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Global Contagion and the Decoupling Debate

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Abstract

This paper argues that there are a number of different versions of decoupling hypotheses and that rapid swings in their popularity are due largely to herding in popular mental models and shifts in short run correlations. It is important to not put too much emphasis on such changes of correlations since these can vary substantially depending on the patterns of shocks. There are substantial differences in the effects of contagion during the current crisis on growth rates of both advanced and emerging economies, such as the BRICs. Our estimates suggest that while countries like China and India have been able to maintain high growth rates, their short falls from trends have not been greatly smaller than that for the United States itself. Thus their decoupling has not been as great as many popular analyses have suggested.

1. Introduction

Fashion can change swiftly among commentators on the global economy. The media has a strong incentive to emphasize new area of stories to capture attention and there appears to be a quite elastic supply of experts to provide them. In the 1970s global interdependence was all the rage while in the middle of the first decade of this century decoupling theories gathered considerably attention to be followed again by recoupling stories as the global financial crisis worsened, and contagion was felt across the globe.

Now as the crisis eases, advocates of decoupling stories are rising again. For example, in a 2010 book entitled Fiscal Hangover: How to Profit from the New Global Economy, the investment director for Money Morning, Keith Fitz-Gerald devotes a major part to advocacy of what he calls "The Great Decoupling." He argues that "The term decoupling…is widely misunderstood – and even more widely misapplied. Most people think of it solely in term of financial markets. However, what it really means is that the global economy will be disconnected…" (Fitz-Gerald, 2010). We strongly agree with Keith Fitz-Gerald that discussions of decoupling can at times be quite confusing because people have different concepts in mind. Unlike Fitz-Gerald, however, we believe that there are several different legitimate and useful concepts of decoupling and that the key to productive discussion and analysis is to closely identify the type or types of decoupling that are being discussed, not to spend time in debate about

what a specific concept of decoupling should be. In this respect decoupling is much like contagion, where a number of useful concepts also coexist (Liang and Willett, 2008).

A major purpose of this paper is to distinguish among several different concepts or uses of decoupling. A second major purpose is to illustrate the dangers of the popular practice of exaggerating the importance of recent correlations - whether of financial market performance or economic growth rates – as guides to the general relationships among these markets or economies. Changes in correlations may be products of changing structural relationships, market sentiment, or patterns of shocks and the last can be quite variable over time. In popular discussions changes in correlation that have been generated primarily by changes in patterns of shocks are often taken as evidence of new eras of structural relationships. We argue that neither the fall in stock market correlations that sparked much of the decoupling discussion nor the sharp increases in correlations from contagion as the financial crisis went global in 2008 should be taken as strong evidence about longer term relationships.

While the most highly publicized views on issues like contagion and decoupling are often highly over simplified, they raise important issues for investors, global businesses, and policy makers and have been the subject of considerable high quality research. In section 2 we offer a brief history of the decoupling debates and document the rapid swings in the popularity of

decoupling stories based on shifts in short run correlations among financial markets and growth rates. In section 3 we offer an interpretation of these rapid swings based on the concept of herding in popular mental models. In section 4 we discuss more useful concepts of decoupling that go beyond simple correlations. In section 5 we illustrate the substantial instability in the correlation among growth rates and stock markets over time. In section 6 we turn to the argument that emerging market economies such as China and India have been able to largely insulate their economies, i. e., decouple, from the Great Recession in the advanced economies. We show that while China and India were able to maintain growth rates that would be envied by any of the advanced economies, measures of their growth rates relative to estimated trends suggest that while they escaped the crisis with much less damage than did economies such as Mexico and Russia, their short falls from trend were not a great deal less than for the United States and on some measures were even a little greater. Section 7 offers concluding commends.

2. A Brief History of the Decoupling Debates

In the 1970s global interdependence was highlighted by the breakdown of the Bretton Woods regime of adjustably pegged exchange rates, the oil shocks, and emergence of stagflation on a global scale. While citizens of most countries had long paid attention to the importance of the world economy, these

developments came as a shock to many Americans who were used to being well insulated from most global economic developments. From ignoring global economies interactions, many switched to exaggerating its importance. By the 1980s, however, more balanced views were wide spread among leading researchers. Even for large economies like the United Sates, international economic interdependence was significant, both due to external shocks and the ways in which the external sector influenced the impacts of domestic policies. A prime example of the latter was the twin deficits analysis which argued that US budget deficits were a major cause of the strong dollar and US current account deficits in the 1980s. Discussions of the desirability of economic policy coordination received prominence and discussion of locomotive theories for global growth were popular.

Other than sources of commodity shocks, developing countries played little role in the discussions of macro economic policy coordination among the advanced economies. On the investment side, the 1980s are largely remembered as the decade of the Latin American debt crises. In Asia, there was early talk of decoupling from economic dependence on the advanced economies as "strong domestic demand and confident consumer became hallmarks of Asian countries." (Asian Economics Flash, 2007). However, the 1997-1998 Asian financial crises wiped this concept out of investors' minds. The buzzword reappeared after September 11, 2001 when the US and Europe sank into recession, but emerging

countries like India and China continued to grow at mid to high single digits. From 2002 to 2007, emerging nations sustained high growth. "The 'decoupling' thesis…[became] a popular theme in Asian policy circles in the first decade of the new millennium…" (Athukorala and Kohpaiboon, 2009). In this context decoupling meant " the notion that the East Asian region had become a self-contained economic entity with potential for maintaining its own growth dynamism independent of the economics outlook for the traditional developed market economies" (Athukorala and Kohpaiboon, 2009).

Attention to the possibility of decoupling broadened as US growth began to slow in 2005 without noticeable effects on growth in other regions. This prospect was highlighted by the IMF in its World Economic Outlook (2007). Even after the slowing of US growth was followed by the early signs of the US subprime crises, many serious researchers as well as popular analysts emphasizing decoupling- and with some justification. As Vanessa Rossi (2008) documents "Up to mid-2008, the emerging markets remained strong-'decoupling did work'". In a 2007 report the IMF concluded "Overall, these factors suggest that most countries should be in a position to 'decouple' from the U.S. economy and sustain strong growth if the U.S. slowdown remains as moderate as expected."(IMF, 2007)

As will be documented in section 5, over this period the decoupling of economic growth rates was accompanied by a decoupling of stock market

behavior. Increasing liberalization of financial sectors, improvements in communication and computer technology, declines in transaction costs, and increased recognition of the benefits of diversification have all contributed to a substantial increase in international financial interdependence among advanced and emerging market economies. Indeed some even argued that the correlations among stock markets had increased so much that there was little benefit left to international diversification.

Big investment firms like Goldman Sachs and Morgan Stanley were the ones to popularize the notion of decoupling.[1] They believed "China, together with emerging Asia, stands a very good chance of outperforming and decoupling from the US economy in the coming few years." (Asian Economics Flash, 2007). In 2007, IMF data indicated that India and China accounted for a higher proportion of global growth than the U.S. (Esterhuizen, 2008). In the later part of 2007, as the crisis worsened in the US, investors increasingly switched to emerging market assets. A $54 billion inflow to emerging market funds helped generate strong global stock performance outside the US in 2007 (Prakash, 2008). These decoupling views were sharply dashed as 2008 progressed, however. In a careful study of the spread of the global crisis, Dooley and Hutchison (2009)

[1] The main advocate was Jim O'Neill, chief economist of Goldman Sachs and the inventor of the BRIC acronym for the world's four biggest emerging markets of Brazil, Russia, India and China in 2001.

pointed to May 2008 as the latest time that any plausible decoupling view could be held with respect to stock markets.

In fall 2008, after Lehman Brothers' collapse, the global financial system was strongly affected.[2] Emerging economies got caught in the fallout. Outflows from EM funds were $15 billion in January 2008 alone (Prakash, 2008). Some of the biggest stock markets drops were in emerging markets. Sell offs in China and India led the way. By mid-October 2008, the BRIC index was down 57% (Global Finance Magazine, 2008). Global funds fled the emerging markets and took refuge in US Treasury securities. By the beginning of 2008, Goldman Sachs raised the prospect of recoupling on the argument that "some parts of the rest of the world would now find it difficult to ignore the US slowdown." (O'Neil, 2008). Discussions of recoupling quickly replaced decoupling stories.

Not all analysts just followed the data. For example, Nouriel Roubini in a number of publications of his Global EconoMonitor predicted that decoupling would not last. In early February of 2008 a Danske Bank Emerging Markets Brief was titled "From Decoupling to Recoupling" and a research paper by Barry Eichengreen and Yung Chul Park (2008) completed in May was titled "Asian and the Decoupling Myth." Still as far as the investment world was concerned Mohamed El-Erian (2009) judges that "The decoupling camp was firmly in control in the run-up to the 'sudden stop' experienced by the global economy in

[2] For more detailed analysis and references on the spread of the crisis see Rajan (2009) and Willett, Liang, and Zhang (forthcoming).

the last 3½ months of 2008 … market consensus increasingly viewed emerging economies as the growth locomotive for a world looking to reduce its dependence on highly-indebted U.S. consumers."

The victory of the recouplers was only temporary, however. Decoupling quickly returned in 2009 when Europe and the US continued to show signs of contraction while China and India quickly rebounded. In its October 2009 WEO, the IMF said growing economies like "India and China will lead the expansion this year and will grow at rates of 5.4 and 8.5 percent, respectively." (Commodity on line, 2009). Decoupling was, once again, a hot topic. As El-Erian (2009) put it in August 2009, "With the ongoing normalization of the financial system, the decoupling camp is again in strong ascension today. It is buoyed by the developing pick-up in economic activities and the fact that equity valuations are now back above the pre-Lehman levels."

3. An Interpretation of the Swings in Opinion

How should we interpret such rapid swings back and forth in opinion? For the investment community we believe that this is largely an example of the tendency to focus on popular models or stories to interpret events and sell investment strategies. An example is in the tendency for foreign exchange market participants and commentators to focus on one or two factors at a time, flitting from current account deficits to money growth to international indebtedness and

back again. In dealing with a world of great complexity and uncertainty, recent developments in behavioral and neuro economics and finance suggest that it's quite understandable that investors grasp for simple mental models.[3] Such focus on problems of information and the cognitive limitation of the human brain suggest that it's quite understandable to have considerable herding in the adoption of popular models. Their views are also likely to be much more lightly held than deep seated ideologies. With the frequency of surprise developments in the financial world, there are likely to be frequent shifts in focus. While confirmation bias dampens the frequency of switcher among investors the "latest thinking" will often show considerable flexibility.

In this light we can interpret the decoupling and recoupling theses as views on the short or medium term outlooks for correlations among countries' economic growth rates and financial market performance. And from this perspective it's perfectly reasonable to switch back and forth between decoupling and recoupling views based on the patterns of shocks that hit economies. On the other hand, taken as scientific hypotheses, such frequent switching is highly disturbing. This is likewise true for policy makers attempting to deal with the challenges of economic and financial interdependence.

Fortunately, however, international monetary analysis provides a framework within which we can make sense of a substantial portion of the

[3] See, for example, Burnham (2005), Peterson (2007), and Zweig (2007).

otherwise bewildering array of comments made about decoupling – pro and con. A beginning is to recognize that there are a number of different concepts of decoupling, not all of which go hand in hand. As was illustrated in the previous section some discussions focus on the behavior of stock markets, some on the real economy and some on both. While economic growth certainly has an influence on stock markets, the relationship is far from one to one. In general in recent decades we find higher correlations among stock markets than among economic growth rates across countries, indicating an increased degree of global capital mobility and financial integration. This is illustrated in section 5.

4. Concepts of Decoupling

Decoupling clearly implies a break in a relationship that was previously more coupled and closely linked. This definition lends itself naturally to discussions of changes in patterns of correlations and that is what commentators usually have in mind, especially in discussions of stock markets. Economists often offer more structural definitions, however. The definition of "decoupling … as growth in one area becoming less dependent on growth in another area" (Rossi, 2008) reflects this view. Discussions also frequently proceed in terms of the size of spillovers from one economy to another (IMF, 2007). Often the case for decoupling in the face of greater globalization is made in terms of greater regionalization. This is especially common in Asia where intra regional trade has

grown rapidly. Furthermore while the discussions of such macroeconomic interdependence in the 1970s and 80s focused heavily on the relationships among the advanced economies, with the spectacular growth of the BRICs (Brazil, Russia, India, and China) and other emerging market economies in recent years, current discussions focus heavily on relationships with the emerging market countries as well.

A recent study by an IMF economist M. Ayhan Kose et al. (2008) describes the decoupling and recoupling debate as "largely about whether and how emerging markets will be affected by the U.S. business cycle." In a broader concept, decoupling means business cycles in emerging nations are more independent from business cycles in advanced nations like the U.S. After they separated 106 countries into industrial and emerging economies, they found evidence of "business cycle convergence within each of these two groups of countries but divergence (or decoupling) between them."

These issues have been the subject of quite a number of recent empirical studies, especially for Asia and Europe, that don't directly address the decoupling debate but focus instead on economic interdependence more generally. The label under which most of this analysis goes is the degree of business cycle synchronization. Of course this can be measured in the same ways as decoupling, just with a reversal of signs. A good deal of the literature has been motivated by the empirical implementation of optimum currency area criteria in the context of

the pros and cons of regional monetary union or greater regional policy coordination.[4] The standard argument is that a greater degree of synchronization reduces the divergence in optimal monetary policies for the member of a prospective currency area and hence reduces the cost of giving up independent national monetary policies.

One common method of measurement is to divide the sources of a country's macroeconomic economic fluctuations into global, regional, and national factors. The difficulty with this approach, as with correlation analysis, is that it conflates the effects of direct interdependence or spillover effects with the nature of shocks. As a consequence changes in correlations are interpreted as indicating changes in the degree of interdependence or spillover when in fact they may largely reflect changes in the patterns of shocks. This point is emphasized in the paper by Kose et al. (2008). They find that for EMs group factors have become more important relative to global factors over the period 1985-2005 compared with 1960-1984. However, over this period estimates of the size of the spillover on EMs from fluctuations in the US economy have increased, not decreased.

These seemingly conflicting results are easily explained. Global shocks were stronger in the earlier period. As the WEO comments "Export exposure to the United States has generally continued to increase, even for countries where

[4] Far discussion and references to this literature see Willett et al (2009), and Willett, Permpoon, and Srisorn (forthcoming), and Willett, Permpoon, and Wihlborg (forthcoming).

the US share of total exports has declined" (IMF, 2007). The WEO goes on to stress that the magnitudes of these real linkages vary considerably across countries. They are especially strong for the United States' immediate neighbors, Canada and Mexico, and are generally stronger with the advanced than with the emerging and developing economies. Such econometric estimates of direct spillovers suggest that the old adage that when the US sneezes the rest of the world catches a cold is greatly exaggerated except for Canada and Mexico. The IMF describes the spillovers from US fluctuations as "important" but "generally moderate in magnitude" (IMF, 2007).

Decoupling and recoupling (and changes in the degree of business cycle synchronization) are closely related to the size, nature, and source of shocks. Larger shocks get transmitted most strongly and faster. Similarly, we observe convergence, or recoupling, when shocks are generated from the intertwined and complex global financial system. In the beginning of the current credit crisis, neither the magnitude nor the natures of the shocks were initially fully recognized. So patterns diverged across countries. Initially it was viewed primarily as a shock to the US and some European banks. As the crisis entered its more severe stages, however, the seizing up of the global financial system acted as a common shock across most countries, leading to a substantial increase in synchronization. The combination of the drying up of trade, finance and the

beginning of recessions in many countries then began to take its toll on international trade, in turn worsening the recessions in many countries

The magnitudes of these spillovers will vary not only with patterns of trade and investment but also with the causes of fluctuations in the United States. Thus it was not unreasonable that many analysts believed that the spillovers from what was initially viewed almost exclusively as a US domestic housing market problem would be relatively mild. Since housing has a relatively low import content and the effects on the aggregate US economy were expected to be moderate, it was quite plausible to expect little effect on growth in other countries. The growth effects abroad from the US recession in the early 1990s generated by the Savings and Loans crisis had been much weaker than from the US recession following the bursting of the tech bubble. Furthermore historically the spillovers from US slowdowns in growth had been much weaker than from actual recessions.

As the magnitudes of the crisis slowly revealed itself, the outlook for emerging markets changed drastically. The banking systems in both the US and Europe were much more heavily exposed to securities based on subprime mortgages than officials and analysts had been aware. As the sharp downturn in the housing market hit first the shadow banking system of conduits, hedge funds and Special Investment Vehicles (SIVs) and then the parent banks themselves, even EMs with sound fundamentals were hit by a double whammy. First the

freezing up of the credit system led to drastic reductions and in many cases actual reversals of financial flows from the advanced to the EM economies, even though the financial systems of the later had generally little direct exposure to the toxic assets. Then as the US and Europe moved into recession, EM exports fell sharply. They were hit both by the drop in demand for imports in the recession countries and by a substantial drying up of trade credit. On top of this, EMs with weak fundamentals such as large current account deficits and high short-term foreign indebtedness were hit by speculative runs over and above the general increase in risk aversion and flight to quality in the financial sector.[5]

The strength of transmission channels can change decoupling quickly into recoupling and vice versa. India has a more open financial system than does China. So the credit crisis was transmitted more strongly to India through financial markets than to China. The large portfolio inflow to India in 2007 gave many a false impression of decoupling, but this was reversed to a huge outflow in 2008 as the crisis worsened. China, on the other hand, had built a much stronger trade relationship with the U.S and rest of the advanced world than had India. Thus China was hit harder through its export sector.

In terms of providing protection from economic fluctuations in the advanced economies much of the increases in intra regional trade in Asia gave misleading signals to those who did not analyze its composition carefully. Much

[5] See Willett, Liang, and Zhang (forthcoming).

of the increase had been in inputs to export platforms, especially in China. Thus when the advanced economies demand for imports from China was hit, this was passed along as reductions in China's demand for imported inputs from the rest of Asia. As a result the extent of intra regional trade within Asia provided much less insulation from advanced country fluctuations than if there had been an equivalent expansion of trade in final products (Eichengreen and Park, 2008; Athukorala and Kohpaiboon, 2009).

A full analysis of decoupling (and synchronization) requires consideration not just of impact effects but also of countries' ability to respond to these shocks. This is an area where the decoupling camp has a stronger position. Many EMs have been developing greatly expanded domestic markets and strong international reserve positions. This combination has allowed many EMs to respond to the contagion from the advanced economies with strong macroeconomic stimulus. China has been the most prominent, but by no means the only example. As a result many EMs who took a hard hit have been able to begin their recoveries rather quickly. This is the major truth underlying the reemerge of the decoupling camp.

One should be careful not to swing too far in this direction, however. There is a vast difference between the moderate decoupling view that many EMs will be able to resume substantial growth fairly quickly and the hope that the BRICs could be a new locomotive to drive the world economy. In some specific

market segments such as particular commodities there may be some truth in the stronger argument, but not in the aggregate.

5. Analysis of the Instability of Growth and Financial Market Correlations

Our theses that correlations are heavily influenced by the patterns of shocks and that since these can vary a great deal over time so will the correlations are strongly borne out by the calculations presented in Tables 1 and Table 2. In these we focus on correlations between the United States and three sets of countries, its closest neighbors, Canada and Mexico, advanced economies represented by Germany and Japan, and the BRICs. We consider growth correlations first. We present both simple correlations of annual growth rates against the United States over a series of five-year periods and the correlations of deviations from trend. [6] For the deviations from trend, we calculate them from the Hodrick-Prescott Filter (HP filter). The HP filter is a data-smoothing technique that is commonly used to remove short-term fluctuations and reveal long-term trends. In contrast to the linear trend, HP filter produces a non-linear presentation with a procedure of square error minimization. The HP filter is not without drawbacks, however. For example, the determinants of the variance of the trend or level of smoothness is arbitrary, and there is an end-point problem in

[6] Two sets of GDP growth correlations in five-year intervals are calculated: the simple correlation and the correlation of deviation from trend after applying the Hodrick-Prescott Filter (Tables 1a and 1b).

which the calculation puts more weight on the observations in the end of the series (Marinheiro, 2004/4005). However, as Ravn and Uhlig (1997, p1) have suggested, although the HP filter may be only optimal in special cases, "none of these shortcomings and undesirable properties are particularly compelling: the HP filter has withstood the test of the time and the fire of discussion remarkably well." With these considerations in mind, we adopted the HP filter for our calculations in this paper.

5.1 Growth Rate Correlations

Our story line is strongly supported by both sets of calculations. The correlations are extremely variable over the different time periods (Tables 1a and 1b). The differences between the simple correlations and the correlations of deviations from trend are usually quite small. They differ by less than 0.1 in 79 percent of the calculations. However, the differences can be big sometimes. For example, during 2005-2008, detrended correlations of three of the BRIC countries are significantly different from their simple correlations. The differences are 0.42 for Brazil-US, 0.21 for China-US, and 0.39 for Russia-US. For other countries, the largest differences are 0.44 for Germany-US during 1995-99, and 0.27 for Japan-US during 1960-64.

We do find some expected regularities based on structural characteristics. The United States' closest trading partners, Canada and Mexico, display

consistently high correlations with the US over the entire sample period. The correlations between Canada and the US vary only from 0.63 to 0.99, with 80 percent being 0.79 or above. Up to 1995 Mexico-US correlations were quite variable, but since Mexico's economic liberalization and its joining NAFTA, the correlations have been consistently high, varying only between 0.82 and 0.96.

Due in considerable part to the major oil shocks the correlations of the industrial countries with the US were especially high during the 1970s. While at the time there were many claims that we had entered a new era of global interdependence, by the late 1980s the correlations of Germany with the US had fallen substantially and in the early 1990s both sets of correlations had turned negative. In the first decade of the new century they were both positive again. Over our full sample the German-US simple correlations varied from 0.88 in 1980-84 to -0.86 in 1990-94 (0.87 to -0.85 for detrended correlations). For Japan the simple correlations varied from 0.97 in 2000-04 to -0.58 in 1990-94 (0.96 to -0.50 for detrended correlations). The correlations of the US and developing countries show high volatility as well, often varying from large positive to large negative numbers. Using detrended data, the pairwise correlations vary from 0.91 to -0.25 for Mexico-US, 0.77 to -0.71 for Brazil-US, 0.76 to -0.87 for China-US, and 0.99 to -0.95 for India-US (The Russian data does not go back far enough to make such comparisons.).

Table 1b, however, shows that compare with other countries in our sample, the BRICs generally have lower degrees of growth comovements with the US. Evidence of low correlations can be found during 1980-1984 for Brazil and India, 1985-1989 and 1995-1999 for Brazil, India, and China, and 2000-2004 for India, China, and Russia. Nevertheless, the evidence is not strong enough to support decoupling. During other time frames, the same sets of correlations are quite high. For example, China-US growth correlations are 0.62 and 0.76 during 1980-1984 and 2005-2008, India-US are 0.88 and 0.99 during 1990-1994 and 2005-2008 respectively, and Russia-US are 0.82 during 2005-2008. Furthermore, simultaneous increases in correlations (other than Brazil) during 2005-2008 show the effect of increased globalization and interdependence rather than decoupling. With its seesaw patterned correlations, Brazil's case shows volatility rather than decoupling.

Thus, our results caution that we should not place a good deal of weight on using correlations over short periods to either support or reject decoupling. The high variability in correlations over time suggests that the general increase in global economic interdependence reflected in growing international trade as a proportion of GDP and substantial increases in international capital mobility has been dominated by the variability in patterns of shocks.

5.2 Stock Market Correlations

Interestingly we find considerably less variability in correlations of equity returns. Negative correlations are less frequent and of smaller magnitudes (Table 2). Again Canada-US correlations are the most stable, varying only between 0.64 and 0.82. Mexico's correlations are also rather stable for the three periods available, varying between 0.64 and 0.79. German-US stock correlations show an upward trend, but Japan-US correlations do not. From 1975 through 2004, the five-year correlations varied only between 0.4 and 0.55 for Japan, while for Germany they varied from 0.25 to 0.75 over the same period. The BRIC correlations generally start off low or negative and then rise substantially in the later periods. This is consistent with these economies becoming more integrated into the global financial system.

6. Did the BRICs Insulate their Economies Successfully from the Great Recession?

Another relevant empirical issue is to look at how the BRICs and other EMs have weathered the financial crisis compared with the advanced economies. Of course, a full analysis of this question would require careful econometric estimations of the impacts of the interactions among countries. For example the strong view of BRICs as locomotives sees their growth as helping to reduce the size of the recessions in the advanced economies. This version sees "the BRIC's vigorous consumption growth helping drag advanced economies out of recession"

(Lex, 2009). As an initial investigation, however, we can compare how growth rates during the crisis in the BRICs and other EMs compared with those in the advanced economies.

A typical perception of the success of the BRICs is given by the Lex Column in the Financial Times. "The BRICs, excluding Russia, withstood the financial crisis better than the developed world: China and India maintained robust growth."(Lex, 2009). It is certainly true that China and India maintained growth rates that the advanced economies would love to have, but this can give a misleading impression of the growth costs the crisis imposed on such economies.

More relevant is what happened to their growth rates compared with what they would have been without the crisis. This counterfactual is of course unobservable so we must rely on estimates and these may differ. Still it is an exercise worth pursuing. The simplest method is to compare growth rates during the crisis with those preceding it. Of course even this simple method raises a number of issues. What year or average of years of growth should we take as the benchmark for comparison? And how should we measure the crisis declines when they cut across various years? Furthermore, we don't know if the recent resumption of growth in most economies in 2009 will be continued. In a recent paper (Willett, Liang, and Zhang, forthcoming) we used IMF estimates to compare growth rates for 2007 with 2009. The average differences across the advanced and emerging and developing economies as groups were quite similar,

with declines of 6.1 and 6.6 percent respectively, but with considerable variability within each group. For example, U.S. growth fell less than 5 percent, from 2.1 to -2.7 percent, but Mexican growth fell by more than 10 percent, from 3.3 to -7.3 percent.

A likely better measure is to look at deviations from growth trend using a Hodrick-Prescott filter. Our analyses in some cases paint a quite different picture from the standard story (Table 3a and 3b). Depending on the time periods used for calculating the trends,[7] we estimated China's growth rate was 1.67 to 1.92 percent below its long term economic growth trend in 2009. This was much better than the growth reductions for many other countries. For example, we estimate Russia's growth was 8.57 to 10.16 percent less than its trend, while estimated declines for Mexico was 6.14 to 6.4 percent, Germany 4.25 to 4.39 percent, and Brazil 3.78 to 3.86 percent. By comparison, growth in the US dropped only 2.53 to 2.61 percent. India and Canada's were in similar situations, growth decreased 2.2 to 2.53 percent and 2.28 to 2.56 percent respectively. Since the growth rate for the US in 2009 was among the least below the estimated normal growth suggests that the BRICs on average didn't weather the recent credit crisis much better than the US did. In terms of these calculations, the BRICs were not as insulated from the crisis as some decoupling advocators have argued.

[7] The deviations from the trend here are based on the Hodrick-Prescott filter generated for the period of 1960-2009 and 2000-2009 respectively.

Using the Hodrick-Prescott filter may understate the effects of the crisis, however, since in its standard application the full time period is used and in our application this includes the crisis years at the end of the series. As noted previously, the mechanism of the HP filter's calculation produces the "end-point bias" which means the last point of the series has an exaggerated impact on the trend at the end of the series (Bruchez, 2003). [8] Thus the recession pulled down the calculated trend rates of growth. We thus also calculated linear trends based on data only through 2006 and compared 2009 growth rates with trend rate of growth.[9] On these measures the effects of the crisis on the United States appear much stronger, with the magnitude of sub par growth equaling 5.67 percent if the trend is started in 2000 and 6.14 percent if the trend is started in 1990 (Tables 3c and 3d). For China the growth gap is 4.42 percent if 2000 is used, but only 1.33 percent if 1990 is used. This reflects the acceleration of China's growth as more economic reforms took hold. The other two BRICs, Brazil and India, also appear to weather the crisis better than in the previous scenarios. One can make arguments on both sides as to which is more appropriate.

With the notable exception of the effect on China using the trend from 1990, the results are generally qualitatively similar to those from the H-P filter

[8] The end-point problem can be adjusted by adding forecasting value to the end of the series, however, the forecast might also be biased due to factors such as business cycle conditions (Bruchez, 2003). Discussions on the solution for the problem can be done in a future research.
[9] The deviations from the trend here are based on the linear trend for the period of 1990-2006 and 2000-2006 respectively.

with respect to the pattern of growth declines. Russia is still the hardest hit. Using the 1990 trend, we found Brazil and India performed somewhat better than the US. The declines from their growth trends were -4.41 and -3.46 percent respectively, compare with -6.14 percent for the US. Using the 2000 trend, India appears harder hit. Its growth rate was 7.74 percent less than trend. Brazil and the US were 5.11 and 5.67 percent less, respectively.

While we should not put too much weight on these specific calculations, they do strongly suggest that we should not be too quick to accept the conclusions that the BRICs, excluding Russia, have been able to largely insulate themselves from the Great Recession. It seems that some commentators have conflated the high trend growth rates of these countries with their degree of insulation from the global economy. This is clearly an important issue which deserves deeper structural analysis.

7. Concluding Remarks

We have argued that there are a number of different versions of decoupling hypotheses and that it is important to keep these distinctions in mind if we are to avoid confusion. It is particularly important not to place too much emphasis on the latest patterns of correlations among economic growth rates and stock prices since these can vary substantially from one period to another depending on the patterns of shocks.

While we would not put much weight on the precise numbers of our calculations, they suggest that no relatively open economy was able to almost completely decouple from the effects of the global financial shock. But many were able to adopt policy responses that reduced the negative impact and most of these policy responses were not of the beggar-thy-neighbor variety. The failure of the shock to cumulate into anything like the Great Depression of the 1930s suggests that despite all of the miscues made by governments in fighting the crisis, we still have come a long way since the 1930s. Let us hope that this crisis in turn will help governments learn as much about sound financial regulation and supervision as was learned from the 1930s about macro economic policy making.

The United States was never a great a locomotive of the global economy as was popularly imagined and neither will be the BRICs within the next few decades. But the US has had and will continue to have an important (if possible somewhat declining) impact on the global economy and increasingly so will the BRICs. We have entered a world where no one country or group of countries is economically dominant. This is a world of complex economic interdependence that requires joint management by a sizeable group of countries if we are to achieve our collective economic potential.

In this regard there is another aspect of economic interdependence that will return to prominence as we recover from the global financial crisis – the problem of global payments imbalances. To avoid global instability it is

important not only to restore growth, but to do so in ways that reduce global current account imbalances to safe proportions. The economics of this is well understood. Countries with large surpluses such as China and much of Asia need to rely more on the expansion of domestic demand and less on exports. Countries with large deficits, especially the United States, need to increase domestic savings (both public and private) while reducing domestic consumption. If this is to be done without generating another recession substantial expansion of exports will be required.

From the standpoint of standard economic models this is a simple problem with a simple solution. In practice there are substantial political problems because of the short-run costs of making such adjustments. The global costs of such adjustments will be much less if they are undertaken cooperatively across countries. This is a situation where there is much more commonality than divergence of economic interests from a longer term perspective.

The key obstacle is the status quo bias of short run political pressures that can create substantial short-run conflicts of interest. There are also important technical economic issues concerning the most effective ways of going about the rebalancing of both surplus and deficit economies. In this policy sense economies will remain importantly coupled despite continued swings back and forth in the short-run correlations of their economic growth rates and stock market performances.

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Table 1. Correlations of GDP Growth (vs. the US)[10]

1a. Simple correlations of GDP growth in five-year intervals (1960-2008)

	1960-1964	1965-1969	1970-1974	1975-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2008
Brazil		0.38	0.82	0.31	-0.05	-0.17	0.44	-0.72	0.78	-0.64
Canada	0.99	0.90	0.89	0.87	0.87	0.72	0.90	0.69	0.80	0.99
China					0.67	0.49	0.54	-0.88	0.24	0.55
Germany		0.18	0.56	0.84	0.88	0.39	-0.86	0.21	0.61	0.30
India	0.21	-0.98	-0.38	-0.23	0.00	-0.54	0.92	-0.52	0.06	0.98
Japan	-0.61	-0.53	0.51	0.87	0.49	0.87	-0.58	-0.49	0.97	0.90
Mexico	0.26	0.30	0.46	-0.05	-0.12	0.20	-0.18	0.86	0.96	0.82
Russia									0.90	0.43

1b. Correlations of the deviations from GDP growth trend (Hodrick-Prescott Filter) in five-year intervals (1960-2008)

	1960-1964	1965-1969	1970-1974	1975-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2008
Brazil		0.36	0.82	0.50	0.00	-0.27	0.41	-0.71	0.77	-0.22
Canada	0.99	0.90	0.86	0.89	0.90	0.70	0.89	0.63	0.79	0.98
China					0.62	0.38	0.54	-0.87	0.40	0.76
Germany		0.25	0.59	0.84	0.87	0.69	-0.85	0.64	0.50	0.45
India	0.25	-0.95	-0.40	-0.26	-0.02	-0.55	0.88	-0.60	0.15	0.99
Japan	-0.34	-0.48	0.54	0.85	0.45	0.89	-0.50	-0.39	0.96	0.95
Mexico	0.21	0.29	0.46	0.03	0.01	0.30	-0.25	0.83	0.91	0.83
Russia									0.55	0.82

[10] Data Source: GDP annul data are taken from the IFS and WEO October 2009.

Table 2. Simple Correlations of Equity Returns (vs. the US) in Five-year Intervals (1/1960-11/2009)[11]

	1/1960-12/1964	1/1965-12/1969	1/1970-12/1974	1/1975-12/1979	1/1980-12/1984	1/1985-12/1989	1/1990-12/1994	1/1995-12/1999	1/2000-12/2004	1/2005-11/2009
Brazil							-0.02	0.64	0.65	0.78
Canada	0.82	0.80	0.80	0.64	0.77	0.84	0.66	0.82	0.77	0.81
China								0.09	0.01	0.45
Germany	0.45	0.23	0.33	0.25	0.37	0.55	0.44	0.73	0.75	0.89
India					-0.07	-0.03	-0.02	0.15	0.28	0.77
Japan			0.32	0.41	0.42	0.55	0.43	0.43	0.47	0.72
Mexico								0.68	0.64	0.79
Russia									0.37	0.59

[11] Data Source: Equity returns are calculated from the major national equity prices from Bloomberg.

Table 3. Deviations of GDP Growth from the Trend[12]

3a. Deviations of GDP growth from the trend (Hodrick-Prescott Filter for the whole period (1960-2009))[13]

	Brazil	Canada	China	Germany	India	Japan	Mexico	Russia	US
2006	0.67	1.08	1.58	2.76	2.16	1.70	3.52	2.12	1.08
2007	2.36	1.28	2.9	2.43	1.37	2.38	2.63	3.58	1.07
2008	1.82	-0.25	-1.21	1.37	-0.93	-0.08	1.27	2.28	-0.06
2009	-3.86	-2.56	-1.67	-4.39	-2.2	-4.23	-6.4	-10.16	-2.61

3b. Deviations of GDP growth from the trend (Hodrick Prescott Filter for 2000-2009)

	Brazil	Canada	China	Germany	India	Japan	Mexico	Russia	US
2006	0.59	1.32	1.38	2.77	2.06	1.68	3.74	2.73	1.23
2007	2.34	1.54	2.68	2.49	1.19	2.49	2.86	4.55	1.19
2008	1.86	0.01	-1.44	1.46	-1.19	0.15	1.51	3.57	0.03
2009	-3.78	-2.28	-1.92	-4.25	-2.53	-3.89	-6.14	-8.57	-2.53

[12] For the results in 2007-2009, deviations from the trend are calculated using the actual value from the Hodrick-Prescott Filter trend and the forecasting value from the linear trend.

[13] The starting year of the whole period varies for different economies due to the data availability. For example, the GDP data for the US, Canada, India, Japan, and Mexico start from 1960, for the other economies start later than 1960 (i.e., Brazil in 1964, China in 1979, Germany in 1961, and Russia in 1996).

3c. Deviations of GDP growth from the trend (Linear trend for 1990-2006)

	Brazil	Canada	China	Germany	India	Japan	Mexico	Russia	US
2006	0.57	-1.10	1.81	3.08	1.59	1.08	1.88	NA	-0.64
2007	2.16	-1.59	3.20	2.67	0.61	1.40	0.29	NA	-1.21
2008	1.47	-3.87	-0.88	1.45	-1.93	-1.50	-1.89	NA	-2.96
2009	-4.41	-6.94	-1.33	-4.51	-3.46	-6.14	-10.43	NA	-6.14

3d. Deviations of GDP growth from the trend (Linear trend for 2000-2006)

	Brazil	Canada	China	Germany	India	Japan	Mexico	Russia	US
2006	0.17	0.36	0.34	1.82	-0.21	0.02	1.47	0.86	-0.16
2007	1.67	0.20	1.19	1.11	-1.92	0.15	-0.32	1.81	-0.74
2008	0.87	-1.76	-3.43	-0.41	-5.20	-2.96	-2.69	-0.19	-2.49
2009	-5.11	-4.52	-4.42	-6.66	-7.47	-7.79	-11.42	-13.43	-5.67