NIPE

Universidade do Minho

Documentos de Trabalho

Working Paper Series

"Fiscal Policy Discretion, Private Spending, and Crisis Episodes?"

Luca Agnello
Davide Furceri
Ricardo M. Sousa

NIPE WP 31/ 2011

NÚCLEO DE INVESTIGAÇÃO EM POLÍTICAS ECONÓMICAS
UNIVERSIDADE DO MINHO

"Fiscal Policy Discretion, Private Spending, and Crisis Episodes?"

Luca Agnello
Davide Furceri
Ricardo M. Sousa

NIPE[*] WP 31/ 2011

URL:
http://www.eeg.uminho.pt/economia/nipe

[*] NIPE – *Núcleo de Investigação em Políticas Económicas* – is supported by the Portuguese Foundation for Science and Technology through the *Programa Operacional Ciência, Teconologia e Inovação* (POCI 2010) of the *Quadro Comunitário de Apoio III*, which is financed by FEDER and Portuguese funds.

Fiscal Policy Discretion, Private Spending, and Crisis Episodes

Luca Agnello[*] *Davide Furceri*[†] *Ricardo M. Sousa*[$]

Abstract

In this paper, we assess the impact of fiscal policy *discretion* on economic activity in the short and medium-term. Using a panel of 132 countries from 1960 to 2008, we find that fiscal policy discretion provides a net stimulus to the economy in the short-run and crowding-in effects are amplified once crisis episodes are controlled for– in particular, banking crises - giving a great scope for fiscal policy stimulus packages. However, crowding-out effects take over in the long-run – especially, in the case of debt crises -, in line with the concerns about long-term debt sustainability.

Keywords: Fiscal policy discretion, GDP growth, private consumption, private investment, crowding-in, crowding-out.
JEL: E0, E6.

[*] Banque de France, Service d'Etude des Politiques de Finances Publiques (FIPU), 31 Rue Croix des Petits Champs, 75001 Paris, France. University of Palermo, Department of Economics, Business and Finance, Viale delle Scienze, 90128 Palermo, Italy. Emails: luca.agnello@banque-france.fr, luca.agnello@economia.unipa.it.

[†] International Monetary Fund, 700 19th Street NW, 20431 Washington DC, USA; University of Palermo, Department of Economics, Business and Finance, Viale delle Scienze, 90128 Palermo, Italy. Emails: dfurceri@imf.org, furceri@economia.unipa.it.

[$] University of Minho, Department of Economics and Economic Policies Research Unit (NIPE), Campus of Gualtar, 4710-057 - Braga, Portugal; London School of Economics, Financial Markets Group (FMG), Houghton Street, London WC2 2AE, United Kingdom. E-mails: rjsousa@eeg.uminho.pt, rjsousa@alumni.lse.ac.uk.

"At the onset of the crisis, countries needed to firm up their finances, both to cover the costs of financial restructuring, and depending on the balance of payments situation to reduce their current account deficits, which depend on in part on the budget deficit." (Fischer, 1998)

1. Introduction

The occurrence of the recent global crisis became key for assessing the role that economic policy and, in particular, fiscal policy can play on influencing economic activity, particularly during episodes of severe downturns (Agnello and Nerlich, 2010; Castro, 2010; Agnello and Schuknecht, 2011).

Indeed, many countries have actively adopted fiscal expansionary measures in reaction to such an extraordinary event. While there is uncertainty about the magnitude of the effect of these fiscal measures on economic activity (Cohen et al., 2011), these interventions pose major challenges for policymakers, because they represent a valuable test to the long-term sustainability of public finances as the evidence on current developments in government bond markets shows (Schuknecht et al., 2009). In addition, they may lead to business cycle de-synchronization (Rafiq and Mallick, 2008; Mallick and Mohsin, 2010) and negatively impinge on the nexus between monetary and financial stability (Granville and Mallick, 2009; Sousa, 2010a; Castro, 2011).

Similarly, despite the consensual view on the withdrawal of such stimulus as the recovery materializes and the fact that several developed countries are now facing fiscal sustainability challenges, the effect that fiscal retrenchments may have on economic performance is not clear. In addition, while there seems to be an agreement on the long-term benefits of government debt reductions, there is no unified view on the short-term effects of fiscal austerity (Jansen et al., 2008).

Indeed the argument about the effectiveness of fiscal policy can be dated back to the Keynesian model that predicts that expansionary fiscal policy (i.e. a rise in government spending or a cut in government taxation) boosts disposable income, raises private consumption and partially crowds-out investment via the increase of interest rate. At the empirical level, the evidence seems to confirm the positive short-term effect of fiscal policy on consumption and output (Fatás and Mihov, 2001; Blanchard and Perotti, 2002; Mountford and Uhlig, 2009).

However, other studies suggest the possibility of Non-Keynesian effects associated with fiscal policy measures. The underlying idea is that a permanent reduction of government spending may lead to an increase in output and consumption, because agents will expect an increase of future income due to the cut of future taxation (Feldstein, 1982; Giavazzi and Pagano, 1990). In this case, fiscal contractions can be "expansionary" as a result of the improvement in household and business confidence and cutting budget deficits could stimulate the economy even in the short-term.

More recently and in light of the exceptional economic developments, research has started to focus on the role that fiscal policy can play in times of crisis. In this context, Alesina et al. (2002) argue that initial fiscal conditions play a key role in the response to the crisis responses in both advanced and emerging economies, the reason being linked to the fact that countercyclical fiscal policies are more likely to be adopted when sufficient fiscal space was created prior to the crisis. IMF (2009a) reports that expansionary fiscal policy is particularly effective in shortening the spells of recessions associated with financial crises in advanced economies and boosting recoveries in the aftermath. For emerging markets, the evidence is mixed due to limited credit access, procyclical spending bias and small automatic stabilizers which have constrained the ability of governments to adopt fiscal measures that help counteracting the effects of adverse economic conditions (IMF, 2009b).

Baldacci et al. (2009) assess the effects of fiscal policy responses during episodes of systemic banking crises in advanced and emerging market economies. The authors show that timely countercyclical fiscal responses can shorten the length of crisis episodes. Moreover, when crises are caused by financial sector distress, fiscal expansions increase the likelihood of earlier recovery. Baldacci and Kumar (2010) argue that timely countercyclical fiscal measures contribute to shortening the length of banking crises by stimulating aggregate demand. Hutchison et al. (2010) show that fiscal contraction is significantly correlated with large output losses during sudden-stops and balance of payments crisis in emerging markets and developing countries. Heim (2010a) finds that, calculating the effects for recession and non-recession periods and comparing them to models with average crowding-out and models without crowding-out, one concludes that the magnitude of the crowding-out effects is roughly the same. Spilimbergo et al. (2008) review the historical episodes of financial crises and the fiscal policy conduction during these periods. The authors show that an optimal fiscal package to mitigate the adverse consequences of financial crises should be collective, contingent, diversified, large, lasting, and sustainable.

However, fiscal policy measures aimed at the crisis resolution generally imply costly government restructuring of private sector's balance sheet and, consequently, a significant increase in public debt. Reinhart and Rogoff (2008a, 2008b, 2009) find that banking crises lead to sharp declines in tax revenues, as well as to significant increases in government spending and, at the end of these episodes, economic growth recovers very slowly. Laeven and Valencia (2008) estimate that the net fiscal costs associated with systemic banking crises – i.e. a situation where a country's corporate and financial sectors experience a large number of defaults and financial institutions face difficulties repaying loans on time – are substantial. Furceri and Zdzienicka (2010) find that banking crises are followed by a medium-term increase in the government gross debt-to-GDP ratio of about 37 percentage points.

From the abovementioned literature, it emerges that government interventions to boost private sector credit and to stimulate domestic demand may be costly and may increase the risk of high-inflation and lower private investment and GDP growth in the medium term. Therefore, there is a potential conflict between the short-term effects of countercyclical fiscal expansions during downturns and their medium-term growth implications, a feature that we investigate in the current paper.

The main goal of this work is to assess the macroeconomic impact of discretionary fiscal policy. We use a two-step approach. In the *first step*, we identify fiscal discretionary shocks by estimating a policy rule for government consumption. This methodology is built on the work of Fatás and Mihov (2003, 2006) - regarding the effects of the volatility of fiscal policy shocks on long-term growth - and Afonso et al. (2010) - in assessing the determinants of spending volatility. In this way, we are able to extract the discretionary component of fiscal policy and, thereby, to quantify the unexpected variation in the policy measure – which would, otherwise, be contaminated by the automatic response of fiscal policy to economic activity –, while dealing with the endogeneity issue. In the *second step*, we assess the impact of fiscal discretion on GDP growth and private sector's demand (more specifically, private consumption and investment growth) over different time horizons. This allows us to look at the size of the crowding-in and crowding-out effects and to analyze whether the potentially expansionary short-term effect is reverted in the medium-term. In this context, our paper is inspired by the works of Heim (2010a) and Furceri and Sousa (2011a).

Using a panel of 132 countries from 1960 to 2008, we show that fiscal policy discretion can provide a net stimulus to the economy in the short-term, i.e. crowding-in effects are likely to dominate over short horizons. However, crowding-out effects are stronger in the long-run, although they are never strong enough to completely offset the overall expansionary impact of government spending. This highlights the importance of timely fiscal responses during economic downturns and the role of fiscal policy as a key stabilizing tool.

In addition, we find that crowding-in effects tend to be stronger and more persistent for OECD countries than for developing countries. As for the crowding-out effects, they seem to affect significantly on the dynamics of investment growth and, to a smaller extent, on private consumption.

Next, we turn to the analysis of the role that fiscal policy can play in times of crisis, drawing on the work by Corsetti and Mueller (2010). Our findings suggest that, regardless the typology of crisis, crowding-in effects are magnified once these exceptional circumstances are controlled for, and dominate during the first years of the crises. This is consistent with the idea that there is a great scope for fiscal policy stimulus packages in order to boost economic recovery. However, crowding-out effects take over in the long-run and significantly reduce private sector's spending. Interestingly, the crowding-out effects might be so strong that they completely annihilate the previous expansionary effect. In particular, in the case of banking crises, our results show that a discretionary increase in public spending is key for a long-lasting economic recovery and the size of the crowding-in effects make it a very successful tool in such context. As for domestic debt crises, a boost in government spending has a negative effect of real GDP growth which persists over time. This is consistent with rising concerns about the long-term sustainability of public debt, which crowds-out private consumption and investment and exacerbates the crisis. As a result, there is a potential trade-off between the short-term and the medium-term impact of fiscal policy during episodes of debt crises, as unconventional policy measures might have destabilizing effects.

The rest of the paper is organized as following. Section two describes the empirical methodology used to measure fiscal policy discretion and to assess its macroeconomic impact. Section three discusses the results. Section four evaluates the effectiveness of fiscal policy in times of crisis. Finally, Section five concludes with the main findings and major policy implications.

2. Empirical Methodology

2.1 Measuring fiscal policy discretion

Following Fatás and Mihov (2003), we extract the discretionary component of government spending by estimating, for each country i (with $i =1,...,N$), the following fiscal policy reaction function:

$$\Delta g_{i,t} = \mu_i + \beta_i \Delta y_{i,t} + \gamma_i \Delta g_{i,t-1} + \Gamma_i X_{i,t} + v_{i,t} \qquad (1)$$

where g is the logarithm of real government spending, y is the logarithm of real GDP, and $\boldsymbol{X}$ is a set of controls including inflation, inflation squared, a time trend and the logarithm of real public debt. Inflation is included to ensure that our results are not driven by high inflation episodes in which case the comovement between real government spending and output might be due to monetary instability rather than fiscal policy. Moreover, we also account for the potential nonlinearity between fiscal developments and inflation by including the inflation squared term. We consider a time trend in our specifications, since government spending can have a deterministic time trend in addition to a stochastic one. Finally, the initial level of debt controls for the possibility that discretionary spending might be limited for countries facing heavy debt burden.

In this context, we expect that fiscal policymakers are reluctant to deliberate increases in spending that are financed by borrowing, otherwise they would be running the risks of loosing policy credibility and countering the effectiveness of fiscal stimulus.

The estimates of the country-specific coefficients β_i and γ_i, and $v_{i,t}$ in specification (1) represent, respectively, the measures of responsiveness and persistence (Afonso et al., 2010) and a quantitative estimate of discretionary spending. By construction, this latter measure can be interpreted as a *proxy* of spending decisions which are taken by the governments for reasons not directly related to economic conditions, i.e. it corresponds to a measure of the fiscal policy shock. In addition, given that we account for the initial level of the debt in equation (1), the increase in spending has to be interpreted as public spending shock which leaves the debt unchanged.

In order to control for potential endogeneity due to the simultaneity in the determination of output and government spending, we estimate equation (1) using an Instrumental Variables – Two-Stage Least Squares (IV-2SLS) method.

2.2 Assessing the macroeconomic impact of fiscal policy discretion

The residuals of regression (1) obtained for each country *i* are then used in the second-step in order to assess the impact of discretionary government spending on aggregate demand.[1] To do so, we estimate a dynamic panel growth equation of the following form:

$$\Delta y_{i,t} = \mu_i + \beta \Delta y_{i,t-1} + \sum_{j=1}^{4} \delta_j \hat{v}_{i,t-j} + \lambda Z_{i,t} + \tau_i + \varepsilon_{i,t} \qquad (2)$$

where y_t denotes the logarithm of real GDP while $\hat{v}_t$ indicates, for each country *i*, the vector of estimates of discretionary spending.[2] $\boldsymbol{Z_t}$ is a vector of control variables that can affect growth in the short-term, such as the log of openness and population growth rate. Finally, we include country-fixed effects (μ_i) to account for differences among countries' growth rates and time-fixed effects (τ_i) to control for the occurrence of global shocks and their impact on the (normal) business cycle. Since specification (2) is a dynamic panel and embodies fixed effects, the parameters are estimated by a two-step robust Generalized Method of Moments (GMM) estimator as discussed in Arellano and Bond (1991).[3] In fact, when Ordinary Least Squares (OLS) are used, the lagged dependent variable will be correlated with the error term, $\omega_{i,t} = \mu_{i,} + \tau_{i,} + \varepsilon_{i,t}$, even if

[1] Pagan (1984) argues that when (i) the predetermined variables that appear in the equation of interest are also included in the first-stage regression, (ii) only lagged values of the generated regressors appear as explanatory variables, and (iii) an instrumental variable estimation is used in the second-stage, valid statistical inference can be made with a small loss of efficiency.

[2] Including lags allows for a delayed impact of discretionary measures on real activity. From a theoretical point of view, it is commonly accepted that the response of macroeconomic aggregates (such as GDP, consumption, investment) to fiscal policy is lagged, not contemporaneous. For instance, all VAR-based evidence assume that the macroeconomy does not respond on impact (Afonso and Sousa, 2011a, 2011b; Fatás and Mihov, 2001; Blanchard and Perotti, 2002; Giordano et al., 2007; Castro and Cos, 2008; Mountford and Uhlig, 2009). Moreover, in equation (1), we follow Fatás and Mihov (2003, 2006) and, therefore, control for the contemporaneous response of government spending to output changes in the same spirit of Blanchard and Perotti (2002). From an empirical point of view, our strategy also avoids getting biased estimates for the coefficients associated to fiscal discretion in the second stage. In fact, the shock is a function of the dependent variable. Consequently, the inclusion of contemporaneous fiscal discretion in equations (2)-(4) - instead of its lags -, would imply that the coefficient associated with fiscal discretion would be the "sum" of its own explanatory power and its covariance with the dependent variable. Putting it differently, the coefficient would be biased and the shock could not be retrieved or properly identified. Indeed, while tackling the issue of endogeneity and simultaneity in the first-stage, the issue of identification in the second-stage still requires a careful treatment. This is less of a problem when we only add the lags of the shock to the second-stage regressions.

[3] Windmeijer's (2005) small-sample correction for two-step standard errors is also implemented.

we assume that disturbances are not themselves autocorrelated.[4] As result, OLS estimates are likely to be biased.

In order to assess whether discretionary government spending produces crowding-in versus crowding-out effects, we re-estimate equation (2) for private consumption growth ($\Delta c_{i,t}$):

$$\Delta c_{i,t} = \mu_i + \beta \Delta c_{i,t-1} + \sum_{j=1}^{4} \delta_j \hat{v}_{i,t-j} + \lambda Z_{i,t} + \tau_i + \varepsilon_{i,t} \qquad (3)$$

and investment growth ($\Delta i_{i,t}$):

$$\Delta i_{i,t} = \mu_i + \beta \Delta i_{i,t-1} + \sum_{j=1}^{4} \delta_j \hat{v}_{i,t-j} + \lambda Z_{i,t} + \tau_i + \varepsilon_{i,t} \qquad (4)$$

where all the right-hand side variables have the usual meanings. The abovementioned questions concerning the estimation issues are still valid for equations (3) and (4) and, therefore, a two-step robust GMM estimator is used.

Crowding-in versus crowding-out effects are explored by estimating the response of consumption and investment growth rates to a discretionary spending shock. Impulse-Response Functions (IRFs), along with the 68% error bands, are obtained via the delta method.[5, 6] More specifically, IRFs are computed by perturbating the estimated regressor (i.e. fiscal policy discretion), not the shock of the equation.

[4] See Arellano and Bond (1991) and Baltagi (2001).

[5] The impulse-response functions are consistent with specifications (2)-(4). In this case, unless we impose some kind of factorization, the response of GDP, consumption and investment to the discretionary fiscal spending component cannot be assessed. In our framework, this can be achieved by including only the lags of the shock in the set of explanatory variables of the second-stage regressions. Although we do not estimate a (Bayesian) Vector Auto-Regressive or Maximum Likelihood framework, the underlying mechanism is similar. In addition, if the discretionary component of government spending is thought as a predictive variable and we assess its economic content over different time horizons, then our second-stage framework can be described as a set of forecasting regressions. In this context, predictors and predicted variables need to be evaluated at different moments in time, not contemporaneously.

[6] For the use of 68% probability bands in the context of monetary policy, see Leeper and Zha (2003), Mackowiak (2006) and Sims and Zha (2006a. b). Afonso and Sousa (2011a, b) also refer to these bands for assessing the impact of fiscal policy shocks.

3. Data and Empirical Results

3.1 Data

The data cover 132 countries and are obtained from the World Bank's World Development Indicators for the time period 1960-2008. We consider annual data for GDP, private consumption, private investment and government spending. Due to data availability (both in terms of time and country dimension), we proxy private investment and government spending with gross fixed capital formation and public consumption, respectively. All variables are expressed in real per capita terms, where we use the GDP deflator to convert nominal in real constant terms. Data on public debt are retrieved from the Historical Public Debt Database assembled by the Fiscal Affairs Department of the International Monetary Fund (Abbas et al., 2010). Series dating a variety of financial crisis (banking, currency, domestic and external default or restructuring, and inflation) are provided by Reinhart and Rogoff (2010) and are available at: http://terconnect.umd.edu/creinhar/Courses.html.

3.2 Baseline model

In this section, we discuss the results of our baseline models (2)-(4). Table 1 summarizes the main findings. For each model, columns 1 and 2 show the parameter estimates obtained using different econometric specifications. In column 1, we begin by quantifying the empirical relationship between the variables of interest (GDP, consumption and investment growth rate) and the lagged discretionary part of government spending. We then examine the robustness of our results to the inclusion of additional controls, such as the log of openness and population growth rate (column 2).

We note that GDP growth and investment growth exhibit a reasonable degree of persistence, as the coefficient associated to the lagged dependent variable is statistically significant. This has two main implications. First, from a theoretical point of view, it suggests that it is important to distinguish the effects of discretionary fiscal policy from the ones related to the normal dynamics of aggregate demand and its sub-components. Second, from an empirical perspective, it supports the use of a dynamic panel estimation.

In addition, lags of the dependent variables are found valid instruments in our GMM specification. In fact, we cannot reject the hypothesis of the joint validity of the moment conditions (Hansen's (1982) *J*-test) and we find no higher order correlation in the idiosyncratic disturbance terms, $\varepsilon_{i,t}$.

In what concerns the effect of discretionary government spending on GDP growth, we can see that it is initially positive and it turns negative after one year. This suggests that discretionary fiscal policy that relies on spending increase has an expansionary effect on domestic demand in the short-term and a contractionary effect afterwards. Interestingly, the similarity of the results obtained from the consumption and the investment equations seems to support the existence of crowding-in in the very short-run and crowding-out afterwards.

Looking at the results from the extended models (column 2 of Table 1), we find that the inclusion of additional control variables, **Z**, does not change the results.[7] We find that trade openness and population growth positively and significantly affect economic growth.

[INSERT TABLE 1 HERE.]

To shed some light on the magnitude and timing of fiscal policy effects, we estimate the average impulse-response functions (IRFs) of output growth and its two main components (consumption and investment) to discretionary spending.

Figure 1 shows that an increase of 1% in discretionary spending typically increases GDP growth by, approximately, 0.047% within the first year, which, given the share of government consumption to GDP, corresponds to a multiplier of about 0.40.

It is followed by a decline of about three years when the fall in GDP growth reaches -0.027%. The results are in line with the range of short-term multipliers' estimates of total government spending presented in previous empirical studies and based on structural vector autoregressive (SVAR) models, large multinational macro models (Henry et al., 2008) and DSGE models (Coenen et al., 2011). A visual inspection of the Figure also confirms our intuition concerning the relevance of crowding effects. For both private consumption and private investment, crowding-in effects dominate in the short-run, while crowding-out effects are more powerful in the long-run. However, we find that crowding-out is never strong enough to cancel out the

[7] The IRFs computed from the basic and extended specifications tend to overlap.

entire expansionary thrust of discretionary spending, that is, some net stimulus to the economy remains.

Interestingly, the strength and timing of crowding effects significantly changes between the two demand components. More specifically, the amplitude of crowding effects is notably higher for private investment than for consumption. In addition, the duration of the crowding-in effect is shorter (around one year) for investment. In contrast, discretionary spending crowds-out consumption for a relatively shorter time. This piece of evidence is in line with the works of Heim (2010b, 2010c), who shows that government deficits crowd-out both private consumption and investment. However, while government spending deficits are associated with a complete crowding-out effect (i.e. no net stimulus impact), tax cut deficits lead to net negative economic effects.

[INSERT FIGURE 1 HERE.]

3.3 Evidence for OECD versus Non-OECD countries

The analysis presented so far has shown evidence on the existence of crowding-in and crowding-out effects. But are these effects similar for among groups of countries? To answer this question, we replicate the estimation of equations (2)-(4) for developed (OECD) and developing (Non-OECD) countries. In principle, one could be interested in considering more specific geographic areas. Unfortunately, the limited number of countries belonging to each sub-sample (such as Africa, Asia and Pacific, Europe, North America and so on) makes it impossible to get plausible estimates from the dynamic panel model using instrumental variables.

In fact, the GMM estimators can generate moment conditions prolifically, with the instruments proliferating in the time dimension of the panel, T. This can cause several econometric problems in finite samples, the most important consequence being that standard errors are downward biased. This does not allow us to use two-step "GMM-style" estimates for inference purposes (Arellano and Bond, 1991). Moreover, the Hansen-test becomes weaker, generating implausible *p*-values of 1.000 (Andersen and Sorensen, 1996).

Even considering two sub-samples like OECD and Non-OECD, their dimension is rather small in a GMM framework and candidate instruments outnumber countries. Therefore, in order to avoid instrument "over-proliferation" and the problems discussed above, we estimate, for each sub-sample, models (2)-(4) using a more parsimonious IV-

2SLS estimator where only the second and third lags of the dependent variables are used as instruments. Results are reported in Table 2, while IRFs are plotted in Figure 2.

We find that the effect of discretionary spending varies substantially between the two groups of countries. With regards to the effects on consumption growth, we note that crowding-in effects are strongly magnified in OECD countries. In fact, an increase of 1% in discretionary spending typically boosts consumption growth by 0.17% (within the first year). Such effect is limited to 0.05% in the case of developing countries (which is close to the estimate for the benchmark model). Both the size and the persistence of crowding-out effects are higher for developing countries (-0.03%) than for OECD economies. Turning to the impact on investment, we can see that crowding-in effects are more persistent in OECD countries than in developing countries. This leads to a long-lasting (almost two years) increase of the GDP growth rate. In the long-run, however, crowding-out effects prevail and their negative impact on private investment is sizeable (-0.26%), being almost two times larger than in non-OECD countries (-0.14%). As a result, on the investment side, the impact of discretionary government spending is more detrimental for the OECD group. The results are robust to the inclusion of additional control variables (column 2).

[INSERT TABLE 2 HERE.]

[INSERT FIGURE 2 HERE.]

4. Fiscal Policy in Times of Crisis

4.1 Evaluating the impact of fiscal policy during crisis episodes

In order to assess whether the size and timing of crowding-in and crowding-out effects change in time of crises, we look at the effects of discretionary spending shocks on the private sector conditioning them on the occurrence of several typology of crises. In detail, for each crisis, we enlarge our baseline specifications (2)-(4) and include an additional set of regressors which are obtained by interacting the discretionary component of spending ($\hat{v}_{i,t}$) with a dummy (*Crisis*) that takes the value of one when a crisis occurs and zero otherwise. In accordance with the definition and identification of crises for a set of 70 countries as provided by Reinharth and Rogoff (2010), we consider the following episodes: a) banking crises; b) currency crises; c) domestic debt default (or restructuring); d) external debt default (or restructuring); e) inflation crises and f) stock market crashes. Then, we estimate, for each typology of crisis, *k*, the equations:

$$\Delta Y_{i,t} = c_i + \beta \Delta Y_{i,t-1} + \sum_{j=1}^{4} \delta_j \hat{v}_{i,t-j} + \sum_{j=1}^{4} \varphi_j \left(Crisis_i^k \times \hat{v}_i \right)_{t-j} + \sum_{j=1}^{4} \rho_j Crisis_{i,t-j}^k + \lambda Z_{i,t} + \tau_i + \varepsilon_{i,t}, \qquad (5)$$

$$\Delta C_{i,t} = c_i + \beta \Delta C_{i,t-1} + \sum_{j=1}^{4} \delta_j \hat{v}_{i,t-j} + \sum_{j=1}^{4} \varphi_j \left(Crisis_i^k \times \hat{v}_i \right)_{t-j} + \sum_{j=1}^{4} \rho_j Crisis_{i,t-j}^k + \lambda Z_{i,t} + \tau_i + \varepsilon_{i,t}, \qquad (6)$$

$$\Delta I_{i,t} = c_i + \beta \Delta I_{i,t-1} + \sum_{j=1}^{4} \delta_j \hat{v}_{i,t-j} + \sum_{j=1}^{4} \varphi_j \left(Crisis_i^k \times \hat{v}_i \right)_{t-j} + \sum_{j=1}^{4} \rho_j Crisis_{i,t-j}^k + \lambda Z_{i,t} + \tau_i + \varepsilon_{i,t}, \qquad (7)$$

where all the variables have the usual meanings. The higher the statistical significance of the parameter φ, the more important is the role played by the crisis in determining the size and persistence of crowding-in and crowding-out effects.

4.2 Banking crises

Table 3 summarizes the evidence for banking crises. The results suggest that once episodes of baking crises are controlled for, (unconditional) discretionary shocks in public spending have a larger effect than the one presented in the baseline. In particular, we find that a 1 percent shock in the discretionary component of fiscal spending boosts GDP growth by about 0.06% over the first year, which corresponds to a multiplier of 0.5. Similarly, this crowding-in effect emerges for both consumption and investment growth, although it tends to be larger for the later (0.16% versus 0.21-0.26%, respectively). Note, however, that the impact on investment seems to be less persistent, as crowding-out effects emerge after 3 years. In addition, although the occurrence of a banking crisis does not seem to affect the impact of fiscal policy on private consumption and private investment, there is some evidence suggesting that the effectiveness of fiscal policy discretion may be weaker after 3 years. Finally, in line with previous empirical evidence (Kaminsky and Reinhart, 1999; Cerra and Saxena, 2008; Furceri and Zdienicka 2011) the occurrence of a banking crisis severely affects GDP growth and private investment.

[INSERT TABLE 3 HERE.]

4.3 Currency crises

Table 4 describes the results for currency crises. The empirical findings show that (unconditional) fiscal policy discretion shocks can help boosting economic growth in the short-run even when we control for the occurrence of currency crises: a 1% shock in government spending raises GDP, private consumption and private investment by 0.05%, 0.10% and 0.22%, respectively. As in the case of a banking crisis, the impact on investment does not last long, as crowding-out effects emerge after 3 years. Similarly, the occurrence of a currency crisis does not seem to dramatically affect the relationship between fiscal policy discretion and economic activity. Nevertheless, there is weak evidence suggesting that in such circumstances, fiscal policy stimuli may lead to an amplification of the crowding-out effects in private consumption and investment. Moreover, although the size of crowding-out effects is not strong enough to revert the initial crowding-in effects in the case of investment, for consumption the crowding-out effects may overtake the crowding-in impact. Finally, it can be seen that the occurrence of a currency crisis has a substantial impact on the average consumption growth.

[INSERT TABLE 4 HERE.]

4.4 Domestic debt crises

Our results show that when we control for debt crises the (unconditional) positive effects of fiscal policy stimulus are mainly confined to the short-term, where a 1% increase in fiscal policy discretion can raise GDP growth, private consumption growth and private investment growth by 0.06%, 0.14% and 0.22%, respectively. As before, the effects on private investment are of shorter duration given that the initial positive impact erodes and even becomes negative after 3 years. Most importantly, these medium-term crowding-out effects (about -0.23%) are stronger that the short-term crowding-in effects. In addition, it is possible to observe that the effect of fiscal policy discretion during periods of debt crises tends to be detrimental even in the short-run (where GDP growth falls by 0.11%). This is in line with the idea that high public debt levels limit the scope for fiscal stimulus due to the perception of the markets of a higher risk premium associated with larger deficits (Ardagna, 2009). In addition, it is consistent with the argument that the effectiveness of fiscal policy may be small when initial fiscal conditions are poor (Baldacci et al., 2009).

[INSERT TABLE 5 HERE.]

4.5 External debt crises

We now turn to the analysis of external debt crises. These typically involve outright *default* on payment of debt obligations incurred under foreign legal jurisdiction, *repudiation,* or the *restructuring* of debt into terms less favorable to the lender than in the original. While the time of default is accurately classified as a crisis year, there are a large number of cases where the final resolution with the creditors (if it ever did take place) seems interminable. As a result, Reinhart and Rogoff (2010) construct dummy variables where only the first year of default enters as a crisis, in to the country-specific dummy variables that cover the entire episode.

The results obtained when external debt crises are considered (Table 6) suggest that under normal circumstances – i.e. in the absence of external debt crises -, a 1% shock in fiscal discretion: a) boosts private consumption in the short-term (a 0.09% increase); b) crowds-out private investment in the medium-term (a 0.17% reduction); and c) does not have a statistically significant impact on GDP growth. However, under exceptional circumstances – i.e. conditioning the effect of fiscal discretion on the occurrence of an external debt crisis, one can observe a negative impact on GDP growth over the medium-term (-0.06% at the 3-year horizon) that is largely explained by the crowding-out effect over private consumption (-0.16%). As in the case of currency crises, episodes of instability in the external accounts can severely impact on the average consumption growth rate.

[INSERT TABLE 6 HERE.]

4.6 Inflation crises

In Table 7, we assess the role of inflation crises. These episodes are typically chronic as they last for many years. Reinhart and Rogoff (2004) used a twelve-month inflation threshold of 40% or higher percent to define a "freely falling" episode. More recently Reihnart and Rogoff (2010) define an inflation crisis using a threshold of 20% per annum.

Controlling for the occurrence of inflation crises, we find that a 1% positive (unconditional) shock to fiscal spending stimulates GDP growth (0.07%) in the short-term (within 1 year), but crowds-out private investment (-0.27%) in the medium-term (3 years ahead). Taking into account the share of government consumption to GDP, this translates into a short-run multiplier of 0.6. In contrast, during episodes of inflation crisis, fiscal policy can negatively impinge on the economic activity as both GDP growth and private spending growth fall.

[INSERT TABLE 7 HERE.]

4.7 Stock market crashes

Interestingly, our results suggest an asymmetric response of economic activity to fiscal discretion that is conditional on the state of the economy. On the one hand, fiscal policy is effective in promoting economic growth and private sector's demand in the case of stock market crashes: a 1% shock to fiscal discretion raises medium-term GDP growth, private consumption growth and private investment growth by 0.10% (i.e., a multiplier effect of 0.8), 0.18% and 0.60%, respectively. On the other hand, fiscal policy can be harmful for medium-run economic activity in the absence of periods of financial turbulence: a 1% shock to the discretionary component of fiscal spending leads to fall in GDP growth, consumption growth and investment growth by 0.03%, 0.08% and 0.20%, respectively, at the 3-4 year horizons. Therefore, over the long-run, crowding-in effects associated with fiscal discretion in periods of stock market crashes dominate the crowding-out effects during episodes of financial markets stability. Putting it differently, fiscal policy measures can act as an important tool for boosting the confidence of economic agents during periods of disruption in the financial markets. The 2007-2009 financial turmoil is a key witness of this observation. However, in normal times, adjustments that signal a deterioration of the fiscal stance will result in fall in stock prices and have a negative impact on economic activity (Ardagna, 2009). Finally, one can see that stock market crashes have a very large effect on average GDP growth and also impinge very negatively on consumption and investment growth. This, in turn, corroborates the idea that wealth effects on consumption are important (Sousa, 2010b) and investment is highly sensitive to the occurrence of financial crises (Peltonen et al., 2011).

[INSERT TABLE 8 HERE.]

4.8 Quantifying the size of crowding-in and crowding-out effects

The whole evidence for fiscal policy during times of crisis is summarized in Table 9 and Figure 3. More specifically, Table 9 describes the size of crowding-in and crowding-out effects by type of crisis, while Figure 3 displays the impulse-response functions (IRFs) to a positive shock to fiscal policy discretion for each type of crisis.

We find that, regardless the typology of crisis, crowding-in effects dominate during the first years of the crises. Compared to the baseline (benchmark) scenario, the size of crowding-in effects is magnified during crisis periods, which suggests that there is a great scope for fiscal policy stimuli packages under such exceptional circumstances. However, in the long-run, crowding-out effects take over and significantly reduce private investment growth and, to a small extent, private consumption growth.

Interestingly, under the crises scenario, the crowding-out effects might be strong enough to cancel out the entire expansionary thrust of government spending. Consequently, the unconventional policy measures undertaken by governments during crises might have destabilizing long-run effects. As a result, extraordinarily expansionary fiscal measures may need to be withdrawn in a timely manner. This result is in line with the works by Claessens et al. (2004) and Cerra et al. (2009) and the recommendations of international institutions (IMF, 2009a; OECD, 2009).

[INSERT TABLE 9 HERE.]

[INSERT FIGURE 3a HERE.]

[INSERT FIGURE 3b HERE.]

5. Conclusions

In this paper, we assess the dynamic macroeconomic impact of fiscal policy discretion. In particular, we look at the size of the crowding-in and crowding-out effects and check whether there is a trade-off between the short-term impact and the medium-term implications of a positive fiscal policy shock. We do this by analysing a panel of 132 countries from 1960 to 2008.

The results show that fiscal policy discretion can provide a net stimulus to the economy in the short-run, but crowding-out effects emerge in the long-run. However, , in general, these are not strong enough to cancel out the expansionary path of government spending and, as a result, fiscal policy is a key stabilizing tool during economic downturns.

We also find that crowding-in effects are of larger magnitude and more persistent for OECD countries, while crowding-out effects seem to be more detrimental for private investment than for private consumption.

Looking at the role of fiscal policy in times of crisis, our findings suggest that crowding-in effects are amplified once such exceptional circumstances are controlled for – in particular, banking crises - and dominate in the short-run, a feature that corroborates the idea of a great scope for fiscal policy stimulus packages. However, crowding-out effects take over in the long-run and negatively impinge on private sector's spending. For instance, in the case of debt crises, a boost in government spending has a negative and persistent effect of real GDP growth, in line with the rising concerns about the long-term sustainability of the debt path.

Summing up, our research suggests that there is a trade-off between the short-term and the medium-term impact of fiscal policy. In particular, in the outcome of a crisis episode, fiscal measures should be withdrawn in a timely manner and a well-conceived austerity plan may need to be adopted in order to guarantee a sustainable growth path and avoid destabilizing market tensions. As a result, ensuring a stable macroeconomic environment and the adopting sound fiscal policies in normal times seems to be crucial to enhance the effectiveness of fiscal policy when economies are hit by extraordinary shocks (Tavares and Valkanov, 2001) and to shorten the length of such episodes (Baldacci et al., 2009; Spilimbergo et al., 2009).

References

Abbas, S. A., Belhocine, N., ElGanainy, A., and M. Horton, 2010. A historical public debt database. International Monetary Fund, IMF Working Paper No. 245.

Afonso, A., and R. M. Sousa, 2011a. The macroeconomic effects of fiscal policy. *Applied Economics*, forthcoming.

Afonso, A., and R. M. Sousa, 2011b. What are the effects of fiscal policy on asset markets? *Economic Modelling*, 28(4), 1871-1890

Afonso, A., Agnello, L. and D. Furceri, 2010. Fiscal policy responsiveness, persistence and discretion. *Public Choice*, 145(3), 503-530.

Agnello, L., and C. Nerlich, 2010. On the severity of economic downturns: lessons from cross-country evidence, European Central Bank, mimeo.

Agnello, L., and L. Schuknecht, 2011. Booms and busts in housing markets: determinants and implications. *Journal of Housing Economics*, forthcoming.

Alesina, A., Ardagna, S., Perotti, R., and F. Schiantarelli, 2002. Fiscal policy, profits, and investment. *American Economic Review*, 92(3), 571-589.

Andersen, T. G., and B. E. Sorensen, 1996. GMM estimation of a stochastic volatility model: A Monte Carlo study. *Journal of Business and Economic Statistics*, 14(3), 328-352.

Ardagna, S., 2009. Financial markets' behavior around episodes of large changes in the fiscal stance. *European Economic Review*, 53, 37-55.

Arellano, M., and S. Bond, 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, 58, 277-297.

Baldacci, E., and M. S. Kumar, 2010. Fiscal deficits, public debt, and sovereign bond yields. International Monetary Fund, IMF Working Paper No. 184.

Baldacci, E., Gupta, S., and C. Mulas-Granados, 2009. How effective is fiscal policy response in systemic banking crises? International Monetary Fund, IMF Working Paper No. 160.

Baltagi, B., 2001. *Econometric analysis of panel data*. Chichester: Wiley.

Blanchard, O., and R. Perotti, 2002. An empirical characterization of the dynamic effects of changes in government spending and taxes on output. *Quarterly Journal of Economics*, 117(4), 1329-1368.

Castro, V., 2011. Can central banks' monetary policy be described by a linear (augmented) Taylor rule or by a nonlinear rule? *Journal of Financial Stability*, 7(4), 228-246.

Castro, V., 2010. The duration of economic expansions and recessions: more than duration dependence. *Journal of Macroeconomics*, 32, 347-365.

Castro, F., and P. Hernández de Cos, 2008. The economic effects of fiscal policy: The case of Spain. *Journal of Macroeconomics*, 30(3), 1005-1028.

Cerra, V., and S. Saxena, 2008. Growth dynamics: The myth of economic recovery. *American Economic Review*, 98, 439-457.

Cerra V., Panizza, U., and S. Saxena, 2009. International evidence on recovery from recessions. International Monetary Fund, IMF Working Paper No. 183.

Claessens, C. A., Klingebiel, D., and L. Laeven, 2004. Resolving systemic financial crises: policies and institutions. The World Bank, Policy Research Working Paper No. 3377.

Coenen, G., Erceg, C., Freedman, C., Furceri, D., Kumhof, M., Lalonde, R., Laxton, D., Lindé, J., Mourougane, A., Muir, D., Mursula, S., de Resende, C., Roberts, J., Roeger, W., Snudden, S., Trabandt, M., and J. in't Veld, 2010. Effect of fiscal stimulus in structural models. *American Economic Journal: Macroeconomics*, forthcoming.

Corsetti, G., and G. Mueller, 2010. The effectiveness monetary policy depends on the financing and the monetary policy mix. Mimeo.

Fatás, A. and I. Mihov, 2006. The macroeconomics effects of fiscal rules in the US states. *Journal of Public Economics*, 90, 101-117.

Fatás, A. and I. Mihov, 2003. The case for restricting fiscal policy discretion. *Quarterly Journal of Economics*, 118, 1419-1447.

Fatás, A., and I. Mihov, 2001. The effects of fiscal policy on consumption and employment: theory and evidence. CEPR Discussion Paper Nº. 2760.

Feldstein, M., 1982. Government deficits and aggregate demand. *Journal of Monetary Economics*, 9, 1-20.

Fischer, S., 1998. In defense of the IMF. *Foreign Affairs*, 77(4), 103-107.

Furceri, D., and R. M. Sousa, 2011a. The impact of government spending on the private sector: crowding-out versus crowding-in effects. *Kyklos*, forthcoming.

Furceri, D., and A. Zdzienicka A., 2011. The real effects of financial crises in the European transition economies. *Economics of Transition*, 17, 1-25.

Furceri, D., and A. Zdzienicka, 2010. The consequences of banking crises on public debt. OECD Economics Department Working Paper No. 801.

Giavazzi, F., and M. Pagano, 1990. Can severe fiscal contractions be expansionary? Tales of two small European countries. In Blanchard, O., and S. Fischer (Eds.). *NBER Macroeconomics Annual*, MIT Press.

Giordano, R., Momigliano, S., Neri, S., and R. Perotti, 2007. The effects of fiscal policy in Italy: evidence from a VAR model. *European Journal of Political Economy*, 23, 707-733.

Granville, B., and S. K. Mallick, 2009. Monetary and financial stability in the euro area: procyclicality versus trade-off. *Journal of International Financial Markets, Institutions and Money*, 19, 662-674.

Hansen, L., 1982. Large sample properties of Generalized Method of Moments estimators. *Econometrica*, 50, 1029-1054.

Heim, J. J., 2010a. Is crowd out a problem in recessions? Rensselaer Polytechnic Institute, Department of Economics, Working Paper No. 1103.

Heim, J. J., 2010b. Do government deficits crowd out consumer and investment spending. *Journal of the Academy of Business and Economics*, 10(3), October.

Heim, J. J., 2010c. Do tax cut and spending deficits have different crowd out effects? Rensselaer Polytechnic Institute, Department of Economics, Working Paper No. 1104.

Henry, J., Hernandez de Cos, P., and S. Momigliano, 2008. The impact of government budgets on prices: Evidence from macroeconometric models. *Journal of Policy Modeling*, 30(1), 123-143.

Hutchison, M., Noy, I., and L. Wang, 2010. Fiscal and monetary policies and the cost of sudden stops. *Journal of International Money and Finance*, 29(6), 973-987.

International Monetary Fund, 2009a. From recession to recovery: How soon and how strong? *World Economic Outlook*, Chapter 3, Washington, DC: International Monetary Fund.

International Monetary Fund, 2009b. The state of public finances: Outlook and medium-term policies after the 2008 Crisis, Washington, DC: International Monetary Fund.

Jansen, D. W., Li, Q., Wang, Z., and J. Yang, 2008. Fiscal policy and asset markets: a semiparametric analysis. *Journal of Econometrics*, 147, 141-150.

Kaminsky, G., and C. Reinhart, 1999. The twin crises: the causes of banking and balance of payment problems. *American Economic Review*, 89(3), 473-500.

Laeven, L., and F. Valencia, 2008. Systemic banking crises: a new database. International Monetary Fund, IMF Working Paper No. 224.

Leeper, E. M., and T. Zha, 2003. Modest policy interventions. *Journal of Monetary Economics*, 50(8), 1673-1700.

Mackowiak, B., 2006. What does the Bank of Japan do to East Asia? *Journal of International Economics*, 70, 253-270.

Mallick, S. K., Mohsin, M., 2010. On the real effects of inflation in open economies: theory and empirics. *Empirical Economics*, 39, 643-673.

Mountford, A., Uhlig, H., 2009. What are the effects of fiscal policy shocks? *Journal of Applied Econometrics*, 24, 960-992.

Organisation for Economic Co-Operation and Development, 2009. *Economic Outlook*, 86, Paris: Organisation for Economic Co-Operation and Development.

Pagan, A., 1984. Econometric issues in the analysis of regressions with generated regressors. *International Economic Review*, 25(1), 221-247.

Peltonen, T., Sousa, R. M., and I. Vansteenkiste, 2011. Investment in emerging market economies, *Empirical Economics*, forthcoming.

Rafiq, M. S., and S. K. Mallick, 2008. The effect of monetary policy on output in EMU3: a sign restriction approach. *Journal of Macroeconomics*, 30, 1756-1791.

Reinhart, C. M., and K. S. Rogoff, 2010. From financial crash to debt crises. National Bureau of Economic Research, NBER Working Paper No. 15795.

Reinhart, C. M., and K. S. Rogoff, 2009. The aftermath of financial crises. National Bureau of Economic Research, NBER Working Paper No. 14587.

Reinhart, C. M., and K. S. Rogoff, 2008a. This time is different: A panoramic view of eight centuries of financial crises. National Bureau of Economic Research, NBER Working Paper No. 13882.

Reinhart, C. M., and K. S. Rogoff, 2008b. Banking crises: An equal opportunity menace. Paper presented at the Meetings of the American Economic Association in San Francisco, December.

Reinhart, C. M., and K. S. Rogoff, 2004. The modern history of exchange rate arrangements: A reinterpretation. *Quarterly Journal of Economics*, 69(1), 1-48.

Schuknecht, L., von Hagen, J., and G. Wolswijk, 2009. Government risk premiums in the bond market: EMU and Canada. *European Journal of Political Economy*, 25(3), 371-384.

Sims, C., and T. Zha, 2006a. Were there regime switches in U.S. monetary policy? *American Economic Review*, 96(1), 54-81.

Sims, C., and T. Zha, 2006b. Does monetary policy generate recessions? *Macroeconomic Dynamics*, 10(2), 231-272.

Sousa, R. M., 2010a. Housing wealth, financial wealth, money demand and policy rule: evidence from the Euro area. *The North American Journal of Economics and Finance*, 21, 88–105.

Sousa, R. M., 2010b. Consumption, (dis)aggregate wealth, and asset returns. *Journal of Empirical Finance*, 17(4), 606-622.

Spilimbergo, A., Symansky, S., and M. Schindler, 2009. Fiscal multipliers. International Monetary Fund, IMF Staff Position Note No. 11.

Spilimbergo, A., Symansky, S., Blanchard, O., and C. Cottarelli, 2008. Fiscal policy for the crisis. International Monetary Fund, IMF Staff Position Note No. 01.

Tavares, J., and R. Valkanov, 2001. The neglected effect of fiscal policy on stock and bond returns. UCLA, Anderson School of Manaagement Working Paper No. 413.

Windmeijer, F., 2005. A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics*, 126, 25-51.

List of Tables

Table 1: Dynamic Panel Estimation (Baseline model).

Set of explanatory variables:	GDP growth		Consumption growth		Investment growth	
	(1)	(2)	(1)	(2)	(1)	(2)
Lagged dependent variable	0.194***	0.184***	-0.020	-0.015	0.109**	0.095**
	[0.044]	[0.052]	[0.039]	[0.035]	[0.043]	[0.046]
$v_{i,t-1}$	0.045**	0.047**	0.063**	0.061**	0.145*	0.149*
	[0.020]	[0.021]	[0.031]	[0.031]	[0.078]	[0.078]
$v_{i,t-2}$	-0.012	-0.015	0.039	0.034	-0.087	-0.103*
	[0.013]	[0.013]	[0.030]	[0.029]	[0.058]	[0.058]
$v_{i,t-3}$	-0.017	-0.015	-0.031	-0.031	-0.087*	-0.114**
	[0.012]	[0.012]	[0.029]	[0.026]	[0.054]	[0.053]
$v_{i,t-4}$	-0.025**	-0.024**	-0.034	-0.036	-0.020	-0.020
	[0.011]	[0.011]	[0.024]	[0.023]	[0.058]	[0.057]
Population growth	-	0.544**	-	0.361	-	0.957
	-	[0.275]	-	[0.323]	-	[0.719]
Openness	-	0.014**	-	0.025***	-	0.041**
	-	[0.007]	-	[0.009]	-	[0.017]
Total Observations	3085	3023	3016	2954	2835	2773
Number of countries	132	130	131	129	130	128
AR(1) test statistic	-4.10	-4.02	-5.30	-5.49	-4.43	-4.35
p-value	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) test statistic	-0.62	-0.60	-0.82	-0.75	-0.91	-1.00
p-value	0.54	0.55	0.41	0.45	0.36	0.32
Hansen Statistic	40.36	41.13	49.06	43.95	70.87	74.94
p-value	0.41	0.38	0.13	0.27	0.73	0.61

Note: Dynamic panel-data estimation (two-step Difference GMM). Robust standard errors in square brackets. *, **, *** statistically significant at 10%, 5% and 1% level, respectively. Parameter estimates associated to time effects are not reported for sake of space.

Table 2: IV Panel Estimation (Country Sub-samples).

	OECD countries						Non-OECD countries					
Set of explanatory variables:	GDP growth		Consumption growth		Investment growth		GDP growth		Consumption growth		Investment growth	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Lagged dependent variable	0.326***	0.309***	0.183*	0.184*	0.144	0.16	0.001	-0.182	0.172	0.196	-0.031	0.059
	[0.104]	[0.106]	[0.112]	[0.118]	[0.126]	[0.128]	[0.188]	[0.227]	[0.181]	[0.173]	[0.185]	[0.185]
$v_{i,t-1}$	0.036	0.044	0.168**	0.172**	0.221	0.17	0.080**	0.104***	0.062***	0.054**	0.200*	0.135
	[0.073]	[0.075]	[0.072]	[0.073]	[0.214]	[0.213]	[0.035]	[0.040]	[0.023]	[0.023]	[0.107]	[0.104]
$v_{i,t-2}$	0.080*	0.076*	-0.028	-0.026	0.201	0.162	-0.001	0.000	0.028	0.022	-0.065	-0.096*
	[0.046]	[0.047]	[0.053]	[0.053]	[0.153]	[0.155]	[0.017]	[0.017]	[0.026]	[0.026]	[0.057]	[0.055]
$v_{i,t-3}$	0.037	0.038	-0.011	-0.001	-0.126	-0.127	-0.011	-0.016	-0.036	-0.037	-0.139**	-0.141**
	[0.046]	[0.046]	[0.052]	[0.053]	[0.151]	[0.154]	[0.013]	[0.013]	[0.023]	[0.023]	[0.056]	[0.057]
$v_{i,t-4}$	-0.013	-0.009	0.062	0.072	-0.271*	-0.245*	-0.023*	-0.029**	-0.016	-0.015	-0.038	-0.027
	[0.041]	[0.042]	[0.046]	[0.047]	[0.146]	[0.148]	[0.012]	[0.013]	[0.020]	[0.020]	[0.053]	[0.053]
Population growth	-	0.008*	-	0.009*	-	0.026*	-	0.041***	-	0.045***	-	0.095***
	-	[0.004]	-	[0.005]	-	[0.014]	-	[0.009]	-	[0.012]	-	[0.026]
Openness	-	0.015	-	-0.188	-	0.506	-	1.131***	-	0.384	-	1.424**
	-	[0.194]	-	[0.236]	-	[0.744]	-	[0.261]	-	[0.242]	-	[0.618]
Total Observations	991	983	984	976	896	888	2233	2176	2169	2112	2019	1962
Number of countries	30	30	30	30	30	30	102	100	101	99	100	98
Hansen Statistic	2.516	2.249	0.36	0.492	12.85	14.26	1.003	0.273	2.426	2.853	16.69	22
p-value	0.113	0.134	0.548	0.483	0.000	0.000	0.317	0.601	0.119	0.0912	4.41E-05	2.72E-06

Note: IV-2SLS panel-data estimation (second and third lags of the dependent variables used as instruments). Robust standard errors in square brackets. . *, **, *** statistically significant at 10%, 5% and 1% level, respectively..

Table 3: Dynamic Panel Estimation (Banking Crisis).

Set of explanatory variables:	GDP growth		Consumption growth		Investment growth	
	(1)	(2)	(1)	(2)	(1)	(2)
Lagged dependent variable	0.273***	0.289***	0.028	0.049	0.220***	0.221***
	[0.056]	[0.048]	[0.043]	[0.043]	[0.047]	[0.049]
$v_{i,t-1}$	0.061**	0.058**	0.162***	0.155***	0.213**	0.257**
	[0.029]	[0.028]	[0.030]	[0.029]	[0.096]	[0.101]
$v_{i,t-2}$	0.000	-0.001	0.008	0.014	-0.099	-0.115
	[0.021]	[0.020]	[0.032]	[0.033]	[0.076]	[0.086]
$v_{i,t-3}$	0.006	0.007	-0.041	-0.046	-0.190**	-0.191**
	[0.019]	[0.019]	[0.034]	[0.032]	[0.074]	[0.084]
$v_{i,t-4}$	-0.01	-0.003	0.011	0.015	0.034	0.021
	[0.018]	[0.016]	[0.031]	[0.032]	[0.049]	[0.054]
$(Crisis_i \times v_i)_{t-1}$	-0.056	-0.046	-0.092	-0.105	0.093	-0.015
	[0.036]	[0.035]	[0.076]	[0.076]	[0.153]	[0.149]
$(Crisis_i \times v_i)_{t-2}$	-0.006	-0.013	0.000	-0.012	0.044	0.071
	[0.040]	[0.041]	[0.072]	[0.072]	[0.190]	[0.199]
$(Crisis_i \times v_i)_{t-3}$	-0.099**	-0.101**	-0.129	-0.11	-0.24	-0.264
	[0.040]	[0.045]	[0.101]	[0.102]	[0.198]	[0.221]
$(Crisis_i \times v_i)_{t-4}$	-0.031	-0.034	-0.015	-0.017	-0.077	-0.064
	[0.037]	[0.036]	[0.060]	[0.060]	[0.150]	[0.154]
$Crisis_{i,t-1}$	-0.758*	-0.452	-0.684	-0.553	-3.058**	-2.995*
	[0.446]	[0.442]	[0.669]	[0.686]	[1.450]	[1.677]
$Crisis_{i,t-2}$	0.443	0.491	0.459	0.502	0.899	1.207
	[0.454]	[0.436]	[0.676]	[0.753]	[1.872]	[2.116]
$Crisis_{i,t-3}$	0.218	0.147	0.417	0.366	1.980	1.972
	[0.381]	[0.374]	[0.466]	[0.514]	[1.516]	[1.592]
$Crisis_{i,t-4}$	0.053	0.033	0.125	0.165	0.347	0.559
	[0.324]	[0.315]	[0.347]	[0.351]	[1.241]	[1.237]
Population growth		0.081		0.222		0.288
		[0.168]		[0.216]		[0.647]
Openness		0.019***		0.019**		0.036***
		[0.006]		[0.007]		[0.013]
Total Observations	1943	1920	1924	1901	1838	1815
Number of countries	64	64	64	64	64	64
AR(1) test statistic	-4.54	-4.60	-3.69	-3.76	-3.70	-3.73
p-value	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) test statistic	-1.32	-1.21	-0.77	-0.57	-1.56	-1.54
p-value	0.19	0.23	0.44	0.57	0.12	0.12
Hansen Statistic	50.37	50.21	50.14	51.43	43.72	49.54
p-value	0.11	0.11	0.11	0.09	0.28	0.12

Note: Dynamic panel-data estimation (two-step Difference GMM). Robust standard errors in square brackets. *, **, *** statistically significant at 10%, 5% and 1% level, respectively.

Table 4: Dynamic Panel Estimation (Currency Crisis).

Set of explanatory variables:	GDP growth		Consumption growth		Investment growth	
	(1)	(2)	(1)	(2)	(1)	(2)
Lagged dependent variable	0.284***	0.298***	0.041	0.056	0.223***	0.223***
	[0.053]	[0.048]	[0.042]	[0.043]	[0.045]	[0.044]
$v_{i,t-1}$	0.057**	0.049*	0.101**	0.094**	0.225**	0.224**
	[0.029]	[0.028]	[0.039]	[0.038]	[0.114]	[0.109]
$v_{i,t-2}$	0.027	0.021	0.012	0.011	0.071	0.076
	[0.029]	[0.028]	[0.046]	[0.048]	[0.112]	[0.106]
$v_{i,t-3}$	-0.02	-0.019	0.006	0.015	-0.419***	-0.433***
	[0.030]	[0.031]	[0.039]	[0.038]	[0.121]	[0.124]
$v_{i,t-4}$	-0.008	-0.002	0.024	0.023	0.132	0.142
	[0.021]	[0.018]	[0.025]	[0.023]	[0.122]	[0.111]
$(Crisis_i \times v_i)_{t-1}$	-0.026	-0.021	0.03	0.03	-0.006	0.010
	[0.033]	[0.035]	[0.063]	[0.063]	[0.140]	[0.154]
$(Crisis_i \times v_i)_{t-2}$	-0.053*	-0.044	-0.007	-0.003	-0.256**	-0.279**
	[0.031]	[0.030]	[0.047]	[0.045]	[0.132]	[0.130]
$(Crisis_i \times v_i)_{t-3}$	-0.003	-0.001	-0.142**	-0.147**	0.326*	0.354*
	[0.038]	[0.039]	[0.057]	[0.060]	[0.192]	[0.185]
$(Crisis_i \times v_i)_{t-4}$	-0.007	-0.009	-0.044	-0.032	-0.254	-0.272*
	[0.028]	[0.025]	[0.052]	[0.049]	[0.173]	[0.157]
$Crisis_{i,t-1}$	-0.216	-0.092	-1.598***	-1.462***	-1.180	-1.123
	[0.317]	[0.305]	[0.397]	[0.391]	[1.086]	[1.159]
$Crisis_{i,t-2}$	0.45	0.474	0.462	0.524	2.760***	3.055***
	[0.308]	[0.296]	[0.346]	[0.364]	[0.789]	[0.926]
$Crisis_{i,t-3}$	-0.204	-0.181	0.968**	1.052**	-0.825	-0.695
	[0.311]	[0.302]	[0.426]	[0.433]	[0.986]	[1.026]
$Crisis_{i,t-4}$	-0.080	-0.106	-0.089	-0.106	1.580	1.745
	[0.181]	[0.172]	[0.338]	[0.328]	[1.335]	[1.314]
Population growth		0.088		0.240		0.203
		[0.157]		[0.220]		[0.643]
Openness		0.017***		0.019***		0.041***
		[0.005]		[0.007]		[0.014]
Total Observations	1938	1915	1919	1896	1833	1810
Number of countries	64	64	64	64	64	64
AR(1) test statistic	-4.49	-4.53	-3.78	-3.79	-3.82	-3.92
p-value	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) test statistic	-1.23	-1.14	-0.35	-0.16	-1.55	-1.51
p-value	0.22	0.25	0.73	0.88	0.12	0.13
Hansen Statistic	51.84	50.67	45.75	46.55	42.27	46.86
p-value	0.08	0.10	0.21	0.19	0.33	0.18

Note: Dynamic panel-data estimation (two-step Difference GMM). Robust standard errors in square brackets. *, **, *** statistically significant at 10%, 5% and 1% level, respectively.

Table 5: Dynamic Panel Estimation (Domestic Debt Crisis).

Set of explanatory variables:	GDP growth		Consumption growth		Investment growth	
	(1)	(2)	(1)	(2)	(1)	(2)
Lagged dependent variable	0.284***	0.305***	0.039	0.055	0.234***	0.230***
	[0.056]	[0.047]	[0.040]	[0.040]	[0.049]	[0.047]
$v_{i,t-1}$	0.061*	0.059*	0.156***	0.144***	0.227**	0.215**
	[0.033]	[0.033]	[0.032]	[0.033]	[0.101]	[0.100]
$v_{i,t-2}$	0.010	0.004	0.024	0.022	-0.052	-0.055
	[0.025]	[0.023]	[0.028]	[0.030]	[0.094]	[0.095]
$v_{i,t-3}$	-0.003	-0.004	-0.04	-0.034	-0.242***	-0.234***
	[0.017]	[0.015]	[0.043]	[0.042]	[0.066]	[0.066]
$v_{i,t-4}$	-0.01	-0.004	-0.012	-0.007	0.03	0.037
	[0.018]	[0.016]	[0.026]	[0.026]	[0.072]	[0.071]
$(Crisis_i \times v_i)_{t-1}$	-0.113**	-0.116**	-0.115	-0.111	0.056	0.063
	[0.047]	[0.047]	[0.081]	[0.078]	[0.225]	[0.228]
$(Crisis_i \times v_i)_{t-2}$	-0.089	-0.087	-0.038	-0.029	-0.121	-0.123
	[0.061]	[0.059]	[0.086]	[0.086]	[0.200]	[0.218]
$(Crisis_i \times v_i)_{t-3}$	-0.100	-0.090	-0.155	-0.155	-0.192	-0.205
	[0.071]	[0.069]	[0.101]	[0.107]	[0.249]	[0.278]
$(Crisis_i \times v_i)_{t-4}$	0.004	-0.006	0.039	0.035	-0.075	-0.089
	[0.028]	[0.027]	[0.027]	[0.027]	[0.076]	[0.074]
$Crisis_{i,t-1}$	-0.742	-0.594	-0.99	-0.725	-5.246	-4.259
	[1.164]	[1.101]	[0.759]	[0.818]	[3.672]	[3.520]
$Crisis_{i,t-2}$	1.278	1.321	1.699	1.314	7.401	7.001
	[1.091]	[1.063]	[1.220]	[1.308]	[4.508]	[4.493]
$Crisis_{i,t-3}$	-0.967	-1.159	-0.533	-0.460	1.339	1.404
	[1.126]	[1.070]	[1.216]	[1.165]	[2.380]	[2.235]
$Crisis_{i,t-4}$	0.162	0.141	0.967	1.212*	-2.581	-2.130
	[0.925]	[0.862]	[0.669]	[0.711]	[2.577]	[2.565]
Population growth		0.058		0.241		-0.003
		[0.164]		[0.227]		[0.545]
Openness		0.018***		0.018**		0.036***
		[0.005]		[0.007]		[0.012]
Total Observations	1943	1920	1924	1901	1838	1815
Number of countries	64	64	64	64	64	64
AR(1) test statistic	-4.48	-4.58	-3.80	-3.84	-3.68	-3.69
p-value	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) test statistic	-1.19	-1.04	-0.70	-0.56	-1.39	-1.39
p-value	0.24	0.30	0.48	0.58	0.17	0.17
Hansen Statistic	51.42	49.87	47.77	48.31	43.84	45.47
p-value	0.09	0.11	0.16	0.15	0.27	0.22

Note: Dynamic panel-data estimation (two-step Difference GMM). Robust standard errors in square brackets. *, **, *** statistically significant at 10%, 5% and 1% level, respectively.

Table 6: Dynamic Panel Estimation (External Debt Crisis).

Set of explanatory variables:	GDP growth		Consumption growth		Investment growth	
	(1)	(2)	(1)	(2)	(1)	(2)
Lagged dependent variable	0.295***	0.305***	0.048	0.062	0.232***	0.224***
	[0.055]	[0.048]	[0.047]	[0.047]	[0.046]	[0.048]
$v_{i,t-1}$	0.04	0.036	0.100**	0.090**	0.2	0.201
	[0.034]	[0.033]	[0.040]	[0.038]	[0.147]	[0.151]
$v_{i,t-2}$	0.001	-0.007	0.005	0.014	-0.09	-0.113
	[0.036]	[0.034]	[0.055]	[0.058]	[0.156]	[0.177]
$v_{i,t-3}$	0.003	0.008	-0.013	-0.005	-0.188**	-0.170**
	[0.023]	[0.023]	[0.041]	[0.039]	[0.077]	[0.070]
$v_{i,t-4}$	-0.015	-0.006	0.008	0.011	0.053	0.074
	[0.017]	[0.014]	[0.025]	[0.023]	[0.093]	[0.092]
$(Crisis_i \times v_i)_{t-1}$	-0.002	-0.002	0.057	0.056	0.074	0.065
	[0.040]	[0.039]	[0.079]	[0.075]	[0.239]	[0.257]
$(Crisis_i \times v_i)_{t-2}$	0.003	0.013	0.001	-0.016	-0.017	0.015
	[0.043]	[0.042]	[0.075]	[0.080]	[0.301]	[0.337]
$(Crisis_i \times v_i)_{t-3}$	-0.058*	-0.064**	-0.149*	-0.156**	-0.116	-0.15
	[0.031]	[0.032]	[0.080]	[0.080]	[0.240]	[0.224]
$(Crisis_i \times v_i)_{t-4}$	0.014	-0.001	-0.017	-0.015	-0.109	-0.14
	[0.023]	[0.021]	[0.037]	[0.036]	[0.213]	[0.209]
$Crisis_{i,t-1}$	-0.574	-0.358	-1.631**	-1.312*	-0.049	0.37
	[0.537]	[0.587]	[0.695]	[0.759]	[1.787]	[1.817]
$Crisis_{i,t-2}$	0.465	0.424	0.906	0.704	2.76	3.119
	[0.630]	[0.679]	[0.902]	[0.999]	[1.943]	[2.010]
$Crisis_{i,t-3}$	-0.165	-0.174	0.06	0.096	-1.262	-1.815
	[0.455]	[0.439]	[0.668]	[0.636]	[1.749]	[1.818]
$Crisis_{i,t-4}$	-0.012	0.057	0.555	0.523	0.318	0.696
	[0.379]	[0.358]	[0.712]	[0.681]	[2.007]	[2.198]
Population growth		0.099		0.245		0.139
		[0.160]		[0.224]		[0.700]
Openness		0.017***		0.018**		0.044***
		[0.005]		[0.007]		[0.015]
Total Observations	1943	1920	1924	1901	1838	1815
Number of countries	64	64	64	64	64	64
AR(1) test statistic	-4.51	-4.55	-3.78	-3.81	-3.70	-3.66
p-value	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) test statistic	-1.28	-1.19	-0.48	-0.33	-1.54	-1.53
p-value	0.20	0.24	0.63	0.74	0.13	0.13
Hansen Statistic	50.32	50.16	49.75	48.62	42.03	45.50
p-value	0.11	0.11	0.12	0.14	0.34	0.22

Note: Dynamic panel-data estimation (two-step Difference GMM). Robust standard errors in square brackets. *, **, *** statistically significant at 10%, 5% and 1% level, respectively.

Table 7: Dynamic Panel Estimation (Inflation Crisis).

Set of explanatory variables:	GDP growth		Consumption growth		Investment growth	
	(1)	(2)	(1)	(2)	(1)	(2)
Lagged dependent variable	0.289***	0.304***	0.034	0.054	0.233***	0.235***
	[0.055]	[0.049]	[0.045]	[0.049]	[0.048]	[0.045]
$v_{i,t-1}$	0.088***	0.073**	0.113	0.094	0.206	0.246
	[0.029]	[0.028]	[0.070]	[0.079]	[0.187]	[0.180]
$v_{i,t-2}$	-0.004	-0.003	0.078	0.079	0.142	0.106
	[0.036]	[0.037]	[0.072]	[0.078]	[0.169]	[0.166]
$v_{i,t-3}$	0.004	0.011	-0.011	-0.004	-0.251*	-0.269**
	[0.046]	[0.046]	[0.060]	[0.058]	[0.134]	[0.136]
$v_{i,t-4}$	-0.025	-0.019	0.027	0.021	-0.083	-0.083
	[0.020]	[0.017]	[0.034]	[0.030]	[0.068]	[0.062]
$(Crisis_i \times v_i)_{t-1}$	-0.082*	-0.062	0.004	0.019	0.072	0.028
	[0.049]	[0.055]	[0.110]	[0.135]	[0.248]	[0.240]
$(Crisis_i \times v_i)_{t-2}$	0.006	0.004	-0.124*	-0.120*	-0.347*	-0.32
	[0.058]	[0.058]	[0.070]	[0.073]	[0.199]	[0.199]
$(Crisis_i \times v_i)_{t-3}$	-0.048	-0.051	-0.104	-0.110	-0.017	0.006
	[0.060]	[0.061]	[0.072]	[0.075]	[0.178]	[0.179]
$(Crisis_i \times v_i)_{t-4}$	0.029	0.025	-0.058	-0.039	0.186*	0.183*
	[0.025]	[0.023]	[0.048]	[0.046]	[0.104]	[0.104]
$Crisis_{i,t-1}$	0.051	-0.014	-0.930*	-0.961*	1.623	2.064
	[0.445]	[0.438]	[0.497]	[0.514]	[1.523]	[1.319]
$Crisis_{i,t-2}$	0.445	0.475	1.582***	1.724***	2.051	2.119
	[0.454]	[0.448]	[0.582]	[0.601]	[1.863]	[1.733]
$Crisis_{i,t-3}$	-0.488	-0.384	-0.371	-0.371	-0.596	-0.940
	[0.421]	[0.421]	[0.656]	[0.650]	[1.650]	[1.540]
$Crisis_{i,t-4}$	0.091	0.169	-0.406	-0.293	0.063	0.644
	[0.325]	[0.297]	[0.405]	[0.426]	[1.936]	[1.794]
Population growth		0.121		0.176		0.002
		[0.164]		[0.223]		[0.597]
Openness		0.016***		0.020**		0.044***
		[0.005]		[0.008]		[0.014]
Total Observations	1943	1920	1924	1901	1838	1815
Number of countries	64	64	64	64	64	64
AR(1) test statistic	-4.48	-4.53	-3.68	-3.69	-3.67	-3.73
p-value	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) test statistic	-1.29	-1.19	-0.61	-0.39	-1.44	-1.40
p-value	0.20	0.24	0.54	0.69	0.15	0.16
Hansen Statistic	50.35	49.65	51.03	52.59	44.52	42.84
p-value	0.11	0.12	0.09	0.07	0.25	0.31

Note: Dynamic panel-data estimation (two-step Difference GMM). Robust standard errors in square brackets. *, **, *** statistically significant at 10%, 5% and 1% level, respectively.

Table 8: Dynamic Panel Estimation (Stock Market Crashes).

Set of explanatory variables:	GDP growth		Consumption growth		Investment growth	
	(1)	(2)	(1)	(2)	(1)	(2)
Lagged dependent variable	0.297***	0.280***	0.026	0.056	0.299***	0.289***
	[0.061]	[0.062]	[0.055]	[0.068]	[0.051]	[0.050]
$v_{i,t-1}$	0.046	0.058	0.160***	0.140***	0.072	0.058
	[0.040]	[0.042]	[0.035]	[0.036]	[0.083]	[0.111]
$v_{i,t-2}$	0.041	0.031	0.037	0.04	-0.032	0.014
	[0.033]	[0.031]	[0.038]	[0.045]	[0.086]	[0.097]
$v_{i,t-3}$	-0.035	-0.046	-0.076**	-0.076**	-0.148	-0.169
	[0.030]	[0.031]	[0.038]	[0.034]	[0.127]	[0.120]
$v_{i,t-4}$	-0.028*	-0.02	0.013	0.016	-0.196*	-0.144
	[0.016]	[0.017]	[0.032]	[0.034]	[0.109]	[0.098]
$(Crisis_i \times v_i)_{t-1}$	-0.046	-0.043	-0.085	-0.087	0.026	-0.001
	[0.041]	[0.040]	[0.065]	[0.068]	[0.127]	[0.253]
$(Crisis_i \times v_i)_{t-2}$	-0.058	-0.039	-0.048	-0.071	0.021	-0.169
	[0.050]	[0.056]	[0.068]	[0.083]	[0.150]	[0.300]
$(Crisis_i \times v_i)_{t-3}$	0.077**	0.102*	0.170**	0.175**	-0.108	-0.138
	[0.037]	[0.053]	[0.078]	[0.079]	[0.263]	[0.285]
$(Crisis_i \times v_i)_{t-4}$	0.051	0.05	0.03	0.031	0.669**	0.596**
	[0.037]	[0.039]	[0.048]	[0.075]	[0.320]	[0.293]
$Crisis_{i,t-1}$	-1.729***	-1.766***	-1.575***	-1.550***	-5.860***	-5.617**
	[0.393]	[0.414]	[0.463]	[0.487]	[1.044]	[2.670]
$Crisis_{i,t-2}$	1.330**	1.207*	0.08	0.588	1.421	2.867
	[0.613]	[0.674]	[0.670]	[0.990]	[1.242]	[2.964]
$Crisis_{i,t-3}$	-0.660**	-1.053*	-1.177*	-1.598**	0.011	0.58
	[0.248]	[0.557]	[0.602]	[0.677]	[2.669]	[3.198]
$Crisis_{i,t-4}$	0.162	0.177	-0.049	-0.048	-2.507	-2.609*
	[0.226]	[0.226]	[0.290]	[0.782]	[2.705]	[1.457]
Population growth		0.374		0.447		0.748
		[0.345]		[0.422]		[0.986]
Openness		0.012*		0.014*		0.037**
		[0.006]		[0.008]		[0.016]
Total Observations	1464	1441	1453	1430	1362	1339
Number of countries	48	48	48	48	48	48
AR(1) test statistic	-3.97	-3.81	-3.08	-3.02	-3.03	-2.93
p-value	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) test statistic	-0.15	-0.05	0.18	0.45	0.00	0.01
p-value	0.88	0.96	0.86	0.65	1.00	0.99
Hansen Statistic	36.91	37.65	39.99	37.26	39.99	38.32
p-value	0.57	0.53	0.43	0.55	0.43	0.50

Note: Dynamic panel-data estimation (two-step Difference GMM). Robust standard errors in square brackets. *, **, *** statistically significant at 10%, 5% and 1% level, respectively.

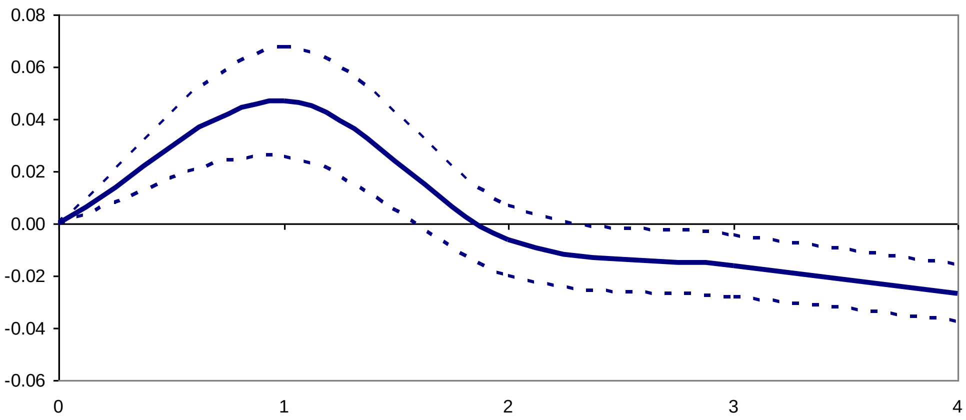
Table 9: The Size of Crowding-In and Crowding-Out Effects.

	GDP growth		Consumption growth		Investment growth	
Type of crisis	Crowd-in	Crowd-out	Crowd-in	Crowd-out	Crowd-in	Crowd-out
Bank Crises	0.012	-0.097	0.050	-0.156	0.242	-0.452
Currency Crises	0.028	-0.024	0.124	-0.131	0.235	-0.156
Domestic Debt Crises	0.000	-0.124	0.032	-0.189	0.278	-0.466
Ext. Debt Crises	0.034	-0.051	0.146	-0.160	0.266	-0.328
Inflation Crises	0.011	-0.039	0.113	-0.115	0.274	-0.298
Stock Market Crashes	0.055	-0.003	0.097	-0.028	0.352	-0.346
OECD	0.090	0.000	0.172	0.000	0.190	-0.260
Not-OECD	0.104	-0.027	0.054	-0.030	0.135	-0.146
Baseline	**0.047**	**-0.027**	**0.061**	**-0.035**	**0.149**	**-0.123**

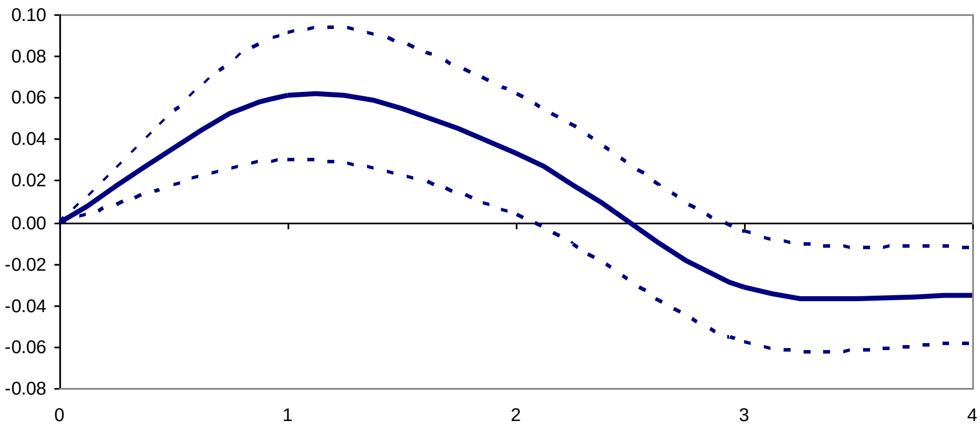
List of Figures

Figure 1: Impulse-Response Functions (Baseline model).

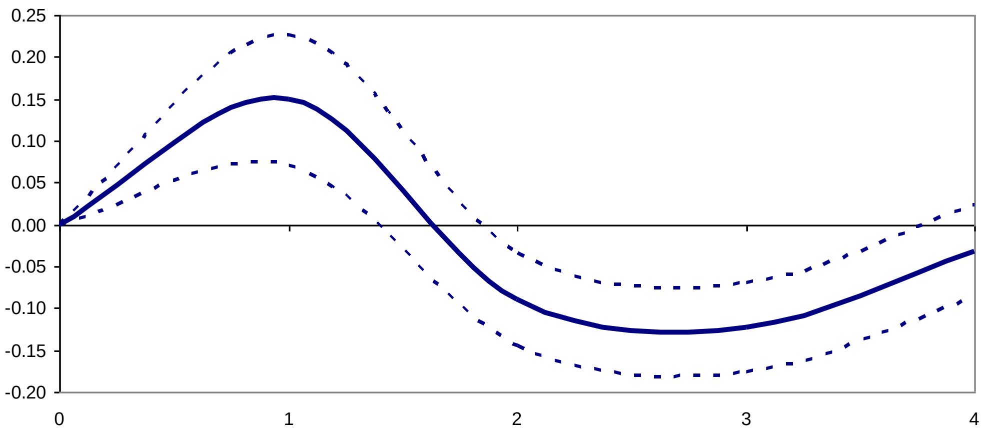
Response of GDP growth



Response of Consumption growth

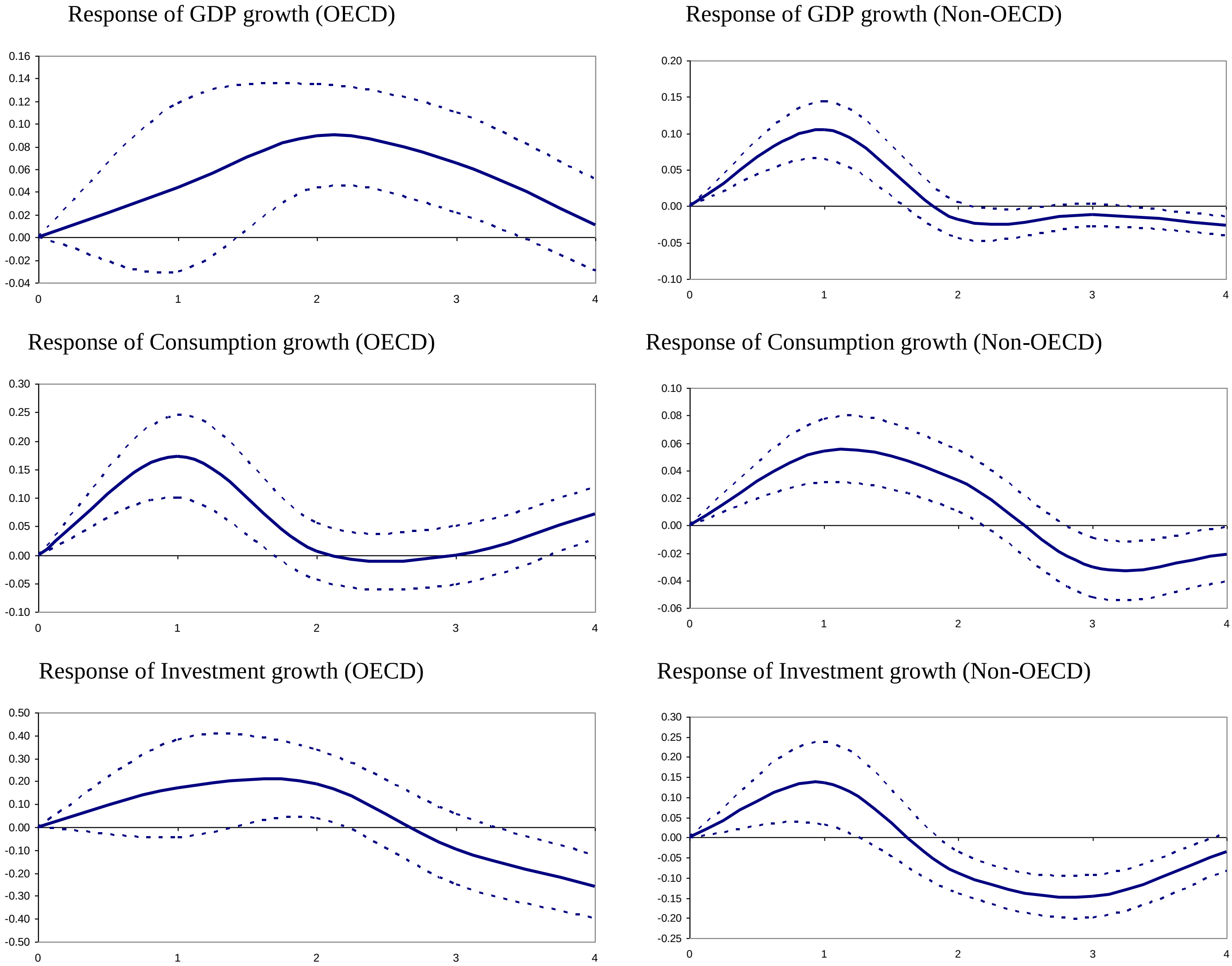


Response of Investment growth



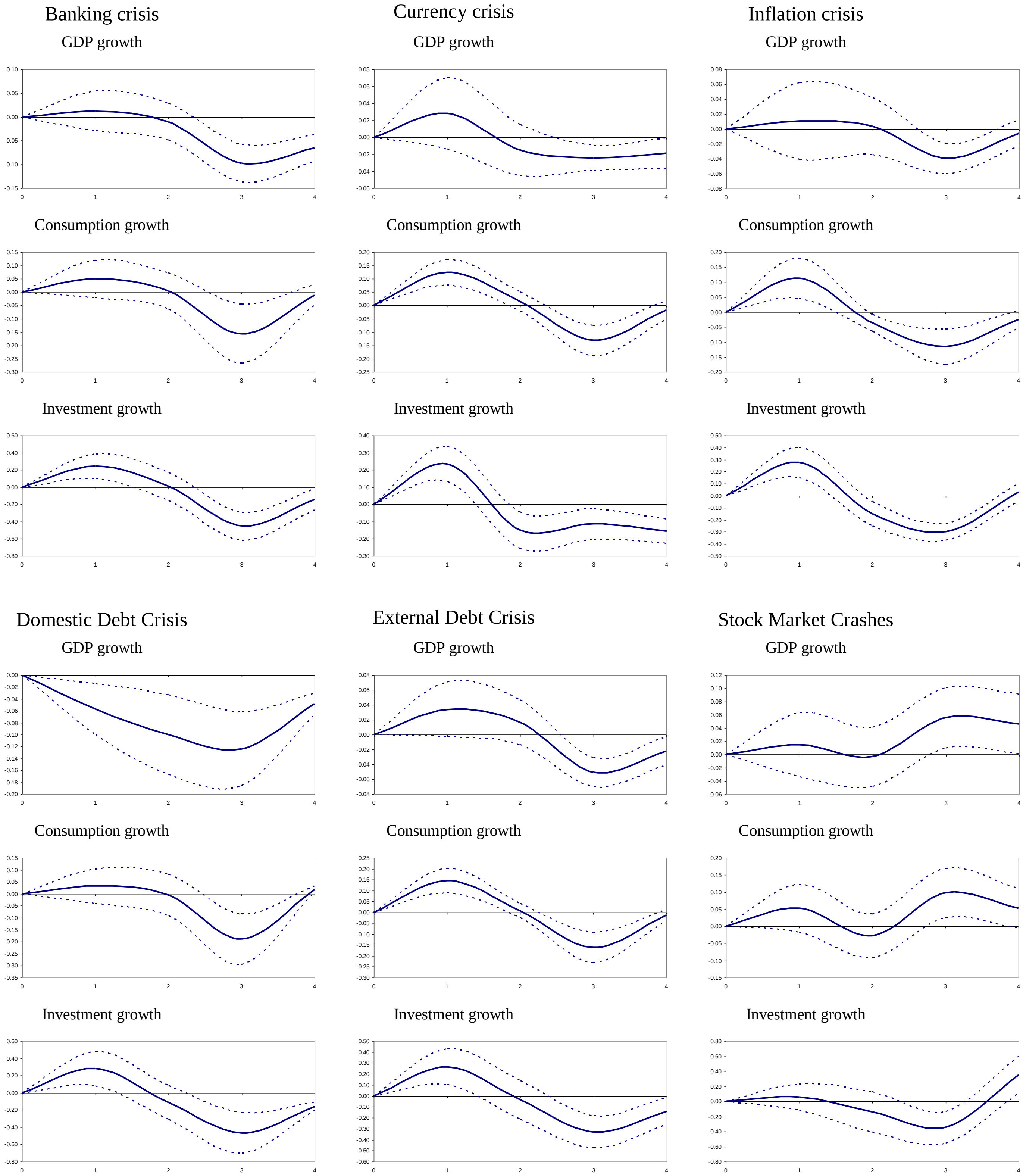
Note: Confidence bands at 68% level of significance. Blue line refers to the model with additional control variables.

Figure 2: Impulse-Response Functions (Baseline model, Subsamples).



Note: Confidence bands at 68% level of significance.

Figure 3: Impulse-Response Functions (Crises).



Note: Confidence bands at 68% level of significance.

Most Recent Working Paper

NIPE WP 31/2011	Luca Agnello, Davide Furceri e **Ricardo M. Sousa**, “Fiscal Policy Discretion, Private Spending, and Crisis Episodes ? ”, 2011
NIPE WP 30/2011	Agnello, L e **Ricardo M. Sousa**, “How do Banking Crises Impact on Income Inequality? ”, 2011
NIPE WP 29/2011	**Alexandre, Fernando, Luís Aguiar-Conraria,** Pedro Bação e **Miguel Portela**, “A Poupança em Portugal”, 2011
NIPE WP 28/2011	**Alexandre, Fernando** e Carmen Mendes, “Growth, Consumption and Political Stability in China”, 2011
NIPE WP 27/2011	**Baleiras, Rui Nuno**, “Collective Efficiency Strategies: A Regional Development Policy Contribution for Competitiveness Enhancement”, 2011
NIPE WP 26/2011	Brekke, Kurt R., Rosella Levaggi, Luigi Siciliani e **Odd Rune Straume,** “Patient Mobility, Health Care Quality and Welfare”, 2011
NIPE WP 25/2011	**Aguiar - Conraria, Luís,** Pedro C. Magalhães **e Maria Joana Soares** “Cycles in Politics: Wavelet Analysis of Political Time-Series”, 2011
NIPE WP 24/2011	Agnello,Luca, **Vitor Castro e Ricardo M. Sousa** “How Does Fiscal Policy React to Wealth Composition and Asset Prices? ”, 2011
NIPE WP 23/2011	Silva, Hélia**, Linda Veiga e Miguel Portela** “Strategic Interaction in Local Fiscal Policy: Evidence from Portuguese Municipalities”, 2011
NIPE WP 22/2011	**Sousa, Ricardo M.**, “Wealth, Labour Income, Stock Returns and Government Bond Yields, and Financial Stress in the Euro Area”, 2011
NIPE WP 21/2011	Sousa, João e **Ricardo M. Sousa**, “Asset Returns Under Model Uncertainty: Evidence from the euro area, the U.K. and the U.S. ”, 2011
NIPE WP 20/2011	Sila, U e **Ricardo M. Sousa**, “Do Windfall Gains Affect Labour Supply? Evidence from the European Household Panel ”, 2011
NIPE WP 19/2011	Jawadi, F., Sushanta K. Mallick e **Ricardo M. Sousa**, “Fiscal Policy in the BRICs”, 2011
NIPE WP 18/2011	Jawadi, F., Sushanta K. Mallick e **Ricardo M. Sousa**, “Monetary Policy Rules in the BRICS: How Important is Nonlinearity?”, 2011
NIPE WP 17/2011	Magalhães, Pedro C., **Luís Aguiar-Conraria** e Michael S. Lewis-Beck, “Forecasting Spanish Elections”, 2011
NIPE WP 16/2011	**Aguiar-Conraria, Luís e Maria Joana Soares,** “The Continuous Wavelet Transform: A Primer”, 2011
NIPE WP 15/2011	**Amado, Cristina** e Timo Teräsvirta, “Conditional Correlation Models of Autoregressive Conditional Heteroskedasticity with Nonstationary GARCH Equations”, 2011
NIPE WP 14/2011	Siciliani, Luigi, **Odd Rune Straume** e Roberto Cellini, “Quality competition with motivated providers and sluggish demand”, 2011
NIPE WP 13/2011	**Castro, Vítor**, “The Portuguese Stock Market Cycle: Chronology and Duration Dependence”, 2011
NIPE WP 12/2011	Mallick, Sushanta K. e **Ricardo M. Sousa** “The real effects of financial stress in the Euro zone”, 2011
NIPE WP 11/2011	**Castro, Vítor,** "The Portuguese Business Cycle: Chronology and Duration ", 2011
NIPE WP 10/2011	**Aguiar-Conraria, Luís, e Yi Wen,** "OPEC´s Oil Exporting Strategy and Macroeconomic (In)Stability", 2011
NIPE WP 09/2011	**Afonso, António e Ricardo M. Sousa,** “Consumption, Wealth, Stock and Government Bond Returns: International Evidence”, 2011
NIPE WP 08/2011	**Esteves, Rosa Branca e Joana Resende,** “Competitive Targeted Advertising with Price Discrimination”, 2011
NIPE WP 07/2011	**Bastos, Paulo, Natália P. Monteiro e Odd Rune Straume** “The effect of private versus public ownership on labour earnings”, 2011
NIPE WP 06/2011	**Castro, Vítor e Rodrigo Martins,** "Mayors’ Reelection Choice and the Economy: Evidence from Portugal", 2011

NIPE WP 05/2011	**Brekke, Kurt R. Luigi Siciliani e Odd Rune Straume,** "Quality competition with profit constraints: Do non-profit firms provide higher quality than for-profit firms?", 2011
NIPE WP 04/2011	**Baleiras, Rui Nuno** "Collective efficiency strategies: a policy instrument for the competitiveness of low-density territories", 2011
NIPE WP 03/2011	**Machado, C. Sofia, Miguel Portela** "Age and opportunities for promotion", 2011
NIPE WP 02/2011	**Machado, C. Sofia, Miguel Portela** " Hours of work and retirement behavior", 2011
NIPE WP 01/2011	**Amado, Cristina, Timo Teräsvirta** "Modelling Volatility by Variance Decomposition", 2011