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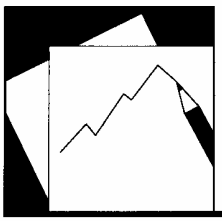

IMF Working Paper

New Rates from New Weights

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New Rates from New Weights

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Abstract

This paper describes the result and the methodology of updating nominal and real effective exchange rate weights on the basis of trade data over 1999–2001. The underlying framework is an updated version of the IMF's current effective exchange rate calculation, which uses weights largely based on 1989–91 data. Since then, substantial changes have occurred in international trade relations, warranting a recalculation of effective exchange rate indices on the basis of new trade patterns. Updated weights show that the United States and developing countries (most notably China) have grown in their importance in global trade, while Japan and the European Union have declined, with substantial implications for the path of the dollar and exchange rate effects of emerging market crises since 1995.

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I. INTRODUCTION

This paper updates the weights for effective exchange rate calculations, using trade data over the 1999–2001 period. The weights currently used in effective exchange rate indices published in *International Financial Statistics* are based on 1989–1991 data, with an adjustment to incorporate transition countries a few years later.[2] Naturally, these weights fail to reflect developments in international trade relations during the subsequent decade, which was punctuated by rapid globalization and rising importance of many emerging market countries in the global trading system.

Outdated weights can lead to an incorrect assessment of the development in the effective exchange rate, a key input for the macroeconomic analysis of open economies. A prominent example can be found in the recent discussion of the U.S. current account deficit and exchange rate. With the buildup of the U.S. current account deficit to a historic level—accompanied by a substantial appreciation of its real effective exchange rate—a consensus appears to have emerged on the inevitable downward correction in both the current account deficit and the real effective exchange rate of the United States. However, the assessment of necessary correction in the exchange rate will vary with prevailing trade patterns of the United States.

Another example can be found in the growing importance of China in global trade, which is beginning to have wide-ranging economic implications. However, data from the late 1980s and early 1990s cannot help us to assess the ground that China has gained, or its economic significance. While the rise in China's role is obvious to any observer, the question remains whose presence has diminished as the mirror image.

To gain insight on the effect of recent trade patterns on effective exchange rate calculations, this paper updates the weights using detailed trade data for 164 countries that account for nearly 100 percent of global trade.[3] The results are discussed in the following order. Section II compares the new and old (existing) weights, and provides an overview of changes. Section III discusses in detail how the calculation of the new weights differs from the existing calculation. The basic approach is identical to that used in the existing calculation, while some improvements have been made to the calculation of the importance of domestic sales and third-market weights. Section IV discusses the approximate effect of new weights on the path of selected exchange rates over the 1990s, and Section V concludes. Annexes contain technical details, such as descriptions of the data and the formulae for calculating weights.

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[2] The methodology for the effective exchange rate calculation was applied widely as part of the Information Notice System (INS), which had purported to facilitate surveillance over exchange rate policies. The surveillance purpose has since been de-emphasized, but one legacy of the INS has been the methodology of calculating the effective exchange rate.

[3] Hence, the updating discussed in the paper is close to but different from the full updating of exchange rate weights that encompasses all 184 countries covered by the INS. See Annex 4 for a complete list of countries and the methods used to update weights for all countries.

II. NOW AND THEN

Effective exchange rate calculations start with constructing the weights to be applied to each trade partner. An overview of the results of updating these weights is presented in two tables. Table 1 reports the new weights for a wide range of key industrial and developing countries. The trade weights are reported with respect to industrial countries—further divided into the United States, the euro area, Japan, and other industrial countries—and developing countries which are reported along geographical lines as Africa, Asia (further subdivided into China, Association of South East Asian Nations (ASEAN) and the rest), Latin America, the Middle East, and the transition countries of eastern Europe and the former Soviet Union. Table 2 uses the same format to report differences from the existing weights that cover all countries (in the current weight calculation, there also exists a different set of weights calculated only across industrial countries).

The results indicate several trends in the patterns of trade. *First, industrial countries remain at the heart of the international trading system, but their importance has declined significantly compared to the previous exercise*. Industrial countries still account for more than half of the trade-based exchange rate weights for most countries that are reported (Table 1). In some non-industrial countries that have particularly close trading relationships with major industrial countries (the Czech Republic, Israel, Mexico, and Poland), the weights of industrial countries approach or even exceed 80 percent. That said, the weights of industrial countries have almost universally declined since the last exercise, often by quite substantial amounts (Table 2). This primarily reflects the globalization of world trade.

Within the industrial countries, the United States and the euro area are dominant, with the weight of the United States generally increasing since the last exercise while the weight of other areas has declined. The United States and the euro area are particularly important for other countries in north America and Europe, respectively (Table 1).[4] By contrast, Japan's weight is smaller than that of the United States in all reported Asian countries, except in Thailand for which Japan commands a slightly larger weight than the United States. The weight of the United States has generally increased, most dramatically for fellow members of the North American Free Trade Agreement (NAFTA), Canada, and Mexico (Table 2). This reflects strong growth in the United States, possibly aided by the rise in value of the dollar, which may have affected trade weights as U.S. producers typically price in dollars while others price to market in the United States.[5] In addition, some of the decline in the weight of the euro area comes from treating the region as a single bloc rather than twelve different countries.

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[4] Trade weights are calculated both for individual euro area countries and for the euro area as one bloc. However, the descriptive discussion focuses on the euro area as one bloc.

[5] Over the 1991-2001 period, U.S. growth in merchandise trade exceeded that of the euro area in both value and volume terms.

Asia is the most important developing country region, although the importance of many developing regions is increasing over time (Table 2). This reflects the globalization of the international trading system, as well as the exclusion of many transition countries from the last exercise. Emerging Asia (which excludes Japan) almost universally has a larger weight than any other developing country region, the only major exception being the importance of intra-regional trade for Latin America (Table 1). There have also been some visible shifts in the importance of regions within Asia, reflecting growth differentials. The increased role of China since the last exercise is particularly striking, and there has been a generalized rise in the importance of ASEAN countries. In contrast, the weights of other Asia have decreased in many cases, driven by a decline in the relative economic weight of the newly industrialized economies (NIEs comprising Korea, Hong Kong SAR, Singapore, and Taiwan Province of China). Nor has there been much increase in the weight of India.

Regional trade has become more important. There is noticeable evidence of strengthened regional ties, reflecting both regional trade agreements (NAFTA, Sectoral Commission for the Common Market of the South (MERCOSUR), and the expansion of bilateral arrangements with the European Union) and the integration of emerging markets into the global trading system—for example, Asia has become more important for Australia and New Zealand.

III. Deconstructing the Weights

A. The Old (Existing) Weights

The aggregate trade weights reflect the sum of weights on trade in commodities, manufactures, and services. The existing calculations generate two sets of weights that differ in the scope of country coverage, and in whether domestic competition is incorporated in calculating manufactures weights. The first method—to be called the Global System in this paper—covers a large group of (184) countries, and uses only data on trade flows. The familiar CPI-based real effective exchange rates of the IMF have been calculated by applying this Global System. The second method, to be called the Industrial System, covers only industrial countries—for which unit labor costs (ULCs) were available—but takes account of domestic sales of home-produced goods in every market (see Annex 2 for details). This method has been used to construct the ULC-based real effective exchange rates of the IMF.

Both methods treat different trade categories in a similar manner. Individual commodities are assumed to be perfect substitutes, so that the associated weights depend on the importance of other countries in the overall supply and demand for a commodity. By contrast, manufactures are assumed to be differentiated goods so that weights depend on bilateral flows across countries, augmented by the impact of third-market competition in export markets. In the Industrial System, these third-market effects depend on the importance of foreign and domestic goods in overall demand, while the Global System takes a more mechanistic approach of assigning equal weights to direct and third-market competition. As far as services are concerned, only trade in tourism is included, and then only for countries for which tourism is a particularly important part of overall trade. The weights are calculated in a similar manner to those for manufactures, using bilateral data on tourist arrivals. These weights are then combined based on the importance of different types of trade, so that:

$$W_{ij} = \alpha_M W_{ij}(M) + \alpha_C W_{ij}(C) + \alpha_T W_{ij}(T)$$

where $W_{ij}(M), W_{ij}(C),$ and $W_{ij}(T)$ denote weights calculated for manufactures, commodities, and tourism, respectively—between country *i* and *j*—and $\alpha_M, \alpha_C,$ *and* α_T denote the shares of these three types of trade in the overall trade of country *i*.

B. The New Weights

The new trade weights incorporate three major changes to the existing weights:

- *A uniform methodology is used for 164 countries*. The system used for calculating third-market effects in the manufacturing weights for industrial countries (Industrial System) has been extended to 164 countries, so that the distinction between the Global System and the Industrial System has been abolished for them.[6] To overcome data limitations, several approximations are made as discussed in Annex 1.

- *Services trade has been included in a more systematic manner*. Rather than focusing on tourism, the new weights include all trade in services in the calculation. The main issue here is that no comprehensive data on bilateral trade in services is available, except for the bilateral trade in tourism that can be proxied by data on tourist arrivals. What work has been done on trade in services tends to show that it responds to the same basic factors such as distance, relative GDP, and cultural links that explain trade in manufactures. Accordingly, trade in services—except for tourism—is assumed to be distributed in the same manner as trade in manufactures, and the same weights are used. However, for the countries in which tourism is a particularly important part of overall trade, separate weights are calculated for trade in tourism, using the same methodology used in the existing weights (see Annex 2 for details). Hence, the new weights are:

  $$W_{ij} = (\alpha_M + \alpha_S) W_{ij}(M) + \alpha_C W_{ij}(C) + \alpha_T W_{ij}(T)$$

  where $W_{ij}(M), W_{ij}(C),$ and $W_{ij}(T)$ are country-weights for manufactures, commodities, and tourism; and α_M, α_S, α_C, and α_T denote the shares of manufactures, (non-tourism) services, commodities, and tourism in overall trade.

- *The single euro area index is calculated anew.* In the existing weights, the members of the euro area are counted as individual countries. While continuing this practice for analytic purposes, a single index is also calculated treating the euro area as a single

[6] See Annex 4 for the methods used to calculate trade weights for the remaining 20 countries.

entity with a single exchange rate.[7] Individual country weights capture country-specific competitiveness when inflation rates diverge among euro countries, and are maintained as the unit of calculation for country-specific policy analysis. As a supplement, the single euro index is calculated to assess the euro-area-wide competitiveness against other major currencies, after accounting for intra-euro-area trade linkages.

Table 3 examines the impact of treating the euro area as a single entity. The first column reports the weights derived under the new methodology using this assumption, while the second column shows the weights that follow when the euro area countries are treated as individual trade entities and their weights are then summed to get a single value for the euro area as a whole. To gain some perspective on the importance of any discrepancies, the table also reports the values for the euro area by summing existing weights for euro-area countries from the Global System. The results indicate that treating the euro area a single entity tends to reduce its weight in other countries' effective exchange rates, but that this effect is a relatively small part of the overall change between the old and new weights. For non-oil commodity exporters, however, the aggregation reduces the weights of the euro area noticeably, as intra-euro area trade in commodity is netted out.[8]

C. Commodity Weights

Commodity trade is assumed to occur in an integrated global market, as commodities are assumed to be perfect substitutes with a single price (Annex 2 provides detailed formulae for the construction of the weights). As in the earlier exercise, commodities are defined at the 2-digit SITC level, leading to 20 different types of commodities (see Annex 1 for details). Within each commodity category, the weight country *i* assigns to country *j* is unrelated to bilateral commodity trade, but is instead determined by country *j*'s share in the global market. The overall commodity weight is obtained by aggregating individual commodity weights, with allowances made both for the importance of each commodity category in a country's total commodity trade and for the importance of the country in the global trade of each commodity. Ceteris paribus, a commodity category in which a country commands a more dominant global presence is counted more heavily when individual commodity weights are aggregated to the overall commodity weight.

Trade in petroleum and energy products, however, are excluded from calculation of commodity weights, following the existing approach to calculating weights. Several reasons underlie this choice. First, except in the long run, exchange rate changes are not likely to

[7] The euro area is not the only monetary union in existence. While this paper chose the euro area as the most conspicuous example in terms of its global economic weight, similar calculations can be made for other monetary unions (e.g., the West African Economic and Monetary Union) as needed for policy analysis.

[8] Intra-euro area trade in manufacturers is also netted out from trade statistics, but reflected in weights as domestic sales.

have much effect on trade in oil or gas. Variable costs account for a very small portion of their production costs, and thus exchange rate variation can exert only a limited effect on production decisions. Next, the energy sector is largely segmented from the rest of the economy, except for its contribution to the state budget through energy revenues. The eventual effect of the energy sector on the rest of the economy is affected more by the government's spending decision than by the exchange rate variation. Finally, the world oil market is strongly influenced by cartels, and exchange rate variations have only indirect effects on the market.

Table 4 reports the importance of commodity trade (in overall trade) for a range of individual economies. The highest shares are for traditional non-oil commodity exporters, with commodity shares exceeding 20 percent for Chile, New Zealand, Argentina, Russia, Australia, and Brazil. At the other end of the scale, in Singapore and Taiwan Province of China, commodity trade represents about 5 percent of overall external competition. Compared to the existing Global System, the relative importance of (nonoil) commodities in overall trade has declined across the spectrum, partly owing to the inclusion of services trade under the new system.

D. Manufacturing Weights

Unlike commodities, manufactures are assumed to be differentiated goods that are imperfectly substitutable across countries (Annex 2 provides detailed formulae for the construction of the weights). The aggregate manufacturing weights consist of two effects, the competition through imports of manufactures and through exports of such goods, with the relative importance depending on the relative size of these two flows. Within exports, the weights reflect both the direct competition with the producers in the destination country and the (indirect) competition with them in third-country markets—thus called the third-market effect. In the new calculations—as in the Industrial System—the importance of the third-market effect is determined by the relative importance of imports of manufactures versus sales of home products of the destination country (hence the weight is smaller the more closed the country). By contrast, the Global System arbitrarily assigns equal weights to direct and third-market competition.

Table 5 presents relative weights assigned to manufacturing imports under the new system and the old Global System for the set of countries included in Table 1 (the weight for exports is simply one minus this value). The countries with the highest import weights are the commodity exporters such as Australia, Chile, Argentina, and New Zealand, as such countries import many more manufactures than they export. By contrast, the lowest weights go to economies with few natural resources that import commodities and export manufactures, such as Hong Kong SAR, Singapore, Taiwan Province of China, and Japan. The middle group generally includes economies with more mixed trading patterns, such as the euro area and the United Kingdom. The United States has a very high weight accorded to imports without being a commodity exporter, reflecting the large underlying trade deficit. The old Industrial System weights show a similar pattern to the new weights, while the old Global System weights are less easy to interpret.

Table 6 presents the relative importance of third market competition versus bilateral export competition in the same format as Table 4. In the new weights the importance of third-market competition depends on the openness of the countries to which exports are sent. Hence, third market weights are relatively small for countries such as Canada and Mexico, which export mainly to the relatively closed U.S. market, and are larger for countries such as Singapore, Australia, and India, whose main export markets are the relatively open Asia region. Notably, all of these weights are below ½, the value assigned to third-market weights in the existing Global System. The existing weights in the Industrial System show a generally similar pattern to those from the new methodology, with the exception of New Zealand, whose third-market weight far exceeds ½ .

E. Tourism Services Weights

For countries that are heavily dependent on trade in tourism services, the tourism weights are calculated in the same manner as the Industrial System for manufactures weights (details in Annex 2). Like manufactures, tourism services are viewed as differentiated products, except that the product is sold by bringing tourists into a country.

IV. Reconstructing the Effective Exchange Rates

This section examines the implications of the new effective exchange rate weights for the analysis of exchange rate movements since 1995, the period most relevant for policy analysis and also that for which the new weights are most applicable. Given a set of weights for country *i* on partner countries (W_{ij} for $j \neq i$), real effective exchange rate (REER) indices are calculated as a geometric weighted average of bilateral real exchange rates between home country and its trade partners. Specifically, the REER index of country *i* is calculated by

$$E_i = \prod_{j \neq i} \left(\frac{P_i R_i}{P_j R_j} \right)^{W_{ij}}$$

where *j* refers to trade partners, P's are CPIs, and R_i and R_j are bilateral nominal exchange rates of country *i* and *j* against the U.S. dollar (measured in U.S. dollar per local currency).

A. General Trends

Figures 1 and 2 graph real effective exchange rate indices for a wide range of countries since the start of 1995 (keeping 1995 average equal to 100), calculated vis-à-vis about 40 major trader countries. Figure 1 reports new and existing effective exchange rates, as well as national estimates for the United States, the euro area, and Japan. Figure 2 presents the same information, but as the ratio of the existing real exchange rate indices to the newly calculated real exchange rate indices, to assess the difference between two real exchange rate indices from another angle.

The most notable change for the major currencies is the more muted appreciation and subsequent depreciation of the U.S. dollar using the new weights. The U.S. real exchange

rate based on new weights rose by some 25 percent between 1995 (as a whole) and February 2002 rather than the 40 percent found using the existing weights, and fell less subsequently. This smaller appreciation is not offset by smaller depreciations of currencies such as the euro or the yen. Rather, there appears to be a tendency for most currencies to have a smaller appreciation or larger depreciation under the new weights—most real effective indices have smaller numerical values. This seemingly paradoxical result reflects underlying changes in international trade relations. The key here is the increased weight of the United States in most other countries' effective exchange rates, and the rising importance of developing countries in the U.S. effective exchange rate. Between 1995 and early 2002, many countries experienced a significant bilateral real depreciation against the U.S. dollar, which was only partly reversed subsequently. As the U.S. dollar is generally accorded a higher weight in the new calculations, this means that outside of the United States exchange rates have tended to depreciate more on a multilateral basis. By contrast, the new calculations for the United States put more weight on developing countries, whose exchange rates have changed less against the dollar (as shown in the bottom panel of the data for the United States). Hence the unintuitive result that most real effective exchange rate indices are numerically smaller using the new weights since 1995.[9]

The U.S. real exchange rate index calculated under the new weights have been much closer to the index calculated by the U.S. authorities. The U.S. panel of Figure 1 shows that the real exchange rate index based on the new weights has tracked the Federal Reserve Board (FRB) real exchange rate index (which uses weights that are updated from year to year) much more closely than the real exchange rate index based on the existing weights.[10] For the euro and the yen, all three indices are much closer to one another than they are for the U.S. dollar.

Compared period by period, the new and old indices exhibit substantial difference. Figure 2 presents the ratio of the old real exchange rate index to the new index, which measures the difference between the two indices in each month. The difference mostly ranges from 2 to 6 percent of the new index, but gets close to 10 percent of the new index in several instances. The U.S. dollar in 2002—at the peak of its appreciation—is the first such instance, and other similar instances arise in the currencies of Canada, Argentina, and Mexico over the 2001-2003 period. The difference between the new and old indices is also conspicuous in many emerging market currencies, including those of Brazil, China, and India.

B. Exchange Rates vis-à-vis Subgroups of Trading Partners

The exchange rate indices can be calculated separately vis-à-vis subgroups comprising developing and advanced countries, to illustrate the roles of two groups. Figure 3 presents the exchange rate sub-indices measuring only the contribution of either industrial or developing countries (the overall effective exchange rate is thus a sum of these two indices). It comes out

[9] See Annex 3 for an illustrative algebraic analysis of a three-country example.

[10] See Leahy (1998) for a discussion of the FRB index.

clearly that exchange rate fluctuations are larger against industrial countries than against their developing counterparts, particularly for industrial countries. This is not limited to the largest traders (such as the United States and euro area) against which many countries formally peg, but is also true for the smaller industrials.[11] It probably reflects a range of issues, including the fact that many emerging market countries are more open to trade, have trade patterns which are often more concentrated and hence dependent on specific currencies, and often borrow internationally in the currencies of their major trading partners. All of these will create a desire to limit exchange rate fluctuations against major trading partners—the so-called "fear of floating" syndrome (Calvo and Reinhart, 2002). In addition, the group comprises a larger number of individual countries so fluctuations in individual countries may tend to cancel out more.

The analysis so far has focused on comparing the REER indices based on the new weights with that from the Global System. We next calculated the exchange rate across only the industrial countries, in order to compare the real effective exchange rates based on the new weights with the existing Industrial System which used a more similar methodological approach (the new REERs are calculated using unit labor costs, as this is how the real exchange rates are calculated and reported under the existing Industrial System). As can be seen in Figure 4, the differences in the path of the real exchange rates are generally quite small and are largest for Australia and New Zealand, countries where the weight of commodities in trade has changed significantly. This suggests that the main reason for the differences in Figure 1 are differences in methodology and weights across industrial and developing countries.

C. Three Exchange Rate Events

To further illustrate the properties of the new and existing weights, we compare the real exchange rate movements across all countries for three recent episodes of large exchange rate movements: the Asian crisis (June 1997 to January 1998), the Argentine crisis (January to September 2002), and the U.S. dollar depreciation between February 2002 and May 2004.

Asian crisis. Table 7 shows the changes in the two multilateral exchange rates around the Asian crisis, from June 1997 to January 1998. The depreciations in the crisis countries (Indonesia, Korea, Malaysia, the Philippines, and Thailand) are similar across the two approaches, reflecting the generalized nature of the fall in their exchange rates. Elsewhere, exchange rates are generally estimated to have appreciated more (or depreciated less) in real effective terms under the new weights than under the old ones. The difference is particularly large for economies with close regional ties, including Australia, China, Japan, New Zealand, and Taiwan Province of China. Their real effective exchange rates appreciated by at least 2 percentage points more under the new weights than under the old ones.

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[11] For example, it is true for Japan despite the fact that many emerging Asian economies are generally considered to be more concerned with their bilateral exchange rates against the U.S. dollar than the yen, and that the yen-U.S. dollar rate has fluctuated quite significantly.

The Argentine crisis. Table 8 compares the changes in the two multilateral exchange rates from January to September of 2002. Again, the impact on the crisis countries (Argentina, Brazil, and the República Bolivariana de Venezuela) are similar under the two weighting schemes. Most other countries are found to have gone through a larger appreciation or a smaller depreciation under the new weights than under the old ones. In particular, Latin American countries with close ties to Argentina are found to have experienced smaller real depreciation under the new weights, together with many other emerging markets and the United States. The real depreciation of the United States and some closely linked countries is likely to have been driven by the trend depreciation of the dollar that started in February 2002. Currencies of other industrial countries, which generally appreciated during the crisis, are found to have appreciated by more under the new weights.

Depreciation in the U.S. dollar since early 2002 (Table 9). The U.S. dollar depreciated by about 10 percent from the peak of February 2002 to May 2004 under the new weights, 4 percentage points less than under the existing weights for all countries. The smaller dollar depreciation under the new weights is again attributable to the increase in the importance of developing countries for the U.S. trade, and to the relative stability of the exchange rates between these developing countries and the United States. Because of the larger weight of the United States in other countries' trade, however, other currencies are generally found to have appreciated by a larger margin (e.g. euro) or to have depreciated by a smaller margin (many developing countries). The difference is most noticeable for the Western Hemisphere countries, including Canada. These differences are much less stark if the comparison is made only with other industrial countries, whether the weights are taken from the Global System or Industrial System (Table 10). Given the significant differences between different exchange rate indices, Table 11 compares two IMF exchange rate indices and those constructed by the authorities for the dollar, euro, and yen. For the U.S. dollar, the FRB index appears to be much closer to the IMF index based on new weights than the existing index based on old weights. The contrast is much smaller for the euro and yen.

V. CONCLUSIONS

Comparing trade weights based on data 10 years apart, several changes in the global trade pattern stand out. While industrial countries remain the dominant force in the global trading system, their relative importance has declined, being replaced by emerging market countries including China. In contrast to the relative decline in the importance of industrial countries as a whole, the weight of the United States has increased for most trading partners. At the same time, reflecting the rise in regionalism, the weights of regional trading partners have increased for countries in the NAFTA, Latin America, and (South) East Asia.

Applying new weights to calculate effective exchange rates, different pictures emerge for several exchange rate episodes. Starting in 1995, the new real effective exchange rate index for the U.S. dollar appreciated much less in the lead-up to its February 2002 peak than the existing index. Subsequently, the new index also depreciated less than the existing index. In both cases, the new index is found to have moved much more closely to the FRB index than the existing index that was calculated on the basis of old trade data.

During the Asian crisis in the late 1990s and the Argentine crisis in 2002, the real effective exchange rates of industrial countries are found to have appreciated more under the new weights than under the old weights. This contrast is consistent with the rise in the importance of crisis countries in world trade over the last decade. Beyond crisis periods, the much publicized symptom of fear of floating is observed in the real exchange rate between industrial countries and developing countries as a bloc. The real exchange rates of industrial countries calculated vis-à-vis developing countries look almost constant, relative to their real exchange rates calculated vis-à-vis the rest of industrial countries.

Annex 1. Data

A summary of our methodology helps to put the data discussion in context. We separately calculated—for each country—(normalized) partner competitiveness weights in three categories of trade, namely, a) commodities, b) manufactures, and c) tourism. Trade in services, other than tourism, was assumed to follow a pattern similar to trade in manufactures, and no separate weights were calculated for this category of trade. The three sets of partner weights were then aggregated to obtain an overall set of competitiveness weights—again, for each country—by weighting them by the proportion of trade in the respective trade categories. For this purpose, trade in non-tourism services was lumped with trade in manufactures, as both are assumed to behave similarly.

a) **Merchandise trade**: Data was obtained from United Nations COMTRADE database at the SITC double-digit level on a bilateral basis. Averages over 1999–2001 (or as available in the period) were used in the calculations. Bilateral trade flows made it possible to correct for intra-euro-area trade in constructing euro area series from individual euro area member country trade flows.

Commodity categories were distinguished, in our exercise , at the SITC double-digit level. They comprise SITC single-digit codes 0, 1, 2, 4, and SITC 2 digit code 68 (non-ferrous metals). (See Table A.1 for all corresponding double-digit codes and category description). Trade in each commodity category is assumed *not* to be distinguished by source (i.e., imports of the same commodity from different countries are perfectly substitutable). Under this assumption, only total trade of each country by commodity group is needed to calculate the competitiveness weight to be accorded to the country either as a competitive producer or a consumer of that commodity. Bilateral trade from COMTRADE was aggregated by commodity for each country to create the series needed. Weights were then calculated for each commodity and then aggregated into one overall commodity weight[12] using proportions of trade in the various commodities for each country.

All other SITC codes, except the fuels group (single-digit code 3) , were aggregated into a single manufactures group.[13] Fuels were thus excluded from the exercise. The manufactures group, in contrast to the commodities group, is just a single composite group, trade in which

[12] The euro area figures less prominently as a commodity competitor in our calculations, because intra-euro-area commodity trade flows are no longer included in total commodity trade. An approach, of the kind employed for manufactures, that also takes into account domestic demand would correct for this problem, but domestic demand would be hard to compile across a large set of countries for each commodity at the SITC double-digit level.

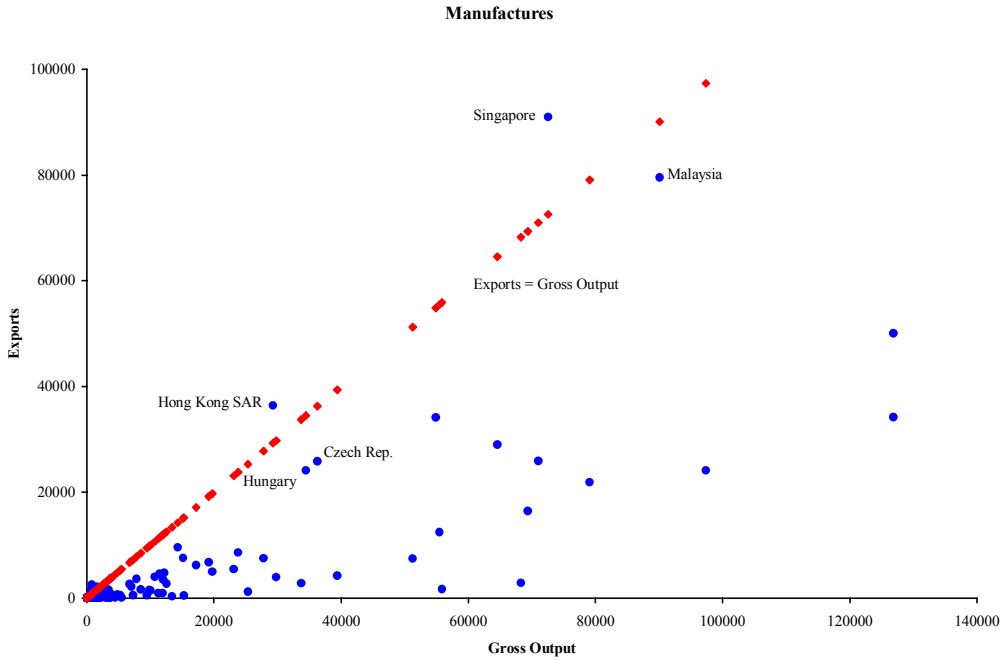
[13] Hong Kong SAR's imports were adjusted for re-exports. Imports, as obtained from COMTRADE, were nearly an order of magnitude larger than exports and clearly seemed to include huge amount of merchandise reexported via Hong Kong SAR. Therefore, Hong Kong SAR's imports were corrected for re-exports, assuming a margin of 15 percent. The re-exports series was also obtained from COMTRADE.

is distinguished by source. Calculation of manufacturing weights, therefore, requires bilateral detail. For many countries with two observations of bilateral trade flow (export from country A to B and import by country B from country A), the average of the two observations was used. For countries without their own data on bilateral trade, bilateral trade data as reported by partner countries were used.

b) **Services trade**: Data were obtained from the IMF's World Economic Outlook. This was used only to derive the share of manufacturing (i.e., manufacturing plus non-tourism services) in total trade.

c) **Domestic sales of (home-produced) manufactures**: These data were constructed for each country by subtracting the country's manufactures exports from an estimate of its U.S. dollar nominal gross manufacturing output. Gross manufacturing output was obtained for industrial countries from the STAN database of the Organization for Economic Cooperation and Development. However, it is not readily available from a common source for developing countries. It was, therefore, estimated from net (value added) manufacturing data, which are available from the World Bank for a large number of countries. Based on the observed gross/net ratio for industrial countries, a ratio of 10/3 was applied to estimate gross output from the reported net manufacturing output.

For two economies—Hong Kong SAR and Singapore—the estimation based on a 10/3 ratio produced implausible results. The value of their manufacturing exports exceeded their gross output, a physical impossibility, presumably reflecting their role as a reprocessing base and the host for entrepôt trade. We, therefore, applied a ratio of 6/1 for these two economies, which would then imply a measure of openness (as measured by exports/gross output) that is consistent with what is observed for similarly open countries, such as Malaysia, Hungary, and the Czech Republic (see the figure below).



d) **Tourism trade:** Data on tourist arrivals by country and total tourism exports were obtained from the World Tourism Organization. Tourism data were only kept for countries where tourism exports exceeded a threshold of 20 percent of total exports; for other countries, tourism was considered not significant (in line with the current approach to weight calculation), and therefore dropped. Tourism exports of 29 countries, which met the threshold criterion, were allocated to partner countries based on the number of tourist arrivals from those partner countries. This bilateral tourism data were used in calculating tourism weights in a manner similar to manufactures.

The 29 countries with bilateral tourism data are Albania, Antigua and Barbuda, The Bahamas, Belize, Barbados, Comoros, Cyprus, Dominica, Dominica Republic, Egypt, Eritrea, Fiji, Georgia, Greece, Grenada, Croatia, Jamaica, Jordan, St Kitts and Nevis, Lebanon, Malta, St. Lucia, St. Vincent and the Grenadines, Maldives, Mauritius, Samoa, Seychelles, Uganda, and Vanuatu.[14]

[14] Four of these countries are excluded from the Industrial System but included in the Global System. The four countries are Antigua and Barbuda, The Bahamas, St. Vincent and the Grenadines, and Vanuatu.

Table A.1 Two-Digit SITC Categories

Food	
Live animals chiefly for food	00
Meat and meat preparations	01
Dairy products and birds' eggs	02
Fish, crustaceans, mollusks, preparations thereof	03
Cereals and cereal preparations	04
Vegetables and fruit	05
Sugar, sugar preparations and honey	06
Feeding stuff for animals, not incl. unmil. cereals	08
Miscel. edible products and preparation	09
Agricultural Raw Materials	
Tobacco and tobacco manufactures	12
Hides, skins and furskins, raw	21
Crude rubber (including synthetic and reclaimed)	23
Cork and wood	24
Pulp and waste paper	25
Textile fibers (except wool tops) and their wastes	26
Oils	
Oil seeds and oleaginous fruit	22
Crude animal and vegetable materials, n.e.s.	29
Animal oils and fats	41
Fixed vegetable oils and fats	42
Animal-vegetable oils-fats, processed and waxes	43
Industrial Materials	
Crude fertilizers and crude materials (excl. coal)	27
Metalliferous ores and metal scrap	28
Non-ferrous metals	68
Beverages	
Coffee, tea, cocoa, spices, manufactures thereof	07
Beverages	11

Annex 2. Formula for Weights[15]

Commodity Weights

The weights for commodity trade are calculated on the assumption that primary commodities are homogeneous goods, thus traded in an integrated global market. With no differentiation among countries in the global market, the weight assigned to a country reflects the importance of the country in the global market either as a buyer or as a seller. Let X_j^h be county *j*'s export of commodity *h* and M_j^h be country *j*'s import of commodity *h*. Let s_j^h be country *j*'s share of global trade in commodity *h*. Let w_i^h be commodity *h*'s share of country *i*'s trade in all commodities.

$$s_j^h = \frac{M_j^h + X_j^h}{\sum_n M_n^h + \sum_n X_n^h}$$

$$w_i^h = \frac{M_i^h + X_i^h}{\sum_h M_i^h + \sum_h X_i^h}$$

The weight that country *i* attaches to country *j* for trade in commodities is

$$W_{ij}(P) = \frac{\sum_h w_i^h s_j^h}{\sum_h w_i^h \left(1 - s_i^h\right)}$$

The numerator adds up the global importance of country *j* in different commodity trade (*h*), applying weights that capture the internal importance of each commodity for the trade of country *i*. For example, if country *i* has no trade in certain commodity (*k*), we will have w_i^k equal to zero and the global share of country *j* in the trade of commodity *k* would not enter the weight that country *i* attaches to country *j* for trade in commodities.

Manufacturing Weights

When Data on Home Sales Are Available

Two countries—*i* and *j*—compete with each other in every separate market, and accordingly, the weighting scheme counts different markets separately. Under the more comprehensive method—used in the INS Industrial system—sales data comprise both external trade and domestic sales by home firms. The weight that country *i* assigns to country *j* depends on the presence of country *j* in a typical market *k*, and the importance of this market *k* to country *i*.

The theoretical basis for this weight traces back to Armington (1969) and McGuirk (1987). Under assumptions of constant elasticity of substitution among products differentiated along

[15] This annex draws heavily on Zanello and Desruelle (1997).

national borders, it is shown that the competitiveness effect of country j's price movement on country i is proportional to the weighted sum of country j's market share in all markets in which countries i and j meet, with the weight of each market determined by the importance of the market to country i. The market shares used in this calculation are calculated on the basis of both external trade and domestic sales of each country.

Algebraically, consider market *k* in which producers of country *i* and *j* compete with each other. Let X_j^k denote the sales of country *j* in market *k*. Let s_j^k denote country *j*'s market share in market *k*, and w_i^k denote the share of country *i*'s sales in market *k* in country *i*'s total sales (output).

$$s_j^k = \frac{X_j^k}{\sum_l X_l^k}$$

$$w_i^k = \frac{X_i^k}{\sum_n X_i^n}$$

Then, the weight that country *i* attaches to country *j* is

$$W_{ij}(M) = \frac{\sum_k w_i^k s_j^k}{\sum_k w_i^k \left(1 - s_i^k\right)}$$

This measure captures the interaction between two countries that arises in each market. The degree of competition between producers of country *i* and *j* in market *k* is measured by the product of country *k*'s importance for country *i* (w_i^k) and country *j*'s strength in market *k* (s_j^k).

This formula for weight can be decomposed into three components, which lends itself to a more familiar interpretation.

$$W_{ij}(M) = \frac{w_i^i s_j^i + w_i^j s_j^j + \sum_{k \neq i,j} w_i^k s_j^k}{\sum_k w_i^k \left(1 - s_i^k\right)}$$

The first term in the numerator gauges the import competition, namely the competition between countries *i* and *j* in the home market of country *i* (market *i*) that is induced by country *i*'s imports from country *j*. The second term gauges the direct export competition, namely the competition between countries *i* and *j* in market *j*—the home market of country *j*—that is caused by the export from country *i* to country *j*. The third term gauges the third-market export competition, capturing the competition between countries *i* and *j* in all other markets.

With judicious rescaling, this can be also rewritten in terms of three self-contained weights as follows. (The second term XW_{ij} is further decomposed into two in a later equation.)

$$W_{ij}(M) = \lambda_i^{IM} MW_{ij} + \lambda_i^{X} XW_{ij},$$

where MW refers to the normalized bilateral import weight, XW refers to the normalized export weight that incorporates both direct and third-market competitions, and λ's denote the weights assigned to each component in constructing the overall weight W. In terms of market shares(s_j^k) and sales shares (w_i^k), these terms can be written as follows.

$$MW_{ij} = \frac{s_j^i}{\sum_{l \neq i} s_l^i}$$

$$XW_{ij} = \frac{\sum_{k \neq i} w_i^k s_j^k}{\sum_{k \neq i} w_i^k \left(1 - s_i^k\right)}$$

$$\lambda_i^M = \frac{w_i^j \left(1 - s_i^i\right)}{\sum_k w_i^k \left(1 - s_i^k\right)}$$

$$\lambda_i^X = \frac{\sum_{k \neq i} w_i^k \left(1 - s_i^k\right)}{\sum_k w_i^k \left(1 - s_i^k\right)}$$

The import weight $\left(MW\right)$ is country *j*'s share of country *i*'s imports, and the export weight $\left(XW\right)$ can be interpreted as the ratio of the intensity of competition between countries *i* and *j* to the intensity of competition between country *i* and all other competitor countries. The coefficient on the import weight (λ_i^M) gauges the relative importance of the domestic market in terms of country *i*'s competition with all other countries—algebraically, the ratio of the measure of the domestic-market (market *i*) competition between country *i* and all others to the sum over all markets of the measures of competition between country *i* and all others. The coefficient on the export weight (λ_i^X) gauges the relative importance of all export markets in country *i*'s competition with all other countries.

The export weight can be further decomposed into the two components:

$$XW_{ij} = \mu_i^{BX} BXW_{ij} + \mu_i^{TX} TXW_{ij},$$

where BXW denotes the normalized bilateral export weight, TXW denotes the normalized export weight for third-market effects, and μ's denote the weights assigned to each. Written in terms of market and sales shares, these terms are:

$$BXW_{ij} = \frac{w_i^j s_j^j}{\sum_{k \neq i} w_i^k s_k^k}$$

$$TXW_{ij} = \frac{\sum_{k \neq i,j} w_i^k s_j^k}{\sum_{k \neq i} w_i^k \left(1 - s_i^k - s_k^k\right)}$$

$$\mu_i^{BX} = \frac{\sum_{k \neq i} w_i^k s_k^k}{\sum_{k \neq i} w_i^k \left(1 - s_i^k\right)}$$

$$\mu_i^{TX} = \frac{\sum_{k \neq i} w_i^k \left(1 - s_i^k - s_k^k\right)}{\sum_{k \neq i} w_i^k \left(1 - s_i^k\right)}$$

The coefficient on the bilateral export weight (μ_i^{BX}) gauges the importance country *i*'s competition with home producer in each export market—country *k* in market *k*—relative to country *i*'s competition with all others in each export market. The coefficient on the third-market export weight (μ_i^{TX}) gauges the relative importance country *i*'s competition with third-parties—those other than countries *i* and *j*—in each export market.

When Data on Home Sales Are Not Available

The other method that underlies the Global System uses market share measures that are calculated on the basis of exports only, excluding home-market sales by domestic producers. The formula contains three terms, each corresponding to import competition, direct export competition, and indirect (third-market) export competition. These three terms are conceptually similar to the three same-named terms under the Industrial System, but algebraically differ in that they do not include home-market sales.

$$W_{ij}\left(M\right) = \beta_i^M s_j^i + \beta_i^X \left[\frac{1}{2} w_i^j + \frac{1}{2} \frac{\sum_{k \neq i,j} w_i^k s_j^k}{\sum_{k \neq i} w_i^k \left(1 - s_i^k\right)}\right],$$

where

$s_j^k = \frac{X_j^k}{\sum_{l \neq k} X_l^k}$: country *j*'s share in all manufacturing imports of country *k*,

$w_i^k = \frac{X_i^k}{\sum_{n \neq i} X_i^n}$: the share of exports to country *k* in all manufacturing exports of country *i,*

$\beta_i^M = \frac{\sum_{l \neq i} X_l^i}{\sum_{l \neq i} X_l^i + \sum_{n \neq i} X_i^n}$: share of imports in country *i*'s trade in manufactures, and

$\beta_i^X = \frac{\sum_{n \neq i} X_i^n}{\sum_{l \neq i} X_l^i + \sum_{n \neq i} X_i^n}$: share of exports in country *i*'s trade in manufactures.

The most conspicuous contrast between the two methods, noted in Table 6, lies with the relative weights assigned to direct export competition and third-market export competition. The method of the Global System assigns constant and identical weights to both effects, in contrast to the more comprehensive method of the Industrial System which allows relative weights to be determined by trade patterns.

Tourism Services Weights

The weights are similar to the manufactures weights under the INS Global System, which excludes home sales by domestic producers from calculation.

$$W_{ij}(T) = \beta_i^M(T) s_j^i(T) + \beta_i^X(T) \left(\frac{1}{2} w_i^j(T) + \frac{1}{2} \frac{\sum_{k \neq i,j} w_i^k(T) s_j^k(T)}{\sum_{k \neq i} w_i^k(T)(1 - s_i^k(T))} \right)$$

In the above formula, coefficients β's denote the share of imports and exports in country i's trade in tourism services, $s_j^k(T)$ denotes country j's share of all expenditure on foreign tourism spent (imported) by residents of country k, and $w_i^k(T)$ denotes country k's share of all foreign tourism services received (exported) by residents in country i.

Annex 3. REER Algebra

We develop a simple example that shows that new trade weights can numerically increase or decrease all multilateral exchange rates in the same direction. Consider a three-country world. Let matrix A denote the trade weight and vector b denote the log changes in bilateral exchange rates against the third country (denoted as the price of the third currency in terms of the first and second currencies).

$$A_0 = \begin{pmatrix} 0 & \frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & 0 & \frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} & 0 \end{pmatrix}$$

$$b = \begin{pmatrix} b^1 \\ b^2 \\ 0 \end{pmatrix}$$

The multilateral exchange rates of all three countries are defined by the following vector R, where I denotes an identity matrix.

$$R_0 = \left(A_0 - I\right)b$$

Next consider the following new trade weights and the associated real exchange rates. Under the new trade weights, the importance of the third country rose to an extreme—the first and second countries trade only with the third country.

$$A_1 = \begin{pmatrix} 0 & 0 & 1 \\ 0 & 0 & 1 \\ x & 1-x & 0 \end{pmatrix}$$

$$R_1 = \left(A_1 - I\right)b$$

Now consider the difference between the two real exchange rates based on trade weights A_1 and A_2.

$$R_1 - R_0 = \begin{pmatrix} -\frac{1}{2}b^2 \\ -\frac{1}{2}b^1 \\ \left(x-\frac{1}{2}\right)\left(b^1 - b^2\right) \end{pmatrix}$$

It is possible that all real exchange rates are numerically smaller or larger than the other, depending on the relative movements of trading pattern and bilateral rates against the third country. Algebraically,

Case 1: $R_1 \gg R_0$ if $b^1 < b^2 < 0$ and $x < \frac{1}{2}$, and

Case 2: $R_1 \ll R_0$ if $b^1 > b^2 > 0$ and $x < \frac{1}{2}$.

If we name the three countries as the euro area, Asia, and the United States, the euro has depreciated more against the dollar than Asian currencies ($b^1 > b^2 > 0$), while Asia's share in the U.S. trade has increased ($x < \frac{1}{2}$). This corresponds to Case 2, causing all three real exchange rates to decline numerically.

Annex 4. Expanding the Calculation of Weights

This annex describes the methods used to expand the calculation of trade weights to 184 countries that are covered in the Information Notice System (INS). The primary method advocated in the paper, Industrial System method, has been applied to 164 countries, and two alternative methods have been applied to the remaining 20 countries.

For 16 countries with detailed trade data but no information on domestic manufacturing sales, the weights are calculated by the Global System method, which is based on directions of trade in goods, services, and commodities, while taking into account third-market competition. To incorporate these 16 countries fully as trading partners of the other 164 countries, the primary-method weights of the 164 countries are scaled down proportionately, so that the final weights add up to one when added over all 180 countries.

For the remaining 4 countries to which neither the Industrial System nor the Global System method can be applied, the weights are calculated on the basis of Direction of Trade Statistics or comparable national data, ignoring the distinction among product categories and third-market competition. Considering their small share in the trade of other countries, their shares are kept to zero in the trade weights for the other 180 countries.

The lists of economies in the three groups are as follows.

Economies to which the Industrial System method has been applied:
Albania, Algeria, Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Republic of Congo, Costa Rica, Côte d'Ivoire, Croatia, Cyprus, Czech Republic, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Eritrea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, The Gambia, Georgia, Germany, Ghana, Greece, Grenada,Guatemala, Guinea, Guinea-Bissau, Guyana, Honduras, Hong Kong SAR, Hungary, Iceland, India, Indonesia, Iran, Islamic Republic of, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea, Kuwait, Kyrgyz Republic, Lao PDR, Latvia, Lebanon, Lesotho, Libya, Lithuania, Luxembourg, Macedonia, FYR, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russia, Rwanda, Saint Lucia, Samoa, Saudi Arabia, Senegal, Serbia and Montenegro, Seychelles, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, St. Kitts and Nevis, Sudan, Suriname, Swaziland, Sweden, Switzerland, Syrian Arab Republic, Taiwan Province of China, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbekistan, Venezuela, Viet Nam, Republic of Yemen, Zambia, and Zimbabwe.

Economies to which the Global System method has been applied: Haiti, Antigua and Barbuda, The Bahamas, St. Vincent and the Grenadines, Iraq, Qatar, Afghanistan, the Democratic Republic of Congo, Equatorial Guinea, Liberia, São Tomé and Principe, Sierra Leone, Somalia, Solomon Islands, Kiribati, and Vanuatu.

Remaining economies: Netherlands Antilles, Myanmar, the Republic of Marshall Islands, and the Federated States of Micronesia.

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Table 1. New Trade Weights

	Industrial Countries	United States	Japan	Euro Area	Other Industrial	Developing Countries	Africa	Asia	China	ASEAN	Other Asia	Latin America	MidEast	Transition 1/	Regional
															NAFTA
United States	**0.56**	0.00	0.13	0.19	0.25	**0.44**	0.01	0.23	0.07	0.05	0.11	0.17	0.01	0.02	0.27
Mexico	**0.88**	0.69	0.04	0.08	0.07	**0.12**	0.00	0.07	0.02	0.02	0.04	0.03	0.00	0.01	0.73
Canada	**0.83**	0.66	0.05	0.08	0.05	**0.17**	0.01	0.09	0.03	0.02	0.04	0.05	0.01	0.02	0.69
															Latin America
Argentina	**0.51**	0.18	0.04	0.19	0.09	**0.49**	0.01	0.12	0.04	0.03	0.05	0.32	0.01	0.02	0.32
Brazil	**0.65**	0.27	0.06	0.22	0.11	**0.35**	0.02	0.11	0.03	0.02	0.06	0.18	0.01	0.03	0.18
Chile	**0.58**	0.20	0.06	0.18	0.13	**0.42**	0.01	0.16	0.06	0.03	0.07	0.20	0.01	0.04	0.20
															NIA+ASEAN 2/
Japan	**0.55**	0.27	0.00	0.17	0.11	**0.46**	0.01	0.38	0.12	0.09	0.17	0.04	0.01	0.02	0.24
China	**0.69**	0.24	0.19	0.17	0.10	**0.30**	0.01	0.21	0.00	0.04	0.17	0.03	0.01	0.03	0.20
Hong Kong SAR	**0.56**	0.18	0.08	0.15	0.15	**0.45**	0.01	0.39	0.21	0.05	0.13	0.03	0.01	0.02	0.15
Korea	**0.64**	0.23	0.18	0.14	0.09	**0.36**	0.01	0.26	0.11	0.06	0.09	0.04	0.02	0.03	0.13
Singapore	**0.59**	0.21	0.14	0.15	0.09	**0.41**	0.01	0.36	0.06	0.16	0.14	0.02	0.01	0.02	0.26
Taiwan Province of China	**0.65**	0.23	0.19	0.15	0.09	**0.35**	0.01	0.28	0.10	0.07	0.11	0.03	0.01	0.02	0.16
India	**0.65**	0.19	0.07	0.25	0.14	**0.34**	0.04	0.19	0.04	0.04	0.11	0.03	0.04	0.04	0.14
Indonesia	**0.60**	0.17	0.17	0.16	0.11	**0.40**	0.02	0.29	0.06	0.06	0.17	0.04	0.03	0.03	0.20
Malaysia	**0.63**	0.24	0.15	0.14	0.09	**0.37**	0.01	0.30	0.05	0.06	0.19	0.03	0.01	0.02	0.23
Philippines	**0.67**	0.26	0.19	0.13	0.08	**0.33**	0.01	0.28	0.04	0.06	0.18	0.03	0.01	0.02	0.23
Thailand	**0.64**	0.19	0.20	0.15	0.10	**0.36**	0.01	0.28	0.06	0.06	0.16	0.03	0.01	0.02	0.20
															Subregion 3/
Australia	**0.65**	0.19	0.13	0.16	0.16	**0.36**	0.02	0.27	0.07	0.07	0.13	0.03	0.02	0.02	0.21
New Zealand	**0.73**	0.17	0.11	0.14	0.30	**0.27**	0.01	0.18	0.05	0.04	0.09	0.04	0.01	0.02	0.29
															Subregion 4/
Euro area	**0.60**	0.20	0.08	0.00	0.32	**0.40**	0.03	0.17	0.05	0.03	0.09	0.05	0.02	0.13	0.27
Switzerland	**0.82**	0.11	0.05	0.53	0.12	**0.18**	0.01	0.09	0.02	0.02	0.05	0.03	0.01	0.04	0.09
Denmark	**0.80**	0.09	0.04	0.43	0.24	**0.21**	0.01	0.10	0.03	0.02	0.05	0.03	0.01	0.06	0.21
United Kingdom	**0.79**	0.15	0.05	0.49	0.10	**0.22**	0.02	0.12	0.03	0.02	0.07	0.02	0.02	0.04	0.06
Norway	**0.81**	0.10	0.05	0.35	0.31	**0.18**	0.01	0.10	0.03	0.02	0.05	0.02	0.01	0.04	0.28
Sweden	**0.80**	0.11	0.05	0.43	0.21	**0.20**	0.01	0.09	0.03	0.02	0.04	0.03	0.01	0.06	0.18

Table 1. New Trade Weights (concluded)

	Industrial Countries	United States	Japan	Euro Area	Other Industrial	Developing Countries	Africa	Asia	China	ASEAN	Other Asia	Latin America	MidEast	Transition 1/	Regional Subregion 4/
Cyprus	**0.70**	0.05	0.06	0.37	0.23	**0.30**	0.02	0.11	0.02	0.02	0.06	0.04	0.05	0.09	0.19
Turkey	**0.76**	0.11	0.03	0.48	0.14	**0.24**	0.02	0.09	0.02	0.02	0.05	0.02	0.03	0.08	0.11
Hungary	**0.82**	0.09	0.03	0.60	0.10	**0.18**	0.01	0.07	0.02	0.01	0.03	0.02	0.01	0.09	0.08
Poland	**0.79**	0.05	0.02	0.58	0.14	**0.21**	0.01	0.07	0.02	0.01	0.04	0.02	0.01	0.10	0.12
Czech Rep.	**0.79**	0.06	0.02	0.60	0.11	**0.21**	0.01	0.06	0.02	0.01	0.03	0.01	0.01	0.12	0.10
Russia	**0.53**	0.10	0.04	0.28	0.11	**0.47**	0.02	0.17	0.08	0.02	0.07	0.04	0.03	0.22	0.08
Nigeria	**0.62**	0.09	0.05	0.31	0.16	**0.38**	0.03	0.25	0.07	0.04	0.13	0.04	0.02	0.05	..
South Africa	**0.68**	0.14	0.07	0.30	0.17	**0.32**	0.09	0.15	0.04	0.03	0.09	0.04	0.01	0.03	..
Iran, I. R. of	**0.54**	0.04	0.06	0.32	0.12	**0.46**	0.02	0.20	0.05	0.03	0.11	0.03	0.09	0.13	..
Israel	**0.78**	0.30	0.05	0.30	0.13	**0.22**	0.01	0.13	0.03	0.02	0.08	0.03	0.01	0.04	..
Saudi Arabia	**0.64**	0.17	0.11	0.22	0.14	**0.36**	0.02	0.22	0.05	0.04	0.12	0.02	0.08	0.03	..

1/ Consists of Eastern European and Central Asian countries.

2/ NIA consists of Hong Kong SAR, Korea, Singapore, and Taiwan Province of China.

3/ Consists of NIA, ASEAN, Australia, and New Zealand.

4/ Consists of Norway, Sweden, Denmark, Switzerland, and United Kingdom.

Table 2. Difference in Trade Weights, (New Weights Minus Old Weights) /1

	Industrial Countries	United States	Japan	Euro Area	Other Industrial	Developing Countries	Africa	Asia	China	ASEAN	Other Asia 3/	Latin America	MidEas	Transition 2/	Regional
															NAFTA
United States	**-0.12**		-0.05	-0.06	-0.01	**0.12**		0.04	0.05	0.02	-0.03	0.08		0.01	0.08
Mexico	**0.01**	0.18	-0.05	-0.09	-0.04	**-0.01**		-0.01	0.01		-0.02				0.17
Canada	**0.01**	0.17	-0.06	-0.08	-0.02	**-0.01**		-0.02	0.02		-0.04				0.18
															Latin America
Argentina	**-0.19**	0.02	-0.03	-0.15	-0.04	**0.19**		0.02	0.02			0.19		0.01	0.19
Brazil	**-0.09**	0.07	-0.03	-0.09	-0.04	**0.09**		0.01	0.01			0.09		0.02	0.09
Chile	**-0.15**	0.03	-0.03	-0.12	-0.03	**0.15**	-0.01	0.05	0.04		0.01	0.08		0.03	0.08
															NIA+ASEAN 4/
Japan	**-0.11**	0.04		-0.09	-0.06	**0.11**		0.11	0.08	0.04	-0.01			0.01	0.02
China	**0.09**	0.11	0.03	-0.04		**-0.09**		-0.10		0.01	-0.11			0.01	-0.10
Hong Kong SAR	**0.01**	0.06	-0.08		0.03	**-0.01**		-0.03	-0.03	0.02	-0.02			0.01	-0.01
Korea	**-0.16**		-0.07	-0.05	-0.04	**0.16**		0.12	0.09	0.03		0.01		0.02	0.02
Singapore	**-0.08**	0.02	-0.04	-0.02	-0.03	**0.08**		0.07	0.04	0.02	0.02				0.02
Taiwan Province of China	**-0.12**		-0.04	-0.05	-0.04	**0.12**		0.11	0.07	0.03				0.01	0.03
India	**-0.13**	0.04	-0.04	-0.08	-0.04	**0.13**	0.01	0.07	0.03	0.02	0.02		0.02	0.03	0.03
Indonesia	**-0.09**	0.05	-0.04	-0.08	-0.01	**0.09**		0.06	0.03	0.02				0.02	0.01
Malaysia	**0.01**	0.08		-0.04	-0.03	**-0.01**		0.00	0.03	0.02	-0.06			0.01	-0.04
Philippines	**-0.05**	0.05	0.02	-0.07	-0.04	**0.05**		0.07	0.02	0.03	0.02	-0.01			0.05
Thailand	**-0.07**	0.05	-0.03	-0.07	-0.02	**0.07**		0.07	0.04	0.03				0.01	0.03
															Subregion 5/
Australia	**-0.11**		-0.04	-0.07		**0.11**		0.08	0.04	0.04				0.02	0.05
New Zealand	**-0.08**	0.03	-0.02	-0.13	0.03	**0.08**		0.06	0.03	0.02				0.02	0.09
															Subregion 6/
Euro area	**-0.10**	0.01	-0.04		-0.07	**0.10**	-0.02	0.03	0.03					0.10	-0.06
Switzerland	**-0.05**	0.03	-0.01	-0.05	-0.01	**0.05**		0.01	0.01			0.01		0.03	-0.01
Denmark	**-0.07**		-0.02	-0.06		**0.07**		0.02	0.02					0.05	
United Kingdom	**-0.05**	0.02	-0.02	-0.04	-0.02	**0.05**		0.02	0.02					0.03	-0.02
Norway	**-0.02**	0.01		-0.03		**0.02**		0.02	0.02					0.03	
Sweden	**-0.09**		-0.02	-0.05	-0.01	**0.09**		0.02	0.02			0.01		0.05	-0.01

Table 2. Difference in Trade Weights, New weights minus old weights (concluded) /1

	Industrial Countries	United States	Japan	Euro Area	Other Industrial	Developing Countries	Africa	Asia	China	ASEAN	Other Asia 3/	Latin America	MidEast	Transition 2/	Regional Subregion 6/	
Cyprus	**-0.08**	-0.01	-0.03	-0.05		**0.08**		0.00	0.02		-0.01	0.02	0.01	0.05	-0.02	
Turkey	**-0.03**	0.01	-0.02	-0.01		**0.03**		0.01	0.01				-0.01	0.06		
Hungary	**0.01**	0.03	-0.01	0.04	-0.04	**-0.01**		0.00					-0.01	0.03	-0.03	
Poland	**0.00**	-0.02	-0.03	0.08	-0.03	**0.00**		-0.01			-0.01	-0.01	-0.01	0.06	-0.01	
Czech Rep.	**0.11**	0.03		0.03	0.05	**-0.11**		0.04		0.01	0.03	0.01		-0.19	0.03	
Russia	**-0.05**		-0.01	-0.05	0.01	**0.05**	0.02	0.08	0.02	0.02	0.04	0.04	0.03	-0.11	-0.03	
Nigeria	**-0.15**	-0.01	-0.01	-0.08	-0.04	**0.15**		0.13	0.06	0.02	0.05			0.03		..
South Africa	**-0.18**	0.01	-0.06	-0.12	-0.02	**0.18**	0.07	0.08	0.03	0.02	0.03			0.02		..
Iran, I. R. of	**-0.24**		-0.07	-0.14	-0.04	**0.24**		0.12	0.03	0.01	0.08		0.07	0.06		..
Israel	**-0.07**	0.11	-0.02	-0.10	-0.05	**0.07**		0.03	0.02		0.01			0.03		..
Saudi Arabia	**-0.12**	0.03	-0.03	-0.05	-0.07	**0.12**		0.07	0.04	0.01	0.02		0.05	0.01		..

1/ Only differences bigger than .01 (1 percent) in magnitude are shown in the table.

2/ Consists of Eastern European and Central Asian countries; INS weights were not computed for many countries in the group.

3/ Most of the differences represent losses of Hong Kong SAR, Singapore, and Taiwan Province of China.

4/ NIA consists of Hong Kong SAR, Korea, Singapore and Taiwan Province of China.

5/ Consist of NIA, ASEAN, Australia, and New Zealand.

6/ Consists of Norway, Sweden, Denmark, Switzerland, and United Kingdom.

Table 3. Weight of Euro Area by Different Methods

	New Weights		Old Weight
	Euro area as a Region	Euro area as Individual Countries	Euro area as Individual Countries
United States	0.19	0.20	0.25
Mexico	0.08	0.09	0.16
Canada	0.08	0.10	0.16
Argentina	0.19	0.23	0.34
Brazil	0.22	0.25	0.30
Chile	0.18	0.23	0.30
Japan	0.17	0.18	0.25
China	0.17	0.18	0.21
Hong Kong SAR	0.15	0.16	0.15
Korea	0.14	0.15	0.19
Singapore	0.15	0.15	0.17
Taiwan Province of China	0.15	0.15	0.19
India	0.25	0.27	0.33
Indonesia	0.16	0.18	0.24
Malaysia	0.14	0.14	0.18
Philippines	0.13	0.14	0.21
Thailand	0.15	0.16	0.22
Australia	0.16	0.20	0.23
New Zealand	0.14	0.20	0.27
Switzerland	0.53	0.54	0.58
Denmark	0.43	0.44	0.48
United Kingdom	0.49	0.49	0.52
Norway	0.35	0.36	0.38
Sweden	0.43	0.43	0.48
Cyprus	0.37	0.41	0.42
Turkey	0.48	0.49	0.49
Hungary	0.60	0.59	0.56
Poland	0.58	0.59	0.50
Czech Rep.	0.60	0.60	0.56
Russia	0.28	0.32	0.33
Nigeria	0.31	0.34	0.39
South Africa	0.30	0.32	0.41
Iran, I. R. of	0.32	0.35	0.46
Israel	0.30	0.30	0.40
Saudi Arabia	0.22	0.24	0.27

Table 4. Difference in Commodity Shares

	New (99-01)	Global System (89-91)	Difference
Singapore	0.04	0.12	-0.08
Taiwan Province of China	0.06	0.11	-0.04
Sweden	0.08	0.13	-0.06
Mexico	0.08	0.18	-0.10
United States	0.08	0.14	-0.06
Switzerland	0.08	0.09	-0.01
United Kingdom	0.08	0.15	-0.06
Korea	0.08	0.14	-0.06
Euro area	0.09	0.17	-0.08
Turkey	0.10	0.24	-0.14
Japan	0.10	0.16	-0.06
China	0.10	0.20	-0.10
Saudi Arabia	0.10	0.18	-0.08
Hong Kong SAR	0.11	0.09	0.02
Canada	0.13	0.20	-0.07
Nigeria	0.13	0.18	-0.05
India	0.14	0.20	-0.06
Norway	0.15	0.25	-0.10
Denmark	0.15	0.29	-0.14
South Africa	0.17	0.28	-0.10
Iran, I. R. of	0.20	0.31	-0.10
Brazil	0.23	0.40	-0.17
Australia	0.23	0.34	-0.11
Russia	0.25	..	..
Argentina	0.26	0.51	-0.25
New Zealand	0.30	0.47	-0.17
Chile	0.40	0.59	-0.19

Table 5. Importance of Imports in Overall Manufacturing Weights

	New Weights	Old Global System Weights	Old Industrial System Weights
Hong Kong SAR	0.21	0.63	..
Singapore	0.27	0.54	..
Taiwan Province of China	0.30	0.36	..
Japan	0.31	0.25	0.26
Sweden	0.31	0.46	0.37
Korea	0.33	0.39	..
China	0.34	0.45	..
Switzerland	0.36	0.49	0.46
Denmark	0.37	0.54	0.39
Canada	0.38	0.55	0.39
Mexico	0.39	0.54	..
India	0.40	0.56	..
United Kingdom	0.44	0.54	0.47
Euro area	0.45	0.39	0.72
Turkey	0.46	0.57	..
Russia	0.49	..	..
South Africa	0.48	0.68	..
Brazil	0.54	0.37	..
Norway	0.57	0.66	0.43
United States	0.58	0.57	0.61
New Zealand	0.65	0.75	0.56
Argentina	0.68	0.51	..
Chile	0.74	0.84	..
Australia	0.75	0.75	0.53

Table 6. Importance of Third-Market Components in Manufaturers Export Weights

	Third Market Weight/Bilateral Export Weight		
	New Weights	Old Global System Weights 1/	Old Industrial System Weights
Canada	0.22	1.00	0.08
Mexico	0.24	1.00	..
Argentina	0.24	1.00	..
Chile	0.26	1.00	..
Brazil	0.26	1.00	..
United States	0.27	1.00	0.28
United Kingdom	0.27	1.00	0.37
Euro area	0.29	1.00	0.33
China	0.29	1.00	..
Switzerland	0.29	1.00	0.28
Turkey	0.31	1.00	..
New Zealand	0.32	1.00	0.74
Taiwan Province of China	0.33	1.00	..
South Africa	0.34	1.00	..
Japan	0.33	1.00	0.21
Sweden	0.34	1.00	0.41
Korea	0.34	1.00	..
Denmark	0.34	1.00	0.40
Russia	0.35	..	..
Hong Kong SAR	0.37	1.00	..
Australia	0.39	1.00	0.23
India	0.40	1.00	..
Norway	0.41	1.00	0.41
Singapore	0.45	1.00	..

1/ Old CPI weighting scheme (Global System) gives equal importance to bilateral and third-market competition.

Table 7. Percent Change in Real Exchange Rates During Asian Crisis
(July 1997 to January 1998)

	New Weights	Old Global Weights	Difference
Indonesia	-67.5	-67.9	0.3
Korea	-39.6	-40.0	0.4
Malaysia	-33.9	-34.2	0.4
Philippines	-26.9	-28.7	1.9
Thailand	-42.5	-43.6	1.1
United States	10.4	11.1	-0.7
Euro area	2.8	2.9	-0.1
Japan	-0.9	-2.9	2.1
United Kingdom	6.9	6.7	0.3
Switzerland	3.0	2.9	0.1
Canada	-0.8	1.5	-2.3
Australia	-2.4	-5.3	2.9
New Zealand	-5.9	-8.1	2.1
Norway	3.0	2.5	0.6
Sweden	1.3	1.5	-0.2
Denmark	0.5	0.6	0.0
Singapore	-2.6	-4.4	1.8
China	16.9	12.1	4.8
Hong Kong SAR	10.6	11.4	-0.8
Taiwan Province of China	-8.1	-10.3	2.2
India	7.4	5.5	1.9
Pakistan	3.4	2.7	0.8
Argentina	6.7	7.3	-0.6
Brazil	2.9	3.9	-1.0
Chile	2.2	2.0	0.2
Colombia	-9.6	-7.9	-1.7
Mexico	8.6	10.4	-1.7
Peru	6.1	5.5	0.7
Venezuela	23.4	22.5	0.9
Hungary	1.8	1.7	0.1
Poland	3.9	3.9	-0.1
Israel	3.8	3.5	0.2
Turkey	13.3	13.0	0.3
Egypt	9.4	7.4	2.0
Iran, I. R. of	19.2	13.0	6.2
Saudi Arabia	10.6	9.3	1.3
Algeria	11.8	10.2	1.6
Morocco	4.8	4.3	0.5
Nigeria	10.1	6.7	3.3
South Africa	0.6	-1.4	2.0

Table 8. Percent Change in Real Exchange Rates During Argentine Crisis
(January 2002 to September 2002))

	New	Global Old System	Difference
Argentina	-45.2	-49.1	3.9
Brazil	-24.0	-28.9	4.9
Venezuela	-35.3	-38.0	2.7
United States	-1.8	-4.0	2.2
Euro area	7.7	6.5	1.2
Japan	6.2	4.6	1.6
United Kingdom	3.1	2.4	0.7
Switzerland	3.8	2.6	1.1
Canada	2.0	0.3	1.7
Australia	1.9	1.3	0.6
New Zealand	6.6	5.3	1.3
Norway	10.8	10.4	0.4
Sweden	5.3	4.2	1.2
Denmark	4.5	3.8	0.7
Indonesia	14.9	13.2	1.7
Korea	7.9	5.2	2.7
Malaysia	-4.0	-4.7	0.8
Philippines	-5.0	-5.2	0.2
Thailand	-1.4	-2.4	1.0
Singapore	-0.9	-1.4	0.5
China	-9.9	-9.3	-0.7
Hong Kong SAR	-4.9	-5.2	0.3
Taiwan Province of China	-3.4	-4.5	1.1
India	-1.7	-3.5	1.8
Pakistan	1.0	-0.6	1.5
Chile	-5.0	-8.9	3.9
Colombia	-10.9	-16.2	5.2
Mexico	-8.7	-10.0	1.4
Peru	-2.5	-6.0	3.5
Hungary	3.6	4.6	-0.9
Poland	-11.1	-10.0	-1.1
Israel	-5.2	-6.8	1.6
Turkey	-12.2	-11.5	-0.8
Egypt	-4.4	-5.2	0.8
Iran, I. R. of	-77.2	-77.3	0.1
Saudi Arabia	-5.2	-7.1	1.9
Algeria	-13.2	-14.4	1.2
Morocco	0.5	-0.1	0.6
Nigeria	-7.7	-9.1	1.4
South Africa	11.4	9.8	1.6

Table 9. CPI-Based Real Exchange Rates during U. S. Dollar Depreciation
(Percent change from February 2002 to May 2004)

	New	Old Global Weights	Difference
United States	-9.6	-13.7	4.1
Euro area	22.9	20.8	2.2
Japan	3.1	-1.3	4.4
United Kingdom	4.4	2.9	1.4
Switzerland	3.6	1.6	2.0
Canada	12.1	7.5	4.6
Australia	21.7	19.4	2.3
New Zealand	25.0	21.8	3.3
Norway	3.4	2.4	1.1
Sweden	11.2	9.3	1.9
Denmark	9.7	8.3	1.4
Indonesia	14.8	11.2	3.6
Korea	6.0	1.7	4.3
Malaysia	-11.7	-13.6	2.0
Philippines	-14.6	-17.0	2.4
Thailand	-2.8	-5.7	2.9
Singapore	-6.2	-7.3	1.2
China	-16.7	-15.8	-0.9
Hong Kong SAR	-16.6	-16.6	0.0
Taiwan Province of China	-10.6	-13.0	2.3
India	-3.2	-6.8	3.6
Pakistan	-3.2	-6.4	3.2
Argentina	-16.1	-22.2	6.1
Brazil	-16.1	-20.5	4.4
Chile	-2.9	-8.5	5.6
Colombia	-11.7	-18.2	6.5
Mexico	-21.2	-24.5	3.3
Peru	-6.4	-12.6	6.2
Venezuela	-27.5	-32.5	5.0
Hungary	12.5	13.5	-1.0
Poland	-18.4	-16.0	-2.4
Israel	-13.6	-17.3	3.7
Turkey	2.5	2.8	-0.3
Egypt	-32.5	-33.9	1.4
Iran, I. R. of	-77.4	-78.2	0.7
Saudi Arabia	-16.7	-19.8	3.2
Algeria	-12.0	-14.5	2.5
Morocco	0.6	-1.2	1.8
Nigeria	-7.5	-9.8	2.3
South Africa	51.4	46.8	4.6

Table 10. Real Effective Exchange Rate During U. S. Dollar Depreciation1/
(Percent change from February 2002 to May 2004)

	Only Industrial Countries				
	New Weights	Global System Weights		Industrial System Weights	
	Percent change in REER	Percent change in REER	Difference from New Weights	Percent change in REER	Difference from New Weights
United States	-20.2	-20.5	0.2	-19.2	-1.0
Euro area	16.0	14.4	1.7	13.5	2.6
Japan	-3.5	-7.2	3.7	-2.6	-0.9
United Kingdom	1.3	0.5	0.8	0.5	0.9
Switzerland	6.0	5.0	1.1	4.6	1.5
Canada	13.7	8.4	5.2	14.9	-1.2
Australia	17.4	16.4	1.0	18.2	-0.8
New Zealand	24.1	22.2	1.8	26.7	-2.7
Norway	7.5	7.1	0.4	6.1	1.4
Sweden	10.1	9.8	0.3	9.2	0.8
Denmark	8.6	8.3	0.3	6.7	1.9

1/ Real exchange rates based on unit labor costs.

Table 11. Comparision of Exchange Rate Indexes

	Changes relative to 1995 average			Changes relative to 2002 Q1		
	US Dollar					
	IMF New	IMF Old	National	IMF New	IMF Old	National
1997Q1	4.5	9.2	5.7			
1998Q1	14.4	20.1	17.1			
1999Q1	13.1	18.0	16.0			
2000Q1	14.0	21.1	17.3			
2001Q1	23.0	32.3	26.4			
2002Q1	27.8	39.9	31.0			
2003Q1	21.2	28.3	25.0	-6.7	-11.6	-6.0
2003Q2	17.1	23.9	20.8	-10.7	-16.0	-10.2
2003Q3	17.3	24.0	21.2	-10.5	-15.9	-9.8
2003Q4	13.0	18.2	16.6	-14.8	-21.7	-14.4
2004Q1	10.5	15.5	14.4	-17.3	-24.4	-16.6
	Euro					
	IMF New	IMF Old	National	IMF New	IMF Old	National
1997Q1	-7.5	-5.6	-7.6			
1998Q1	-9.5	-8.0	-10.8			
1999Q1	-8.1	-6.5	-7.6			
2000Q1	-18.7	-17.0	-17.6			
2001Q1	-19.8	-17.4	-18.8			
2002Q1	-20.0	-16.8	-19.8			
2003Q1	-7.9	-5.3	-8.8	12.1	11.6	11.0
2003Q2	-4.5	-2.0	-5.6	15.5	14.8	14.2
2003Q3	-5.2	-2.7	-6.2	14.8	14.2	13.6
2003Q4	-2.4	-0.5	-4.0	17.6	16.4	15.8
2004Q1	-0.5	1.6	-1.9	19.5	18.5	17.8
	Yen					
	IMF New	IMF Old	National	IMF New	IMF Old	National
1997Q1	-22.4	-21.0	-21.5			
1998Q1	-17.1	-16.9	-14.5			
1999Q1	-13.6	-12.7	-9.2			
2000Q1	-7.6	-5.4	-4.2			
2001Q1	-13.9	-11.4	-12.7			
2002Q1	-22.5	-19.8	-19.7			
2003Q1	-20.5	-19.6	-18.8	2.0	0.3	0.9
2003Q2	-21.2	-21.0	-19.2	1.3	-1.2	0.5
2003Q3	-21.2	-20.9	-19.1	1.3	-1.0	0.6
2003Q4	-17.4	-17.8	-15.1	5.0	2.1	4.6
2004Q1	-18.6	-19.1	-16.1	3.8	0.8	3.6

1/ IMF Old refers to the CPI-based real exchange rates calculated under the Global System.

Figure 1. CPI-Based Real Effective Exchange Rate Index
(June 1995 = 100)

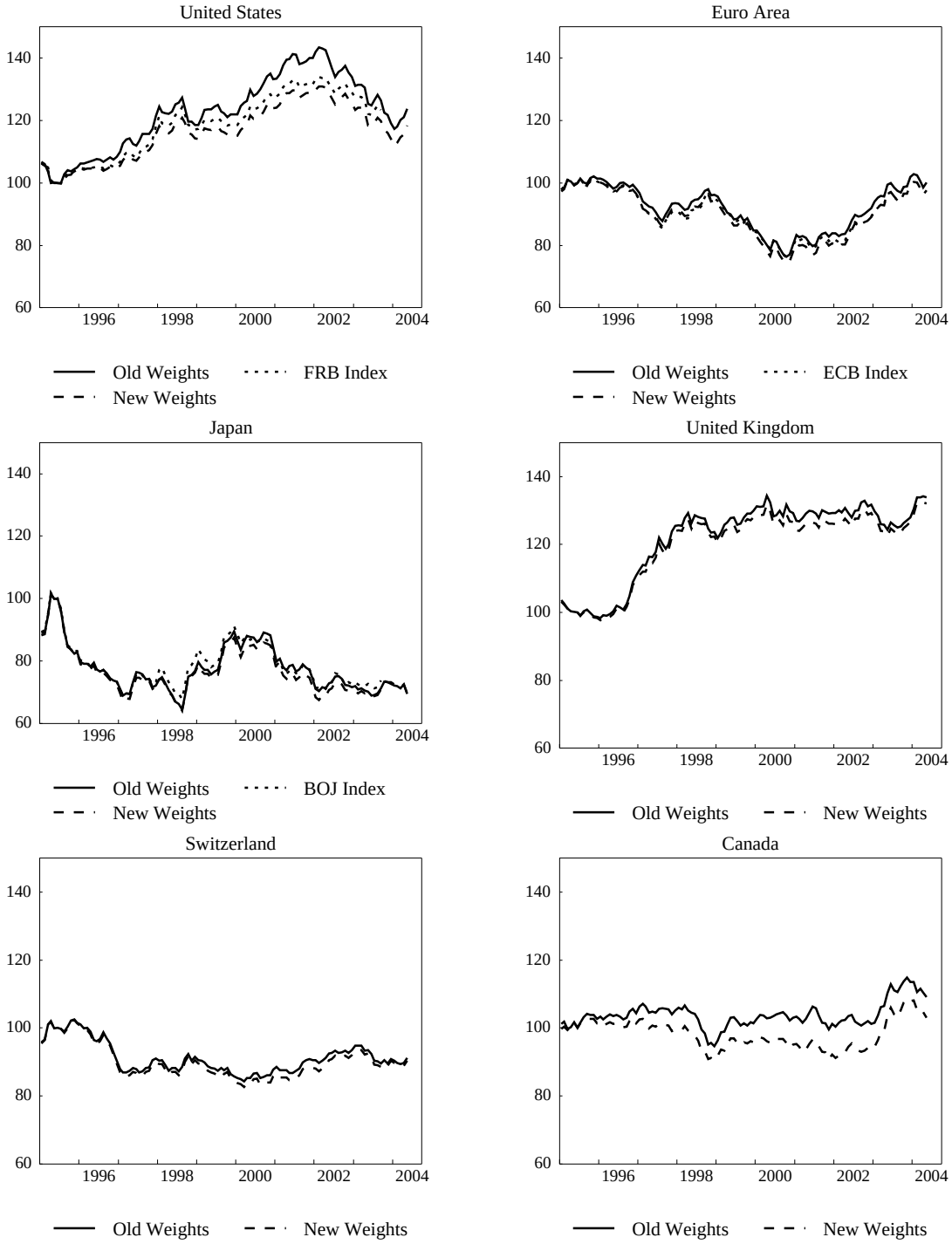


Figure 1. CPI-Based Real Effective Exchange Rate Index (continued)
(June 1995 = 100)

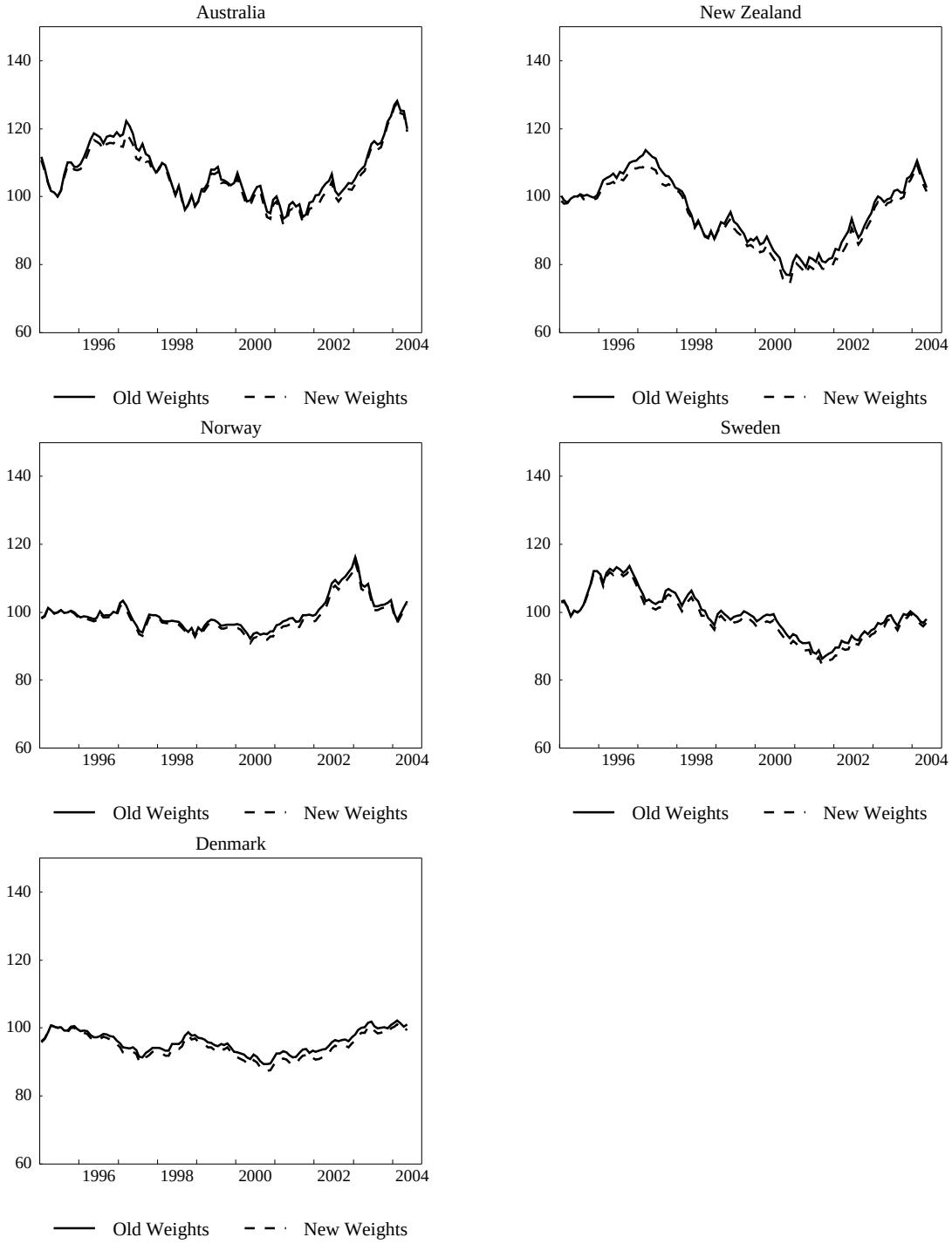


Figure 1. CPI-Based Real Effective Exchange Rate Index (continued)
(June 1995 = 100)

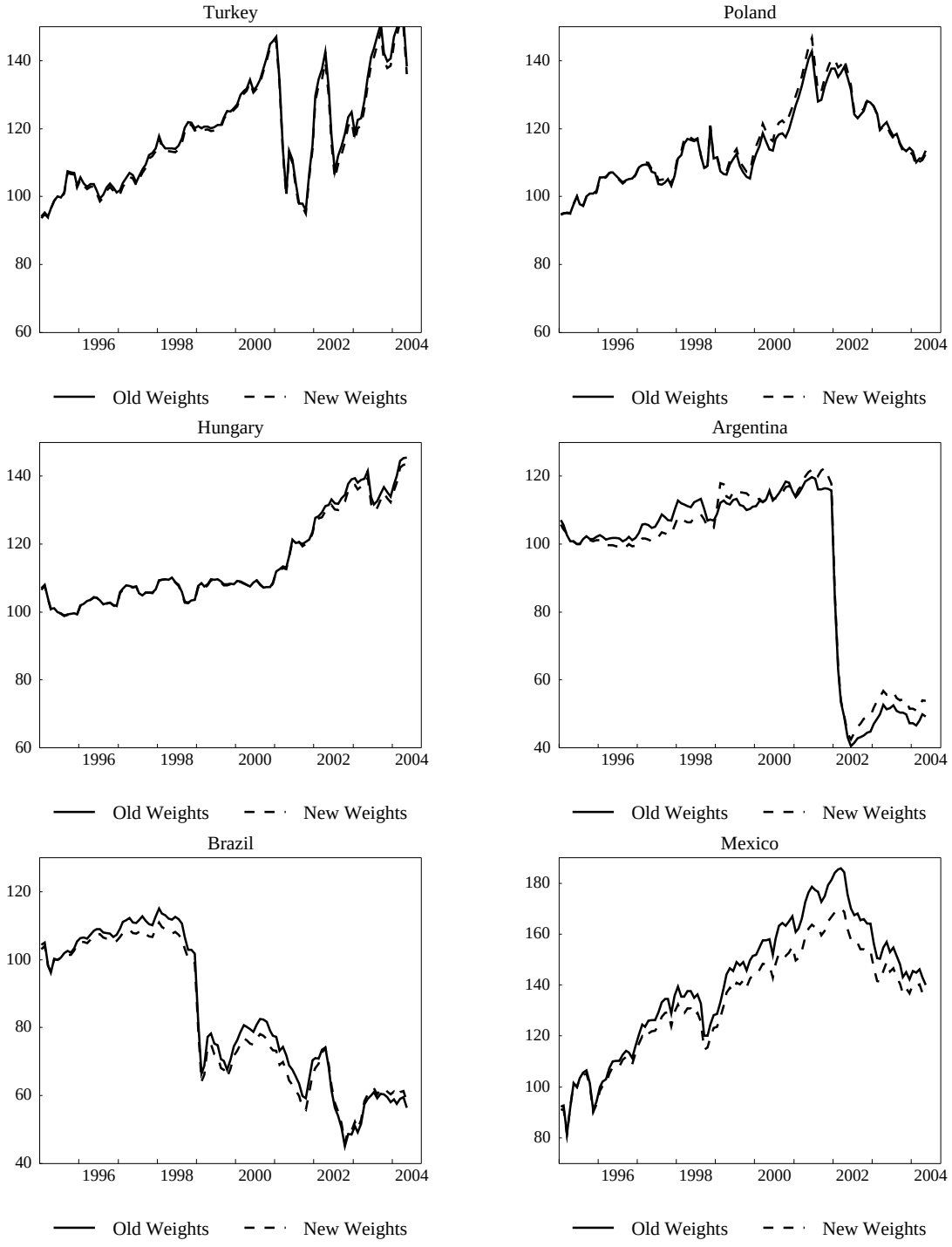


Figure 1. CPI-Based Real Effective Exchange Rate Index (concluded)
(June 1995 = 100)

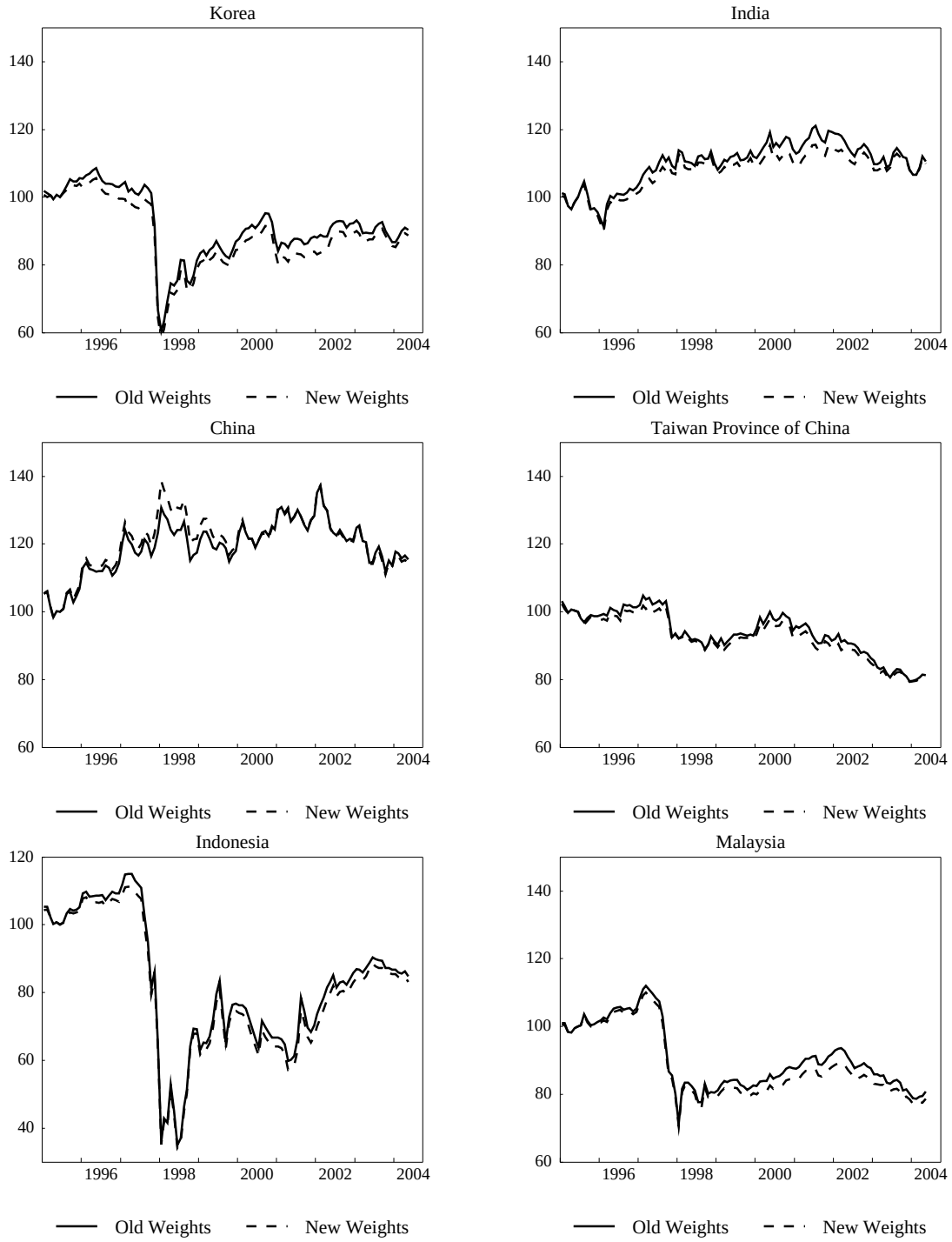


Figure 2. Ratio of Old Index to New Index
(CPI-Based Real Effective Exchange Rate Index, June 1995 = 100)

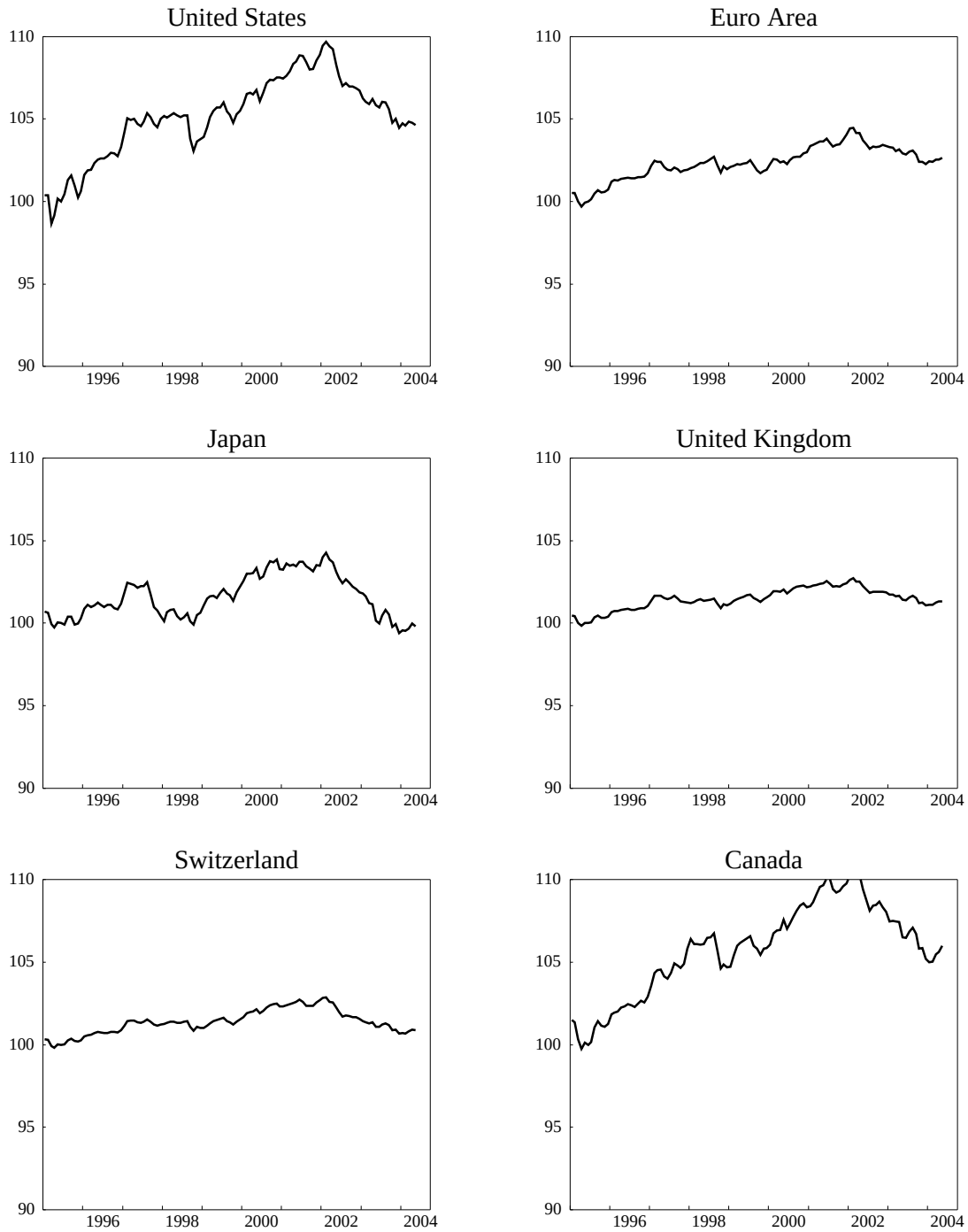


Figure 2. Ratio of Old Index to New Index (continued)

(CPI-Based Real Effective Exchange Rate Index, June 1995 = 100)

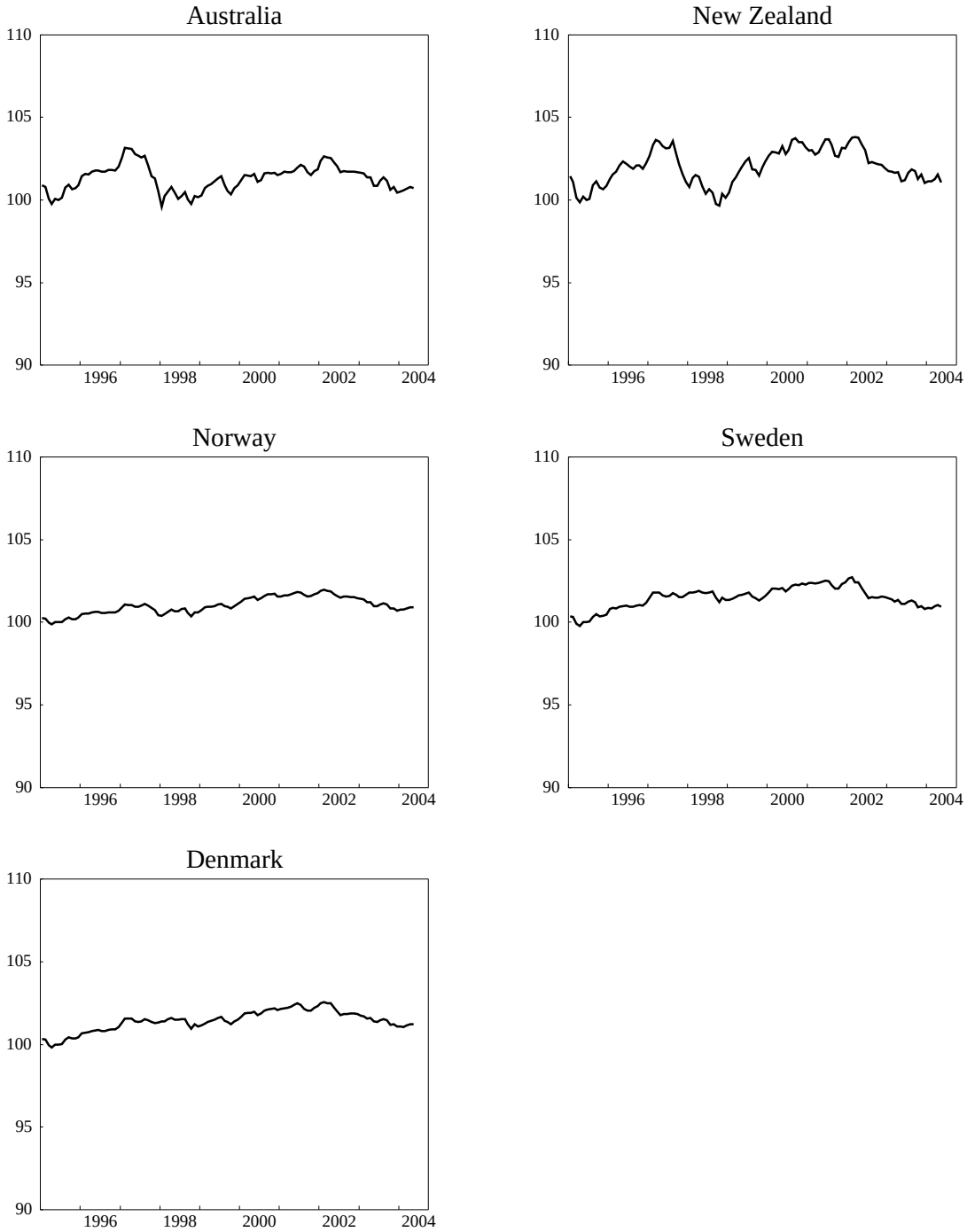


Figure 2. Ratio of Old Index to New Index (continued)
(CPI-Based Real Effective Exchange Rate Index, June 1995 = 100)

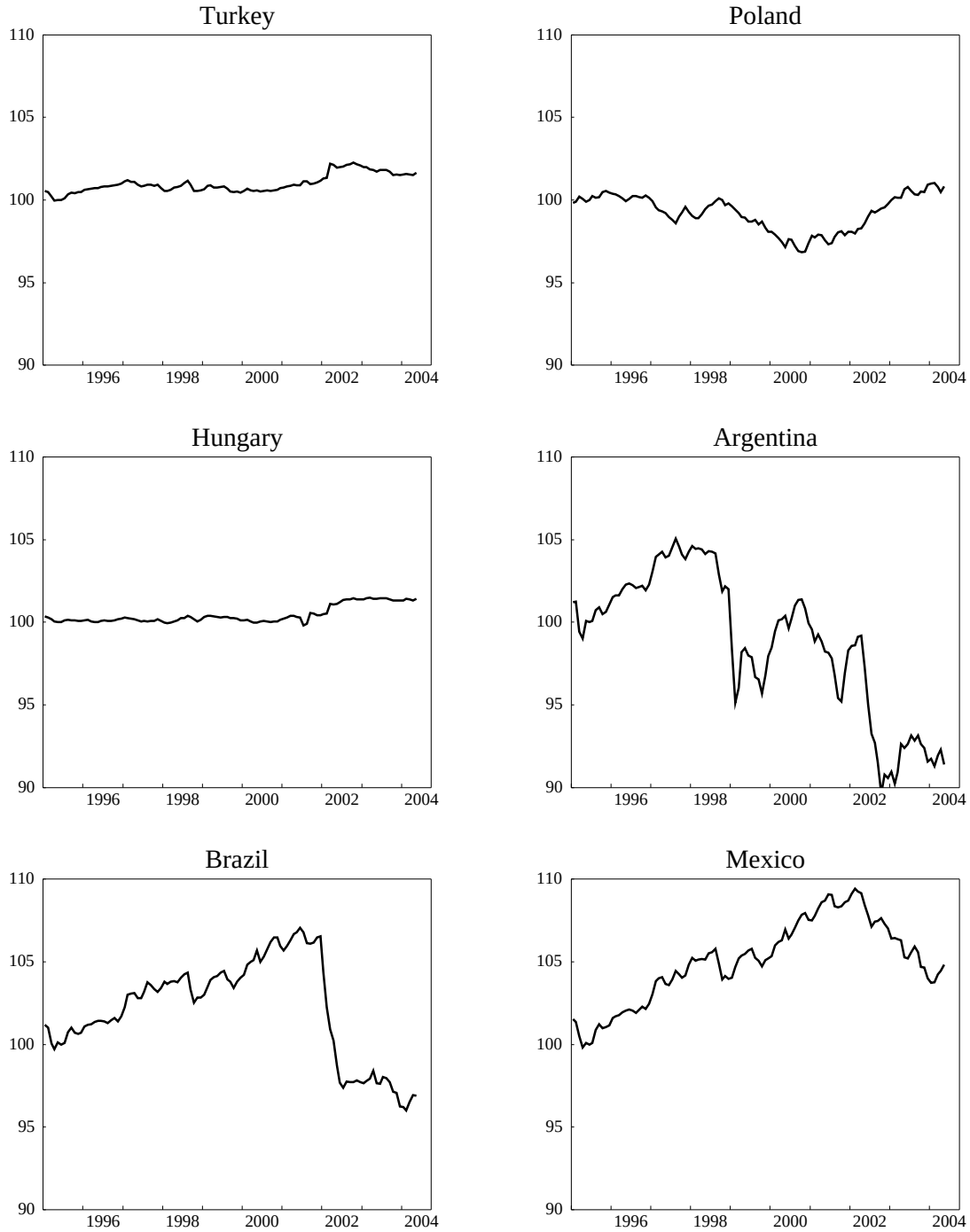


Figure 2. Ratio of Old Index to New Index (concluded)

(CPI-Based Real Effective Exchange Rate Index, June 1995 = 100)

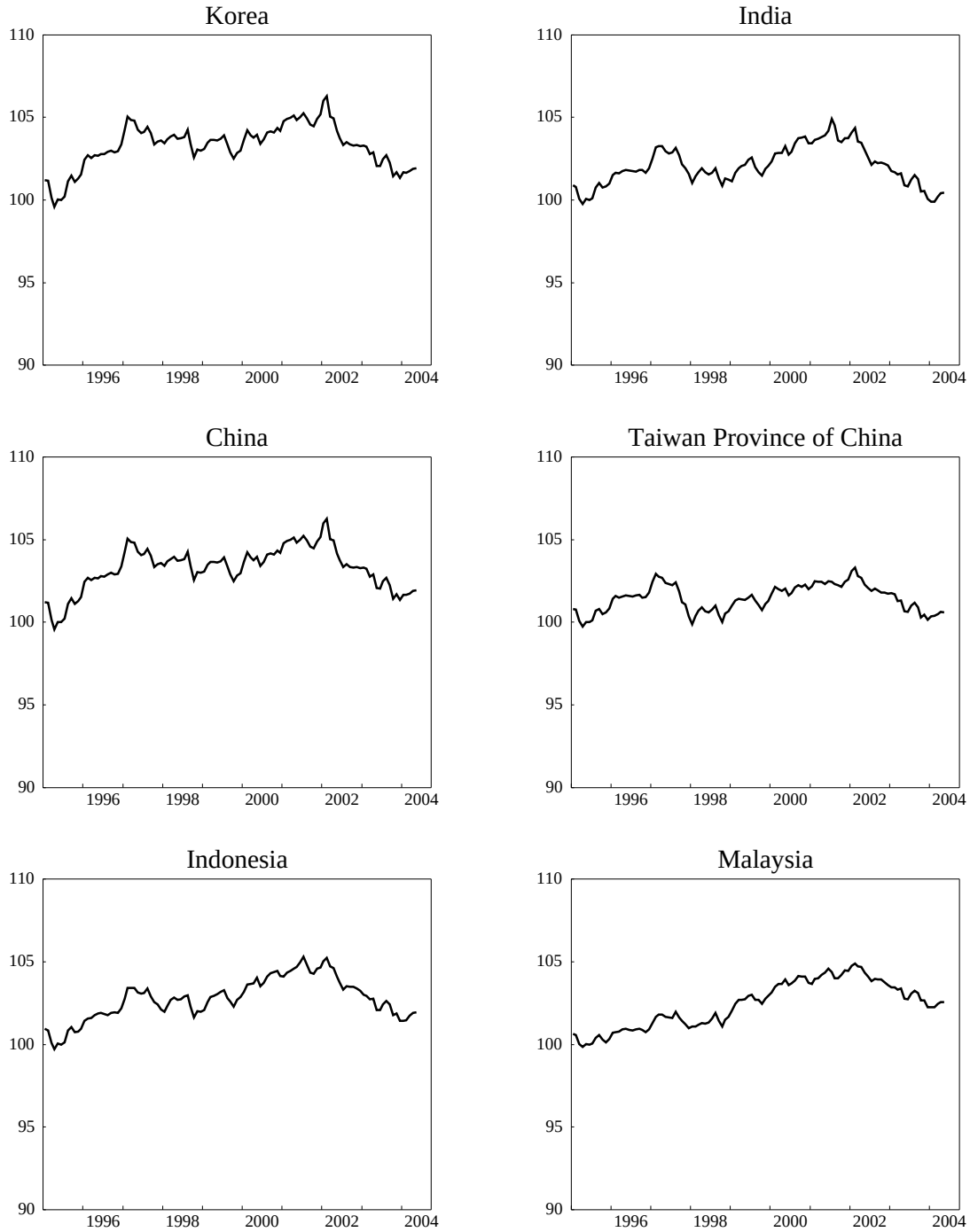


Figure 3. Old and New Exchange Rate Index Relative to Subgroups
(CPI-Based Real Effective Exchange Rate Index, June 1995 = 100)

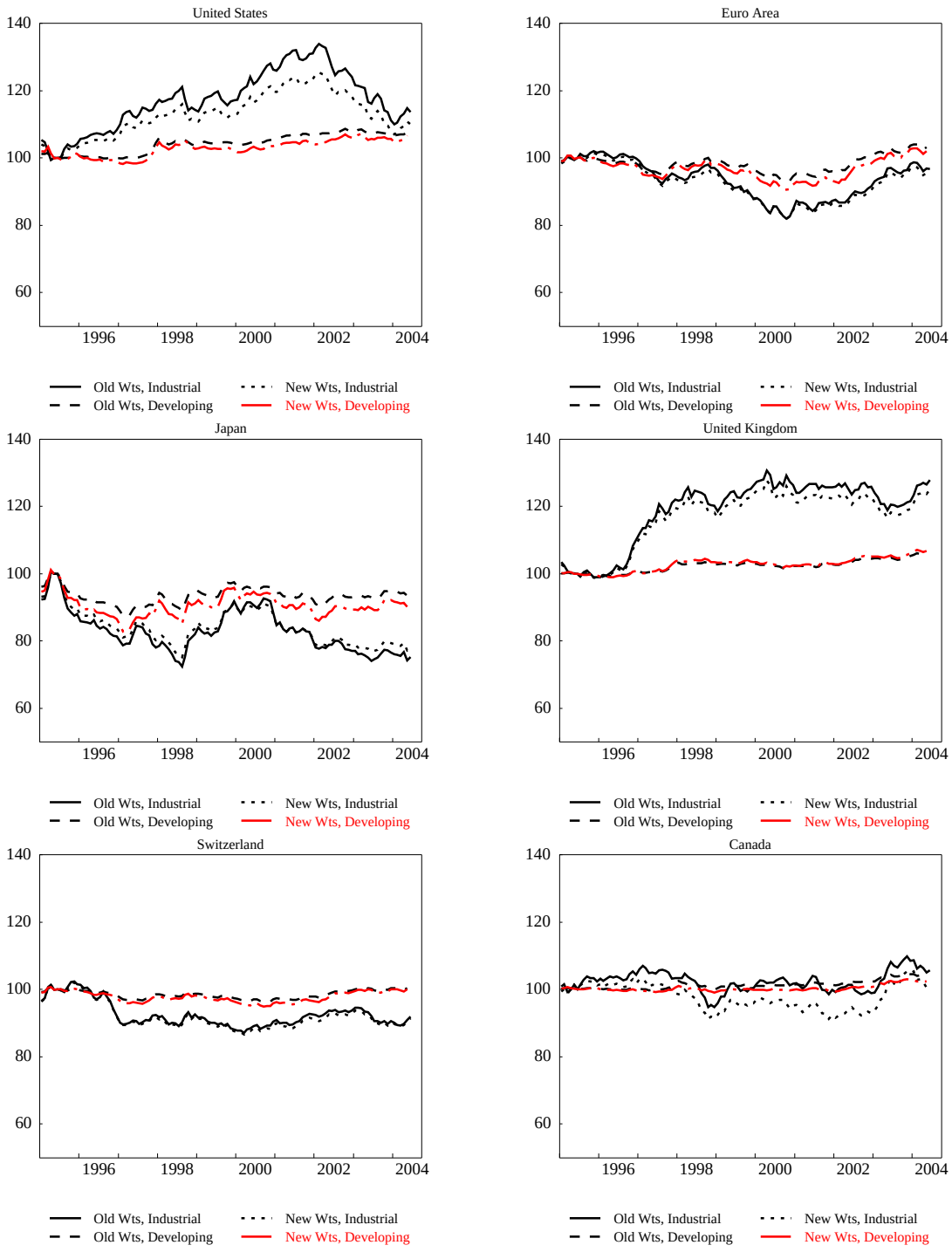


Figure 3. Old and New Exchange Rate Index Relative to Subgroups (continued)
(CPI-Based Real Effective Exchange Rate Index, June 1995 = 100)

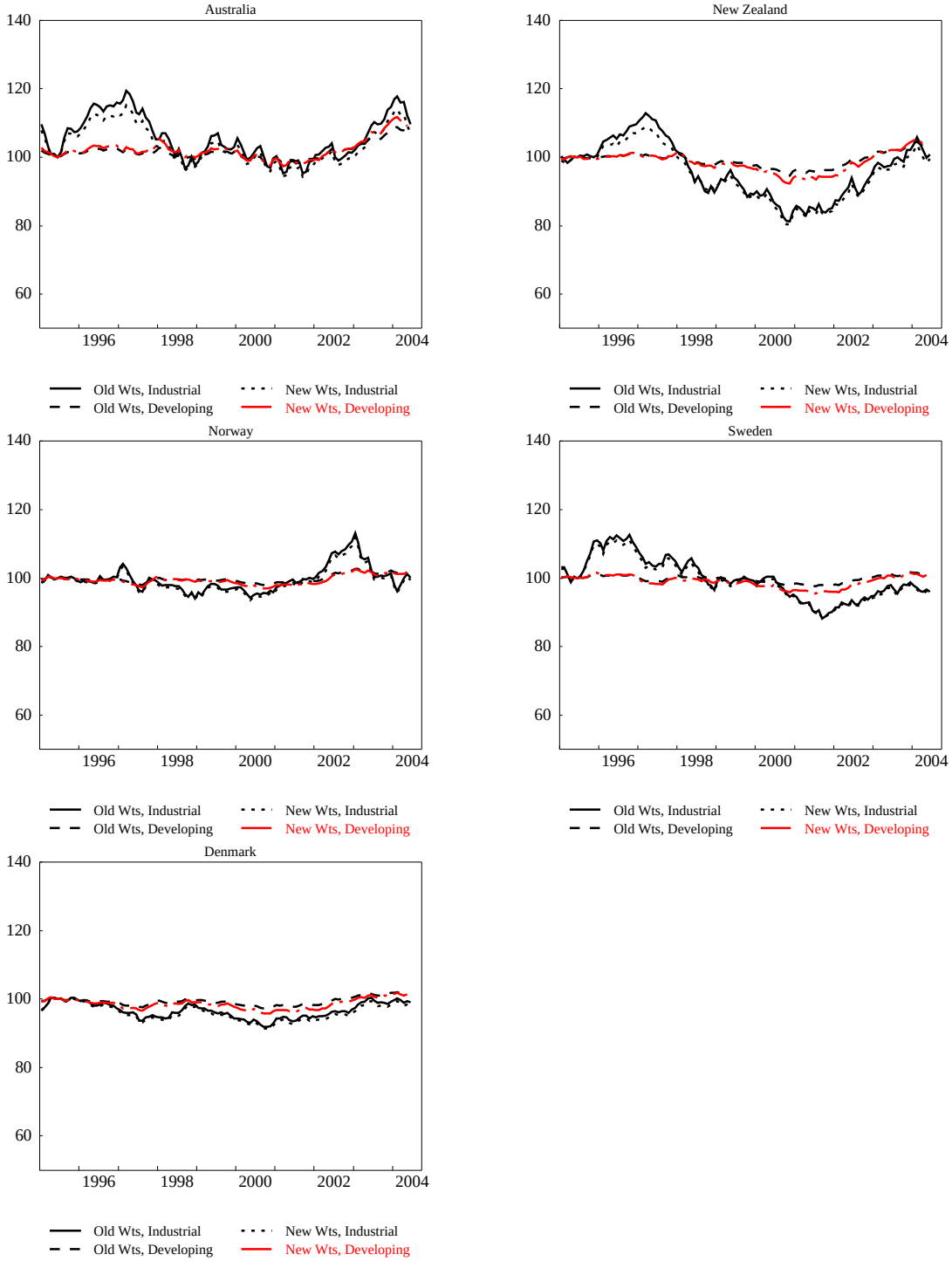


Figure 3. Old and New Exchange Rate Index Relative to Subgroups (continued)
(CPI-Based Real Effective Exchange Rate Index, June 1995 = 100)

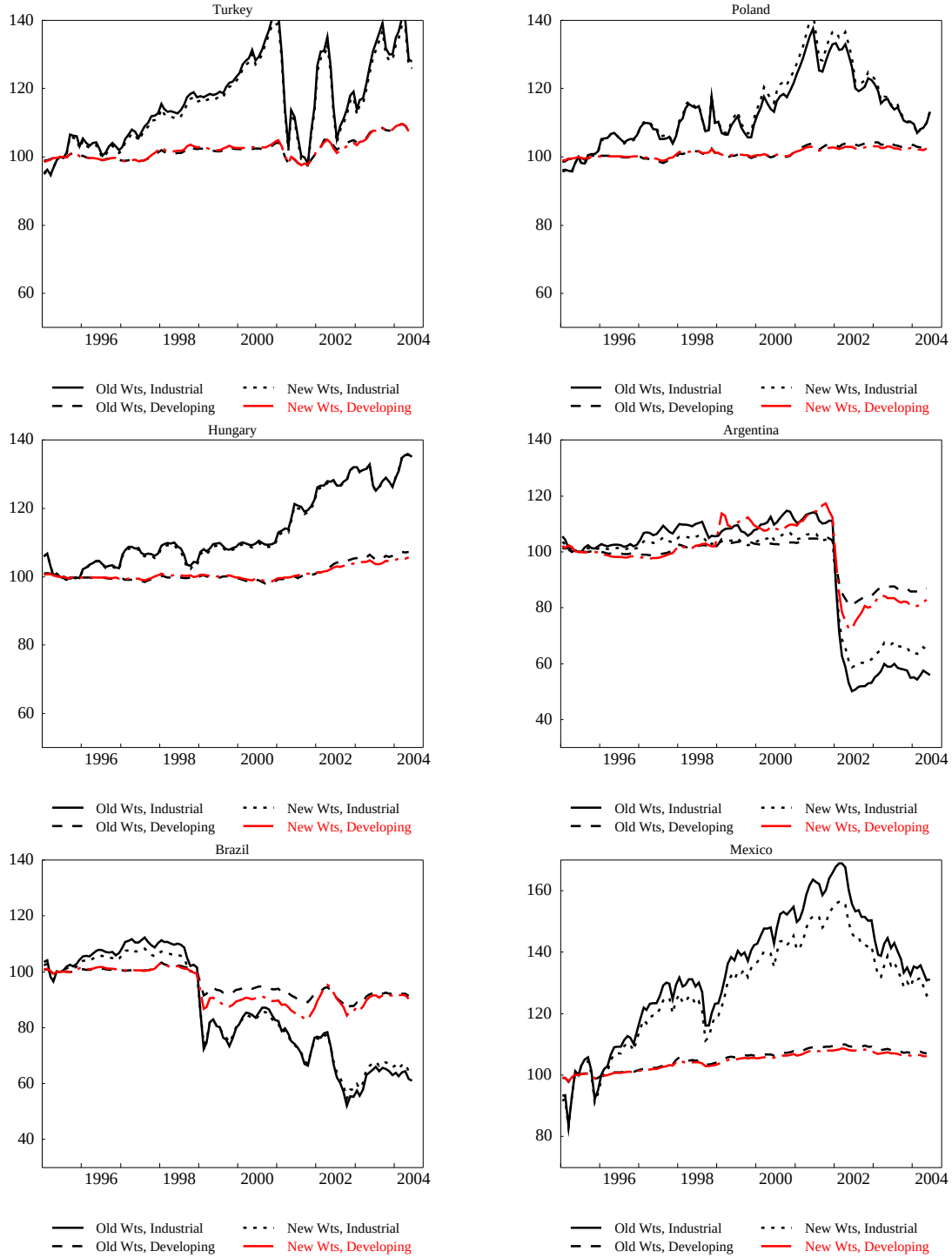


Figure 3. Old and New Exchange Rate Index Relative to Subgroups (concluded)
(CPI-Based Real Effective Exchange Rate Index, June 1995 = 100)

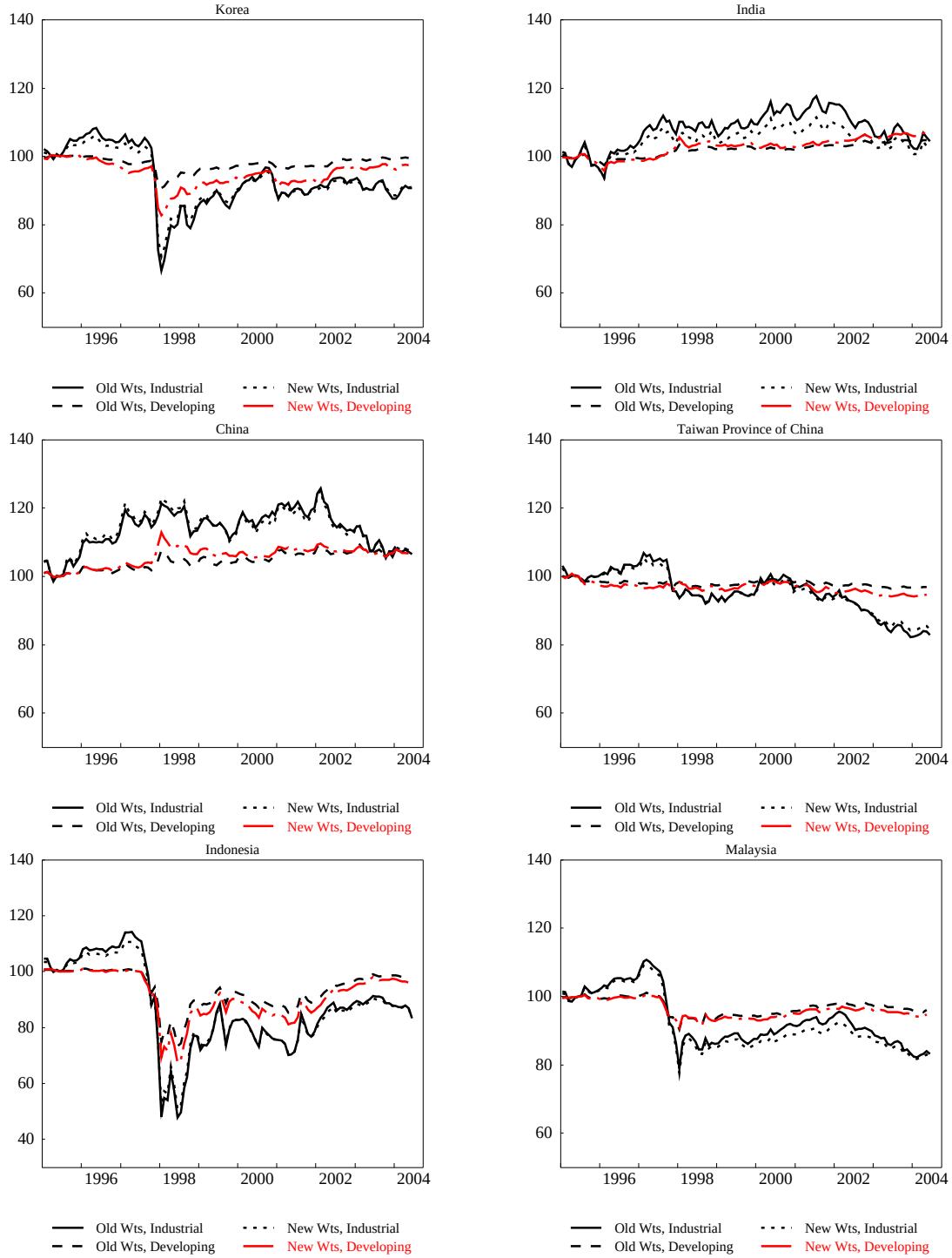
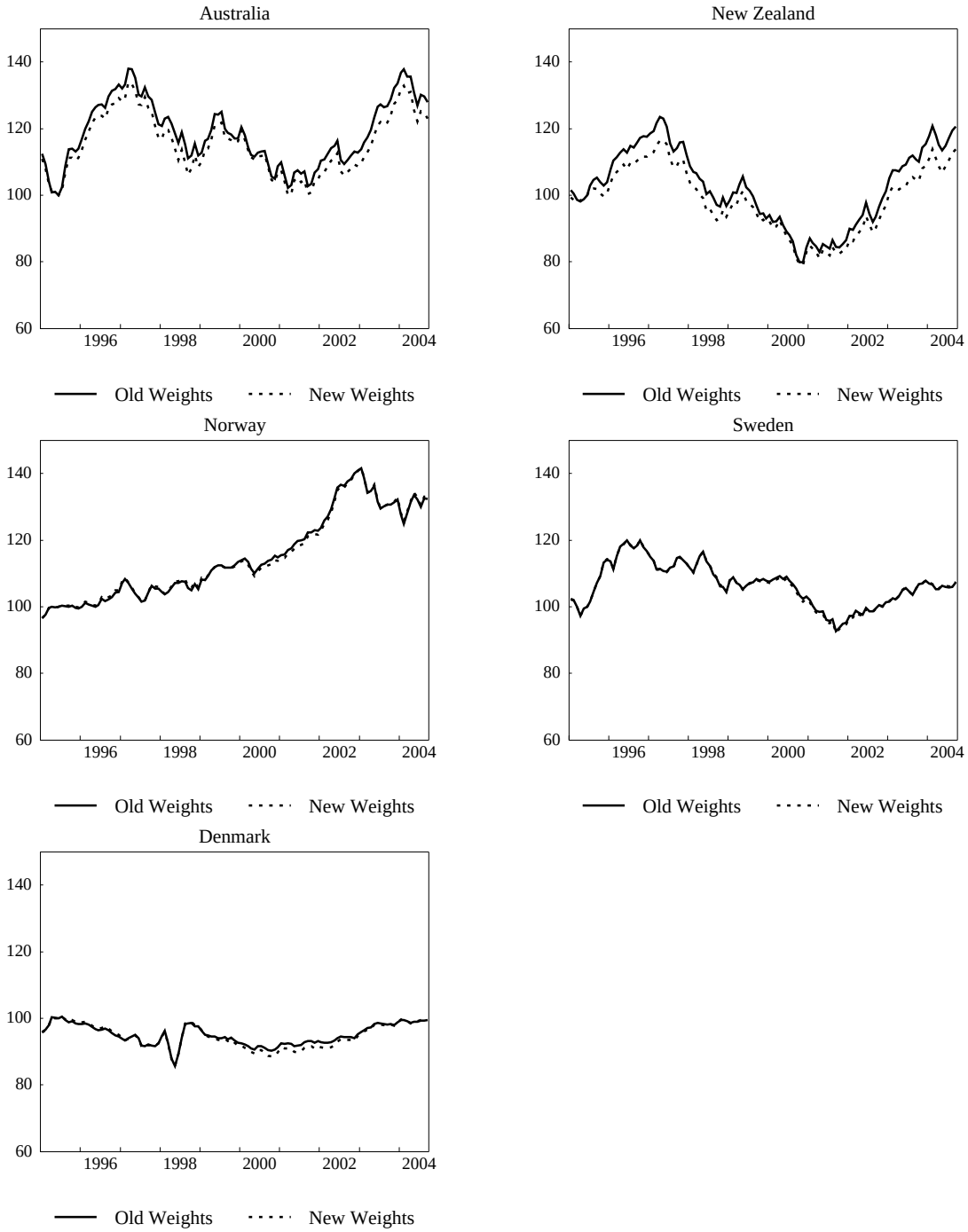


Figure 4. ULC-Based Real Effective Exchange Rate Index 1/
(June 1995 = 100)

1/ Only against other industrial countries.

Figure 4. ULC-Based Real Effective Exchange Rate Index (concluded) 1/
(June 1995 = 100)



1/ Only against other industrial countries.