South African Journal of Economics Vol. 74:2 June 2006

INTERNATIONAL LESSONS FOR THE PROPERTY PRICE BOOM IN SOUTH AFRICA

NORBERT FUNKE, FRIEDRICH KIßMER AND HELMUT WAGNER*

Abstract
South Africa appears to share some of the characteristics (property price boom, easing of monetary policy, strong domestic demand growth) of asset price booms in industrial countries that were followed by a period of weak growth. The international experience suggests that a number of practical obstacles need to be overcome before a more proactive role for monetary policy is warranted. However, a larger variety of available mortgage contracts, including longer-term fixed-rate contracts, should allow for a more efficient allocation of interest rate risks. Also, a more systematic nationwide collection of property price data, including data on commercial property price developments, would provide a more representative basis for analysis.
JEL Classifications: E52, E58, E44
Keywords: Asset Prices, property prices, monetary policy, economic development

Asset prices in South Africa have risen strongly over the past few years. Since 1999 residential property prices have increased by well over 100 per cent in real terms. Stock prices have also grown by over 50 per cent in real terms since 2003.

Asset price booms do not last forever. Empirical evidence for a group of industrial countries suggests that sharp corrections in equity prices occurred on average every 13 years and lasted for about $2^1/_2$ years. Sharp house price corrections have been less frequent, roughly one bust every 20 years, but the average correction lasted longer and output losses were larger (IMF, 2003).[1]

This raises a number of policy questions for South Africa. How does South Africa's boom compare with past booms in industrial countries? What distinguishes a boom that results in a slowdown of economic activity from a boom that does not? What can and should policymakers do to minimize the risk that a boom period ends in a bust? This paper addresses these questions by drawing on the experience of industrial countries.

The paper is structured as follows. Section 1 reviews briefly the economic link between asset price developments and economic activity. Section 2 discusses the identification of asset price booms. Section 3 looks at indicators that may allow one to distinguish between

* Deputy Division Chief, African Department, International Monetary Fund; Assistant Professor, Department of Economics, University of Hagen; Professor (Chair), Department of Economics, University of Hagen.
The views expressed in this paper are those of the authors and do not necessarily represent those of the IMF or IMF policy. This paper was presented at the 60th International Atlantic Conference in New York in October 2005. A previous version of this paper formed part of the Article IV discussions with the South African authorities. Helmut Wagner was a short-term visiting scholar at the IMF Institute during 2004, when this research started. We thank Michael Nowak, Carolyn Wilkins and two anonymous referees for helpful comments on an earlier draft.
[1] To qualify as a bust real equity prices (real property prices) had to exceed 37 per cent (14 per cent) from peak to trough (IMF, 2003, p. 63).

asset price booms that were followed by recessions and those that did not result in a severe slowdown. Section 4 is devoted to practical policy issues. Section 5 offers some tentative policy conclusions.

1. TRANSMISSION MECHANISMS

Asset price fluctuations may affect the real economy through a variety of channels. These include their effect on consumption via a wealth change, investment, and banks' balance-sheets (Mishkin, 2001).

Changes in asset prices affect household consumption spending through a wealth effect, primarily in the form of stock market and real estate valuations. Recent studies for the United States find that a $1 decrease in stock market wealth leads to a reduction of spending of 4-7 cents; for other industrialized countries, the impact is somewhat less (*e.g.*, IMF, 2002). The main effect is short-lived and dissipates over 1-3 years. Empirical analyses suggest that the impact of a significant fall in real estate prices may be more important than an equivalent decline in stock prices (Case, Quigley, and Shiller, 2001), though this finding is not unchallenged (Ludwig and Slok, 2002). Available evidence for a group of emerging markets also suggests that there is a small, but statistically significant, relationship between stock market developments and private consumption. Over a three-year period, a 10 per cent decline (increase) in stock prices is associated, on average, with a 0.2-0.4 per cent decrease (increase) in private consumption (Funke, 2004).

Large asset price swings also affect investment and this relationship is captured by Tobin's "q" (*e.g.*, Tobin, 1980). With rising stock prices the market value of firms increases, relative to its replacement cost, and thus makes the financing of investment projects relatively cheaper. In contrast, in the case of a significant decline in stock prices, companies find it more difficult to raise equity and may raise less money relative to the cost of equipment, thus investment may decline. Comparable mechanisms are in place in real estate markets. A higher price of housing, relative to construction costs, stimulates housing construction because of higher profitability. The reverse is true for falling house prices. A sudden decline in property prices renders investment less attractive and reduces the profitability of the investment. As a result, investment may dry up and contribute to an economic slowdown.

A weakening of asset prices may have adverse effects on financial stability. Changes in asset prices may be transmitted to the real side of the economy through banks' balance sheet effects. An increase in stock market or real estate wealth increases the available collateral and strengthens the financial position of borrowers. The higher level of available collateral tends to reduce the agency costs of the lender, diminishes borrowers' incentives to engage in moral hazard, and leads to a reduction in the external finance premium (Wagner and Berger, 2003). Lenders' willingness to supply credit increases and hence investment and consumer durable expenditure may increase. A decline in net worth, as a result for example of falling equity or property prices, may set in motion the opposite effects.

2. IDENTIFICATION OF ASSET PRICE BOOM PERIODS IN SOUTH AFRICA

Any closer analysis of asset price booms requires a definition of boom periods. Unfortunately, there is no well established definition of what an asset price boom is; and

booms are sometimes associated with bubbles. Though loosely speaking a bubble describes a significant deviation of an asset price from a well-defined fundamental value, identification of bubbles remains very controversial. Distinguishing asset price booms from asset price bubbles is a challenging task as surging asset prices may be driven by good news on economic developments or by a speculative bubble or a combination of both. As a consequence, a number of economists doubt that it is possible to identify bubbles (*e.g.*, Mishkin, 2001, p. 15). "Identifying a bubble in the process of inflating may be among the most formidable challenges confronting a central bank" (Alan Greenspan, 1999 from The Economist September 26, 2002).

From a theoretical perspective, a bubble refers to a situation where the price of an asset exceeds its fundamental value by a wide margin. However, making such an assessment is fraught with complications. As a result, most empirical analyses follow a more pragmatic approach and focus on large and persistent increases in asset prices, using business cycle techniques (*e.g.* IMF, 2003) or large deviations from trend, to identify boom periods. In the latter case, trend measures have been derived on the basis of past growth rates or on the basis of filtering techniques, such as a Hodrick-Prescott filter (*e.g.*, Bordo and Jeanne, 2002, and Detken and Smets, 2004).

Using an asset price gap measure, that is the difference between the actual value and a trend (equilibrium) value, has the advantage that it reduces the weight given to high growth rates directly after a sharp market correction. Following Detken and Smets (2004), we associate an asset price boom with a period in which the real property price index or an aggregate asset price index is 10 percent above its trend based on a Hodrick-Prescott filter.[2] Because of the higher volatility of equity prices, a 10 percent threshold produces an excessively large number of booms for equities; therefore for stock prices we raise the threshold to 25 per cent. We use annual data. The smoothing parameter is set to 1000 to obtain a relatively smooth adjustment of the trend series.

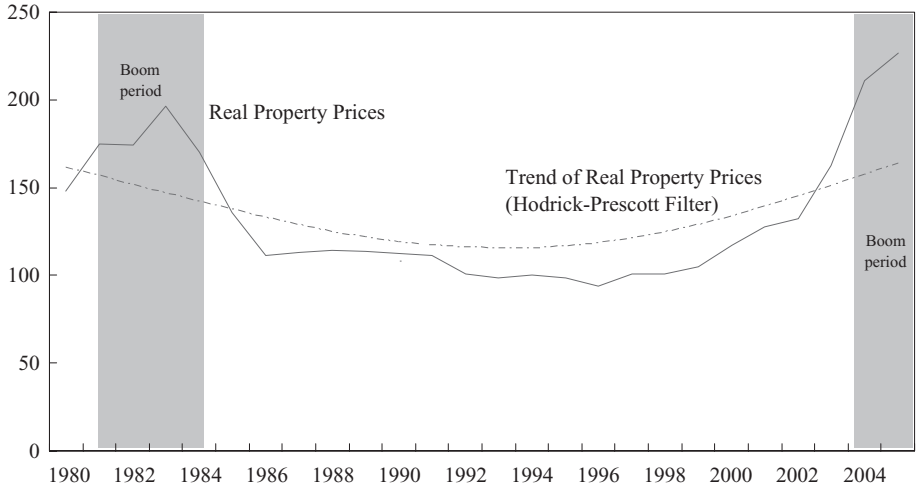
This method gives reasonable results for South Africa. The recent increase in property prices may indeed be classified as a property price boom, particularly since 2004 (Figure 1). Since 1980, house price developments appear to be in their second cycle. Following the house price boom in the early 1980s (1981-84) with its peak in 1984, house prices fell by over 40 per cent in real terms within three years. Based on the above criteria, stock price developments during 2005 also fall in the category of a boom period. When equal weights are given to stock and house price developments, the situation could be characterized as an aggregate asset price boom since 2004 (Table 1).[3]

3. ASSET PRICE BOOMS, INFLATION, RECESSIONS, AND FINANCIAL INSTABILITY

In general, monetary authorities may be concerned about asset price boom periods because of the macroeconomic repercussions. In particular, price booms may signal a rise

[2] The HP filter derives a trend such that it minimizes a weighted average of the gap between actual asset prices and the rate of change of asset prices. A disadvantage of the HP filter is that the end points of the filtered trend series tend to be sensitive to the last observation. Alternative techniques yield qualitatively similar results.

[3] Little information is available on the relative share of equity and real estate wealth in household wealth to determine a more accurate weighting scheme.



1/ A property price boom is associated with a period in which the real property price index is at least 10 percent above its trend level (measured by a Hodrick-Prescott filter).

Figure 1. South Africa Real Property Price Developments 1/(Index 1994 = 100)

Table 1. Asset Price Boom Periods in South Africa: 1980-2005 1/

	1980s		**Since 1990**
Property Prices	1981-84		2004-2005
Stock Prices	1980-81	1987	2005
Aggregate Asset Prices	1981-84		2004-05

Source: Authors' calculations.
1/ Based on Hodrick-Prescott filter, see text.

in inflation or be followed by an asset price reversal that results in a slowdown in economic activity and, possibly, a period of financial instability.

(a) Asset Price Boom and Inflation

Increases in asset prices could signal a rise in inflation or inflation expectations. If asset price developments are a leading indicator for inflation, a tightening of monetary policy may be warranted, to avoid an increase in inflation. In the context of a new Keynesian model with sticky prices and a financial accelerator, Bernanke and Gertler (1999, and 2001) show in a number of simulations that monetary authorities should indeed consider asset price changes if, and only if, they signal changes in inflation expectations. However, the empirical evidence on the relationship between asset price booms and inflation is mixed (see also Stock and Watson, 2003). Borio, English, and Filardo (2003) find that, on average, inflation does not increase significantly during, and directly after, a boom. Borio and Lowe (2002) suggest that causality may also run in the opposite direction. A disinflation period or a low inflation environment may be conducive to the development of an asset price boom. Most of the asset price booms in industrial countries during the late 1990s/early 2000s occurred during a period of disinflation or in a low-inflation

environment. Developments in South Africa also appear to correspond to the situation where a boom period developed during a disinflation period.[4]

(b) High Cost and Low Cost Booms

Increases in asset prices are often followed by asset price corrections which, in turn, may lead to a slowdown in economic activity and may be accompanied by a period of financial instability.[5] From a policy perspective, it would be useful to identify regularities that help to distinguish between boom periods that were followed by a sharp drop in real GDP (high-cost booms) from those that were followed by a relatively mild slowdown (low-cost booms). Analyzing 38 aggregate asset price boom periods since 1970 for 18 OECD countries, Detken and Smets (2004) define a high cost boom as an aggregate asset price boom period that was followed by a sharp drop of GDP, defined as a drop of 3 percentage points between the boom period and the average of the two years following the boom.

Table 2 reports some key results for selected macroeconomic variables, distinguishing between the average developments during the pre-boom, boom and the post-boom period for high-cost and low-cost booms (Detken and Smets, 2004). The pre-boom period is defined as the average of the two years before the asset price boom, whereas the post-boom period refers to the average of the two years after the boom. Real GDP growth and investment growth have been strong in the pre-boom period, indicating that asset price booms are associated with business cycle upturns.

Table 2. Comparison of Low- and High-cost Booms (Percent change, unless otherwise indicated)

	Average Pre-boom		Average Boom		Average Boom	
	High-Cost	Low-Cost	High-Cost	Low-Cost	High-Cost	Low-Cost
Δ Real GDP	3.3	3.5	4.2	3.3***	0.1	1.6***
Δ Aggregate asset prices	6.3	5.1	10.4	8.0	−9.1	−5.3***
Δ Equity prices	12.7	8.1	11.2	13.7	−10.8	−6.6
Δ Real estate prices	0.7	3.8	9.3	6.2***	−7.3	−1.3***
Δ Consumption	3.2	3.5	4.1	3.3***	−0.2	2.3***
Δ Investment	6.1	7.2	7.6	6.3	−6.2	−2.2***
Δ Money	5.6	4.3**	8.5	5.0***	1.2	2.7***
Δ Domestic Credit	3.5	4.7	9.7	6.2*	−0.9	1.6**
Δ CPI	6.2	2.9*	6.5	3.0	5.2	4.2
Nominal interest rate (Percent)	9.0	7.4	10.5	7.3**	12.1	9.3
Real interest rate (Percent)	3.8	3.3	5.5	3.2	5.2	3.9

Source: Detken and Smets, 2004.
Rates of change are all in real terms.
(Stars (***, **, *) denote significance of the Wilcoxon-Mann-Whitney test, testing for the difference in populations between high-cost and low-cost episodes at the 5 percent, 10 percent, and 15 percent significance level.

In the case of high-cost booms real GDP dropped on average by 4 percentage points. High cost booms are associated with a significantly larger decline in property prices. Moreover, high-cost asset price booms are also characterized by more rapid domestic demand growth (consumption and investment) during the boom period as well as rapid

[4] In South Africa the statistical link between housing prices and inflation appears to be relatively small. Housing has a weight of about 22 per cent in the CPI and 12 per cent in the CPIX (which excludes interest rates on mortgage bonds). Despite strong increases in property prices the housing item in the CPIX only changed by some 4 per cent between November 2005 and November 2004.
[5] See *e.g.,* Cecchetti and others, 2003; and Bordo and Jeanne, 2002.

money and credit growth. Whereas average interest rates in low-cost asset price booms remain fairly constant during the boom period, interest rates rose during the high-cost booms. In high cost booms, private consumption and, more importantly, investment drop sharply in the post-boom period.

We extend these results to analyze the probability that asset price booms are followed by a recession (defined as negative annual real GDP growth) or a period of weak economic growth (annual GDP growth <1 percent). To calculate the probability, we first identified boom periods for equity prices and property prices for 18 industrial countries. The (unconditional) probability is then obtained by dividing the number of asset price booms that were followed by a recession or a period of weak growth within two years by the number of boom periods. Table 3 shows that the unconditional probability is over 40 per cent that an aggregate asset price boom is followed by a recession within two years and there is some 70 percent probability that it is followed by a period of weak economic growth. Results confirm that recessions are more likely to occur after residential property price booms. Stock market booms are followed by a recession within the next two years only in one out of seven cases. It should be stressed that these probabilities are unconditional because they do not take into account country-specific factors that may increase or lower the recession probability.

Table 3. Probability of Asset Price Booms Followed by a Period of Slow Growth (In percent)

	Recession 1/	**Weak Economic Growth 2/**
Aggregate Asset Price Boom	42	71
Stock Market Boom	14	39
Residential Property Price Boom	47	70

Source: Authors' calculations.
1/ A recession is defined as a period of negative real GDP growth.
2/ Periods of weak economic growth are associated with annual real GDP growth below one percent.

Overall, the above stylized facts are consistent with a credit/collateral driven asset price boom and bust cycle. An easing of monetary policy during the pre-boom and boom period contributes to strong credit growth. Rising asset prices increase the value of collateral, which, in turn, stimulate lending further. This trend reverses with a drop in asset prices.

Developments in South Africa appear to share some of these characteristics, notably the loosening of monetary conditions. Monetary and credit policy has provided a stimulus to the market. Monetary and credit policy was eased in 2003 and interest rates were lowered by 650 basis points between June 2003 and April 2005. Mortgage rates fell in line with official short-term interest rates and, as a result, the commercial banks' variable mortgage rate fell to 10.5 per cent in the second quarter of 2005 from over 23 per cent at the end of 1998. But a number of factors relatively specific to South Africa have also supported property developments. Private sector analysts point to factors such as a growing black middle class, an increasing scarcity of suitable and properly serviced land, an increasing demand for local property by South Africans living abroad, and foreign investors' interest in coastal properties (Absa, 2005a, b). The magnitude of the overall effect of recent tax changes, such as a reduction in the transfer duty for the third consecutive year in the 2004/05 budget, is more difficult to predict.

(c) Asset Price Boom and Financial Stability

Asset price changes may also lead to financial imbalances and financial instability in the medium term.[6] A number of banking crises in industrial countries were associated with a property price boom, including the crises in Japan (1992) and in the Nordic countries (*e.g.*, Norway in 1987, Finland in 1991, and Sweden in 1991).

In South Africa mortgage contracts are typically based on variable interest rates. These adjustable rates make households vulnerable to interest rate shocks. The possibility of rising interest rates as strong growth continues and some inflation pressures build, could affect household's debt service capacity and dampen housing demand. Homeowners could be forced to sell (or driven into default), thereby increasing the supply of housing and driving house prices and the value of collateral down.

At present, however, the banking sector in South Africa, which finances most real estate transactions, appears reasonably well protected against a possible drop in property prices. Banks are well capitalized. The mortgage debt of households has grown significantly less rapidly than the market value of housing; the ratio of household debt to market value of housing shrank to 47 per cent in 2004 from 68 per cent in 2000. The average risk-weighted capital-adequacy ratio stood at 13.3 per cent at the end of December 2004. Net non-performing loans (non-performing loans less specific provisions) as a ratio of total loans were below 2 per cent.

Sy (2005) conducts a stress test to assess the banks' ability to absorb potential losses due to a sharp decline in property prices. Using a worst-case scenario on the basis of past experience, the stress test assumes a 50 per cent drop in real estate prices and an increase in non-performing loans to 7 per cent of mortgage loans. Under such a scenario, the capital adequacy ratio of the banking system would fall to about 11.3 per cent from 13.3 per cent. Despite this significant decline, the average capital adequacy ratio remains well above the regulatory minimum of 10 per cent.[7]

Still, the distress phase at the end of a boom period may be long lasting, while economic activity is holding up well. Therefore, the link between asset prices and financial stability may be of a longer-term nature.

4. PRACTICAL ISSUES FOR POLICYMAKERS

If policymakers were able to identify high-cost asset price booms, they would be confronted with two choices. Policymakers can opt for a proactive monetary policy that aims at preventing the emergence of an "asset price bubble", or follow a "reactive policy" of aggressive easing once the asset price bubble has burst. A proactive policy rests on the ability of the authorities to influence asset prices in the desired manner.[8]

It remains open to debate as to the extent to which the monetary authorities can influence asset price developments with the necessary degree of precision. Given the complex nature of the transmission mechanism, the increase in interest rates necessary to halt an asset price boom is difficult to determine. A small increase in interest rates may

[6] See, for example, Mishkin and White, 2002, Schwartz, 2002, and Bean 2003.

[7] Data availability limits this analysis to the aggregate banking sector. Therefore, the analysis cannot capture the possibility of individual banks being under more pressure.

[8] See for example, Smets (1997), Cogley (1999), Bordo and Jeanne (2002), Hunter, Kaufman, and Pomerleano (2003), Filardo (2001, 2003).

have no significant impact on stock or property prices. It may even lead to a further boost in asset prices, as small increases may reassure consumers and investors that the central bank is "ahead of the curve". Moreover, the existence of various asset classes complicates the appropriate timing of the move, in particular if asset price developments are not synchronized.[9]

In addition, (small) open emerging market economies may not face the same set of policy options as large industrial countries, in particular the United States. Although cross-border trading of real estate is more difficult than cross-border trading of securities, empirical findings show that property price developments are linked internationally through cross-border financial integration (IMF 2004). Global interest rate developments and global economic activity appear to be major determinants of house prices in industrial countries. The average of the pair-wise correlations of annual changes in real property prices between the United States and the other 17 industrial countries in our sample is 0.35. Between 1994 and 2005, the correlation between annual changes in real property prices in the United States and South Africa was of the order of 0.80.[10] Cross-border linkages diminish the impact of domestic policy changes.

Experience from industrial countries suggests that there appears to be some reluctance from central bankers to admit that asset price developments play a significant role in their policymaking.[11] From a central banker's perspective, the risks involved are asymmetric. In the case of preemptive tightening, there is a risk that the central bank will be blamed for bursting sound economic developments (The Economist, 2002, September 5). On the other hand, monetary policy may well be applauded for easing aggressively during an asset price bust period. However, a policy that favors an aggressive lowering of interest rates when asset prices tumble and (explicitly) refrains from an increase when asset prices boom, may create moral hazard problems. As long as private investors anticipate that the central bank will aggressively lower interest rates in the case of a bursting asset price boom, the central bank would provide some sort of safety net to international investors. Investors have incentives to follow a riskier investment strategy (Trichet, 2003). This asymmetry has the characteristics of a put option and may, therefore, give additional stimulus to an asset price boom. In their three period-model, Berger, Kißmer and Wagner (2005) show that a policy of "benign neglect" towards asset price booms is generally not optimal when private agents are forward looking.

If the central bank aims at influencing asset price developments, an appropriate communication strategy may be critical. Unfortunately, economic theory offers few insights into the linkages between communication, public reaction, and economic outcomes. Anecdotal evidence suggests that policymakers run the risk of contributing to financial market volatility, if they respond inappropriately to asset price developments, as for example has often been the case where policymakers tried to support exchange rates at levels not consistent with fundamentals.

The communication strategy needs to take into account the likelihood that the link between asset price developments and financial stability is of a longer-term nature. A

[9] In many cases stock market developments lead property price developments by 1-2 years.
[10] The correlation coefficient is negative (−0.16) for the period 1980 to 2002.
[11] See Mussa, 2003, p. 49.

number of central banks in industrial countries regularly publish Financial Stability Reports. In March 2004 the South African Reserve Bank (SARB) published its first Financial Stability Review, which will help monitor developments in the financial system and help identify potential risks. Increasing sophistication of these reports will be a useful communication tool and may complement existing analyses for the conduct of monetary policy. As Mussa notes (2003, p. 50), it is important that any change in interest rates is undertaken and explained in the context of overall economic developments.

5. POLICY CONCLUSIONS FOR SOUTH AFRICA

South Africa appears to share some of the characteristics (property price boom, easing of monetary policy, strong domestic credit growth) of asset price boom periods in industrial countries. These were often followed by a period of weak growth and, in some cases, banking sector fragility. At the same time, however, a number of factors relatively specific to South Africa have supported property price developments.

The experience of industrial countries suggests that a number of practical obstacles need to be overcome before a more proactive role of monetary policy is warranted. Because of the importance of global interest rates in explaining future movements in house prices, the role of monetary policy may be more limited in smaller economies. Open emerging market economies, therefore, may have to focus on the development of an appropriate regulatory environment, tax system (*e.g.*, for capital gains), and financial infrastructure to reduce the risk of future bubbles. Advanced stress testing that takes account of the possibility of joint shocks would be one important tool to identify the extent of financial sector vulnerabilities. Regulatory measures could, for example, include changes in collateral or buyers' net worth requirements. Theoretically, an interesting proposal is to adjust borrowing limits downwards as house prices accelerate. A well designed and transparent legal and accounting system facilitates the valuation of collateral and the use of collateral in the case of default.

In South Africa, one risk relates to a sudden increase in interest rates, although at this stage the banking sector seems to be reasonably resilient to such a shock. The lag of long-term financing options makes borrowers more vulnerable to shifts in interest rates. To reduce this vulnerability, further analyses should be undertaken to investigate what changes may be needed to create an environment that would be conducive to a larger set of mortgage contracts. A larger variety of available mortgage contracts, including longer-term fixed-rate contracts, should allow for a more efficient allocation of interest rate risk.

As in many industrial countries, housing price data availability in South Africa is somewhat limited and relies largely on one private sector provider. A more systematic nationwide collection of data would provide more representative data. Moreover, if quality improvements are not adequately captured in housing market data, the measured increase in house prices may be overstated. At the same time, it would be important to collect comprehensive data on commercial property price developments. Commercial property prices also tend to follow boom-bust cycles that are not necessarily synchronized with developments in residential property prices, but may lead to similar negative economic effects. Given the importance of the housing sector, improvements in the reliability of housing market data would be desirable.

REFERENCES

ABSA (2005a). Property Trends, various issues.
——— (2005b). "Residential Property Market", in *Absa Economic Perspectives*, Second Quarter 2005 pp. 20-24.
BEAN, C. (2003). "Asset Prices, Financial Imbalances and Monetary Policy: Are Inflation Targets Enough?", BIS Working Paper No 140, (Basle: Bank for International Settlements).
BERGER, W., KIßMER F. und WAGNER H. (2005). "Monetary Policy and Asset Prices: More Bad News for 'Benign Neglect' ". University of Hagen, mimeo.
BERNANKE, B. and GERTLER, M. (1999). "Monetary Policy and Asset Price Volatility", Federal Reserve Bank of Kansas City (ed), New Challenges for Monetary Policy, Proceedings of the 1999 Jackson Hole Conference, Kansas City, pp. 77-128.
BERNANKE, B. and GERTLER, M. (2001). "Should Central Banks Respond to Movements in Asset Prices?", *America Economic Review Papers and Proceedings*, Vol. 91, No. 2 pp. 253-257.
BORDO, M. and JEANNE, O. (2002) "Monetary Policy and Asset Prices: Does 'Benign Neglect' Make Sense?", *International Finance*, Vol. 5, No. 2, 139-164.
BORIO, C. and LOWE P. 2002, "Asset Prices, Financial and Monetary Stability: Exploring the Nexus", BIS Working Paper No. 114 (Basle: Bank for International Settlements).
BORIO, C., ENGLISH, W. and FILARDO, A. (2003). "A Tale of two Perspectives: Old or new Challenges for Monetary Policy?", *BIS Working Papers*, No. 127 (Basle: Bank for International Settlements).
CASE, K. E., SHILLER, R. J. and QUIGLEY, J. M. (2002). "Comparing Wealth Effects: The Stock Market versus the Housing Market", NBER Workng Paper No. 8606 (National Bureau of Economic Research: Boston Mass).
CECCHETTI, S., GENBERG, H. and WADHWANI, S. (2003). "Asset Prices in a Flexible Inflation Targeting Framework", In Asset Price Bubbles: The Implications for Monetary, Regulatory, and International Policies, Eds. William Hunter, Georg G. Kaufmann, Michael Pomerleano, pp. 427-444 (Cambridge, Mass: MIT Press).
COGLEY, T. (1999). "Should the Fed Take Deliberate Steps to Deflate Asset Price Bubbles?", Federal Reserve Bank of San Francisco, *Economic Review*, No. 1 pp. 42-52.
DETKEN, C. and SMETS, F. (2004). "Asset Price Booms and Monetary Policy", ECB Working Paper No. 364 (Frankfurt: European Central Bank).
FILARDO, A. (2001). "Should Monetary Policy Respond to Asset Price Bubbles? Some Experimental Results", Working Paper 01-04 (Kansas City: Federal Reserve Bank of Kansas City).
——— (2003). "Should Monetary Authorities Prick Asset Price Bubbles?", *Preliminary draft* (Basle: Bank for International Settlements).
FUNKE, N. (2004). "Is there a Stock Market Wealth Effect in Emerging Markets?", *Economics Letters*, Vol. 83, pp. 417-421.
HUNTER, W., KAUFMAN, G. and POMERLEANO, M. (2003). "Asset Price Bubbles: The Implications for Monetary, Regulatory, and International Policies" (Cambridge, Mass.: MIT Press).
INTERNATIONAL MONETARY FUND (2002). "Is Wealth Increasingly Driving Consumption", World Economic Outlook, April (Washington: International Monetary Fund), pp. 74-84.
——— (2003). "Real and Financial Effects of Bursting Asset Price Bubbles", World Economic Outlook, April (Washington: International Monetary Fund), pp. 61-94.
——— (2004). "The Global House Price Boom", World Economic Outlook, forthcoming (Washington: International Monetary Fund).
LUDWIG, A. and SLOK, T. (2002). The Impact of Changes in Stock Prices and House Prices on Consumption in OECD Countries, IMF Working Paper No.1 (Washington: International Monetary Fund).
MISHKIN, F. (2001). "The Transmission Mechanism and the Role of Asset Prices in Monetary Policy", NBER Working Paper 8617 (Cambridge, Massachusetts: National Bureau of Economic Research).
MISHKIN, F. and WHITE, E. (2002). "U.S. Stock Market Crashes and Their Aftermath: Implications For Monetary Policy", *National Bureau of Economic Research*, Working Paper 8992.
MUSSA, M. (2003). "Asset Prices and Monetary Policy", In Asset Price Bubbles: The Implications for Monetary, Regulatory, and International Policies, Eds. William Hunter, Georg G. Kaufmann, Michael Pomerleano, pp. 427-444 (Cambridge, Mass: MIT Press), pp. 41-50.
SCHWARTZ, A. J. (2002). Asset Price Inflation and Monetary Policy, "Asset Price Inflation and Monetary Policy", NBER Working Paper 9321 (Cambridge, Massachusetts: National Bureau of Economic Research).
SMETS, F. (1997). "Financial Asset Prices and Monetary Policy: Theory and Evidence", Working Paper No. 47, Bank for International Settlements (London: Center for Economic Policy Research).
JAMES, S. and WATSON, M. (2003). "Forecasting Output and Inflation: The Role of Asset Prices", *Journal of Economic Literature*, Vol. XLI September, pp. 788-829.
SY, A. (2005). "South Africa – Financial Sector Vulnerability", Article IV Consultation with South Africa, 2005, Selected Issues, pp. 37-49 (Washington, D.C.: International Monetary Fund).
TOBIN, J. (1980) "Asset Accumulation and Economic Activity" (Oxford: Basil Blackwell).
TRICHET, J.-C. (2003). "Asset Price Bubbles and Their Implications for Monetary Policy and Financial Stability" in: Asset Price Bubbles: The Implications for Monetary, Regulatory, and International Policies, Eds. William Hunter, Georg G. Kaufmann, Michael Pomerleano, pp. 41-50.
THE ECONOMIST (2002). "To Burst or not to Burst? Was Alan Greenspan Really Powerless to Stop the Stockmarket Bubble", September 5th.
WAGNER, H. and BERGER, W. (2003). "Financial Globalization and Monetary Policy", *De Nederlandsche Bank Staff Reports*, No. 95 (Amsterdam: De Nederlandsche Bank).