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CAPITAL FLOW BONANZAS: AN ENCOMPASSING VIEW OF THE PAST AND PRESENT

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ABSTRACT

A considerable literature has examined the causes, consequences, and policy responses to surges in international capital flows. A related strand of papers has attempted to catalog current account reversals and capital account "sudden stops." This paper offers an encompassing approach with an algorithm cataloging capital inflow bonanzas in both advanced and emerging economies during 1980-2007 for 181 countries and 1960-2007 for a subset of 66 economies from all regions. In line with earlier studies, global factors, such as commodity prices, international interest rates, and growth in the world's largest economies, have a systematic effect on the global capital flow cycle. Bonanzas are no blessing for advanced or emerging market economies. In the case of the latter, capital inflow bonanzas are associated with a higher likelihood of economic crises (debt defaults, banking, inflation and currency crashes). Bonanzas in developing countries are associated with procyclical fiscal policies and attempts to curb or avoid an exchange rate appreciation -- very likely contributing to economic vulnerability. For the advanced economies, the results are not as stark, but bonanzas are associated with more volatile macroeconomic outcomes for GDP growth, inflation, and the external accounts. Slower economic growth and sustained declines in equity and housing prices follow at the end of the inflow episode.

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1. Introduction

A pattern has often been repeated in the modern era of global finance. Foreign investors turn with interest toward some developing country. Capital flows in volume into small and shallow local financial markets. The exchange rate tends to appreciate, asset prices to rally, and local commodity prices to boom. These favorable asset price movements improve national fiscal indicators and encourage domestic credit expansion. These, in turn, exacerbate structural weaknesses in the domestic banking sector even as those local institutions are courted by global financial institutions seeking entry into a hot market. At the same time, local authorities resort to large-scale foreign exchange sales of the local currency to cushion the effects on the exchange rate of the capital inflow bonanza.

Other policy interventions, such as increases in reserve requirements and transactions taxes, usually follow to insulate the domestic economy from the accumulation of reserves. An inherent tension emerges: Local authorities take such changes as a global vote of approval that might encourage them to delay the difficult task of structural adjustment.

This pattern is etched sharply in the experience of the ERM, the ERM2, and the Latin convergence associated with NAFTA and its regional successors. In the run-up to a more perfect union, potential entrants are increasingly looked upon favorably by global investors. Those investors appreciate that close integration with a strong anchor country or group of countries will ultimately discipline policymakers in the periphery, which will narrow exchange rate fluctuations and country risk spreads and buoy local equity prices. But these same dynamics also play out in commodity-exporting emerging market

economies when the prices of their output surge on world markets or when very low interest rates and sluggish growth in the advanced countries turn the attention of investors there outward. Across countries, a different rising tide raises all boats.

But tides also go out when the fancy of global investors shifts and the "new paradigm" looks shop worn. Flows reverse and asset prices give back their gains, often forcing a painful adjustment on the economy.

This experience has provided a fertile testing ground for international economists. A varied flora has blossomed that will be reviewed in Section 2. Given double-entry bookkeeping and the zero-sum nature of global trade, these issues of global adjustment have been described in terms of the current or financial accounts and as deterioration in some countries or improvement in others. Moreover, the time windows have been chosen to isolate the build-up or run-down of any of these measures.

This paper attempts to be encompassing in its examination of these issues by simplifying the definition of the key event that is studied and by widening the time window around that event. We investigate what happens before, during, and after a capital flow bonanza. That is, we ask how do economies perform in and around periods when capital inflows are relatively large (or, equivalently, when their financial account surpluses are relatively large)? Due to data limitations discussed below, we make this operational by examining episodes of large current account deficits.

We study 181 countries from 1980 to 2007, a subset of 66 countries from 1960 to 2007 for which more detailed information on economic variables is available, and a smaller group of 18 countries for which house price data are available; the samples include all regions and income groups. Our primary aim is to quantitatively define and

date capital inflow bonanza episodes, so as to study their various aspects. In Section 3, we document several features of these bonanza periods, including their incidence and duration. In Section 4, we examine the evidence on potential links between capital flow bonanzas and debt, currency, inflation, and banking crises. In Section 5, we systematically illustrate the behavior of a variety of macroeconomic, financial, and policy indicators on the eve and aftermath of these episodes.

Our main findings can be summarized as follows:

With nearly fifty years of data, it is evident that bonanzas have become more frequent as restrictions on international capital flows have been relaxed worldwide. Although the approaches differ, this finding is in line with the evidence presented in Eichengreen and Adalet (2005).

The heavy inflow episode can persist, often lulling policymakers and investors into treating the bonanza as a *permanent* phenomenon rather than a *temporary* shock. Episodes end, more often than not, with an abrupt reversal or "sudden stop" à la Calvo (as in Calvo, 1998). The current account path around bonanzas is distinctly V-shaped, irrespective of whether the broader, but more recent, sample or the less inclusive, but longer, sample is the benchmark.

Capital inflow bonanza periods are associated with a *higher incidence* of banking, currency, and inflation crises in all but the high income countries (using some of the crises indicators developed in Kaminsky and Reinhart, 1999, and codified in Reinhart and Rogoff, 2008a). This result is not the artifact of a few extreme cases; in more than 60 percent of the countries, the probability of a crisis around the dates of a capital flow

bonanza is higher than for the entire sample. Capital flow bonanzas *systematically precede* sovereign default episodes.

In developing countries (those designated by the World Bank as middle and low income), the stance of fiscal policy, as measured by the growth in real government spending, *is notoriously procyclical during capital inflow bonanzas*. This is consistent with the earlier observation that temporary "good times" are often treated as permanent. In effect, our preliminary results also suggest that fiscal policy plays a destabilizing role around capital flow bonanzas—and possibly more generally.

For the advanced economies, the results are not as stark, as there is no systematic cross-country evidence over 1960-2007 that the probability of a financial crisis increases during bouts of heavy capital inflows. The crisis-prone Nordic countries in the early 1990s and the Iceland, U.K., and U.S. crises at present would appear to be important departures from this general result (as in Reinhart and Rogoff, 2008b). Nonetheless, capital flow bonanzas are associated with more volatile macroeconomic outcomes for real GDP growth, inflation, and the external accounts.

Real GDP growth tends to be higher in the run-up to a bonanza and then systematically lower. The imprint of bonanzas is evident in asset markets. Equity prices rise when capital flows in and retreat when capital flows out. A similar pattern is evident in house prices for our small sample. A bonanza is not to be confused with a blessing.

The last section turns to some of the policy implications of our analysis and discusses possible future research in this area.

2. Concepts and Data Issues

1. Reviewing the existing literature

The existing literature has studied multiple manifestations of international adjustment in the balance-of-payments data. Double-entry bookkeeping and the global summing to zero of trade flows produces the four alternative frames of reference laid out in Table 1. The main issues of adjustment can be described in terms of either an improvement or deterioration (along the rows of the matrix) in either the current or capital accounts (along the columns).

Table 1. Frames of reference in the literature

		Balance-of-payments account	
Change:		***Current account***	***Capital account***
	Improvement	Current account reversal	Capital inflow problem
	Deterioration	Twin deficits	Sudden stop

There is a rich empirical literature on current account reversals, the upper left cell, mostly documenting the macroeconomic consequences of a marked improvement in a sample of many countries. Many features of these studies follow the path laid out in the pioneering paper by Gian Maria Milesi-Ferretti and Assaf Razin (2000). As summarized in Table 2, they established three criteria to identify a current account reversal that are now the norm: The change in the balance must be large relative to nominal GDP, large absolutely in dollar terms, and not the product of a spike in a single year. Focusing on low- and middle-income countries, they find that the adjustment experience is

heterogeneous and depends importantly on whether the currency crashes on the foreign exchange market.

Table 2. Current and capital account reversals: Some definitions

Study	Criteria used to select the episodes of interest
Current account reversals: Milesi-Ferreti and Razin (2000). Also Edwards (2005), Eichengreen and Adalet (2005), and Freund and Warnock (2005)	Their underlying idea is that "large" events provide more information on determinants of reductions in current-account deficits than short-run fluctuations. These events have to satisfy three requirements: 1) An average reduction in the current account deficit of at least 3 (or 5) percentage points of GDP over a period of three years with respect to the three years before the event; 2) The maximum deficit after the reversal must be no larger than the minimum deficit in the three years preceding the reversal; 3) The average current account deficit must be reduced by at least one third. The first and second requirements should ensure that we capture only reductions of sustained current account deficits, rather than sharp but temporary reversals. The third requirement is necessary so as to avoid counting as a reversal a reduction in the current account deficit from, say, 15 to 12 Percent. Events are based on three-year averages.
Capital account--sudden stops: Calvo, Izquierdo, and Mejia (2004)	A Sudden Stop is defined as a phase that meets the following conditions: 1) It contains at least one observation where the year-on-year fall in capital flows lies at least two standard deviations below its sample mean (this addresses the"unexpected" requirement of a Sudden Stop). 2) The Sudden Stop phase ends once the annual change in capital flows exceeds one standard deviation below its sample mean. This will generally introduce persistence, a common fact of Sudden Stops. 3) Moreover, for the sake of symmetry, the start of a Sudden Stop phase is determined by the first time the annual change in capital flows falls one standard deviation below the mean.
Capital account--sudden stops: Calvo, Izquierdo, and Loo-Kung (2006) or CIL	1) In addition to the criterion of large capital flow reversals exceeding two standard deviations from the mean (for their capital flow proxy), CIL require that 2) these reversals be accompanied by a spike in some external aggregate measure of the cost of funds in order to capture systemic effects. More specifically, CIL uses the (log of) J. P. Morgan Emerging Market Bond Index (EMBI) spread over US Treasury bonds for EMs, the Merrill Lynch Euro-area Government Index spreads for Euro-area countries (as well as Nordic countries such as Denmark, Norway, and Sweden), and G7 Government Index spreads for all remaining developed countries. CIL construct aggregate high-spread episodes in analogous fashion to the Calvo, Izquierdo and Mejía (2004) measure of large capital flow reversals (i.e., CIL consider spikes in spreads exceeding two standard deviations from the mean), and that a Sudden Stop occurs when the measure of the fall-in-capital-flows phase overlaps (on a yearly basis) with the aggregate high-spread phase. Episodes that lie within a six-month interval are considered part of the same Sudden Stop phase.

Barry Eichengreen and Muge Adalet (2005) extended the sample to include the pre-1970 experience, thereby providing historical context. In particular, large current

account reversals appear to be the product of open trade in goods, services, and assets. Reversals have only been frequent in the two heydays of global capital markets—the recent period and the 1920s and 1930s. Large adjustments were much rarer under the pre-World-War I gold standard and during the Bretton Woods years.

An important fuel to the study of current account reversals has been the U.S. experience of sustained large deficits. The intent is to find rules of thumb that will be informative about the U.S. experience when the presumed "day of reckoning" comes and the unsustainable is no longer sustained. The search for such lessons appears in important papers by Sebastian Edwards (2005 and 2007) and Caroline Freund and Frank Warnock (2005). They find an important role for the textbook forces thought to rein in a current account imbalance—a slowing in income growth and a real depreciation of the currency.

Similar interest in the U.S. experience produced work in the 1980s on why the current account deteriorated, which is the subject of the lower left cell of Table 1. The main culprit at that time was identified to be the large budget deficit, which through national income accounting was mirrored in its twin, the current account. Contemporaneous discussions of this can be found in Federal Reserve Bank of Kansas City (1985) and a later review has been provided by Bosworth (1993). This line of argument petered out in the late 1990s when the U.S. federal budget went into surplus but the current account remained deeply in red.

Those researchers focusing on the right cells of the contingency table typically take the perspective of emerging market economies. In particular, they view the portfolio investment decisions of investors at the center of the global financial system as somewhat

fickle. Assets in some emerging markets may be in fashion for a time. Those inflows tend to appreciate the exchange rate, lead to reserve accumulation as authorities attempt to offset that force, and push up prices in asset markets. Altogether, this presents a "capital inflow problem" as described by Guillermo Calvo, Leo Leiderman, and Carmen Reinhart (1993), an issue also studied by Eduardo Fernandez-Arias and Peter Montiel (1996).

When capital no longer flows into an emerging market, the nation can no longer support an excess of spending over income. The result, in the phrase of Guillermo Calvo and his coauthors, is a "sudden stop," forcing current account adjustment. The empirical application of this insight can be found in Calvo, Izquierdo, and Mejia (2004) and Calvo, Izquierdo, and Loo-Kung (2006), both of which are described in more detail in Table 2.

2. Defining a capital flow bonanza

The decision to adopt a particular algorithm to date and catalog capital inflow bonanzas naturally involves tradeoffs. An advantage of casting our net wide to all large capital inflow episodes is that it does not predispose us to episodes that inevitably ended in a marked reversal. In this sense, there is a lower predisposition to tilt the analysis toward economic crises. An inflow bonanza can end with a bang or with a whimper. In this sense, our approach parallels the analysis of Goldfajn and Valdes (1999), who rather than starting their analysis with currency crises dates, began by documenting episodes of cumulative real exchange rate appreciations of varying degrees and then sorted out which

episodes unwound through an abrupt nominal exchange rate crash and which did so through reductions in inflation versus their trading partners. [1]

We began with the presumption that the best indicator of capital flows would be reserve accumulation less the current account balance, as it measures the resources acquired (or dispersed) through issuance (or retirement) of home country liabilities. This indirect measurement of the change in liabilities seemed more likely to be available for a longer time span and for more countries than direct information from financial accounts. In the event, data on reserves tends to be published only on a delayed basis in many countries. To keep our efforts topical, the current account balance as a percent of GDP is our benchmark indicator. It is measured more consistently across time and international boundaries than its capital account and financial account counterpart.[2] For the more recent period, the same filter rules are applied to the other measures as a robustness check as is reported in an appendix.

We began by applying the three-step approach proposed by Milesi-Ferreti and Razin to our data set with a suitable revision that does not enforce a current account reversal. This approach, however, raised some issues about dating the bonanzas of many well-known episodes. In some countries where the deterioration in the current account (and hence the rise in capital inflows) was a relatively smooth process over several years, this algorithm did not flag these episodes as bonanzas even though the current account deficits were large by historical standards. Heavy inflow cases, such as the United States

[1] Gourinchas et. al. (2001) perform a similar exercise to assess which credit booms end in crises and credit crunches and which do not. Edwards (2004) is particularly careful in trying to consider both abrupt reversals and more gradual adjustment.

[2] We would also like to thank Gian Maria Milesi-Ferreti for pointing out the financial account figures have to be interpreted with care during years in which there is debt forgiveness, which show up as large debt repayments (i.e., capital outflows).

since 2004 and Australia in several cycles since 1960, were missed altogether. In other cases, the inflow bonanza persisted after the peak current account deficit had been reached. For instance, the Thai and Malaysian current account deficits peaked in the early 1990s; however, while the deficits remained large by historical standards well into 1996, these years are not classified as bonanzas by this algorithm. Many of the important (but less persistent) surges in capital inflows of the late 1970s and early 1980s also go undetected.

We ultimately settled on an alternative algorithm that provided uniform treatment across countries but was flexible enough to allow for significant cross-country variation in the current account. As in Kaminsky and Reinhart (1999), we select a threshold to define bonanzas that is common across countries (in this case the 20th percentile).[3] This threshold included most of the better known episodes in the literature but was not so inclusive as to label a bonanza more "routine" deteriorations in the current account. Because the underlying frequency distributions vary widely across countries, the common threshold produces quite disperse country-specific cutoffs. For instance, in the case of relatively closed India, the cutoff to define a bonanza is a current account deficit/GDP in excess of 1.8 percent, while for trade-oriented Malaysia the comparable cutoff is a deficit/GDP ratio of 6.6 percent. [4]

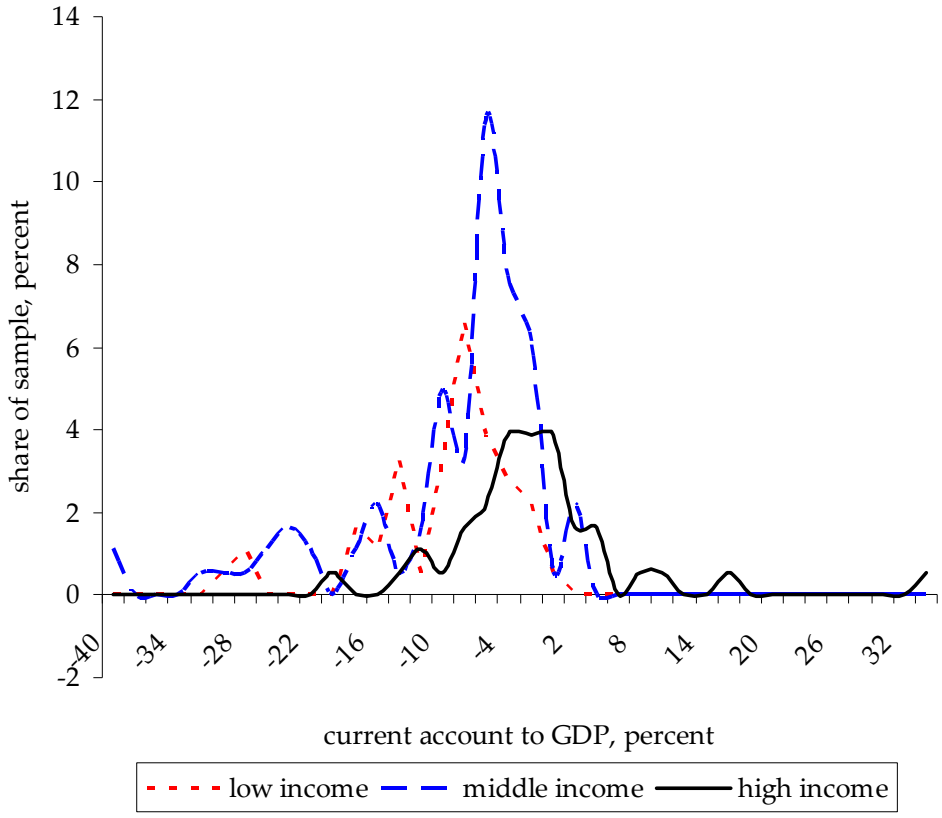
Figure 1, which plots the frequency distribution for 181 countries, highlights these differences both across countries and major income groups. As the figure makes clear,

[3] We also impose a non-negativity constraint, so countries that are capital exporters throughout the sample never record a bonanza.

[4] The interested reader is referred to Appendix Figure 2, which provides a comparison among three definitions of bonanza episodes—using the current account, the financial account, and capital flows.

Figure 1

Distribution of current-account cutoffs
used in defining bonanzas
181 countries from 1980 to 2008



Sources: International Monetary Fund, *World Economic Outlook* and authors' calculations.

the range of experience is wide, but large deficits appear more frequently in lower-income countries.

3. Sample coverage and data

We employ three samples to analyze the capital bonanza phenomenon. The broadest sample includes the 181 countries covered in the International Monetary Fund's *World Economic Outlook* for 1980 through 2007. Information is available on the current account, real GDP, inflation, and the real exchange rate. This allows us to examine the recent country experiences in a truly global setting.

We will refer to the second dataset as the "core" sample, which spans 1960 through 2007 and covers 64 countries across all regions. This sample is dominated by high- and middle-income countries, where data availability poses less of a constraint. It is for this sample that we are able to examine in greater depth the macroeconomic features of the bonanzas. Also, for the core countries, we have a sufficiently complete dating of economic crises (debt, banking, etc.) that allow us to assess whether a capital inflow bonanza predisposes countries to financial crises.

The third set is a small sample of eighteen industrial countries for which we have data on house prices from the Bank for International Settlements. Otherwise, the data coverage for this group is the same as the core group. Appendix Tables 1 and 2 list the countries (and the income group they belong to) that make up the three samples. [5]

All data are annual. In addition to including time series on the current account, capital and financial accounts, and nominal GDP (all in US dollars), we employ a variety of macroeconomic times series. These include country-specific variables: international reserves, nominal and real exchange rates, real GDP, consumer prices, export, imports, government expenditure, revenue, and deficits, equity, and (in the case of some advanced economies) real estate prices. In addition, we have dichotomous variables that date external debt crises, currency crashes, and inflation and banking crises. Global variables, such as commodity prices, international interest rates, growth in the world's largest economies, measures of macroeconomic volatility, and the global incidence of capital flow bonanzas and various "types" of economic crises, round out the analysis. Appendix Table 3 provides a full list of the variables as well as their respective sources.

[5] The income group classification is that provided by the World Bank.

The availability of long time series on various aspects of macroeconomic performance was important in deciding on the design principle of our key indicator—a capital flow bonanza. Because we had gathered a sufficiently rich dataset, we could be somewhat general in defining events, because we will be able to characterize behavior in a wide window around those events. That is, we can see the run-up and the wind-down in a manner that encompasses the definitions of earlier work.

3. Capital Flow Bonanzas: Global Cycles and Country Episodes

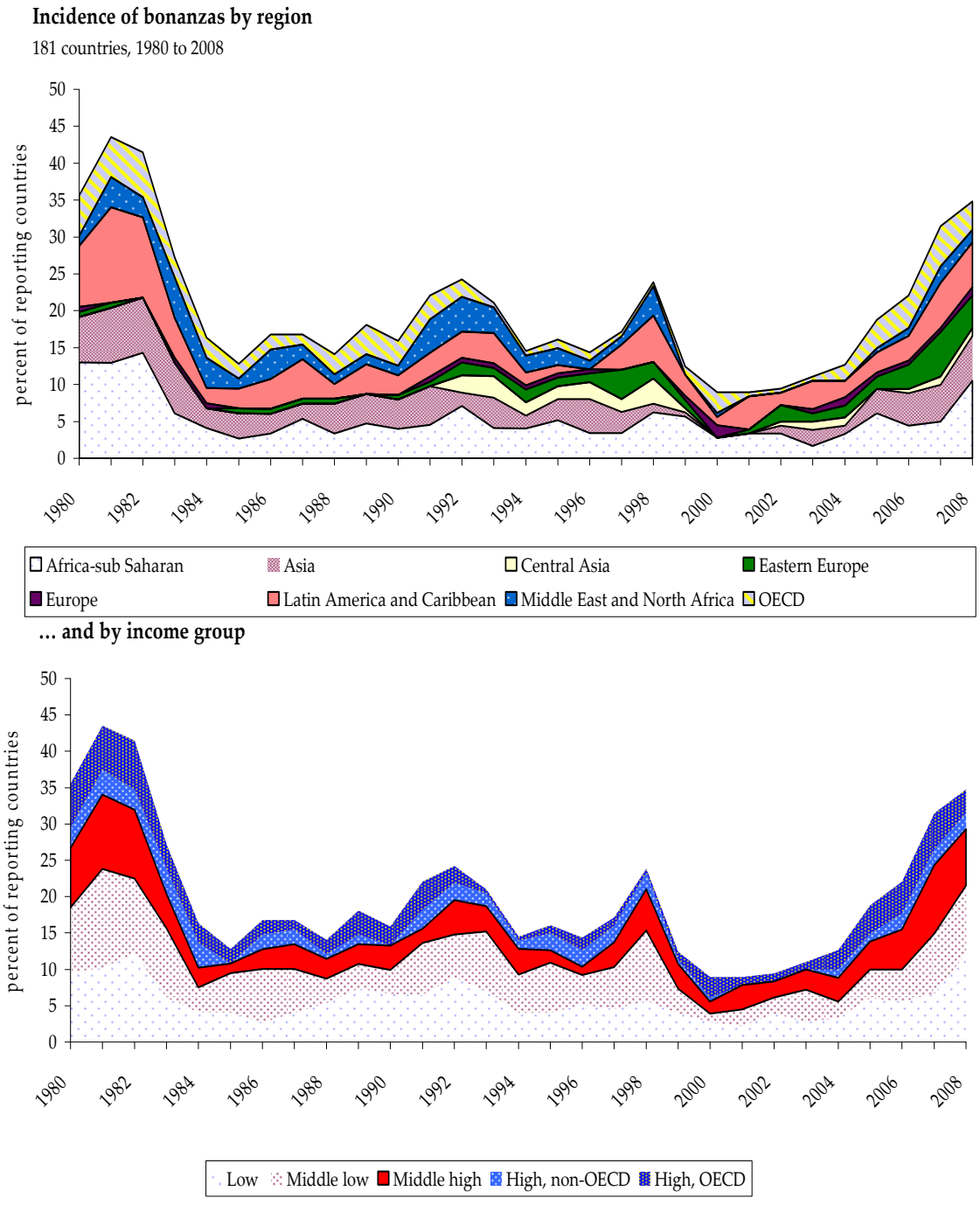
In what follows, we provide a sketch of country-specific and global capital flow cycles, including: incidence, by region and income group; duration; and links to global indicators.

1. The big picture

It is relatively well known that international capital flows have an important cyclical component.[6] The fact that capital (contrary to the predictions of the neoclassical growth paradigm) does not flow from rich to poor countries has also received considerable attention. [7] Both of these stylized facts are illustrated in the two panels of Figure 2, which plot the incidence (i.e. the percent of countries) of capital inflow bonanzas for the broad sample consisting of 181 countries. The specific dates of the bonanza episodes on a country-by-country basis are listed in the four-part Appendix Table 4, for high, middle-high, middle-low, and low income groupings. The third

[6] See, for example, Sarno and Taylor (1999), who, using standard time series techniques, decompose the various components of international capital flows into their permanent and transitory components.
[7] Lucas (1990) suggested human capital differentials might account for this "paradox," while Reinhart and Rogoff (2004) and Alfaro, et.al. (2008) point to the high incidence of sovereign default and weak institutions, respectively.

Figure 2. Incidence of Bonanzas by Region and Income Group: 181 Countries, 1980-2007



Source: International Monetary Fund, *World Economic Outlook* (April 2008) and authors' calculations.

Table 3. Dates of capital flow bonanzas:
Core sample, high and middle-high income, 1960-2007

Country	Years of Bonanzas
High Income, OECD	
Australia	1965,1986, 1989, 2004-2005, 2007
Austria	1972-1974, 1976-1977, 1979-1981, 1995-1997, 1999
Belgium	1967-1968, 1975-1984
Canada	1975-1979, 1981, 1989-1993
Denmark	1969-1970, 1974-1977, 1979, 1981-1982, 1984-1987
Finland	1975-1976, 1980, 1988-1992
France	1966-1967, 1969, 1974, 1976, 1982-1983, 2005-2007
Germany	1980, 1991, 1994-1995, 1999-2000
Greece	1983, 1985, 2000, 2006-2007
Italy	1974, 1980-1982, 1991-1992
Korea	1980-1983, 1991, 1996
New Zealand	1974-1975, 1982, 1984-1985, 2005-2007
Norway	1974-1979, 1986-1989, 1998
Portugal	1981-1982, 2000-2001, 2005
Spain	1965-1966, 1974, 1976, 2000, 2004-2007
Sweden	1976-1977, 1979-1982, 1990-1992
United Kingdom	1960-1976, 1988-1990, 2005-2007
United States	2002-2007
High Income, Non-OECD	
Hong Kong SAR	1980-1981, 1994-1997
Singapore	1980-1984, 1987
Middle- income, high	
Argentina	1982, 1987, 1994, 1997-1999
Brazil	1974-1983, 1999, 2001
Chile	1978, 1980-1982, 1984-1986,
Costa Rica	1970-1983, 1989-1990
Hungary	1986-1987, 1993-1994, 1998-1999, 2003-2004
Malaysia	1981-1983, 1991, 1994-1995
Mauritius	1979-1982, 2006-2007
Mexico	1974-1976, 1979-1981, 1991-1994
Panama	1967-1973, 1975-1982, 1997-1998, 2007
Poland	1980-1981, 1985-1989
Romania	1992, 2004-2007
Russia	1992, 1997
South Africa	1981-1982, 2005-2007
Turkey	1977, 1980, 2000, 2004-2007
Uruguay	1980-1984, 2001
Venezuela	1967, 1977-1978, 1982, 1987-1988, 1992-1993, 1998

Table 3 (concluded). Dates of capital flow bonanzas:
Core sample, middle-low and low income, 1960-2007

Country	Years of Bonanzas
Middle-income, low	
Algeria	1969, 1973, 1975-1979, 1986, 1988-1989, 1994-1995, 1998
Angola	1982, 1995, 1997-1999, 2001
Bolivia	1978-1979, 1981, 1985-1987, 1993, 1998
China	1979, 1985-1986, 1988-1989, 1993
Colombia	1971, 1982-1983, 1995, 1997-1998
Dominican Republic	1966-1970,1972-1973, 1975-1982, 1987
Ecuador	1978, 1981-1982, 1987, 1989, 1991, 1998
Egypt	1967-1971, 1974-1976, 1979, 1981-1985, 1998
El Salvador	1978, 1989, 1990, 2003, 2005, 2007
Guatemala	1981, 1987, 1992-1993, 1994, 1999, 2001
Honduras	1974-1975, 1978-1981, 1984, 2003-2004, 2007
Indonesia	1967-1973, 1975,1982-1983, 1986-1987, 1991, 1995
Morocco	1976-1977, 1981, 1983-1987
Nicaragua	1988, 1990-1994
Paraguay	1980-1982, 1986-1987, 1996
Peru	1973-1977, 1981-1983, 1993, 1995, 1998
Philippines	1975-1980, 1982-1983, 1990, 1993, 1997
Sri Lanka	1979-1984, 1986, 1988
Thailand	1975-1977,1981-1983, 1990-1991, 1995-1996
Tunisia	1981-1984, 1986, 1993
Low-income	
Central African Republic	1980, 1982-1984, 1992-1995
Côte d'Ivoire	1980, 1988-1992
India	1984, 1987-1990
Kenya	1980-1981, 1987, 1989, 1995
Myanmar	1981-1982, 1990-1992, 1998
Nigeria	1981-1983, 1986, 1993, 2002
Zambia	1981-1982, 1998, 2000-2001
Zimbabwe	1981-1982, 1992, 2004- 2005

Notes: The dates shown are those picked up by the algorithm described in the preceding section. Consecutive years (for example, Greece 2000, 2001) are treated as a single episode.

column of this appendix table also provides the dates of sovereign external debt crises (defaults or restructuring).[8] For our core sample of 66 countries, which account for about 90 percent of world GDP, the bonanza dates for 1960 through 2007 are listed in Table 3.

As the top panel of the figure illustrates, the last major "boom in booms" was the early 1980s. To be more precise, as the core sample reveals for the longer 1960 to 2007 period, the upswing of this cycle was from 1975 to 1982, or just before the onset of the debt crisis of the 1980s. Prior to 1975, capital flow bonanzas were fewer and further between, consistent with the historical evidence presented in Eichengreen and Adalet (2005). Capital flow bonanzas resurfaced in the early 1990s coinciding with a decline in U.S. interest rates (see Calvo, Leiderman, and Reinhart, 1993 and Chuhan, Claessens and Mamingi, 1998) and the large-scale Brady plan restructuring of emerging market debt. This resurgence was modest and occurred in a more selective group of countries—a feature well documented by the World Bank (1997). With Uruguay in 2002 marking the last major crisis in emerging markets, bonanzas have re-appeared in force. The regional breakdown indicates that the recipients in this latest wave include countries in Latin America, mostly smaller ones benefiting from the commodity-price boom, industrial countries where real estate prices had been rising rapidly, and the nations of Central and Eastern Europe and the former Soviet Union, presumably being rewarded for closer integration with the European Union.[9]

Illustrated in the bottom panel of the figure is the well-publicized empirical regularity that middle- and high-income countries receive the lion's share of cross-border

[8] The link between capital flow bonanzas and debt crises will be the focus of Section 4.

[9] Discussions of the earlier wave of capital to Central and Eastern Europe and the former Soviet Union include Claessens, et al. (1998) and Lankes and Stern (1998), while the more recent experience is covered in Lane and Milesi-Ferretti (2007).

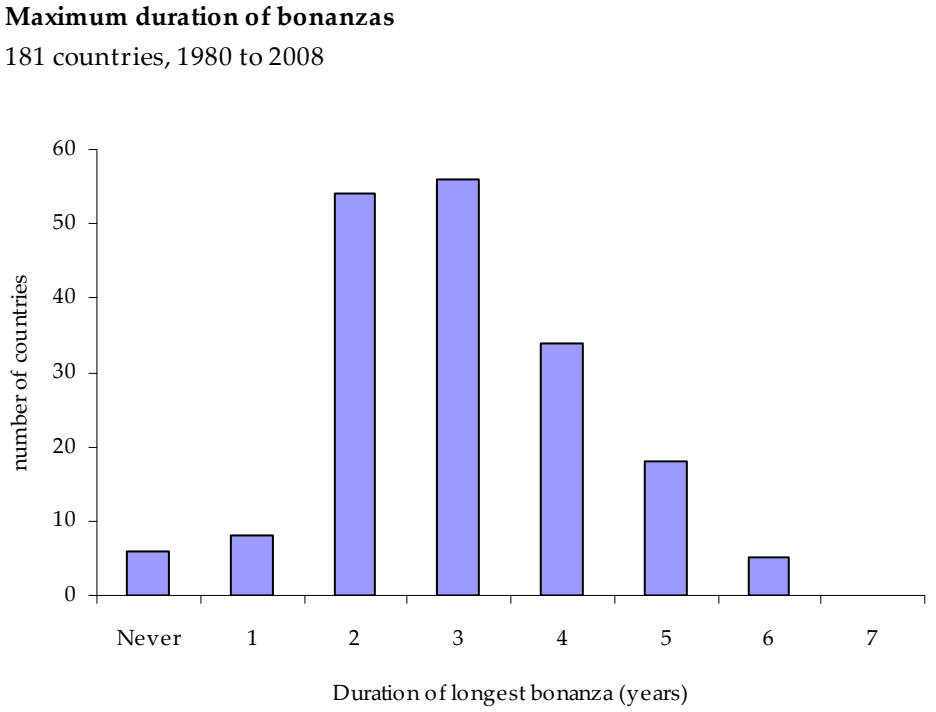
capital flows. This is true by a huge margin when flows are measured in U.S. dollar terms and remains so when we calculate the incidence of bonanzas (which scale current account deficits by GDP). Despite the fact that low-income countries account for 28 percent (50 countries) of the 181 countries in this sample, less than 18 countries have recorded a capital bonanza in any given year during the past 30 years or so. The incidence of capital flow bonanzas is far less cyclical for the low-income group. On the basis of these observations, we base our more in-depth analysis of capital flow bonanzas and their link to financial crises in the next two sections on a group of 66 countries, of which 58 are middle- or high-income.[10]

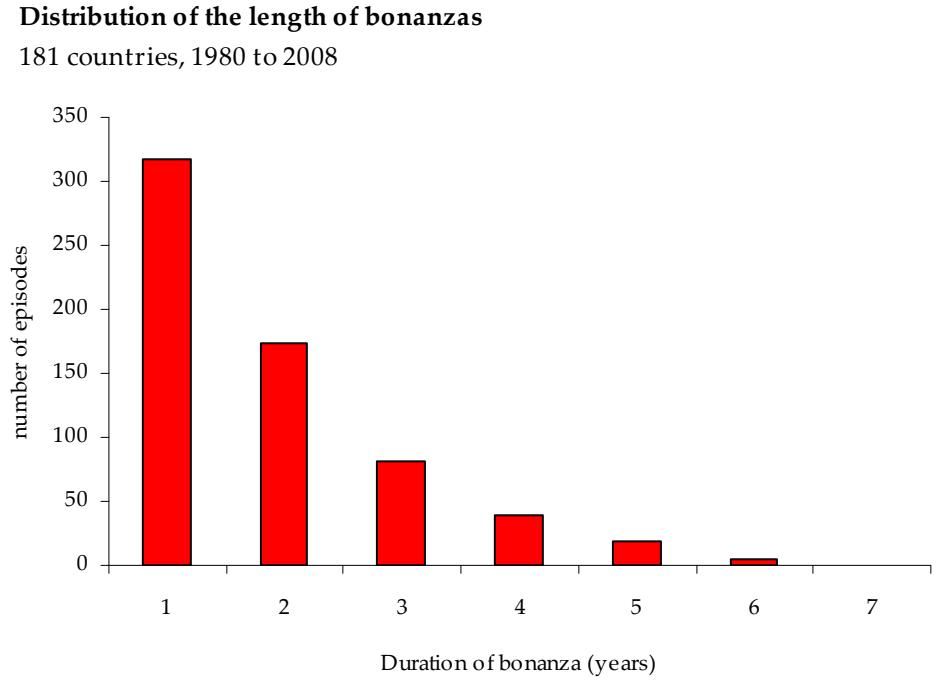
The two panels in Figure 3 provide complementary information on the duration of bonanzas. The upper panel plots the maximum duration of bonanzas (in years) by countries (rather than episodes). So, for example, six of the 181 countries never experienced a capital inflow bonanza, as they are net capital exporters; this group includes Brunei, Luxembourg, Namibia, the Netherlands, Switzerland, and the United Arab Emirates. For most countries, bonanzas lasted somewhere between two and four years, which is perhaps why so many governments (and investors) fall into the all-too-common trap of treating bonanzas as permanent rather than transitory shocks—an issue we take up later when examining the typical fiscal response to the abundance of foreign capital.

Turning now to an analysis of individual episodes, consistent with their cyclical nature, three-quarters of the episodes identified during 1980 to 2007 last two years or less. Some caution is in order in that there are a large number of instances in which bonanza

[10] It is important to note that the middle-income group is comprised of middle-low and middle-high income (the latter constitute the largest single group), so our analysis bears on many developing countries beyond the largest emerging markets.

Figure 3. Characteristics of bonanzas





Source: Authors' calculations and data cited in Table 3.

episodes are separated by a single year, which de facto makes the bonanza episode much longer and adds to the ex-ante confusion as to what is permanent and what is transitory. The present US bonanza, which began in 2002 and was into its sixth consecutive year by 2007, is by no means common, but neither is it unique. Australia, and the United Kingdom, among others, experienced similar long-lived bonanzas in the earlier (1960-1979) period, as Table 3 makes plain.

2. The capital flow cycle and world commodity prices

Capital inflow surges have often been linked to reductions in international interest rates, economic growth in advanced economies, and global commodity price booms. [11] In the remainder of this section, we briefly revisit the well-trodden path of the external roots of capital flow bonanzas. Our primary aim in this paper—beyond establishing systematically the dates and incidence of capital inflow bonanzas—is to focus on the macroeconomic consequences or developments surrounding capital flows (a topic that takes up the next two sections of the paper. As such, we only provide a mere sketch of the links between the bonanza cycle and selected developments in global macroeconomic conditions, so as to build on earlier analyses using the most recent data.

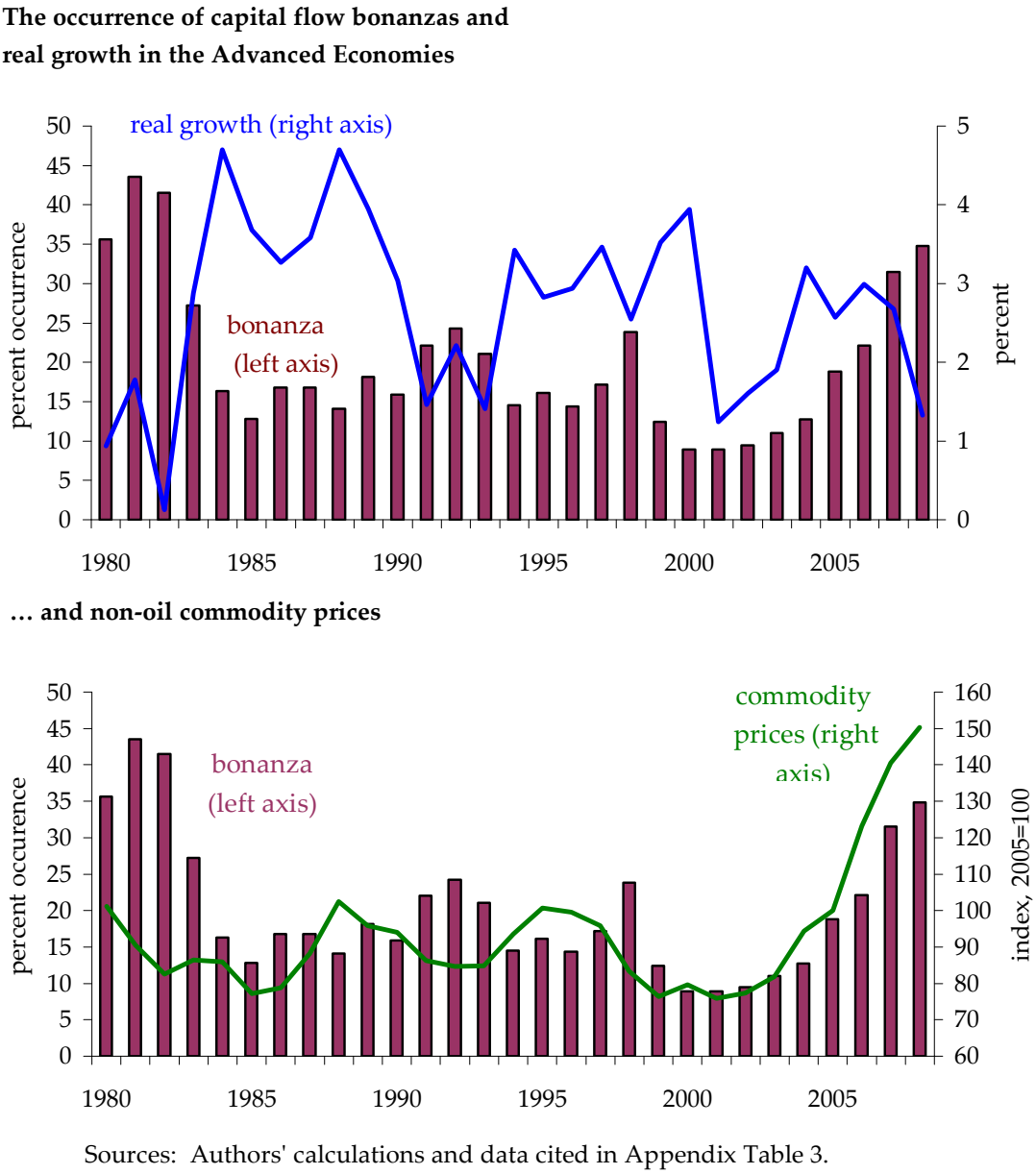
To this end, we perform two simple exercises. First, we plot our time series on the incidence of bonanzas for the 181-country sample over 1980 through 2007 against: (i) real per-capita GDP growth in the advanced economies, as reported in the IMF's *World Economic Outlook* (upper panel of Figure 4); and (ii) the IMF's index of real commodity prices, excluding oil (bottom panel of Figure 4).[12] The evidence presented in top panel of Figure 4 is in line with Calvo, Leiderman, and Reinhart (1993), who posit

[11] See Fernandez-Arias and Montiel (1996) for a survey of a literature that flourished in the early 1990s.
[12] As is conventionally done, the nominal commodity price index is deflated by an index of the price of manufactures (see, for example Boughton, 1991).

that when growth slows in the advanced economies, global capital searches for higher yields and profit opportunities abroad in emerging markets—a phenomenon that is well underway at the current conjuncture, as discussed in Frankel (2007) in the context of the carry trade and its previous incarnations. The capital flow bonanza-commodity price boom link has an old history and some classic episodes of well-managed (in terms of the macroeconomic policy response) and badly-botched varieties make for interesting reading in Cuddington (1989) and sources cited therein. While the earlier 1980s do not fit the pattern as neatly, it is important to note that a spectacular boom in commodity prices prevailed in the late 1970s when the surge in the incidence of bonanzas began in earnest, as shown in the next section. Beyond the direct positive implications of higher commodity prices for export revenues for much of the emerging world, as Frankel (2006 and 2008a and 2008b) demonstrates, an underlying impetus to world commodity prices is low or negative world interest rates, much along the lines of the late 1970s and the last few years. Hence, the effects of lower international interest rates work not only through the portfolio channels stressed in Calvo, Leiderman, and Reinhart (1993), but also the commodity price channel à la Frankel (2006). A third, and important link between world real interest rates and capital flows to emerging markets comes from the channel stressed in Dooley and Fernandez-Arias (1996), who emphasize the benign impacts of low real rates on default probabilities.

Our second empirical exercise is an attempt to explain the share of bonanzas in terms of the growth of real GDP in the advanced economies, real commodity prices, and the U.S. real short-term interest rate. We employ the core dataset to capture the significant swing in real commodity prices as well as the long stretch of negative real

Figure 4. Capital Flow Bonanzas, Advanced Economies' Growth Performance, and World Commodity Prices: 181 Countries, 1980-2007



Sources: Authors' calculations and data cited in Appendix Table 3.

interest rates in the United States in the 1970s. Our dependent variable is contained in a limited range, from zero to 100 percent as befits a share of a total. Accordingly, we specify that our independent variables explain the dependent variable by way of a logistic

function. That is, the explanatory variables, along with a vector of ones to capture a constant term, are aligned in the vector x_t with corresponding coefficients in the vector β to obey the functional form, $100 \cdot \exp(x_t \beta)/[1+\exp(x_t \beta)]$.

The coefficients reported in the first column of Table 4 were estimated with a maximum likelihood procedure using annual data from 1967 to 2006. As this is a probability forecasting model, the goodness-of-fit measure we rely on chiefly is the quadratic probability score (QPS), for the reasons explained in Diebold and Rudebusch (1989).

As anticipated in the figures, the coefficient on commodity prices is positive and that on growth is negative; both are statistically significant at the one percent confidence level. The coefficient on the contemporaneous real interest rate, however, does not match the intuition provided in Calvo, Leiderman, and Reinhart (1993). Their explanation relies on the cumulative encouragement to capital flows to the periphery afforded by low interest rates at the core. To match this, the next six columns of the table report estimates using successive individual lags of the real rate, from one to six years. In the event, the size of the negative effect of real rates on the share and the significance of that effect, as well as the explanatory power of the model, tends to increase as the lag lengthens.

Table 4.

Logistic models explaining the probability of a capital flow bonanza

estimated with annual data from 1967 to 2006

		Real short-term interest rate						
	Constant		Lagged:					
	term	**current**	**1**	**2**	3	**4**	**5**	**6**
Constant	-2.345	-2.775	-2.121	-1.855	-1.884	-1.872	-1.727	-1.800
	-13.470	*-6.402*	*-5.208*	*-4.785*	*-4.565*	*-4.501*	*-4.623*	*-5.747*
real interest rate		0.129						
		3.006						
			-0.049					
			-0.960					
				-0.138				
				-2.708				
					-0.103			
					-1.942			
						-0.108		
						-2.006		
							-0.147	
							-3.033	
								-0.199
								-4.730
real GDP growth		-0.226	-0.137	-0.142	-0.130	-0.140	-0.137	-0.115
		-3.731	*-2.162*	*-2.370*	*-2.106*	*-2.227*	*-2.324*	*-2.135*
commodity prices		0.076	0.049	0.042	0.042	0.043	0.039	0.041
		4.912	*3.278*	*2.920*	*2.735*	*2.827*	*2.867*	*3.669*
Log likelihood function	-135.3	-145.2	-148.9	-146.1	-147.4	-147.4	-144.8	-140.0
R^2	0.471	0.440	0.323	0.415	0.372	0.373	0.450	0.568
QPS	3.060	3.973	4.727	5.619	5.016	4.936	5.149	5.250

Note: t-statistics are in italics.

Source: Authors' calculations and data cited in Appendix Table 3.

4. Do capital flow bonanzas make countries more crisis prone?

Are capital flow bonanzas a blessing, a curse, or neutral in making financial crises more likely or more severe? The literature is filled with famous case studies of capital flow bonanzas that ended in spectacular crises. The papers range from the infamous episodes in the Southern Cone in the late 1970s-early 1980s (see, for instance, Diaz Alejandro's 1985 classic) to Calvo and Talvi (2005), who place great store in the capital flow sudden stop following the Russian 1998 crisis in explaining Argentina's subsequent crash. Rather than focusing on specific episodes that are either as famous or more obscure, we systematically examine the potential links between the likelihood of a capital inflow bonanza and financial crises. Our analysis is conducted on a country-by-country basis as well as at the "global" level consistent with the aim of providing an encompassing approach. Our comprehensive database on the dates of bonanza and crises episodes allows us to uncover novel results on the systematic connection between the *incidence* of bonanzas and debt, currency, inflation, and banking crises. Hence, our analysis sheds light on the first part of the question of whether financial crises are more likely; it remains for future research to investigate issues glimpsed here pertaining to a possible link between the order of magnitude of the bonanza and the severity of the crises. The latter part of the section is devoted to more general macroeconomic volatility (as opposed to crises).

1. Bonanzas and financial crises: preamble and evidence

Section 2 delineated the criteria used to define a capital flow bonanza and catalogued, country-by-country, all the identified bonanza episodes. To examine the potential links with financial crises of various stripes, we proceed symmetrically. Our

crisis analysis is taken directly from Reinhart and Rogoff (2008). These crises definitions are reproduced in Table 5, while a full listing of dates for sovereign external defaults (or restructurings), currency crashes, inflation crises, and banking crises are presented in Table 6 for 64 of the 66 core countries, for which we have dates on capital flow

Table 5. Defining crises by events: a summary

Type of Crisis	Definition and or Criteria	Comments
Banking crisis	We mark a banking crisis by two types of events: (1) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions; and (2) if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions), that marks the start of a string of similar outcomes for other financial institutions.	This approach to dating the beginning of the banking crises is not without drawbacks. It could date the crises too late, because the financial problems usually begin well before a bank is finally closed or merged; it could also date the crises too early, because the worst of crisis may come later. Unlike external debt crisis (see below), which have well-defined closure dates, it is often difficult or impossible to accurately pinpoint the year in which the crisis ended.
External Debt crises	A sovereign default is defined as the failure to meet a principal or interest payment on the due date (or within the specified grace period). The episodes also include instances where rescheduled debt is ultimately extinguished in terms less favorable than the original obligation.	While the time of default is accurately classified as a crisis year there are a large number of cases where the final resolution with the creditors (if it ever did take place) seems interminable. For this reason we also work with a crisis dummy that only picks up the first year.
Inflation crisis	An annual inflation rate *20 percent* or higher. We also examine separately the incidence of more extreme cases where inflation exceeds 40 percent per annum.	All consecutive years where the threshold is met or exceeded are counted as a part of the same inflation crisis.
Currency crash	An annual depreciation versus the US dollar (or the relevant anchor currency—historically the UK pound, the French franc, or the German DM and presently the euro) of *15 percent* or more. This is similar to the Frankel and Rose (1996) approach to dating crashes.	In parallel treatment to the inflation crisis dating, all consecutive years where the threshold is met or exceeded are counted as a part of the same inflation crisis.

Source: Reinhart and Rogoff (2008a).

bonanzas.[13] In line with our dating of bonanzas, Table 6 provides beginning and ending dates to define each crisis episode. Hence, an entry of a single year denotes that the crises only lasted that long.

Table 6 (continued). Dates of Economic Crises:
Core sample, middle-low and low income, 1960-2007

Country	External Default	Currency Crash	Inflation Crisis	Banking Crisis
	Within three years of the bonanza			
Middle-income, low				
Algeria	91-96	88-91, 94-95	91-95	90-92
Angola	85-03	66-73, 91-03	74-80, 91-05	92-97
Bolivia	80-84, 86-97	72, 79, 82-85, 87, 89	73-75, 79-86, 91	86-87, 94-97
China		84, 86, 89, 94	94	92-99
Colombia		79-82, 85, 87-96	80-91, 95, 97-00	82-87, 98
Dominican Republic	82-94, 05	85, 87-88, 90, 03-04	80, 84-85, 88-91, 03-05	
Ecuador	82-95, 99-00	71, 82-92, 95-00	74, 83-01	81, 84, 88, 91, 96-02
Egypt	83	79, 89-91, 01, 03	80, 86-87, 89-90, 92	81-83, 90-95
El Salvador		73, 88	85-87, 90, 93	89
Guatemala	86, 89	86, 89-90	86, 90-91	
Honduras	81-07	90, 93-94, 96	90-91, 94-97	
Indonesia	66-70,98-00, 02	62-68, 78, 83, 86, 97-98, 00	60-68 79, 98-99	92, 94, 96-02
Morocco	83, 86-90	85		83-84
Nicaragua	83-07	79, 85-93	73, 79-92	87-96
Paraguay	68-69, 86-92, 03-04	84-86, 89, 92-93, 98-99, 01-02	74,79-80, 84-91, 94	95-00
Peru	69, 76, 78, 80, 83-97	76-93, 98	75-94	83-90
Philippines	83-92	71, 83-84, 90, 97, 00	73-74,84-85	81-87, 97-01
Sri Lanka	79, 81-83			89-93
Thailand		84, 97, 00	74	80-87, 96-01
Tunisia	79-82	74, 78, 86		
Low-income				
Central African Republic	81, 83-07	94	94	76-82, 88-99
Côte d'Ivoire	83-98, 00-07	94	77, 79, 94	88-91
India	69, 72-76	67, 84, 88, 91, 93	73-74	93-98
Kenya	94-98, 00	76, 81-82, 89, 91-93, 99	84, 92-94	85-89, 92-95
Myanmar	02-07	75	66, 73-76, 88-98, 01-03, 06	96-03
Nigeria	87-94, 04-05	72, 81, 85-92, 99	75, 77, 81, 83-84, 88-89, 92-96	92-96
Zambia	83-94	83-86, 88-96, 98, 00	84-03	95
Zimbabwe	00-07	82-84, 88-06	83-84, 91-06	95-06

Notes: These include all crises (by type) around the bonanzas. Crises definitions are presented in Table 3.
Source: Reinhart and Rogoff (2008) and sources cited therein.

From the crises dates shown in Table 6 and the bonanza dates listed in Table 3, we constructed a family of country-specific probabilities. For each of the countries, this implies four unconditional crisis probabilities, that of: default (or restructuring) on external sovereign debt, a currency crash, an inflation crisis, and a banking crisis. We also construct the probability of each type of crisis within a window of three years before

[13] The missing two are Japan and the Netherlands, which are creditor countries.

Table 6. Dates of economic crises:
Core sample, high and middle-high income, 1960-2007

Country	External Default	Currency Crash	Inflation Crisis	Banking Crisis
		Within three years of the bonanza		
High Income, OECD				
Australia		76, 82, 85, 97, 00	66, 75	89-92
Austria		05		
Belgium		82, 05		
Canada				83-85
Denmark				87-92
Finland		67, 92		91-94
France		76, 05		94-95
Germany		84, 97, 99, 05		77-79
Greece		76, 80,83, 85-86, 90, 05	86, 90	91-95
Italy		76, 92, 05	74, 80	90-95
Korea	98*	66, 70, 75, 79-80, 97	74, 80-81	82, 85-88, 97-02
New Zealand		76, 80-82, 87, 89		87-90
Norway		82, 86		87-93
Portugal		76-77, 81-84, 05	74, 82-84	
Spain		67,77, 82, 93, 05	77	77-85
Sweden		77, 82, 92, 05		91-94
United Kingdom		67, 75-76, 81-83, 93	75	74-76, 84, 91, 95, 07
United States		69, 71, 75		84-91, 07
High Income, Non-OECD				
Hong Kong SAR		83		82-86, 98
Singapore		97	73	82
Middle- income, high				
Argentina	56-65, 82-93, 01-05	65-71, 74-91, 02	65-67, 71-92, 02	80-82, 95-96, 01-03
Brazil	83-94	65-71, 74-95, 99, 01-02	65-71, 74-95	85, 90, 94-97
Chile	65, 72, 74-75, 83-90	62-79, 82-85, 87, 89	62-80, 83, 85, 90-91	82-84
Costa Rica	81-90	74, 81, 87, 91, 95	74, 81-83, 88, 91-92, 95	87, 94-96
Hungary	41-67	93, 95-97	90-93, 95-96	91-95
Malaysia		98		85-88, 97-01
Mauritius		79, 81, 83-84	79-81	
Mexico	82-90, 95*	76, 82-87,89, 94-95, 99	76-77, 80-92, 95-96	81-82, 94-00
Panama	83-96			88-89
Poland	81-94	87-95	96-97, 99	91-95
Romania	81-83, 86	73, 83, 90-01	90-02	90-99
Russia	91-00	87-96, 98-99	93-97, 98-01	95, 98
South Africa	85-87, 89, 93	67, 82, 84-85, 88, 96, 98, 00-01		77
Turkey	78-79, 82	71, 77-01	77-03	82-84, 94
Uruguay	83, 87, 90, 03	67-86, 70-72, 74-97, 01-02	64-96	81-84, 02
Venezuela	83-88, 90	84, 86, 89-96, 02-04	80, 83-88, 90. 95-97, 04-05	78-86, 93-94

Notes: These include all crises (by type) around the bonanzas. Crises definitions are presented in Table 1.
Source: Reinhart and Rogoff (2008) and sources cited therein.

and after the bonanza year or years, this we refer to as the conditional probability of a crisis. If capital flow bonanzas make countries more crises prone, the conditional probability, $P(Crisis_i \mid Bonanza)$ should be greater than the unconditional probability of a crisis, $P(Crisis_i)$, where the subscript i refers to the ith "type" of crisis (default, currency, etc.).

Table 7 aggregates these country-specific conditional and unconditional probabilities by three groups (all countries, high income, and middle and low income).

The test statistic for the equality between two proportions,

$$Z = \frac{(p_1 - p_2)}{\left\{ P(1-P)\left[\frac{1}{n_1} + \frac{1}{n_2}\right]\right\}^{1/2}}, \text{ where } P = \frac{p_1 n_1 + p_2 n_2}{n_1 + n_2},$$

is calculated for each pair of probabilities, where $n_1 = n_2$ = number of observations in each group. The instances where the difference in proportions is significantly different at the one percent confidence level are reported in Table 7 in *italics.*

Table 7. Are Bonanza Episodes More Crisis Prone?
Core sample, 1960-2007

Probability of crisis (in percent)	External Default	Currency Crash	Inflation Crisis	Banking Crisis
High Income				
Conditional on a bonanza (three-year window)	0.2	9.5	2.6	11.9
Unconditional	0.0	8.2	2.1	11.2
Difference	0.2	1.3	0.5	0.7
Middle and low income				
Conditional on a bonanza (three-year window)	29.6	31.5	31.7	20.7
Unconditional	21.0	22.7	23.5	14.3
Difference	*8.6*	*8.8*	*8.2*	*6.4*
All countries				
Conditional on a bonanza (three-year window)	22.2	25.8	24.2	18.4
Unconditional	15.7	19.1	18.0	13.2
Difference	*6.5*	*6.7*	*6.2*	*5.2*
Percent of countries for which conditional probability is greater than unconditional				
	42.2	65.6	59.4	60.9

Notes: The three-year window encompasses three years before the bonanza years listed in Table 2, the year (or years if these are consecutive) of the bonanza and the three years following the episode.
Italics denote significance at the one percent confidence level.
Sources: Based on Tables 2 and 4 and authors' calculations.

The main results are summarized as follows. For the full sample, the probability of any of the four varieties of crises conditional on a capital flow bonanza is significantly

higher than the unconditional probability. Put differently, the incidence of a financial crisis is higher around a capital inflow bonanza. However, separating the high income countries from the rest qualifies the general result. As for the high income group, there are no systematic differences between the conditional and unconditional probabilities.

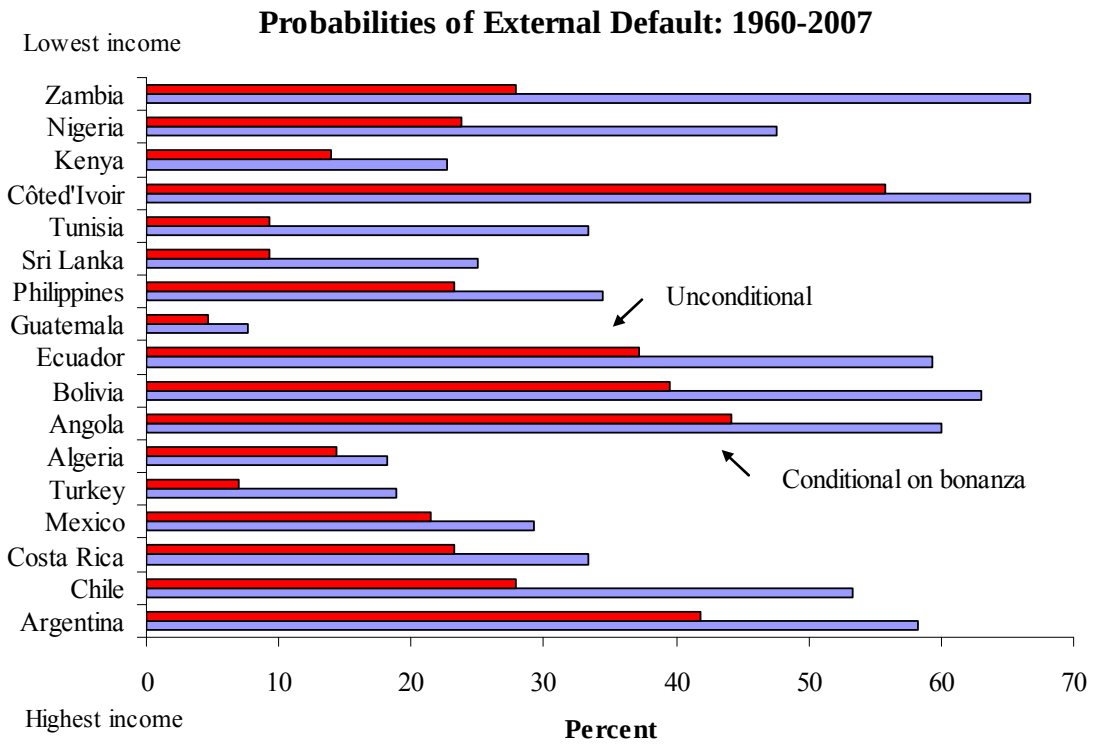
These results are not entirely surprising as the high income countries do not default on their sovereign debts during the sample in question.[14] Given that the threshold that defines an inflation crisis is 20 percent per annum, it is also hardly a surprise that this cutoff is seldom surpassed by wealthy countries—whether experiencing a capital flow bonanza or not. It is less obvious, a priori, that there is no discernable increase in the likelihood of a banking or currency crisis for the advanced economies. The bottom row of Table 7 provides the share of countries for which $P(Crisis_i \mid Bonanza) \geq P(Crisis_i)$ as an additional indication of how commonplace is it across countries to see bonanzas associated with a more crisis-prone environment. For sovereign defaults, less than half the countries record an increase in default probabilities around capital flow bonanzas. (Here, it is important to recall that about one-third of the countries in the core sample are high income.) For currency, banking, and inflation crises, the majority of countries register a higher propensity to enter into crisis around bonanza periods.

Beyond the aggregate results presented in Table 7, Figures 5 to 8 for debt, currency, inflation, and banking crises, respectively, present a comparison of conditional and unconditional probabilities for individual countries, where the differences in crisis probabilities were greatest. (Hence, the country list varies across figures). As noted earlier, no high-income country turns up in Figure 5 on debt crises. The same cannot be

[14] There are, however, many instances where the now-advanced economies defaulted in their earlier incarnations (see Reinhart and Rogoff, 2008a for a full chronology of these episodes).

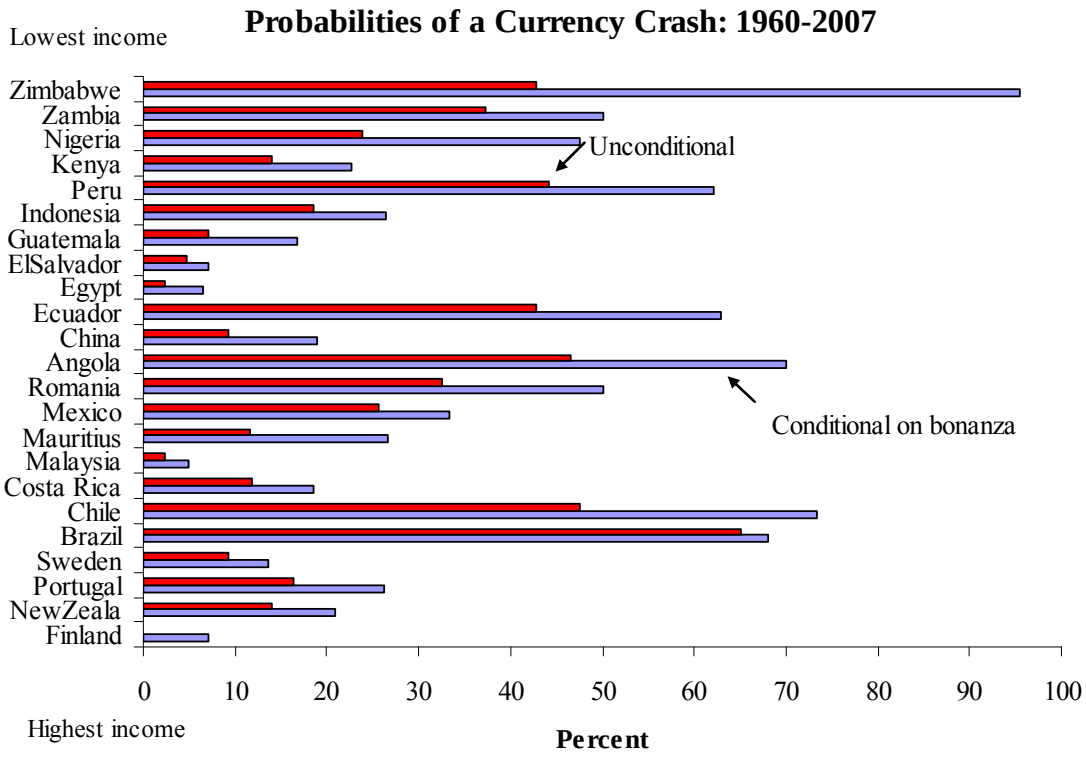
said of Figures 6 through 8. While the advanced economies register much lower (conditional and unconditional) crisis probabilities than their lower income counterparts, the likelihood of crisis is higher around bonanza episodes in several instances. Notably, Finland and Norway record a higher probability of a banking crisis during the vicinity of a capital flow bonanza, while Greece, Italy, and the United Kingdom show a greater predisposition to an inflation crisis when bonanzas are present.

Figure 5. Are bonanza episodes more crisis prone? Sovereign external default: 66 countries, 1960-2007



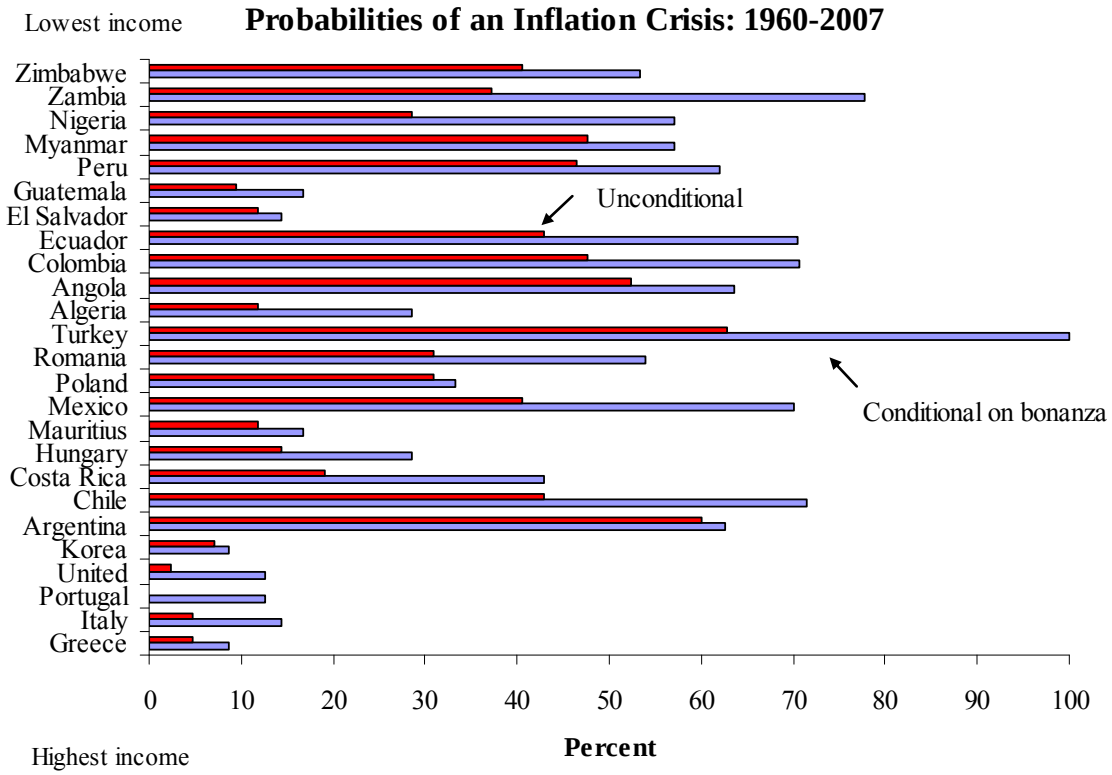
Sources: Authors' calculations, Reinhart and Rogoff (2008a), and sources cited therein.

Figure 6. Are bonanza episodes more crisis prone? Currency crashes: 66 countries, 1960-2007



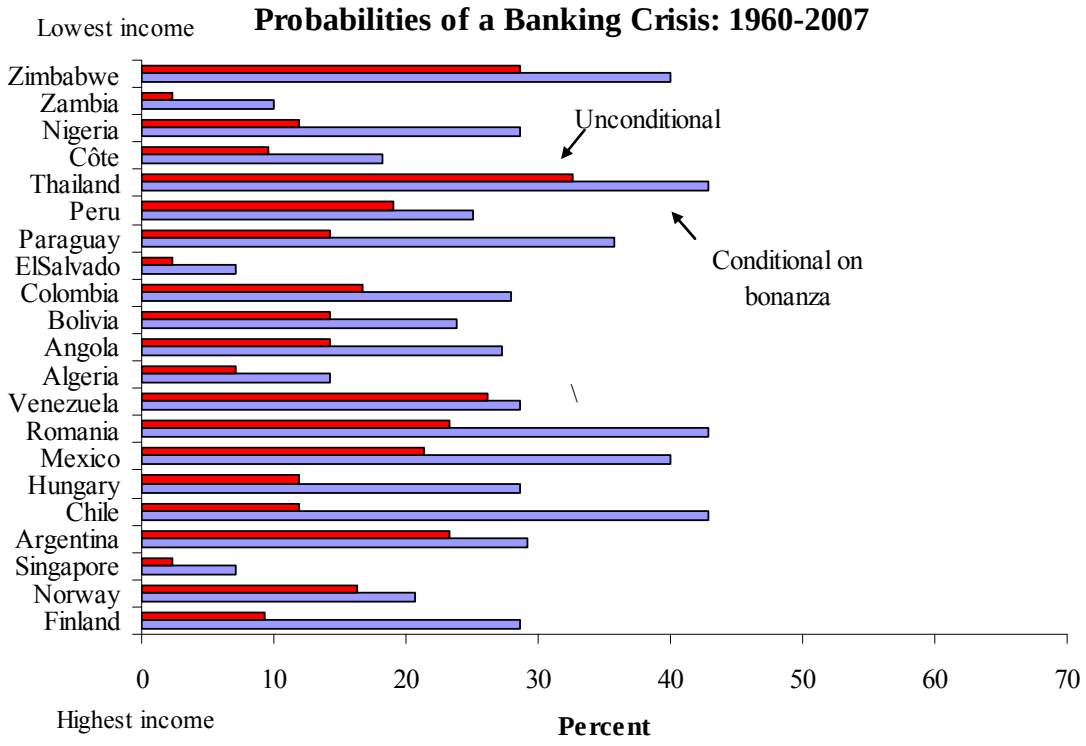
Sources: Authors' calculations, Reinhart and Rogoff (2008a), and sources cited therein.

Figure 7. Are bonanza episodes more crisis prone? Inflation crises: 66 countries, 1960-2007



Sources: Authors' calculations, Reinhart and Rogoff (2008a), and sources cited therein.

Figure 8. Are bonanza episodes more crisis prone? Banking crises: 66 countries, 1960-2007

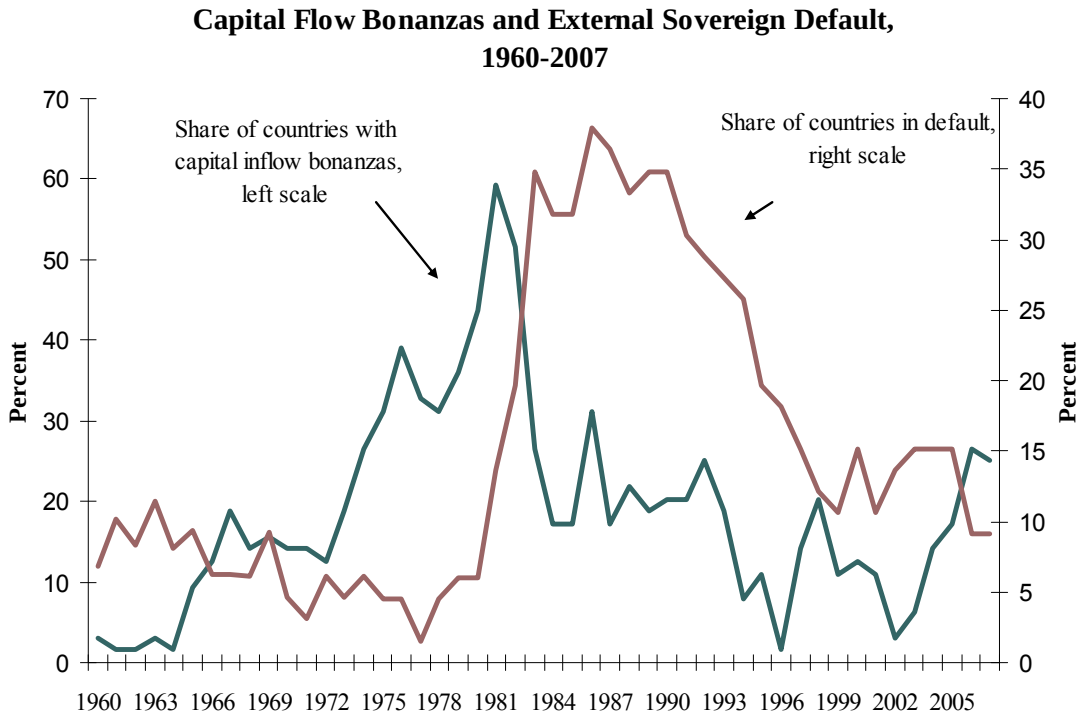


Sources: Authors' calculations, Reinhart and Rogoff (2008a), and sources cited therein.

2. Bonanzas as a predictor of sovereign defaults

Beyond the country-by-country comparisons described in the preceding section, we wanted to refine further the relationship between bonanzas and sovereign defaults. As discussed in Reinhart and Rogoff (2008a) in the context of the evidence from 1800 to 2007, there is an intimate connection between the global capital flows (as measured annually in terms of U.S. dollars) and default (exactly as measured here, by the incidence of sovereign default). A variant of this relationship is presented in Figure 9, which plots the annual *incidence* of capital flow bonanzas during 1960-2007 for the core sample and

Figure 9. Capital flow bonanzas as predictors of sovereign default: 66 countries, 1960-2007



Sources: Authors' calculations, Reinhart and Rogoff (2008a), and sources cited therein.

the comparable incidence on sovereign default. The overall incidence is higher and more variable than that shown in Figure 1 for the 181 countries, as the core sample predominantly represents countries that have access to international capital markets and, in particular, private flows. A cursory inspection of this figure is suggestive that the incidence of bonanzas possibly "leads" the incidence of default. This temporal pattern would seem plausible in light of the fact that capital inflows to developing countries have

historically been predominantly debt-creating flows.[15] As the bonanza continues, leverage (usually public and private) increases.[16]

To investigate this possibility formally, we ran a series of logistic regressions where the dependent variable is the aggregate or global probability of sovereign default against the aggregate or global probability of a capital flow bonanza, either contemporaneous or lagged anywhere between one year and six years. As in the prior section, this functional form respects the limited range of the dependent variable. These results are summarized in Table 8 along the column headings for lags up to six years. As the results indicate, the fit of regression improves steadily as the lag length is extended up to six years. The single bonanza regressor is statistically significant at the one percent level for the regressions where the t-statistics appear in *italics.* The preferred specification (six lags) yields an R^2 of about 0.50. Similarly, the QPS statistic falls. As in the previous discussion on determinants, the global factors behind bonanzas, this exercise is meant to be illustrative rather than a self-contained model of sovereign default. It is worth mentioning that this external default time series registers a contemporaneous correlation with world real interest rates of 0.59, underscoring that there are multiple factors beyond bonanzas that determine the likelihood of a sovereign debt crises. These results would not be unfamiliar to the reader on Mendoza and Terrones (2008), who conclude that not all credit booms end in financial crises, but most emerging markets crises were associated with credit booms.

[15] It is important to reiterate that the incidence of sovereign default during the period in question owes to emerging markets.

[16] On the basis of the historical track record, it is plausible to expect a higher chance of a sovereign default after a bonanza even in cases where government debt is not increasing. This is because the government sooner or later has usually ended up guaranteeing private sector debts.

Table 8.

Logistic models explaining the probability of default

estimated with annual data from 1967 to 2006

	Share of countries with capital flow bonanzas							
	Constant		Lagged:					
	term	**current**	**1**	**2**	3	**4**	**5**	**6**
constant	-1.637	-1.526	-1.778	-1.989	-2.093	-2.211	-2.323	-2.345
	-14.2	*-6.5*	*-7.7*	*-9.0*	*-10.0*	*-11.1*	*-12.6*	*-13.5*
Bonanza		-0.005						
		-0.5						
			0.007					
			0.7					
				0.016				
				2.1				
					0.021			
					3.0			
						0.027		
						4.1		
							0.031	
							5.4	
								0.033
								6.0
Log likelihood function	-148.1	-147.9	-147.8	-146.2	-144.3	-141.4	-137.4	-135.3
R^2	0.000	0.008	0.014	0.091	0.173	0.284	0.413	0.471
QPS	1.921	1.906	1.895	1.747	1.589	1.375	1.129	1.018

Note: t-statistics are in italics.

Source: Authors' calculations and data cited in Appendix Table 3.

3. Bonanzas and macroeconomic volatility

Crises, like bonanzas, are discrete, traumatic, and (in the more stable countries) relatively rare. Yet another possibility where capital flow bonanzas would be less than a

blessing might be if these bouts of capital inflows lead to an overall increase in macroeconomic volatility, even if it did not increase the odds of a financial crisis outright. To shed some light on this issue, we performed some simple exercises involving the volatilities of real GDP growth, consumer price inflation, and the current account-GDP ratio. Needless to say, this only skims the surface of the potential links between bonanzas and macroeconomic volatility.

We measure volatility as the 66th percentile of the absolute annual change in each macroeconomic variable. Table 9 reports for the full sample the simple pairwise correlations between the incidence of capital inflow bonanzas from 1981 to 2007 and the volatility (as described above) of real GDP growth, inflation, and the current account to GDP. For all three variables the correlation is positive (ranging from a low of 0.25 fo inflation to a high of 0.43 for real GDP growth) and statistically significant. Of course, this exercise does not speak of causality or how representative this "global" bonanza-volatility link plays out for individual countries.

Table 9. Incidence of Bonanzas and Volatility:
181 Countries, 1980-2007

Correlation of the incidence of bonanzas with the volatility of:	
Real GDP growth	0.43
Inflation	0.25
Current account to GDP	0.39

Notes: We measure volatility as the 66th percentile of the absolute annual change in each macroeconomic variable.
Sources: International Monetary Fund *World Economic Outlook* and authors' calculations.

5. Anatomy of Bonanza Episodes

The macroeconomic developments associated with surges in capital inflows are a mixture of anecdotal evidence from case studies and more systematic analyses which (to our knowledge) have no standardized definition of "a capital inflow episode" or bonanza.[17] The collective evidence from this literature suggests that capital inflows are most often associated with both a deterioration in the current account and an accumulation in international reserves, ostensibly from the central bank's persistent efforts to avoid or mitigate the tendency towards a nominal and real exchange rate appreciation that usually goes hand-in-hand with the capital inflow.[18] As Calvo, Leiderman,and Reinhart (1993) document in several papers, the pressures for the exchange rate to appreciate stem both from an increased demand for the local assets (which may or may not lead to an asset price boom or bubble) as well as from an increase in aggregate demand for both traded and nontraded goods. As long as the supply of the nontraded good is not perfectly elastic, the relative price of nontradeables increase (i.e., a real exchange rate appreciation).

In an attempt to analyze the cyclical behavior of fiscal policy in advanced and emerging market economies, Kaminsky, Reinhart, and Vegh (2004) present evidence for emerging markets of the "when it rains, it pours" phenomenon; that is to say that the cyclical components of GDP, net capital flows and real fiscal spending all reinforce each other. Periods of cyclically high capital inflows are associated with an expansion in real government spending—fiscal policy is procyclical both in relation to output and capital inflows.

[17] See Reinhart and Reinhart (1998) for a discussion of the stylized facts and the references cited therein.
[18] See Reinhart and Reinhart (2008) for evidence of fear of floating or, in the recent context, fear of an appreciation.

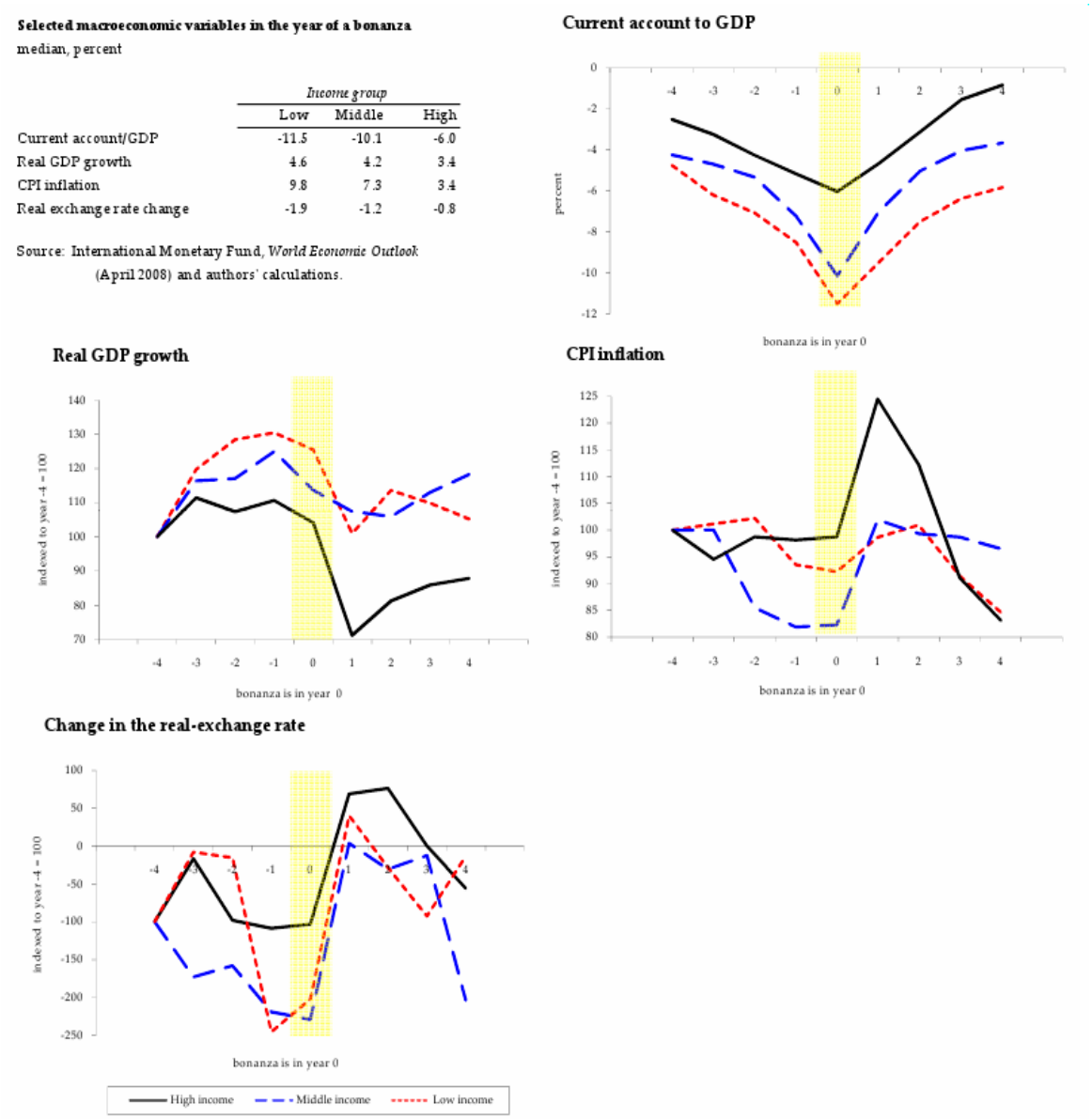
Some of these macroeconomic trends, notably the worsening current account, appreciating real exchange rates, and rising asset prices, regularly present themselves on the eve of currency and banking crises (Kaminsky and Reinhart, 1999) and sudden stops (Edwards, 2004 and 2007). In the remainder of this section, we extend such comparisons.

1. Growth, inflation, and the current account

Capital flow bonanzas—as with sudden stops, current account reversals, and financial crises—each have their own idiosyncrasies. However, these episodes also tend to share common threads that cut across time and national boundaries, which we exploit by opening a wide window of comparison.

Our strategy is to examine the behavior of key macroeconomic and financial indicators in the run-up and aftermath of the identified bonanza episodes, starting with the "big picture." Figure 10 presents four panels showing medians across episodes during 1980 to 2007 for key macroeconomic indicators: real GDP growth, inflation, the current account balance-to-GDP, and the real exchange rate. We plot each series from four years (-4) before the bonanza (year 0) to four years (4) after. Because of the enormous diversity in our 181-country sample, the medians are plotted separately for high-, middle-, and low-income countries (denoted by a solid, dashed, and dotted lines, respectively). In line with the findings of several papers on capital account reversals and sudden stops, the average path of the current account balance to GDP (top right panel) is distinctly V-shaped, with the current account deteriorating into the bonanza year and

Figure 10. Growth, inflation, the current account, real exchange rate around bonanzas: 181 countries, 1980-2007



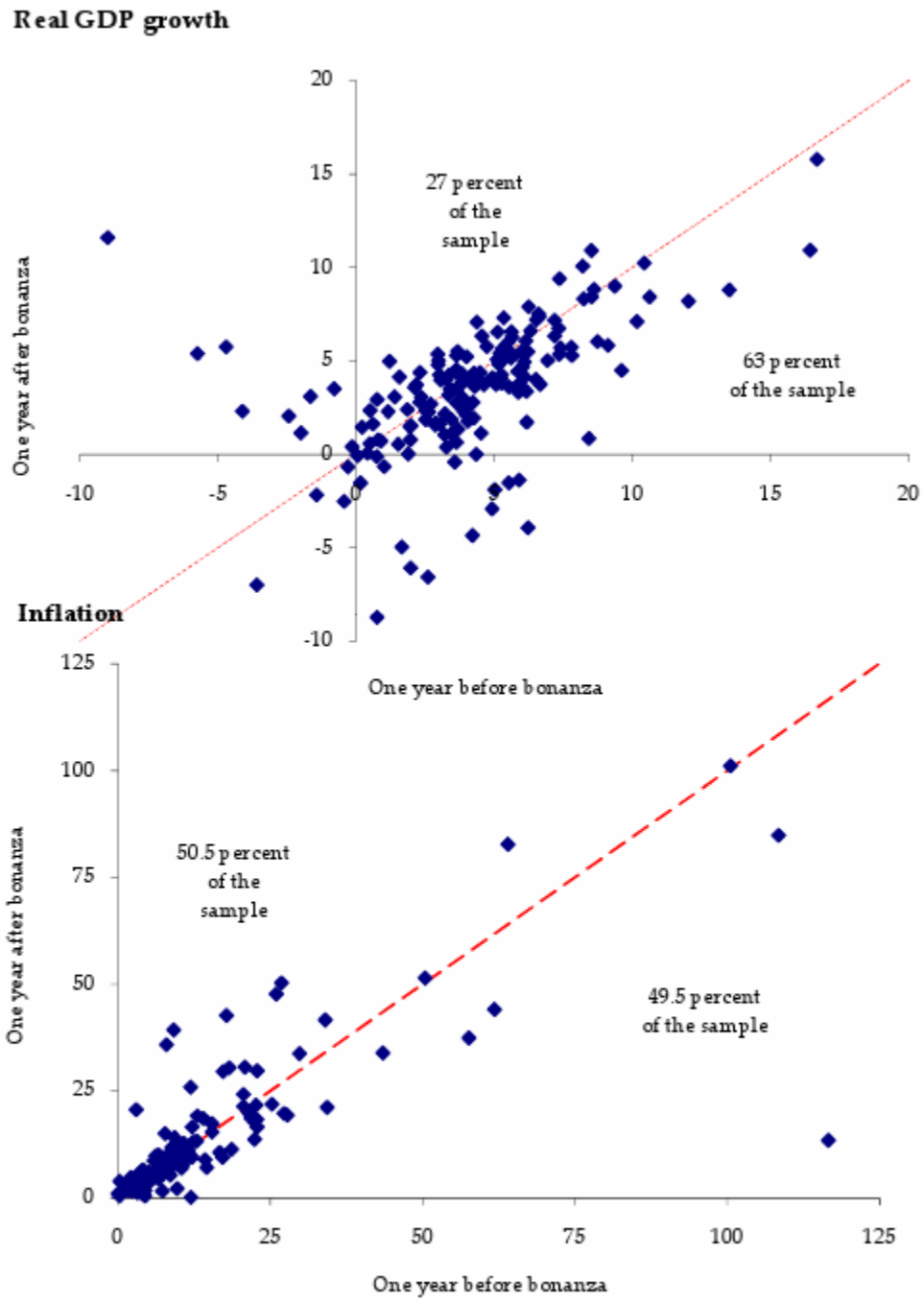
improving steadily thereafter. Note that this is not an artifact of our selection criteria. We do not select for big changes, only big levels. Current account deficits are, on average, largest for the low-income countries and smallest for the advanced economies, consistent with the evidence reported earlier on cut-off values. The path of the real

exchange rate (bottom left panel) shows that there is a cumulative appreciation (a decline denotes an appreciation) up to the bonanza year and a sharp depreciation afterwards. The analysis of Goldfajn and Valdes (1999) presents compelling evidence that in the overwhelming majority of cases, the cumulative real appreciation unwinds through a swift nominal depreciation (perhaps through a full-fledged currency crisis) rather than through a downward adjustment in prices.

GDP growth rises into the bonanza but then slows, settling back to a roughly pre-bonanza growth rate for middle- and low-income countries and a markedly lower growth rate for high-income economies. As to inflation, the trajectory is so diverse across the three income groups that it is impossible to draw any conclusion as to a fixed behavioral pattern. This suggests that the efforts of central banks in anchoring expectations are more important than the stage of the capital-flow cycle.

This association holds across individual countries as well. Figure 11 provides reinforcing cross-episode evidence via scatter plots that compare the real GDP growth and inflation performance for the year before and after the bonanza. Observations above the 45 degree ray indicate that growth (inflation) is higher one year after the bonanza than the year before the bonanza episode; the converse is true for observations below the diagonal. Taken together these scatter plots confirm that for the most part (63 percent of the episodes) growth is lower after the capital inflow boom, while no clear pattern emerges for inflation.

Figure 11. Before and after: growth and inflation around bonanzas: 181 countries, 1980-2007



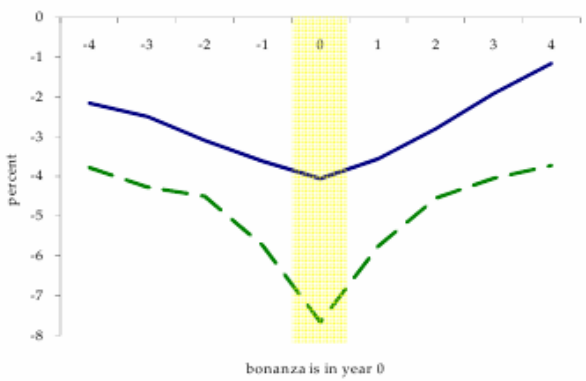
Source: International Monetary Fund, *World Economic Outlook* (April 2008) and authors' calcuations.

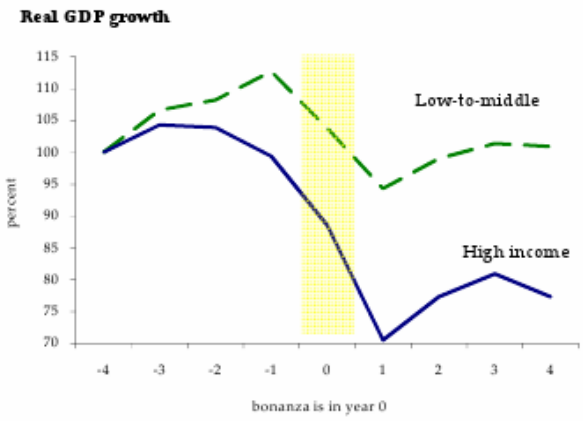
The narrative illustrated in Figure 12 for the core 66 countries for the longer sample spanning 1960 through 2007 intimately mirrors the broader post-1980 experience; the current account registers a V-shaped pattern, inflation is markedly different for the wealthy and not-so-wealthy countries, and real growth picks up in the run-up to the bonanza but does worse in the aftermath—particularly for high-income countries. Whatever growth benefits accrue during the bonanza phase are but short-lived.

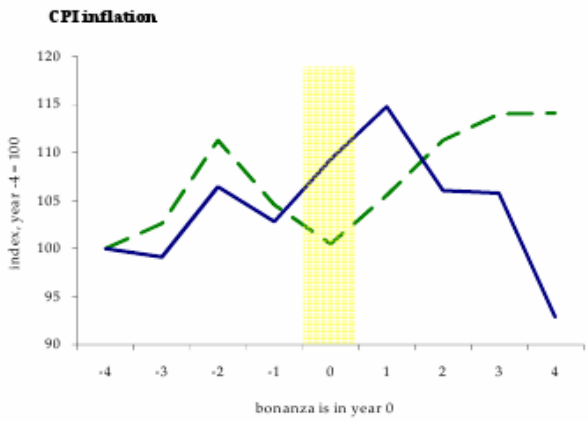
Figure 12. Growth, inflation and the current account around bonanzas: 66 countries, 1960-2007

Median in bonanza years	*By income group*	
Percent	Low-middle	High
Current account/GDP	-7.7	-4.1
Real GDP growth	5.0	3.3
CPI inflation	10.0	5.6

Source: International Monetary Fund, *World Economic Outlook* (April 2008) and International Financial Statistics and authors' calculations





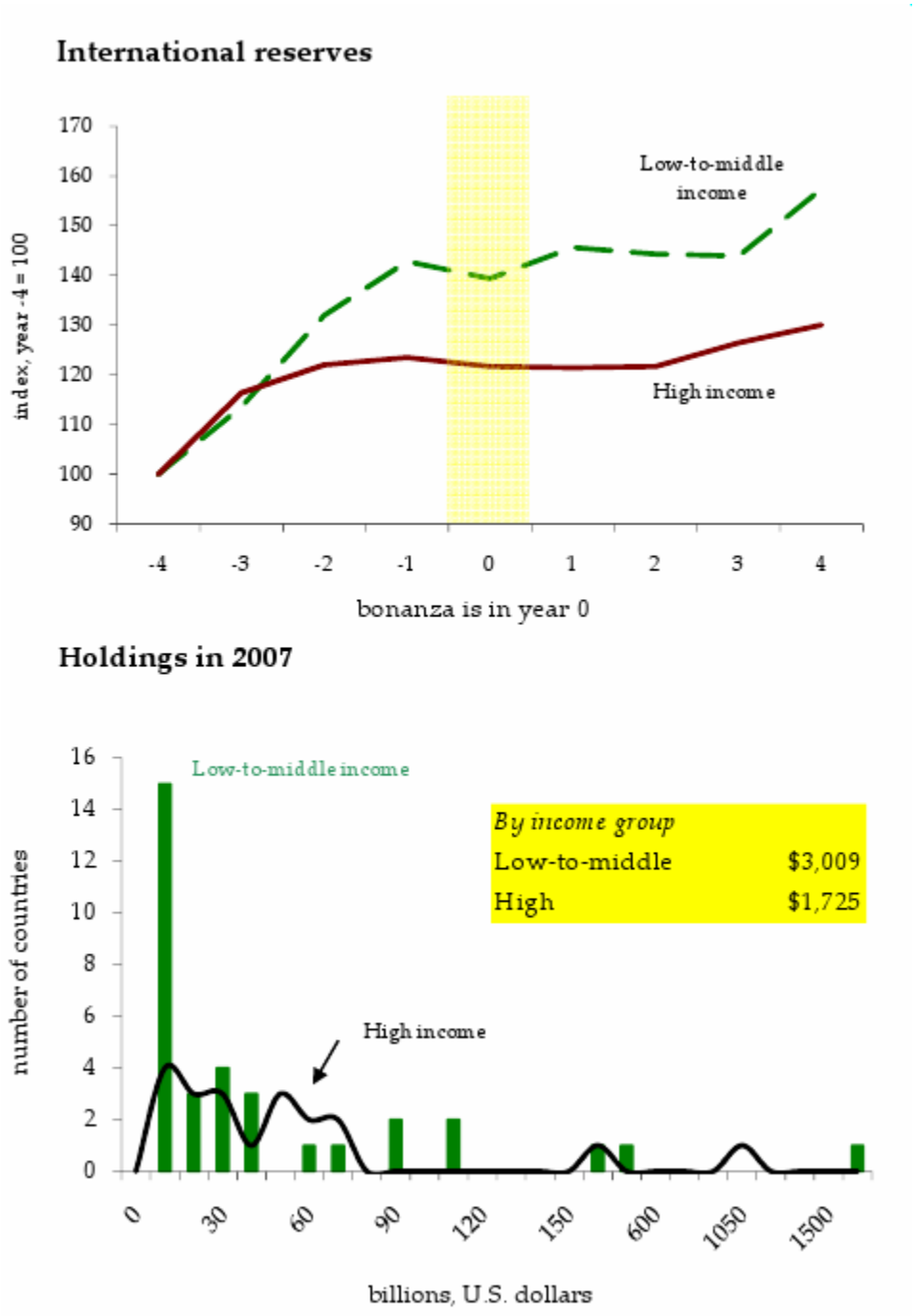


2. External sector: Reserves, exchange rates, and trade

There is a blossoming recent literature trying to explain why many emerging market countries have been amassing international reserves at an unprecedented clip. Some studies have stressed a "precautionary" motive in which countries build their war chests in good times to provide liquidity if need be in bad times.[19] What the upper panel of Figure 13 makes plain is that the practice of accumulating reserves, especially in developing countries during capital inflow years (which characterizes the current juncture for many emerging markets) is far from new, as the episodes depicted in this figure span 1960 to the present. Reluctance to allow for a sustained nominal or real exchange rate appreciation is a constant that has withstood the test of time in emerging markets. Tendencies to lean against the wind are seldom more pronounced than when there is a capital inflow bonanza underway. The forty-percent-plus increase in reserves in the run-up to the bonanza is no trivial change for the middle and low income countries, who as of 2007 held about twice as much in reserves as their high-income counterparts (bottom panel).

[19] See for instance, Bastourre, Carrera, Ibarlucia (2008), and Carrol and Jeanne (2008).

Figure 13. International reserves around bonanzas: 66 countries, 1960-2007



Sources: International Monetary Fund, *World Economic Outlook* and authors' calculations.

There is little surprising in Figure 14, which displays the same graphs for the external indicators (trade balance, exports, imports, and real exchange rate) for the 66-country sample. The trade balance follows the same path of the current account, as imports expand more rapidly than exports at the outset of the bonanza. The real exchange rate initially appreciates and subsequently depreciates in the years immediately following the capital flow bonanza. The only incremental evidence revealed by Figure 14 is that the real depreciation shown in the bottom right panel is noticeably smoother than that shown in Figure 9 for the 181 country average post-1980; possibly, this difference may reflect that crises are more severe (Kaminsky and Reinhart, 1999) and reversals more acute (Eichengreen and Adalet, 2005) in the more recent period or that the addition of lower-income countries in the larger sample adds to volatility.

3. Fiscal policy: amplifier or stabilizer

Managing surges in capital inflows poses nontrivial policy challenges, particularly if the inflows are persistent and/or if the orders of magnitude are staggering; these policy challenges are discussed in detail and examples provided in Reinhart and Reinhart (1998). Policy responses can mitigate the down-side of capital flow bonanzas (recall the main conclusion from the preceding section is that bonanzas are historically associated with higher odds of a financial crises) or amplify their more worrisome tendencies. The mismanagement of capital flow bonanza-commodity price boom episodes (see Cuddington, 1989) more often than not has its roots in the authorities' premise that the "good times" are permanent and, as such, can fully support a full-fledged expansion in real fiscal spending. This is the essence of fiscal procyclicality as documented by Gavin and Perotti (1997) and Kaminsky, Reinhart, and Vegh (2004) (or KRV henceforth).

Figure 14. External indicators and bonanzas: 66 countries, 1960-2007

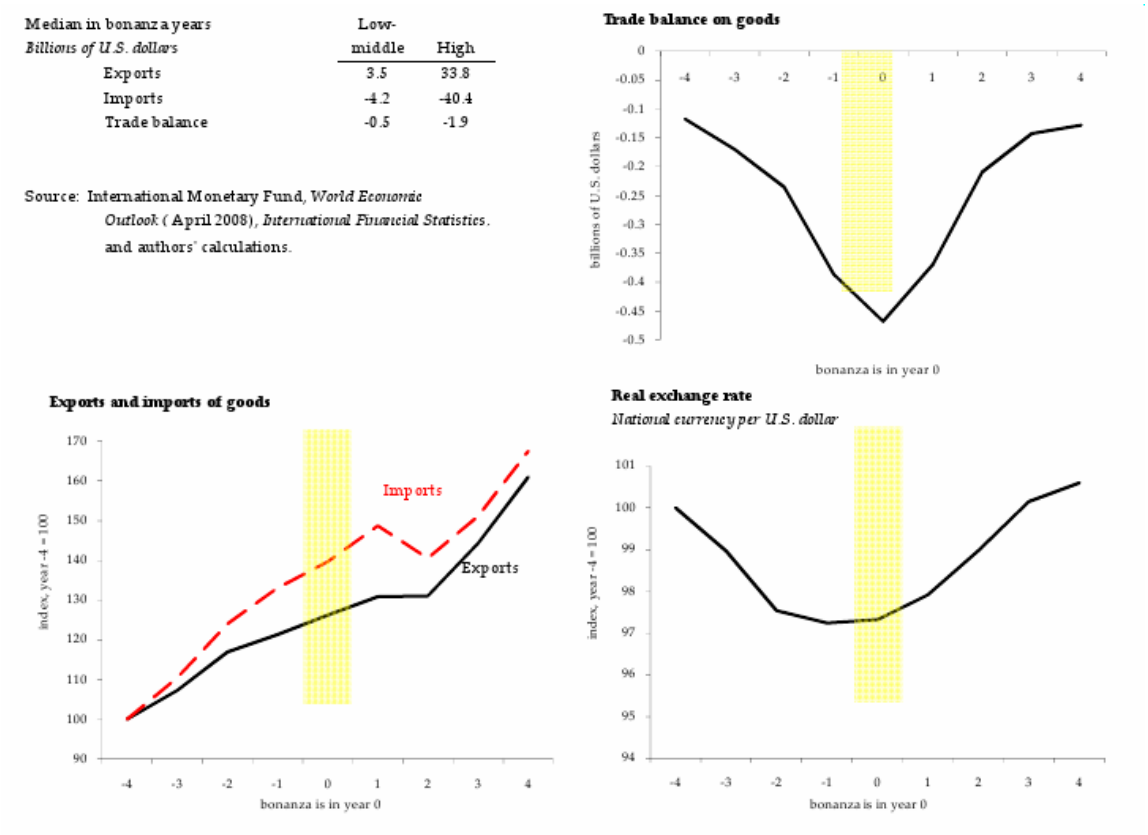
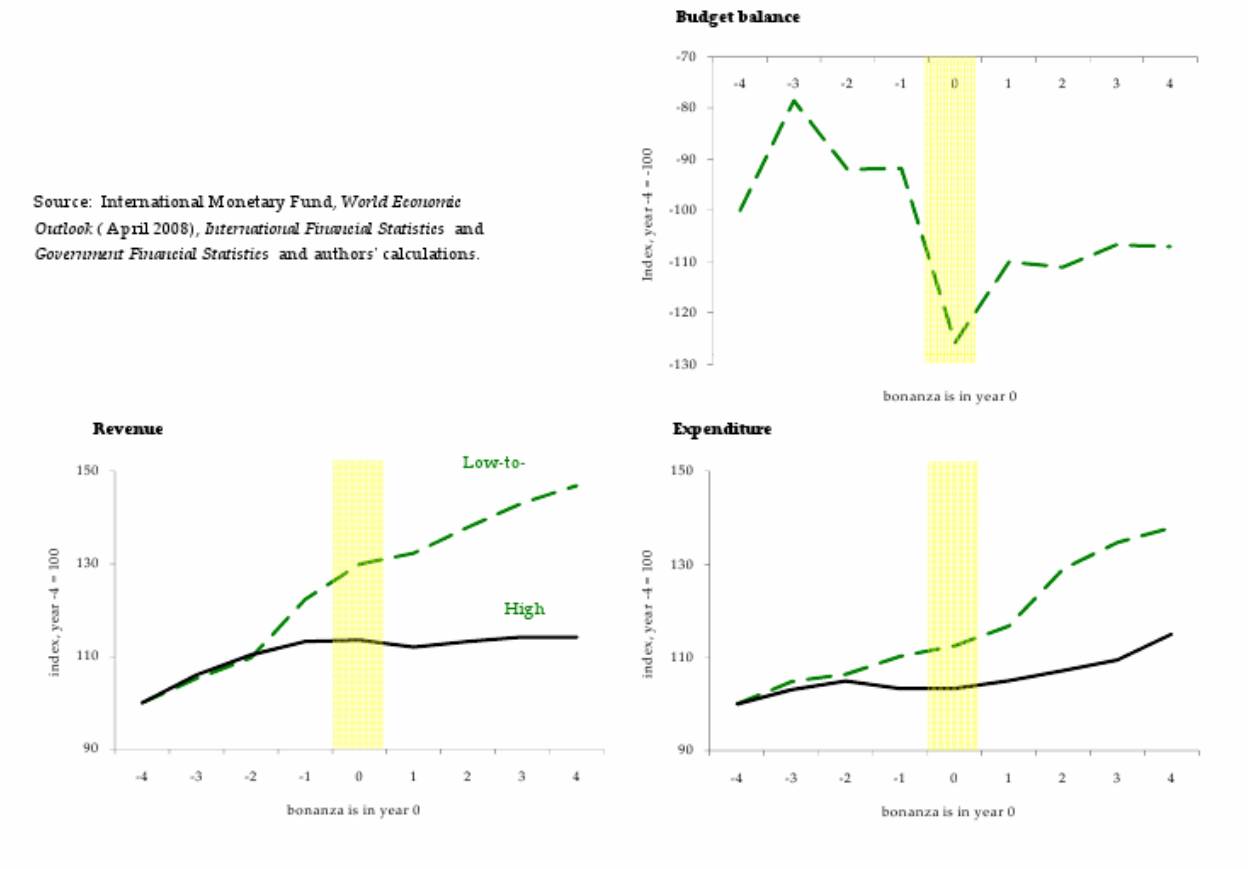


Figure 15 presents, in a comparable format, the evolution of real government spending and revenues and the fiscal balance (all indexed to the level four years prior to the bonanza). The deeply entrenched pattern of procyclical fiscal behavior by middle and low income countries emerges unambiguously from the three panels that make up the figure. Government spending from two years prior to the year of the bonanza rises by about 20 percent *in real terms* at a time during which growth is accelerating, as discussed. Despite even faster growth in government revenues (than in expenditures), the fiscal balance deteriorates markedly into the bonanza year. (This deterioration materializes

Figure 15. Fiscal Indicators and Bonanzas: 66 Countries, 1960-2007



because, while revenues are growing more rapidly, they are doing so from a lower base than expenditures four years prior to the bonanza.) The lax expenditure during the boom phase (and the associated deterioration in the fiscal balance) sets the stage for a "non-voluntary" fiscal tightening when the economic downturn sets in. Hence, as KRV (2004) illustrate, the magnitude of the swing in real fiscal spending during the cycle from boom to bust can be as large as 25 to 35 percentage points (as in the case of Uganda and Liberia, respectively.)[20]

[20] To be clear, the amplitude of the swing is calculated as the percent growth in real government spending during an expansion minus the growth in government spending in downturns. In the case of an extremely procyclical government, real spending would *grow* during good times (as shown in Figure 15), perhaps by

KRV rank the government's procyclicality propensity by two measures: the correlation between the cyclical component of real GDP and real fiscal spending (if positive, it implies procyclicality) and the amplitude of the swing in real spending (as described). Using these two indicators, we conducted a simple exercise to shed light on the plausible conjecture that the procyclical nature of government spending may help explain why the odds of a financial crisis increase around capital flow bonanzas, as illustrated in the preceding section. On a cross-country basis, we correlated the difference between the conditional, $P(Crisis_i \mid Bonanza)$, and unconditional probability, $P(Crisis_i)$ for each of the four types of crises (as shown for selected countries in Figures 4-8) and the two KRV measures of fiscal procyclicality (one at a time). The eight correlations were positive ranging from 0.25 to 0.46; six of the correlations were statistically significant. The results of these preliminary exercises are, thus, consistent with our conjecture about the destabilizing role of fiscal policy around capital flow bonanzas—and possibly more generally.

4. Asset markets

The last indicators we examine around bonanza periods are asset prices, specifically, real equity prices for the 66-country sample and real house prices for a subset of 18 high income countries for the period from 1970 through 2007. There has been discussion and some anecdotal evidence to suggest that asset prices boom during some famous capital inflow bonanzas (as in Calvo, Izquierdo and Talvi, 2003). Such a phenomenon appears reasonable, as a capital inflow represents an increased demand (by the rest of the world) for a particular country's assets, which would include equity and

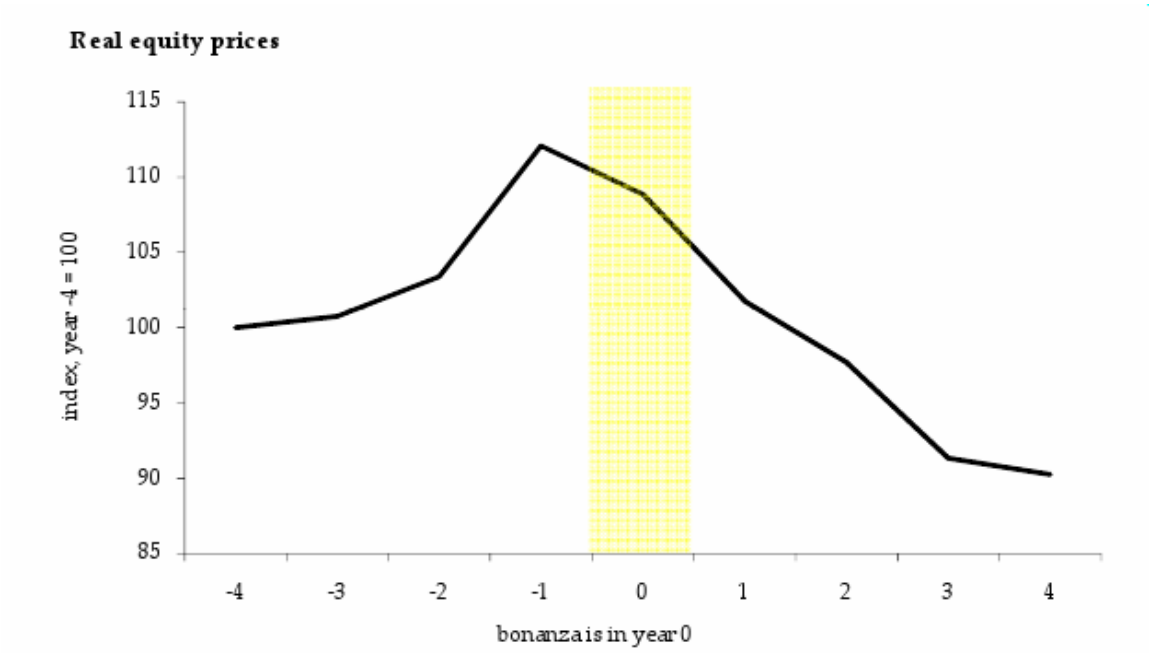
15 percent; and in downturns it would *contract* by about 10 percent. Thus the amplitude of the swing during the business cycle would be 25 percent.

real estate. As to asset prices and crises, one cannot read Kindelberger (1989) without drawing a tight link between the two.

Kaminsky and Reinhart (1999) present evidence to suggest that equity price bubbles are systematically present in the eve of banking crises—indeed, they are a good leading indicator of these. Reinhart and Rogoff (2008b) present evidence that real house prices boomed on the eve of the worst post-World War II banking crises in emerging market economies.

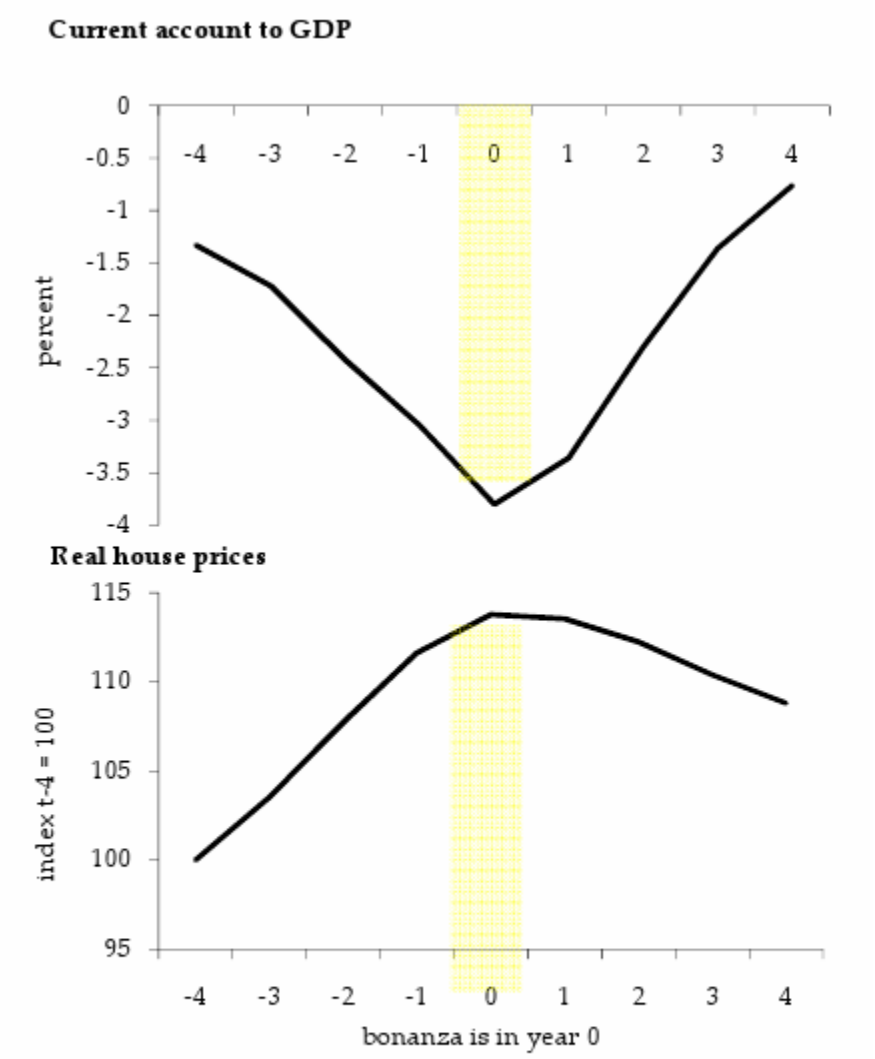
Figures 16 and 17 suggest a three-way link between capital inflow bonanzas, asset price booms, and financial crises. For both asset markets (for equities in Figure 16 and houses in Figure 17), there is a marked rise in inflation-adjusted prices that peaks at the time of the bonanza and is followed by a sustained decline during the four years following the bonanza. Taking together the evidence on the higher likelihood of a sovereign default in particular (and other types of financial crises in general), the slowdown in real GDP growth, and the protracted decline in asset values following the capital bonanza, the swift corrections in the twin deficits (current account and fiscal) observed after the bonanza may likely be a matter of necessity rather than choice.

Figure 16. Equity prices and bonanzas: 66 countries, 1960-2007



Source: International Monetary Fund, *World Economic Outlook* (April 2008), *International Financial Statistics*, and authors' calculations.

Figure 17. House Prices and Bonanzas: 18 Advanced Economies, 1970-2006



Source: International Monetary Fund, *World Economic Outlook* (April 2008), *International Financial Statistics*, Bank for International Settlements and authors' calculations

6. Conclusion

Conversations revolving around international financial adjustment sometimes have an aspect similar to the climactic scene in a few Hollywood crime movies in which the villain lures the hero in a hall of mirrors. It is not clear which is the originating action and which is the reflection, so that left can be right, or right left. Invariably, the initial target turns out to be glass. In international finance, one country's current account surplus can correspond to many countries' deficits, and a surplus is mirrored in a deficit in the capital account. As a consequence, the considerable literature on international adjustment overlaps to a significant degree, even though the studies adopt different selection criteria for what constitutes an event.

We have adopted a back-to-basics approach toward understanding some of the features of episodes of heavy capital inflows which, given double-entry bookkeeping, has usually meant periods of large current account deficits by historical standards. By focusing squarely on the perspective of the recipient of capital inflows (wherever or however poor or wealthy that country may be), our analysis does not extend to issues pertaining to lending countries or the broader and currently popular discussion of global imbalances. Nearly all the areas we have touched upon, both as to the causes and consequences of the bonanzas, merit further scrutiny, particularly as relates to the links between asset prices, bubbles, crises, and capital flows.

As to the policy responses to capital inflow bonanzas, our analysis has been silent in all dimensions but one. Namely, we present evidence on the infamously procyclical and destabilizing reaction of fiscal policy (specifically government spending) to the

capital flow bonanza in nearly all but the high income countries.[21] The expansionary fiscal policy unfolds against a backdrop of higher growth in output and government revenues associated with the bonanza. It is not unreasonable to conjecture that these government spending practices in "good times" set the stage for a multi-decade pattern of serial default.

During the past few years, international interest rates have remained low (by historical standards), and real interest rates have turned negative on a sustained basis for the first time since the late 1970s. Commodity prices have surged. Once again, investors in the financial centers of the world and elsewhere are tripping over themselves in the eternal quest for higher yields in emerging markets and other higher-risk investments. From an emerging market perspective, the external scenario of the past few years can be best characterized as "benign." Yet, as of 2007, 85 percent of countries in our core sample have recorded increases in real government expenditures. Perhaps once again, authorities view the favorable global environment as permanent). Fully *two-thirds* of the 181 countries covered in the IMF's latest *World Economic Outlook* recorded higher inflation in 2007 than in 2006, and an equal share recorded even higher inflation on a year-end basis in 2007 than on a year-average basis—pointing to even higher readings for 2008. If this is what is to be expected in good times, where capital bonanzas are plentiful, it is perhaps time to start re-reading Kindleberger.

[21] It is important to recall that there is a positive association between the degree of fiscal procyclicality and the incremental odds of a financial crisis around capital flow bonanzas.

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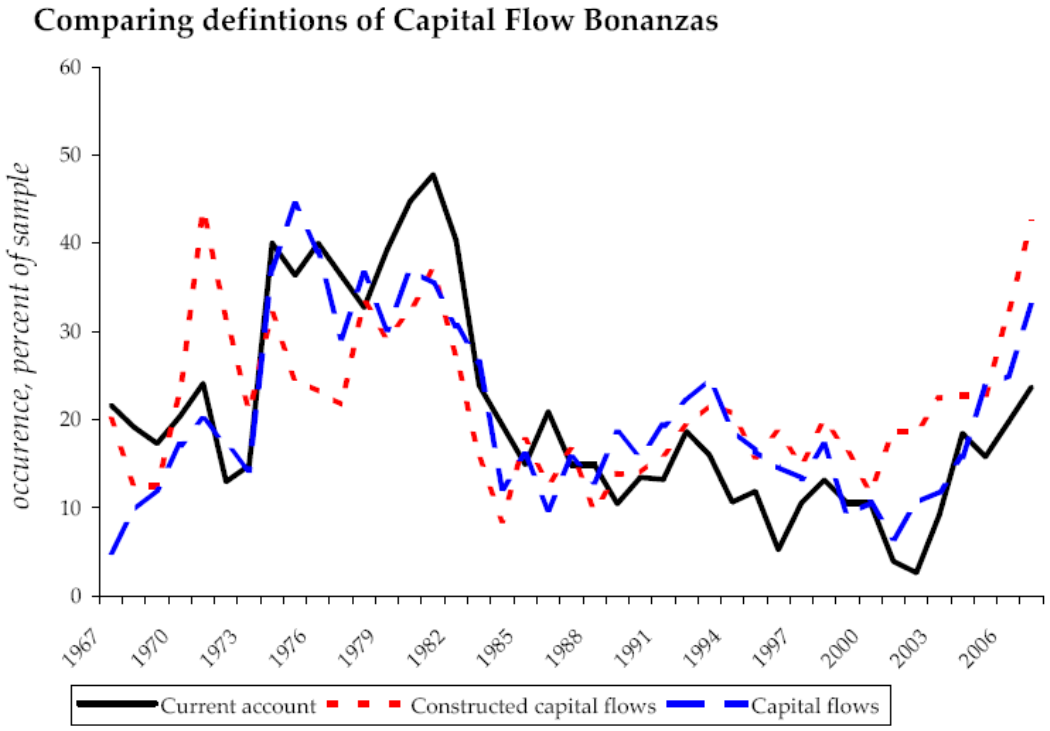
Appendix Figure 1. Comparing definitions of capital flow bonanzas: 66 countries, 1960-2007



Sources: Authors' calculations and sources listed in Appendix Table 3.

Sources: International Monetary Fund, *World Economic Outlook* and authors' calculations.

Appendix Table 1. 66 Countries, 1960-2007

Low income (8)	Middle-low income (20)	Middle-high income (16)	High income (22)
Central African Republic	Algeria	Argentina	Austria
Cóte d'Ivoire	Angola	Brazil	Australia
India	Bolivia	Chile	Belgium
Kenya	China	Costa Rica	Canada
Myanmar	Colombia	Hungary	Denmark
Nigeria	Dominican Republic	Malaysia	Finland
Zambia	Ecuador	Mauritius	France
Zimbabwe	Egypt	Mexico	Germany
	El Salvador	Panama	Greece
	Guatemala	Poland	Hong Kong SAR
	Honduras	Romania	Italy
	Indonesia	Russia	Japan
	Morocco	South Africa	Korea
	Nicaragua	Turkey	Netherlands
	Paraguay	Uruguay	New Zealand
	Peru	Venezuela	Norway
	Philippines		Portugal
	Sri Lanka		Singapore
	Thailand		Spain
	Tunisia		Sweden
			United Kingdom
			United States

Note: Income classification from the World Bank. Number of countries in each category shown in parentheses.

Appendix Table 2. Country Coverage: 181 Countries, 1980-2007

Low income	Middle-low income	Middle-high income	High income
Afghanistan, Rep. of.	Albania	Argentina	Bahamas, The
Bangladesh	Algeria	Belize	Bahrain
Benin	Angola	Botswana	Barbados
Burkina Faso	Armenia	Brazil	Belgium
Burundi	Azerbaijan	Bulgaria	Brunei Darussalam
C ⌠te d'Ivoire	Belarus	Chile	Canada
Cambodia	Bhutan	Costa Rica	Cyprus
Central African Republic	Bolivia	Croatia	Czech Republic
Chad	Bosnia and Herzegovina	Dominica	Denmark
Comoros	Cameroon	Equatorial Guinea	Estonia
Congo, Democratic Republic of	Cape Verde	Gabon	Finland
Eritrea	China	Grenada	France
Ethiopia	Colombia	Hungary	Germany
Gambia, The	Congo, Republic of	Kazakhstan	Greece
Ghana	Djibouti	Latvia	Hong Kong SAR
Guinea	Dominican Republic	Lebanon	Iceland
Guinea-Bissau	Ecuador	Libya	Ireland
Haiti	Egypt	Lithuania	Israel
India	El Salvador	Malaysia	Italy
Kyrgyz Republic	Fiji	Mauritius	Japan
Lao People's Democratic Republic	Georgia	Mexico	Korea
Liberia	Guatemala	Montenegro, Republic of	Kuwait
Madagascar	Guyana	Oman	Luxembourg
Malawi	Honduras	Panama	Malta
Mali	Indonesia	Poland	Netherlands
Mauritania	Iran, Islamic Republic of	Romania	New Zealand
Mongolia	Jamaica	Russia	Norway
Mozambique	Jordan	Serbia	Portugal
Myanmar	Kenya	Seychelles	Qatar
Nepal	Kiribati	Slovak Republic	Saudi Arabia
Niger	Lesotho	South Africa	Singapore
Nigeria	Macedonia, Former Yugoslav Republic of	St. Kitts and Nevis	Slovenia
Pakistan	Maldives	St. Lucia	Spain
Papua New Guinea	Moldova	St. Vincent and the Grenadines	Sweden
Rwanda	Morocco	Turkey	Switzerland
Senegal	Namibia	Uruguay	Taiwan Province of China

Appendix Table 2. Country Coverage: 181 Countries, 1980-2007 (concluded)

Low income	**Middle-low income**	**Middle-high income**	**High income**
Sierra Leone	Nicaragua	Venezuela	Trinidad and Tobago
Solomon Islands	Paraguay		United Arab Emirates
Sudan	Peru		United Kingdom
Sπo TomΘ and Prφncipe	Philippines		United States
Tajikistan	Samoa		
Tanzania	Sri Lanka		
Timor	Suriname		
Togo	Swaziland		
Uganda	Syrian Arab Republic		
Uzbekistan	Thailand		
Vietnam	Tonga		
Yemen, Republic of	Tunisia		
Zambia	Turkmenistan		
Zimbabwe	Ukraine		
	Vanuatu		

Appendix Table 3. List of Variables

Variable	*Units*
GDP, IMF *World Economic Outlook*	Billions
Nominal GDP	
Real GDP	
External accounts, IMF *World Economic Outlook*	Billions of US dollars
Total capital flows, net	
Current account balance	
Financial account balance	
Trade balance	
Foreign reserves	
Imports of goods and services	
Exports of goods and services	
Prices	
Consumer price index**, IMF *World Economic Outlook***	Indices
Inflation	Percent
Equity prices, IMF *International Financial Statistics*	Indices
House prices, Bank for International Settlements	Indices
Exchange rate, *International Financial Statistics*	National currency per U.S. dollar
Fiscal and national accounts, IMF *World Economic Outlook* and *Government Financial Statistics*	Billions of national currency
Central government balance	
Central government expenditure	
Central government revenue	
Other variables	
Crises indicators, Reinhart and Rogoff (2008)	Indices
Commodity prices, Boughton (1991) and IMF *World Economic Outlook*	Index
Short-term interest rates, *Source* OECD and IMF *International Financial Statistics*	Percent

Appendix Table 4. Dates of Capital Flow Bonanza and External Debt Crises: Extended sample, high income, 1980-2007

Country	Years of Bonanzas	Years of external default
High Income, OECD		
Australia	1986, 1989, 2004-2005, 2007	
Austria	1980-1981, 1995-1997, 1999	
Belgium	1980-1984	
Canada	1981, 1989-1993	
Denmark	1981-1982, 1984-1987	
Finland	1982-1983, 2005-2007	
France	1980, 1988-1992	
Germany	1980, 1991, 1994-1995, 1999-2000	
Greece	1983, 1985, 2000, 2006-2007	
Iceland	1982, 2000, 2004-2007	
Ireland	1980-1984, 2007	
Italy	1980-1982, 1991-1992	
Korea	1980-1983, 1991, 1996	1998*
New Zealand	1982, 1984-1985, 2005-2007	
Norway	1986-1989, 1998	
Portugal	1981-1982, 2000-2001, 2005	
Spain	2000, 2004-2007	
Sweden	1980-1982, 1990-1992	
United Kingdom	1988-1990, 2005-2007	
United States	2002-2007	
High-income non-OECD		
Antigua and Barbuda	1981-1982, 1986-1989	1996-2006
Bahamas, The	1997-1998, 2005-2007	
Bahrain	1987, 1989, 1991-1993, 1998	
Barbados	1981, 2004-2007	
Cyprus	1980, 1983-1984, 1991-1992	
Czech Republic	1996-1997, 2001-2004	
Estonia	2004, 2006-2007	
Georgia	1994-1995, 2007	
Hong Kong SAR	1980-1981, 1994-1997	
Israel	1981-1984, 1995-1996	
Kuwait	1993, 1995-1996, 1998	
Malta	1995-1996, 2000	
Qatar	1992, 2004-2007	
Saudi Arabia	1983-1984, 1986, 1991-1993	
Singapore	1980-1984, 1987	
Slovenia	1999, 2006-2007	
Trinidad and Tobago	1982-1984, 1986, 1997-1998	1988-1989

Appendix Table 4. Dates of Capital Flow Bonanza and External Debt Crises: Extended sample, middle-high income, 1980-2007

Country	Years of Bonanzas	Years of external default
Middle- income, high		
Argentina	1982, 1987, 1994, 1997-1999	1982-1993, 2001-2005
Belize	2000-2005	
Botswana	1980-1984, 1990	
Brazil	1980-1983, 1999, 2001	1983-1994
Bulgaria	1990-1993, 2005-2007	1990-1994
Chile	1980-1982, 1984-1986,	1983-1990
Costa Rica	1980-1983, 1989-1990	1981-1990
Croatia	1997, 2002, 2007	1992-1996
Dominica	1980-1981, 1989-1990, 2005	2003-2005
Equatorial Guinea	1980-1982, 1995-1996, 1998	
Gabon	1986-1989, 1992, 1998	1986-1994, 1999-2004
Grenada	2001-2003, 2006-2007	
Hungary	1986-1987, 1993-1994, 1998-1999, 2003-2004	
Latvia	2004, 2006-2007	
Lebanon	1983, 1990-1992, 1997-1998	
Malaysia	1981-1983, 1991, 1994-1995	
Mauritius	1980-1982, 2006-2007	
Mexico	1980-1981, 1991-1994	1982-1990, 1995*
Oman	1986, 1992-1995, 1998	
Panama	1980-1982, 1997-1998, 2007	1983-1996
Poland	1980-1981, 1985-1989	1981-1994
Romania	1992, 2004-2007	1981-1983, 1986
Russia	1992, 1997	
Serbia	2007	1992-2004
Seychelles	1982, 1999, 2001, 2005, 2007	2000-2002
Slovak Republic	1996-1998	
South Africa	1981-1982, 2005-2007	1985-1987, 1989, 1993
St. Kitts and Nevis	1989, 2001-2003, 2007	
St. Lucia	1980, 1983, 2003, 2006-2007	
St. Vincent and the Grenadines	1997-1998, 2004, 2006-2007	
Turkey	1980, 2000, 2004-2007	1982
Uruguay	1980-1984, 2001	
Venezuela	1982, 1987-1988, 1992-1993, 1998	1983-1988, 1990, 1995-1997, 2004-20(

Appendix Table 4. Dates of Capital Flow Bonanza and External Debt Crises:
Extended sample, middle-low income, 1980-2007

Country	Years of Bonanzas	Years of external default
Middle-income, low		
Albania	1991-1992, 1997, 2002, 2007	1991-1995
Algeria	1969, 1973, 1975-1979, 1986, 1988-1989, 1994-1995, 1998	1991-1996
Angola	1982, 1995, 1997-1999, 2001	1985-2003
Armenia	1992, 1996-1998	
Azerbaijan	1996, 1998, 2003-2004	
Bhutan	1982-1987	
Bolivia	1981, 1985-1987, 1993, 1998	1980-1984, 1986-1997
Bosnia and Herzegovina	2003, 2005	1992-1997
Cameroon	1980-1981, 1987-1988, 1993, 2002	1987-2003
Cape Verde	1980-1981, 1999, 2003-2004	1981-1996
China	1985-1986, 1988-1989, 1993	
Colombia	1982-1983, 1995, 1997-1998	
Congo, Republic of	1994-1996, 1998-1999, 2007	1983-2007
Djibouti	2000, 2006-2007	
Dominican Republic	1980-1982, 1987	1982-1994, 2005
Ecuador	1981-1982, 1987, 1989, 1991, 1998	1982-1995, 1999-2000
Egypt	1981-1985, 1998	
El Salvador	1989, 1990, 2003, 2005, 2007	
Fiji	1981, 2004-2007	
Guatemala	1981, 1987, 1992-1993, 1994, 1999, 2001	1986, 1989
Guyana	1980-1983, 1985-1986	1982-1986
Honduras	1980-1981, 1984, 2003-2004, 2007	1981-2007
Indonesia	1982-1983, 1986-1987, 1991, 1995	1998-2000, 2002
Iran, Islamic Republic of	1980-1981, 1986, 1991-1993	1980-1995
Jamaica	1981-1982, 1985, 2007-2007	1981-1985, 1987-1993
Jordan	1990-1992, 2005, 2007	1989-1993
Kiribati	1992, 1996, 2005-2007	
Lesotho	1991-1993, 1996-1998	
Macedonia	1994, 1997-1998, 2002	1983-1999
Maldives	1980, 1993, 2005-2007	
Moldova	1993, 1997-1998, 2006	1998, 2002
Morocco	1981, 1983-1987	1983, 1986-1990
Nicaragua	1988, 1990-1994	
Paraguay	1980-1982, 1986-1987, 1996	1986-1992, 2003-2004
Peru	1981-1983, 1993, 1995, 1998	1980, 1983-1997
Philippines	1980, 1982-1983, 1990, 1993, 1997	1983-1992
Samoa	1980-1981, 1991-1993, 2003	
Sri Lanka	1979-1984, 1986, 1988	1981-1983
Suriname	1983, 1991, 1998-1999, 2001, 2003	
Swaziland	1980-1985	
Syrian Arab Republic	1980, 1983, 1994, 2006-2007	
Thailand	1981-1983, 1990-1991, 1995-1996	
Tonga	1990-1991, 1994-1995, 1998	
Tunisia	1981-1984, 1986, 1993	1980-1982
Turkmenistan	1995, 1997-1999	
Ukraine	1994-1995, 2007	1998-2000
Vanuatu	2002-2003, 2005-2007	

Appendix Table 4. Dates of Capital Flow Bonanza and External Debt Crises:
Extended sample, low income, 1980-2007

Low-income		
Benin	1981-1983, 1988, 2002-2003	
Burkina Faso	1999-2001, 2004-2005	1987-1996
Burundi	1982-1983, 1987, 1990, 2006-2007	
Cambodia	1988-1989, 1996, 1998	
Central African Republic	1980, 1982-1984, 1992-1995	1981, 1983-2007
Chad	1986, 2000-2004	
Comoros	1984-1985, 1987, 1994, 1997	
Congo, Democratic Republic o	1987, 1989, 1991-1992, 2005	1980-2007
Côte d'Ivoire	1980, 1988-1992	1983-1998, 2000-2007
Ethiopia	1999, 2002, 2005-2007	1991-1999
Gambia, The	1980-1981, 1996, 2005	1986-1990
Ghana	1993, 1997, 1999, 2006-2007	1968, 1970, 1974, 1987
Guinea	1988-1990, 1996, 2007	1985-1988, 1991-1998
Haiti	1980-1981, 1990-1993	1982-1999
India	1984, 1987-1990	
Kenya	1980-1981, 1987, 1989, 1995	1994-1998, 2000
Lao People's Democratic Repul	1988-1989, 2004-2005, 2007	
Madagascar	1980-1981, 1990, 2005, 2007	1981-2002
Malawi	1980, 1992, 1994, 1997, 2002, 2005	1982, 1988
Mali	1980, 1996, 1999-2001, 2004	
Mauritania	1980-1983, 2004-2005	1992-1996
Mongolia	1998, 2002-2003	
Mozambique	1987-1989, 1993-1995	1983-1992
Myanmar	1981-1982, 1990-1992, 1998	2002-2007
Nepal	1982-1984, 1989-1991	
Niger	1980-1982, 2005-2006	1982-1991
Nigeria	1981-1983, 1986, 1993, 2002	1987-1994, 2004-2005
Pakistan	1993, 1996-1997, 2007-2007	1981, 1998-1999
Papua New Guinea	1980-1984, 1997	
Rwanda	1991-1993, 1997-1998	
São Tomé and Príncipe	1982, 1991-1992, 2007-2007	1987-1994
Senegal	1980-1984	1981-1985, 1990, 1992-1996
Sierra Leone	1980-1982, 1990-1991, 1996	1983-1984, 1986-1996
Solomon Islands	1985, 1991, 2005-2007	
Sudan	1981-1982, 1992-1995	1980-2007
Tanzania	1994-1995, 1998-1999	1980, 1982-1984, 1988, 1991-1997
Togo	1980 ,1982-1983, 1987	1980-1993
Uganda	1991, 1993, 1998-2001	1981, 1985-1993
Vietnam	1993-1996, 2007	1985-1998
Zambia	1981-1982, 1998, 2000-2001	1983-1994
Zimbabwe	1981-1982, 1992, 2004- 2005	2000-2007