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CURRENT ACCOUNT DEFICITS IN INDUSTRIAL COUNTRIES: THE BIGGER THEY ARE, THE HARDER THEY FALL?

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ABSTRACT

There are a number of worrisome features of the U.S. current account deficit. In particular, its size and persistence, the extent to which it is financing consumption as opposed to investment, and the reliance on debt inflows raise concerns about the likelihood of a sharp adjustment. We examine episodes of current account adjustment in industrial countries to assess the validity of these concerns. Our main findings are (i) larger deficits take longer to adjust and are associated with significantly slower income growth (relative to trend) during the current account recovery than smaller deficits, (ii) consumption-driven current account deficits involve significantly larger depreciations than deficits financing investment, and (iii) there is little evidence that deficits in economies that run persistent deficits, have large net foreign debt positions, experience greater short-term capital flows, or are less open are accommodated by more extensive exchange rate adjustment or slower growth. Our findings are consistent with earlier work showing that, in general, current account adjustment tends to be associated with slow income growth and a real depreciation. Overall, our results support claims that the size of the current account deficit and the extent to which it is financing consumption matter for adjustment.

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I. Introduction

The U.S. current account deficit was a record $668 billion in 2004, accounting for 5.7 percent of GDP and fully two-thirds of global net foreign lending. Its size, as well as the unprecedented foreign flows into U.S. bonds associated with it, have raised concerns about how the adjustment to a more balanced current account will play out. One grim scenario begins with foreigners suddenly losing their appetite for U.S. assets, and in the process of unwinding their large U.S. positions, pushing up interest rates, depressing growth, and causing a large depreciation of the dollar. Worries about such a disorderly adjustment first surfaced in 2000, when the U.S. deficit-GDP ratio crossed the 4 percent mark.

The conventional wisdom on current account adjustment is that some current account deficits are more problematic than others. Important factors are the size and persistence of the deficit, its use and financing, and the openness and indebtedness of the economy. For example, Summers (2004) notes that 5 percent of GDP is a traditional "danger point" for current account deficits, and argues that deficits rising to finance consumption and government spending and deficits supported by short-term financing are of relatively greater concern. Obstfeld and Rogoff (2004) highlight the importance of goods market integration in adjustment because the magnitude of exchange rate adjustment needed to reduce a deficit is greater when markets are not well integrated and the substitution between foreign and domestic goods is low. Roubini and Stetser (2005) worry about the size of the foreign debt position and the corresponding interest payments. Concerns about delaying a U.S. adjustment abound, for example, Bergsten and

Williamson (2004) write "[n]o one doubts that adjustment will eventually happen. The sooner it starts, the less chance it will take a catastrophic form."

We aim to evaluate the importance of these concerns by examining the U.S. situation within the context of current account reversals that have occurred in a wide range of industrial countries. In all, we have at our disposal twenty-six current account reversals that occurred between 1980 and 2003. The twenty-six episodes vary in a number of ways and allow us to place the current U.S. situation in context; while the U.S. may be in what it considers uncharted waters (with respect to its own history), along many dimensions its current scenario is not atypical.

There are well known characteristics of current account reversals in industrial countries. In particular, they tend to occur around 5 percent of GDP, and involve currency depreciation and a decrease in GDP growth (Freund 2000 and 2005).[1] But "typical" can conceal considerable deviations across episodes, as some reversals are more benign than others. The main goal of this paper is to examine the extent to which aspects of the buildup of the current account deficit are associated with more severe outcomes; we attempt to uncover the set of preconditions that is associated with more benign outcomes, and the set that is associated with greater pain. Specifically, we examine—in the context of twenty-six current account reversals—the extent to which variation in the size and persistence of the current account deficit, its nature (whether it is funding consumption or something more productive such as investment), the size and composition of financing, and the openness of the economy matter for the adjustment process. We then characterize the adjustment process in using three main measures: the

[1] Several analyses have replicated and updated these results, including IMF (2002), Debelle and Galati (2005), and Croke et al. (2005).

extent of exchange rate depreciation, the slowdown in GDP growth, and the improvement in the current account balance that accompany reversals.

We begin by updating the characterization of current account reversals. To do this, we append the Freund (2000) analysis with a study of the dynamics of various financial variables through the adjustment process and incorporate data through 2003. The characterization can be summarized as follows. We verify that the main results from Freund (2000) still hold: Countries tend to experience slow GDP growth and a real depreciation as the current account adjusts, and the adjustment appears to be spurred by real export growth, as well as declining investment and consumption. Current account adjustments are generally matched by reversals in the financial account. In emerging markets, all types of portfolio investment flows—debt, equity, and banking—adjust sharply (Rothenberg and Warnock, 2005), but in our sample of industrial countries the financial account dynamics are more subtle. The most dramatic adjustment is in the banking or "other" flows, which decrease over 2 percentage points (of GDP) in the first two years of the adjustment. In addition, bond inflows appear to surge in the run-up to the reversal. In contrast, equity and direct investment flows do not show well defined dynamics around the adjustment process.

Our results on the relationship between preconditions and outcomes can be summed up as follows. We find that larger deficits take longer to resolve and are associated with relatively slower income growth during recovery. There is no significant correlation between size of the deficit and the extent of depreciation. In contrast, reversals that were preceded by a persistent deficit (a deficit that lasted for at least five years before reversing) are not associated with more depreciation or slower growth. We

find that consumption and government driven deficits tend to lead to a greater real depreciation than investment driven episodes: A one percentage point shift from investment to consumption (or government spending) generates an addition 0.7 percentage points in average annual depreciation during adjustment. We find relatively little evidence that the level of openness or the nature of the financing—whether it is through bond flows or more directly into productive uses, such as equity or direct investment—impact the severity of the adjustment. Deficits associated with greater bond inflows do appear to be followed by larger increases in interest rates—perhaps because the bond inflows kept interest rates abnormally low, as in Warnock and Warnock (2005)—and a sharper decrease in equity prices. Finally, the size of the external position does not appear to affect the outcome.

We also examine the 1987 U.S. adjustment episode to discern to what extent it reflected the typical case, and look at the key indicators for 2004 in order to gauge where the United States stands with respect to adjustment. We find that in the 1987 episode, the extent of depreciation was very close to predicted, though adjustment was somewhat slower with less of a decrease in growth. We use 2004 values of key variables to predict the pattern of U.S. adjustment were it to begin now. The analysis suggests that were the adjustment to start in 2005, the dollar would depreciate 25% from its peak but only 2¼% annually over the next three years, as much of the depreciation occurs before the current account actually reverses.

Our work is complementary to many contemporaneous papers. The most similar in spirit is Croke et. Al. (2005), who employ a similar dataset to analyze how experiences differed between episodes characterized by a growth slowdown and those that were not,

but they do not examine how preconditions in the episodes differed. Adelet and Eichengreen (2005), also use an event study approach with a much longer historical sample (going back to 1880) for a much broader range of countries; in their study, data limitations preclude analysis of the range of preconditions and outcomes that we are able to analyze. Clarida, Gorretti, and Taylor (2005), using empirical time series analysis, examine the points at which current accounts might reverse. Obstfeld and Rogoff (2005), in a general equilibrium model, start from the assumption that the current account adjusts and then trace out the implications. Faruqee et al (2005) examine current account dynamics in the context of the IMF's global general equilibrium model.

Our work is also related to the literature on current account reversals in emerging markets (sometimes referred to as the "sudden stop" literature). But, reversals in our industrial country study are distinctly different from those in emerging markets. For example, whereas we find that reversals are associated with adjustments in either growth or the exchange rate, emerging market reversals are not associated with large changes in growth (Milesi-Ferretti and Razin (1998), Chinn and Prasad (2003)), perhaps because the exchange rate adjusts much more.[2] On the financial side, our industrial country results differ from those for emerging markets for two reasons. One, financial systems in industrial are likely more efficient intermediating funds, making the type of capital flows associated with the run-up to a reversal less important. Two, the foreign debt of industrial countries is more likely to be denominated in the home currency, ameliorating the balance sheet effect of a devaluation.

[2] In contrast, Edwards (2001), which analyzes current account deficits in a sample of 120 countries, finds evidence that current account reversals lead to lower per-capita GDP growth.

The paper proceeds as follows. Section II defines episodes of adjustment, examines empirical regularities of current account and financial account adjustment in industrial countries, and discusses persistent deficits. Section III examines whether case studies support the notion that bigger deficits (in terms of size, consumption, and debt flows) imply harder falls. Section IV presents robustness analyses of the key results. Section V discusses the United States in light of the predictions. Section VI concludes.

II. Characterizations of episodes of adjustment and persistent deficits

In this section, we define and characterize current account reversals and persistent deficits.

Episodes of adjustment

We update previous results from Freund (2000) using data through 2003 and also incorporate financial variables. We document current account adjustment from a large deficit to highlight patterns of adjustment. The criteria for a current account adjustment are:

i. The current account deficit-GDP ratio exceeded two percent before the reversal.

ii. The average deficit-GDP ratio was reduced by at least two percentage points over three years (from the minimum to the centered three year average).

iii. The maximum deficit-GDP ratio in the five years after the reversal was not larger than the minimum in the three years before the reversal.

iv. The current account deficit-GDP ratio was reduced by at least one third.

Using these criteria on data from high-income OECD countries from 1980-2003, we identify 26 episodes of adjustment, listed in Table 1. In our sample, there is considerable variation across episodes, as current account troughs occurred between 1980 (Austria and Sweden) and 1999 (Austria, again, and New Zealand); ranged from relatively small deficits (2.1 percent in France) to some that were quite large (Portugal's 16.1 percent deficit); and were associated with a wide variety in the size of net foreign asset positions (from those that were nearly balanced or even positive, to one that exceeded negative 70 percent of GDP).[3]

Figure 1 documents the pattern of adjustment across a range of variables, with event time 0 corresponding to the year the current account balance is most negative. Consistent with previous studies, countries tend to experience slow GDP growth (and increasing unemployment) and a real depreciation as the current account adjusts. In addition, real export growth, as well as declining investment and consumption, spurs adjustment. Adjustments are associated with worsening budget deficits and a pause in the accumulation of reserves, but little change in real long- or short-term interest rates.

We next examine financial account dynamics through the adjustment period. Absent large shifts in errors and omissions or sharp movements in the capital account (which, for most countries, is too small to adjust much), current account adjustments must be matched by reversals in the financial account, but for industrial countries we know little about which components of the financial account actually adjust. As Rothenberg and Warnock (2005) show that net amounts can mask considerable differences in inflows and outflows, Figure 2 is designed to show, for each of the four main components of the

[3] Net foreign asset positions and gross liabilities positions are from Lane and Milesi-Ferretti (2005). Throughout our paper, using published IIP data instead of the Lane Milesi-Ferretti dataset would produce similar results, but with fewer observations.

financial account (direct investment, equity flows, bond flows, and banking or other flows), the adjustment process for net inflows (inflows minus outflows), gross outflows, and gross inflows.

In emerging markets, all types of portfolio investment inflows dry up around the time of the current account reversal (Rothenberg and Warnock, 2005). In sharp contrast, in our industrial country sample the bulk of the adjustment in the year immediately following the current account trough comes via a sharp decrease in banking (or "other") flows. In contrast, net direct investment, equity, and bond flows do not show clearly defined dynamics around the adjustment. The gross flows (depicted in the second and third columns of Figure 2) do not provide much additional insight: The only new information that we can glean from the gross flows is that bond inflows typically surge in the run-up to the reversal and peak one to two years into the adjustment process.

Persistent Deficits

In addition to reversals, we characterize persistent deficits because much of the concern over the current U.S. episode has focused on its extended duration. Persistence is also related to the net foreign asset position (NFA) (which we also consider below), since persistent deficits will tend to decrease the NFA position.[4] Still, we think it is useful to have a separate variable that focuses entirely on duration in order to characterize these episodes and also to examine whether reversals from persistent deficits are inherently

[4] Persistent deficits need not result in large negative NFA positions if valuation effects offset the current account deficits. In practice, this can be true for a given year, as exchange rate movements can lead to large valuation adjustments. However, if there is mean reversion in exchange rates, the valuation changes may well net to zero in the medium- to long-run.

different. In addition, net foreign asset position data are only available for 24 of the 26 episodes.

We define deficits as persistent if they satisfy the following three criteria:

i. The CA/GDP ratio was below 2 percent for five consecutive years.

ii. There was no reversal (as defined above for five years).

iii. The CA/GDP ratio was below 2/3 of its initial level in each of the five years.

The first criterion ensures that we are examining persistent deficits. The second ensures that the deficit is not undergoing a reversal; this criterion effectively eliminates V-shaped deficits. The third eliminates slow improvements and highly variable deficits. In all, the criteria leave us with two types of persistent deficits, those that are continuously worsening and those that are flat but deep.

We identify 14 episodes of persistent deficits (Table 2). Of these, 10 were eventually reversed via adjustment episodes.[5] Four—Australia, Greece, Portugal, and the U.S.—have ongoing persistent deficits that remain unresolved. The average duration of a persistent episode is nearly 8 years. Characteristics of persistent deficits are shown in Table 3. The first column shows values for persistent-episode countries during the episode, the second column is for the same group outside of the episode, and the final column is for all other industrial countries. By definition, the current account position is on average worse. Key characteristics include lower than average savings rates, high net foreign debt, and somewhat elevated short-term interest rates. They are also somewhat

[5] That is, 10 of our 26 reversal episodes were preceded by persistent deficits.

less open—though this measure is highly variable and does not account for country size.[6] In contrast, investment-to-GDP and income growth are nearly identical to overall averages in the OECD. This suggests that persistent deficits are structural, and that foreign investment is largely driven by opportunities that would remain unexploited in a world where capital was immobile.

III. Are Some Reversals More Equal Than Others?

In this section, we evaluate whether large deficits, deficits that persist for at least five years, and/or deficits in countries with large foreign debt tend to involve more severe reversals.[7] To do so, we examine correlations between various outcomes (income growth, the extent of depreciation, the completeness with which adjustment occurred, and movements in interest rates and equity prices) with various preconditions (the size of the current account trough; whether the reversal was preceded by a persistent deficit; the extent to which it was associated with surges in consumption, investment, or fiscal deficits; the extent of openness and indebtedness to the rest of the world; and the nature of its financing). We use three measures of depreciation: the total real exchange rate adjustment during the seven years of the episode, the existence of an exchange rate crisis in that period, and the average exchange rate adjustment from year 0 to year 3. Exchange rate crises are identified using the Frankel and Rose (1996) definition, using monthly data

[6] Countries that have run persistent deficits are on average very similar in size to countries that have not (Real GDP in US$ is about 4 percent greater), however, the standard deviation of income is larger (about 70 percent greater).

[7] IMF (2002) examines large deficits, defined as 4 percent of GDP or more that persist for at least 3 years, in addition to the definition of reversals from Freund (2000). They also find that current account improvement increases as the size of the deficit increases, but less than one for one. Their focus is, however, on general characteristics of reversals, as opposed to differences between episodes with large and small deficits. The definition is different from that of general reversals so does not provide a direct comparison between episodes with large deficits and more moderate deficits.

on the local currency-SDR nominal exchange rate.[8] We use two measures of growth: average growth in the three years of recovery less average growth over the whole period and average growth in the three years of recovery less average growth in the three years before recovery. Asset price movements are captured by the change in short-term rates, long-term rates, and equity prices (all adjusted for inflation) from three years leading into the current account trough to the three years following. Finally, we characterize deficits by the extent to which they were resolved after three years. Specifically, the variable RESOLVE is defined as the percentage point improvement in the current account GDP ratio from year 0 to year 3. The definition of current account reversals implies that RESOLVE will be correlated with the size of the deficit: to qualify as a reversal, a significant improvement in the current account must occur. Still, this variable allows us to test whether other factors are correlated with adjustment, and also the extent to which the average deficit is improved. That is, a coefficient on CA/GDP at trough of –1 would imply that deficits are fully reversed after three years. A coefficient of -.5 would imply they are 50 percent reversed. Simple correlations and significance levels are presented in Table 4. A data appendix offers more details about the variables.

Large and persistent deficits

As noted in the introduction, current thinking suggests that large and persistent deficits will involve more pain. However, the correlations presented in Table 4 imply that the resolution of large and/or persistent deficits does not require a more extensive depreciation nor are they more likely to be associated with an exchange rate crisis. If

[8] A currency crisis has taken place if the nominal exchange rate depreciated by at least 25 percent over the last year, and by at least 10 percent more than in the previous year.

anything, the correlations indicate that large and persistent deficits tend to involve less depreciation than average. (We discuss this result in more detail in the next section.) The resolution of large deficits is, however, associated with a growth slowdown that is deeper than average (Table 4 and Figure 3). Not surprisingly, they also involve a significantly greater adjustment in a 3-year period. There is no indication that deeper or more persistent deficits are associated with larger adjustments in interest rates or equity prices.

Consumption- vs. Investment- vs. Government-driven episodes

If current account deficits are associated with consumption booms or large fiscal deficits, rather than a surge in the more productive investment spending, the adjustment process might be more painful. Indeed, the correlations in Table 4 imply that deficits driven by consumption growth involve significantly more depreciation in years 0 to 3. Similarly, deterioration in the fiscal balance increases depreciation, though the coefficient is not significant at standard levels. Consumption driven deficits are also associated with an increase in relative GDP growth 3year/3year. However, further examination shows that this is due to lower growth during the period when the deficit is worsening, as opposed to higher growth in the recovery period; consistent with this, the correlation between consumption growth in the pre-period and GDP growth relative to the long-run average is insignificant. Deficits driven by investment growth are associated with significantly slower income growth during recovery and significantly less depreciation than other episodes. These are likely the episodes that are most cyclical. The relationship between investment and the exchange rate adjustment is very strong (Figure

4). Interest rates and equity prices do not appear to be influenced by whether the current account deficit is associated with surges in consumption, investment, or budget deficits. Finally, we find no evidence that the growth in the fiscal balance affects GDP growth relative to long-run average.

Openness

In well integrated economies, only a small relative price change will be needed to induce consumers to switch to domestic goods, thus reducing the trade (and current account) deficit. Thus, we expect that more open economies will experience less depreciation during adjustment. Looking at the correlation between openness (measured as average openness during the three years before reversal) and exchange rate adjustment, we find very little evidence that openness affects exchange rate adjustment in industrial countries. The signs are correct, greater openness is associated with less average and total depreciation and a lower likelihood of a crisis, but openness is not significant at standard levels.

Large Indebtedness to the Rest of the World

It can be argued that countries that rely heavily on foreign financing are more prone to quick reversals in foreign investment and that these quick reversals can induce considerable pain. For example, if foreigners hold a sizeable portion of domestic assets (either in net or gross terms), their retreat could spark a spike in interest rates, decreasing equity prices, low growth, and a sharp depreciation.

To see whether this is true in our sample, we look at two measures of the extent of indebtedness to the rest of the world. The first is the size of the net foreign asset position relative to GDP. Here we see no evidence that countries with large net debt positions (that is, negative NFA positions) have worse outcomes with respect to their exchange rates, income growth, interest rates, or equity prices. Counter to the evidence on exchange rate depreciation, there does appear to be a higher incidence of currency crises in countries with more negative net foreign asset positions. The correlation with RESOLVE is negative, indicating that more negative NFA positions are (weakly) associated with greater improvements in the current account balance, however, the effect of the current account trough on adjustment is turns out to be the only robustly significant factor. The second measure we utilize is the size of the country's gross liabilities to the rest of the world (scaled by GDP). Here the evidence is clear: Larger gross liabilities positions do not appear to be associated with significantly worse outcomes.

While we do not find evidence that a more negative NFA or gross liabilities position results in worse outcomes, simple correlations can be misleading if they are affected by outliers. In Figure 5 we present scatter plots of the relationships between gross liabilities positions and GDP growth and currency movements. The figures show that, with or without outliers, there is no apparent relationship between the extent of foreign indebtedness at the time of the current account trough and subsequent changes in GDP or currency values.[9] If anything, larger gross liabilities positions are associated with less exchange rate depreciation.

[9] If foreign debt is largely foreign-currency-denominated, as in many emerging markets (Eichengreen and Hausmann, 1999; Burger and Warnock, 2004), the exchange rate depreciation associated with a current account reversal could lead to a painful balance sheet effect. In our industrial country sample, this does not seem to be the case.

Financing through Productive Means?

If the financial system does not intermediate very well, one could be concerned that large current account deficits financed by bond inflows are associated with borrowing binges that in the end bring more pain. In contrast, deficits financed by more productive inflows such as direct investment or equity inflows, because they went directly into productive uses, may well adjust in a more benign fashion. However, if the financial system is adept at intermediating, the form of the inflow should not matter; the system will find the best use for the funds, whether they enter the country as direct investment or short-term bond flows.

The evidence we present suggests the latter case. We find no evidence that the type of financing impacts the outcome for GDP growth or exchange rates.[10] Deficits associated with larger bond inflows are associated with larger subsequent increases in short-term interest rates and a greater decrease in equity prices. This is consistent with the empirical evidence in Warnock and Warnock (2005), who show that the cessation of large bond inflows can lead to a substantial increase in interest rates (which, presumably, could also lead to a sharper decrease in equity prices).

IV. Multivariate Analysis

The simple correlations of Table 4 indicated that larger deficits are associated with a greater slowdown in growth, less exchange rate depreciation, and a greater adjustment in CA/GDP. They also imply that the use of funds matter—deficits funding

[10] Perhaps paradoxically, we find that greater productive inflows are associated with an increased incidence of crisis.

investment spending tend to be associated with slower growth during recovery and less depreciation. Of course, bilateral correlations leave open the possibility that other factors are driving these relationships. Parsing out effects in a sample of 26 observations is difficult, but in this section we attempt to determine whether these relationships are robust or if other factors are more important. Specifically, we regress GDP growth, ΔER, and the extent to which the current account deficit is resolved in three years on the preconditions: the size of the current account trough, whether it was preceded by a persistent deficit, the composition of spending variables, and (where relevant) openness and the net foreign asset position.

Growth Effects

Table 5a investigates the factors that result in larger growth slowdowns. The dependent variable is relative income growth relative to the long run average; consistent with Table 4, the size of the current account at its trough is highly significant (column 1).[11] The coefficient on the size of the current account deficit at its trough is 0.15, implying that a one percentage point increase in the current account deficit at its trough is associated with a 0.15 percentage point slowdown in annual growth during the first three years of recovery. Including other factors – persistent deficits, the magnitude of the NFA position, or investment, consumption, and fiscal growth in the pre-recovery period (columns 2 and 3) – does not materially impact the size or significance of the coefficient on CA/GDP, nor are these other factors significant. In column 4 we control for average growth in the period before the deficit reached its trough (lagged average growth);

[11] We use GDP growth relative to long run average because the GDP growth in the period before adjustment—the denominator of GDP growth 3year/3year—is correlated with the initial period variables, creating a bias.

growth in the previous period is not significant.[12] Finally, in columns 5 and 6 we test whether the relationship between growth slowdown and the size of the deficit owes to a few large deficit countries. Excluding potential outliers (see figure 3) – countries with deficits that exceeded 10 percent or, alternatively, those that exceeded 6 percent – does not materially reduce the magnitude of the coefficient on CA/GDP, although when only the three countries with extreme current account deficits are excluded, the coefficient is no longer significant.

The results in Table 5a indicate that the relationship between the size of the current account deficit and the subsequent growth slowdown is rather robust. We caution, though, that while larger deficits are correlated with slower subsequent growth, this does not necessarily imply that larger deficits depress growth. It could be that the large deficit may be the result of a more amplified business cycle: strong growth exacerbates the deficit and the ensuing slowdown as the deficit narrows is more severe. However, as noted, even when we control for growth in the period when the deficit expanded, the size of the deficit is still highly significant (Table 5a column 4). It could be that greater growth before the deficit reversed tends to generate larger deficits, but the correlation between pre-reversal income growth and CA/GDP at trough is close to zero and insignificant (not shown). Thus, stronger growth as the deficit worsened is not correlated with the size of the deficit, but weaker growth as the deficit improved is correlated with its size.[13] Finally, if business cycle effects were the main driver of the episode, the correlation between GDP growth (3 year/3year) should be highly correlated

[12] We measure income growth before the reversal analogously to income growth after the reversal, as three-year average GDP growth *before* the adjustment relative to long run GDP growth.
[13] We also find that the size of the deficit at its trough is uncorrelated with movements in unemployment (not reported).

with the extent of adjustment, with deficits that show a larger resolution, experiencing a greater slowdown relative to the previous three years, and therefore a more extreme business cycle. However, the correlation between these variables is near zero and insignificant. In contrast, GDP growth relative to long term GDP growth is correlated with the extent of adjustment (Figure 3). Thus, while the business cycle clearly plays a role in these adjustments, it does not fully explain why larger deficits are associated with slower real income growth.

We note, too, that the correlations in Table 4 suggest that the interest rate channel is absent: bigger deficits are not associated with bigger increases in interest rates, or with interest rates that are high relative to long run averages. Still, we find that larger deficits are associated with significantly lower investment during the current account recovery Table 5B records results when we decompose the growth effects. Specifically, we regress investment growth (year 0 to 3) on lagged investment growth (year –3 to 0) and the current account trough to see if there is evidence of strong investment growth that reverses (column1). Pre-reversal investment growth is insignificant, while the current account trough remains highly significant, with a coefficient of 0.5. The correlation is highly significant even when we exclude outliers (columns 2 and 3). Thus, we cannot rule out a depressing effect of the current account deficit on investment growth. This is consistent with previous work showing that much of the adjustment from a large current account deficit comes through investment (Freund 2000 and 2005), and of course larger deficits require larger adjustments.

In contrast, the effect of the current trough on other components of GDP growth is not robustly significant (columns 4-9). Cyclical effects with respect to consumption are

very strong—countries that had a consumption boom as the current account deficit worsened tend to have a decline in consumption during the reversal. The size of the deficit is correlated with consumption when outliers are excluded, but the sign implies that countries with larger deficits had, if anything, *less* of a decline in consumption. This implies that the welfare effects of large deficits may be limited, depending on the extent to which GDP declines during adjustment.

Exchange Rate Effects

Tables 6a and 6b report results when average exchange rate adjustment (from year 0 to year 3) and total exchange rate adjustment are the dependent variables, respectively. For average exchange rate adjustment, a number of the variables displayed a significant correlation (Table 4). When all of these variables are included in the regression, we find that there are robust effects from being preceded by a persistent episode and from the extent of investment growth before reversal (Table 6b). In particular, both the presence of a persistent deficit and the extent of investment growth before the reversal reduce the extent of depreciation that is required to accommodate adjustment. We also control for the exchange rate adjustment as the deficit worsened (column 3) and removing potential outliers (columns 4 and 5). The result is very strong and suggests that a one percentage point increase in investment as a share of GDP as the deficit is expanding leads nearly one percentage point less average annual depreciation during the current account recovery. In addition, the presence of a persistent deficit reduces average depreciation by about 3 percentage points annually. As shown in Figure 4, the correlation between investment growth in the pre-period and average exchange rate movement is very strong.

Investment growth in the period when the current account is worsening also reduces the extent of *total* depreciation (Table 6b). In particular, a one percentage point increase in investment is associated with a total depreciation that is about 2.5 percentage points smaller. The result is robust to controlling for the total exchange rate adjustment in the period before the exchange rate reversed (column 2), to including other variables (columns 3 and 4), and to removing outliers (columns 5 and 6). If we regress total exchange rate adjustment on a constant alone the coefficient is –16.3 (not reported), implying that on average a total real depreciation of about 16 percent is required for adjustment.

In both specifications, we can reject that the coefficients on consumption growth and fiscal deterioration are equal to the coefficient on investment growth. We cannot reject that consumption and fiscal deterioration have the same effect on exchange rate movements. This implies that deficits driven by consumption or fiscal deterioration are associated with significantly more depreciation than those driven by investment.

When total exchange rate adjustment is the dependent variable the presence of a persistent deficit is not statistically significant (column 4) though the sign still implies that persistent deficit countries experience less depreciation. The somewhat contradictory results on persistent deficits with respect to average and total exchange rate adjustment imply that being preceded by a persistent deficit does not affect total depreciation, but does affect depreciation in the recovery period. In the persistent episodes, depreciation begins somewhat earlier, with stronger j-curve effects.

We do not find strong evidence that openness affects the extent of depreciation that accompanies reversals.[14] When average exchange rate adjustment is the dependent variable the coefficient is close to zero and insignificant. When total exchange rate adjustment is the dependent variable, the coefficient has the expected sign: greater openness reduces depreciation, but it is not significant. It could be that the trade to GDP ratio is a bad measure of the extent of openness at the margin. Alternatively, the small sample size could be an issue.[15] In addition, countries now in the European Union make more than half of the sample, and may have similar levels of integration. Finally, overall openness may not be what is relevant, but rather the price elasticity of imports and exports, and their various components (Mann and Plück 2005).

Adjustment

Table 7 reports results on adjustment effects. Only the size of the deficit matters for the extent to which it is resolved after three years. We find that for each one percentage point increase in the current account trough, three years into recovery, the current account is about ½ a percentage point larger. The coefficient on CA/GDP at trough is significantly different from negative one (except when we exclude deficits exceeding than 6 percent of GDP), indicating that larger deficits remain significantly larger after 3 years. Thus, large deficits are not as completely resolved as small ones after three years.

[14] We also try controlling for the size of the economy by regressing openness on ln(GDP) and using the residual, but the results are similar.
[15] If we exclude Belgium, with an openness measure exceeding 120 percent, the coefficient on openness is highly significant, provided only investment growth (year -3 to 0) and openness are included in the regression.

Summary of Results

The results show that larger deficits are associated with slower income growth during the current account recovery period and take somewhat longer to resolve. Growth effects are more severe because more adjustment is required when the current account deficit is greater. Indeed, as we have shown, growth (relative to long run) is negatively correlated with the extent of adjustment (Figure 3). Although deeper deficits are associated with slower growth, they do not appear to require more depreciation. Once we control for other variables, exchange rate movements are not significantly different in countries with deeper deficits. In part, this may be because nominal exchange rate adjustment is limited in some industrial countries, either because of managed systems, fixed exchange rates, or because key trading partners fix exchange rates. Restricted exchange rate adjustment in turn leads to more extreme current account deficits and lower income growth during current account recovery. Income growth is forced to accommodate adjustment precisely because depreciation is not more severe. Indeed, there is a strong inverse correlation between the extent of exchange rate adjustment and the slowdown in GDP growth (Figure 4). There is a tradeoff: adjustment comes through either exchange movements or GDP growth. If exchange rates movements are limited, the current account position worsens further and the GDP hit is more extreme.

We also found that the resolution of persistent deficits and of deficits with large negative NFA positions is broadly similar to others, in terms of total exchange rate adjustment and growth effects. Investment-driven current accounts require less exchange rate adjustment than episodes driven by consumption or government spending. This implies that investment channels resources into exports which can eventually service the

debt. Finally, we found that financing does not matter significantly for the adjustment process, suggesting that markets are efficient at intermediating funds.

IV. Implications for the United States

In 1987 the U.S. deficit was driven largely by consumption—from 1984 to 1987 consumption grew 2½ percentage points while investment declined by 2 percentage points. Table 8 reports predictions, based on the significant variables in the regressions above, and actual effects. It also reports predictions that are based on the assumption that the U.S. current account deficit begins its reversal this year; that is, predictions that use 2004 values of the initial conditions for the U.S. For the 1987 episode, the model performs reasonably well on exchange rate adjustment—total depreciation was somewhat higher than predicted and average depreciation during the recovery was right on target. The model predicted slower growth and a larger adjustment than actually occurred.[16] Despite the large current account deficit, the model predicts roughly the same total depreciation now and less depreciation from year 0 to year 3. The reason is that investment growth has been somewhat stronger and it is a persistent deficit, and persistent deficits tend to involve less depreciation during recovery.

Figures 3, 4 and 5 also show the predicted values for the United States—again, under the assumption that the reversal begins this year—with an open circle labeled US04. From those simple bilateral relationships, which do not take into account other factors, we see that were the U.S. current account deficit to begin a reversal this year, we would expect the following: a slowdown in GDP growth (Figure 3a or 5c) and a real

[16] Using time-series data over the same period and analyzing thresholds of adjustment, Clarida, Goretti and Taylor (2005) also find that U.S. adjustment is slow relative to other countries.

exchange rate depreciation of about 4% going forward (Fig. 4a) and 17% from its peak (Fig. 5a and 5b). Of course, most of these bilateral relationships are not at all tight, so wide (sometimes very wide) confidence intervals—most of which would encompass zero—must be place around these point estimates.

Finally, a striking feature of Figures 3, 4 and 5 is that the U.S. is in no way an exception when placed with other current account reversal episodes. That is, the U.S. is typically found in the middle of the scatter plot and is never an outlier. There is, however, one aspect in which the U.S. is an outlier. Figure 6 shows that U.S. gross liabilities scaled by Rest of the World GDP—essentially, what portion of rest of the world wealth ends up in the U.S.—are far larger than any other country's gross liabilities. There are two things to note about this figure. First, the fitted line is meaningless because the confidence band on the point estimate would be enormous and the fitted line would be downward sloping if we excluded the United States. Second, while the U.S. might look like an outlier on this graph, and perhaps to an economist, portfolio theory would suggest that the U.S. should have an even greater gross liabilities position. Because the U.S. is roughly half of global capital markets, simple portfolio theory would predict that U.S. liabilities should be roughly 50% of rest of the world wealth, not the 37% we see today.

While looking at previous episodes offers some useful insights into how a U.S. adjustment might occur, there are several reasons to believe the United States is a special case. The main one is the size of the United States, and thus the large capital inflows necessary to finance the deficit. In addition, currency management by trade partners, who would suffer from a sharp U.S. adjustment, has limited exchange rate movements. The status of the dollar as the reserve currency also has important implications for

adjustment. Finally, the fact that debt is denominated in U.S. dollars makes depreciation less costly to domestic residents.

V. Conclusion

We have shown that large deficits are associated with a significant slowdown in income growth, though if anything they involve less depreciation. We think these facts are related. In countries where exchange movements are limited, either because of managed systems, fixed exchange rates, or key partners fix exchange rates, the current account will deteriorate more than if the exchange rate were flexible. Moreover, because of restricted exchange adjustment, growth will be forced to do much of the work of adjustment. Indeed, there is a very robust inverse correlation between income growth and the total exchange rate adjustment during the recovery.

In contrast, persistent deficits do not lead to a more severe adjustment. Our results suggest that they may be slightly less disruptive in terms of exchange rate movement, with depreciation beginning earlier in the episode and being somewhat more limited. In general, persistent-deficit countries are characterized by a low savings rate.

We also find that deficits driven by investment growth are more benign in terms of exchange rate adjustment than deficits driven by consumption or fiscal spending. This is intuitive, since these are the economies where the accrued debt can be more easily serviced. There is only weak evidence that the level of openness reduces the magnitude of exchange adjustment.

On the financing side, we find that the nature of the inflows while the current account deficit is worsening does not impact the outcome. That is, whether the financing of the deficit comes through inflows of equity, direct investment, bonds, or bank deposits

has no apparent bearing on the adjustment process, possibly because financial systems in industrial countries intermediate these flows rather well. Finally, the size of the foreign liabilities position seems to be uncorrelated with the adjustment process.

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Table 1: Episodes of Adjustment

Country	Trough Year	Current Account /GDP	NFA/GDP
Australia	1989	-5.9	-43.9
Austria	1980	-4.9	-12.8
Austria	1999	-3.2	-19.5
Belgium	1981	-4.1	-1.9
Canada	1981	-4.2	-36.5
Canada	1993	-3.9	-36.4
Denmark	1986	-5.3	-46.7
Finland	1991	-5.5	-34.3
France	1982	-2.1	-0.5
Greece	1985	-8.0	.
Greece	1990	-4.2	.
Iceland	1982	-8.2	-46.3
Iceland	1991	-4.0	-49.6
Ireland	1981	-13.1	-60.0
Italy	1981	-2.6	-3.6
Italy	1992	-2.4	-11.0
New Zealand	1984	-13.3	-53.4
New Zealand	1999	-6.2	-71.7
Norway	1986	-6.0	-13.6
Portugal	1981	-16.1	-41.8
Spain	1981	-2.8	-12.0
Spain	1991	-3.6	-16.1
Sweden	1980	-3.3	-7.4
Sweden	1992	-3.4	-21.1
UK	1989	-5.1	9.1
United States	1987	-3.4	-1.6
Average		-5.6	-26.4

Current account and NFA are at the time of the current account trough.

Table 2: Episodes of Persistent Deficits

Country	Year began	Length of Episode	Average Deficit	Average NFA
Australia	1980	10	-4.4	-32.0
Australia	1991 [a]	13	-4.2	-54.0
Austria	1976	5	-3.8	-12.8
Austria	1995	6	-2.5	-18.1
Canada	1974	8	-3.7	-34.6
Canada	1986	8	-3.6	-34.2
Denmark	1981	10	-3.7	-39.8
Greece	1976[b]	10	-4.5	.
Greece	1995 [a]	8	-5.7	.
Ireland	1976	6	-8.5	-52.7
New Zealand	1978	7	-5.6	-39.4
New Zealand	1994	7	-5.3	-68.2
Portugal	1996 [a]	7	-7.5	-34.4
United States	1998 [a]	6	-3.9	-19.3
Average		7.92[c]	-4.8	-36.6

a. Episode may not have ended as of 2003.
b. Current account data begins in 1976, so episode may have actually been longer.
c. Includes all episodes. If ongoing episodes are excluded, average is 7.7 indicating that recent episodes are somewhat longer.

Table 3: Characteristics of Persistent Deficit Episodes (Unweighted Averages)

Variable	Persistent deficit countries, in episode	Persistent deficit countries, out of episode	Other industrial countries
CA/GDP	-4.7	-1.5	1.0
GDP growth	2.9	3.2	2.8
Savings/GDP	20.8	22.4	25.2
Investment/GDP	23.7	23.1	23.7
Real Short Rate	3.4	2.2	2.1
Real Long Rate	3.5	3.1	3.5
Net Foreign Asset	-0.4	-0.2	0.0
Fiscal balance/GDP	-3.6	-3.8	-3.0
Openness	55.9	60.7	73.2

Averages for all persistent episodes, including unresolved episodes. All others includes other countries and same currents during periods that do not qualify as persistent.

Table 4: Correlation Coefficients

	CA/GDP at trough	Preceded by persistent deficit	Con/ GDP growth -3 to 0	Inv/ GDP Growth -3 to 0	Fis/ GDP Growth -3 to 0	NFA/ GDP at trough	Open-ness	Gross Liab /GDP at trough	Share of Bond Inflows	Share of DI/Equity Inflows
GDP Growth 3yr/3yr	**0.38** **(0.06)**	0.11 (0.60)	**0.38** **(0.05)**	**-0.84** **(0.00)**	-0.31 (0.12)	-0.07 (0.76)	-0.09 (0.66)	-0.09 (0.67)	0.20 (0.34)	-0.19 (0.41)
GDP Growth (3yr/lr avg)	**0.51** **(0.01)**	0.16 (0.44)	0.05 (0.79)	**-0.37** **(0.07)**	-0.07 (0.72)	0.14 (0.53)	-0.18 (0.38)	-0.07 (0.74)	-0.03 (0.89)	0.01 (0.97)
Total ER	-0.33 (0.10)	0.29 (0.15)	**-0.43** **(0.03)**	**0.73** **(0.00)**	0.32 (0.11)	-0.12 (0.59)	0.29 (0.15)	**0.35** **(0.09)**	-0.07 (0.75)	0.02 (0.92)
Average ER	**-0.39** **(0.05)**	**0.45** **(0.02)**	**-0.49** **(0.01)**	**0.74** **(0.00)**	0.32 (0.11)	-0.29 (0.17)	0.21 (0.31)	0.27 (0.20)	-0.21 (0.33)	0.31 (0.17)
Crisis	-0.28 (0.17)	-0.10 (0.64)	-0.01 (0.94)	-0.14 (0.51)	-0.05 (0.81)	**-0.43** **(0.03)**	-0.32 (0.11)	-0.21 (0.34)	-0.16 (0.45)	**0.43** **(0.06)**
Resolve	**-0.75** **(0.00)**	0.02 (0.93)	0.10 (0.62)	0.12 (0.54)	0.00 (0.98)	**-0.36** **(0.08)**	0.30 (0.14)	0.02 (0.93)	0.02 (0.91)	-0.07 (0.78)
Short Rates	0.00 (0.99)	0.09 (0.70)	-0.21 (0.35)	0.07 (0.77)	0.26 (0.25)	-0.10 (0.68)	0.06 (0.81)	0.28 (0.21)	**0.38** **(0.09)**	0.06 (0.81)
Long Rates	-0.08 (0.74)	0.12 (0.60)	-0.32 (0.17)	0.13 (0.58)	0.09 (0.72)	-0.06 (0.81)	0.02 (0.92)	0.17 (0.46)	0.15 (0.53)	0.02 (0.93)
Equity Prices	-0.09 (0.70)	-0.25 (0.27)	-0.10 (0.68)	0.22 (0.35)	0.01 (0.96)	0.17 (0.49)	0.06 (0.40)	-0.11 (0.66)	**-0.58** **(0.01)**	-0.05 (0.84)

Notes: At most 26 observations. P-values in parentheses, with significance at the 10 percent level or better in bold. Year 0 is the year of the current account trough. Interest rates and equity prices are adjusted for inflation. In the outcome variables (in the first column), changes are generally expressed as the difference between the 3-year average following the trough and the 3-year average leading up to the trough. Exceptions are GDP Growth (lr avg), which is relative to the long-run average GDP growth, and Average ER, which is average annual exchange rate movement from the trough to year 3. Total ER is the maximum total exchange rate depreciation from year –3 to year 3. In both cases, a currency depreciation will have a negative sign. Crisis is the presence of an exchange rate crisis at some point between year –3 and 3. Resolve is computed as the percent point improvement in the exchange rate from year 0 to year 3. NFA, Gross Liabilities, and the Shares of Bond and DI/Equity Flows are defined in the Data Appendix.

Table 5a: Growth Effects

Dependent Variable: GDP Growth 0 to 3 relative to long-run average						
	(1)	(2)	(3)	(4)	(5)	(6)
CA/GDP at trough	0.15*	0.16*	0.20*	0.15*	0.14	0.48*
	(4.00)	(2.81)	(3.06)	(3.90)	(1.38)	(4.79)
Preceded by persistent deficit		0.81				
		(1.41)				
CON/GDP growth (-3 to 0)		0.01				
		(0.09)				
INV/GDP growth (-3 to 0)		-0.05				
		(-0.64)				
FISBAL/GDP Growth (-3 to 0)		-0.03				
		(-0.71)				
NFA at trough			-0.01			
			(-0.86)			
Average GDP growth (-3 to 0)				0.01		
				(0.05)		
Constant	-0.30	-0.57	-0.37	-0.30	-0.33	0.87
	(-1.13)	(-1.28)	(-1.28)	(-1.13)	(-0.81)	(2.07)
R-squared	0.26	0.40	0.31	0.26	0.06	0.38
NOB	26	26	24	26	23	20

Robust t-statistics in parentheses. Column 5 excludes countries with deficits exceeding 10 percent of GDP. Column 6 excludes countries with deficits exceeding 6 percent of GDP. * Significant at the 5 percent level.

Table 5b: Decomposing Growth Effects

	INV/ GDP (1)	*INV/ GDP (2)*	*INV/ GDP (3)*	*CON/ GDP (4)*	*CON/ GDP (5)*	*FIS/ GDP (6)*	*FIS/ GDP (7)*	*NX/ GDP (8)*	*NX/ GDP (9)*
CA/GDP at trough	0.51* (3.77)	0.67* (2.16)	0.95* (3.87)	-0.03 (-0.15)	-0.62* (-2.42)	-0.44* (-2.16)	0.17 (0.38)	-0.45* (-2.77)	-0.01 (-0.05)
CON/GDP growth (-3 to 0)				-0.49* (-2.51)	-0.34* (-2.17)				
INV/GDP growth (-3 to 0)	-0.22 (-1.63)	-0.17 (-1.25)	-0.08 (-0.71)						
FISBAL/GDP Growth (-3 to 0)						-0.42 (-1.53)	-0.36 (-1.11)		
NX/GDP Growth (-3 to 0)								-0.15 (-1.16)	-0.13 (-0.71)
Constant	-1.10 (-1.70)	-0.47 (-0.40)	0.48 (0.53)	0.50 (0.40)	-2.14 (-1.76)	-3.21 (-2.49)	-0.69 (0.34)	1.35 (1.76)	-3.23 (-3.40)
R-squared	0.61	0.42	0.47	0.25	0.37	0.27	0.19	0.44	0.05
NOB	26	23	20	26	23	25	22	26	23

Robust T-statistics in parentheses.

Table 6a: Exchange Rate Effects

Dependent Variable: Average Annual Real Exchange Rate Adjustment, Year 0 to 3						
	(1)	(2)	(3)	(4)	(5)	(6)
CA/GDP at trough	0.05	-0.09	0.05	0.06	0.46	0.37
	(0.59)	(-0.79)	(0.57)	(0.64)	(1.99)	(0.93)
Preceded by	3.28*	3.75*	3.23*	3.22*	3.35*	3.10*
persistent deficit	(3.76)	(3.48)	(3.65)	(3.40)	(3.02)	(2.35)
CON/GDP growth	0.16	0.17	0.16	0.15	0.19	0.19
(-3 to 0)	(0.83)	(0.95)	(0.84)	(0.74)	(0.78)	(0.71)
INV/GDP growth	0.85*	0.71*	0.85*	0.85*	0.92*	0.92*
(-3 to 0)	(5.99)	(3.44)	(5.68)	(5.74)	(6.46)	(5.86)
FIS BAL/GDP	-0.17	-0.06	-0.17	-0.17	-0.14	-0.13
Growth	(-1.97)	(-0.36)	(-1.82)	(-1.89)	(-1.33)	(-1.27)
(-3 to 0)						
NFA at trough		0.03				
		(1.54)				
Average Exchange			-0.04			
Adjustment			(-0.34)			
(-3 to 0)						
Openness				0.00		
				(0.27)		
Constant	-3.54	-3.63	-3.53	-3.66	-1.91	-2.17
	(-4.10)	(-4.09)	(-3.92)	(-3.42)	(-1.53)	(-1.18)
F-test	16.38	5.22	15.06	13.45	10.38	9.84
Predcon=predinv	[0.00]	[0.04]	[0.00]	[0.00]	[0.01]	[0.01]
F-test	21.38	25.34	19.75	20.75	26.21	20.39
-Predfis=predinv	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
F-test	0.00	0.18	0.00	0.01	0.03	0.03
-Predfis=Predcon	[0.96]	[0.68]	[0.97]	[0.94]	[0.85]	[0.86]
R-square	0.73	0.74	0.73	0.73	0.74	0.74
NOB	26	24	26	26	23	20

Robust T-statistics in parentheses. P-values in brackets. *Significant at the 5 percent level.

Table 6b: Total Exchange Rate Adjustment

Dependent variable: Total Real Exchange Rate Adjustment						
	(1)	(2)	(3)	(4)	(5)	(6)
CA/GDP at trough				0.34		
				(0.78)		
Preceded by persistent deficit				5.84		
				(1.14)		
CON/GDP growth (-3 to 0)				0.36		
				(0.41)		
INV/GDP growth (-3 to 0)	2.58*	2.40*	2.33*	2.83*	2.75*	2.86*
	(5.69)	(4.79)	(4.31)	(3.71)	(5.26)	(5.52)
FIS BAL/GDP Growth (-3 to 0)				-0.24		
				(-0.49)		
NFA at trough			0.01			
			(0.10)			
Openness				0.08		
				(0.89)		
Total Exchange Adjustment Before Currency Reversal		-0.20	-0.18	-0.08		
		(-1.19)	(-0.92)	(-0.38)		
Constant	-17.60	-14.74	-14.91	-22.31	-18.11	-16.96
	(-10.77)	(-4.48)	(-3.49)	(-2.54)	(-11.37)	(-10.27)
F-test predcon=predinv				6.62		
				[0.02]		
F-test -predfis=predinv				12.84		
				[0.00]		
F-test -predfis=predcon				0.01		
				[0.92]		
R-square	0.53	0.55	0.54	0.63	0.59	0.64
NOB	26	26	24	26	23	20

Robust T-statistics in parentheses. P-values in brackets. Column 5 and 6 exclude countries with current account GDP rations less than -10 and -6, respectively.
*Significant at the 5 percent level.

Table 7: Adjustment Effects

Dependent Variable: Resolve, Percentage Point Resolution of CA/GDP after 3 years	(1)	(2)	(3)	(4)	(5)
CA/GDP at trough	-0.51*	-0.55*	-0.59*	-0.36	-0.53
	(-3.42)	(-2.81)	(-3.76)	(-1.95)	(-1.63)
Preceded by persistent deficit			-1.32		
			(-1.21)		
CON/GDP growth (-3 to 0)			0.05		
			(0.26)		
INV/GDP growth (-3 to 0)			-0.18		
			(-1.25)		
FIS BAL/GDP growth			0.10		
(-3 to 0)			(1.18)		
Openness			0.01		
			(0.78)		
NFA at trough		0.01			
		(0.56)			
Constant	1.66	1.77	1.11	2.33	1.76
	(2.24)	(2.49)	(1.22)	(2.89)	(1.44)
F-test CAtrough=-1	10.67	5.30	6.61	11.94	2.20
	[0.00]	[0.03]	[0.02]	[0.00]	[0.16]
R-square	0.56	0.55	0.65	0.15	0.17
NOB	26	24	26	23	20

Robust T-statistics in parentheses. P-values in brackets. * Significant at the 5 percent level.

Table 8: US Adjustment

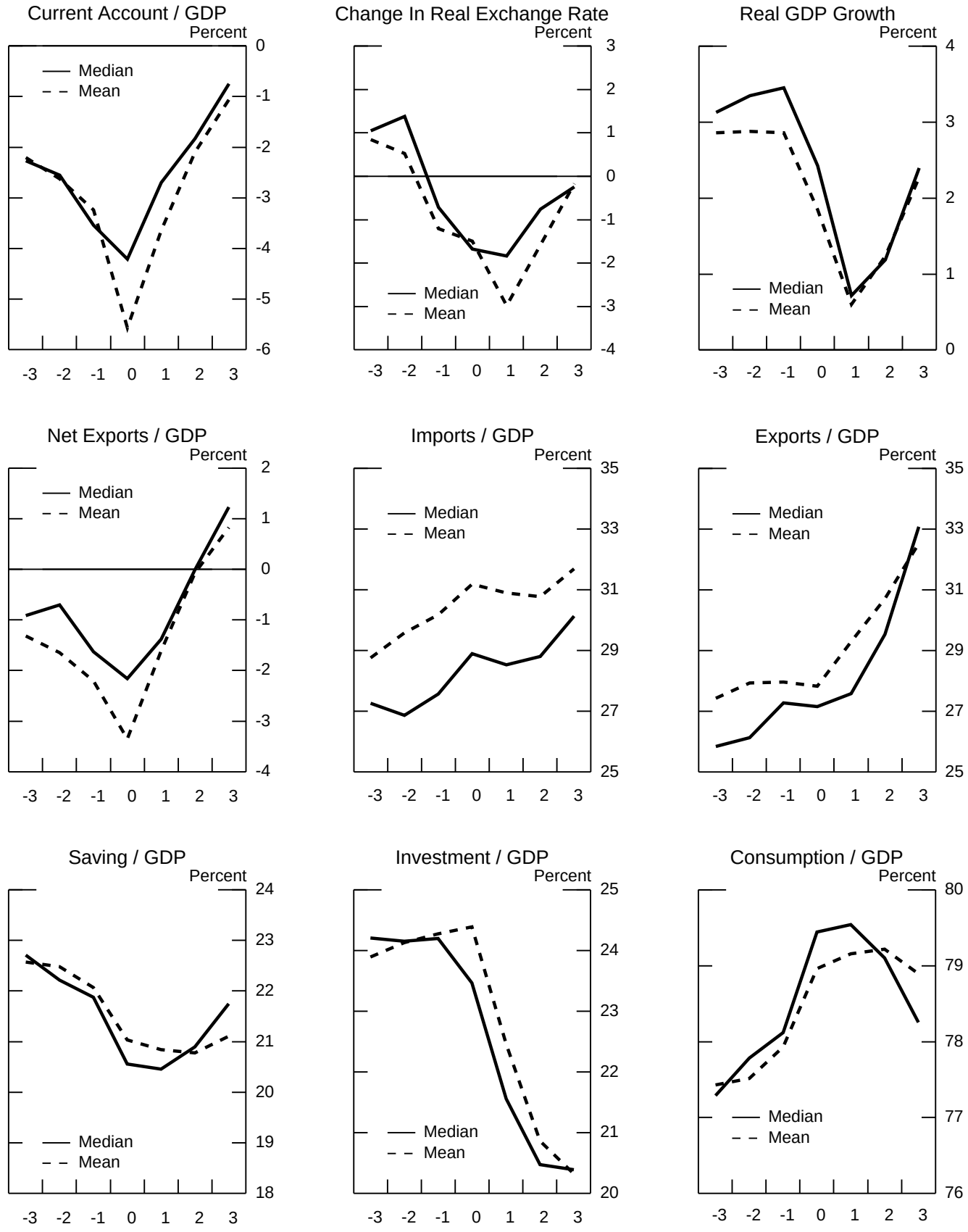
	Total Exchange Rate Adjustment	Average Exchange Rate Adjustment[a] (Year 0 to 3)	Relative Growth[b]	3 Year Adjustment[b]
1987 Predicted	-22.91	-4.28	-0.81	3.40
1987 Actual	-34.41	-4.25	0.23	2.05
2005 Predicted	-23.66	-2.25	-1.05	4.20

a. Included variable is investment growth, year -3 to 0.
b. Included variables are preceded by persistent deficit and investment growth, year -3 to 0.
c. Included variable is current account trough.

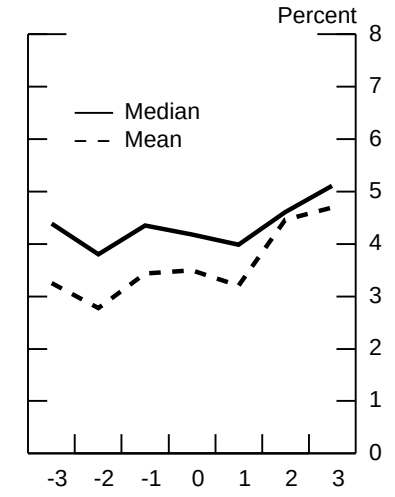
Data Appendix

Average Exchange Rate Adjustment (-): Average exchange rate adjustment from year 0 to 3, including year 0 exchange rate adjustment. Depreciation is negative.
CA/GDP at trough: Minimum current account deficit before reversal.
CRISIS: An indicator variable that is one if there was an exchange crisis in that year, as defined by Frankel and Rose 1996.
GDP growth 3yr/3yr: Three-year average GDP growth after reversal (year 0 to 3) relative to three year average GDP growth before reversal.
GDP growth 3yr/LT: Three-year average GDP growth (year 0 to 3) relative to average GDP growth from 1980 to 2003.
Total Exchange Rate Adjustment (-): Total exchange rate adjustment from exchange rate peak to trough between year -3 and 3. A currency depreciation is negative.
CON/GDP growth: Percentage point growth in consumption in the three years before the reversal.
FIS BAL/GDP Growth: Percentage point growth in the fiscal balance in the three years before the reversal.
INV/GDP Growth: Percentage point growth in investment in the three years before the reversal.
OPENNESS: Average (imports + exports)/GDP in the three years before the reversal.
Preceded by persistent: An indicator variable that is one if the reversal was preceded by a persistent deficit.
RESOLVE : The percentage point improvement in the current account in three years (year 0 to year 3).
NFA/GDP: Lane and Milesi-Ferretti (2005) data, equals gross assets minus gross liabilities (scaled by GDP). Defined at the trough of the CA balance.
Gross Liabilities/GDP: Lane and Milesi-Ferretti (2005) data, defined at the trough of the CA balance.
Share of Bond Inflows: Bond inflows divided by overall financial account inflows, averaged over years -3 to 0.
Share of DI/Equity Inflows: Direct investment and equity inflows divided by overall financial account inflows, averaged over years -3 to 0.

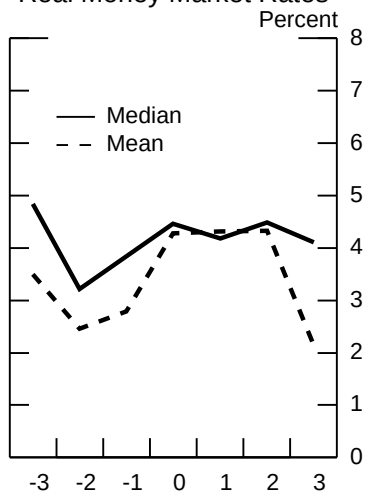
Figure 1


Current Account / GDP
Percent
Median
Mean
Change In Real Exchange Rate
Percent
Median
Mean
Real GDP Growth
Percent
Median
Mean
Net Exports / GDP
Percent
Median
Mean
Imports / GDP
Percent
Median
Mean
Exports / GDP
Percent
Median
Mean
Saving / GDP
Percent
Median
Mean
Investment / GDP
Percent
Median
Mean
Consumption / GDP
Percent
Median
Mean

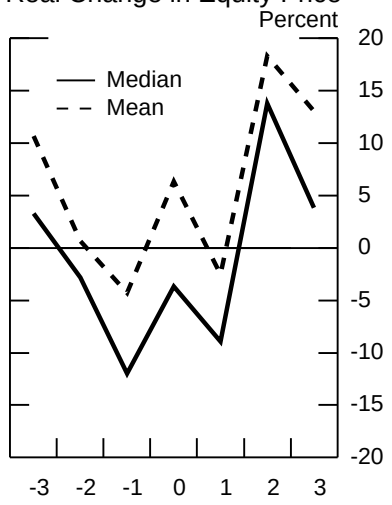
Real Medium Term Bond Rates



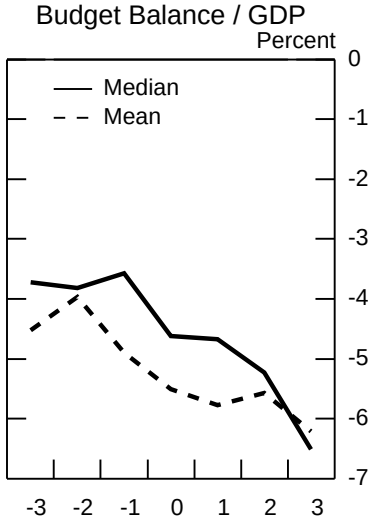
Real Money Market Rates



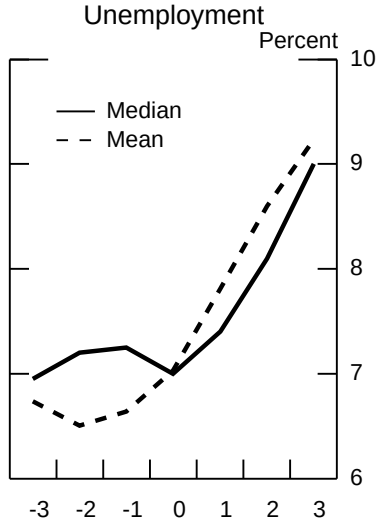
Real Change in Equity Price



Budget Balance / GDP



Unemployment



Reserve Assets

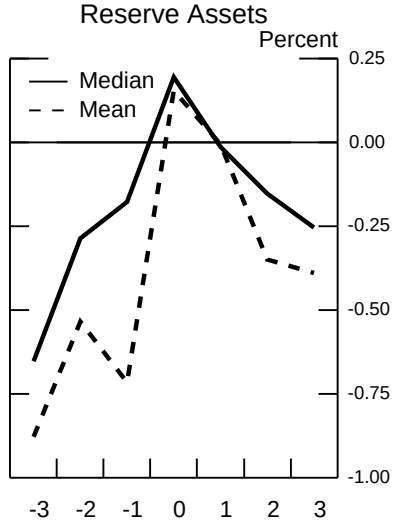


Figure 2

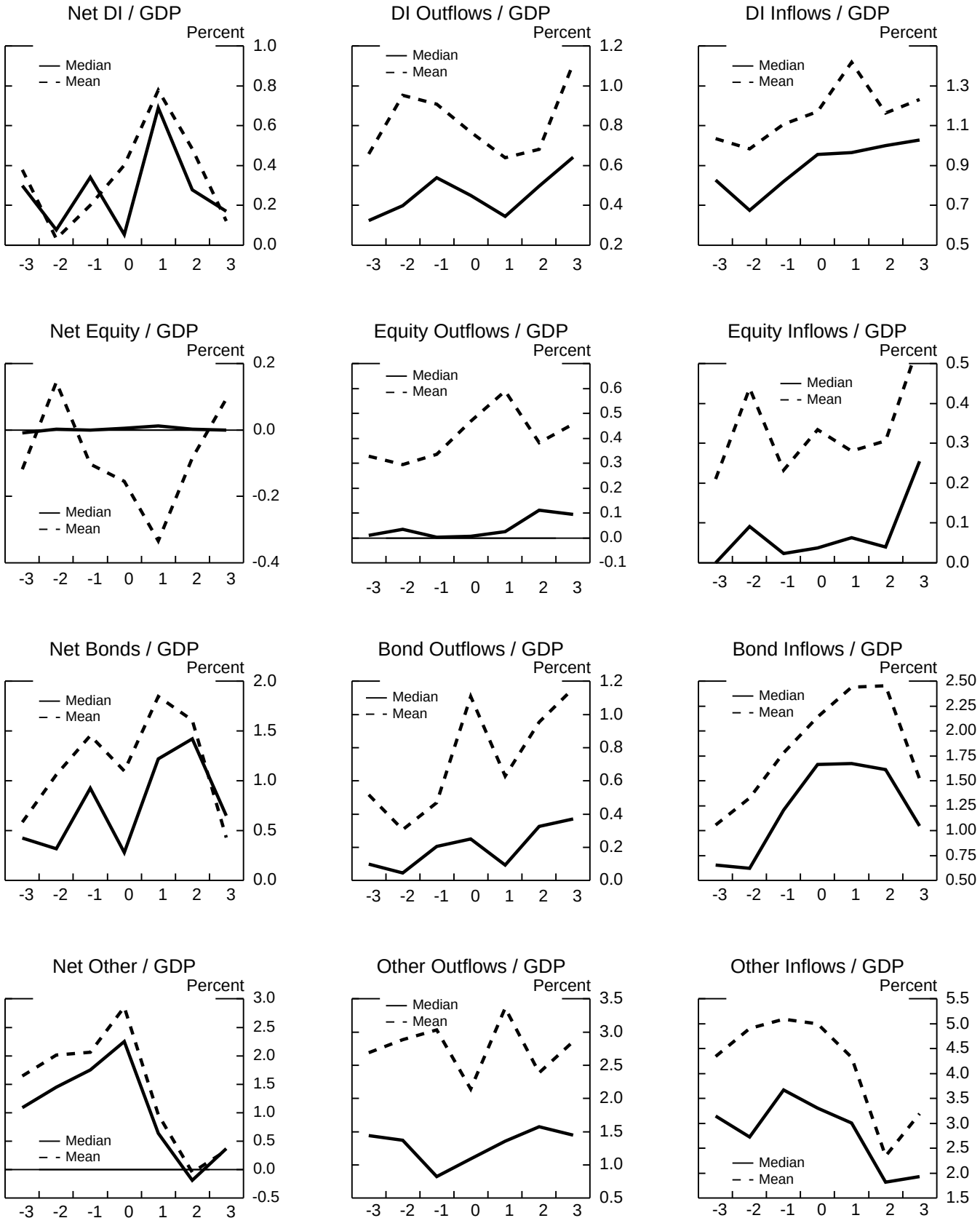
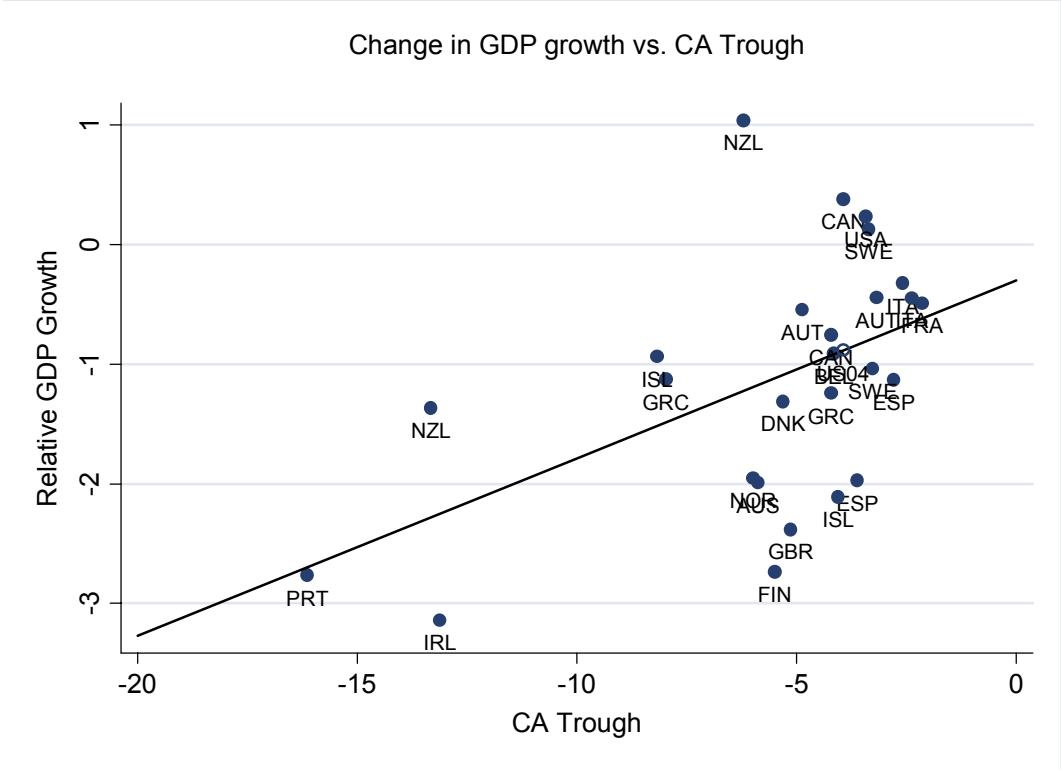

Net DI / GDP
Percent
Median
Mean
DI Outflows / GDP
DI Inflows / GDP
Net Equity / GDP
Equity Outflows / GDP
Equity Inflows / GDP
Net Bonds / GDP
Bond Outflows / GDP
Bond Inflows / GDP
Net Other / GDP
Other Outflows / GDP
Other Inflows / GDP

Figure 3: Real Side Effects

(a)



(b)

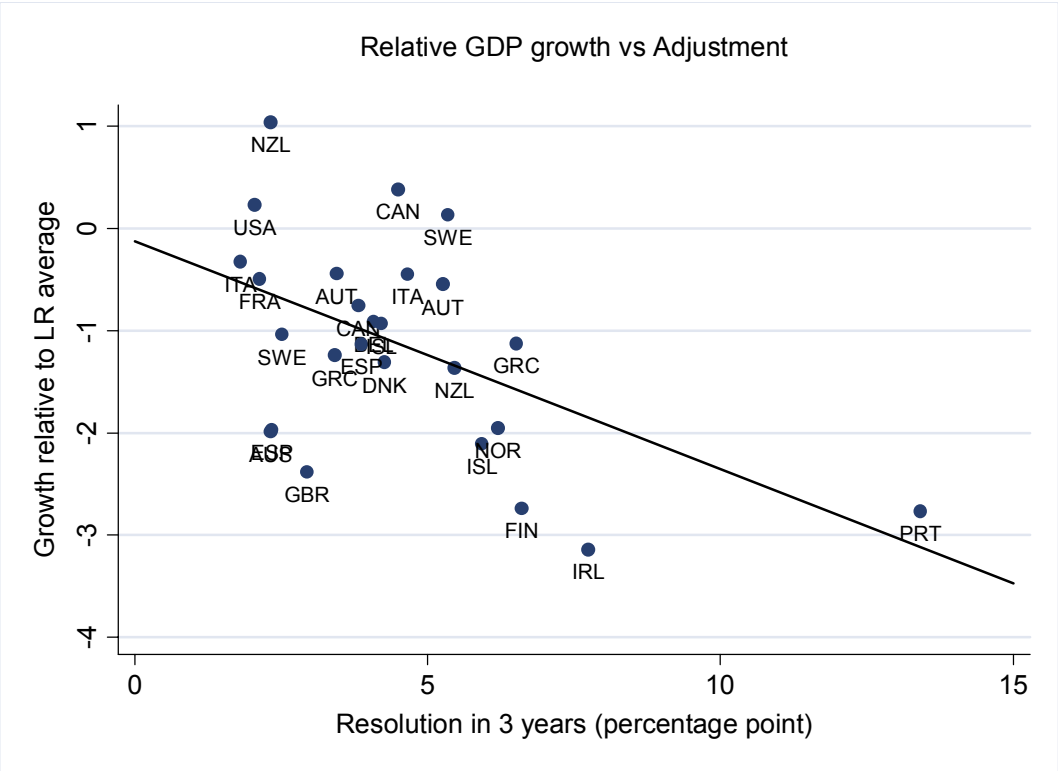
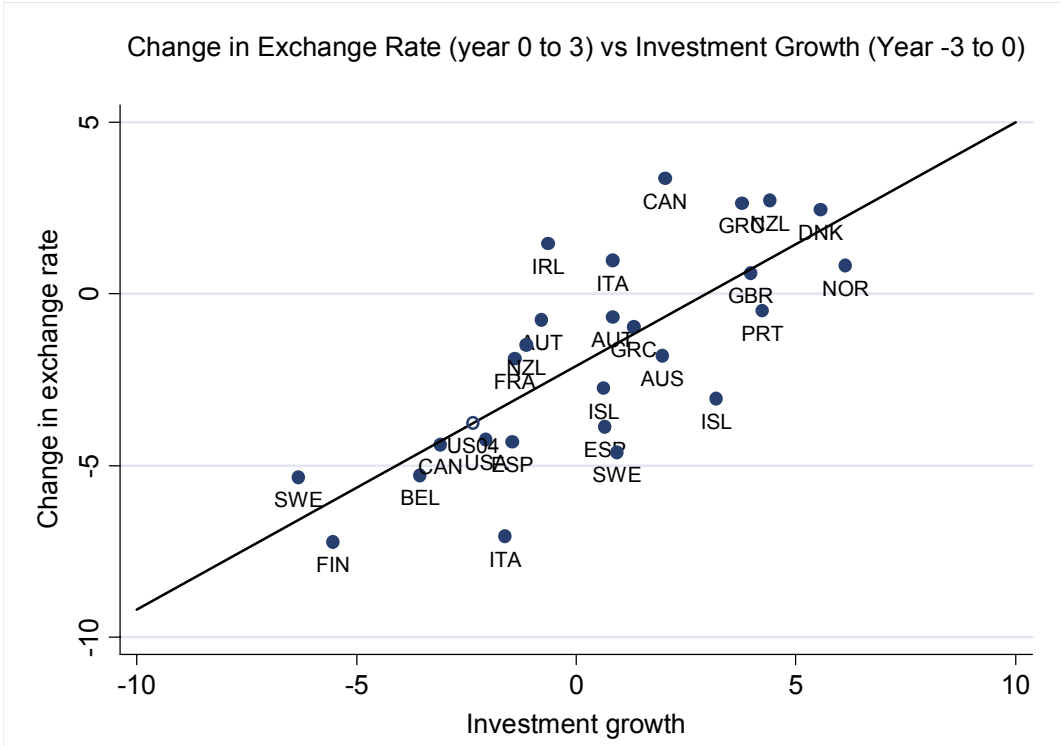


Figure 4

(a)


Change in Exchange Rate (year 0 to 3) vs Investment Growth (Year -3 to 0)
Change in exchange rate
Investment growth
5
0
-5
-10
-10
-5
0
5
10
CAN
GRC
NZL
DNK
IRL
ITA
GBR
NOR
PRT
AUT
AUT
GRC
NZL
FRA
AUS
ISL
ISL
US04
CAN
USA
ESP
ESP
SWE
SWE
BEL
FIN
ITA

(b)

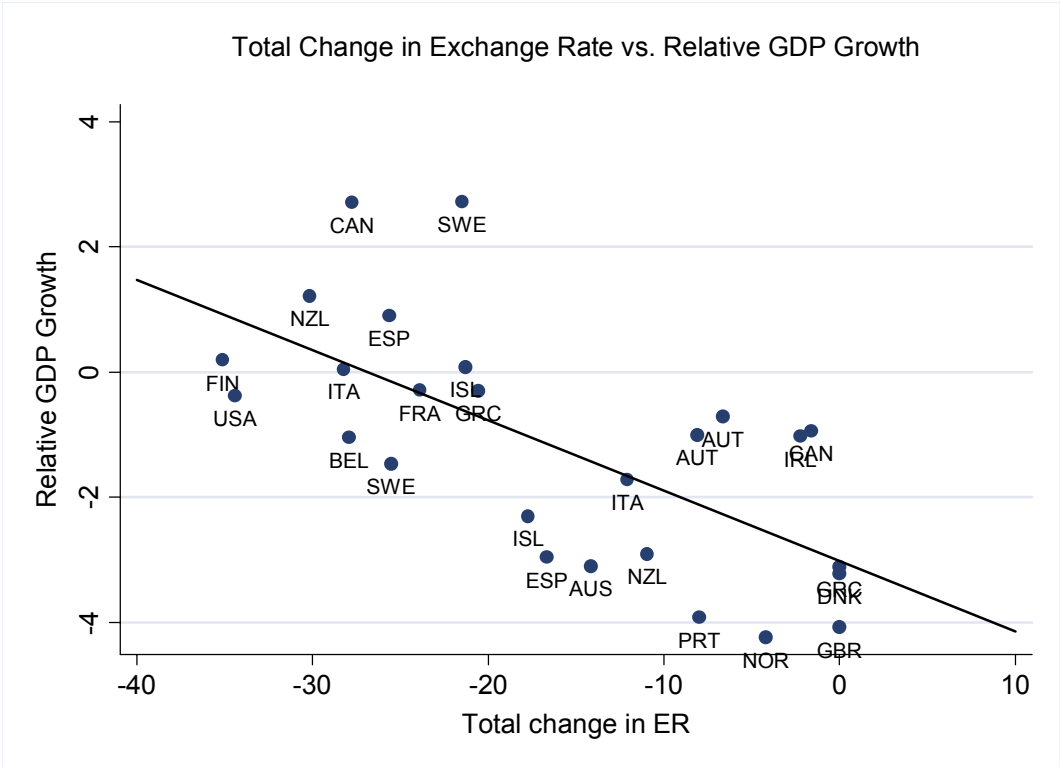
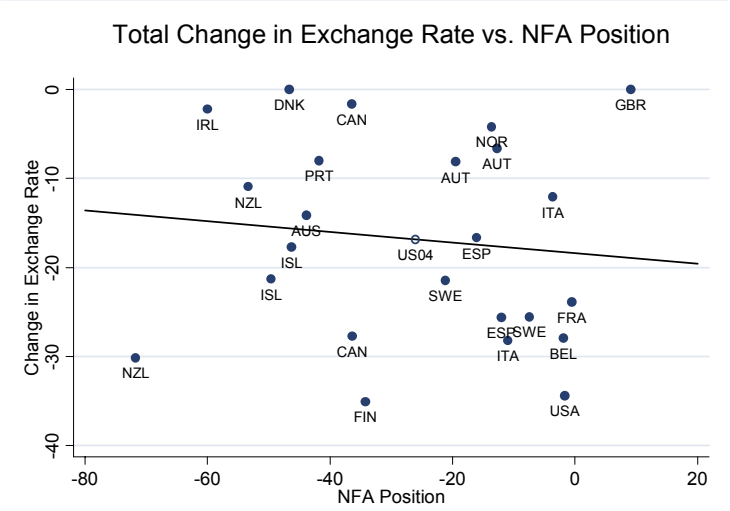
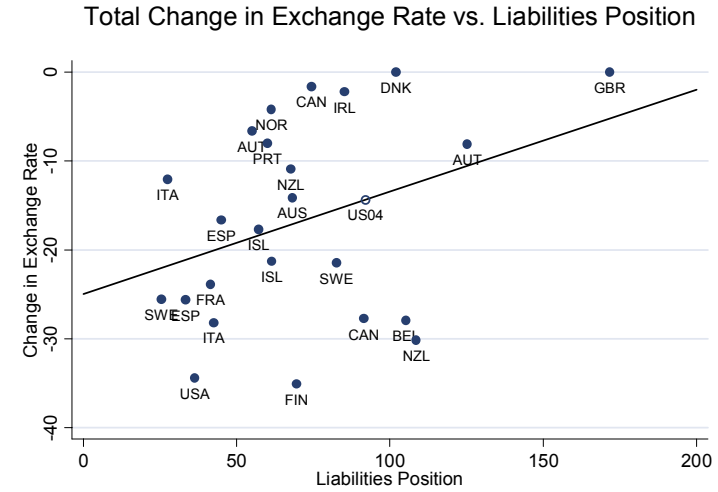

Total Change in Exchange Rate vs. Relative GDP Growth
Relative GDP Growth
Total change in ER
4
2
0
-2
-4
-40
-30
-20
-10
0
10
CAN
SWE
NZL
ESP
FIN
ITA
ISL
USA
FRA
GRC
AUT
AUT
CAN
IRL
BEL
SWE
ITA
ISL
ESP
AUS
NZL
GRC
DNK
PRT
NOR
GBR

Figure 5

(a)


Total Change in Exchange Rate vs. NFA Position
Change in Exchange Rate
NFA Position
0
-10
-20
-30
-40
-80
-60
-40
-20
0
20
DNK
CAN
GBR
IRL
NOR
AUT
AUT
PRT
NZL
ITA
AUS
US04
ESP
ISL
ISL
SWE
FRA
ESP
SWE
CAN
ITA
BEL
NZL
FIN
USA

(b)


Total Change in Exchange Rate vs. Liabilities Position
Change in Exchange Rate
Liabilities Position
0
-10
-20
-30
-40
0
50
100
150
200
DNK
GBR
CAN
IRL
NOR
AUT
AUT
PRT
NZL
ITA
AUS
US04
ESP
ISL
ISL
SWE
FRA
SWE
ESP
ITA
CAN
BEL
NZL
USA
FIN

(c)

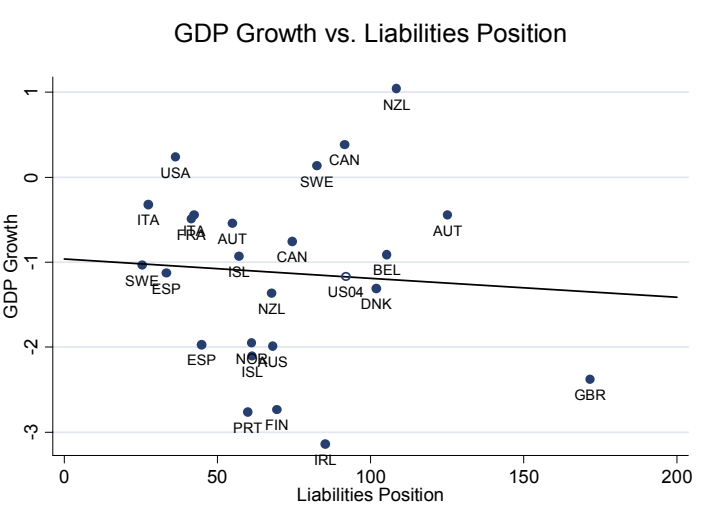
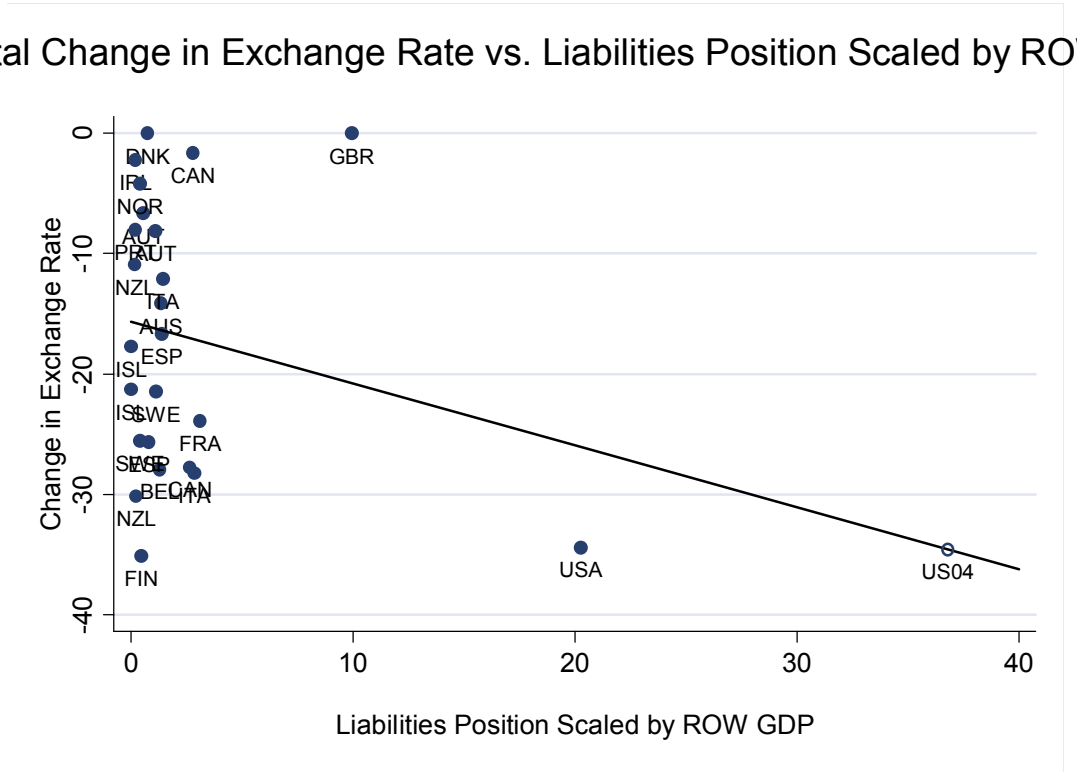

GDP Growth vs. Liabilities Position
GDP Growth
Liabilities Position
1
0
-1
-2
-3
0
50
100
150
200
NZL
CAN
USA
SWE
ITA
AUT
AUT
CAN
BEL
SWE
ESP
ISL
US04
DNK
NZL
ESP
AUS
GBR
PRT
FIN
IRL

Figure 6


Total Change in Exchange Rate vs. Liabilities Position Scaled by ROW GDP
Change in Exchange Rate
0
-10
-20
-30
-40
0
10
20
30
40
Liabilities Position Scaled by ROW GDP
DNK
CAN
GBR
NOR
AUT
NZL
ITA
AUS
ESP
ISL
SWE
FRA
BEL
CAN
ITA
NZL
FIN
USA
US04