

Fiscal Decentralization in Specific Areas of Governments. An empirical evaluation with country panel data.

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Abstract:

This present paper is intended to explaining fiscal decentralization across countries end over time. Our contribution is twofold. First; it is hypothesized that the so called “normative arguments”, which predict some well defined effects from income, population diversity, population density and the like, should be examined in light of the underlying political economy game and the explicit recognition that a case specific public good trade off exists between normative and political variables. Second, since the available data set from the IMF, as well as some of the related variables needed to make the empirical analysis are incomplete, an imputation procedure is made in order to produce a balanced panel of 44 countries. Results confirm that different State’s functions exhibit different patterns when it comes to the explanatory variable being used.

Keywords:

Political Economy, Median Voter, Fiscal Federalism, Decentralization

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1. Introduction.

An extensive theoretical as well as empirical literature exists upon the effects of fiscal decentralization on various areas of public sector (Letelier 2012, Voigt y Blume 2012). Similarly, some research has been made to shed light over the reasons why some countries are more fiscally decentralized than others and/or why they exhibit a predictable pattern over time as regards this matter (Panizza, 1999, Letelier 2005, Arzaghi y Henderson; 2005). Nonetheless, a vacuum still exists when it comes to explaining why some specific areas of government are more likely to be decentralized than others. While the bulk of the research so far provides sound explanations regarding why the share of sub national government's expenditure relative to the general government's tends to rise (decline) in response to well defined exogenous variables, it ignores the fact that public goods may exhibit important differences from one another in both the particular technology needed to produce them and the very capacity of decentralized jurisdictions to provide suitable administration support and funding.

We hypothesizes that two driving forces are key determinants in the extent to which decentralization is a welfare winning option in particular public goods. On the one hand, decentralization entails better locally based information being available to policy makers and public managers. On the other, decentralization may lead to a loss in scale economies from public provision, which raises the price being paid for such services (Letelier and Sáez 2012). Superimposed on above arguments, there in an exogenously given institutional structure this frames underlying incentives of the political economy game. Our aim hinges upon the need to explaining why particular areas of government differ in their decentralization pattern. We estimate an unbalanced panel model that includes 44 countries for which data are available from the IMF (*GFS*) and other related sources.

The remaining of this paper is as follows. Section 2 describes the existing theory about the country determinants of fiscal decentralization. The empirical model and estimation strategy are presented in section 3. Section 4 discusses econometric results.

2. Fiscal Decentralization in Theory and Practice.

The theory on why decentralization may produce a better (or worse) public sector quality outcome dates back as far as Hayek (1945) and his acknowledgement of decentralization being a socially efficient way to taking advantage from dispersed individual information on the needs and demands in society. While normative public finance tradition in economics has made this contention into a theorem (Oates, 1972), it falls short in differentiating case specific public goods in the analysis. Similarly, despite the so called “second generation of Fiscal Federalism” (Lokwood, 2006; Oates 2008) has made sound contributions in understanding the underlying political process that explains fiscal decentralization, it makes no explicit mention of the multiple dimensional nature of public goods. Although the role being played by inter jurisdictional externalities (Oates, 1972; Zodrow and Mieszkowski, 1986), the extent of scale economies being seen as an obstacle for small sub national governments to be in charge (Oates, 1985; Bennett 1994) and a myriad of other against indications to decentralization (Prud’homme, 1995) have been extensively examined in the empirical literature, little effort has been made to formalize such a complex variety of cases in a comprehensive way. A contribution in this regard is the work by Letelier and Saez (2012), thereby two opposing driving forces in explaining fiscal decentralization are identified. At the one hand, the so called “Von Hayek Effect” (*VHE*) results from the gains in government’s information about the particular demands of the local constituency resulting from a stronger local representation. At the other, the “Scale Effect” (*SCE*) generated by the loss in economies of scale from decentralization is assumed to have a cost push effect on public goods provision. Since both effects are specific public goods sensitive, it follows that different public functions are likely to show different degrees of decentralization.

Among variables generally recognized as relevant in the shaping of public sector structure, median voter’s income is certainly the one that deserves most attention. It has been argued that as income rises, voters become more demanding on the quality of public goods as well as on the type of public goods they want the State to provide. In the same way as more demand for equity oriented public expenditure may be expected as the median voter (*MV*)

becomes more affluent, it may also be expected that more demand for highways and public infrastructure will emerge (Pryor 1967). Some argue this has tended to strengthen the share of intermedium levels of governments among federal countries (Pommerehne 1977; Marlow 1988; Wallis and Oates 1988) *vis a vis* the national and local levels. Another argument worth mentioning states that as the *MV*'s income rises, so does the national budget and the corresponding ruling government's spoils from office. As this becomes more significant and visible, the *MV* will be more likely to prefer a decentralized arrangement whereby budget control is spread up across smaller autonomous sub national governments (Panizza 1999). Nevertheless, Letelier and Sáez (2012) contend that a rise in the *MV*'s income does not necessarily lead to more decentralization, as we expand the model to more than one public good. On the one hand, more centralization lowers public goods quality. On the other, the cost reducing effect of centralization may be further strengthened as total expenditure on one particular public service rises, driving some of it away from lower tiers of government and into the national level. Areas of governments in which large and usually indivisible investments are needed may be subject to such a pattern. Conversely, public goods in which the quality benefit of decentralization and/or the ideological sensitivity of widening the gap between the local and central *MV* is high, are likely to be more decentralized.

The effect of people "diversity" has been often taken as a factor leading to a more public goods differentiated demand. Similarly, voters diversity entails a larger "ideological distance" between the median and every different community (Panizza 1999), which makes decentralization a welfare winning option. This contention is strongly rooted on theoretical predictions (Tiebout 1956), as well as in the empirical evidence (Oates, 1972; Pommerehne, 1977; Panizza 1999, Letelier 2005). Separate mention deserves individuals' income heterogeneity being expressed in a bad income distribution. While this may be considered a kind of income induced diversity, it also reflects an inequitable distribution of economic and political power across income groups, which is likely to induce more political control in the hands of a small income selected central elite. Thus, income diversity may lead to fiscal centralization (Pommerehne, 1977; Letelier 2005).

A number of other related variables have been currently singled up as potentially significant variables. One worth mentioning is population density, on account of its potential effect on the ideological distance between national and local constituencies (Panizza, 1999) and/or the minimum scale operation required to efficiently provide services. Litvack and Oates (1971) hypothesize that as population grows, the rising costs of congestion at the local level tends to raise subnational government's expenditures relative to the central government's. This will certainly increase the cost of local public goods per resident and cause a decline in its demand. They assert, however, that the demand for local public goods is generally price inelastic, making congestion increase the cost per resident. This effect should be weighed against the gains of distributing a fixed cost over a larger population (Buchanan 1965). Litvack and Oates (1971) further state that local public goods are subject to important indivisibilities, which makes local governments more likely to offer a wider range of local public goods as population becomes large enough to reach some threshold after which further decentralization becomes affordable. A counter argument to this rests upon the likely larger central government's administration cost from having to deal with a low densely populated territory. Such a consideration may explain the cases of big federations like Russia, Canada, and the United States in which low population density coexists with a high degree of fiscal decentralization.

Finally, the influence of political factors in the making and enforcement of fiscally decentralized rules is twofold. First, we will assume that "institutions" matter, so that the existing rules of the game have a visible impact on the distribution of public revenues. Nevertheless, the set of incentives put in place by the institutional frame itself, should be interpreted in the context of the set of normative variables referred to above.

3. The empirical model and the estimation strategy.

3.1. The model.

As presented in Ec. 1, it will be assumed that the degree of fiscal decentralization (FD) is determined by two sets of variables, in which "*i*" represents countries and "*t*" time.

$$FD_{it} = \alpha_i + \beta_t + \delta_1[NORM] + \delta_2[POL] + \mu_{it} \quad Ec.1$$

One first set is meant to capture what it will be called the “normative” determinants of fiscal decentralization (NORM). This hinges upon a welfare enhancing effect, which results from the information gains made available to public officers as government’s decisions are taken closer to people’s needs, and a “scale effect” which makes public provision more costly as we decentralize (Letelier and Saez 2012). In this regard, it must be expected that every different public good provision is subject to case specific potential quality gains from a decentralized administration schemes, as well as an equally specific cost reducing benefits from a centralized large scale provision. The normative approach to fiscal decentralization also entails well determined predictions on the expected effect of some economic and socio demographic variables. As country’s GDP per head grows, the median voter (*MV*) will weigh the danger of keeping a larger national budget in the hands the Leviathan, which drives him into preferring a fiscally decentralized arrangement, with the push cost effect resulting from running and funding public goods by sub national governments. Similarly, a plural society will favor a wider variety of public goods, which are more easily produced by a more decentralized model. It should be mentioned though, that despite individuals’ income inequality being potentially a sign of income induced diversity, a rather unequal society is more likely to be subject by elite capture and political clientelism, which in turn favors centralization of power.

The second set is the political economy determinant of fiscal decentralization (POL). Theory predicts that an underlying conflict exists between the spoils from office form running a large national budget by the federal (central) government, and the alleged benefits from fiscal decentralization prescribed by the normative arguments above (Pannizza, 1999; Arzaghi M. and Henderson, 2005). Such a trade off expresses itself in an effort by the national government to keeping control of the budget, on the one hand, and the pressure from organized regionally and locally based groups to get a larger share State’s

revenues. Thus, we may expect that institutional arrangements that strengthen the national government's power will prevent decentralization. This is the case of strong ruling political coalitions, and large and powerful political parties that support central government's decisions. At the other end, democratic regimes, weak and fractionalized parties and deeper sub national governments' political representation, will generally favor fiscal decentralization. Albeit ideology may have a saying in the issue at hand, it not cut clear what the sign of this correlation is. While the traditional neoliberal view advocates an all across the board budget devolution (e.i. Tiebout, 1956; Brennan and Buchanan, 1980), the also traditional anti neoliberal approach is usually closer to the view that "participation" is a political asset in its own right that should be promoted at all levels, this being a precondition for fiscal decentralization to occur. Needless to say, the political economy game is played in the existing institutional frame. In our case, the federal status (FED) is a fundamental feature in every country's profile. We may expect that generally, federal countries will favour more decentralised schemes of fiscal administration regardless of the particular function being performed. Similarly, democratic regimes (RD) will naturally favour the unrestricted expression of community and regionally based constituencies, which are likely to pressure for a larger share of the national budget. The opposite trend is expected to be found in presidential regimes (PRES), in which the national government will attempt to keep the general government's budget under control.

Nevertheless, it should be bare in mind that none of the above variables (or sets of variables) will necessarily have a single predefined effect on fiscal decentralization. The case of specific functions being addressed in this present research demands an idiosyncratic acknowledgment of the particular type of expenditure being examined. This boils down to saying that in spite of the pure income effect described above, cost considerations may push the *MV* in the opposite direction. Similarly, the range of aforementioned institutional features should not be evaluated on their own right, but in the context of the type of public good being addressed.

3.2. Data source and the definition of variables.

Following previous empirical research, our fiscal decentralization measurements (FD) are based upon IMF's Government Financial Statistics (GFS). The general definition of FD being used equals sub national government's expenditure as a share of the general government's. In our case, such a measurements are focused on specific areas of expenditures. In particular; we examine the cases of education (FDED), health (FDHE), housing (FDHO), social protection (FDSP), police and order (FDPOS) and transportation (FDTRANS). All of them are expressed in logs. Selected countries are the ones for which information is available from the aforementioned source. This entails 45 countries, whose available annual information differ over time, leading to an unbalanced panel that covers OCDE, Latin America, Asia and Eastern European countries. Among them, the longest available time series spans from 1972 to 2008.

Eleven exogenous variables have been specified. The GDP per head (GDPpc) series as well as population density (D) are expressed in natural logs and they were taken from the World Development Indicators. The log of the GINI coefficient is provided by the World Institute for Development Economics Research of the United Nations University. We take advantage of Papa Norris data base in order to control for the country's federal – non federal status (FED=1 for federations), the fact of being a “socially heterogeneous society” (PLU=1 for heterogeneous countries), the existence of a presidential political regime (PRES=1 for presidential constitutions) and an interaction variable between FED and the autonomous status of sub national regions (AUTON = 1 when autonomy exists). Values for AUTON were taken from the Data Base of Political Institutions (DPI). The remaining four exogenous variables stand for the interaction effect between various country specific features of the political system. They are; i) the interaction effect between a dummy for democratic regimes (DR= 1 for democracy) and the effective number of political parties (ENEP), being this last variable estimated according to Laakso and Taagepera; ii) the interaction between DR and the ruling government's ideology (IDEO), which in this case takes a value equals -1 for leftist regimes, 0 for the political centre and 1 for rightist ones; iii) the interaction between DR and the existence of democratically elected provincial

(states) senators ($SEN = 1$ for elected provincial senators) and iv) the interaction between DR and the “majority index” (MAJ), which equals the ratio of the number of government’s aligned parliaments over the total number. Variables DR, ENEP, IDEO, SENATOR and MAJ come from The QOG Social Policy Database and from DPI.

As opposed to previous empirical studies, we have imputed missing data for both endogenous as well as exogenous variables, which was done according to Rubin’s (1987) multiple method (MI). Such a procedure hinges upon a Monte Carlo simulation that assumes a random pattern for the missing data, a high correlation between imputed variable, a set of co variables and a model for imputed endogenous variables similar to the one reported in the econometric results. Twenty interactions were made in the imputations in order to achieve an efficiency index close to 96%. An advantage of this imputation technique is that it does not modify the statistical properties of the original series, avoiding relevant changes on the imputed variables distribution.

3.2. Estimation strategy.

In order to take model in Ec. 1 to testing, a dynamic specification will be assumed. In dealing with across country sample heterogeneity and the likely correlation between the lagged independent variable and the error term, two estimation methods are used. They are the Generalised Method of Moments (GMM) and the Arellano Bond first difference estimator (GMM-DIFF: Arellano and Bond, 1991). It should be noticed though, that when the panel poses a high degree of persistence³ and rather short time series, the GMM-DIFF estimators loss efficiency due to instruments’ weakness for endogenous variables in first differences (Blundell y Bond, 1998; y Blundell, Bond y Windmeijer, 2000). In dealing with that, we can estimate the model in both first differences as well as in levels (GMM-SYS) (Arellano and Bover, 1995; Blundell and Bond, 1998). The GMM-SYS considers the dynamic model as a system of equations, each of them representing one particular period. Equations in the system differ from one other on the specified instruments for each case.

³ This means high cross section variation and low over time variation.

While instruments being used for first differentiated endogenous variables correspond to their in level lagged values, in level endogenous variables are instrumented by their lagged first differentiated values. Consistent estimations will be achieved in the absence of serial correlation and exogenous explanatory variables. Above property testing follows Arellano y Bond (1991). Instruments validation as well as additional moments conditions in the dynamic model are based on Sargan (1958) and Hansen (1982).

4. Results.

Estimations of the dynamic model's coefficients are reported in table 1. Since the use of more than one lagged value - for both endogenous and exogenous variables - appears to be non significant, only one lagged variables estimations are reported. With the exceptions of social protection decentralization (FDSP) and housing (FDHO), Arellano-Bond test does not show evidence of neither first order nor second order autocorrelation in the remaining estimations. While Hensen's test suggests that instruments appear to be valid, Sargan test reports that no cases of severe over identification are found.

Income per head.

Confirmation that more FD should be expected as income per head rises can be obtained from the estimated model. This coefficient is larger for the case of social protection (Log FDSP), which probably reflects the fact that subnational governments are in a better position to administer social oriented programs. Nevertheless, such a result more likely reveals that lower tiers of government play an "agent" role in running expenditures of that kind, which are usually funded by the national government through categorical grants. In this respect, our results confirm that normative consideration matter in the general design of equity oriented policies. Albeit education (Log FDHE), health (Log FDHE) and public order and safety (Log FDPOS) appears to have a lower than one expenditure elasticity with respect to DF, this last case (POS) exhibits a coefficient three times larger than the other two. This can be interpreted as POS being a very income sensitive type of service, in which

the “quality” component is a substantial part of *VM*’s demand. In this regard, it can be said that information gains from decentralization are very significant in this particular function.

Socio Demographic Variables.

As far as population density is concerned (Log D), its effects is significant in health (Log FDHE), housing (Log FDHO) and transportation (Log FDTRA). Regarding health expenditure estimations, reported result is in line with previous studies as it suggests that costs saving considerations are probably relevant in this particular function. Albeit primary health expenditure is likely to be affordable by subnational governments, this is unlikely to occur for secondary and tertiary health expenditures, in which case significant investments and large scale indivisible infrastructure is in order. As population density rises, the specific “knowledge benefit” from decentralization diminishes and so does the pure knowledge benefit from it. Since available data does not distinguish primary health expenditure from more complex types of health expenditures, the aforementioned scale effect appears to dominate, leading to more fiscal centralization as density rises. Inter jurisdiction coordination problems are also likely to arise in transportation, in which population density is likely to produce significant externalities across neighbouring communities. Cost saving benefits from centralising such a service - or at least that part of it which is publicly run, are expected to become apparent in densely populated areas. Regarding housing, State support programs on that particular field are expected to be sensitive to the kind of residents and specific type of housing being demanded. Commercial areas will certainly differ from residential ones, and so do housing related public policies. Although this points out to more decentralization as population density rises, it should be also bear in mind that housing regulation usually demands a rather comprehensive approach when it comes to city planning and building permission. The positive coefficient being reported suggests that the knowledge effect is stronger in this case.

The effect of population’s diversity is twofold. First, the GINI coefficient appears to have a clear and significant negative impact on fiscal decentralization regardless of the type of expenditure at stake. It should be said that this is in line with most previous empirical

studies (Letelier 2005), and it reflects that concentration of income is likely to be correlated with some kind of political power concentration. A high GINI will also be associated with a rather uneven distribution of human capital across individuals, and thereby to more chances of some sort of urban elite capture. Second, a plural society (PLU) will be naturally prone to decentralising as long as different communities are allowed to freely express their preferences. Albeit this is generally confirmed by estimations, the cases of housing and public order and safety exhibit the opposite sign. As stated above, diverse societies are not necessarily prone to fiscal devolution as long as the cost saving effect from centralization is significant, which may be the case in these two last refereed functions.

Political Variables.

While federal countries appear to be more fiscally decentralised in education, health, housing and transportation, they are more centralised in social protection and public order and safety. Nonetheless, this pro decentralization effect is further strengthened in education, health, social protection and transportation when FED is interacted with sub national governments having autonomous political regions (AUTO). In the particular case of social protection, the net effect of the two dummies turns out to be positive. Interestingly enough, public order and safety appears to be even more centralised when regional autonomy is accounted for, which further confirms that normative considerations dominate in that case.

The effect of democratic regimes (RD) shows that theoretical predictions about the likelihood of political freedom being a factor that generally favours subnational fiscal autonomy should be qualified upon the case at stake and the interaction variable being used. When RD is interacted by the effective number of political parties (ENEP), estimated coefficients are negative in education, social protection and public order and safety, which is consistent with ENEP being a proxy for political weakness (see above). A positive coefficient of variable $RD \times \text{Log ENEP}$ in the remaining functions might be interpreted as a sign that efficiency considerations may weight more than political ones. Similarly, albeit presidential countries are assumed to prefer centralised fiscal arrangements, which appears to occur in all cases but in public order and safety, cost efficient considerations are

probably stronger in that last function. As far as ideology is concerned ($RD \times IDEO$), reported estimations suggest that only three of the specific functions being examined are sensitive to such an interactive variable. Results indicate that rightist regimes exhibit more decentralization in health and public order and safety, but less decentralization in housing. As stated above, conservative coalitions are expected to delegate budget and functions on lower tiers of government, this being a prediction which is -once more- dependent upon the specific function's scale effect. Majority coalitions ($RD \times \text{Log MAJ}$) produce the expected sign in health, housing and social protection, but the opposite one in education and public order and safety. Finally, elected provincial senators ($RD \times \text{SEN}$) have clearly mixed effect, this being in line with our political economy predictions in social protection, public order and safety and transportation, and closer to the normative model in the remaining cases.

4. Conclusions.

Under the hypothesis that specific types of government's expenditure produce different patterns as far as fiscal decentralization is concerned, this research provides evidence that this is so by examining 6 areas of public provision. A methodological contribution to the existing literature consists in producing imputed data for missing information, so that a balance panel is used in which basic fiscal statistics are taken from the IMF and other related sources.

Results confirm that in some cases, the so called normative model of fiscal decentralization is strong enough to compensate the predicted effect from the political economy game, thereby the national government attempt to keep control over the national budget. Among examined function, special mention deserve the case of public order and safety, in which cost related factors appears to be strong determinants in the actual allocation of functions across tiers of government.

Table 1. Estimation of the dynamic model of decentralization of public spending in the world

Estimator two-step SYSTEM-GMM						
Endogenous variables						
	Log FDED [1]	Log FDHE [2]	Log FDHO [3]	Log FDSP [4]	Log FDPOS [6]	Log FDTRA [7]
Log GDPpc	.0216*** (0.001)	.0174*** (0.004)	.0231*** (0.006)	.166*** (0.012)	.061*** (0.002)	.008*** (0.001)
Log D	0.001 (0.001)	-.063*** (0.008)	.0478*** (0.004)	0.019 (0.014)	-0.005 (0.004)	-.004** (0.002)
Log GINI	-.0557*** (0.004)	-.173*** (0.014)	-.294*** (0.015)	-.561*** (0.036)	-.141*** (0.003)	-.0257*** (0.001)
FED	.105*** (0.005)	.0734** (0.024)	.303*** (0.024)	-.712*** (0.058)	-.211*** (0.011)	-.0814*** (0.004)
FED * AUTON	.0213*** (0.005)	.366*** (0.028)	-.241*** (0.04)	.924*** (0.168)	-.175*** (0.0156)	.059*** (0.016)
PLU	.0426*** (0.006)	.402*** (0.028)	-.0296*** (0.009)	.428*** (0.068)	-.0757*** (0.006)	.009*** (0.003)
PRES	0.0125 (0.007)	-.121*** (0.017)	-.264*** (0.029)	-0.103 (0.088)	.184*** (0.007)	-.0178*** (0.005)
RD * log ENEP	-.054*** (0.001)	.0305* (0.013)	.251*** (0.017)	-.111*** (0.022)	-.0566*** (0.002)	.0085*** (0.002)
RD * IDEO	0.001 (0.001)	.0174* (0.007)	-.0119* (0.005)	-0.010 (0.007)	.0039*** (0.001)	-0.0002 (0.0004)
RD * log MAJ	-.0567*** (0.004)	.0895*** (0.022)	.0490** (0.0182)	.188** (0.063)	-.0155*** (0.005)	-0.007 (0.004)
RD * SEN	-.171*** (0.004)	-.0596* (0.024)	-.0690*** (0.010)	.108** (0.041)	.0314* (0.0136)	.0148*** (0.004)
Log FDED _{t-1}	.775*** (0.004)					
Log FDHE _{t-1}		.415*** (0.014)				
Log FDHO _{t-1}			.262*** (0.029)			
Log FDSP _{t-1}				.629*** (0.027)		
Log FDPOS _{t-1}					.468*** (0.011)	
Log FDTRA _{t-1}						.842*** (0.007)
N	587	587	587	587	587	587
Number groups	43	43	43	43	43	43

Table 1. Estimation of the dynamic model of decentralization of public spending in the world

Estimator two-step SYSTEM-GMM						
Endogenous variables						
	Log FDED [1]	Log FDHE [2]	Log FDHO [3]	Log FDSP [4]	Log FDPOS [6]	Log FDTRA [7]
Obs per group: min	1	1	1	1	1	1
	13.65	13.65	13.65	13.65	13.65	13.65
Avg	31	31	31	31	31	31
Max						
Wald chi2(12)	1.3e+07	5.71e+09	136948.05	9.75e+09	857681.36	7.78e+07
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000
Arellano-Bond test for AR(1) in first differences: z	-2.24	-2.35	-3.66	-1.62	-1.72	-2.39
Prob > z	0.025	0.019	0.000	0.104	0.086	0.017
Arellano-Bond test for AR(2) in first differences: z	-0.67	0.11	2.17	1.05	1.24	1.48
Prob > z	0.503	0.915	0.030	0.292	0.214	0.138
Sargan test of overid. Restrictions	chi2(455)) = 484.19 0.166	chi2(459)) = 500.71 0.087	chi2(456) = 429.70	chi2(442) = 432.12	chi2(441) = 505.00	chi2(419) = 406.92
Prob > Chi2			0.807	0.623	0.019	0.655
Hansen test of overid. Restrictions	chi2(455)) = 35.30 1.000	chi2(459)) = 23.26 1.000	chi2(456) = = 29.47	chi2(442) = = 23.63	chi2(441) = = 34.33	chi2(419) = 28.76
Prob > Chi2			1.000	1.000	1.000	1.000
Difference-in-Hansen tests of exogeneity of instrument subsets: GMM instruments for levels						
Hansen test excluding group	chi2(399) = 30.67 1.000	chi2(399) = 23.26 1.000	chi2(397) = 29.32 1.000	chi2(385) = 23.26 1.000	chi2(381) = 36.95 1.000	chi2(366) = 29.95 1.000
Prob > Chi2						
Difference (null H = exogenous)	chi2(56) = 4.64 1.000	chi2(60) = 0.00 1.000	chi2(59) = 0.15 1.000	chi2(57) = 0.37 1.000	chi2(60) = -2.62 1.000	chi2(53) = -1.18 1.000
Prob > Chi2						
Difference-in-Hansen tests of exogeneity of instrument subsets: iv [Log GDPpc, Log D, log GINI, FED, FED * AUTON, PLU, PRES, RD * log ENEP, RD * IDEO, RD * log MAJ, RD * SENATOR]						
Hansen test excluding group	chi2(444) = 32.13 1.000	chi2(448) = 26.22 1.000	chi2(445) = 31.98 1.000	chi2(431) = 25.61 1.000	chi2(430) = 25.64 1.000	chi2(408) = 30.51 1.000
Prob > Chi2						
Difference (null H = exogenous)	chi2(11) = 3.17 0.988	chi2(11) = -2.96 1.000	chi2(11) = -2.11 1.000	chi2(11) = -1.98 1.000	chi2(11) = 8.69 0.651	chi2(11) = -1.75 1.000
Prob > Chi2						

The standard errors of the corrected coefficients (Windmeijer, 2005).

Legend: p-value<0.05 (*). p-value<0.01 (**). p-value<0.001 (***)

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