# SHARP REDUCTIONS IN CURRENT ACCOUNT DEFICITS: AN EMPIRICAL ANALYSIS

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## ABSTRACT

We study determinants and consequences of sharp reductions in current account imbalances (reversals) in low- and middle-income countries. We try to answer two questions: first, what triggers reversals? Second, what factors explain how costly reversals are? We find that both domestic variables, such as the current account balance, openness and the level of reserves, and external variables, such as terms of trade shocks, US real interest rates and growth in industrial countries seem to play an important role in explaining reversals in current account imbalances. We also find some evidence that countries with a less appreciated real exchange rate, higher investment and openness prior to the reversal tend to grow faster after a reversal occurs.

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1. Introduction

The debacle of the Mexican peso and, most recently, the currency crisis in Thailand and its repercussions in East Asia have shown the dangers associated with changes in the direction of capital flows after a period of large current account deficits. These changes can force the adoption of costly adjustment measures to reduce external imbalances and meet external obligations. The Mexican experience and its spillover effects on other emerging market economies have been the subject of a large number of studies; however, no comprehensive cross-country study of sharp reductions in current account imbalances has so far been undertaken. Our research project attempts to fill this gap. In this paper we report early results from a study of determinants and consequences of reversals in current account imbalances in low- and middle-income countries over the period 1971-1992. We try to answer two questions: first, what triggers sharp reductions in current account deficits? Second, what factors explain how costly such reductions are?

Our work is related to the literature on current account sustainability (Milesi-Ferretti and Razin 1996a, b; Cashin and McDermott, 1996) because it examines whether persistent current account deficits are likely to end up in a crisis or to be reversed without large output costs. With its focus on the real aspects of external adjustment, our study is also complementary to the empirical literature on currency crises. Indeed, external crises often feature large depreciations followed by a reduction in current account deficits.[1] Econometric analysis of currency crises has focused on the behavior of key economic variables before and after a devaluation (or a speculative attack) compared to periods of "tranquility", and on the probability of an "episodic" event occurring ( Eichengreen et al., 1995 and Frankel and Rose, 1996), as well as on "early

[1] See Edwards (1989) for an analysis of devaluation episodes in developing countries and their consequences for output and the current account.

warning" indicators (Kaminsky et al., 1997). Other work on currency crises has either relied on case studies (for example, Dornbusch et al., 1995) or focused specifically on contagion effects of the Mexican episode (Sachs et al., 1996). While our analysis looks at determinants of events, it also tries to explain why similar events have different macroeconomic consequences.

A sharp reduction in external imbalances can originate in a change in macroeconomic policy stance undertaken by the country in question--for example, the implementation of a stabilization plan, or it can be forced upon the country by external developments, such as a sudden reversal in international capital flows. In Section 2 we sketch how solvency requirements point to possible determinants of reductions in current account imbalances. In Section 3 we define reversals as large reductions in current account deficits. In Section 4 we use probit analysis to study the determinants of the probability of reversals. In Section 5 we explore the macroeconomic consequences of reversals.

## 2. Solvency Requirements

The most obvious reason for a reversal is the need to ensure that the country remains solvent. A simple sufficient condition for solvency is that the ratio of external liabilities to GDP is stabilized; hence we quantify the size of the reversal in the trade balance that is needed to stabilize this ratio. Let $tb$ be the trade balance before the reversal, and let $tb^*$ be the level of the trade balance needed to stabilize the ratio of external debt to GDP. Abstracting from equity and FDI flows and stocks, we can then write

$$REV = tb^* - tb = (r^* - \gamma^* - \epsilon^*)d - tb = [(r^* - r) - \gamma^* - \epsilon^*]d - (s - i)$$

where $r$ ($r^*$) is the pre-(post-)reversal level of the real interest rate on external debt, $\gamma^*$ is the post-reversal rate of growth of the economy, $\epsilon^*$ is the post-reversal rate of real appreciation, $d$ is the ratio of external debt to GDP and $s$ and $i$ are the shares of national savings and domestic investment to GDP. As long as the real interest rate (adjusted by the rate of real appreciation/depreciation) exceeds the economy's growth rate, stabilization of the debt to GDP ratio requires a trade surplus. The size of the reversal is larger, the larger the initial trade imbalance. For a given initial trade imbalance, the size of the necessary reversal is increasing in the level of external debt and in the rate of interest, and decreasing in the rate of growth. The second way to express the equality relates the size of the necessary reversal to the relation between interest rates before and after the event. On the one side, a reversal can be thought as lowering the risk premium on external debt, thereby reducing the actual size of the necessary turnaround in the trade balance. On the other side, the need for a turnaround may arise because of an increase in world interest rates, in which case the interest differential would raise the size of the necessary reversal. Clearly, any shock that affects $r^*$ or $\gamma^*$ alters the intertemporal budget constraint faced by the country and may therefore require a reversal in the trade balance.

More generally, in our work on sustainability (Milesi-Ferretti and Razin 1996a, b) we emphasize how macroeconomic policy variables (such as the fiscal balance), structural features of the economy (such as the degree of openness), financial determinants (such as size and composition of external liabilities) and external variables (such as real interest rates and the terms of trade) relate to the ability of a country to sustain prolonged external imbalances without crisis-driven reversals.

3. Defining Reversals

Our sample consists of 86 low- and middle income countries, listed in the Appendix. The data covers the period 1971 to 1992. We focus on sharp and persistent reductions in current account imbalances net of official transfers (reversal events). These events have to satisfy two requirements. The first is an average reduction in the current account deficit of at least 3 ( 5) percentage points of GDP over a period of three years with respect to the three years before the event (a definition similar to the one used by Alesina and Perotti (1997) for fiscal stabilizations).[2] The second is that the maximum deficit after the reversal must be no larger than the minimum deficit in the three years preceding the reversal. This second requirement ensures that we capture reductions of sustained current account deficits, rather than temporary reversals.

The actual sample period during which we can measure events is 1974 to 1990 (since we define events based on three-year averages). For a 3 percent average reduction in the current account deficit, we find 116 episodes in 60 countries; for a 5 percent reduction 72 episodes in 40 countries. Some reversals occur in consecutive years; if we exclude reversals occurring within two years of a previous one, the sample is narrowed to 72 episodes (48 for a 5 percent reduction). The remaining countries that did not experience reversals constitute our control group.

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[2] We also require the current account deficit to be reduced to below 10 percent (or, alternatively, by at least a third) so as to avoid capturing reductions in deficits from, say, 25 to 22 percent of GDP.

4. Explaining Reversals

In this section we first characterize the behavior of some key economic variables in the three years preceding and following a reversal, compared to periods of "tranquility", following a methodology developed in Eichengreen et al. (1995). We then use multivariate probit analysis to examine whether a set of macroeconomic, financial and structural variables help predict whether a country is going to experience a reversal in current account imbalances. The choice of the set of explanatory variables, which are listed below, is motivated by existing research on currency and banking crises, as well as by our previous work on sustainability. The main source of data is the World Bank (World Tables and Global Development Finance). The choice of the sample size and period is dictated by considerations of data availability. A detailed Appendix on data sources and definitions is available from the authors.

*Macroeconomic variables*. Among these we include the share of investment in GDP (*INV*), economic growth (*GROW*), GDP per capita (*GDP*) and the fiscal balance as a fraction of GDP (*FISC*).

*External sector variables*. These include the current account balance excluding official transfers as a share of GDP (*CA*), official transfers as a share of GDP (*OT*), the CPI-based real effective exchange rate (*RER*), the terms of trade (*TT*) and the average share of exports and imports to GDP (*OPEN*).

*External assets and liabilities*. These include: foreign exchange reserves as a fraction of imports (*RES*) or as a fraction of M2 (*RM*), the ratio of external debt to exports (*DEBTX*) or to output (*DEBTY*), the ratio of interest payments to GNP (*INTGNP*), the share of concessional debt in total external debt (*CONRAT*), the share of public debt in total debt (*PUBRAT*), the share of

short-term debt in total debt (*SHORT*), the share of FDI flows to GDP (*FDI*) and the share of portfolio flows to GDP (*PORTF*).

*World variables*: these include the level of real interest rates in the US (*RINT*) and the real growth rate in industrial countries (*GROECD*). In addition, we also use continent and time dummies.

Figure 1 presents a graphical analysis of the behavior of a select set of variables around the time of reversals, showing deviations of these variables from their mean during periods of "tranquility". Given our definition of events, the current account shows a sharp improvement the year of the reversal, while the fiscal balance shows a more gradual improvement throughout the period. The real exchange rate 2-3 years before events is more appreciated than during periods of tranquility, and then depreciates throughout the adjustment period. Growth in the period preceding reversals is declining, and turns around the year after the reversal occurs. The terms of trade in the period preceding reversals tend to be worse with respect to periods of tranquility, but start improving the year of the reversal, and the ratio of reserves to imports shows a similar pattern. Finally, the interest burden as a fraction of GDP is high in countries experiencing reversals, and it peaks in the year of the reversal, declining thereafter.

In the probit analysis, we estimate the probability of a reversal occurring at time $t$ (meaning a 3 percent average decline of the current account deficit between $t$ and $t+2$ with respect to the period between $t-1$ and $t-3$) as a function of variables at $t$ - 1 and of contemporaneous exogenous shocks (terms of trade, industrial countries' growth, world interest rates). For the current account, growth, investment, real exchange rate and terms of trade we

use a three-year average (over the period $t$-1 to $t$-3) rather than their level at $t$-1, to ensure consistency with the way we measure reversals.

Probit results are presented in Table 1.

The first two columns use alternative definitions of reversals (3 and 5 percent, respectively); the third column adds the fiscal balance as an explanatory variable (constraints on the availability of fiscal data imply that the sample becomes smaller); the fourth column refers to a sample that excludes countries with per capita GDP below $1000, and the last column excludes"adjacent"events (occurring within two years). Overall, the empirical analysis identifies a number of predictors of reversals in current account imbalances:

A) Current account deficit: not surprisingly, reversals are more likely in countries with large current account deficits. This result is consistent with solvency and willingness to lend considerations.

B) Openness: reversals are less likely in more open economies. This result is consistent with theories of current account sustainability that emphasize how more open economies have less difficulties in servicing external liabilities and have lower incentives to renege on external debt, thereby making a turnaround in capital flows less likely (Milesi-Ferretti and Razin, 1996a).

C) Reserves: countries with lower reserves (as a fraction of imports) are more likely to experience a reversal. Clearly, low reserves make it difficult to sustain large external deficits and may reduce the willingness to lend of foreign investors. The ratio of reserves to M2, indicated by Calvo (1995) and others as a key predictor of recent balance-of-payments crises, does not

appear to signal reversals ahead of time in our sample. It is negatively correlated with our event measure but is dominated, in terms of statistical significance, by the reserves to imports ratio.

D) Investment: a for a given current account deficit, high savings and investment increase the likelihood of a reversal (but the effect is not always statistically significant).On the one side high investment should increase the ability to sustain external deficits (which would lead us to expect a negative sign), but on the other side high investment/savings can increase future exports and output growth, thus contributing to narrowing current account imbalances. The second effect appears to be stronger (see also Section 5).

E) GDP per capita. Countries with higher GDP per capita are more likely to experience reversals. The coefficient on this variable captures the difficulty of extremely poor countries in reversing their external imbalances, and is also consistent with the theory of stages in the balance of payments.

F) Concessional debt. A reversal is less likely, the higher the share of concessional debt. Concessional debt flows are less volatile and they tend to be higher in countries that have difficulties reducing external imbalances and servicing external obligations. As one would expect, concessional debt becomes statistically insignificant once the poorest countries are excluded from the sample (column 4).

G) Fiscal balance. For a given current account deficit, the probability of a reversal is higher, the lower the public sector deficit. This result can be interpreted together with Figure 1; fiscal retrenchment actually begins before the reversal in the current account balance.

H) Terms of trade. Reversals are more likely to occur in years in which the terms of trade improve (see Figure 1); we also find some evidence that reversals are more likely after a period

of worsened terms of trade. One interpretation of the latter finding is that countries whose terms-of-trade have deteriorated are more likely to experience a reversal of capital flows, and may therefore be forced to adjust.

I) OECD growth. Reversals are more likely to occur in years when the OECD growth rate is high. Growth increases the demand for exports from developing countries, helping to narrow current account deficits.

J) US interest rates. Reversals are more likely after a period of high real interest rates in industrial countries. High real interest rates increase the cost of borrowing for developing countries and reduce the incentive for capital to flow to developing countries.

K) Official international transfers. A current account reversal is less likely when official transfers are high. Clearly, higher official transfers reduce the need to adjust the current account (we are measuring the current account net of such transfers). Note also that the coefficient on *OT* increases when we introduce the deficit variable in the regression, because the deficit is measured inclusive of transfers.

Reversals do not appear to be systematically correlated with GDP growth before the event; we also do not find significant links between the real exchange rate (or its rate of change) and current account reversals (see, however, Section 5). Interestingly, none of the variables directly measuring the burden of external debt comes in significantly in the probit regressions. The variable measuring the interest burden (INTGNP) is positively correlated with our event measure, but its statistical significance disappears once we control for reserves and concessional debt. The two variables measuring external debt (DEBTX and DEBTY) are not correlated with our events, probably because several highly indebted countries relying on external assistance do

not experience reversals. Variables capturing the composition of capital inflows (FDI, PORTF) are also statistically insignificant (regressions not reported).

## 5. Determinants of Output and Export Performance

In this section we present some preliminary results on the behavior of output and export growth in countries that experienced sharp reductions in current account imbalances. The basic idea we want to explore is whether reversals are costly in terms of output performance. These costs can arise because reversals are associated with macroeconomic crises, or, more generally, because they require macroeconomic adjustment and a reallocation of resources across sectors. In Milesi-Ferretti and Razin (1996a, b) we discuss structural, macroeconomic and financial indicators of current account sustainability that can help predict whether large and persistent current account imbalances are likely to end up in a crisis. In the empirical analysis we rely on some of these indicators--the degree of openness, the investment share, the external debt burden, the real exchange rate and the terms of trade.

For the purpose of this "before-after" analysis we selected the 3 percent event definition and grouped events occurring in adjacent years for the same country, counting them as a single, longer-lasting reversal. For example, reversals occur in Botswana in 1983, 1984 and 1985; we take the post-event period to last from 1983 to 1987 and calculate the average of variables accordingly. This leads to identify 71 reversal episodes, 3 of which (Korea 1982-87, Malaysia 1984-89 and Syria 1986-91) last for six years. The median current account deficit before the event is 10 percent, and after the event 2.5 percent.

We relate output growth after the reversal (as deviation from the world average during the same period) to its level before the reversal (also as a deviation from world average) and to a set of explanatory variables. Among these we include GDP per capita before the event (a "conditional convergence" term). The current account deficit and the ratio of interest payments to GDP before the event should capture the size of the necessary external adjustment. The level of US interest rates before and after the event (*RINT* and $RINT_{t+1}$) and the change in terms of trade between the period before and after the event are controls for external developments. The level of the real exchange rate before the event should capture in a crude way the degree of exchange rate misalignment, and its effects on the allocation of resources. Finally, the degree of openness and especially the level of investment before the event should be related to growth capacity. We use the same set of explanatory variables to explain growth in the value of exports after the event (as a deviation from world average), although we may expect some of the coefficients to be different. In particular, faster export growth may be needed in countries that have larger current account imbalances, but overall growth may be lower if adjustment measures need to be more drastic. Regression results are presented in Table 2.

The median change in output growth between the period after and before the event is around zero; however, output performance is very heterogeneous. For example, Uruguay's average growth was - 7 percent in the period 1982-84, compared to 4.6 percent in the period 1979-81; Nigeria instead went from negative growth of -5.5 percent in 1981-83 to growth of 3 percent over the following three years.

Table 2 shows that countries that had a less appreciated level of the exchange rate, higher investment and more trade openness before the event are likely to grow faster after the event. The size of the point estimates indicates that the effects of these variables are also economically significant: for example, a country that has a ratio of trade to GDP 10 percent higher than another or a real exchange rate 20 percent more depreciated is likely to grow 0.6 percent faster each year after the event. We also find some evidence that countries that had lower current account deficits before the event grow faster. The correlation of growth before and after the event is very low and statistically insignificant.

Not surprisingly, growth in the value of exports tends to accelerate after a reversal compared to the period before. The median increase, around 5 percent, is virtually unchanged when we consider deviations from world averages. Table 2 shows that export growth after the event tends to be higher in countries that had higher investment and larger current account deficits before the event. The result concerning investment is consistent with the notion that building productive capacity allows a country to increase future exports, as well as with the results of our probit analysis, that showed how countries with high investment were more likely to experience reversals. The coefficient on the current account deficit is to be expected, given that, by definition, we have selected countries that sharply reduced their external imbalances. The negative sign on the openness coefficient may capture the notion that countries that start out relatively closed have more scope for increasing exports. The coefficient on the real exchange rate has the expected sign, but is significant only in the higher income sub-grouping.

## 6. Concluding Remarks

This brief report of ongoing research on the determinants of current account reversals and their economic consequences provides evidence which is consistent with the literature on current account sustainability. Both domestic variables, such as the current account balance, openness and the level of reserves, and external variables, such as terms of trade shocks, US real interest rates and growth in industrial countries seem to play an important role in explaining reversals in current account imbalances. A natural extension of this work, that we are currently pursuing, is an examination of the link between currency crises and reversals in current account imbalances. We believe that this type of analysis can shed additional light on the determinants of output costs associated with external crises.

## APPENDIX 1: LIST OF COUNTRIES

| | | | |
|---|---|---|---|
| Algeria | Egypt | Malawi | Senegal |
| Argentina | El Salvador | Malaysia | Sierra Leone |
| Bangladesh | Ethiopia | Mali | Sri Lanka |
| Barbados | Fiji | Malta | Sudan |
| Benin | Gabon | Mauritania | Swaziland |
| Bhutan | Ghana | Mauritius | Syria |
| Bolivia | Gambia | Mexico | Tanzania |
| Botswana | Guatemala | Morocco | Thailand |
| Brazil | Guyana | Myanmar | Togo |
| Burkina Faso | Honduras | Nepal | Trinidad and Tobago |
| Burundi | Haiti | Nicaragua | Tunisia |
| Cameroon | Hungary | Niger | Turkey |
| Central African Rep. | India | Nigeria | Uganda |
| Chad | Indonesia | Oman | Uruguay |
| Chile | Iran | Pakistan | Venezuela |
| China | Jamaica | Panama | Western Samoa |
| Colombia | Jordan | Paraguay | Zaire |
| Congo | Kenya | Peru | Zambia |
| Costa Rica | Korea | Philippines | Zimbabwe |
| Cote d'Ivoire | Laos | Portugal | |
| Dominican Republic | Lesotho | Romania | |
| Ecuador | Madagascar | Rwanda | |

## APPENDIX 2: DATA SOURCES AND DEFINITIONS

CA : Current account balance (excluding official transfers) as a fraction of GDP. Source: World Bank, World Tables.

GDP : GDP per capita (chain rule). Source: Summers and Heston, Penn Tables 5.6.

FISC : fiscal balance (including grants) as a fraction of GDP. Source: World Bank, World Tables.

OT : Official transfers in US$. Source: World Bank, World Tables.

I : Share of investment in GDP. Source: World Bank, World Tables.

GROW : growth rate of real GDP (constant 1987 prices). Source: World Bank, World Tables.

TT : Terms of trade index (period average=100). Source: World Bank, World Tables.

RER : Real exchange rate index (period average = 100). Source: International Monetary Fund, Information Notice System.

OPEN : Average share of exports and imports to GDP. Source: authors' calculations, based on World Bank, World Tables.

RES : foreign exchange reserves as a fraction of imports. Source: World Bank, Global Development Finance.

RM : foreign exchange reserves as a fraction of M2. Source; Authors' calculations based on World Bank, World Tables and Global Development Finance.

DEBTX : Ratio of external debt to exports. Source: World Bank, Global Development Finance.

DEBTY : Ratio of external debt to GDP. Source: World Bank, Global Development Finance.

INTGNP : Ratio of interest payments on external debt to GDP. Source: World Bank, Global Development Finance.

CONRAT: Share of concessional debt in total debt. Source: World Bank, Global Development Finance.

PUBRAT: Share of public debt in total debt. Source: World Bank, Global Development Finance.

SHORT: Share of short-term debt in total debt. Source: World Bank, Global Development Finance.

FDI: Net FDI flows as a fraction of GDP. Source: World Bank, Global Development Finance.

PORTF: Net portfolio flows as a fraction of GDP. Source: World Bank, Global Development Finance.

RINT: US prime lending rate, deflated by the US GDP deflator. Source: International Monetary Fund, international Financial Statistics.

GROECD: Real growth rate in OECD countries. Source: International Monetary Fund, International Financial Statistics.

Exp.growth: growth in the value of exports of goods and services (as a deviation from world export growth). Source: World Bank, World Tables and authors' calculations.

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Table 1: Determinants of reversals

| | ΔCA > 3% | ΔCA>5% | ΔCA > 3% | ΔCA > 3% GDP>1000 | ΔCA > 3% non adjacent. |
|---|---|---|---|---|---|
| CA(t-1) | -0.06** (0.01) | -0.08** (0.015) | -0.11** (0.02) | -0.13** (0.02) | -0.11** (0.021) |
| GROW(t-1) | -0.006 (0.016) | 0.013 (0.020) | -0.01 (0.02) | -0.028 (0.021) | 0.005 (0.02) |
| FISC(t-1) | | | 0.064** (0.013) | 0.073** (0.015) | 0.049** (0.015) |
| INV(t-1) | 0.023** (0.01) | 0.020* (0.012) | 0.016 (0.012) | 0.027* (0.014) | 0.007 (0.01) |
| GDP(t-1) | 0.00014** (0.00004) | 0.0002** (0.000) | 0.0001** (0.0000) | 0.0002** (0.0000) | 0.0002** (0.0001) |
| OPEN(t-1) | -0.018** (0.005) | -0.013** (0.006) | -0.020** (0.006) | -0.024** (0.006) | -0.021** (0.006) |
| RES(t-1) | -0.124** (0.032) | -0.108** (0.042) | -0.139** (0.036) | -0.111** (0.038) | -0.128** (0.041) |
| RER(t-1) | 0.001 (0.003) | 0.004 (0.003) | 0.002 (0.002) | 0.006 (0.004) | 0.001 (0.003) |
| OT(t-1) | -0.057** (0.025) | -0.059** (0.029) | -0.135** (-0.035) | -0.132** (0.045) | -0.137** (0.04) |
| INTGNP(t-1) | -0.014 (0.026) | 0.020 (0.029) | 0.02 (0.03) | 0.057* (0.033) | 0.006 (0.04) |
| PUBRAT(t-1) | 0.012** (0.005) | 0.013** (0.006) | 0.010* (0.005) | 0.010 (0.006) | 0.005 (0.006) |
| CONRAT(t-1) | -0.012** (0.004) | -0.020** (0.005) | -0.009* (0.005) | -0.005 (0.006) | -0.006 (0.006) |
| TT(t-1) | -0.007** (0.003) | -0.005 (0.004) | -0.005 (0.004) | -0.009** (0.004) | -0.004 (0.003) |
| ΔTT(t) | 0.010** (0.003) | 0.010** (0.004) | 0.011** (0.004) | 0.010** (0.0048) | 0.010 (0.007) |
| RINT(t-1) | 0.117** (0.026) | 0.110** (0.033) | 0.113** (0.029) | 0.092** (0.033) | 0.078** (0.032) |
| GROECD(t) | 0.205** (0.05) | 0.202** (0.06) | 0.225** (0.056) | 0.239** (0.064) | 0.157** (0.07) |
| GROECD(t-1) | -0.039 (0.043) | 0.046 (0.055) | -0.05 (0.047) | -0.046 (0.053) | -0.07 (0.05) |
| Avg Likelihood | 0.78 | 0.84 | 0.78 | 0.77 | 0.81 |
| Observations | 1128 | 1128 | 1016 | 753 | 895 |
| Cases correct | 1010 | 1058 | 913 | 672 | 836 |

Notes: Estimation by probit (standard errors in brackets). Dependent variable takes the value 1 if a reversal of at least 3% (5%) takes place at time *t*, and zero otherwise. **(*) indicate statistical significance at the 95% (90%) confidence level. The variables CA, GROW, INV, RER and TT are averages over the three years preceding the event. The variables OPEN, CONRAT, PUBRAT, OTY, GDP, DEFY, RINTUS, GROECD are levels. Regressions include continent dummies (coefficients not reported). Time dummies were excluded based on a joint F-test.

Table 2: consequences of reversals

| | Output growth | Output growth (GDP>1000) | Export growth | Export growth (GDP>1000) |
|---|---|---|---|---|
| Lagged Dep Var. | 0.12<br>(0.10) | 0.12<br>(0.09) | 0.14<br>(0.11) | 0.12<br>(0.13) |
| CA | 0.14**<br>(0.06) | 0.11<br>(1.32) | -0.37**<br>(0.14) | -0.59**<br>(0.21) |
| RER | -0.038**<br>(-0.016) | -0.044**<br>(-0.012) | -0.045<br>(-0.036) | -0.09**<br>(0.04) |
| ΔTT | -0.01<br>(0.02) | -0.03<br>(0.02) | -0.06<br>(0.05) | 0.01<br>(0.04) |
| OPEN | 0.058**<br>(0.021) | 0.042*<br>(0.022) | -0.086<br>(-0.057) | -0.12**<br>(0.06) |
| INTGNP | 0.03<br>(0.16) | -0.18<br>(0.17) | 0.25<br>(0.37) | -0.03<br>(0.33) |
| RINT | -0.15<br>(0.58) | -0.26<br>(-1.39) | -1.17**<br>(0.56) | 0.84<br>(0.56) |
| RINT(t+1) | -0.06<br>(0.15) | -0.13<br>(-0.40) | -0.16<br>(1.15) | 1.24<br>(1.11) |
| GDP | -0.00016<br>(0.00020) | -0.0004**<br>(0.0002) | 0.001*<br>(0.0006) | 0.001*<br>(0.0007) |
| INV | 0.096*<br>(0.049) | 0.108*<br>(0.056) | 0.487**<br>(0.145) | 0.35**<br>(0.146) |
| $R^2$ | 0.26 | 0.35 | 0.24 | 0.30 |
| No. Obs. | 65 | 53 | 65 | 53 |

Notes: Estimation by OLS with White's correction for heteroscedasticity; standard errors in brackets. **(*) indicate statistical significance at the 95% (90%) confidence level. Dependent variables are three-year averages, expressed as deviations from world averages. The explanatory variables CA, RER, RINT and INV are averages over the three years preceding the event, and the variable RINT(t) over the three years following the event; the variables OPEN, GDP and INTGNP are levels the year before the event; the variable ΔTT is the average percentage change in the terms of trade between the periods after and before the event. All regressions include continent dummies (coefficients not reported). Regression (1) and (2) contains a dummy for episode (Peru 1989); regression (3) contains a dummy for one episode (Sudan 1977). Regression (4) contains a dummy for one episode (Korea 1976).

**Figure 1. Deviations from Tranquility**
Data from 86 Countries, 1971-1992, Scales and Data Vary by Panel

Movements 3 Years Before and After (71) 3% Events
Mean plus two standard deviation band--excluding adjacent events