary least squares estimates obtained using data from 1990:Q1 to 2014:Q4.

Yellen made the following observations

“...To summarize, this analysis suggests that economic slack, changes in imported goods prices, and idiosyncratic shocks all cause core inflation to deviate from a longer-term trend that is ultimately determined by long-run inflation expectations. As some will recognize, this model of core inflation is a variant of a theoretical model that is commonly referred to as an expectations-augmented Phillips curve. Total inflation in turn reflects movements in core inflation, combined with changes in the prices of food and energy....An important feature of this model of inflation dynamics is that the overall effect that variations in resource utilization, import prices, and other factors will have on inflation depends crucially on whether these influences also affect long-run inflation expectations.

We would add a response to this statement. Why should these idiosyncratic, temporary shocks to the inflation rate influence inflationary expectations? They could only do so if they caused a change in the models used to forecast inflation. There is surely no good reason to change the model, for a supply side shock to inflation to be regarded as a permanent influence on inflation itself.

Ideally from a central bank perspective, inflationary expectations will be “anchored” at low levels. Yellen makes the point with the aid of some stylized reaction functions. She provides two alternative possible responses to a temporary shock to the price level. One scenario is when inflation expectations are subject to considerable volatility, as they were in the inflationary seventies. A second scenario is when low rates of inflation are confidently expected, as it now appears to be. As Yellen suggests

“.....perhaps because the central bank has been successful over time in keeping inflation near some specified target and has made it clear to the public that it intends to continue to do so.....In this case, inflation will deviate from its longer-term level only as long as import prices are rising. But once they level out, inflation will fall back to its previous trend in the absence of other disturbances..”

To quote Yellen further

A key implication of these two examples is that the presence of well-anchored inflation expectations greatly enhances a central bank’s ability to pursue both of its objectives--

namely, price stability and full employment. Because temporary shifts in the rate of change of import prices or other transitory shocks have no permanent influence on expectations, they have only a transitory effect on inflation. As a result, the central bank can “look through” such short-run inflationary disturbances in setting monetary policy, allowing it to focus on returning the economy to full employment without placing price stability at risk. Indeed, the Federal Reserve has done just that in setting monetary policy over the past decade or more...”

The problem with deflation

The Fed however has a new problem with inflation. That it may be too low rather than too high. It is of the view that too low a rate of inflation would make it difficult for the Fed to combat recessions. Too quote Yellen

“...Inflation that is persistently very low can also be costly, and it is such costs that have been particularly relevant to monetary policymakers in recent years. The most important cost is that very low inflation constrains a central bank’s ability to combat recessions. Normally, the FOMC fights economic downturns by reducing the nominal federal funds rate, the rate charged by banks to lend to each other overnight. These reductions, current and expected, stimulate spending and hiring by lowering longer-term *real* interest rates--that is, nominal rates adjusted for inflation--and improving financial conditions more broadly. But the federal funds rate and other nominal interest rates cannot go much below zero, since holding cash is always an alternative to investing in securities. Thus, the lowest the FOMC can feasibly push the *real* federal funds rate is essentially the negative value of the inflation rate. As a result, the Federal Reserve has less room to ease monetary policy when inflation is very low. This limitation is a potentially serious problem because severe downturns such as the Great Recession may require pushing real interest rates far below zero for an extended period to restore full employment at a satisfactory pace. For this reason, pursuing too low an inflation objective or otherwise tolerating persistently very low inflation would be inconsistent with the other leg of the FOMC’s mandate, to promote maximum employment....”

The power to create as much central bank money as central banks wish to do, one might think would be sufficient to prevent deflation. That extra money created might get stuck on the balance sheets of banks becomes an argument for ever more money creation. And might well require even more unconventional measures to get money into the pockets and purses of private individuals, and out of them. The proverbial helicopter first

introduced as a heuristic device by Milton Friedman and later alluded to by ex-Chairman of the Fed, Ben Bernanke, might be called upon to spread cash around to avoid a potential blocking role played by banks. Though giving money away, rather than giving it to banks, might be defined as fiscal, rather than monetary policy, and inhibited accordingly by politics.

Lowering interest rates is not the only way for a central bank to hope to influence spending. The wealth effects of money creation itself can stimulate more spending both directly when excess money is exchanged for goods and service. When money is exchanged for assets and financial claims on them, their higher asset prices will add further to wealth to further encourage spending. The counter to excess demands for cash to hold rather than spend is to supply still more cash until money loses its attractions because at some point with ever more cash supplied, inflationary expectations will rationally replace deflationary expectations, to reduce the demand for cash.

Conclusion; Is the Fed dual mandate logically consistent- why hope to surprise the economy?

The ambitions the Fed has to not only control inflation but to also manage the business cycle is surely contradictory. Controlling inflation in the light of inflationary expectations demands, as the Fed appears to concede, that the Fed acts in a highly predictable way to avoid inflation surprises. But combating a recession, would surely require an inflation or monetary policy surprise, that is more inflation than the market has come to expect.

Why does the Fed appear to believe that it is able to engineer inflation surprises to combat recessions while it makes the case strongly for the benefits of highly consistent expectations of low inflation itself? It would seem that Keynesian notions of managing an economy die very hard in the Fed. These contradictions about

the role expectations and Fed watching play in the economy lead in another direction. A route well-articulated by Milton Friedman and the monetarists in the inflationary seventies. It helps make the case for more reliance monetary policy rules rather than the exercise of monetary policy discretion. Monetary policy rules imply market determined rather than policy determined interest rates. Market determined rates of interest can be expected to be rather stable interest rates if accompanied by highly predictable growth in the supply of central bank money.

These rules would have to be abandoned in times of a liquidity crisis. A crisis would always call for a central bank to break such a money supply rule to undertake the most important of its functions. That is to supply a financial system, that is desperate for cash, with a temporary abundance of it.

The practice of monetary policy in Emerging Economies- the troubled case of SA

The Governor of the South African Reserve Bank (Resbank) Lesetja Kganyago, has expressed a much less benign view of higher inflationary expectations in South Africa. He is very much inclined to react to any theoretically temporary shock to the level of prices. For him demand side or supply side forces acting on prices demand very similar monetary policy reactions.

To quote the Reserve Bank Governor

“... As I have already mentioned, average expectations have been fairly stable around the top of the target range for several years now. But focusing on a simple average conceals useful information. Medium-term expectations have converged strongly over the past four years, revealing something near a consensus that South African inflation will be around 6 per cent over the longer term. This is not because of shocks, which cannot be foreseen with any clarity several years out. This is because the 6 per cent is perceived as the normal level. The inflation outlook is not favourable. We expect headline inflation to average more than 6 per cent in the first and fourth quarters of next year, and just less than 6 per cent in 2017.

This forecast faces sizeable risks, especially from currency depreciation as well as wage and price determination processes. With weak commodity prices and US monetary policy normalisation coming closer, we cannot be complacent about the exchange rate and its potential inflation consequences. Furthermore, we confront medium-term inflation expectations bunched around the top of the target range. The risk of positive inflation shocks feeding into higher expectations and price setting remains very high....”.

The stability of inflationary expectations to date in South Africa and the fact that inflation expectations (as measured) are statistically much more likely to follow rather than lead headline inflation has not impressed the Resbank. It is difficult moreover to credit the view that changes in the inflation rate, that has been a very variable one, have been driven by inflationary expectations, expectations that have barely changed over the years, rather than the other way round, that inflation has led rather than followed inflation expected.

There is a major problem with a central bank policy reaction function that does not differentiate supply side from demand side shocks to inflation. It will lead to higher policy determined interest rates, when a supply side shock drives prices higher - regardless of the absence of any prevailing demand side pressures on prices. Higher interest rates may then further depress already weak levels of demand. Higher taxes, or a weaker exchange rate that temporarily drives prices higher, reduce the disposable incomes of households and so depress their demands for goods and services. These lower levels of demand then further discourage firms from investing in additional capacity or in hiring workers.

This makes for highly pro-cyclical monetary policy interventions. Not only may interest rates be forced higher as supply side shocks slow the economy down. It also means lowering interest rates when supply side shocks, in the form of a stronger rand, result in temporarily favourable inflation trends that act to stimulate spending.

There is no reason to have confidence in the ability of the Reserve Bank to predict the future foreign exchange value of the rand – nor any reason to have greater confidence in any private sector forecast for the rand. This unpredictability of the rand, coupled with the difficulty in predicting the pass through effect of a weaker rand via global commodity and other prices on export and import prices makes forecasting headline inflation in SA a particularly hazardous exercise.

Recently, the weaker rand has had an unusually subdued impact on import and export prices. This has resulted in a far smaller pass through impact on domestic prices than predicted in the Reserve Bank inflation model. This has been readily acknowledged by the Resbank. We would add that these unexpectedly lower inflation rates, given rand weakness of the recent order of magnitude, has fortunately recently helped restrain the Resbank from raising its repo rate further than it has done.

The Reserve Bank, unlike its Fed counterpart seems to be very uncomfortable measuring the output gap itself. It might be smaller- or larger than previously thought- making the impact of higher interest rates on demand and then on inflation still more difficult to predict. To quote the Governor further

“And the inaccuracy of our output gap estimates did not come as a surprise. It is a well-established fact that output gaps are very difficult to estimate, especially in real time. The phenomenon itself is unobserved. There is no single, agreed method for its determination, and competing methods yield varying results. So policymakers do not accept output gap estimates uncritically. In real time, we thought in late 2013 that the output gap may have widened to as much as -3,5 per cent. Since then, we have repeatedly re-estimated the gap. Our latest measures suggest that the gap may have been closer to -0,5 per cent at that time in late 2013.....”

We would add a further feed-back loop worthy of consideration by the monetary authorities in SA and elsewhere. That is the feed-back loop from economic growth to expected returns for investors and consequent net capital flows into and out of the domestic currency. Growth will tend to lead capital flows to fund any deficit

on the current account of the balance of payments. Monetary policy interventions that depress the growth outlook, will tend to discourage capital inflows. If it does so slower growth will weaken rather than strengthen the rand. Slower growth associated with higher interest rates and a weaker rand may well add to measured inflation rates.

It is the ability to attract foreign capital that sets the limits to the growth rate of an economy dependent on foreign savings to fund its growth. The output gap of relevance for inflationary pressures is the difference between domestic demand and potential supply, including to an important degree, supplies of imports. The limits to growth are set by the ability to attract foreign capital to help fund the balance of payments and foreign trade account deficits that will tend to increase with the growth rate. Measuring an output gap and the pressure it imposes on prices would therefore require an estimate of imported supplies. Flows of capital can fund the excess of imports over exports- of supply over demand. These flows of capital and of imported goods can moderate inflationary pressures exerted by the demand side of the economy.

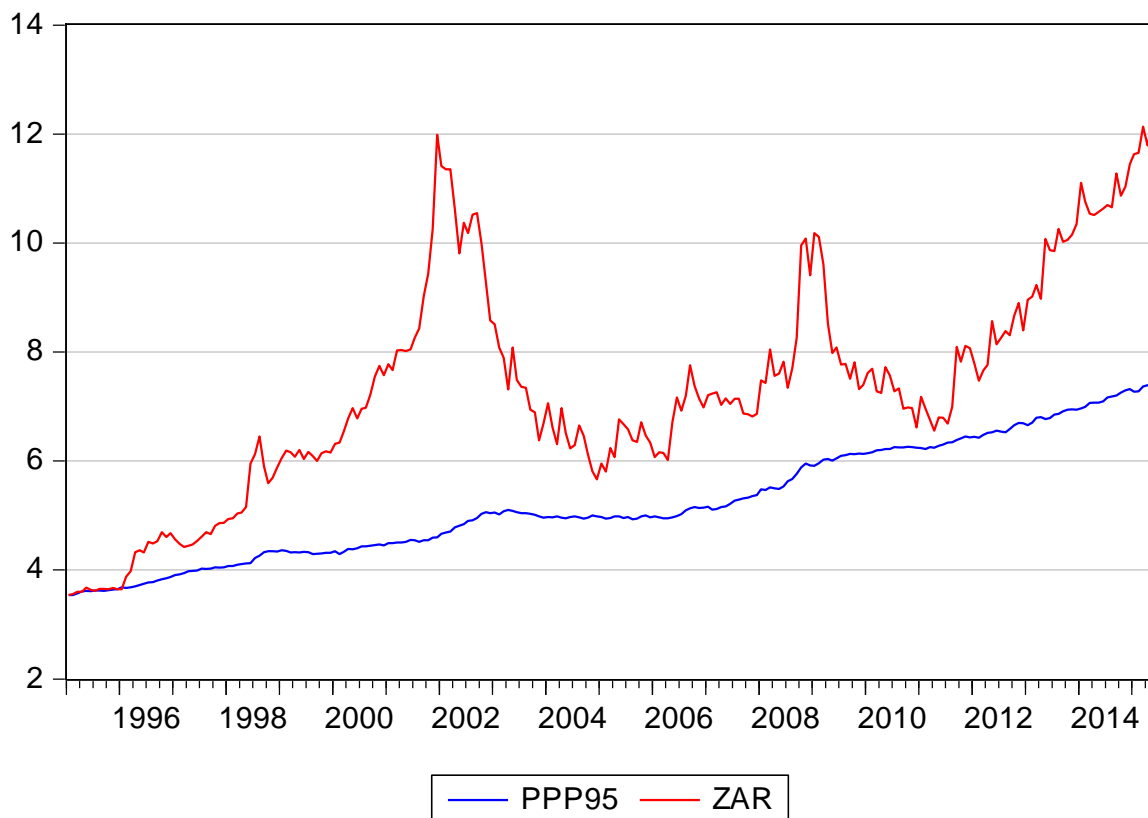
The rate of exchange will determine the prices paid for imports and the capital flows encouraged by expected returns may well support the domestic currency. These considerations are particularly relevant for small less developed open economies with a seemingly permanent excess of domestic expenditure over domestic output and so permanent reliance on foreign savings.

Inflation targets may help anchor inflation expectations but they have to be made credible by the actions and not only the intentions of central bankers to contain aggregate demand within the low inflation limits of potential supply applying the tools of monetary policy. The Fed has clearly succeeded in reducing the rate of inflation expected better than the SA Reserve Bank, despite its best

intentions. The Resbank appears to find it difficult to understand why an expected 6% p.a. inflation rate has become the norm.

Why then do economic agents with an interest in the SA expect inflation to be about 6% on average? Any model of expected inflation in SA, including that of the Reserve Bank, would have to give a prominent role to the effective foreign exchange value of the rand. The problem for any such forecast is that the rand has not and cannot be expected to follow some form of purchasing power parity (PPP). (See below a comparison of the USD/ZAR exchange rate and its PPP equivalent since 1995)

Fig 6. The USD/ZAR Exchange Rate and its Purchasing Power (PPP) Equivalent



If more SA inflation were accompanied consistently and contemporaneously by a weaker exchange rate, the rand prices of domestic goods and services and of foreign exchange would be moving in the same inflation linked direction. Purchasing power parity would hold approximately and modelling exchange rates and inflation rates would then be a much easier task than it now is. The history of an exchange rate that deviates significantly from PPP equivalent exchange rates cannot justify the use of a PPP equilibrium condition to help forecast exchange rates.

The rand unfortunately for the model builder does not follow or move simultaneously with differences in inflation between SA and its trading partners. Much more typical is for the exchange value of the rand to change in response to highly independent flows of global capital. Independent that is of domestic monetary policy settings. An exchange rate determined by flows of capital that take their cue from degrees of global risk aversion rather than from SA specific economic or political events and the risks associated with them.

Therefore in these unpredictable circumstances, the exchange value of the rand leads rather than follows the inflationary process. Import, export prices and domestic prices follow the exchange rate in more or less close order, depending on global inflation trends, the state of the SA economy and the policy reactions of the Reserve Bank. The theoretical case for inflation targets in small open economies surely depends on the assumption of a well behaved exchange rate, one that conforms to PPP. Such an assumption is not justified.

When an unpredictable exchange rate constitutes the source of the major inflation shocks acting on the economy, the expectation of inflation must accord a large role to the expected exchange rate. Such expectations, well supported by the historical record, will have a very limited influence over the exchange rate to Reserve Bank reactions. Expectations of persistent rand weakness are fully revealed by differences in nominal interest rates between SA and its trading partners. When interest rates in SA are higher than those in the US, the difference in rates or spread will be expected to compensate for expected rand weakness Vs the USD. The percentage premium or discount of a forward over a spot rate is the expected rate of exchange in three months or three years or ten years and will be roughly equal to the difference in market interest rates over the same period of time. The equilibrium interest parity condition will tend to hold. The differences in interest rates over a particular period will be equal to the expected percentage change in the exchange rate over the same period. The forward percentage premium or discount of the forward over the spot rate of exchange will be made equal to the interest rate spread through riskless arbitrage operations.

The differences in ten year RSA and USA bond yields have remained consistently around five to six per cent per annum. In other words the rand has been consistently expected to weaken by about the same average percentage rate over an extended period of time. The more the rand is expected to weaken, the more inflation would be consistently expected. The foreign exchange market in the rand has consistently priced in rand weakness. That is differences in the rate of inflation expected in SA and the USA, as revealed by higher SA interest rates, are expected to be offset by approximately the same rate of rand weakness. The foreign exchange market acts as if PPP is expected to hold

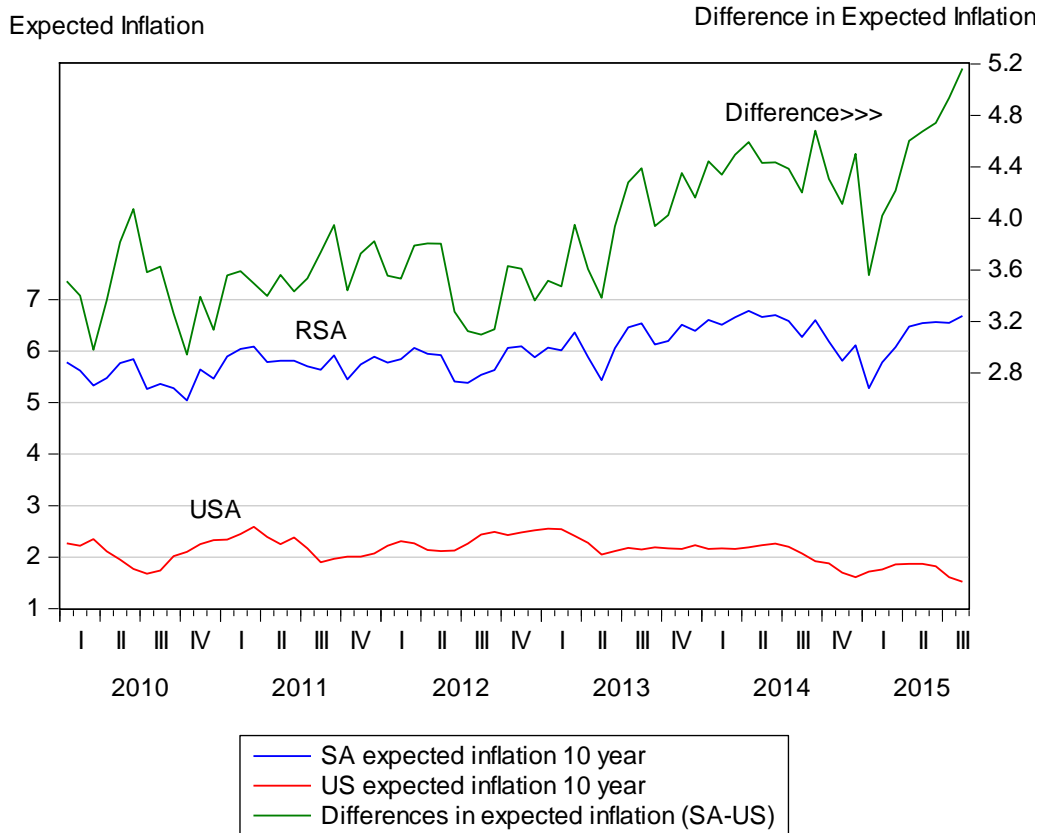
The rand exchange rate however as we show in Fig 6 has not therefore weakened as the market has expected it to. Lengthy

periods of (unexpected) rand strength against the USD are identified in figure 6 though they have influenced inflation itself much more than inflation expected. Actual rand strength did not lead to expected rand strength. The relationship between inflation expected and actual inflation in SA was identified in figure 5.

Another uncomfortable implication of the spot USD/Rand exchange rates is that it tends to weaken as interest rate spreads widen and strengthen as the spreads narrow. Or in other words the more the rand weakens, the more the market expects it to weaken further. That is to say the interest carry, influenced by domestic interest rate settings, appears to have a generally perverse influence on the foreign exchange value of the rand. This provides the evidence that higher rates in SA can be counterproductive in their influence on inflation. Increase in SA short term interest rates under Reserve Bank direction may well lead to rand weakness and therefore higher rather than lower prices in general.

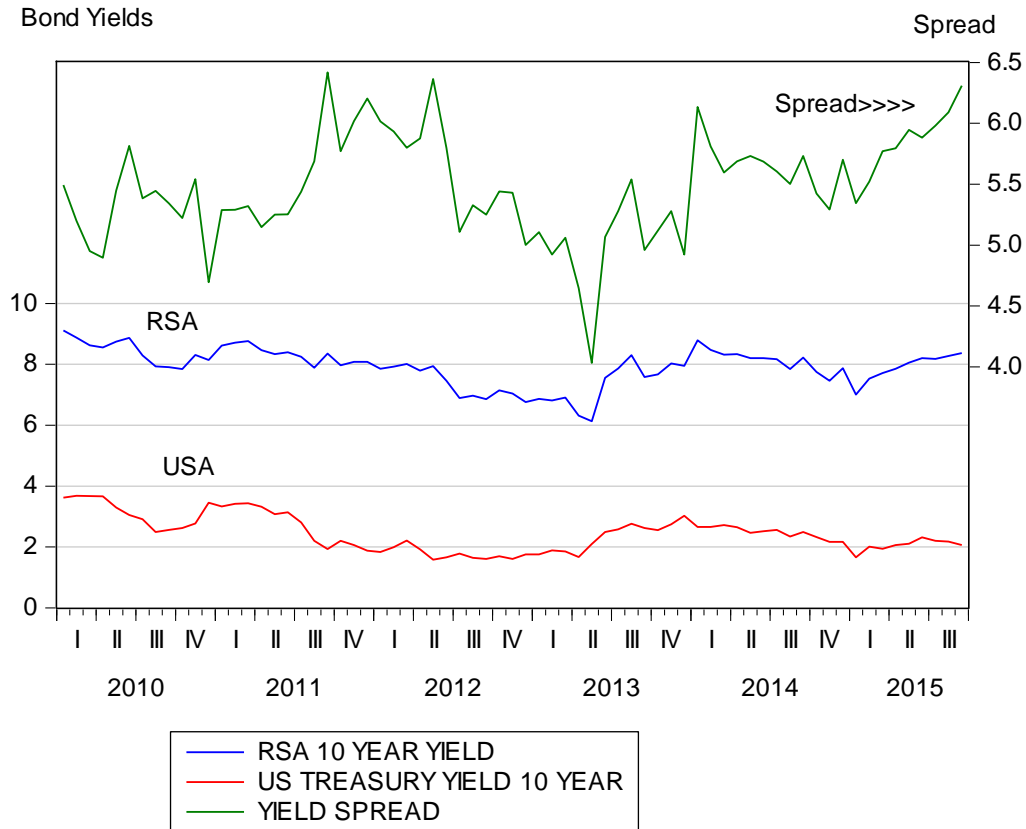
As we show below the recent increase in expected inflation in SA is associated with a recently wider spread between RSA and USA bond yields. That is with more expected rand weakness. The market recently has consistently with more inflation expected been pricing more rand weakness and so more inflation expected in SA. (See below)

Figure 7: Expected inflation in SA and the US in 2014-15, daily data



Source; Federal Reserve Bank of St Louis (Fred Data Base) Investec Wealth and Investment

Figure 8: 10 year bond yields in SA and the US in 2014-15, daily data



Source; Federal Reserve Bank of St Louis (Fred Data Base) Investec Wealth and Investment

Any model used to forecast inflation in SA would add further explanatory variables to represent the force of higher expenditure taxes and administered prices on the CPI. Such administered or regulated price increases have proved to be a more or less continuous influence on prices in general and can be predicted to remain so. These other supply side forces acting on prices, will be equivalent to the impact of exchange rate shocks on prices and will reduce spending power in a similar way. If however they are thought by the Reserve Bank to further encourage inflationary expectations, believed to lead to ever more inflation, less rather

than more accommodating monetary policy and still slower growth, becomes more likely.

Conclusion; Appropriate monetary responses for SA

Low rates of inflation in SA are an appropriate objective for monetary policy in SA. Inflation targets are not serving inflation the SA economy well because the exchange value of the rand cannot be expected to respond in any predictable way to monetary policy interventions. Moreover the exchange rate and other supply side shocks, outside of its control, have clearly made it very difficult for the Reserve Bank to make the all-important distinction between supply side shocks to the economy, that they should ignore, and demand side shocks that might justify intervention in the form of lower or higher interest rates or perhaps even in the form of less conventional monetary policy.

The Reserve Bank remains strongly committed to its inflation targets. Its pronounced fear of self-fulfilling inflationary expectations makes it vulnerable to the accusation of being soft on inflation, should inflation breach or threaten to breach the upper band of the inflation target for supply side or demand side reasons. Monetary policy in South Africa needs a different narrative. One that does not imply that inflation expectations necessarily drive inflation and a narrative that allows monetary policy to ignore supply side shocks, especially exchange rate shocks, and focus its attention on demand side shocks or pressures on inflation.

Expected inflation in SA will only retreat permanently with less rand weakness expected. As we have indicated monetary policy in SA will have minimal influence on the expected value of the rand. Our advice to the Reserve Bank is to recognize its inability to influence the foreign exchange value of the rand and the

inflationary expectations associated with expected rand weakness. And to ignore them.

Inflationary expectations on their own will not drive inflation ever higher in SA. It will take a mixture of more inflation expected combined with an excess of demand over supply to justify more inflation expected. In the absence of easier monetary policy that accommodates and reinforces a supply side shock on the price level, supply side shocks can only have a temporary effect on prices and the inflation rate. The danger however is the opposite one. The Reserve Bank by reacting to more inflation expected with tighter monetary policy settings, will widen the negative output gap growth. Slower growth may then be accompanied by a weaker rand and higher rather than lower rates of inflation.