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Preliminary Abstract

Paths into the Asian Crisis of 1997-98 and the recent global financial crisis were similar, but the roads out could not be more different. Common wisdom has it that on impact Asia endured fiscal austerity imposed by the IMF whereas the IMF recommended stimulus in the case of the advanced nations at the epicenter of the crisis in 2008-09. While the IMF did recommend different policies to begin with, the fiscal adjustment in Asia was far more modest than is commonly known and the switch from stimulus to austerity in Europe was quite abrupt. The difference in fiscal stance helps explain the difference in the post-crisis paths of output and employment in the two regions.

¹ Preliminary, please do not quote without permission.

Introduction

When a country experiences a significant change in its macroeconomic circumstances, flexible policies can play a significant role in mitigating the impact of the shock on output, employment, and other key measures of economic performance (Dornbusch and Fischer, 1987, Ch. 12). While there are generally a range of relevant policy options for leaders to consider in such scenarios, recent events in Europe and the United States have focused the collective imagination of the economics profession on the role of fiscal policy. Specifically, in the aftermath of the Great Recession, an acerbic debate has emerged over the issue of whether fiscal consolidation, colloquially known as “austerity,” has been helpful or harmful to the recovery of growth and employment in advanced economies.

Conventional wisdom holds that fiscal expansion during a downturn can stimulate growth and return the economy to full employment, provided that debts are not so high as to preclude new borrowing. In contrast to this view, a small but influential literature documents that austerity actually spurs economic expansion when countries reduce their cyclically adjusted primary balance (CAPB) through lower spending rather than higher taxes (Alesina and Perotti, 1995; Alesina and Ardagna, 2010). Given the extended slowdown in Europe following the onset of fiscal consolidation in 2010, however, and the relatively weak U.S. recovery in the aftermath of sequestration, the counter intuitive notion of expansionary austerity faces increasing skepticism. Recent research at the International Monetary Fund (IMF) reports a negative relationship between fiscal consolidation forecasts and subsequent forecast errors of GDP growth (Blanchard and Leigh, 2013). This evidence suggests that the IMF under-estimated the size of fiscal multipliers with respect to the fiscal consolidation programs that were announced in Europe in early 2010.

Despite mounting evidence in favor of Blanchard and Leigh, the austerity dispute remains unresolved in the academic community, and there is certainly no indication that the view of rapid fiscal consolidation as harmful to growth carries the day with policy makers in advanced countries (Jorda and Taylor, 2013). Given the inconclusive state of the debate, it is surprising that both intellectual camps continue to direct their analytical machinery exclusively at episodes where countries pursue fiscal consolidation, ignoring the wealth of information inherent in comparing the economic performance of countries that pursue fiscal austerity with those that do not.

In contrast to the previous literature on fiscal adjustment, this is precisely the approach we adopt in this paper. Specifically, we exploit the similarities between the causes of the Asian Financial Crisis of 1997-98 and the Global Financial Crisis of 2008-09—and the differences in economic policy responses in each case—to provide a setting in which we can more definitively answer the following question. Do countries that pursue countercyclical fiscal policy in response to a negative macroeconomic shock experience a faster recovery of output and employment than those that implement fiscal austerity?

At the onset of the Asian Crisis, officials from the International Monetary Fund (IMF) urged national authorities to pursue fiscal consolidation as a means of stabilizing the balance of payments—improving the current account through a decrease in absorption.² On the brink of losing capital market access and in desperate need of liquidity, Asian Crisis countries complied with the IMF's conditions in order to receive emergency loans. Shortly after the initial agreements were signed, however, the IMF reversed course with respect to its initial prescription

² Citations to buttress the claim that the IMF insisted on fiscal austerity during the Asian Crisis include Posen (2010), Krugman (2001), Frankel (2002), Roach (2012) and various Article IV consultation reports.

on fiscal consolidation, allowing countries to increase their deficits by enabling automatic stabilizers to take hold.

The tack in Europe following the Global Financial Crisis was exactly the opposite. There, the IMF initially encouraged countries to pursue fiscal stimulus, starting in the fall of 2008.³ Two years later the European Commission and the European Central Bank (led by Germany) began to demand fiscal consolidation in return for contributing to the funding of emergency loans to the peripheral countries of Europe. Austerity measures were announced in 2010, budget deficits as a fraction of GDP were reduced and the European Fiscal Compact was announced in March 2011.

Figures 1 and 2 demonstrate the economic consequences associated with the drastically different policy adjustments taken by Asian and European governments in response to the respective crises. Figure 1, which plots the evolution, in event time, of the growth rate of GDP in affected countries before and after the East Asian and European crises, tells the central story that the rest of the paper explores in detail. The two crises caused sharp economic contractions in both East Asia and in the peripheral countries of Europe (GIIPS). But while the recovery in Asia was a rapid and robust “V”-shaped affair, Europe is still struggling to mount a recovery, more of a “W”, as it were—less the final upstroke.

In the countries hit by the East Asian Crisis—Indonesia, Malaysia, South Korea, and Thailand—the average growth rate of GDP fell from an average of about 7 percent per year in the 4 years before the onset of the crisis to negative 9 percent upon impact. A striking feature of the data is the speed with which growth recovered. Within a year of the crisis, GDP growth turned positive. The average growth rate of GDP during the four-year period after the crisis was

³ Text Documenting the IMF’s Encouraging Fiscal Expansion Early in the Crisis
http://www.ieso-imf.org/ieso/files/completed evaluations/RITA_-_Background_Studies.pdf

about 5 percent—not quite back to the pre-crisis average but strong economic performance by most standards.

The event-time profile of GDP growth in the five European Crisis countries (GIIPS) stands in sharp contrast to their Asian counterparts. Output falls on impact. The average growth rate of GDP in the GIIPS, approximately 3 percent per year before the crisis, bottoms out at almost negative 5 percent in the first year after the crisis. In the second year after the crisis, GDP growth becomes slightly less negative, but then begins to contract even more sharply in year 3, and falls to about negative 2.5 percent by year 4. While output falls on impact and the recession deepens in the first year after the crisis hits, the pace of contraction slows as fiscal stimulus begins to take effect. But rather than growth continuing to recover as it did in East Asia, the GIIPS economies experience a “double dip.” It is interesting to note that the decline in growth accelerates about a year after the move to fiscal consolidation in Europe.

Figure 2, which shows unemployment rates across the two regions in event time, tells a similar story of downturn and rapid recovery in Asia versus prolonged stagnation in Europe. The average unemployment rate across the four East Asian countries in the four years prior to the crisis was about 3.5 percent. The unemployment rate jumps above 5 percent in the year the crisis hits before falling to just under 4 percent in the fourth year after the crisis. In contrast, the behavior of unemployment rates in the GIIPS countries tells a consistent story of weakening economies that start to deteriorate even faster with the onset of austerity. The average unemployment rate in the five European countries before the crisis was about 8 percent and jumps to 12 percent in the year after the crisis. Mirroring the decrease in GDP growth shown in Figure 2, the rise in unemployment slows between the first and second year after the crisis (from 12 to 14 percent), before surging to about 18 percent in the fourth year following the crisis.

Our formal statistical results support this simple visual story. Irrespective of the data series we choose, t-tests of means confirm that Asia tightened government finances early and then loosened as the need for countercyclical fiscal policy became clear. Europe began with fiscal stimulus but tightened and pursued fiscal consolidation before economic recovery took hold. Moreover, the differences in the changes in the fiscal policy stance explain the response of output across the two regions. Panel regression estimates with country-fixed effects corroborate that the change in fiscal stance from stimulus to austerity had a statistically significant impact on the decline in real GDP growth in Europe. The change in the cyclically-adjusted primary balance has a negative and statistically significant impact on output growth when the fiscal stance switches from stimulus to austerity in Europe. In East Asia, on the other hand, the contractionary impact of fiscal austerity is evident on impact during the crisis, but fiscal policy does not appear to have a statistically significant effect on real GDP growth in the pre-crisis and post-crisis periods. Our findings are consistent with the argument that the size of the fiscal multiplier may depend on the state of the economy with significantly larger multipliers during recessions than in normal times (Auerbach and Gorodnichenko, 2012).

The regression estimates also suggest that investment ratios and growth rates in East Asia still remain below their pre-crisis levels. There are at least two possible explanations for this finding. One is that these countries have reached the limits of catch up growth and are settling into a new steady state characterized by investment and growth more akin to the advanced economy cohort of which they are now a part. An alternative explanation is that despite the quick change of tack from fiscal consolidation to a stance that allowed the automatic stabilizers to kick in, the Asian countries suffered permanent output losses. Resolving which of these hypotheses is correct lies beyond the scope of this paper. But if the Asian Crisis did result in

permanent output losses in spite of attempts to use countercyclical fiscal policy (and other tools) as a means of adjustment to cushion the blow of financial crisis and recession then there is an important lesson here. Deep economic contractions—especially those induced by financial crises—can have lasting effects.

Beyond the specific contribution of advancing the debate on fiscal austerity, this paper contributes more broadly to a growing number of studies that demonstrate the power of comparative macro case studies to tell us about the impact of policy. Using the narrative approach to identifying changes in fiscal policy popularized by Romer and Romer (1989, 2007), Guajardo, Leigh and Pescatori (2011) demonstrate that in the short-run all consolidations lead to contraction. Henry and Miller (2009) demonstrate the power of the policy-experiment approach in an emerging economy context. This paper uses the approach to illustrate the insights we can gain about advanced economies by using the narrative approach to compare the impact of policy changes in advanced economies with those in emerging markets.

The paper proceeds as follows. Section I narrates the two tales of adjustment and documents the changes in fiscal policy stance in East Asia and Europe during and in the aftermath of the two crises. Section II describes the data and methods. Section III presents t-tests of means for debt and deficit variables as well as the absorption variables. Section IV describes the results from the formal estimations. Section V concludes.

I. Two Tales of Adjustment

Despite a few warning signs such as growing current account deficits, the Asian financial crisis of 1997–1998 was largely unanticipated. While some skeptics had argued that claims of the Asian economic miracle were overstated and that Asian economies would eventually run into

diminishing returns (Krugman 1994; Young 1994, 1995), the complexity and severity of the crisis surprised most observers. Domestic asset markets collapsed, banks failed, and firms went bankrupt. Over-borrowing, insufficient regulatory oversight, large foreign-currency-denominated debt burdens, and collapsing exchange rates were seen as the main culprits that led to a vicious deleveraging cycle in which foreign investors lost confidence in East Asia, and net private capital flows declined dramatically both during and in the aftermath of the crisis.

In the years prior to the Asian Financial Crisis, fiscal positions in the East Asian crisis countries were strong. Korea, Malaysia and Indonesia entered the crisis with fiscal surpluses (Figure 4). Although fiscal deficits in the crisis countries were moderate, the policy measures in the original IMF programs nevertheless included fiscal consolidation. The fiscal adjustment was intended to help stem the reversal of international capital flows that had precipitated the crisis. The planned fiscal consolidation was strongest in Thailand, where the fiscal deficit had increased in the year prior to the crisis. In Indonesia and Korea, even the initial programs contained little overall adjustment and policy makers anticipated that expenditures would be cut elsewhere in the budget to cover the costs of recapitalizing banks (Lane et. al, 1999).

As the crisis progressed, however, the collapse in domestic demand and deterioration in the real economy was far worse than anticipated. For instance, the original IMF forecast for real GDP growth of 3% for Indonesia in 1997 was subsequently revised to -12.1% and actually turned out to be -13.13% (Appendix Table 2, Panel A). Similarly, for Thailand the original forecast for 1998 was 3.5%, the estimate was revised to -5% and the realized GDP growth rate was -10.51% (Appendix Table 2, Panel C). There was also a severe investment decline in the crisis countries from 36% to 22% of GDP.

As the deterioration in the economic situation became apparent, subsequent program

reviews noted that the severity of the economic downturn was not anticipated in the original program targets. Accordingly, the IMF adopted a new approach that was clearly articulated in April of 1998 by Stanley Fischer, then First Deputy Managing Director of the IMF:

“On the question of the appropriate degree of fiscal tightening, the balance is a particularly fine one. At the outset of the crisis, countries needed to firm their fiscal positions, both to make room in their budgets for the future costs of financial restructuring, and --depending on the balance of payments situation -- to reduce the current account deficit... Among the three Asian crisis programs, the balance of payments factor was important only in Thailand, which had been running a current account deficit of about 8 percent of GDP.

The amount of fiscal adjustment in Indonesia was one percent of GDP; in Korea it was 1.5 percent of GDP; and in Thailand -- reflecting its large current account deficit -- the initial adjustment was 3 percent of GDP. After these initial adjustments, if the economic situation in the country weakened more than expected, as it has in the three Asian crisis countries, the IMF has generally agreed with the country to let the deficit widen somewhat, that is, to let automatic stabilizers operate” (Fischer, 1998).

In other words, the deteriorating economic environment had led to substantial increases in fiscal deficits, which, from the beginning of 1998 on, were accommodated by easing the programs' fiscal objectives (Lane et. al, 1999). For instance, Appendix Table 2 shows that the original projections for the change in the fiscal balance for Indonesia in 1997/98 and 1998/99 were -0.9% and 0.2% of GDP, respectively (Panel A). These targets were subsequently revised upward to -2.2% and -9.2% of GDP during the mid-year program reviews. The actual numbers for the change in the fiscal balance turned out to be -2.47% in 1997 and -1.04% in 1998. A similar pattern prevails for Korea and Thailand as well with the IMF fiscal targets being revised upwards in comparison with the projections made in the original programs (Panels B and C).

At the time the East Asian IMF programs were implemented, their goal was to use fiscal policy to facilitate external adjustment and bolster market confidence. In hindsight, it is easy to say that the severity of the economic downturn was not accurately forecast in the original

program formulations and that the IMF should have permitted greater fiscal flexibility from the outset. Be that as it may, the Fund did loosen the fiscal straitjacket as the Asian Crisis unfolded and output recovered quickly. These facts are at odds with the perception that the IMF applied a standard prescription of strict fiscal austerity during the East Asian crisis and suggest that the IMF adopted a far more accommodative fiscal stance in East Asia than is commonly known. The real question, therefore, is not whether the IMF got things right from the outset, but whether policy makers in Europe learned from the flexibility the Fund showed with respect to fiscal policy in Asia.

IA. European Policy Responses to the Global Financial Crisis

Much like the crisis that swept through Asia a decade earlier, the complexity and severity of the Global Financial Crisis *cum* Great Recession was also largely unanticipated. Credit spreads spiked, housing prices and stock markets collapsed, bank failures were widespread, and firms went bankrupt. Only this time the crisis began in the developed world, which also bore the brunt of the impact. Over-borrowing and deregulation in financial markets led to a vicious deleveraging cycle from which the United States and Europe have yet to recover.

Figure 3a demonstrates the evolution, in event time, of the cyclically adjusted primary balance (CAPB) as a percentage of potential GDP in Asia and Europe (also referred to as the government's structural fiscal balance). The structural balance is widely-used as a measure of policy induced changes in fiscal policy as it filters out changes in fiscal balances that are due to business cycle fluctuations. Figure 3b demonstrates the evolution, in event time, of the primary fiscal balance as a percentage of GDP in Asia and Europe.

Figure 3a and Figure 3b show that East Asia pursued a relatively neutral to expansionary fiscal policy stance in the midst and immediate aftermath of the crisis. The modest tightening about two years after the crisis coincides with the rapid recovery in real GDP growth followed by fiscal expansion during the 2001 recession. The primary fiscal balance starts off positive (about 1.8 percent of GDP) in 1997 and begins to deteriorate mildly a year before the start of the crisis in 1997. In the year the crisis hits, the average fiscal balance is about negative 1.8 percent of GDP. One can see the impact of the qualitative story of changes in fiscal projections by the IMF within the year. GDP recovers and the fiscal balance improves for cyclical reasons.

By contrast, the peripheral countries of Europe follow a markedly different approach to fiscal policy. Figure 3a shows that, on impact, structural balances expanded significantly in 2008 and 2009 in the European periphery countries (GIIPS). The primary fiscal balance changed from -1.9% of GDP on average in 2007 to -5.5% in 2008 and -11.2% in 2009, an overall fiscal expansion of 3.6 percentage points of GDP between 2007/08 and 5.7 percentage points between 2008/09 (Figure 3b). Figure 3a and Figure 3b therefore show that following the onset of the Global Financial Crisis the initial policy response was one of fiscal stimulus in line with textbook prescriptions of counter-cyclical fiscal policy adjustment. Starting in 2010, however, the modus operandi in European economic policy switched from flexibility to austerity.

The abrupt reversal in fiscal policy stance—especially in the European periphery—is striking in size, composition and speed even when compared to the *initial* fiscal adjustment path prescribed by the IMF in East Asia *before* Fund officials realized the depth and severity of the East Asian Crisis. For the European periphery, the primary fiscal balance changed from -13% of GDP to -7.7% of GDP, a consolidation of 5.3 percentage points of GDP on average between 2010 and 2011—almost twice as large as the adjustments initially prescribed in Thailand and

three to five times as large as those in Korea and Indonesia. In addition to the primary fiscal adjustments in Europe being larger than in Asia, they have also been more persistent—a further fiscal consolidation of approximately 1.6 percentage points of GDP took place in Europe between 2011 and 2012. It is therefore important to note that whereas consolidation was never fully implemented in Asia because of the IMF’s relatively quick change in course, fiscal consolidation in Europe took hold and persisted for more than two years in the midst of a severe downturn.

Taken together, Figure 3a and Figure 3b paint a consistent picture of the change in fiscal policy stance in peripheral Europe relative to the East Asian crisis countries during and in the aftermath of the two crises. The central point that Asia and Europe took diametrically opposite approaches to fiscal policy is robust to the way in which one measures the level and changes in the fiscal stance. Indeed, turning to the primary deficit, there is some evidence that the switch to countercyclical fiscal policy in Asia took place so quickly as to suggest the following characterization. Asia, like Europe, pursued expansionary fiscal policy when the crisis hit (albeit modest). The main difference is that once Asia began pursuing expansionary fiscal policy it stayed the course until economic activity rebounded. One may argue that this was only one to two years since output rebounded so quickly. Europe changed tack in the third year after the crisis hit and this seems to have exacerbated the initial fall in output and increase in unemployment.

IB. Alternative Channels of Adjustment

While the response of fiscal policy played a significant role in mitigating the impact of the Asian financial crisis on the real economy, it is important to remember that fiscal policy is

just one of the tools available to policymakers confronted with a negative shock. In addition to allowing automatic fiscal stabilizers such as the expansion of spending on the social safety net to kick in once the IMF recognized the importance of fiscal flexibility, the adjustment of prices—specifically the exchange rate—played a central role in the rapid recovery of output in East Asia. Figure 4 demonstrates that the average crisis-stricken country in East Asia experienced a 23 percent depreciation of the nominal exchange rate vis a vis the dollar during 1998 followed by an additional 10 percent over the course of the next three years.

With a cumulative depreciation of over 30 percent against the dollar, the Asian crisis countries were able to quickly restore external balance. In the three years before the onset of the crisis, current account balances in the Asian Crisis countries averaged about 5 percent of GDP. In Year 0 the crisis countries ran current account surpluses of almost 10 percent of GDP and the average current account balance over the course of the next three years was a surplus in excess of five percent of GDP. Of course, the large depreciation of the nominal exchange rate was not a costless exercise. The extensive short term dollar-denominated borrowing that in many ways precipitated the crisis meant that rapid depreciation led to financial distress for many corporations that did not have dollar revenues. Nevertheless, the flexibility in prices played a significant role in allowing the economy to adjust through price adjustment and expenditure switching.

In contrast, because the exchange rate has barely moved in Europe (Figure 4), the burden of adjustment in Europe has fallen on quantities rather than prices—expenditure reduction rather than expenditure switching. There are of course many reasons why the Euro has not depreciated against the dollar. The exchange rate is not a policy instrument for Europe in the same way that it is for a small open economy. In the absence of the nominal exchange rate as a tool of

adjustment, policy makers within the GIIPS are not without means to restore competitiveness. To the extent that policy makers cannot avail themselves of fiscal and monetary policy (exchange rate) to achieve internal and external balance, the remaining choices are to either push hard on structural reforms that raise the productivity of workers, or to accept internal devaluation.

Between 2004 and 2009 average unit labor costs across the GIIPS rose over 16 percent. Indeed, from 2000 to 2009 unit labor costs in the GIIPS experienced a cumulative rise of 30 percent. With growth in wages outstripping growth in productivity by more than 3 percentage points per year, it is not surprising that the average current account deficit in the GIIPS reached almost 10 percent of GDP by 2008. While unit labor costs have fallen by about 5 percent since 2009, this is not nearly enough to undo the erosion of competitiveness that took place since the outset of the Euro. Furthermore, the fall in unit labor costs has been almost exclusively the result of falling wages. Average labor productivity in the GIIPS has been relatively flat (see Figure 5). The question is whether falling wages alone can bear the brunt of adjustment. This will take a long time and be very painful. Structural reform holds out the promise of productivity increases, but so far there is little evidence of productivity gains or structural changes that would bring about more rapid productivity growth in the future.

II. Data and Methodology

The principal data sources used in this paper are the IMF's World Economic Outlook (April 2013) and the International Financial Statistics (IFS) database. The WEO provides numerous series related to output, government debt, deficits, savings and investment. Other absorption indicators such as household consumption, exports and imports and data for nominal

variables like exchange rates and interest rates come from the IFS database. The primary country panel includes the four countries most hard hit by the East Asian crisis namely Indonesia, Korea, Malaysia and Thailand and the peripheral countries of the original Euro zone⁴—Greece, Ireland, Italy, Portugal and Spain (GIIPS). The formal estimations also consider a wider Asian sample that includes China, India, Hong Kong, Philippines, Singapore and Taiwan and the remaining (original) Euro zone countries of Austria, Belgium, Denmark, Finland, France, Germany, Luxembourg, the Netherlands and Sweden. The sample also includes the United Kingdom. Appendix B presents the exact definitions of the variables used. The sample period is 1990-2012.

For the European countries, the WEO includes a measure of the government structural balance also referred to as the cyclically-adjusted primary balance. Changes in the cyclically-adjusted primary balance are used as a measure of changes in the government's discretionary balance or fiscal policy stance. For a number of the East Asian countries, coverage of this variable begins after 2000 following the East Asian crisis. Since the CAPB is a principal variable of interest for this paper, we constructed this measure for the East Asian countries following the methodology prescribed by Fedelino, Ivanova, and Horton (2009) in a technical note for the IMF. Briefly, the cyclically adjusted primary balance is:

$$CAPB = R \left(\frac{Y^P}{Y} \right)^{\epsilon_R} - G \left(\frac{Y^P}{Y} \right)^{\epsilon_G},$$

The first term is the cyclically-adjusted component of government revenues where R is the nominal primary revenue, Y^P is potential output, Y is actual output and ϵ_R is elasticity of revenue with respect to the output gap. The second term is the cyclically-adjusted component of

⁴ The original Euro zone refers to member countries that adopted the Euro before physical notes and coins were first introduced in January 2002.

government expenditures where G is the nominal government expenditure and ϵ_G is the elasticity of government expenditures with respect to the output gap.

Fedelino, Ivanova, and Horton (2009) suggest that if revenue elasticity is equal to one (i.e., revenues are perfectly correlated with the cycle) and expenditure elasticity is equal to zero (i.e., expenditures are not affected by the cycle) the cyclically adjusted primary balance becomes:

$$CAPB = R \left(\frac{Y^P}{Y} \right) - G$$

Since measures of potential output of Y^P were also missing from the WEO database, using the IMF's methodology, estimates of trend output were computed using a HP-filter with a smoothing parameter of 100. This measure of potential output was used to compute estimates of the output gap for the East Asian countries as well as the cyclically-adjusted primary balance as a percent of potential output (or GGSB_NPGDP in the WEO).

III Simple Statistical Tests

In this section we present simple t-tests of means to examine changes in the debt and deficit variables and in the absorption indicators over time and across regions. For each variable of interest, y_{it} , where subscript i refers to the country and subscript t to the period, our approach is to examine the evolution of the variable from a pre-crisis baseline through the crisis and post-crisis periods across the different groups of countries—East Asia, the GIIPS, Asia-other and Europe-other. A point regarding the timing of the two crises and the implications for statistical analysis is worth noting. While the formal estimates have to be presented separately by group since the two crises did not occur contemporaneously, this does not preclude simple t-tests of differences in means across cohorts or groups of countries in the same way that labor economists

employ cohort-analysis to examine the determinants of the earning potential of cohorts that enter the labor force at different points in time. Therefore we can present a simple t-test of means of a change in the government's structural balance across East Asia and the GIIPS pre-crisis or post-crisis in event time. However, it is important to note that differences across East Asia and the GIIPS cannot be used to compute difference-in-difference estimates to compare the change in fiscal stance in the GIIPS between 2008-2012 with East Asia in 1998-2002 as the control group.

IIIA. T-Tests of Means: Debt and Deficits

The t-tests of means are presented across time periods for each group and across groups within each time period. For example, t-tests for the change in the growth rate of real output between the pre-crisis and crisis periods or the crisis and post-crisis periods are presented for the GIIPS and East Asia separately in Table 1. Table 2 presents t-tests of means across groups for East Asia versus the GIIPS in the pre-crisis, crisis, and post-crisis periods—all in event time.

Table 1 shows the t-tests of means for debt and deficit variables by country group across four time periods. The first is a pre-crisis baseline period which begins four years prior to the crisis and ends one year before ($T-4$, $T-1$). The second is the crisis-period which is the year of the crisis (T), the third is the immediate post-crisis period ($T+1$, $T+2$) and a second post-crisis phase three to four years out ($T+3$, $T+4$).⁵ The post-crisis period is broken into two phases to capture the effects of the fiscal policy stance on impact and any change in fiscal policy stance as the crisis progresses. In particular examining the two post-crisis periods separately is designed to quantify the qualitative narrative of a change in fiscal stance from austerity on impact to stimulus

⁵ Note that we take the crisis year to be 1998 for East Asia and 2008 for the global financial crisis. The four calendar time periods for the East Asian crisis are therefore 1994-1997(pre-crisis), 1998(crisis), 1999-2000(post-crisis I), 2001-2002(post-crisis II). For the global financial crisis the time periods are 2004-2007 (pre-crisis), 2008 (crisis), 2009-2010 (post-crisis I) and 2011-2012 (post-crisis II).

as the real effects of the East Asian crisis began to unfold and the contrasting change in stance from fiscal stimulus on impact to austerity in 2010 for the GIIPS and Europe overall.

For each variable, group means by time period were computed in two steps. First, a country-mean was calculated for each country and each of the four time periods. Second, the group mean was calculated by taking the mean across all countries in the group for each time period. For example, the first panel shows group averages for the general government gross debt as a percent of GDP for the four time periods. To obtain the group mean of 25.65 for the East Asian crisis countries in the pre-crisis period, a country mean was computed for each of the four crisis countries between 1994 and 1997. The group average was computed by taking an average of the four country averages. The same procedure was followed for all the variables in Table 1 for each of the four time periods.

The last three columns show t-tests of means for each group (by country) to examine whether the debt and deficit variables under consideration changed significantly (i) in the crisis period relative to the pre-crisis baseline, (ii) in the first phase post-crisis relative to the pre-crisis period, (iii) the second phase of the post-crisis period relative to the first phase.

Panel 1 shows that while debt-to-GDP ratios rose for East Asia during and in the aftermath of the crisis, the changes across time periods were not statistically significant. It is noteworthy, however, that by 2002 East Asian debt-to-GDP ratios stood at about 48% of GDP relative to an average of 26% in the pre-crisis period. A similar pattern holds for the other Asian countries as well with the post-crisis build up in the debt-to-GDP ratio being statistically significant. For the peripheral countries of Europe (the GIIPS) in contrast the increase in debt-to-GDP ratios post-crisis has been strikingly large and statistically significant. It is worth noticing that the pre-crisis average debt-to-GDP ratio for the GIIPS stood at about 68% while violating

the Maastricht criterion of 60% is nowhere close to the 120% average between 2011-2012 (*Post-Crisis II*). The European core also experienced an increase in debt-to-GDP ratios, however, not as significantly large as the European periphery.

Several measures of fiscal policy illustrate the differences in fiscal policy between the GIIPS and the East Asian countries. Panel 2 shows the government's fiscal balance as a percent of GDP which is inclusive of interest payments. The t-tests suggest that for the East Asian countries, a steady overall stimulus was applied throughout the crisis and post-crisis periods. While the IMF prescribed austerity measures initially, the policy was quickly reversed as Appendix Table B shows. Since the policy reversal takes place within the crisis year, and the WEO data simply show the final numbers which suggest an expansion in the fiscal balance-- initially by drawing down the pre-crisis budgetary surplus and then by incurring deficits. A similar pattern is seen in the other East Asian countries as well.

The *Post II- Post I* column tells a compelling story in the difference between the evolution of the fiscal deficit in East Asia versus Europe. In years 3 and 4 after the crisis, the average overall fiscal balance as a fraction of GDP in Asia becomes 1.82 percentage points more negative and is significant at the 10 percent level of confidence. The average GIIPS country on the other hand experiences a 6.15 percentage point fiscal consolidation that is significant at the 5 percent level. The average core European country also experiences a fiscal tightening in the third and fourth years after the crisis of 1.26 percentage points of GDP that is significant at the 5 percent confidence level.

Panel 3 shows the primary fiscal balance exclusive of net interest payments which reflects a similar pattern of stimulus or fiscal expansion in East Asia and stimulus followed by

austerity in Europe with the magnitude of the adjustment being much larger for the GIIPS relative to the European core.

Row 1 of Panel 4 demonstrates that In East Asia, the structural balance or CAPB rises from 0.16 percent of potential GDP before the crisis to 0.57 percent reflecting a mild but statistically insignificant tightening of 0.41 percentage points. This observation is also consistent with our basic assertion that the fiscal consolidation imposed by the IMF was not particularly stringent. The increases in the CAPB in the *Post I* and *Post II* periods are even smaller, 0.14 and 0.05 percentage points. For the other Asian countries there was a very small discretionary stimulus suggesting that across Asia the discretionary fiscal policy stance was almost neutral during and in the aftermath of the crisis.

We see a very different pattern of the CAPB in Europe. Prior to the great recession, the average CAPB in the GIIPs was negative 4.72 percent of potential GDP. On impact, the average deficit widens to negative 7.93 percent of potential GDP, a fiscal loosening of 3.21 percentage points that is statistically significant at the 10 percent level. In the first two years after the crisis, the CAPB becomes slightly more negative and bottoms out at an average of negative 9.26 percent of potential GDP. Things turn radically in 2010 following the adoption of austerity measures that were part of the conditions imposed by the IMF/EU loan programs. In the third and fourth year after the crisis, fiscal policy tightens significantly as the CAPB goes from negative 9.26 percent of GDP to negative 5.42 percent of potential GDP, a fiscal tightening of 3.84 percentage points of potential GDP that is significant at the 5 percent level. The core European countries demonstrate a similar pattern. The average CAPB becomes 1.76 percentage points more negative in the first two years after the crisis; this is statistically significant at the 1 percent level. In the third and fourth years after the crisis, the CAPB becomes less negative by

0.87 percentage points of potential GDP, a fiscal tightening that is significant at the 5 percent confidence level.

Panels 5 and 6 decompose the government's net borrowing and lending into revenues and expenditures, respectively. The t-tests show that while government revenues fell during the East Asian crisis they had increased significantly by 2002 for the crisis countries and fallen although not statistically significantly for the other East Asian countries. For the GIIPS, revenues fell in the initial aftermath of the crisis but rose by on average 1.48% of GDP. For the European core, revenues as a fraction of GDP appear to have remained remarkably stable. Panel 6 shows that the bulk of the adjustment in the fiscal balance for the GIIPS following 2010 has been in the form of government expenditure cuts. Government expenditures rose by 3.3% during the crisis year and by a further 5.6% in the two years following the crisis and then fell by 3.72% after 2010. The fall in expenditures (3.72%) and rise in revenues (1.48%) accounts for the 5.2% consolidation in the fiscal balance for the GIIPS in Panel 3. T-tests show a similar pattern of rising government expenditures to cuts following 2010 for the core European countries.

Table 2 presents t-tests of means for the GIIPS relative to East Asia in event time. These statistics therefore represent cross-group comparisons of means by time period. The t-tests show that in event time difference in debt-to-GDP ratio for the GIIPS relative to East Asia changes significantly from *Post-Crisis I* to *Post Crisis II*. The fiscal stimulus in the immediate aftermath of the crisis is significantly different to the East Asian crisis countries at the 1% significance level. The reversal in fiscal position in the GIIPS relative to East Asia from stimulus to austerity in the last three columns is also highly statistically significant in event time.

Notice that the last three columns represent changes across groups across event-time periods and are therefore a “surrogate difference in difference” estimate of the changes that take

place in the GIIPS relative to the East Asian crisis countries across event-time. We refer to these as surrogate estimates since the event time periods for the two groups do not coincide in calendar time—the East Asian crisis took place in 1998 and the global financial crisis in 2008. Therefore the East Asian crisis countries cannot be used as a control group in a strict or formal difference in difference sense. However, it is legitimate to present t-tests of means as a simple statistical comparison across country-groups and as is often done in the labor-literature to make cross-cohort statistical comparisons. We discuss this issue in greater detail when we present the formal estimations.

The general government overall balance in the GIIPS relative to East Asia shows a statistically significant fiscal stimulus in the GIIPS in the crisis and the first post-crisis period. After 2010, however, the fiscal stimulus changes to a highly statistically significant fiscal consolidation of 7.97% of GDP relative to East Asia and relative to the immediate aftermath of the crisis. A similar and statistically significant pattern of changes is seen in the t-tests of means for the government's primary fiscal balance, structural balance, government revenues and expenditures.

The patterns in Tables 1 and 2 suggest that not only are the within group changes significant across time for the GIIPS as a group, the reversal in fiscal stance is also highly significant across groups, i.e., relative to the East Asia crisis countries as a group in event time. In particular, note the highly significant reversals in sign in the last two columns of Table 2 for all the government fiscal balance variables. For example, government expenditures in the GIIPS increase dramatically relative to East Asia and then fall equally dramatically--the difference in the government expenditure ratio across the two regions changes from a positive 5.72% of GDP (in the penultimate column of Table 2) to a negative 5.78% of GDP (the last column of Table 2).

The bottom line is that irrespective of the data series we choose the story remains the same. Asia tightened government finances early and then loosened as the need for countercyclical fiscal policy became clear. Europe began with fiscal stimulus but tightened and pursued fiscal consolidation before economic recovery took hold.

III B. T-Tests of Means: Real GDP Growth and Absorption Indicators

Table 3 confirms the statistical and economic significance of Figure 3. The average growth rate of GDP falls by 16.56 percentage points during the Asian Crisis but growth rebounds quickly. The column labeled (*Post I- Crisis*) demonstrates that GDP growth two years after the crisis is 15.25 percentage points higher than during the crisis. A simple t-test of means shows that this difference is statistically significant at the 1 % level of confidence.

Turning to the GIIPS we see the opposite pattern. The average pre-crisis growth rate in the GIIPs was 3.17 percent. During the crisis the average growth rate falls to -0.51 percent. Unlike Asia, however, growth does not begin to recover in the two years after the crisis. The contraction actually gets worse. The average growth rate in the GIIPS in the two years after the crisis is -2.23 percent. The *Post I-Crisis* column indicates that the 3.68 percentage point decline in growth is statistically significant at a 5 percent level of confidence. Growth remains negative in the third and fourth year after the crisis, averaging negative 1.88 percent. For the core countries of Europe, the change in average growth rates (*Post II-Post I*) is positive and significant.

Turning to unemployment reveals a similar pattern. At the onset of the Asian Crisis unemployment jumped from an average of 3.09 percent to 5.12 percent, an increase that is significant at a 10 percent level of confidence. There is no significant increase in the

unemployment rate in the Asian Crisis countries in the two years after the crisis. Prior to the crisis, the average unemployment rate in the GIIPs was 7.54 percent. On impact, the GIIPs unemployment rate rises slightly to 7.93 percent but the increase is not statistically significant. Things change dramatically, however, in the *Post-Crisis I* period where the average unemployment rate jumps to 12.19 percent—an increase of 4.25 percentage points that is statistically significant at the 5 percent confidence level. The unemployment rate rises by another 4.22 percentage points to an average of 16.41 percent in the *Post-Crisis II* period. This increase is also significant at the 5 percent confidence level.

Investment ratios also fell and recovered in East Asia following the crisis while investment ratios continue to fall significantly in the post-crisis period for the peripheral countries of Europe. Consistent with a continuing decline in domestic absorption, current account deficits in the GIIPS in the pre-crisis and crisis period have shrunk in a statistically significant manner in the post-crisis period.

Table 4 shows that the East Asian crisis countries grew faster by 4.2% on average relative to the GIIPS in the pre-crisis period in event time. The collapse of growth on impact during the crisis in East Asia was far more drastic and statistically significant relative the GIIPS (a fall of 8.7%). Combined with the evidence in the first column that these countries were growing faster than the GIIPS by about 4.2 percent, on average, the fall of 8.7% on average during the crisis represents a change of approximately 12.9% in the gap in growth rates relative to the pre-crisis period. By the same token, the recovery in East Asia was also very fast and significantly higher, 8.29% on average, relative to the GIIPS in two years after crisis. The difference in the growth rates in the second phase of the crisis in the GIIPS relative to East Asia narrows a bit in event time due to the world recession in 2001 ($t+3$ in event time for East Asia).

Table 4 shows that the unemployment rate was significantly higher in the GIIPS relative to East Asia in pre-crisis period in event time. The increase in unemployment on impact during crisis in GIIPS was lower relative to East Asia and average gap relative to Asia narrows relative to the average gap in the pre-crisis period. The increase in unemployment in post-crisis period, however, is significantly higher (7.44%) and the average unemployment gap relative to East Asia increases by 4.6%. Unemployment continues to rise to on average 11.7% higher than East Asia in the second post-crisis period and the change relative to first post-crisis period is also significantly higher--the average gap in unemployment in the GIIPS increases by a further 4.3% relative to East Asia in event time. The changes in the average gap in unemployment across the different phases of the crisis are highly statistically significant.

Consumption ratios are higher in GIIPS relative to East Asia in pre-crisis period. The gap widens significantly on impact during crisis and then narrows significantly in the post-crisis period. Turning to investment, investment ratios were significantly higher in East Asia in pre-crisis period by on average 12.5%. The collapse in investment ratios on impact was very dramatic during crisis relative to the GIIPS such that gap between investment ratios across the two regions in event time changes by 14.16% with investment ratios in GIIPS higher by 1.64% on average relative to East Asia. The trend in gaps reverses dramatically in post-crisis period with investment in Asia recovering and in the GIIPS collapsing such that the gap is 6% and 4.4% higher in East Asia relative to the GIIPS in the two phases of the post-crisis period. The changes in the investment ratio gaps are statistically significant. Note that the gap between investment ratios in East Asia and the GIIPS does not return to pre-crisis levels suggesting that East Asian investment ratios do not recover to pre-crisis levels. We explore this finding further in the formal estimations.

Savings ratios were higher in East Asia relative to GIIPS in pre-crisis period. The gap widens on impact during crisis suggesting that the fall in savings ratios is higher in the GIIPS relative to East Asia on impact during the crisis. The gap in savings ratios narrows a little in the post-crisis period and remains wider than the pre-crisis period. Finally, current account deficits were higher in the GIIPS, on average, relative to East Asia in the pre-crisis period. The gap in current account balances widens on impact with deficits growing larger in the GIIPS and current account surpluses in East Asia. This trend reverses in the post-crisis period with deficits falling dramatically in the GIIPS while East Asia maintains small surpluses on the current account.

IV. Formal Estimations

The formal estimations employ a fixed effects panel specification as follows:

$$y_{it} = \alpha_i + \beta_1 * \Delta CAPB_{t-1} + \beta_2 * y_{i,t-1} + \beta_3 * (X)_{i,t-1} + \varepsilon_{it}$$

Where y_{it} is output growth or the unemployment rate or the output gap in period t . β_1 estimates the impact of a change in the cyclically-adjusted primary balance lagged one period. β_2 controls for a one-period lag of the dependent variable, $y_{i,t-1}$, and β_3 measures the impact of various lagged control variables, $X_{i,t-1}$, designed to control for initial conditions such as the initial debt-to-gdp ratio, the balance on the current account, the level of the fiscal balance, exchange rates and interest rates. α_i represents the country-fixed effects and ε_{it} is the error term. The specifications are estimated for each group of countries separately and for three different event-time periods around the crisis episodes.

We address the challenge of unobserved heterogeneity at the individual or country-level by incorporating fixed effects into the econometric specifications. However, it is not possible to control for calendar-time effects which are different across cohorts or in our case crises that

occurred at two different points in calendar time. Since the East Asian crisis and the global financial crisis did not occur contemporaneously, we cannot directly employ a difference-in-difference methodology in our formal estimations to estimate the impact of say a change in fiscal stance on output growth across East Asia and Europe.

We use these formal estimations to examine whether the qualitative story shown graphically and via t-tests of means are borne out in the formal estimations. The patterns are striking. Panels a-c of Table 5 present group-wise regressions for the pre-crisis, crisis and post-crisis periods. Beginning with the first set of results for the European countries, Column 1a shows that the lagged structural balance is positively correlated with real GDP growth in the pre-crisis period. However, Column 2a controls for lagged real GDP growth, we see that the period of consolidation is associated with a period of positive and significant real GDP growth. In other words, the results in Column 2a are consistent with a countercyclical fiscal policy stance.

During the crisis period, 2008-2009, the coefficient on the lagged structural balance in Column 3a remains positive and statistically significant but once a control for lagged GDP growth is included the coefficient loses significant (Column 4a). In Column 5a we see a negative and highly significant coefficient on the change in the lagged structural balance. The coefficient suggests that the change in fiscal stance from stimulus to austerity had a statistically significant impact on the decline in real GDP growth in Europe. Moreover, the sign and statistical significance of this variable remain robust to the inclusion of lagged real GDP growth as a control. A similar pattern obtains for the peripheral countries of Europe in panel B. Note that the number of observations comes from just five countries and therefore the robustness of the result varies when real GDP growth is included as a control.

Turning to East Asia in Panel C, we see that the contractionary impact of fiscal austerity is evident on impact during the crisis. However in the pre-crisis and post-crisis periods the effect of discretionary fiscal policy does not appear statistically significant. Note that these regressions include all ten Asian countries in the sample. Insufficient numbers of observations precluded a similar regression exercise limited to the four East Asian countries most badly affected by the Asian crisis. The results in Panels a-c of Table 5 confirm the simple visual story in Figures 1-4 corroborated by the t-tests of means.

Our findings are consistent with the argument that the size of the fiscal multiplier may depend on the state of the economy with significantly larger multipliers during recessions than in normal times (Auerbach and Gorodnichenko, 2012). Factors that could drive the state-dependent size of the fiscal multiplier include: the prevalence of a zero lower bound that precludes further monetary easing to counteract fiscal austerity measures; and the response of consumption and investment to current rather than future income and profits. In the face of contracting aggregate demand on the consumption and investment front, fiscal austerity measures can have a significantly higher impact on output.

Table 6 shows that a cross-country growth regressions using panel data for the East Asian crisis countries (1980-2012). The regression specification includes country fixed effects. The first column shows that, on average, real GDP growth is lower by 2.6% when a post-crisis dummy is included in the growth regression. For the pre-crisis period, the average growth rate of real GDP is on average 7.3% and the average post-crisis growth rate is 4.7% in the four countries that experienced the brunt of the East Asian crisis. The evidence therefore suggests that while the crisis-afflicted economies recovered quickly real GDP growth did not return to the pre-crisis average. Column (2) shows that on average post-crisis investment ratios are about 8.9% lower

that the pre-crisis average of approximately 35% of GDP. The data suggest that investment ratios also did not recover to their pre-crisis levels. Taken together the evidence in Column (1) and (2) suggests that both real GDP growth and investment ratios are significantly lower in the East Asian crisis countries.

Disentangling whether the decline in growth and investment represents a new steady state for the East Asian countries due to convergence and declining marginal returns a la Krugman (1994) and Young (1994, 1995) or a permanent loss in output lies beyond the scope of this paper. However, in Column (3) a simple regression of real GDP growth on investment ratios suggests that for the full sample of data, a 1% increase in the investment-GDP ratio leads to a 0.26% increase in real GDP growth. Column (5) shows that in the pre-crisis period a 1% increase in the investment ratio led to a 0.1% increase in real GDP growth while in Column (6) a 1% increase in the investment ratio leads to a 0.27% increase in real GDP growth. The evidence in Columns 5 and 6 is possible evidence of a higher marginal product of capital or a more efficient use of capital following the crisis.

The evidence in Table 6 suggests that investment rates and growth rates in East Asia still remain below their pre-crisis levels. There are at least two possible explanations for this observation. One is that these countries have reached the limits of catch up growth and are settling into a new steady state characterized by investment and growth more akin to the advanced economy cohort of which they are now a part. An alternative explanation is that despite the quick change of tack from fiscal consolidation to a stance that allowed the automatic stabilizers to kick in, the Asian countries suffered permanent output losses. Resolving which of these hypotheses is correct lies beyond the scope of this paper. But if the Asian Crisis did result in permanent output losses in spite of attempts to use countercyclical fiscal policy (and other

tools) as a tool of adjustment to cushion the blow of financial crisis and recession then there may be an important additional lesson here. Deep economic contractions—especially those caused by financial crises—can have lasting effects. Policy makers would be wise to use all tools at their disposal—including fiscal policy—to avoid them, even if it means running larger deficits than they would like in the short to medium term.

V. Conclusion

A re-examination of the Asian Crisis in light of the slow recovery in Europe following the 2008 Global Financial Crisis reveals the limitations of the “It’s mostly fiscal” characterization of the IMF as a wholesale purveyor of austerity. While the Fund initially pushed for fiscal consolidation during the Asian Crisis, officials in the organization moved to a more accommodative stance within a year. The story of adjustment in Europe is exactly the opposite. Europe began with an accommodative stance that turned to fiscal austerity two years later. Furthermore, the size of the initial adjustments in Asia pale in comparison with the size of the fiscal consolidation imposed on the GIIPS by the EC, ECB, and the IMF during their emergency loan agreements. In the European Story, moreover, the Fund has been the voice of moderation, pushing for fiscal measures rather than targets such as those required under the European Fiscal Compact.

While there are many possible explanations for why Asia’s recovery from its crisis has been more rapid and robust than that of Europe, a leading candidate is the decision by policy makers in the two regions to adopt very different adjustment strategies. In one case there was initial fiscal consolidation followed by greater flexibility to allow for automatic stabilizers. In the other case there was initial fiscal expansion with a quick pivot to fiscal consolidation. The

impact of this quick pivot on output and employment may have been exacerbated by the absence of other policy levers such as exchange rate flexibility and monetary policy independence.

That said, the data behave in a manner that would seem to reflect the theory of countercyclical fiscal policy at work: by running surpluses when times are good governments can accumulate a stockpile of funding that allows them to spend, stimulate aggregate demand and cushion the blow when the economy is hit with a negative shock. The initial contraction in Asia came about as fiscal policy tightened. Output and employment rebounded as policy became more expansionary. The moderated fiscal stance in Asia plus the commitment to reform was the key to the quick recovery.⁶ Expansionary policy in Europe in the early days of the financial crisis helped mitigate the real economic impact. The switch to fiscal consolidation seems to have contributed to the onset of a double dip.

It is also worthwhile noting that the IMF's emphasis on structural reforms in Europe has been less aggressive than its stance on reforms in Asia. The reforms that were formally part of the agreements in Europe appear to have been less deep and extensive, particularly those addressing critical bottlenecks such as product market, labor market and banking sector reforms.⁷

⁶ Summary of structural reforms during Asian Crisis on page 21:

<http://www.imf.org/external/pubs/ft/wp/wp98128.pdf>

⁷ An IMF review of the progress to date under the new Greek program noted that Greece's fiscal and external imbalances are improving, but its substantial economic contraction has continued. The IMF found that the structural transformation of economy is proceeding at a slow place outside of the labor market, "...and this is making Greece's adjustment more costly." There was agreement with the Greek authorities that "...structural reforms to date had been uneven at best, and that a reinvigoration of the reform agenda would be critical to boost potential growth." The review cited a lack of movement in deregulating product markets by removing barriers to entry. The privatization of state-owned assets was another area of major concern, since the targets that had been set "...have been missed by a wide margin", in part because of political resistance. The IMF acknowledged that the reform of Greek labor markets had been initiated, but called for further measures, such as the implementation of a new minimum wage system. The liberalization of entry to regulated professions also needed to be advanced. A recent IMF review of Portugal's record in the program found that structural reforms have been advanced, and gave these efforts some of the credit for the decline in Portuguese government bond yields. The government has moved to tackle excessive regulatory procedures, and adapt wage bargaining to allow differences in wages across sectors. A number of judicial reforms are also underway. But the IMF's staff worried that "...it remains unclear whether reforms to date are sufficient to address the large external competitiveness gap or will engender an adequately strong supply response to avoid a prolonged demand-driven slump.

When financial markets lose confidence in the policies of a nation, it may have no choice but to embrace tough measures—including fiscal austerity—to regain access to international capital markets and put public finances back on a sustainable trajectory. While the long-run benefits of austerity may outweigh the short-run costs for a small country that is cut off from world capital markets, this may not be the case for a set of large, systemically important countries such as the European Union or the United States. In this context, the circumstances under which the benefits of austerity outweigh the costs and the optimal speed of fiscal adjustment are not absolute. While cold-turkey deficit reduction may be the optimal strategy for balancing the budget in some circumstances, on other occasions a gradual path toward eliminating the deficit may actually constitute the disciplined course of action. Indeed, the facts uncovered in this paper suggest that discipline in the GIIPS does not mean fiscal austerity but rather a commitment to countercyclical fiscal policy coupled with an unwavering commitment to structural reforms that have the capacity to increase productivity.

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Figure 1. Growth in Asia following the Asian financial crisis rebounds more quickly than growth in the European Periphery countries following the 2008 Financial Crisis

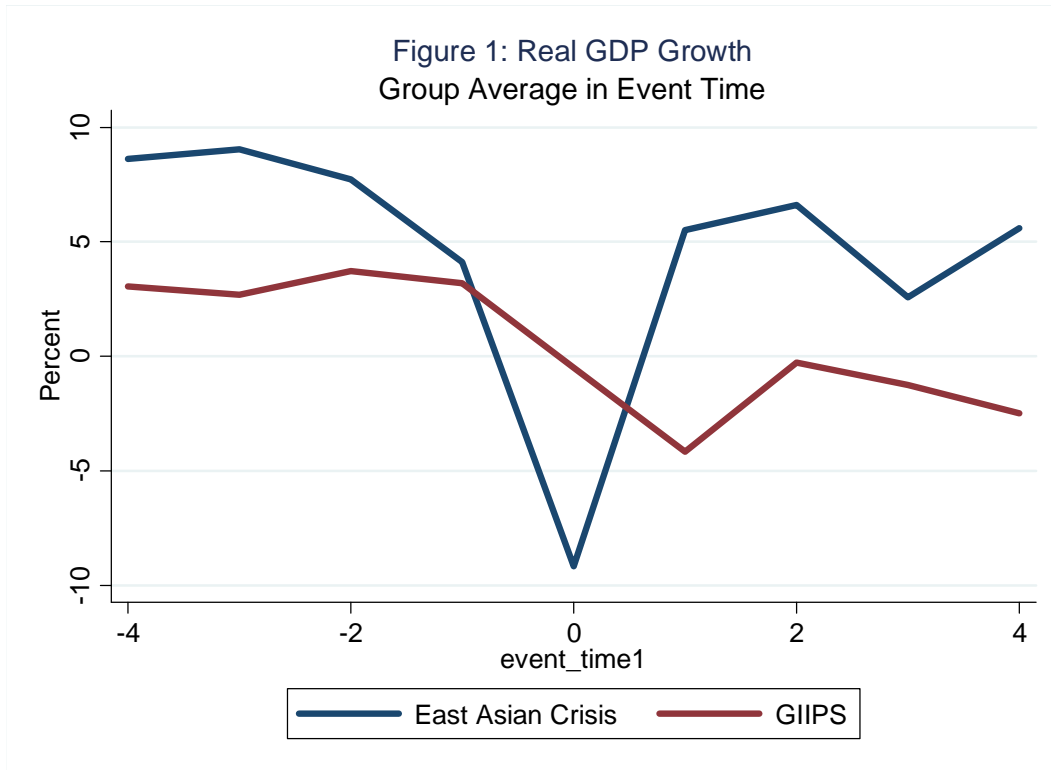


Figure 2. Unemployment in Asia following the Asian financial crisis rises less rapidly than it does in the European Periphery countries following the 2008 Financial Crisis

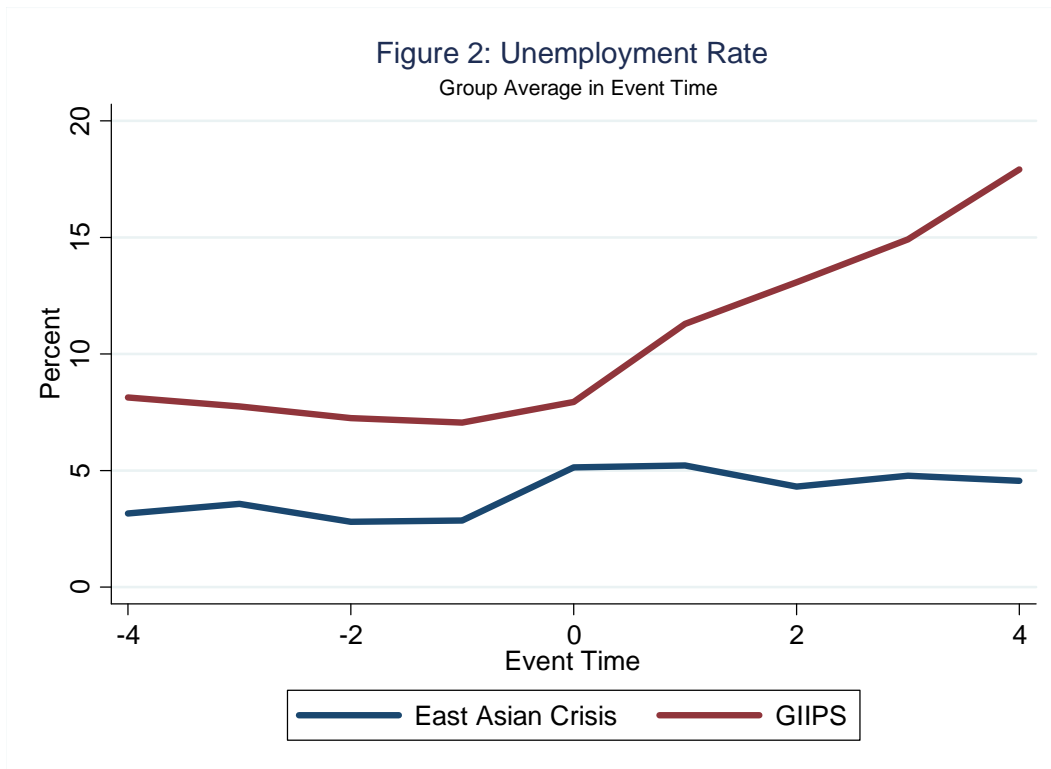


Figure 3. Policy Makers in Asia and Europe adopted very different approaches to fiscal policy following their financial crises.

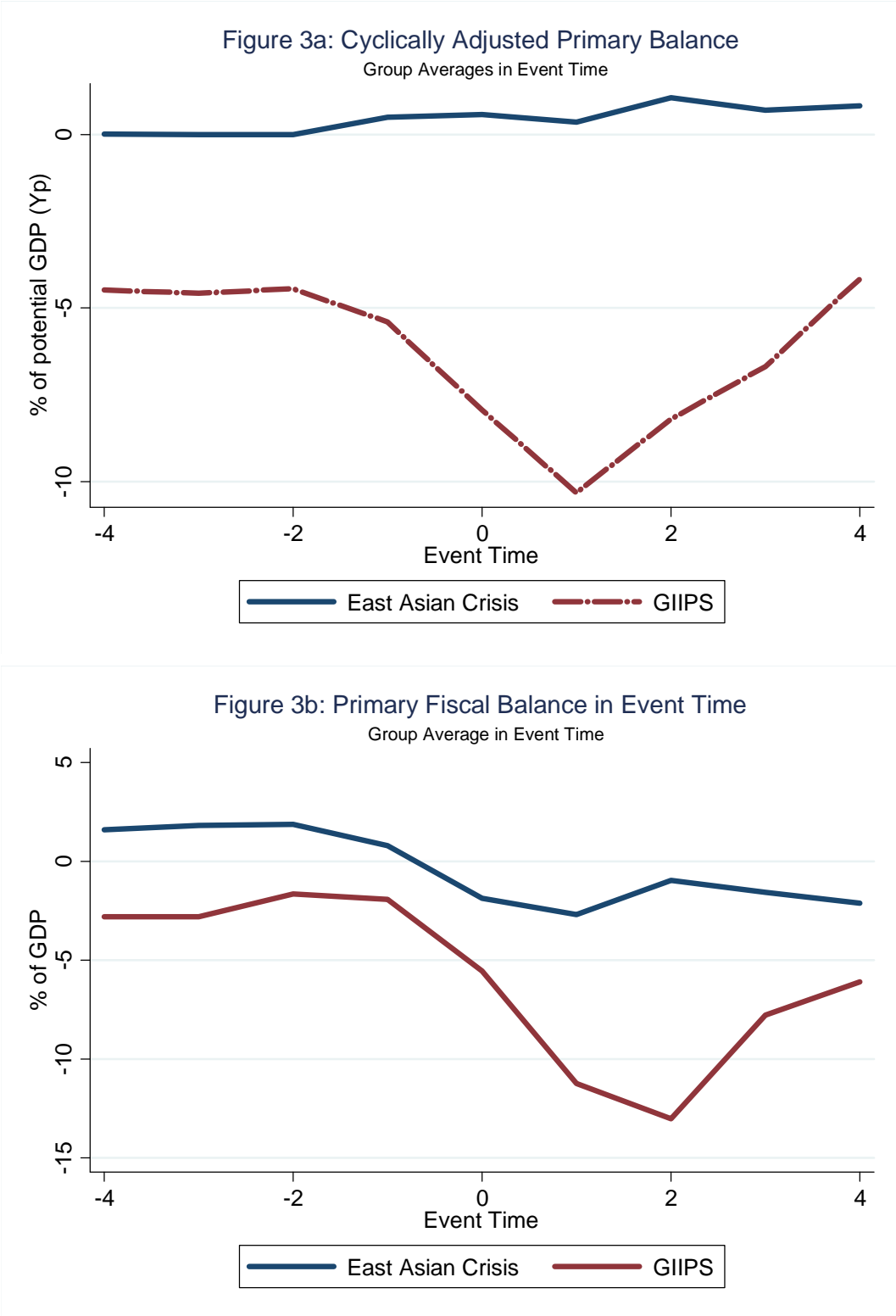


Figure 4: Exchange Rates Decline Significantly in East Asia compared to the Relative Stability of the Euro.

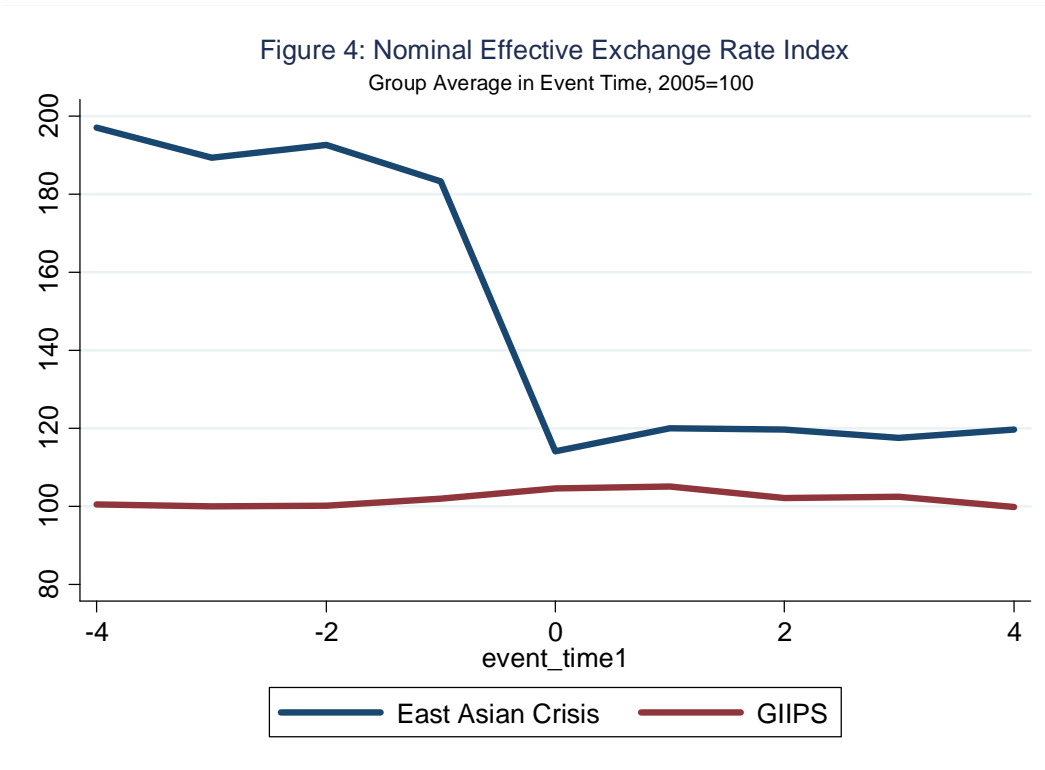
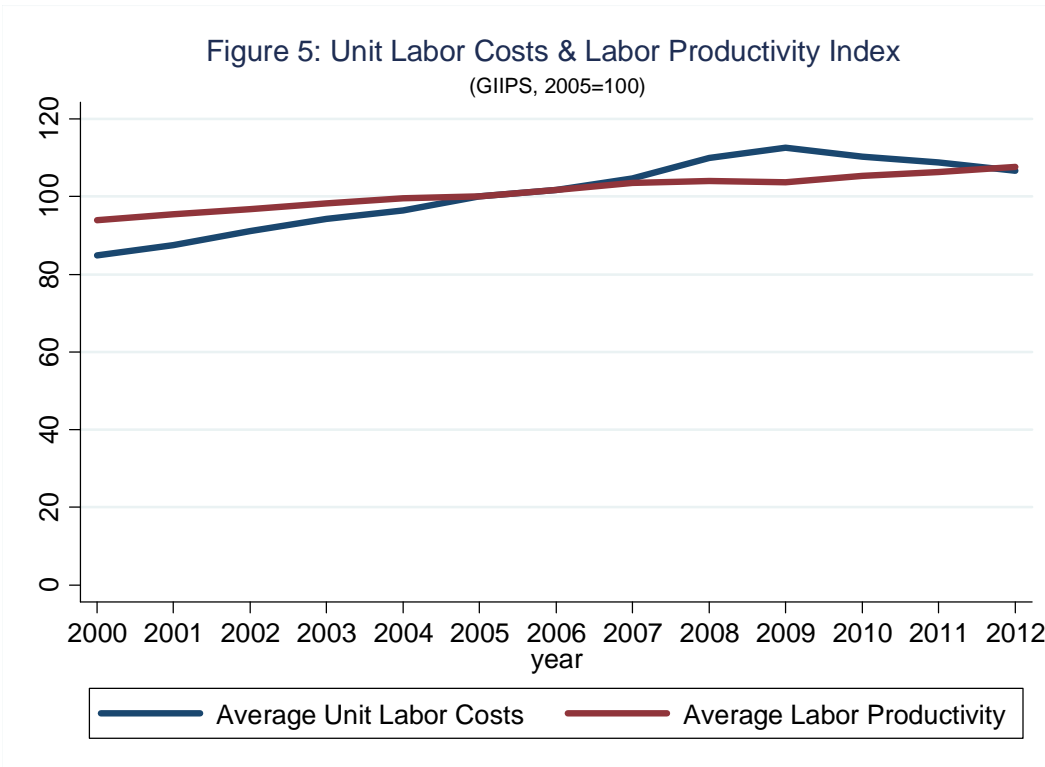


Figure 5: Unit Labor Cost Increases have Outpaced Labor Productivity Growth in the European Periphery



**Table 1: T-Tests of Means: Debt and Deficits
By Country-Group in Crisis Event Time**

Panel 1: General government gross debt (% of GDP)								
Averages	Pre-Crisis	Crisis	Post-Crisis I	Post-Crisis II	Changes	Crisis-Pre	Post I- Crisis	Post II- Post I
	(t-4, t-1)	(t=0)	(t+1, t+2)	(t+3,t+4)				
East Asian Crisis	25.65	33.96	51.62	47.78	8.32	17.66	-3.85	
GIIPS	67.82	74.92	95.68	119.35	7.10*	20.75***	23.67***	
East Asia-other	46.21	47.35	50.22	51.92	1.14	2.87*	1.70***	
Europe-core	51.2	52.68	60.39	64.74	1.48	7.71***	4.35***	

Panel 2: Government Fiscal Balance Inclusive of Net Interest Payments (% of GDP)								
Averages	Pre-Crisis	Crisis	Post-Crisis I	Post-Crisis II	Changes	Crisis-Pre	Post I- Crisis	Post II- Post I
	(t-4, t-1)	(t=0)	(t+1, t+2)	(t+3,t+4)				
East Asian Crisis	4.09	2.04	-1.15	-2.97	-2.05	-3.19	-1.82*	
GIIPS	0.63	-2.58	-8.88	-2.73	-3.21*	-6.30**	6.15**	
East Asia-other	3.97	-0.44	1.2	-0.51	-4.41	1.64	-1.70*	
Europe-core	1.29	1.37	-2.98	-1.72	0.08	-4.35***	1.26***	

Panel 3: Government Primary Fiscal Balance (% of GDP)								
Averages	Pre-Crisis	Crisis	Post-Crisis I	Post-Crisis II	Changes	Crisis-Pre	Post I- Crisis	Post II- Post I
	(t-4, t-1)	(t=0)	(t+1, t+2)	(t+3,t+4)				
East Asian Crisis	1.56	-1.88	-1.84	-1.84	-3.44**	0.04	0	
GIIPS	-2.3	-5.55	-12.14	-6.94	-3.26*	-6.58**	5.20**	
East Asia-other	-0.12	-3.01	-2.22	-4.04	-2.89*	0.79	-1.81**	
Europe-core	-0.09	0.26	-4.23	-2.99	0.35	-4.49***	1.24***	

Panel 4: Government Structural Balance (% of Potential GDP)							
	Pre-Crisis	Crisis	Post-Crisis I	Post-Crisis II	Crisis-Pre	Changes	
	(t-4, t-1)	(t=0)	(t+1, t+2)	(t+3,t+4)		Post I- Crisis	Post II- Post I
East Asian Crisis	0.16	0.57	0.71	0.76	0.41	0.14	0.05
GIIPS	-4.72	-7.93	-9.26	-5.42	-3.21*	-1.33	3.84**
East Asia-other	-0.01	-0.05	-0.05	-0.06	-0.05***	0	-0.02**
Europe-core	-0.61	-0.84	-2.59	-1.72	-0.23	-1.76***	0.87**

Panel 5: General Government Revenues (% of GDP)							
Averages	Pre-Crisis	Crisis	Post-Crisis I	Post-Crisis II	Crisis-Pre	Changes	
	(t-4, t-1)	(t=0)	(t+1, t+2)	(t+3,t+4)		Post I- Crisis	Post II- Post I
East Asian Crisis	20.73	19.27	19.16	21.23	-1.46	-0.11	2.07**
GIIPS	39.97	40.02	39.01	40.49	0.05	-1.01**	1.48**
East Asia-other	20.63	19.19	19.19	17.96	-1.44*	0	-1.24
Europe-core	47.56	47.51	47.2	47.48	-0.05	-0.31	0.28

Panel 6: General Government Expenditure (% of GDP)							
Averages	Pre-Crisis	Crisis	Post-Crisis I	Post-Crisis II	Crisis-Pre	Changes	
	(t-4, t-1)	(t=0)	(t+1, t+2)	(t+3,t+4)		Post I- Crisis	Post II- Post I
East Asian Crisis	19.17	21.15	21	23.06	1.97	-0.15	2.06*
GIIPS	42.27	45.57	51.15	47.43	3.30*	5.57*	-3.72*
East Asia-other	20.75	22.2	21.42	21.99	1.45*	-0.78	0.58
Europe-core	47.65	47.26	51.43	50.47	-0.4	4.17***	-0.96***

**Table 2: T-Tests of Means: Debt and Deficits
GIIPS versus East Asia in Crisis Event Time**

	Pre-Crisis	Crisis	Post-Crisis I	Post-Crisis II	Crisis-Pre	Changes	Post II-
	(t-4, t-1)	(t=0)	(t+1, t+2)	(t+3,t+4)		Post I- Crisis	Post I
Average Difference (GIIPS-East Asia)							
General government gross debt (% of GDP)	42.17	40.96	44.05	71.57	-1.21	3.09	27.52***
Government Overall Fiscal Balance (% of GDP)	-3.46	-4.62	-7.72	0.25	-1.15	-3.10*	7.97***
Government primary fiscal balance (% of GDP)	-3.86	-3.68	-10.30	-5.10	0.18	-6.62**	5.20**
Government Structural Balance (% of Potential GDP)	-4.88	-8.50	-9.97	-6.18	-3.62**	-1.47	3.78**
General Government Revenues (% of GDP)	19.24	20.75	19.85	19.27	1.51*	-0.90**	-0.58
General Government Expenditure (% of GDP)	23.10	24.43	30.15	24.37	1.33	5.72**	-5.78**

**Table 3: T-Tests of Means: Absorption Indicators
By Country-Group in Event Time**

Panel 1: Real GDP Growth (%)							
	Averages					Changes	
	Pre-Crisis (t-4, t-1)	Crisis (t=0)	Post-Crisis I (t+1, t+2)	Post-Crisis II (t+3,t+4)	Crisis-Pre	Post I-Crisis	Post II-Post I
East Asian Crisis	7.38	-9.18	6.07	4.08	-16.56***	15.25***	-1.99
GIIPS	3.17	-0.51	-2.23	-1.88	-3.68**	-1.72**	0.35
East Asia-other	6.90	1.42	6.14	3.45	-5.49**	4.72**	-2.69**
Europe-core	3.18	0.35	-1.02	1.17	-2.83***	-1.36***	2.19***

Panel 2: Unemployment Rate (%)							
	Averages					Changes	
	Pre-Crisis (t-4, t-1)	Crisis (t=0)	Post-Crisis I (t+1, t+2)	Post-Crisis II (t+3,t+4)	Crisis-Pre	Post I-Crisis	Post II-Post I
East Asian Crisis	3.09	5.12	4.75	4.67	2.03*	-0.37	-0.08
GIIPS	7.54	7.93	12.19	16.41	0.39	4.25**	4.22**
East Asia-other	3.67	4.61	4.97	5.85	0.94**	0.36**	0.88**
Europe-core	6.57	5.52	7.08	6.69	-1.04***	1.56***	-0.39*

Panel 3: Consumption Ratio (% of GDP)							
	Averages					Changes	
	Pre-Crisis (t-4, t-1)	Crisis (t=0)	Post-Crisis I (t+1, t+2)	Post-Crisis II (t+3,t+4)	Crisis-Pre	Post I-Crisis	Post II-Post I
East Asian Crisis	53.27	53.45	55.08	56.13	0.18	1.62*	1.06
GIIPS	59.44	61.22	60.99	61.13	1.78	-0.24	0.14
East Asia-other	55.95	56.78	56.93	58.01	0.84	0.15	1.08
Europe-core	51.31	50.36	51.8	51.58	-0.95**	1.44***	-0.22

Panel 4: Investment Ratio (% of GDP)							
	Averages				Changes		
	Pre-Crisis (t-4, t-1)	Crisis (t=0)	Post-Crisis I (t+1, t+2)	Post-Crisis II (t+3,t+4)	Crisis-Pre	Post I-Crisis	Post II-Post I
East Asian Crisis	37.47	22.24	23.21	24.92	-15.23***	0.97	1.72
GIIPS	24.95	23.88	18.68	16.00	-1.07	-5.20***	-2.68***
East Asia-other	30.88	28.23	27.24	25.43	-2.65***	-0.99	-1.81
Europe-core	20.34	21.09	18.12	19.35	0.76**	-2.98***	1.23***

Panel 5: National Gross Savings Rate (% of GDP)							
	Averages				Changes		
	Pre-Crisis (t-4, t-1)	Crisis (t=0)	Post-Crisis I (t+1, t+2)	Post-Crisis II (t+3,t+4)	Crisis-Pre	Post I-Crisis	Post II-Post I
East Asian Crisis	33.28	32.69	30.63	29.32	-0.60	-2.05**	-1.31
GIIPS	18.58	14.72	12.90	12.82	-3.86	-1.83***	-0.08***
East Asia-other	32.26	33.02	30.47	30.18	0.76	-2.55	-0.29
Europe-core	24.52	24.12	21.21	22.30	-0.4	-2.91***	1.09**

Panel 6: Current Account Balance (% of GDP)							
	Averages				Changes		
	Pre-Crisis (t-4, t-1)	Crisis (t=0)	Post-Crisis I (t+1, t+2)	Post-Crisis II (t+3,t+4)	Crisis-Pre	Post I-Crisis	Post II-Post I
East Asian Crisis	-0.72	0.92	0.88	0.54	1.64	-0.04**	-0.34
GIIPS	-8.20	-13.48	-7.94	-4.36	-5.28***	5.54***	3.58**
East Asia-other	1.72	2.28	1.51	1.42	0.56	-0.77	-0.09
Europe-core	4.00	2.90	2.80	2.35	-1.1	-0.1	-0.45

**Table 4: T-Tests of Means: Absorption Indicators
GIIPS versus East Asia in Crisis Event Time**

	Pre-Crisis	Crisis	Post-Crisis I	Post-Crisis II	Crisis-Pre	Changes Post I-	Post II-
	(t-4, t-1)	(t=0)	(t+1, t+2)	(t+3,t+4)		Crisis	Post I
	Average Difference (GIIPS-East Asia)				Difference in Difference		
Real GDP Growth (percent)	-4.21	8.67	-8.29	-5.96	12.88***	-16.96***	2.33*
Unemployment Rate (percent)	4.45	2.81	7.44	11.74	-1.64**	4.63***	4.30**
Consumption Ratio (% of GDP)	6.17	7.77	5.91	4.99	1.60*	-1.86***	-0.92**
Investment Ratio (% of GDP)	-12.52	1.64	-4.53	-8.92	14.16***	-6.17***	-4.39***
Gross Savings Rate (% of GDP)	-14.70	-17.96	-17.73	-16.51	-3.26**	0.23	1.23*
Current Account Balance (% of GDP)	-7.48	-14.40	-8.82	-4.90	-6.92***	5.58***	3.92**

Table 5: Changes in the Structural Fiscal Balance and Real GDP Growth
 Dependent Variable: Real GDP Growth
 Panel A: European 15

	<u>2002-2007</u>		<u>2008-2009</u>		<u>2010-2012</u>	
	(1a)	(1b)	(1c)	(1d)	(1e)	(1f)
Lagged Structural Balance (Δ)	0.312*** (3.22)	0.394*** (4.23)	1.576* (1.98)	0.007 (0.01)	-0.367*** (3.76)	-0.295*** (2.91)
Lagged GDP Growth		0.397*** (3.51)		1.115*** (5.61)		-0.111* (1.85)
Constant	2.782*** (23.49)	1.809*** (6.06)	-1.082 (1.33)	-4.225*** (5.84)	0.632*** (3.44)	0.568*** (3.16)
Adjusted R-squared	0.05	0.08	0.62	0.49	0.02	0.06
<i>N</i>	90	90	30	30	45	45

Panel B: GIIPS

	<u>2002-2007</u>		<u>2008-2009</u>		<u>2010-2012</u>	
	(2a)	(2b)	(2c)	(2d)	(2e)	(2f)
Lagged Structural Balance (Δ)	0.262 (-1.67)	0.217 (1.24)	1.562** (3.15)	0.987* (2.62)	-0.309* (2.18)	-0.302* (2.00)
Lagged GDP Growth		-0.139 -0.61		0.487* (2.69)		-0.054 -0.32
Constant	3.062*** (16.27)	3.455*** (5.17)	0.385 (0.39)	-1.273 -1.45	-1.218** (3.19)	-1.325** (2.53)
Adjusted R-squared	0.08	-0.11	0.35	0.75	0.02	-0.13
<i>N</i>	30	30	10	10	15	15

Panel C: Asia 10

	<u>1992-1997</u>		<u>1998-1999</u>		<u>2000-2007</u>	
	(3a)	(3b)	(3c)	(3d)	(3e)	(3f)
Lagged Structural Balance (Δ)	-0.445 (1.41)	-0.465 (1.55)	-8.119** (3.04)	-1.62 (1.04)	-0.351 (1.03)	-0.305 (0.9)
Lagged GDP Growth		0.419** (2.15)		-0.861*** (6.30)		0.156 (1.33)
Constant	7.467*** (26.34)	4.234*** (2.77)	3.039** (2.30)	2.792*** (4.86)	5.935*** (23.21)	5.049*** (7.09)
Adjusted R-squared	0.2	-0.1	0.04	0.8	0.13	-0.11
<i>N</i>	49	49	20	20	80	80

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 6: The Impact of the East Asian Crisis on Real GDP Growth Rates and Investment Ratios (1980-2012)

(Indonesia, Korea, Malaysia and Thailand)						
	(1)	(2)	(3)	(4)	(5)	(6)
	Real GDP Growth (Full Sample)	Investment Ratio (Full Sample)	Real GDP Growth (Full Sample)	Real GDP Growth (Full Sample)	Real GDP Growth (Pre-crisis)	Real GDP Growth (Post-Crisis)
Post-Crisis Dummy	-2.557*** (5.18)	-8.923*** (9.62)		-1.613** (2.51)		
Investment Ratio			0.263*** (0.046)	0.106** (2.24)	0.103* (1.68)	0.267*** (3.05)
Constant	7.309*** (22.40)	34.989*** (57.06)	-2.382 -1.446	3.606** (2.14)	3.72* (1.72)	-2.202 -0.96
	26.87	92.62	33	16.39	2.82	9.32
Adjusted R-squared	0.15	0.41	0.18	0.18	0.02	0.09
<i>N</i>	128	128	132	128	72	56
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Appendix Table 1: Variable definitions

Variable	Definition	Data Source
General government gross debt (% of GDP)	General government gross debt	World Economic Outlook (April 2013)
Government Overall Fiscal Balance (% of GDP)	General government primary net lending/borrowing	World Economic Outlook (April 2013)
Government primary fiscal balance (% of GDP)	General government net lending/borrowing	World Economic Outlook (April 2013)
Government Structural Balance (% of Potential GDP)	General government structural balance	World Economic Outlook (April 2013)
General Government Revenues (% of GDP)	General government revenue	World Economic Outlook (April 2013)
General Government Expenditure (% of GDP)	General government total expenditure	World Economic Outlook (April 2013)
Real GDP Growth (percent)	Gross domestic product, constant prices	World Economic Outlook (April 2013)
Unemployment Rate (percent)	Unemployment rate (Percent of total labor force)	World Economic Outlook (April 2013)
Consumption Ratio (% of GDP)	Household Final Consumption Expenditure	International Financial Statistics
Investment Ratio (% of GDP)	Total investment	World Economic Outlook (April 2013)
Gross Savings Rate (% of GDP)	Gross national savings	World Economic Outlook (April 2013)
Current Account Balance (% of GDP)	Current account balance	World Economic Outlook (April 2013)
Labor Productivity	Hourly labor productivity, total economy index (2005=100)	Eurostat dataset
Unit Labor Costs	Unit labor costs, total economy index (2005=100),	Eurostat dataset
Nominal Exchange Rate	Nominal effective exchange rate index (2005=100)	International Financial Statistics
Inflation (%)	Consumer Prices, All Items (2005=100)	International Financial Statistics
Interest Rate (%)	Interest rate, government securities, government bonds	International Financial Statistics

Appendix Table 2: Panel A

Percent of GDP	<u>IMF Target</u>		<u>WEO</u>	<u>IMF Target</u>		<u>WEO</u>
	<u>Original</u>	<u>Revised</u>	<u>Actual</u>	<u>Original</u>	<u>Revised</u>	<u>Actual</u>
	Indonesia					
	1997/98	1997/98	1997	1998/99	1998/99	1998
Change in fiscal balance	-0.9	-2.2	-2.41	0.2	-9.2	-1.04
Fiscal balance (levels)	0.3	-0.9	-1.25	0.5	-10.1	-2.29
Change due to economic environment	-1.3	-4.2		0.3	-11.1	
Exchange rate	-1.4	-3.5		0.2	-6.4	
GDP growth	0.3	-0.5		0.1	-4.0	
Oil Price Change	-0.2	-0.2		0	-0.7	
Policy changes	0.3	2.7		0.2	1.7	
Outlays	0.2	2.7		0.4	3.8	
Social Safety Net	0	0		0	-1.0	
Bank Restructuring	-0.5	0		0	-1.6	
Statutory Revenue Change	0.6	0		-0.2	0.5	
Residual (unexplained)	0.2	0.7		-0.2	0.2	
Real GDP Growth rate	5	4.6	4.7	3	-12.1	-13.13
Sources: WEO October 2012, Lane et. al (1999)						

Appendix Table 2: Panel B

Percent of GDP	<u>IMF Target</u>		<u>WEO</u>	<u>IMF Target</u>		<u>WEO</u>
	<u>Original</u>	<u>Revised</u>	<u>Actual</u>	<u>Original</u>	<u>Revised</u>	<u>Actual</u>
	Korea					
	1997	1997	1997	1998	1998	1998
Change in fiscal balance	.	-0.3	0.03	0.2	-5.0	-1.35
Fiscal balance (levels)	0	0	2.56	0.2	-5.0	1.21
Change due to economic environment	.	.		-0.4	-1.9	
Exchange rate	.	.		-0.3	-0.9	
GDP growth	.	.		-0.1	-1.0	
Oil Price Change						
Policy changes	.	.		-0.1	-2.8	
Outlays	.	.		0.1	-1.1	
Social Safety Net	.	.		-0.2	-2.1	
Bank Restructuring	.	.		-0.8	-1.4	
Statutory Revenue Change	.	.		0.8	1.8	
Residual (unexplained)	.	.		0.7	-0.4	
Real GDP Growth rate		5.5	5.77	2.5	-7.0	-5.71
Sources: WEO October 2012, Lane et. al (1999)						

Appendix Table 2: Panel C

Percent of GDP	<u>IMF Target</u>		<u>WEO</u>	<u>IMF Target</u>		<u>WEO</u>
	<u>Original</u>	<u>Revised</u>	<u>Actual</u>	<u>Original</u>	<u>Revised</u>	<u>Actual</u>
	Thailand					
	1996/97	1996/97	1997	1997/98	1997/98	1998
Change in fiscal balance	-3.3	-4.0	-4.43	1.0	-3.5	-4.61
Fiscal balance (levels)	-1.1	-1.6	-1.68	-0.1	-5.1	-6.29
Change due to economic environment						
Exchange rate	-1.1	-0.3		-0.9	-3.1	
GDP growth	-0.2	-0.2		-0.9	-2.0	
Oil Price Change	-1.0	-0.1		0	-0.9	
Policy changes						
Outlays	-1.2	-2.6		1.9	-0.6	
Social Safety Net	-0.6	-1.9		1.8	2.6	
Bank Restructuring	-0.6	0		0	-0.6	
Statutory Revenue Change	0	-0.7		-1.1	-2.0	
Residual (unexplained)	0	0		1.2	-0.7	
Real GDP Growth rate	-1.0	-1.1		0	0.1	
Sources: WEO October 2012, Lane et. al (1999)	2.5	-0.4	-1.37	3.5	-5.0	-10.51

Appendix 3: Crisis Timeline in the European Periphery and East Asia

Greece

10/19/2009- Socialist government reveals that Greece has been greatly under reporting their debt level, doubling the estimate of the previous government to 12% of GDP

(<http://www.theguardian.com/business/2012/mar/09/greek-debt-crisis-timeline>).

12/14/2009- Greece announces plans to reduce deficit by 4% in next year and pledges to bring the deficit to 3% by the end of the 4 year term

(<http://www.theguardian.com/world/2009/dec/14/greece-unveils-reforms-to-public-finances>).

3/4/2010- Greece announces austerity plan, increase in VAT and cigarette/alcohol tax as well as freeze on pensions and cap on civil service pay

(<http://www.theguardian.com/business/2012/mar/09/greek-debt-crisis-timeline>).

5/1/2010- Greece implements austerity budget in order to receive loan package

(<http://www.imf.org/external/pubs/ft/survey/so/2010/car050210a.htm>).

7/7/2010- Greek parliament passes pension reform as required by IMF/EU deal and raises women's retirement age to 65

(<http://www.theguardian.com/business/2012/mar/09/greek-debt-crisis-timeline>).

6/29/2011- Greek parliament passes second austerity bill cutting spending and increasing taxes as required by EU loan program

(<http://www.theguardian.com/business/2012/mar/09/greek-debt-crisis-timeline>).

12/14/2011- IMF says Greek reforms are running behind schedule

(<http://www.theguardian.com/business/2012/mar/09/greek-debt-crisis-timeline>).

6/24/2011- European leaders agree to new loan program for Greece in return for Euro 28bn in cuts and tax raises plus a Euro 50bn privatization program

(<http://www.theguardian.com/world/2011/jun/24/greece-eu-bailout-david-cameron>).

9/11/2011- Greece announces property tax increases to stave off the denial of a new round of loans (<http://www.theguardian.com/business/2011/sep/11/greece-emergency-property-tax>).

9/21/2011- Greece announces further austerity measures in response to demands from the Troika (<http://www.theguardian.com/business/2011/sep/21/greece-to-cut-more-jobs-and-spending>).

1/28/2012- German government insists more on more austerity measures as precondition for continuing loans to Greece

(<http://www.theguardian.com/business/2012/mar/09/greek-debt-crisis-timeline>).

2/12/2012- Greece announces further austerity plans in order to receive another round of loans (<http://www.theguardian.com/world/2012/feb/12/greece-austerity-cuts-euro-bailout>).

7/24/2012- Troika officials claim that Greece's austerity measures have not been carried out under good faith continued pressure by lending countries to implement austerity in debtor countries (<http://www.theguardian.com/business/2012/jul/24/greek-exit-from-euro-fears-heighten>).

9/19/2012- Greece begins plans to sell off public property to shrink deficit

(<http://www.theguardian.com/world/2012/sep/19/debt-ridden-greece-firesale>).

Spain

2/5/2010- Spain plans to cut deficit to 3% by 2013 to quell market fears that it is the next Greece (<http://www.theguardian.com/business/2010/feb/05/spain-bid-calm-turmoil>).

9/30/2010- Moody cuts Spain's government debt rating citing concerns about government debt (<http://www.theguardian.com/business/2010/sep/30/spain-loses-top-credit-rating>).

8/26/2011- Spanish Government announces it will add Balanced Budget Amendment to Constitution with cap of 60% on public debts except in cases of emergency (<http://www.businessinsider.com/spain-balanced-budget-amendment-2011-8#ixzz1b4rERjoW>).

12/19/2011- Spain's new government pledges public spending cuts of at least Euro 16.5bn (<http://www.theguardian.com/world/2011/dec/19/spain-prime-minister-spending-cuts>).

3/25/2012- Spain's PM announces new budget with Euro 40bn in spending cuts and taxes increase (<http://www.theguardian.com/world/2012/mar/25/eurozone-spain-cuts-mariano-rajoy>).

7/11/2012- Spain announces a new round of austerity measures totaling Euro 65bn as a precondition of receiving a new round of loan program (<http://www.theguardian.com/business/2012/jul/11/mariano-rajoy-spain-65bn-cuts>).

Portugal

4/28/2010- In the face of further trouble in Greece and a Spanish debt downgrade, Portugal announces austerity measures.

(<http://www.theguardian.com/business/2010/apr/28/greek-debt-crisis-europe-bailout>).

Ireland

11/4/2010- Ireland announces plans to cut Euro 6bn from upcoming budget, double what had been predicted, includes cuts in social welfare, increases in petrol duties and increases in income taxes coupled with decreases in tax credits

(<http://www.theguardian.com/world/2010/nov/04/ireland-slashes-budget-greek-bailout-fears>).

11/29/2010- Ireland announces 4 year austerity plan in order to receive loan program from EU, IMF, UK, Denmark and Sweden

(http://money.cnn.com/2010/11/28/news/international/ireland_bailout/index.htm).

12/5/2011- Ireland announces austerity measures along with Greece and Italy

(<http://www.theguardian.com/world/2011/dec/05/cuts-tax-rises-ireland-italy>).

12/5/2012- Ireland implements a further Euro 2.5bn austerity plan mainly with new property tax and cut in child benefits

(<http://www.theguardian.com/world/2012/dec/05/ireland-austerity-budget>).

Italy

9/14/2011- Italy votes to adopt a Euro 54bn austerity plan with aims to eliminate fiscal deficit by 2013, details include cutting spending, delaying public pension payouts, raising VAT and implementing a new wealth tax

(<http://www.theguardian.com/business/blog/2011/sep/14/french-banks-downgraded-europe-debt-crisis>).

12/4/2011- Italy announces another austerity plan with taxes increases and spending cuts totaling Euro 30bn

(<http://www.theguardian.com/world/2011/dec/04/austerity-italy-minister-tears>).

General European Union

7/21/2011- European Council agrees to increase fiscal consolidation in Euro Area, member states (except those under a loan program) are required to reduce their deficits below 3% by 2013 (<http://www.european-council.europa.eu/home-page/highlights/a-common-response-to-the-crisis-situation.aspx?lang=en>).

12/9/2011- EC (with UK not joining) agree on intergovernmental treaty to place strict caps on government spending and borrowing with penalties for violators, will take effect Jan 1 2013 if 12 members have approved the treaty (<http://www.reuters.com/article/2011/12/09/eurozone-idUSL5E7N900120111209>).

5/11/2012- EC announces new outlook for Eurozone further austerity measures are recommended to keep members in compliance with 3% deficit limit previously laid out (<http://www.theguardian.com/business/2012/may/11/more-austerity-unemployment-europe>).

East Asian Crisis IMF program date announcements

Thailand:

8/1997- IMF approves financial aid package

(<http://www.imf.org/external/np/exr/ib/2000/062300.htm#box1>)

Indonesia:

11/1997- IMF announces financial aid package

(<http://www.imf.org/external/pubs/ft/op/op178/op178.pdf> Box 1.2 page 4)

South Korea:

12/1997- IMF announces 3 year financial program

((<http://www.imf.org/external/pubs/ft/op/op178/op178.pdf> Box 1.3 page 6)

Malaysia:

No program implemented by the IMF