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How Resilient Were Emerging Economies to the Global Crisis?

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Abstract

This paper studies the cross-country incidence of the 2008-2009 global crisis and documents a structural break in the way emerging economies responded to the global shock. Contrary to popular perceptions, emerging market economies suffered growth collapses comparable, or even larger, to those experienced by advanced economies during the crisis. With such large financial and real shock, most of the world economy came to a halt when the crisis hit, with most countries resuming their pre-crisis growth rates afterwards. While emerging economies were not able to avoid the crisis collapse, they grew at a higher rate during the post crisis, relative to before and, as usual, to advanced countries. Moreover, emerging economies initiated their recovery sooner. Breaking with the past, emerging economies were able to conduct countercyclical policies, and became more similar to developed countries in softening the impact of the crisis and in their ability to pursue expansionary policies.

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1. Introduction

This paper analyzes how emerging market countries fared the 2008-2009 global crisis by documenting their performance during the fallout from the crisis and the subsequent recovery. In particular, we first revisit and question the claim that, on impact, emerging market countries suffered less than advanced countries in terms of economic activity. We show that, while emerging economies appear to have displayed better performance during the crisis when looking at growth rates, they experienced similar growth contractions in gross domestic product (GDP) and industrial production when accounting for their higher pre-crisis growth rates. However, emerging economies did in fact recover faster and more strongly than advanced countries, returning to high growth rates more quickly. While, on average, emerging economies performed better than advanced countries, there is heterogeneity among them, with Eastern Europe and Central Asia faring the worst. Overall, low income countries appear to have been more isolated from the global cyclical pattern around the crisis.[1] Second, we relate the behavior of emerging economies to both the crisis transmission mechanisms and a structural break in the way they conduct their policies. In doing so, we describe some of the different factors that might have transmitted the crisis worldwide, with the main ones being trade and finance. We also discuss what specific policies emerging markets adopted to become more resilient to crises and how these policies seem to have played a more useful role during the global crisis than in the past.

The popular perception is that emerging economies fared, on average, substantially better than advanced countries during the global downturn of 2008-2009 (Eichengreen, 2009).

[1] Economies are classified as "advanced" (or "developed") if they fall under the World Bank's July 2010 classification of "high income" countries (including both OECD and non-OECD countries). All others are "developing countries." Within the latter, economies are classified as "emerging" if they have access to loans from the World Bank (IBRD) and as low income if they only have access to funds from IDA (the World Bank's International Development Association focused on the poorest nations). All countries not falling under the "advanced economies" are assigned to regions according to the World Bank's July 2010 classification. "Middle East & Africa" includes countries in both the Middle East and North and Sub-Saharan Africa. "Asia" includes countries in East Asia, South Asia, and the Pacific region. Appendix Table 1 contains the income and regional classifications.

Researchers justify those claims, either explicitly or implicitly, by presenting as evidence a negative association between some indicators of economic performance during the crisis and the level of GDP per capita (Claessens, Dell'Ariccia, Igan, and Laeven, 2010; Frankel and Saravelos, 2010; Lane and Milesi-Ferretti, 2010; Rose and Spiegel, 2010a, 2010b, and 2010c; and Rose, 2011).[2] We argue, instead, that emerging countries suffered declines in real GDP growth comparable, or even larger, to those in advanced countries, with most countries rebounding during the crisis aftermath according to how much they collapsed. However, emerging economies displayed a better recovery, growing sooner at an even higher rate than before the crisis. Another part of the good news is that emerging economies became more similar to developed nations and did not suffer larger collapses during the global crisis, as opposed to the past. In the case of low income countries, their relatively lower degree of trade and financial openness seem to have helped them suffer lower declines in output growth.

Our results on the crisis fallout differ from those in the literature for at least two reasons. First, some studies use GDP growth as an indicator of economic performance during the crisis (Frankel and Saravelos, 2010; Rose and Spiegel, 2010a, 2010b, and 2010c; and Rose, 2011). While it is true that advanced countries attained lower rates of GDP growth during the crisis (even after controlling for several variables), this observation might just be capturing convergence effects, not a higher incidence of the crisis itself. Namely, advanced countries grow less on average than emerging economies independent of any crisis event. In contrast, when looking at *collapses* in GDP growth, the evidence suggests that, on impact, the crisis was not more severe in advanced countries. Second, although some other studies measure crisis incidence in terms of changes in GDP growth (Blanchard, Faruqee, and Das, 2010; Claessens,

[2] The usual approach consists of running a regression of some measures of economic performance on a number of macroeconomic variables, including the level of GDP per capita.

Dell'Ariccia, Igan, and Laeven, 2010; and Lane and Milesi-Ferretti, 2010), we identify a non-linearity between the collapse in GDP growth and GDP per capita that was ignored in those studies. In effect, it is not the case that higher collapses increase monotonically with GDP per capita, as one may derive from the other papers. Instead, the largest collapses in GDP growth tend to occur at income levels corresponding to those of the wealthier emerging countries and poorer high income economies.

We argue next that the length of the recession and the post-crisis performance is one area where emerging economies did fare better, partly because of structural reasons and partly because their policies worked in their favor this time around. Based on relatively high frequency industrial production data and using different measures of the length of the recession, we show that the number of months that emerging economies were under recessionary pressures was smaller than that of advanced countries. For example, by September 2009, emerging countries, as a group, achieved their pre-crisis levels of industrial production, while advanced countries were still well below their pre-crisis level, even by the end of 2010. Moreover, while advanced countries were able to return to their pre-crisis growth rates by January 2010, emerging economies enjoyed by then even higher growth rates than before the crisis, allowing them to converge faster to their trend output level. For example, while industrial production in advanced economies was over 16 percentage points below trend in November 2011, it was only 7 percentage points below trend in emerging economies at that time. This analysis of the post crisis complements the growing literature on the crisis, which has concentrated mainly on the collapse and has typically looked at low frequency GDP measures.

We conjecture four reasons for the differentiated post-crisis behavior of emerging market countries, relative to their past and to advanced economies. The first and most obvious one is that the root of the problem was in the financial markets of advanced countries and that developing countries had a low exposure to these markets relative to other developed countries. At the same time, the financial collapse hit highly leveraged consumers in some developed countries, while consumption was posed to continue growing at a high rate in emerging countries. The second reason is that one of the main crisis transmission channels seems to have been international trade. As the U.S. economy came to a standstill in the fourth quarter of 2008, firms stopped their international orders anticipating an accumulation of inventories (due to the orders already being processed and shipped). This generated an immediate collapse in production in several emerging economies focused on supplying manufactures to advanced countries and the world economy in general, many of them located in Asia. As inventories started to decrease and it became more likely that global demand would stabilize and the crisis would not be transmitted full blown to emerging economies, firms reignited the production process and overall economic activity in emerging markets picked up.[3] Thus, emerging economies were able to generate a faster recovery than developed countries (for which manufacturing accounts for a smaller share of total activity). The third reason is that, to the extent that emerging economies grow at a higher pace in their path to become richer nations, a recovery of their growth trajectory would make their output converge sooner to the pre-crisis level.

The fourth reason for the better post-crisis performance of emerging economies, at least relative to their previous history, is a fundamental change in the way emerging countries have conducted their policies in the recent past. In effect, the behavior of emerging countries around the global crisis might come as a surprise given previous experiences during turmoil periods,

[3] Alessandria, Kaboski, and Midrigan (2010 and 2011) document a large inventory adjustment in the U.S. during the crisis. They show that imports and sales of foreign automobiles began to decline by mid-2008 and the ratio of inventories to sales rose about 45 percent over the next six months. When sales began to recover at the beginning of 2009, imports continued to fall and the inventories-to-sales ratio started to decline toward its pre-crisis level.

when foreign shocks tended to end up as full blown domestic crises. Historical evidence suggests that emerging countries lacked the policy tools available to advanced countries to deal with crises. In fact, previous worldwide turbulent episodes found most emerging economies unable or unwilling to perform countercyclical policies. Moreover, in many cases, their own vulnerabilities and poor institutional frameworks were the factors that helped amplify negative external shocks, leading to sharper and more painful recessions. For instance, the absence of access to world capital markets during turbulent times seems to have hampered the ability of governments to raise funds and conduct countercyclical fiscal policies (Reinhart and Reinhart, 2008; Broner, Lorenzoni, and Schmukler, 2011). In addition, emerging economies typically followed procyclical policies during both good and bad times (Kaminsky, Reinhart, and Vegh, 2004; Talvi and Vegh, 2005). But a change in the policy stance seems to have taken place in the late 2000s (Gourinchas and Obstfeld, 2011; Kose and Prasad, 2011).

In this paper, we document new developments that seem to indicate a structural break in the way emerging countries conduct their policies, with more countercyclical policies pursued before and during the global crisis. Furthermore, as opposed to previous crisis episodes, the resilience of countries to the 2008-2009 crisis might be partly attributed to a combination of sounder macroeconomic and financial policy frameworks and a shift towards safer domestic and international financial stances. First, the global crisis found many emerging countries with more fiscal space, better domestic balance sheets, and the required credibility to conduct expansionary fiscal and monetary policies.

Regarding the financial stance, emerging countries have, on average, made a conscious effort to try to reduce both the credit risk embedded in debt contracts and, within debt, currency and maturity mismatches. On the external front, emerging economies became net creditors to the rest of the world as regards debt contracts while increasing significantly their net debtor position as regards equity contracts (particularly via FDI). On the domestic front, several emerging economies (in particular their public sectors) have extended during the 2000s the maturity profile of their debt and the degree of domestic currency debt. This migration of emerging countries from a net debtor to a net creditor position vis-à-vis the rest of the world in terms of debt contracts and the reduction of foreign currency and short-term debt might have played a key contributing role in avoiding the downside risks of financial globalization. In the past, the devaluations typical of financial crises tended to increase the burden of foreign issued, foreign currency debt. Plus, market shutdowns triggered rollover crises because of the high incidence of short-term debt. In contrast, during the global crisis the devaluations implied an improvement in the external positions of emerging economies (when measured in local currency) due to their net creditor stance. Moreover, the lower mismatches due to the higher prevalence of domestic currency and longer-term debt helped absorb the shock. Furthermore, the external liability was reduced when the financial crisis materialized as equity prices plummeted around the world, and the net debtor equity position shrank.[4] The migration of net debtor to net creditor positions in terms of debt reflected largely the buildup of international reserve buffers over the 2000s, which was an important feature of the improved macro immune system, albeit not the only one. Nevertheless, some economies had witnessed rapid credit growth before the crisis, which seems to have deepened the extent of the collapse (Lane and Milesi-Ferretti, 2010).

[4] This shift in the net foreign asset position of emerging countries is the reverse of the exorbitant privilege documented for the U.S. (Gourinchas and Rey, 2007). Namely, the observation that during the last decades the U.S. has been increasing its share of low yield short-term liabilities (debt, trade credit, and bank loans) on its total gross foreign liabilities and simultaneously increasing its share of high yield long-term assets (equity and direct investment) on its total gross foreign assets. This change in the balance sheet allowed the U.S. to earn a significant excess return on assets over liabilities.

All the changes in the domestic and international fronts appear to have helped financially globalized emerging countries avoid the amplification of the external shock in the domestic economies and the materialization of domestic financial crises, as had often been the case in the past. As a result, most emerging countries came out of the crisis with strong balance sheets, which have contributed to a speedy recovery. This stands in sharp contrast with advanced countries, where domestic financial crises became a common feature during the global turmoil and where the fiscal stances deteriorated significantly. In particular, rich countries saw their recovery hampered by impaired balance sheets in financial intermediaries, households and, especially, the public sector. This is illustrated, for example, by the jump in (gross) public sector debt to almost 100 percent of GDP in the U.S. and to around 90 percent of GDP in the U.K.

The rest of this paper is organized as follows. Section 2 describes the cross-country incidence of the crisis and the post-crisis recovery. Section 3 describes and documents the transmission channels, and provides a simple econometric analysis of the cross-country correlates of growth collapses and recoveries. Section 4 discusses the resilience and policy responses of emerging economies to the 2008-2009 external shock. Section 5 concludes.

2. Performance during the 2008-2009 Crisis

This section documents the performance of emerging countries during the 2008-2009 crisis and the subsequent recovery. First, we revisit the claim that emerging countries fared substantially better than advanced countries during the downturn phase of the crisis. Next, we next show that the post-crisis recovery was indeed stronger and faster in emerging countries.

2.1 Performance during the Downturn

The 2008-2009 global crisis is one of the broadest, deepest, and most complex crises afflicting the world since the Great Depression (Almunia et al., 2009). The crisis originated in the relatively small U.S. subprime housing finance market, which represented about 15 percent of U.S. total residential mortgages in 2006. The latter, in turn, accounted for 25 percent of U.S. total debt.[5] After Lehman Brothers' collapse in September 2008, however, the crisis quickly spread across institutions, markets, and borders. There were massive failures of financial institutions and a collapse in asset values. For example, stock markets around the world fell over 30% between September and December 2008, with about US$ 18 trillion in G-7 stock market capitalization vanishing relative to pre-crisis levels. These developments in financial markets marked the end of the boom years of the mid-2000s. Moreover, while real world GDP grew, on average, at 3 percent between 2000 and 2008, real world GDP growth was -1.9 percent in 2009.

Although highly synchronized, the behavior of GDP growth appears to be heterogeneous across countries. In fact, recent research suggests that emerging countries fared substantially better than advanced countries during the downturn phase of the crisis. In general, the evidence shows that countries with higher GDP per capita experienced lower GDP growth.[6] For instance, emerging countries and low income countries grew on average 0.8 and 4.5 percent, respectively, significantly higher than the -3.5 percent growth rate observed advanced countries (top panel of Figure 1 and Table 1). Moreover, there is substantial heterogeneity across regions: while Asian

[5] Agarwal and Ho (2007).
[6] Claessens, Dell'Ariccia, Igan, and Laeven (2010), Frankel and Saravelos (2010), Lane and Milesi-Ferretti (2010), and Rose and Spiegel (2010a, 2010b, and 2010c).

countries experienced a growth rate of 5.1 percentage points, average GDP growth in the Latin America and the Caribbean region was -2 percentage points.[7]

These statistics on real GDP growth, however, hide the extent of growth deceleration during the crisis. When the cross-country performance is measured by comparing growth collapses, defined as the percentage point difference in real GDP growth rates between 2007 and 2009, the picture is different and points to greater degree of cross-country similarities. In contrast to the standard view, the top panel of Figure 2 shows that growth collapses were in fact slightly larger in emerging countries relative to advanced countries, 6.9 versus 6 percentage points respectively. On the bright side, low income countries suffered a smaller decline in GDP growth, of just 3.2 percentage points.[8]

A geographical parsing of the data reinforces this pattern, showing that no financially integrated emerging region was immune to the global crisis (top panel of Figure 3). Declines in real GDP growth rates were observed in all regions of the world. The Latin America and the Caribbean and Eastern Europe and Central Asia regions experienced greater growth collapses than those observed in advanced countries (-7.7 and -12.4 percentage points, respectively, in comparison to -6 percentage points). Although growth collapses were somewhat smaller in Asian countries and Middle East and African countries (-4.5 and -4.2 percentage points, respectively), these are significant declines in GDP growth rates that are obscured by only looking at plain GDP growth rates. That is, the deceleration in growth observed in 2009 was highly homogeneous across the board.

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[7] Throughout this section, each country's observation within each group is weighted by its level of GDP in 2007 measured in US$ relative to the group aggregate. Appendix Table 1 contains the income and regional classifications used.

[8] If simple averages are used instead, advanced economies actually have greater collapses. However, the difference in growth collapses between advanced and emerging economies is not statistically different from zero.

Interestingly, Figure 4 shows that most of the few countries that grew faster in 2009 compared to 2007 are low income countries. That figure also shows a statistically significant U-shape pattern of growth collapses versus income per capita. This observation is consistent with the claim that the largest growth collapses did not occur in the richest countries.[9] To make this claim more formal, we consider several tests. First, we run a linear regression of growth collapse on the logarithm of GDP per capita for those countries with GDP per capita above US$ 8,000. The slope coefficient of this regression is slightly positive but not statistically different from zero; thus, if anything, richest countries tended to have smaller, not greater growth collapses.[10] Second, in Table 2 we perform regressions of growth collapse on income dummies and, again, the dummies for advanced and emerging countries are not statistically different from each other. If anything, emerging countries suffered greater collapses. On the other hand, low income countries did suffer smaller collapses.[11] These findings stand in contrast with economic performance in previous crises episodes. In particular, the central panel of Table 2 shows regressions of growth collapses on income and regional dummies during the Russian/Asian crises of 1997-1998. During these crises, emerging and low income economies across all regions suffered very large growth collapses, while advanced countries suffered modest growth decelerations.

We interpret these findings as suggesting that, within the group of financially and trade integrated countries, the systemic and global dimensions of the crisis dominated country-specific strengths, leading to a highly synchronized and homogeneous deceleration of growth. On the

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[9] The U-shape remains even after dropping countries with a GDP collapse greater than 19 percentage points: Angola, Armenia, Estonia, Latvia, Lithuania, and Ukraine.

[10] This result also holds if we drop the countries mentioned in footnote 9.

[11] As a consistency check, we report in Table 1 several measures of GDP (growth, collapse, and recovery) by income groups and by regions. For example, we arrive at a similar conclusion if we define growth collapse as real GDP growth in 2009 minus average real GDP growth rate during 2000-2007: GDP collapse in advanced and emerging countries was about the same. One important difference, however, is that the collapse in Asian countries is now substantially lower, of about -2.6 percentage points.

other hand, lower income countries, being less integrated to the rest of the world, were relatively more isolated from the global shock and suffered smaller growth collapses.

2.2 Performance during the Recovery

The degree of heterogeneity observed in the recovery between advanced and emerging economies has been greater than that observed in the downturn. In particular, as the effect of the global systemic shock faded, the relative strengths of individual countries or regions might have played a fundamental role in the recovery. Heterogeneity in the rebound is observed not just between advanced and emerging countries, but also across emerging regions (Table 2 and bottom panel of Figure 1). Perhaps the most striking feature of the global recovery is the strength with which emerging economies resumed their high growth rates, instead of being driven solely by the rich countries, as was the case in previous global crises.

We first note that, on average, there was a large bounce-back effect in economic activity: countries that suffered greater collapses tend to be those that enjoyed larger growth recoveries, defined as GDP growth in 2010 minus GDP growth in 2009.[12] At the aggregate level, a comparison between the top and bottom panels of Figures 2 and 3 shows this correlation between growth collapses and growth recoveries. In fact, as illustrated in Figure 5, there is a clear negative association between the difference in real GDP growth rates between 2009 and 2007, and the growth recovery in 2010 relative to 2009. Only few countries suffered a simultaneous deceleration in growth between 2009 and 2007, and between 2010 and 2009.[13] The figure, however, shows substantial heterogeneity in the recovery across countries. Indeed, comparing

[12] For 2010, we use actual GDP figures or, if not available, Consensus Forecast or World Economic Outlook (IMF) estimates.
[13] These countries are Albania, Azerbaijan, Equatorial Guinea, Djibouti, Greece, Guyana, Haiti, Kyrgyz Republic, Pakistan, The Gambia, Uganda, and Vanuatu.

the top panel of Figure 6 with that of Figure 3, we observe that even though advanced countries and countries in the Eastern Europe and Central Asia region suffered large collapses, their expected recovery during 2010 and 2011 was not as strong as that in other emerging regions.

To discuss in more detail the speed of the recovery, we consider data on industrial production at a monthly frequency. These data allow us to construct different measures of the duration of the recession that cannot be constructed using annual observations. Figure 7 displays the evolution of industrial production across income groups relative to pre-crisis trends. The top left panel measures the level of industrial production in advanced economies together with a trend line constructed by computing the average growth rate observed between January 2005 and April 2008, the latter being the pre-crisis peak in industrial production. We also normalize the industrial production to 100 in April 2008. The upper right panel and lower left panel report the analogous numbers for emerging and low income economies respectively. The lower right panel displays year-on-year growth rates of industrial production minus the corresponding average over January 2005 to April 2008 in the three groups of countries. While a casual inspection of the data suggests that industrial production dropped the most in advanced countries, the lower right panel shows that the collapse in industrial production growth rates relative to their pre-crisis counterparts was similar in emerging and advanced countries. In particular, while industrial production in advanced and emerging countries dropped 21 percent and 14 percent from peak-to-trough, respectively, the collapse in industrial production growth relative to previous trends was 25.4 percent in advanced countries and 24 percent in emerging countries (first two columns of Table 3). As before, low income countries suffered smaller decelerations relative to both advanced and emerging economies.

The recovery in industrial production, however, happened earlier and more strongly in emerging than in advanced economies. For instance, the pre-crisis peak in industrial production took place around April 2008 for both advanced and emerging economies. But a sustained recovery started around January 2009 for emerging economies while advanced countries started to rebound 4 months later, in May 2009 (top panel of Figure 7). In other words, the recessionary phase of the business cycle lasted on average 9 months for emerging economies and 13 months for advanced countries. Likewise, by November 2009 emerging countries achieved their pre-crisis levels of industrial production, while advanced countries were still well below their pre-crisis levels by December 2010.[14] Moreover, emerging economies witnessed growth rates in industrial production even higher than pre-crisis rates, allowing them to recover part of the lost ground. In particular, while industrial production in advanced economies was over 16 percentage points below trend in November 2011, industrial production in emerging economies was only 7 percentage points below trend at that time.

The same message follows when looking at GDP growth for 2010 and forecasts for 2011 (lower panel of Figure 1). GDP figures show an average growth rate of more than 6.5 percent (5.7 percent) in 2010 (2011) for emerging economies versus only 2.6 percent (2.2 percent) for advanced countries. Looking at growth recoveries (growth in 2010 minus growth in 2009), however, shows that advanced and emerging countries enjoyed a similar acceleration in their growth rates (lower panel of Figure 2). Of course, this observation reflects to some extent the bounce-back effect discussed earlier and the observation that growth collapses were similar in advanced and emerging countries. Nevertheless, the recovery was heterogeneous across countries and regions (Figures 3 and 5).

[14] Alternative measures capturing the length of the recession, displayed in Table 3, confirm that emerging countries started to recover earlier than advanced countries.

This last observation implies that not all countries will recover by 2010 or 2011 all the losses derived from the crisis. One, albeit imperfect, way of capturing this cost is assessing whether countries have or will have recovered to a reference *level* of economic activity. To this end, we consider two reference levels of GDP: (i) the GDP level that was reached in 2008 (i.e., the pre-crisis annual peak) and (ii) the level that would have been reached in 2010-2011 had countries maintained the average growth rates that they had registered in the 2000-2007 period. The latter reference level is an estimate of trend GDP.

Consider first the expected levels of GDP in 2010-2011 relative to that in 2008 (top panel of Figure 6). In 2010, the average levels of GDP in advanced countries and in Eastern Europe and Central Asia are estimated to remain below their 2008 levels, by -1 and -1.6 percent, respectively. In contrast, the GDP of the remaining developing regions will comfortably exceed that of 2008 by 2010. In 2011, however, all regions are expected to exceed their 2008 GDP levels, although with substantial heterogeneity: at one extreme, the 2011 level of GDP in Asia is expected to be over 23 percentage points above its 2008 value; at the other extreme, GDP in advanced countries is expected to be just 1.2 percentage points above its 2008 value. Similar cross-country patterns emerge if the comparison is made against the GDP level that would have been achieved had the crisis not taken place and had countries continued to grow at the average rates achieved in the 2000-2007 period (lower panel of Figure 6). The difference between expected GDP based on forecast growth rates and the counterfactual GDP levels is a rough measure of the output cost of the global crisis. By far, the region most affected by the global crisis is Eastern Europe and Central Asia, whose expected GDP levels are about 14 and 16 percent below trend in 2010 and 2011, respectively, should the crisis had never happened. Interestingly, the regions that suffered smaller output losses, as defined by the previous measures, are those that faced the global crisis with better macroeconomic fundamentals and that were able to perform countercyclical policies. We discuss these issues in Section 4.

3. Transmission Channels of the Global Shock

The classic literature on the transmission of shocks across countries focuses, for the most part, on shocks originated in emerging economies that get spilled over to other emerging economies. This time, however, the shock started in the center of the financial system, was of a larger scale, and was transmitted worldwide mostly through trade and financial factors. These channels are somewhat different from those analyzed in the classic literature. Although briefly examined here, these mechanisms seem to still have been active during the 2008-09 financial crisis.

3.1. The Trade Channel

As the recession deepened in advanced countries during the second half of 2008, and a series of policy announcements possibly amplified the uncertainty about the length and depth of the recession, consumers in advanced countries suffered a large negative wealth effect and abruptly demanded fewer goods from the rest of the world.[15] As global demand plummeted, the price of these goods and other commodities declined as well, leading to a drop in trade volumes and prices. Both effects implied that exporter countries received fewer dollars for the fewer goods they sold. For example, when the U.S. economy began its recession in late 2007 and as its economic slowdown deepened, it not only demanded fewer exports from China, but it also depressed commodity prices, hitting all net commodity exporters regardless of the final destination of their exports. Naturally, countries more open to trade and dependent on exports

[15] Taylor (2009 and 2010) argues that the U.S. government's announcement that "there is systemic risk" and that "the Great Depression is coming" led to worldwide panic and extreme uncertainty.

were hit severely, as witnessed by the sudden sharp contractions in East Asia. The collapse in export volumes is shown in the top panel of Figure 8.

The worldwide collapse in trade occurred almost simultaneously with the generalized decline in industrial production (Figure 7). For example, global export volumes fell by around 25 percent between April 2008 and January 2009, and started to rebound thereafter, mirroring the movements in industrial production. Emerging economies suffered a collapse in trade volumes similar to that in advanced countries: between April 2008 and January 2009, export volumes declined by around 22 percent in both groups. In advanced countries, however, the decline in export volumes lasted longer than in the other regions, consistent with the slower recovery observed in their industrial production. Perhaps surprisingly, low income countries suffered a collapse in trade similar to those in advanced and emerging countries but lower GDP collapses. This could be explained by the observation that these economies are relatively closed to trade and, therefore, the drop in export volumes may have had a small impact on their GDPs.

As expected, the large decline in export volumes was accompanied by a drop in commodity prices (Panel B of Figure 8). This negative impact on commodity prices hit all commodity exported regardless of the final destination of their exports. The price of oil fell more than 70 percent from peak (July 2008) to trough (December 2008). Similar declines were observed, for example, in the price of copper (68 percent from April to December 2008) and soybean (53 percent between July and December 2009). These lower export prices might have amplified the direct impact of a lower global demand, spreading the global crisis even further. Moreover, the negative income shock suffered by commodity exporters might have lowered their demand for imports from other countries, reinforcing the decline in global demand.

3.2. The Financial Channel

The financial channel is more complex and operates through the financial account that connects economies to the international financial system. When a crisis of global dimensions affects the world economy, like the post Lehman Brothers panic, the negative wealth effects suffered in high income countries lead to a decrease in foreign investments and, therefore, to less available capital, especially for emerging countries. This direct financial effect can be amplified by mechanisms that affect how financial intermediaries typically operate. For example, international investors (banks, mutual funds, hedge funds, and so forth) might have to reduce their exposures to emerging economies in response to shocks affecting the size, liquidity, and quality of their assets. Likewise, leveraged investors, such as banks and hedge funds, might face regulatory requirements, internal provisioning practices, or margin calls that prompt them to rebalance their portfolios by selling their asset holdings in other economies. In addition, international banks and other agents might generate capital outflows during crises, for example if a parent bank in another country finds itself in need to boost its capital. Therefore, losses in a crisis-hit economy might lead international investors to sell off assets or curtail lending in other economies as well.

Several developments in the global financial system during the last two decades could have amplified the transmission of the shock. In particular, globalization and securitization (the process of transforming illiquid assets, like mortgages, into traded securities) led to a complex net of interconnections among financial institutions across countries. The complex and multiple layer structure of the securitization process led to opaque and hard-to-value assets on the balance sheet of financial institutions. Simultaneously, these institutions increased substantially their leverage, financing their portfolios with less capital and more short-term debt, reflecting a moral hazard problem due to implicit government guarantees. With Lehman Brother’s bankruptcy in

September 2008, investors reassessed the expectation of whether large and complex financial institutions would be allowed to fail, leading to more uncertainty about the consequences of possible failures of highly interconnected banks. As a consequence, spreads in the interbank market skyrocketed and banks with large exposure to non-performing loans suffered substantial declines in their short-term funding. New information brought with Lehman's collapse along with the uncertainty involved in the true value of the assets of financial institutions prompted a re-pricing of risk that induced a cycle of deleveraging as financial institutions found difficulties in rolling over their short-term liabilities. As large financial institutions deleveraged, credit to the non-financial sector plummeted as well. Simultaneously, as a response to higher and uncertain risks, investors pulled out from risky assets, both in advanced and emerging countries, and purchased assets perceived to be safer (mostly, U.S. T-bills).[16]

This generalized increase in uncertainty, re-pricing of risk, and flight-to-quality effects were manifested in the large declines of asset prices and capital flows around the world. In effect, there was a significant retrenchment by foreign investors with large declines in capital inflows by foreign investors across advanced and emerging economies (lower panel of Figure 8). Advanced countries experienced a large drop in capital inflows between the first and last quarter of 2008, of the order of 12.6 percentage points of GDP. The decline in emerging countries, while similar, was concentrated in the latter part of 2008: capital inflows declined by 11.2 percentage points of GDP between the third and fourth quarter. On the other hand, low income economies suffered a sudden but short-lived drop in capital inflows in the first quarter of 2009, with flows

[16] Many observers have argued that the financial channel has been the main channel of transmission of shocks across countries during the 1990s (Baig and Goldfajn, 1999; Kaminsky and Reinhart, 2000; Van Rijckeghem and Weder, 2001; and Caramazza, Ricci, and Salgado, 2004). See also Kaminsky and Reinhart (2000) and Martinez Peria, Powell, and Vladkova-Hollar (2005) on the role of banks; Borensztein and Gelos (2003), Kaminsky, Lyons, and Schmukler (2004), and Broner, Gelos, and Reinhart (2006) on the role of mutual funds, among many others. Similar channels also operated during the global crisis.

returning to their previous levels by the second quarter of 2009. Moreover, while capital was flowing out of the financially open economies during the peak of the turmoil, stock markets collapsed in a highly synchronized way across regions and credit growth stagnated. This suggests a reinforcing pattern in which a decline in capital flows might have triggered a collapse in asset prices and a generalized deterioration in domestic financial systems, which in turn could have amplified the capital outflows due to margin calls, capital requirements, and so forth.

3.3 Correlates of Growth Collapses and Growth Recoveries

In this subsection, we perform cross-country regressions to measure the impact of different correlates on growth collapses and growth recoveries. These correlates are related to both the trade and financial mechanisms documented above. To reduce concerns of endogeneity, independent variables are measured at their 2007 values throughout this section.

Table 4 reports regressions of growth collapses on country-group dummies and a number of variables capturing the transmission channels. In almost all specifications considered, we cannot reject the hypothesis that advanced and emerging countries suffered similar collapses, even after controlling for a number of variables. These regressions also suggest that economies more open to trade, with larger current account deficits, and a higher growth rate of domestic credit relative to GDP over 2003-2007 suffered greater growth collapses. In these estimations, reserves and a specific measure of financial openness are not statistically significant. True, there are combinations of variables where one can find a statistically significant coefficient for these variables, but that significance is not robust to changes in the sample size or the independent variables used in the regressions.

In Table 5 we report cross-country regressions analyzing the recovery, defined as GDP growth in 2010 minus GDP growth in 2009. Consistent with the graphical analysis shown above, we find a strong bounce-back effect: economies that suffered larger collapses in real GDP growth between 2007 and 2009 are expected to have stronger growth recoveries. Besides this bounce-back effect, there is some evidence that countries with higher reserves as a fraction of GDP were those expecting stronger recoveries. The remaining variables are not statistically different from zero except for the advanced economies dummy, which in several regressions is positive and significant. According to these regressions, advanced countries seemed to enjoy a greater growth recovery than emerging economies. While, at first sight, this finding seems inconsistent with those based on industrial production data, it is not. As we have shown, emerging economies started to recover strongly since the beginning of 2009. Therefore, these regressions, which define the recovery as growth in 2010 minus growth in 2009, do not capture that emerging economies started to recover earlier than advanced countries.

4. Resilience and Policy Responses to the Crisis

Section 2 showed that, during the crisis, emerging market economies suffered growth collapses comparable, or even larger, to those experienced by advanced economies. Yet, emerging economies were typically able to recover faster and more strongly, reaching, and in some cases even surpassing, pre-crisis output levels, and thus converging sooner to the trend GDP. In this section, we document a structural break in the way these economies have responded to the global shock. In particular, contrary to past experiences, emerging economies were able to conduct countercyclical policies to mitigate the impact of the crisis, and hence became more similar to developed countries.

Once a country is hit by an external shock, the way it performs and how resilient it is depends, to a large extent, on its economic fundamentals. In previous crisis episodes, many emerging countries were usually caught with substantial macroeconomic and financial vulnerabilities that sapped their ability to undertake countercyclical policies. They were instead compelled to respond procyclically, raising interest rates, cutting fiscal spending, or raising taxes in order to contain and cope with capital outflows, currency pressures, and low international reserve levels. Furthermore, in many cases, even these measures were unable to prevent financial meltdowns. As argued by Reinhart and Reinhart (2008), the lack of access to world capital markets during turbulent times may have hampered the ability of governments to conduct countercyclical fiscal policies. Moreover, Kaminsky, Reinhart, and Vegh (2004) document that emerging economies have typically followed pro-cyclical policies in bad times.

In contrast with the past, the global financial crisis found many emerging countries with the required credibility and space to conduct countercyclical monetary and fiscal policies and a more consolidated financial stance, which allowed them to partially offset the global shock. Furthermore, at least in part because of the many crises suffered in the 1990s and early 2000s, many emerging countries became better prepared to withstand external shocks and were consequently in relatively stronger positions when the crisis erupted. Several factors proved to be useful during late 2008 and early 2009, creating buffers between the external conditions and the local economy. Broadly speaking, these factors include developments in (i) monetary and exchange rate policies, (ii) fiscal policy, and (iii) a sounder external and domestic financial position.

4.1. Monetary and Exchange Rate Policy

Perhaps one of the most surprising features of the emerging country responses to the recent global crisis was the drastic reduction in interest rates. In previous crises, emerging countries were forced to increase interest rates to contain capital outflows and the drainage in reserves as their currencies came under attack. This time, the recently acquired credibility and institutional capacity of their central banks was an essential asset to conduct an active monetary policy when the world economy came to a halt. As displayed in Figure 9, inflation targeting countries in Asia and Latin America were able to implement drastic reductions in their monetary policy rates. In addition, Table 6 shows the behavior of money market interest rates during the 2008-2009 and previous crisis episodes in Asia, Eastern Europe and Central Asia, and Latin America and the Caribbean. The top right panel displays average interest rates during the 12 months before and after a number of crises. For example, during the 1994 Mexican crisis, Asian, and Latin American countries had to increase their interest rates, while during the 2008-2009 crisis, these regions decreased their rates. Note, also, that while Eastern Europe and Central Asia countries were able to reduce interest rates during the Mexican crisis, money market interest rates increased considerably during the 2008-2009 crisis. The lower right panel shows a similar picture, but displaying peak-to-trough changes in money market rates.

The exchange rate regime was a key factor that contributed to the ability to lower interest rates. With the exception of Eastern Europe, most (financially globalized) emerging countries have moved towards more flexible exchange rate regimes, especially after the emerging market crises of the 1990s. This movement was feasible for at least two reasons: first, central banks improved their independence, credibility, and institutional capacity; and second, these countries were able to reduce currency mismatches in the government and private sectors' balance sheets through the deepening of local currency debt markets. These developments implied that exchange rate fluctuations had less adverse balance sheet effects. As a result of these more flexible monetary regimes, exchange rates were allowed to depreciate significantly in 2008 thereby cushioning the global shock and, at the same time, helping mitigate the deterioration of the external balance. This depreciation is in stark contrast with previous crisis episodes (Figure 10 and Table 6).

4.2. Fiscal Policy

Previous to the global crisis, many emerging economies improved their fiscal stance and acquired enough fiscal space to design and implement packages to counteract the contraction in the world economy. This is displayed in Figure 11, which shows a measure of fiscal space across income groups and regions as defined in Aizenman and Jinjarak (2010). This fiscal space measure, defined as total public debt divided by average tax revenues during 2000-2007, measures the number of tax years required to fully pay the stock of public debt if all revenues are assigned for that purpose. Interestingly, the figure shows that, during the global crisis, emerging and low income regions had more fiscal space than advanced countries to perform countercyclical fiscal policies. Figure 12 shows estimated costs of the fiscal discretionary measures that many emerging countries undertook in 2009, compared to those of other G-20 countries. Many emerging countries announced strong countercyclical fiscal policies, even larger than those in several advanced countries. This strong expansion in fiscal spending in emerging countries contrasts with the usual fiscal consolidations observed during previous crisis episodes. In the past, emerging countries typically followed procyclical fiscal policies (Kaminsky, Reinhart, and Vegh, 2004), and particularly so during crisis episodes.

4.3 Financial Factors

Two key developments in the management of their financial account have helped emerging economies reduce their vulnerabilities to external shocks. First, many countries improved their current account positions, partly because of major terms-of-trade improvements, thereby becoming less dependent on foreign financing. Second, and perhaps more importantly, many emerging economies have steadily changed the structure of their external assets and liabilities, making the balance sheet effects work in their favor this time. As Figure 13 shows, there was a switch of foreign liabilities from debt to equity while debt assets in foreign currency were accumulated to levels that exceeded foreign debt liabilities. As currencies depreciated, the local currency value of their external assets increased, while that of their debt liabilities shrunk. In addition, with the collapse in growth and in equity markets, the local currency value of emerging economies' equity liabilities also contracted. Of course, emerging economies were able and willing to let their currencies depreciate precisely because the change in foreign assets and liabilities did not create concerns of negative balance sheet effects. In contrast, developed countries increased their debt liabilities vis-à-vis emerging countries, in part reflecting the large debt flows used to finance the U.S. current account deficit. Simultaneously, however, advanced countries became net claimants on emerging countries on the equity side.

The other side of the coin of this safer form of international financial integration was the accumulation of foreign reserves, which picked up dramatically in the emerging world since the Asian currency crises of the late 1990s (reserves are measured as the vertical distance between the black and grey lines in Figure 13). Reserve accumulation served two purposes in emerging countries: first, it slowed down the appreciation of the domestic currency during the pre-crisis expansionary period; and second, it served as a self-insurance mechanism during the crisis, deterring currency and banking panics. In fact, when the global crisis erupted, many emerging countries held international reserves in excess of their stock of short-term foreign liabilities. In practice, it eliminated concerns about debt rollover difficulties, giving investors less incentives to attack domestic currencies. At the same time, international reserves also gave central banks a significant room to contain the depreciation of their currencies during the crisis.

An important factor in allowing exchange rates to depreciate was the shift in emerging country borrowing from foreign currency towards domestic currency (Figures 14 and 15). This change in the denomination of debt has avoided the negative balance sheet effects common in previous crises, when devaluations led to debt overhang problems. In fact, the current discussions on the European crises partially miss this point. For instance, even if Greece were allowed to devalue its currency (or other countries like Portugal and Spain managed to reduce local wages and prices) to become more competitive and boost growth through the trade channel, the fact that the debt is denominated in Euros would increase the real financial burden. Consequently, this would make the necessary price adjustment even larger and possibly trigger the beginning of a vicious cycle (de la Torre, Levy Yeyati, and Schmukler, 2003 and 2010). Similarly, some emerging countries were able to increase the average maturity of domestic and international private debt, also reducing concerns about debt rollover difficulties (Figures 16 and 17). For example, relative to the 1990s, countries in the Latin America and the Caribbean region have been able to increase the average maturity of international debt from 5.4 years to 7.7 years. We note, however, that the increase in the maturity was not homogeneous across regions, as can be observed in the lower maturity of international private debt in the Middle East and Africa region.

The soundness of domestic financial sectors also improved in several emerging countries due to better regulation and supervision, more prudent practices by financial intermediaries, and abundant local liquidity. When the international wholesale interbank market dried up in the last quarter of 2008, banks that relied more on this short-term wholesale market were hit harder and suffered rollover problems (Raddatz, 2010). Thus, even as the external environment deteriorated sharply, local financial systems remained on sound footing and depositors did not flee the domestic banking system (unlike during previous crises). Perhaps for the first time in recent decades, the domestic financial systems of many emerging countries at least did not amplify the shock emanating from the international financial system.

5. Conclusions

This paper shows that, contrary to common perceptions, emerging economies were hit by the global crisis as much as developed countries. As the world economy collapsed, both emerging and developed economies witnessed declines in growth rates of a similar magnitude when compared to their pre-crisis growth rates. Since emerging economies were growing at a higher rate, they continued to do so during the crisis, which might have prompted many to conclude that they were more resilient to it. Furthermore, the rebound from the crisis had some similarities between emerging countries and developed countries, in the sense that the size of the collapse in each country explains part of the post-crisis performance. However, one silver lining for emerging economies is that they started the recovery faster, returning to their higher growth rates. Moreover, they have even recovered part of the lost ground, signaling a stronger recovery, and thus expecting to reach their pre-crisis output trend sooner. Nevertheless, there is significant heterogeneity among emerging countries with those in Eastern Europe and Central Asia faring much worse. The crisis was transmitted across countries mostly through trade and financial factors. This likely contributed to the better performance of low income countries, which were less connected to the epicenters of the crisis in the main industrialized economies.

Hopefully, this paper helps clarify part of the recurrent discussion of resilience of emerging economies to the global crisis. Unlike several estimates, it was difficult for emerging countries to decouple from the world economy at the same time that they were part of the global production system, used foreign funds to finance investments, and held assets abroad. Any significant collapse of the global demand and in the financial centers was likely to get transmitted to countries linked to them. Emerging economies fell in this category. This type of reaction was what the world experienced during the recent global crisis and is likely to experience if a similar shock materializes again in the future. The faster recovery of industrial production in emerging economies can be partly explained by a recomposition of inventories, which were initially depleted and needed restocking once it became obvious that the world economy would eventually stop its freefall.

Notwithstanding the collapse, emerging economies were indeed more resilient this time around, not so much relative to developed countries but, more importantly, relative to their own past. In other words, during the global crisis, emerging economies were able to become more similar to developed countries and did not magnify the external shock. While in the past, emerging economies would fall more than developed countries, with the financial system and the public sector amplifying the shock due to their weak stances, this time the two groups of countries fell similarly. Furthermore, emerging economies were prepared and able to use a wide range of countercyclical policies, which might have helped soften the negative effects of the crisis. While these tools have been available to developed countries for a long time, emerging economies had to overcome their past history of procyclicality. The good stance of emerging economies before the global crisis and the policies implemented during it were likely reflected in the post-crisis performance.

The continuing integration to global trade and global financial markets pose a trade off to developing countries. While integration tends to be associated with higher growth and other positive spillover effects, it also makes countries susceptible to foreign shocks and contagion effects. To the extent that the world economy moves to a more “multi-polar world,” with several growth poles (such as, Brazil, China, Germany, India, and the U.S.) as engines of world growth, the risk of a synchronized collapse diminishes, assuming that the different growth poles are not perfectly correlated.

Being more open to foreign shocks, makes the lessons from the global crisis more telling. Emerging countries would probably try to keep improving their external positions, saving more, accumulating reserves, expanding their fiscal space, reducing credit mismatches (through less currency and maturity exposure), building buffers in the financial system, and gaining confidence and credibility in their monetary and financial policies, among other things. These policies seemed to have been helpful during the global downturn and the incentives for emerging countries to stay in the same path only became more obvious. Unfortunately, some of these policies entail pecuniary and opportunity costs, like the costs of hoarding reserves, those related to developing local currency and long-term debt markets, and those implied by a slowdown in the growth rate of credit and consumption. Moreover, the actions by some countries have some negative spillover effects across countries. For example, by limiting foreign capital some countries might push capital to flow to neighboring countries, exerting more pressure on their domestic currencies. In a world where goods and capital continue to flow increasingly across nations, having a broad framework to understand the general equilibrium effects (within and across countries) of the policies adopted to deal with globalization is an avenue for fruitful new research.

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Table 1
Growth, Collapse, and Recovery

	By Region					By Income Level		
	Advanced Economies	**Asia**	**Eastern Europe & Central Asia**	**Latin America & Caribbean**	**Middle East & Africa**	**Advanced**	**Emerging**	**Low Income**
Average Growth in 2000-2007	2.4	7.7	6.1	3.6	5.5	2.4	6.2	6.8
Growth 2008	0.3	6.5	4.1	4.1	5.3	0.3	5.3	6.1
Growth 2009	-3.5	5.1	-5.4	-2.0	1.6	-3.5	0.8	4.5
Growth 2010	2.6	8.8	3.9	5.8	4.3	2.6	6.5	5.6
Growth 2011	2.2	7.5	4.0	4.2	5.1	2.2	5.7	6.2
Growth Collapse								
Growth in 2009 Minus Growth in 2007	-6.0	-4.5	-12.4	-7.7	-4.2	-6.0	-6.9	-3.2
Growth in 2009 Minus Average Growth in 2000-2007	-5.9	-2.6	-11.5	-5.6	-4.0	-5.9	-5.4	-2.6
Growth Recovery								
Growth in 2010 Minus Growth in 2009	6.1	3.7	9.3	7.8	2.7	6.1	5.7	1.1
Growth in 2011 Minus Growth in 2009	5.7	2.4	9.4	6.3	3.5	5.7	4.9	1.7

This table shows real GDP growth rates, real GDP average growth rates, and two definitions of real GDP growth collapse and GDP growth recovery. 2007, 2008, and 2009 data come from the IMF's World Economic Outlook (October 2010). The projections for 2010 and 2011 come from Consensus Forecasts (January 2011) and the IMF's World Economic Outlook (October 2010) for countries not in the Consensus Forecasts sample. The numbers are shown as percentage points of GDP. Regional and income level averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing. Countries not classified as advanced are assigned to regions according to the World Bank's July 2010 classification. "Middle East & Africa" includes "Middle East & North Africa" and "Sub-Saharan Africa." "Asia" includes "East Asia & Pacific" and "South Asia."

Table 2
Income and Regional Differences in Real GDP Growth Collapse and Recovery

	2008-2009 Crisis					Asian-Russian Crisis			2008-2009 Crisis				
	Real GDP 2009	Collapse	Collapse	Collapse	Collapse	Collapse	Collapse	Collapse	Real GDP 2010	Recovery	Recovery	Recovery	Recovery
Advanced Economies	-3.667 ***	6.910 ***				1.236 ***			1.608 ***	5.275 ***			
	(0.443)	(0.568)				(0.307)			(0.426)	(0.585)			
Emerging Economies	-1.071 *	7.553 ***				6.879 ***			3.655 ***	4.726 ***			
	(0.559)	(0.660)				(1.421)			(0.323)	(0.493)			
Low Income Economies	2.932 ***	2.727 ***				5.386 ***			4.274 ***	1.342 **			
	(0.581)	(0.666)				(0.766)			(0.407)	(0.529)			
Advanced Economies			6.910 ***				1.236 ***				5.275 ***		
			(0.572)				(0.309)				(0.589)		
Middle East & Africa			2.583 ***				7.534 ***				1.779 ***		
			(0.625)				(2.125)				(0.382)		
Asia			4.226 ***				6.410 ***				2.692 ***		
			(0.945)				(1.090)				(0.949)		
Eastern Europe & Central Asia			12.550 ***				5.518 ***				6.876 ***		
			(1.287)				(0.883)				(1.160)		
Latin America & Caribbean			6.650 ***				4.498 ***				4.063 ***		
			(0.612)				(0.633)				(0.731)		
Log of GDP per Capita				2.177 ***	4.659 ***			1.011				1.567 ***	2.617 ***
				(0.291)	(1.000)			(1.314)				(0.230)	(0.714)
Squared Log of GDP per Capita					-0.736 ***			-0.325					-0.312 *
					(0.269)			(0.275)					(0.187)
Constant				1.850 ***	0.923			5.408 ***				0.789	0.396
				(0.625)	(0.728)			(0.978)				(0.517)	(0.591)
Number Of Observations	170	170	170	170	170	171	171	171	170	170	170	170	170
R-squared	0.195	0.569	0.674	0.212	0.250	0.247	0.252	0.003	0.613	0.479	0.503	0.186	0.198
Adjusted R-squared	0.181	0.562	0.664	0.207	0.241	0.233	0.230	-0.009	0.606	0.469	0.488	0.181	0.188
Wald Test: Advanced=Emerging	13.229 ***	0.546				15.069 ***			14.654 ***	0.513			
Wald Test: Advanced=Low Income	81.537 ***	22.838 ***				25.279 ***			20.467 ***	24.837 ***			

This table shows ordinary least square regressions of 2009 and 2010 real GDP, and collapse and recovery measures around different crises, against income-level and regional dummies and GDP per capita. Collapse during the 2008-2009 crisis is defined as the difference between the real GDP growth rate in 2009 vis-à-vis the real GDP growth rate in 2007. Collapse during the Asian and Russian crisis is defined as the difference between the maximum and minimum growth rates between 1996 and 1999, considering the monotonic declines in growth rate. Recovery during the 2008-2009 crisis is defined as the difference between the expected real GDP growth rate in 2010 vis-à-vis the real GDP growth rate in 2009. The bottom lines show F statistics for Wald tests on whether the coefficient of the advanced economies dummy is equal to the coefficient of the emerging economies or low income economies dummies. Actual real GDP growth rates data come from the IMF's World Economic Outlook (October 2010). For countries not in the World Economic Outlook sample, 2010 data are projections from Consensus Forecasts (January 2011). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing. Countries not classified as advanced are assigned to regions according to the World Bank's July 2010 classification. "Middle East & Africa" includes "Middle East & North Africa" and "Sub-Saharan Africa." "Asia" includes "East Asia & Pacific" and "South Asia." Robust standard errors are in parentheses. *, **, and *** mean significant at 10%, 5%, and 1%, respectively.

Table 3
Post-Crisis Recovery

	Extent of Collapse		Length of Recovery		
	Collapse in IP Level (Peak to Trough)	Collapse in YOY IP Growth Rate	No. of Months to Recover Half of the Collapse in IP Level	No. of Months to Recover Half of the Collapse in IP Growth Rate	No. of Months to Achieve Pre-Crisis Average Growth Rate
Advanced Economies	-21.0%	-25.4%	12.6	6.4	11.1
Emerging Economies	-13.8%	-24.0%	5.7	6.7	10.3
Low Income Economies	-11.9%	-18.7%	3.7	2.6	1.2

This table shows different measures for the extent of the collapse and the length of the recovery in industrial production (IP) levels and growth rates across income levels around the 2008-2009 crisis. The first column shows the percentage change in the IP level from the 2008 peak to the trough. The second column shows the difference in IP year-over-year (YOY) growth rates between the 2008 peak and the trough. The third column shows the number of months (since the IP level trough) necessary for a country to recover half of the collapse in its IP level. The fourth column shows the number of months (since the IP YOY growth rate trough), necessary for a country to recover half of the collapse in its IP YOY growth rate. The fifth column shows the number of months (since the IP YOY growth rate trough), necessary for the IP YOY growth rate of a country to recover to the average pre-crisis IP YOY growth rate. Average pre-crisis YOY IP growth rates are calculated across the January 2005 to April 2008 period. IP data come from the World Bank's Global Economic Monitor. Income level averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing.

Table 4
Correlates of Real GDP Growth Collapse

	2008-2009 Crisis									
	Collapse	Collapse	Collapse	Collapse	Collapse	Collapse	Collapse	Collapse	Collapse	Collapse
Advanced Economies	5.163 ***	7.195 ***	6.831 ***	5.159 ***	0.325	5.430 ***	5.518 ***	4.248 ***	6.007	6.429
	(0.889)	(0.622)	(0.570)	(0.548)	(5.163)	(0.890)	(0.905)	(0.839)	(5.428)	(5.941)
Emerging Economies	5.536 ***	8.210 ***	7.356 ***	6.024 ***	3.454	6.362 ***	5.851 ***	4.884 ***	6.773	6.140
	(1.052)	(1.045)	(0.626)	(0.630)	(4.115)	(1.223)	(1.071)	(0.918)	(4.215)	(4.378)
Low Income Economies	0.976	3.618 ***	2.078 ***	1.078	-0.822	1.909 **	0.824	0.085	2.136	0.601
	(0.837)	(0.808)	(0.774)	(0.722)	(3.788)	(0.866)	(0.835)	(0.869)	(3.909)	(4.089)
De Facto Trade Openness (Exports + Imports, as % of GDP)	0.020 **					0.022 **	0.015 *	0.012	0.040 **	0.035 **
	(0.009)					(0.009)	(0.009)	(0.009)	(0.016)	(0.017)
Reserves (as % of GDP)		-0.036				-0.051				-0.050
		(0.030)				(0.032)				(0.046)
Current Account (as % of GDP)			-0.086 ***				-0.076 **			-0.016
			(0.032)				(0.032)			(0.059)
Growth of Credit (2003 to 2007, as % of GDP)				6.472 ***				6.239 ***		10.520 ***
				(1.856)				(1.892)		(2.916)
Log of de Facto Financial Openness (as % of GDP)					1.065				-0.403	-0.633
					(0.843)				(1.018)	(1.073)
Number Of Observations	170	153	170	148	104	153	170	148	104	88
R-squared	0.580	0.569	0.589	0.634	0.654	0.582	0.595	0.638	0.671	0.753
Adjusted R-squared	0.570	0.558	0.579	0.624	0.640	0.568	0.583	0.625	0.655	0.728
Wald Test: Advanced=Emerging	0.184	0.940	0.381	1.274	4.498 **	0.807	0.155	0.700	0.206	0.026
Wald Test: Advanced=Low Income	24.741 ***	15.326 ***	24.838 ***	24.061 ***	0.338	15.777 ***	25.542 ***	25.493 ***	3.967 **	6.440 **

This table shows ordinary least square regressions of a real GDP growth collapse measure around the 2008-2009 crisis, against income-level and regional dummies, and other trade and financial controls. Collapse during the 2008-2009 crisis is defined as the difference between the real GDP growth rate in 2009 vis-à-vis the real GDP growth rate in 2007. "Log of de Facto Financial Openness (as % of GDP)" is defined as the sum of the stock of foreign assets and liabilities, scaled by GDP. The data come from Lane and Milesi-Ferretti (2007). The bottom lines show F statistics for Wald tests on whether the coefficient of the advanced economies dummy is equal to the coefficient of the emerging economies or low income economies dummies. 2009 and 2007 real GDP growth rates data come from the IMF's World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing. Robust standard errors are in parentheses. *, **, and *** mean significant at 10%, 5%, and 1%, respectively.

Table 5
Correlates of Real GDP Growth Recovery

	2008-2009 Crisis									
	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery
Real GDP Growth Collapse	0.494 ***	0.503 ***	0.508 ***	0.521 ***	0.573 ***	0.503 ***	0.504 ***	0.520 ***	0.578 ***	0.668 ***
	(0.062)	(0.062)	(0.068)	(0.065)	(0.062)	(0.065)	(0.069)	(0.066)	(0.060)	(0.062)
Advanced Economies	1.613 **	1.473 **	1.782 ***	2.788 ***	1.412	1.499 *	1.464 *	2.702 ***	0.797	-0.204
	(0.778)	(0.693)	(0.673)	(0.725)	(3.181)	(0.766)	(0.819)	(0.797)	(3.562)	(3.500)
Emerging Economies	0.708	0.164	0.933 **	1.009 **	0.820	0.191	0.567	0.902	0.444	-1.380
	(0.644)	(0.630)	(0.428)	(0.429)	(2.488)	(0.737)	(0.665)	(0.662)	(2.711)	(2.834)
Low Income Economies	-0.253	-0.444	0.100	0.318	-0.806	-0.417	-0.220	0.220	-1.121	-2.177
	(0.617)	(0.579)	(0.517)	(0.562)	(2.361)	(0.645)	(0.622)	(0.670)	(2.587)	(2.945)
De Facto Trade Openness (Exports + Imports, as % of GDP)	0.003					0.000	0.004	0.001	-0.004	-0.016
	(0.006)					(0.005)	(0.006)	(0.006)	(0.010)	(0.012)
Reserves (as % of GDP)		0.042 **				0.042 **				0.063 *
		(0.020)				(0.020)				(0.035)
Current Account (as % of GDP)			0.019				0.021			-0.036
			(0.024)				(0.024)			(0.057)
Growth of Credit (2003 to 2007, as % of GDP)				-1.062				-1.079		-2.125
				(1.014)				(1.021)		(1.546)
Log of de Facto Financial Openness (as % of GDP)					-0.015				0.137	0.456
					(0.522)				(0.662)	(0.647)
Number Of Observations	170	153	170	148	104	153	170	148	104	88
R-squared	0.696	0.708	0.698	0.702	0.770	0.708	0.698	0.702	0.771	0.788
Adjusted R-squared	0.687	0.699	0.688	0.692	0.759	0.697	0.687	0.690	0.757	0.764
Wald Test: Advanced=Emerging	2.036	3.410 *	1.895	6.014 **	0.388	3.378 *	2.093	5.795 **	0.105	0.979
Wald Test: Advanced=Low Income	7.067 ***	6.801 **	4.620 **	8.585 ***	2.554	6.762 **	4.619 **	8.553 ***	1.705	1.635

This table shows ordinary least square regressions of a real GDP growth recovery measure around the 2008-2009 crisis, against a growth collapse measure, income-level and regional dummies, and other trade and financial controls. Recovery during the 2008-2009 crisis is defined as the difference between the expected real GDP growth rate in 2010 vis-à-vis the real GDP growth rate in 2009. Real GDP growth collapse is defined as the difference between the real GDP growth rate in 2009 vis-à-vis the real GDP growth rate in 2007. "Log of de Facto Financial Openness (as % of GDP)" is defined as the sum of the stock of foreign assets and liabilities, scaled by GDP. The data come from Lane and Milesi-Ferretti (2007). The bottom lines show F statistics for Wald tests on whether the coefficient of the advanced economies dummy is equal to the coefficient of the emerging economies or low income economies dummies. 2010, 2009, and 2007 real GDP growth rates data come from the IMF's World Economic Outlook (October 2010). For countries not in the World Economic Outlook sample, 2010 data are projections from Consensus Forecasts (January 2011). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing. Robust standard errors are in parentheses. *, **, and *** mean significant at 10%, 5%, and 1%, respectively.

Table 6

Exchange Rates and Money Market Rates around Crises

Panel A: Difference between Pre- and Post-Crisis Averages

	Exchange Rates				**Money Market Rates**			
	Mexican Crisis	Asian Crisis	Russian Crisis	Global Crisis	Mexican Crisis	Asian Crisis	Russian Crisis	Global Crisis
Asia	-1.5%	23.1%	3.9%	8.3%	48.5%	70.2%	-40.4%	-20.8%
Eastern Europe & Central Asia	64.6%	28.1%	100.6%	26.2%	-20.9%	-4.5%	21.2%	31.1%
Latin America & Caribbean	39.9%	7.3%	21.2%	20.5%	37.0%	5.0%	21.0%	-1.7%

Panel B: Peak-Trough Difference

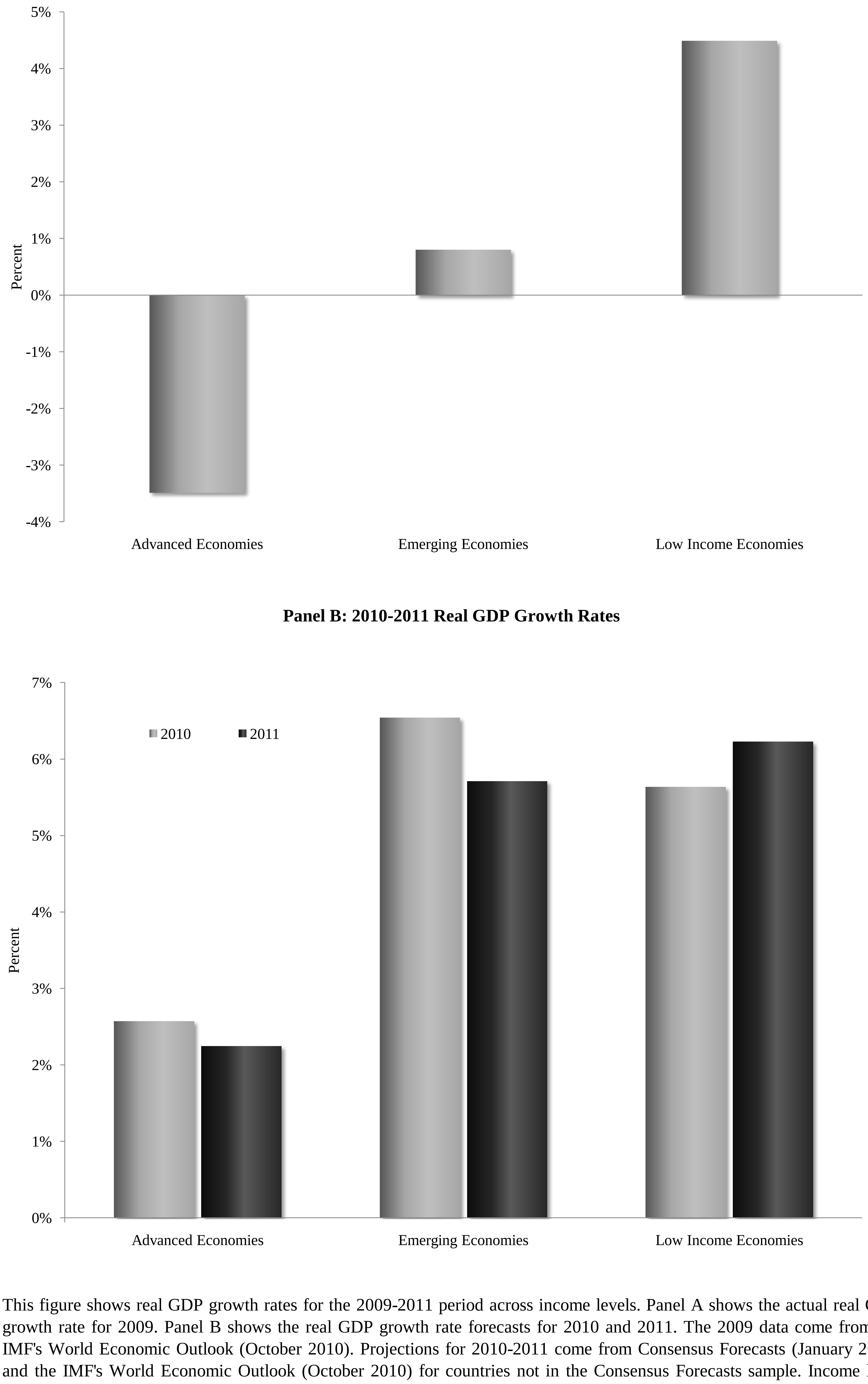
	Exchange Rates				**Money Market Rates**			
	Mexican Crisis	Asian Crisis	Russian Crisis	Global Crisis	Mexican Crisis	Asian Crisis	Russian Crisis	Global Crisis
Asia	-1.5%	57.8%	50.7%	14.6%	275.9%	807.7%	203.6%	-42.3%
Eastern Europe & Central Asia	304.9%	77.8%	172.6%	49.3%	-68.8%	-20.2%	-40.3%	337.6%
Latin America & Caribbean	257.8%	16.6%	50.6%	41.4%	279.1%	81.0%	127.0%	-34.2%

This table shows the behavior of exchange rates and money market rates around crisis events. Panel A shows percentage changes for exchange rates and money market rates average levels between the post-crisis and the pre-crisis windows. Panel B shows percentage changes for these rates between the peak and the trough within the pre- and post-crisis windows. If the trough is earlier than the peak, the difference in the numerator is calculated as peak minus trough, and is thus positive. The converse is true if the trough occurred after the peak (in which case the rate fell for the country during that crisis). Pre- and post-crisis windows are defined as the 12-month period before and after the starting month for each crisis. The starting month for the crises is defined as follows: Jan. 95 for the Mexican crisis, Jul. 97 for the Asian crisis, Jul. 98 for the Russian crisis, and Sep. 08 for the global crisis. Data for exchange and money market rates come from the IFS. Regional averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Countries not classified as advanced are assigned to regions according to the World Bank's July 2010 classification. "Asia" includes "East Asia & Pacific" and "South Asia."

Figure 1
Real GDP Growth in 2009 and Growth Forecasts across Income Levels

Panel A: 2009 Real GDP Growth Rates

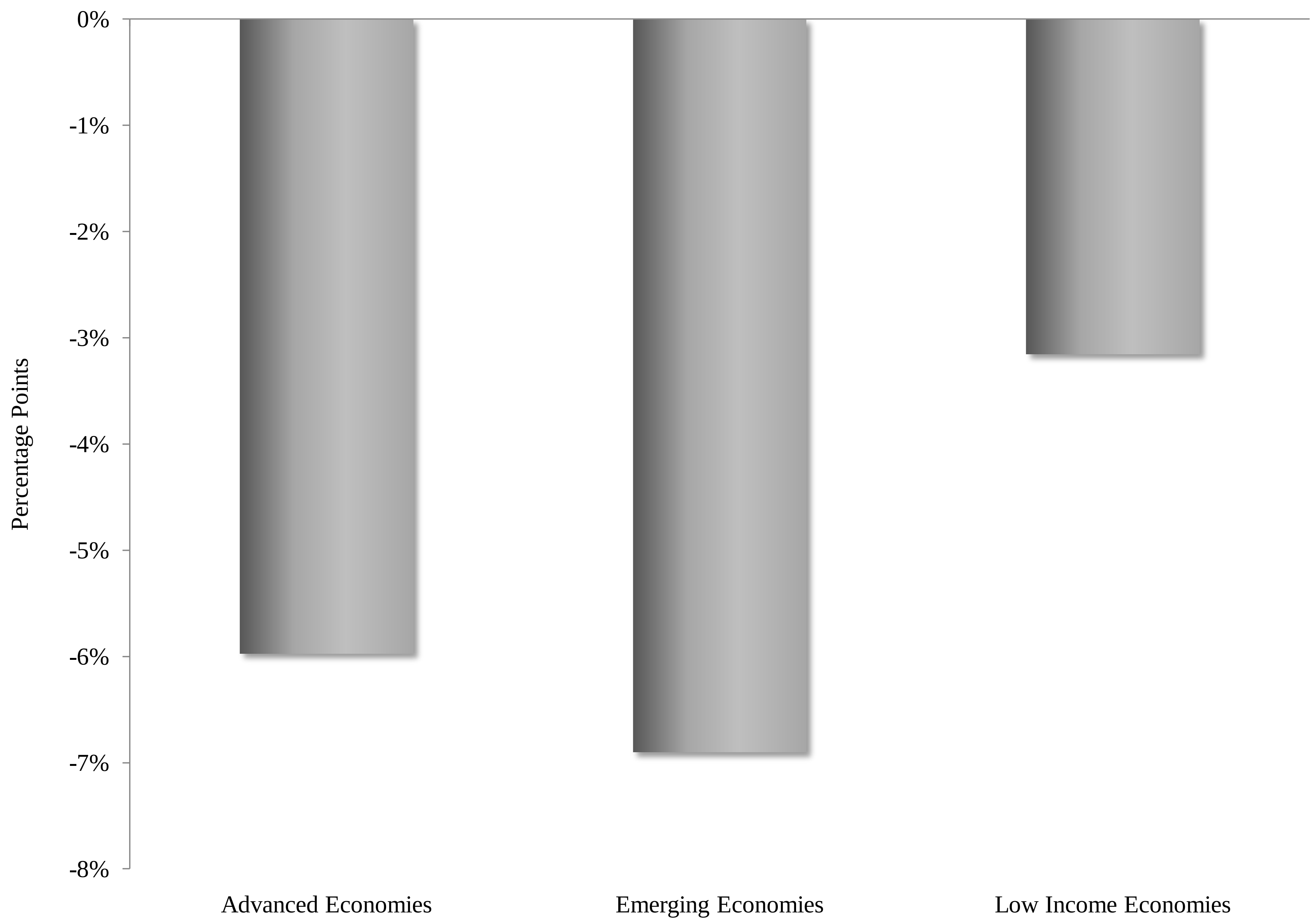
Panel B: 2010-2011 Real GDP Growth Rates



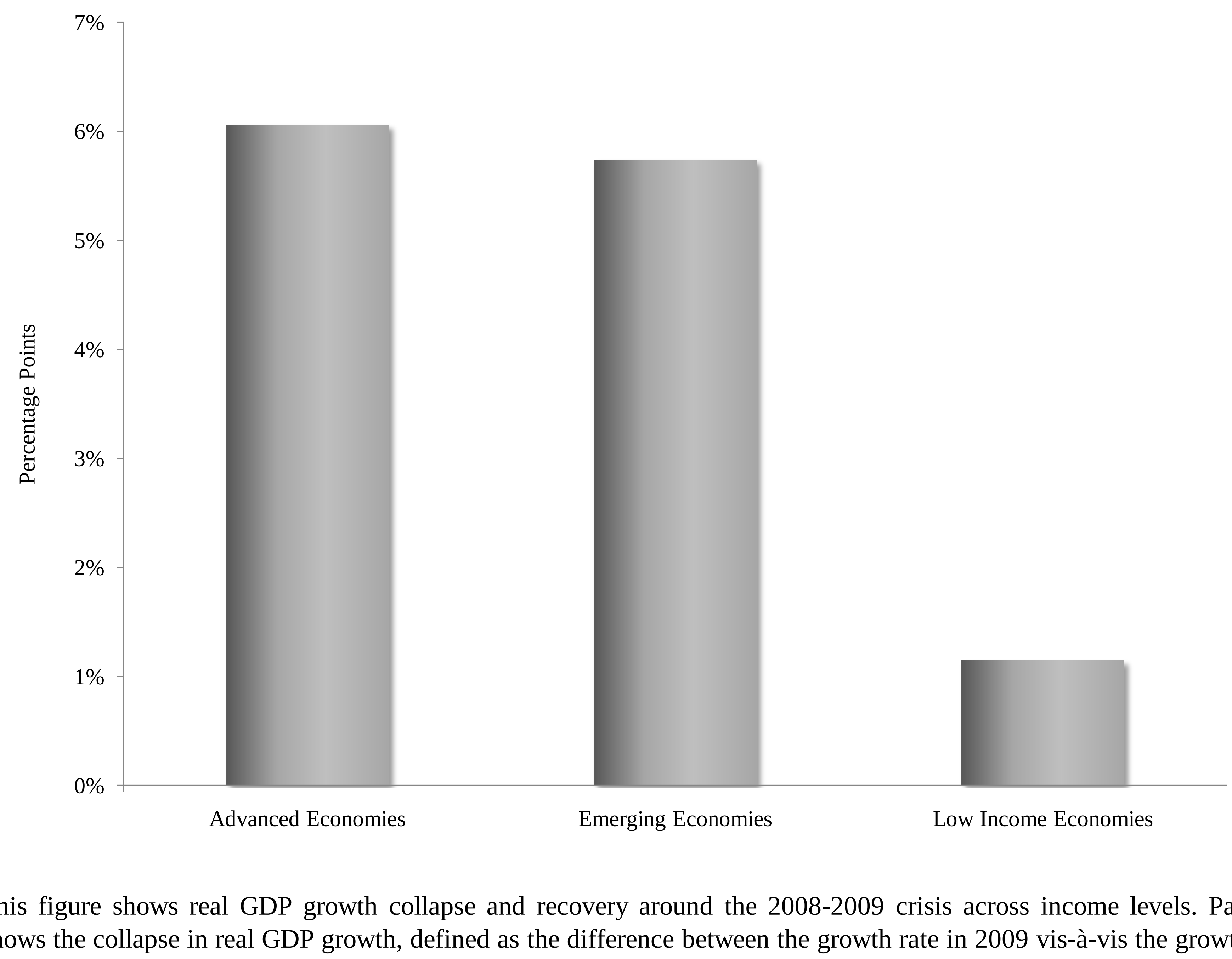
This figure shows real GDP growth rates for the 2009-2011 period across income levels. Panel A shows the actual real GDP growth rate for 2009. Panel B shows the real GDP growth rate forecasts for 2010 and 2011. The 2009 data come from the IMF's World Economic Outlook (October 2010). Projections for 2010-2011 come from Consensus Forecasts (January 2011) and the IMF's World Economic Outlook (October 2010) for countries not in the Consensus Forecasts sample. Income level averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing.

Figure 2
Real GDP Growth Collapse and Recovery across Income Levels

Panel A: Real GDP Growth Collapse (Growth in 2009 Minus Growth in 2007)



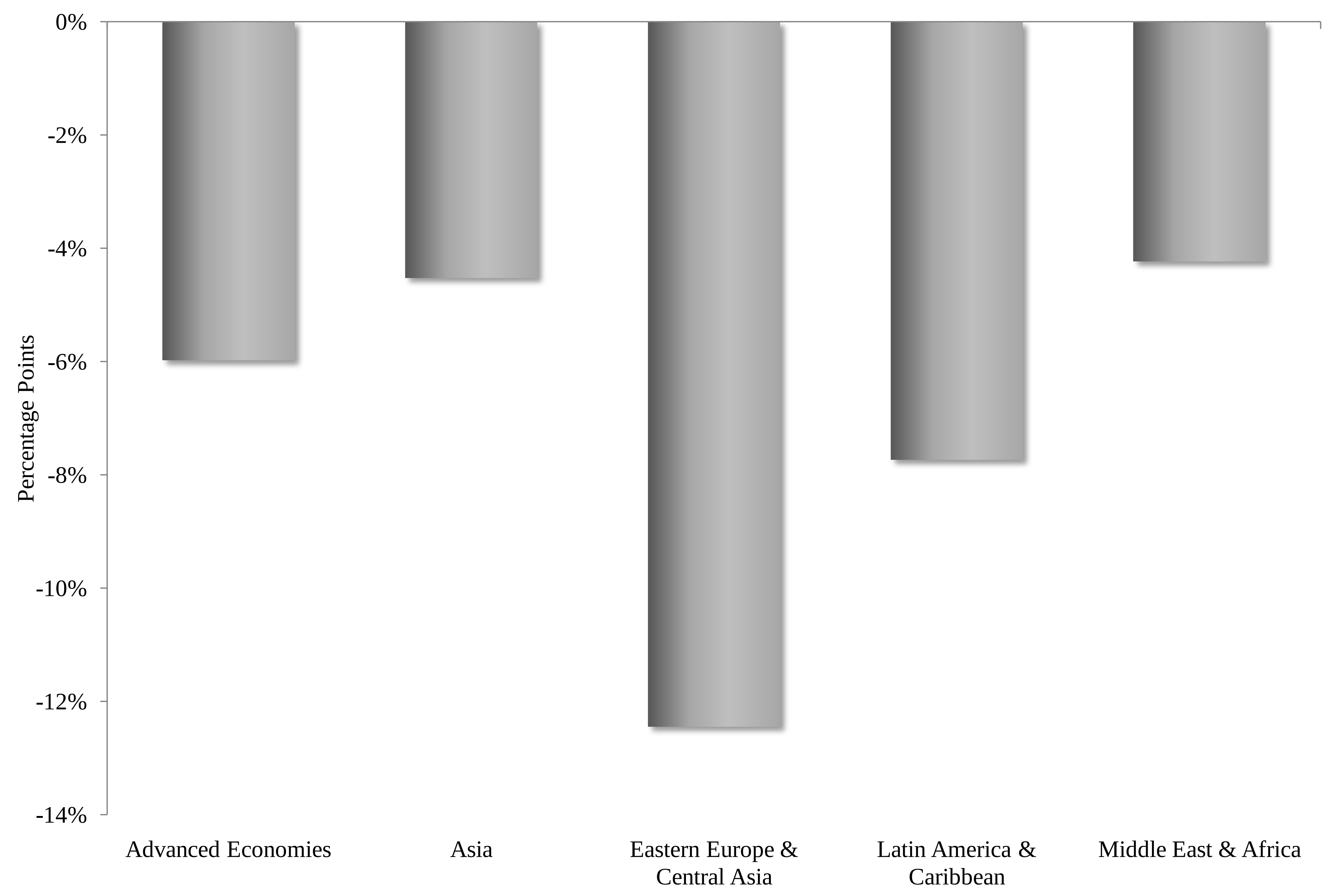
Panel B: Real GDP Growth Recovery (Growth in 2010 Minus Growth in 2009)



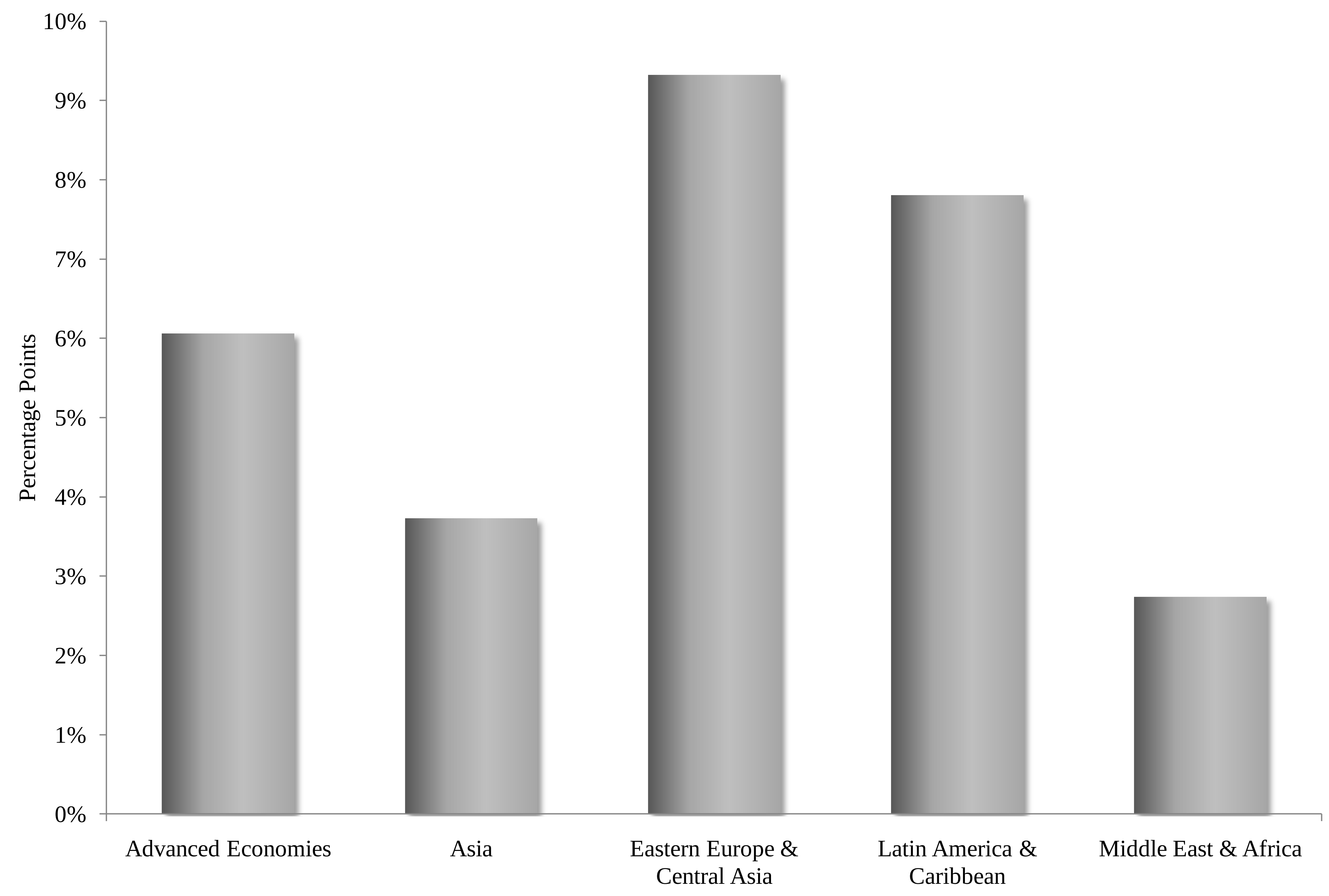
This figure shows real GDP growth collapse and recovery around the 2008-2009 crisis across income levels. Panel A shows the collapse in real GDP growth, defined as the difference between the growth rate in 2009 vis-à-vis the growth rate in 2007. Panel B shows the recovery in real GDP growth, defined as the difference between the expected growth rate in 2010 vis-à-vis the growth rate in 2009. 2007 and 2009 data come from the IMF's World Economic Outlook (October 2010). Projections for 2010 come from Consensus Forecasts (January 2011) and the IMF's World Economic Outlook (October 2010) for countries not in the Consensus Forecasts sample. The numbers are shown as percentage points of GDP. Income level averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing.

Figure 3
Real GDP Growth Collapse and Recovery across Regions

Panel A: Real GDP Growth Collapse (Growth in 2009 Minus Growth in 2007)

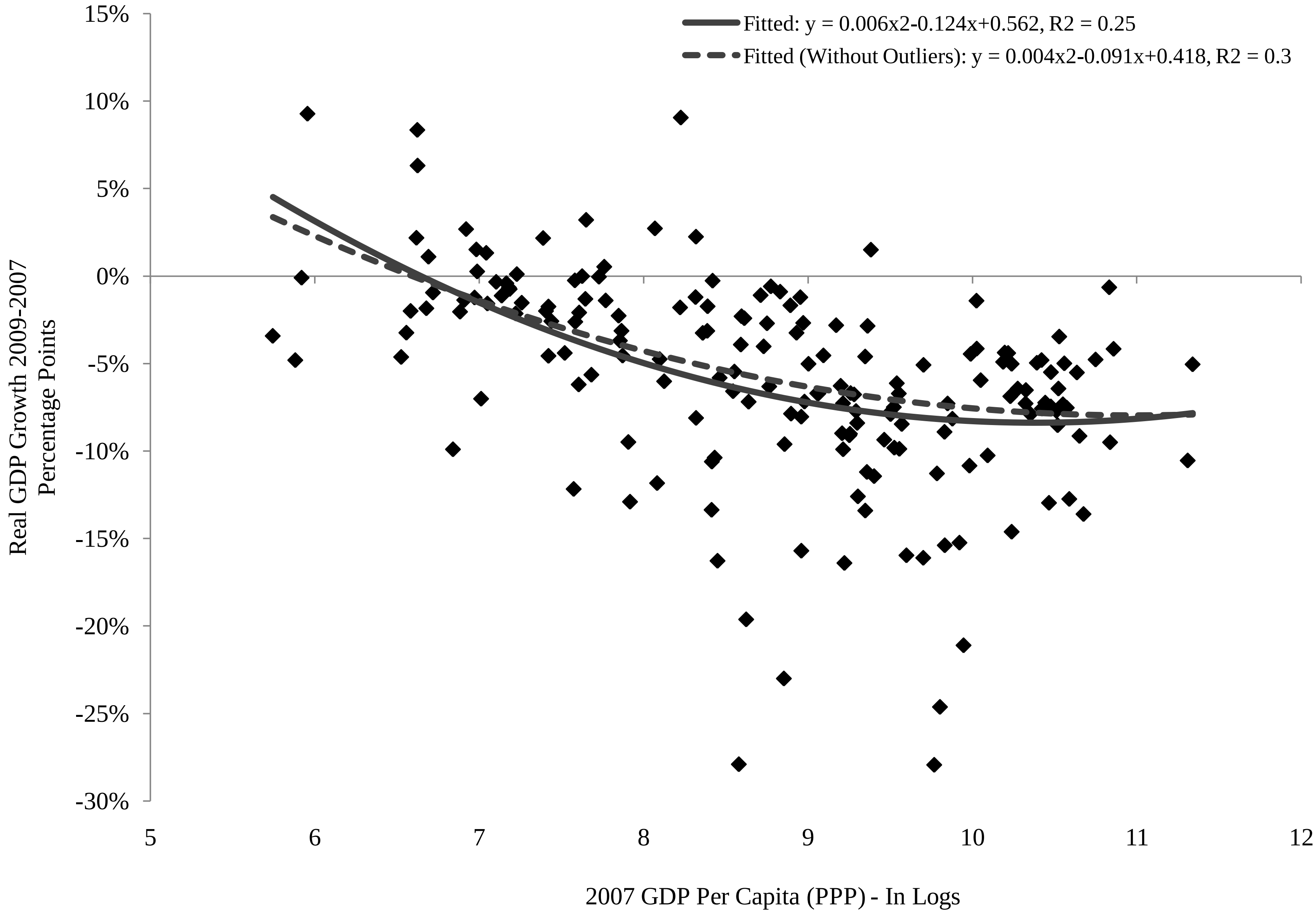


Panel B: Real GDP Growth Recovery (Growth in 2010 Minus Growth in 2009)



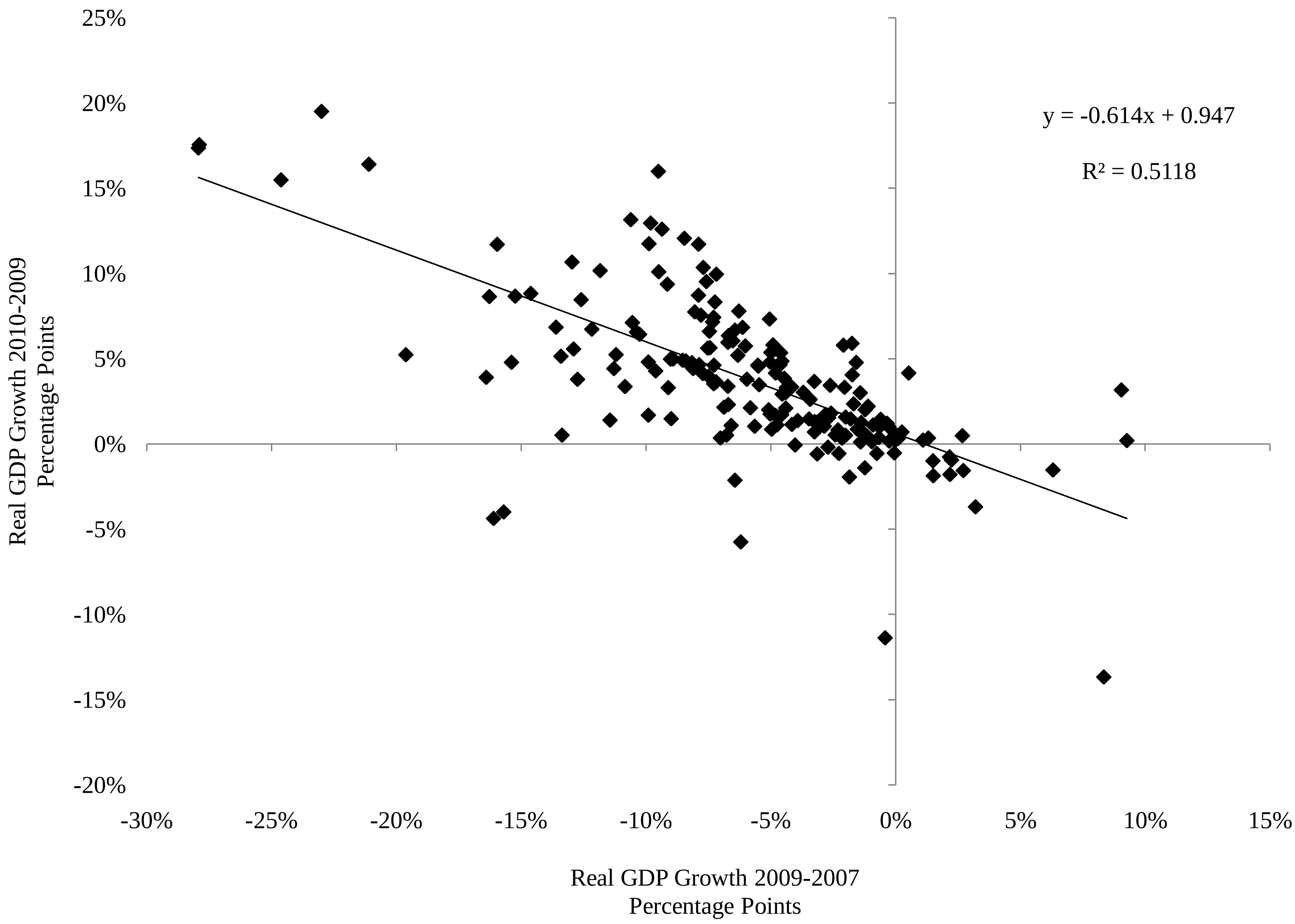
This figure shows real GDP growth collapse and recovery around the 2008-2009 crisis across regions. Panel A shows the collapse in real GDP growth, defined as the difference between the growth rate in 2009 vis-à-vis the growth rate in 2007. Panel B shows the recovery in real GDP growth, defined as the difference between the expected growth rate in 2010 vis-à-vis the growth rate in 2009. 2007 and 2009 data come from the IMF's World Economic Outlook (October 2010). Projections for 2010 come from Consensus Forecasts (January 2011) and the IMF's World Economic Outlook (October 2010) for countries not in the Consensus Forecasts sample. The numbers are shown as percentage points of GDP. Regional averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Countries not classified as advanced are assigned to regions according to the World Bank's July 2010 classification. "Middle East & Africa" includes "Middle East & North Africa" and "Sub-Saharan Africa." "Asia" includes "East Asia & Pacific" and "South Asia."

Figure 4
Real GDP Growth Collapse and Income Level



This figure shows the cross-country relation between real GDP growth collapse around the 2008-2009 crisis and income level. The Y-axis depicts the real GDP collapse, defined as the real GDP growth rate in 2009 minus the real GDP growth rate in 2007; while the X-axis depicts the natural logarithm of the 2007 GDP per capita (PPP adjusted). All data come from the IMF's World Economic Outlook (October 2010). The numbers are shown as percentage points of GDP. The fitted lines estimate quadratic relations between the GDP growth rate and the natural logarithm of the GDP per capita. "Fitted (Without Outliers)" excludes countries with extreme collapses (i.e. negative growth rate higher than 19%). All coefficients are significant at a 5% level.

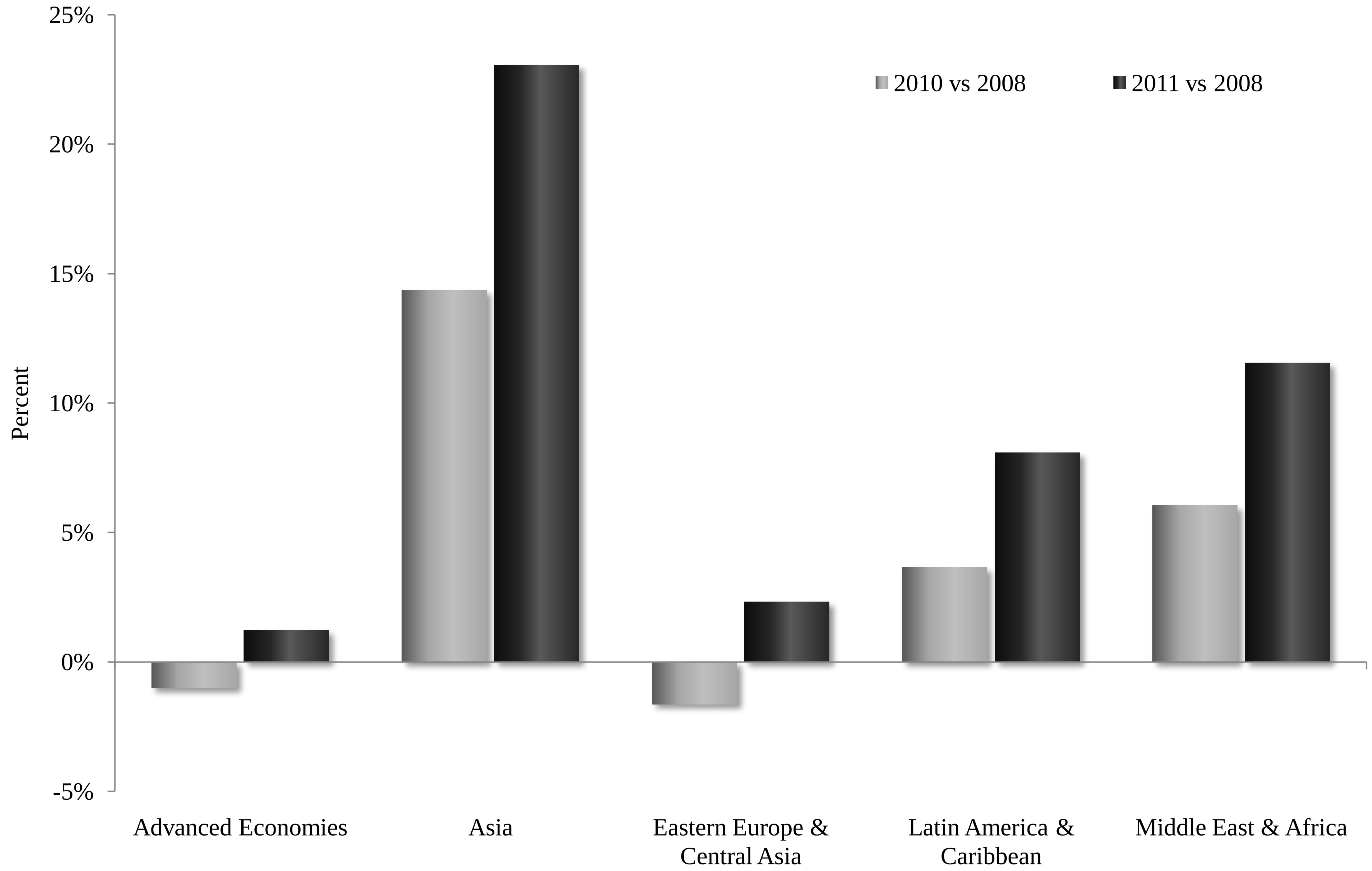
Figure 5
Real GDP Growth Collapse and Recovery



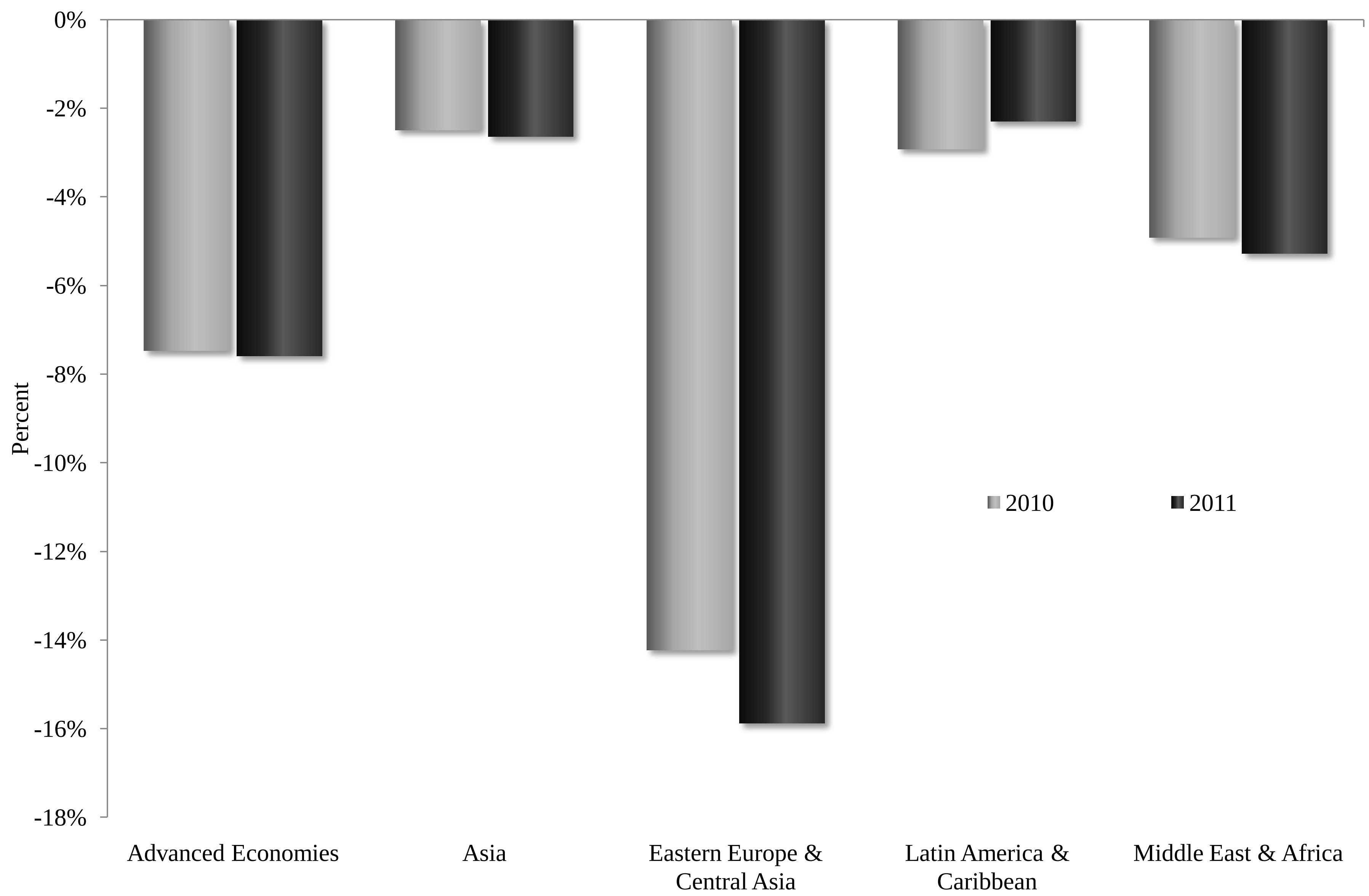
This figure shows the cross-country relation between real GDP growth collapse and recovery around the 2008-2009 crisis. The Y-axis depicts the real GDP growth collapse, defined as the real GDP growth rate in 2010 minus the real GDP growth rate in 2009. The X-axis depicts the real GDP growth recovery, defined as the real GDP growth rate in 2009 minus the real GDP growth rate in 2007. 2007 and 2009 data come from the IMF's World Economic Outlook (October 2010). Projections for 2010 come from Consensus Forecasts (January 2011) and the IMF's World Economic Outlook (October 2010) for countries not in the Consensus Forecasts sample. The numbers are shown as percentage points of GDP. The regression estimates the linear relation between the collapse and recovery measures.

Figure 6
Real GDP Growth Rates and Output Losses Relative to Pre-Crisis Trend

Panel A: Real GDP Growth Rates

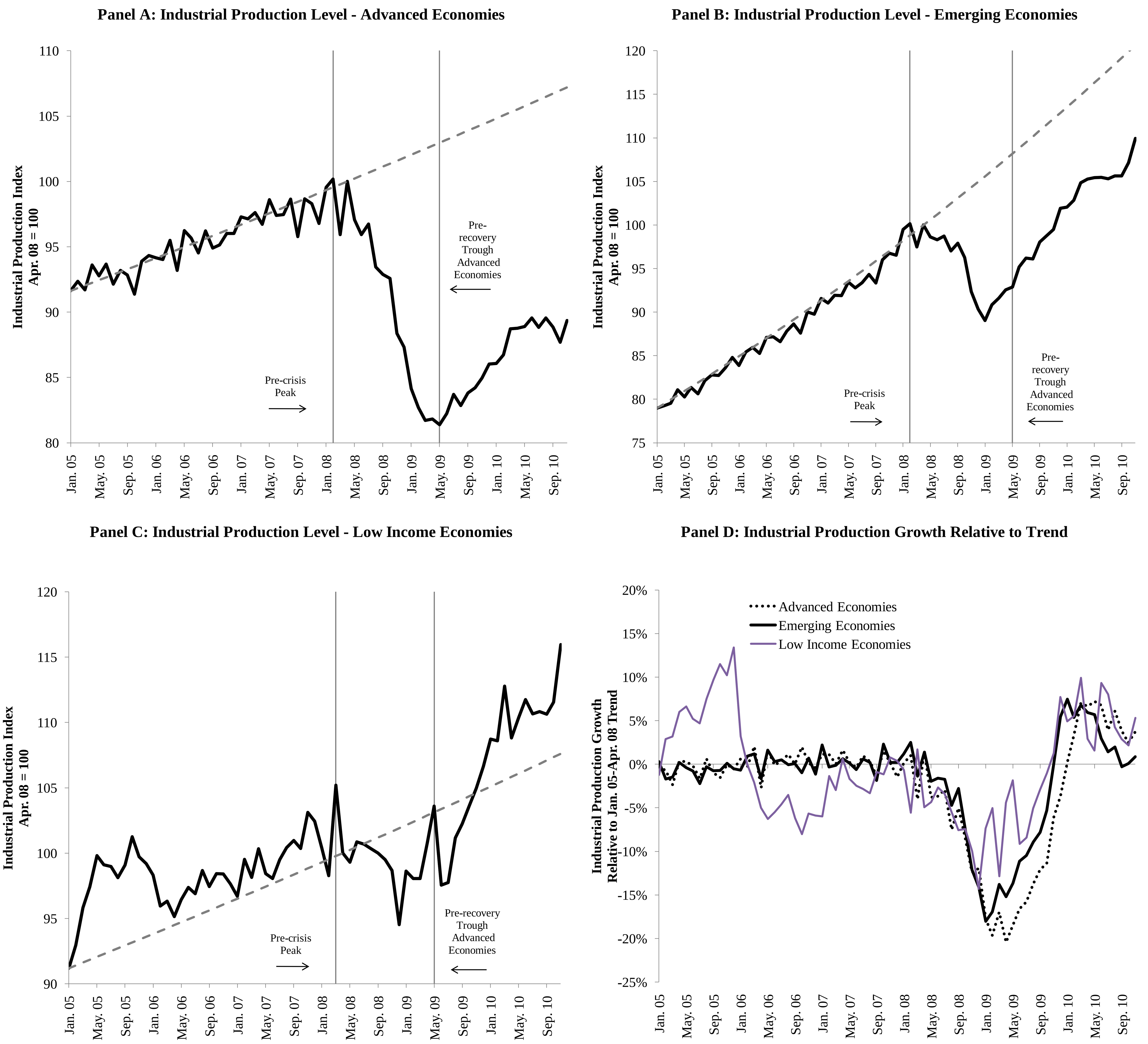


Panel B: Real Output Losses Relative to Real GDP Trend



This figure shows real GDP in 2010 and 2011 in comparison with previous trends. Panel A shows the projected real GDP in 2010 and 2011 as a percentage of the 2008 real GDP. Panel B shows the projected real output losses relative to real GDP trend for 2010 and 2011, defined as the difference between projected real GDP for 2010 (2011) and counterfactual real GDP for 2010 (2011), expressed as a percentage of counterfactual real GDP for 2010 (2011). Projected real GDP is calculated based on 2009 real GDP level and 2010-2011 growth projections (and actual figures for some countries for 2010). Counterfactual real GDP is constructed by extrapolating pre-crisis average growth rates through the 2008-2011 period (i.e. as if there had been no crisis event). Data for counterfactual real GDP is thus calculated based on 2007 real GDP level and the 2000-2007 average growth rate extrapolated through 2008-2011. The 2000-2009 data come from the IMF's World Economic Outlook (October 2010). Projections for 2010-2011 come from Consensus Forecasts (January 2011) and the IMF's World Economic Outlook (October 2010) for the countries not in Consensus Forecasts sample. Regional averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Countries not classified as advanced are assigned to regions according to the World Bank's July 2010 classification. "Middle East & Africa" includes "Middle East & North Africa" and "Sub-Saharan Africa." "Asia" includes "East Asia & Pacific" and "South Asia."

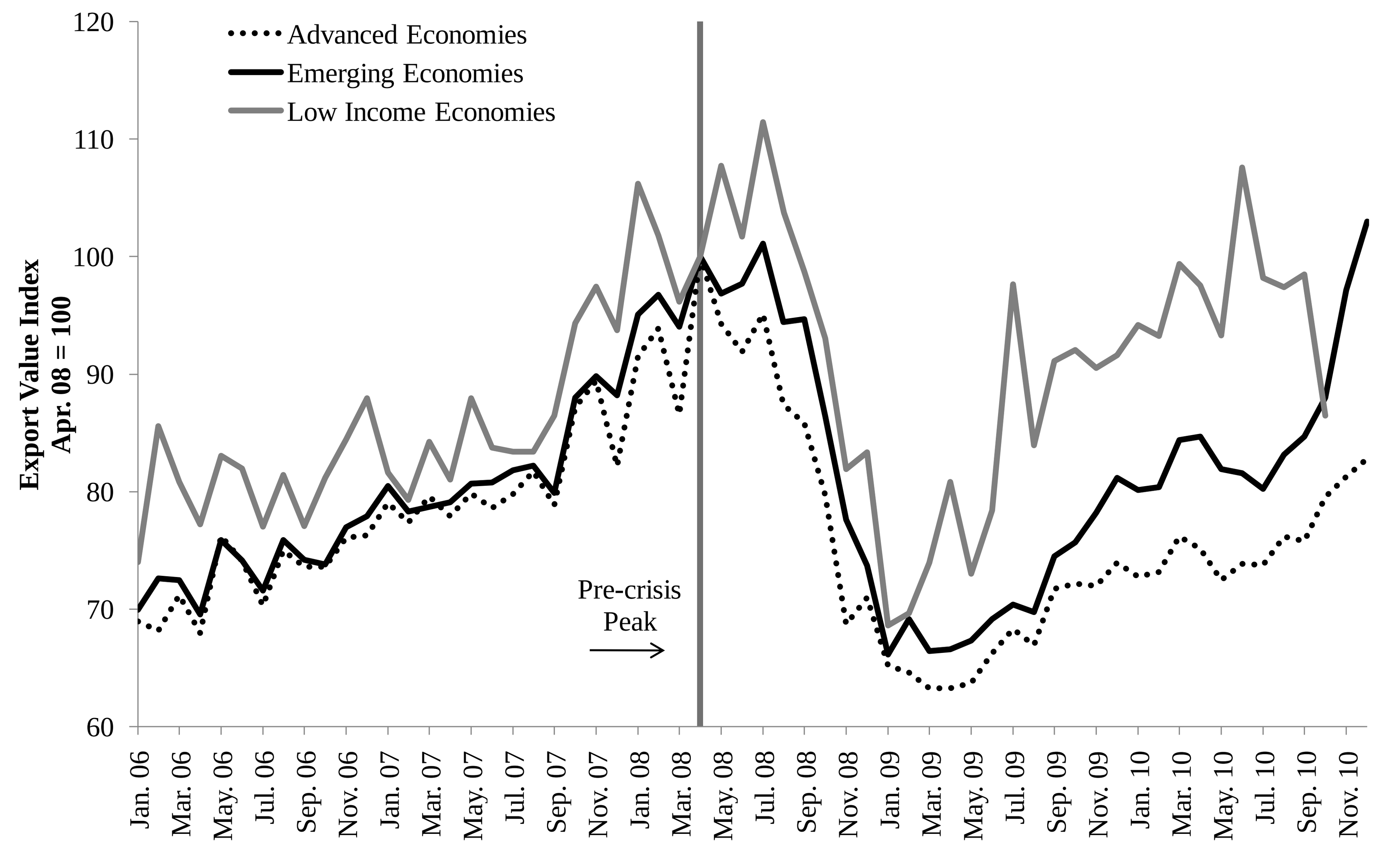
Figure 7
Industrial Production



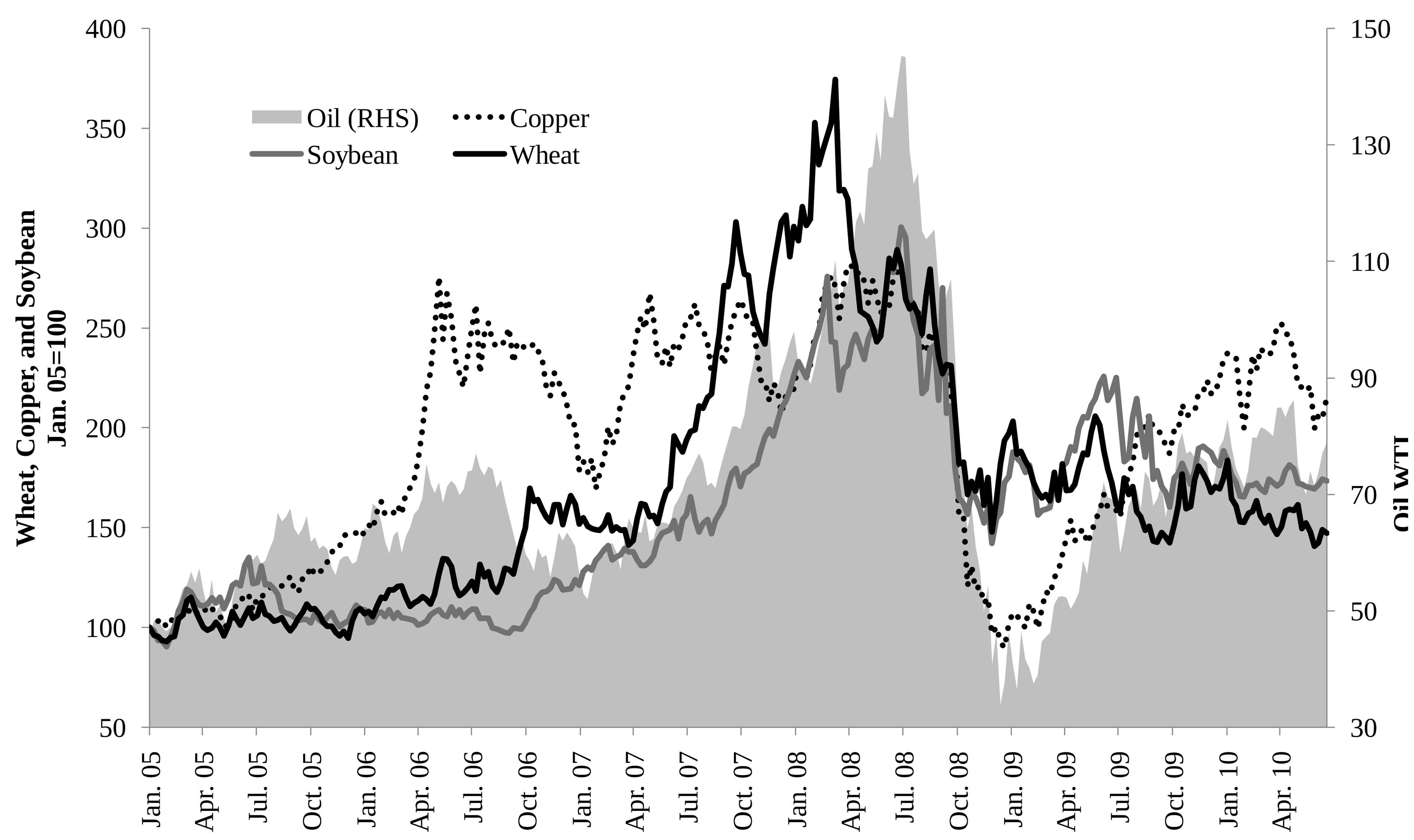
This figure shows industrial production (IP) during the 2008-2009 crisis across income levels. Panel A, B, and C show the IP level, indexed to 100 in April 2008, and the IP level pre-crisis trend for the three income levels. The pre-crisis trend for each income level is constructed by calculating the pre-crisis compounded annual growth rate between January 2005 and April 2008, and extrapolating it until the end of the sample. Panel D shows the evolution of year-on-year (YOY) IP growth relative to the pre-crisis average YOY IP growth. Pre-crisis average YOY IP growth is calculated across the January 2005-April 2008 period. IP data come from the World Bank's Global Economic Monitor. Income level averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing.

Figure 8
Trade Value, Commodity Prices, and Capital Flows

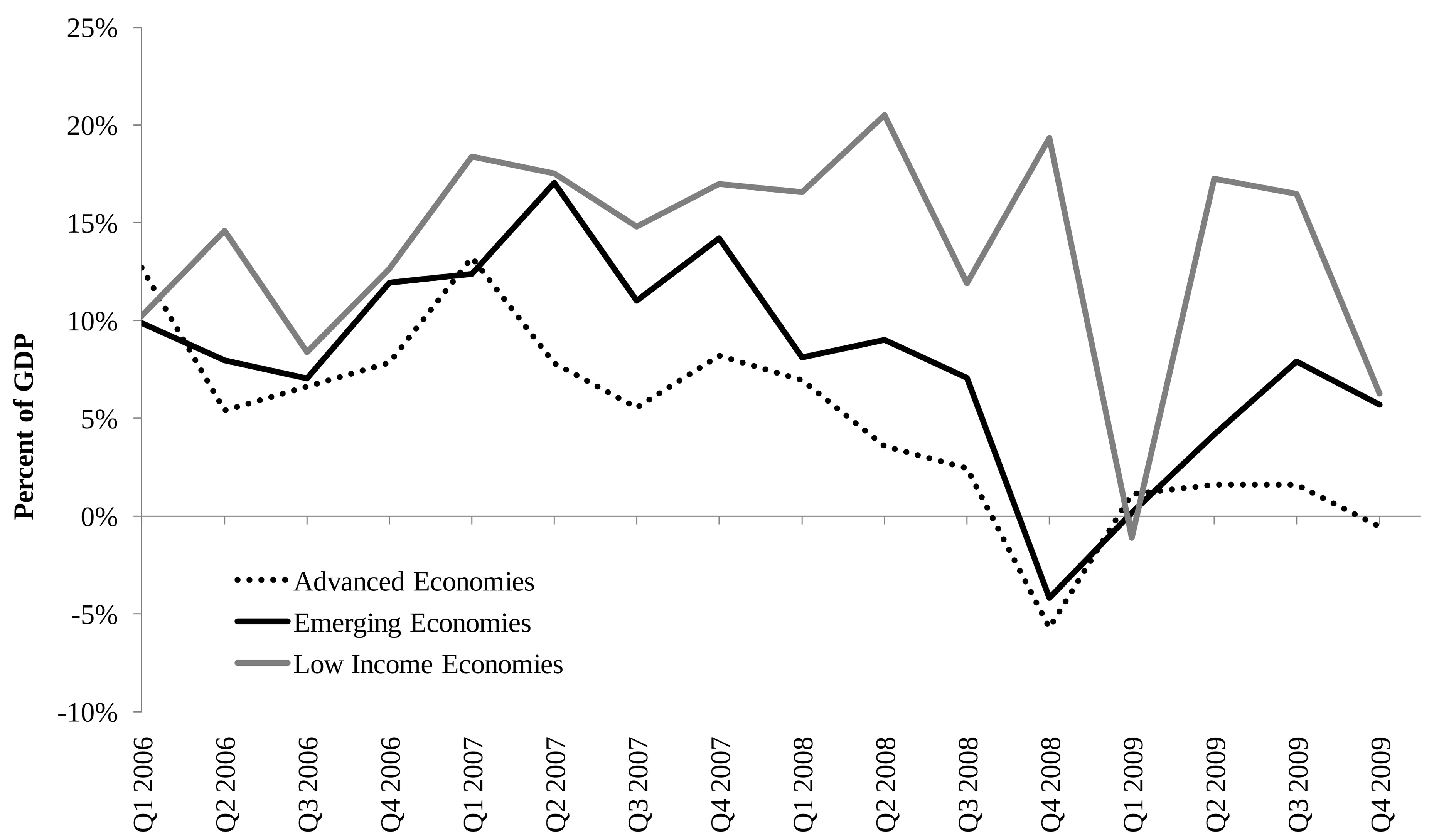
Panel A: Trade Value



Panel B: Commodity Prices



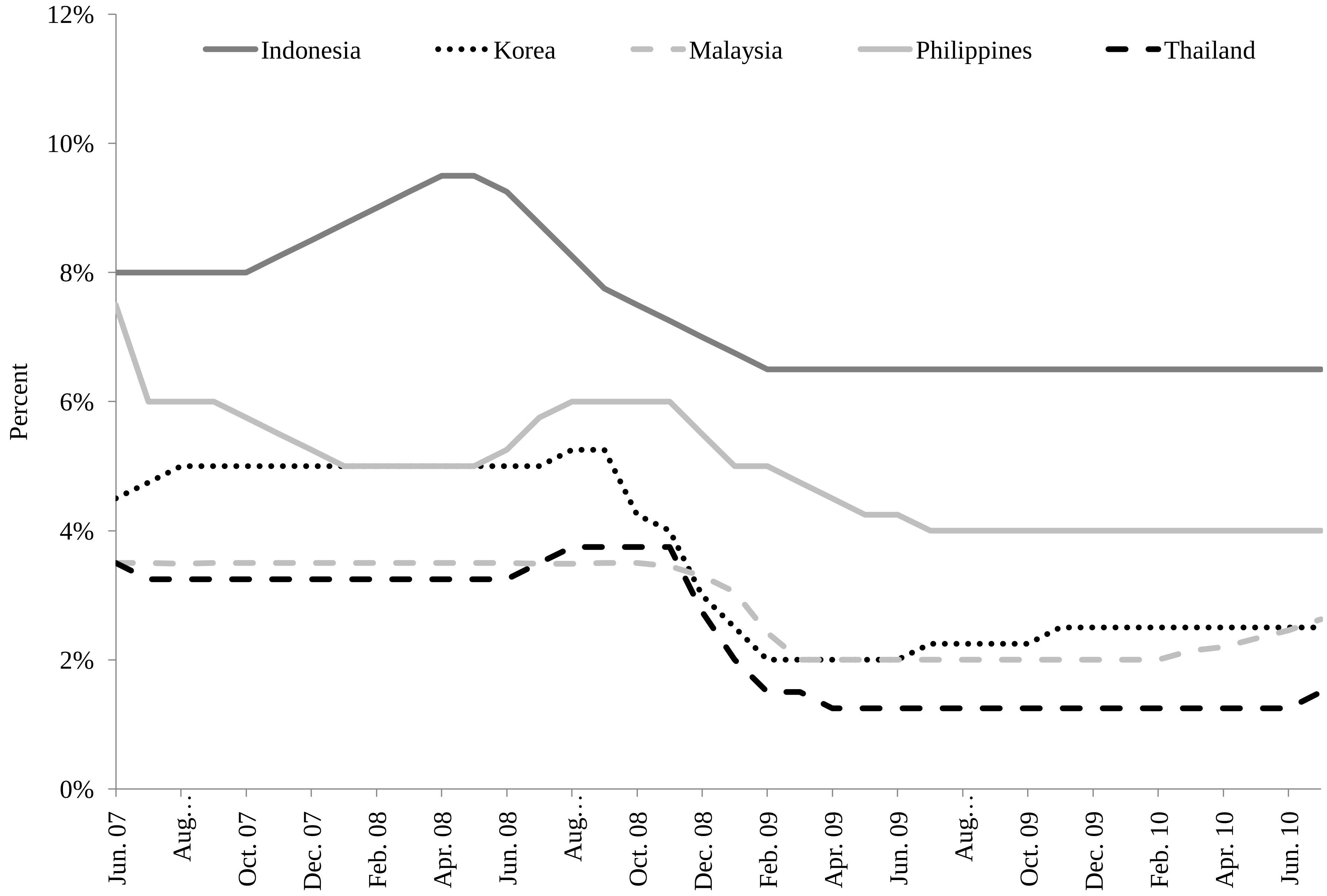
Panel C: Capital Flows



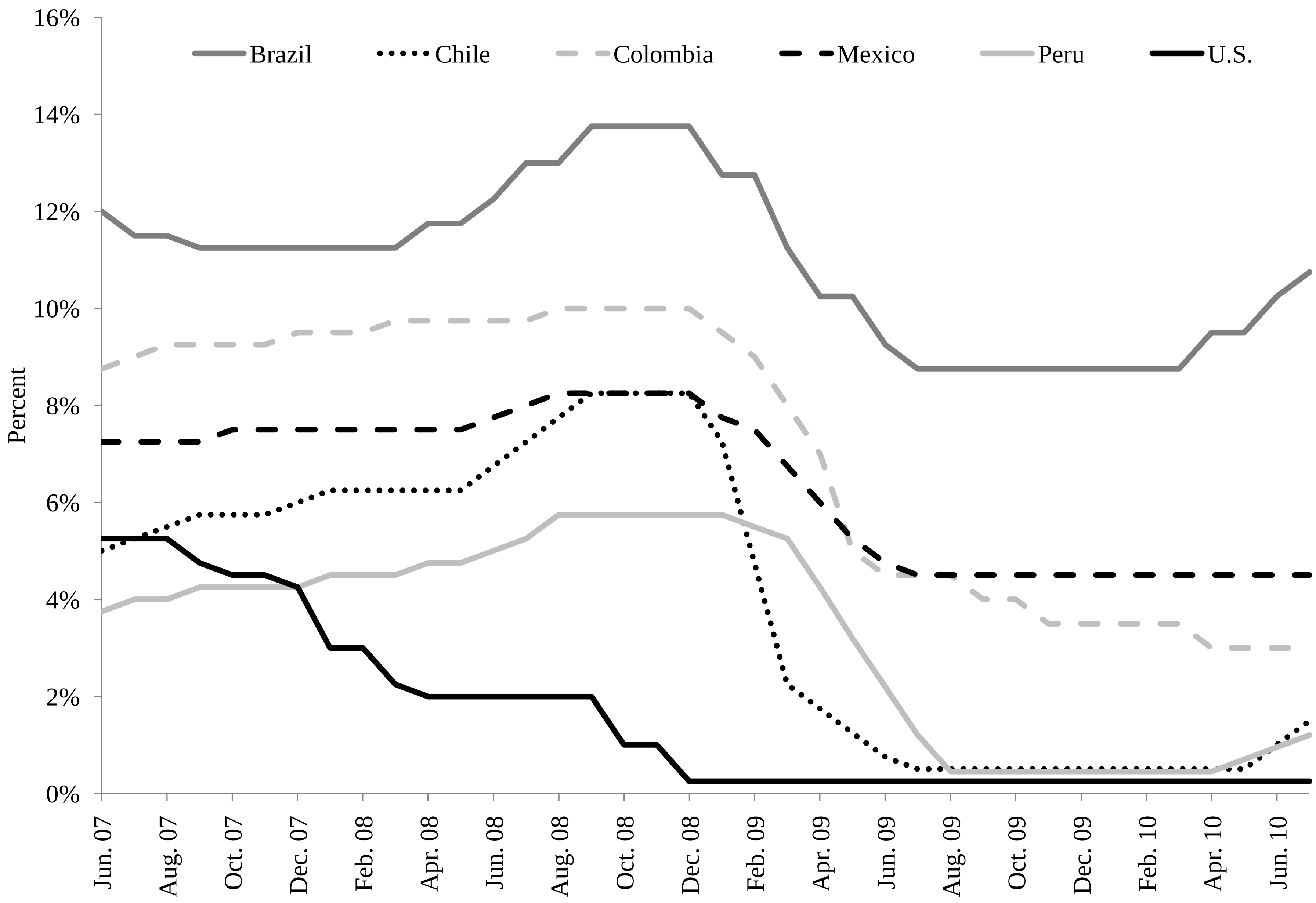
This figure shows trade value, commodity prices, and capital flows from 2005 to 2010. Panel A shows the evolution of trade value across income levels. Trade value is measured as the real value of goods exports, seasonally adjusted, in April 2008 constant million U.S. dollars, and is indexed to 100 in April, 2008. The data come from the World Bank's Global Economic Monitor. Panel B shows the evolution of commodity prices. Wheat, copper, and soybean prices (nominal, in U.S. dollars) are indexed to 100 in January 01, 2005. Oil prices are in current U.S. dollars. The data come from Bloomberg. Panel C shows gross capital inflows by foreigners as a percentage of GDP across income levels. The data come from the IMF's Balance of Payments Statistics. Income level averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing.

Figure 9
Monetary Policy Rates

Panel A: Monetary Policy Rates in Inflation-Targeting Asian Countries



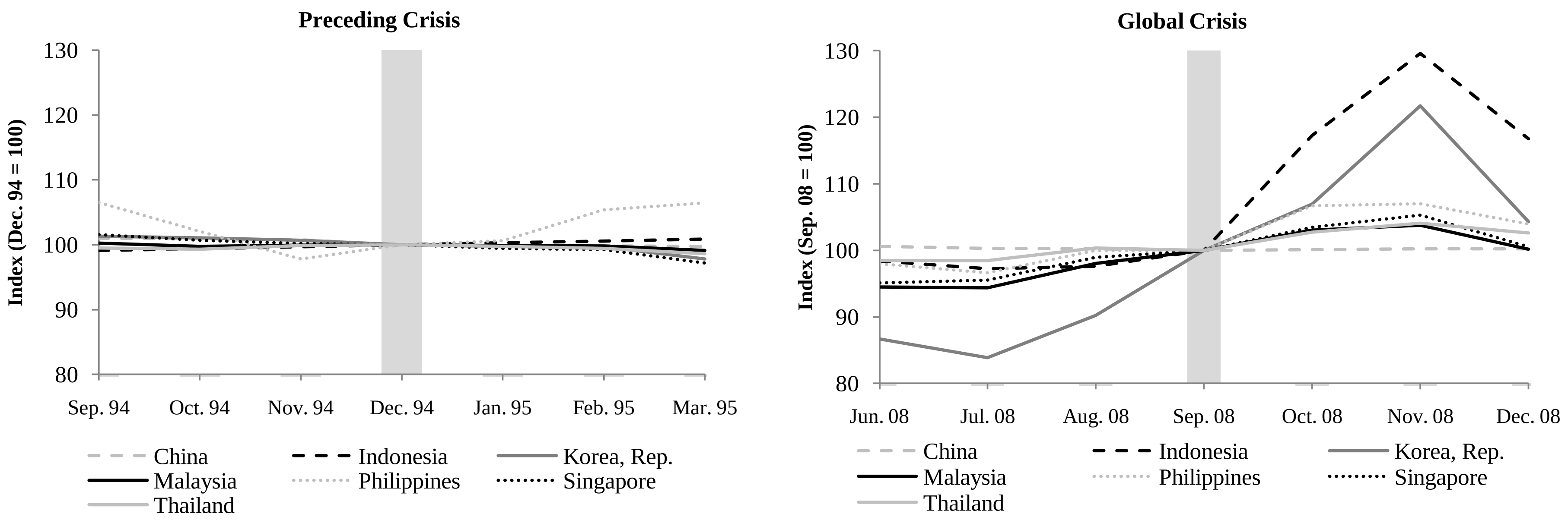
Panel B: Monetary Policy Rates in Inflation-Targeting Latin American Countries and the U.S.



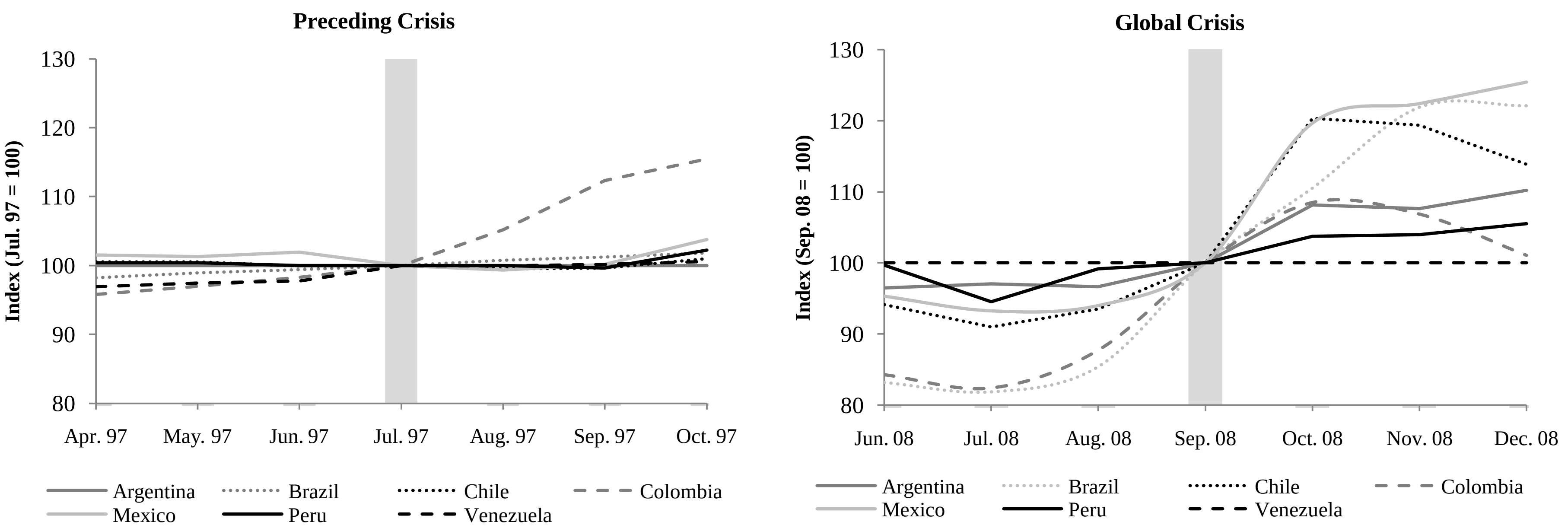
This figure shows monetary policy rates in inflation-targeting countries in Asia, Latin America, and the U.S. Data for Asian countries come from each country's central bank. Data for Latin American countries and the U.S. come from Bloomberg.

Figure 10
Nominal Exchange Rate Fluctuations around Crises

Panel A: Asia



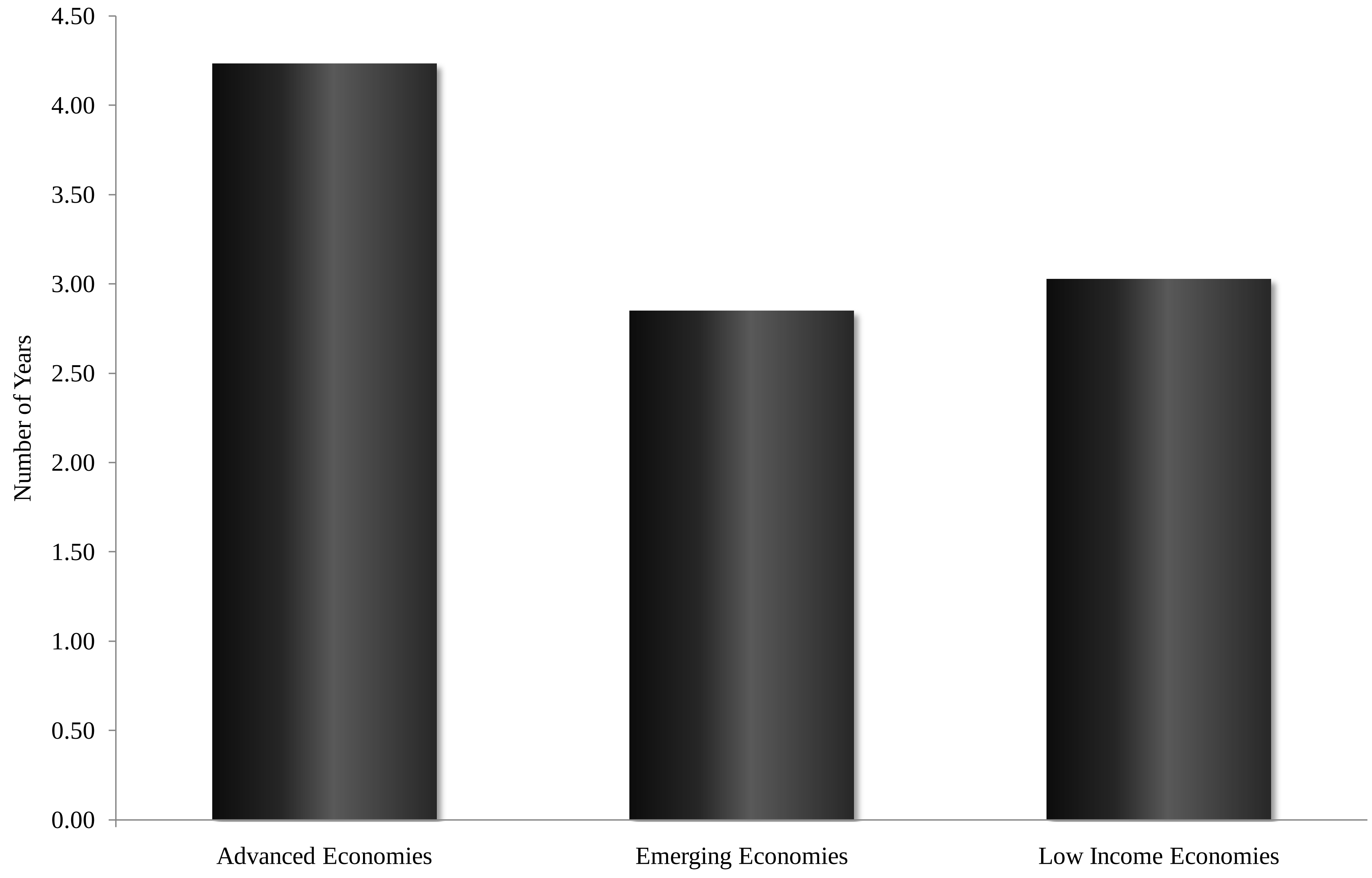
Panel B: Latin America & Caribbean



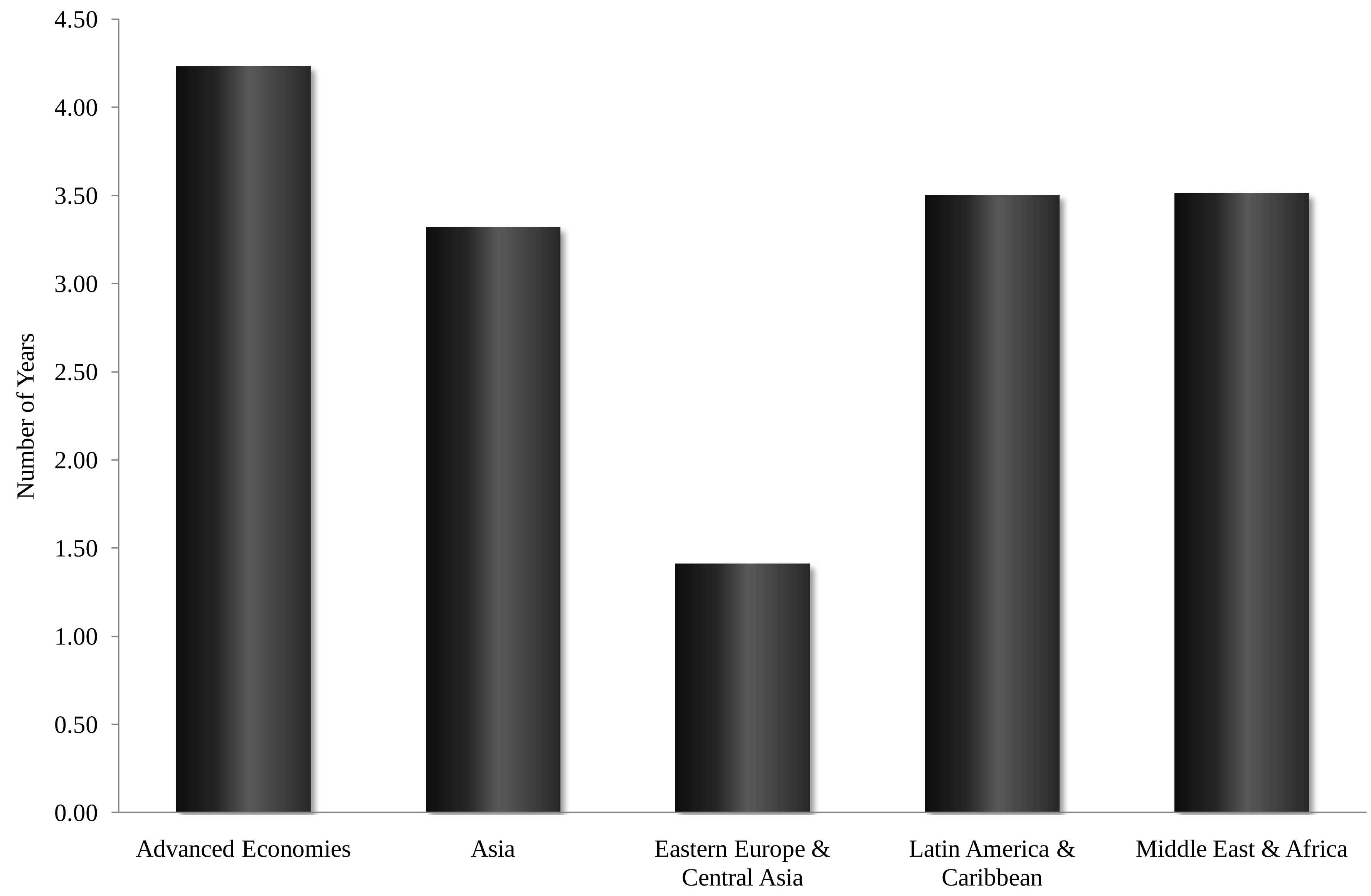
This figure shows nominal exchange rate fluctuations around crises for selected countries in Asia (Panel A) and Latin America & Caribbean (Panel B). The indexes were defined as 100 in the beginning of each crisis: Dec. 94 (Asia) and Jul. 97 (Latin America & Caribbean) for preceding crises, and Sep. 08 for the global crisis. The data come from the IMF's IFS.

Figure 11
Fiscal Space

Panel A: 2007 Fiscal Space Measure across Income Levels



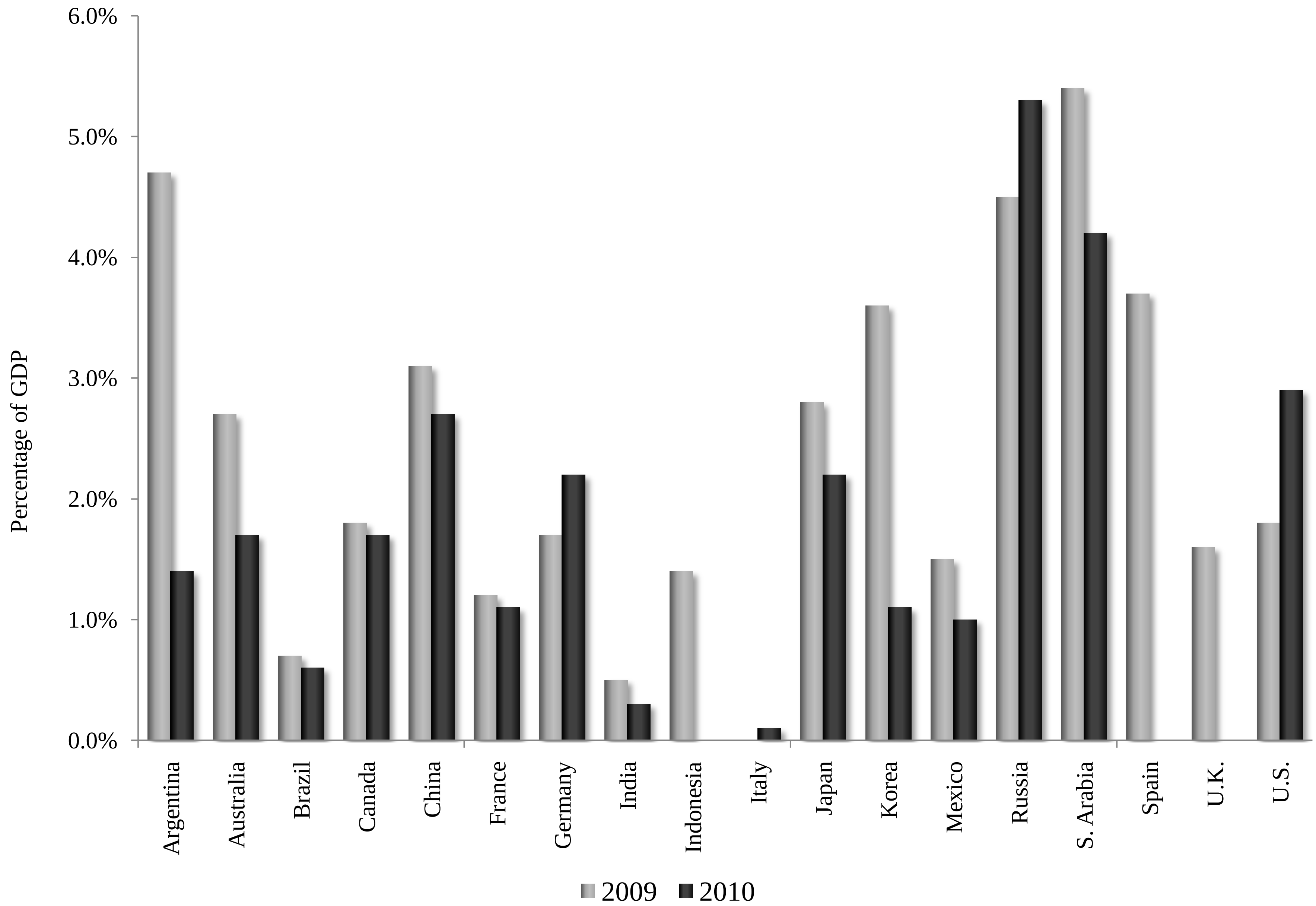
Panel B: 2007 Fiscal Space Measure across Regions



This figure shows a fiscal space measure across income levels and regions. The de facto fiscal space measures the number of tax years needed for a country to repay its outstanding public debt. This is defined as the ratio of the outstanding public debt as of 2007 to the pre-crisis tax revenue (averaged across 2000-2007). This measure is based on Aizenman and Jinjarak (2010). The data come from the World Bank's WDI. Regional and income level averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing. Countries not classified as advanced are assigned to regions according to the World Bank's July 2010 classification. "Middle East & Africa" includes "Middle East & North Africa" and "Sub-Saharan Africa." "Asia" includes "East Asia & Pacific" and "South Asia."

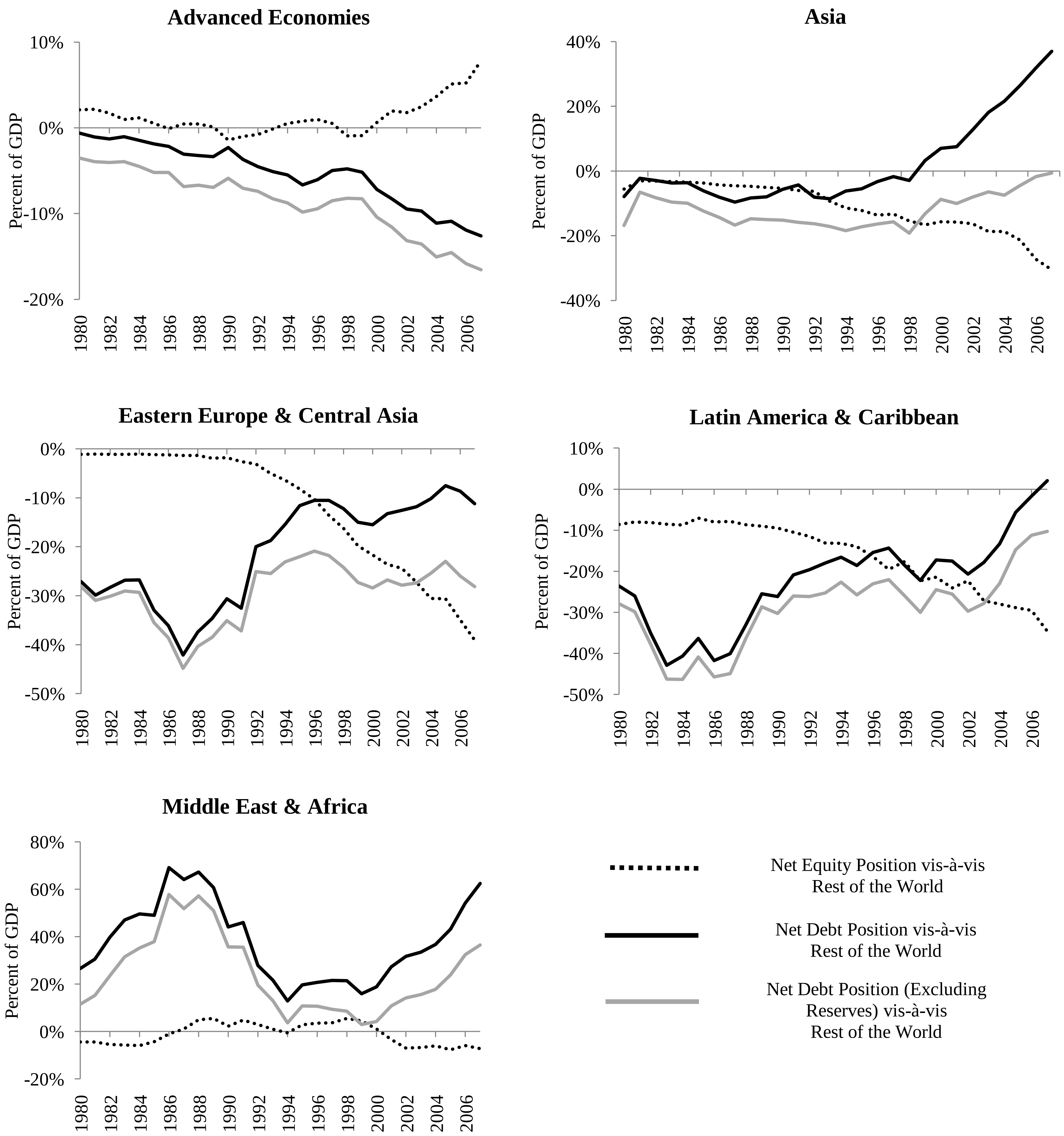
Figure 12
Fiscal Policy

Estimated Costs of Fiscal Discretionary Measures in 2009 and 2010



This figure shows estimated costs and announced fiscal packages during the 2008-2009 crisis. The data come from IMF's "The State of Public Finances: Outlook and Medium Term Policies After the 2008-2009 crisis."

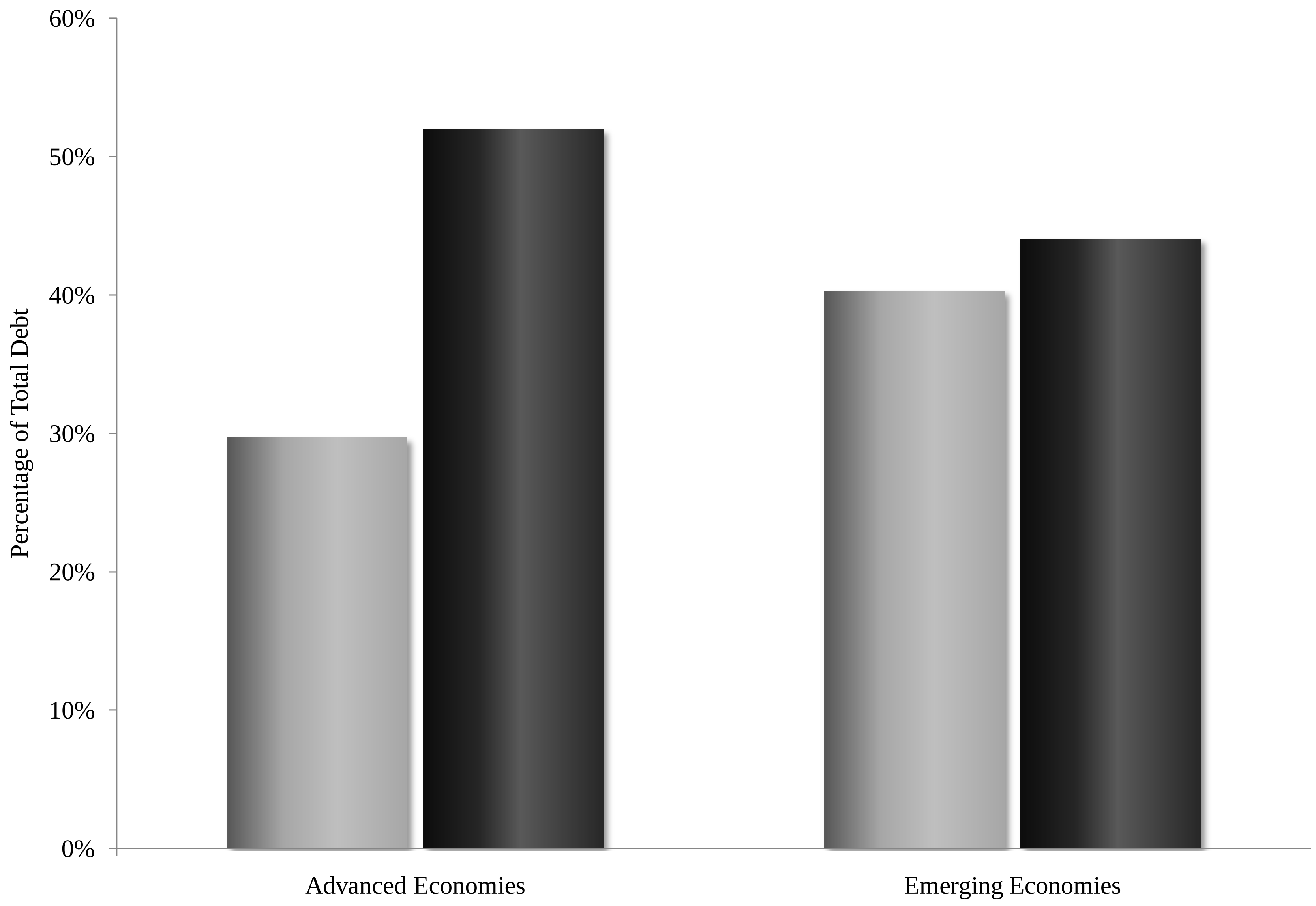
Figure 13
Net Foreign Assets across Regions



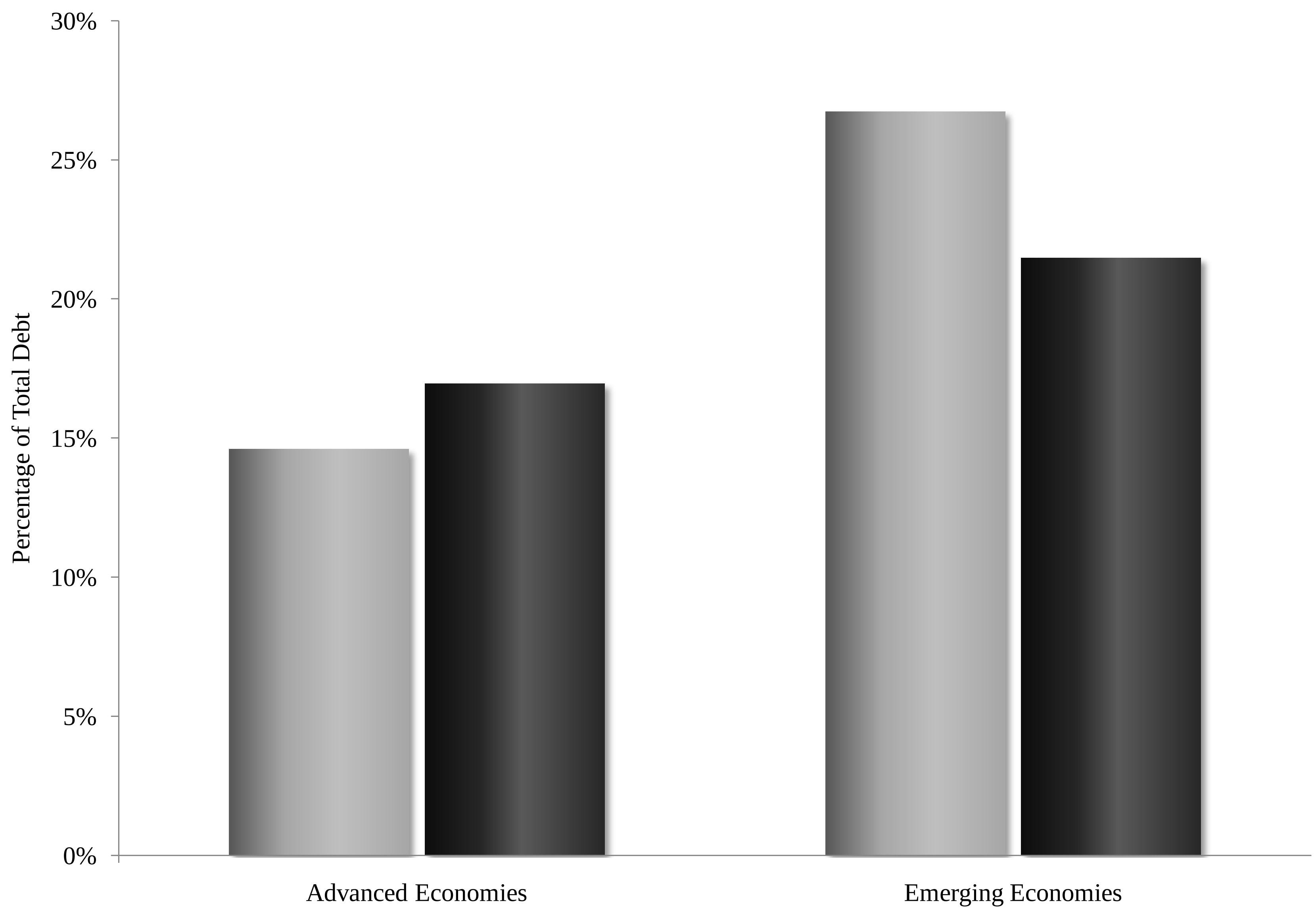
This figure shows the evolution of net foreign assets as a percentage of GDP across regions. The net equity position, vis-à-vis the rest of the world (ROW), is the sum of net foreign direct investment assets and net portfolio equity assets. In turn, the net debt position, vis-à-vis ROW, is the sum of debt assets and reserves minus debt liabilities. The data come from Lane and Milesi-Ferretti (2007). Regional averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Countries not classified as advanced are assigned to regions according to the World Bank's July 2010 classification. "Middle East & Africa" includes "Middle East & North Africa" and "Sub-Saharan Africa." "Asia" includes "East Asia & Pacific" and "South Asia."

Figure 14
Debt Dollarization across Income Levels

Panel A: Private Sector Foreign Currency Debt over Total Debt



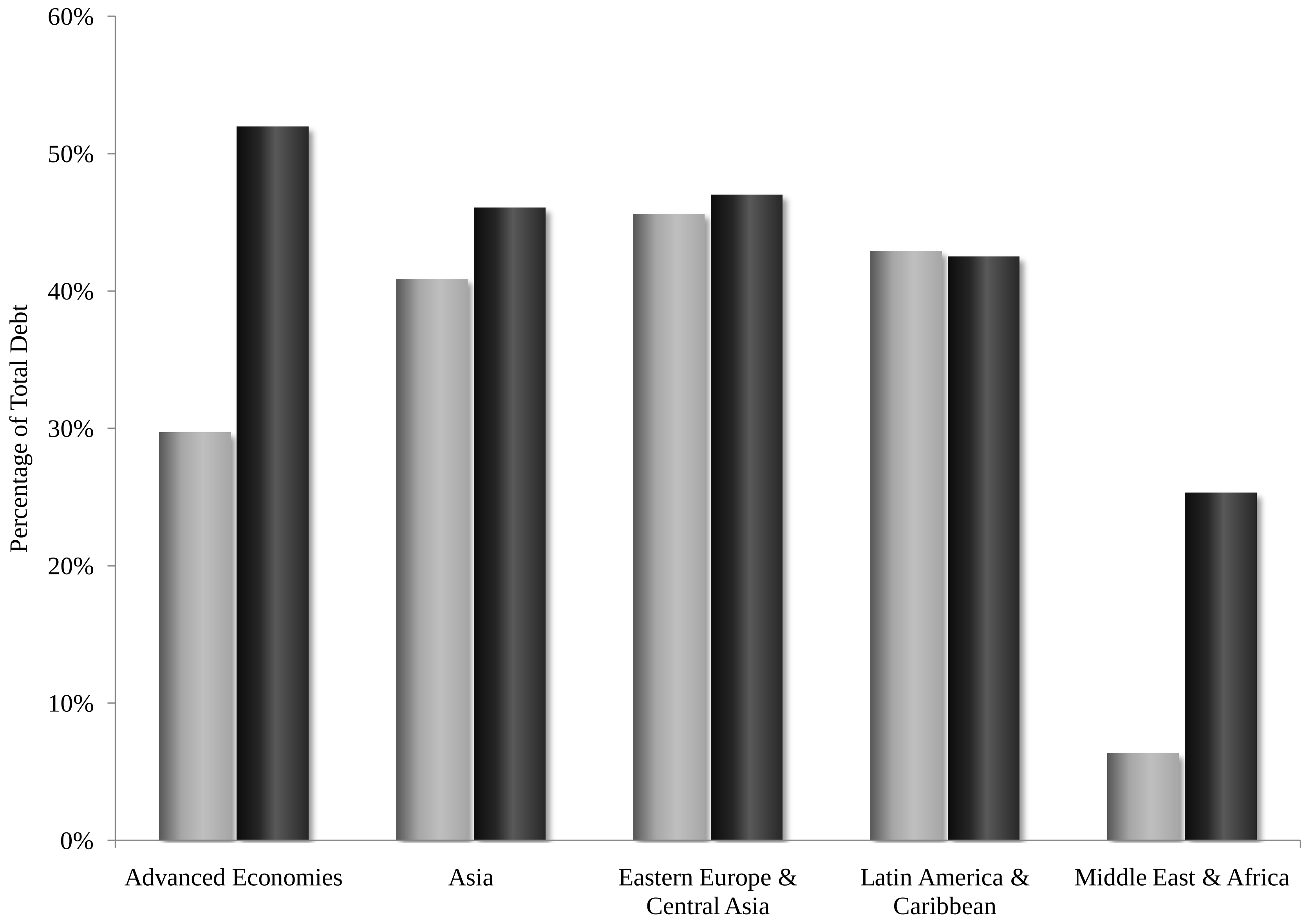
Panel B: Public Sector Foreign Currency Debt over Total Debt



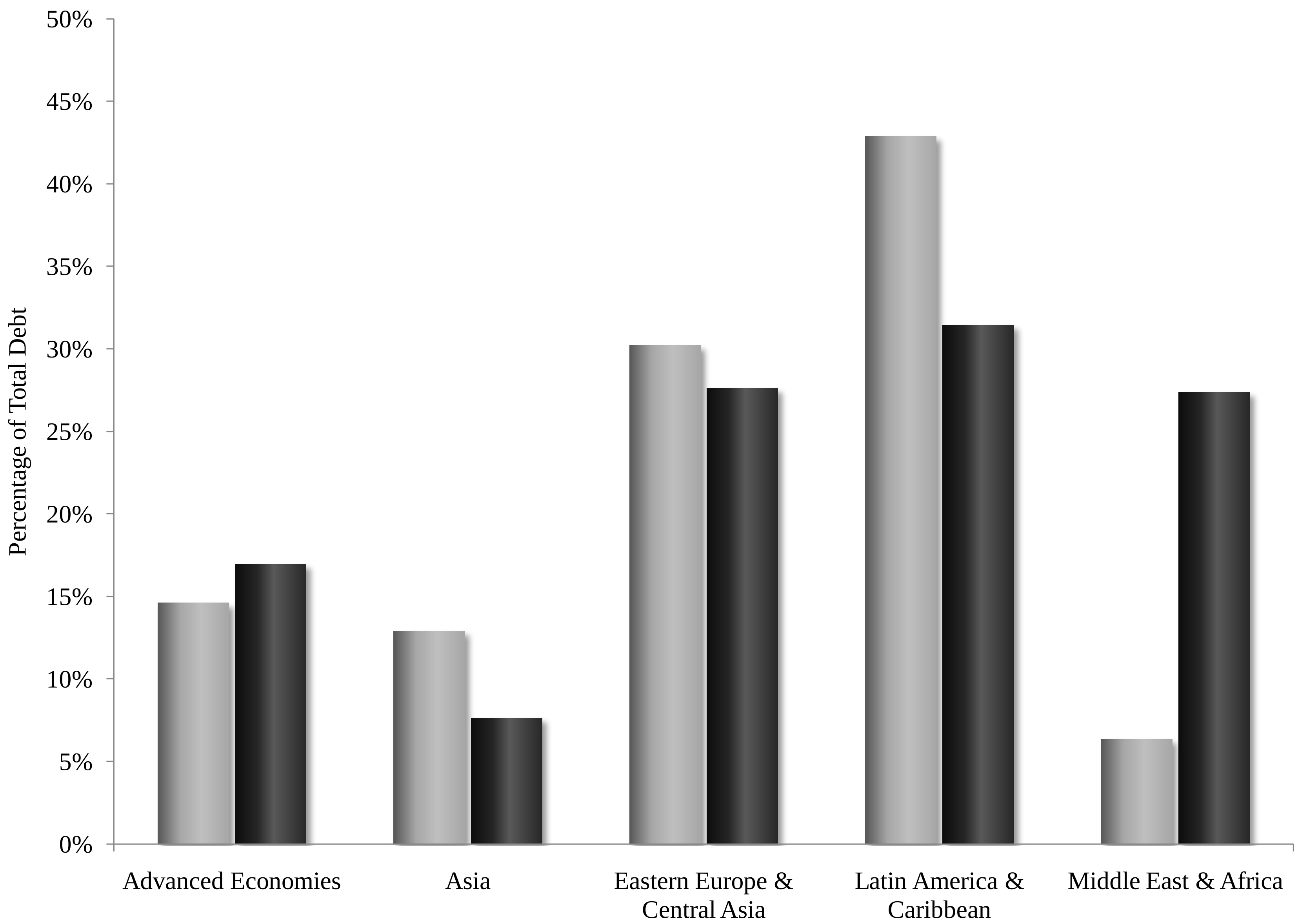
This figure shows the unweighted average of the percentage of foreign currency denominated private and public sector bonds outstanding across income levels, during the 1990 and 2000 decades. The data come from BIS. Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing.

Figure 15
Debt Dollarization across Regions

Panel A: Private Sector Foreign Currency Debt over Total Debt



Panel B: Public Sector Foreign Currency Debt over Total Debt



This figure shows the unweighted average of the percentage of foreign currency denominated private and public sector bonds outstanding across regions, during the 1990 and 2000 decades. The data come from BIS. Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Countries not classified as advanced are assigned to regions according to the World Bank's July 2010 classification. "Middle East & Africa" includes "Middle East & North Africa" and "Sub-Saharan Africa." "Asia" includes "East Asia & Pacific" and "South Asia."

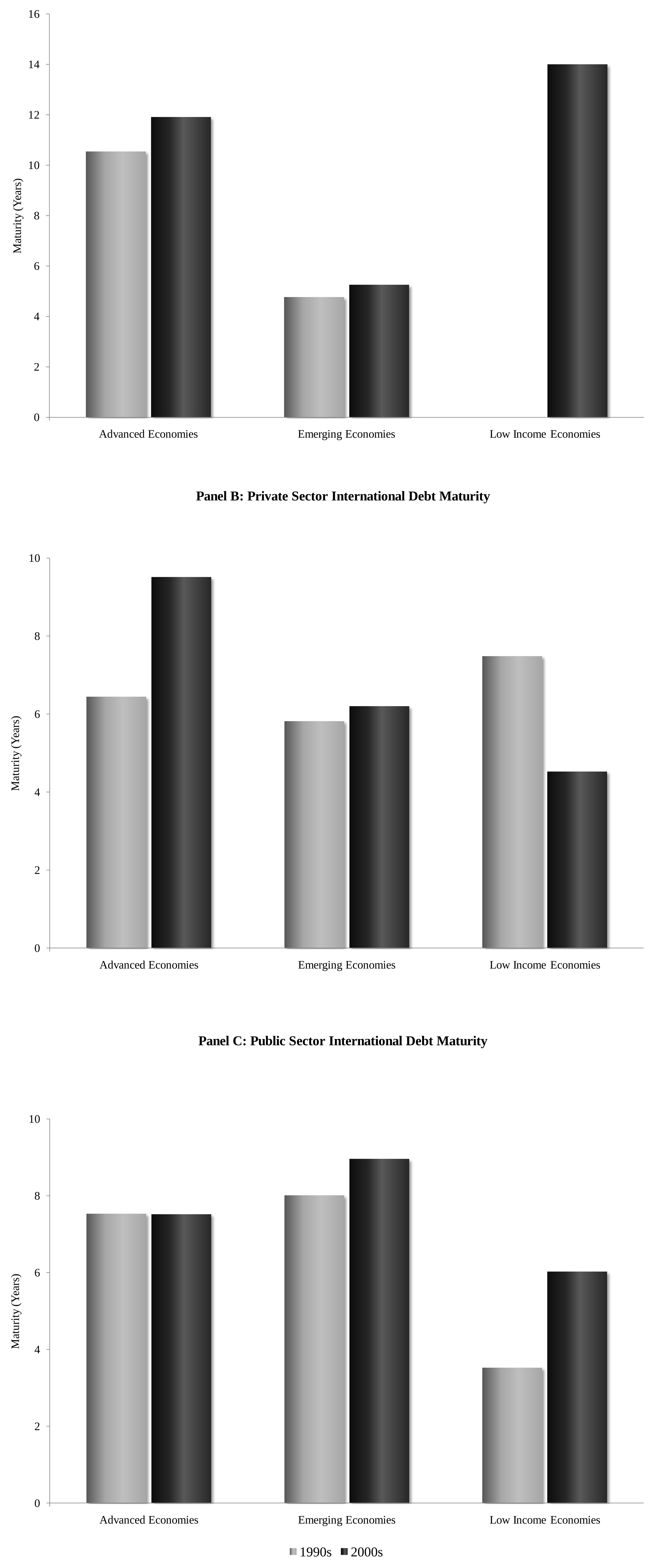
Figure 16

Private and Public Sector Debt Maturity across Income Levels

Panel A: Private Sector Domestic Debt Maturity

Panel B: Private Sector International Debt Maturity

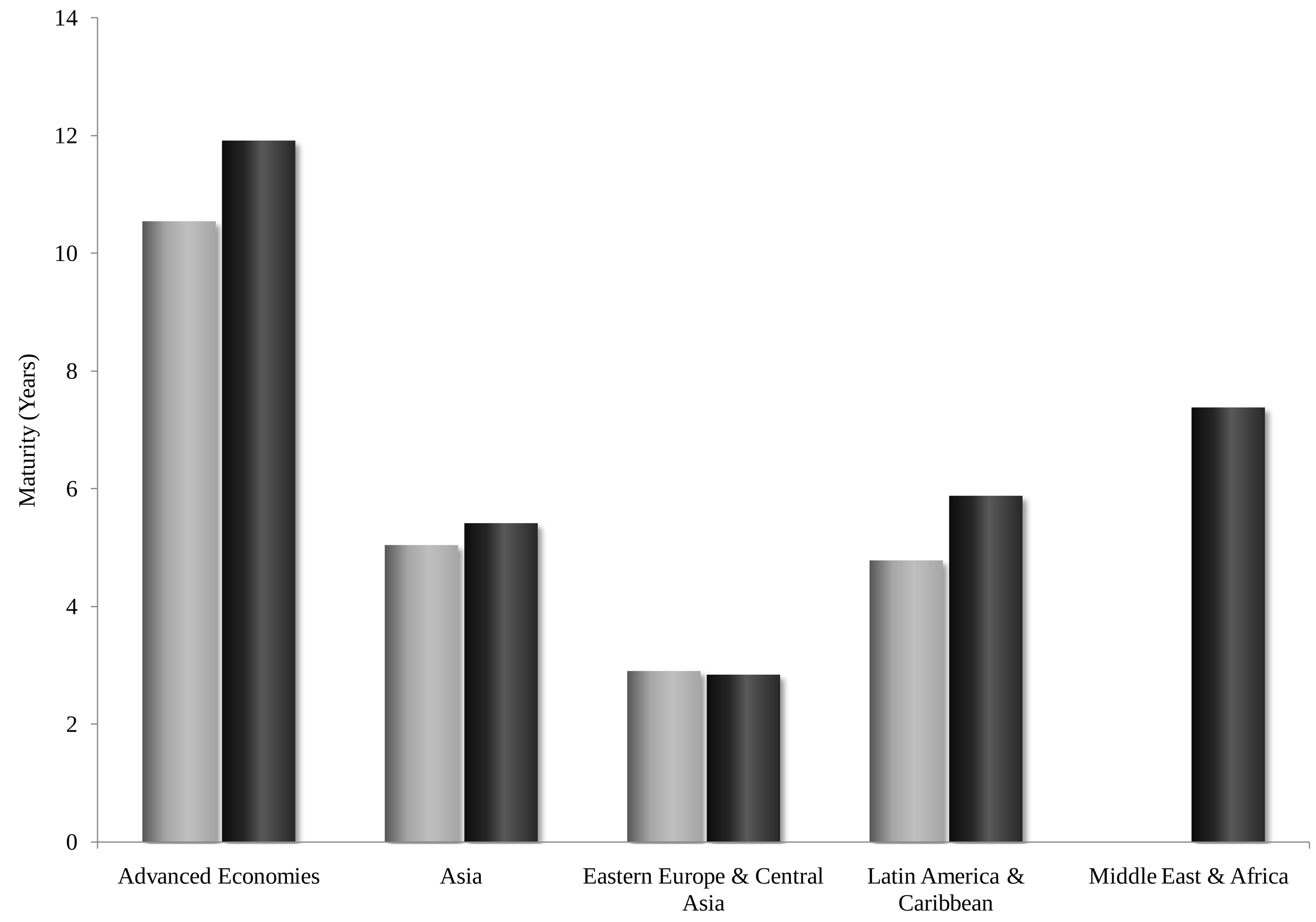
Panel C: Public Sector International Debt Maturity



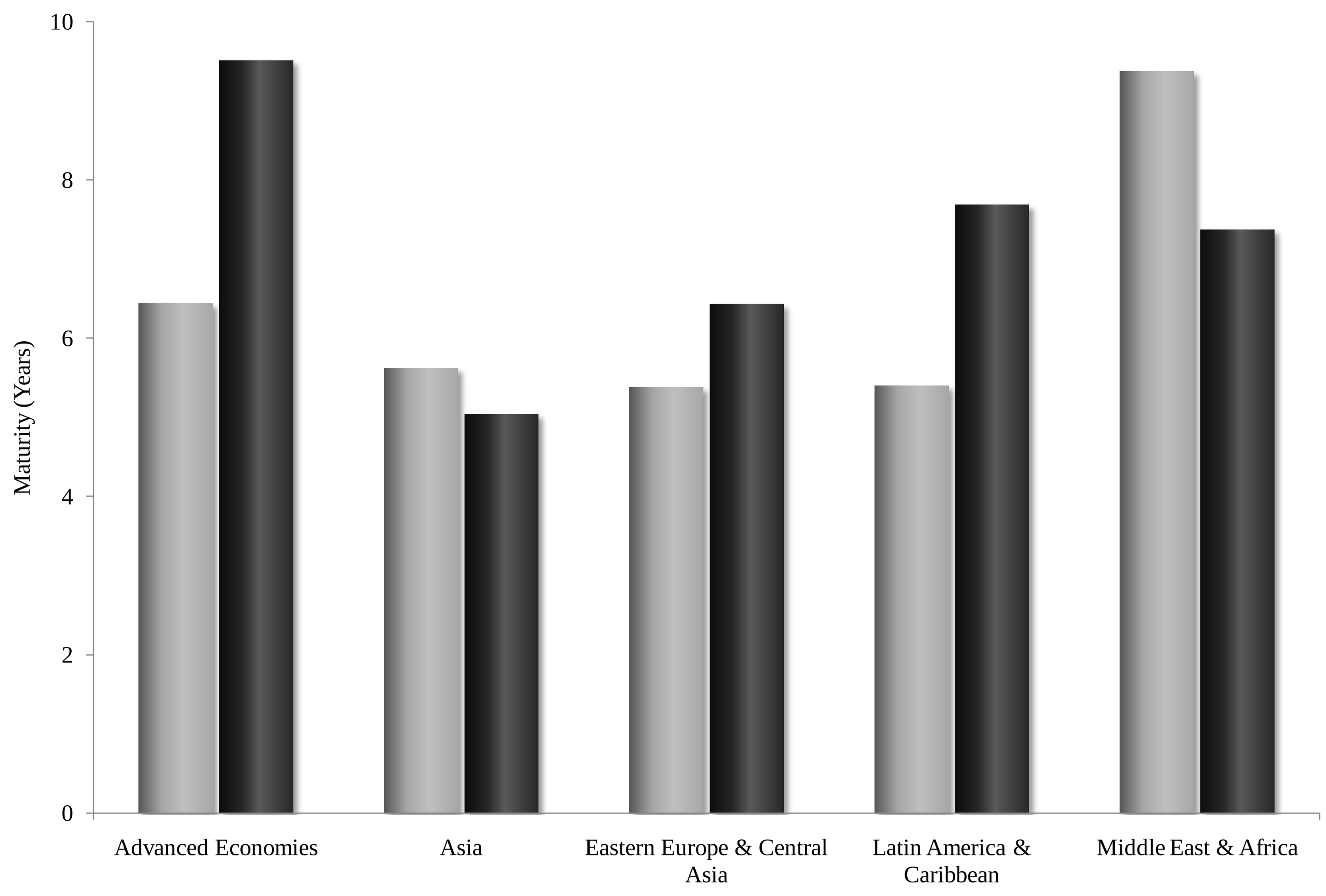
This figure shows the average maturity of private sector domestic and international new debt issues and public sector international new debt issues issues, during the 1990 and 2000 decades. The data come from Thomson Reuter's SDC. Income level averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing.

Figure 17
Private and Public Sector Debt Maturity across Regions

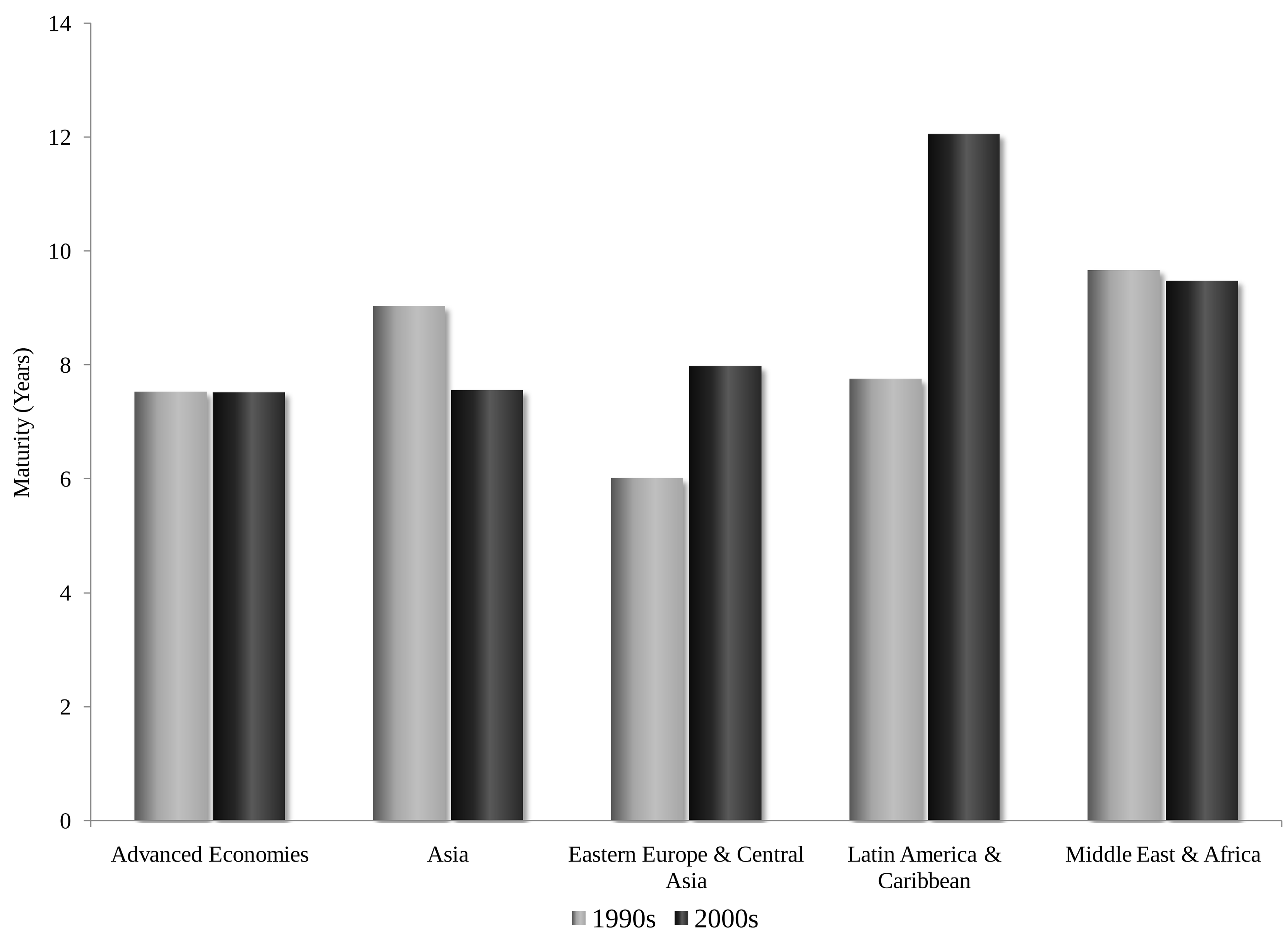
Panel A: Private Sector Domestic Debt Maturity



Panel B: Private Sector International Debt Maturity



Panel C: Public Sector International Debt Maturity



This figure shows the average maturity of private sector domestic and international new debt issues and public sector international new debt issues, during the 1990 and 2000 decade. The data come from Thomson Reuter's SDC. Regional averages are weighted by 2007 nominal GDP in U.S. dollars from the World Economic Outlook (October 2010). Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Countries not classified as advanced are assigned to regions according to the World Bank's July 2010 classification. "Middle East & Africa" includes "Middle East & North Africa" and "Sub-Saharan Africa." "Asia" includes "East Asia & Pacific" and "South Asia."

Appendix Table 1
Income Level and Regional Classifications

	Country Name	Income Level Classification	Regional Classification
1	Albania	Emerging	Eastern Europe & Central Asia
2	Algeria	Emerging	Middle East & Africa
3	Angola	Low Income	Middle East & Africa
4	Antigua and Barbuda	Emerging	Latin America & Caribbean
5	Argentina	Emerging	Latin America & Caribbean
6	Armenia	Emerging	Eastern Europe & Central Asia
7	Australia	Advanced	Advanced Economies
8	Austria	Advanced	Advanced Economies
9	Azerbaijan	Emerging	Eastern Europe & Central Asia
10	Bahrain	Emerging	Middle East & Africa
11	Bangladesh	Low Income	Asia
12	Barbados	Emerging	Latin America & Caribbean
13	Belarus	Emerging	Eastern Europe & Central Asia
14	Belgium	Advanced	Advanced Economies
15	Belize	Emerging	Latin America & Caribbean
16	Benin	Low Income	Middle East & Africa
17	Bhutan	Low Income	Asia
18	Bolivia	Emerging	Latin America & Caribbean
19	Bosnia and Herzegovina	Emerging	Eastern Europe & Central Asia
20	Botswana	Emerging	Middle East & Africa
21	Brazil	Emerging	Latin America & Caribbean
22	Brunei Darussalam	Emerging	Asia
23	Bulgaria	Emerging	Eastern Europe & Central Asia
24	Burkina Faso	Low Income	Middle East & Africa
25	Burundi	Low Income	Middle East & Africa
26	Cambodia	Low Income	Asia
27	Cameroon	Low Income	Middle East & Africa
28	Canada	Advanced	Advanced Economies
29	Cape Verde	Emerging	Middle East & Africa
30	Central African Republic	Low Income	Middle East & Africa
31	Chad	Low Income	Middle East & Africa
32	Chile	Emerging	Latin America & Caribbean
33	China	Emerging	Asia
34	Colombia	Emerging	Latin America & Caribbean
35	Comoros	Low Income	Middle East & Africa
36	Costa Rica	Emerging	Latin America & Caribbean
37	Croatia	Emerging	Eastern Europe & Central Asia
38	Cyprus	Emerging	Eastern Europe & Central Asia
39	Czech Republic	Emerging	Eastern Europe & Central Asia
40	Côte d'Ivoire	Low Income	Middle East & Africa
41	Democratic Republic of Congo	Low Income	Middle East & Africa
42	Democratic Republic of Timor-Leste	Low Income	Asia
43	Denmark	Advanced	Advanced Economies
44	Djibouti	Low Income	Middle East & Africa
45	Dominica	Emerging	Latin America & Caribbean
46	Dominican Republic	Emerging	Latin America & Caribbean
47	Ecuador	Emerging	Latin America & Caribbean
48	Egypt, Arab Rep.	Emerging	Middle East & Africa
49	El Salvador	Emerging	Latin America & Caribbean
50	Equatorial Guinea	Emerging	Middle East & Africa
51	Eritrea	Low Income	Middle East & Africa
52	Estonia	Emerging	Eastern Europe & Central Asia
53	Ethiopia	Low Income	Middle East & Africa
54	Fiji	Emerging	Asia
55	Finland	Advanced	Advanced Economies
56	Former Yugoslav Republic of Macedonia	Emerging	Eastern Europe & Central Asia
57	France	Advanced	Advanced Economies
58	Gabon	Emerging	Middle East & Africa
59	Georgia	Emerging	Eastern Europe & Central Asia
60	Germany	Advanced	Advanced Economies
61	Ghana	Low Income	Middle East & Africa
62	Greece	Advanced	Advanced Economies
63	Grenada	Emerging	Latin America & Caribbean
64	Guatemala	Emerging	Latin America & Caribbean
65	Guinea	Low Income	Middle East & Africa
66	Guinea-Bissau	Low Income	Middle East & Africa
67	Guyana	Low Income	Latin America & Caribbean
68	Haiti	Low Income	Latin America & Caribbean
69	Honduras	Low Income	Latin America & Caribbean
70	Hong Kong SAR, China	Emerging	Asia
71	Hungary	Emerging	Eastern Europe & Central Asia
72	Iceland	Advanced	Advanced Economies
73	India	Emerging	Asia
74	Indonesia	Emerging	Asia
75	Iran, Islamic Rep.	Emerging	Middle East & Africa
76	Iraq	Emerging	Middle East & Africa
77	Ireland	Advanced	Advanced Economies
78	Islamic Republic of Afghanistan	Low Income	Asia
79	Israel	Emerging	Middle East & Africa
80	Italy	Advanced	Advanced Economies
81	Jamaica	Emerging	Latin America & Caribbean
82	Japan	Advanced	Advanced Economies
83	Jordan	Emerging	Middle East & Africa
84	Kazakhstan	Emerging	Eastern Europe & Central Asia
85	Kenya	Low Income	Middle East & Africa
86	Kiribati	Low Income	Asia
87	Korea, Rep.	Emerging	Asia
88	Kosovo	Low Income	Eastern Europe & Central Asia
89	Kuwait	Emerging	Middle East & Africa
90	Kyrgyz Republic	Low Income	Eastern Europe & Central Asia
91	Lao People's Democratic Republic	Low Income	Asia
92	Latvia	Emerging	Eastern Europe & Central Asia
93	Lebanon	Emerging	Middle East & Africa
94	Lesotho	Low Income	Middle East & Africa
95	Liberia	Low Income	Middle East & Africa
96	Libya	Emerging	Middle East & Africa
97	Lithuania	Emerging	Eastern Europe & Central Asia
98	Luxembourg	Advanced	Advanced Economies
99	Madagascar	Low Income	Middle East & Africa
100	Malawi	Low Income	Middle East & Africa
101	Malaysia	Emerging	Asia
102	Maldives	Low Income	Asia
103	Mali	Low Income	Middle East & Africa
104	Malta	Advanced	Advanced Economies
105	Mauritania	Low Income	Middle East & Africa
106	Mauritius	Emerging	Middle East & Africa
107	Mexico	Emerging	Latin America & Caribbean
108	Moldova	Low Income	Eastern Europe & Central Asia
109	Mongolia	Low Income	Asia
110	Montenegro	Emerging	Eastern Europe & Central Asia
111	Morocco	Emerging	Middle East & Africa
112	Mozambique	Low Income	Middle East & Africa
113	Myanmar	Low Income	Asia
114	Namibia	Emerging	Middle East & Africa
115	Nepal	Low Income	Asia
116	Netherlands	Advanced	Advanced Economies
117	New Zealand	Advanced	Advanced Economies
118	Nicaragua	Low Income	Latin America & Caribbean
119	Niger	Low Income	Middle East & Africa
120	Nigeria	Low Income	Middle East & Africa
121	Norway	Advanced	Advanced Economies
122	Oman	Emerging	Middle East & Africa
123	Pakistan	Emerging	Asia
124	Panama	Emerging	Latin America & Caribbean
125	Papua New Guinea	Emerging	Asia
126	Paraguay	Emerging	Latin America & Caribbean
127	Peru	Emerging	Latin America & Caribbean
128	Philippines	Emerging	Asia
129	Poland	Emerging	Eastern Europe & Central Asia
130	Portugal	Advanced	Advanced Economies
131	Qatar	Emerging	Middle East & Africa
132	Republic of Congo	Low Income	Middle East & Africa
133	Republic of Yemen	Low Income	Middle East & Africa
134	Romania	Emerging	Eastern Europe & Central Asia
135	Russian Federation	Emerging	Eastern Europe & Central Asia
136	Rwanda	Low Income	Middle East & Africa
137	Samoa	Low Income	Asia
138	Saudi Arabia	Emerging	Middle East & Africa
139	Senegal	Low Income	Middle East & Africa
140	Serbia	Emerging	Eastern Europe & Central Asia
141	Seychelles	Emerging	Middle East & Africa
142	Sierra Leone	Low Income	Middle East & Africa
143	Singapore	Emerging	Asia
144	Slovakia	Emerging	Eastern Europe & Central Asia
145	Slovenia	Emerging	Eastern Europe & Central Asia
146	Solomon Islands	Low Income	Asia
147	South Africa	Emerging	Middle East & Africa
148	Spain	Advanced	Advanced Economies
149	Sri Lanka	Low Income	Asia
150	St. Kitts and Nevis	Emerging	Latin America & Caribbean
151	St. Lucia	Emerging	Latin America & Caribbean
152	St. Vincent and the Grenadines	Emerging	Latin America & Caribbean
153	Sudan	Low Income	Middle East & Africa
154	Suriname	Emerging	Latin America & Caribbean
155	Swaziland	Emerging	Middle East & Africa
156	Sweden	Advanced	Advanced Economies
157	Switzerland	Advanced	Advanced Economies
158	Syrian Arab Republic	Emerging	Middle East & Africa
159	São Tomé and Príncipe	Low Income	Middle East & Africa
160	Taiwan, China	Emerging	Asia
161	Tajikistan	Low Income	Eastern Europe & Central Asia
162	Tanzania	Low Income	Middle East & Africa
163	Thailand	Emerging	Asia
164	The Bahamas	Emerging	Latin America & Caribbean
165	The Gambia	Low Income	Middle East & Africa
166	Togo	Low Income	Middle East & Africa
167	Tonga	Low Income	Asia
168	Trinidad and Tobago	Emerging	Latin America & Caribbean
169	Tunisia	Emerging	Middle East & Africa
170	Turkey	Emerging	Eastern Europe & Central Asia
171	Turkmenistan	Emerging	Eastern Europe & Central Asia
172	Uganda	Low Income	Middle East & Africa
173	Ukraine	Emerging	Eastern Europe & Central Asia
174	United Arab Emirates	Emerging	Middle East & Africa
175	United Kingdom	Advanced	Advanced Economies
176	United States	Advanced	Advanced Economies
177	Uruguay	Emerging	Latin America & Caribbean
178	Uzbekistan	Emerging	Eastern Europe & Central Asia
179	Vanuatu	Low Income	Asia
180	Venezuela, RB	Emerging	Latin America & Caribbean
181	Vietnam	Emerging	Asia
182	Zambia	Low Income	Middle East & Africa
183	Zimbabwe	Emerging	Middle East & Africa

This table shows the list of economies included in the data and their income level and regional classification. Advanced economies are economies classified as "High Income" under the World Bank July 2010 classification (both OECD and non-OECD). Economies are classified as emerging if they have access to IBRD financing, and as low income if they only have access to IDA financing. Countries not classified as advanced are assigned to regions according to the World Bank's July 2010 classification. "Middle East & Africa" includes "Middle East & North Africa" and "Sub-Saharan Africa." "Asia" includes "East Asia & Pacific" and "South Asia."