Recent studies have questioned the usefulness of categorising currency regimes based on government policy statements, as the behaviour of many currencies seems to deviate from the stated position of the central monetary authorities. During the 1990s, currency regimes appeared to trend toward the ‘hard corners’ of pegs and floats advocated by economists in the belief that intermediate regimes were incompatible with the increased international capital mobility. Fischer (2001) illustrated the trend using the exchange rate regime declarations made to the International Monetary Fund by central banks: between 1991 and 1999 the number of declared ‘floating’ regimes more than doubled to make up 42 per cent of the 185 currencies monitored and to become the most prevalent currency regime. Calvo and Reinhart (2002) showed that, while many countries claimed to have a floating currency, there was evidence that central banks continue to manage currencies to such an extent that many could not be considered to behave like floating currencies. Calvo and Reinhart describe this as a ‘fear of floating’, caused by central bank concerns that a free market for the currency might introduce levels of exchange rate volatility that would negatively impact on economic performance.

A floating regime can be defined as one which is independent of exchange rate targets, and which is not used as an instrument for macroeconomic management.
A floating exchange rate should be set by the market, and in its purest sense there should be no form of government or central bank intervention. In reality, many central banks of countries with freely floating currencies, such as those of Australia and Japan, intervene in the currency market, and Calvo and Reinhart concede that a true float is ‘an artifact of economics textbooks’ (Calvo and Reinhart 2002:382). Perhaps in recognition of this, Calvo and Reinhart chose the Australian dollar as the benchmark for floating currencies—a float in which the central bank maintains some element of control, but this control is exercised only in situations of ‘excessive’ exchange rate volatility and the effectiveness of this intervention is debatable (Rogers and Siklos 2003). In the case of the ‘hard peg’ or the fixed exchange rate, the currency is fixed to that of another country or a ‘basket’ of currencies of other countries.

However, the ‘mid-range’ of exchange rate regimes incorporates a number of options, and Calvo and Reinhart were motivated to write their paper by a suspicion that many countries were not completely committed to a corner option. Hard pegs are easy to monitor, and it is obvious when a country has adopted one. But floating currencies are more ambiguous and central banks typically do not make their interventions known. Calvo and Reinhart developed a technique to see whether there is central bank intervention in a supposedly floating currency and found that emerging market economies are particularly prone to a ‘fear of floating’. As a result, studies relying on government classifications to define currency regimes may come to erroneous conclusions.

The desire to manage a currency is often predicated on an assumption that currency volatility is bad for trade. Frankel and Wei (1998), for example, observe that Europe pursued exchange rate stabilisation in order to promote bilateral trade. Fixed exchange rates are thought to eliminate price uncertainty, stimulating trade and investment and lowering the real interest rate (Levy-Yeyati and Sturzenegger 2003). It can be argued that a more managed exchange rate may benefit emerging market economies, which are particularly reliant on foreign investment for technological development and growth (Meyer 2004; Liu 2002).

While the Bank of Papua New Guinea states that the kina is a floating currency, there is evidence that a soft peg is being maintained. Following the float in 1994, the peg appears to have been initially to the US dollar (Bowman 2004) but it is likely that more recently it has moved to a combination of the Australian and US dollars (Appendix 1). Inflation has been a significant problem in the PNG economy, and some researchers (De Brouwer 2000; Xu 1999) have called for more formal dollarisation, or ‘aussification’, as a way of reducing imported inflation, as is implied by the Barro-Gordon framework (Tavlas 2003). It is not clear, however, that a fixed regime will create the much-desired outcome of increased trade. Frankel and Wei (1998) show that the prevalence of low levels of trade in countries with volatile exchange rate regimes seems to have been eliminated in the 1990s with the advent of greater international capital movement and more financial instruments for hedging transaction risks. Levy-Yeyati and Sturzenegger (2003) further find that emerging markets with less flexible exchange rate regimes experience slower rates of growth than those with floating regimes. Trade and growth is a priority for the Government of Papua New Guinea. Its interest in increasing trade is spelled out in its ‘Export Driven Growth Strategy’, currently being implemented, which includes a range of reforms aimed specifically at increasing export revenues.
Since the floating of the kina in October 1994, policy decisions have restricted the market’s ability to set its value. In the past, Papua New Guinea’s central bank has exercised significant exchange conversion controls that effectively prevented the value of the kina being determined by market forces. The International Monetary Fund (2003), in Article IV consultations with Papua New Guinea, observed that there was ‘frequent intervention by the central bank’ during a period of kina depreciation in 2002. The most compelling evidence to support an exchange rate management strategy comes from the Bank of Papua New Guinea itself. Its website clearly articulates a policy of exchange rate stability, stating that ‘[m]aintaining price stability in a small open economy like PNG requires amongst other things, relative stability in the exchange rate’. The bank sees a stable kina as particularly desirable, and kina stability is a major discussion point in the semi-annual Monetary Policy Statements. For instance, the July 2005 statement commented that an increase in reserves means that in future ‘the Bank will have greater flexibility in counteracting any adverse movements in the exchange rate’ (Bank of Papua New Guinea 2005b:12).

Other research also illustrates that the kina has not been allowed to float freely. Bowman (2004) used a simple Frankel and Wei (1994) style OLS regression of the kina against other major currencies to find a weighting of 0.93 assigned to the US dollar, the type of result expected in a pegged regime. These observations make it seem unlikely that the kina is behaving like a freely floating currency, but as Calvo and Reinhart did not include the kina in their study, it is useful to see if the kina conforms to their beliefs about a ‘fear of floating’ in emerging market currencies.

This study initially assesses the behaviour of the kina using the Calvo and Reinhart technique and contrasts its behaviour with that of the Australian dollar. It is found that there is evidence that the kina has experienced some management, and that this may be consistent with an inflation targeting ‘lite’ regime, which may both explain recent low inflation (Figure 1) and the continued strong relationship of the US dollar to the kina (Appendix 1). Inflation targeting ‘lite’ may be a useful framework for future analysis of PNG monetary policy, but the economic climate in Papua New Guinea is changing: fiscal stability and a

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<th>Table 1</th>
<th>Volatility of selected indicators, Australia and Papua New Guinea, 1995–2004</th>
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<tr>
<td>Export volatility (avg qtrly % change)</td>
<td>Prob (monthly % change within ±2.5% band)</td>
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<tr>
<td></td>
<td>Interest rates</td>
</tr>
<tr>
<td>Australia</td>
<td>January 1995–January 2004</td>
</tr>
<tr>
<td></td>
<td>Papua New Guinea</td>
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</tbody>
</table>

Source: Monthly data were obtained from the International Monetary Fund, International Financial Statistics. Quarterly export data obtained from the Bank of Papua New Guinea and the Australian Bureau of Statistics. Value of exports denominated in current Australian dollars.
booming commodity market have created a promising basis for economic growth and development. The outlook for Papua New Guinea is the best it has been in years. The recent dismantling of exchange controls and a sustained low-inflation environment has created a climate receptive to less currency management. Given that recent studies of the relationship between trade and exchange rates are less supportive of previous beliefs that a stable exchange rate would lead to increased trade, it is possible that the kina will be allowed to float more freely in future.

Method and data

The study period used here for the Calvo and Reinhart (2002) analysis runs from January 1995 to January 2004 (the months immediately after the float of the kina have been omitted to allow for a ‘settling in’ period). Both Papua New Guinea and Australia had officially nominated floating currency regimes throughout this period. Monthly data is used (when quarterly data, such as CPI data, is used, it is assumed to be constant over the three months of the associated quarter).

While official policy nominates the kina as a float, it is likely that the effects of exchange controls result in behaviour more akin to a managed float or soft peg. The Calvo and Reinhart methodology can be used to examine the behaviour of the currency and other macroeconomic indicators to see if government policy reflects the actual management of the currency. They propose a model of exchange rate management based on central bank credibility, pass-through levels and inflation targeting. They suggest that a lack of credibility is associated with higher variance in risk premium shocks, and that inflation targeting is manifest in interest rates. To test this, exchange rate, interest rate

Figure 1  Papua New Guinea headline inflation and real GDP growth (annual), 1993–2004

Source: Bank of Papua New Guinea.
and reserves variability are examined. As per Calvo and Reinhart, the IMF’s International Financial Statistics (IFS) data are used for each series. Exchange rates are monthly end-of-period bilateral exchange rates against the US dollar (IFS line AE, used as monthly percentage change), reserves are gross foreign exchange reserves minus gold (IFS line 1.L.D, used as monthly percentage change), nominal interest rates are obtained from IFS line 60B (Interbank rates) and 60C (182 day T-bill rates) for Australia and Papua New Guinea respectively, and consumer prices were obtained from IFS line 64 to deflate nominal interest rates.

**Results and discussion**

The Calvo and Reinhart (2002) study used the Australian dollar as the benchmark for floating currencies, and it is used here for contrast with the behaviour of the kina. Calvo and Reinhart initially examined exchange rate volatility for evidence of activity designed to smooth or minimise currency fluctuations. Exchange rate volatility is likely to be lowest in countries with a highly managed regime, such as a hard or soft peg, while a floating regime is likely to be highly volatile as market forces, not exchange rate targets, set the value of the currency. Calvo and Reinhart determine that a managed currency has a greater probability of remaining within a volatility band, set by the authors at ±2.5 per cent, than a floating currency. If the kina is being actively managed, it is expected that the monthly price movements are more likely to remain within the ±2.5 per cent band than those of the Australian dollar. Calvo and Reinhart show that, the more managed the regime, the higher the likelihood of fluctuations falling within the ±2.5 per cent band. Their managed floating regime on average has exchange rate changes falling within the band around 87.5 per cent of the time. They find that the average for a floating exchange rate is around 77 per cent—higher than the Australian benchmark probability of 70 per cent, and higher than the Australian results found here of 66.67 per cent. Over this time period, the kina’s probability of variance within the band is lower still (55.56 per cent), which indicates a greater degree of volatility than that of the managed and pegged regimes. Indeed, during this period the kina is more volatile than the Australian dollar. This evidence fits with the official assertion that the kina is a floating currency.

Calvo and Reinhart argue that further indications of central bank intervention can be taken from the levels of foreign exchange reserves. The more heavily-managed currencies are said to be accompanied by greater fluctuations in the levels of reserves as foreign exchange is bought or sold in attempts to influence the exchange rate. Calvo and Reinhart find that central banks of more managed currencies are less likely to keep fluctuations in their reserves of that currency within a narrow ±2.5 per cent band. Some fluctuation in reserves is to be expected: for example, reserves may fluctuate if their assets change in value or accrue interest. Calvo and Reinhart note that changes in the value of New Zealand’s reserves are a result of foreign currency debt management rather than exchange rate management. Previous PNG governments have left significant debts that are currently being rationalised, and improved fiscal management has resulted in a focus on debt reduction. It is likely that this explains some of the reserve movements, but it is also likely that some of the reserve variance is caused by exchange rate management.

The Australian benchmark for reserve variance in the Calvo and Reinhart study is 50 per cent, with some floating currencies experiencing much greater reserve stability (such as Japan, at 74 per cent). The results
found here for Australia indicate that perhaps slightly more government intervention has taken place during this period, with reserve fluctuations falling within the ±2.5 per cent band only 45.37 per cent of the time. Papua New Guinea, with reserves in the band only 25 per cent of the time, is below that of Calvo and Reinhart’s average floating result of 37.79 per cent. This does not necessarily indicate market intervention: as noted previously, it is possible that these changes reflect the management of foreign currency-denominated debt. Further, Papua New Guinea has more volatile export revenues than Australia, with quarterly fluctuations of 11.27 per cent compared with Australia’s 5.67 per cent. This could explain more volatile reserves.

In their study, Calvo and Reinhart note an interesting anomaly: the average of the managed floating currencies (39.2 per cent) is higher than that of the floating currencies (37.8 per cent), implying that countries with floating currencies have less stable reserves than countries with managed currencies. However, they also show that those countries with the most stable exchange tend to have the most volatile reserve holdings. Since the kina has a more volatile exchange rate, coupled with more volatile reserves, firm conclusions cannot be drawn at this point.

According to Calvo and Reinhart, evidence of monetary policy interactions can also be found in the movement of nominal interest rates. If interest rates are being managed to stabilise the exchange rate, it is likely that they will be more volatile than those not being used to manage exchange rates. The available rate most closely influenced by monetary policy is selected for examination: in the case of Australia, this is the interbank rate, while in the absence of this rate in Papua New Guinea the PNG 182-day T-bill rate is used instead. Calvo and Reinhart find that, while interest rates are most stable for limited flexibility regimes, this is not always the case in emerging markets. A lack of central bank credibility will result in volatile interest rates when expectations about inflation targets and exchange rate volatility incite negative investor sentiment. Evidence from Calvo and Reinhart (2001) indicates that interest rate variance is highest for emerging market countries with managed exchange rate regimes. If the kina is a soft peg or a managed float, higher interest rate variance can be expected, while interest rate variance should be low in Australia as the central bank is credible and investors are unlikely to receive any nasty surprises. For interest rate variance, a band of ±4 per cent is used, and Calvo and Reinhart find that floating regimes typically have a low level of interest rate variance. Notable outliers (Mexico, Peru) generate an average result of 8.5 per cent, which is higher than the median of 2.8 per cent, and in general it can be said that interest rate volatility is very low for floating regimes. Consistent with this story is the result for Australia—interest rate movements outside the band are non-existent (0 per cent).

The results for Papua New Guinea show a greater level of interest rate variance (4.6 per cent), higher than the median of the floating regimes. This is, however, consistent with Papua New Guinea’s status as a less developed country, as these countries are more likely to have higher interest rate variance. Real interest rates tell a similar story, with some movement outside the band (6.5 per cent) in the case of Papua New Guinea, while again the Australian real interest rate did not move outside the ±4 per cent band during the study period. Calvo and Reinhart observe that the managed floating regimes have the most volatile exchange rates—and that this category also contains more emerging market countries than other categories. If the Bank of Papua New Guinea is in fact trying to stabilise the exchange rate
through domestic open market operations and is afflicted by a lack of credibility (consistent with Calvo and Reinhart’s and King and Sugden’s (1997) explanations of interest rate volatility), then these results support the premise that the kina is behaving like an emerging-market managed regime.

In general, therefore, the evidence presented for Papua New Guinea is mixed. High levels of exchange rate volatility imply little government exchange rate intervention, but volatile reserve levels may indicate the opposite. Reserve levels may fluctuate for other reasons, however, so no firm conclusion can be drawn, despite reserve volatility being significantly greater than Calvo and Reinhart’s floating average and the Australian situation. Nonetheless, like emerging-market managed floating currencies, both nominal and real interest rates are highly volatile.

An alternative to exchange management is inflation targeting, and it has been suggested that the Bank of Papua New Guinea is pursuing an inflation target, resulting in the current low inflation period. Calvo and Reinhart show that a lack of central bank inflation targeting credibility can lead to both increased interest rate variance and increased foreign exchange volatility in emerging markets, precisely the results observed here. They show that the variance in the exchange rate can be described as

\[ \sigma_E^2 = \sigma_S^2 \frac{b^2 k^2}{s^2} \]

where \( \sigma_S \) is the variance of a random shock describing the risk premium, \( b \) represents the credibility of the inflation target, and \( k \) is a constant money multiplier. Under their assertion that the effects of risk premium shocks on the currency can be offset completely by setting nominal interest rates, the variance of the exchange rate is independent of the risk premium and is instead governed by the credibility of the inflation rate target. As credibility increases, or \( b \to \infty, \sigma_E \to 0 \) so expected exchange rate volatility falls.

The lack of a credible inflation-targeting regime may explain the paradox of volatile reserves coupled with a volatile kina. Any inflation targeting being performed by the Bank of Papua New Guinea can only be described as ‘inflation targeting lite’ (Stone 2003). Under this definition of inflation targeting, the central bank does not commit transparently to an inflation target, but instead reserves the right to adjust it as required. Inflation targeting ‘lite’ regimes have multiple monetary policy objectives, and intervene in the exchange rate. These regimes also emphasise financial stability and often involve a commitment to price stability as the primary objective of monetary policy. This definition appears to fit the different phenomena observed and the Bank’s public statements. If the Bank of Papua New Guinea is pursuing inflation targeting ‘lite’, it is in good company, as research indicates that this regime is prevalent among emerging markets with less-managed currency regimes. As Stone observes, countries pursuing the inflation targeting ‘lite’ management strategy typically have higher levels of government debt, are more exposed to economic shocks, and are less integrated into global capital markets. Stone also observes that inflation targeting ‘lite’ countries are more active in foreign exchange management.

So is the Bank of Papua New Guinea pursuing inflation targeting ‘lite’? Certainly, if it is pursuing an inflation target, the lack of a clearly articulated policy including distinct and publicly disseminated targets means that only this option is possible. Further, recent Bank of Papua New Guinea statements provide evidence that it may be inflation targeting. Price stability has come to the fore in its Monetary Policy Statements,
with the Bank stating that its main objective is ‘achieving and maintaining price stability’. In addition, it states that

[st]ability in price is therefore taken to mean stability in inflation, which can be defined as low inflation attained over a reasonable period of time…[p]rice stability requires steady movements in the exchange rate and other price variables (Bank of Papua New Guinea 2005a:12).

This statement neatly summarises the ingredients of an inflation targeting ‘lite’ regime, and goes a considerable way towards explaining the kina’s fear of floating.

Conclusion

Like many emerging-market ‘floating’ currencies, it appears that the PNG kina does not behave exactly as described by official policy. The kina may be afflicted by the ‘fear of floating’ identified among many emerging-market currencies by Calvo and Reinhart. This will not be a surprise to those engaged in research on the kina, as exchange controls have always meant that the kina’s exchange rate value could not be purely market-determined. The evidence here suggests that the Bank of Papua New Guinea may be following an inflation targeting ‘lite’ regime and is perhaps afflicted by a lack of credibility, which would explain much of the observed behaviour of reserves, interest rates and exchange rates.

It seems clear that currency management is taking place, and public statements by the Bank of Papua New Guinea indicate that this policy is unlikely to change in the near future. Prior research shows that currency targets are based on the US dollar and the Australian dollar (Bowman 2004). This makes sense: Australia continues to be a major trading partner for Papua New Guinea, and, as a major mineral exporter, much of Papua New Guinea’s exports and imports are likely to be denominated in US dollars. As the Bank of Papua New Guinea moves to lift currency conversion controls, it is possible that the kina’s characteristics will resemble more closely those of a floating currency.

Notes

2 Currency data obtained from Datastream; currencies are denominated in Swiss francs.

References


International Monetary Fund, 2003. IMF Concludes 2003 Article IV Consultation with Papua New Guinea, IMF Public Information Notice 03/78, International Monetary Fund, Washington, DC.


Acknowledgments

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Appendix 1

Currency relationships

If the kina is being managed, how is this taking place? The most likely possibility is that the kina is being ‘soft pegged’ to a foreign currency, and some believe that this is the Australian dollar. The recent economic assessment from the Australian Department of Foreign Affairs and Trade states that the kina ‘tracks closely’ the Australian dollar (Australia 2004:27). Previous research (Bowman 2004) demonstrated that the kina was strongly tied to the US dollar between 1993 and 2003 and found no evidence of a relationship with the Australian dollar. However, this period commenced prior to the floating of the kina, and the situation may have changed more recently. From a visual inspection of nominal price movements in the kina and the Australian dollar
it appears that a ‘parting of ways’ took place in 1998, and that the kina has devalued significantly against both the US dollar and the Australian dollar. A more robust analysis of the more recent period of currency management is useful to assess the impact of currency management in the light of the ‘fear of floating’ findings.

A brief assessment of monthly currency data for the period January 2000–04 demonstrates that the relationship between the Australian dollar and the kina has strengthened over the last five years. Correlation statistics (Appendix Table 1) show that the kina is highly correlated with both the Australian dollar and the US dollar (as the kina is a much less traded currency than either dollar, assumptions about the direction of causality can be made confidently). The US dollar is more strongly correlated with the kina, at 0.78, while the Australian dollar is somewhat less correlated at 0.29. This supports the findings of Bowman (2004) that the US dollar is the currency with the strongest relationship to the kina, although, unlike Bowman’s earlier findings, it is likely that the Australian dollar is now playing a more significant role in determining the final value of the kina. The kina is also significantly cointegrated with both currencies at 1 per cent, incorporating two lags for the Australian dollar and four for the US dollar. This finding has much intuitive resonance, and indicates significant long-run relationships with both currencies (although cointegration statistics do not give an indication of the relative importance of either currency to the value of the kina).

Additionally, Frankel and Wei (1994) style regression tests (Appendix Table 2) indicate that the Australian dollar now has a weighting in the kina’s currency basket, although it should be noted that the $R^2$ measure of fit is not strong (0.27). The findings of the Frankel and Wei regression over this recent time period support the results of the correlation tests, with the weighting of the US dollar in the kina’s currency basket ($\beta_1$, 0.57) larger than that of the Australian dollar ($\beta_2$, 0.29). Again this test demonstrates that the Australian dollar is now influencing the kina, but the kina’s movements are still dominated by the US dollar.

It is likely that the composition of any basket peg changes over time in response to changing monetary policy. When a range of periods is examined, the Frankel and Wei regression is found to strengthen considerably during some periods. It appears, for example, that there was a period of much tighter currency management between June 2001 and January 2004 (Appendix Table 3). The regression $R^2$ measure of fit was strong (0.52), a result more often seen in basket-pegged regimes. During this time, the US dollar was dominant (0.82) and these results certainly indicate that the Bank of Papua New Guinea is not pursuing a ‘hands-off’ management strategy.
Appendix Table 1  
Cointegration and correlation statistics

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<tr>
<td>PNG kina</td>
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<td>Cointegration</td>
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<tr>
<td>A$</td>
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<td>32.03***</td>
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<tr>
<td>US$</td>
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Notes: * Intercept (no trend), 4 lags ¹ Intercept and trend, 2 lags ** Significant to 1 per cent. Statistics for monthly nominal currency series, all currencies denominated in Swiss francs.

Appendix Table 2  
Regression statistics

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<td>β₂ A$</td>
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Notes: Statistics for monthly nominal currency series, all currencies denominated in Swiss franc. Calculations made in logged differences as per Frankel and Wei (1994), with the model taking the form

\[ \Delta \log(PNG_t) = \alpha + \beta_1 \Delta \log(USD_t) + \beta_2 \Delta \log(AUD_t) + \epsilon_t \]

It is clear that the US dollar retains a dominant role in the currency basket, reinforcing the findings of correlation analysis. The coefficient estimated for the Australian dollar is not statistically significant. The \( R^2 \) line of fit is not as strong as is often the case in currencies declaring a pegged exchange rate. While management may be taking place, it is likely to be less than that which occurs in a formally pegged regime, resulting in a weaker line of fit. Durbin-Watson statistics indicate that the analysis is robust to autocorrelation.

Appendix Table 3  
Other horizons regression statistics

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Notes: Statistics for monthly nominal currency series, all currencies denominated in Swiss franc. Calculations made in logged differences as per Frankel and Wei (1994), with the model taking the form

\[ \Delta \log(PNG_t) = \alpha + \beta_1 \Delta \log(USD_t) + \beta_2 \Delta \log(AUD_t) + \epsilon_t \]

This period significantly reinforces evidence that the kina may be a pegged regime. The \( R^2 \) line of fit is strong, and indicates significant management during this time. Again the US dollar is the dominant currency, and its dominance appears to have increased during this period. Again the estimated coefficient for the Australian dollar is not statistically significant. Durbin-Watson statistics indicate that the analysis is robust to autocorrelation.
Appendix Figure 1  Australian dollar and PNG kina nominal price movements 1995–2004 ($US)