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Chapter III

INTERNATIONAL CAPITAL FLOWS, CURRENT-ACCOUNT BALANCES AND DEVELOPMENT FINANCE

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A. Introduction

Heads of State and Government gathered in Monterrey, Mexico, in March 2002 committed themselves through the Monterrey Consensus, *inter alia*, to attract and enhance inflows of productive capital (para. 21) and to make debt sustainable (para. 47). The beginning of the millennium also saw the shift of developing countries as a group from net capital importers to net capital exporters. Indeed, since the Asian financial crisis in 1997–1998 capital has increasingly been flowing "uphill" – from poor to rich countries. The magnitude of this new phenomenon has caused some observers to conclude that some developing countries have been creating a global "savings glut" (Bernanke, 2005).[1]

The emergence of developing countries as net capital exporters contrasts with expectations derived from standard growth theories. These theories postulate that with open capital markets, capital will flow from rich to poor countries in order to exploit the higher expected rates of return on capital and bridge the "savings gap" in capital-scarce countries. The theories also predict that capital inflows will spur economic growth.

However, these predictions are not supported by developments over the past few years. Not only is capital flowing "uphill", but net capital-exporting developing countries also tend to grow faster and invest more than those developing countries that receive net capital inflows. These developments also call into question another hypothesis of standard economic theory, namely that there is a close and positive relationship between capital account liberalization and economic growth.

The divergence between these expectations and empirical findings has been described as a "puzzle". However, this divergence is puzzling only if viewed from the perspective of the basic tenets of neoclassical economic theory, particularly the idea that the evolution of the current account is driven by the behaviour of a representative agent that has perfect foresight and maximizes an intertemporal utility function. It is not puzzling once it is recognized that these assumptions do not reflect what actually happens in the real world.

This chapter addresses the main issues associated with capital flowing "uphill" – a phenomenon also called the "capital flows paradox" – with a view to providing a unified framework to enhance an understanding of the mechanisms that determine current-account balances and their interaction with the determinants of investment and growth. The chapter examines those factors that have played a

key role in improving the external balances of many developing countries, in particular swings from current-account deficit to surplus and the associated net capital outflows.

The main finding is that in countries which are heavily dependent on primary commodities, swings in the current account are driven to a large extent by changes in commodity prices, and that in countries with more diversified export and production structures, the real exchange rate plays the key role in determining changes in the current-account balance. Particularly the latter finding is in line with recent research that has shown not only that an overvalued exchange rate has detrimental effects on the external balance, but also that a competitive real exchange rate is a key factor for achieving growth of aggregate demand in the short run and of employment in the long run (Frenkel and Taylor, 2006; Eichengreen, 2007; and Rodrik, 2007).

Section B of this chapter briefly traces the recent evolution of the current account in different groups of developing countries. Section C analyzes episodes of current-account reversals in developing economies over the past three decades and highlights the conditions that are generally conducive to a strengthening of both the external balance and output growth. Section D takes up the fundamental building blocks of the traditional theoretical frameworks to examine the relationship between financial openness, net capital flows, investment and growth. It highlights the divergence between predictions of the standard "savings gap" model and the standard neoclassical growth model on the one hand, and the empirical observations that net capital inflows are not always necessary for growth and that faster growth in developing economies can even be associated with net capital exports on the other. Section E draws conclusions, outlining implications for economic policies at the national and international levels.

B. Recent evolution of the current account in developing countries

In the late 1990s, the current account of developed countries as a group moved from a surplus to a deficit and developing economies as a group moved from a deficit to a large surplus (chart 3.1). The evolution of the aggregate current-account balance (chart 3.1A) is strongly influenced by the behaviour of the two largest economies in each group, the United States and China respectively. While China can build on an enormous labour force it is also an outstanding example of a developing country that has succeeded in creating a sizeable amount of capital and in combining a significant current-account surplus with fast domestic capital accumulation.

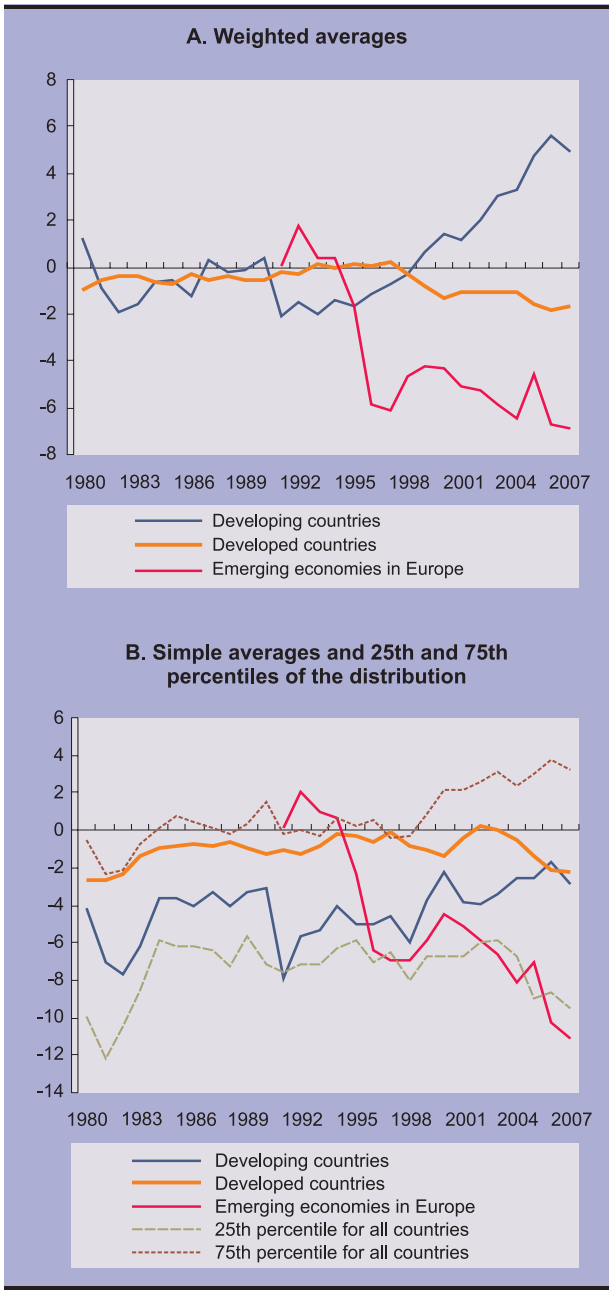
There is considerable heterogeneity within the developed and developing country groups, as can be seen by comparing charts 3.1A and 3.1B. The latter shows the evolution of the non-weighted, simple average of current-account balances. While the average for developing countries still showed a deficit after the turn of the millennium, the difference in current-account performance between developing and developed countries has narrowed substantially since then. But at the same time, the dispersion within the two groups of countries has increased, as indicated by the curves showing the evolution of the country at the 25th and 75th percentile of the distribution of the current-account balances. The inter-quartile range rose from 6 per cent of GDP in 1997 to 11.5 per cent of GDP in 2007.

The reversal of the current-account balances of developing countries started around 1998, probably largely in response to the wave of financial crises

Chart 3.1

CURRENT-ACCOUNT BALANCE IN DEVELOPING AND DEVELOPED COUNTRIES, AND EMERGING ECONOMIES IN EUROPE, 1980–2007

(Per cent of GDP)



Source: UNCTAD secretariat calculations, based on United Nations Statistics Division, Department of Economic and Social Affairs (UNSD/DESA) National Accounts data; *UNCTAD Handbook of Statistics* database; and IMF, *Balance of Payments* database.

Note: Emerging economies in Europe comprise the Czech Republic, Estonia, Latvia, Lithuania, Slovakia and Slovenia. A 75th (25th) percentile is the value below which 75 (25) per cent of observations are found.

that hit the developing world in the second half of the 1990s. The reversal was driven mainly by emerging-market economies (chart 3.2). By 2007, the emerging-market economies among the developing countries had eliminated, or almost eliminated, their current-account deficits (chart 3.2A), while other developing countries continued to maintain a substantial deficit (chart 3.2B). The transition economies of South-East Europe and the Commonwealth of Independent States (CIS) did not follow the same trend: whereas the emerging-market economies in this group registered, on average, a dramatic increase in their current-account deficit, other transition economies managed to reduce their deficits substantially.

The observation that the overall improvement in the current-account balances is mainly attributable to emerging-market economies can be explained by the fact that the other countries had only limited access to international capital markets and were only marginally affected by the financial crises of the last 10 years. This observation is even more perplexing from the perspective of mainstream economic theory, because it is the emerging-markets economies that, due to their greater openness to the international financial markets, would be expected to benefit the most from net capital inflows (or inflows of "foreign savings"), and thus have greater current-account deficits (box 3.1). Yet it was in the Asian emerging-market economies in particular that greater gross inflows were more than offset by gross outflows (chart 3.3).[2]

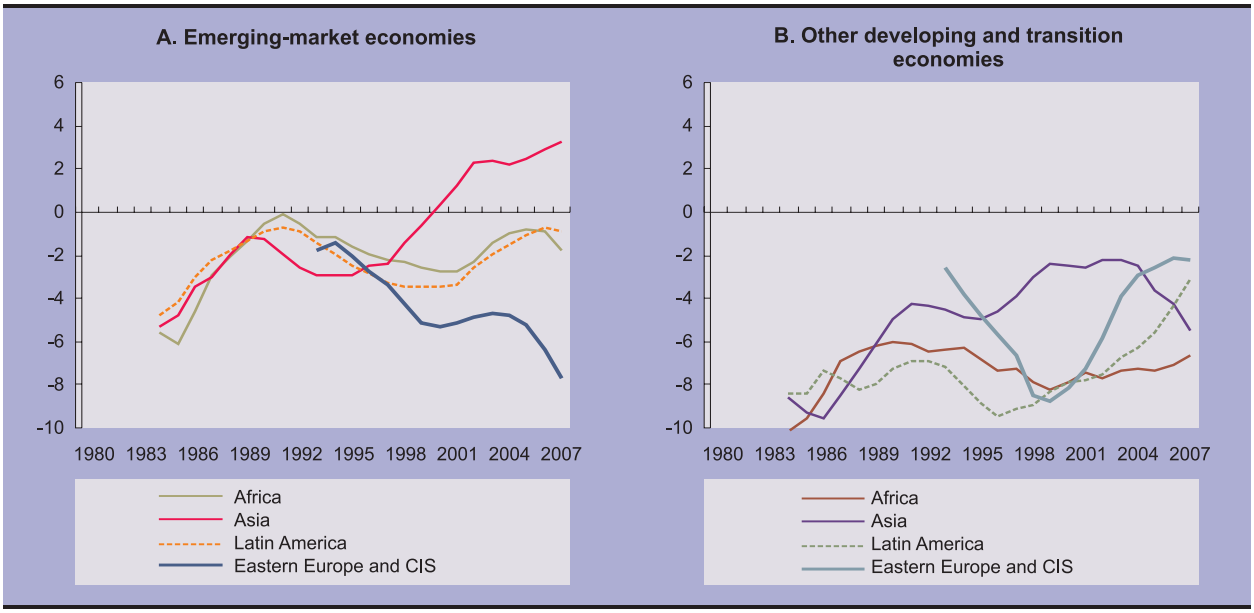
Chart 3.3 also illustrates the three waves of capital flows to and from developing countries and how these affected different regions. The first wave began in the mid-1970s and ended with the debt crisis in the early 1980s. The second started after the Brady swaps of the early 1990s and ended with the sudden halt in flows that followed the Asian and Russian crises. The third wave started in the early 2000s and has not yet ended. The first wave brought a large net inflow of capital, as gross outflows from developing countries were very small. During the second wave, rising gross capital inflows were accompanied by rising gross outflows. And during the third wave, gross outflows, largely associated with the accumulation of foreign-exchange reserves, particularly from Asia, outpaced gross inflows, leading to net capital outflows from developing countries.

For a number of countries whose trade performance is determined primarily by world demand for

Chart 3.2

CURRENT-ACCOUNT BALANCE IN DEVELOPING AND TRANSITION ECONOMIES BY REGION, 1980–2007

(Average as per cent of GDP)



Source: UNCTAD secretariat calculations, based on IMF, *Balance of Payments* and *World Economic Outlook* databases; and *UNCTAD Handbook of Statistics* database.

Note: Cross-country simple averages and five-year-moving averages. Eastern Europe and CIS does not include the Russian Federation.

Box 3.1

CURRENT ACCOUNT AND NET CAPITAL FLOWS: SOME DEFINITIONS

In standard terminology, capital inflows represent the acquisition of domestic assets by non-residents (plus grants), whereas sales of domestic assets by non-residents are defined as a negative capital inflow. Similarly, capital outflows measure the acquisition of foreign assets by residents, while sales of foreign assets by residents are defined as a negative capital outflow.

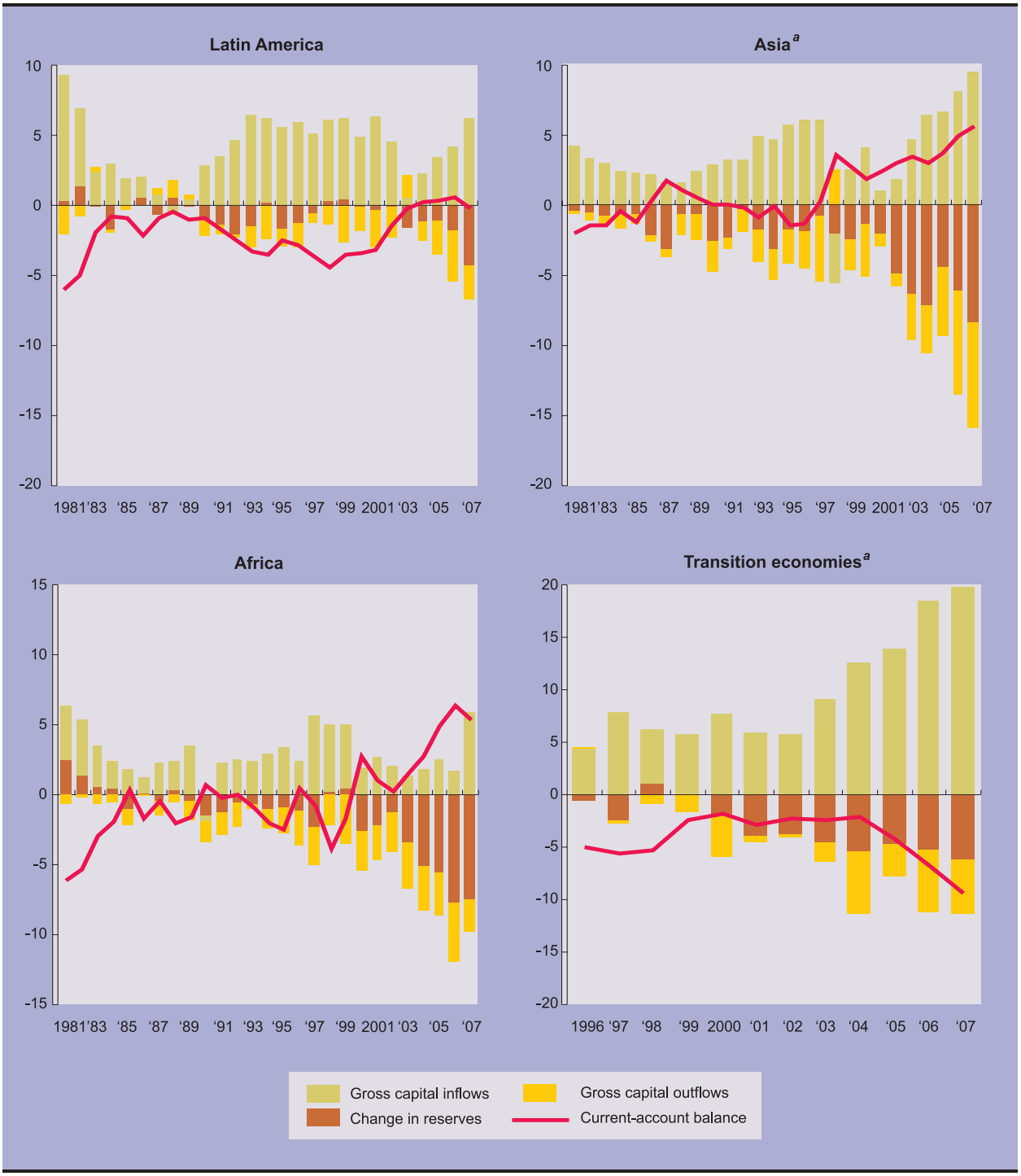
In the system of national accounts, the current-account balance corresponds to both the difference between national savings and investment and the difference between national income and expenditure. This implies that when domestic expenditure exceeds national income the resulting current-account deficit measures the transfer of resources from abroad that finances excess expenditure; this transfer is sometimes called "foreign savings".

The current-account balance is equal to the sum of the balance of imports and exports of goods and services plus the balance of factor payments between residents and non-residents, as well as current transfers. It is in the logic of the balance of payments as an accounting identity that the current-account balance equals the sum of all capital flows, changes in international reserves, and errors and omissions. Although in balance of payments accounting the latter three items are recorded separately, the terms "*net capital inflow*" and "*net capital outflow*" as used in this *Report* comprise the balance of the capital account, changes in reserves and net errors and omissions, unless otherwise mentioned, and are, thus, identical to the current-account balance (with opposite sign). This means that a current account surplus is identical with a net capital outflow and a current-account deficit is identical with a net capital inflow. This differs from the definition used in the *TDR 1999* (Part two, chap. V).

Chart 3.3

CAPITAL FLOWS, CURRENT-ACCOUNT BALANCE AND CHANGE IN RESERVES IN DEVELOPING AND TRANSITION ECONOMIES, BY REGION, 1981–2007

(GDP weighted averages as per cent of GDP)



Source: UNCTAD secretariat calculations, based on IMF, *Balance of Payments, International Financial Statistics* and *World Economic Outlook* databases; and national sources.

Note: For change in reserves, a negative value indicates an increase in reserves. Gross capital inflows are the sum of direct investment in the economy, portfolio investment liabilities and other investment liabilities. Gross capital outflows are the sum of direct investment abroad, portfolio investment assets and other investment assets.

a Excluding major oil exporters. Transition economies include Bulgaria and Romania.

primary commodities the improvement in their current account occurred with the rise in prices of primary commodities. Oil exporters, in particular, experienced a large turnaround of their current accounts when oil prices started to increase, whereas net importers of commodities recorded a negative effect on their current accounts. Many emerging-market economies in Asia fall in the latter group. But these countries compensated for an increase in their commodity-related import bill through a proportionately larger increase in revenues from manufactured exports, as their policymakers decided to keep real exchange rates slightly undervalued.

C. Determinants of current-account swings

1. Examples of post-crisis current-account reversals

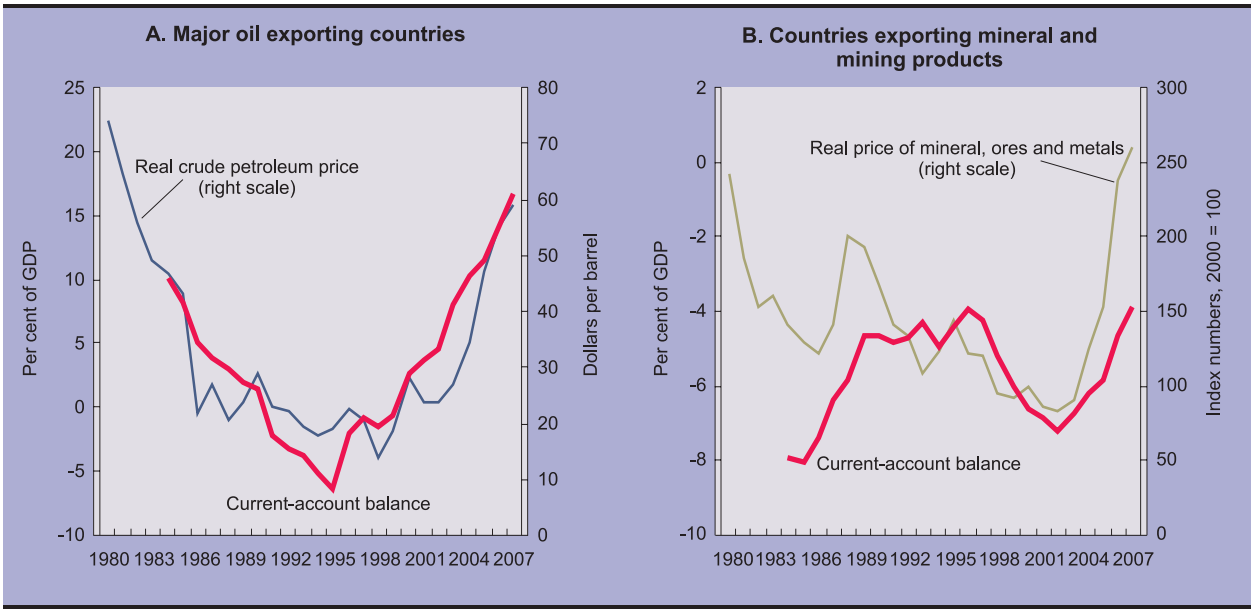
A reversal in the current-account balance of a developing country is often associated with a terms-of-trade shock. The considerable improvement of the current account balance following a positive price shock is most apparent in the case of oil-exporting countries (chart 3.4A), and also, albeit to a lesser extent, in the case of countries with mineral, ore and metal exports (chart 3.4B). However, in recent years developing-country producers of other primary commodities have also seen their terms of trade improve considerably, with attendant effects on their current-account position. Depending on the structural features of an economy, deficit reversals in developing countries can also be caused by a large depreciation in their real exchange rate or by a severe recession. Over the past 20 years, reversals triggered by currency depreciations have frequently been the outcome of financial crises in emerging-market economies. The Republic of Korea and the Russian Federation in 1998, and Argentina in 2002 are outstanding examples. China also provides an example of the second type of current-account reversal if one considers the adjustments made after its currency crisis in 1992, when the yuan depreciated markedly before it was fixed for a long time to the dollar (see chart 3.5).

Most of the currency and financial crises of the past can be reasonably well described by some stylized facts relating to two different exchange-rate regimes. In one group of countries, the exchange rate was pegged to a reserve currency, generally the dollar. This was the case in many smaller economies where the monetary authorities tried to stabilize the economy by adopting an exchange-rate "anchor". This strategy, which was often successful in cutting inflation, mostly ended in overvaluation of the currency and a large current-account deficit, as imports from the anchor economy became cheaper (Flassbeck, 2001). In another group of countries, a regime of flexible exchange rates was applied. Variations in the interest rate policies of these countries, which reflected their inflation differentials, led to large inflows of short-term capital in the absence of restrictions on capital flows. This caused an appreciation of the real exchange rate, which led to a rapid growth of imports and current-account deficits.

In both cases, the worsening of the current-account balance increased the perception of international investors of a growing currency risk, and, at a certain point, triggered a sudden and strong capital outflow. Loss of confidence in international financial markets usually provokes defensive actions by governments and central banks, including an increase in interest rates, intervention in the currency market, and an attempt to reduce fiscal deficits despite the

Chart 3.4

CURRENT-ACCOUNT BALANCE AND COMMODITY PRICES FOR COUNTRIES EXPORTING OIL, AND MINERAL AND MINING PRODUCTS, 1980–2007



Source: UNCTAD secretariat calculations, based on IMF, *Balance of Payments* and *World Economic Outlook* databases; UNCTAD, *Commodity Price Statistics* online; and *UNCTAD Handbook of Statistics* database.

Note: Current-account balance data are cross-country simple averages and five-year-moving averages. Exporters of mineral and mining products comprise Chile, Ghana, Guinea, Mozambique, Niger, Papua New Guinea, Peru, Suriname and Zambia. Real crude petroleum price: average of Dubai/Brent/Texas, equally weighted (dollars per barrel), deflated by United States consumer price index (2000 = 100). Real price of mineral, ores and metals: price index of mineral, ores and metals deflated by United States consumer price index (2000 = 100).

worsening domestic economic situation. This happened in the Republic of Korea in 1998, when its economy, despite relatively sound fundamentals, was subject to the contagion effects of the financial crisis that hit some other East Asian countries which were pursuing the anchor approach. The problem was that the exchange rate of the Korean currency had been de facto fixed after the opening up of its capital account, without considering the risk of speculative net capital inflows as a result of the relatively low dollar interest rates. The sharp current-account reversal in this country was driven by output and import contraction. Subsequently, a real currency depreciation helped sustain a moderate surplus for quite some time (chart 3.5A).

The current-account reversal in Argentina in 2002 followed a similar pattern (chart 3.5B): the currency board arrangement with the dollar led to an unsustainable overvaluation of the real exchange rate, which was exacerbated by the fact that, while the United States accounted for only a small fraction of the country's exports, Argentina's main trading partner, Brazil, had devalued its currency in 1999. When the currency board was abandoned in 2002, this regime change caused a sharp currency depreciation. Combined with extremely severe economic contraction, this led to a swing in the current-account balance of 10 per cent of GDP in 2002, and subsequently to a fast acceleration of growth that was initially driven by import substitution and an increase in exports.

In China, a surge in the current-account surplus, accompanied by moderate inflation, began in 2001. It took place in an environment of fast growth of the world economy and with an exchange rate that was still at the low level of 1993 when the Chinese authorities had allowed a sharp depreciation of the nominal exchange rate and pegged the yuan unilaterally to the dollar. This depreciation led to a reversal of the current account, which turned positive, but the

Chart 3.5

CURRENT-ACCOUNT REVERSALS, GDP GROWTH AND REAL EFFECTIVE EXCHANGE RATE FOR SELECTED COUNTRIES

Source: UNCTAD secretariat calculations, based on IMF, *Balance of Payments* and *International Financial Statistics* databases; JPMorgan; and *UNCTAD Handbook of Statistics* database.

Note: A thick segment of the line depicting the current-account balance denotes a deficit reversal.

surplus diminished somewhat in the aftermath of the Asian financial crisis (chart 3.5C). This was because the currencies of other Asian economies – whose producers competed with Chinese exporters on world markets – depreciated sharply, and Chinese exports stagnated as a result of recession in these countries.

The improvement in the current account of the Russian Federation after its 1998 financial crisis was primarily due to favourable terms-of-trade developments and growing exports of energy-related commodities (chart 3.5D). Although the interest rate differential vis-à-vis the dollar narrowed after 1998, the potential for speculative gains returned with rising inflation and higher nominal interest rates. The ensuing appreciation of the rouble nullified the competitive gains for the Russian economy accruing from the currency depreciation associated with the 1998 crisis. This may compromise Russian efforts to diversify the economy sufficiently to be able to deal with future dips in oil prices or a depletion of reserves.

The four cases discussed above show that large improvements in the current account are usually accompanied by either a positive terms-of-trade shock or by a depreciation of the real exchange rate. The results of an econometric exercise, aimed at estimating the cross-country determinants of positive current-account reversals and the conditions under which such reversals are associated with an increase in GDP growth, suggest that this pattern is also valid for a larger sample of countries. The main results of this exercise are discussed below, while the methodology used to define the reversal episodes and detailed results of the econometric analysis are described in the annex to this chapter.

2. Factors influencing current-account reversals

For the quantitative analysis, 268 reversal episodes were identified. Their main characteristics are summarized in table 3.1. More than three quarters of the episodes took place in developing economies, about 10 per cent in transition economies, and the remaining 15 per cent in developed economies.[3] The average episode started with a current-account deficit of approximately 10 per cent of GDP. It lasted for about four years and brought about a cumulative current-account reversal of approximately 12 per cent of GDP. In developed economies the initial deficit and the size of the reversal were about half those of the developing and transition economies. GDP growth during the period in which the reversal took place was generally lower than GDP growth in the period before the reversal, but at 0.5 percentage points, the difference was not very large. On average, economic activity tended to pick up after the reversal was completed, and in the period following the reversal GDP growth was about one percentage point higher than in the period in which the reversal took place.

The reversals were usually associated with large depreciations of the real exchange rate and they were followed by a limited appreciation of the real exchange rate. Thus, after the reversal was completed, the real exchange rate was about 20 per cent lower than in the period before the episode. Domestic producers were thus internationally more competitive after the reversal than before. An exception to this pattern is the transition economies, where the period in which the reversal took place was characterized by an appreciation of the real exchange rate.

The evolution of several variables during the reversal episode is illustrated in chart 3.6, which distinguishes between developed and developing economies. GDP growth reached a trough in the year after the beginning of the episode and then started to recover in both the developed and developing economies. In both groups of countries reversals tended to occur when there was a large negative output gap (i.e. when the actual output was higher than trend output).[4] In developing countries, the real exchange rate peaked one period before the reversal and kept depreciating for several periods after the beginning of the reversal. By contrast, in developed economies, the real exchange rate began to depreciate several periods before the episode and then flattened at the time of the episode. Reversals in developing countries, unlike those in developed countries, were often preceded by positive terms-of-trade shocks. Real interest rates rose sharply in both groups before the reversal took place, probably as a result of unsuccessful attempts by the monetary authorities to defend a nominal exchange rate. In developed and developing countries alike, the real interest rate started falling immediately after the reversal.

To sum up, evidence shows that current-account reversals are typically preceded by positive

Table 3.1

ANALYSIS OF CURRENT-ACCOUNT REVERSALS:
SUMMARY OF CHANGES IN GDP GROWTH AND THE REAL EFFECTIVE EXCHANGE RATE (REER)

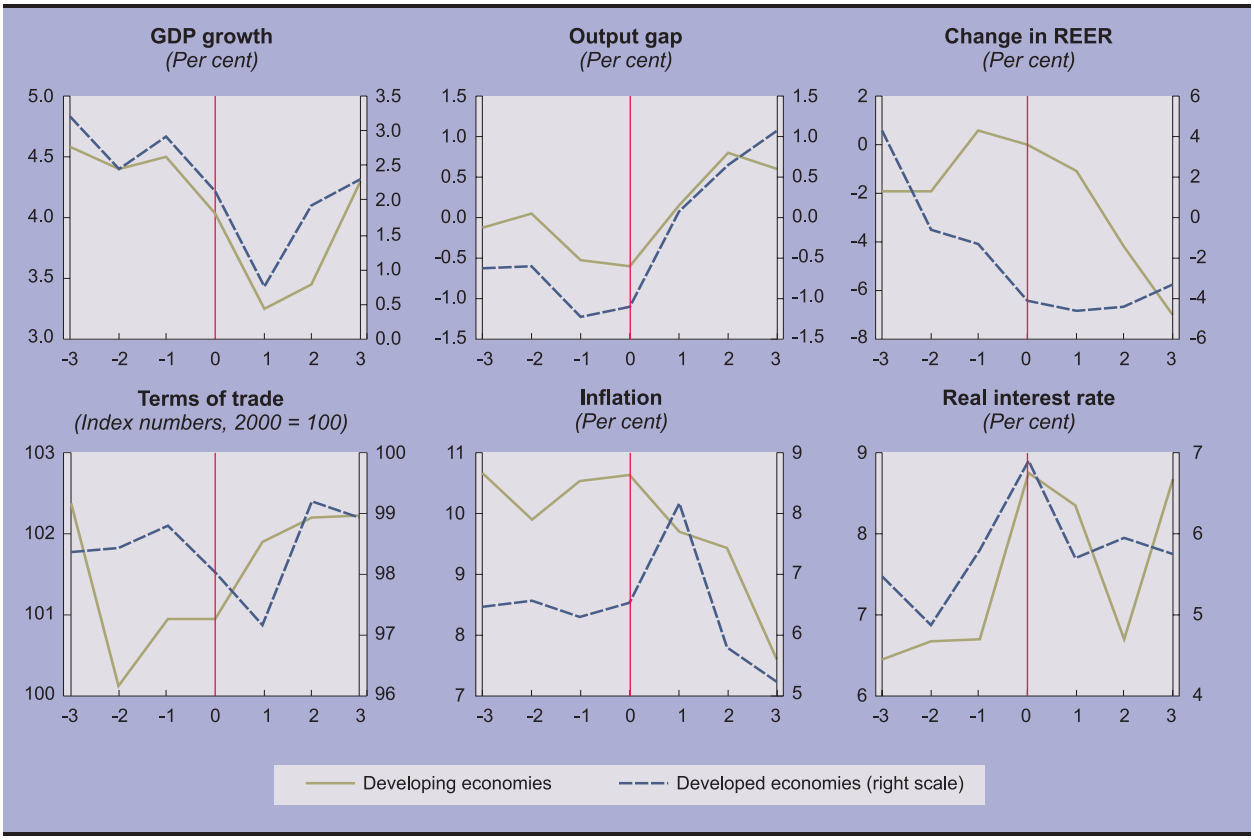
	Current-account balance at the beginning of the episode	*Current-account reversal*	*Duration*	*Change in*						*No. of episodes*
				GDP growth			*REER*			
	(Per cent of GDP)		*(Years)*	*(t - t-1)*	*(t+1- t)*	*(t+1- t-1)*	*(t - t-1)*	*(t+1 - t)*	*(t+1 - t-1)*	
				(Percentage points)						
All economies	-10.0	12.3	4.2	-0.5	1.3	0.6	-21.5	4.7	-19.4	268
Developed economies	-5.4	6.4	4.0	-0.6	1.4	0.6	-9.0	6.4	-3.3	40
Transition economies	-12.3	14.5	4.6	7.3	4.3	10.7	-24.4	28.8	-14.0	22
Developing economies	-10.7	13.2	4.2	-1.1	1.0	-0.3	-23.6	2.7	-22.6	206
Africa	-13.2	14.6	4.3	-1.4	0.7	-0.9	-26.6	1.1	-26.1	97
Latin America and the Caribbean	-7.7	10.6	4.1	-1.8	2.4	0.3	-18.0	8.9	-12.7	52
Asia and the Pacific, excl. West Asia	-6.8	9.9	4.0	-1.2	1.4	0.3	-24.1	-3.0	-26.6	37
West Asia	-13.0	19.6	4.9	2.3	-2.2	0.3	-25.7	4.5	-27.0	20

Source: UNCTAD secretariat calculations, based on *UNCTAD Handbook of Statistics* database; World Bank, *World Development Indicators*; IMF, *Balance of Payments* and *International Financial Statistics* databases; JPMorgan; and national sources.

Note: Values in period "t" are the averages of the values over the reversal episodes, while values in periods "t-1" and "t+1" are the averages values of the three years before the beginning and three years after the end of the episode, respectively.

Chart 3.6

MAIN ECONOMIC VARIABLES AROUND A CURRENT-ACCOUNT REVERSAL



Source: See table 3.1.
Note: The horizontal axis marks years before and after the reversal episode.

terms-of-trade shocks and real depreciations, and that the subsequent improvement in the current-account balance enables implementation of a more investment- and growth-friendly monetary policy stance. But changes in the current account are influenced by a variety of factors in addition to the real exchange rate and the terms of trade. An econometric investigation provides some indications of the relative importance of changes in some other variables that contribute to possible current-account reversals in developed or developing economies.[5]

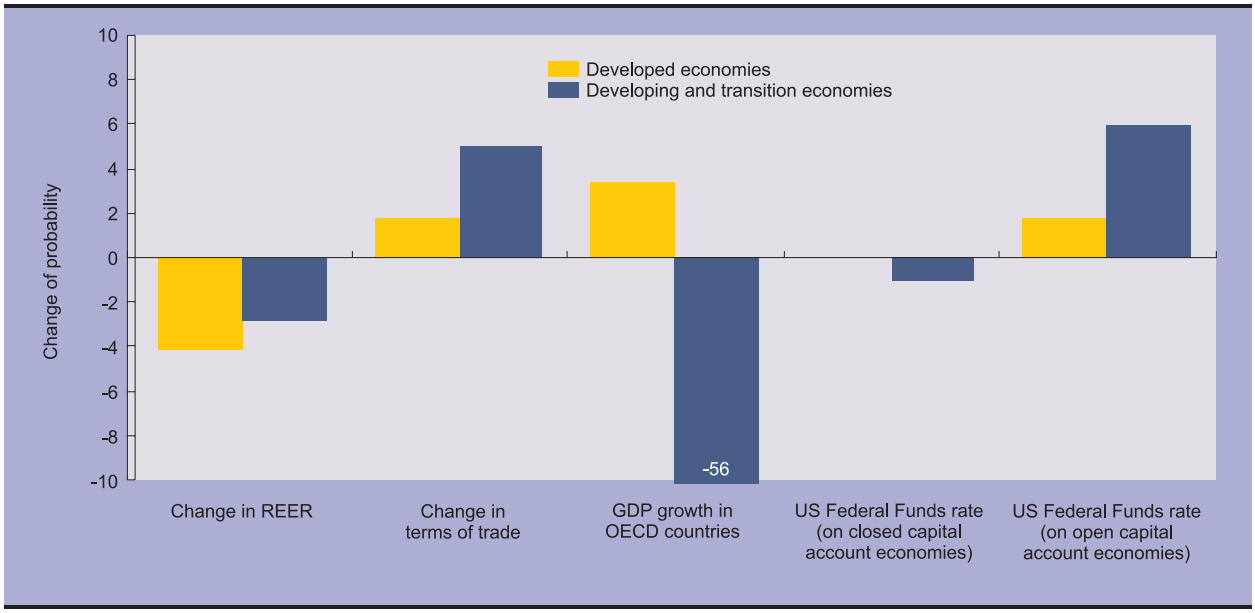
The main results of this analysis are summarized in chart 3.7 (for details see table 3.A1 in the annex to this chapter). The chart shows the effect of a "one standard deviation" change in each variable on the probability of occurrence of a current-account reversal.[6] The "one standard deviation" represents a normalization of changes in different variables, which is useful because, under standard assumptions, the probability that a variable will change by more than one standard deviation in either direction is not very high.[7]

Current-account reversals are correlated with real depreciations in all economies – developed, developing and transition – but further analysis also shows that the effect of exchange-rate shocks is stronger in the developed economies. If a depreciation of the real effective exchange rate in developed economies increases the probability of a current-account reversal by 4.2 per cent, the corresponding effect in developing and transition economies is 2.8 per cent.[8] The probability of a current-account reversal occurring due to changes in the terms of trade is almost three times higher for developing and transition economies than for developed economies. In the former, an improvement in the terms of trade is associated with a 5 per cent increase in the probability of a current-account reversal, while the

Chart 3.7

DETERMINANTS OF THE PROBABILITY OF A CURRENT-ACCOUNT REVERSAL

(Per cent)



Source: UNCTAD secretariat calculations, based on data in annex table 3.A1.
Note: The bars indicate the effect of a one standard deviation change of the relevant variable on the probability of a current-account-deficit reversal.

corresponding value for the latter is 1.8 per cent. This finding indicates that external shocks have a significant effect on the current account of developing countries.

Along similar lines, the econometric analysis also confirms that current-account reversals in developing and transition economies are negatively correlated with GDP growth in developed economies (i.e. that faster growth in the latter increases the probability of a reversal in the former). A decrease in GDP growth in the OECD countries increases the probability of a current-account reversal in developing countries by more than 50 per cent (the bar in chart 3.7 is truncated at -10 per cent). The opposite relationship holds in the developed economies, but in this case the effect is smaller and the coefficient is not statistically significant.[9] The chart also shows that external financial shocks (as measured by changes in the United States interest rate policy), have practically no effect on the probability of a current-account reversal of developing countries with a closed capital account. But for those with an open capital account, it can have a large positive effect: an increase in the Federal Funds Rate increases the probability of a current-account reversal by approximately 6 per cent.

Taken together, these results suggest that, rather than being driven by autonomous saving and investment decisions of domestic agents, current-account reversals in developing countries tend to be driven by external shocks emerging from goods as well as financial markets.

In order to examine the conditions under which a country can move from a current-account deficit to a current-account surplus without suffering a large and protracted economic crisis, the reversal episodes shown in table 3.1 have been divided into three groups: expansionary, contractionary and unclassified. Episodes that were followed by an increase in GDP growth of at least one percentage point are classified as expansionary, those followed by a one percentage point decrease in GDP growth are classified as contractionary, and all remaining episodes are defined as unclassified. Based on this methodology, out of 193 episodes, 57 were expansionary, 77 were contractionary and 59 could not be classified.[10]

Table 3.2

CHANGES IN EXCHANGE RATES AND TERMS OF TRADE DURING CURRENT-ACCOUNT REVERSALS, BY TYPE OF EPISODE

	Type of episode							
	Expansionary		Contractionary		Not classified		Total	
Episodes with:	No. of episodes	Terms-of-trade change (per cent)	No. of episodes	Terms-of-trade change (per cent)	No. of episodes	Terms-of-trade change (per cent)	No. of episodes	Terms-of-trade change (per cent)
Depreciation of real exchange rate	42	26	58	20	50	18	150	21
Appreciation of real exchange rate	15	120	19	10	9	33	43	53
Total	57	51	77	17	59	20	193	28

Source: See table 3.1.

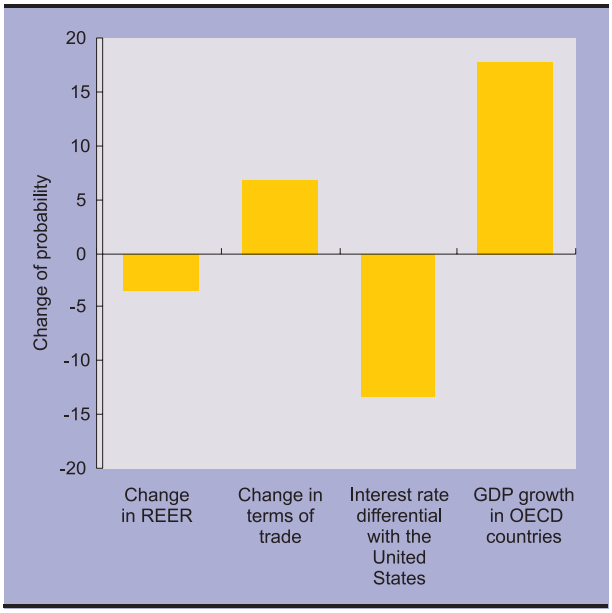
Within each of these groups, a further distinction can be made between episodes that were accompanied by a currency depreciation and a currency appreciation. Table 3.2 shows that more than 75 per cent of the episodes were accompanied by a real depreciation of the exchange rate. The few episodes accompanied by a real appreciation of the exchange rate were characterized by positive terms-of-trade shocks which were more than twice as large as those associated with the episodes accompanied by a depreciation. Moreover, expansionary episodes that were accompanied by a currency appreciation also experienced large positive changes in their terms of trade.[11] This provides *prima facie* evidence that unless a country receives a large positive terms-of-trade shock, a real exchange rate depreciation is a necessary, but not sufficient, condition for an expansionary current-account deficit reversal. If developed economies were to be excluded from this analysis, it would lead to even stronger results in the same direction.

The finding that expansionary reversals need either a large positive terms-of-trade shock or a real depreciation is strengthened by a formal test that controls for a host of other factors that may affect the probability of such a reversal (chart 3.8).[12] A real depreciation increases the probability of an expansionary reversal by approximately 3.5 per cent, and an improvement in the terms of trade increases

Chart 3.8

DETERMINANTS OF THE PROBABILITY OF AN EXPANSIONARY CURRENT-ACCOUNT REVERSAL, DEVELOPING AND TRANSITION ECONOMIES

(Per cent)



Source: UNCTAD secretariat calculations, based on data in annex table 3.A2.

Note: The bars indicate the effect of a one standard deviation change of the relevant variable on the probability of an expansionary current-account-deficit reversal.

the probability of such a reversal by approximately 7 per cent. Moreover, an increase in the difference between the domestic and the United States nominal interest rate reduces the probability of an expansionary reversal by 13 per cent. This suggests that high nominal interest rates have a large negative effect on the probability of an expansionary reversal. Another important factor is the global macroeconomic environment: an increase in the GDP growth of the OECD countries is associated with an 18 per cent increase in the probability of an expansionary reversal occurring in developing and transition economies.

An attempt at explaining the determinants of contractionary reversals did not produce satisfactory results: the statistical model showed that the only robust predictors are the output gap and the nominal interest rate (the higher the nominal interest rate the more likely it is that the reversal will be contractionary). Some of the regressions described in the annex found that greater trade openness is associated with a higher probability of a contractionary episode occurring, and that greater capital-account openness is associated with a lower probability of a contractionary episode occurring. These results can lead to the conclusion that successful reversals tend to have many features in common: a depreciated real exchange rate, positive terms-of-trade shocks and an accommodating monetary policy. However, each contractionary reversal has its own explanation.

D. Foreign capital and growth

The observation that since the beginning of this century capital has been flowing "uphill", while at the same time an increasing number of developing countries that are net capital exporters have achieved high growth rates, raises serious questions about the theoretical foundations of the standard recommendations for economic policies in developing countries.

There is broad agreement that neither the direction of international capital flows nor output growth in capital-exporting and capital-importing countries fit the predictions of the standard models. By contrast, there is disagreement on the reasons why this is so. On the one hand, there are those who claim that simple extensions of the standard model can yield predictions which are consistent with the data. On the other hand, there are those who argue that problems with the standard neoclassical approach go deeper, and that a completely different economic model needs to be applied. This section suggests several reasons why the latter interpretation may be sounder than the former.

1. Standard economic models of savings and development

(a) The savings gap model

Typically, theories of economic growth and explanations for large income differences between countries focus on countries' endowments in terms of factors of production and/or natural resources. Economies with more capital equipment and/or better educated workers are expected to generate higher per capita income than countries with low-skilled labour and meagre capital equipment. Thus, in order to be able to catch up, poor countries need more capital. However, if the creation of capital is a function of the level of income, developing countries face the dilemma of not having enough capital precisely *because* they are poor. In other words, their savings are insufficient to free up a part of the domestic production potential for the production of capital goods or for the production of exports that could finance

imports of such goods. In this theoretical framework, economies are not expected to grow fast enough to initiate a catching-up process before reaching critical benchmarks of savings and investment (see, for example, Sachs et al., 2004). The attempt to fill this "savings gap" by capital inflows from countries with higher income and savings has guided traditional development thinking.

According to this thinking, the strategy to reduce global poverty and to allow the catching up of poorer countries is built on two blocks. Firstly, the endowments of less developed countries can be enriched by giving them access to those factors of production that they lack – through the provision of private foreign capital or official development assistance. Secondly, as developed countries open up their markets to the products of developing countries that possess natural resources or abundant labour but little capital, the developing countries are able to raise their export earnings and, consequently, to import more sophisticated equipment.

The savings gap theory refers to the standard growth model of the 1940s and 1950s: the Harrod-Domar model (Harrod, 1939; and Domar, 1957). This capital-labour model identifies certain necessary components of growth, but it does not explain the functional relationships that determine the interaction of these components. Most approaches based on this growth theory see the rate of capital accumulation determined by the difference between capital deepening (the capital-labour ratio) and capital widening (the amount of saving per capita needed to hold the capital-labour ratio constant as the population grows and the existing capital stock depreciates). If total factor productivity is constant "the economy grows in per capita terms as long as saving per capita exceeds capital widening" (Sachs et al., 2004: 124).

Accordingly, countries with relatively low growth rates are encouraged to increase their savings enough to keep up with the requirements of capital widening. This conclusion is plausible, as productive investment is found to be decisive for growth. However, if domestic saving is essentially equated with productive domestic investment, the result is trivial. It amounts to saying that economies with briskly growing investment grow more rapidly than economies with less dynamic investment. Thus the Harrod-Domar model predicts what it assumes: savings are needed to grow and a high ratio of savings is better than a low ratio.[13]

Because of its tautological nature, this approach does not enable far-reaching policy conclusions. The argument that total savings must be increased by an inflow of external savings in order to raise productive investment is based on the assumption that households are the only source of domestic savings and that savings are invariably used for productive investment in fixed capital. If either of these two assumptions is relaxed, the inflow of foreign savings becomes less important for the promotion of productive investment. In that case, other sources of domestic savings, including company profits, and the kinds of activities in which these savings are invested are of crucial importance for economic growth, as discussed in chapter IV. The Latin American experience during the last quarter of the past century has shown that higher capital inflows (i.e. the availability of foreign savings) cannot be equated with higher investments. Despite sizeable net capital inflows investment ratios remained low and output growth subdued.

(b) The neoclassical model

The more recent textbook descriptions of the behaviour of the economy in the long run are rooted in the purely neoclassical growth model originally developed by Solow (1956) and Swan (1956). According to this model, savings determine capital accumulation (as in the Harrod-Domar model), but savings and investment are not always related to economic growth (in contrast to the Harrod-Domar model). Savings (and investment) drive growth only when the economy is out of equilibrium, but they do not influence growth when the economy is in equilibrium. In the long run, growth is determined solely by technology, which in turn is determined exogenously by non-economic variables.

Successive work based on this model, such as the Cass-Koopmans model (Cass, 1965; and Koopmans, 1965) "endogenized" the saving rate. It did so by modelling the behaviour of a representative individual who seeks to optimize lifetime utility. This strand of the literature assumes perfect foresight and risk-aversion: it hypothesizes that consumers prefer a stable consumption path and that any transitory shock to income is, under normal circumstances, compensated for by a change in savings in the same direction (i.e. a temporary drop in income leads to lower savings and a temporary increase in income

leads to higher savings). A permanent shock to income has the opposite effect. If GDP growth increases permanently, individuals will immediately jump to a higher consumption path and the increase in growth will lead to lower savings.

By contrast, if a shock has its origin in the savings rate, for example if a change in preferences leads to higher savings, then both investment and growth increase (as in the Harrod-Domar model), at least in the transition to a "new steady state". Thus, the model predicts different relationships between savings and growth, depending on the nature of the shock and on whether the shock is permanent or temporary. In response to a temporary shock to GDP growth, income and savings change in the same direction, while in response to a permanent shock to GDP growth, income and savings change in opposite directions. In response to a shock to the savings rate (for example resulting from a change in preferences), income and savings change in the same direction. In this case, however, causality goes from savings to income.

These assumptions are based on a closed economy model, in which ex-post national savings are always equal to ex-post investment. Things are different in open economy models that allow free capital flows. Since savers can invest in other countries, the open economy neoclassical model predicts that there should be no correlation between domestic savings and investment decisions.

As first pointed out by Lucas (1990), under the model's assumption that profits per unit of output are the same in all countries, the marginal product of capital should be higher in countries with a relatively small capital stock (i.e. in poor countries) so that poor countries should record net capital inflows. Accordingly, the observed relatively small capital flows from developed to developing countries have been labelled the "Lucas Paradox". This paradox triggered a vast body of literature that sought to explain the factors that limit the incentives to invest in developing economies. The recent literature seeks to explain the Lucas Paradox by switching the emphasis from factor accumulation to total factor productivity (TFP), which (in the Solow-Swan model) is the part of the overall productivity increase that cannot be attributed to either labour or capital. It argues that if TFP correctly reflects the return on investment, countries with faster productivity growth will invest more. It also argues that countries with faster productivity growth will have lower savings rates because agents anticipate the potential for future consumption, which increases with rising productivity growth.

Given that the current account equals, by definition, the difference between national savings and investment, the neoclassical model predicts that countries with relatively fast productivity growth have current-account deficits (Gourinchas and Jeanne, 2007). If there are no capital controls, there should be no direct link between domestic investment and savings decisions. This means that the neoclassical open economy model predicts that an exogenous increase in national savings will be associated with an improvement in the current account, but that it will have no effect on domestic investment and growth.

To summarize, similar to the savings-gap model, the neoclassical model predicts a positive correlation between savings (equal to investment) and growth for a closed economy. But while the savings-gap model predicts that open economies with current-account deficits grow faster than countries with surpluses, in the neoclassical model the growth impact of capital inflows depends on whether savings or productivity were subject to the initial shock.

(c) Evidence

The neoclassical model is based on three central assumptions: (i) the economy can be described by studying the behaviour of a representative agent; (ii) the representative agent is fully rational and maximizes intertemporal utility under perfect foresight; (iii) the economy is in a long-run equilibrium characterized by full employment (see also box 3.2). If one of these assumptions is violated, the model is not applicable and its policy recommendations are unfounded. While the assumptions have been called into question, proponents of the model have argued that the strength of the model is to be judged not only by its assumptions, but also by its predictive power. Yet, the model's predictive power is challenged by empirical evidence.

Empirical evidence points to a highly significant positive correlation between savings and growth over the past 20 years (chart 3.9). This observation is not consistent with the prediction of the standard neoclassic model, according to which there is no

Box 3.2

THE FAILURE OF THE NEOCLASSICAL MODEL

While most economists would agree that the assumptions of the neoclassical model are far from reality, the model continues to serve as a basis for economic policy prescriptions. One problem is that it approaches macroeconomic issues with microeconomic reasoning that can lead to erroneous policy recommendations. Kaldor (1983: 83) commented on this problem as follows:

> Primitive religions are anthropomorphic. They believe in gods which resemble human beings in physical shape and character … [Anthropomorphic economics applies] to the national economy the same principles and rules of conduct as have been found appropriate to a single individual or a family - paying your way, trimming your expenditure to fit your earnings, avoiding living beyond your means and avoiding getting into debt. These are well-worn principles of prudent conduct for an individual, but when applied as policy prescriptions to a national economy they lead to absurdities.
>
> If an individual cuts his expenditure he will not thereby reduce his income. However, if a Government cut their public expenditure programme in relation to tax rates and charges, they will reduce the total spending in the economy and hence the level of production and income … It is a policy that is appropriate only in times of excess demand and over-full employment.

For many reasons it is wrong to assume that a complex economy, with millions of agents with diverging interests, functions in a way that would be found in a Robinson Crusoe world. For example, prices only clear markets if supply and demand are determined independently. This is not the case for one of the most important prices, that of labour. Wages are a cost factor, and thus influence the supply of goods and services, but they also determine the income of the largest segment of the population and thereby influence the demand for goods and services. In the same vein, an individual agent may reduce its consumption in order to invest more, but in a complex economy, where investment and savings decisions are made independently by different actors, higher savings (equivalent to lower demand for consumer goods) do not automatically lead to an increase in investment; rather, the opposite may be true. Keynes (1936) argued that the decision "not to have dinner today" depresses the business of preparing dinner today without immediately stimulating any other business. Unless companies have "accurate information about the future", they will react to lower demand and falling profits by reducing investment, thereby reducing income.

In neoclassical models, the assumption of full employment prevents a fall in aggregate demand brought about by an increase in the savings rate. In the closed economy version of the model, this leads to an immediate reduction in the interest rate, and, since firms supposedly have perfect foresight and anticipate higher growth in the future, they react by increasing investment. This implies that firms increase investment even as involuntary inventories rise and their capacities are not fully utilized. It is hard to think of a real world entrepreneur who would behave in this way. Nor is there any country where the interest rate is determined by the supply of financial savings (let alone real savings). Short-term rates are either the result of central bank policy – when monetary policy operates without external constraints – or are influenced by short-term financial speculation.

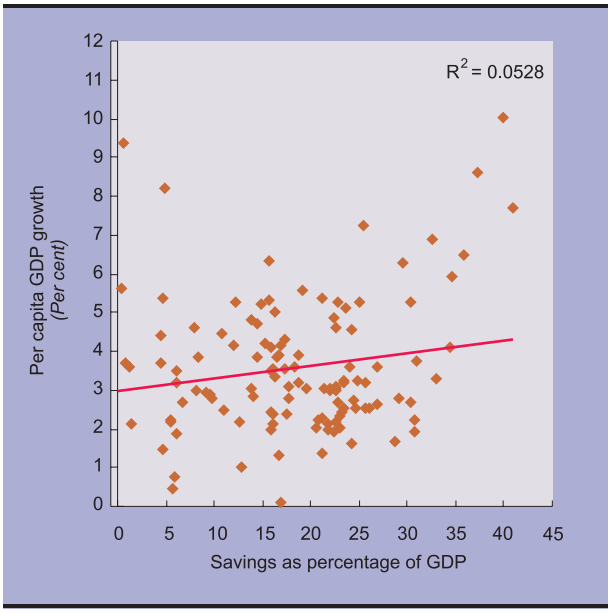
In the open economy version of the neoclassical model, foreign savings (equivalent to the current-account deficit) close any gap between the demand and supply of national savings that may exist at the prevailing real interest rate, or in other words, they provide additional financial resources for investment. However, since the global current-account balance is zero by definition (although, due to statistical errors, actual records may show a different balance), the question arises as to how the "decision" of a specific country to have a current-account deficit is made consistent with the decisions in the rest of the world to have a surplus. This is a question for which the model does not provide an answer but which is essential for the conduct of successful growth-oriented macroeconomic policies.

While most economists would agree that the assumptions mentioned above are questionable, the standard answer of neoclassical economists is that one should not focus too much on the assumptions. Models should be judged based on the accuracy of their predictions and not on the validity of their assumptions. The evidence discussed in this chapter suggests that the neoclassical model fails on both the validity of its assumptions and its ability to predict.

Chart 3.9

RELATIONSHIP BETWEEN DOMESTIC SAVINGS AND PER CAPITA GDP GROWTH, AVERAGE FOR 1985–2005

(Per cent)



Source: UNCTAD secretariat calculations, based on *UNCTAD Handbook of Statistics* database; and World Bank, *World Development Indicators*.

Note: The sample comprises 130 developed, developing and transition economies.

correlation between domestic savings and investment in open economies.[14] The empirical relationship between the current-account balance and growth is much less clear. The long-term relationship between growth and the current-account balance is negative and statistically significant for developed economies, as predicted by the model (chart 3.10A), but it is positive and statistically significant, albeit less so, for developing and transition economies and thus contradicts the model's prediction (chart 3.10B).[15]

The empirical findings of Gourinchas and Jeanne (2007) indicate a positive correlation between the current-account balance and TFP growth and a negative correlation between net capital inflows and convergence towards the world technological frontier. Both these findings refute the predictions of the neoclassical model; most importantly in the present context, the findings contradict the neoclassical prediction that developing countries with a relatively rapid rate of convergence towards the world technology frontier will import more capital (i.e. run a relatively large current-account deficit). Their focus on TFP growth also allows Gourinchas and Jeanne (2007) to explain the Lucas Paradox (given that most developing countries have lower TFP growth than the advanced economies). However, they uncover another puzzle as they find that capital seem to flow to developing countries that are growing slowly rather than to those that are growing rapidly. They call this finding the "allocation puzzle".

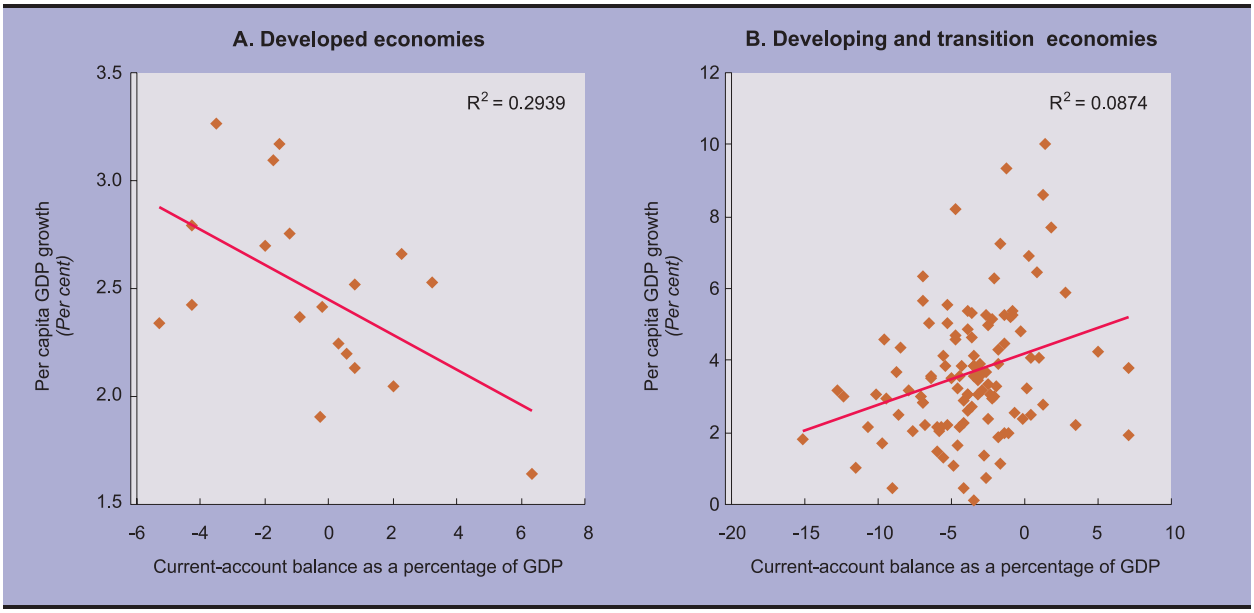
Some authors claim that marginal changes to the neoclassical model suffice to reconcile these divergences between the model's predictions and empirical evidence. Prasad, Rajan and Subramanian (2007), for instance, interpret the absence of a positive growth impact of capital inflows in developing countries as being caused by the inefficiency of financial intermediation in the financial systems of these countries. According to these authors, institutional deficiencies (such as weak protection of property rights) limit the ability of financial intermediaries to effectively use foreign capital to finance arm's length transactions, especially investment projects that have a long gestation period and low initial profitability.

But Prasad, Rajan and Subramanian (2007) also show that the strong link between net capital inflows and the behaviour of the real exchange rate has a large negative effect on export industries. Indeed, export-oriented industries are very often the most dynamic component of the domestic economy and the negative relationship between capital inflows and GDP growth could well be explained by the fact that capital inflows tends to lead to an appreciation of the real exchange rate or even an overvaluation.

Rodrik and Subramanian (2008) propose a further explanation for the absence of a positive growth impact of capital inflows by distinguishing between savings-constrained and investment-constrained economies. They postulate the existence of a savings constraint if several potentially profitable investment projects cannot be realized because of the high costs of capital. Capital inflows would relax the savings constraint and, by lowering interest rates, stimulate investment and growth. In investment-constrained economies, by contrast, capital inflows have no effect on investment and growth, but they raise consumption. In economies of this type, capital inflows

Chart 3.10

RELATIONSHIP BETWEEN CURRENT-ACCOUNT BALANCE AND PER CAPITA GDP GROWTH, 1985–2005



Source: UNCTAD secretariat calculations, based on *UNCTAD Handbook of Statistics* database; and World Bank, *World Development Indicators*.

Note: The sample in chart A comprises 19 developed economies and the sample in chart B comprises 111 developing and transition economies.

impact negatively on growth because they lead to an appreciation of the real exchange rate and thus hurt the tradeables sector. However, Rodrik and Subramanian (2008) stop short of explaining the underlying reasons that make an economy subject to the savings or the investment constraint.

To summarize, a significant number of empirical findings call into question the predictions of neoclassical growth models. While both the structure of these models and the econometric techniques designed to test the validity of their predictions have been developed further with a view to reconciling the differences between these empirical findings with the model's predictions, the remaining difference is often interpreted in a somewhat *ad hoc* fashion as pointing to structural problems of developing countries – such as imperfections of their financial markets – or policy failures. However, it may be at least as plausible to try and explain the empirical findings by means of an alternative model. The following subsection outlines such a model.

2. An alternative approach to savings and investment

Explanations of the relationship between savings and investment based on the work of Schumpeter and Keynes focus on the role of profits in the adjustment of savings and investment. These explanations share the perspective that economies do not develop along a known and somehow predetermined path, but that they are subject to external quantity and price shocks, as well as to policy shocks. Given that this approach does not assume perfect information and foresight, it does not postulate the existence of a mechanism that would automatically preserve or restore full employment. It therefore presents a more realistic image of developing economies, which are often characterized by weak economic structures and slack capacity. In such a set-up, profits are the residual element of income, unlike wages or rents, which are normally the outcome of contracts that are agreed at a certain periodic interval. One implication of this

approach is that, if an economy has not yet reached its full-employment level and/or if its potential to grow is not fully exploited, any increase in aggregate demand (either domestic or foreign) will increase output and profits.

Another implication is that most of the adjustment to new price signals or changed spending behaviour is primarily reflected in profit swings, which influence the investment behaviour of firms. For example, a fall in the savings rate does not imply a fall in investment (as implied in the neoclassical model); rather, it will cause a rise in profits which gives both a new incentive to invest and the possibility to finance such investment from retained profits (*TDR 2006*, annex 2 to chap. I). The same logic applies to an improvement of the current account in response to price changes that are favourable for domestic producers. By increasing domestic profits, higher net exports will trigger additional domestic investment, and the income effects of higher exports and higher investment will generate higher savings. Thus, in this view, an increase in savings is no longer a prerequisite for either higher investment or a current-account improvement.

On the other hand, a current-account deficit that emerges in the wake of negative shocks from a rise in import prices, a fall in export prices or a real currency appreciation can have large negative effects on domestic output, and can thus lead to lower savings and lower planned investment. The emerging current-account deficit is equivalent to a net capital inflow, but this inflow is the symptom of a negative shock, and it will certainly not induce higher planned investment in plant and equipment. On the contrary, it is likely that planned investment will fall as a result of lower profits or sales volumes.[16]

Viewing developing countries as having a persistent "savings gap" implies a confusion between the low savings of households in developing countries and the behaviour of the current-account of the economy as a whole. A country does not take decisions over savings, consumption, investment and the current-account balance. The behaviour of the current-account balance is normally driven by shocks that are often induced by differences in the stance of domestic macroeconomic policy among trading partner countries, as well as by large changes in the competitive position of domestic producers vis-à-vis the rest of world (for example as a result of overshooting nominal exchange rates), or by price movements in international commodity markets.

Movements in the real exchange rate and commodity prices are the most frequent shocks for developing countries, and they have immediate and quantitatively significant consequences for trade and current-account balances. An increase in the current-account deficit as a result of an appreciation of the real exchange rate and a concomitant loss of competitiveness of domestic producers may be temporarily financed by a net capital inflow, but it will sooner or later require some form of adjustment – normally a real depreciation. Indeed, exchange-rate overvaluation has been the most frequent and the most "reliable" predictor of the financial crises that have characterized the developing world over the past 15 years.[17]

If current-account imbalances are understood as the outcome of export performance and import demand, rather than an international savings transfer, it is also possible to understand why current-account surpluses and net foreign asset accumulation can favour longer term growth. The fact that a number of developing countries are rapidly accumulating foreign exchange reserves, instead of using these funds to further increase their imports, is due to their attempts to defend their favourable competitive position arising from an undervalued exchange rate – mostly reached after a severe financial crisis. It is also due to their strategy to avoid dependence on the international capital markets and their volatility. It is only under such circumstances that open developing economies are able to set their monetary conditions in a way that favours domestic investment and the building of productive capacity.

E. Implications for economic policy

1. Macroeconomic policies

One of the outstanding features of the economic process is its proneness to shocks and cyclicality. Uncertainty, falling profits and shrinking demand may depress the activity of investors and bring a successfully ignited process of capital formation and growth to a sudden halt. Therefore, it is of the utmost importance for sustained growth and catching up that macroeconomic policies effectively absorb shocks, allow a quick resolution of cyclical disturbances and provide enterprises with a stable environment conducive to investment in productive capacity. One crucial element is the availability of adequate, reliable and cost-effective financing of investment.

Monetary instability, periods of hyperinflation and frequent financial crises have often forced many developing countries to adopt economic policies that generate the exact opposite of what would be favourable investment conditions. "Sound macroeconomic policies" as prescribed by the Washington Consensus, combined with financial liberalization, seldom led to the desired result of higher investment and faster growth, whereas the alternative policy approaches helped the newly industrializing economies of East and South-East Asia to accelerate their catch-up process.

In Asia, accommodative and stimulating monetary policies, with low policy interest rates and government intervention in the financial markets, have been accompanied by undervalued exchange rates since the financial crisis in 1997–1998. Fiscal policy has been used pragmatically to stimulate demand whenever that was required to respond to cyclical developments. Chart 3.11 reveals the degree of monetary stimulation: in South, East and South-East Asia, the policy interest rate (in real and nominal terms) has been, on average, consistently lower than the growth rate (in real and nominal terms) over the past 20 years, except during the Asian financial crisis (see also chapter IV, box 4.1). By contrast, policy interest rates have been considerably higher in Latin America, where monetary policy has focused entirely on avoiding inflation, with the result that investment ratios and growth rates remained low. It is only since 2003 that more accommodative monetary policies and an overall good growth performance have prevailed in the majority of the countries in that region.

This evidence suggests that sustained income growth needs proactive economic management so that there is a permanent tendency for planned investment to exceed planned savings. Such an environment enables vigorous economic expansion, even if the propensity of private households to save remains unchanged. The additional savings that correspond to the increased investment are eventually generated by higher profits and a higher total income, while the initial increase in investment is financed by credit creation in the banking system (see also chapter IV).

By the same token, if growth and fixed investment are constrained by monetary conditions, including the exchange rate, many efforts aimed at good governance or strengthening of market forces may not generate the expected results, and overly restrictive monetary conditions may become prohibitive for development. In pursuing the agenda of the Washington Consensus, which aimed at "getting the prices right", many countries got two of the most important prices – the exchange rate and the interest rate – wrong. This may explain why the Washington

Chart 3.11

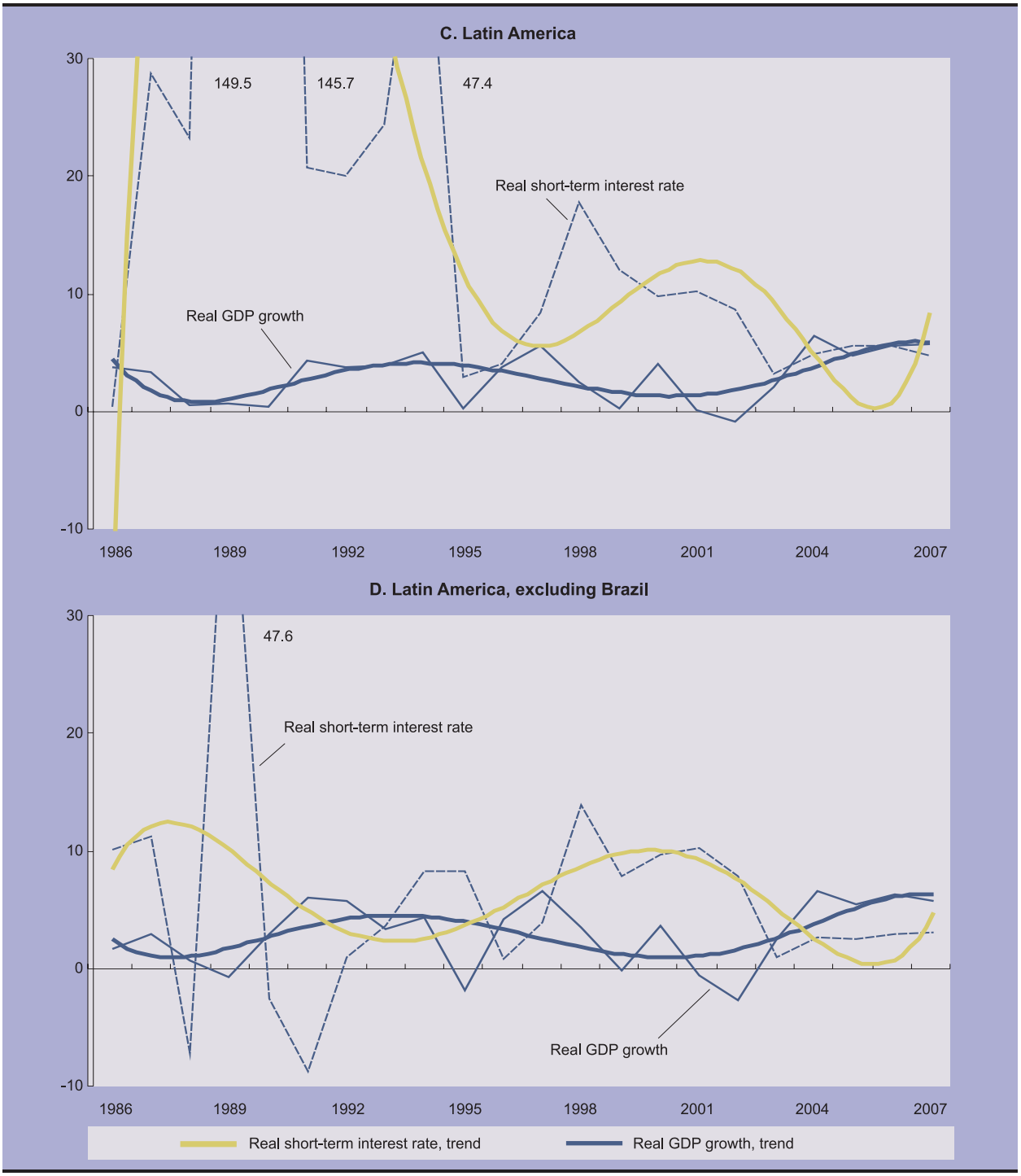
REAL SHORT-TERM INTEREST RATE AND GDP GROWTH IN ASIA AND LATIN AMERICA, 1986–2007

(Per cent)

Chart 3.11 (concluded)

REAL SHORT-TERM INTEREST RATE AND GDP GROWTH IN ASIA AND LATIN AMERICA, 1986–2007

(Per cent)



Source: UNCTAD secretariat calculations, based on OECD, *International Development Statistics* (IDS) online; IMF, *International Financial Statistics* database; *UNCTAD Handbook of Statistics* database; and Thomson Datastream.

Note: Real short-term interest rates are GDP weighted. East, South and South-East Asia: Bangladesh, India, Indonesia, Malaysia, the Philippines, the Republic of Korea, Singapore, Taiwan Province of China and Thailand. Latin America: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, Uruguay and Venezuela (Bolivarian Republic of).

Consensus was not applied in Washington: the United States, after flirting briefly with monetarist orthodoxy at the beginning of the 1980s, returned to fine-tuning the interest rate and to an extraordinarily accommodative monetary policy stance over the past two decades.

To be sure, a stable environment conducive to investment in productive capacity must include price stability. Countries that are prone to high and accelerating inflation may find it more difficult to start and sustain a process of development and catching up than countries with a history of price stability. In other words, without a sufficient number of policy instruments available to effectively dampen inflationary pressure, attempts to spur development by expansionary macroeconomic policy are more likely to fail as inflation soars. But appropriate wage and incomes policies could help countries to maintain price stability so that monetary policy can be used to support an investment-led development process without risking an acceleration of inflation.

It may be argued that the Asian experience suggests that this policy mix needs to be complemented by some form of capital-account regulation. It is true that controls on capital inflows have helped to contain crises, and to some extent even to prevent them. However, the prime objective of these countries' policy mix has been to maintain low nominal interest rates, and it is for this reason that arbitrage possibilities and the incentives for speculation have been small to begin with. It is only in situations when this policy mix has not been entirely successful in averting speculation on currency appreciation and concomitant destabilizing short-term capital inflows that a more hands-on approach to controlling such flows has proved helpful, as in Malaysia, for example. But it is important to note that such additional interventionist measures have been episodic and are not a core element of Asian policy strategies.

2. Need for international policy coordination

It is mainly international speculation searching for interest arbitrage and gains from exchange-rate appreciation that makes it difficult to prevent currency overvaluation and financial crises (see also *TDRs 2004* and *2007*). Revaluation of currencies as a result of speculative capital flows undermines the normal functioning of the exchange-rate mechanism that would prevent the emergence of large and persistent current-account deficits. Moreover, the adjustment to currency overvaluation driven by speculative capital flows can be extremely costly, as the Asian and the Latin American financial crises have amply demonstrated.

Strengthened international cooperation in macroeconomic and financial policy may be required to contain speculative capital flows and reduce their damaging impact on the stability of the world economy. Such cooperation could also help prevent governments from manipulating exchange rates to improve the international competitiveness of their economies. Overall competitiveness of countries is a zero sum game. All countries can simultaneously raise productivity and wages and the level of trade to improve their overall economic welfare, but they cannot all simultaneously increase their world market shares or improve their current-account balances. There is an adding up problem, as recently acknowledged also in the Growth Report of the Commission on Growth and Development (2008: 94–96). Whereas efforts of companies to gain market shares at the expense of other companies, are an essential ingredient of a functioning market system, efforts of nations to gain at the expense of other nations at a similar level of development is a different and much more problematic type of competition.[18]

A framework of international rules governing international monetary and financial relations similar to those governing the use of trade policy measures in agreements of the World Trade Organization (WTO) could lend greater coherence to the system of global economic governance. The Secretary-General of UNCTAD has suggested the adoption of a code of conduct aimed at preventing the manipulation of exchange rates, wage rates, taxes or subsidies in the competition for higher market shares and at preventing the financial markets from driving the competitive positions of nations in the wrong direction (UNCTAD, 2008). The adoption of such a code of conduct would mark a new spirit of multilateralism in global economic governance and would allow balancing the potential advantages resulting from real exchange rate adjustment for one country against the potential disadvantages of other countries that would be affected by that adjustment.

For example, major changes in the nominal exchange rate should be subject to multilateral oversight and negotiations. Only if such rules were to apply could all trading parties avoid unjustified overall loss or gains of competitiveness, and developing countries could systematically avoid the trap of overvaluation that has been one of the greatest impediments to prosperity in the past. ■

Notes

1 For an earlier discussion, see TDR 2006, chapter I, section D.

2 It has also been observed that fast growing developing economies tend to have smaller deficits than slowly growing developing economies (Prasad, Rajan and Subramanian, 2007).

3 The sample includes 22 developed countries, 20 transition economies and 91 developing countries, and the relative frequencies were 0.55, 0.90 and 0.44, respectively.

4 The relationship in transition economies is a different one: growth picked up before the reversal episodes and reversals tended to occur when output was above trend.

5 This statistical analysis allows isolating the effect of a single variable by assuming that all other variables included in the experiment are held constant.

6 Thus, for example, the observation in the following discussion that "a real depreciation increases the probability of a current-account reversal by 4.2 per cent" signifies that "a real depreciation equal to a one standard deviation change in the movement of the real exchange rate increases the probability of a current-account reversal by 4.2 per cent."

7 If the relevant variable has a normal (Gaussian) distribution, this probability is about 30 per cent.

8 Moreover, the annex shows that the real exchange rate is statistically significant in the regressions that focus on developed countries but only marginally significant in the regressions that focus on developing and transition economies.

9 Moreover, by including OECD growth in the developed countries, the regression may lead to an endogeneity bias.

10 For 75 of the episodes listed in table 3.1 there were not enough data to calculate GDP growth both before and after the episode.

11 Similarly, among the reversals that could not be classified, the change in the terms of trade is almost twice as large for episodes that are accompanied by a real appreciation than it is for episodes that are accompanied by a real depreciation.

12 As above, the following discussion assumes a one standard deviation change of the relevant variable.

13 Traditionally, overall investment is defined as being equal to national savings plus foreign savings. This is a highly questionable terminology because foreign savings is just the counterpart of the current-account deficit. However, the purchasing power which is transferred by the net capital inflow can also be used for consumption; there is no mechanism that would guarantee the use of capital inflows for investment.

14 This was first highlighted by Feldstein and Horioka (1983) who interpreted their result as indicating low – or restricted – capital mobility, even among the industrialized countries. Otherwise, capital would "seek out the most productive investment opportunities worldwide" (Obstfeld and Rogoff, 1996: 162).

15 The figure for the advanced economies does not include Ireland and Luxembourg, which are two large outliers. If these countries are included, the relationship remains positive but not statistically significant (it is positive and statistically significant if only Luxembourg is excluded). While chart 3.10A presents a simple correlation, which does not control for other factors that may also affect GDP growth and the current-account balance, Prasad, Rajan and Subramanian (2007) show that these results are robust when controlling for standard determinants of GDP growth, including investment.

16 The same reasoning holds for a scenario where a current-account surplus is the result of a positive shock to exports, leading to higher profits in the

tradable sector and to positive second-round effects on aggregate output and investment.

17 This reasoning is also relevant in the context of policies related to external debt and its repayment. A net repayment of external debt always requires a shift in the current account. This shift can originate from either a growth differential between the debtor and the creditor countries (with a relative fall in real income of the debtor country) or an improvement of the competitiveness of producers in the debtor country that leads to the switching of expenditure from foreign to domestic goods. But this implies a loss of competitiveness and market shares of producers in the creditor countries. If governments of the creditor countries do not accept this loss of competitiveness of their producers and therefore influence the exchange rate, a default by the debtor is unavoidable. In other words, a creditor economy cannot retain its export position and expect the repayment of debt. Standard analyses of net capital flows between countries and of foreign debt of countries do not normally take this paradox into account.

18 This kind of fallacy of composition does not refer to efforts by developing countries to catch up and gain globally vis-à-vis developed economies. Rather, it describes the competition of nations at a similar level of development, and a permanent loss of market shares which would normally not result from catching up by developing countries.

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Annex to chapter III

ECONOMETRIC ANALYSES OF DETERMINANTS OF EXPANSIONARY AND CONTRACTIONARY CURRENT-ACCOUNT REVERSALS

With a view to getting a better understanding of the relative importance of different factors, in particular changes in real exchange rates and terms-of-trade shocks, in bringing about positive current-account reversals, the UNCTAD secretariat has undertaken a cross-country analysis of the determinants of such reversals and the conditions under which the reversals are associated with an increase in GDP growth. This annex describes the methodology used to define the reversal episodes and provides detailed results of the econometric analyses.

1. Identifying reversal episodes

Current account reversals are defined by using an approach similar to that discussed by IMF (2007). An episode was considered to begin (time 0) when the current account improved by at least 0.5 percentage points of GDP over the next three years, and it was considered to end (time T) when at least 50 per cent of the original reversal was overturned and the current account remained below its level at time T for at least three years. In order to be considered for this exercise, episodes also needed to be large and persistent. Therefore, all episodes in which the cumulative adjustment of the current-account balance was less than 2.5 per cent of GDP and all episodes in which the current-account balance deteriorated below the level at time 0 within five years from the beginning of the episode were excluded from the sample. Episodes that lasted more than 8 years were truncated and terminated by choosing the largest current-account surplus (or smallest deficit) realized between years 5 and 8. The episodes were taken from the experiences of 133 countries (22 developed countries, 91 developing countries and 20 transition economies) for the period 1975–2006.

2. Econometric analyses of the determinants of current-account reversals

The estimates of a Probit model aimed at evaluating the multivariate relationship between the probability of a reversal episode and the behaviour of several macroeconomic variables are reported in table 3.A1. The dependent variable takes a value of 1 in the first and second year of the reversal episode and 0 in tranquil periods. All turbulent periods which did not occur during the first or second year of the episode were dropped from the sample.[1]

Explanatory variables comprise the following:

- the current-account balance as a share of GDP (CAB),
- the change in the real effective exchange rate (DREER),
- GDP growth (GDPGR),
- the output gap (OUTPUTGAP),
- the change in terms of trade (DTOT),
- credit growth (CRGR),
- log inflation (ln(INF)),
- trade openness (OPEN),
- the log of GDP per capita (ln(GDP_PC)),
- average GDP growth in the OECD economies (OECDGR),
- the United States Federal Funds rate (US FF RATE),
- a dummy variable that takes a value of 1 for countries with an open capital account (KA OPEN),
- the interaction between KA OPEN and US FF RATE (KA OPEN*US FF RATE),
- a dummy variable that takes a value of 1 for countries with a fixed exchange rate (FIX XRATE), and
- a dummy variable that takes a value of 1 for countries with an intermediated exchange rate (INTER XRATE).[2]

Since the US FF RATE only varies over time and not across countries, standard errors were clustered at the year level. The point estimates cannot be interpreted as showing a causal relationship going from the explanatory variables to the probability of a reversal episode. However, the result can shed light on the correlates of reversal episodes.

Table 3.A1 shows that, as expected, a reversal tends to occur when an economy has a current-account deficit and that it is accompanied by a depreciation of the real exchange rate.[3] A corollary of this finding is that countries with a floating exchange rate are less likely than countries with a fixed exchange rate to be able to improve their current account. Indeed, the statistical analysis shows that the FIX XRATE dummy variable is negative and statistically significant. The regression model also confirms the findings of the analysis in chart 3.6, and suggests that a reversal tends to occur in periods of low GDP growth and when output is below capacity, while inflation does not play an important role. Trade openness has a positive coefficient (though not always statistically significant) in the developed countries and a negative effect in developing and transition economies. The positive sign of GDP per capita indicates that reversals are more prevalent in middle-income developing countries than in low-income developing countries. With

Table 3.A1

DETERMINANTS OF CURRENT-ACCOUNT REVERSALS

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
CAB	-1.198	-1.260	-0.745	-0.611	-1.388	-1.474
	(7.94)***	(8.12)***	(3.39)***	(3.23)***	(7.72)***	(7.79)***
DREER	-0.093	-0.086	-0.197	-0.126	-0.090	-0.086
	(1.96)*	(1.57)	(2.56)**	(2.20)**	(1.56)	(1.32)
GDPGR	-0.510	-0.692	-1.063	-1.033	-0.559	-0.731
	(2.19)**	(3.24)***	(3.85)***	(3.53)***	(2.10)**	(3.10)***
OUTPUTGAP	-0.835	-0.970	-0.402	-0.370	-0.799	-0.960
	(4.19)***	(4.73)***	(1.16)	(1.24)	(3.65)***	(3.88)***
DTOT	0.097	0.110	0.063	0.052	0.126	0.142
	(1.98)**	(2.29)**	(0.86)	(0.91)	(2.08)**	(2.37)**
CRGR	0.055	0.043	-0.060	-0.052	0.054	0.044
	(1.69)*	(1.17)	(2.65)***	(2.96)***	(1.55)	(1.10)
ln(INF)	0.009	0.008	0.002	-0.001	0.001	0.001
	(1.16)	(0.97)	(0.22)	(0.15)	(0.08)	(0.11)
OPEN	-0.008	0.011	0.029	0.053	-0.054	-0.037
	(0.35)	(0.44)	(1.12)	(3.18)***	(1.90)*	(1.14)
ln(GDP_PC)	0.021	0.018	0.014	0.014	0.053	0.046
	(3.01)***	(2.58)***	(0.55)	(0.80)	(4.80)***	(4.11)***
OECDGR	-0.591	-0.530	0.019	0.040	-0.684	-0.658
	(2.59)***	(2.65)***	(0.22)	(0.56)	(2.34)**	(2.55)**
US FF RATE	-0.005	-0.003	-0.001	-0.001	-0.004	-0.003
	(1.67)*	(1.08)	(0.22)	(0.45)	(1.14)	(0.82)
KA OPEN*US FF RATE	0.015	0.014	0.006	0.006	0.020	0.020
	(3.04)***	(3.55)***	(1.93)*	(2.58)***	(2.49)**	(2.57)**
KA OPEN	-0.127	-0.115	-0.125	-0.196	-0.123	-0.113
	(4.35)***	(4.38)***	(1.77)*	(2.25)**	(3.21)***	(3.20)***
FIX XRATE		-0.056		-0.041		-0.053*
		(2.42)**		(2.68)***		(1.74)
INTER XRATE		-0.026		-0.019		-0.027
		(1.43)		(1.40)		(1.10)
No. of observations	1 382	1 285	365	342	1 017	943
Group	All countries		Developed		Developing and transition	

Note: For definitions of variables and sources, see explanatory note at the end of this annex.
Probit estimates with standard errors clustered at the year level. The dependent variable is a dummy that takes a value of 1 in the first two years of the episode and a value of 0 in tranquil periods. Turbulent periods which do not occur in the first two years of the episode are not included in the sample. The explanatory variables are averages over the three years preceding the episode. Robust z statistics in parentheses.

* Significant at 10 per cent.
** Significant at 5 per cent.
*** Significant at 1 per cent.

regard to external factors, there is strong evidence that the probability of a current-account reversal in developing countries is negatively associated with GDP growth in the developed world. The behaviour of the United States interest rate is very important in countries with an open capital account, but has no effect on the probability of a reversal in developing countries with a closed capital account.

3. Distinction between expansionary and contractionary reversals

The next econometric exercise focuses on the conditions under which an economy can move from a current-account deficit to a current-account surplus without suffering a large and protracted economic crisis. This question was approached by classifying the reversal episodes analysed in the first exercise into expansionary and contractionary ones. Expansionary reversals are all the episodes that are followed by an increase of GDP growth of at least one percentage point. Similarly, contractionary reversals are followed by a one percentage point decrease in GDP growth. All remaining episodes are defined as "neutral".

The hypothesis that expansionary reversals need either a large, positive terms-of-trade shock or a real depreciation, is confirmed by a formal test that controls for possible other factors that may affect the probability of such a reversal. Table 3.A2 presents the results of a multivariate analysis of the determinants of expansionary reversals. In this case, each observation is one episode and the dependent variable takes a value of 1 if the episode is expansionary and a value of 0 if the episode is neutral or contractionary. Like table 3.A1 the regressions control for:

- the current-account balance as a share of GDP (CAB),
- the change in the real effective exchange rate (DREER),
- the output gap (OUTPUTGAP),
- the change in terms of trade (DTOT),
- log inflation (ln(INF)),
- trade openness (OPEN),
- the log of GDP per capita (ln(GDP_PC)),
- average GDP growth in the OECD economies (OECDGR), and
- capital account openness (KA OPEN).

In addition this exercise controls for:

- the difference between the domestic and the United States interest rate (DIR-FFR), as a measure of how accommodating monetary policy is compared to that of the United States;
- the quality of institutions (INSTQUAL, computed as an average of the six indices assembled by Kaufmann, Kraay and Mastruzzi, 2007);[4] and
- an index of labour market rigidity (LMR).

As expected, the regressions show that the output gap variable is positive and highly significant, indicating that countries that are in a deep crisis are more likely to rebound and sustain higher growth in the post-reversal period. Moreover, the data show that the presence of a competitive exchange rate and positive terms-of-trade shocks are strong predictors of an expansionary reversal, and that the same is true for an accommodating monetary policy, which has a direct and an indirect effect, mediated by the competitive real exchange rate. The data show that countries where a policy of high interest rates is applied are less likely to observe an expansionary reversal. Inflation, the size of the current-account deficit at the beginning

Table 3.A2

DETERMINANTS OF EXPANSIONARY CURRENT-ACCOUNT REVERSALS

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
DREER	-0.449 (2.08)**	-0.583 (2.41)**	-0.534 (2.40)**	-0.557 (2.60)***	-0.704 (3.08)***	-0.651 (2.86)***
DTOT	0.131 (2.15)**	0.116 (1.83)*	0.135 (2.34)**	0.103 (1.59)	0.081 (1.09)	0.111 (1.70)*
OUTPUTGAP	6.228 (4.58)***	5.533 (4.28)***	6.050 (4.46)***	6.125 (4.44)***	4.915 (4.13)***	5.847 (4.39)***
DIR-FFR	-0.032 (1.81)*	-0.042 (1.83)*	-0.047 (2.01)**	-0.043 (2.27)**	-0.053 (2.51)**	-0.057 (2.53)**
ln(INF)	-0.041 (0.16)	-0.186 (0.66)	-0.062 (0.24)	-0.180 (0.76)	-0.422 (1.70)*	-0.222 (0.92)
CAB	0.011 (1.59)	0.012 (1.69)*	0.012 (1.64)	0.013 (1.75)*	0.011 (1.59)	0.012 (1.60)
KA OPEN	0.112 (0.86)	0.193 (1.30)	0.248 (1.62)	0.309 (1.98)**	0.412 (2.33)**	0.418 (2.36)**
OECDGR	5.530 (3.83)***	5.756 (3.42)***	5.462 (3.22)***	6.042 (4.55)***	6.275 (4.35)***	5.932 (3.92)***
ln(GDP_PC)				0.081 (1.55)	0.081 (1.53)	0.097 (1.77)*
OPEN				-0.033 (0.42)	-0.166 (1.62)	-0.105 (1.07)
INSTQUAL				-0.208 (2.30)**	-0.246 (2.26)**	-0.232 (2.08)**
LMR				0.003 (1.44)	0.002 (0.68)	0.002 (0.99)
No. of observations	155	129	135	152	126	132
Group	All	Developing	Developing and transition	All	Developing	Developing and transition

Note: For definitions of variables and sources, see explanatory note at the end of this annex.
Probit estimates with robust standard errors. The dependent variable is a dummy that takes a value of 1 for reversal episodes characterized by a subsequent sustained increase in GDP growth and a value of 0 for other reversal episodes. DREER and DTOT are the changes in the real effective exchange rate and the terms of trade, respectively, between the episode and three years before; the other variables are averages for the duration of the episode.
* Significant at 10 per cent.
** Significant at 5 per cent.
*** Significant at 1 per cent.

of the reversal, the presence of capital controls, trade openness, GDP per capita, and the index of labour market rigidities are not significantly correlated with the probability of observing an expansionary reversal. A further result is that economies with "good institutions" as defined by Kaufmann, Kraay and Mastruzzi (2007) are significantly less likely to observe an expansionary current-account reversal. By contrast, the analysis shows again that external factors (proxied by GDP growth in OECD countries) are a key determinant of the probability of observing an expansionary reversal.

Table 3.A3 contains the results of the same analysis focusing on contractionary reversals. In this case, the model is unable to explain why countries do

Table 3.A3

DETERMINANTS OF CONTRACTIONARY CURRENT-ACCOUNT REVERSALS

	(1)	(2)	(3)	(4)	(5)	(6)
DREER	0.048 (0.23)	0.073 (0.31)	0.082 (0.38)	0.058 (0.28)	0.118 (0.48)	0.120 (0.53)
DTOT	-0.099 (1.04)	-0.076 (0.80)	-0.085 (0.94)	-0.090 (1.01)	-0.068 (0.73)	-0.079 (0.94)
OUTPUTGAP	-7.326 (4.86)***	-7.331 (4.68)***	-7.390 (4.75)***	-7.390 (5.02)***	-7.558 (4.89)***	-7.565 (4.93)***
DIR-FFR	0.032 (1.70)*	0.034 (1.40)	0.034 (1.44)	0.055 (2.50)**	0.063 (2.24)**	0.061 (2.26)**
ln(INF)	0.033 (0.14)	0.046 (0.19)	0.008 (0.03)	0.130 (0.54)	0.200 (0.83)	0.128 (0.54)
CAB	-0.003 (0.40)	-0.006 (0.87)	-0.006 (0.89)	-0.008 (1.02)	-0.007 (0.83)	-0.009 (1.03)
KA OPEN	-0.107 (0.75)	-0.228 (1.29)	-0.272 (1.64)	-0.362 (2.09)**	-0.588 (2.67)***	-0.597 (3.00)***
OECDGR	-1.795 (1.33)	-2.644 (1.61)	-2.489 (1.54)	-2.353 (1.61)	-3.210 (1.77)*	-2.983 (1.71)*
ln(GDP_PC)				0.018 (0.31)	-0.008 (0.13)	-0.005 (0.09)
OPEN				0.116 (1.09)	0.389 (2.25)**	0.298 (2.10)**
INSTQUAL				0.084 (0.83)	0.081 (0.64)	0.111 (0.93)
LMR				-0.003 (1.13)	-0.001 (0.36)	-0.001 (0.32)
No. of observations	155	129	135	152	126	132
Group	All	Developing	Developing and transition	All	Developing	Developing and transition

Note: For definitions of variables and sources, see explanatory note at the end of this annex.
Probit estimates with robust standard errors. The dependent variable is a dummy that takes a value of 1 for reversal episodes characterized by a subsequent contraction in GDP growth and a value of 0 for other reversal episodes. DREER and DTOT are the changes in the real effective exchange rate and the terms of trade, respectively, between the episode and three years before; the other variables are averages for the duration of the episode.
* Significant at 10 per cent.
** Significant at 5 per cent.
*** Significant at 1 per cent.

not grow after the episode. The only robust predictors are the output gap and the nominal interest rate: the higher the nominal interest rate the more likely it is that the reversal will be contractionary. In some regressions, greater trade openness is associated with a higher probability of occurrence of a contractionary episode, and greater capital account openness is associated with a lower probability of observing a contractionary episode. However, these results do not appear to be particularly robust.

Explanatory note to tables 3.A1, 3.A2 and 3.A3

DEFINITIONS OF VARIABLES AND SOURCES

Variable	*Definition*	*Source*
CAB	Current-account balance divided by GDP	World Bank, *World Development Indicators*
DREER	Change in the real effective exchange rate: deviation of the real effective exchange rate from its average level in tranquil periods. Tranquil periods begin three years after the end of the episode and ends three years before beginning of it.	IMF, *International Financial Statistics*; and national sources
GDPGR	GDP growth	*UNCTAD Handbook of Statistics* database
ln(GDP_PC)	Logarithm of per capita GDP (PPP at constant 2000 international dollars)	IMF, *World Economic Outlook*; and national sources
OUTPUTGAP	Output gap: Per cent deviation of GDP trend from its current value	IMF, *World Economic Outlook*; and national sources
DTOT	Change in the terms of trade	UNCTAD calculations, based on IMF, *World Economic Outlook*; and national sources
CRGR	Growth of total credit to residents	World Bank, *World Development Indicators*
Ln(INF)	Logarithm of inflation	IMF, *International Financial Statistics*; and national sources
OPEN	Trade openness: sum of imports and exports divided by GDP	IMF, *World Economic Outlook*; and national sources
OECDGR	Average GDP growth in OECD economies	*UNCTAD Handbook of Statistics* database
US FF RATE	United States federal funds rate	National sources
KA OPEN	Dummy variable that takes value one for countries with open capital account	Chinn and Ito (2007)
KA OPEN*US FF RATE	Interaction between KA OPEN and US FF RATE	Chinn and Ito (2007)
FIX XRATE	Dummy variable that takes value one for countries with a fixed exchange rate regime	Levy Yeyati and Sturzenegger (2005)
INTER XRATE	Dummy variable that takes value one for countries with an intermediate exchange rate regime	Levy Yeyati and Sturzenegger (2005)
DIR-FFR	Difference between domestic and United States interest rate	National sources
INSTQUAL	Quality of institutions index	Kaufmann, Kraay and Mastruzzi (2007)
LMR	Labour market rigidity index	López de Silanes et al. (2004)

Notes

1 Assuming that a country has a reversal episode that starts in 1998 and lasts until 2002, the dependent variable takes value of 0 in 1975–1997 and 2003–2006 and a value of 1 in 1998 and 1999. The observations for the 2000–2002 period are dropped from the sample.

2 Floating exchange rate is the excluded dummy.

3 However, the real depreciation significantly anticipates the reversal only in the sub-sample of developed countries.

4 See also the discussion of governance indicators in chapter VI, section D of this *TDR*.