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Peg the Export Price Index: A Proposed Monetary Regime for Small Countries

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[tables and graphs included]

The current fashion in monetary policy regimes is inflation targeting. Such countries as the United Kingdom, Sweden, Canada, New Zealand, Australia, Chile, Brazil, Norway, Korea, and South Africa have adopted it, and many monetary economists approve. In part this is a consequence of the disillusionment with exchange rate targets that arose in the course of the currency crises of the last ten years (from Mexico 1994 to Argentina 2001). Proponents of inflation targeting point out that if the exchange rate is not to be the anchor for monetary policy, then the ultimate objective of price stability requires that some new nominal variable must be chosen as the anchor. Two old favorite candidates for nominal anchor, the price of gold and the money supply, have long since been discredited in the eyes of many. So that seems to leave inflation targeting.

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Of the possible price indices that a central bank could target, the CPI is the usual choice. But this may not be the best choice. I want to argue for targeting an index of export prices.

This idea is a moderate version of a more exotic-sounding proposed monetary regime that I have written about elsewhere, called Peg the Export Price – or PEP, for short. I have proposed PEP explicitly for those countries that happen to be heavily specialized in the production of a particular mineral or agricultural export commodity. The proposal is to set fix the price of that commodity in terms of domestic currency, or, equivalently, set the value of domestic currency in terms of that commodity. For example, African gold producers would peg their currency to gold – in effect returning to the long-abandoned gold standard. Middle Eastern oil producers would peg to oil. Coffee producers would peg to coffee, wheat producers to wheat. And so forth. One can even think of exporters of manufactured goods that qualify: standardized semi-conductors (that is, commodity chips) are sufficiently important exports in Korea and some other East Asian countries that one could imagine pegging to their price.

How would this work operationally? Conceptually, one can imagine the government holding reserves of gold or oil, and intervening whenever necessary to keep the price fixed in terms of local currency. Operationally, a more practical method would be for the central bank each day to announce an exchange rate vis-à-vis the dollar, following the rule that the exchange rate moves precisely in proportion to the day's price of gold or oil in terms of dollars on the London market. Either way, the effect would be to stabilize the price of the commodity in terms of local currency. Or perhaps, since these

commodity prices are determined on world markets, a better way to express the policy is stabilizing the price of local currency in terms of the commodity.²

Some have responded to the PEP proposal by pointing out, correctly, that the side-effect of stabilizing the local-currency price of the export commodity in question is that it would destabilize the local-currency price of other export goods. If agricultural or mineral commodities constitute virtually all of exports, then this is not an issue. But for a heavy majority of countries, no single commodity constitutes more than half of exports. Even those who are heavily specialized in a single mineral or agricultural product may wish to diversify further into new products in the future, so as to be less dependent on a single commodity. For these two sorts of countries, the strict version of PEP may not be appropriate. For those countries where export diversification is important, a moderated version of PEP may be called for instead.

One possible margin of moderation is the width of the band: one can define a broad band as a target around the central parity, rather than seeking to fix the price perfectly. Another way to go is to define as the parity a basket that includes the export commodity as well as a weighted average of currencies of major trading partners – e.g., 1/3 dollars, 1/3 euros, and 1/3 oil.³ A third way to moderate the proposal is to interpret it as targeting a broad index of all export prices, rather than the price of only one or a few

² Frankel and Ayako Saiki, “A Proposal to Anchor Monetary Policy by the Price of the Export Commodity,” *Journal of Economic Integration*, September 2002, 17, no. 3: 417-448; Frankel, “A Proposed Monetary Regime for Small Commodity Exporters: Peg the Export Price (PEP),” *International Finance*, (Blackwill Publishers), vol. 6, no. 1, Spring 2003, 61-88; and Frankel, “Should Gold-Exporters Peg Their Currencies to Gold?” Research Study No. 29, World Gold Council, London, 2002.

³ “Iraq’s Currency Solution,” *The International Economy*, Fall 2003, pp. 54-57.

export commodities. This article proposes targeting just such an export price index. This moderate form of the proposal could be abbreviated PEPI, for Peg the Export Price *Index*.

The argument for the export targeting proposal, in any of its forms, can be stated succinctly: It delivers one of the main advantages that a simple exchange rate peg promises, namely a nominal anchor, while simultaneously delivering one of the main advantages that a floating regime promises, namely automatic adjustment in the face of fluctuations in the prices of the countries' exports on world markets. Textbook theory says that when there is an adverse movement in the terms of trade, it is desirable to accommodate it via a depreciation of the currency. When the dollar price of exports rises, under PEP or PEPI the currency per force appreciates in terms of dollars. When the dollar price of exports falls, the currency depreciates in terms of dollars. Such accommodation of terms of trade shocks is precisely what is wanted. In recent currency crises, countries that suffered a sharp deterioration in their export markets were often eventually forced to give up their exchange rate targets and devalue anyway; but the adjustment was far more painful -- in terms of lost reserves, lost credibility, and lost output -- than if the depreciation had happened automatically.

The desirability of accommodating terms of trade shocks is a particularly good way to summarize the attractiveness of export price targeting relative to the reigning champion, CPI targeting. Consider the two categories of adverse terms of trade shocks: a fall in the dollar price of the export in world markets and a rise in the dollar price of the import on world markets. In the first case, a fall in the export price, you want the local currency to depreciate against the dollar. As already noted, PEP or PEPI deliver that

result automatically; CPI targeting does not. In the second case, a rise in the import price, the terms-of-trade criterion suggests that you again want the local currency to depreciate. Neither regime delivers that result.⁴ But CPI targeting actually has the implication that you tighten monetary policy so as to appreciate the currency against the dollar, by enough to prevent the local-currency price of imports from rising. This implication – reacting to an adverse terms of trade shock by appreciating the currency – seems perverse. It could be expected to exacerbate swings in the trade balance, and output.

Few believe that the proper response for an oil-importing country in the event of a large increase in world oil prices is to tighten monetary policy and thereby appreciate the currency sufficiently to prevent an increase in the price of oil in terms of domestic currency. The usual defense offered by inflation targeters is that in the event of such a shock, the central bank should deviate from the CPI target and explain the circumstances to the public. But what can be the argument for making such derogations on an ad hoc basis, when it is possible to build them into a simple target rule in the first place? Certainly not a gain in transparency and credibility.

CPI targeting is not unique in having an Achilles heel, in the form of import price shocks. Other standard candidates for nominal anchor have their own problems.

⁴ There is a reason for that. In addition to the goal of accommodating terms of trade shocks, there is also the goal of resisting inflation; but to depreciate in the face of an increase in import prices would exacerbate price instability.

Each Candidate for Nominal Anchor has its Own Vulnerability

Each of the variables that are candidates for nominal anchor has its own characteristic sort of extraneous fluctuations that can wreck havoc on a country's monetary system, as summarized in Table 1.

- A **monetarist** rule would specify a fixed rate of growth in the money supply. But fluctuations in the public's demand for money or in the behavior of the banking system can directly produce gratuitous fluctuations in velocity and the interest rate, and thereby in the real economy. For example, in the United States, a large upward shift in the demand for money around 1982 convinced the Federal Reserve Board that it had better abandon the money growth rule it had adopted two years earlier, or else face a prolonged and severe recession.
- Under a **gold standard**, the economy is hostage to the vagaries of the world gold market. For example, when much of the world was on the gold standard in the 19th century, global monetary conditions depended on the output of the world's gold mines. The California gold rush from 1849 was associated with a mid-century increase in liquidity and a resulting increase in the global price level. The absence of major discoveries of gold between 1873 and 1896 helps explain why price levels fell dramatically over this period. In the late 1890s, the gold rushes in Alaska and South

Africa were each again followed by new upswings in the price level. Thus the system did not in fact guarantee stability.⁵

- One proposal is that monetary policy should **target a basket of basic mineral and agricultural commodities**. The idea is that a broad-based commodity standard of this sort would not be subject to the vicissitudes of a single commodity such as gold, because fluctuations of its components would average out somewhat.⁶ The proposal might work if the basket reflected the commodities produced and exported by the country in question. But for a country that is a net importer of oil, wheat, and other mineral and agricultural commodities, such a peg gives precisely the wrong answer in a year when the prices of these import commodities go up. Just when the domestic currency should be depreciating to accommodate an adverse movement in the terms of trade, it appreciates instead. Brazil should not peg to oil, and Kuwait should not peg to wheat.
- The need for robustness with respect to import price shocks argues for the superiority of **nominal income targeting** over inflation targeting.⁷ A practical argument against

⁵ Cooper (1985) or Hall (1982). On the classical gold standard, see also Bordo and Schwartz (1997) and papers in Eichengreen (1985).

⁶ A “commodity standard” was proposed in the 1930s – by B. Graham (1937) – and subsequently discussed by Keynes (1938), and others. It was revived in the 1980s: e.g., Hall (1982).

⁷ Velocity shocks argue for the superiority of nominal income targeting over a monetarist rule. Frankel (1995) demonstrates the point mathematically, using the framework of Rogoff (1985), and gives other references on nominal income targeting.

nominal income targeting is the difficulty of timely measurement. For developing countries in particular, the data are sometimes available only with a delay of one or two years.

- Under a *fixed exchange rate*, fluctuations in the value of the particular currency to which the home country is pegged can produce needless volatility in the country's international price competitiveness. For example, the appreciation of the dollar from 1995 and 2001 was also an appreciation for whatever currencies were linked to the dollar. Regardless the extent to which one considers the late-1990s dollar appreciation to have been based in the fundamentals of the US economy, there was no necessary connection to the fundamentals of smaller dollar-linked economies. The problem was particularly severe for some far-flung economies that had adopted currency boards over the preceding decade: Hong Kong, Argentina, and Lithuania.

Dollar-induced overvaluation was also one of the problems facing such victims of currency crisis as Mexico (1994), Thailand and Korea (1997), Russia (1998), Brazil (1999) and Turkey (2001), even though none of these countries had formal rigid links to the dollar. It is enough for the dollar to exert a large pull on the country's currency to create strains. The loss of competitiveness in non-dollar export markets adversely impacts such measures of economic health as real overvaluation, exports, the trade balance, and growth, or such measures of financial health as the ratios of current account to GDP, debt to GDP, debt service to exports, or reserves to imports.

- This brings us back to the current fashion of *targeting the inflation rate* or CPI.⁸ To some, PEP may sound similar to inflation targeting. But, as already noted, a key difference between the CPI and the export price is the terms of trade. When there is an adverse movement in the terms of trade, one would like the currency to depreciate, while price level targeting can have the opposite implication. If the central bank has been constrained to hit an inflation target, oil price shocks (as in 1973, 1979, or 2000), for example, will require an oil-importing country to tighten monetary policy. The result can be sharp falls in national output. Thus under rigid inflation targeting, supply or terms-of-trade shocks can produce unnecessary and excessive fluctuations in the level of economic activity.

Table 2 reports the correlation between changes in import prices in world markets (expressed in dollars/import), and changes in the exchange rate (expressed in dollars/local currency). The countries represented are major countries who today target inflation. In each case, the correlation is positive. In other words these countries respond to increases in world prices of their imports by appreciating their currencies rather than depreciating them. This is consistent with CPI-targeting, but seems to fly in the face of the textbook principle of floating exchange rates that a country's monetary policy should respond to an adverse shift in the terms of trade so as to depreciate the currency rather than appreciate it.

⁸ Among many possible references are Svensson (1995), Bernanke, et al. (1999), and Truman (2003).

Consider the most recent history. Australia, Canada, New Zealand, Singapore, Sweden, Switzerland, and the UK each in 2002 and 2003 experienced increases in the prices of their imports on world markets, expressed in dollars. The textbook theory says that their currencies should have been allowed to depreciate to accommodate this adverse shift in their terms of trade, to give resources the incentive to shift out of the production of importables. But this did not happen [as Figures 1 illustrate]. In each case, one could say that monetary policy was sufficiently tight, relative to the United States, that their currencies appreciated against the dollar. In each case, the observable result was that an index of import prices in local currency did not rise, but if anything actually fell. Why? Inflation-targeting is the obvious culprit. The implication is that this regime obligated them to tighten sufficiently to prevent a large increase in local currency import prices and therefore in the CPI.⁹

By contrast, in 1974 and 1980, large increases in these countries' import prices on world markets were reflected as large increases in domestic currency import prices as well [also shown in figures 1]. But this was before these countries switched to inflation targeting. Future research should compute correlations as in Table 2 that isolate periods when the country was targeting the CPI.

⁹ Presumably the import price indices in terms of dollars rose in 2003 not just because of tight world markets for oil and other commodities, but also because of the depreciating dollar. [That import prices fell in local currency is key. To the extent that local currencies appreciated against the dollar alone, this need have nothing to do with their real effective exchange rate, i.e., their terms of trade against a weighted average of trading partners. But if that were the whole story, then countries' monetary policy would not have been tightening as reflected in local currency import prices.]

To recap, each of the most popular variables that have been proposed as candidates for nominal anchors is subject to fluctuations that will add an element of unnecessary monetary volatility to a country that has pegged its money to that variable: velocity shocks in the case of M1, supply shocks in the case of inflation targeting, measurement errors in the case of nominal GDP targeting, fluctuations in world gold markets in the case of the gold standard, and fluctuations in the anchor currency in the case of exchange rate pegs.

Do Floating Rates Accommodate Export Price Shocks?

It was noted above that one of PEPI's advantages is also an advantage that floating promises: automatic adjustment to terms of trade shocks. Do floating rates really deliver on this promise? Australia is sometimes given as an example of a country where the currency has been allowed to depreciate automatically when its export commodities face weak world markets, and vice versa. One can calculate for Australia what was the path followed historically by an index of export prices expressed in terms of domestic currency, versus what would have been the path of the same export basket if the currency had been rigidly pegged to the dollar, under the assumption that the prices of these commodities are determined exogenously on world markets. [See Table 3 and accompanying Charts at end of paper.]

In nominal terms, export prices rose rapidly in the 1970s and 1980s, in line with general Australian inflation and depreciation (which would not have happened if the currency had been rigidly pegged to the dollar). The real price of exports, obtained by

deflating by the local CPI, is a more relevant measure, as it indicates the incentive for resources to shift into or out of the export sector. Historically, over the period 1970-2001, real export prices show a standard deviation of .18, less than the .30 that would have prevailed under a dollar peg, or the .50 under a yen peg or .29 under a mark/euro peg. (The price indices are expressed in logs, so .18 is 18 percent. Under the hypothetical rigid peg to the dollar, mark or yen, it is assumed that the local CPI would be the same as the CPI of the United States, Germany, or Japan, respectively.) 19% of deviations were larger than in magnitude than .25, a possible generator of balance of payments difficulties, as compared to 47 % under a dollar peg. In other words, the float did succeed in reducing the variability of real export prices a bit, but the remaining variability was still substantial.

The same calculation for other floaters also shows small reductions in volatility relative to their hypothetical pegs. Canada's float reduced the standard deviation of its real export prices only to .14 over the last three decades, from .18 under a hypothetical dollar peg. 6% of deviations were less than .25 under its actual float, as compared to 19% under a dollar peg. The United Kingdom's float produced a historical standard deviation of .16, which is the same as it would have been under a dollar peg, and slightly larger than it would have been if pegged rigidly to the DM/euro (.15). 13% of its deviations were greater than .25, less than would have happened under a dollar peg (16%) but greater than under a euro peg (9%). Switzerland's float reduced the standard deviation to .07, only slightly below the .08 that would have prevailed under a peg to the DM/euro. (See figures)

In short, exchange rate flexibility allowed a partial accommodation of fluctuations in world prices for these countries' export goods, so that real export prices did not move as much as they would have if the country had been rigidly pegged to a major currency. However, the floats came with three drawbacks:

- (1) this offset was only partial;
- (2) it required giving up benefits of a nominal anchor (nominal prices in every case were substantially more variable, usually due to an upward trend, than they would have been under a peg);
- (3) extraneous volatility was also introduced by exchange rate fluctuations.

In the case of countries like Australia or the United Kingdom, one might suspect extraneous volatility from speculative bubbles or Dornbusch overshooting. But the problem is potentially worse in the case of countries that attempt exchange rate targets and are then subject to speculative attacks. Consider Korea, which during much of this period was classified de jure as floating but de facto intervening in pursuit of a dollar exchange rate target. Its export prices fell sharply in terms of local goods during 1995-97, in part due to a strong dollar, and rose sharply during 1997-98 due to a collapsing won. The result was a standard deviation of real export prices of .23, over the period 1970-2000, almost as great as if it had been rigidly pegged to the dollar (.28). 23% of deviations were greater than .25 (as compared to .29 under a hypothetical dollar peg or 74% under a yen peg). South Africa was more successful in reducing its real export price variability, to 0.11, as compared to .21 under a hypothetical dollar peg and .22 under a hypothetical mark/euro peg. It managed to eliminate altogether deviations above .25.

The argument for the PEPI proposal is that if any of these countries had adopted it, it would have eliminated their export price variability altogether. That is the definition of PEPI. That, in turn, would probably have helped stabilize the balance of payments. It would, for example, have allowed the Korean won to depreciate automatically in the late 1990s, without the need for a costly failed attempt to defend an exchange rate target before the devaluation.¹⁰

How would PEPI be implemented operationally? As noted at the outset, in the simple version of the PEP proposal, there is nothing to prevent a central bank from intervening to fix the price of a single agricultural or mineral product perfectly on a day-to-day basis. Such perfect price fixing is not possible in the case of a broad basket of exports, as called for by PEPI, even if it were desirable. For one thing, such price indices are not even computed on a daily basis. So it would be, rather, a matter of setting a target zone for the year, with monthly realizations, much as a range for the CPI is declared under the most standard interpretation of inflation targeting. The declared band could be wide if desired, just as with the targeting of the CPI, money supply, exchange rate, or other nominal variables. Open market operations to keep the export price index inside the band if it threatens to stray outside could be conducted in terms either of

¹⁰ Earlier work reported simulations of the path of exports over the last three decades if countries had followed the PEP proposal, as compared to pegging rigidly to a major currency, or as compared to whatever policy the country in fact followed: Frankel (2002) focuses primarily on producers of gold, Frankel (2003) on oil exporters, and Frankel and Saiki (2002) on various other agricultural and mineral producers. A typical finding was that developing countries that suffered a deterioration in export markets in the late 1990s, often contributing to a financial crisis, would have adjusted automatically under the PEP regime.

foreign exchange or in terms of domestic securities. For some countries, it might help to monitor on a daily or weekly basis the price of a basket of agricultural and mineral commodities that is as highly correlated as possible with the country's overall price index but whose components are observable on a daily or weekly basis in well-organized markets. The central bank could even announce what the value of the basket index would be one week at a time, by analogy with the Fed funds target in the United States. The weekly targets could be set so as to achieve the medium-term goal of keeping the comprehensive price index inside the pre-announced bands; and yet the central bank could hit the weekly targets very closely, if it wanted, for example, by intervening in the foreign exchange market.

A still more moderate, still less exotic-sounding, version of the proposal would be to target a producer price index. In practice, it is often difficult to separate production cleanly into the two sectors, nontraded goods and exportables, in which case the two versions of the proposal – targeting an export price index or a producer price index -- come down to the same thing. The key point of the PEP proposal is to exclude import prices from the index, and to include export prices. The problem with CPI targeting is that it does it the other way around.

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Table 1: Six proposed nominal targets and the Achilles heel of each

Regime	Targeted variable	Vulnerability	Historical Example
Inflation targeting	CPI	Import price shocks	Oil shocks of 1973, 1980, 2000
Monetarist rule	M1	Velocity shocks	US 1982
Gold standard	Price of gold	Vagaries of world gold market	1849 boom; 1873-96 bust
Commodity standard	Price of agricultural & mineral basket	Shocks in market for imported commodity	Oil shocks of 1973, 1980, 2000
Nominal income targeting	Nominal GDP	Measurement problems	Less developed countries
Fixed exchange rate	\$ (or euro)	Appreciation of \$ (or euro)	1995-2001

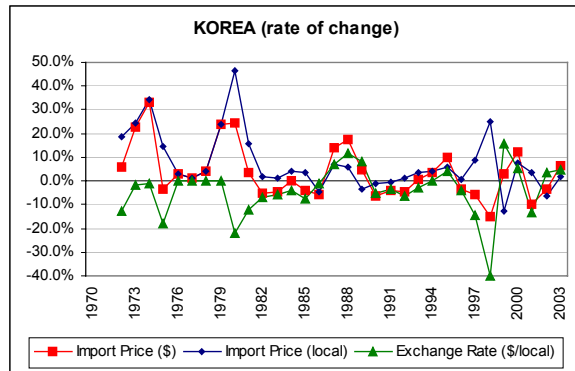
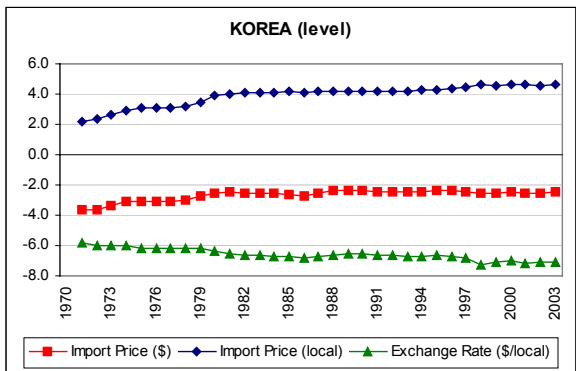
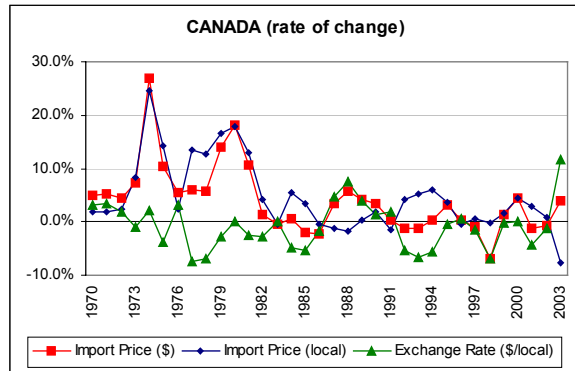
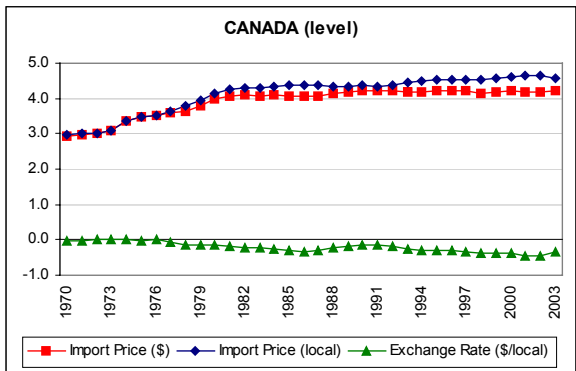
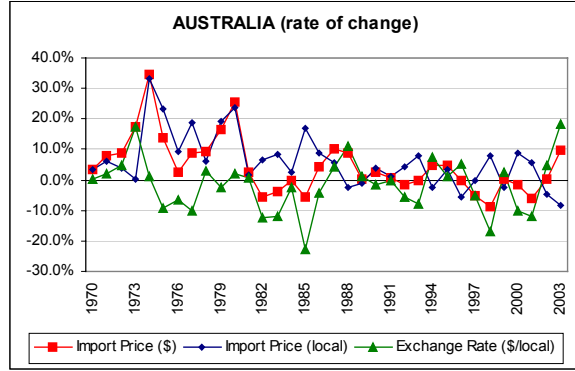
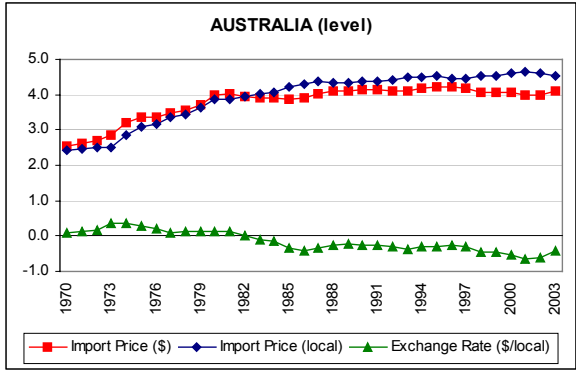
Table 2:
Correlation of Changes in Exchange Rate (\$/local currency)
and Changes in Dollar Price of Imports (1970-2003)

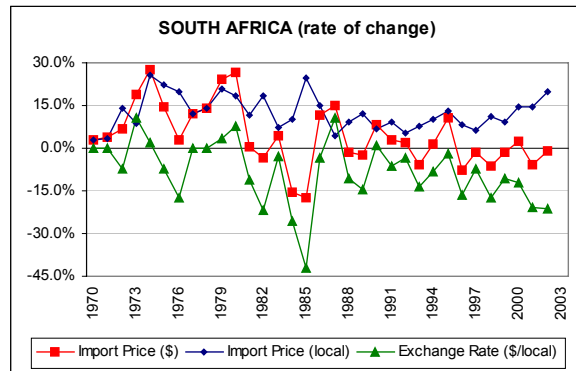
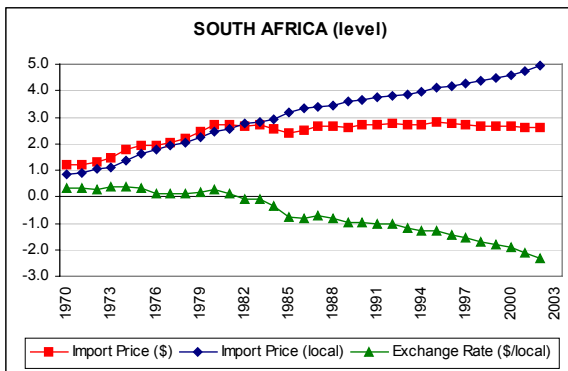
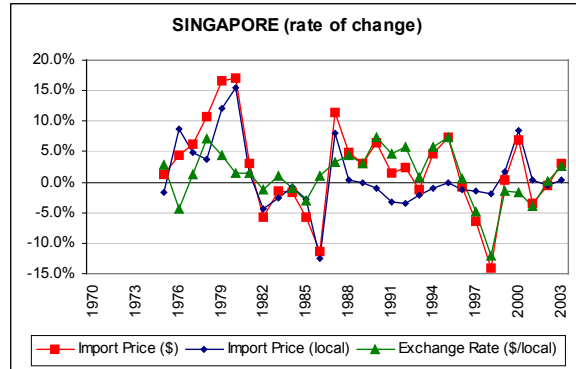
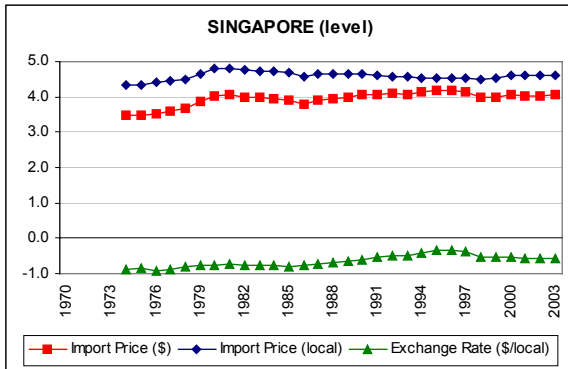
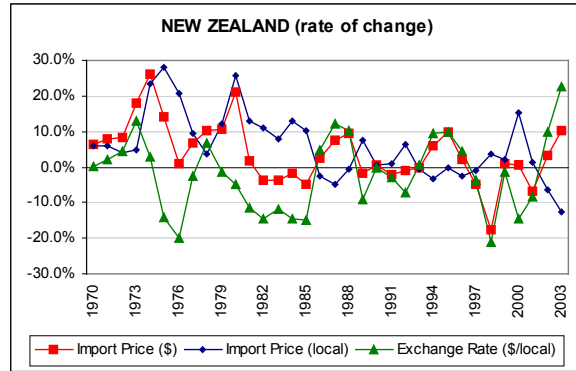
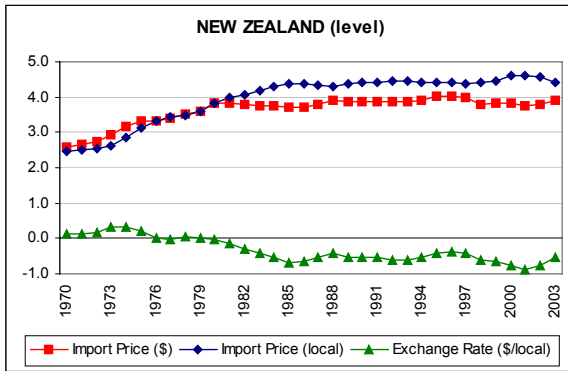
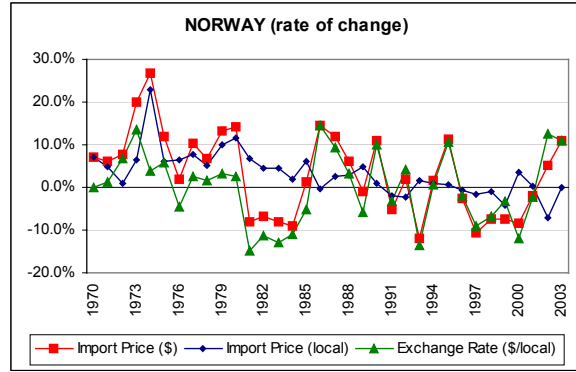
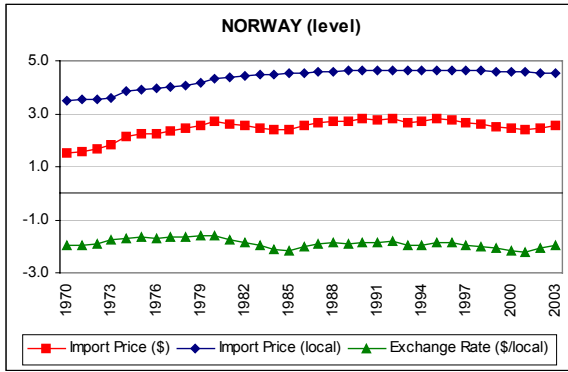
Source: International Financial Statistics, IMF.

	Correlation
AUSTRALIA	0.493
CANADA	0.249
KOREA	0.359
NEW ZEALAND	0.836
NORWAY	0.546
SINGAPORE	0.639
SOUTH AFRICA	0.846
SWEDEN	0.745
SWITZERLAND	0.850
THAILAND	0.299
UNITED KINGDOM	0.525

**Figures 1:
Dollar Price of Imports, Local Price of Imports and the Exchange Rate (\$/local)
(1970-2003)**

Source: International Financial Statistics, IMF





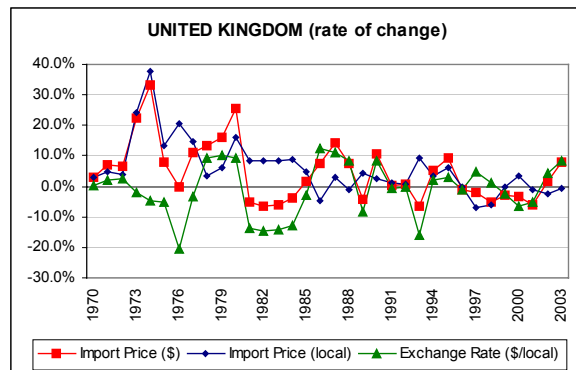
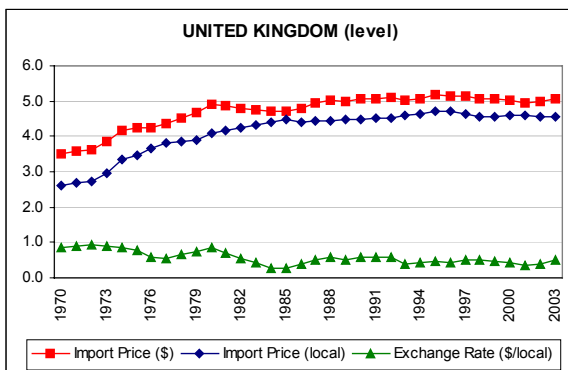
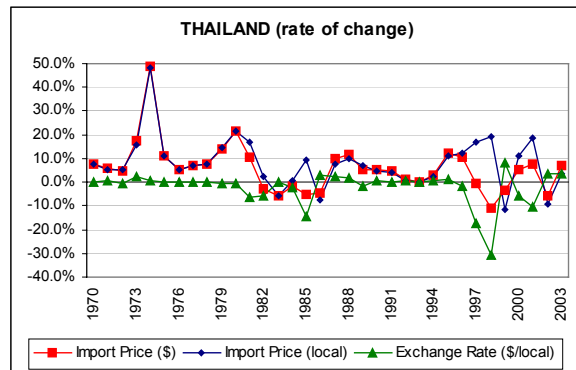
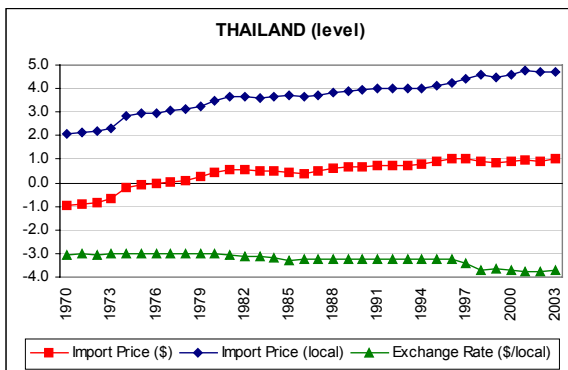
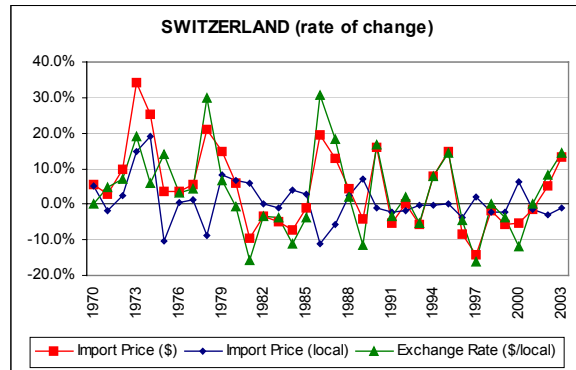
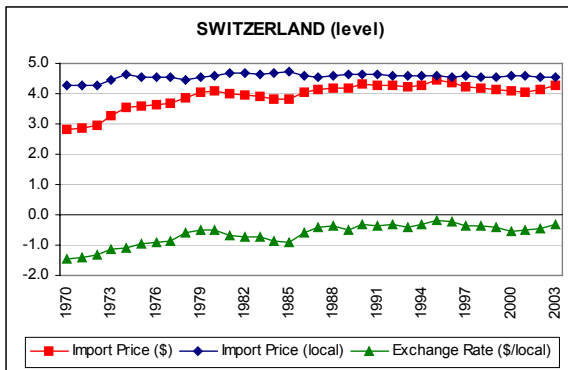
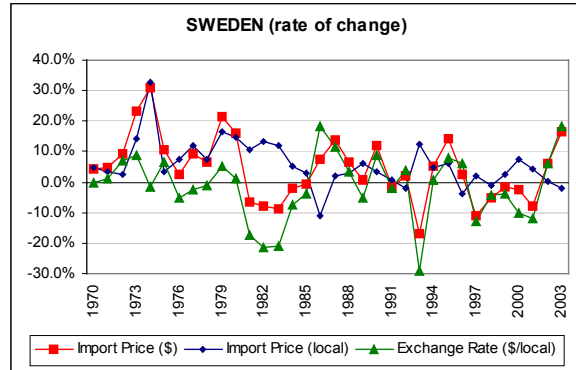
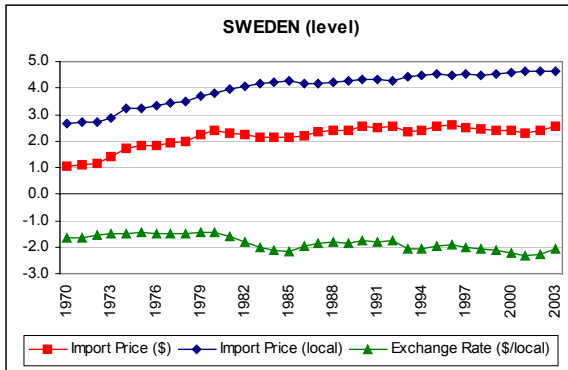


Table 3: Variability of export price index (nominal and real) under alternative currency regime assumptions: actual local currency policy, vs. peg to yen, euro or dollar

Nominal									Real								
ARGENTINA									ARGENTINA								
LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5	LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
JPY	0.27	4	1	1	9	44.4%	11.1%	11.1%	JPY	0.20	5	1	0	9	55.6%	11.1%	0.0%
Euro	0.11	3	0	0	9	33.3%	0.0%	0.0%	Euro	0.13	3	0	0	9	33.3%	0.0%	0.0%
USD	0.07	1	0	0	9	11.1%	0.0%	0.0%	USD	0.05	1	0	0	9	11.1%	0.0%	0.0%
USD	0.06	1	0	0	9	11.1%	0.0%	0.0%	US\$	0.05	1	0	0	9	11.1%	0.0%	0.0%
AUSTRALIA									AUSTRALIA								
LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5	LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
JPY	0.53	29	24	7	32	90.6%	75.0%	21.9%	JPY	0.18	23	6	0	32	71.9%	18.8%	0.0%
Euro	0.30	27	18	0	32	84.4%	56.3%	0.0%	Euro	0.50	31	26	14	32	96.9%	81.3%	43.8%
USD	0.20	14	8	0	32	43.8%	25.0%	0.0%	USD	0.29	28	19	0	32	87.5%	59.4%	0.0%
USD	0.33	24	10	3	32	75.0%	31.3%	9.4%	US\$	0.30	24	15	3	32	75.0%	46.9%	9.4%
BRAZIL									BRAZIL								
LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5	LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
JPY	2.28	10	10	9	10	100.0%	100.0%	90.0%	JPY	0.18	8	1	0	10	80.0%	10.0%	0.0%
Euro	0.22	23	9	0	32	71.9%	28.1%	0.0%	Euro	0.40	32	27	7	32	100.0%	84.4%	21.9%
USD	0.23	20	10	0	32	62.5%	31.3%	0.0%	USD	0.21	20	10	0	32	62.5%	31.3%	0.0%
USD	0.37	27	17	5	32	84.4%	53.1%	15.6%	US\$	0.18	21	7	0	32	65.6%	21.9%	0.0%
CANADA									CANADA								
LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5	LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
JPY	0.52	32	21	8	32	100.0%	65.6%	25.0%	JPY	0.14	14	2	0	32	43.8%	6.3%	0.0%
Euro	0.26	22	12	1	32	68.8%	37.5%	3.1%	Euro	0.39	31	25	6	32	96.9%	78.1%	18.8%
USD	0.27	21	12	1	32	65.6%	37.5%	3.1%	USD	0.22	21	11	0	32	65.6%	34.4%	0.0%
USD	0.41	30	18	4	32	93.8%	56.3%	12.5%	US\$	0.18	20	6	0	32	62.5%	18.8%	0.0%
Nominal KOREA									Real KOREA								
LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5	LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
JPY	0.66	30	27	11	31	96.8%	87.1%	35.5%	JPY	0.23	23	7	1	31	74.2%	22.6%	3.2%
Euro	0.28	23	14	2	31	74.2%	45.2%	6.5%	Euro	0.47	31	23	10	31	100.0%	74.2%	32.3%
USD	0.21	19	8	0	31	61.3%	25.8%	0.0%	USD	0.28	23	13	2	31	74.2%	41.9%	6.5%
USD	0.35	24	16	4	31	77.4%	51.6%	12.9%	US\$	0.28	17	9	3	31	54.8%	29.0%	9.7%
Nominal MALAYSIA									Real MALAYSIA								
LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5	LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
JPY	0.40	24	12	4	28	85.7%	42.9%	14.3%	JPY	0.21	22	5	0	28	78.6%	17.9%	0.0%
Euro	0.42	28	23	6	28	100.0%	82.1%	21.4%	Euro	0.51	27	26	14	28	96.4%	92.9%	50.0%
USD	0.35	18	10	5	28	64.3%	35.7%	17.9%	USD	0.36	25	22	2	28	89.3%	78.6%	7.1%
USD	0.45	20	14	4	28	71.4%	50.0%	14.3%	US\$	0.33	26	20	3	28	92.9%	71.4%	10.7%
Nominal NEW ZEALAND									Real NEW ZEALAND								
LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5	LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
JPY	0.67	29	27	19	31	93.5%	87.1%	61.3%	JPY	0.19	26	5	0	31	83.9%	16.1%	0.0%
Euro	0.21	21	9	0	31	67.7%	29.0%	0.0%	Euro	0.39	29	23	8	31	93.5%	74.2%	25.8%
USD	0.20	19	6	0	31	61.3%	19.4%	0.0%	USD	0.19	21	7	0	31	67.7%	22.6%	0.0%
USD	0.39	25	18	3	31	80.6%	58.1%	9.7%	US\$	0.20	20	7	0	31	64.5%	22.6%	0.0%
Nominal NORWAY									Real NORWAY								
LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5	LC	Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
JPY	0.45	31	21	7	32	96.9%	65.6%	21.9%	JPY	0.27	27	15	0	32	84.4%	46.9%	0.0%
Euro	0.34	26	16	4	32	81.3%	50.0%	12.5%	Euro	0.47	31	27	12	32	96.9%	84.4%	37.5%
USD	0.29	18	11	3	32	56.3%	34.4%	9.4%	USD	0.30	23	14	1	32	71.9%	43.8%	3.1%
USD	0.40	27	14	4	32	84.4%	43.8%	12.5%	US\$	0.27	23	16	2	32	71.9%	50.0%	6.3%

Nominal

SINGAPORE		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	0.17	15	3	0	23	65.2%	13.0%	0.0%	
JPY	0.36	20	14	5	23	87.0%	60.9%	21.7%	
Euro	0.22	16	5	0	23	69.6%	21.7%	0.0%	
USD	0.10	8	0	0	23	34.8%	0.0%	0.0%	

Real

SINGAPORE		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	0.30	18	14	0	23	78.3%	60.9%	0.0%	
JPY	0.45	19	16	9	23	82.6%	69.6%	39.1%	
Euro	0.33	19	13	4	23	82.6%	56.5%	17.4%	
US\$	0.29	16	9	2	23	69.6%	39.1%	8.7%	

SOUTH AFRICA

SOUTH AFRICA		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	0.98	28	25	21	29	96.6%	86.2%	72.4%	
JPY	0.24	25	9	0	29	86.2%	31.0%	0.0%	
Euro	0.19	13	8	0	29	44.8%	27.6%	0.0%	
USD	0.36	26	15	4	29	89.7%	51.7%	13.8%	

SOUTH AFRICA

SOUTH AFRICA		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	0.11	14	0	0	29	48.3%	0.0%	0.0%	
JPY	0.42	27	24	7	29	93.1%	82.8%	24.1%	
Euro	0.22	22	10	0	29	75.9%	34.5%	0.0%	
US\$	0.21	20	7	0	29	69.0%	24.1%	0.0%	

SWITZERLAND

SWITZERLAND		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	0.16	10	2	0	18	55.6%	11.1%	0.0%	
JPY	0.28	13	6	1	18	72.2%	33.3%	5.6%	
Euro	0.31	14	10	1	18	77.8%	55.6%	5.6%	
USD	0.46	16	12	4	18	88.9%	66.7%	22.2%	

SWITZERLAND

SWITZERLAND		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	0.07	3	0	0	18	16.7%	0.0%	0.0%	
JPY	0.14	10	1	0	18	55.6%	5.6%	0.0%	
Euro	0.08	3	0	0	18	16.7%	0.0%	0.0%	
US\$	0.19	12	6	0	18	66.7%	33.3%	0.0%	

THAILAND

THAILAND		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	0.53	24	19	9	32	75.0%	59.4%	28.1%	
JPY	0.25	25	14	0	32	78.1%	43.8%	0.0%	
Euro	0.21	20	5	1	32	62.5%	15.6%	3.1%	
USD	0.38	24	11	3	32	75.0%	34.4%	9.4%	

THAILAND

THAILAND		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	0.12	13	1	0	32	40.6%	3.1%	0.0%	
JPY	0.42	31	26	8	32	96.9%	81.3%	25.0%	
Euro	0.21	25	6	0	32	78.1%	18.8%	0.0%	
US\$	0.23	23	10	1	32	71.9%	31.3%	3.1%	

Nominal

TURKEY		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	3.96	26	26	26	26	100.0%	100.0%	100.0%	
JPY	1.25	19	15	10	26	73.1%	57.7%	38.5%	
Euro	1.23	21	16	11	26	80.8%	61.5%	42.3%	
USD	1.32	22	19	13	26	84.6%	73.1%	50.0%	

Real

TURKEY		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	1.26	20	14	9	26	76.9%	53.8%	34.6%	
JPY	1.28	22	17	11	26	84.6%	65.4%	42.3%	
Euro	1.24	15	10	10	26	57.7%	38.5%	38.5%	
US\$	1.26	20	12	9	26	76.9%	46.2%	34.6%	

UNITED KINGDOM

UNITED KINGDOM		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	0.61	30	25	12	32	93.8%	78.1%	37.5%	
JPY	0.23	19	10	0	32	59.4%	31.3%	0.0%	
Euro	0.28	24	14	2	32	75.0%	43.8%	6.3%	
USD	0.46	27	22	5	32	84.4%	68.8%	15.6%	

UNITED KINGDOM

UNITED KINGDOM		Stdev	+0.1	+0.25	+0.5	Out of	% of +0.1	% of +0.25	% of +0.5
LC	0.16	20	4	0	32	62.5%	12.5%	0.0%	
JPY	0.33	30	17	0	32	93.8%	53.1%	0.0%	
Euro	0.15	14	3	0	32	43.8%	9.4%	0.0%	
US\$	0.16	13	5	0	32	40.6%	15.6%	0.0%	

Figures 2: Export index expressed in local currency – historical versus under hypothetical peg of currency to dollar or other major currencies

