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WHICH GLOBALIZATION MATTER? ON THE NEXUS BETWEEN FISCAL DECENTRALIZATION AND MANY DIMENSIONS OF INTEGRATION

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Which globalization matter? On the nexus between fiscal decentralization and many dimensions of integration

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Abstract: This paper tests the effects of several dimensions of globalization on fiscal decentralization by decomposing the effects of the KOF index of globalization into its main components: economic, political and social integration. We attempt to recognize whether different aspects of globalization promote fiscal decentralization, measured according to different definitions. Empirical analysis shows that social integration fosters both revenue and expenditure decentralization. Instead, the impact of economic and political globalization is less robust. Economic integration significantly promotes fiscal decentralization only when we use tax revenue decentralization as proxy for decentralization while political integration significantly and positively affects only expenditure decentralization. Overall, since higher social globalization contributes to lower barriers across countries and inter-jurisdictional mobility of productive factors, we argue that correlation between social integration and decentralization may reflect the willingness of local authorities to reinforce their competitiveness to attract firms and workers. Moreover, the emergence of forces of "glocalization" could strengthen pressure towards decentralization to recover local cultural identity and to assign local actors with higher decision-making power.

Keywords: fiscal decentralization, globalization

JEL classification: H7, H87

1. Introduction

Decentralization of authority to local governments is a spreading trend observed over the last few decades across several countries (Shah, 2006; OECD, 2002a,b). Moves towards decentralization can be interpreted as the result of a counterbalance between the benefits of large jurisdictions, mainly due to scale economies and internalization of spillovers, and the costs of heterogeneity of large and diverse populations. However, Alesina and Spolaore (1997) and Bolton and Roland (1997) argued that globalization may change the counterbalance of incentives for secessionism and decentralization as opposed to centralising tendencies. These authors suggest that the international integration of markets can lower obstacles to fractionalization of central authority by reducing the economic costs of smallness thus implying a positive correlation between decentralization and globalization.

Empirical evidence on this issue is tiny but it is now receiving growing attention.[1] A general positive relationship emerges between globalization and moves towards fiscal decentralization in the paper of Ermini and Santolini (2010) with regard to a sample of OECD countries over the period 1978-1997. These authors make use of an overall index of globalization proposed by Dreher (2006) which resumes information about 23 variables that relates to economic, political and social dimensions of integration. Before, investigation on the nexus between decentralization and globalization has mainly focused on economic integration, namely trade and capital openness, as proxy for globalization and it produced mixed results. A general positive relationship emerges between economic globalization and moves towards revenue and expenditure decentralization in the paper of Stegarescu (2004b) with regard to a sample of OECD countries over the period 1970-2001. Less robust, even if positive, is also the correlation detected between financial openness and decentralization. In addition, the author investigates whether decentralization is promoted under political integration, as a distinct factor from market globalization, finding support to this line of enquiry. On the opposite, studying 47 countries for the time span 1978-1997, Garrett and Rodden (2003) pointed out that economic and, to a lesser extend, capital openness can foster fiscal centralization in order to "better mitigate market risk for citizens within their borders" (p.109).

In this paper we build on the suggestion put forward by Stegarescu (2004b) that the vertical structure of the public sector may be affected by different dimensions of globalization other than economic cohesion, such as political integration. With this regard, our analysis focuses on the effect played on decentralization by the main constituents components of the overall KOF index of globalization, i.e. economic, political and social integration. Several contributions are offered by our empirical analysis. Firstly, we use the more complex KOF indexes of globalization and, as a novelty, a specific attention is devoted to the index of social integration. The impact of social dimension of globalization was not previously examined although it may offer interesting implications. As an additional contribution, we adopt several definitions of decentralization ranging from sub-national revenue and expenditure on total government revenue and expenditure, released by the IMF's GFS, to the tax revenue

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[1] A larger part of the literature devoted attention to the closely related argument on the country size-globalization nexus. While Rodrick (1998) finds a positive relationship between the size of a country and the degree of economic openness, Alesina and Wacziarg (1998) and Garen and Trask (2005) ended with opposite results suggesting that larger countries benefit less from economic integration and, thus, decentralization of power to smaller jurisdictions may be a valid option when factor markets are economically integrated.

decentralization index and the revenue decentralization index elaborated by Stegarescu (2004a, 2005).

Results show that the positive correlation between the global KOF index of globalization, already emerged in the paper of Ermini and Santolini (2010), is mainly driven by a positive correlation between decentralization and social integration. Contrary to previous empirical evidence, economic and political integration measured by the KOF indexes are less significant in the regression analysis. In particular, we observe that economic integration promotes significantly fiscal decentralization only when the tax revenue decentralization index is used as dependent variable in the regression analysis. On the side of political integration, we observe a significant and positive impact only on the expenditure decentralization index.

Some possible interpretations can be draw to explaining the "social dimension" of fiscal decentralization. The first one makes appeal to economic considerations. The removal of barriers in information flows together with cultural proximity favour inter-jurisdictional mobility of people and firms across countries. This triggers competition among local governments through decentralization in order to attract tax base inside their own jurisdiction. A different interpretation of the positive social globalization-decentralization nexus can be associated to socio-political phenomenon. Social integration mitigates the relevance of national identity in favour of the emergence of a supranational identity. Concurrently, forces of glocalization strengthen the concept of local identity. Under such circumstances, decentralization may reveal a successful political instrument for helping citizens to maintain and affirm their own local distinctiveness and self-determination.

The paper proceeds as follows. Section 2 draws some considerations on the link between fiscal decentralization and the three separate dimensions of globalization. Section 3 describes data and empirical model while estimation results are commented in the following section. Section 5 concludes.

2. Decentralization and the many dimensions of globalization

In modern world, economic integration is one manifest aspect of globalization. When related to decentralization, the major challenge is to provide additional empirical evidence in order to shed light on divergent theoretical views which demonstrate that both centralization and decentralization incentives are associated with market integration. From one side, as mentioned above, it is assumed that economic integration may alleviate the cost of smallness (Alesina and Spolaore, 1997) since the increase in the market size and the reduction in economic transaction costs counterbalance benefits associated to larger size such as scale economies and internalization of externalities. Thereby, economic integration strengthens secession threats within countries, especially where minority groups are present or inter-regional income inequality prevails. Since decentralization represents a less costly alternative to secessionist movements, generally, it may be preferred and implemented (Bolton and Roland, 1997). In addition, Alesina *et al.* (2000) state that relatively small and homogeneous groups, from the point of view of cultural, linguistic or ethnic characteristics, can benefit from forming small and homogeneous political jurisdiction assuming they trade and are economically integrated with others. To sum up, previous authors demonstrate that economic integration enhances process of secession or decentralization. Accordingly, in the paper of Stegarescu (2004b) emerges, as a general tendency, that economic globalization measured in

terms of trade openness fosters the trend towards fiscal decentralization with a marked effect when own revenue decentralization and exclusion of social security from the central government are concerned. On the contrary, fiscal centralization is likely to emerge under globalization pressures on the basis of the so-called "compensation hypothesis" (Cameron 1978; Rodrik 1998) which asserts that economic integration increases the demand for social protection against externally generated economic insecurity and volatility. Indeed, it is optimal to pursue stabilization policies at central government level to recover from aggregate shocks, to guarantee inter-regional risk sharing policies in response to region specific shocks, to accomplish with redistribution those regions which are structurally penalized by economic integration. Estimates from Garrett and Rodden (2003) give evidence to a positive relationship between fiscal centralization and trade and capital accounts openness. As a possible explanation of this result, the authors observe that under globalization, and correlated regional specialization (Krugman, 1991), countries and their regions face a higher exposure to international unexpected asymmetric economic shocks (Rodrick, 1998; Persson and Tabellini, 1996) and centralization may best respond to sub-national governments demand for uncertainty and risk insurance.

Following Stegarescu (2004b), there are reasons to assume a positive link between political integration and decentralization. Making particular reference to the UE experience, the author suggests that political integration is likely to promote decentralization of power to lower level of government. He argues that the costs of smallness are even reduced given that, according to the "Sandwich" hypothesis, we observe a supranational authority which operates on a very large scale of several member countries to provide certain public goods and services. Moreover, the same mechanism that squeezes central government authority between the strengthening of the supranational body and the increasing influence of the regional governments, is a catalyst for demand of higher degree of decentralization emerging from below within member countries. Instead, opposite considerations can be suggested building on Dreher's (2006) argumentations. Economic integration favours interregional mobility of people and other factors of production that leads to a high competitive environment. As an attempt to attract tax base, regions may be willing to enjoy larger fiscal autonomy and power to tax inside their jurisdiction which translates in a higher demand for decentralization. However, a race to the bottom can take place. If political integration emerges to confine competition by means of, for example, tax harmonization policies and formal or informal agreements, there is less space for local autonomy. This means that an increase in political integration can result in a reduced demand for decentralization. Given the theoretical literature proposes conflicting expectations, it is left to empirical analysis to assess the effect of political integration.

Finally, the analysis of the nexus between social integration and decentralization is missing in the existing literature. Social integration can be interpreted as cultural proximity, share of common habits among citizens of different countries and free exchange of information. Higher level of social integration facilitates the approval of common commercial agreement together with inter-jurisdictional mobility of people and firms. Under these circumstances, it is likely that sub-national level of governments ask for more autonomy from the central government in order to compete for attracting tax base from neighbouring regions. A positive nexus between decentralization and social integration can be assumed also on the basis of different reasoning. First, the approach of "glocalization" stresses the relevance of links to global environment and network while empowering local communities, improving local

resources value, also by stressing distinctiveness and local cultural identity. It requires to incorporating and combining both global and local interests and needs while taking advantages of international opportunities. Increasing social integration therefore can stress the necessity of recovering elements of local identity as preventing international cultural homologation. Under such pressures, the promotion of decentralization appears as the natural political strategy to implement more accountable and democratic governance in order to increase the participation of local authorities and stakeholders with the purpose of giving voice to local heterogeneity. However, Sharma (2008) highlights that glocalization is generating tendencies towards supranational governance and centralization on one hand and for localization and decentralization on the other, therefore our estimates of the impact of social integration on the transfer of power to sub- nation governments are welcome to indicate which tendency is dominant. Secondly, socially integrated countries are more willing to avoid conflict and to live peacefully (Colletta and Cullen, 2000; Colletta et al., 2001). In addition, it has been observed that decentralization can be conceived as an instrument for peace building and, especially in a situation where peace already exists, as in the large part of OECD countries under analysis, for sustaining and enhancing stability (Kauzya, 2005).[2] A possible reason why decentralization helps to reduce conflicts is that it allows minority group to be better represented and to enhance their perceptions of citizenship, preventing social exclusion, inter-group grievances and conflicts over public goods and services provision (Scott, 2009). As a result, more socially integrated countries demand higher level of decentralization in order to promote prospects for peace and, as a reinforce mechanism, to enhance social cohesion.

The main results of previous empirical evidence on the nexus between fiscal decentralization and globalization are summarized in table 1. From this table, it is clear that non conclusive relationships are detected by Garret and Rodden (2003) and Stegarescu (2004b). However, Stegarescu results are more in line with Ermini and Santolini (2010) evidence since they find a positive and statistically significant impact of globalization index on fiscal decentralization. Regarding the effects of political integration on fiscal decentralization, Stegarescu (2004b) finds opposite results according to the kind of fiscal decentralization examined. On the side of revenue decentralization, political cohesion produces a centralization of tax and revenue decisions whereas, on the side of expenditure, it leads to a decentralization of decision-making. This result deserves attention given that political integration may exacerbate vertical fiscal imbalance since the centralization of power to tax turns into intergovernmental transfers for funding expenditure on local public goods and services that may reduce benefit from decentralization (Stein, 1999).

The above discussion has suggested that it can be expected a differentiated impact on (tax) revenue and expenditure decentralization of economic and political dimensions of globalization. At the same time, it emerges a lack of evidence on the link between social integration and fiscal decentralization. Thus, the estimation of the intensity and direction of this relationship and the assessment of which dimension among economic, political and social dimension of globalization is more relevant in driving fiscal decentralization are tasks that will be performed in the next sections.

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[2] Actually, Kauzya (2005) is sceptical about the effectiveness of decentralization to enforce peace where the framework of the shared exercise of power does not ensure that several actors play for the well-being of each citizen and where hostility over power sharing prevails, such as in a situation of war.

Tab. 1 The empirical evidence on the relationship between fiscal decentralization and globalization

I) Revenue decentralization and tax revenue decentralization as dependent variable

Authors	Globalization index	Economic Globalization index	Political Globalization index
Garret and Rodden (2003)[a]	-	Trade/GDP (-)* Open capital accounts (-)*	-
Stegarescu (2004b)[a]	-	Trade Openness (-/+)* Financial openness (+)	EU political integration (-)*
Ermini and Santolini (2010) [a,b]	KOF index (+)*	-	-

II) Expenditure decentralization index[a] as dependent variable

Authors	Globalization index	Economic Globalization index	Political Globalization index
Garret and Rodden (2003)[a]	-	Trade/GDP (-)* Open capital accounts (-)*	-
Stegarescu (2004b)[a]	-	Trade Openness (+)* Financial openness (+)*	EU political integration (+)*
Ermini and Santolini (2010) [a,b]	KOF index (+)*	-	-

Legend: (a) data source IMF's GFS.
(b) data source Stegarescu (2004a).
(+/-) is the sign of the coefficient of globalization index.
* the coefficient of globalization index is statistically significant

3. Data and empirical model

The study of Ermini and Santolini (2010) shows a positive and significant nexus between fiscal decentralization and globalization for OECD countries by using the overall KOF globalization index (Dreher, 2006).[3] In this paper, we extend this empirical analysis by decomposing the effects of the overall index of globalization into its main components: economic, political and social integration. In this way, we want find out which of these different aspects of globalization drives the positive trend towards fiscal decentralization observed in Ermini and Santolini (2010). For the empirical analysis we use a panel of OECD countries members[4] and the period 1978-1997.

To estimate the relationship between fiscal decentralization and the many dimensions of integration, we consider the following static panel data model with country fixed effects υ_i:

$$FDindex_{it} = a + \delta_1 EconKOF_{it} + \delta_2 PolKOF_{it} + \delta_3 SocKOF_{it} + \beta X_{it} + \upsilon_i + \mu_{it} \qquad (1)$$

In empirical model (1), the dependent variable *FDindex* corresponds to fiscal decentralization index for country i ($i=1,...,N$) at time t ($t=1,...,T$). Several indicators of fiscal decentralization are considered to check for robustness results. In details, we use the shares of sub-national revenue (*REVDEC*) and expenditure (*EXPDEC*) on total government revenue

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[3] For data on KOF index, see http://globalization.kof.ethz.ch/.

[4] Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Luxemburg, Netherlands, Norway, Spain, Sweden, United Kingdom, United States.

and expenditure.[5] The source of these indicators is the International Monetary Fund's (IMF) Government Finance Statistics (GFS). Since both indexes do not account for the real assignment of functions, resources and decision-making powers to different levels of government and, thus, the fiscal autonomy of sub-central governments, we employ two indicators developed by Stegarescu (2004a). We use the tax revenue decentralization index (*ST_TAXREVDEC*) and the revenue decentralization index (*ST_REVDEC*).[6] They are computed by including only taxes and own revenue sources where sub-central government has discretion over tax rate, tax base or both.[7]

Regarding the independent variables, we consider three different KOF indexes of globalization in order to test the impact of economic, political, and social integration in fiscal decentralization. The KOF index related to economic integration (*EconKOF*) resumes information about actual flows (i.e., trade, foreign direct investment, portfolio investment, income payments to foreign nationals) and economic restrictions (i.e., hidden import barriers, mean tariff rate, taxes on international trade and capital account restrictions).

The determinants of the political KOF index of integration (*PolKOF*) are the presence of embassies in a country, international treaties, the membership in international organizations and participation in U.N. Security Council Missions.

Finally, the social KOF index of globalization (*SocKOF*) consists in data on: *i)* personal contact, measured in terms of telephone traffic, transfers on GDP, international tourism, foreign population on total population, international letters per capita; *ii)* information flows, based on internet users, television, trade in newspapers as percent of GDP; *iii)* cultural proximity, measured in terms of the number of McDonald's restaurants, number of Ikea, and trade in books.

The matrix X includes control variable for economies of scale and spillover of public goods and for trend in the demand for public goods: population size (POP), population growth (POP_GROWTH), percentage of urban population (URBAN) and urban population growth (URBAN_GROWTH). The impact on fiscal decentralization of each variable could be positive or negative. A positive impact is expected in the presence of congestion effects or positive externalities whereas negative impact is associated to the presence of scale economies in the demand of public goods and services as well as to spillover.

In the matrix X we also include some control variables for economic development and business cycle, that is per capita gross domestic product (GDP) at US constant price, GDP growth (GDP_GROWTH) and unemployment rate (UNEMP). With regard to these indicators, opposite effects on decentralization may emerge. Empirical evidence shows that developed and developing country are increasingly moving towards decentralization as a respond to increasing demand for autonomy in defining policies better suited to promote local comparative advantages (OECD, 2002a,b; Shah, 2006) Accordingly, we may expect a positive correlation between fiscal decentralization and GDP indicators. However, as remarked by Stegarescu (2004b), the public theory states that higher levels of income are associated with enlargement of the size of government and centralization of public sector, such as improved welfare state intervention, to ensure income redistribution and equity over

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[5] Both sub-national and total government expenditure do not include current and capital transfers to other levels of government.

[6] The panel is unbalanced only when we use ST_REVDEC as dependent variable.

[7] Unfortunately, we can only use data on the revenue decentralization side since Stegarescu has not developed cross-sectional time series for OECD countries on the side of expenditure decentralization.

the country. This effect prevailing, a negative impact of GDP indexes on decentralization should emerge. Instead, as regards unemployment, the expected impact on fiscal decentralization is negative because an higher level of unemployment requires stabilization policies which may be more efficiently pursed at central level with a cut of administration and coordination costs among different levels of governments.

Finally, X includes a control for government size (GOVSIZE) measured as the ratio of total government expenditure on GDP. The empirical literature shows that a larger public sector could be consistent with a fiscal decentralization mainly funded by grants and revenue-sharing (Stein, 1999; Rodden, 2003). This means that an increase in GOVSIZE could rise overall fiscal decentralization.

The data source of control variables are the following: GFS for GOVSIZE; OECD for UNEMP; World Bank Development Indicators for the remaining control variables.

Finally, a constant term a is included in model (1) as well as the *iid* error term μ.

4. Estimation results

In this section we present estimation results of static panel model (1). Empirical model is estimated by running panel fixed effect (FE) regression and by Prais-Winsten regression with panel-corrected standard errors (Beck and Katz, 1995) since we detect first order autocorrelation in the error terms, group-wise heteroschedasticity and cross-sectional correlation problems.

Table 2 reports estimates of decentralization model (1) which assumes as dependent variable the revenue decentralization index elaborated by Stegarescu (2004a). Firstly, we focus on our variables of interest. When we estimate model (1), including only the EconKOF index, we observe in table 2, columns I-II, that the coefficient of economic integration assumes a positive value although not statistically significant. The estimation of the model which takes into account the political integration index only, reported in columns III-IV, shows that PolKOF impacts negatively, but not significantly, on ST_REVDEC. Finally, from columns V-VI, we can see that the KOF social integration index exerts a positive and significant effect on Stegarescu revenue decentralization where the coefficient of SocKOF is equal to 0.134 in PW-PCSE estimation. Moving to estimate model (1) which takes into account the joint effect of the three globalization indexes on ST_REVDEC, columns VI-VII confirm results already emerged. Specifically, social integration appears to be a significant determinant of revenue decentralization while economic and political globalization indexes return to be not significant.

When we consider as the dependent variable of model (1) the revenue decentralization index provided by GFS, we do not observe in table 3 qualitative differences from results reported in table 2.

Re-running model (1) to estimate the nexus between tax revenue decentralization and globalization and following the same estimation strategy as illustrated above, table 4 shows that economic integration (columns I-II), as well as social integration (columns V-VI), increases significantly tax revenue decentralization. Again, it does not emerge a significant effect played by political integration. These results are confirmed when we estimate full model (1) as shown in columns VII-VIII.

Results on the side of expenditure decentralization are reported in table 5. We detect a clear and significant effect only for the social KOF index with a value that for the unbiased

PW-PCSE estimations ranges from 0.094 to 0.100 (see columns VI and VIII). As regards the EconKOF index, the FE and PW-PCSE coefficients take opposite signs but both are not significant. On the other hand, according to the FE coefficient of the political KOF index, we should assume a positive and significant effect on expenditure decentralization (columns III and VII) which, however, is not robust under the PW-PCSE estimates which turn out to be not statistically significant (columns IV and VIII).

To sum up, estimation results show that the main determinant of fiscal decentralization is social integration which fosters the decentralization process. This finding suggests that the positive and significant correlation between fiscal decentralization and the KOF index of globalization founded in Ermini and Santolini's (2010) study is mainly due to an increase in social interdependence among countries by means of an increase in information flows, personal contacts and cultural proximity.

With concern to the impact of the economic KOF index, it emerges a general positive correlation with revenue decentralization whereas negative with expenditure decentralization. In details, political integration tends to centralize (tax) revenue decision making and decentralize spending decisions at local governmental level; however, these trends are not statistically significant in the regression analyses with the exception of FE estimations for expenditure decentralization (see tab. 5, columns III-VII). This evidence is not new in the literature since Stegarescu (2004b) finds the same results, in terms of sign and statistical robustness, using different indicators of economic globalization.

As regards to control variables, evidence emerged throughout tables 2-5 shows that economies of scale are not a relevant cost to hinder decentralization since population presents a positive and frequently significant coefficient. But an increase in the population growth tends to significantly stimulate the demand of public goods provided by the central government which turns out in a reduced pressures for revenue decentralization. Generally positive coefficients of urbanization indicators may suggest the presence of heterogeneity in citizen preferences which, being spatially concentrated, maybe be better accomplished by a decentralized government. While the level of GDP has a negative but almost negligible impact on fiscal decentralization, the GDP growth promotes both tax and expenditure decentralization which is coherent with the evidence of an increasing trend towards decentralization characterizing both developed and developing countries. In case of unemployment, our results suggest that a higher level of unemployment requires higher level of central intervention to ensure inter-regional risk sharing expenditure policy for stabilization but, at same time, it emerges a tendency to assign local governments with more power on the side of revenue autonomy which may be better off to recover in case, for example, of asymmetric economic shocks. Results over the impact of a larger public sector government confirm the expectation of a positive correlation with decentralization.

5. Conclusion

In this paper we test the effects on fiscal decentralization of several dimensions of globalization. As previous studies we examine the impact of economic and political integration; in addition, for the first time, we analyse the impact of social globalization. Estimation results show that social integration is the main determinant of fiscal decentralization. Contrary to previous analyses (Garret and Rodden, 2003; Stegarescu, 2004b), economic and political integration measured by the KOF index do not play an effective role in explaining fiscal decentralization.

Some possible interpretations of these results can be suggested. The first one has an economic nature. Cultural proximity and the removal of barriers in information flows generate an environment in favour of inter-mobility of tax base (i.e., people and firms) across countries. Local governments promote decentralization process in order to attract mobile resources also from abroad. Decentralization thus is conceived as the more suitable political structure to leverage on own resources and to promote local attractiveness. Secondly, socio-political considerations could be take into account. Scholars of glocalization observe that social and political integration reduces the importance of national belonging in favour of the emergence of a supranational identity. Concurrently, under glocalization, local identity is strengthen and decentralization may reveal a successful instrument for helping citizens to maintain and affirm their own local identity.

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Tab. 2 Estimation results

	ST_REVDEC							
	FE[a]	**PW-PCSE**	**FE[a]**	**PW-PCSE**	**FE[a]**	**PW-PCSE**	**FE[a]**	**PW-PCSE**
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Economic KOF index	0.054	0.059					0.027	0.048
	(0.76)	(1.40)					(0.41)	(1.10)
Political KOF index			-0.017	-0.012			-0.021	-0.016
			(-0.50)	(-0.61)			(-0.66)	(-0.75)
Social KOF index					0.289***	0.134***	0.287***	0.124***
					(4.33)	(3.46)	(4.20)	(3.10)
POP ($\cdot 10^4$)	0.001**	0.012***	0.001**	0.010***	0.000	0.001**	0.000	0.001**
	(2.39)	(2.96)	(2.30)	(2.84)	(1.46)	(2.23)	(1.48)	(2.39)
POP_GROWTH	-2.695**	-1.433**	-2.540**	-1.244*	-4.137***	-2.020**	-4.204**	-2.128**
	(-2.54)	(-2.08)	(-2.45)	(-1.86)	(-4.16)	(-2.46)	(-4.09)	(-2.52)
URBAN	0.700***	0.408*	0.685***	0.314	0.668***	0.410**	0.723***	0.515**
	(3.09)	(1.78)	(3.28)	(1.39)	(3.35)	(1.98)	(3.36)	(2.28)
URBAN_GROWTH	2.883***	1.425**	2.863***	1.216*	4.533***	2.073***	4.550***	2.192***
	(3.06)	(2.15)	(3.00)	(1.90)	(4.97)	(2.61)	(5.00)	(2.65)
GDP	-0.001***	-0.000	-0.001***	0.000	-0.001***	-0.000	-0.001***	-0.000**
	(-3.46)	(-0.34)	(-3.96)	(0.75)	(-4.49)	(-1.46)	(-4.64)	(-2.05)
GDP_GROWTH	-0.064	-0.024	-0.050	-0.027	-0.070	-0.016	-0.073	-0.019
	(-0.82)	(-0.64)	(-0.64)	(-0.73)	(-0.85)	(-0.40)	(-0.91)	(-0.45)
UNEMP	0.048	0.08	0.056	0.112	0.034	0.050	0.019	0.024
	(0.46)	(1.07)	(0.53)	(1.40)	(0.33)	(0.63)	(0.19)	(0.30)
GOVSIZE	-0.037	0.034	-0.025	0.047	-0.066	0.027	-0.068	0.023
	(-0.76)	(0.89)	(-0.52)	(1.22)	(-1.51)	(0.72)	(-1.49)	(0.60)
$R^{2\ whitin}$	0.23		0.23		0.33		0.33	
R^2		0.90		0.89		0.92		0.92
MW-GWH test $\chi^2_{(16)}$	2349.8***		2468.1***		1345.2***		1228.0***	
BP-LM test $\chi^2_{(120)}$	425.0***		440.3***		345.9***		356.8***	
LM-AR1 test $F_{(1,\ 15)}$	76.4***		85.4***		87.7***		75.6***	
Common AR-1		0.71		0.74		0.64		0.63
year effect	*yes*	*no*	*yes*	*no*	*yes*	*no*	*yes*	*no*
Observations No.	314	314	314	314	314	314	314	314

Note: estimates include constant and country fixed effect; z and t statistics in parenthesis for PW-PCSEs and Fixed-Effect estimation, respectively.

Legend: MW-GWH test = Modified Wald test for groupwise heteroskedasticity (Greene, 2000); BP-LM test= Breusch-Pagan Lagrange Multiplier test of independence (Greene, 2000); LM-AR1 test= Lagrange Multiplier test of first order autocorrelation (AR-1) in error terms (Wooldridge, 2002); a: Robust standard errors; ***,**,*: coefficient significant at level 1%, 5%, 10%, respectively.

Tab. 3 Estimation results

	ST_TAXREVDEC							
	FE[a] I	PW-PCSE II	FE[a] III	PW-PCSE IV	FE[a] V	PW-PCSE VI	FE[a] VII	PW-PCSE VIII
Economic KOF index	0.148**	0.165***					0.119*	0.147***
	(2.34)	(3.97)					(1.94)	(3.49)
Political KOF index			-0.029	-0.002			-0.032	-0.010
			(-1.10)	(-0.11)			(-1.28)	(-0.41)
Social KOF index					0.267***	0.148***	0.258***	0.107**
					(3.81)	(3.26)	(3.57)	(2.43)
POP ($\cdot 10^4$)	0.000*	0.000	0.000	0.000	-0.000	0.000	0.000	0.000
	(1.80)	(1.15)	(1.06)	(1.00)	(-0.36)	0.31	(0.56)	(0.65)
POP_GROWTH	-1.080	-1.331*	-0.623	-1.003	-2.115**	-1.756**	-2.404**	-1.806**
	(-1.06)	(-1.88)	(-0.57)	(-1.39)	(-2.11)	(-2.11)	(-2.46)	(-2.24)
URBAN	0.396*	0.332	0.315*	0.052	0.290	0.128	0.455**	0.392**
	(1.94)	(1.63)	(1.72)	(0.27)	(1.64)	(0.77)	(2.36)	(1.99)
URBAN_GROWTH	1.947**	1.493**	1.827*	1.075	3.409***	2.025**	3.467***	2.089***
	(2.14)	(2.18)	(1.83)	(1.54)	(3.61)	(2.50)	(3.85)	(2.67)
GDP	-0.001***	-0.000**	-0.001***	0.000	-0.001***	-0.000**	-0.001***	-0.001***
	(-4.02)	(-2.39)	(-4.93)	(0.33)	(-5.42)	(-2.04)	(-5.30)	(-3.45)
GDP_GROWTH	-0.061	0.007	-0.025	0.004	-0.045	0.013	-0.069	0.011
	(-0.83)	(0.18)	(-0.34)	(0.10)	(-0.58)	(0.28)	(-0.90)	(0.25)
UNEMP	0.283***	0.188**	0.317***	0.285***	0.296***	0.235***	0.252***	0.146*
	(3.07)	(2.16)	(3.45)	(3.22)	(3.18)	(2.78)	(2.82)	(1.71)
GOVSIZE	-0.076	0.011	-0.046	0.039	-0.083*	0.013	-0.099**	-0.003
	(-1.57)	(0.27)	(-0.95)	(0.91)	(-1.93)	(0.30)	(-2.24)	(-0.07)
$R^{2\,whitin}$	0.26		0.24		0.32		0.34	
R^2		0.93		0.91		0.94		0.94
MW-GWH test $\chi^2_{(16)}$	7255.4***		6674.4***		2700.5***		3664.0***	
BP-LM test $\chi^2_{(120)}$	386.0***		446.6***		336.6***		304.9***	
LM-AR1 test $F_{(1,\,15)}$	99.0***		92.5***		93.4***		97.9***	
Common AR-1		0.67		0.71		0.59		0.60
year effect	*yes*	*no*	*yes*	*no*	*yes*	*no*	*yes*	*no*
Observations No.	320	320	320	320	320	320	320	320

Note: estimates include constant and country fixed effect; z and t statistics in parenthesis for PW-PCSEs and Fixed-Effect estimation, respectively.

Legend: MW-GWH test = Modified Wald test for groupwise heteroskedasticity (Greene, 2000); BP-LM test= Breusch-Pagan Lagrange Multiplier test of independence (Greene, 2000). LM-AR1 test= Lagrange Multiplier test of first order autocorrelation (AR-1) in error terms (Wooldridge, 2002); a: Robust standard errors; ***,**,*: coefficient significant at level 1%, 5%, 10%, respectively.

Tab. 4 Estimation results

	REVDEC							
	FE[a]	PW-PCSE	FE[a]	PW-PCSE	FE[a]	PW-PCSE	FE[a]	PW-PCSE
	I	II	III	IV	V	VI	VII	VIII
Economic KOF index	0.056	0.016					0.046	0.002
	(1.30)	(0.53)					(1.08)	(0.08)
Political KOF index			-0.040	-0.026			-0.041	-0031
			(-1.52)	(-1.19)			(-1.64)	(-1.46)
Social KOF index					0.108***	0.079***	0.104***	0.081***
					(3.00)	(2.78)	(2.77)	(2.79)
POP ($\cdot 10^4$)	0.001***	0.001***	0.001***	0.001***	0.000***	0.001***	0.001***	0.001***
	(4.81)	(3.31)	(4.82)	(3.36)	(4.59)	(3.10)	(4.61)	(3.13)
POP_GROWTH	-2.960***	-0.697	-2.772***	-0.735	-3.387***	-1.079*	-3.487***	-1.165*
	(-3.92)	(-1.13)	(-3.82)	(-1.19)	(-4.49)	(-1.66)	(-4.40)	(-1.76)
URBAN	0.841***	0.681***	0.863***	0.679***	0.801***	0.740***	0.918***	0.778***
	(4.81)	(3.11)	(5.30)	(3.42)	(4.80)	(3.83)	(5.20)	(3.57)
URBAN_GROWTH	2.465***	0.576	2.429***	0.606	3.058***	0.992	3.090***	1.077*
	(3.59)	(0.98)	(3.59)	(1.03)	(4.57)	(1.59)	(4.58)	(1.69)
GDP	-0.000***	-0.000**	-0.000***	-0.000***	-0.000***	-0.000***	-0.001***	-0.000***
	(-2.65)	(-2.53)	(-3.27)	(-3.18)	(-3.29)	(-3.87)	(-3.41)	(-3.35)
GDP_GROWTH	0.137**	0.066**	0.153**	0.061**	0.143**	0.077**	0.136**	0.072**
	(2.05)	(2.19)	(2.32)	(2.03)	(2.26)	(2.45)	(2.12)	(2.28)
UNEMP	-0.002	0.001	0.002	0.014	0.002	-0.047	-0.024	-0.046
	(-0.02)	(0.01)	(0.03)	(0.25)	(0.03)	(-0.78)	(-0.35)	(-0.71)
GOVSIZE	0.071**	0.063**	0.086***	0.069***	0.068**	0.062**	0.065**	0.067***
	(2.30)	(2.36)	(2.95)	(2.61)	(2.56)	(2.44)	(2.34)	(2.67)
$R^{2\ whitin}$	0.25		0.26		0.28		0.29	
R^2		0.95		0.95		0.96		0.96
MW-GWH test $\chi^2_{(16)}$	1224.2***		1214.2***		17629.0***		11001.3***	
BP-LM test $\chi^2_{(120)}$	537.9***		581.4***		431.11***		413.9***	
LM-AR1 test $F_{(1,15)}$	238.5***		256.6***		228.5***		212.6***	
Common AR-1		0.73		0.74		0.68		0.69
year effect	*yes*	*no*	*yes*	*no*	*yes*	*no*	*yes*	*no*
Observations No.	320	320	320	320	320	320	320	320

Note: estimates include constant and country fixed effect; z and t statistics in parenthesis for PW-PCSEs and Fixed-Effect estimation, respectively.
Legend: MW-GWH test = Modified Wald test for groupwise heteroskedasticity (Greene, 2000); BP-LM test= Breusch-Pagan Lagrange Multiplier test of independence (Greene, 2000). LM-AR1 test= Lagrange Multiplier test of first order autocorrelation (AR-1) in error terms (Wooldridge, 2002); a: Robust standard errors; ***,**,*: coefficient significant at level 1%, 5%, 10%, respectively.

Tab. 5 Estimation results

	EXPDEC							
	FE[a]	PW-PCSE	FE[a]	PW-PCSE	FE[a]	PW-PCSE	FE[a]	PW-PCSE
	I	II	III	IV	V	VI	VII	VIII
Economic KOF index	0.051	-0.004					0.025	-0.032
	(1.11)	(-0.12)					(0.63)	(-0.94)
Political KOF index			0.159***	0.031			0.158***	0.024
			(3.84)	(1.08)			(4.01)	(0.87)
Social KOF index					0.135**	0.094**	0.133**	0.100***
					(2.33)	(2.57)	(2.43)	(2.65)
POP ($\cdot 10^4$)	0.001***	0.001***	0.001***	0.001***	0.001***	0.001**	0.001**	0.001**
	(4.07)	(3.17)	(3.06)	(3.13)	(2.95)	(2.17)	(2.28)	(2.02)
POP_GROWTH	-0.397	0.345	-0.317	0.468	-0.996	0.077	-1.129	0.191
	(-0.48)	(0.54)	(-0.37)	(0.70)	(-1.17)	(0.12)	(-1.35)	(0.29)
URBAN	0.797***	0.525**	0.462***	0.536**	0.765***	0.602***	0.499***	0.545**
	(3.78)	(2.21)	(2.71)	(2.51)	(4.16)	(2.71)	(2.79)	(2.54)
URBAN_GROWTH	-1.421**	-0.819	-1.517**	-0.975	-0.658	-0.494	-0.701	-0.633
	(-1.98)	(-1.37)	(-2.07)	(-1.53)	(-0.96)	(-0.84)	(-1.05)	(-1.03)
GDP	0.000	-0.000	0.000	-0.000	-0.000	-0.000**	0.000	-0.000*
	(0.17)	(-0.95)	(1.32)	(-1.31)	(-0.50)	(-2.29)	(0.88)	(-1.87)
GDP_GROWTH	0.224**	0.051	0.223**	0.062	0.227**	0.061	0.209**	0.068*
	(2.36)	(1.27)	(2.42)	(1.49)	(2.52)	(1.52)	(2.41)	(1.65)
UNEMP	-0.390***	-0.375***	-0.325***	-0.387***	-0.391***	-0.448***	-0.348***	-0.436***
	(-3.52)	(-4.17)	(-3.19)	(-4.59)	(-3.70)	(-5.46)	(-3.57)	(-5.09)
GOVSIZE	0.306***	0.229***	0.296***	0.228***	0.298***	0.224***	0.275***	0.226***
	(5.96)	(6.15)	(6.33)	(6.10)	(5.99)	(6.10)	(6.23)	(6.33)
$R^{2 \text{ whitin}}$	0.32		0.39		0.35		0.42	
R^2		0.94		0.94		0.94		0.94
MW-GWH test $\chi^2_{(16)}$	698.2***		734.7***		1544.7***		800.6***	
BP-LM test $\chi^2_{(120)}$	381.5***		376.4***		338.3***		348.9***	
LM-AR1 test $F_{(1, 15)}$	40.5***		37.3***		32.7***		29.7***	
Common AR-1		0.66		0.63		0.67		0.65
year effect	*yes*	*no*	*yes*	*no*	*yes*		*yes*	
Observations No.	320	320	320	320	320	320	320	320

Note: estimates include constant and country fixed effect; z and t statistics in parenthesis for PW-PCSEs and Fixed-Effect estimation, respectively.

Legend: MW-GWH test = Modified Wald test for groupwise heteroskedasticity (Greene, 2000); BP-LM test= Breusch-Pagan Lagrange Multiplier test of independence (Greene, 2000); LM-AR1 test= Lagrange Multiplier test of first order autocorrelation (AR-1) in error terms (Wooldridge, 2002); a: Robust standard errors; ***,**,*: coefficient significant at level 1%, 5%, 10%, respectively.