How do OECD donor countries distribute foreign aid among developing countries during their fiscal episodes?

Sèna Kimm Gnangnon

▶ **To cite this version:**

Sèna Kimm Gnangnon. How do OECD donor countries distribute foreign aid among developing countries during their fiscal episodes?. 2013. halshs-00786009

CENTRE D'ETUDES
ET DE RECHERCHES
SUR LE DEVELOPPEMENT
INTERNATIONAL

SERIE ETUDES ET DOCUMENTS DU CERDI

How do OECD donor countries distribute foreign aid among developing countries during their fiscal episodes?

Kimm GNANGNON

Etudes et Documents n° 01

January 2013

1

The author

Kimm Gnangnon
PhD Student
Clermont University, University of Auvergne, CNRS, UMR 6587, CERDI, F-63009 Clermont Fd.

Email: kgnangnon@yahoo.fr

Abstract

In this paper, we investigate the effects of fiscal episodes in Organization for Economic Cooperation and Development (OECD) donor countries on the distribution of their aid expenditures towards developing countries. We use descriptive statistics provided by Alesina and Ardagna (2010) on fiscal episodes and regression models to perform this analysis. The results show evidence that the "aid expenditures variables" respond variably to the episodes of large changes in fiscal policy in OECD donor countries. In addition, European Union and Non-European Union countries behave differently in terms of aid expenditures distribution during their fiscal episodes.

JEL Classification: F35, E62, H62.

Keywords: foreign aid, fiscal consolidation, fiscal stimuli, OECD Countries.

1. INTRODUCTION

In response to the largest post-war recession, OECD governments have run up record peacetime budget deficits. The recent world financial and economic crisis together with the more recent European debt crisis have added to peacetime budget deficits recorded by OECD governments and led to a substantial deterioration of their public finances. Today, as measures to make their public finances sustainable, many of them are being forced to adopt fiscal consolidation measures.

There is a substantial literature that shows that "fiscal adjustments which rely primarily on spending cuts on transfers and the government wage bill have a better chance of being successful and are expansionary. By contrast, fiscal adjustments which rely primarily on tax increases and cuts in public investment tend not to last and are contractionary" (see, for instance, Alesina and Perotti (1995, 1997a, 1998), McDermott and Wescott (1996), IMF (1996), OECD (1997) and Perotti (1997), Alesina and Ardagna (1998), Ardagna (2007), Alesina and Ardagna (2010), IMF (2010)). However, Heylen and Everaert (2000) empirically contest the findings according to which current expenditure reductions are the best policy to achieve a successful fiscal consolidation.

Regarding fiscal expansions, Alesina and Perotti (1995a) find evidence that fiscal expansions typically occur through increases in expenditures. More recently, Alesina and Ardagna (2010) also show evidence that fiscal stimuli based on tax cuts are more likely to increase growth than those based upon spending increases.

In view of all these different empirical results, one can question whether fiscal episodes in donor governments do not affect aid supply. Indeed, it is likely that during fiscal consolidation episodes where government expenditure will likely be curtailed, development aid supplied (that constitute a category of government expenditure) the traditional OECD DAC (Development Assistance Committee) countries will also be reduced. Similarly, we can also expect donor governments to increase aid expenditure during fiscal stimuli years as the other categories of government spending rise. At the same time, these OECD DAC countries have committed either individually or collectively (through international meetings) to achieve a target level of aid flows granted to developing countries, commitments that were renewed at the Gleneagles summit. Evidence has also been shown in the empirical literature based on OECD Development Statistics that few advanced countries (e.g. the Netherlands, Norway, Sweden and Denmark) are enforcing the international ODA target of 0.7% of GNI.

Why such poor results in terms of aid supplies? One can look for political or geostrategic reasons. One can also look for economic reasons, that is, macroeconomic reasons and more particularly fiscal reasons. For example, the OECD communication (14th April 2010) stipulates that Africa will not likely receive more than the USD 11 billion of the USD 25 billion promised at the Gleneagles summit, due to the adjustment measures adopted by the member countries in response to the recent financial and economic crisis. Moreover, recent figures[1] regarding the net official development assistance (ODA) disbursements confirm its decline: the overall net ODA of OECD DAC members (in per cent of their gross national income –GNI-) dropped in real terms by 2.7% in 2011, compared to 2010, situation reflecting fiscal constraints in several DAC countries which have affected their ODA budgets. In addition, Bilateral aid to sub-Saharan Africa also experiences a fall of -0.9% in real terms compared to 2010, whereas aid to the African continent increased by +0.9%, as donors provided more aid to North Africa after the revolutions in the region; the net bilateral ODA flows disbursed towards the group of Least Developed Countries (LDCs) also declines severely by 8.9% in 2011, compared to 2010.

This empirical literature on development aid issues has also already established that recipient-country characteristics such as income level, population, and political system (see e.g. Alesina and Dollar, 2000; Dollar and Levin, 2006) affect aid inflows. However, the part of the literature that deals with the donor side's determinants of aid, especially the part that focuses on the fiscal variables, is brief and inconclusive. For example, Faini (2006) finds evidence that higher budget deficit and higher stock of public debt reduce aid, whereas Round and Odedokun (2004) and Boschini and Olofsgard (2007) find no significant relationship between deficits and aid provision. Moreover, none of these studies explore the effects that the fiscal episodes in donor countries may have on aid provision. In this paper, we focus on macroeconomic determinants of aid generosity (while controlling for potential other political and institutional variables) to investigate how donors behave in terms of (real) aid supplies during the fiscal episodes. In other words, we explore the long-run average (LRA)

---

[1] See in the OECD Website:
http://www.oecd.org/newsroom/developmentaidtodevelopingcountriesfallsbecauseofglobalrecession.htm

effects of fiscal consolidation and stimuli episodes on OECD donor countries' aid supplies, irrespective of their effect on per capita income and other economic and political variables. We follow the literature on fiscal episodes and use descriptive statistics and regression models to perform this analysis.

The paper is structured as follows: in the next section (II), we provide a literature survey on the topic. We then explain how the fiscal episodes in OECD countries are determined (III). In section IV, we present our empirical model and discuss the econometric methodology. Section V presents empirical results and the last section (VI) concludes.

2. LITERATURE REVIEW

Several controversial studies have been conducted on the supply of foreign aid, with most of them relying on how recipients' characteristics affect aid delivery. However, limited studies have dealt with the supply side determinants of aid flows from the donor's perspective (i.e., the determinants of "aid effort" or "aid generosity"). For example, the focus of these studies on how macroeconomic variables (and especially fiscal policy ones) can theoretically and empirically affect aid generosity remains scarce. Beenstock (1980), Mosley (1985), Faini (2006), and more recently Jones (2011) have been the few authors who explore both theoretically and empirically the determinants of aid supplies. While controlling for other economic and political determinants of aid supply, Beenstock (1980) shows evidence that aid flows are negatively and significantly affected by the net budget surplus. Mosley (1985) concludes among other variables a positive and significant effect of the central government budget deficit on aid flows for Netherlands and United Kingdom, whereas the effect is not statistically significant for the other countries (Canada, France, West Germany, Japan, Norway, Sweden, USA). Faini (2006) concludes on a sample of 15 donor countries over the period 1980–2004 that an increase in the budget deficit or in the stock of debt leads to a severe decline of development assistance. Jones (2011) examines the aid expenditures response to banking crises in donor countries and observes among others that bilateral aid supplies[2] are positively driven in both the long and short run by government expenditures (as a percentage of GDP).

---

[2] Total bilateral aid is here the net bilateral aid disbursement minus debt relief (which excludes disbursements to multilateral organizations but includes support to NGOs and international private organizations) over the period 1960–2009.

Besides these results based on theoretical models, several other empirical studies have been conducted on this topic. These studies encompass three main strands: the first one comprise studies that do not find any significant effect of fiscal variables on aid effort (Round and Odedokun 2004 and Boschini and Olofsgard, 2007 for fiscal balance variable; and Mendoza et al. 2009 for tax revenue variable); the second includes studies that conclude for a positive effect of fiscal variables on aid effort (Mold et al. 2010 for fiscal balance variable and Chong and Gradstein 2002 for tax revenue variable). The last strand deals with the studies that empirically show that the budget surplus is achieved by cutting aid along with many other spending categories (Bertoli et al. 2008; Dang et al. 2010). In addition, a recent study (Fuchs et al., 2012) provides a comprehensive review of the existing literature on donors' aid budgets and examines the variables that determine robustly aid effort (measured by the Overseas Development Assistance (ODA) as a share of gross national income) of the 22 OECD DAC members. This study is conducted over the period 1976-2008 and tests several hypotheses concerning international, domestic politics and macroeconomic determinants of aid effort as well as the potential substitute and complements of ODA. The authors observe among variables capturing the overall budget constraints and macroeconomic conditions that, only the debt burden appears to be negatively and significantly associated with aid generosity of OECD countries. Overall, we can infer from this empirical literature that "the fiscal determinants of aid supply contradict one another sufficiently so that there is no trenchant evidence on the relationship between fiscal policy and aid flows." Our purpose in the following sections is to understand how fiscal variables, especially fiscal episodes, namely fiscal consolidation and fiscal stimuli episodes in donor countries, affect aid expenditures distribution among developing countries. The next section will consider how these fiscal episodes in OECD countries are determined.

3. THE DETERMINATION OF FISCAL EPISODES IN OECD COUNTRIES

The choice of the approach to measure the fiscal episodes is a critical point when assessing effects on aid supplies. The empirical literature provides several definitions for timing fiscal contractions and stimuli, with most of them relying on the structural budget balance concept, the balance that results from intentional actions of policymakers. Fiscal episodes (consolidations and stimuli) result from the attempts of the governments to change the budgetary position of the government: fiscal consolidations or stabilizations aim at adopting

discretionary fiscal policies that cut budget deficits while fiscal stimuli consist of discretionary fiscal policies that increase budget deficits. To identify fiscal consolidation episodes, we need to compute a measure of fiscal impulse. The fiscal impulse is the discretionary change in budgetary position and can be measured as the difference between the actual budgetary position and what would prevail under a benchmark cyclical situation (Alesina and Perotti, 1995a). In this paper, we follow (Alesina and Perotti, 1995a), Ardagna and Alesina (2010) for identifying fiscal episodes. The latter use Blanchard's (1993) approach[3] to compute the cyclically adjusted primary balance.

Once calculating the fiscal impulse measure, we need a rule to identify the fiscal episodes (fiscal consolidations and fiscal stimuli periods). The criteria used in the existing literature to identify these episodes differ slightly from paper to paper. In this paper, we apply the original Alesina and Perotti (1995) definitions, re-employed recently in Ardagna and Alesina (2010) and also widely used in practice. According to those definitions:

- *"A period of fiscal adjustment is a year in which the cyclically adjusted primary balance improves by at least 1.5 percent of GDP."*
- *"A period of fiscal stimulus is a year in which the cyclically adjusted primary balance deteriorates by at least 1.5 percent of GDP."*

Accordingly, we use the episodes of fiscal adjustments and stimuli identified by Ardagna and Alesina (2010) to examine their effects on aid efforts: the authors focus on a sample of 21 OECD countries with data spanning 1970–2007. The countries included in their sample are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States. However, in our database, we exclude "Greece and Switzerland" because these countries have significantly short panels, though our results do not change if we include them.

Relying on large changes in fiscal policy stance, especially on the reductions and increases of budget deficits, Alesina and Ardagna (2010) use the Blanchard's (1993) indicator of fiscal impulse (changes in the cyclically adjusted primary balance) to identify the fiscal episodes.

---

[3] Note that in the empirical literature of fiscal episodes, there are three main techniques to compute the cyclically adjusted primary balance: the OECD technique, the IMF technique and the Blanchard technique.

Overall, they identify 107 periods of fiscal adjustments; 65 last only for one period, while the rest are multiperiod adjustments and 91 periods of fiscal stimuli with 52 lasting 1 year; the remaining are multiperiods. Appendix 3 list the episodes (years) of fiscal consolidation and fiscal stimuli identified by Alesina and Ardagna (2010).

4. ECONOMETRIC SPECIFICATION

4.1 The model

The baseline model estimated is the following:

$$A_{it} = \alpha_1 Numbertight + \alpha_2 Numbertightsq + \alpha_3 Numberstimuli + \alpha_4 Numberstimulisq$$
$$+ \alpha_5 Govnetlend + \alpha_6 Pubdebt + \alpha_7 Outputgap + \mu_i + \eta_t + \varepsilon_{it} \tag{1}$$

where i denotes the countries (i = 1,....., 19) and t denotes years (t = 1970, ..., 2007), and the dependent variable $A_{i,t} = (Aid/GDP)_{i,t}$ denotes the "aid variable" from the country i in year t.

Within this framework, we are naturally confronted with the choice of the adequate "aid variable" to perform our analysis: should we consider aid on a commitment or net disbursement basis? We follow Roodman (2007) and choose to not use aid on a commitment basis because "aid commitments would reward donors for systematically over-promising aid as well as underestimating the absorptive capacity of aid recipients" (see also Bertoli et al., 2008). Therefore, we think in terms of "disbursements" and consider the variable "net aid disbursements". The latter can be the total net aid (bilateral and multilateral) disbursements as a percentage of GDP when debt forgiveness is subtracted out, as well as this variable broken down by channel (multilateral versus bilateral) and by recipient development income classification (the OECD classification)): bilateral aid, multilateral aid[4], aid to LDCs, aid to other LICs, aid to LMICs and aid to UMICs. Note that we also include as one of our "aid dependent variables" the Aid (net of debt forgiveness) disbursed to Africa, given the different commitments of OECD DAC countries to increase substantially their aid supply to this region in order to help it achieve by 2015 the Millennium Development Goals (MDGs). The definitions and sources of the regressors are detailed in the Appendices 1 and 2. μ_i are donor fixed effects that are incorporated in the model to capture the heterogeneity among countries

---

[4] The Multilateral Aid is naturally not net of debt forgiveness.

as well as the likely importance of unobservables correlated with the error term in determining aid flows. η_t are year dummies and are included in all specifications to account for common shocks to aid volume in any given year.

The disturbance $\varepsilon_{i,t}$ is assumed to be identically and independently distributed $(0, \sigma_\varepsilon^2)$, that is, assumed not correlated with the explanatory variables of the model and the normality of which is not required (Baltagi, 2002).

The choice to subtract the debt forgiveness from the net ODA disbursements, in percent of GDP is dictated by several reasons. Indeed, several definitions of aid exist in the empirical literature: the aid commitments, the gross aid disbursements, the net aid disbursements, the net aid disbursements minus debt forgiveness and the Net Aid Transfers of Roodman (2009). In this study, our choice is dictated by the fact that the debt cancellation does not give rise to an actual disbursement of funds. Moreover, debt cancellation may even imply a double-counting of aid if the cancelled debt was granted on a concessional basis. As previously highlighted, we also break down for further analysis the net aid disbursement net of debt forgiveness by channel (multilateral versus Bilateral) and by recipient development income classification.

For robustness check of our results, we also use a set of time-varying and non-varying control variables derived from the empirical literature that are included once in the baseline model: the degree of trade openness; a variable capturing the ideological orientation of the government; the quality of bureaucracy; the level of population; the real effective exchange rate; banking crises; the unemployment rate; the inflation rate, the cold war, the welfare institutions and the voting similarity index in United Nations General Assembly (UNGA). As we note further, the coefficients of our variables in the baseline model are not significantly affected by the inclusion of these control variables (for robustness check). These results can be obtained upon request.

Should our supply equation of aid flows have a dynamic specification?

Wildavsky (1964) points out that current year's spending in any public agency is predominantly influenced by the budget of the previous year. Mosley (1984) reinforces this argument by stressing that it is particularly true for aid agencies, since aid projects often run over several years, with financial flows being committed already in the first year.

To explore statistically this likely dynamic specification, we follow the procedure suggested by Maddala (1987) and Anderson and Hsiao (1982). This procedure refers to a

Wald test to evaluate whether the lagged dependent variables has a direct effect on the dependent variable, apart from the indirect influence generated by serial correlations of the errors. If this is the case, then the model is called "state-dependence" or "system dynamic," and if not, it is called "serial correlation" or "error dynamics." In fact, there are two steps in the implementation of the test, as described in Maddala (1987): the first consists of testing whether a serial correlation model is to be used. For this purpose, a serial correlation model $y_{it} = \beta' x_{it} + \alpha_i + w_{it}$ with $w_{it} = \rho w_{it-1} + u_{it}$ is reformulated as follows $y_{it} = \rho y_{it-1} + \beta' x_{it} - \beta \rho x_{t-1} + \eta_{it} + u_{it}$. If there is serial correlation in the errors, then the coefficient of the lagged independent variables should be equal to minus the product of the coefficients of current x and lagged y. Second, once it has been established that a serial correlation model should not be used, it is tested whether $\rho = 0$.

To perform the test, we use two lags of the dependent variable because additional lags appear not significant. The results are reported in Table 1. Accordingly, we estimate the previous described model specification with one and/or two lagged dependent variables, depending on the result obtained in Maddala's (1987) test. While it is well known that the fixed-effects estimator generates biased results in a dynamic panel, Nickell (1981) proves that this bias decreases in the number of time periods and approaches zero as T (the time period) approaches infinity (the time dimension of the panel is large). Accordingly, as our time dimension is T = 38 and our cross-section dimension is N = 19, we choose to work with the fixed effects.

This large time dimension of our panel raises the issue of a likely serial correlation of errors (serial correlation for each individual through the time period), contemporaneous correlation between individuals, and heteroscedasticity of disturbances in the model. We perform the tests of autocorrelation, homoscedasticity and independence of residuals between individuals where the null hypotheses are respectively the absence of autocorrelation AR (1) of disturbances, the homoscedasticity of disturbances and the absence of contemporaneously correlation of the residuals. The results of the tests[5] reject all these null hypotheses. Thus, we need to use appropriate correction technique(s)[6] to deal with those problems. For panels with

---

5 These results are available upon request.

6 Note that with the LSDV estimator, although the presence of the lagged dependent variables can deal with the serial correlation of errors, it doesn't take into account the contemporaneous correlation of errors.

dimensions like ours (T>N), the econometric literature proposed either the Feasible Generalized Least Squares (FGLS) of Parks-Kmenta[7] or the Panel Corrected Standard Errors (PCSEs) of Beck and Katz (1995). However, Beck and Katz (1995, 2001) have shown evidence that the PCSEs method is not only more accurate and performs well compare to the FGLS estimator (especially for T>15), pointing out that when FGLS are considered and tested, the standard errors are too optimistic. The Panel Corrected Standard Errors, by enabling us to deal with the problems of panel heteroscedasticity, autocorrelation and contemporaneously correlation, allows for the unit specific AR1 term to correct for serial correlation: we use this method in this study. Beside these estimators, the econometric literature also proposes the Fixed Effects where standard errors are computed using Driscoll-Kraay (1998) method (henceforth referred to as FE-DK). In fact, the Driscoll-Kraay standard errors estimates are heteroscedasticity consistent and robust to every general forms of spatial and temporal dependence in the residuals. In this paper, we test the robustness of our baseline model's results by the use of the FE-DK[8] (Fixed Effects with Driscoll-Kraay standard errors) technique. In addition, because the one or two years lagged dependent variable(s) can be included in the model, depending on the Maddala (1987)'s test, we would have also used the generalized method of moments (GMM) estimator or the LSDVC (least square dummy variables corrected) as an alternative to LSDV technique for the robustness of our baseline model's results. However, the GMM estimator relies on the strong hypothesis that the time period be lower than the cross-section dimension that is, N>T and the LSDVC[9] estimator relies on the strong hypothesis that all regressors should be exogenous, not even weakly exogenous. For all these reasons, we use as our main estimator the LSDV estimator with Panel Corrected Standard Errors (PCSEs) technique and for another robustness check, the FE-DK standard errors technique. Note also that regarding the LSDV with the PCSEs, if the Maddala's (1987) test reveals the presence of a "state-dependence" in the dynamic specification, then we apply the OLS-fixed effects (LSDV) regression with one or two years lagged dependent variables (to correct for serial correlation) without the Panel-Specific

---

7 This procedure was first described by Parks (1967) and popularized latter by Kmenta (1986). Thus, it is usually known either as Parks or as Parks-Kmenta.

8 The results are obtained by the use of the Stata module « xtscc » implemented by Hoechle (2007).

9 See Kiviet (1995, 1999) and Bun and Kiviet (2003).

AR(1) correction. If the dynamic specification is "error dynamics," then we use the OLS-fixed effects (LSDV) regression with the Prais-Winsten procedure based on the panel-specific AR(1).

Recognize that the previous assumption of our model parameters' homogeneity is strong, we relax it by examining the variation across different groups of countries and test to what extent the average effect varies according to the group of countries observed. Therefore, we split our sample into two major groups (although recognizing that any splitting of our sample into sub-samples remains somewhat arbitrary) and estimate the baseline model over the whole period 1970–2007. This will allow us to check whether the magnitudes of the coefficients of interest obtained over these sub-groups are different from those obtained over the full sample. The groups are then:

    - The group of European Countries (EU): Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, and United Kingdom.

    - The group of Non-European Union countries (Non-EU): Australia, Canada, Japan, and United States.

The next section is devoted to the discussion of the expected sign of the different regressors included in the model.

4.2 Discussion on the expected signs of the variables

The number of fiscal consolidation episodes: We follow Dang et al., (2009) procedure to capture the effects of financial crisis on aid effort to introduce in our model a variable that captures the effects of fiscal consolidation: the "number of years of fiscal consolidation." This variable records the number of years since the first year where a fiscal consolidation occurs, with the first year taking a value of "1" and the value "0" for all years subsequent to the fiscal consolidation end's year. To allow the effect to diminish over time, we include this counter variable in both linear and square terms in the model. In other words, we expect a negative effect of the counter variable "number of years of fiscal consolidation" but a positive effect of its square terms.

In fact, during the episodes of large fiscal consolidation, governments tighten their budgets and reduce the high debt levels to make public finances sustainable. Therefore, we can expect governments to reduce several items of expenditure including spending on aid flows, despite

their firm commitment to increase aid exports to recipient countries. However, as Round and Odedokun (2004: P306) have mentioned, since "aid can act as an immense foreign policy tool for donor governments, it is not a particular discretionary item in the budget"; thus, it may not be reduced even in deterioration of public finance situations. Although this argument runs contrary to the expectation of a procyclical pattern of foreign aid (Hallet, 2009), we can also expect aid expenditures to be protected during the episodes of fiscal consolidation. In other words, large fiscal consolidation can exert a positive effect on aid flows. In addition, we also assume the governments in the face of several competing government expenditures reduce several items but maintain or increase aid exports for strategic or geopolitical reasons: aid could be protected even when spending is being constrained (Round and Odedokun, 2004).

The number of fiscal stimuli episodes: The construction of this variable also refers to Dang et al., (2009) and thus, follows the same procedure as for the variable "number of years of fiscal consolidation" with the difference here being that this variable records the number of years since the first year of the occurrence of a fiscal stimulus. This variable takes the value of "1" for the first year, "2" for the second year, and the value "0" for all years subsequent to the fiscal stimuli end's year. To allow the effect to diminish over time, we also include this counter variable in both linear and square terms in the model.

During large episodes of fiscal stimuli that aim to stimulate the domestic activity, aid expenditures may decrease (this is considered a discretionary component that is cut in favor of social and investment spending), increase as the other discretionary components of expenditures, or it may neither increase nor decrease. In other words, we expect a positive, neutral, or even a negative effect of this variable.

The budget deficit and the public debt: As in Mosley (1985), Round and Odedokun (2004), Faini (2006), and Bertoli et al. (2008), we hypothesize that the cases of weaker fiscal position characterized by larger budget deficits and high levels of public debt will ceteris paribus lead to the reduction in the level of discretionary spending, especially that of aid flows – because of strong pressures to reduce deficits and public debt and preserve scarce foreign currency. In other words, a healthy fiscal position will be associated ceteris paribus with higher spending, including on official development assistance. We also follow Bertoli et al. (2008) and

hypothesize that "*given the small volume of aid relative to GDP, it is the overall level of public expenditures rather than its allocation among different expenditures chapters that influences the volume of aid*" (see also Faini, 2006).

In contrast to these hypotheses and in accord with Bertoli et al. (2008), we can also assume that weak budgetary positions – or significant debt overhang may not have a detrimental impact on foreign aid, provided that the governments adopt an accommodating attitude toward the fiscal disequilibria over the medium term.

Output gap: The effect of the output gap (the difference between the maximum output achievable and the actual level of output) can be either positive or negative: we can expect positive output shocks to lead to higher aid expenditure by traditional OECD donors and negative shocks to exert an adverse effect on their aid supplies. However, if aid expenditure is considered to be a specific protected item of the budget (for several reasons, including political or geostrategic ones), aid exports could rise if OECD DAC members experience negative shocks and at least not decline (at best increase) in the aftermath of a positive shock in these countries.

5. **EVALUATION OF THE ESTIMATION RESULTS**

In this section, we turn to the interpretation of the results stemming from performing our regressions. Before interpreting these results, let us say a few words about the results of Maddala's (1987) test (see Table 1). "**Insert Table 1 around here**".

For each kind of aid variable, the test is performed on both the one-year lagged values and the two-year lagged values, because additional lagged values appear not to be significant. The Maddala's (1987) test suggests that if the test for the restriction of coefficients is rejected, then we test for the significance of the coefficient of the lagged dependent variable. If the latter is significantly different from zero, we can conclude that the model is "state dependent". Conversely, if the test for the restriction of coefficients is not rejected, then we test for serial correlation by testing whether the coefficient of the lagged dependent variable is equal to zero. If the latter does not hold, we conclude that the model can be considered as a "serial correlation model": the presence of the lagged dependent variable(s) in the model corrects only for serial correlation and does not drive any state dependence over time.

Based on the results of the Maddala's (1987) test displayed in Table 1, on the procedure of estimation described in sub-section 4.1 and in the possible interpretations described above, we perform the different regressions, the results of which are reported in Tables 2 to Table 5. In all of these tables, the dependent variables (as mentioned above) are: the total net aid (bilateral and multilateral) disbursements as a percentage of GDP when debt forgiveness is subtracted out, and this variable broken down by channel (multilateral versus bilateral) and by recipient development income classification (the OECD classification)): bilateral aid, multilateral aid[10], aid to LDCs, aid to other LICs, aid to LMICs, aid to UMICs and Aid to Africa.

"**Insert Table 2 around here**".

The Table 2 related to our full sample of the 19 OECD DAC Countries, reports the results associated to the effects of fiscal episodes on each of these different dependent variables by the use of the LSDV technique with the Panel Corrected Standard Errors (PCSEs) and/or the Prais-Winsten estimators.

The results suggest evidence that whereas fiscal retrenchment episodes do not affect the total ODA (minus debt forgiveness), fiscal stimuli episodes do affect it: the higher the number of large fiscal expansion years, the higher the overall aid expenditures (minus debt relief) distributed by OECD DAC countries, with this increase diminishing over time (after 1.06 years). The same interpretation applies to Bilateral ODA. Multilateral ODA appears to not being affected by fiscal stimuli periods in OECD DAC countries but seems to decrease (though the coefficient is statistically significant only at 10%) during fiscal consolidation episodes. However, the aid effort of OECD DAC countries towards Least Developed Countries is dictated by fiscal circumstances in these donors' countries: aid provision declines during large fiscal consolidation periods (there is no rebound over time) and increases during fiscal stimuli episodes (this rise diminishes after 1.03 years). Fiscal episodes do not matter for OECD DAC countries' aid exports to group of income countries "Other Low-Income Countries", Lower-Middle-Income Countries and the Upper Middle Income Countries appear to be affected by large changes in fiscal policy in OECD DAC countries: surprisingly, OECD DAC countries' aid exports to LMICs decline permanently following

---

[10] The Multilateral Aid is naturally not net of debt forgiveness.

fiscal retrenchment measures and increase (with a likely declining approximately after 1.12 years) when donors' countries implement large fiscal stimuli policies; in contrast, large discretionary fiscal stimuli measures do not influence aid to Upper Middle Income Countries, but the latter plummets during large fiscal consolidation episodes (there is here a chance of rebounding of this aid over time, even if the coefficient is statistically significant at only 10% level). Turning now to the peculiar Africa's region (a region that particularly needs high levels of aid inflows for its development), the results suggest evidence that large changes in fiscal policies in OECD DAC countries influence aid exports to this region. Indeed, on one side, the higher the number of years of fiscal tightening measures in donors' countries, the lower their aid expenditures to Africa. However, there is a likely rebound after approximately 1.5 years. On the other side, OECD Donors' aid exports to Africa appear to benefit from the large fiscal stimuli measures adopted in OECD DAC countries but this positive effect is short-lasting as the donors' aid effort starts declining after approximately 14 months.

Regarding the control variables, the results show evidence that the fiscal balance appears to be significant and negative in only one regression (that of LMICs); the public debt seems to exhibit alternating negative and non significant coefficients, suggesting that the accumulation of public debt can have a negative impact on aid effort. The output gap also appears to be significant only in one regression (regression with Total Aid).

"**Insert Table 3 around here**".

The use of the Fixed Effects associated with the Driscoll-Kraay standard errors technique for robustness check (see Table 3) leads us to conclude that the results obtained are similar (although with slightly different standard errors) to those in Table 2 apart from the fact that Multilateral aid supplied by OECD DAC countries declines here severely when they experience large fiscal tightening measures. Nevertheless, in contrast with the result in Table 2, resumption appears after 1.3 years. Note also that as mentioned above, the results of our coefficients of interest remain roughly stable and robust to the inclusion of the additional control variables quoted above (see sub-section 4.1) only once in the baseline regression. The results tables could be obtained upon request.

"**Insert Table 4 around here**".

"**Insert Table 5 around here**".

In the Tables 4 and 5, we report the results concerning the sub-samples of European Union and Non-European Union countries. We observe that European Union countries appear to

exhibit roughly the same behaviour as those observed over the full sample (in Table 2). However, Non-European Union countries belonging to our sample do not behave similarly to Europeans in terms of aid expenditures during large changes in their fiscal policies. Indeed, irrespective of the "aid variable" considered, large discretionary fiscal tightening and stimuli policies do not matter for aid supplied by Non-European Union countries, apart from two special cases: surprisingly, Multilateral ODA supplied by these countries decline during fiscal expansion episodes (the coefficient is significant at only 10% level), with this decline not diminishing over time; aid expenditures of Non-European donors' countries towards Africa's region seem to increase when these countries implement large discretionary fiscal expansion measures, but this positive effect start declining just after approximately 9 months.

The aid effort of Non-European Union countries seem to be determined by the overall fiscal stance of the countries in a given year (as shown by certain significant and negative coefficients of the variable capturing the fiscal balance and certain significant and negative coefficients of the variable capturing the stock of public debt). Overall, it appears from our analysis that whereas the distribution of aid expenditures among developing countries by European Union DAC Countries is to some extent dictated by fiscal circumstances, especially by large changes in fiscal policies in these countries the Non-European Union DAC countries behave totally in a different way since their aid effort is not mainly determined by their fiscal circumstances.

6. **CONCLUSION**

In this paper, we analyze the behavior of OECD donor countries with respect to the distribution of their aid expenditures during the fiscal episodes (episodes of fiscal consolidation and episodes of fiscal stimuli). The focus here is on a sample of 19 OECD DAC countries as well as on two sub-samples (European Union and Non-European Union countries) over the period 1970-2007. We use descriptive statistics provided by Alesina and Ardagna (2010) on large fiscal episodes in OECD countries and regression models to perform this analysis. The empirical results suggest evidence that aid supplied by traditional OECD DAC countries respond to large changes in fiscal policies in these countries: on one side, whereas the total aid (net of debt forgiveness), the bilateral aid and "OtherLICs" do not seem to be affected by episodes of large fiscal consolidation, the latter appearing to influence Multilateral aid, aid to LDCs, aid to LMICs, aid to UMICs and particularly aid to Africa'

region with a chance of some of these negative effects to be resorbed over time; on the other side, large fiscal expansion measures in OECD donor countries exert a positive impact on the total aid flows, as well as the bilateral aid, aid to Least Developed Countries, aid to LMICs particularly aid to Africa, with all these positive effects declining over time.

The results also show evidence that the behaviour of the sub-sample of European Union countries is similar to that of the full sample of OECD DAC countries. However, the Non-European countries of our sample display an opposite behaviour with regard to their aid expenditures during large fiscal tightening and large fiscal expansion policies: except few cases (multilateral aid and aid to Africa), neither large fiscal consolidation measures nor large fiscal stimuli policies exert an impact of the aid effort of the sub-group of Non-European countries. The aid supplied by this sub-group of countries seems to be driven by other factors than fiscal ones, such as political factors or trade interests. Since the purpose of this study is not to examine the determinants[11] of aid effort, but rather to focus on how large changes in fiscal policies of the traditional OECD DAC countries affect their aid supply, it would be interesting to explore in another study what kind of political and economic variables shape the aid effort of the sub-group of Non-European countries.

Furthermore, we would like to highlight two limits to our study: the first is our focus on only traditional OECD donors which are the main ones in terms of aid supply. However, the so-called "emerging countries" have appeared recently to start playing an important role in terms of aid provision to the other developing countries within the framework of South-South cooperation. It would thus be interesting to explore in another study whether fiscal policy measures in these "emerging countries" matter for their development assistance.

One may also require us to extend our database to the recent year for which fiscal variables are available (2011) (though the fiscal episodes variables come from Alesina and Ardagna, 2010). This is not really a limit of our study because the fiscal austerity measures currently adopted by many OECD countries especially European Union countries are on-going and will last many years (for example, these measures should be implemented until 2017 for France). Therefore, such extension seems unsuitable.

---

[11] We implicitly do this by adding additional control political and other economic variables to our baseline model to test the robustness of its results (see above). As mentioned above, our baseline model coefficients do not change and the results are available upon request.

The empirical shortfall of aid exports to Africa observed over the full sample of OECD countries is in accordance with the 2010's announcement of OECD to reduce aid supplies to Africa, as well as the different figures of aid disbursements in 2011 compared to 2010. Given the severity of the multiple crises faced by OECD countries, one could suspect that their aid effort will not resume before several years. This severe aid decline will be dramatic for poverty in developing countries and jeopardize their efforts to attain the Millennium Development Goals (MDGs), as in these hard economic times, these countries are also affected by lower investments and lower exports.

Overall, our findings raise an important question: given the high dependence of aid flows on fiscal circumstances in donor countries and also given the heavy reliance of many developing countries (particularly Low-Income Countries) on these aid inflows, shouldn't it be better for the international community to help the aid recipients improve substantially their capacity to mobilize domestic revenue ? In fact, for any country in the world, the tax revenues are unavoidably the main source of fiscal revenue in the long term. The call by the international community at the Monterrey Consensus (2002) to mobilize additional financial financing mechanisms for developing countries can contribute to this ultimate goal.

REFERENCES

Ahrend, R., Catte, P., and Price, R. (2006) Interactions between monetary and fiscal policy: how monetary conditions affect fiscal consolidation. *OECD Economics Department Working Paper*, No 521.

Alesina, A. and Perotti, R. (1995a) Fiscal expansions and adjustments in OECD countries. *Economic Policy*, No. 21, 207-247.

Alesina, A., and Perotti, R. (1995b) The political economy of budget deficits. *IMF Staff Papers*, No. 42.

Alesina, A., and Ardagna, S. (1998). Tales of Fiscal Adjustments. *Economic Policy*, October 1998, 489-545.

Alesina, A., Perotti, R., and Tavares, J. (1998) The Political Economy of Fiscal Adjustments. *In: Brookings Papers on Economic Activity* 1. 197-266.

Alesina, A. (2000) The Political Economy of the Budget Surplus in the US. *Journal of Economic Perspectives*, 14, 3–19.

Alesina, A., and Dollar D. (2000) Who Gives Foreign Aid to Whom and Why ? *Journal of Economic Growth, Springer*, Vol. 5, No. 1, pages 33-63.

Alesina, A., and Ardagna, S. (2010) "Large Changes in Fiscal Policy: Taxes vs Spending," *Tax Policy and the Economy*, Volume 24, Chapter 2, pp 35–68.

Anderson, T. W., and Hsiao, C. (1982) Formulation and Estimation of Dynamic Models Using Panel Data. *Journal of Econometrics* 18, pp. 47-82.

Ardagna, S. (2007) Determinants and Consequences of Fiscal Consolidations in OECD Countries. *Harvard University*, December 2007.

Allan, J., and Scruggs, L. (2004) Political partisanship and welfare state reform in advanced industrial societies. *American Journal of Political Science*, 48(3), 496–512.

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

Baltagi, B.H. (2002) *Econometrics*, 3rd ed.

Beenstock, M. (1980) Political Econometry of Official Development Assistance. *World Development*, Vol. 8, pp. 137-144.

Bertoli, S., Giovanni A. C., and Manaresi, F. (2008) Aid effort and its determinants: A comparison of the Italian performance with other OECD donors. *Working Papers Series* wp2008-11, *Universita' degli Studi di Firenze Dipartimento di Scienze Economiche,*

Blanchard, O. (1990) Comment on Giavazzi and Pagano. *NBER Macroeconomics Annual*, MIT Press, Cambridge, MA.

Blanchard, O. (1993) Suggestion for a New Set of Fiscal Indicators. *OECD Working paper* n° 79.

Boschini, A., and A. Olofsgård (2007) Foreign Aid: an Instrument for Fighting Communism?. *Journal of Development Studies*, vol. 43, no. 4, pp. 622-648.

Bruno, G.S.F. (2004) Estimation and inference in dynamic unbalanced panel data models with a small number of individuals. *CESPRI WP* n°.165, Università Bocconi-CESPRI.

Bruno, G.S.F. (2005) Approximating the bias of the LSDV estimator for dynamic unbalanced panel data models. *Economics Letters*, Vol 87, pp 361-366.

Bun. M. J. G and Kiviet, J. F. (2001) The Accuracy of Inference in Small Samples of Dynamic Panel Data Models. *Tinbergen Institute Discussion Paper, TI 2001-006/4.*

Bun, M. J. G. and Kiviet, J. F. (2003) On the diminishing returns of higher order terms in asymptotic expansions of bias. *Economics Letters*, 79: 145–152.

Chong, A. and Gradstein, M. (2008) What Determines Foreign Aid? The Donors' Perspective. *Journal of Development Economics*, Vol. 87, No. 1, August, pp 1-13.

Dang, H.-A., Knack S., and Rogers, H. (2010) International aid and financial crises in donor countries. *Policy Research working paper*. no. WPS 5162.

Driscoll, J. C. and Kraay A. C. (1998) Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data, *Review of Economics and Statistics*, 80: 549-560.

European Commission. (1995) Technical Note: The Commission Services, Method for Calculating the Cyclical Adjustment of Government Budget Balances. *European Economy* N° 60, Directorate-General for Economic and Financial Affairs.

Fuchs A., Dreher A. and Nunnenkamp P. (2012) Determinants of Donor Generosity: A Survey of the Aid Budget Literature. *Kiel Working Papers* 1789, Kiel Institute for the World Economy.

Faini, R. (2006) Foreign aid and Fiscal Policy. *CEPR Discussion Paper* No. 5721.

Giavazzi, F., and Pagano, M. (1996) Non-Keynesian Effects of Fiscal Policy Changes: International Evidence and the Swedish Experience. *Swedish Economic Policy Review*, vol. 3, n°1, Spring, 67-112.

Giavazzi, F., Jappelli, T. and Pagano, M. (2000) Searching for Non-Linear Effects of Fiscal Policy: Evidence from Industrial and Developing Countries. *European Economic Review*, vol. 44, n°7, 1259-1289.

Hallen, M., (2009) Economic cycles and development aid: what is the evidence from the past? *ECOFIN Policy Brief* n°5.

Heylen, F. and Everaert, G. (2000) Success and Failure of fiscal consolidation in OECD: A multivariate analysis. *Public Choice*: 105, 103-124.

Hoechle, D. (2008) Robust Standard Errors for Panel Regressions with Cross-sectional Dependence, *Stata Journal*. 7: 281-312.

International Monetary Fund (IMF) (2010) Will it hurt? Macroeconomic effects of fiscal consolidation. In *World Economic Outlook*, Recovering risk and rebalancing (October 2010), Chapter 3, pp 93-122.

Jones S. (2011) Aid Supplies Over Time - Accounting for Heterogeneity, Trends, and Dynamics", *Working Paper* No. 2011/04, UNU-WIDER.

Kiviet, J. (1995) On bias, inconsistency, and efficiency of various estimators in dynamic panel data models. *Journal of Econometrics*, Vol 68, pp 53-78.

Kiviet, J. (1999) Expectation of Expansions for Estimators in a Dynamic Panel Data Model; Some Results for Weakly Exogenous Regressors. *In Analysis of Panels and Limited Dependent Variable Models, eds*. L.-F. L. C. Hsiao, K. Lahiri and M. H. Pesaran, 199–225. Cambridge: Cambridge University Press.

Kmenta J. (1986) *Elements of Econometrics*. New York: Macmillan, 655 pp. 2nd edition.

Laeven, L., and Valencia, F. (2008) Systemic Banking Crises: A New Database. *IMF Working Paper* WP/08/224.

Maddala, G. S. (1987) Limited Dependent Variable Models Using Panel Data Analysis. *Journal of Human Resources*, 22, pp. 307-360.

Maddala, G. S., and Wu, S. (1999) A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and Statistics,* 61, 631–52.

McDermott, J., and Wescott, R. (1996) An Empirical Analysis of Fiscal Adjustments, *IMF Staff papers,* vol. 43, n.4, 723-753.

Mendoza, R., Jones R., and Vergara, G. (2009) Will the global financial crisis lead to lower foreign aid? A first look at United States ODA. *Fordham University, Department of Economics, Fordham Economics Discussion Paper Series*.

Mosley, P. (1985) The political economy of foreign aid: A model of the market for a public good. *Economic Development and Cultural Change*, 33(2):373–93.

Mold, A., Prizzon, A. Frot, E., and Santiso, J. (2010) Aid flows in times of crises, Paper presented to the conference on development cooperation in times of crisis and on achieving the MDGs, *IFEMA convention centre (Madrid)*.

Nickell, S. (1981) Biases in dynamic models with fixed effects. *Econometrica,* 49, 1417-1426.

Organization for Economic Cooperation and Development (OECD). (2010) *DAC Statistical Reporting Directives, Development Assistance Committee*.

Organization for Economic Cooperation and Development (OECD). *Economic Outlook*, various issues.

Parks R. (1967) Efficient estimation of a system of regression equations when disturbances are both serially and contemporaneously correlated. *J. Am. Stat. Assoc*, 62:500–9.

Roodman, D. (2007) The Anarchy of Numbers: Aid, Development, and Cross-Country Empirics. The World Bank Economic Review, vol. 21, no. 2, pp. 255-77.

Roodman, D. (2008) History says financial crisis will suppress aid. Global Development: Views from the Center. http://blogs.cgdev.org/globaldevelopment/2008/10/history-says-financial-crisis.php.

Round, J. I., and Odedokun, M. (2004) Aid effort and its determinants. *International Review of Economics and Finance*, 13(3):293–309, 2004.

Tingley, D. (2010) Donors and domestic politics: Political influences on foreign aid effort. *The Quarterly Review of Economics and Finance,* 50: 40–49.

Wildasky, A. (1964) The Politics of the Budgetary Process, Little Brown, Boston.

APPENDICES AND TABLES

Table 1 : Maddala (1987)'s test for "Net Aid Disbursements, net of debt forgiveness"on the baseline equation, 1970-2007

		Full OECD Sample	EU Sub-Sample	Non-EU Sub-Sample
Test for $Total_{t-1}$	*On the restriction of Coefficients*	6.03 (0.0000)	5.20 (0.0551)	0.92 (0.4970)
	On the coefficient of $Total_{t-1}$	161.90 (0.0000)	117.89 (0.0000)	31.64 (0.0000)
Test for $Total_{t-2}$	*On the restriction of Coefficients*	2.18 (0.0347)	1.97 (0.0577)	0.18 (0.9881)
	On the coefficient of $Total_{t-2}$	57.46 (0.0000)	45.32 (0.0000)	13.16 (0.0004)
Test for $Bilateral_{t-1}$	*On the restriction of Coefficients*	3.88 (0.0004)	3.40 (0.0015)	0.23 (0.9770)
	On the coefficient of $Bilateral_{t-1}$	175.30 (0.0000)	125.64 (0.0000)	43.98 (0.0000)
Test for $Bilateral_{t-2}$	*On the restriction of Coefficients*	1.10 (0.3607)	1.00 (0.4312)	0.07 (0.9994)
	On the coefficient of $Bilateral_{t-2}$	39.62 (0.0000)	33.44 (0.0000)	2.30 (0.1317)
Test for $Multilateral_{t-1}$	*On the restriction of Coefficients*	2.32 (0.0242)	1.95 (0.0604)	1.25 (0.2785)
	On the coefficient of $Multilateral_{t-1}$	99.43 (0.0000)	84.61 (0.0000)	10.74 (0.0014)
Test for $Multilateral_{t-2}$	*On the restriction of Coefficients*	1.13 (0.3436)	1.03 (0.4068)	0.25 (0.9702)
	On the coefficient of $Multilateral_{t-2}$	33.45 (0.0000)	18.63 (0.0000)	13.99 (0.0003)
Test for $LDCs_{t-1}$	*On the restriction of Coefficients*	9.01 (0.0000)	8.98 (0.0000)	0.65 (0.7151)
	On the coefficient of $LDCs_{t-1}$	195.38 (0.0000)	136.56 (0.0000)	51.44 (0.0000)
Test for $LDCs_{t-2}$	*On the restriction of Coefficients*	0.95 (0.4643)	1.12 (0.3507)	0.92 (0.4928)
	On the coefficient of $LDCs_{t-2}$	38.31 (0.0000)	34.92 (0.0000)	0.05 (0.8160)
Test for $OtherLICs_{t-1}$	*On the restriction of Coefficients*	2.26 (0.0286)	3.08 (0.0035)	0.31 (0.9483)
	On the coefficient of $OtherLICs_{t-1}$	189.49 (0.0000)	178.51 (0.0000)	26.59 (0.0000)
Test for $OtherLICs_{t-2}$	*On the restriction of Coefficients*	1.29 (0.2516)	1.53 (0.1546)	0.19 (0.9867)
	On the coefficient of $OtherLICs_{t-2}$	62.33 (0.0000)	10.71 (0.0012)	43.22 (0.0000)

Test for $LMICs_{t-1}$	*On the restriction of Coefficients*	2.24 (0.0296)	1.32 (0.2375)	0.96 (0.4613)
	On the coefficient of $LMICs_{t-1}$	210.04 (0.0000)	153.94 (0.0000)	48.40 (0.0000)
Test for $LMICs_{t-2}$	*On the restriction of Coefficients*	1.13 (0.3396)	0.69 (0.6777)	0.78 (0.6018)
	On the coefficient of $LMICs_{t-2}$	6.44 (0.0115)	4.25 (0.0400)	1.82 (0.1796)
Test for $UMICs_{t-1}$	*On the restriction of Coefficients*	2.17 (0.0351)	2.28 (0.0277)	0.27 (0.9654)
	On the coefficient of $UMICs_{t-1}$	156.15 (0.0000)	114.23 (0.0000)	33.62 (0.0000)
Test for $UMICs_{t-2}$	*On the restriction of Coefficients*	1.05 (0.3920)	1.29 (0.2549)	1.00 (0.4356)
	On the coefficient of $UMICs_{t-2}$	9.46 (0.0022)	8.11 (0.0046)	0.12 (0.7343)
Test for $Africa_{t-1}$	*On the restriction of Coefficients*	5.95 (0.0000)	6.07 (0.0000)	0.62 (0.7379)
	On the coefficient of $Africa_{t-1}$	242.48 (0.0000)	183.11 (0.0000)	26.65 (0.0000)
Test for $Africa_{t-2}$	*On the restriction of Coefficients*	0.68 (0.6907)	0.96 (0.4585)	0.50 (0.8299)
	On the coefficient of $Africa_{t-2}$	19.27 (0.0000)	14.30 (0.0002)	2.89 (0.0915)

Note: The table contains F-Statistics and the P-Value associated.

Table 2: Effects of Fiscal Episodes in DAC OECD Countries on net aid disbursements minus debt forgiveness (% of GDP), 1970-2007

Estimator: LSDV technique with Panel Corrected Standard Errors.

	1[a]	2[b]	3[b]	4[b]	5[b]	6[b]	7[b]	8[b]
	Total	**Bilateral**	**Multilateral**	**LDCs**	**OtherLICs**	**LMICs**	**UMICs**	**Africa**
Variables								
Aid_{t-1}	0.517***	0.768***	0.552***	0.811***	0.841***	0.710***	0.628***	0.804***
	(0.0513)	(0.0302)	(0.0398)	(0.0233)	(0.0169)	(0.0327)	(0.0294)	(0.0243)
Aid_{t-2}	0.300***							
	(0.0499)							
Numbertight	-0.0116	-0.00450	-0.00918*	-0.00718**	-0.00208	-0.00380	-0.00257*	-0.0118***
	(0.0105)	(0.00939)	(0.00515)	(0.00326)	(0.00157)	(0.00321)	(0.00136)	(0.00372)
Numbertightsq	-0.000644	-0.00296	0.00352	0.00164	0.000334	0.00233*	0.000996*	0.00397**
	(0.00466)	(0.00392)	(0.00230)	(0.00140)	(0.000741)	(0.00130)	(0.000550)	(0.00158)
Numberstimuli	0.0296**	0.0279***	0.000384	0.0107**	0.00189	0.0101***	0.000515	0.0188***
	(0.0128)	(0.0103)	(0.00637)	(0.00424)	(0.00172)	(0.00384)	(0.00170)	(0.00439)
Numberstimulisq	-0.0140**	-0.0132***	-0.00125	-0.00517***	-0.000816	-0.00452***	-0.000571	-0.00816***
	(0.00605)	(0.00459)	(0.00299)	(0.00198)	(0.000833)	(0.00167)	(0.000770)	(0.00200)
Govnetlend	0.000192	-0.000478	-0.000269	-1.50e-05	0.000120	-0.000482*	-0.000201	0.000119
	(0.000814)	(0.000661)	(0.000421)	(0.000260)	(0.000113)	(0.000276)	(0.000128)	(0.000300)
Pubdebt	-0.000229**	-0.000218**	1.88e-06	-9.97e-05***	2.25e-05	-6.55e-05	1.28e-05	-0.000106***
	(9.87e-05)	(8.75e-05)	(4.34e-05)	(3.59e-05)	(1.82e-05)	(4.34e-05)	(1.44e-05)	(3.72e-05)
Outputgap	0.00302*	0.00215	0.000108	0.000428	0.000269	0.000569	-9.59e-06	0.000703
	(0.00158)	(0.00152)	(0.000712)	(0.000431)	(0.000186)	(0.000405)	(0.000182)	(0.000437)
Constant	0.0254	0.0754***	0.0461***	0.0126***	0.00978***	0.0215***	0.00606***	0.00559
	(0.0156)	(0.0137)	(0.00578)	(0.00327)	(0.00337)	(0.00396)	(0.00143)	(0.00361)
Countries-Obs	19-601	19-613	19-601	19-597	19-590	19-597	19-594	19-597
Overall R^2	0.958	0.932	0.908	0.948	0.934	0.815	0.709	0.941
Country and/or Year Dummies Significance	YES	YES	YES	YES	YES	YES	YES	YES

Note: *p-value<0,1; **p-value<0,05; ***p-value<0,01. –

Notes related to the Results of Maddala's (1987) test:

The regressor "Aid" denotes the "Aid variable". a: The model is "state-dependent" with one and two year lagged values of the dependent variable.- b: The model is "state-dependent" only with one year lagged values of the dependent variable.- c: The model is "state-dependent" only with two year lagged values of the dependent variable.- d: The model is "error dynamic" (that is the presence of one or two year lagged values of the dependent variable corrects only for serial correlation).

Table 3: Effects of Fiscal Episodes in DAC OECD Countries on net aid disbursements minus debt forgiveness (% of GDP), 1970-2007

Estimator: Fixed Effects with Driscoll-Kraay Standard Errors

	1[a]	2[b]	3[b]	4[b]	5[b]	6[b]	7[b]	8[b]
	Total	**Bilateral**	**Multilateral**	**LDCs**	**OtherLICs**	**LMICs**	**UMICs**	**Africa**
Variables								
Aid_{t-1}	0.517***	0.768***	0.552***	0.811***	0.841***	0.710***	0.628***	0.804***
	(0.0715)	(0.0422)	(0.0621)	(0.0396)	(0.0353)	(0.0302)	(0.0753)	(0.0376)
Aid_{t-2}	0.300***							
	(0.0737)							
Numbertight	-0.0116	-0.00450	-0.00918**	-0.00718*	-0.00208	-0.00380	-0.00257*	-0.0118**
	(0.00798)	(0.00615)	(0.00399)	(0.00414)	(0.00151)	(0.00314)	(0.00132)	(0.00455)
Numbertightsq	-0.000644	-0.00296	0.00352**	0.00164	0.000334	0.00233*	0.000996**	0.00397**
	(0.00434)	(0.00299)	(0.00133)	(0.00165)	(0.000670)	(0.00132)	(0.000448)	(0.00178)
Numberstimuli	0.0296*	0.0279*	0.000384	0.0107*	0.00189	0.0101***	0.000515	0.0188**
	(0.0162)	(0.0163)	(0.00586)	(0.00536)	(0.00340)	(0.00334)	(0.000933)	(0.00769)
Numberstimulisq	-0.0140**	-0.0132**	-0.00125	-0.00517**	-0.000816	-0.00452***	-0.000571	-0.00816**
	(0.00595)	(0.00641)	(0.00186)	(0.00228)	(0.00142)	(0.00133)	(0.000452)	(0.00332)
Govnetlend	0.000192	-0.000478	-0.000269	-1.50e-05	0.000120	-0.000482	-0.000201	0.000119
	(0.000789)	(0.000740)	(0.000552)	(0.000203)	(0.000176)	(0.000451)	(0.000198)	(0.000291)
Pubdebt	-0.000229*	-0.000218**	1.88e-06	-9.97e-05**	2.25e-05	-6.55e-05	1.28e-05	-0.000106**
	(0.000129)	(0.000100)	(8.81e-05)	(4.20e-05)	(1.91e-05)	(4.63e-05)	(1.92e-05)	(4.34e-05)
Outputgap	0.00302**	0.00215**	0.000108	0.000428	0.000269	0.000569	-9.59e-06	0.000703
	(0.00129)	(0.00104)	(0.000844)	(0.000528)	(0.000174)	(0.000638)	(0.000288)	(0.000676)
Constant	0.0545***	0.0511***	0.0764***	0.0167***	0.0120***	0.0214***	0.00729***	0.0242***
	(0.0112)	(0.0110)	(0.00930)	(0.00469)	(0.00209)	(0.00311)	(0.00183)	(0.00590)
Countries-Obs	19-601	19-613	19-601	19-597	19-590	19-597	19-594	19-597
Within R^2	0.6963	0.6679	0.4212	0.7679	0.8344	0.5787	0.4475	0.7581
Country and/or Year Dummies Significance	YES	YES	YES	YES	YES	YES	YES	YES

Note: *p-value<0,1; **p-value<0,05; ***p-value<0,01.

Notes related to the Results of Maddala's (1987) test:

*The regressor "Aid" denotes the "Aid variable". **a**: The model is "state-dependent" with one and two year lagged values of the dependent variable. **b**: The model is "state-dependent" only with one year lagged values of the dependent variable. **c**: The model is "state-dependent" only with two year lagged values of the dependent variable. **d**: The model is "error dynamic" (that is the presence of one or two year lagged values of the dependent variable corrects only for serial correlation).*

Table 4: Effects of Fiscal Episodes in European Union Countries on net aid disbursements minus debt forgiveness (% of GDP), 1970-2007
Estimator: LSDV technique with Panel Corrected Standard Errors

	1[a]	2[b]	3[b]	4[b]	5[b]	6[d]	7[b]	8[b]
	Total	**Bilateral**	**Multilateral**	**LDCs**	**OtherLICs**	**LMICs**	**UMICs**	**Africa**
Variables								
Aid_{t-1}	0.513***	0.750***	0.591***	0.809***	0.754***		0.655***	0.799***
	(0.0573)	(0.0341)	(0.0450)	(0.0246)	(0.0359)		(0.0292)	(0.0251)
Aid_{t-2}	0.297***							
	(0.0563)							
Numbertight	-0.0107	-0.00488	-0.00749	-0.00832**	-0.00155	-0.000401	-0.00343**	-0.0141***
	(0.0119)	(0.0108)	(0.00556)	(0.00382)	(0.00174)	(0.00308)	(0.00146)	(0.00436)
Numbertightsq	-0.00244	-0.00369	0.00220	0.00168	8.41e-05	0.000734	0.00130**	0.00457**
	(0.00519)	(0.00443)	(0.00244)	(0.00163)	(0.000828)	(0.00128)	(0.000592)	(0.00185)
Numberstimuli	0.0392***	0.0311**	0.00745	0.00978*	0.00209	0.00469	0.000414	0.0174***
	(0.0150)	(0.0122)	(0.00712)	(0.00502)	(0.00192)	(0.00381)	(0.00193)	(0.00519)
Numberstimulisq	-0.0171**	-0.0139***	-0.00392	-0.00450**	-0.000779	-0.00274*	-0.000388	-0.00750***
	(0.00677)	(0.00524)	(0.00326)	(0.00227)	(0.000897)	(0.00161)	(0.000835)	(0.00229)
Govnetlend	0.00109	-2.35e-05	-5.49e-05	0.000107	0.000280**	-0.00144**	-0.000319**	0.000248
	(0.000925)	(0.000786)	(0.000484)	(0.000306)	(0.000125)	(0.000638)	(0.000138)	(0.000343)
Pubdebt	-0.000299*	-0.000302**	1.27e-05	-0.000171***	-1.71e-05	0.000117	6.20e-05***	-0.000216***
	(0.000154)	(0.000135)	(6.71e-05)	(5.56e-05)	(2.23e-05)	(7.30e-05)	(1.93e-05)	(6.28e-05)
Outputgap	0.00418**	0.00281	0.000820	0.000461	0.000371*	0.000204	-4.75e-05	0.000872*
	(0.00195)	(0.00189)	(0.000818)	(0.000534)	(0.000221)	(0.000702)	(0.000216)	(0.000525)
Constant	0.0966***	0.141***	0.101***	0.0402***	0.0123***	-0.000977	0.0129***	0.0583***
	(0.0213)	(0.0259)	(0.0184)	(0.00989)	(0.00346)	(0.0167)	(0.00304)	(0.0101)
Countries-Obs	457-15	465-15	453-15	449-15	442-15	451-15	446-15	449-15
Overall R^2	0.960	0.934	0.917	0.944	0.884	0.447	0.738	0.937
Country and/or Country Dummies Significance	YES	YES	YES	YES	YES	YES	YES	YES

Note: *p-value<0,1; **p-value<0,05; ***p-value<0,01.
Notes related to the Results of Maddala's (1987) test:
*The regressor "Aid" denotes the "Aid variable". **a**: The model is "state-dependent" with one and two year lagged values of the dependent variable. **b**: The model is "state-dependent" only with one year lagged values of the dependent variable. **c**: The model is "state-dependent" only with two year lagged values of the dependent variable. **d**: The model is "error dynamic" (that is the presence of one or two year lagged values of the dependent variable corrects only for serial correlation).*

Table 5: Effects of Fiscal Episodes in Non-European Union Countries on net aid disbursements minus debt forgiveness (% of GDP), 1970-2007
Estimator: LSDV technique with Panel Corrected Standard Errors

	1[d]	2[d]	3[d]	4[d]	5[d]	6[d]	7[d]	8[d]
	Total	**Bilateral**	**Multilateral**	**LDCs**	**OtherLICs**	**LMICs**	**UMICs**	**Africa**
Variables								
Numbertight	0.00479	0.00317	0.0101	-0.00469	-0.00200	0.00100	0.00228	0.000214
	(0.0190)	(0.0137)	(0.0140)	(0.00504)	(0.00749)	(0.00825)	(0.00297)	(0.00885)
Numbertightsq	0.00532	0.00221	0.00116	0.00248	0.000534	0.000712	-0.000548	-0.000861
	(0.00835)	(0.00614)	(0.00635)	(0.00236)	(0.00320)	(0.00354)	(0.00127)	(0.00442)
Numberstimuli	-0.0383	-0.00337	-0.0382*	-0.00158	0.00572	-0.00164	0.00164	0.0256***
	(0.0281)	(0.0191)	(0.0213)	(0.00640)	(0.0122)	(0.00952)	(0.00359)	(0.00950)
Numberstimulisq	0.0139	-0.00682	0.0250	-0.000261	-0.00449	-0.00183	-0.00157	-0.0172***
	(0.0209)	(0.0145)	(0.0169)	(0.00456)	(0.0105)	(0.00600)	(0.00239)	(0.00524)
Govnetlend	-0.00957***	-0.00778***	0.000215	-0.00167**	-0.000829	-0.00240*	0.000194	-0.000297
	(0.00248)	(0.00192)	(0.00111)	(0.000696)	(0.00131)	(0.00136)	(0.000360)	(0.00101)
Pubdebt	0.000361	0.000241	0.000240**	-0.000233***	0.000554**	-0.000332**	3.13e-05	-0.000117
	(0.000312)	(0.000313)	(0.000103)	(7.21e-05)	(0.000229)	(0.000145)	(3.68e-05)	(8.09e-05)
Outputgap	0.00445	0.00423**	-0.000656	0.000495	-6.27e-05	0.00201	-8.98e-05	0.000296
	(0.00283)	(0.00214)	(0.00173)	(0.000772)	(0.00141)	(0.00135)	(0.000456)	(0.00110)
Constant	0.363***	0.255***	0.112***	0.0582***	0.0822***	0.0614***	0.0180***	0.0179***
	(0.0160)	(0.0147)	(0.00790)	(0.00409)	(0.0201)	(0.00729)	(0.00234)	(0.00397)
Countries-Obs	148-4	148-4	148-4	148-4	148-4	148-4	148-4	148-4
Overall R^2	0.952	0.939	0.607	0.605	0.594	0.592	0.494	0.697
Country and or Year Dummies Significance	YES	YES	YES	YES	YES	YES	YES	YES

Note: *p-value<0,1; **p-value<0,05; ***p-value<0,01.
Notes related to the Results of Maddala's (1987) test:
a: *The model is "state-dependent" with one and two year lagged values of the dependent variable.* ***b:*** *The model is "state-dependent" only with one year lagged values of the dependent variable.* ***c:*** *The model is "state-dependent" only with two year lagged values of the dependent variable.* ***d:*** *The model is "error dynamic" (that is the presence of one or two year lagged values of the dependent variable corrects only for serial correlation).*

Appendix 1: Description of variables and Sources

Total = Net Official Development Assistance disbursed by each donor minus debt forgiveness, in percent of GDP. This variable includes bilateral ODA as well as ODA to multilateral institutions. Source: Development Assistance Committee of OECD.

Numbertight = the Number of years since the fiscal consolidation has started in a donor country. Source: Calculated by the author using the Episodes of Fiscal Adjustment identified by Alesina and Ardagna (2010).

Numbertightsq = the square of the number of years since the fiscal consolidation has started in a donor country. Source: Calculated by the author using the Episodes of Fiscal Adjustment identified by Alesina and Ardagna (2010).

Numberstimuli = the Number of years since the fiscal stimuli has started in a donor country. Source: Calculated by the author using the Episodes of Fiscal Stimuli identified by Alesina and Ardagna (2010).

Numberstimulisq = the square of the number of years since the fiscal stimuli has started in a donor country. Source: Calculated by the author using the Episodes of Fiscal Stimuli identified by Alesina and Ardagna (2010).

Pubdebt = Gross Public Debt-to-GDP-ratio. Source: The International Monetary Fund (IMF)'s New comprehensive database on Public debt – (November 2010).

Govnetlend = General government fiscal balances (Total Revenues minus Total Expenditures) in percent of GDP. Source: OECD Economic Outlook N° 88 – December 2010.

Appendix 2: The categories of development aid variables considered

Total net aid disbursement minus debt forgiveness, as a percentage of GDP (denoted **"Total"** in the tables).
Total Bilateral net aid disbursements minus debt forgiveness, in percent of GDP (denoted **"Bilateral"** in the tables).
Total Multilateral net aid disbursements in percent of GDP (denoted **"Multilateral"** in the tables).
Net aid disbursements to UMICs (Upper-Middle-Income Recipient Countries) minus debt forgiveness, in percent of GDP (denoted **"UMICs"** in the tables).
Net aid disbursements to LDCs (Least Developed Recipients) minus debt forgiveness, in percent of GDP (denoted **"LDCs"** in the tables).
Net aid disbursements to Other LICs (Other Low-Income Recipient Countries) minus debt forgiveness, in percent of GDP (denoted **"OtherLICs"** in the tables).

Net aid disbursements to LMICs (Lower-Middle-Income Recipient Countries) minus debt forgiveness, in percent of GDP (denoted **"LMICs"** in the tables).

Net aid disbursements to Africa (Upper-Middle-Income Recipient Countries) minus debt forgiveness, in percent of GDP (denoted "**Africa**" in the tables).

Appendix 3: The Episodes of fiscal adjustment and Stimuli identified by Ardagna and Alesina (2010)

Country	Episodes of fiscal adjustments	Episodes of fiscal Stimuli
Australia	1987 1988	1990 1991
Austria	1984 1996 1997 2005	1975 2004
Belgium	1982 1984 1987 2006	1975 1981 2005
Canada	1981 1986 1987 1995 1996 1997	1975 1982 1991 2001
Denmark	1983 1984 1985 1986 2005	1974 1975 1980 1981 1982
Finland	1973 1976 1981 1984 1988 1994 1996	1978 1982 1983 1987 1990 1991
France	1979 1996	1975 1981 1992 1993 2002
Germany	1996 2000	1995 2001
Greece	1976 1986 1991 1994 1996 2005 2006	1981 1985 1989 1995 2001
Ireland	1976 1984 1987 1988 1989 2000	1974 1975 1978 2001 2007
Italy	1976 1980 1982 1990 1991 1992 1997	1972 1975 1981 2001
Japan	1984 1999 2001 2006	1975 1993 1998 2005 2007
Netherlands	1972 1973 1983 1988 1991 1993 1996	1975 1980 1995 2001 2002
New Zealand	1987 1989 1993 1994 2000	1988
Norway	1979 1980 1983 1989 1996 2000 2004	1974 1976 1977 1986 1987 1991
Portugal	1982 1983 1986 1988 1992 1995 2002	1978 1985 1993 2005
Spain	1986 1987 1994 1996	1981 1982 1993
Sweden	1981 1983 1984 1986 1987 1994 1996	1974 1977 1979 1980 1991 1992
United Kingdom	1977 1982 1988 1996 1997 1998 2000	1971 1972 1973 1990 1991 1992
United States		2002

Appendix 4: Descriptive Statistics for the full sample of 19 countries

Variable	Observations	Mean	Standard	Minimum	Maximum
Total	698	0.3834206	0.237751	0.0123208	1.040209
Bilateral	698	0.2664351	0.1681259	0.0001609	0.7653306
Multilateral	686	0.1368092	0.0892978	0.0149068	0.4230811
Africa	679	0.1080993	0.0913522	-0.0490529	0.4348712
North Africa	642	0.0114865	0.0192585	-0.0864862	0.1710931
South Africa	679	0.0942579	0.0839063	0.0006688	0.4344764
LDCs	679	0.0866175	0.0734737	0.0007832	0.4292414
Other LICs	673	0.0316807	0.0408299	-0.0007994	0.3507794
LMICs	679	0.0711394	0.0465048	-0.0264144	0.3198324
UMICs	675	0.0183391	0.0176495	-0.0214394	0.1241507
Numbertight	653	0.194487	0.519999	0	4
Numbertightsq	653	0.3078101	1.195037	0	16
Numberstimuli	653	0.1653905	0.4734319	0	3
Numberstimulisq	653	0.2511485	0.9615392	0	9

Govnetlend	690	-2.192955	4.329945	-16.00805	18.48245
Pubdebtimf	712	52.32846	29.10584	0	191.6414
Outputgap	644	-0.1337252	2.141367	-8.722275	6.514374

Appendix 5: Classification of Countries According to Income (OECD's Classification)

Africa : Angola, Algeria, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Rep, Chad, Comoros, Congo, Dem. Rep, Congo, Rep, Cote d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mayotte, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, St Helena, Sudan, Swaziland, Tanzania, Togo, Tunisia Uganda, Zimbabwe.

LDCs: Angola, Benin, Burkina Faso, Burundi, Central Africa, Chad, Comoros, Congo, Dem. Rep., Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Uganda, Zambia, Haiti, Cambodia, Laos, Timor-Leste, Afghanistan, Bangladesh, Bhutan, Maldives, Myanmar, Nepal, Yemen, Kiribati, Samoa, Solomon Islands, Tuvalu, Vanuatu.

Other LICs: Cote d'Ivoire, Ghana, Kenya, Nigeria, Zimbabwe, Korea, Dem. Rep, Vietnam, Kyrgyz Republic, Pakistan, Tajikistan, Uzbekistan, Papua New Guinea.

LMICs: Albania, Bosnia-Herzegovina, Kosovo, Macedonia, FYR, Moldova, States Ex-Yugoslavia, Ukraine, Algeria, Egypt, Morocco, Tunisia, Cameroon, Cape Verde, Congo, Rep., Namibia, Swaziland, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Bolivia, Colombia, Ecuador, Guyana, Paraguay, Peru, China, Indonesia, Mongolia, Philippines, Thailand, Armenia, Azerbaijan, Georgia, India, Sri Lanka, Turkmenistan, Iran, Iraq, Jordan, Palestinian Adm. Areas, Syria, Marshall Islands, Micronesia, Fed. States, Niue, Tokelau, Tonga, Wallis and Futuna.

UMICs: Belarus, Croatia, Montenegro, Serbia, Turkey, Libya, Botswana, Gabon, Mauritius, Mayotte, Seychelles, South Africa, St. Helena, Anguilla, Antigua and Barbuda, Barbados, Belize, Costa Rica, Cuba, Dominica, Grenada, Jamaica, Mexico, Montserrat, Panama, St.Kitts-Nevis, St. Lucia, St.Vincent and Grenadines, Trinidad and Tobago, Argentina, Brazil, Chile, Suriname, Uruguay, Venezuela, Malaysia, Kazakhstan, Lebanon, Oman, Cook Islands, Fiji, Nauru, Palau.