MAGYAR NEMZETI BANK

MNB Background Studies
2003/2

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ANALYSIS OF LARGE REAL EXCHANGE RATE APPRECIATION EPISODES

July 2003

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Summary

Similar to Hungary's experience over the past two years, several countries of the world have experienced a fast and large scale real exchange rate appreciation. This study examines in which cases rapid real exchange appreciation proved to be permanent or transitory, what kinds of macroeconomic policies were adopted during periods of appreciation, and what consequences real exchange rate appreciation resulted in.

The goal of the present study was neither to examine ideal disinflation scenarios, nor to study the connection between real exchange rate and economic growth, not even to analyze possible consequences of the Hungarian real exchange rate appreciation. Therefore, the questions of how large an appreciation may be needed to reduce inflation or how large real exchange rate changes had accompanied economic catch-up in certain countries were not analyzed. Also the questions of whether the actual magnitude of appreciation was really needed in Hungary or even further appreciation would be needed to reduce inflation were left out of consideration. This study does not draw conclusions on the optimal disinflation process (i.e., resulting in a permanent decrease of inflation with the least real economic costs) and the real exchange rate. Its objective was narrower than this: it aimed to examine the macroeconomic steps taken before and after appreciation in the countries where rapid exchange rate appreciation developed within two years and the macroeconomic effects that real exchange appreciation combined with applied economic policies caused.

As a result of the above objective, the study adopted a multinational approach: three decades of experience of nearly one hundred countries had been included in the analysis, but the selection of countries was finally reduced to three clear cut groups. To promote widespread comparisons the study used real exchange rate figures based on the consumer price index, but whenever it was possible, it also involved wage developments.

Real exchange rate appreciation cannot be analyzed in its own as deviations from the equilibrium real exchange rate that may cause macroeconomic effects. If a real exchange appreciation of 20 percent, for example, accounts for one half the adjustment of former undervaluation and results in only half of overvaluation, the real economic consequences of ten percent overvaluation must be reckoned with instead of the consequences of a 20 percent real exchange rate appreciation. Although we tried panel techniques to estimate equilibrium real exchange rates for all countries analyzed, the results were unsatisfactory.[1] Consequently, we conjecture on the equilibrium real exchange rate indirectly based on the behavior of the current real exchange rate and the developments of macroeconomic variables.

The two main lessons of the paper stress the importance of the equilibrium real exchange rate and macroeconomic policies. For example, in those floating exchange rate regimes where the real exchange rate appreciation proved to be transitory but led to a permanent reduction of inflation and the external balance did not deteriorate during the appreciation and the output loss was less pronounced than in many exchange-rate based stabilizations, fiscal policies tightened during the appreciation

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[1] The value of the Hungarian forint's equilibrium exchange rate, however, is currently under investigation by a working group at the Economics Department of the MNB .

period and nominal wage growth declined parallel with falling inflation. This statement underlines the role of macroeconomic policies. The statement was also fundamentally characteristic of cases where real exchange appreciation remained permanent after a period of undervaluation. At the same time, adjustments for undervaluation often resulted in greater macroeconomic volatility. This statement draws the attention to the importance of the equilibrium real exchange rate.

The two main lessons are based on the following conclusions:

1. Appreciation episodes can be broken down into three groups:

    (1) Appreciation remained permanent.

    (2) Temporary appreciation following an initially fixed exchange rate regime and deteriorating fiscal balance. This policy mix resulted in significant economic chaos (renewed inflation burst and a substantial decrease of GDP);

    (3) Temporary appreciation under a floating exchange rate regime, an improving fiscal balance, and basically constant real wages. This policy mix resulted in a permanent decrease in inflation, although at a non-negligible cost in terms of GDP and employment.

2. Permanent appreciation

The possibility of extensive exchange rate appreciation becoming permanent is equal to the question of whether the settled exchange rate is close to the equilibrium. Such cases can basically be divided into three groups: (1) Before appreciation an undervalued real exchange rate develops due to a rigid exchange rate system, originating, for example, in the slow flow of factors and price and wage adjustment (examples of this could be Portugal and Denmark at the end of the 1980s, or Switzerland, Austria and Norway at the dissolution of the Bretton-Woods system in 1973). (2) Economic catch-up based on quick expansion in productivity results in rising equilibrium exchange rates (the classic example is Japan). (3) Countries in transition where transition began with a highly undervalued real exchange rate.

3. Temporary appreciation can be divided into two clearly distinguishable groups.

Temporary appreciation usually takes place during times of disinflation efforts and they are most probably temporary because the real exchange rate becomes overvalued– for the very purpose of helping disinflation. Temporary appreciation can be divided into two clearly definable groups in terms of both their circumstances and consequences. The following table summarizes the differences.

Table 1: Main features of temporary appreciation episodes

Group One – Disinflation Ending in Failure (Latin America and several other countries[2])	Group Two – Permanent Disinflation (Developed countries – Australia, Canada, the United Kingdom and New Zealand[3])
Nominal exchange rate	
Fixed exchange rate or crawling devaluation of a decreasing rate	Under a floating exchange rate regime, two thirds of real exchange appreciation was the result of appreciation of the nominal exchange rate
Initial level of inflation	
Between 20 and 100 percent	Nine percent on average
Rate of appreciation	
Between 15 and 70 percent, 40 percent on average in 2-3 years	Between 15 and 27 percent, 23 percent on average in 2-3 years
Persistence of appreciation	
When the exchange rate has reached its highest level, adjustment began immediately and the original exchange rate was restored within a year	When the exchange rate has reached its highest level, this level remained for two years and in the ensuing two years correction took place in an equal proportion each year
Foreign economic activity	
Deteriorated during appreciation but grew afterwards	After the culmination of appreciation it deteriorated and GDP growth only started to approach the former level four years after appreciation
Economic growth prior to and at the end of appreciation	
In both groups, growth of about four percent had been typical before appreciation, which fell to two percent at the culmination of appreciation	
Post-appreciation economic growth	
A significant decrease in GDP that was followed by an overshooting re-acceleration	A slight decrease in GDP and then accelerating growth, which had reached its former speed in the fifth year after the culmination of appreciation

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[2] Similar features are observable in the attempts of Portugal in the late 1970s, and in the recent Turkish and Russian events.

[3] Similar features are observable in the appreciation period of Sweden between 1988 and 1990 with the substantial difference that a fixed exchange rate system was in operation, and flotation only took place in the adjustment period.

Rate of Unemployment	
(Insufficient data available)	During appreciation it dropped from seven to six percent and then, during permanence of the highest level of the real exchange rate, it rose to ten percent

Fiscal Policy	
The budget deficit of four years earlier, which had amounted to four percent of GDP, rose to seven percent, and after appreciation (simultaneously with recession) significant adjustments were necessary	The budget deficit of four years earlier, which had amounted to four percent of GDP, dropped continuously, which resulted in a balanced fiscal policy by the end of the appreciation period; in the adjustment period deficit rose to two percent of GDP

Interest Policy	
(Insufficient data available)	Strict tightening is evident: Previous real interest rates of about four percent rose to over six percent, which may have had a role in the appreciation of the nominal exchange rate

Developments in wages	
(Insufficient data available)	Increases in nominal wages kept with falling inflation, and only by the third year after appreciation (when growth of GDP also regained momentum) commenced real wages to increase by one or two percent

Current balance of payments	
Deficit skyrocketed	Deficit during appreciation was practically stable and decreased during post-appreciation adjustment

Export market share	
The market share decreased continuously during and after appreciation	The market share grew during appreciation, but during permanence and adjustment for appreciation permanent losses occurred in the market share

Post-adjustment real exchange rate	
The real exchange rate preceding appreciation was restored in both groups	

Economic catch-up	
None of the countries in the two groups was in a catching up phase; their relative state of development remained virtually unchanged.	

1. Introduction[*]

Since the beginning of the transition the real exchange rate – the nominal exchange rate adjusted for inflation – of the Hungarian forint has appreciated year by year. Appreciation significantly accelerated after the widening of the exchange rate band in May 2001, due to the fact that the exchange rate versus the euro approached the strong edge of the band. Real exchange appreciation in the past two years, i.e., the period between Q4 2000 and Q4 2002, was 21.3 percent with respect to the 24 main foreign trading partners, using consumer prices to calculate the real exchange rate, out of which 12.3 percent was the result of appreciation of the nominal-effective exchange rate. The nominal exchange rate of the forint depreciated sharply in June 2003. Taking this into account, the end-June level of the real exchange rate was still 14.9 percent higher than in the last quarter of 2000.

Several other countries in the world have experienced rapid and large scale real exchange rate appreciation. Useful conclusions can, therefore, be drawn from surveying international experience and analyzing in which cases rapid real exchange appreciation proved to be permanent or transitory, what consequences it caused and in general, which other factors outcomes depended on. This study describes the initial results of a research examining such issues. Data of 84 countries between 1970 and 2002 were included in the analysis; apart from all the OECD countries, developing countries that are not mini states and whose main macroeconomic figures were available have been included. For the benefit of making extensive international comparisons we used the real-effective exchange rate index based on the consumer price index to measure appreciation.[4] Nearly all the examined countries experienced rapid and extensive exchange rate appreciation since the 1970s, and a real exchange appreciation of at least 15 percent within two years, for example, could be observed in 68 of the countries.

The analysis of the causes and consequences of rapid real exchange appreciation can hardly be separated from the question of whether the post-appreciation real exchange rate was close to the equilibrium or not. Obviously, if the process of appreciation results from an adjustment to the equilibrium, no adverse real economic effect should be reckoned with. Although the present multinational study does not address the issue directly, since this would require comprehensive studies in each country. For the Hungarian forint, the equilibrium real exchange rate is currently under investigation by a working group at the Economics Department.[5]

Consequently, this study surveys conclusions that can de drawn from the statistical data provided in the first place and aspects concerning the equilibrium real exchange

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[4] The real and nominal/effective exchange rates were calculated based on the consumer price indices in comparison with the 24 main foreign trading partners, using a fixed system of weights representing the foreign trade structure of the 1990s. Some main foreign trading partners of several countries, such as Brazil, China, Russia, Hong Kong and the majority of the Former Yugoslav republics, were left out of consideration due to the lack of a reliably long time-series.

[5] Some experimental calculations were made to estimate the equilibrium real exchange rates of each country studied using panel models, but the estimates did not lead to acceptable results.

rate are analyzed only indirectly, as inferred from the macroeconomic processes observed.

We start with those countries in which appreciation proved to be transitory and continue with those where appreciation remained permanent.

2. Transitory Appreciation

Countries that experienced temporary appreciation can be divided into two markedly distinct groups both in terms of the circumstances and consequences of appreciation.

2.1 Disinflation based on fixed exchange rate in countries having high inflation

The experience of Latin American countries is described in detail in the literature.[6] Their main characteristics are the following: (1) Continuous decrease in inflation, but at the same time, only slow convergence to the nominal exchange rate (to fixed rates or to decreasing pace of crawling devaluation), (2) substantial real appreciation lasting for several years, (3) deterioration of the current balance of payments and the balance of foreign trade, (4) a decrease in production after an initial expansion, (5) the increase of the budget deficit after an initial decrease. Mainly heterodox stabilization policies were introduced in countries with chronic inflation, in which anti-inflation policies based on the exchange rate were accompanied by price and wage restrictions. In spite of this, as a result of the slow convergence of inflation, the real exchange rate appreciated and the trend of the real exchange rate was characterized by an arch shaped curve: initial appreciation (lasting for several years), and depreciation afterwards (at the end of the program) could be observed. The main factor of the deterioration of the current balance of payments was an expansion of imports, which had been initially financed by considerable capital influx. Eventually, the main trend in the real economy was fast growth in consumption (even faster than GDP growth) before a period of crisis. Heightened investments also took part in the formation of business cycle in several countries. This cycle was also observable in the case of successful programs – which were not followed with a repeated acceleration of inflation – such as Israel's 1985 stabilization, to mention an example.

To numerically present the stylized facts of the literature, the figures of 21 Latin American countries were examined, out of which countries experiencing large-scale appreciation over a short period of time had been selected. Detailed data of the countries examined can be found in Appendix "A" (page 34). Twenty instances of appreciation[7] were chosen from among them and the average behavior was calculated, which is shown in the two figures below.[8] When calculating averages the culmination

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[6] Both the empirical and theoretical literature had been surveyed in a former study: DARVAS, Zsolt (1998): Moderált inflációk csökkentése - Összehasonlító vizsgálat a nyolcvanas-kilencvenes évek dezinflációit kísérő folyamatokról, MNB Füzetek 1998/9.

[7] Argentina: 1974, 1980, Bolivia: 1985, Chile: 1981, Colombia: 1997, El Salvador: 1985, 1989, Haiti: 1999, Jamaica: 1977, 1983, Mexico: 1975, 1981, 1994, Paraguay: 1983, Peru: 1975, 1982, Uruguay: 1971, 1982, Venezuela: 1983, 2001.

[8] We must emphasize that during appreciation exchange rates in these countries were either pegged to the dollar (in 12 instances out of the 20), or depreciation took place at a gradually decreasing pace (the remaining 8 instances), but nominal strengthening did not occur in any of the countries. At the same time, 11 countries appreciated to various degrees in the nominal/effective sense, due to the fact that

of appreciation was defined as year zero and averages of the previous and subsequent six years were taken.

The first figure shows the level of real – and nominal – effective exchange rate compared to the third year before the culmination of appreciation (denoted as: REER_CPI, NEER), and the annual rate of increase of the consumer price index (CPI). The inflation figures presented are more favorable than the real ones, since at the calculation of the average countries where hyperinflation followed devaluation were omitted, for their inclusion would have marred the figure (these countries were also omitted at the calculation of the average nominal-effective exchange rates).

The second figure shows GDP growth (GDP), the current balance of payments (CA/GDP), the government budget balance (GOV/GDP)[9], the weighted GDP growth of foreign trade partners (WGDP)[10] and the domestic (GAPHP) and foreign (WGAPHP) output gaps calculated with the Hodrick-Prescott Filter. The last two variables are at best indicative, since the HP Filter is based on the assumption that potential output has a low-variability or a "smooth" process, which is a controversial assumption. If GDP decreases, for example, from one year to another as an effect of a structural shock, which may also reduce economic potential in the long run, the use of the HP Filter suggests the wrong conclusion that the economy had already been overheated before the shock, and was excessively slow afterwards. Output gap figures presented in the graph are therefore to be handled with reservations.[11]

The figures presented describe major macroeconomic processes and the applied exchange rate and fiscal policies. Although the figures presented draw a comprehensive picture of the economy, no particular significance can be assigned to any of the variables, since an appropriately specified macromodel would be required in order to account for the marginal contribution of each variable to the failure. It cannot be stated, for example, that a highly increased deficit of the current balance of payments was solely responsible for causing the exchange rate crisis, although it must have been an important factor.

The graphs are self-explanatory, and naturally they coincide with the major conclusions of the bibliography. The transitory nature of real exchange appreciation is striking: the real exchange rate practically returned to the value it had been at before the real exchange appreciation averaging at 40 percent. The decrease of GDP and the repeated rise of inflation to around 40 percent reflect the failure of the programs.

Unsuccessful fiscal and monetary policies, whose effects were further aggravated by unfavorable external activity, form the root cause of the failure. The exchange rate was fixed under circumstances where inflation was still high, and these countries – as

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currencies of other Latin American countries weakened (there was almost always a country where there was hyperinflation, causing appreciation in the partner countries in the nominal/effective sense, even if its importance was relatively small in international trade).

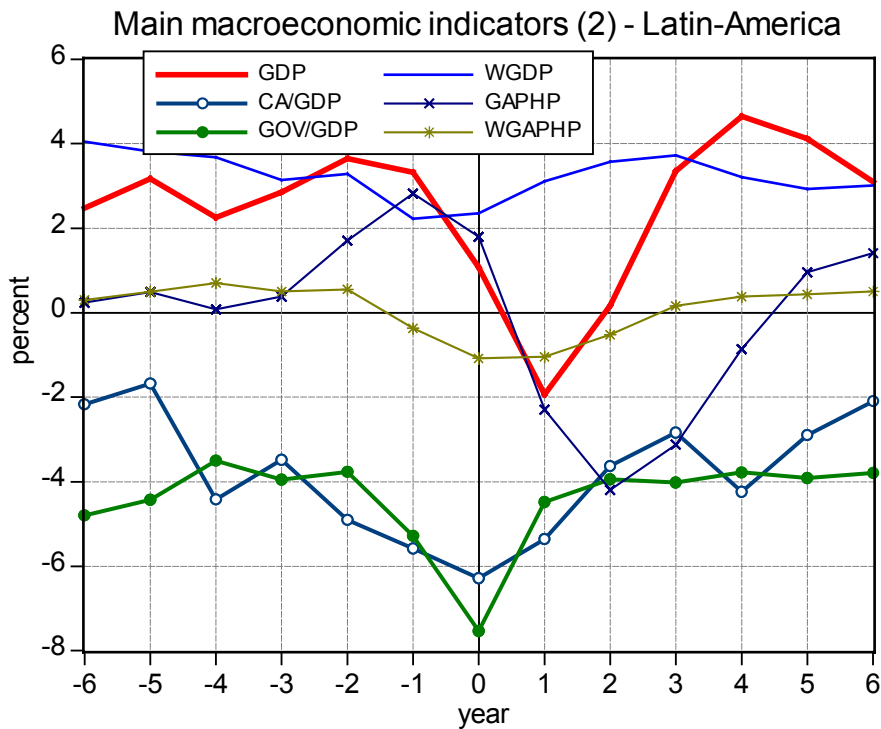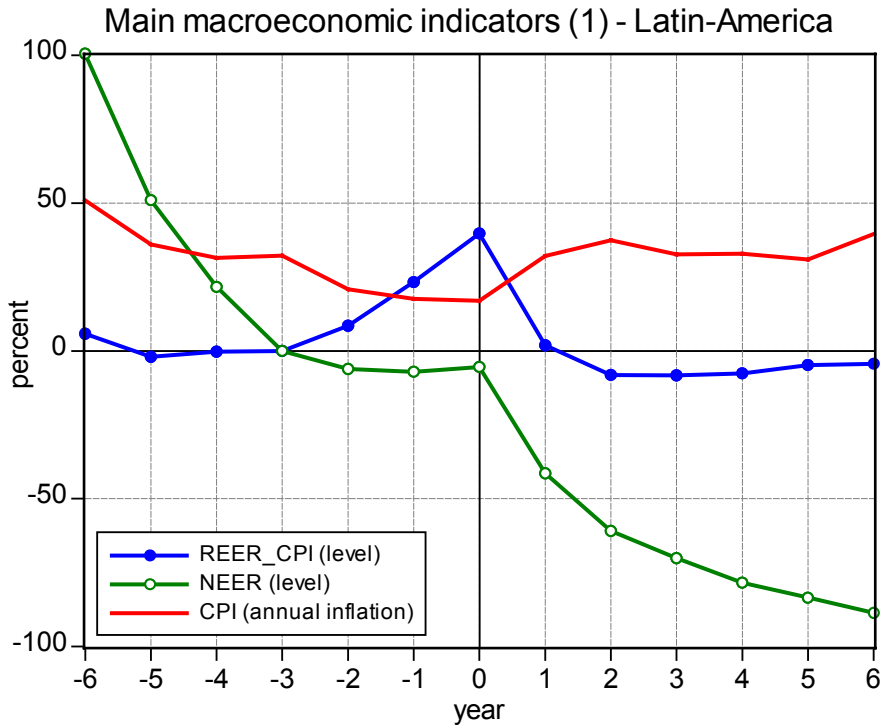[9] The two deficit figures are unfortunately not available for each country.

[10] When weighting GDPs the same weights were used as in the case of real exchange rates, however, Brazil is also among the foreign trade partners, as its GDP figures are available, and it is an important partner of several countries of Latin America.

[11] Different methods for calculating the potential output are surveyed in detail in Zsolt DARVAS – Gábor VADAS (2003): Univariate Potential Output Estimates for Hungary, to be published in the near future.

the figure below also indicates[12] – were not on a catching-up track (except for Chile), which would have supported a permanent appreciation of the real exchange rate. Although long-lasting and favorable economic growth could be observed prior to appreciation, fiscal policies did not seize this opportunity to reduce deficits. On the contrary, budget deficits deteriorated and deficits skyrocketed in the last year of real exchange appreciation, where the pace of the economic growth had already slowed down significantly. Fiscal adjustment, therefore, had to be implemented after an exchange rate crisis broke out (the average fall of the nominal/effective exchange rate was 40 percent over one year) and GDP was decreasing, thus aggravating the adverse impacts of the crisis.

Since the deepest point in the developments of GDP after appreciation did not occur in the same year everywhere – even though tendencies were similar – an even more unfavorable picture unfolds by individually considering the minimum of economic outputs for each country: on average a decline of 4.3 percent was observable, but there was also an example of a decline of 13.4 percent in GDP.

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[12] In the figure development was compared to the USA-Japan-Europe 80-5-15 percent average, which roughly reflects the foreign trade structures' average. European countries are represented by seven nations.

Main macroeconomic indicators (1) - Latin-America

Main macroeconomic indicators (2) - Latin-America

The effect of exchange rate appreciation on export market shares is also worth considering. In order to analyze this the share of each country in the imports of seven major foreign trading partners (USA, Japan, Germany, France, the Netherlands, Spain and UK) were calculated and then these shares were standardized, then figures of the seven target countries were weighted together with the share of these countries in the exports of each source country. Finally, an average of these figures was calculated for

each instance of appreciation.[13] Calculations were made of overall imports (excluding Japan and Venezuela) of regional imports (i.e. imports coming from Latin America, excluding Venezuela). While the exclusion of Japan is explained through its special achievements (fast catching up, large-scale growth in export market shares), the exclusion of Venezuela results from the high proportion of crude oil in its export[14], and the market share in comparison with that of the competitors excluding Japan and Venezuela is therefore meant under the term "overall imports".[15]
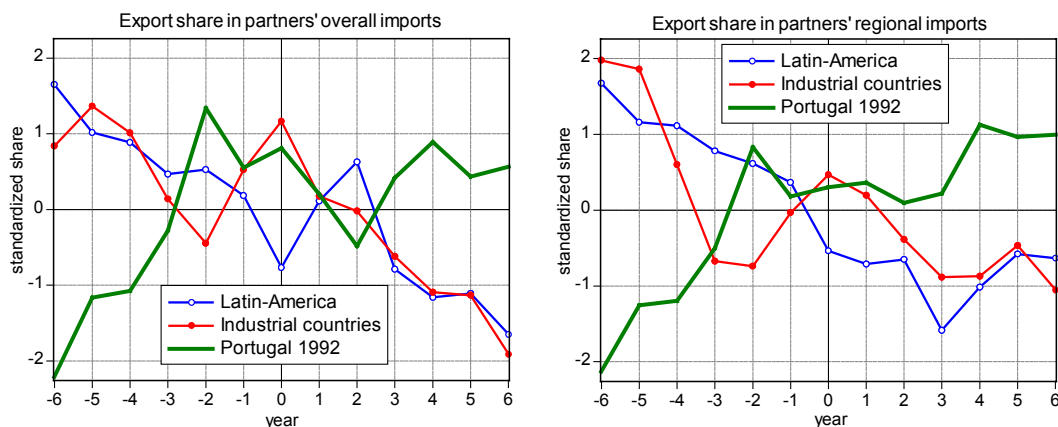
Both figures emphasize the fact that significant market share losses occurred during the appreciation, which practically remained permanent.

In summary, the applied economic policies were only able to reduce inflation temporarily and with significant sacrifices, which proved to be futile because of the repeated acceleration of inflation.

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[13] Since the standard deviation of the linear combination of standardized variables is not necessarily one (although their average is zero), country figures were again standardized before regional weighting, and after the combined weighting of the countries, the regional figure was standardized as well in order to ensure that it is of the same scale as the figures of Portugal and the developed countries, to be presented later.

[14] A marked positive correlation can be demonstrated between the import share of Venezuela and oil prices.

[15] The figures simultaneously present the group of developed countries described in the following section, as well as data on Portugal, also to be analyzed later. The term "regional import" appearing in the figure to the right for developed countries and Portugal refers to imports originating in the developed countries with the exception of Japan.

Per capita GNI at PPP comparetd to the average of main trading partners

Weights: USA 80%, Japan 5%, Germany 3%, France 1.5%, Italy 1.5%, Austria 1.5%, The Netherlands 1.5%, Belgium 1%, UK 5%
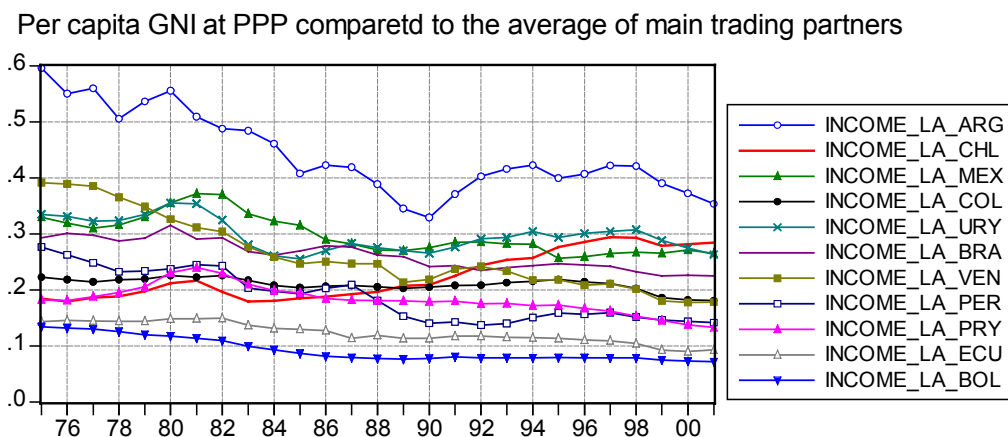
2.2 Disinflation under floating exchange rates in countries having low inflation

Fundamentally differing policies and processes from those encountered in Latin America characterize those five developed countries, which have also experienced rapid and large-scale exchange rate appreciation that later proved to be temporary (Australia, the UK, Canada, Sweden and New Zealand)[16]. These countries – except for Sweden – adopted a floating exchange rate system in the periods studied[17]. An important difference from the Latin American examples is that appreciation of the real exchange rate here occurred to a great extent through the appreciation of the nominal exchange rate: For example, out of the average 19.5 percent real exchange rate appreciation that occurred during the two years preceding the peak, 13.3 percent resulted from the appreciation of the nominal exchange rate.[18]
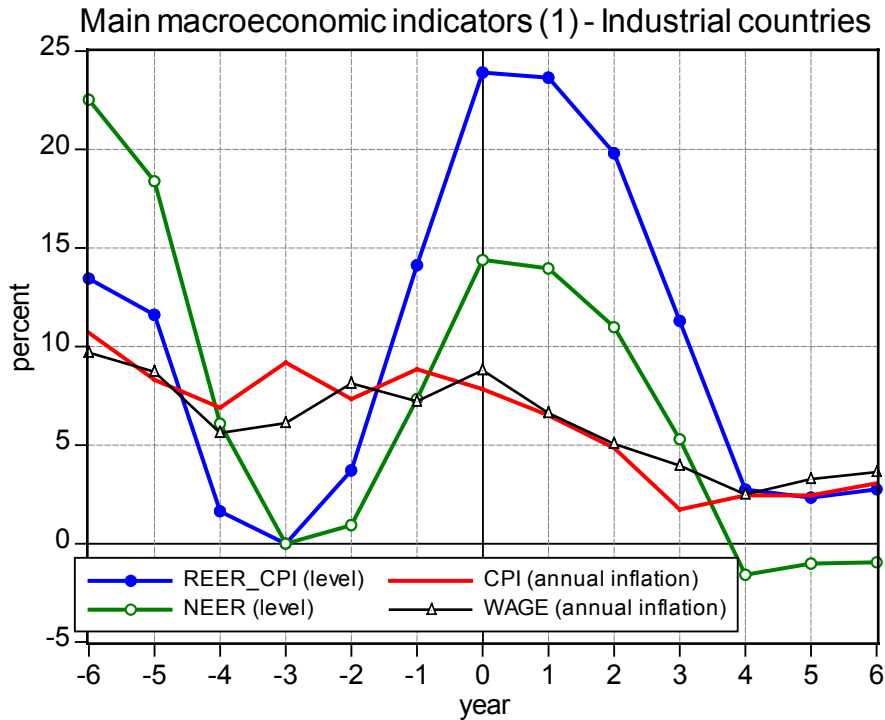
Here we study average behavior, while detailed data of the countries between 1960 and 2001 can be found in Appendix "B" (page 41), and figures of the six years preceding and following appreciation are found in Appendix "C" (page 44). Five instances of four countries – excluding Sweden – were selected, and like the Latin American examples, year zero was again defined as the year in which strong appreciation peaked[19]. The two figures below present, as an addition to the variables defined earlier, the annual increase of nominal wages (denoted as: WAGE), the real interest rate (RI), and the unemployment rate (U).

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[16] The United States of America, being a large and essentially closed economy, was not examined.

[17] Although the macroeconomic processes of Sweden reflect the same phenomena as experienced in the other four countries, due to the lack of nominal exchange rate appreciation preceding real exchange rate appreciation, averages without the figures of Sweden will be analyzed.

[18] Nominal exchange rate appreciation versus the dollar was even higher, at 18.5 percent, and obviously real appreciation in comparison with the US was also stronger.

[19] Australia: 1989, Canada: 1989, Great Britain: 1980, New Zealand: 1988, 1996

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Main macroeconomic indicators (1) - Industrial countries

Legend:
- REER_CPI (level)
- NEER (level)
- CPI (annual inflation)
- WAGE (annual inflation)

Main macroeconomic indicators (2) - Industrial countries

Legend:
- GDP
- CA/GDP
- GOV/GDP
- WGDP
- GAPHP
- WGAPHP
- RI
- U
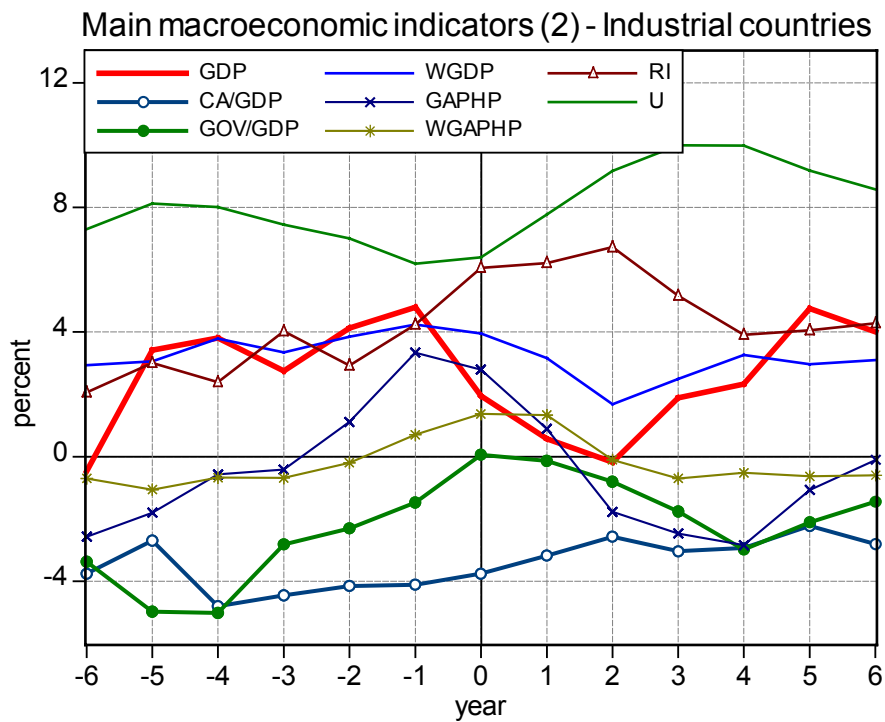
These countries implemented policies differing in many aspects from those of the Latin American countries described in the foregoing. One of the basic differences, which has already been mentioned, is the flotation of the exchange rate, which is important for the fact that – without denying the known disadvantages of the floating exchange rate in small/open countries – in these cases the authorities did not define a fixed nominal exchange rate, which they endeavored to maintain (even despite the value judgement of other market players) through capital restrictions and interventions in the foreign exchange market. Another fundamental difference is that fiscal policies continuously decreased the deficit during the period of appreciation,

that is, it happened in a period when economic growth was still favorable. It is notable that in both the Latin American, as well as the developed countries deficits amounted to four percent of GDP in the fourth year preceding the peak of appreciation, but while the former countries increased the deficit, the latter gradually managed to achieve a balanced budget.[20] A considerable tightening of real interest rates was also observable in the developed countries: previous real interest rates of about four percent rose to over six percent, which may have played a role in strengthening the nominal exchange rate.

Economic growth in both groups fell to two percent from the previous four percent at the peak of appreciation, but while in the Latin American countries a significant decrease even in the average GDP took place in the adjustment period, the average growth of the developed countries only exhibits a slightly negative value.[21] The difference between the two groups of countries with respect to sacrificed growth is further emphasized through differences in foreign demand. The growth of foreign demand decreased significantly in Latin America during the last two years of appreciation and the calculated foreign output gap also became negative at that time. In the industrial states, however, foreign demand reached its lowest point after appreciation, during its permanence. The foreign growth rate failed to attain its former rate, and the calculated foreign output gap stabilized at a slightly negative value.

The figure below shows growth in comparison with foreign partners, including the permanently appreciating Portuguese figures, to be analyzed later.

### GDP growth differential wrt main trading partners
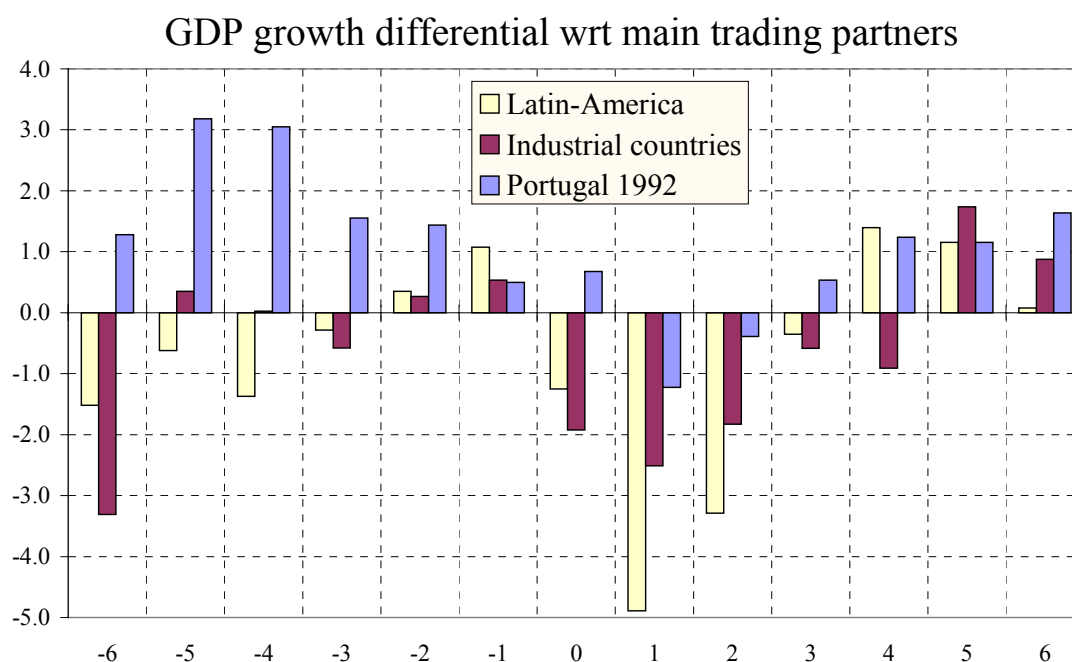
It is apparent that the Latin American countries reacted with a far greater oscillation during post-appreciation adjustment: GDP growth decreased to a greater extent, although relative pick-up was also faster during years 3-5. Accumulated performance

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[20] Of course the fiscal figure used (the ratio of the total deficit to GDP) does not perfectly reflect the stance of fiscal policy – especially in countries with different rates of inflation– but it facilitates evaluation of the trends.

[21] If minimum levels for each country in the years subsequent to appreciation are considered, decreases in GDP, amounting to 0.4-2.1 percent and averaging at 1.2 percent in industrial countries, in contrast with the Latin American average figure of 4.3 percent, are encountered.

in comparison with the foreign countries during the thirteen years presented in the figure was practically equal in both groups of countries, but in the six years following appreciation industrial countries performed two percent better. The same conclusion can be drawn with respect to the calculated output gaps shown in the figure below.

Output gap differential wrt main trading partners
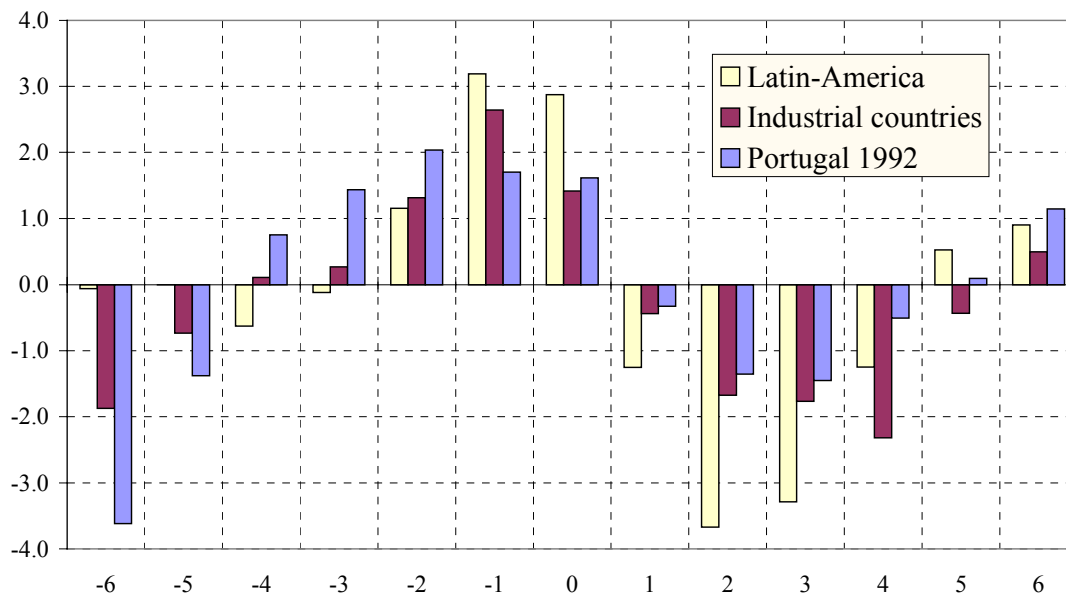
The unemployment rate – whose figures were not available for the Latin American countries, and therefore, no comparison could be made – dropped from seven to six percent during appreciation and rose to ten percent during its permanence in parallel with decelerating GDP growth, and only started to decrease gradually after the repeated strengthening of GDP. This illustrates the cost of disinflation.

Figures of wage developments were also only available for the developed countries. Real wages remained virtually unchanged during appreciation, and only after a decrease in inflation and a repeated acceleration of economic growth did the average growth of real wages develop to a level of about two percent.

A substantial difference from the Latin American examples arises with respect to the deficit of the current balance of payments. Contrary to the large-scale deterioration in Latin America, the account of the balance did not deteriorate in the developed countries, which in part was probably due to fiscal tightening.

The export market share (presented in the figure on page 9) gives a mixed impression: it improved during appreciation, but deteriorated following permanence and the repeated depreciation of the exchange rate. These facts imply that shares were not necessarily influenced by developments of the real exchange rate.

Divergences of the adjustment period are also worth considering. While in the countries of Latin America the real exchange rate was fully adjusted for within a year, the strong exchange rate practically persisted for two years in industrial countries, and adjustment took place in the ensuing two years, where half of the exchange rate devaluation occurred each year. Contrary to the Latin American countries, a weakening exchange rate did not result in an expansion of inflation, which remained at around two or three percent even afterwards. Resulting from the favorable budgetary situation, however, these countries could allow loosening fiscal policies during the decline in the economic growth rate, whose deficit rose to two or three

percent of GDP, and also monetary policies, which is reflected through a reduction of real interest rates from six to four percent.

In summary, disinflation also took its toll in these countries, however, the degree of the sacrifices was smaller than in Latin America, and the business cycles were less varying. Due to the economic policies implemented the decline of inflation remained permanent. The temporary nature of exchange rate appreciation was probably partly due to the fact that neither of these countries were in a catch-up period (see the following figure[22]), so they may have been overvalued to a certain extent during disinflation. Thus the final exchange rate depreciation can be attributed to at least three possible root causes: (1) Adjustment for overvaluation, (2) Decline in the GDP growth rate, as an unfavorable indicator to the market players, (3) Decreasing differences in interest rates[23].

Per capita GNI at PPP comparetd to the average of main trading partners

Weights: USA 50%, Japan 25%, Germany 6%, France 3%, Italy 3%, Austria 3%, The Netherlands 3%, Belgium 2%, UK 5%
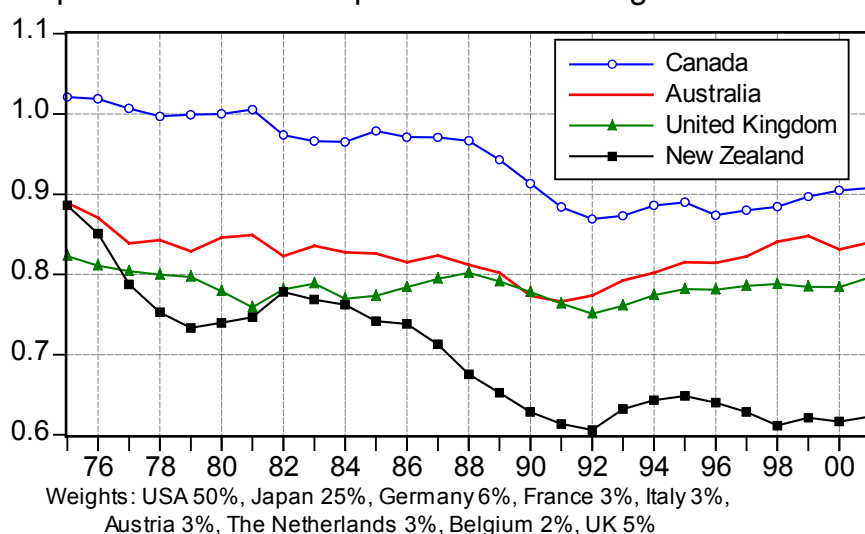
3. Permanent Appreciation

First we summarize the cases in which permanent depreciation occurred. A review of Portugal's real appreciation, occurring in the late 1980s, follows afterwards, which resembles the Hungarian situation in several regards, then exchange rate diagrams of the rest of the countries follow.

- **Czech Republic:** The Czech koruna has been appreciating at the same increasing rate as the Hungarian forint since 2000, however, it is still too early to declare whether this appreciation would prove permanent. The interest rate margin relative to the euro zone has been practically nil or negative in the Czech Republic for years now, which is attributed to the Czech inflation rate dropping to a single-digit figure, so the Czech Central Bank's interest rate policy is not to blame for the speculative investments flooding the country. The Czech experience is thus

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[22] In the figure development was compared to the USA-Japan-Europe 50-25-25 percent average. European countries are represented by seven nations.

[23] It is also evident in the figures that, at a certain degree of decrease in inflation, real interest rates also started to decline, so nominal interest rate differences could drop at a greater rate than the decrease in the real interest rate.

particularly interesting, since the interest differential is zero and the economic growth rate was less than in Hungary even after the gradual recovery from the 1997 exchange rate crisis and stabilization. Notwithstanding, the real exchange rate (within the frame of a floating exchange rate mechanism) is appreciating as quickly as in Hungary, by and large due to a strengthening nominal exchange rate. Lower initial price levels partly explain the rapid appreciation occurring in the early 1990s, however, their impact diminished with time. One of the causes of the present rapid appreciation could be the so-called convergence speculation similar to that experienced in Hungary, while another key motivator was accelerated influx of direct capital investment, which in the 1990s fell significantly short of Hungary's and Poland's figures, partly for regulatory reasons. From 1998 to 2002 a total of EUR 26.9 billion in foreign direct investment reached the Czech Republic (including reinvested income), while during the same period the Czech Central Bank's cumulative foreign exchange intervention amounted to EUR 6.2 billion. And the very basis of appreciation is economic development. Only a detailed analysis of the real exchange rate's evolution and/or its future will tell whether the level of appreciation will persist in the Czech Republic. Notwithstanding, the main macroeconomic indicators do not exhibit signs of overvaluation: after the exchange rate crisis of 1997 (which incidentally has no impact on the annual real exchange rate trend), growth gained vitality after several years of slow recovery despite poor external development, the current-account balance stabilized at five percent of GDP, and Czech exporters continue to gain further market shares on export markets. Appendix "C" illustrates the Czech Republic's main macroeconomic figures (page 54).

- The appreciation experienced in the **three Baltic states** has been quite rapid since the beginning of the transition, however, over the last two or three years the time series of the real exchange rate had leveled off, without any crisis. The fact, that the countries started off at an extremely low wage and price level after the transition, however, makes their assessment difficult.

- **Additional former Soviet states, Bulgaria, Romania, the southern Slavic succession states, Poland and the Czech Republic:** in the initial years of transition an enduring increase in exchange rates – similar that of the Baltic states, albeit of a lower rate – occurred, which was probably also attributed to low initial exchange rates and economic restructuring.

- **Portugal:** The real exchange rate appreciated by approximately 30 percent from 1988 to 1991, which level remained permanently stable after the transitional impact of the EMS crisis of 1992/93.

- **Denmark:** The real exchange rate closely resembles that of Portugal[24], however, the amplitude is lower, with the rate of permanent appreciation between 1987 and 1989 being just thirteen percent.

- **Norway:** The real exchange rate trend is similar to those of Portugal and Denmark, however, less time elapsed between the two peaks in this case (1977 and 1983).

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[24] Around 1975, a temporary appreciation took place in both countries, followed by an exchange rate slump, then at the end of the 1980s real exchange rate rose again to the 1975 level, and following a short period of fluctuation it remained permanent.

- **Spain:** A major appreciation period lasted for nearly a decade, which deserves mention primarily on account of its duration, as nearly half of the former real appreciation had been offset after the 1992/93 EMS crisis, and the level thus established had stabilized.

- **Great Britain:** A real appreciation of nearly 30 percent took place after 1997 in a short period of time, which proved permanent (up to the end of the reference period in September 2002). The EMS crisis of 1992/93 might have foreshadowed the appreciation, though it is remarkable that the real exchange rate was at a stable low after and throughout the five years preceding the appreciation.

- **Switzerland:** An enduring appreciation, reaching 30-40 percent, occurred in the early 1970s, which can be attributed to the adjustment of the undervalued real exchange rate that developed during the fixed undervaluednominal exchange rate of the Bretton-Woods system.

- **Austria:** Similarly to Switzerland, a rapid real appreciation of fifteen percent occurred here during the early 1970s.

- **Japan:** In the post-1985 period the yen's real effective exchange rate increased by 30 percent over two years, which was followed by an additional ten percent in a few years. The resulting real exchange rate remained stable after some fluctuations. The rapid appreciation, however, can be attributed the dollar's cycle[25]. If the evolution of the Japanese situation is examined from 1960 onwards, it becomes clear that up to 1990 – i.e., the onset of the Japanese crisis – the yen improved by 20 percent on average every five years in real terms.

In summary, permanent appreciation occurred mainly in the following cases:

- Rapid and permanent real appreciation occurred several times upon the abandonment of fixed exchange rate systems, which led to presumably undervalued real exchange rates perhaps because of slow price and wage adjustments.

- In catch-up periods based on productivity growth.

- Unusually rapid real appreciation happened in countries undergoing transition in the years following a change in regime, lasting for even several years, primarily because of extremely low price and wage standards versus the exchange rate at the outset and also due to economic restructuring.

In some countries major real depreciation preceded rapid appreciation, so the latter might as well be considered as an adjustment, so these countries are not included in the list of countries subject to enduring appreciation (a typical example of this is Korea between 1986 and 1988).

3.1 Portugal:

3.1.1 Summary of Portugal's exchange rate systems and main economic developments

Over the last forty years, the real exchange rate in Portugal had undergone major appreciation on two occasions: the first one peaked in 1975-76, during the massive

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[25] Before 1985 the dollar increased largely, changing the previous appreciation trend of the Japanese real exchange rate, which was virtually stable between 1980 and 1985.

inflation following the oil price explosion, while the other more than fifteen years afterwards, in 1992. A smaller peak occurred between the two major ones around 1982-83, which – albeit falling short of the real appreciation rate – was similar to the appreciation of 1975 as regards the macroeconomic outcome. The escudo's real value hiked to the same level in both cases of major appreciation, however, while the first rapid appreciation proved a failure, the second rapid one endured. Had the real exchange rate undergone gradual appreciation instead of rising dramatically, it would have led to lower macroeconomic volatility, so in retrospect of several decades the policies applied prior to 1983 could be deemed inappropriate. However, policies applied after 1983 proved successful, so examining the Portuguese example in more detail might prove informative.

The crawling peg exchange rate system was in use for thirteen and a half years in Portugal, from August 1977 to July 1990.[26] One of the key aims of crawling peg devaluation was to curb inflation. The initial stage of the scheme resembled what a number of Latin American countries had experienced during the same period, since here too inflation was attempted to be curbed through active use of the exchange rate, resulting in the same consequences of real appreciation, exchange rate crisis, economic slump and inflation picking up again. As in many Latin American countries, it was in 1977 that this kind of policy was introduced here to supplant the previous exchange rate policy, and the emergence of the crisis also nearly coincided (1982-83).

The adverse current account balance[27] was partly addressed by supplemental devaluation (in 1982-83), partly by raising the monthly devaluation rate, and partly by applying tight fiscal and income policy (real wages decreased by sixteen percent in three years). Resting on four pillars (budget adjustment, wage policy, competitiveness, and monetary policy), this stabilization was accompanied by a

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[26] Portuguese experience regarding the crawling peg regime was addressed in detail in a previous study: DARVAS, Zsolt (1998): Csúszó árfolyamrendszerek – Elmélet és nemzetközi tapasztalatok, MNB Műhelytanulmány 16.

[27] Due to methodological changes in the balance of payments in 1993 – adopted at different dates in different countries – it is not possible to produce comparable current account balance figures conforming to the current methodology for previous decades. In the previous methodology, the balances of current account (CA), capital account (KA) and change in reserves summed up to zero, taking into net consideration errors and omissions (NEO). In the previous methodology, all non-refundable unilateral transfers, such as EU subsidies and remittances of emigrants formed part of the current balance of payments. In the new methodology the previous current balance of payments was divided into two: the current account (CA) and the capital account (KA), furthermore, the capital account of the old methodology were renamed to financial account (FA). Therefore, unfortunately the term "capital account" refers to two basically distinct concepts in the two methodologies. The new capital account included those unilateral transfers, which were expressly serve as capital investment, and also the turnover of non-produced and non-financial goods (e.g., patents). Thus, some of the EU transfers remained in the current account, while others were moved to the capital account. In Portugal and presumably in many other countries, data facilitating the division of the old current account is not available retrospectively, therefore, current account data calculated according to the old methodology (their source being the Banco de Portugal) is presented in the figures to promote comparison. In the second half of the 1990s the difference between the two balances amounted to approximately two percent of GDP. Since this ratio evolved in a relatively stable way, there is also economic argument to handle these transfers as part of the current account – similarly to remittances of Portuguese workers abroad, which is a significant item in Portugal. The same problem stands for other countries as well, but since the amount of the capital account is generally negligible according to the new methodology in the case of other countries studied in this paper, the distorting effects arising from the non-comparability of current account balances of the two methodologies are also limited.

particularly dramatic decrease in investments, even though the encouragement of investment was a priority in the economic policy. The stabilization program managed to restore the balance of payments on current account, and inflation – after an initial upsurge – rapidly assumed a downward trend. The gap between exports and imports improved to the benefit of exports in the two years following stabilization.

At the same time, post-1987 experience with the crawling peg system is in stark contrast with the preceding period. The eight to -nine percent rise in consumer prices in 1987 increased to fourteen by 1990, however, the annual devaluation rate announced earlier had undergone a phased decrease to three percent, so the real exchange rate had appreciated considerably. Explanations of rising inflation could include a massive increase in demand encouraged by budget expansion, a decrease in the effectiveness of monetary policy as a result of the deregulation of international capital flows, an accelerating rise in wages, and even the reversal of the disinflation trend in Europe. The gap between imports and exports widened considerably to the benefit of imports over a period of three years, and the trade deficit widened. Retrospective compensation stipulated in the wage agreements was not effected after failure to meet the inflation target, so the consensus established in the course of trilateral negotiations had broken down. The reaction of monetary policy to address a deteriorating balance of payments and rising inflation was to tighten domestic demand, which proved successful in terms of the external balance. At the same time, the pre-announced devaluation and interest rate differential led to a significant rise in foreign borrowing and of portfolio investments made by foreign investors, which in turn weakened the effectiveness of monetary policy and caused sterilization problems. Financial innovation essentially minimized the efficiency of a monetary policy relying on direct control and interest rate regulation. To this end, indirect monetary regulation was adopted from the beginning of the 1990s, however, strict capital limitations were re-introduced.

For nearly two years following the suspension of the crawling peg exchange rate system, Portugal controlled its exchange rates through managed floatation, but this failed to limit capital influx, so the rapid growth of foreign exchange reserves continued: the value of reserves rose from the USD 2 billion figure in 1987 to USD 27 billion (!) in 1992. We may say that the Central Bank had little chance of keeping the real exchange rate down given such a considerable influx of capital.

Foreign exchange reserves in Portugal
January 1980 - December 1998

Portugal
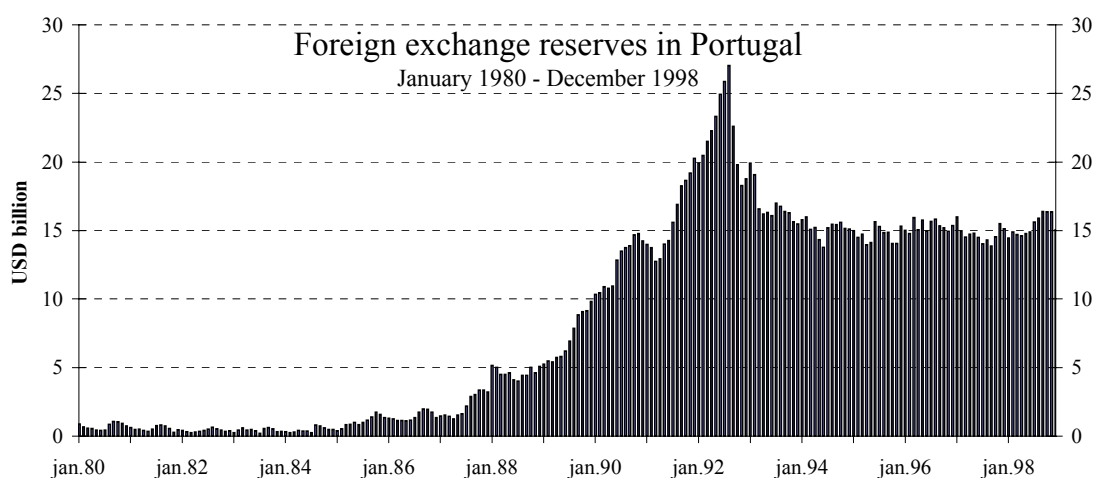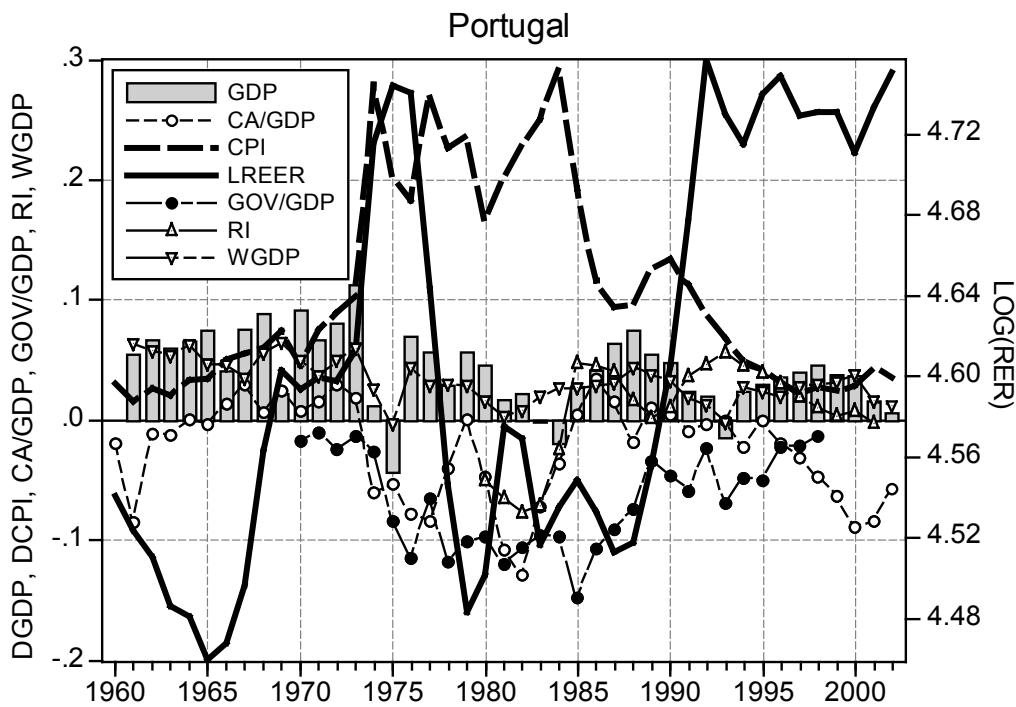
3.1.2 Appreciation Prior to 1992

It is notable that by the early 1990s the real exchange rate rose to the same level as in the mid-1970s, and while it proved only to be transitional in the seventies, in the 1990s the high rate remained permanent after some fluctuations (and it will surely remain because of the monetary union). As in the case of the Latin American scenario *versus* the developed world, there is a fundamental discrepancy between the current account deficits of the two periods: while in the late 1970s and early 1980s the country struggled with the problem of twin deficits, this was no longer typical in the second period of appreciation.

The following two figures show detailed data for the second, enduring appreciation period over the six years preceding and following peak appreciation (1992) (similar to the Latin American and industrial countries reviewed in the previous chapter).

Main macroeconomic indicators (1) - Portugal 1992

Main macroeconomic indicators (2) - Portugal 1992
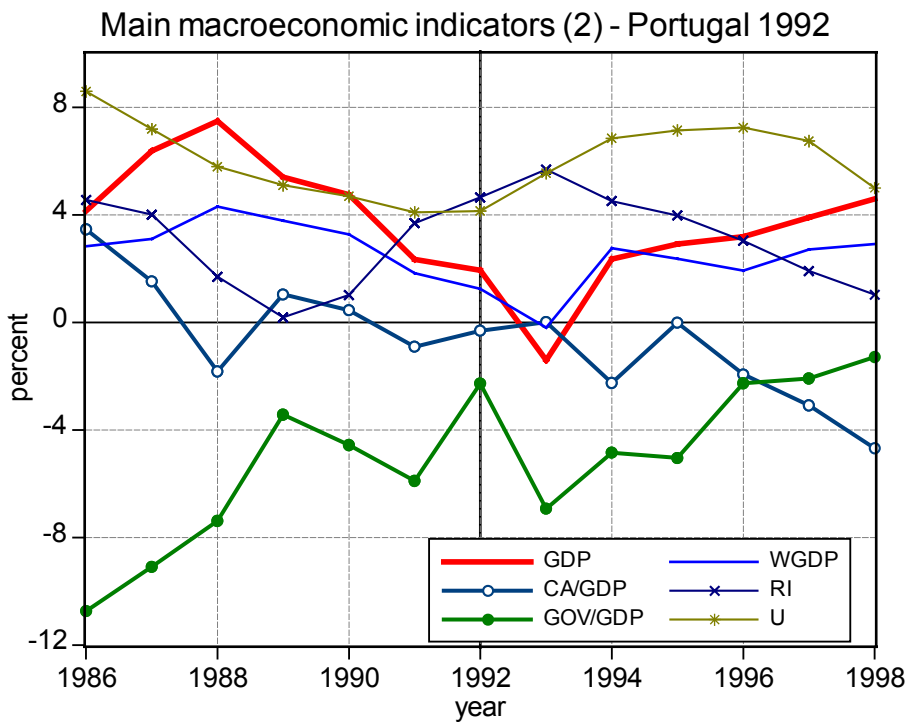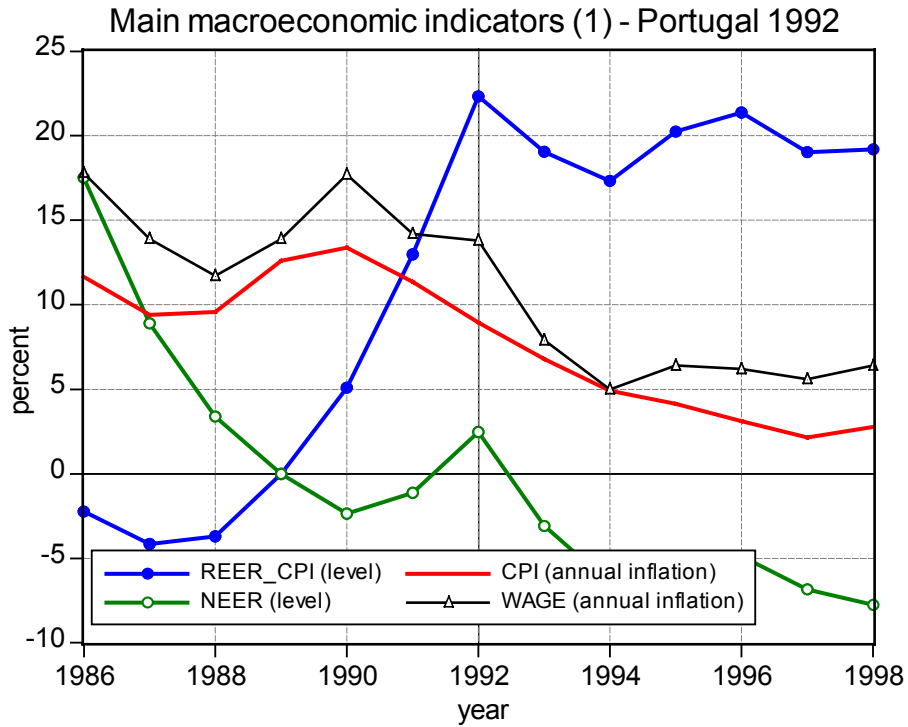
The foreign cycle turned critical in the early 1990s and real interest rates gradually rose up to 1993. Presumably, because of the combined effect of all these factors and the real appreciation, Portugal's GDP growth also declined and even the GDP fell by one and a half percent in 1993. The same factors are observable in the developed floaters (Section 2.2), however, the relative growth outcome (compared to trading partners) was better all along in Portugal (figure on page 13). The development of export market shares was likewise much more favorable, which steadily improved in

Portugal during appreciation, and stabilized thereafter (figure on page 9)[28]. At the same time, with regard to budget policy Portugal's difference from the industrial countries exhibiting transitional appreciation is noteworthy: during the few years preceding and following peak appreciation the deficit had not been reduced here, but had varied at around four of five percent of GDP. Moreover, wage policy was not as disciplined as in the industrial countries either, as real wages increased by three or four percent during appreciation. Starting in 1996, presumably in preparation for monetary union, the budget policy had undergone a major shakeup.

Like in the previously mentioned countries the output gap was also calculated for Portugal using the Hordick-Prescott filter, as well as the average output gap for the partner countries weighted by exports, which is shown in the figure below. From the 1970s onwards a very close synchrony is noticeable between the cycles, which was initially accompanied by higher volatility in Portugal, however, by the end of the period, both the domestic and the foreign output gaps began to exhibit the same amplitude. This was perhaps due to intensifying integration, though economic policy might have also played a decisive role: the deficient policies (maintenance of an overvalued exchange rate, budget spending) applied in the 1970s and early 1980s contributed greatly to the high degree of variability.

Portugal: domestic and foreign output gaps
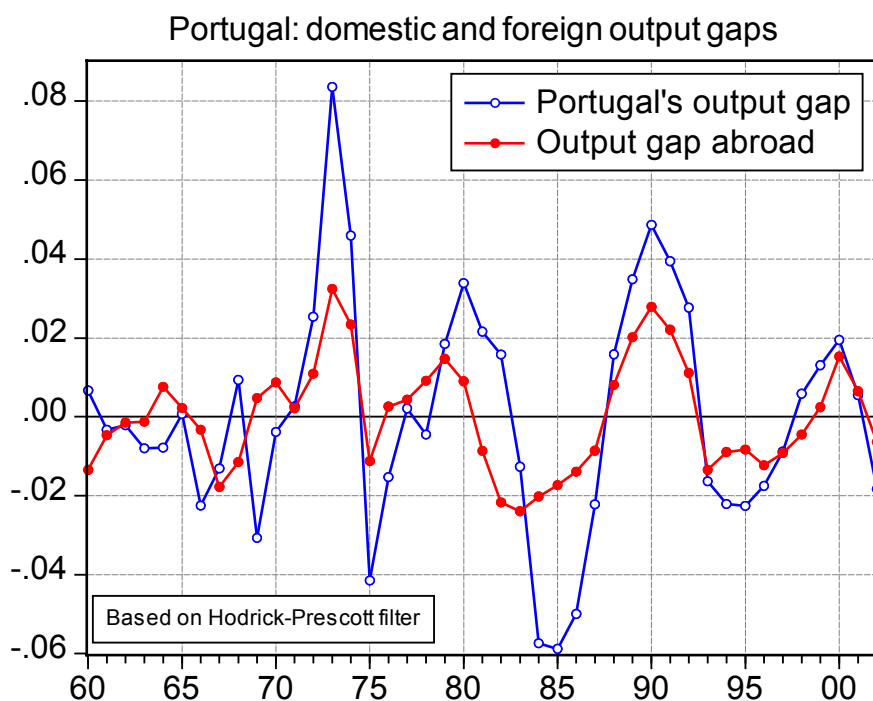
The evolution of the equilibrium exchange rate is also important for the permanence of real appreciation in the 1990s. It might have even been a decisive factor. The estimation of the equilibrium real exchange rate was not attempted here, however, a simple index was calculated: the relationship between the relative state of development (compared to abroad) – which is approximated using GNI rated at per capita purchasing power parity – and the relative price level (compared to abroad). Considering all the countries in the world, a clear correlation is evident between price level and development, however, this relationship applies only "roughly": plotting the data as a cross-sectional sample the dispersion is great around the 45° line. The reason

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[28] Following the 1975 appreciation period, foreign market share decreased significantly.

is that the price level in each country is determined by the productivity rates in the individual sectors, which can differ even if the average income is the same. Plotting relative development and price level as a function in time, however, it is possible to have a quick idea of the equilibrium exchange rate's situation. The figure below shows these values for Portugal and Spain between 1975 and 2001, compared to the average of six European countries[29].

Portugal: per capita income and price level compared to the average of main EMU countries
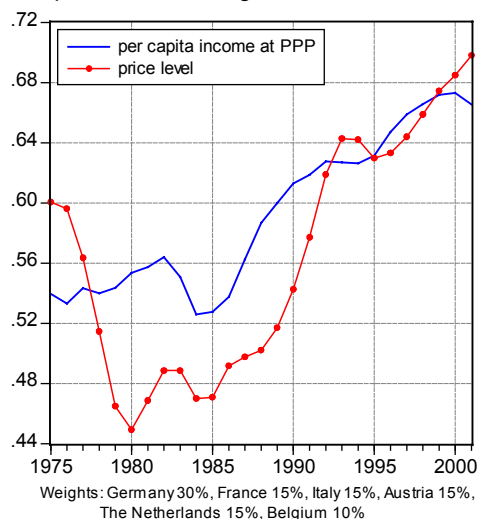
Spain: per capita income and price level compared to the average of main EMU countries

- per capita income at PPP
- price level

Weights: Germany 30%, France 15%, Italy 15%, Austria 15%, The Netherlands 15%, Belgium 10%
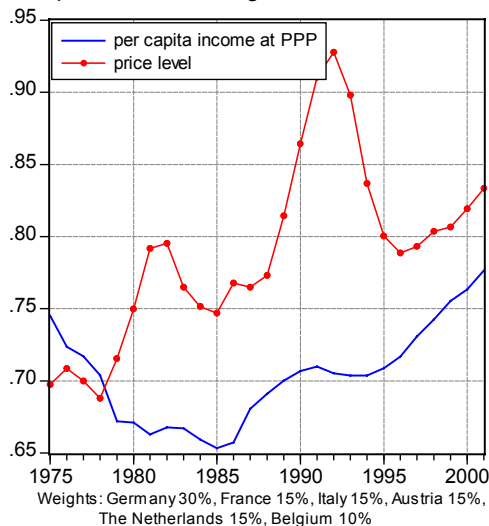
Even though it was argued in the foregoing that the relative state of development and the relative price level need not be identical – as evident, for example, in the figures for Spain in the chart – in the case of Portugal the two indices nevertheless practically equal. It is evident that during the appreciation of 1975 the price level rose high above the state of development, while just the opposite occurred in the 1980s. The figure thus strongly suggests that by the late 1980s the real exchange rate became undervalued, and the consequent appreciation essentially brought the real exchange rate to an equilibrium.

Important conclusions can be drawn on the basis of Spain's figures as well. Beginning in 1983 a major real appreciation process took place in Spain, which lasted for nearly a decade, and whose cumulative value was by and large equal to the rapid appreciation taking place over two or three years in Portugal in the late 1980s[30]. After

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[29] The EU average was not used as a reference for comparison because its composition changed from time to time. In the World Bank's database Germany's pre-1991 figures were adjusted for the effects of reunification.

[30] Exchange rate and inflation resultants of appreciation differ from those of Portugal. In Spain 17.6 percent out of the 33.1 percent appreciation between the lowest point of the real exchange rate in 1983 and 1990 originated from the strengthening of the nominal exchange rate, but the whole instance can be divided into two sub-periods. The nominal exchange rate was virtually stable between 1983 and 1987 (it appreciated just 2.0 percent during these four years), therefore, appreciation was generated through the difference in inflation during this period. At the same time, 15.3 percent out of the 19.3 percent real exchange rate appreciation between 1987 and 1990 was already due to the nominal exchange rate and only 3.4 percent originated from the difference in inflation, since inflation in Spain exceeded only slightly the inflation of its foreign trading partners at this time. In contrast, the majority of appreciation in Portugal was due to surplus inflation, since the nominal exchange rate improved by only five percent between 1990 and 1992.

the 1992/93 ERM crisis, however, of the two countries it was Spain where permanent real depreciation occurred. The figure showing relative state of development and price levels precisely shows that for Spain the difference between the two indices significantly exceeded the average by the early 1990s, which is indicative of an overvalued real exchange rate. Order was practically restored between the two indices as a result of the real depreciation following the crisis, in other words, the historical average difference developed between them.

3.1.3 The considerable deterioration in the current account balance prior to EMU accession

In order to study the permanence of the real exchange rate in Portugal it is imperative to analyze the trends exhibited by the current account balance following appreciation. As shown in the figure on page 20, the balance was close to zero up to 1995 when significant deterioration developed. Theoretically, this could have been the result of an overvalued exchange rate, however, the economic developments infer that this is not the case. On the one hand, the fact that the balance of payments was in equilibrium up to 1995 – i.e., for seven or eight years from the onset of appreciation in 1987/88 – contradicts this scenario, as deterioration should have appeared earlier at that time. On the other hand, the increasing probability of the euro's adoption and good growth prospects could jointly explain the change in consumer habits, i.e., inter-temporal optimization. Thirdly, data on foreign trade indicates that it was not the exports that collapsed, but imports had risen, as shown in the figure below. Not considering the temporary impact of the ERM crisis that cut back foreign trade, the volume of exports measured in Deutsche Marks steadily rose even after 1996, while the growth of imports gathered pace at the time.

Analysis of export market shares also leads to similar conclusions. The figure below shows Portugal's share in imports from industrial countries of the four principal foreign trading partners[31]. Portugal managed to increase its share for all four countries – particularly in Spain – from the mid-1980s, and no considerable decrease is evident, even from 1996. Therefore, no relative market loss occurred in the export markets (as also shown in the figure on page 9 for 1992+6 years, considering the seven main trading partners).

Portugal's foreign trade turnover

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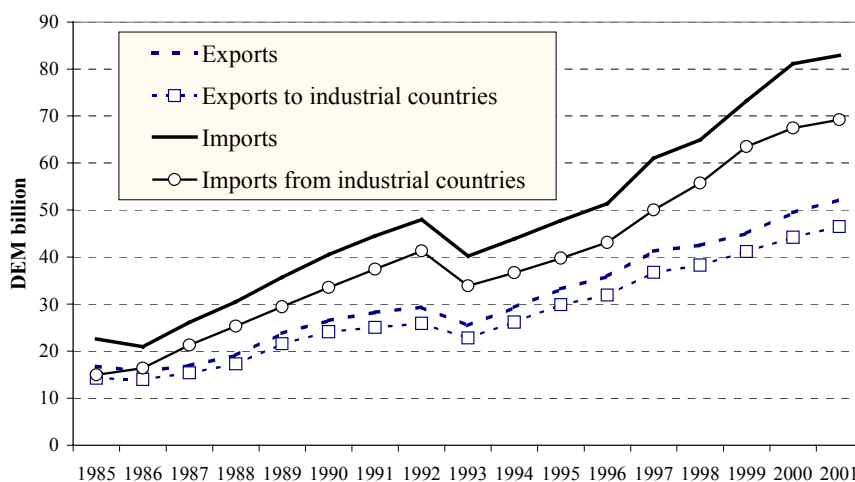
[31] Germany, France, Spain, and the United Kingdom, which receive 68 percent of Portugal's exports.

Share of imports from Portugal in total imports from industrial countries
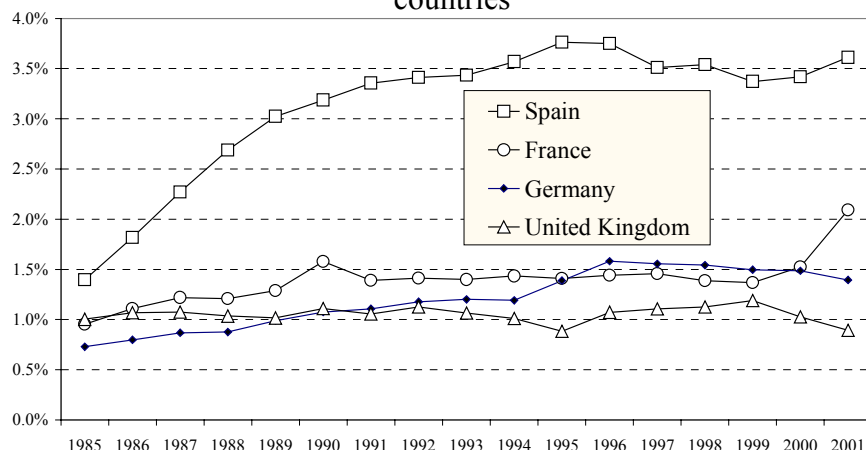
3.2 Real exchange rate trends

3.2.1 Accession Countries

The figure below shows the real exchange rates of six accession countries. The Hungarian and Czech real exchange rates (plotted with bold lines) rose at practically the same accelerating rate as of 2000. In Poland the rate of appreciation was higher, followed by a downward movement, so the real exchange rate level was restored to its value two years earlier.

Because there is substantial trade among accession countries as well (e.g., the Czech Republic accounts for 40 percent in the Slovak Republic's foreign trade) the second figure shows the real exchange rate as compared to Germany. As anticipated, the appreciation compared to Germany was greater than the degree to which the real effective exchange rate had strengthened.

Finally, the third figure below shows unit labor cost-based real exchange rate indices. (As these figures are taken from an OECD source which had no legend, it is not clear which group of foreign trading partners they had been compared to.) The figure shows that while the Hungarian forint had undergone significant appreciation since 2000, a major improvement in competitiveness developed beforehand, e.g., from 1996/97 appreciation on the whole was practically the smallest in Hungary.

Real effective exchange rates
(compared to foreign trading partners)
1990Q1-2002Q4

1996Q1 = 100

- Czech Republic
- Hungary
- Poland
- Slovak Republic
- Croatia
- Slovenia

Real exchange rates
(Compared to Germany)
1990Q1-2002Q4

1996Q1 = 100

- Czech Republic
- Hungary
- Poland
- Slovak Republic
- Croatia
- Slovenia

Unit labor costs based
real effective exchange rate
1993Q1-2002Q3

Czech Republic
Hungary
Poland
Slovak Republic

3.2.2 Baltic and Eastern Countries

Remarkably fast appreciation happened in the Baltic countries, while the fact that they started off at an extremely low wage and price level after the change of regime, makes their assessment difficult. This was the situation in the early 1990s in Bulgaria, Romania and Russia. Rapid two-year appreciation periods are noticeable in the last three countries even after the crises. The Bulgarian real exchange rate is striking in that it visibly returned to the very same trend line after the 1996 hyperinflation crisis. Turkey's experience in the second half of the 1990s, however, is a fine example where crisis ensued after a rapid appreciation period that lasted for seven years.

Real effective exchange rates
1990Q1-2002Q3

Real effective exchange rates
1990Q1-2002Q3
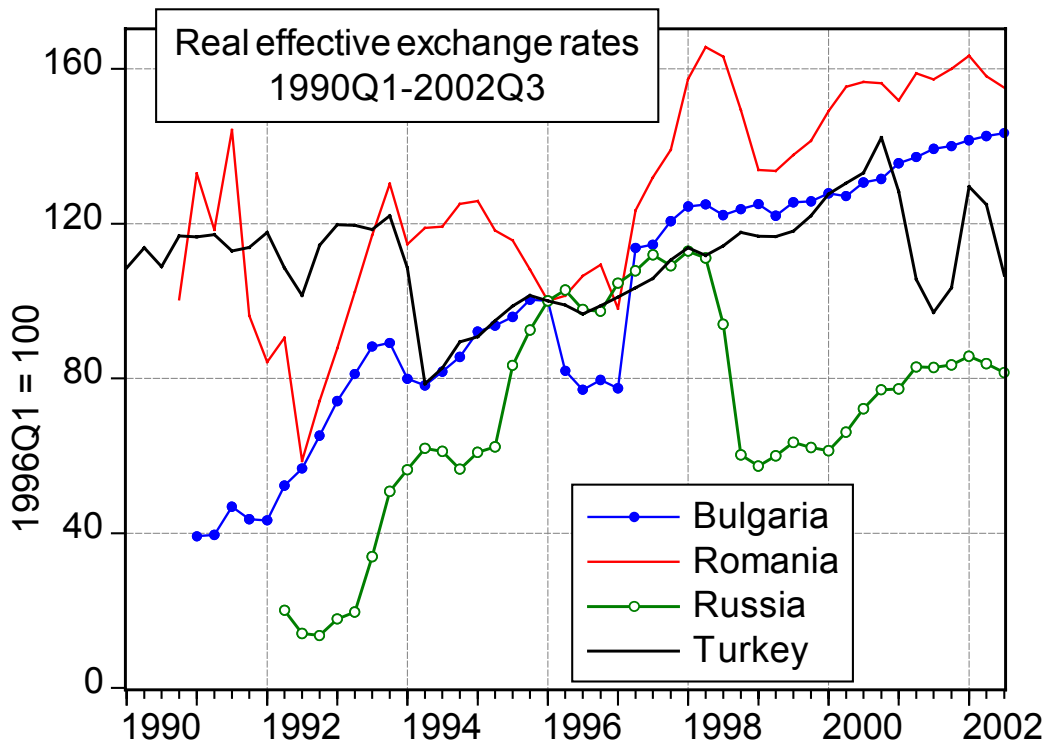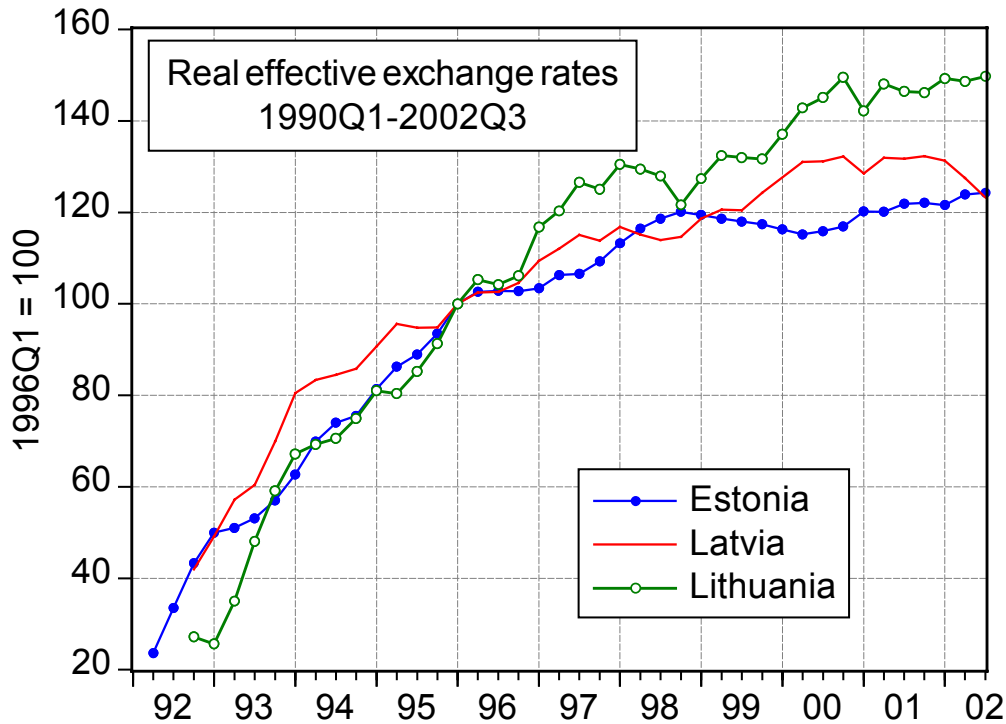
3.2.3 "Peripheral" EMU Member States

Of the five "peripheral" EMU member states, the real exchange rate appreciated by nearly 30 percent in Portugal – as surveyed in detail in the foregoing – between 1988 and 1991/92, remaining mostly stable, but temporarily weakening as a result of the ERM crisis. An extensive appreciation trend (with a few brief readjustments) evolved

in Spain during the period of disinflation: the escudo strengthened nearly 35 percent over seven years from 1983, remaining at this level for two years and only weakening significantly in response to the 1992/93 ERM crisis. While a period of depreciation preceded appreciation in the early 1980s, this could have been a result of transitory appreciation preceding it. A decade-long period of appreciation was also observable in Greece as of 1986, however, its rate was only approximately two percent per annum.

Real effective exchange rates
1960Q1-2002Q3
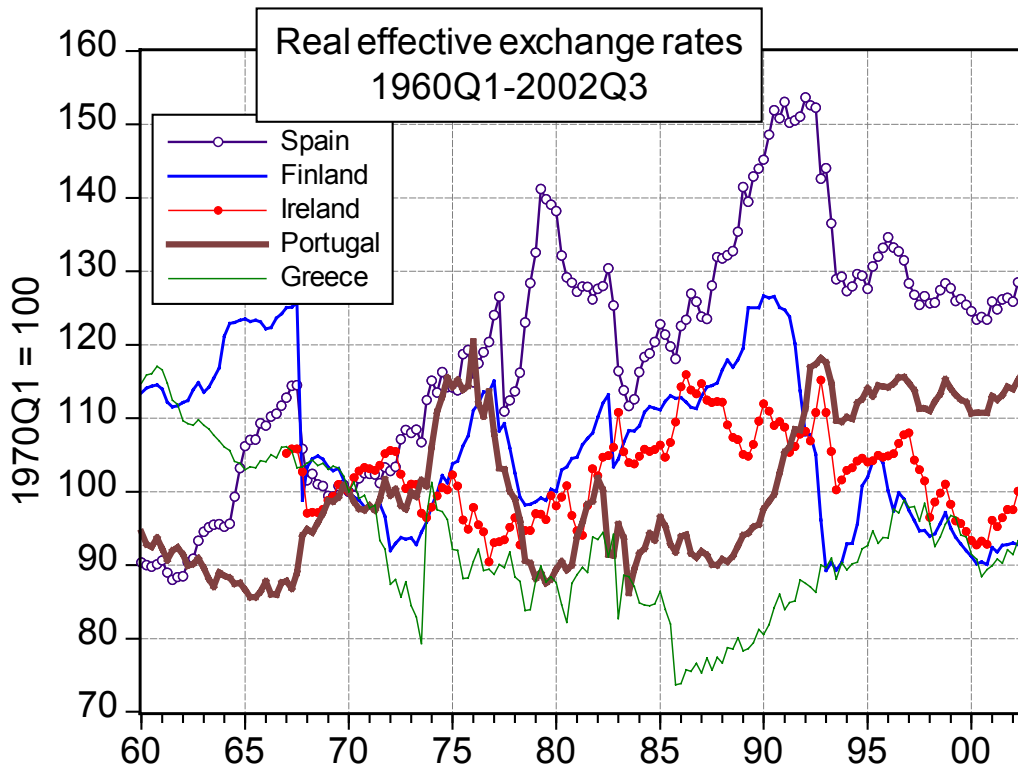
3.2.4 Further Industrial Countries

All five countries (Austria, Denmark, Japan, Norway, and Switzerland) experienced permanent appreciation upon the dissolution of the Bretton-Woods system, most probably because of undervaluation caused by the fixed exchange rate system. Denmark's real exchange rate, on the other hand, resembles Portugal's real exchange rate surveyed in the foregoing, and Norway also exhibits similar processes in the mid-1980s. Japan is a typical example of exchange rate improvement based on increased productivity. Appendix "D" illustrates the main macroeconomic processes of these countries (page 44).

Real effective exchange rates
1960Q1-2002Q3

- Switzerland
- Austria
- Norway
- Denmark
- Portugal

Real effective exchange rate
1960Q1-2002Q3

- Japan
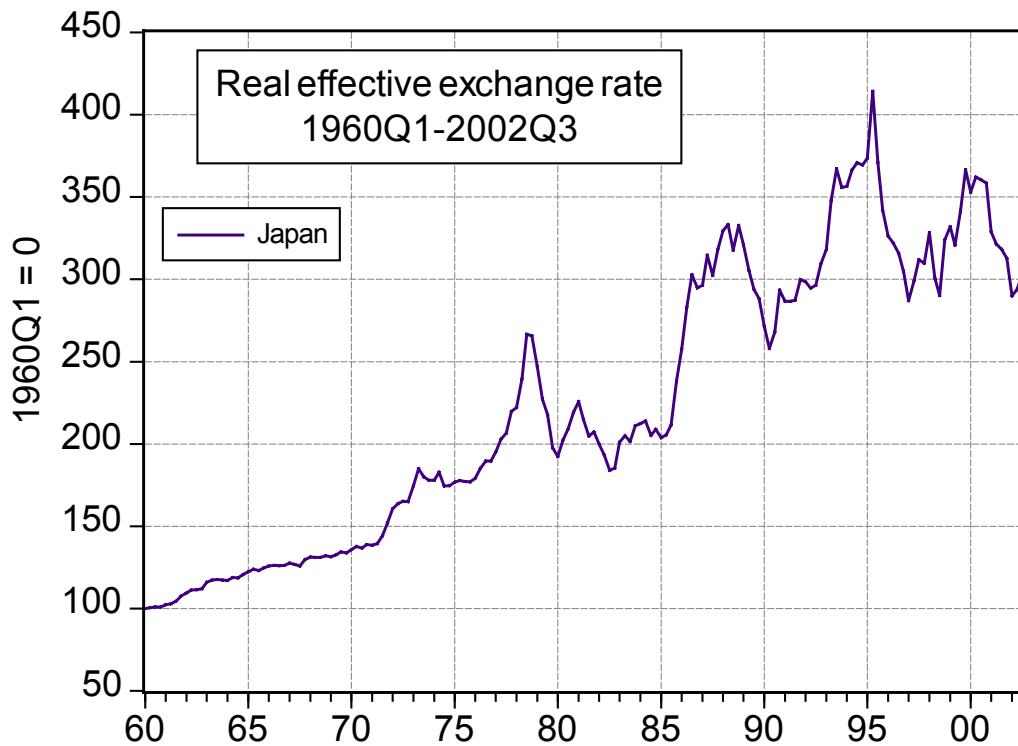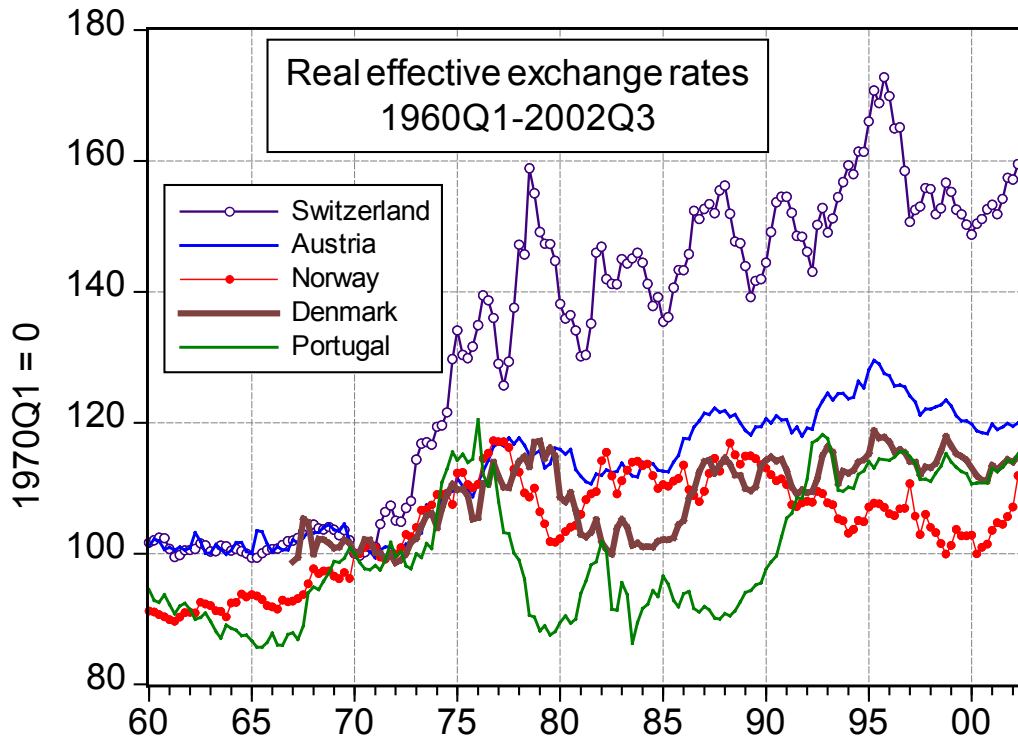
3.2.5 Latin America

Large-scale appreciation occurred in all of the 21 countries surveyed, with most of them experiencing the aforementioned "worst-case scenario". Permanent appreciation is evident in only two countries, namely Barbados and Peru. Appendix "D" illustrates the main macroeconomic indices of these countries (page 53).

Barbados exhibits a somewhat bizarre picture, as the deficit on current account accounted for 20 percent of GDP at the onset of massive appreciation in 1972-75, while the trend was improving. At the beginning of a second major appreciation in 1982-85 there were several major deficiencies, however, the balance quickly turned positive and remained at a near equilibrium for fifteen years. It is also important to note that the favorable economic growth arising after both periods of extensive appreciation is a phenomenon alien from the failed Latin American countries.

Hyperinflation hinders the evaluation of Peru's figures: namely because the uncertainty of the price indices rises in such cases, so real appreciation of more than 100 percent proving permanent could even be the result of an error in measurement: In 1989/90 inflation was at 3,500-7,500 percent.

4. Some Conclusions Regarding the Hungarian Real Exchange Rate

Although the objective of this study was not to analyze the recent real exchange appreciation of the Hungarian forint (a working group at the MNB is currently investigating this), it is nevertheless worth comparing the Hungarian situation with international experience. There are two main issues that deserve particular attention: whether appreciation proves to be permanent[32], and what its consequences are for the real economy, whether it is transitory or permanent.

In comparison with international examples, Hungary does show similarities both with the countries experiencing permanent, and with those exhibiting transitory appreciation. According to our calculations, the real exchange rate of the forint had become undervalued during the final stages of the crawling peg system. It is hard to numerically define the degree of undervaluation, since different methods result in different figures, but at the same it can be stated that the real exchange rate appreciation experienced was – at least partly – an adjustment for undervaluation.

Among the examples of permanent appreciation, there is substantial similarity with Portugal's real exchange rate appreciation of about 30 percent in the late 1980s. In both countries an economic stabilization program containing a significant fiscal adjustment occurred some years before appreciation, and in both countries a crawling peg regime was adopted to control real exchange rate appreciation. This policy was able to reduce inflation from 30 to about ten percent and revitalize economic growth in both countries, and also to reduce the enormous deficit of the current balance of payments. Capital liberalization, intensifying European integration, and the resulting strong capital influx were also common features, and the catch-up process gave fundamental support to real exchange appreciation in both countries. In Portugal, because of the high degree of capital influx, the authorities had no chance of keeping the real exchange rate low any further.

The example of the Czech Republic also provides important lessons. Despite the fact that according to the different calculations the so called Balassa-Samuelson effect underlying real exchange rate appreciation was faster in Hungary than in the Czech Republic, and Czech interest rates are virtually the same as the European ones, real exchange rate appreciation of the Czech Koruna had been faster in the past, and in the present it is of the same degree as the appreciation of the Hungarian forint, if based on

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[32] As we have already indicated, taking into account nominal exchange rate depreciation of the forint in June 2003, the end-June level of the real exchange rate was still 14.9 percent higher than in the last quarter of 2000.

consumer prices, and still, as mentioned before, the key Czech macroeconomic figures do not imply overvaluation. The conclusion that the National Bank of the Czech Republic had no real chance of reducing appreciation significantly, even under an alternative monetary regime, cannot be excluded either.

Certain similarities can be found with countries experiencing transitory appreciation as well. The main similarity with the countries of Latin America is the quick increase in budget deficit during the appreciation period. At the same time, the Hungarian situation differs in several aspects from theirs: while in Latin America real exchange rate appreciation originated from higher inflation under a fixed exchange rate regime, in Hungary it was in equally due to the strengthening of the nominal exchange rate and to higher inflation compared to that of foreign countries. Permanent exchange rate appreciation had no fundamental basis in the Latin American countries, while in Hungary it does. Contrary to the high inflation in Latin America, inflation in Hungary was around ten percent when rapid exchange rate appreciation began, and the degree of appreciation also remained below the figures observed in those countries. Finally, maybe one of the most important aspects is that the Hungarian government is committed to reduce the budget deficit, which was also laid down in the Mid-term Economic Policy Program. Therefore, various similarities can be pointed out with the industrial countries experiencing temporary appreciation. At the same time, it is important to emphasize that Hungary differs from both groups in that it is on a catching-up track that projects a strengthening of the equilibrium real exchange rate, and probably also in that the real exchange rate was undervalued to a certain extent before the onset of rapid appreciation.

When analyzing the current and expected consequences of appreciation, signs of processes approaching the degree of the adverse macroeconomic outcomes following periods of temporary appreciation are not visible. Although figures measuring the mid-term effects of appreciation will only be available in the future, and in 2002 GDP growth slowed down, investments lessened and the unemployment rate slightly increased, market expectations and current growth figures show a fairly positive picture when compared to international experience. Despite the fact that in Hungary – similarly to Portugal and countries experiencing temporary appreciation – the foreign business cycle developed adversely, and the GDP growth rate did not decrease to the same extent as observed in the above-mentioned countries, but was 3.3 percent in 2002. This was in part probably due to the expansive fiscal policy, while in Latin America, where fiscal deficit also rose to eight percent of GDP on average, a process of substantial decrease in GDP began as early as in the appreciation period. In contrast, according to market analysts surveyed by Reuters, the rate of economic growth in Hungary will accelerate in 2003-2004. They expect an average growth of 3.5 percent in 2003 and 4.0 percent in 2004. These figures are significantly more favorable than the GDP decreases during the Latin American worst-case scenarios, and are definitely more favorable than the small-scale GDP decreases of Portugal and the industrial countries experiencing temporary appreciation. In addition to this, market analysts do not expect deterioration in the account of the current balance of payments to GDP ratio, and in their view appreciation and a decrease in inflation will be permanent. Moreover, they expect a further minor decrease in inflation and further slight real exchange rate appreciation.

Obviously, the real economic effects of rapid appreciation can only be analyzed comprehensively in the future, but it seems to be certain that these effects will be strongly influenced through the fiscal and income policies. In the floating exchange rate regimes where the real exchange rate appreciation proved to be transitory but led

to a permanent reduction in inflation and the external balance did not deteriorate during the appreciation and the output loss was less pronounced than in many exchange-rate based stabilizations, and mostly in cases where real exchange rate appreciation proved to be permanent, moderate or decreasing fiscal budget deficits and stable real wages could be observed.
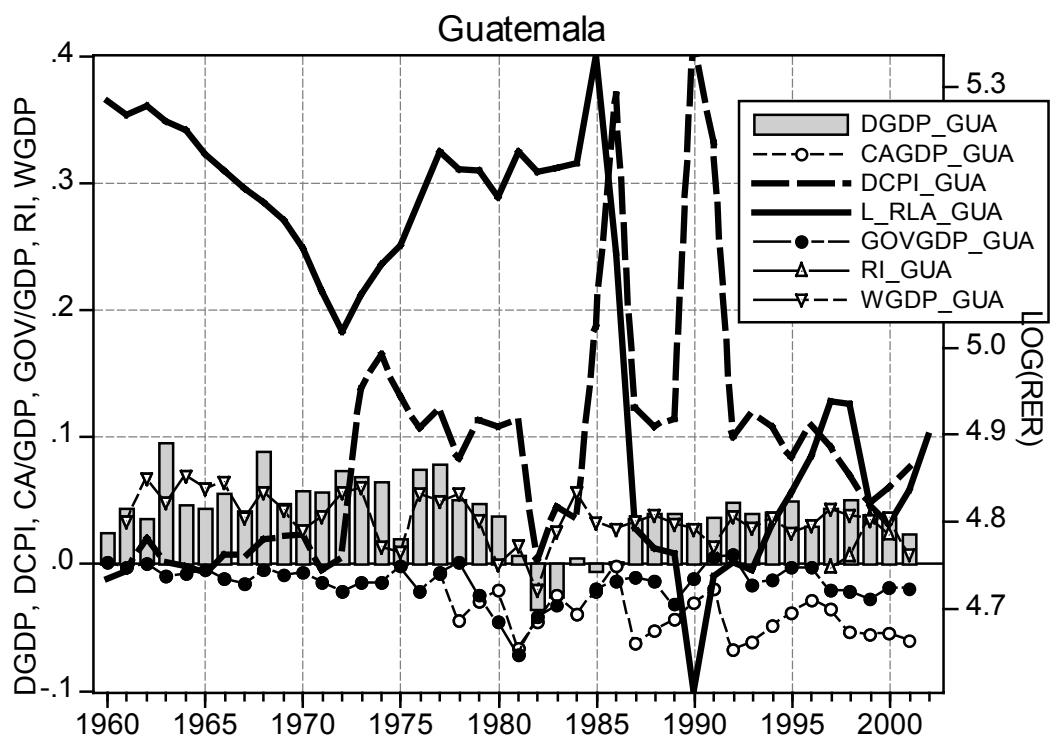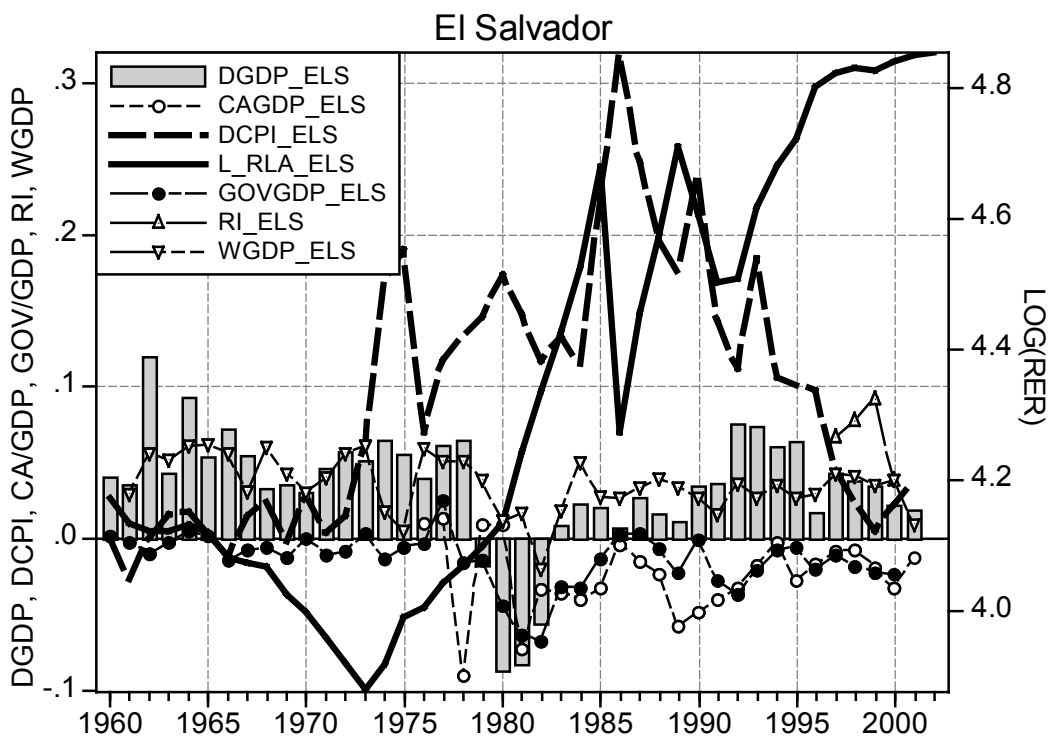
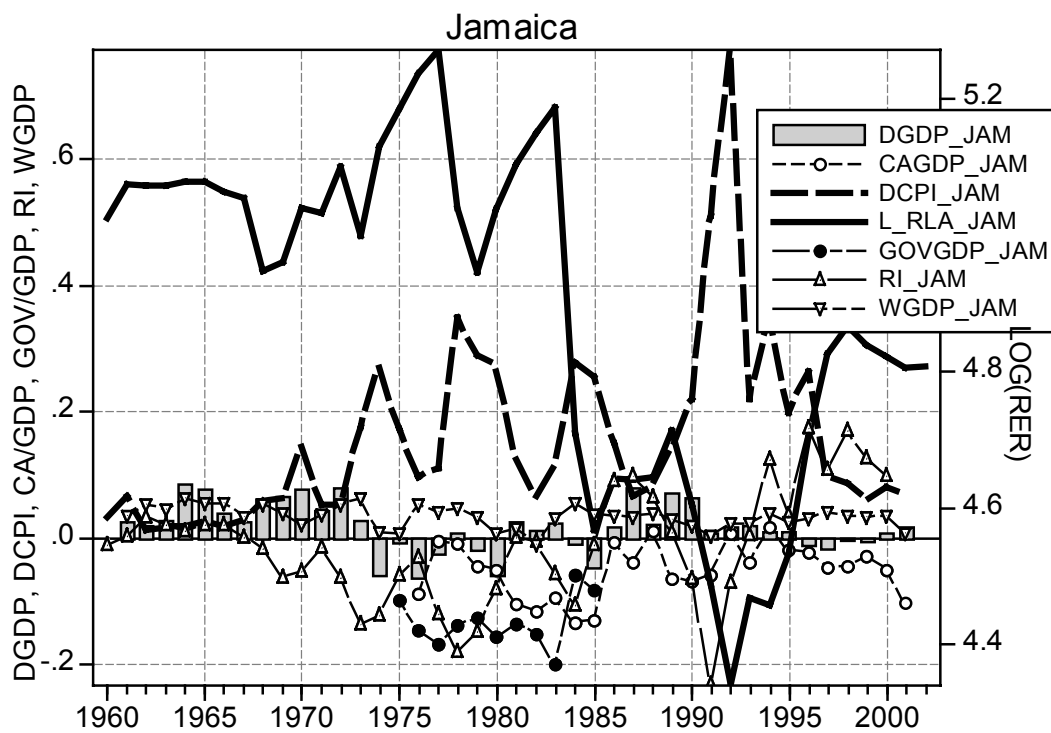## 5. Appendix "A": Macroeconomic Figures of Countries Exhibiting Transitory Appreciation: Latin America and Turkey

Turkey

Argentina

Bolivia

Brazil
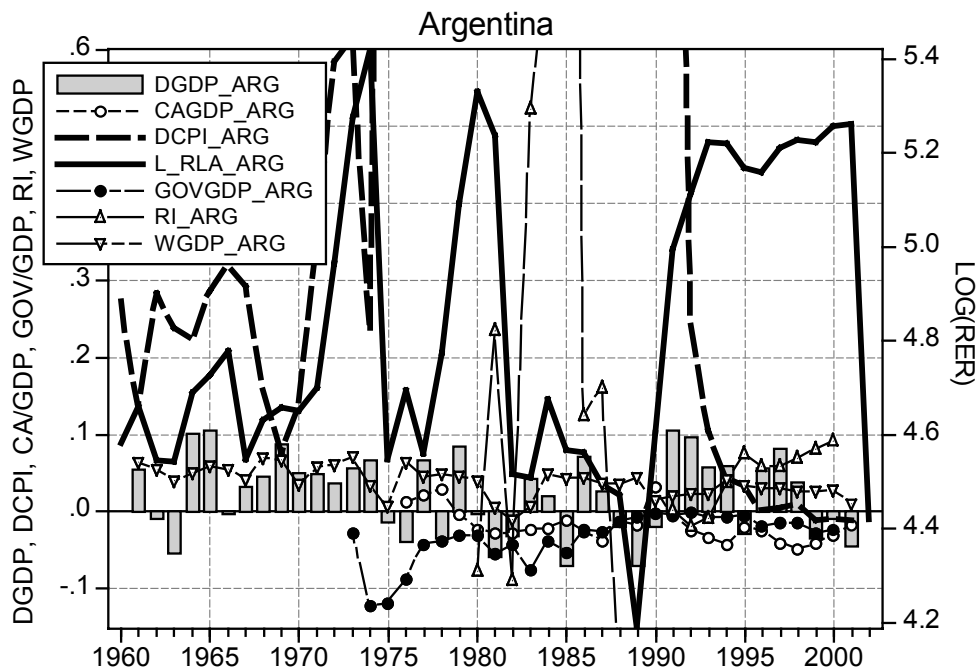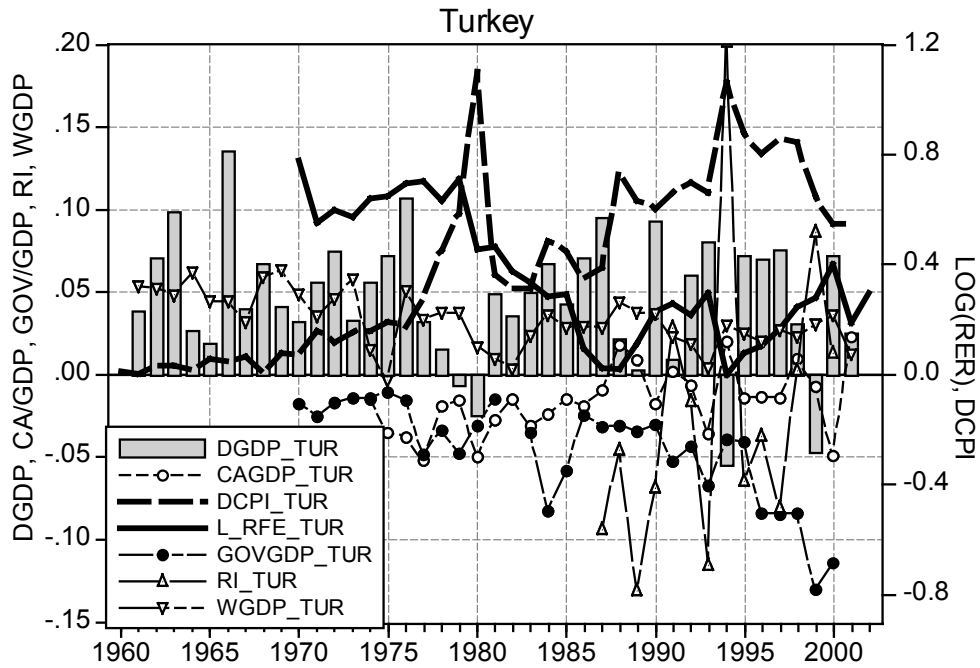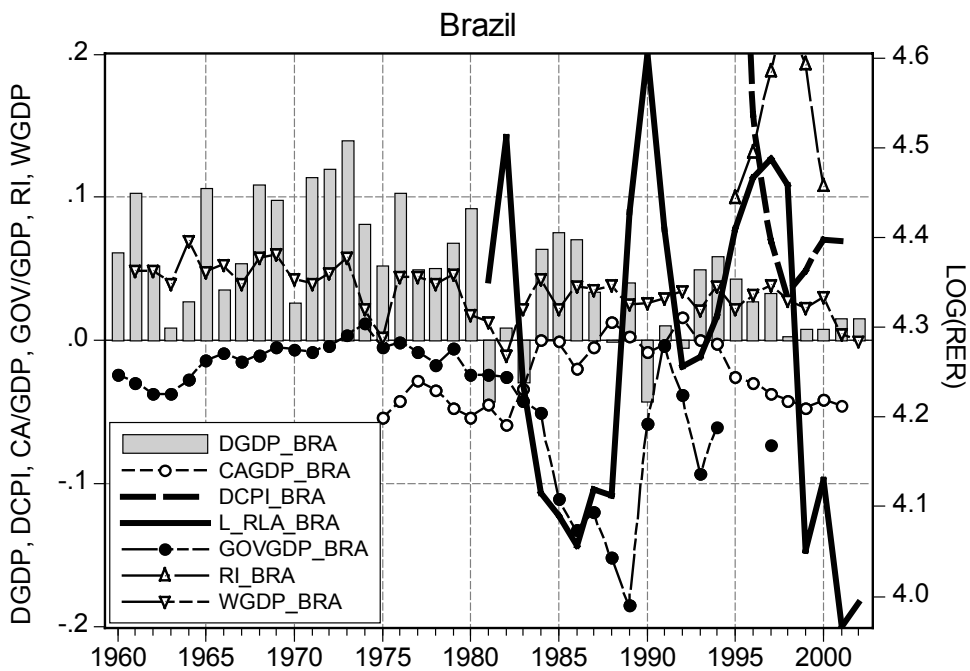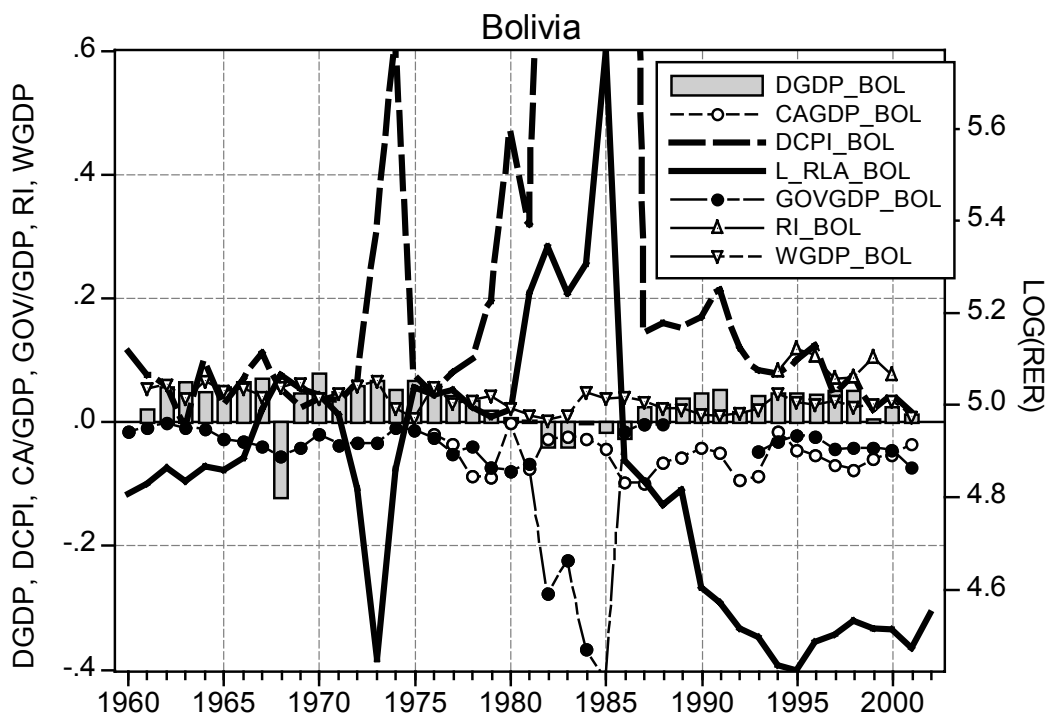
Since 1981, when price index data first became available in the IFS of the IMF, inflation dropped below 100 per cent first in 1995.

Chile

Colombia

El Salvador

Guatemala

Haiti

Jamaica

Mexico

Paraguay

Uruguay

Venezuela
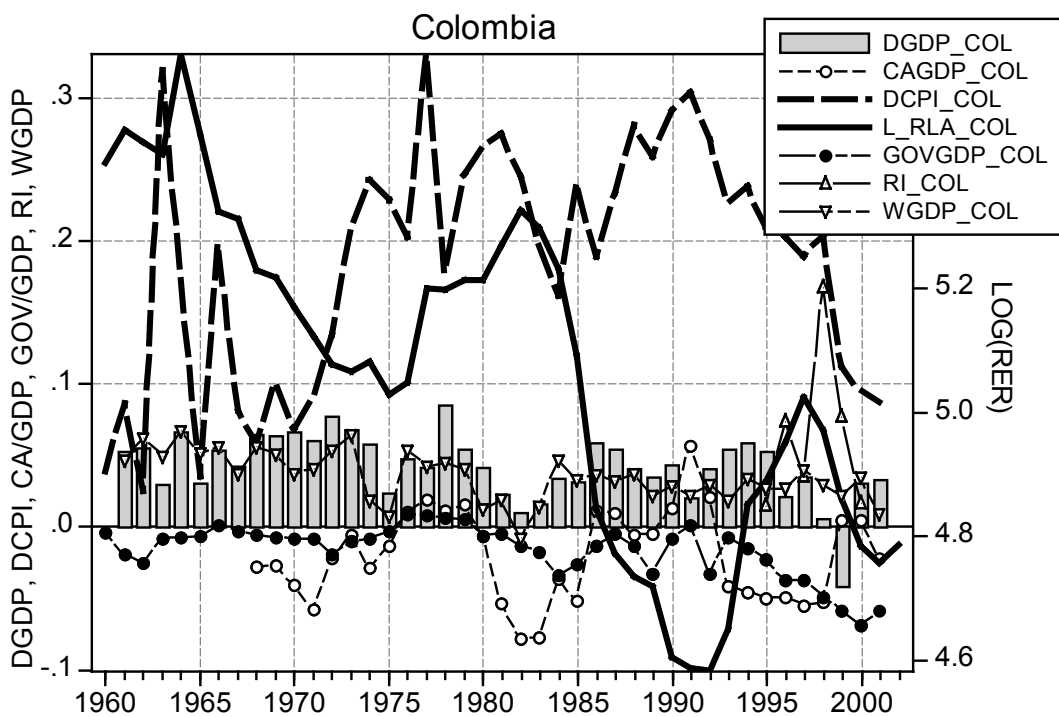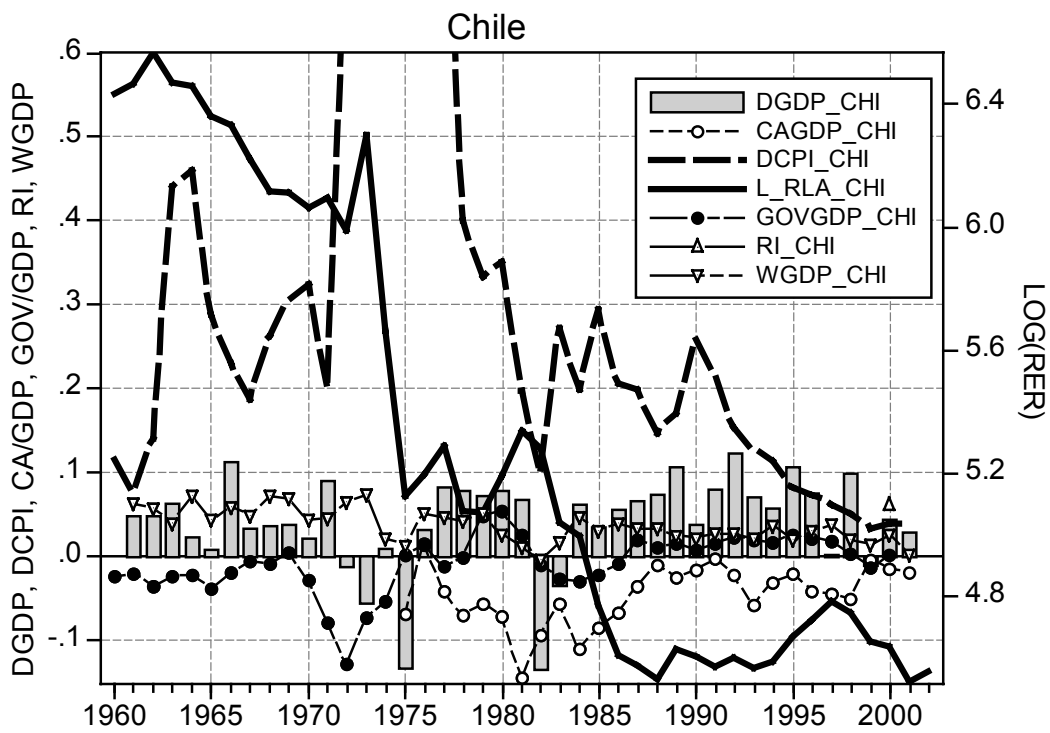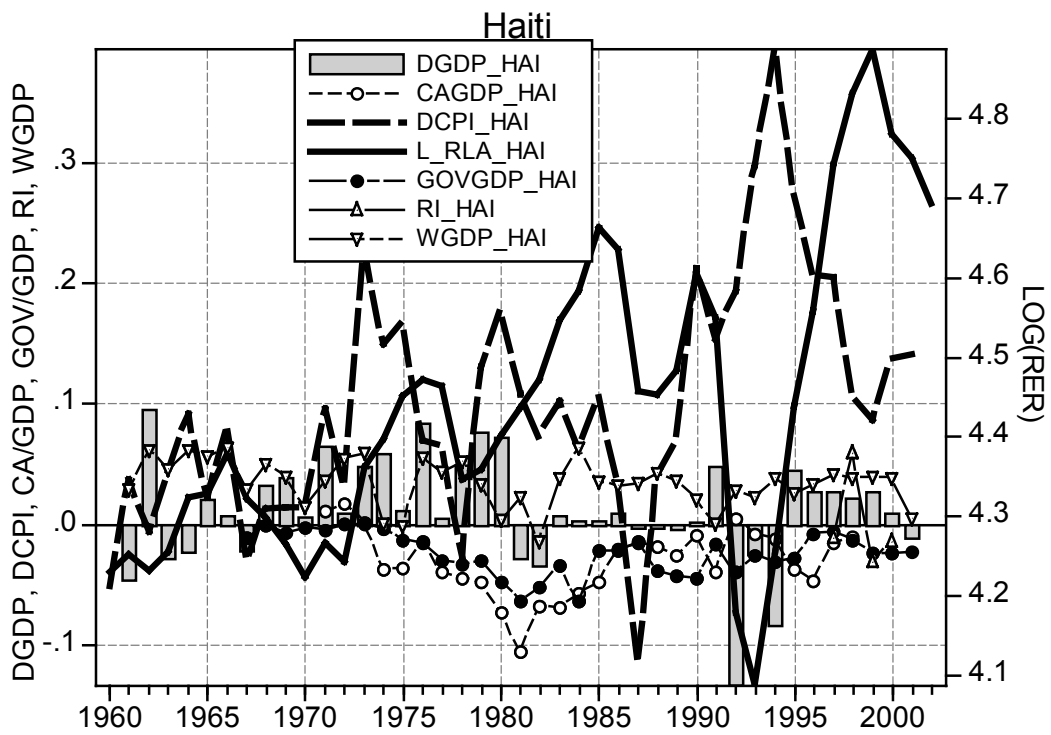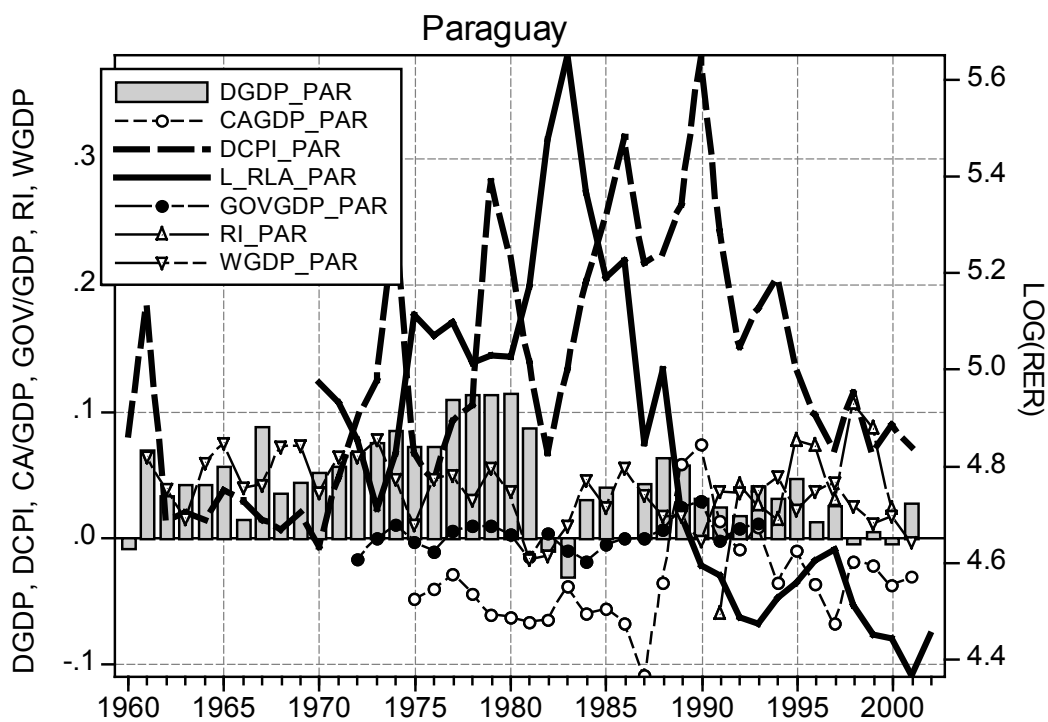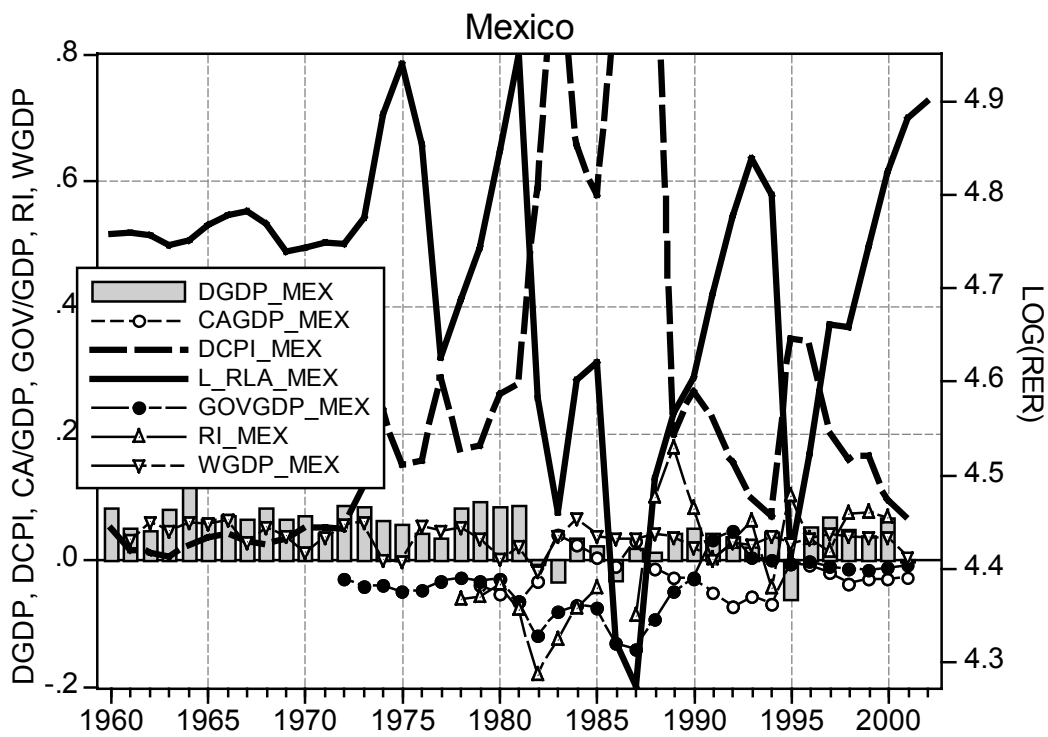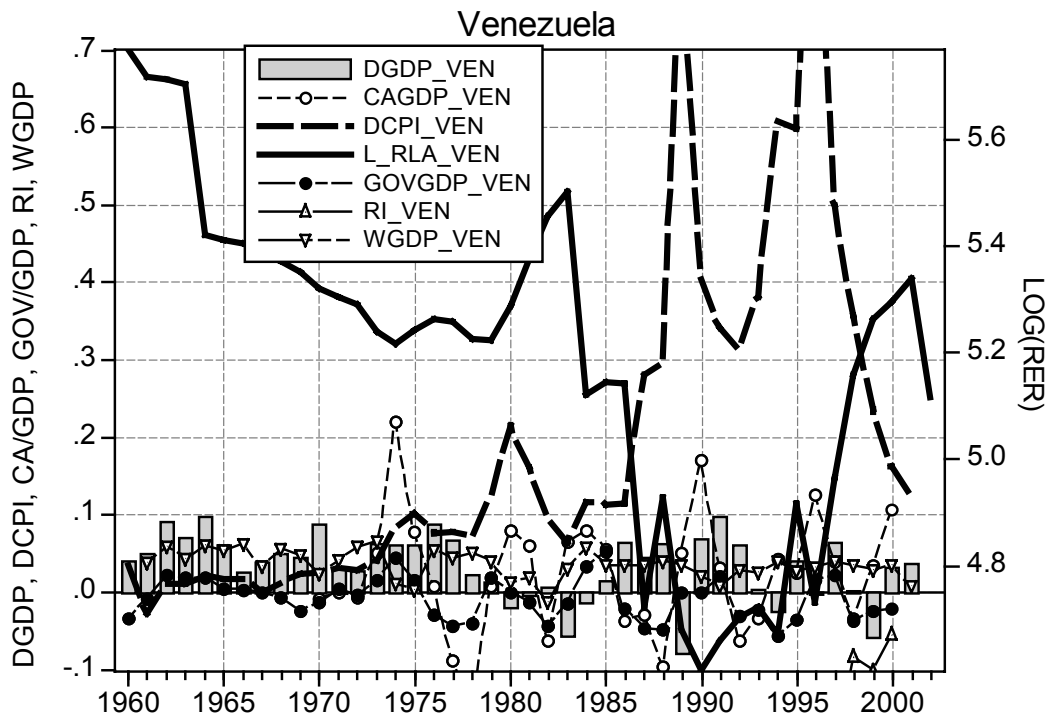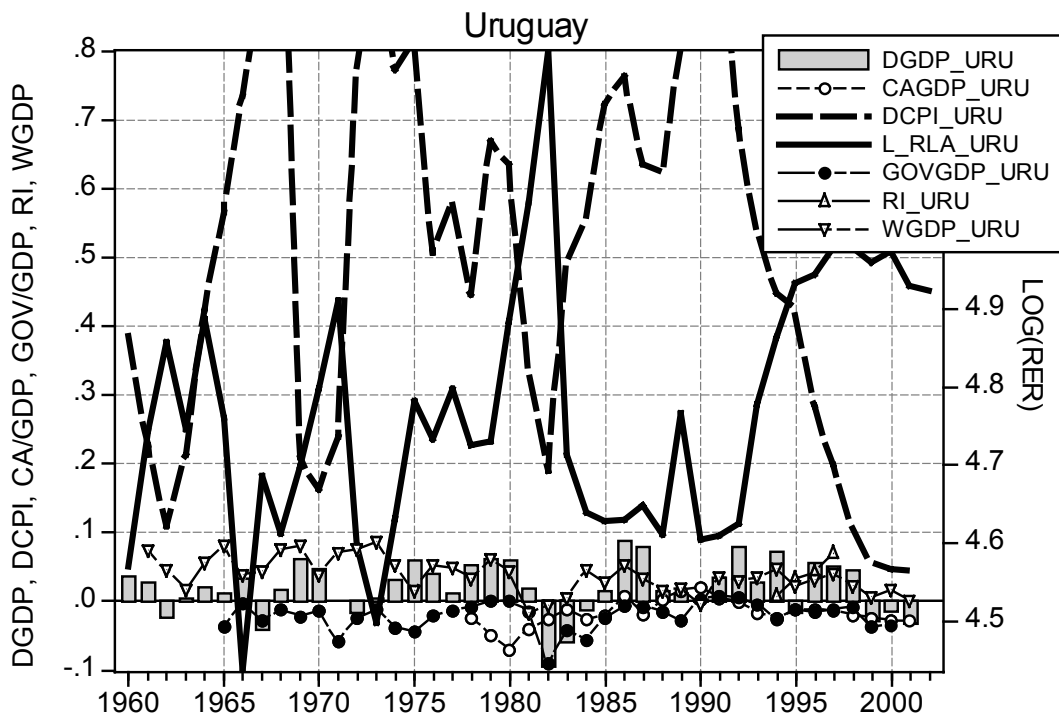
6. Appendix "B": Macroeconomic Figures of Countries Exhibiting Transitory Appreciation: Developed Industrial Countries
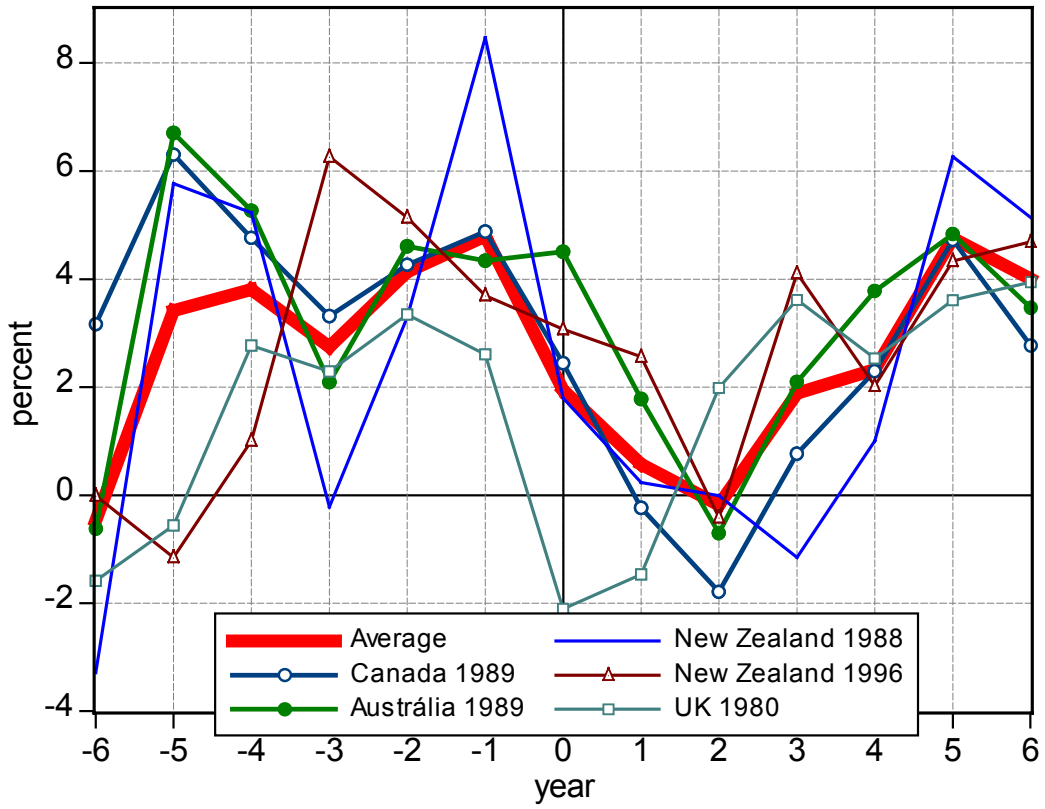

Australia

Canada

New Zealand

Sweden

United Kingdom
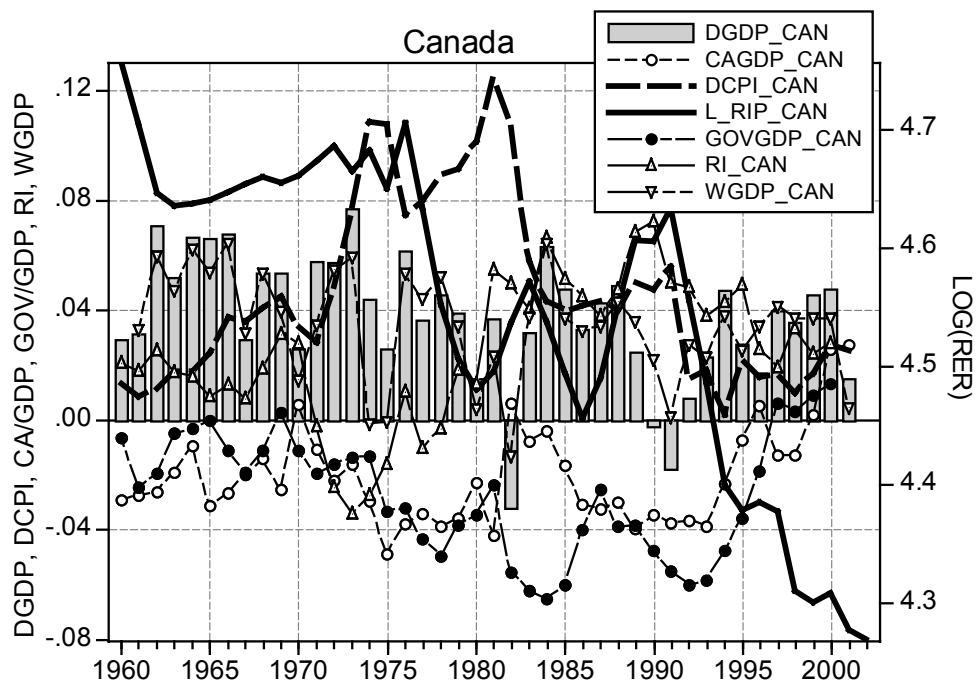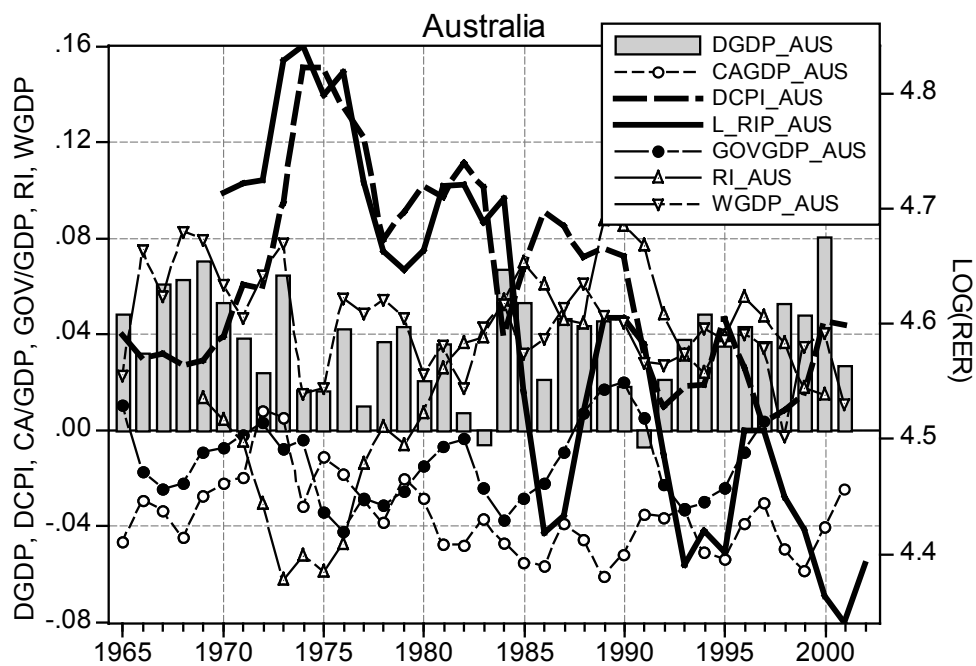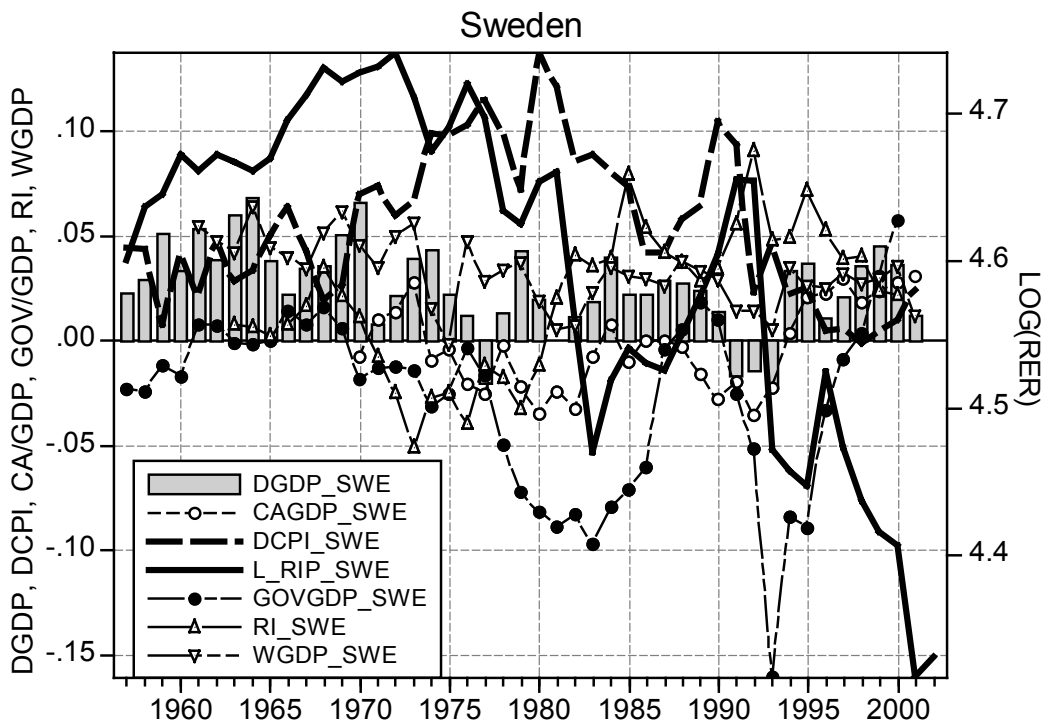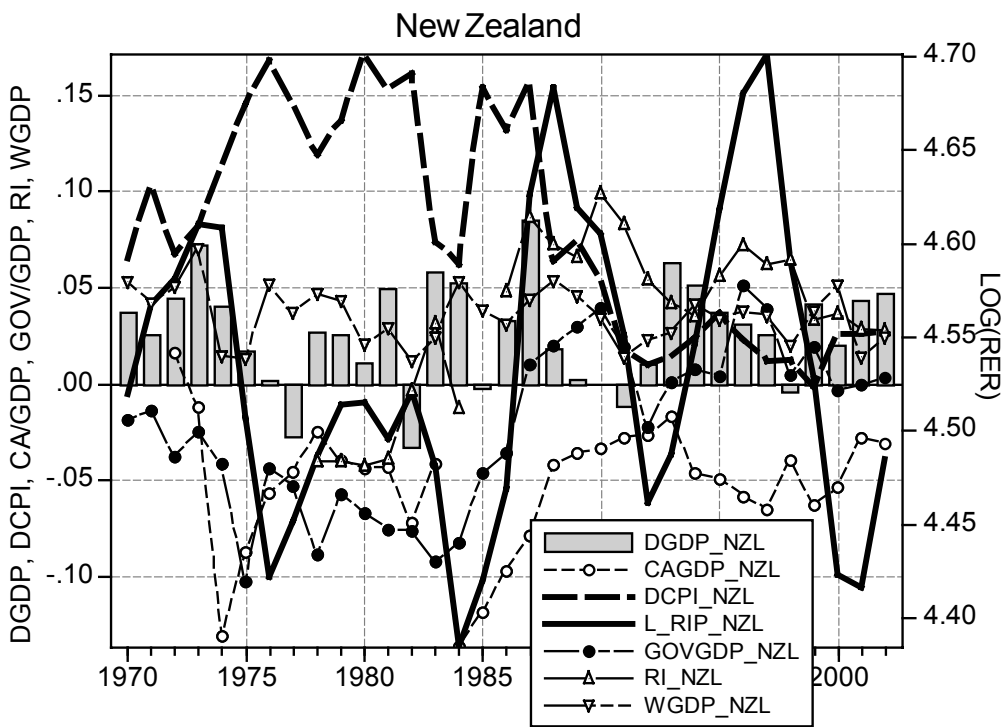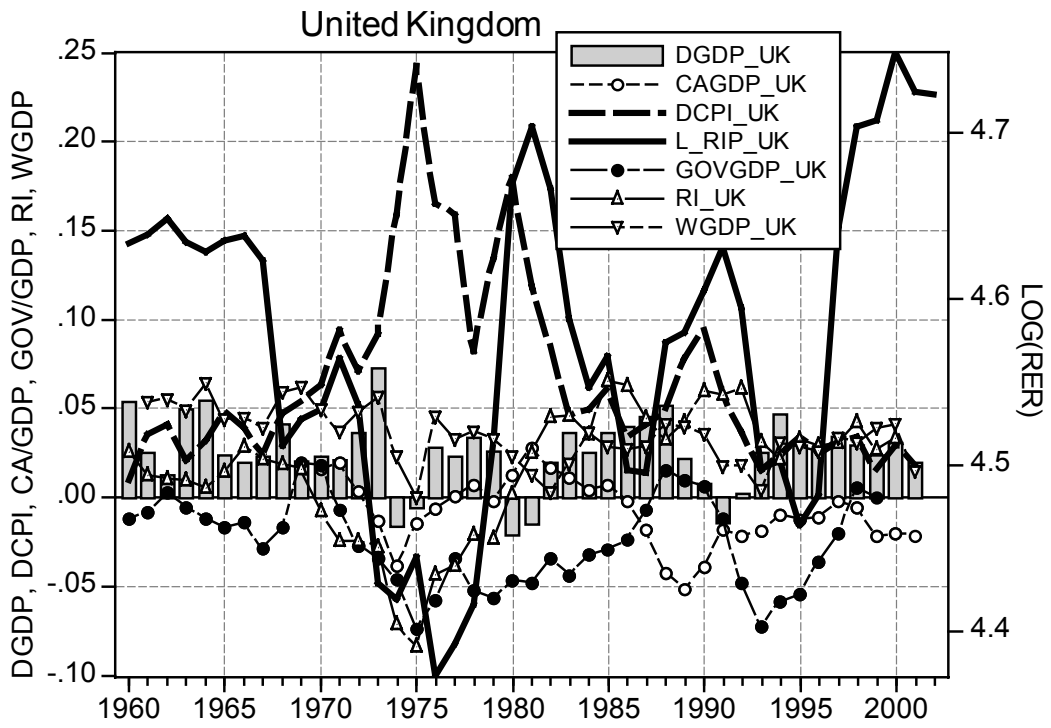
7. Appendix "C": Heterogeneity of Macroeconomic Processes in Developed Industrial Countries Exhibiting Transitory Appreciation
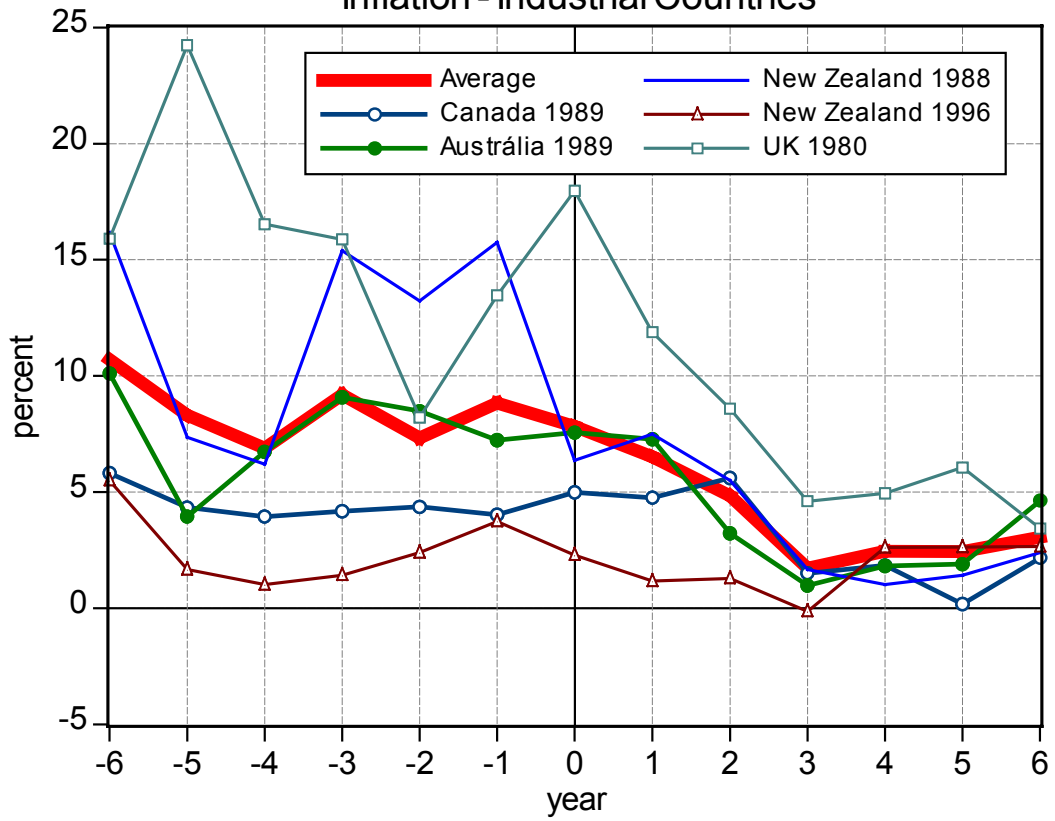

Real Effective Exchange Rates - Industrial Countries

Nominal Effective Exchange Rates - Industrial Countries

Real Interest Rates - Industrial Countries

Legend: Average, Canada 1989, Austrália 1989, New Zealand 1988, New Zealand 1996, UK 1980

Foreign GDP Growth - Industrial Countries

Legend: Average, Canada 1989, Austrália 1989, New Zealand 1988, New Zealand 1996, UK 1980
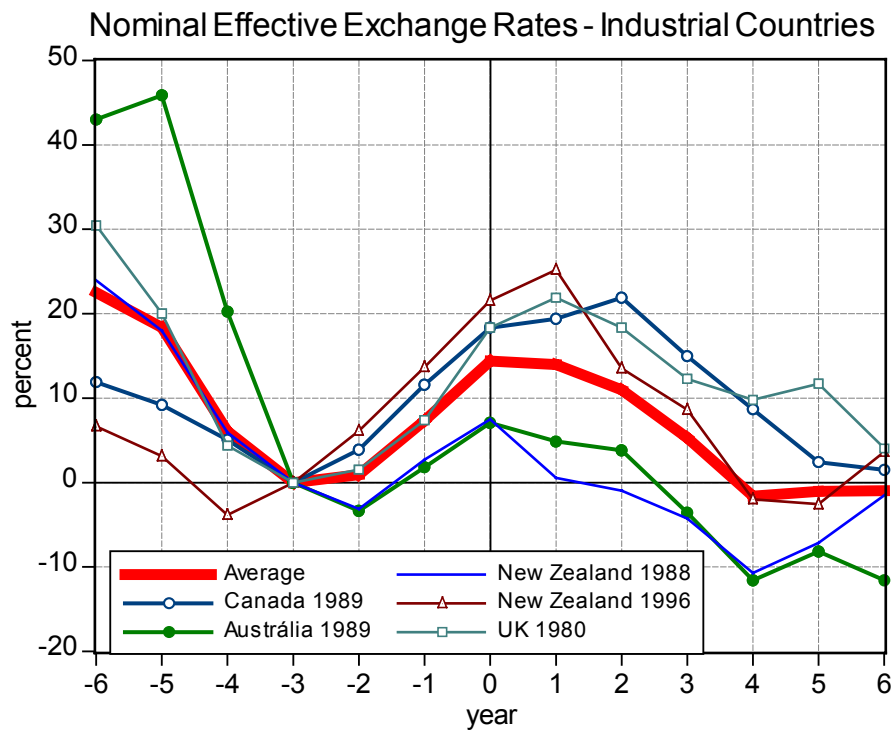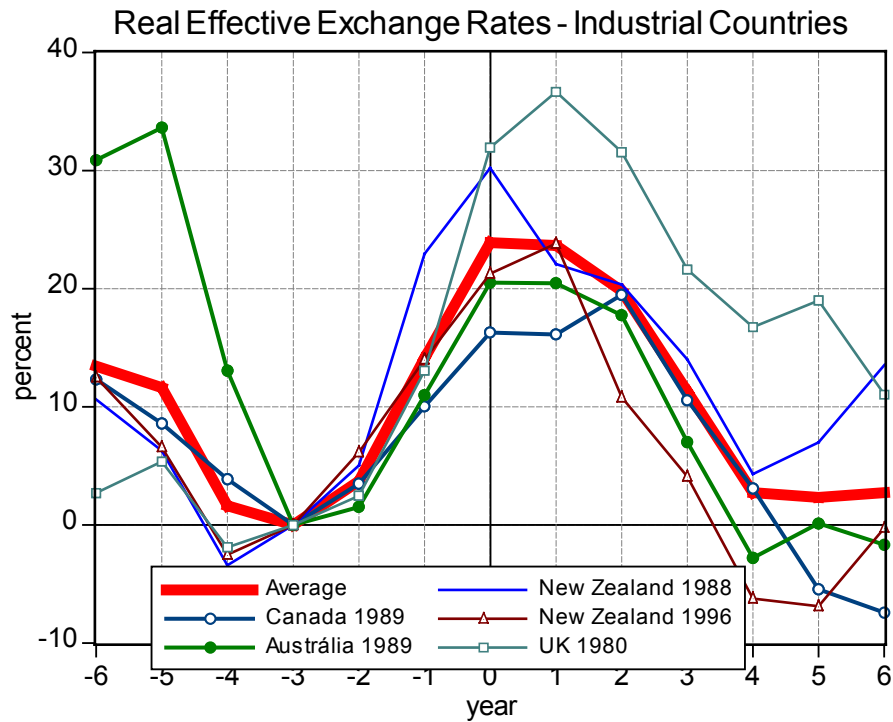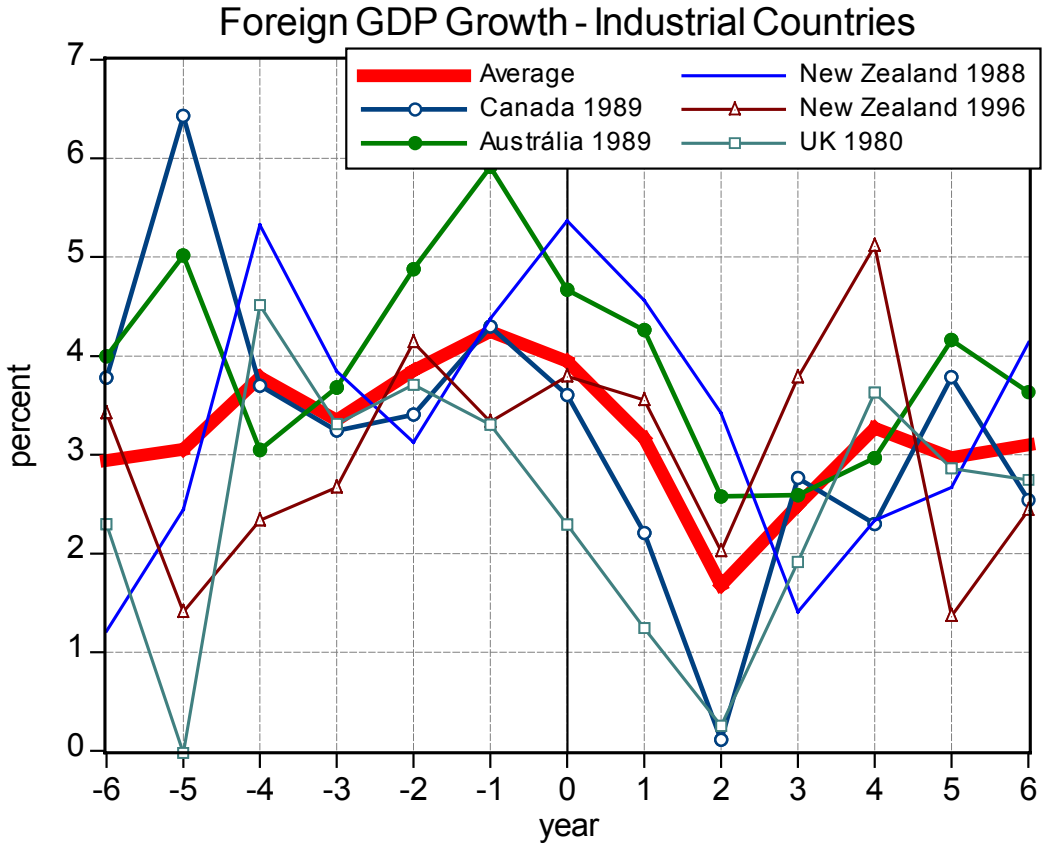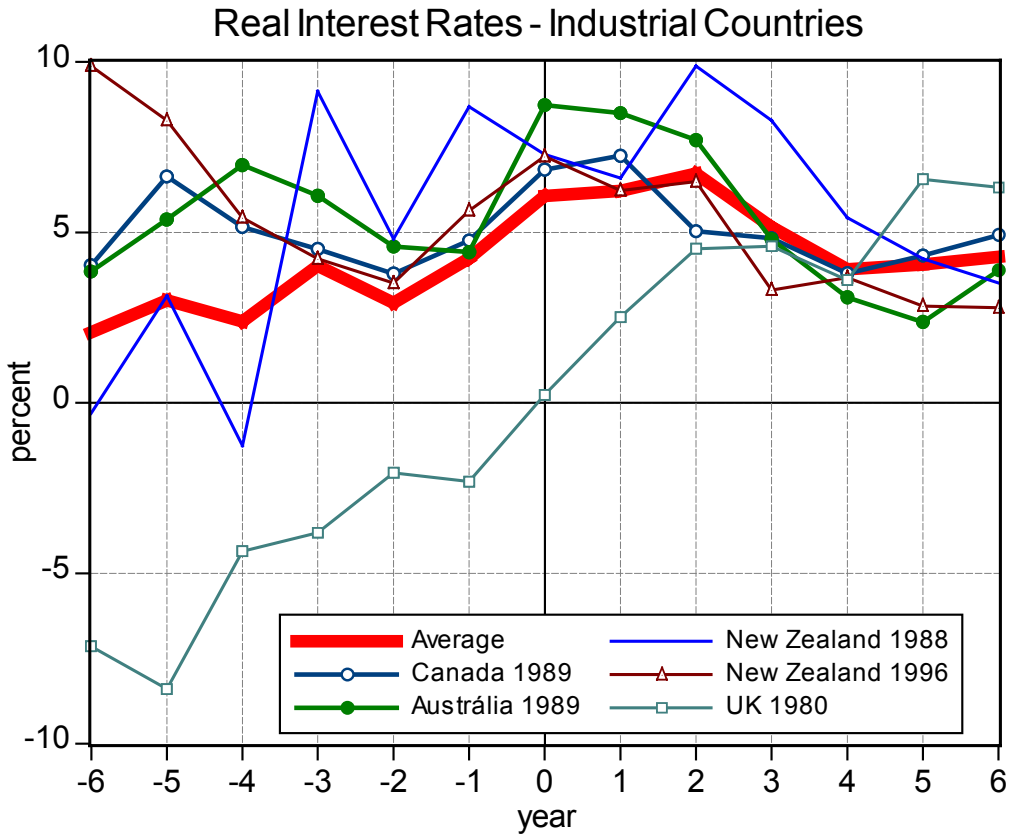
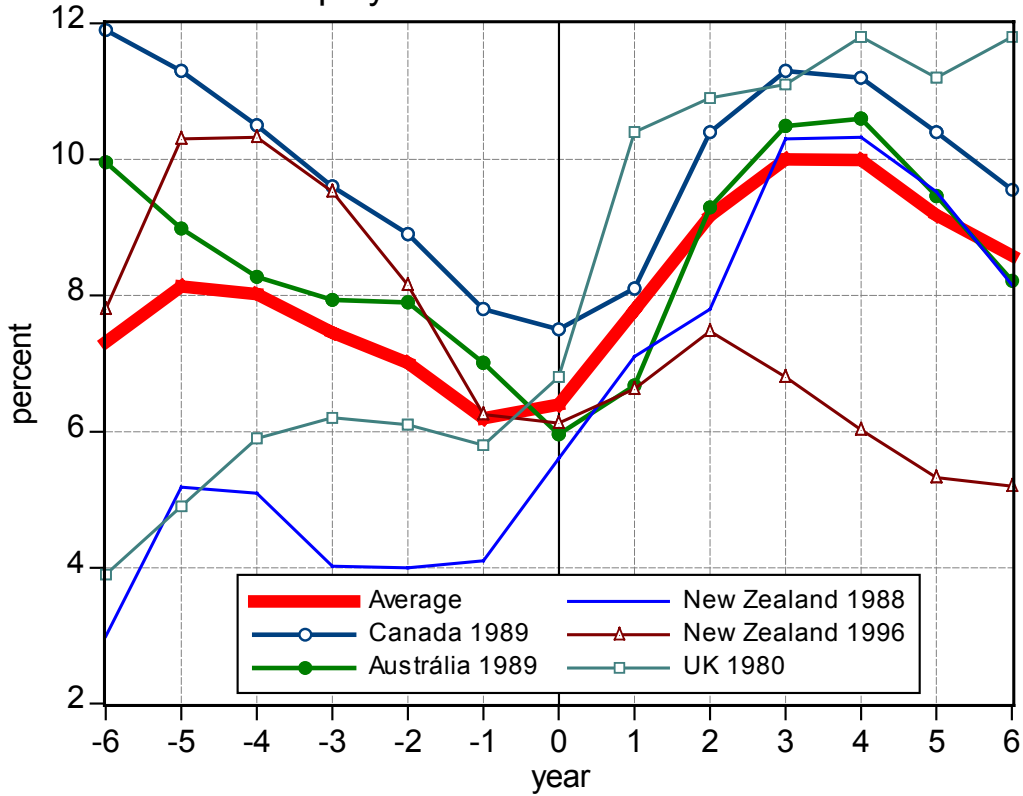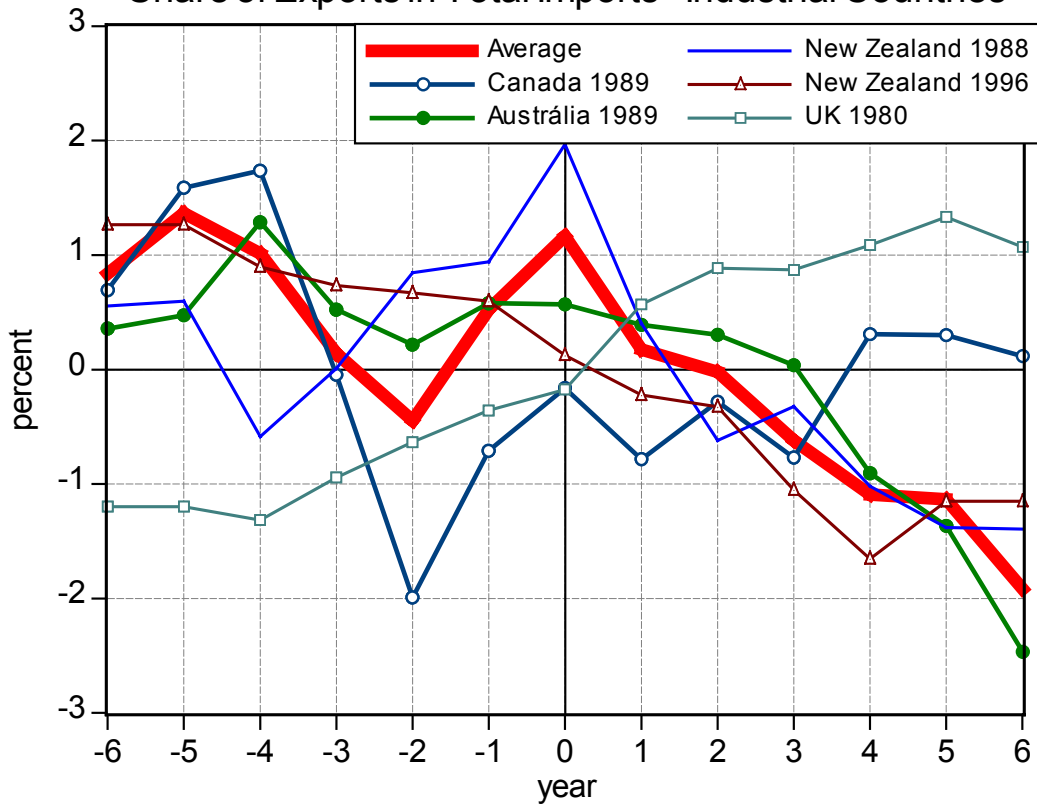## GDP Growth - Industrial countries

Inflation - Industrial Countries

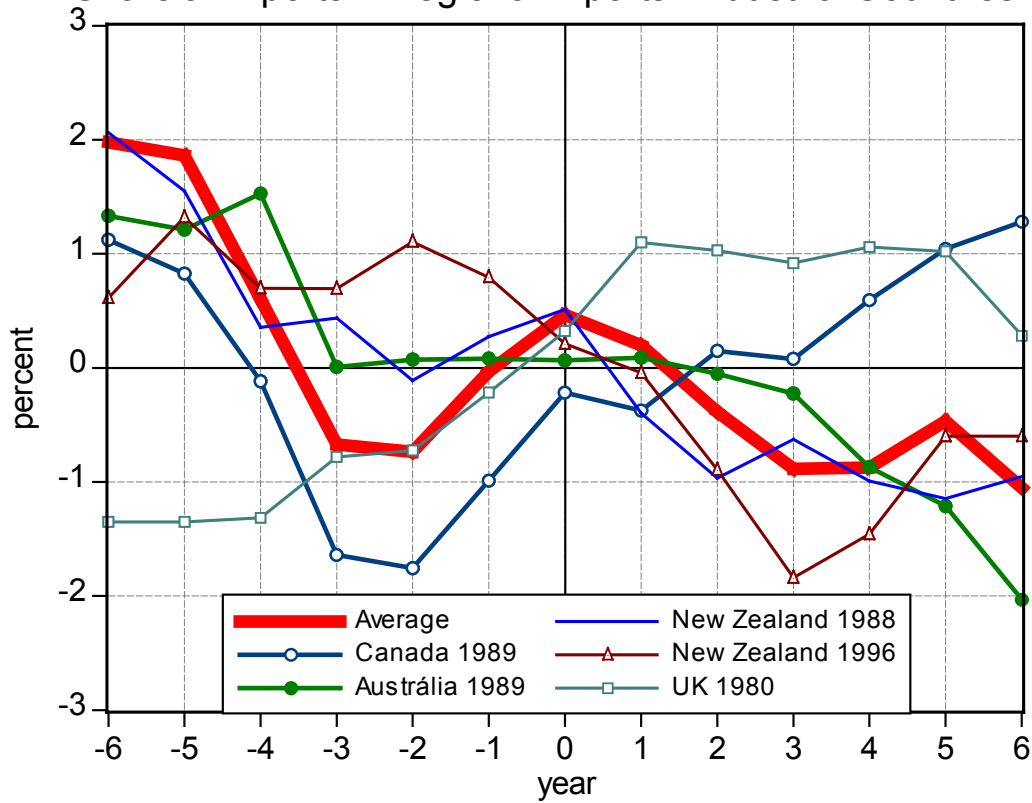Real Wage Growth - Industrial Countries
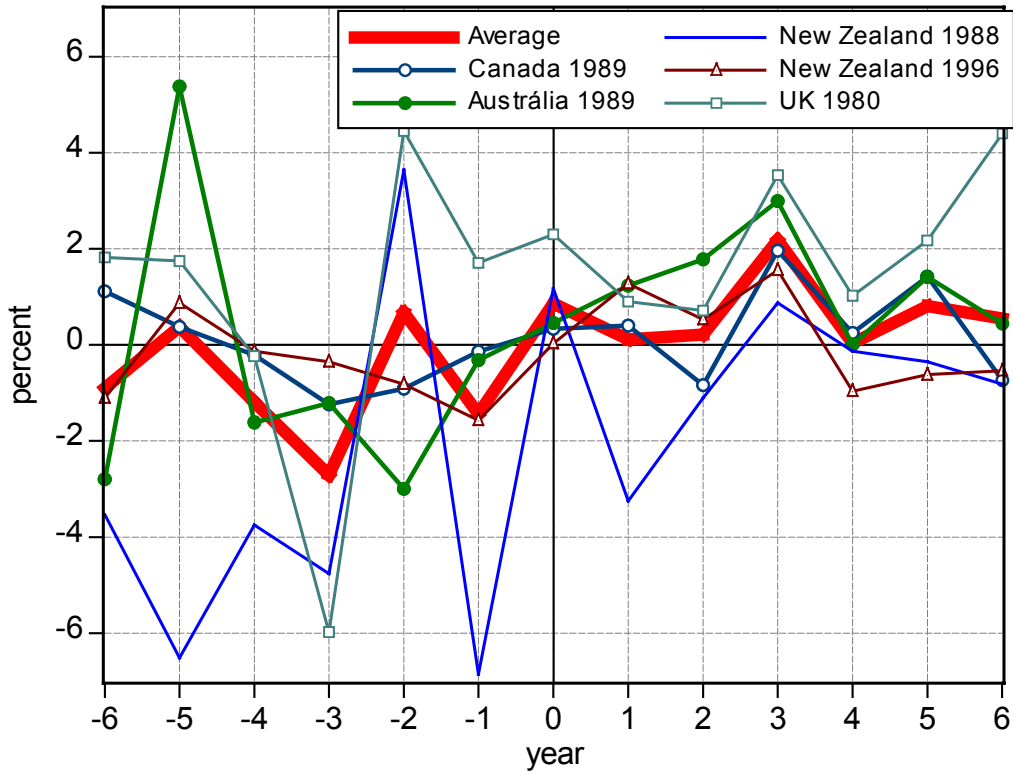
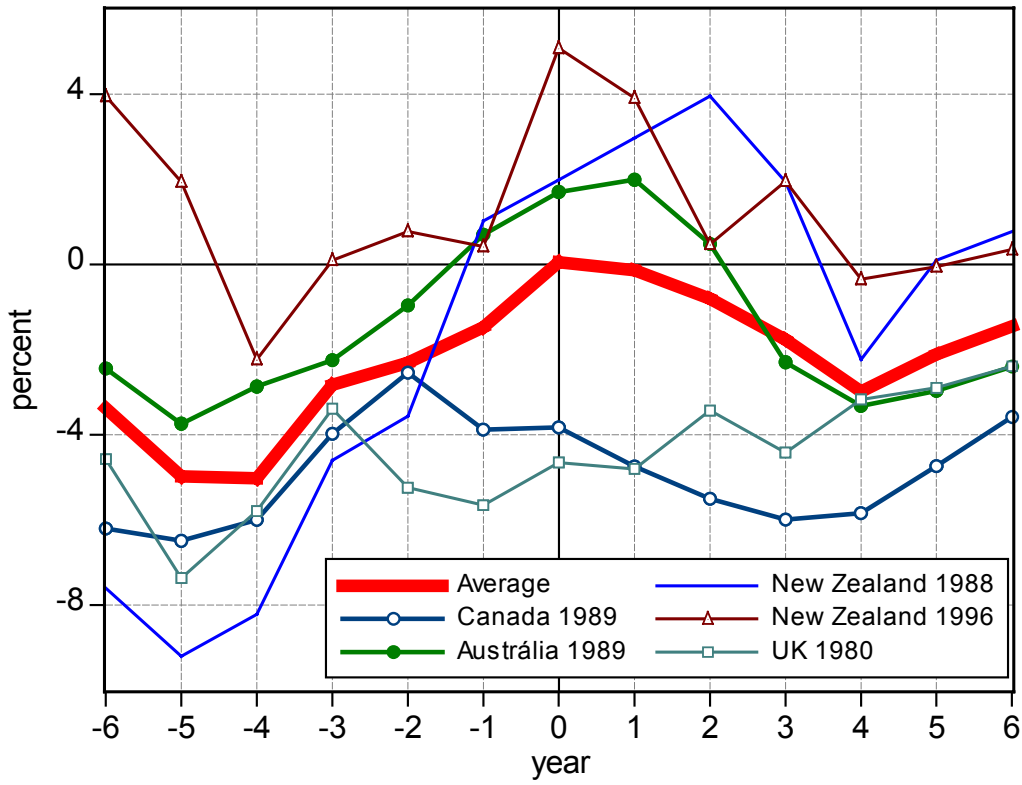Unemployment Rate - Industrial Countries

47

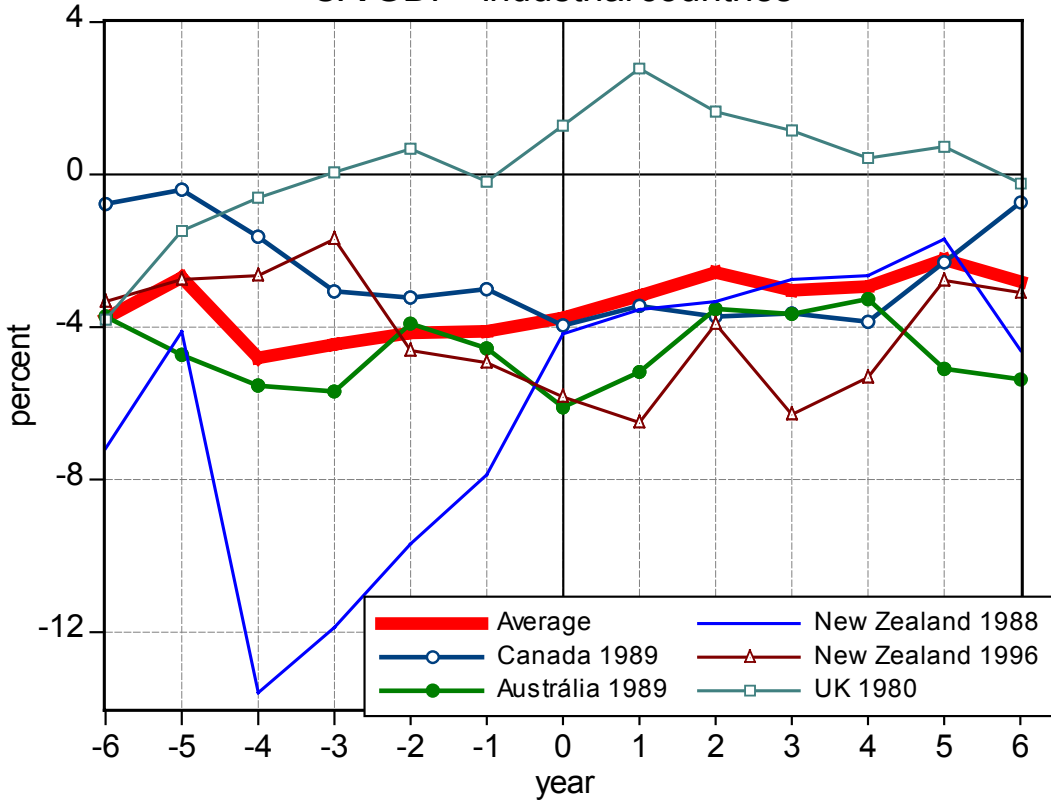# Share of Exports in Total Imports - Industrial Countries

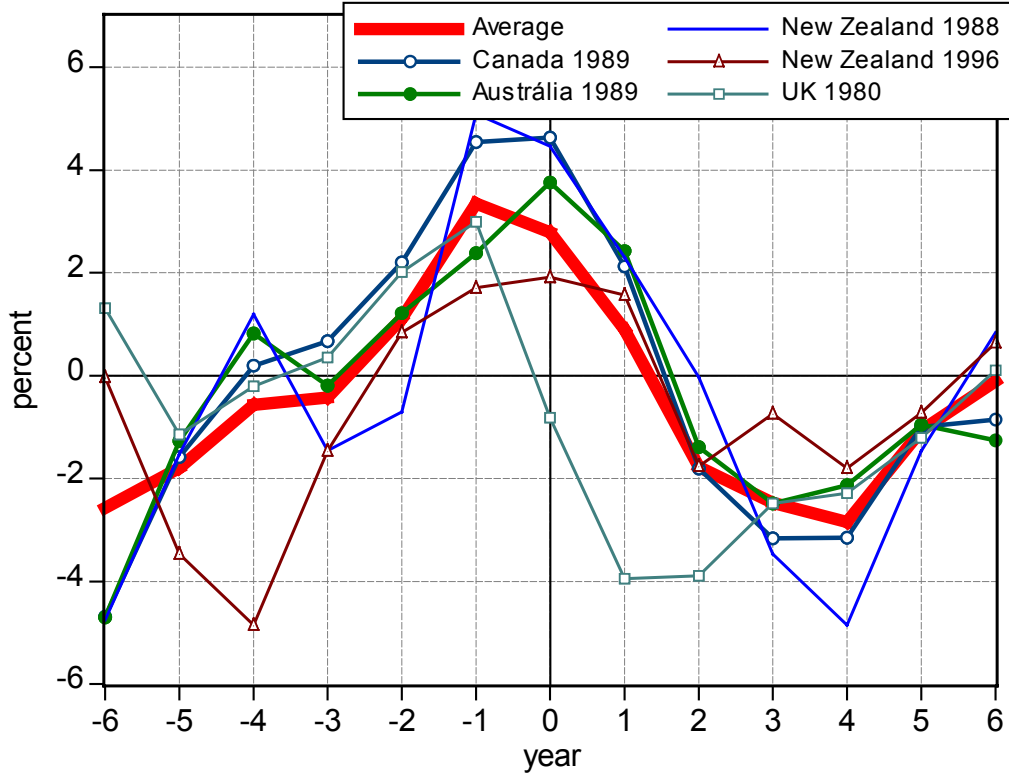# Share of Exports in Regional Imports - Industrial Countries
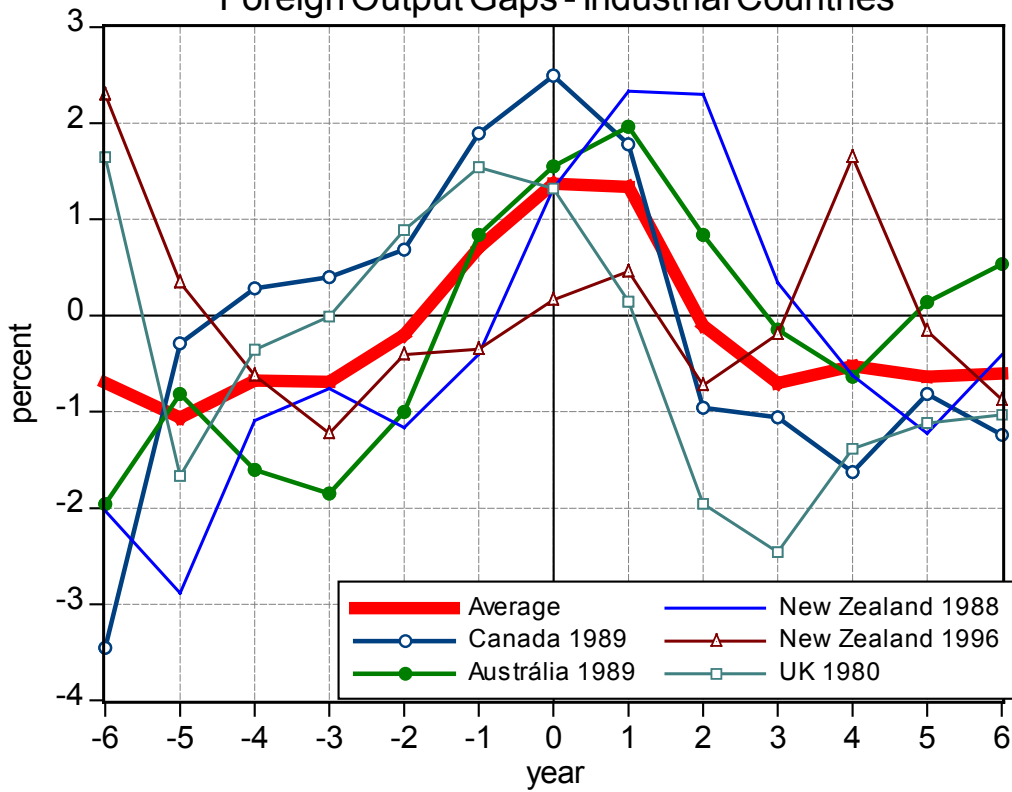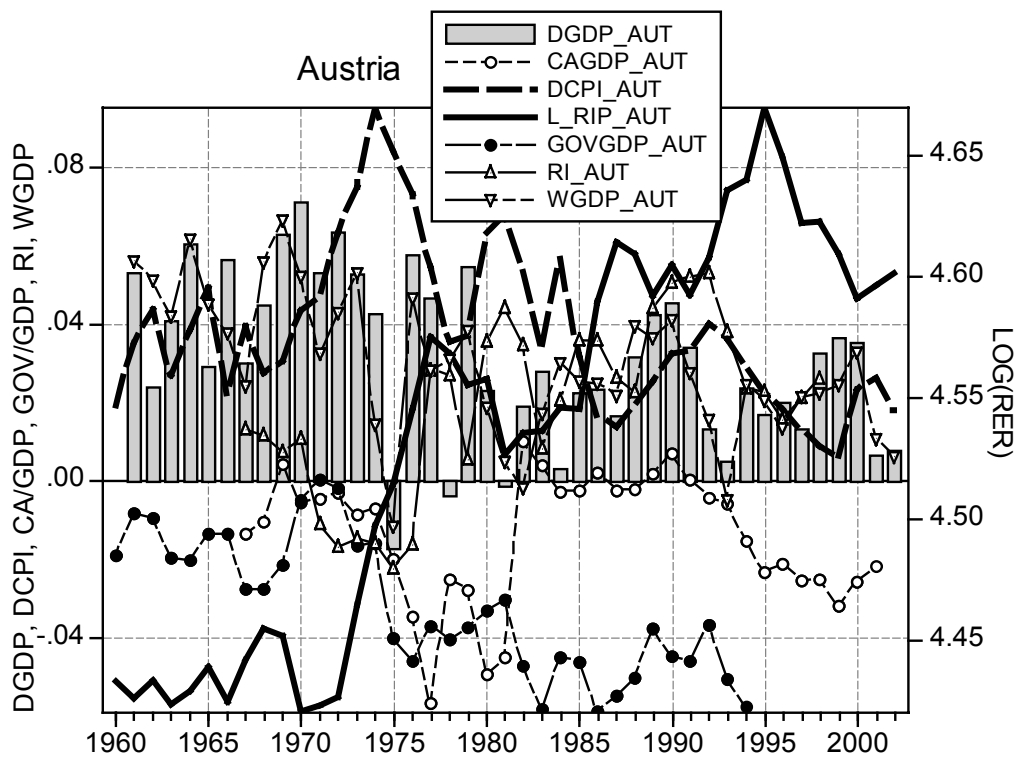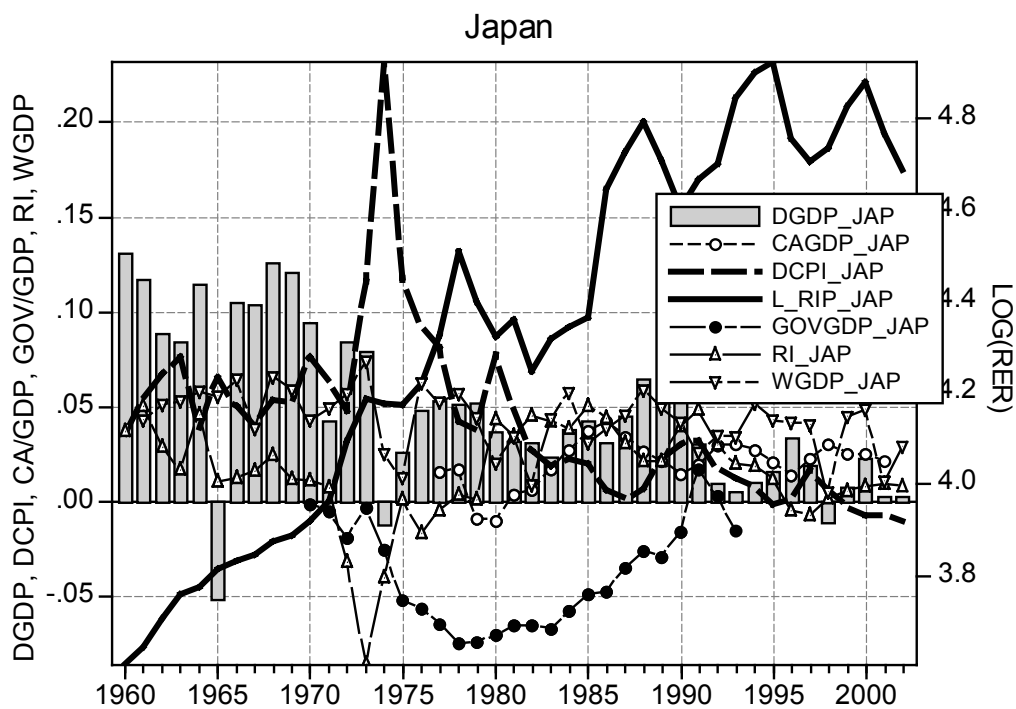
Budget Deficit/GDP - Industrial Countries

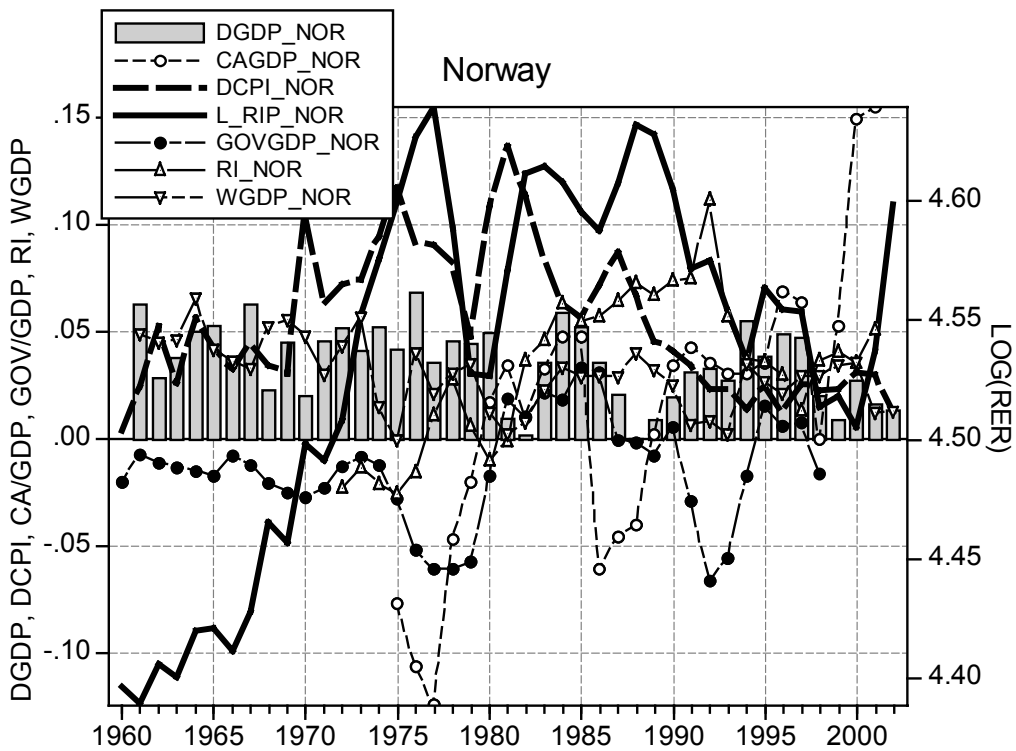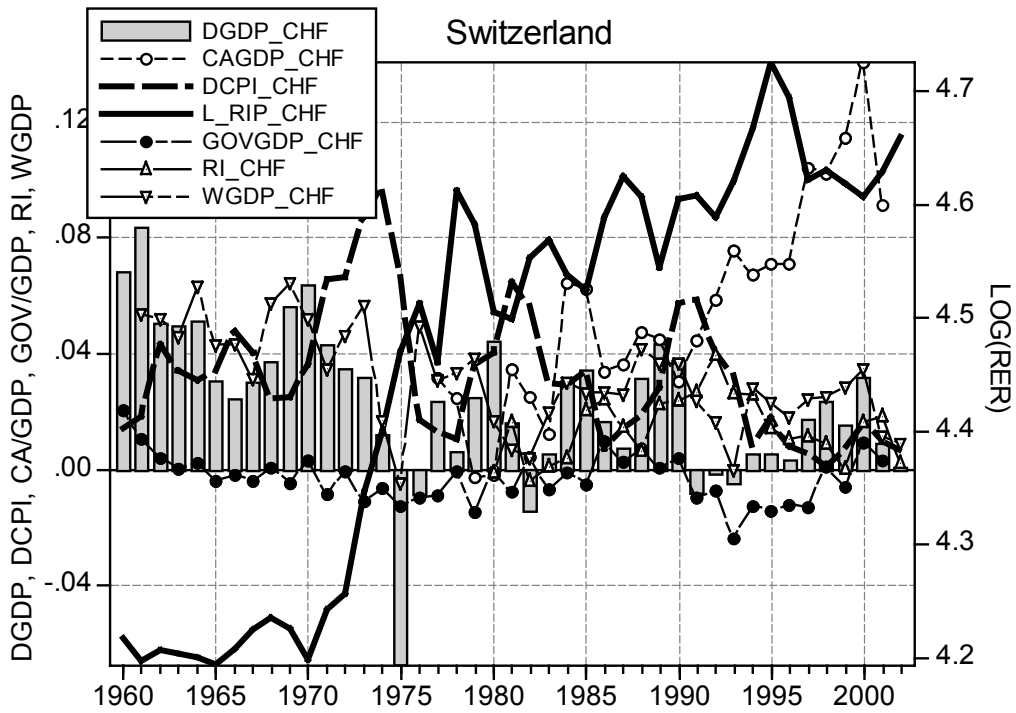CA/GDP - Industrial countries

49
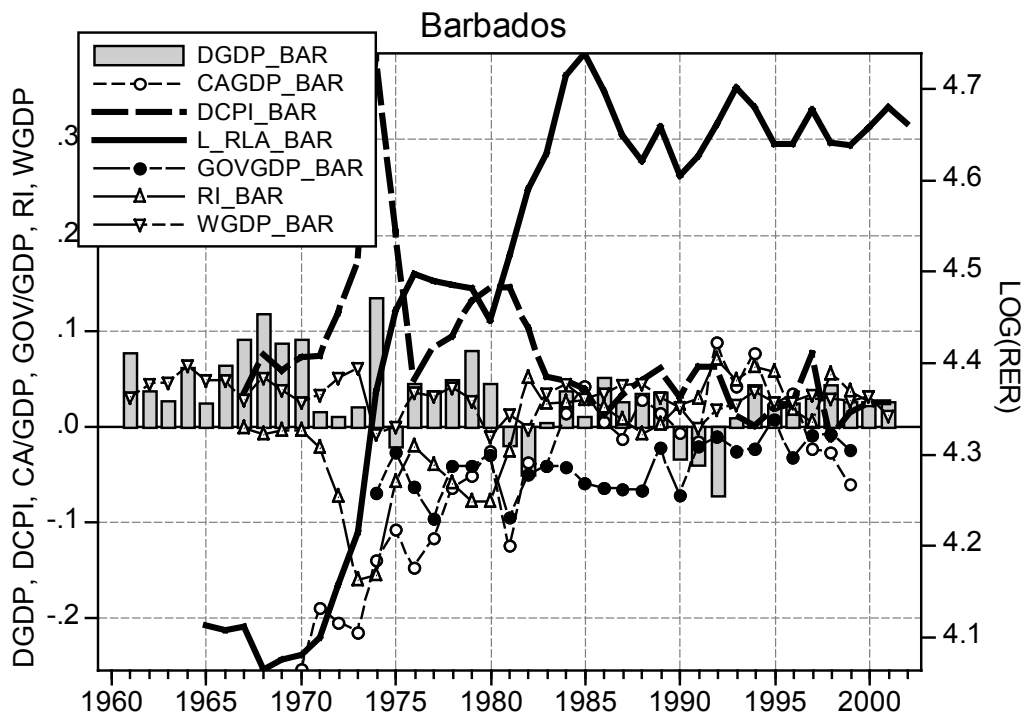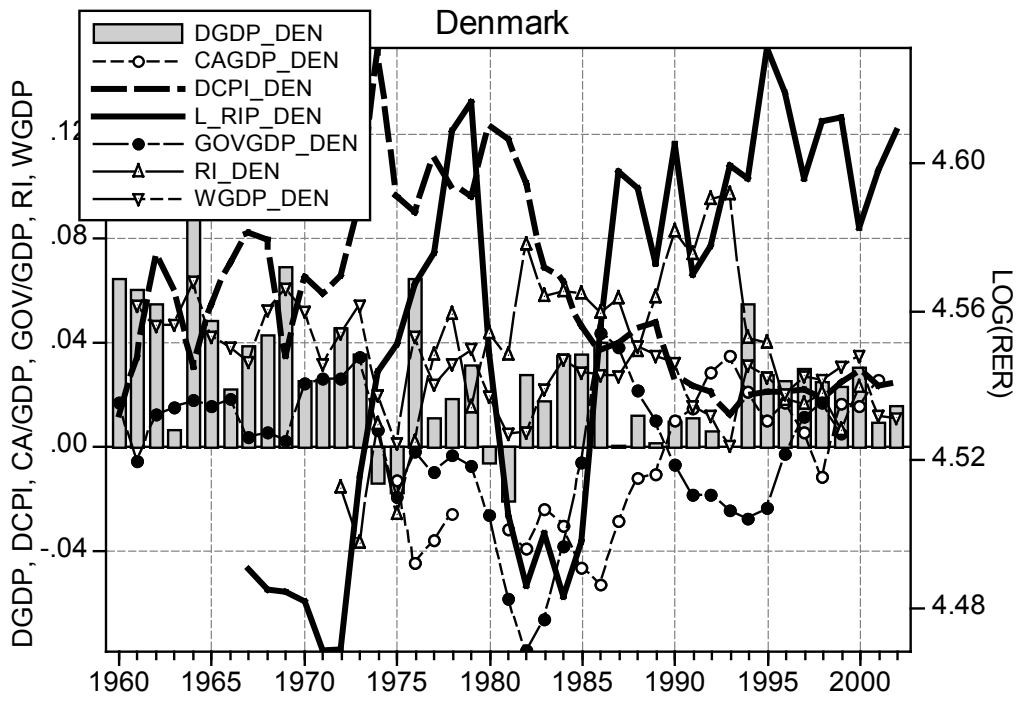
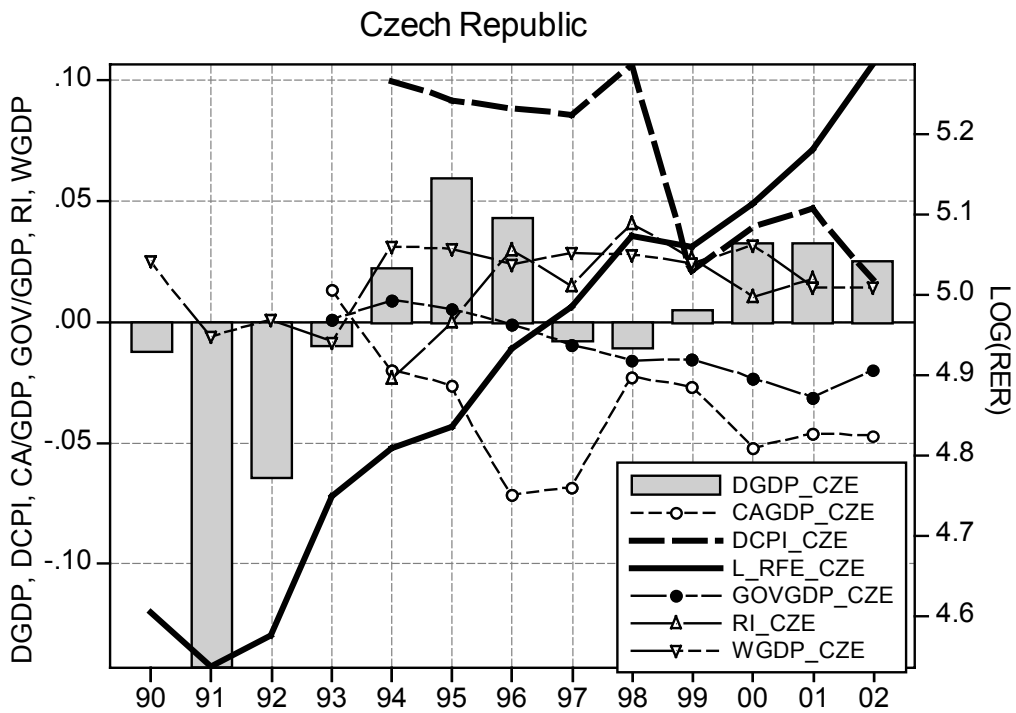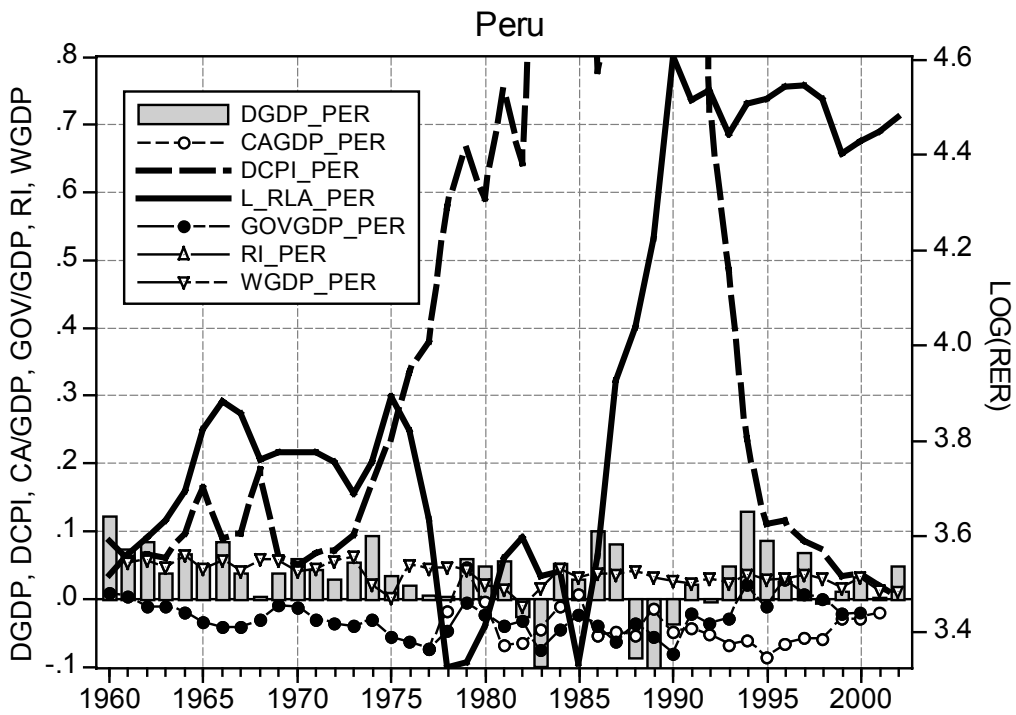**Output Gaps - Industrial Countries**

Foreign Output Gaps - Industrial Countries

8. Appendix "D": Macroeconomic Figures of Countries Exhibiting Permanent Appreciation

Japan

Austria

Switzerland

Norway

Denmark

Barbados

Peru

Czech Republic

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9. Appendix "D": Data sources and countries studied

Data used

Real effective exchange rate **REER** **L_RIP...** **L_RLA...** **L_RFE...** **L_RAZ...** **L_RAF...**	Based on consumer price indices, in comparison with the 24 main foreign trading partners, using fixed weighting representing the foreign trade structure of the 1990s. Some main foreign trading partners of several countries were left out of consideration due to the lack of the reliably long time series, such as Brazil, China, Russia, Hong Kong, and the majority of the Former Yugoslav republics. Source: price index and exchange rate: IMF–IFS, foreign trade (for weighting): IMF–Direction of Trade Statistics
Foreign GDP growth **WGDP...**	The weighted average of the GDP growth of foreign trading partners. The weights are identical to those used for weighting the real exchange rate, however, Brazil omitted previously is included here as GDP figures are available.
Real interest rate **RI...**	The average of the backward and forward looking interest rates calculated by average annual nominal short-term interest rates (treasury bill rates for the majority of the countries and money market interest rate for some) and consumer price inflation. Source: IMF-IFS.
Inflation **CPI…**	Average annual change of the consumer price index. Source: IMF-IFS.
Economic growth **GDP…**	Average annual change of GDP. Source: IMF- IFS, World Bank-WDI.
Domestic (GAPHP) and foreign (WGAPHP) output gap	Deviation from the Hodrick-Prescott trend of the logarithm of the cumulative GDP or WGDP level.
Current balance of payments **CAGDP…**	The current balance of payments versus GDP. Source of basic figures (CA, current price GDP, exchange rate): IMF- IFS, World Bank-WDI. Source of Portugal's figures: Banco de Portugal.
Budget balance **GOVGDP…**	The budget balance versus GDP. Source of basic figures (current price balance and GDP): IMF- , World Bank-WDI.
Unemployment Rate **U**	Source: IMF- IFS, World Bank-WDI; Source of New Zealand's figures for 1980-84: Reserve Bank of New Zealand; Source of the UK's figures for 1970-80: National Statistics (UK)

Export market share	The weighted average of the standardized share of the total or regional imports of key foreign trading partners (excluding Japan and Venezuela), where the weights are derived from the export figures of the country studied. The group averages represent the simple average of each country's standardized indices. Destination countries considered: USA, Japan, Germany, UK, The Netherlands, Spain, and France. Source of basic data: IMF - Direction of Trade Statistics.

Countries studied and abbreviations of their real exchange rates

	Africa	Asia	EU Developing	Developed	Middle East	Latin America
Argentina						RLA_ARG
Australia				RIP_AUS		
Austria				RIP_AUT		
Bahamas, The						RLA_BAH
Bangladesh		RAZ_BAN				
Barbados						RLA_BAR
Belgium				RIP_BEL		
Bolivia						RLA_BOL
Brazil						RLA_BRA
Bulgaria			RFE_BUL			
Burkina Faso	RAF_BUF					
Burundi	RAF_BUR					
Cameroon	RAF_CAM					
Canada				RIP_CAN		
Chile						RLA_CHI
Colombia						RLA_COL
Congo, Rep.	RAF_CON					
Costa Rica						RLA_CRI
Cote D'Ivoire	RAF_COT					
Croatia			RFE_CRO			
Cyprus			RFE_CYP			
Czech Republic			RFE_CZE			
Denmark				RIP_DEN		
Ecuador						RLA_ECU
Egypt					RKK_EGY	
El Salvador						RLA_ELS
Estonia			RFE_EST			

Finland				RIP_FIN	
France				RIP_FRA	
Gambia, The	RAF_GAM				
Germany				RIP_GER	
Ghana	RAF_GHA				
Greece			RFE_GRE		
Guatemala					RLA_GUA
Haiti					RLA_HAI
Honduras					RLA_HON
Hungary			RFE_HUN		
Iceland				RIP_ICE	
India		RAZ_IND			
Indonesia		RAZ_INA			
Ireland				RIP_IRE	
Israel					RKK_ISR	
Italy				RIP_ITA	
Jamaica					RLA_JAM
Japan				RIP_JAP	
Kenya	RAF_KEN				
Korea		RAZ_KOR			
Latvia			RFE_LAT		
Lithuania			RFE_LIT		
Malaysia		RAZ_MAL			
Mauritius	RAF_MAU				
Mexico					RLA_MEX
Morocco	RAF_MOR				
Myanmar		RAZ_MYA			
Netherlands				RIP_NED	
Netherlands Antilles					RLA_NEA
New Zealand				RIP_NZL	
Nigeria	RAF_NIG				
Norway				RIP_NOR	
Pakistan		RAZ_PAK			
Panama					RLA_PAN
Paraguay					RLA_PAR
Peru					RLA_PER

Philippines		RAZ_PHP			
Poland			RFE_POL		
Portugal				RIP_POR	
Romania			RFE_ROM		
Russia			RFE_RUS		
Senegal	RAF_SEN				
Singapore		RAZ_SIN			
Slovak Republic			RFE_SLR		
Slovenia			RFE_SLO		
South Africa	RAF_SAF				
Spain				RIP_ESP	
Sri Lanka		RAZ_SRI			
Sweden				RIP_SWE	
Switzerland				RIP_CHF	
Thailand		RAZ_THA			
Turkey			RFE_TUR		
United Kingdom				RIP_UK	
United States				RIP_USA	
Uruguay					RLA_URU
Venezuela					RLA_VEN