

Fiscal Rules and Composition Bias in OECD Countries

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Abstract

Using a sample of OECD countries, this paper finds that while fiscal rules succeeded in reducing total government expenditures and budget deficits in the medium term, they significantly affected the composition of government expenditure: the ratio of social transfers to government consumption declined. In contrast, we do not find a stable effect of fiscal rules on public investment. It is shown that the compositional shift against social transfers is beyond “from welfare to work” policies, which have been adopted by many OECD countries during the nineties. Our empirical examination reveals that the reduction of social transfers relative to government consumption did not occur in countries with strong legal protection to social rights.

JEL-Code: H00, H30, E62.

Keywords: fiscal rules, government deficit, government expenditure, expenditures composition.

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1. Introduction

In the last decade a wide range of OECD countries adopted budget and expenditure rules. The increase from less than 5 countries in the seventies and eighties, to 30 countries after the nineties (Calderon and Schmidt Hebbel, 2008) could be partially explained by the effectiveness of numerical fiscal rules in curtailing budget deficits in different parts of the world, and at different government levels [for the US see Poterba, 1994; Alt and Lowry, 1994; Alesina and Bayoumi, 1996; for Latin America see Alesina et al, 1999 and for Switzerland see Krogstrup and Walti, 2008].² Krogstrup and Walti (2008), using a panel of Swiss sub-federal jurisdictions, show that fiscal rules have a significant effect on budget deficits even after controlling for voter preferences to exclude the possibility that this correlation is driven by an omitted variable (preferences).

Both policy makers and researchers were aware of the possible costs of adopting fiscal rules along side the benefits of budgetary discipline.³ The main concern was that balance budget rules are expected to deepen recessions according to the Keynesian view.⁴ Nevertheless, Alesina and Bayoumi (1996) found, based on a sample of US states, that fiscal rules have not increased output volatility. More recently several papers detect no evidence that fiscal rules amplify economic fluctuations (See Gali and Perotti, 2003 for EMU countries, Fatas and Mihov, 2006 for US states and Badinger, 2009 for OECD countries).

² See also Guichard et al. (2007) who found that both expenditure and budget rules anchored successful fiscal consolidations.

³ Kopits (2001) provides a list of arguments for and against budget rules.

⁴ From a neo-classical point of view, balance budget rules may impose costs due to sub-optimal path of tax rates (Barro, 1979).

Fiscal rules may provoke costs also as consequence of an unintentional change in the composition of government expenditures. Fiscal consolidation as a result of budget rules could be in various forms: higher taxes, lower public consumption, lower public investment, lower transfer payments and a combination of all the above. Ideally, the particular form of fiscal restraint should be in accordance with cost-benefit considerations: the chosen tax rate should minimize the excess burden of taxation, and the cut in expenditure should be focused on the items with the lowest (marginal) social welfare. In practice, however, political economy considerations are likely to play an important role in determining the composition of government expenditures cut.

Balanced budget rules such as Maastricht-related constraints do not specify what type of government expenditure should be cut to meet the specified budget targets and that leaves room for governments to execute various policy mixes.⁵ Public consumption, and especially government wages, might be less prone to cuts because of the relative strength of lobbies (unions). That would be the case if the median voter is protected by unions,⁶ or when wages is considered by governments as more "visible", and consequently are less exposed to cuts.⁷ In contrast, due to the same political economy reasons, governments could choose sub-optimal level of public investment which may be harmful in terms of long-run economic growth. Transfer payments may be also subject to disproportional cut as a result of binding budget rules. Unbalanced cut in

⁵ Blanchard and Giavazzi (2004) have criticized SGP for not excluding public investment from the definition of the budget. Balassone and Franco (2000) discuss the application of a golden rule in the presence of a fiscal rule.

⁶ A recent paper focusing on the median voter preferences is Creedy and Moslehi (2009), who follows the seminal contribution by Richard and Meltzer (1981).

⁷ Sanz and Velazquez (2003) show that for political reasons governments may choose expenditure composition guided by an impulse of avoiding cuts in "visible expenses". Clearly, government wages are visible expenses, since unions are equipped with tools such as strikes that can easily make wage cuts more visible.

monetary aid to disadvantageous groups may drive inequality and poverty to a level that is inconsistent with social preferences. Scholz and Levine (2001) and Birsall (1998) have raised the fear that fiscal rules might undermine the commitment of the affluent countries to address income inequality.

The empirical literature on the costs side of fiscal rules has almost overlooked the costs that may be associated with an unintended change in the composition of government expenditures.⁸ A simple inspection of countries that implemented expenditure and balanced budget rules at the national level reveals a clear decline in the ratio of government transfers to public consumption after the implementation of the rules (Figures 1a and 1b), and in the ratio of government investment to government consumption in countries that adopted the Maastricht Treaty (Figure 1c).

The goal of this paper is to fill this gap by exploring the effect of numerical fiscal rules on the composition of government expenditures in developed countries. We first start by examining the effectiveness of fiscal rules in reducing budget deficits and the size of government expenditures. Then, we examine whether the difference of rates of change between public investment and transfer payments relative to government consumption are significantly different before and after the introduction of fiscal rules, controlling for a standard list of explanatory variables including the level of these ratios. We shall clearly emphasize that our paper does not resolve the more difficult question of whether the composition of government expenditure is sub-optimal after the introduction of fiscal rules.

⁸ Gali and Perotti (2003) is an exception with regard to public investment but they have not examined the effect on redistribution policy. In a sample that includes the nineties, they found no empirical support for the claim that fiscal rules reduce public investment.

The paper is organized as follows: the next section analyzes the effect of fiscal rules on fiscal consolidations. The main result of the paper is presented in Section 3. It is shown that fiscal rules reduced the growth rate of social transfers more than that of government consumption. In section 4 we discuss two policy issues: first, we test whether the effect of fiscal rules on the government transfers over government consumption ratio is beyond the general adoption of "from welfare to work" policies at OECD countries; second, we analyze whether countries with a strong social security legislation cope better with the expenditure composition effect of fiscal rules. Section 5 concludes, Appendix A explore the effects of fiscal rules using a definition of central government, which in some cases is the basic unit of fiscal rules, and Appendix B shows results after controlling also for political structure.

2. Fiscal rules and fiscal performance

2.1 The data

We use a panel of 22 OECD countries⁹ during the period 1960 to 2006 to test the effects of fiscal rules on actual budget deficits and general government expenditures, and its composition according to three items: government consumption, social transfers and government investment.¹⁰ Since occasionally the rules are based on a central government definition, in appendix A we analyze the robustness of our results to this definition. The source of our data is the OECD.¹¹ Budget deficit is measured by the ratio of nominal government net balance to nominal GDP. The rates of change

⁹ This list includes all OECD countries except Luxembourg, Mexico, Turkey and the new members (Slovak Republic, Poland, Hungary, Korea, Czech Republic). Our choice of countries, which is shown in Table 1, is related to data availability.

¹⁰ The following are the items according to the OECD database: for investment - gross capital formation; for transfers – subsidies + social benefits and social transfers in kind + other current transfers + capital transfers; and for consumption - final government consumption.

¹¹ We checked consistency of our historical data with the data used by Philip Lane (2003), to whom we are thankful.

of government expenditures and its items are computed as the logarithmic change of government expenditure, deflated by GDP prices. The choice of GDP prices as a deflator is in line with Lane (2003): by using GDP prices, we capture the rise in government wages over domestic prices. Since wages is potentially one of the main political economy forces driving the dynamics of expenditure, it is important to allow them to play a role.

Fiscal rules are represented by dummy variables that take the value of 1 during the period that starts at the adoption date of the rule and lasts until the rule is abandoned (otherwise it continues until the end of the sample), and 0 otherwise. Table 1 shows the implementation years for the different rules and countries. This data for Table 1 is based on an extended version of Table 2 of Guichard et al. (2007), who consider budget and expenditure rules on a broad basis. Their original database reflects fiscal rules that were effective at the time that paper was written while the extended database includes also past fiscal rules that were abandoned.¹²

We consider four different definitions for fiscal rules: i) budget rules adopted at the national level (BTARGET); ii) expenditure rules adopted at the national level (ETARGET); iii) Participation at the Maastricht Treaty starting at the year in which *the treaty was approved at a national referendum* (MAAS).¹³ The years in Table 1 are the years at which the referendum took place (and approved); iv) Participation in the

¹² We deviate from that database with respect to expenditure rules in the US following Auerbach (2008) who stresses that the expenditure rule adopted in the US does not match our expenditure rule broad definition since the rule was applied for discretionary spending, excluding social insurance spending for health, social security (retirement and disability pensions), unemployment and other entitlement programs.

¹³ Since there are national debates about participating at the super-national agreements, it is important to define since when the fiscal rule is binding. We assume that the result of a referendum is compelling from the point of view of policy makers.

Stability and Growth Pact (SGP) combined with the adoption of the Euro, which represents a binding commitment.

The choice of these four different definitions, allows for testing different degrees of rules effectiveness, depending on whether the rules are at the national level or at super-national level. Moreover, by using interaction variables, defined as the multiplication of the different dummy variables representing the rules, we can test the effectiveness of combined application of rules. Note, for example, that Germany implemented all types of rules, while Iceland did not adopt any rule and the US is the single country that abolished an existing budget rule without adopting another one until the end of the sample. While in our tables we report the results for the different fiscal rules, we also checked the interaction combinations of all types of rules.¹⁴

We perform GMM estimations using country fixed effects. The effects of national fiscal rules (BTARGET and ETARGET) are estimated with and without year fixed effects to account for the "competition" between year fixed effects and our central dummy variables for fiscal rules which are in fact period dummy variables. The inclusion of year fixed effects might underestimate the effect of fiscal rules depending on how many countries adopt the same fiscal rule at the same time. The adoption of the same fiscal rule at almost the same year by a large share of countries (Maastricht Treaty at the beginning of the nineties and of the Stability and Growth Pact in 1997) is the reason why year fixed effects are not included in the estimation when super-national rules (MAAS and SGP) are employed.

¹⁴ Since in many cases national and super-national rules were implemented simultaneously, we include in the regressions one rule at a time. Combined application of rules is of course an important issue, which is tested through interaction terms. To avoid an excessively detailed presentation these regressions are not reported in the paper, but they are available from the authors.

To capture a medium term perspective, the dependent variable and all non-dummy independent variables are calculated using four years moving averages.¹⁵ In all regressions we report robust standard deviations, using period panel corrected standard errors.

Finally, in all the regressions we use a standard list of control variables measured in moving average over four-years: population growth (DlogPOP) to account for the need of increasing public services, GDP growth (DlogY) which represents the availability of resources, and the growth of population under 15 years old (DlogPOP15) which intensively demands public services such as education and child allowances. We also tried a dummy variable reflecting election years, and the increase in population over 65 years old (DlogPOP65) which represents the demand for old-age transfers, but in most cases they were not significant.

Note also that changes in the dependent variables may reflect a correction for their levels: for example, the reduction in transfer payments over consumption ratio may reflect a correction for its high level at the beginning of the nineties. Thus, it is crucial to control in all the regressions for the lagged level of the dependent variable, calculated as well as a four-years moving average. In the budget deficit regressions, we use a control variable a la Barro (1979), to capture high and transitory government expenditures. This variable is calculated using high deviations of expenditure (higher in absolute value than one standard deviation) from an hp filtered trend.¹⁶

¹⁵ The vast majority of our results hold also with moving averages of three and five years.

¹⁶ Employing an index of violent and non-violent conflicts (CONFLICT) based on the Heidelberg Institute of International Conflict Research turns out to be unproductive. Oddly, we found a negative and significant coefficient for CONFLICT in the regression of government consumption rate of change, which is the category that includes defense expenditure.

In sum, the estimated panel regression, for 22 countries, is:

$$(1) \quad Y_{c,t} = \alpha + \beta FR_{c,t} + \gamma X_{c,t} + \delta_c + \phi_t + \varepsilon_{c,t}$$

Where the dependent variable, $Y_{c,t}$, represents the rate of change for one of the several fiscal variables (e.g., the growth rate of government consumption) in country c in year t , $FR_{c,t}$ stands for fiscal rule dummy variable in country c in year t and $X_{c,t}$ symbolizes a list of control variables including the level of the dependent variable. δ_c and ϕ_t are country and year fixed effects, respectively. We are mainly interested in the sign of β and its size.

Equation (1) is in fact a diff-in-diff regression which provides cleaner estimates for the effect of fiscal rules. The central dependent variables are measured as a difference between rates of change of two fiscal variables such as transfer payments and government consumption and the main explanatory variable also represents a difference - before and after the introduction of fiscal rules.

Note, that we do not examine whether countries violate the fiscal targets that have been adopted (as in the case of Italy, Portugal and Greece) but rather whether these budgetary rules influence fiscal performance. In particular, the budget deficit or any other fiscal measure may be lower after the introduction of fiscal rules and at the same time may exceed the specified target.

2.2 Fiscal Rules and Fiscal Consolidation

Tables 2 and 3 present the estimation results of equation (1) for various fiscal rules, where the dependent variable in Table 2 is the first difference of general government

budget deficit as a share of GDP, and in Table 3 it is the rate of change in total real government expenditures.

Table 2 shows that *budget* rules both at the national and super-national levels are significantly effective in reducing medium term budget deficits after taking into account a standard list of control variables, country and year fixed effects. The reduction of the deficit is relatively large, and it ranges between 0.28 to 0.63 percentage points of GDP.¹⁷ Note, that most of the control variables have the expected signs. An expenditure rule at the national level (ETARGET) has a negative effect on budget deficit (change) but it is significant only when year fixed effects are excluded.

A similar picture emerges regarding the effectiveness of fiscal rules in reducing total government expenditures growth rate (Table 3). Fiscal rules have a consolidated effect on total expenditures as implied by their coefficients. The medium term reduction in the growth rates of total government expenditures is quantitatively large and it ranges between 0.5 and 3.1 percent. Note, however, that both the size and significance are sensitive to the inclusion of year fixed effects.

3. Fiscal Rules and Government Expenditure composition

Following the adoption of fiscal rules, a utilitarian policy maker should cut expenditures in the items with lowest social marginal utility. Examining whether fiscal rules induce suboptimal changes in the composition of government expenditures

¹⁷ In non-reported regressions we obtained that the combinations BTARGET*ETARGET and BTARGET*ETARGET*MAAS derived on higher (in absolute value) coefficients, significant at 1 percent. The strong impact of combined rules is in the spirit of the result found by von-Hagen (2005), who showed that strong fiscal rules have been effective when combined with a design of the budget process enabling governments to commit to the rule.

would involve estimating the marginal utility of broad government items such as public consumption, investment and transfer payments for each country. We pursue here the more modest task of assessing empirically the impact of fiscal rules on government expenditures composition that are captured by two variables. The first variable is the difference between the rate of change of transfer payments and the rate of change of government consumption and the second one is the difference between the rate of change of public investment and the rate of change of government consumption.

3.1 Transfer payments Vs. government consumption

Table 4 documents the impact of fiscal rules on the first aspect of the composition of government expenditures: transfer payments relative to government consumption. Fiscal rules have a negative effect on transfer payments relative to government consumption (Table 4). The negative coefficient of fiscal rules dummy variable is significant for both the expenditure rule and for the Maastricht Treaty. The estimated impact of ETARGET is robust to the inclusion of year fixed effects.

As would be expected, the coefficient of expenditure rule (ETARGET) is the highest as complying with such rule leaves less degrees of freedom than a budget rule, in which governments could in addition impose higher tax rates to meet the rule. Note also that the coefficient of transfer payments relative to public consumption level is negative and significant – meaning that countries tend to lower the rate of change of that difference when the previous level is high.

One possible explanation for the results on expenditure composition is that under sticky wages, complying with the rule implies a need for cuts other than public wage bill (other things being equal). In order to test this hypothesis we run the same regressions using real government wages instead of government consumption.

As can be seen from Table 4 (columns 7 and 8), the difference between the change in log transfer payments and change in log public wage bill is negatively affected by the adoption of an expenditure rule and this result is not sensitive to the inclusion of year fixed effects. Interestingly, the coefficient of the expenditure rule in the social transfers is higher than that for government consumption. Thus, we cannot reject the hypothesis that the composition effect is partially related to the explanation used in the political economy literature.

Two additional robustness checks are provided in appendixes A and B. The findings regarding the negative impact of fiscal rules on the growth rate of transfer payments (relative to government consumption) is robust both to adding the extent of central government and to political structure characteristics (Tables A1 and B1).

3.2 Public investment Vs. government consumption

The same diff-in-diff technique is used in Table 5 to explore the effect of fiscal rules on the second important aspect of the composition of government expenditures: public investment relative to government consumption. Public investment should not be affected by budget rules in countries that have adopted a "golden rule" type such as in the UK. To address that, a dummy variable, with a value of 1 for UK during the years of the golden rule and 0 otherwise, has been added to the investment

regressions. A similar dummy variable was used for Japan, which according to Von Hagen (1996) had specific provisions for investment since 1983.

Unlike the robust results on the effect of fiscal rules on the compositional shift towards less social transfers, the finding regarding public investment is highly unstable. Table 5 shows that on the one hand, fiscal rules at national level have either insignificant impact on public investment (BTARGET) or even positive and significant effect (ETARGET). Moreover, the coefficients of fiscal rules are highly sensitive to the inclusion of year fixed effects. On the other hand, the dummy variables for Maastricht Treaty and SGP have a negative and significant effect on the rate of change of public investment relative to the growth rate of government consumption (SGP is only borderline significant).¹⁸ This result is line with the concern raised by several authors (e.g., Blanchard and Giavazzi, 2004) regarding the negative effect that Maastricht treaty related rules would have on public investment.

We have got the same unstable result as before when replacing government consumption by public wage bill (columns 7 and 8 in Table 5). While the effect of national fiscal rules is either insignificant or even positive, the Maastricht and SGP budget rules have negative and significant coefficients at 5 and 1 percent, respectively (the last two regressions are not reported).

Tables A2 and B2 do not show once again stable and clear effect of the various definitions of fiscal rules on the growth rate of public investment (relative to

¹⁸ One additional reason for the reduction of public investment is the increase of Public-Private partnerships (PPP) in the nineties (OECD, 2008). Beyond the technical problem of unavailability of consistent international data for controlling for this variable, it is not clear whether it would be an exogenous variable or related – at least to some extent - to the adoption of fiscal rules.

government consumption). The significance, and in one specification even the sign, is sensitive to the inclusion of year fixed effect.

4. Policy preferences and the effect of fiscal rules

To what extent (if any) the change in the composition of government expenditures against social transfers documented in the previous section has been intended? Put differently, is the change in the composition of government expenditures artificially linked to fiscal rules? One alternative explanation is that this compositional shift reflects the wishes of countries to cut the excessive level of transfer payments relative to consumption, and that desire was translated into fiscal rules. According to this view, the compositional shift due to fiscal rules is capturing the effect of an omitted variable: the preferences toward a lower level of transfer payments relative to consumption. A second related question is whether OECD countries with better constitutional safeguards for social transfers tend to exhibit weaker change in the composition of government expenditures as a result of adopting fiscal rules.

4.1 Is FWTW the driving force?

It is more difficult to find variables that encapsulate preferences for a change in redistribution policy than for its level. Nevertheless, we employ the timing at which what is known as "From Welfare To Work" (FWTW) policy was first implemented as a variable that may reflect the desire for a change. During the nineties, governments in many OECD countries have adopted FWTW policy. To assess the partial effect of fiscal rules after taking into account the effect FWTW on transfer payments, the following panel regression is estimated:

$$(2) \quad Y_{c,t} = \alpha + \beta \text{ETARGET}_{c,t} + \gamma X_{c,t} + \eta \text{FWTW}_{c,t} + \delta_c + \phi_t + \varepsilon_{c,t}$$

Where the dependent variable, $Y_{c,t}$, represents the difference between the rate of change of transfer payments and the rate of change of government consumption in country c in year t . FWTW is the new variable added to the previous list of control variables. We will use different versions of FWTW to explore the extent to which the size of β is affected by the introduction of FWTW.

One should expect that the coefficient for an expenditure rule would become insignificant as a result of the introduction of FWTW if indeed the adoption of a fiscal rule merely *reflects* a fundamental preference shift that *explains* both FWTW and fiscal rule and consequently the decline in the growth rate of transfer payments relative to government consumption. In Table 6 we consider the possibility of a policy change during the nineties, and we expect that countries that followed the imposition of the policy known as FWTW, which has combined active and passive labor market expenditures with a cut in other government transfers, was analyzed in many OECD reports, and summarized by Martin (2000), Martin and Grubb (2001) and Brender, Peled and Kasir (2002).¹⁹

Three different dummy variables are considered to account for the lack of general agreement regarding the date of implementing FWTW policy. We first consider a general adoption of this policy by using a dummy variable that takes the value of 1 since 1990, and 0 otherwise for all countries except Iceland (FWTW_90). Martin and Grubb (2001) show detailed data at the country level for all OECD countries in our sample, except Iceland. According to the data shown in their Table 1 and Figure 1,

¹⁹ Martin (2000) and Martin and Grubb (2001) define active expenditure as spending on items targeted at increasing participation in the labor market, and passive expenditure as spending on income transfers, namely unemployment benefits and early retirement pensions.

there was a clear jump in FWTW policies starting in 1990. A change in policy since 1990 is reported also in Figure 1 of Banks et al. (2005), based on an index of unemployment benefits duration.

The second dummy variable (FWTW_C) assumes heterogeneity in the adoption date of FWTW policy according to total spending on labor market programs as reported by Martin and Grubb (2001, Table 1); these authors show that in Japan, Norway, Greece and New Zealand the FWTW policy started even before 1990. Our third variable, FWTW_97 is based on the information reported by Brender, Peled and Kasir (2002), who summarize FWTW policies in the OECD countries based on country surveys published by the both the OECD and the IMF, during the years 1998-2001; their study reports an acceleration of FWTW policies in many countries since 1997. In accordance, we use a dummy variable that takes the value of 1 since 1997, and 0 otherwise, for relevant countries (15 out of the 22 countries in our sample).²⁰

We restrict ourselves to expenditures target, since our analysis concentrates on the expenditure side of the budget. The results that are presented in Table 6 show that expenditures rules continue to have a negative and significant effect on the composition of government expenditures against social transfers, even after controlling for FWTW policy under all its different definitions. Note that the size of the estimated coefficient for the expenditure rule (ETARGET) is only marginally smaller as compared to the specification without the dummy for "From Welfare To Work" policy.

²⁰ The countries that accelerated the adoption of FWTW are Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Italy, Japan, Netherlands, New Zealand, Spain, UK and USA.

The dummy variables for FWTW (especially FWTW_90 and FWTW_97) are correlated with year fixed effects and therefore regressions with and without year fixed effects are provided in Table 6. In general, FWTW policy has a negative effect on the rate of change of transfer payments but it is significant at 5 percent in two out of the three definitions. The coefficients for FWTW lose their significance once year fixed effects are introduced, as would be expected.

4.2 Fiscal rules and legal protection

In Table 7 we examine whether countries that have legal institutions, that are intended to protect social rights, exhibit different patterns in terms of the composition of government expenditures after the implementation of budget rules. To study the interaction between fiscal rules and legal protection the following equation is estimated:

(3)

$$Y_{c,t} = \alpha + \beta \text{ETARGET}_{c,t} + \gamma X_{c,t} + \eta \text{FWTW}_{c,t} + \lambda (\text{ETARGET}_{c,t} * \text{LP}_c) + \delta_c + \phi_t + \varepsilon_{c,t}$$

As before, $Y_{c,t}$ symbolizes the difference between the rate of change of transfer payments and the rate of change of government consumption in country c in year t . LP_c is the degree of legal protection for social security in country c . The interaction term ($\text{ETARGET} * \text{LP}_c$) allows for variation in the effect of fiscal rules on the composition of government expenditures according to the level of commitment to social security. LP_c is a variable that has one value for each country and therefore could not appear in the same estimation together with country fixed effects, δ_c .

Two different variables are employed to capture the degree of legal commitment to social security. The first variable is based on Botero et al. (2004) who constructed an

index of social security strength built on the coverage of various branches of social security laws such as pensions, disabilities and unemployment benefits. We used a dummy variable (SSLAWS) that takes the value of 1 for countries with an index higher than the median (as reported for all the countries in their sample), and 0 otherwise. Using this threshold, the list of countries that have a strong social security system includes all the countries in our sample except Belgium, Netherlands, US and Japan.

The second variable (SSCONST) that represents the extent of legal protection for social rights is borrowed from Ben-Bassat and Dahan (2007) who created an index of social security strength based on the constitutional commitment for seven features of social security. Their index, which ranges between 0 and 3, is characterized by a higher variance among developed countries as compared to Botero et al. (2004). Using the same classification as before (i.e., below and above the median), the countries with strong constitutional commitment for social security are: Finland, Switzerland, Portugal, Italy and Spain.

The use of a dummy variable has the advantage of allowing us to characterize the overall policy reaction of countries with strong social security. The overall policy response in countries with strong social security is represented by the sum of the coefficients of the fiscal rule and an interaction term of legal protection dummy and expenditure rule dummy. To allow for more flexible specification of the social security indexes, we also run regressions using an interaction between fiscal rules and the value of the indexes (SSLAWS_INDEX and SSSCONST_INDEX).

The coefficient of expenditure rule is negative and significant in all 8 specifications that appear in Table 7. However, the sum of $SSCONST*ETARGET$ and $ETARGET$ coefficients is close to zero implying that fiscal rules do lead to compositional shift against transfer payments only in countries with a weak constitutional commitment to social security. The same picture emerges when social security coverage variable is used: the difference between the rate of change of transfer payments and government consumption has not been significantly affected by the introduction of fiscal rules in countries with more comprehensive coverage of social security. When we use the indexes instead of the dummy variables, we get also significant results. In summary, these results suggest that better legal protection for social security makes a difference.

An alternative specification would be to include a dummy for legal variables $SSLAWS$ or $SSCONST$ (the main effect) in addition to the interaction term. However, these regressions can be performed only if country fixed effects are excluded. Running these regressions yield similar results: the sum of $ETARGET$ and the interaction term is close to zero, and the coefficients of these terms are significant at 1 percent (not reported here).

5. Summary and Conclusions

Fiscal rules constituted a useful tool for advanced countries in reducing general government budget deficits. It is shown in our empirical estimations that both budget and expenditure rules succeeded, at national as well as multinational (Maastricht and SGP) levels, in reducing the rate of increase in total government expenditures and the level of budget deficits as a percent of GDP.

In this paper we found a relatively large compositional effect of implementing fiscal rules: the ratio of social transfers to government consumption (and to government wages) tend to decline more rapidly in countries implementing fiscal rules compared to countries without such rules.

We have shown that the decline in the ratio of transfers to government consumption is significant even after controlling for cuts in transfers as a result of "From Welfare to Work" Programs, which were adopted by many OECD countries during the nineties. This finding suggests that this compositional shift might be partially unintended.

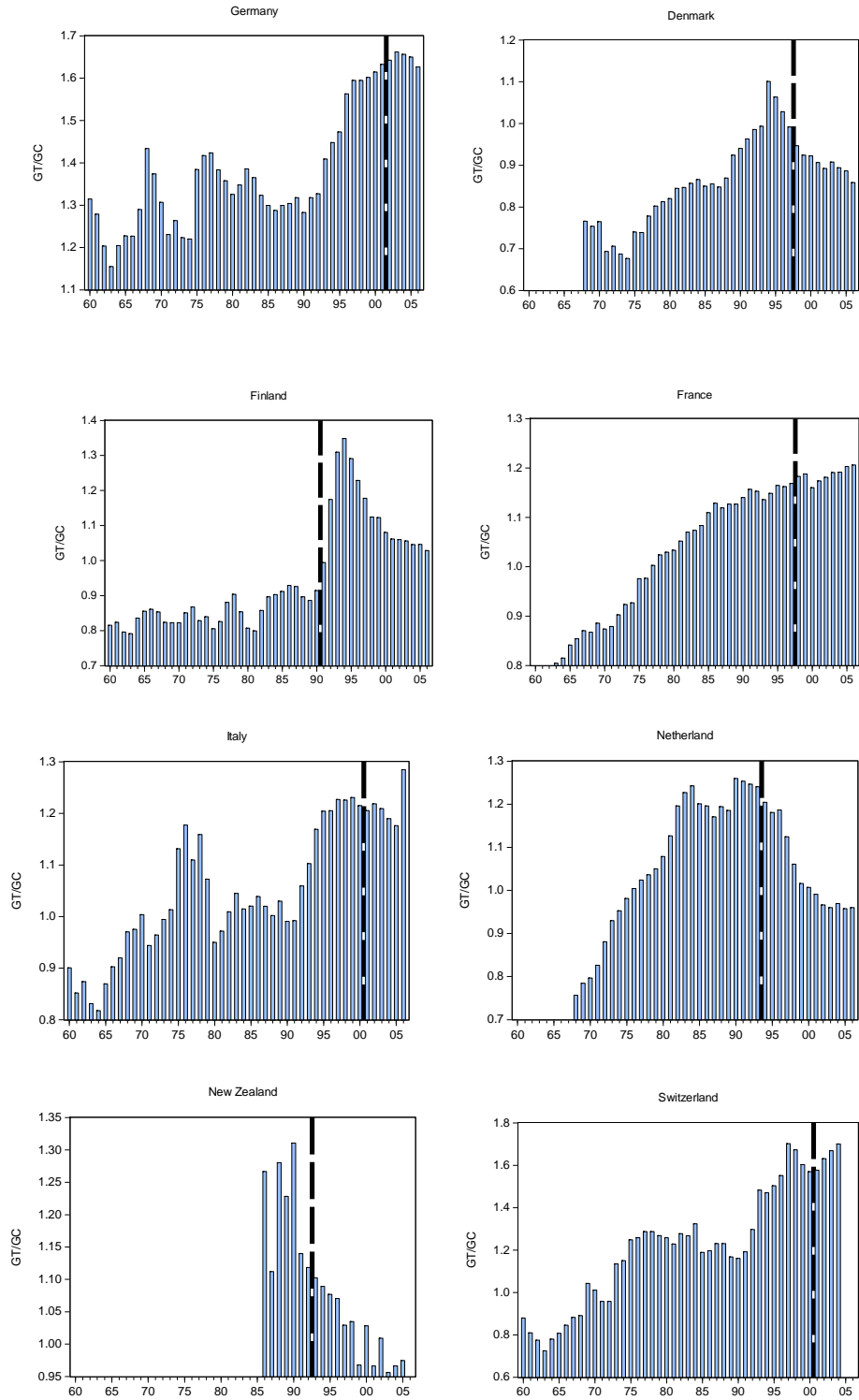
The compositional shift due to fiscal rules found here should be judged in light of the negative (strong) correlation between the share of social transfers and income inequality measures. Note that most OECD countries have witnessed a rising income inequality in the same period that fiscal rules became widespread (OECD, 2008).

Interestingly, we found that the change in the composition of government expenditures against social transfers vanishes for countries with strong legal commitment for a social safety net, as measured by the degree of constitutional commitment to social rights and by social security coverage in laws. This finding shows that countries can design a package of rules to avoid an unintended reduction in social transfers relatively to government consumption.

Figure 1a - Government Transfers over Government Consumption: Expenditure

Rules at the National Level

(the dash line is the year of adoption)



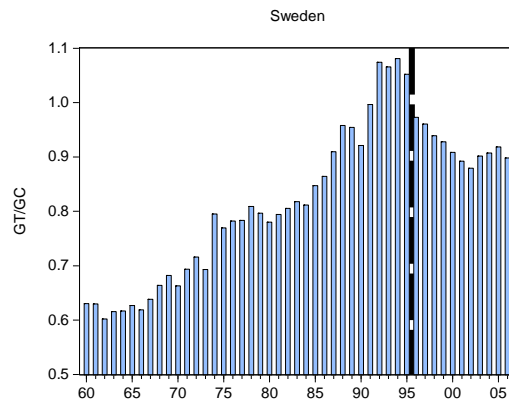
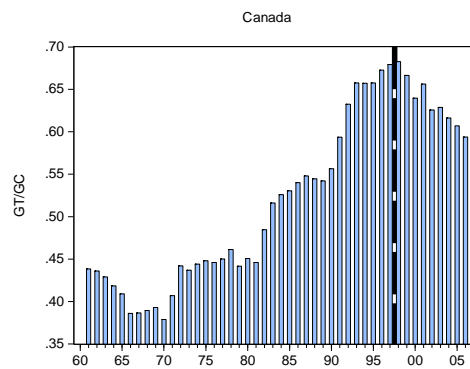
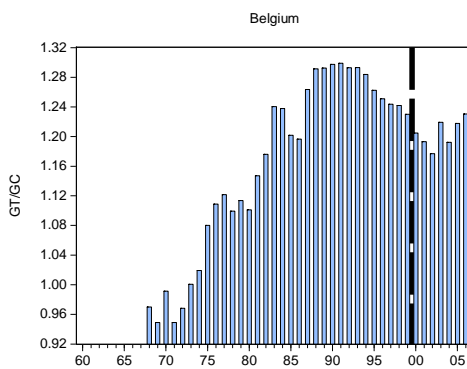
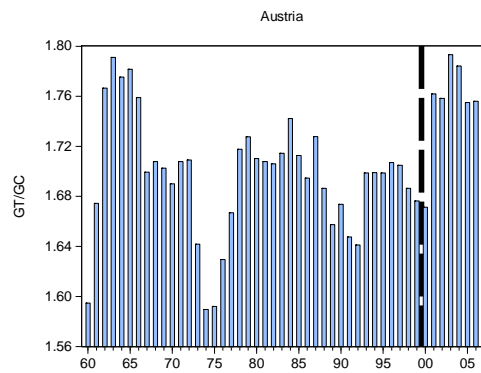
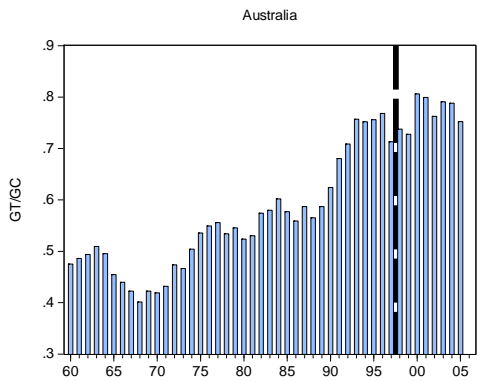


Figure 1b – Government Transfers over Government Consumption: Budget Rules at the National Level
 (the dash line is the year of adoption)



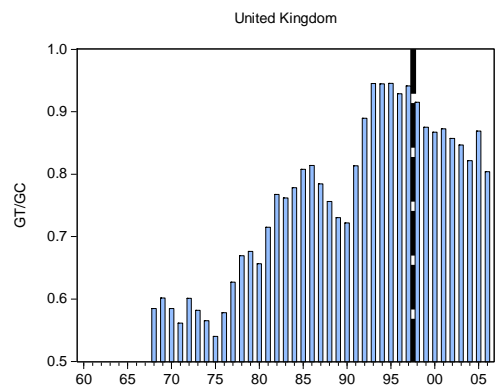
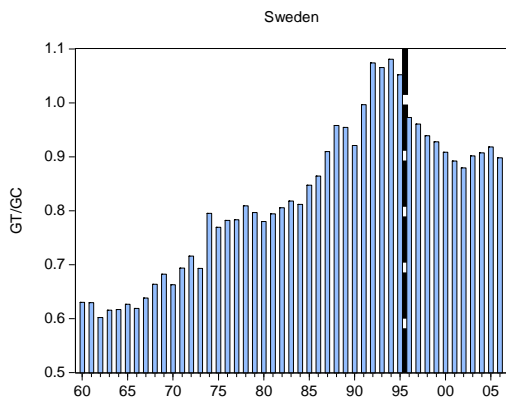
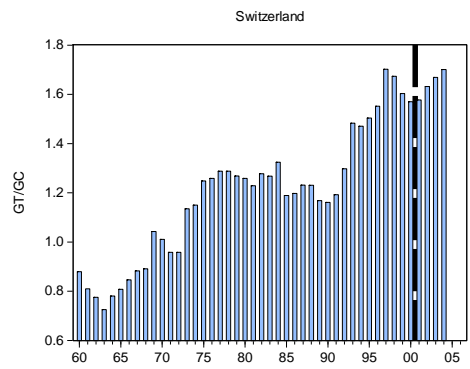
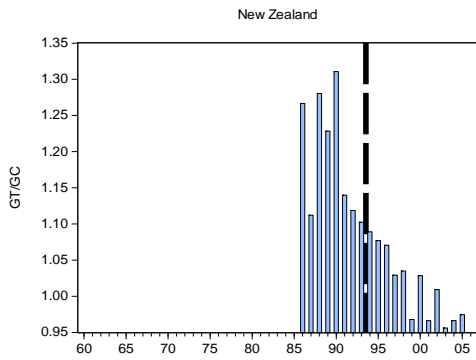
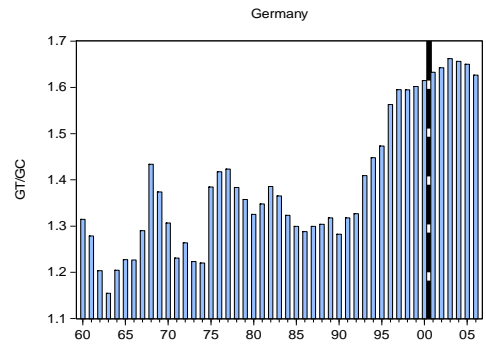
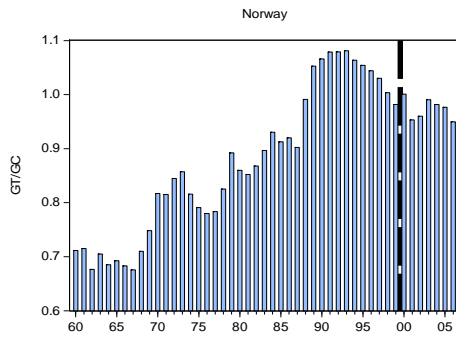
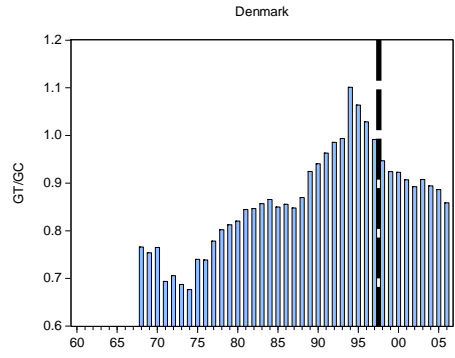
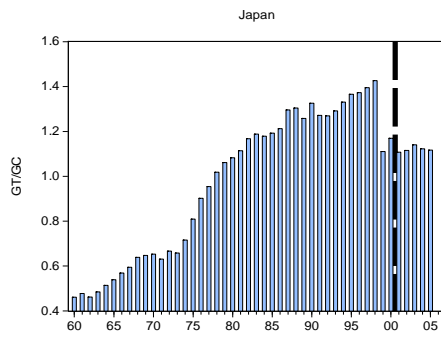
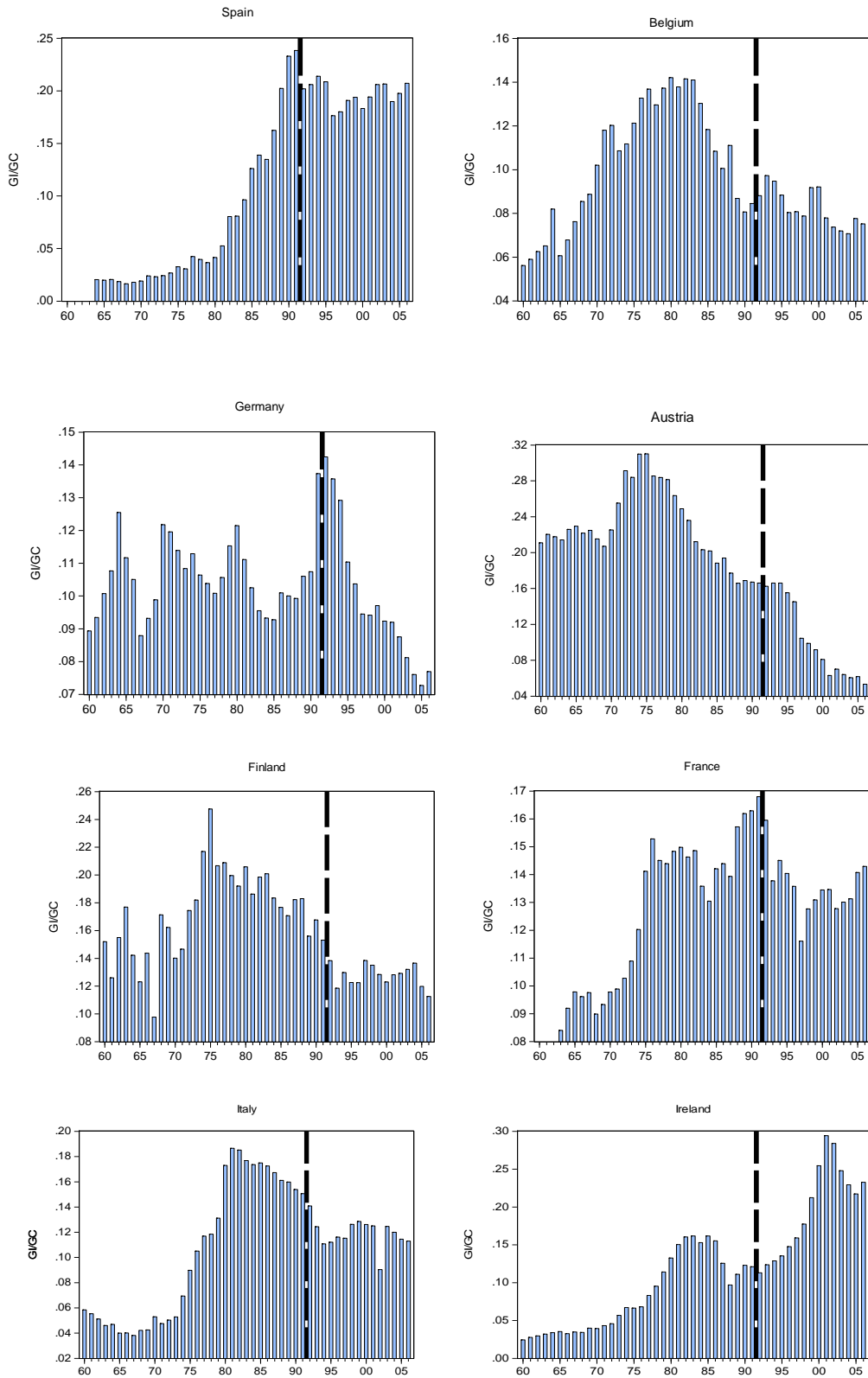


Figure 1c – Government Investment over Government Consumption: Selected Countries participating at Maastricht Treaty
 (the dash line is the year of adoption)



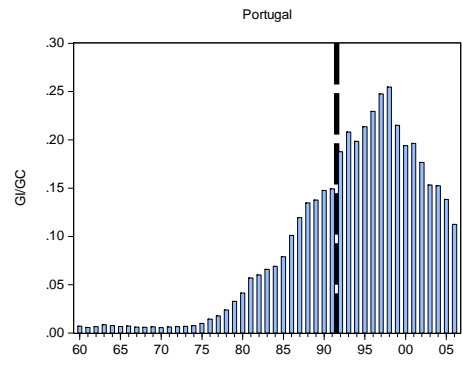
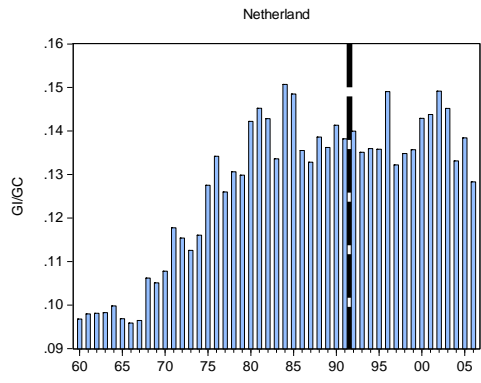


Table 1: Fiscal Rules implementation in selected OECD countries*

| Country | Expenditure Rule | Budget Rule | Maastricht Treaty | SGP and EMU |
|--------------------|-------------------------|----------------------|--------------------------|--------------------|
| Australia | 1985-1990 | 1985-1990 and 1998 + | - | - |
| Austria | - | 2000 + | 1992 + | 1997 + |
| Belgium | 1993-1999 | 1993 + | 1992 + | 1997 + |
| Canada | 1991-1996 | 1991 + | - | - |
| Denmark | 1998 + | 1998 + | 1993 + | - |
| Germany | 2002 + | 1979 + | 1992 + | 1997 + |
| Finland | 1991 + | - | 1994 + | 1997 + |
| France | 1998 + | - | 1992 + | 1997 + |
| Greece | - | - | 1992 + | 1997 + |
| Iceland | - | - | - | - |
| Ireland | - | - | 1992 + | 1997 + |
| Italy | 2002 + | - | 1992 + | 1997 + |
| Japan | 1983 + | 2002 + | - | - |
| Netherlands | 1994 + | 1983-1993 | 1992 + | 1997 + |
| New Zealand | 1994 + | 1994 + | - | - |
| Norway | - | 2001 + | - | - |
| Portugal | - | - | 1992 + | 1997 + |
| Spain | - | 2004 + | 1992 + | 1997 + |
| Switzerland | 2001 + | 2001 + | - | - |
| Sweden | 1996 + | 1996 + | 1994 + | - |
| UK | - | 1998 + | 1993 + | - |
| USA | - | 1985-1990 | - | - |

* The symbol + means that the rule continues until the end of the sample.

Table 2: Fiscal rules and budget deficits, GMM method

| Dependent Variable | D (Government Deficit/Y) | | | | | |
|------------------------------|--------------------------|--------------------|-------------------|-------------------|--------------------|--------------------|
| Number of observations : 890 | | | | | | |
| Period : 1964-2006 | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| DlogY | -11.0 (1.8)*** | -7.9 (1.9)*** | -10.5 (1.8)*** | -8.1 (1.9)*** | -12.1 (1.8)*** | -10.4 (1.8)*** |
| DlogPOP | 15.7 (6.4)** | -3.9 (6.3) | 10.7 (6.7) | -5.3 (6.4) | 14.5 (6.4)** | 15.1 (6.6)** |
| DlogPOP15 | 1.2 (2.7) | 6.8 (2.6)*** | 3.1 (2.8) | 7.2 (2.6)*** | 3.3 (2.6) | 1.3 (2.7) |
| G_deviations | 0.24 (0.02)*** | 0.22 (0.02)*** | 0.25 (0.02)*** | 0.22 (0.02)*** | 0.25 (0.01)*** | 0.24 (0.02)*** |
| Government Deficit/Y | -0.02 (0.01)** | 0.008 (0.01) | -0.01 (0.01) | 0.01 (0.01) | -0.02 (0.01) * | -0.02 (0.01)** |
| BTARGET | -0.53 (0.08)*** | -0.28 (0.09)*** | | | | |
| ETARGET | | | -0.43 (0.1)*** | -0.07 (0.1) | | |
| MAAS | | | | | -0.63 (0.07)*** | |
| SGP | | | | | | -0.44 (0.09)*** |
| Year fixed effects | No | Yes | No | Yes | No | No |
| Adj. R ² | 0.33 | 0.50 | 0.30 | 0.49 | 0.34 | 0.32 |

The dependent variable and the non-dummies independent variables are moving averages over 4 years. Standard deviations are reported in parentheses, using Period Panel Corrected Standard Errors (PSCE). Instruments: one lag difference for fiscal rules variables; same variables with the same moving average length for all the other variables. For all regressions we use country fixed effects.

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

Table 3: Fiscal rules and total government expenditures, GMM method

| Dependent Variable | D(Total Government Expenditure) | | | | | |
|------------------------------|---------------------------------|-----------------------|-----------------------|-----------------------|--------------------------|--------------------------|
| Number of observations : 920 | | | | | | |
| Period : 1964-2006 | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| DlogY | 0.62 (0.05)*** | 0.35 (0.05)*** | 0.61 (0.05)*** | 0.35 (0.05)*** | 0.51 (0.05)*** | 0.63 (0.05)*** |
| DlogPOP | 1.1 (0.2)*** | 0.4 (0.2)*** | 0.81 (0.2)*** | 0.38 (0.2)** | 0.98 (0.2)*** | 0.96 (0.2)*** |
| DlogPOP15 | 0.09 (0.08) | 0.20 (0.07)*** | 0.18 (0.09)** | 0.21 (0.07)*** | 0.19 (0.08)** | 0.11 (0.08) |
| Total Government Expenditure | -1.3e-10 (6.2e-11)** | -7.5e-11 (4.7e-11) | -4.4e-11 (6.5e-11) | -6.1e-11 (4.9e-11) | -2.4e-10 (5.6e-11)*** | -2.0e-10 (5.9e-11)*** |
| BTARGET | -0.025 (0.002)*** | -0.005 (0.002)** | | | | |
| ETARGET | | | -0.024 (0.003)*** | -0.004 (0.003) | | |
| MAAS | | | | | -0.031 (0.002)*** | |
| SGP | | | | | | -0.028 (0.002)*** |
| Year fixed effects | No | Yes | No | Yes | No | No |
| Adj. R ² | 0.41 | 0.63 | 0.39 | 0.63 | 0.47 | 0.44 |

The dependent variable and the non-dummies independent variables are moving averages over 4 years. Standard deviations are reported in parentheses, using Period PCSE. Instruments: one lag difference for fiscal rules variables; same variables with the same moving average length for all the other variables. For all regressions we use country fixed effects.

*** significant at 1 percent; ** significant at 5 percent.

Table 4: Fiscal rules and expenditures composition, GMM method
Transfer Payments Vs. Government Consumption

| Dependent variable | Dlog(Transfer Payments)-Dlog(Government Consumption) | | | | | | Dlog(Transfer Payments)-Dlog(Real Government Wages) | |
|---|--|---------------------|----------------------|---------------------|----------------------|---------------------|---|-----------------------|
| Number of observations : 826 | | | | | | | No. of observations : 724 | |
| Period : 1964-2006 | | | | | | | Period : 1964-2005 | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| DlogY | -0.17 (0.08)** | -0.26 (0.1)*** | -0.19 (0.08)** | -0.28 (0.1)*** | -0.19 (0.08)** | -0.16 (0.08)** | -0.39 (0.10)*** | -0.43 (0.11)*** |
| DlogPOP | 0.15 (0.3) | 0.15 (0.3) | 0.05 (0.3) | 0.15 (0.3) | 0.14 (0.3) | 0.11 (0.3) | 3.1 (0.5)*** | 3.1 (0.5)*** |
| DlogPOP15 | 0.26 (0.1)*** | 0.26 (0.1)** | 0.31 (0.1)*** | 0.27 (0.1)** | 0.29 (0.1)*** | 0.26 (0.1)*** | -0.1 (0.13) | -0.1 (0.14) |
| d(U) | 0.018 (0.002)*** | 0.014 (0.002)*** | 0.017 (0.002)*** | 0.014 (0.002)*** | 0.017 (0.002)*** | 0.018 (0.002)*** | 0.015 (0.002)*** | 0.015 (0.002)*** |
| Transfer Payments/ Gov. Consumption | -0.03 (0.008)*** | -0.02 (0.01)** | -0.03 (0.008)*** | -0.02 (0.01)* | -0.03 (0.008)*** | -0.04 (0.008)*** | | |
| Transfer Payments/ Gov. Wages | | | | | | | 0.0010 (0.0002)*** | 0.0010 (0.0003)*** |
| BTARGET | -0.003 (0.003) | 0.003 (0.003) | | | | | | |
| ETARGET | | | -0.011 (0.003)*** | -0.007 (0.003)** | | | -0.014 (0.003)*** | -0.014 (0.004)*** |
| MAAS | | | | | -0.007 (0.002)*** | | | |
| SGP | | | | | | -0.002 (0.003) | | |
| Year fixed effects | No | Yes | No | Yes | No | No | No | Yes |
| Adj. R ² | 0.28 | 0.29 | 0.29 | 0.29 | 0.28 | 0.27 | 0.38 | 0.38 |

The dependent variable and the non-dummies independent variables are moving averages over 4 years. Standard deviations are reported in parentheses, using Period PCSE. Instruments: one lag difference for fiscal rules variables; same variables with the same moving average length for all the other variables. For all regressions we use country fixed effects.

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

Table 5: Fiscal rules and expenditures composition, GMM method
Public investment Vs. Government Consumption

| Dependent variable | Dlog(Public Investment)-Dlog(Government Consumption) | | | | | | Dlog(Public Investment)-Dlog(Real Government Wages) | |
|--|--|-------------------|-------------------|---------------------|----------------------|--------------------|---|---------------------|
| Number of observations : 893 | | | | | | | No. of observations : 785 | |
| Period : 1964-2006 | | | | | | | Period : 1964-2005 | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| DlogY | 0.28 (0.14)** | 0.75 (0.18)*** | 0.29 (0.14)** | 0.76 (0.18)*** | 0.23 (0.14) | 0.31 (0.14)** | 0.027 (0.15) | 0.51 (0.19)*** |
| DlogPOP | 4.6 (0.5)*** | 3.1 (0.6)*** | 4.6 (0.6)*** | 3.4 (0.6)*** | 4.6 (0.5)*** | 4.5 (0.5)*** | 6.6 (0.8)*** | 5.8 (0.8)*** |
| DlogPOP15 | -1.3 (0.3)*** | -0.4 (0.3) | -1.3 (0.3)*** | -0.51 (0.3)* | -1.2 (0.3)*** | -1.3 (0.3)*** | -1.2 (0.3)*** | -0.6 (0.3)* |
| Public Investment/ Government Consumption | -0.14 (0.04)*** | -0.09 (0.04)** | -0.11 (0.04)** | -0.08 (0.04)* | -0.10 (0.04)** | -0.11 (0.04)** | | |
| Public Investment/ Government Wages | | | | | | | 0.006 (0.004) | 0.012 (0.005)** |
| BTARGET | -0.013 (0.009) | 0.009 (0.01) | | | | | | |
| DUM_UK | -0.016 (0.03) | -0.004 (0.01) | | | | | | |
| ETARGET | | | 0.0017 (0.010) | 0.029 (0.011)*** | | | 0.010 (0.011) | 0.038 (0.012)*** |
| DUM_JAPAN | | | -0.03 (0.03) | -0.03 (0.03) | | | -0.05 (0.02)** | -0.06 (0.02)** |
| MAAS | | | | | -0.026 (0.007)*** | | | |
| SGP | | | | | | -0.016 (0.009)* | | |
| Year fixed effects | No | Yes | No | Yes | No | No | No | Yes |
| Adj. R ² | 0.29 | 0.33 | 0.29 | 0.34 | 0.30 | 0.29 | 0.28 | 0.31 |

The dependent variable and the non-dummies independent variables are moving averages over 4 years. Standard deviations are reported in parentheses, using Period PCSE. Instruments: one lag difference for fiscal rules variables; same variables with the same moving average length for all the other variables. For all regressions we use country fixed effects.

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

Table 6: Fiscal Rules or "From Welfare To Work"? GMM method

| Dependent variable | Dlog(Transfer payments)-Dlog(government consumption) | | | | | |
|--|--|--------------------|----------------------|---------------------|----------------------|---------------------|
| Number of observations : 826 | | | | | | |
| Period : 1964-2006 | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| DlogY | -0.2 (0.08)** | -0.3 (0.1)*** | -0.2 (0.08)** | -0.3 (0.1)*** | -0.2 (0.08)** | -0.2 (0.1)** |
| DlogPOP | 0.03 (0.26) | 0.15 (0.28) | 0.02 (0.26) | 0.15 (0.28) | 0.002 (0.26) | 0.16 (0.28) |
| DlogPOP15 | 0.4 (0.1)*** | 0.3 (0.1)** | 0.4 (0.1)*** | 0.3 (0.1)** | 0.3 (0.1)*** | 0.3 (0.1)** |
| d(U) | 0.02 (0.002)*** | 0.01 (0.002)*** | 0.02 (0.002)*** | 0.01 (0.002)*** | 0.02 (0.002)*** | 0.01 (0.002)*** |
| Transfer Payments/Gov. Consumption | -0.02 (0.009)** | -0.02 (0.01)* | -0.02 (0.009)** | -0.02 (0.01)** | -0.03 (0.008)*** | -0.02 (0.01)* |
| ETARGET | -0.009 (0.003)*** | -0.007 (0.003)* | -0.009 (0.003)*** | -0.007 (0.003)** | -0.009 (0.003)*** | -0.008 (0.003)** |
| FWTW_90 | -0.006 (0.002)** | -0.010 (0.009) | | | | |
| FWTW_C | | | -0.005 (0.002)** | -0.003 (0.006) | | |
| FWTW_97 | | | | | -0.004 (0.003) | 0.008 (0.004)** |
| Year fixed effects | No | Yes | No | Yes | No | Yes |
| Adj. R ² | 0.29 | 0.29 | 0.29 | 0.29 | 0.29 | 0.30 |

The dependent variable and the non-dummies independent variables are moving averages over 4 years. Standard deviations are reported in parentheses, using Period PCSE. Instruments: one lag difference for fiscal rules variables; same variables with the same moving average length for all the other variables. For all regressions we use country fixed effects.

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

Table 7: Expenditure composition and legal protection for social security, GMM method

| Dependent Variable | Dlog(Transfer payments)-Dlog(government consumption) | | | | | | | |
|--|--|----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|
| Number of observations : 826 | | | | | | | | |
| Period : 1964-2006 | | | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| DlogY | -0.3 (0.08)*** | -0.3 (0.1)*** | -0.2 (0.08)*** | -0.3 (0.1)*** | -0.2 (0.08)*** | -0.3 (0.1)*** | -0.2 (0.08)*** | -0.3 (0.1)*** |
| DlogPOP | 0.003 (0.3) | 0.17 (0.3) | -0.001 (0.3) | 0.12 (0.3) | 0.02 (0.3) | 0.15 (0.3) | -0.007 (0.3) | 0.11 (0.3) |
| DlogPOP15 | 0.4 (0.1)*** | 0.3 (0.1)** | 0.4 (0.1)*** | 0.3 (0.1)** | 0.4 (0.1)*** | 0.3 (0.1)** | 0.4 (0.1)*** | 0.3 (0.1)** |
| d(U) | 0.02 (0.002)*** | 0.01 (0.002)*** | 0.02 (0.002)*** | 0.01 (0.002)*** | 0.02 (0.002)*** | 0.01 (0.002)*** | 0.02 (0.002)*** | 0.01 (0.002)*** |
| Transfer Payments/Government Consumption | -0.02 (0.009)** | -0.02 (0.01) | -0.02 (0.009)** | -0.02 (0.01)** | -0.02 (0.009)** | -0.02 (0.01)* | -0.02 (0.009)** | -0.02 (0.01)** |
| ETARGET | -0.033 (0.006)*** | -0.033 (0.006)*** | -0.012 (0.003)*** | -0.010 (0.004)*** | -0.07 (0.02)*** | -0.08 (0.02)*** | -0.013 (0.004)*** | -0.011 (0.004)*** |
| FWTW_90 | -0.006 (0.002)*** | -0.008 (0.009) | -0.006 (0.002)** | -0.010 (0.009) | -0.006 (0.002)*** | -0.009 (0.009) | -0.006 (0.002)** | -0.010 (0.009) |
| SSLAWS*ETARGET | 0.034 (0.006)*** | 0.038 (0.006)*** | | | | | | |
| SSTCONST*ETARGET | | | 0.017 (0.006)** | 0.016 (0.007)** | | | | |
| SSTCONST_INDEX*ETARGET | | | | | 0.026 (0.010)** | 0.032 (0.010)*** | | |
| SSLAWS_INDEX*ETARGET | | | | | | | 0.008 (0.003)** | 0.008 (0.003)** |
| No | No | Yes | No | Yes | No | Yes | No | Yes |
| Adj. R ² | 0.31 | 0.32 | 0.29 | 0.30 | 0.29 | 0.30 | 0.29 | 0.30 |

The dependent variable and the non-dummies independent variables are moving averages over 4 years. Standard deviations are reported in parentheses, using Period PCSE. Instruments: one lag difference for fiscal rules variables; same variables with the same moving average length for all the other variables. For all regressions we use country fixed effects.

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

Appendix A – Robustness Check: Adding central government volume

Table A1: Fiscal rules and expenditures composition, GMM method

Transfer Payments Vs. Government Consumption

| Dependent variable | Dlog(Transfer Payments)-Dlog(Government Consumption) | | | | | |
|--|--|--------------------|----------------------|---------------------|----------------------|----------------------|
| Number of observations : 826 | | | | | | |
| Period : 1964-2006 | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| DlogY | -0.17 (0.1)** | -0.26 (0.1)*** | -0.19 (0.1)** | -0.29 (0.1)*** | -0.18 (0.1)** | -0.14 (0.1)* |
| DlogPOP | 0.16 (0.3) | 0.15 (0.3) | 0.07 (0.3) | 0.20 (0.3) | 0.09 (0.3) | 0.11 (0.3) |
| DlogPOP15 | 0.25 (0.1)*** | 0.26 (0.1)** | 0.29 (0.1)*** | 0.24 (0.1)** | 0.31 (0.1)*** | 0.28 (0.1)*** |
| d(U) | 0.02 (0.002)*** | 0.01 (0.002)*** | 0.017 (0.002)*** | 0.013 (0.002)*** | 0.017 (0.002)*** | 0.018 (0.002)*** |
| Transfer Payments/ Government Consumption | -0.033 (0.008)*** | -0.023 (0.01)** | -0.027 (0.008)*** | -0.015 (0.01) | -0.030 (0.008)*** | -0.035 (0.008)*** |
| BTARGET | -0.005 (0.004) | 0.002 (0.005) | | | | |
| Central government * BTARGET | 0.003 (0.005) | 0.003 (0.005) | | | | |
| ETARGET | | | -0.014 (0.005)*** | -0.014 (0.005)** | | |
| Central government * ETARGET | | | 0.006 (0.006) | 0.01 (0.006)* | | |
| MAAS | | | | | -0.0026 (0.005) | |
| Central government*MAAS | | | | | -0.006 (0.005) | |
| SGP | | | | | | 0.015 (0.006)** |
| Central government*SGP | | | | | | -0.020 (0.007)*** |
| Year Fixed effects | No | Yes | No | Yes | No | No |
| Adj. R ² | 0.28 | 0.28 | 0.28 | 0.29 | 0.28 | 0.28 |

The dependent variable and the non-dummies independent variables are moving averages over 4 years. Standard deviations are reported using Period PCSE. Instruments: one lag difference for fiscal rules; same variables for all the other variables. In all regressions we use country fixed effects.

We use a dummy variable that takes the value 1 for countries where the central government accounts for over 70 percent of the general government total expenditure (source: GFS).

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

Table A2: Fiscal rules and expenditures composition, GMM method
Public investment Vs. Government Consumption

| Dependent variable | Dlog(Public Investment)-Dlog(Government Consumption) | | | | | |
|---|--|-------------------|-------------------|-------------------|---------------------|-------------------|
| | Number of observations : 893 | | | | | |
| | Period : 1964-2006 | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| DlogY | 0.28 (0.14)* | 0.75 (0.18)*** | 0.29 (0.14)** | 0.76 (0.18)*** | 0.24 (0.14)* | 0.31 (0.14)** |
| DlogPOP | 4.7 (0.5)*** | 3.1 (0.6)*** | 4.6 (0.6)*** | 3.4 (0.6)*** | 4.7 (0.5)*** | 4.4 (0.6)*** |
| DlogPOP15 | -1.3 (0.3)*** | -0.4 (0.3) | -1.4 (0.3)*** | -0.5 (0.3)* | -1.2 (0.3)*** | -1.3 (0.3)*** |
| Public Investment/ Government Consumption | -0.13 (0.04)*** | -0.08 (0.04)* | -0.10 (0.04)** | -0.08 (0.04)* | -0.08 (0.04)** | -0.11 (0.04)** |
| DUM_UK | -0.024 (0.03) | -0.011 (0.03) | | | | |
| DUM_JAPAN | | | -0.006 (0.03) | -0.008 (0.03) | | |
| BTARGET | -0.023 (0.01)* | -0.001 (0.01) | | | | |
| Central government * BTARGET | 0.018 (0.02) | 0.017 (0.02) | | | | |
| ETARGET | | | -0.024 (0.02) | 0.009 (0.02) | | |
| Central government * ETARGET | | | 0.036 (0.02) | 0.028 (0.02) | | |
| MAAS | | | | | -0.060 (0.01)*** | |
| Central government*MAAS | | | | | 0.043 (0.02)*** | |
| SGP | | | | | | -0.041 (0.02)* |
| Central government*SGP | | | | | | 0.030 (0.02) |
| Year Fixed effects | No | Yes | No | Yes | No | No |
| Adj. R ² | 0.29 | 0.33 | 0.29 | 0.34 | 0.30 | 0.29 |

See footnote to Table A1.

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

Appendix B- Robustness Check: adding political structure variables

Table B1: Fiscal rules and expenditures composition, GMM method
Transfer Payments Vs. Government Consumption

| Dependent variable | Dlog(Transfer Payments)-Dlog(Government Consumption) | | | | | |
|--|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Number of observations: 665 | | | | | |
| | Period: 1975-2006 | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| DlogY | -0.27 (0.09)*** | -0.34 (0.09)*** | -0.28 (0.09)*** | -0.34 (0.09)*** | -0.25 (0.09)*** | -0.23 (0.09)*** |
| DlogPOP | -0.03 (0.2) | -0.18 (0.2) | -0.19 (0.2) | -0.23 (0.2) | -0.21 (0.2) | -0.13 (0.2) |
| DlogPOP15 | 0.22 (0.1)** | 0.30 (0.1)*** | 0.26 (0.1)*** | 0.32 (0.1)*** | 0.27 (0.1)*** | 0.21 (0.1)** |
| d(U) | 0.014 (0.002)*** | 0.009 (0.002)*** | 0.014 (0.002)*** | 0.009 (0.002)*** | 0.014 (0.002)*** | 0.015 (0.002)*** |
| Transfer Payments/ Gov. Consumption | -0.004 (0.003) | -0.002 (0.003) | -0.004 (0.003) | -0.002 (0.003) | -0.002 (0.003) | -0.004 (0.003) |
| Parliamentary | -0.011 (0.004) *** | -0.012 (0.004) *** | -0.011 (0.004) *** | -0.012 (0.004) *** | -0.011 (0.004) *** | -0.013 (0.004) *** |
| Right Wing government | 0.0002 (0.004) | -0.0008 (0.003) | -0.001 (0.003) | -0.001 (0.003) | -0.002 (0.003) | -0.002 (0.003) |
| Left wing Government | -0.0003 (0.003) | -0.004 (0.003) | -0.004 (0.003) | -0.004 (0.003) | -0.005 (0.003) * | -0.005 (0.003) |
| Proportional Representation | -0.001 (0.002) | -0.001 (0.002) | -0.001 (0.002) | -0.001 (0.002) | -0.002 (0.002) | -0.001 (0.002) |
| BTARGET | -0.007 (0.002)*** | -0.002 (0.002) | | | | |
| ETARGET | | | -0.010 (0.002)*** | -0.006 (0.002)** | | |
| MAAS | | | | | -0.007 (0.002)*** | |
| SGP | | | | | | -0.002 (0.002) |
| Year Fixed effects | No | Yes | No | Yes | No | No |
| Adj. R ² | 0.30 | 0.33 | 0.31 | 0.34 | 0.30 | 0.28 |

The political variables are taken from the Database of Political Institutions of the World Bank presenting the political structures and the political atmosphere. Since political data is available for a sub-period of the sample, the number of observations in these regressions is substantially lower. The variables used are dummy variables: Parliamentary- takes the value 1 if the government system is parliamentary and 0 otherwise; Right and Left Wing – takes the value 1 when the main government party is right or left oriented (center orientation parties are the reference party); Proportional Representation – takes the value 1 if the voting system is proportional and 0 otherwise. See also footnote to Table A1.

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

Table B2: Fiscal rules and expenditures composition, GMM method
Public investment Vs. Government Consumption

| Dependent variable | Dlog(Public Investment)-Dlog(Government Consumption) | | | | | |
|--|--|---------------------|--------------------|--------------------|----------------------|--------------------|
| Number of observations: 663 | | | | | | |
| Period: 1975-2006 | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| DlogY | 0.80 (0.2)*** | 1.08 (0.2)*** | 0.86 (0.2)*** | 1.26 (0.2)*** | 0.90 (0.2)*** | 0.94 (0.2)*** |
| DlogPOP | 5.3 (0.6)*** | 4.5 (0.7)*** | 4.7 (0.7)*** | 3.8 (0.7)*** | 4.5 (0.7)*** | 4.8 (0.7)*** |
| DlogPOP15 | -1.8 (0.3)*** | -1.6 (0.3)*** | -1.8 (0.3)*** | -1.4 (0.3)*** | -1.7 (0.3)*** | -1.91 (0.3)*** |
| Public Investment/ Gov. Consumption | -0.37 (0.04)*** | -0.37 (0.04)*** | -0.33 (0.05)*** | -0.34 (0.05)*** | -0.33 (0.04)*** | -0.32 (0.04)*** |
| UK_DMU | -0.016 (0.03) | 0.015 (0.03) | | | | |
| JAPAN_DUM | | | -0.03 (0.02) | 0.02 (0.02) | | |
| Parliamentary | -0.019 (0.02) | -0.017 (0.02) | -0.031 (0.02)** | -0.028 (0.02)* | -0.028 (0.02)* | -0.032 (0.02)** |
| Right Wing government | 0.008 (0.01) | 0.008 (0.01) | -0.008 (0.01) | -0.005 (0.01) | -0.009 (0.01) | -0.008 (0.01) |
| Left wing Government | -0.002 (0.01) | -0.001 (0.01) | -0.015 (0.01) | -0.011 (0.01) | -0.016 (0.01) | -0.017 (0.01) |
| Proportional Representation | 0.047 (0.01)*** | 0.046 (0.01)*** | 0.043 (0.01)*** | 0.043 (0.01)*** | 0.044 (0.01)*** | 0.044 (0.01)*** |
| BTARGET | -0.052 (0.009)*** | -0.045 (0.01)*** | | | | |
| ETARGET | | | -0.017 (0.010)* | -0.017 (0.010) | | |
| MAAS | | | | | -0.022 (0.007)*** | |
| SGP | | | | | | -0.015 (0.009) |
| Year Fixed effects | No | Yes | No | Yes | No | No |
| Adj. R ² | 0.25 | 0.25 | 0.21 | 0.22 | 0.21 | 0.21 |

See also footnotes to Table B1.

*** significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

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