Social implications of fiscal policy responses during crises*

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NBER working paper No. 19828 (January 2014)

January 15, 2014

Abstract

This paper studies the social implications of fiscal policy responses to crises in Latin America over the last 40 years and in the Eurozone during the aftermath of the global financial crisis. We focus on the behavior of four social indicators: the poverty rate, income inequality, unemployment rate, and domestic conflict. We find a causal link from counteryclical (procyclical) fiscal policy responses to reductions (increases) in all four social indicators. These results call into question recent claims on "expansionary fiscal austerity."

*This is a longer version of the paper prepared for the ANU-Brookings Conference on "The G20 Summit at Five," Canberra, Australia, November 14-15, 2013. We would like to thank Colin Bradford, Kemal Dervis, David Gruen, Homi Kharas, and conference participants at the "The G20 Summit at Five" for helpful comments and suggestions. We are also extremely grateful to Julia Ruiz Pozuelo and Collin Rabe for excellent research assistance.

1 Introduction

It is well established by now that developing countries have typically pursued procyclical fiscal policy (i.e., expansionary fiscal policy in good times and contractionary fiscal policy in bad times), which has tended to amplify the underlying business cycle.[1] In particular, contractionary fiscal policy in bad times has increased the severity and duration of crises.[2] Ironically, the procyclicality of fiscal policy has also become a hotly debated issue in the context of the current crisis in Europe, with influential economists such as Olivier Blanchard (IMF Chief Economist) arguing that fiscal multipliers in the Eurozone have been underestimated by the IMF and others and hence that the contractionary effects of fiscal austerity have been considerably higher.[3]

Lost in much of the discussion on procyclical fiscal policy has been the effect on social indicators, such as unemployment, income inequality, and poverty rate. Surely, part of the reason has been the lack of readily available time-series data on social indicators to match the existing macro-data on fiscal variables and GDP. More generally, the fact that much of the discussion on fiscal procyclicality has focused on either the issue of causality (i.e., does GDP cause government spending or is it the other way around?) or why countries are procyclical (i.e., is it imperfections in international capital markets or domestic political-economy factors?) seems to have left little scope to broaden the discussion and look at the possible interaction between fiscal procyclicality and the behavior of social indicators.[4]

This paper is a first attempt at filling this void by looking at how fiscal

[1] See, for example, Gavin and Perotti (1997), Kaminsky, Reinhart, and Vegh (2004), and Vegh and Vuletin (2012).

[2] See Vegh and Vuletin (2013).

[3] See Blanchard and Leigh (2013).

[4] On the causality issue, see Rigobon (2004), Jaimovich and Panizza (2007), and Ilzetzki and Vegh (2008). For empirical studies looking at possible factors behind procylical fiscal policy, see, among others, Lane (2003), Calderon and Schmidt-Hebbel (2008), and Frankel, Vegh, and Vuletin (2013).

procyclicality during crises may affect the behavior of social indicators. For these purposes, we follow Vegh and Vuletin (2013) and focus primarily on the fiscal policy response to crises in Latin America over the last 40 years. In that paper, we argue that the evidence shows that, on average, Latin American countries have "graduated" in terms of their fiscal and monetary response to crises, in the sense that they have switched from procyclical policy responses before 1998 to countercyclical policy responses after 1998. This average response, however, masks quite a bit of heterogeneity across countries, ranging from cases such as Chile and Brazil, which have graduated on both the monetary and fiscal front, to cases such Argentina and Uruguay, which have shown consistently procyclical policy responses before and after 1998. We further argue that countercyclical policy responses, particularly on the fiscal side, have tended to reduce the duration and intensity of crises.

In this paper, we complement our previous analysis by looking at how the fiscal policy response to crises has affected social indicators such as the poverty rate, income inequality, the unemployment rate, and domestic conflict. Following Vegh and Vuletin (2013), Section 2 provides an operational definition of "crisis" and applies it to our sample of eight Latin American countries.[5] By so doing, we identify 34 crises and characterize their average duration and intensity. Since casual analysis for countries such as Chile and others in the region suggests a policy shift around the year 2000, we choose the year 1998 (a year without any GDP crisis) to divide our sample into a "before" and "after." We show that the frequency, duration, and intensity of crises in Latin America has fallen in the post-1998 period.

In Section 3, we then show that, *on average*, Latin America's fiscal policy responses to crises has shifted from being procyclical before 1998 to being countercyclical after 1998. In this sense, therefore, we could argue that, on average, Latin America has *graduated* in terms of the fiscal policy response to

[5] As detailed in Section 2, our definition is based on the behavior of GDP, so these are, strictly speaking, "GDP crises." However, they typically coincide with well-known crises episodes.

crises. This average response, however, masks a great deal of heterogeneity within our sample, with countries such as Chile and Brazil (and, to some extent, Mexico) leading the way in this graduation process and countries such as Argentina, Uruguay, and Venezuela still showing heavily procyclical policy responses.

Section 4 then looks at the behavior of social indicators during the crises. Specifically, we look at the behavior during crises of the change in (i) the poverty rate, (ii) the ratio of the richest 10 percent to the poorest 10 percent, (iii) the unemployment rate, and (iv) domestic conflict before and after 1998. In general, we see a fairly consistent picture across countries, with Brazil, Chile, and Mexico being the set of countries where poverty, income inequality, unemployment, and domestic conflict have increased the least during crises in the post-1998 period and, to the extent that data are available, where we see smaller increases in all four social indicators in the post-1998 period compared to the pre-1998 period. It is also true that, on average, these social indicators have increased less (or even fallen) during the crises in the pre-1998 period compared to the post-1998 period and the recent global crisis.

In Section 5, we examine the role of fiscal policy in bringing about a reduction (or a smaller increase) in all four social indicators during crises. In other words, can countercyclical fiscal policy attenuate the increase in poverty, income inequality, unemployment, and domestic conflict during crises? We show that there is a statistically significant relationship between the degree of cyclicality of fiscal policy and social indicators, in that the more procyclical is fiscal policy, the more our four social indicators increase. However, since correlations do not imply causation, we construct a measure of fiscal space (which we label a "fiscal readiness index") that acts for an instrument for fiscal policy. We conclude that it is indeed a more countercyclical fiscal policy response that leads to a reduction (or smaller increase) in poverty, income inequality, unemployment, and domestic conflict during crises.

In Section 6, we turn our attention to the current Eurozone crisis to

argue that countries such as Greece, Ireland, Italy, and Portugal have been pursuing procyclical (i.e., contractionary) fiscal policy, as Latin American countries used to do (and still do to some extent). We provide evidence in the form of a fiscal readiness index that suggests that this procyclical fiscal policy has led to higher unemployment and more domestic conflict.

Section 7 offers some concluding remarks.

2 Crises in Latin America: Definition and basic statistics

Following Vegh and Vuletin (2013), our sample for Latin American countries consists of what is commonly referred to as LAC-7 (Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela) and Uruguay. The combined GDP of these 8 economies accounts for almost 93 percent of the Latin American and the Caribbean region's GDP. Table 1 lists the sample period for each of these countries. Unfortunately – and mainly due to the need to have quarterly data for our analysis – the sample period differs across countries. For Argentina, for instance, our sample starts in 1970:1, whereas for Venezuela it starts in 1998:1. For all countries except Venezuela, however, our sample starts in 1980 or earlier, which gives us at least 33 years of quarterly data.

Analyzing policy responses to "crises" naturally requires defining a "crisis". For our purposes, we will define a crisis as beginning in the quarter in which real GDP falls below the preceding 4-quarter moving average and ending in the quarter in which real GDP reaches the pre-crisis level. As indicated in Table 1, using this definition we identify 34 crises in our 8 Latin American countries. The countries with the largest number of crises are Argentina and Brazil (7 crises each) and the country with the least number of crisis is Colombia (2 crises). Given the different sample periods (and the different duration of each individual crisis), the table also reports the frequency of crises (defined as the number of quarters that a given country

is in crisis over the total number of quarters in the sample period). By this metric, Argentina is the country with the highest frequency of crises (0.49), implying that, over the last 43 years, it has been in one crisis or another half of the time, while Colombia is the country with the lowest frequency (0.13). Table 1 also reports the average duration of crises, which is 11 quarters for the whole sample. Uruguay exhibits the longest average duration (18 quarters). The average intensity of crises (measured as the fall in the level of GDP from the start of the crisis to the trough) is 8.6 percent, with Uruguay also having the largest average intensity (14.8 percent).

If we take 1998 as our before-and-after date, how has the frequency, duration, and intensity of crises change?[6] Panel A in Figure 1 shows the frequency of crises before and after 1998 for each of our 8 Latin American countries. On average, we seem to observe higher frequencies before than after 1998. This visual impression is confirmed by Figure 2, Panel A, where we can see that the average frequency of crises fell from 0.42 before 1998 to 0.29 afterwards. As an additional datapoint, the figure also shows that the frequency of crises after 2008 has been 0.23.

Panel B in Figure 1 shows the average duration of crises for our 8 Latin American countries before and after 1998. Once again, the visual impression appears to suggest that the average duration has fallen after 1998. This is confirmed in Figure 2, Panel B, where we see that the overall average duration of crises before 1998 (14 quarters) falls to 8 quarters after 1998.

Finally, Panel C in Figure 1 shows the average intensity of crises for our 8 Latin American countries. As was the case with frequency and duration, the visual impression conveyed by the plot is that the intensity has diminished

[6]While admittedly arbitrary, the choice of 1998 seemed a natural one. First – and as discussed in Frankel, Vegh, and Vuletin (2013) – the late 1990's appears to have been a period where one can detect (through formal regressions using institutional quality as an explanatory variable) a shift in fiscal policy (from procyclical to countercyclical). Within this period, 1998 seemed a natural candidate because no crisis took place in that year providing us with a clean break in the series. We also wanted to leave a reasonably large window (15 years in this case) where one can observe the "after" effects.

after 1998. This is confirmed by Figure 2, Panel B, where we can see that the overall average fall in GDP (from the start of the crisis to the trough) before 1998 was 11 percent, compared to just 7 percent after 1998.

In sum, the evidence clearly suggests that the frequency, duration, and intensity of crises in Latin America has fallen in the post-1998 period. We now turn to analyzing how the fiscal policy response may have varied over time.

3 Fiscal policy response

We now review the response of fiscal policy to crises. Figure 3 shows for each of the eight countries in the sample the average correlation during crises periods between the cyclical component of government spending and GDP before and after 1998.[7] The figure is very revealing, as it pinpoints three countries (Brazil, Chile, and Mexico) that have clearly switched from having a procyclical fiscal policy response before 1998 to a countercyclical policy response after 1998. Not coincidentally, these are countries that are often hailed in the financial press for having considerably improved their macroeconomic management over the years. The other five countries show procyclical fiscal response after 1998, with Argentina, Peru, Uruguay, and Venezuela exhibiting particularly large ones.[8]

4 Behavior of social indicators

This section looks at the behavior of social indicators during the crises episodes defined in the previous section. Specifically, Figure 4 shows the behavior of four social indicators (change in poverty rate, change in ratio of

[7] Notice that a positive (negative) correlation implies procyclical (countercyclical) fiscal policy.

[8] We should note that Colombia did not have GDP crises before 1998 and we do not have data for Venezuela before 1998.

richest 10 percent to poorest 10 percent, change in the unemployment rate, and change in domestic conflict) before and after 1998.

Panel A illustrates the change in the poverty rate. We can see that in three cases (Brazil, Chile, and Mexico) the change in the poverty rate in the post-1998 period has been in fact slightly negative, indicating little change in the poverty rate during crises. As we will conjecture below, this could be due to countercyclical fiscal policies aimed at alleviating poverty in bad times. This post-1998 behavior stands in sharp contrast to the pre-1998 behavior for Brazil and Mexico (we do not have data for Chile), when the changes in the poverty rate were quite large. We then have countries such as Argentina, Colombia, Peru, Uruguay, and Venezuela, where the pre- and post-1998 data is qualitatively the same (Argentina and Peru) or the numbers are positive after 1998 (Colombia, Uruguay, and Venezuela).

Panel B shows the change in the ratio of the richest 10 percent to the poorest 10 percent. While less data are available than for Panel A, the behavior is remarkably similar, with Brazil, Mexico, and Chile exhibiting the smallest changes after 1998 (the change in Brazil and Mexico are actually negative) and the remaining five countries showing consistently higher numbers.

A more complete picture emerges from Panel C as we have pre- and post-1998 data for all eight countries. Here we see in fact five countries (Brazil, Chile, Mexico, Peru, and Uruguay) where the change in the unemployment rate is quite a bit smaller post-1998 than pre-1998. In terms of magnitudes, though, it is still the case that, in the post-1998 period, the figures are the smallest in Brazil, Chile, and Mexico (in addition to Peru).

Finally, Panel D shows the change in domestic conflict (computed relative to the historical average to control for "fixed country effects" so to speak). Once again, in the post-1998 period, Brazil, Chile, and Mexico show the smallest (actually negative) changes.

In sum, we see a fairly consistent picture across countries, with Brazil,

Chile, and Mexico being the set of countries where (i) poverty, income inequality, unemployment, and domestic conflict have increased the least (or fallen) during crises in the post-1998 period, and (ii) to the extent that data are available, where we see a shift in the behavior of our social indicators from the pre- to the post-1998 period, with smaller increases (or falls) in the latter period.

Figure 5 shows the corresponding changes in the averages for Latin America. The picture is qualitatively the same for all four indicators: while all positive, the average change in the post-1998 period is smaller than in the pre-1998 period. The figure also shows the changes for the period after 2008 (the global financial crisis) and in this case three of the four variables are actually negative.

5 The role of fiscal policy

We have seen that, on average, poverty, income inequality, unemployment, and domestic conflict have increased less (or fallen) during crises in the pre-1998 period compared to the post-1998 period or the recent global crisis. But we see quite a bit of variation across countries. For empirical purposes, of course, this variation is welcome because it will enable us to see if we can link the behavior of fiscal policy during crises to the changes in social indicators.

Figure 6 shows the scatter plots of the cyclicality of fiscal policy – captured by the correlation between the cyclical components of GDP and government spending – against each of the four social indicators. In each case, we see a positive and statistically significant relationship (at least at the 10 percent level) indicating that the more procyclical is fiscal policy, the larger is the increase in poverty, income inequality, unemployment, and domestic conflict.

Since correlations do not imply causation, we now proceed to argue that it is actually the change in fiscal policy that is causing the change in social

indicators. In other words, we wish to interpret these scatter plots as implying that a countercyclical fiscal policy leads to a smaller increase (or bigger fall) in poverty, income inequality, unemployment, and domestic conflict. To this effect – and, again, following Vegh and Vuletin (2013) – we construct a "fiscal readiness index" which is basically an index of initial conditions that captures the "fiscal space" that countries may have before a crisis to pursue countercyclical fiscal policy during the crisis. This index attempts to measure the soundness of fiscal policy during the eight quarters (or two calendar years for annual indicators) preceding a crisis. This index is comprised of 3 components, each normalized between 0 and 10, which implies that the index may range between 0 (lowest fiscal readiness) and 30 (highest fiscal readiness).[9] The three components are: (i) sovereign credit ratings, (ii) fiscal deficit as percentage of GDP, and (iii) total (public plus private) external debt as percentage of GDP.[10]

Technically, we want to use the fiscal readiness index as an instrument for fiscal policy. In other words, we want to have a variable that satisfies two conditions: (i) it is highly correlated with the countercyclical fiscal policy response and (ii) it can affect the social indicators only through its effect on the fiscal policy response. The correlation between the fiscal policy response and the fiscal readiness index is -0.50 and hence the first condition is indeed satisfied. Further, we would argue that our index also satisfies the second condition because it is computed *before* the crisis begins and is composed of essentially backward-looking variables. Hence, it cannot directly affect the change in social indicators that takes place after the crisis has begun.

Figure 7 then plots the correlation between the predicted cyclicality of

[9] We pool together data for Latin American and Eurozone countries to facilitate cross-country comparisons. The only exception in which the lower bound (i.e., worst scenario) of the normalization is carrried out at the regional level is for total (public plus private) external debt as percentage of GDP. The value for this variable in some European countries (such as Ireland in recent times) is close to 1,000 percent of GDP, while the highest value for Latin American economies is about 50 percent of GDP.

[10] See Appendix 8.3 for details on the construction of this index.

fiscal policy (using our instrument above) and each of the four social indicators. We can see that the relationship is positive in all cases. Further, in two of the cases (poverty rate and domestic conflict), the relationship is also significant at the five percent level. We thus conclude that our findings support the notion that the causality runs from the fiscal policy response to the behavior of social indicators.

6 Europe: more of the same?

We now look at the current European crisis and ask whether our main finding for Latin America (i.e., the fiscal policy response matters for how social indicators behave during a crisis) holds for this case. Figure 8 shows the duration and intensity of the current crisis for 10 Eurozone countries. As of the first quarter of 2013 (the last quarter for GDP in our sample), the crisis is ongoing for 7 of the 10 countries and is at least 18 quarters old (Panel A). Panel B shows the intensity, with Greece having lost 24 percent of GDP from the start of the crisis to the trough (last quarter in the sample). The average intensity for the current Eurozone crises is 8.4 percent, which roughly coincides with the average intensity of crises in Latin America (8.6 percent, from Table 1).

How did fiscal policy react to the crisis? Figure 9 shows our measure of fiscal policy cyclicality (i.e., the correlation between the cyclical components of government spending and real GDP during crises) for each of the 10 countries. We can see that four countries – Greece, Ireland, Italy, and Portugal – have been procyclical in their response. In other words, they have contracted fiscal spending during the crisis (part of a "fiscal consolidation," to use today's jargon). In contrast, the other 6 countries embarked in countercyclical fiscal policy, with Germany leading the way. So, like in Latin America, we have quite a bit of heterogeneity in the fiscal response to the crisis.

In terms of social indicators, Figure 10, Panel A, shows the changes in unemployment in 10 Eurozone countries.[11] As expected, the biggest changes have taken place in Greece, Ireland, Italy, Portugal, and Spain. This is largely consistent with Panel B, which plots the changes in domestic conflict, with Greece and Spain truly standing out.

The question now becomes: has procyclical fiscal policy led to a larger increase in unemployment and domestic conflict during the crisis? Figure 11 provides an answer to this question by plotting the index of fiscal cyclicality against the change in unemployment (Panel A) and the change in domestic conflict (Panel B). We see that the relationship is positive and statistically significant at, at least, the 10 percent level in both cases. In other words, these relationships are consistent with the idea that a procyclical fiscal response in the Eurozone has led to an increase in unemployment and domestic conflict.

Figure 11, however, could reflect reverse causality. To address this issue – and as we did for Latin American countries above – we compute the fiscal readiness index for our 10 Eurozone countries (Figure 12). In Figure 13, we then show a highly significant correlation between the fiscal readiness index and fiscal policy, as captured by the correlation between the cyclical component of government spending and real GDP. This is tantamount to saying that we have a valid instrument. Finally, in Figure 14 we show a significant relation between our instrument for fiscal readiness and the duration (Panel A) and intensity (Panel B) of crises. We thus conclude that, indeed, procyclical fiscal policy in some Eurozone crises has contributed to making the current crisis more socially costly (both in terms of unemployment and social conflict), much like in Latin America before the late 1990s/early 2000s.

[11] The countries are Austria, Belgium, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, and Spain. Data sources consist mainly of WEO as well as Global Financial Database.

7 Conclusions

This paper started from the observation that the fiscal policy response to crises has dramatically shifted around the world recently. Many Latin American countries (like Chile, Brazil, and Mexico) have graduated in terms of their fiscal responses to GDP crises, in the sense that they have switched from a procyclical to a countercyclical response. On the other hand, many advanced economies (like Greece, Ireland, Italy, and Portugal) have followed contractionary fiscal policies in the aftermath of the global financial crisis. In Vegh and Vuletin (2013), we presented evidence that strongly suggests that fiscal austerity policies lead to longer and deeper GDP crises, whereas fiscal stimulus policies imply shorter and shallower recessions. These findings support recent evidence that fiscal multipliers are larger than previously thought (particularly during recessions) and do not support the so-called "expansionary austerity" hypothesis, put forward by many studies.[12]

Our main focus in this paper has been on the effects of fiscal policy responses to crises on social outcomes, a topic that has received little attention so far and that is of critical policy importance. We find that countercyclical fiscal policies tend to attenuate the increases in poverty, income inequality, unemployment, and domestic conflict during GDP crises. On the other hand, austerity packages tend to exacerbate even more the rise in all four social indicators. Moreover, we have also shown that countries' ability to react countercyclically during GDP crises crucially depends on their fiscal

[12] Our finding that countercyclical fiscal policy has helped in reducing the duration and intensity of GDP crises is, of course, related to the issue of how big are fiscal multipliers; see, for instance, Auerbach and Gorodnichenko (2011), Ilzetzki, Mendoza, and Vegh (2013), and the references therein. In fact, Auerbach and Gorodnichenko (2011) argue that multipliers are larger in bad times than in good times. Riera-Crichton, Vegh, and Vuletin (2013) further suggest that it may matter whether government spending is going up or down and show that, at least for OECD countries, fiscal multipliers are even bigger in bad times when government spending is actually increasing. Riera-Crichton, Vegh, and Vuletin (2012) also show that (when properly measured) tax increases associated with fiscal consolidation episodes are very contractionary.

space. By constructing a simple fiscal readiness index, we have shown that countries which were able to follow sound fiscal and macroeconomic policies in the period before a crisis are, not surprisingly, those which are more prepared to actively use fiscal policy to reduce the length and intensity of a crisis as well as the impact on social indicators.

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8 Appendices

8.1 Data appendix

GDP

Quarterly real GDP is from World Economic Outlook (IMF) and, in some instances, from Global Financial Data.

Poverty rate

Poverty headcount ratio at $2 a day (PPP) (as percentage of population). Source: World Bank.

Ratio 10 percent richest to 10 percent poorest

The ratio 10 percent richest to 10 percent poorest is the ratio of the income share of the richest 10 percent to income share of poorest 10 percent. Source: World Bank.

Unemployment rate

Unemployment rate refers to the share of the labor force that is without work but seeking employment.

Domestic conflict

Domestic conflict is an index that corresponds to variable "weighted conflict measures" from Cross-National Time-Series (CNTS) data and comprises the following dimensions: assassinations, strikes, guerrilla warfare, government crisis, purges, riots, revolutions, and anti-government demonstrations. Change in domestic conflict is calculated with respect to historical average. Domestic conflict ranges between -565 and 2433. Change in domestic conflict is calculated with respect to each country's historical average.

8.2 Chronology of crises

Argentina: 1975:3-1976:4; 1977:4-1978:4; 1981:1-1987:2; 1988:2-1991:3; 1995:2-1996:1; 1998:4-2004:4; 2009:1-2009:2.

Brazil: 1981:1-1984:4; 1987:3-1989:1; 1990:1-1993:2; 1995:3-1995:4; 1998:4-1999:3; 2001:3-2001:4; 2008:4-2009:3.

Chile: 1981:4-1987:3; 1998:4-1999:3; 2008:4-2010:1.

Colombia: 1998:3-2002:1; 2008:4-2009:3.

Mexico: 1982:2-1984:4; 1986:1-1988:4; 1995:1-1997:1; 2001:2-2002:1; 2008:4-2010:3.

Peru: 1982:2-1986:1; 1988:1-1996:4; 2000:3-2001:2; 2009:1-2009:2.

Uruguay: 1981:4-1987:2; 1999:1-2005:4; 2009:1-2009:2.

Venezuela: 1999:1-1999:4; 2002:1-2004:2; 2009:1-2011:3.

8.3 Computation of fiscal readiness index

This appendix describes the computation of the fiscal readiness index. The three components are: (i) sovereign credit ratings, (ii) fiscal deficit as a percentage of GDP, and (iii) total (public plus private) external debt as a percentage of GDP.

Sovereign credit ratings contribute to the index by providing markets' perception about the risk associated with government debt. We use Moody's quarterly data ratings for long-term debt in foreign currency. High numerical values of this component are associated with high ratings (such as Aaa), whereas low numerical scores are associated with low debt ratings such as C. For these purposes, we group Moody's ratings into 9 categories: prime rating (Aaa), high grade (Aa1, Aa2, Aa3), upper medium grade (A1, A2, A3), lower medium grade (Baa1, Baa2, Baa3), non-investment grade speculative (Ba1, Ba2, Ba3), non-investment grade highly speculative (B1, B2, B3), non-investment grade substantial risk (Caa1, Caa2, Caa3), non-investment grade extremely speculative (Ca1, Ca2, Ca3), and in default (C1, C2, C3).

Fiscal deficit as a percentage of GDP aims at capturing short-run fiscal limitations and current debt build up. Source: World Economic Outlook (IMF)

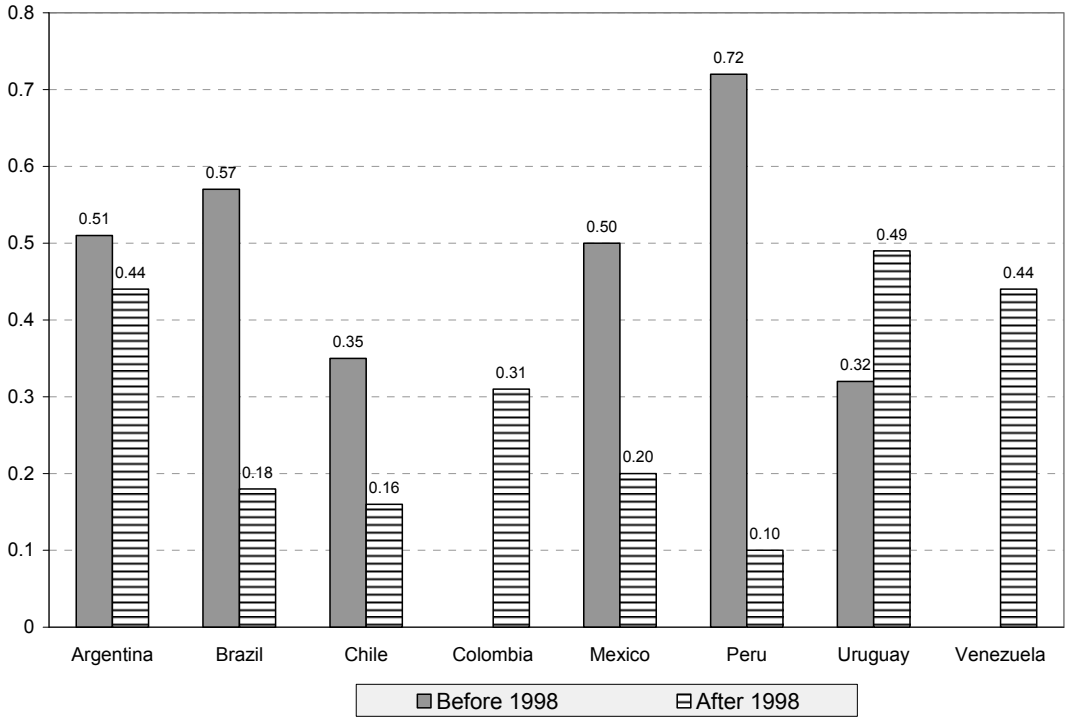
Total (public plus private) external debt as a percentage of GDP contributes to the index by providing a measure of the economy's total debt (public plus private), which proxies not only for public default risk but also for the possibility of bailouts of the financial sector. Source: Carmen Reinhart's website and World Bank's Quarterly External Debt Statistics.

Table 1. GDP crises: Basic stylized facts

Country	Sample period	Main stylized facts of GDP crises			
		Number	Frequency	Av. Duration (in quarters)	Av. Intensity (in percentage)
Argentina	1970:1 - 2013:1	7	0.49	12	9.6
Brazil	1980:1 - 2013:1	7	0.40	7	4.0
Chile	1980:1 - 2013:1	3	0.26	11	8.9
Colombia	1977:1 - 2013:1	2	0.13	10	4.0
Mexico	1981:1 - 2013:1	5	0.35	9	5.8
Peru	1979:1 - 2013:1	4	0.44	15	12.8
Uruguay	1979:1 - 2013:1	3	0.40	18	14.8
Venezuela	1998:1 - 2013:1	3	0.44	8	12.5
Region (total × or average †)		*34×*	*0.36 †*	*11 †*	*8.6 †*

Figure 1. Latin America: Frequency and average duration and intensity of GDP crises

Panel A. Frequency of crises



Panel B. Duration of GDP crises (in quarters)

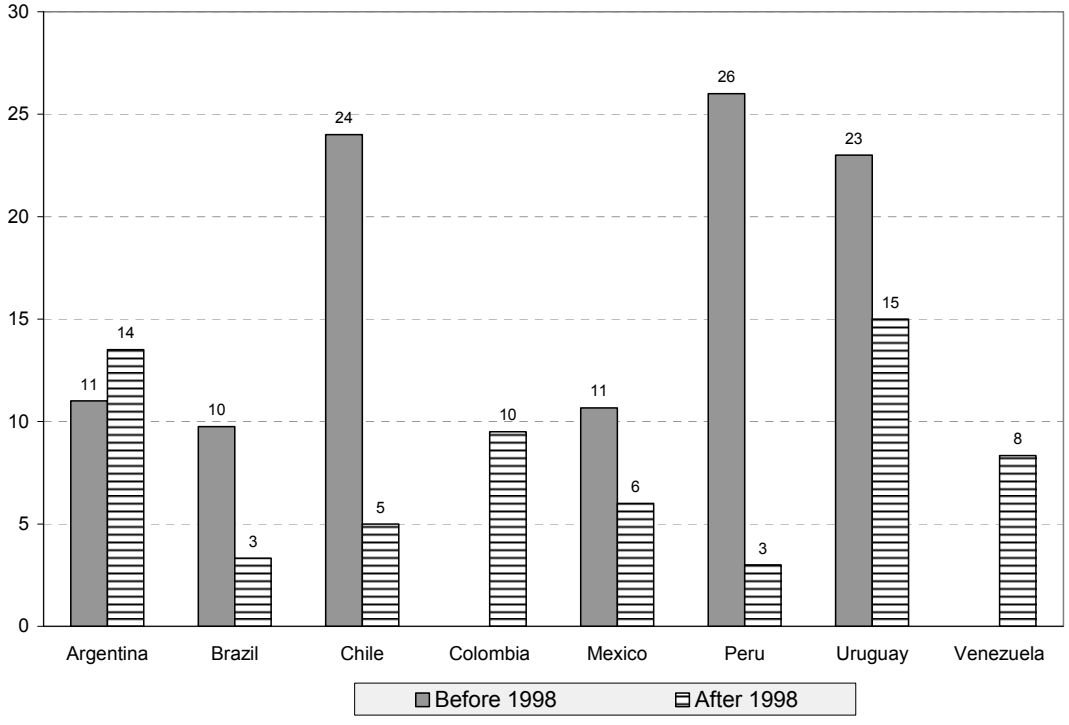


Figure 1. Latin America: Frequency and average duration and intensity of GDP crises (cont.)

Panel C. Intensity of GDP crises (GDP fall from start to trough, in percentage)

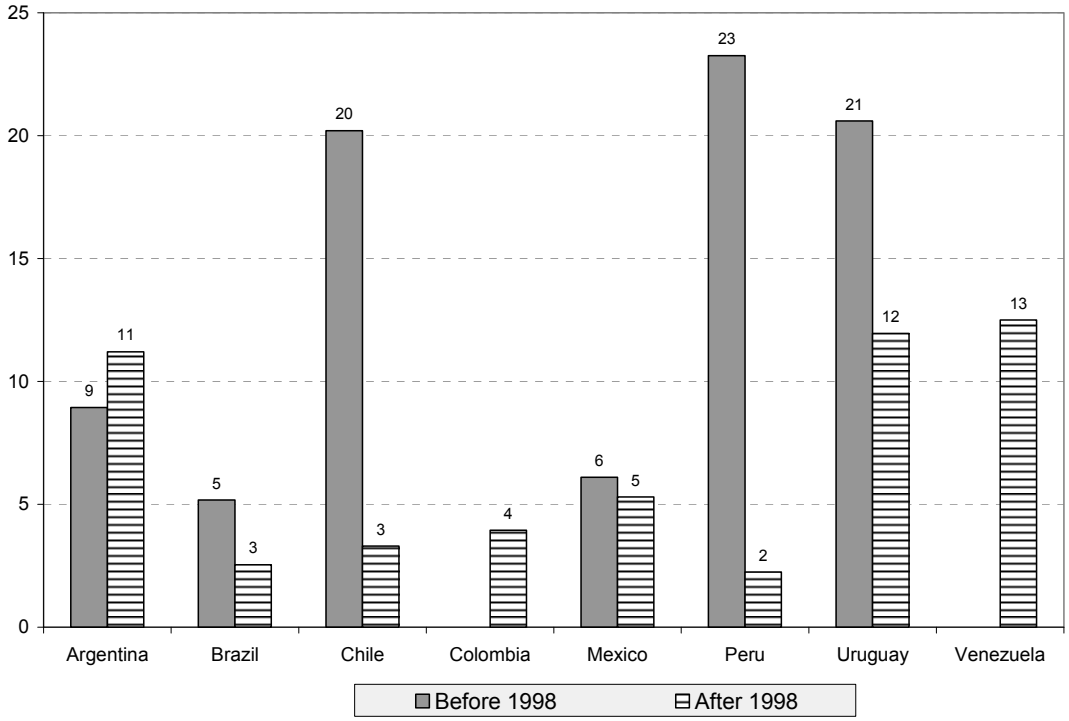
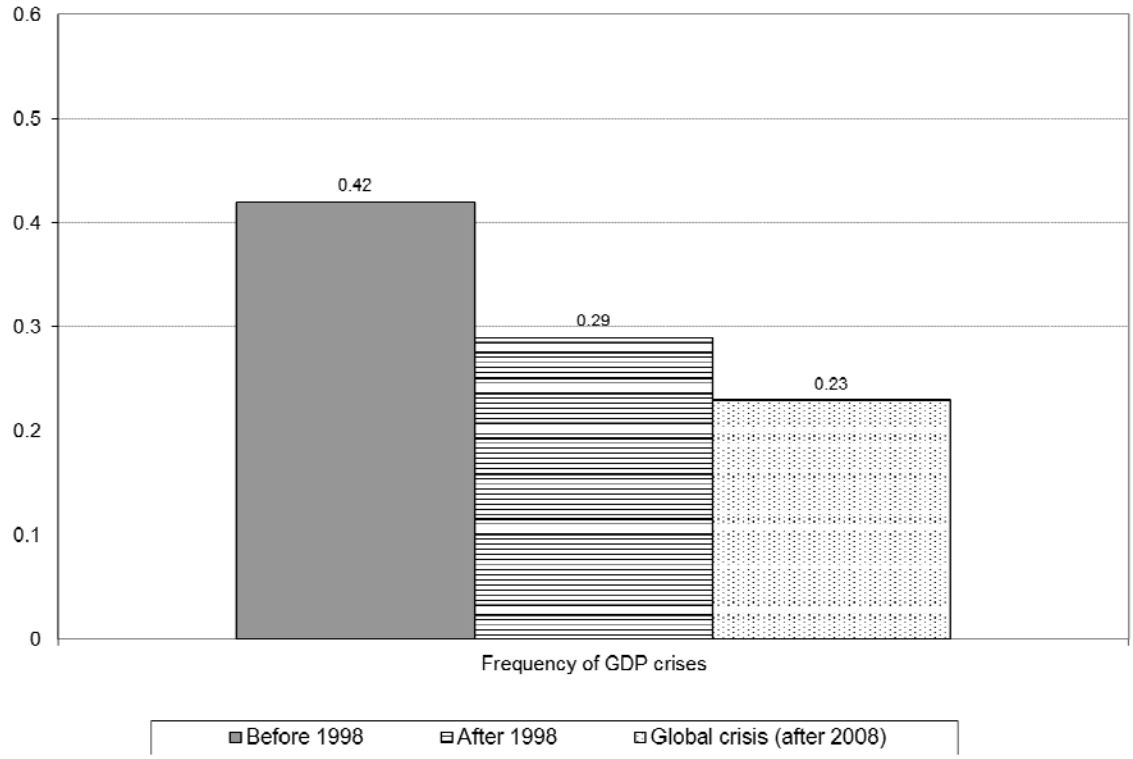


Figure 2. Latin America: Average frequency, duration, and intensity of GDP crises

Panel A. Average frequency of GDP crises



Panel B. Average duration and intensity of GDP crises

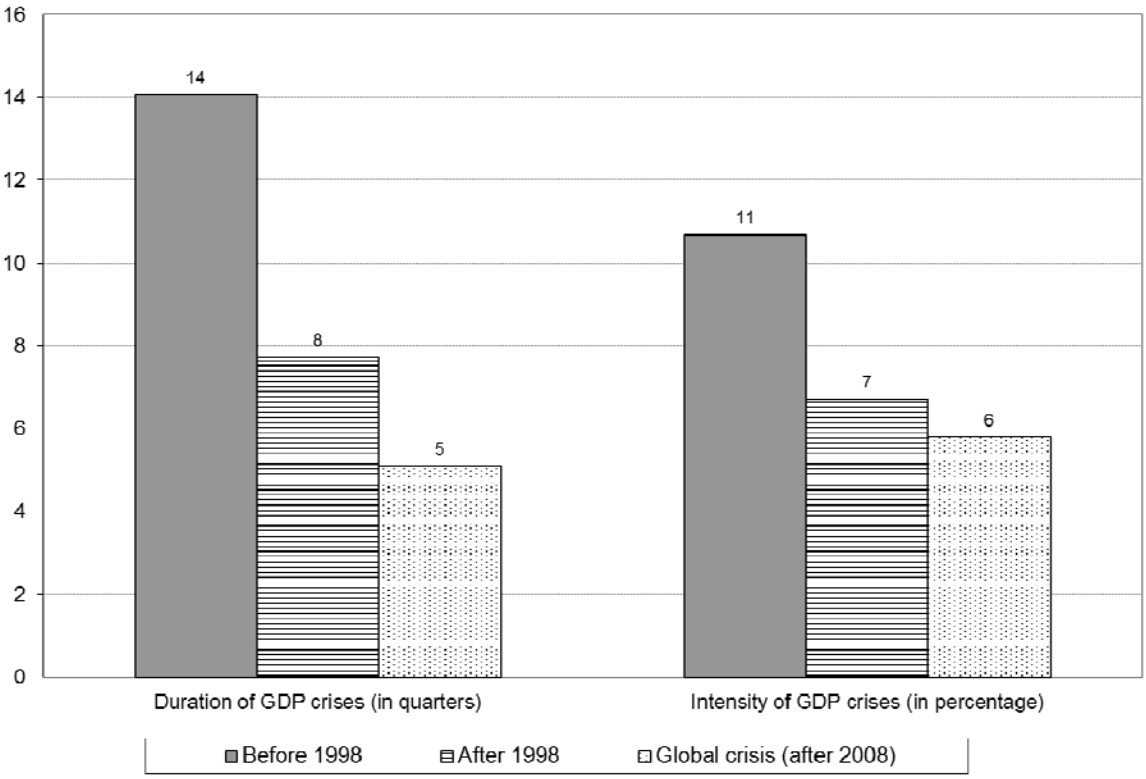
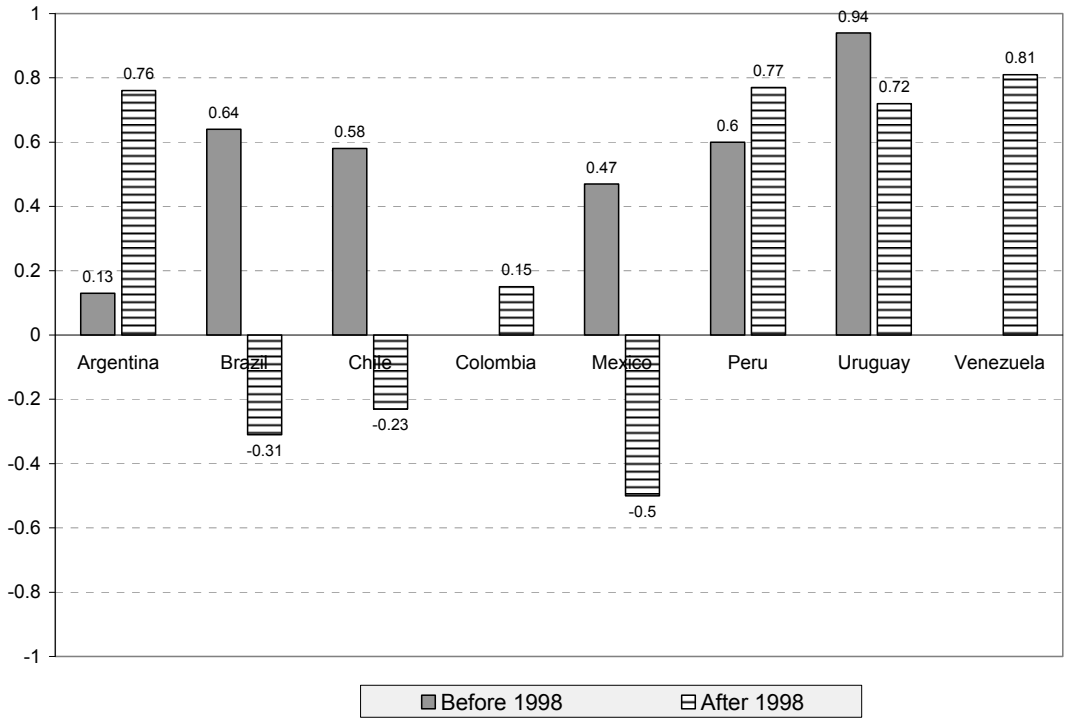


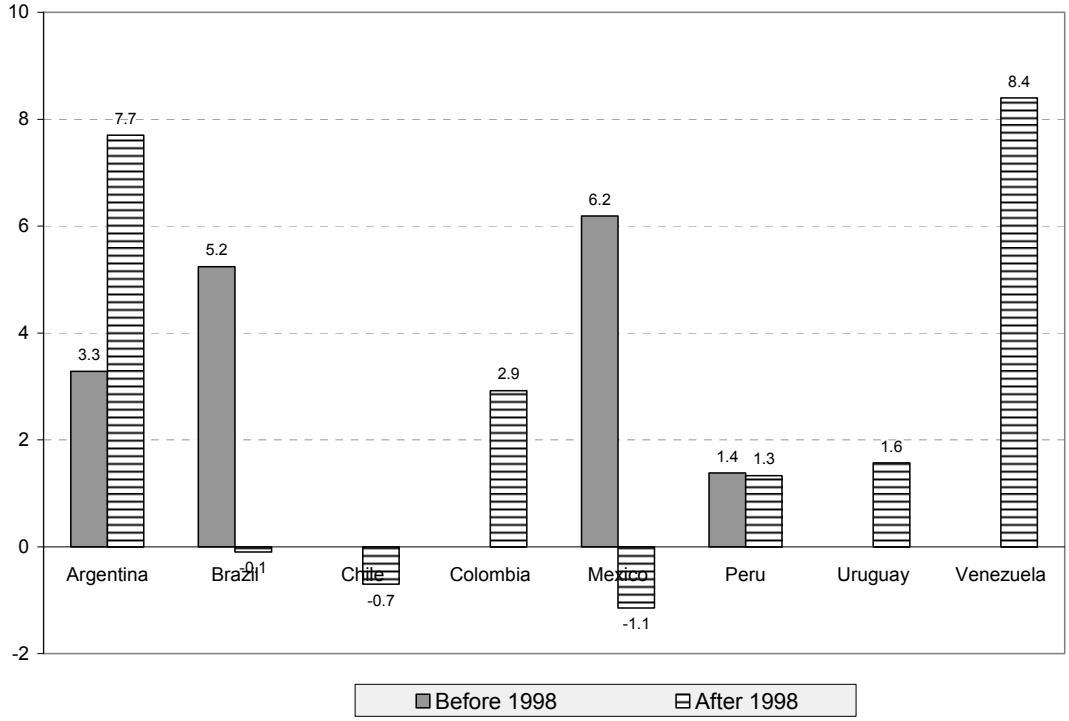
Figure 3. Latin America: Country cyclicality of fiscal policy during GDP crises



Note: Vertical axis is the correlation between the cyclical components of government spending and GDP (during GDP crises).

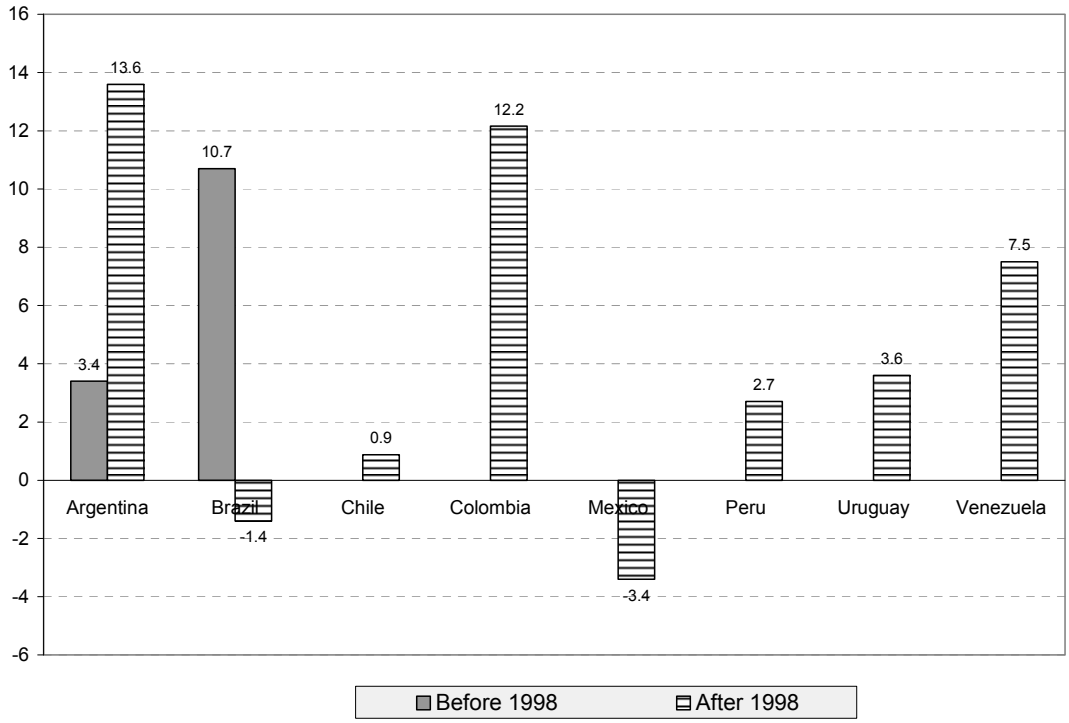
Figure 4. Latin America: Changes in social indicators during GDP crises

Panel A. Change in poverty rate



Note: Poverty rate is expressed as percentage of population.

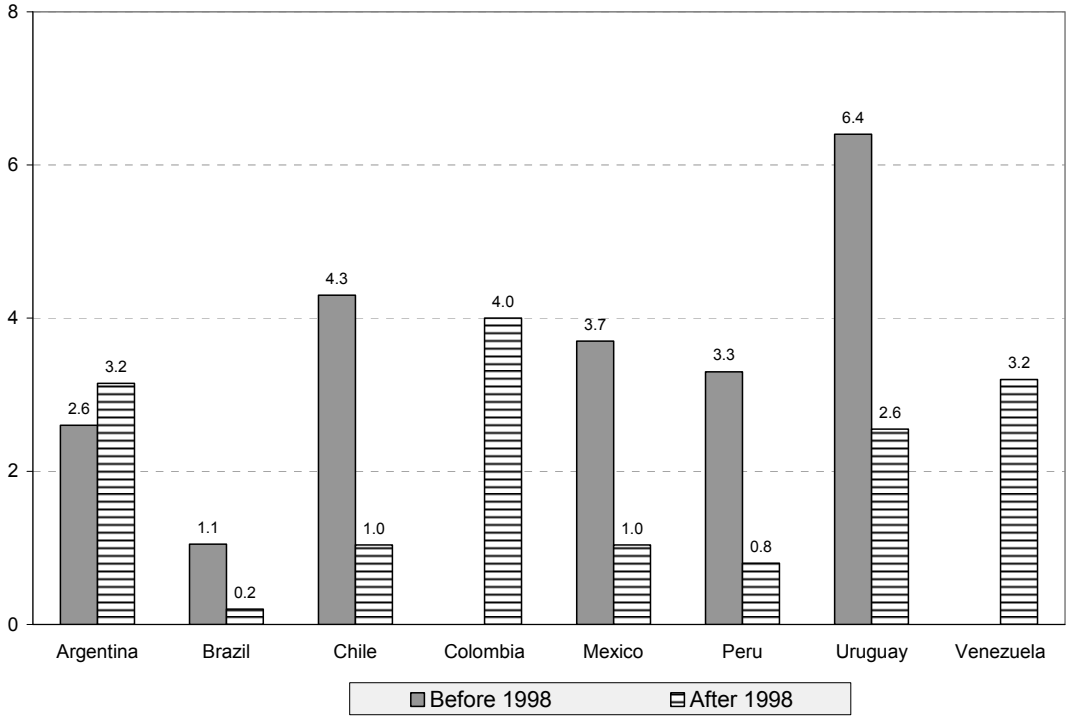
Panel B. Change in ratio 10% richest to 10% poorest



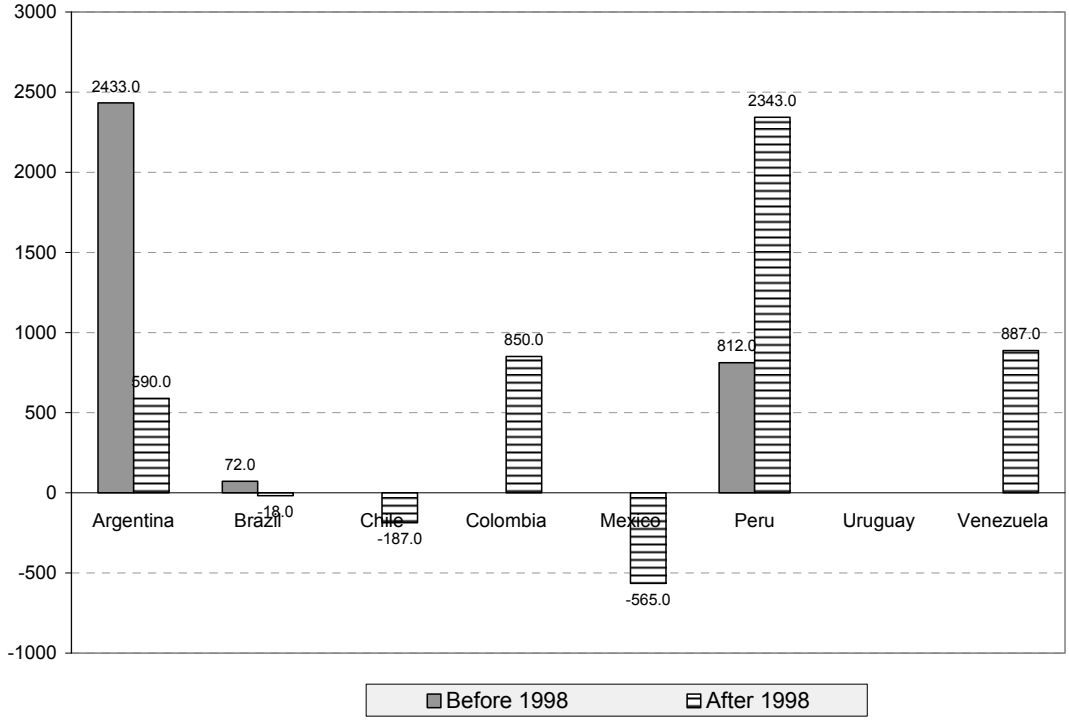
Note: The ratio 10% richest to 10% poorest is the ratio of income share of the richest 10% to income share of poorest 10%.

Figure 4. Latin America: Changes in social indicators during GDP crises (cont.)

Panel C. Change in unemployment rate



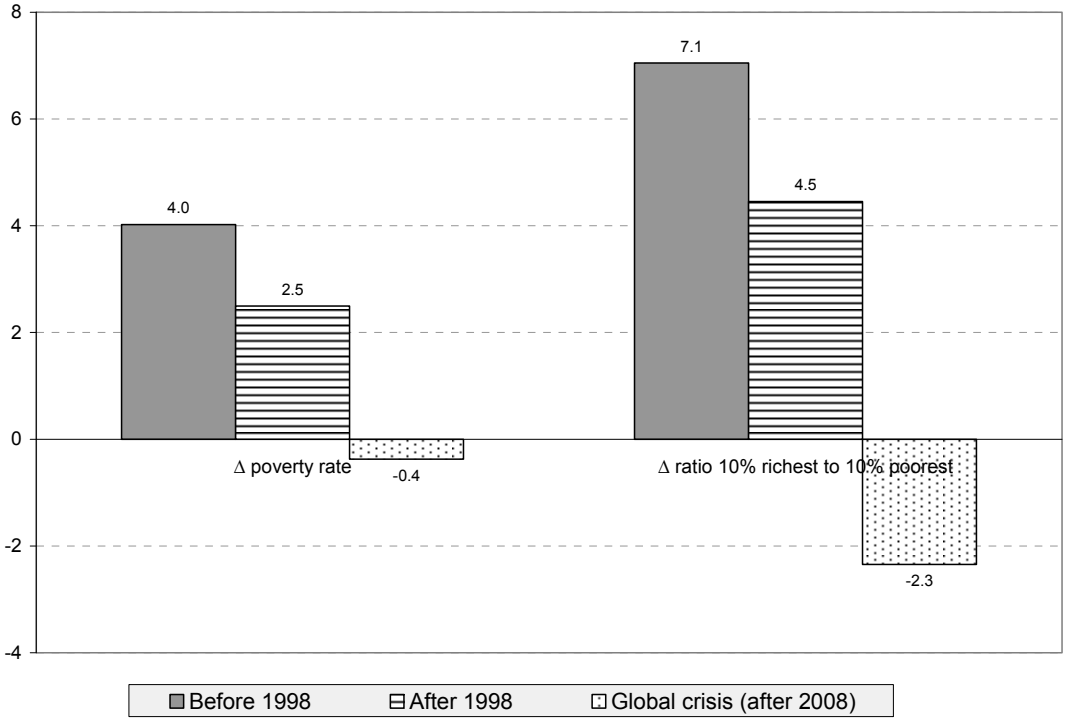
Panel D. Change in domestic conflict



Note: For construction of domestic conflict, see Appendix 8.1. Domestic conflict is an index (ranging between -565 and 2433) that comprises variables such as assassinations, strikes, guerrilla warfare, government crisis, purges, riots, revolutions, and anti-government demonstrations.

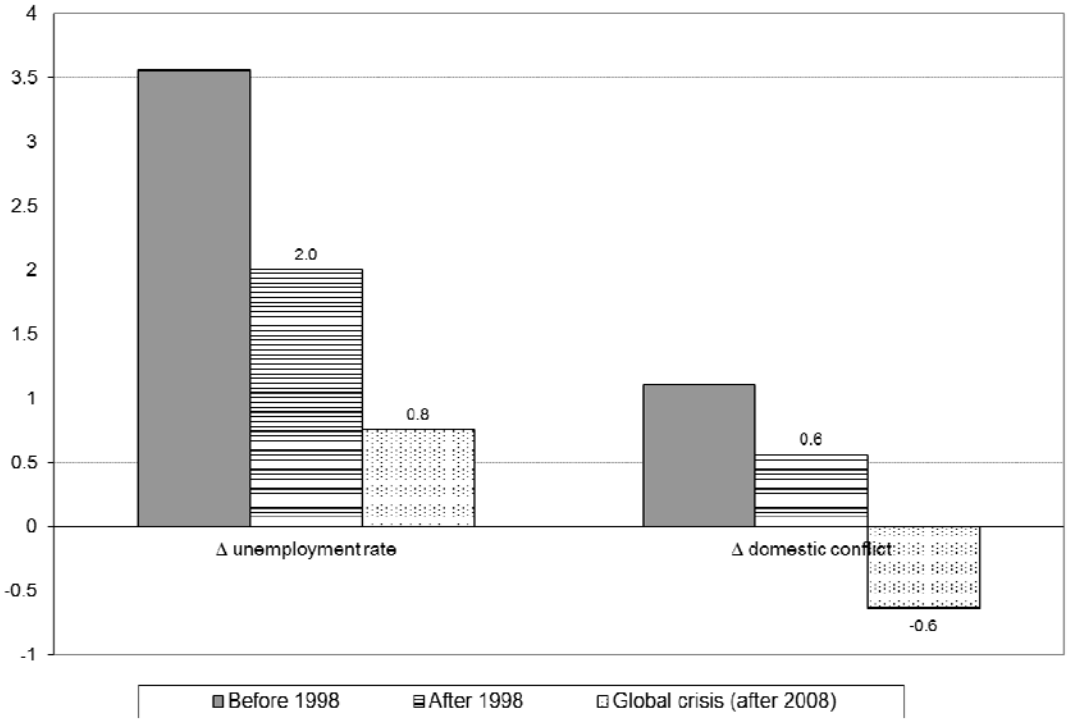
Figure 5. Latin America: Changes in social indicators during GDP crises

Panel A. Changes in poverty rate and ratio 10% richest to 10% poorest



Note: Poverty rate is expressed as percentage of population. The ratio 10% richest to 10% poorest is the ratio of income share of the richest 10% to income share of poorest 10%.

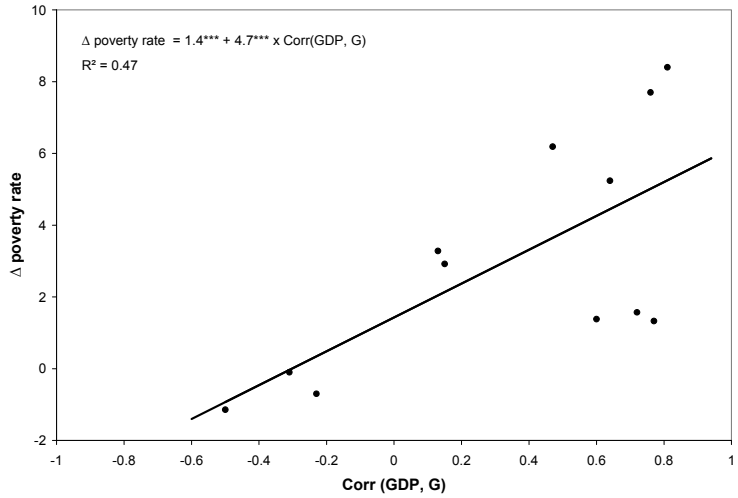
Panel B. Changes in unemployment and domestic conflict (rescaled)



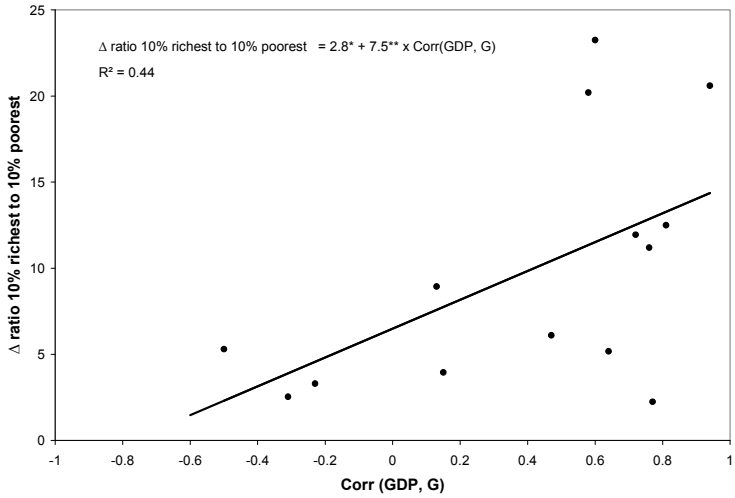
Note: Domestic conflict is rescaled (divided by 100) for presentational purposes. For construction of domestic conflict, see Appendix 8.1. Domestic conflict is an index (ranging between -565 and 2433) that comprises variables such as assassinations, strikes, guerrilla warfare, government crisis, purges, riots, revolutions, and anti-government demonstrations.

Figure 6. Latin America: Cyclicality of fiscal policy and changes in social indicators during GDP crises

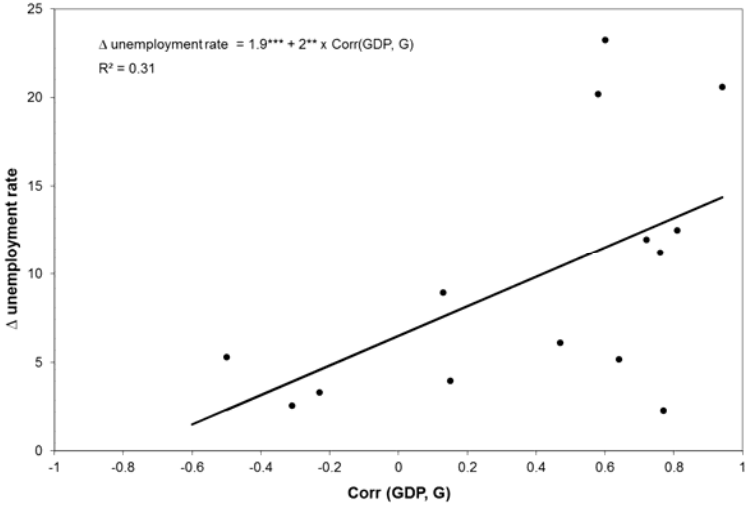
Panel A. Cyclicality of fiscal policy
and change in poverty rate during GDP crises



Panel B. Cyclicality of fiscal policy
and change in ratio 10% richest to 10% poorest during GDP crises



Panel C. Cyclicality of fiscal policy
and change in unemployment rate during GDP crises



Panel D. Cyclicality of fiscal policy
and change in domestic conflict during GDP crises

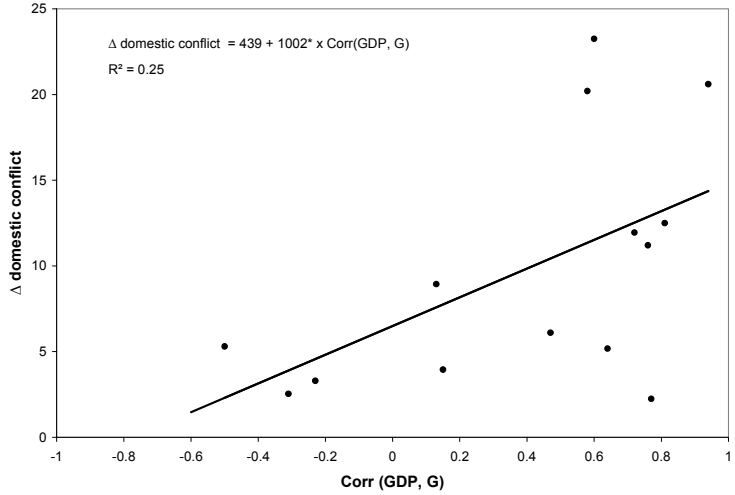
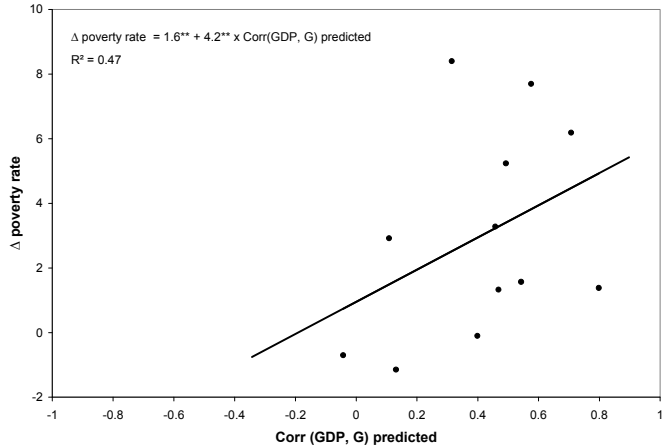
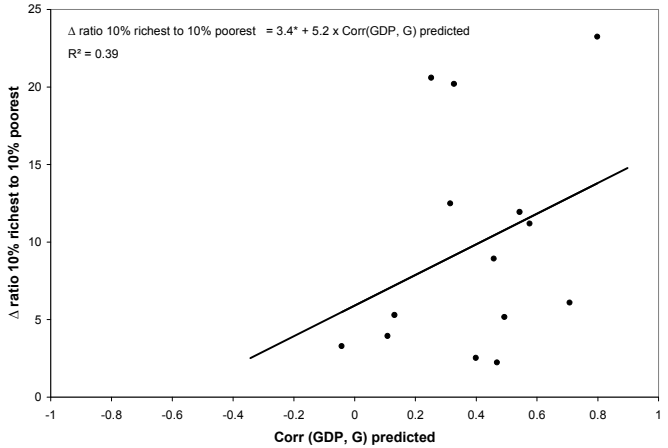


Figure 7. Latin America: Predicted cyclicality of fiscal policy and changes in social indicators during GDP crises

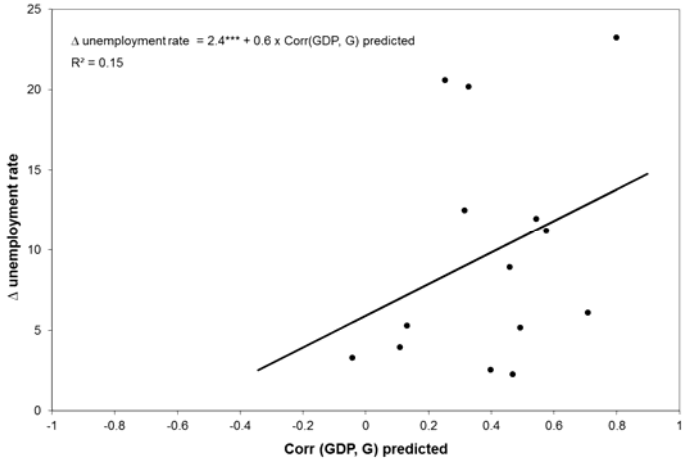
Panel A. Predicted cyclicality of fiscal policy and change in poverty rate during GDP crises



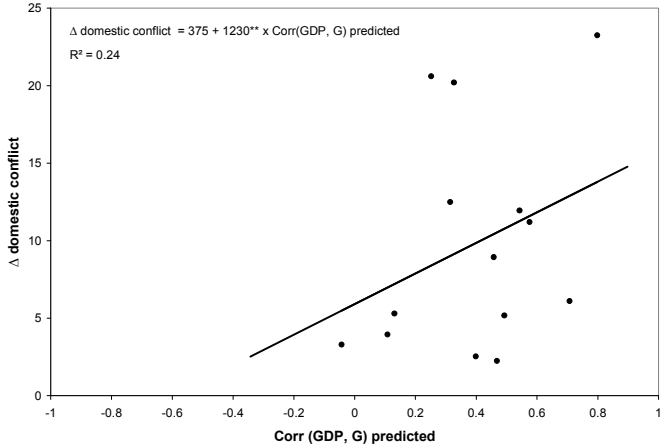
Panel B. Predicted cyclicality of fiscal policy and change in ratio 10% richest to 10% poorest during GDP crises



Panel C. Predicted cyclicality of fiscal policy and change in unemployment during GDP crises



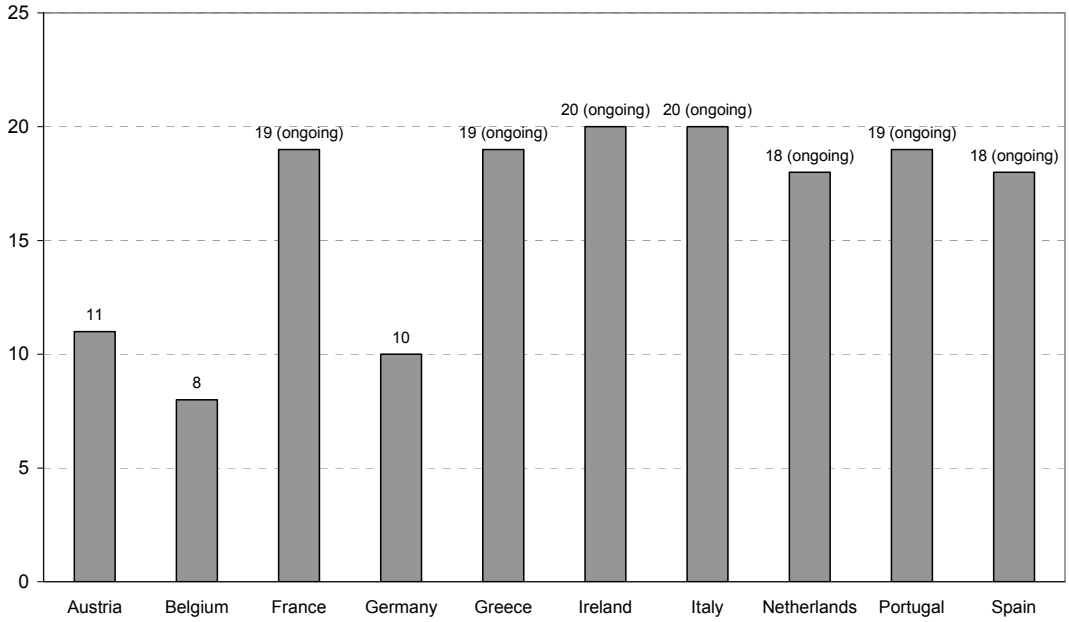
Panel D. Predicted cyclicality of fiscal policy and change in domestic conflict during GDP crises



Note: The regression and R^2 shown in Panels A, B, C, and D refer to second stage IV regression using 2SLS, where the dependent variable is change in poverty rate, change in ratio 10% richest to 10% poorest, change in unemployment rate, and change in domestic conflict during GDP crises. The independent variable is the correlation between the cyclical components of real GDP and real government spending, Corr(GDP, G), and the instrument used is the fiscal readiness index.

Figure 8. Eurozone: Duration and intensity of last GDP crisis

Panel A. Duration of GDP crisis (in quarters)



Panel B. Intensity of GDP crisis (GDP fall from start to trough, in percentage)

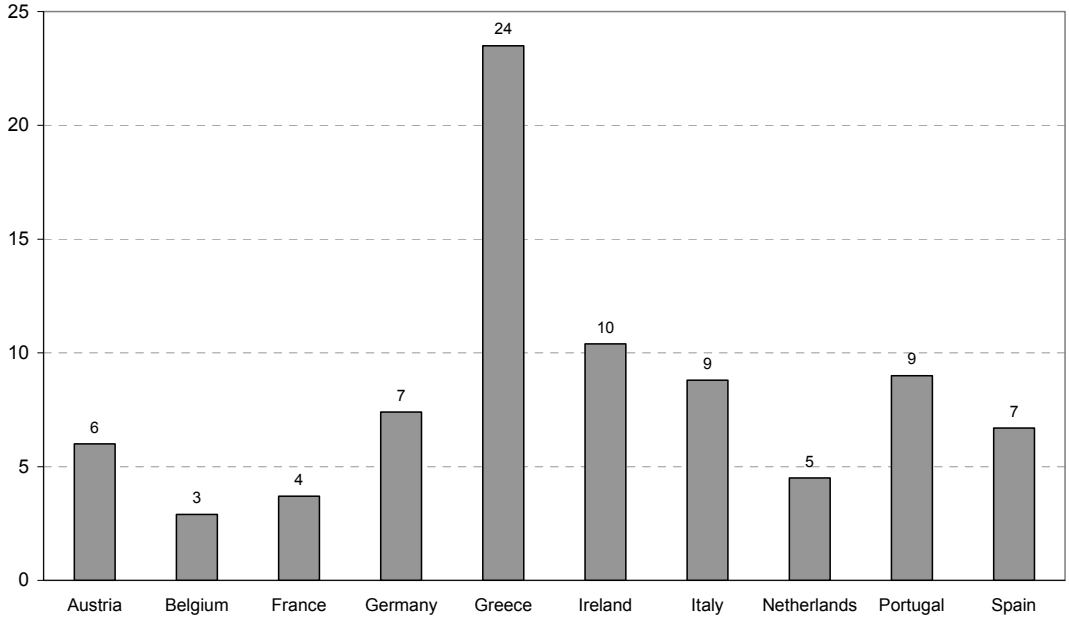
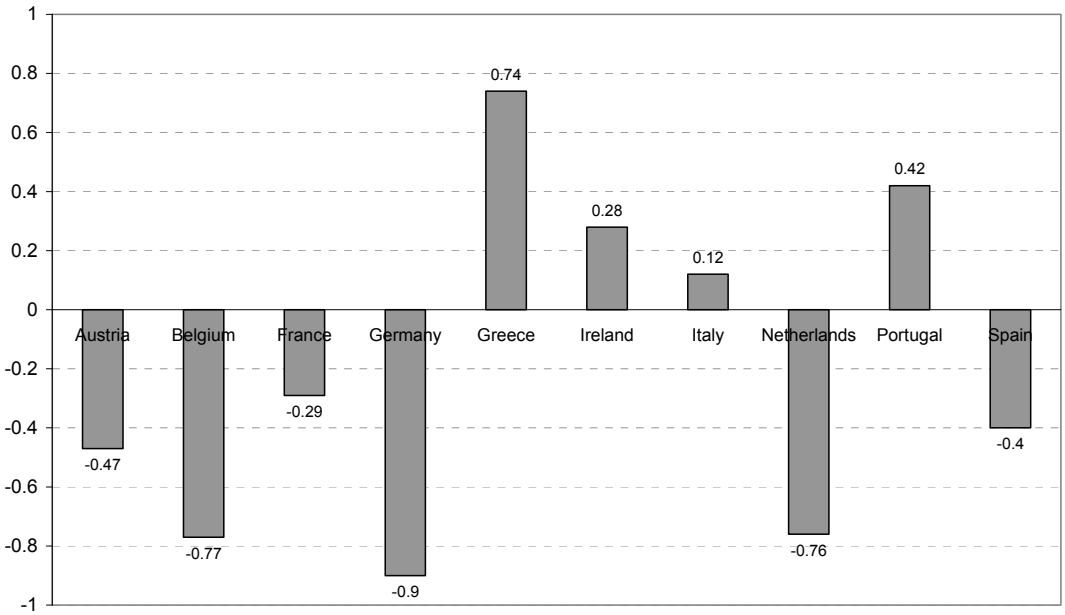


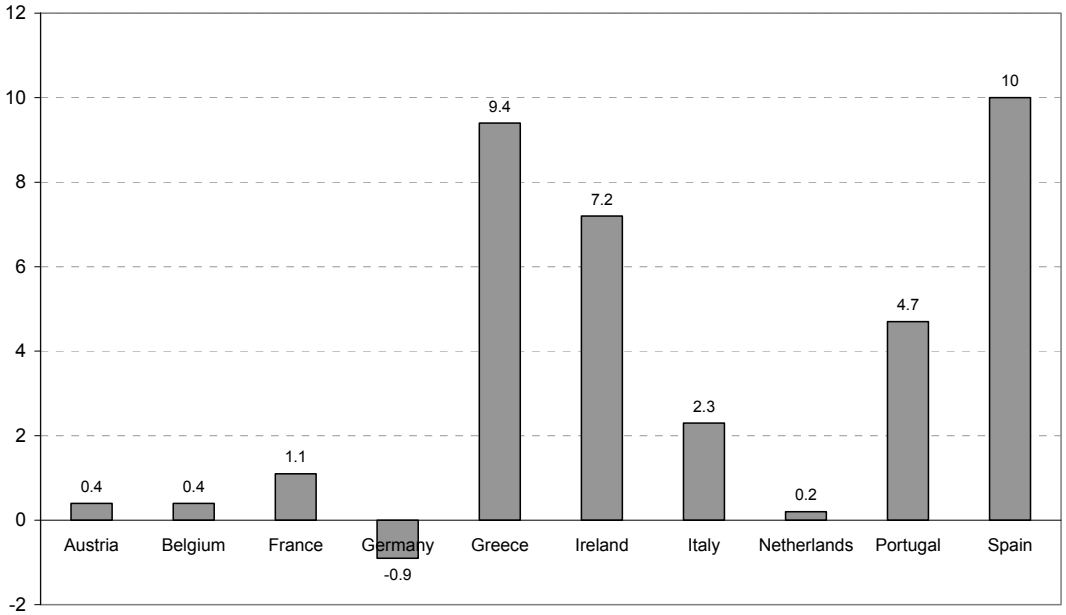
Figure 9. Eurozone: Country cyclicality of fiscal policy during last GDP crisis



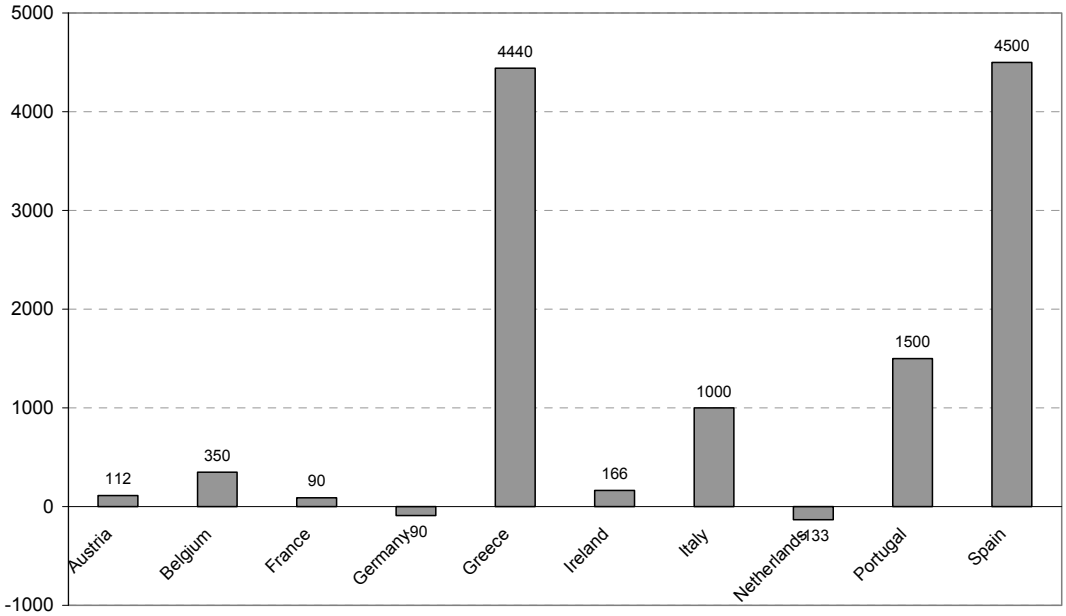
Note: Vertical axis is the correlation between the cyclical components of government spending and GDP (during last GDP crisis).

Figure 10. Eurozone: Changes in social indicators during last GDP crisis

Panel A. Change in unemployment rate



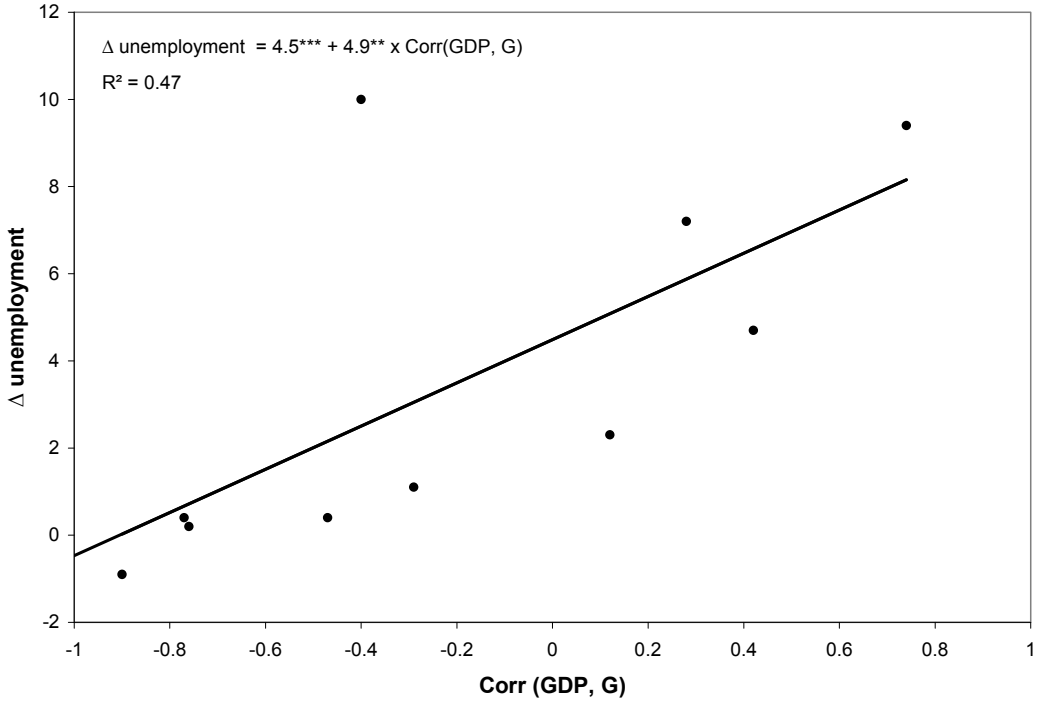
Panel B. Change in domestic conflict



Note: For construction of domestic conflict, see Appendix 8.1. Domestic conflict is an index (ranging between -565 and 2433) that comprises variables such as assassinations, strikes, guerrilla warfare, government crisis, purges, riots, revolutions, and anti-government demonstrations.

Figure 11. Eurozone: Cyclicality of fiscal policy and changes in social indicators during last GDP crisis

Panel A. Cyclicality of fiscal policy
and change in unemployment during last GDP crisis



Panel B. Cyclicality of fiscal policy
and change in domestic conflict during last GDP crisis

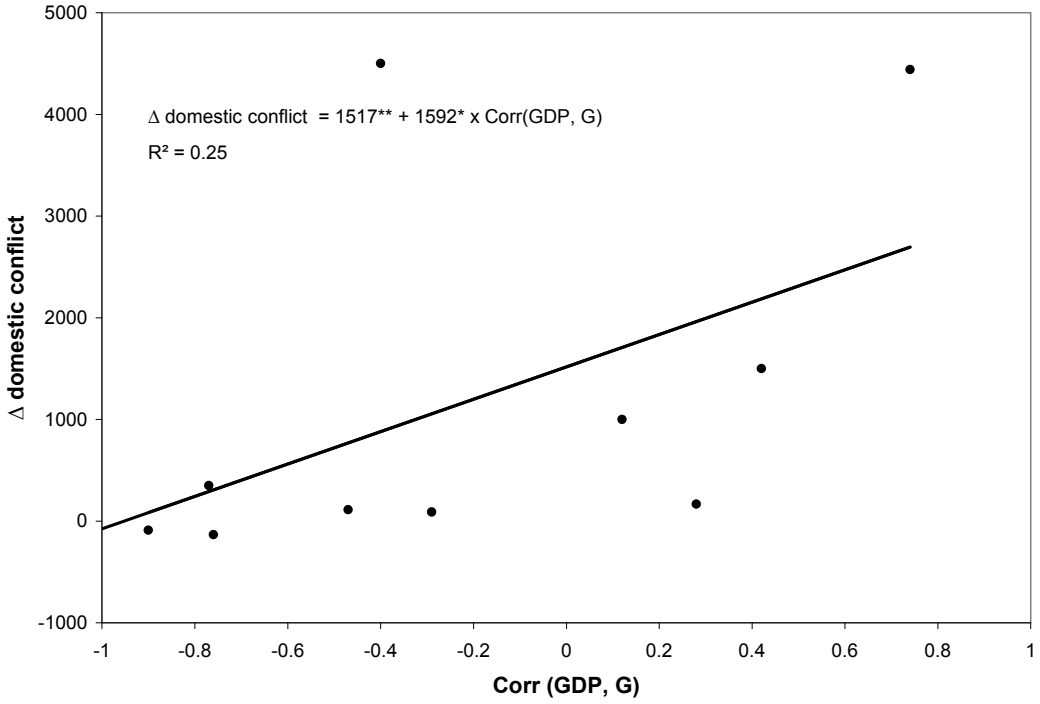


Figure 12. Eurozone: Fiscal readiness index

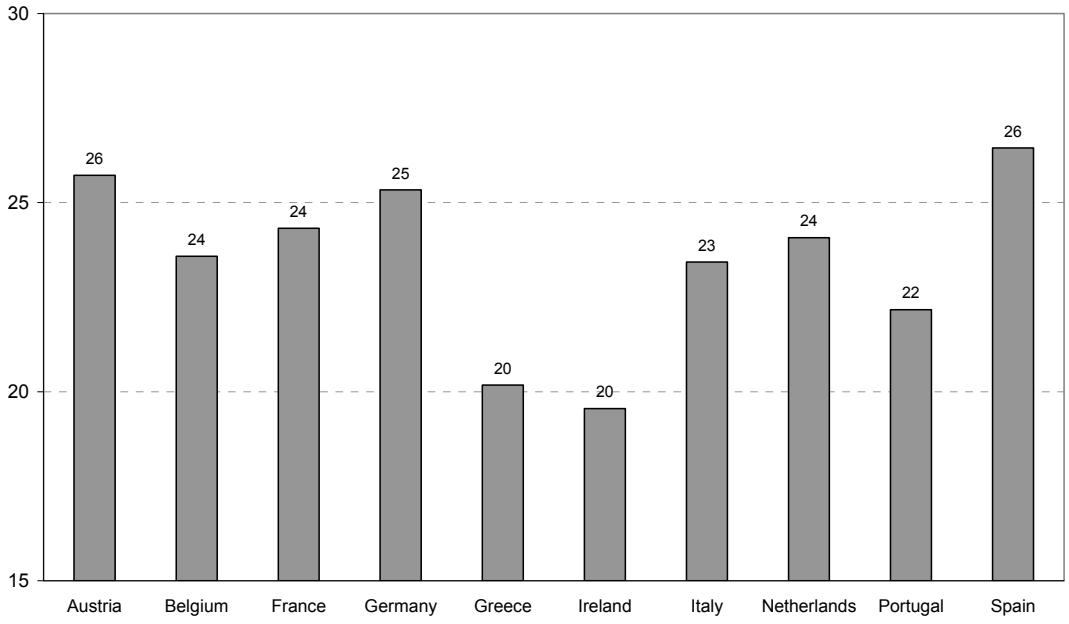


Figure 13. Eurozone: Relationship between fiscal cyclicality and fiscal readiness index

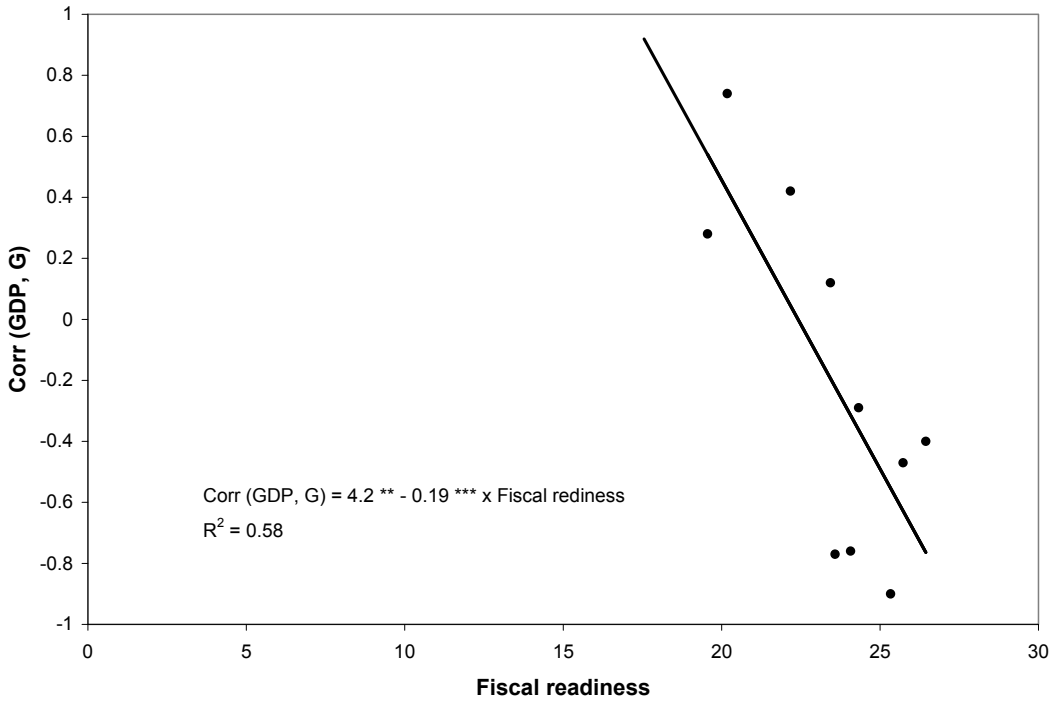
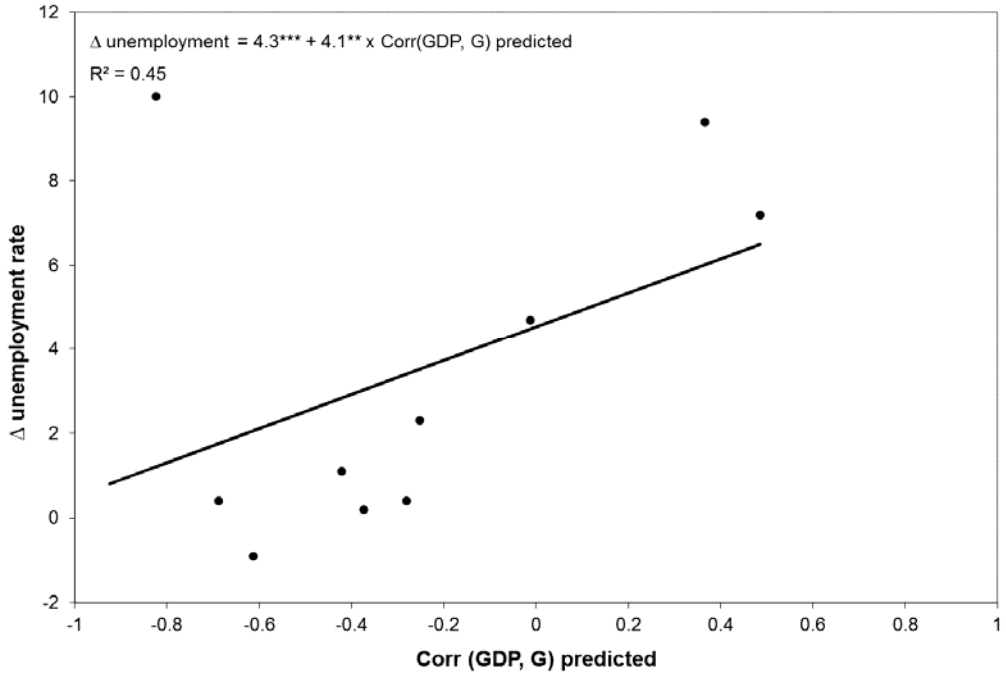
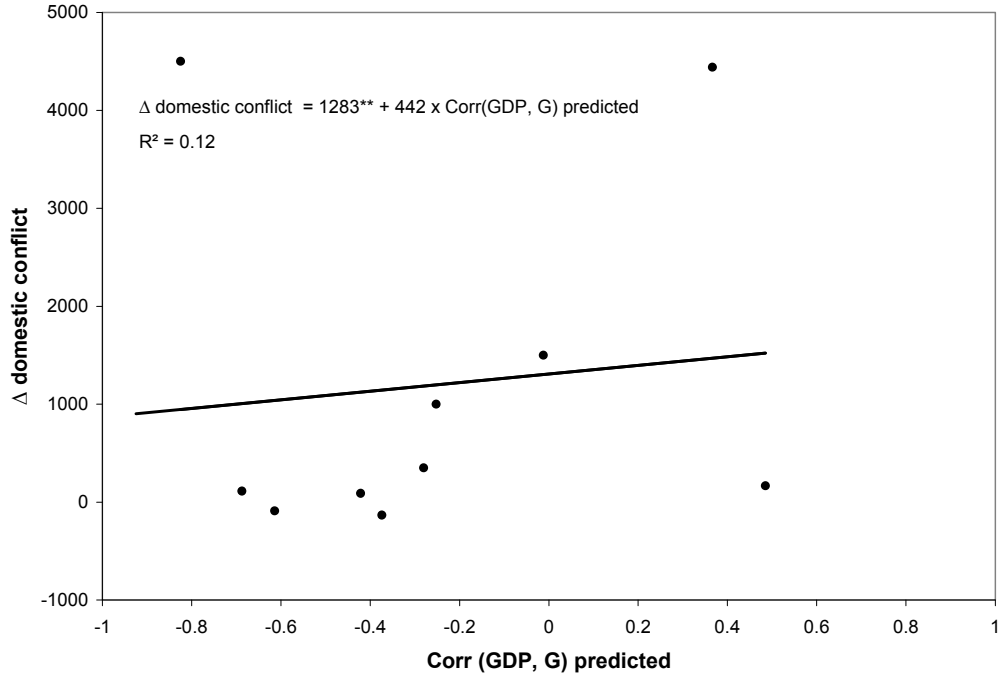


Figure 14. Eurozone: Predicted cyclicality of fiscal policy and changes in social indicators during last GDP crisis

Panel A. Predicted cyclicality of fiscal policy
and change in unemployment during last GDP crisis



Panel B. Predicted cyclicality of fiscal policy
and change in domestic conflict during last GDP crisis



The regression and R^2 shown in Panel A (Panel B) refer to second stage IV regression using 2SLS, where the dependent variable is change in unemployment rate (change in domestic conflict) during the last GDP crisis, the independent variable is the correlation between the cyclical components of real GDP and real government spending, Corr(GDP, G), and the instrument used is the fiscal readiness index.