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Abstract

The Stability and Growth Pact and the process of fiscal consolidation in several European countries have enhanced the role of fiscal rules at sub-national level. This paper analyzes the combined effect of a rule to allocate capital and current block grants to local governments and the "golden rule" of public finance (surplus of current balance). We argue that the two fiscal rules introduce significant rigidities and distortions in local governments' expenditures structure since these mimic the structure of revenues. This effect is particularly relevant in municipalities that are more dependent of intergovernmental grants, mainly rural. On the other hand, urban municipalities with greater tax revenues (current revenues) are constrained in their ability to make capital investments because they receive per capita capital grants below what economies of scale would suggest. An empirical analysis of Portuguese local governments shows that it is no longer the median voter, but fiscal rules, that command the broad pattern of expenditure (current *versus* capital) at a local level. This paper is a contribution to the literature on the perverse effects of fiscal rules.

JEL Classification: H11, H61, H71, H77

Keywords: Intergovernmental block grants, Fiscal Rules, Local Government Expenditure, "Golden Rule"

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1. Introduction

The Stability and Growth Pact (SGP) and the process of fiscal consolidation in several European countries have put some pressure on central governments to impose fiscal rules at a sub-national level. In fact, since the reference values for both the public sector deficit and debt refer to general government, i.e. the overall aggregate of public administrations, any significant slippage on either the deficit or debt of any sub-sector will have a negative effect on those target values. This seems to be the main argument behind the spreading of fiscal rules at a sub-national level.

There has been a long theoretical debate concerning the desirability of fiscal rules. Advocates argue that it is the only way to constrain effectively sub-national governments in their tendency to increase expenditure and lower taxes, in a growing spiral of increased deficits and debt, which is a characteristic of electoral incentives in democracies. In short, given the asymmetric information between voters and their elected representatives, voting is no longer an effective way to control representatives, so that some form of fiscal constitution is needed. Fiscal rules are the main elements of this "constitution".

Critics of fiscal rules emphasize their perverse effects. They built rigidity in budgeting and enhance creative accounting because monitored variables apparently behave well while not observed variables do badly. Fiscal rules do not enable the smoothing of the economic cycle and constrain the median voter in each jurisdiction who is no longer the decision-maker in each community.

There was a recent debate on fiscal rules, particularly the "golden rule" (or surplus of current account), spurred by the need to reform the SGP, which eventually was reformed in 2005. One debate was whether the fiscal target should continue to be the overall balance of public administrations (higher than -3% of GDP) or the current balance. Critics of the overall balance, as a target for fiscal policy, pointed out that public investments should not be paid totally by current revenues, and that inter-generational equity suggests that net investment should be financed by borrowing (Blanchard and Giavazzi 2004 among others). Some critics suggest that the "golden rule"- even in a modified form - should replace the existing rule of a target for the overall balance (Creel, J.; Monperrus-Veroni, P. and Saraceno, F. 2007). However, others point out that although fiscal rules embodied in the Maastricht Treaty and the Stability and Growth Pact have led to a decrease in public investment, the "golden rule"

should not be introduced into the EMU fiscal framework (Balassone F. and D. Franco 2000).

Turning to the reality of fiscal rules in several countries, most countries have adopted "domestic stability pacts" in order to set fiscal targets for different tiers of government (see Sutherland. D.; Price, R. and Joumard, I. 2005 and references herein). Moreover, the United Kingdom has recently adopted the "golden rule" at national level[2] and Germany has established in the Constitution that, in normal circumstances, federal government borrowing cannot exceed total investment. What does not appear to have been addressed in the literature is the consequences on local governments patterns of expenditures of the application of a "golden rule" (for local governments) in the presence of significant intergovernmental block grants.

This paper aims to contribute to filling this gap through some theoretical and empirical contributions to the debate looking at two particular fiscal rules. The first rule (here after rule 1), is the "golden rule" of public finance (surplus of current balance) at local government level. A corollary of this rule is that any borrowing will not be used to finance current expenditures but capital expenditures. The second rule (here after rule 2), is less common but also exists in some countries, either explicitly or implicitly. This is the constant capital-current ratio of intergovernmental block grants.

The main argument of this paper is that these two rules have a different effect on sub-national governments with a low and high per capita tax base. Sub-national governments with low per capita tax base are mainly dependent on intergovernmental grants, so that the sub-national governments' broad pattern of expenditure will be similar to the one imposed by rule 2. Sub-national governments with high per capita tax bases are much less dependent on intergovernmental grants, and the weight of their own current revenues (local taxes, fees and other) is significantly higher. Therefore, we expect a greater variance in the capital-current expenditures' ratio. However, even among these municipalities, we predict that net investment is determined mainly by capital grants independently of economies or diseconomies of scale in local production. These are some of the perverse effects of excessive fiscal rules.

[2] See HM treasury (1997). "over the economic cycle, the Government will only borrow to invest -public consumption (including the consumption of capital) will be paid for by taxation"

2. Fiscal Rules and the Demise of the Median Voter

Since there are several interpretations of the "golden rule" of public finance (rule 1) it is worth clarifying its meaning in this paper. We will consider that the rule applies to local governments if they have to comply, on an annual basis, with the balance or surplus of the current account. The information needed, to impose a "golden rule", is that local governments' accounts enable a clear distinction between current and capital revenues and expenditures.

Fiscal rule 2, the constant capital-current ratio of intergovernmental block grants deserves a closer attention. Most intergovernmental grants are formulae based. These formulae include several variables supposedly reflecting municipal needs (population, area, special needs associated with the socio-demographic characteristics of population, and so on). Fiscal rule 2 applies to intergovernmental grant systems that share three characteristics: (i) most transfers from central government are general transfers, and thus neither earmarked to specific expenditure categories, nor matched by local government funds, (ii) transfers for each municipality are calculated through formulae established in statutes (iii) there is a distinction between current transfers and capital transfers. Within intergovernmental systems that satisfy these criteria we may distinguish two cases. The first case is a direct application of fiscal rule 2. A formula determines the overall amount of grants and the law determines a fixed division of current and capital grants (e.g. 60% and 40% respectively). Therefore, there is one formula (or a set of formulae) to define the overall amount of block grants and an explicit fiscal rule to allocate capital and current grants. The second case is an implicit fiscal rule 2. There is no fiscal rule to split grants but there are independent formulae, one for capital grants and a different one for current grants.[3] If these formulae, as is usually the case are a function of relatively stable variables in the short run (such as population for example) the capital-current grants' ratio does not change much over time. An additional argument for the stability of that ratio is that several countries have "safety net" rules according to which grants received in a given year can not decrease (or decrease significantly) from previous year grants. There is some difference in the two cases but we will disregard it in the paper. Our fiscal rule 2, that sets the capital-current block grants' ratio encompasses the two situations.

[3] In some countries there are only capital grants, which is a particular case of the one we are discussing.

Figure 1 illustrates the effect of fiscal rules 1 and 2 in a limit case of a *no* tax base jurisdiction. For simplicity, let us assume that we have just two composite goods, a current good and a capital good with unitary prices and the maximum amount of the composite current and capital goods is one. We also assume that borrowing is not allowed.

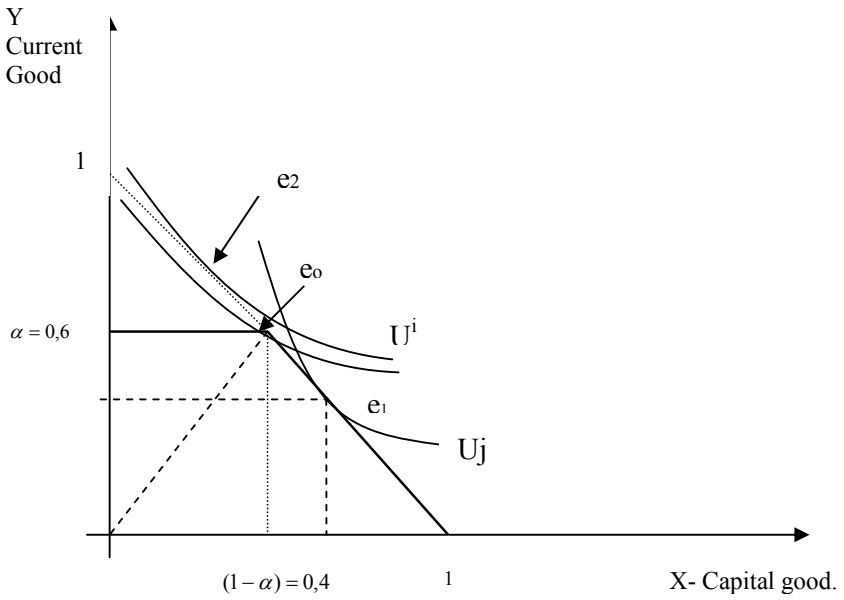

Figure 1 Budget constraint under fiscal rules in a low tax base jurisdiction

Under a no fiscal rule regime, we may consider that the preferences of the median voter will rule so that some allocation in the budget constraint will define a structure of the budget. Thus if *Ui* and *Uj* are the utility functions of the median voters in municipalities *i* and *j* with the same budget constraint, the equilibria levels of expenditure would be given by points e_2 and e_1, respectively.

Let us introduce now fiscal rule 2, which states that a given proportion (α) of a block intergovernmental grant, from central to local governments, is to be accounted as a "current transfer" and the remaining part ($1-\alpha$) as a "capital transfer".[4] These grants

[4] As mentioned earlier it is not important whether overall grants are formula based and the proportion of *current* block grants is directly defined in statute (as happened in Portugal before 2007), or if current block grants are based in one formula and capital grants are calculated through an independent formula.

are respectively, current and capital expenditures for central government, and current and capital revenues for local governments.[5]

If there were no additional rules attached the budget constraint would be the same as in the no fiscal rule regime.

However, if we introduce fiscal rule 1, of a balanced (or in surplus) current budget, two main things change. First, we have now a kinked budget constraint. In the limiting case of a no tax base jurisdiction - where revenues are only from central governments' transfers - the kink is precisely at point e_0 with coordinates $(1-\alpha, \alpha)$. If these are the only sources of revenue, e_0 is also the balanced current budget allocation. The further away from e_0, the higher is the current budget surplus, and capital budget deficit (assuming no borrowing). The equilibrium pattern of expenditure will depend on local preferences. It can be a corner solution (60% current expenditures and 40% capital, with $\alpha = 0{,}6$) given by e_0, as in municipality *i,* or any other frontier solution given, for example, by e_1, as in municipality *j*. Even without borrowing, *capital expenditures will be at least 40% of local expenditures*. The kinked budget constraint, produced by fiscal rules, leads to a decrease in efficiency in municipality *i.*

Since with these fiscal rules, the budget is balanced at e_0, it can be considered a salient point (in Schelling's (1960) sense), and it is possible to predict that equilibria in low tax base jurisdictions will tend to concentrate in the neighborhood of e_0. Our hypothesis is that given the importance of the balanced budget concept in public finance, and some political difficulty in justifying deficits, there will be some tendency for jurisdictions, with no borrowing, to adapt the structure of expenditures to the structure of revenues.

The situation is somewhat different in high tax base jurisdictions as illustrated by figure 2. In these jurisdictions local taxes, fees and other local revenues, are current revenues, so that the revenue pattern in these local governments has a much smaller weight of capital revenues. Let us assume that the proportion of intergovernmental grants on total revenues of the municipality is γ $(0 \leq \gamma \leq 1)$ and that, as before, these grants are split in current grants (proportion α) and capital grants (proportion $1-\alpha$).

What is relevant is that there is a current and a capital account and that a proportion (that can be fixed or flexible) of grants goes for each account.

[5] Herein after we will use local government (or municipalities) as the recipient of grants. All the discussion could be generalized to the case where the recipient is a State or Lander in a federation or a Region in a unitary State.

The weight of current revenues on total revenues is now $1-\gamma(1-\alpha)$ instead of α in the previous case. If, for instance, intergovernmental grants represent 30% of total revenue, with fiscal rule 2 and $\alpha = 0.6$, implies that 88% of total revenues will be current and only 12% capital revenues. Therefore, the current budget would be balanced if current expenditure is also equal to 88%. Again, the equilibrium expenditure will depend on local preferences, and the "golden rule" only implies that capital expenditure cannot be below 12% of the budget. However, any structure of expenditures which departs dramatically from e_3, will be associated with highly unbalanced current and capital accounts.

If our Schelling hypothesis is correct we would expect that high tax base municipalities will have a significant higher proportion of current expenditure and smaller capital expenditures than low tax base jurisdictions. On the other hand, given the smaller dependence of intergovernmental grants in high tax base jurisdictions, we should also expect that the variance of the current expenditures' weight on total expenditure would be much larger in these jurisdictions when compared with low tax base jurisdictions.

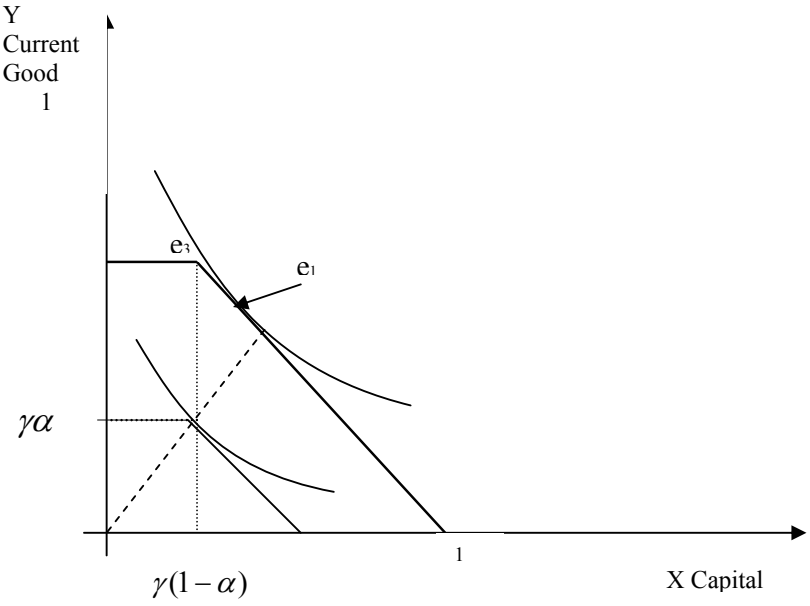

Figure 2 Budget constraint under fiscal rules in a high tax base jurisdiction

As argued above, the main aim of this paper is to give empirical evidence, that the joint effect of fiscal rules 1 and 2 is an inefficient allocation of capital and current expenditures, mainly in low tax base jurisdictions.

In order to analyze the impact of fiscal rule 1 more accurately, let us assume that there is no inflation. Let B_t denote local government debt at the end of year t, A_t borrowing in year t, δB_{t-1} repayment of debt during year t, r the debt implicit interest rate, C_t current expenditures (excluding debt interests), I_t net investment, T_t taxes, G_t^c current block grants and G_t^k capital block grants. The budget constraint of each municipality is given by:

$$T_t + G_t^c + G_t^k + A_t = C_t + r B_{t-1} + I_t + \delta B_{t-1} \qquad (1)$$

On the revenue side the three main sources of income are taxes, intergovernmental grants and borrowing, on the expenditure side, local governments' current consumption plus debt interests, net investment and debt repayment. Let $\Delta B_t = B_t - B_{t-1} = A_t - \delta B_{t-1}$, i.e. ΔB_t represents the net borrowing of the municipality during year t. A rearrangement of Equation (1) clarifies the impact of current and capital balances on net borrowing,

$$\Delta B_t = -\left(T_t + G_t^c - C_t - r B_{t-1}\right) - \left(G_t^k - I_t\right). \qquad (2)$$

A surplus of the budget enables a reduction in local debt. On the other hand, if local debt does not change, $\Delta B_t = 0$, with the "golden rule" of public finance, there must be a surplus in the current account $\left(T_t + G_t^c - C_t - r B_{t-1}\right) > 0$ so that the capital account must be in deficit $((G_t^k - I_t) < 0 \Leftrightarrow I_t > G_t^k)$. A first conclusion is therefore that, if the debt remains constant, net local investment has to be greater than intergovernmental capital grants and the difference is exactly the current surplus since we can rewrite equation (1) as

$$I_t = \Delta B_t + \left(T_t + G_t^c - C_t - r B_{t-1}\right) + G_t^k \qquad (3)$$

A second conclusion is that net investment will equal the sum of current surplus, capital grants and net borrowing.

The usual implication of the "golden rule" is that net borrowing is only to finance capital formation and not for current expenditures. However, the existence of capital grants, at the local governments' level, puts a lower pressure to increase debt.[6]

A third conclusion is that intergovernmental capital grants can *crowd out* local debt. In this case local governments use capital grants to decrease their liabilities. Total crowding out would mean that debt would decrease by the same amount as capital grants so that net investment would equal current surplus (see Equation (2)). Partial crowding out would imply that net investment would exceed current surplus but would be lower than the sum of the surplus with capital grants.

In order to understand the effect of fiscal rules on local governments we may consider the extreme and unrealistic case, of a local government without a tax base.[7] In this case:

$$I_t - G_t^k = \Delta B_t + \left(G_t^c - C_t - r\, B_{t-1}\right) \qquad (4)$$

Note that in this case total revenues would be $G = G^k + G^c$. With no net borrowing, net investment would have to be greater or equal to capital grants, given the "golden rule". If the structure of revenues is 40% capital revenues (grants) and 60% current revenues, the structure of expenditures could either mimic the structure of revenues, or be "biased" towards greater capital expenditure.

[6] Note that when the "golden rule" is applied to central government, and if revenues from capital grants are not significant (e.g. small grants from the EU to a member state), the implication of the rule is a direct relationship between current surplus, net borrowing and net investment.

[7] The case is unrealistic, but there are local governments in Portugal where revenues from central government represent more than 90% of local revenues, so that it is not as unrealistic as it seems.

3. The institutional and financial framework of Portuguese Local Governments

Portugal is, according to the Constitution, a unitary country with two autonomous regions (Madeira and Azores), 309 municipalities and around 4000 parishes, the latter with very few competencies. Therefore, our analysis will focus on municipalities. Although formally a unitary country the financial resources and tax powers of the autonomous regions are greater than many States (or Lander) in federal countries. In fact the Constitution (1976) written in the aftermath of the Portuguese Revolution (April 1974), when there were some threats of regions' independency paralleling the independence in former African colonies of 1975, established that the regions are entitled to all tax revenues (personal and corporate income tax, VAT, excise taxes, etc.) generated in their territories. Furthermore, the autonomous regions receive solidarity grants from the State Budget and so do the regions' municipalities and mainland municipalities which are, and have been, under the same Local Finance Act (*Lei 2/2007*) which establishes criteria for the allocation of current and capital grants from the State Budget. Formula based intergovernmental grants are the main sources of financial support to mainland municipalities and any other form of State support is limited and should be made under a specific contract. However, given the autonomy of the regions, there has been substantial support to municipalities from the Regional Government of Madeira. Therefore there is a different treatment of regional and mainland municipalities, the former receiving grants from three tiers of government (EU, Portuguese Government and Regional Governments) while the latter only receive from two tiers (EU and Portuguese Government). In any case the more substantial grants are from the State Budget.

As in other European countries, the Stability and Growth Pact has enhanced the adoption of sub-national fiscal rules. In particular a Law was enacted in 2001 (*Lei de Enquadramento Orçamental*) in order to define balanced targets for the different sub-sectors of central government (the State (*Estado*) and Autonomous Agencies (*Fundos e Serviços Autónomos-FSA*)) and social security. The State should have the primary balance in surplus or equilibrium, the FSA and Social Security should have no deficit. Later on, the State Budget Laws (from 2003 till 2008) have been establishing that the overall local governments' sector (municipalities in mainland Portugal, Madeira and

Azores) should have no net borrowing requirements, which assuming that there is no alienation of municipal assets, is tantamount to have the sum of budgets' surpluses in one group of municipalities must be at least equal to the sum of budgets' deficits in the other group of municipalities. There has been no fiscal rule for regional governments.
Finally, two fiscal rules have been in place for all local governments. Fiscal rule 1, or the "golden rule" of public finance, which establishes that there should be a surplus in current budgets. It is a corollary of this rule that any net borrowing is to cover capital expenditures. Fiscal rule 2, has been embodied in the Local Finance Acts up to 2007. Overall intergovernmental block grants from the State Budget to municipalities' budgets are formula based as stated above. After defining the overall amount of grants, they are split into capital and current grants according to a fixed proportion.

4. Empirical Results

Table 1 shows some 2006 data for Portuguese municipalities. They are sorted out according to the proportion of central government current grants on municipal current revenues. It shows that there are 99 municipalities highly dependent on intergovernmental grants. On average 70% of current revenues and 54% of capital revenues are grants from central government. These are the low tax base jurisdictions.

Number of Local Governments	Dependence from Current State Grants	Average Current Revenue (1000€).	Average Current Grants (1000€)	Average Ratio Cur Grants/Rev	Average Cap. Rev (1000€).	Average. Cap. Grants (1000€)	Average. Ratio Cap.Grants /Rev
99	**High**: More than 60%	4473.0	3078.5	0.70	4083.6	2052.3	0.54
95	**Medium High**: 40%-60%	8510.3	4123.4	0.50	5466.6	2748.9	0.55
73	**Medium Low:** 20%-40%	17608.4	5093.2	0.30	7435.3	3395.5	0.49
40	**Low**: 0-20%	60221.7	7596.6	0.14	14250.5	5064.4	0.45

Table 1 Average Current and Capital Revenues and Central Government Grants

On the other extreme are local governments where current block grants are smaller than 20% of local revenues. They are simultaneously less dependent from central government transfers and have a higher average current and capital expenditure. There is some heterogeneity within each group as shown by coefficients of variation presented in Table 2.

Number of Local Governments	Dependence from Current State Grants	Aver.age Current Revenues	Aver. Curr. Grants	Average Ratio of Current Grants/Rev	Aver. Cap. Rev.	Aver. Cap. Grants	Aver. Ratio Cap.Grants /Rev
99	**High**: More than 60%	0.368	0.347	0.099	0.430	0.347	0.287
95	**Medium High**: 40%-60%	0.500	0.432	0.122	0.548	0.432	0.289
73	**Medium Low:** 20%-40%	0.638	0.555	0.187	0.561	0.555	0.304
40	**Low**: 0-20%	1.174	0.849	0.241	1.422	0.849	0.409

Table 2 – Within group coefficients of variation.

As predicted, within group heterogeneity is smaller when the dependence from central government's transfers is higher. In highly dependent local governments, current grants represent, on average, 70% of current revenues and the standard deviation is 10% of that mean. On the other hand, in local governments with a higher tax base average current grants represent only 14% of current revenues and standard deviation is 24% of this value.

Table 3 adds some information concerning characteristics of each group of local governments. On average the less populated is the municipality the more dependent it is from central government grants. Variance within each group also increases with population.

Dependence of Current Block Grants	Mean Population	Number	Std. Deviation
High	6935.38	99	3448.024
Medium High	19636.24	95	12589.840
Medium Low	46344.60	73	37071.725
Low	114607.00	40	110743.425
Total	34265.41	307	55907.092

Table 3 – Population mean and standard deviation

Figure 1 illustrates this with a Box plot where moderate outliers are identified with "o" and severe outliers with "*".[8]

[8] See Hogg and Tanis (2001) for a definition of moderate and severe outliers. The main outliers are 179 (Lisbon), 208 (Sintra), 11 (Braga), 26 (Guimarães), 78 (Vila Nova de Famalicão), 31 (Marco de Canavezes), 83 (Vila Verde), 19 (Cinfães) and 255 (Serpa).

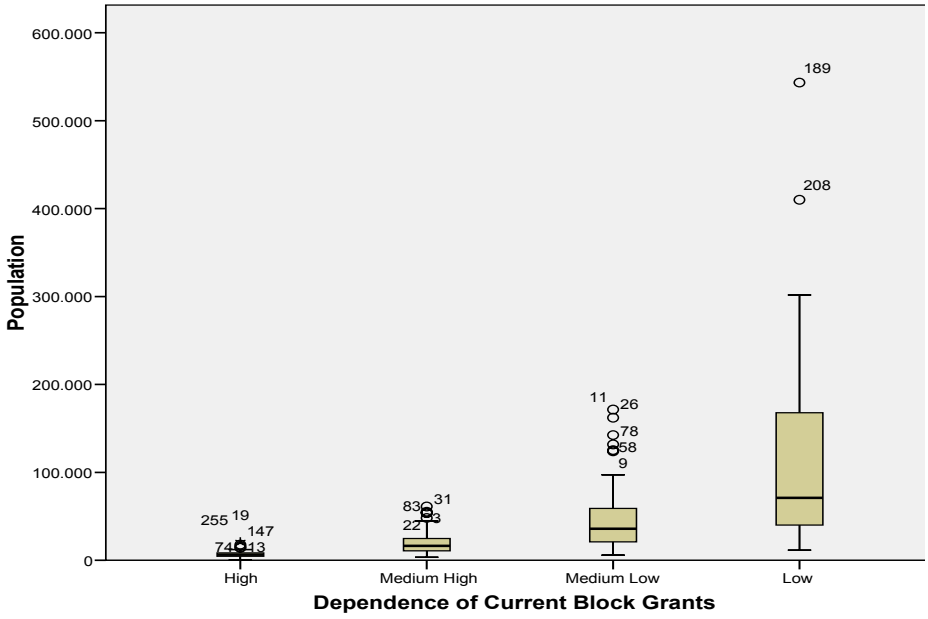

Figure 3 Municipalities' dependence on current block grants by population size

No. of Local Govern.	Dependence from Current State Grants	Average Personal Income Tax per capita (2003)	Aver. Current Exp.. (1000€)	Average Per Capita Current Expenditure	Average. Capital Exp (1000€).	Average Per capita Capital Expenditure	Aver. Curr. Grants Per capita	Aver. Ratio CurrExp/ Capital Exp.
99	**High**: More than 60%	250.46	4408.1	723.54	3660.4	571.41	505.93	1.55
95	**Medium High***:* 40%-60%	307.16	7578.3	455.38	5525.1	317.94	246.44	1.63
73	**Medium Low***:* 20%-40%	414.08	14639.5	394.86	8960.2	236.76	138.53	1.85
40	**Low***:* 0-20%	722.00	48826.5	499.24	20882.5	222.88	82.83	2.58

Table 4 Average Current and Capital Expenditures and Current/Capital ratio

It is important to note that fiscal rules 1 and 2, do not imply that as the current-capital revenues' ratio increase so does the current-capital expenditures' ratio. However, Table 4 suggests that this happens and this is consistent with our hypothesis. In order to analyze in more detail this issue we estimated three equations using ordinary least squares. The first regression relates the expected value of the capital-current expenditures' ratio (CCER) with the capital-current revenues' ratio (CCRR) , the proportion of own current revenues (POCR), net borrowing (NB) and the population

(POP) of each municipality. To take into account the presence of heteroskedasticity we used an heteroskedastic consistent procedure to estimate the standard errors (between parenthesis below the estimated coefficients).

$$\hat{CCER}_i = -0.1295 + 0.9288\,CCRR_i + 0.4334 POCR_i + 0.26\times10^{-7}\,NB_i + 0.13\times10^{-7}\,POP_i$$
$$\qquad\qquad (0.0641) \qquad (0.1064) \qquad (0.84\times10^{-8}) \qquad (0.55\times10^{-6})$$
$$N = 307; \quad R^2 = 0.5579 \quad F - Statistic = 95.2849 \quad p - value = 0.000$$

Given the fungibility of resources and the possibility of local governments running small or large superavits of the current accounts, there should be no reason, *a priori*, to believe that the structure of expenditures would mimic the structure of revenues. If local expenditures were driven by the median voter there should be no statistically significant relationship between these variables. However, as explained in section 2, the existence of fiscal rules (the "golden rule" and the rule to allocate grants), introduces a rigidity in local budgets. Therefore, with fiscal rules we expected that the structure of revenues (CCRR) command the structure of expenditures (CCER), and this is consistent with the empirical results. An increase of 0.1 points in the capital-current revenues' ratio will originate, *ceteris paribus*, an increase of 0.093 in the capital-current expenditures' ratio. We can also note that an increase in the proportion of own current revenues (i.e. in the municipalities' tax base) will originate, *ceteris paribus*, an increase in the expected capital-current expenditures' ratio. Since property related taxes (property tax and a property transfer tax) are the main local taxes in Portugal, the weight of own current revenues in total local revenues is linked with property assets. Several municipal capital expenses are correlated with real estate such as, municipal roads, water and sewage systems and so on.

The positive coefficient associated with net borrowing underlines that a significant part of municipalities' investment is funded by borrowing. Finally, we can verify that, *ceteris paribus,* the weight of capital expenditures is slightly higher in more populated municipalities.

In a second regression, we want to analyze whether net investment per capita changes with the increasing population size of municipalities. This might be associated with economies of scale up to a certain threshold of population size. Therefore, the dependent variable is net investment *per capita* and the covariates are the population (introduced in a quadratic form) and the proportion of municipalities own current

revenues. For the same reason as before we estimated the standard errors in a heteroskedastic consistent way.

$$\hat{NIpc}_i = 697.8 - 0.001522\ POP_i + 0.3352 \times 10^{-8}\ POP_i^2 - 551.6 POCR_i$$
$$\qquad\qquad (0.00043) \qquad (0.1015 \times 10^{-8}) \qquad (89.71)$$
$$N = 307; \quad R^2 = 0.3653 \quad F - Statistic = 58.1408 \quad p - value = 0.000$$

The first comment is that, as expected, we can observe a decrease in net investment *per capita* when we move from less populated to more populated municipalities, although at a diminishing rate. The minimum per capita expenditure is reached around 227 thousand inhabitants, and after that there is an increase in per capita investment. There are only four municipalities with more than 227.000 inhabitants (Lisbon, Sintra, Porto, Vila Nova de Gaia). Associated with the overall decrease in net investment, it is difficult, however, to disentangle what can be explained by economies of scale and scope and what is a result of fiscal rules and the rigidity of grant design. However, empirical evidence has shown that economies of scale are strong for small municipalities and are dependent on the particular local government service. They are exhausted for a smaller population size for services such as schools and public libraries, and for a higher population size for services such as waste disposal. Even in this case where investments are higher, constant returns to scale are reached around 50.000 inhabitants (see Stevens 1978). This suggests that more populated municipalities may be in a situation of fiscal stress since they receive much less per capita grants than suggested by economies of scale[9].

The second comment is that municipalities with a larger tax base, and consequently a higher proportion of own current revenues on local revenues, have a lower level of per capita capital expenses.

This may seem counter-intuitive, but it is not, taking into account the descriptive statistics presented above. Given that intergovernmental grants more than offset differences in own local revenues (associated with a lower tax base), municipalities with more per capita total revenues (including grants, taxes and sales of goods and services) are those with smaller tax bases. Conversely, municipalities with larger tax yields have less per capita total revenues.

[9] For the presentation of the Portuguese institutional framework and the effect of population on total grants *per capita* see Pereira (1996) and Veiga and Pinho (2007).

Similar conclusions can be drawn if we regress current expenditures per capita using the same covariates.

$$\hat{CEpc}_i = 754.5 - 0.003426\ POP_i + 0.7517 \times 10^{-8}\ POP_i^2 - 257.309 POCR_i$$
$$\qquad\qquad (0.00068) \qquad (0.1719 \times 10^{-8}) \qquad (139.0)$$
$$N = 307; \quad R^2 = 0.2548 \quad F - Statistic = 34.5348 \quad p - value = 0.000$$

The relationship between per capita current expenditures and population is similar, and so it is the turning point (228 thousand inhabitants). Municipalities with a larger tax base also have a lower level of per capita current expenses. We must note that the parameter associated with the proportion of own current revenues (POCR) is now marginally significant (p-value =0.065)

5. Conclusions

Fiscal rules may have some positive implications but also non-intentional negative effects. This paper emphasizes additional perverse effects of fiscal rules. Apart from the ones already known in the literature (e.g. incentives for creative accounting), we have shown that the combination of an intergovernmental grant rule (that allocates capital and current block grants in a fixed proportion) with the "golden rule" of public finances (imposing the surplus of the current account) introduces a rigidity in expenditure structure. Essentially, the ratio of capital-current revenues, which is to a great extent exogenous to municipalities, has a binding effect on the capital-current expenditures' ratio. This effect is particularly important in municipalities which are highly dependent of intergovernmental grants but also in the other local governments.

The rigidity imposed by the fiscal rules has obvious impacts on the inefficiency of local governments' decision-making. Moreover, they may create fiscal stress in urban municipalities, whenever there is a decreasing trend in per capita intergovernmental grants, and this trend can not be fully explained by the existence of economies of scale.

Intergovernmental block grants in Portugal, as in some other countries, are formula based. Since the variables underlying these formulae do not change dramatically year after year, there is some stability in capital and current block grants received by municipalities, so that the proportion of capital and current grants is also relatively stable. This shows that the analysis developed in this paper applies to all countries where intergovernmental block grants represent a considerable share of local

governments' revenues, where they are formula based and where there is a distinction between current and capital grants.

Based on the conclusions of this paper we should expect large inefficiencies at local government level (e.g. investments above optimal levels in low tax base municipalities) which can be explained in part by the existence of fiscal rules. This suggests that further research is needed in this direction. Finally this paper has highlighted some additional perverse effects of fiscal rules, and suggests that there are, as a consequence of the Stability and Growth Pact, too much fiscal rules constraining local governments' behavior.

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