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François Facchini

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The determinants of public spending: a survey in a methodological perspective

Facchini, Francois

University of Paris Sud, Faculté Jean Monnet, Sceaux (France),
Associate, Centre d'Economie de la Sorbonne (Paris 1, France)

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The determinants of public spending: an overview in a methodological perspective

SURVEY: This article shows that applied econometric is not a way of selecting, from among a plethora of possible explanations of public spending evolution. It lists 19 explanations and 73 explanatory variables and provides evidence of the great confusion in this field and the relative emptiness of quantitative economics. Then it sustains the Mayer's idea that "given all the weakness of econometric techniques, other ways of testing, such as appeals to qualitative economic history, should not be treated as archaic".

Keywords: public spending, applied econometric and causality
JEL: H10; H50

1. Introduction

The general growth of government spending in the last hundred and fifty years and in industrial societies is a fact established (Borcherding 1977, Flora et al. 1983, Mitchell 1998). The explanation of the growth of government size has also received numerous theoretical explanations (Larkey, Stolp, and Winner 1981, Borcherding 1985, Mueller 1987, Hosley and Borcherding 1997; Mueller 2003; Bergh and Henrekson 2011).

This article lists 19 explanations and 73 explanatory variables. It shows also that the "covering law model" (Hempel 1942) fails when it is applied to explain the evolution of public spending. The "covering law" model is based on mathematical physics. Taking physical sciences as a model, economics deals with efficient causes i.e. A (say, a billiard ball) strikes B (another ball) and causes it to move (Hoover 2008, p.719). In Wagner's Law economic development, for instance, is the shock which causes public spending. This physical approach has a lot of problems. These are the traditional problems of regressions parameter heterogeneity, outliers, omitted variables bias, model uncertainty, measurement error, endogeneity (Rodrik 2012, p.319), and ecological inference. There is, also, the fact that the results of regressions are often un-conclusive

and it is always difficult to know if A strikes B or B strikes A. It is important also to recall that journals do not publish papers that find statistically insignificant results. That limits our knowledge of correlations between the variables and our ability to evaluate their qualities.

Therefore beyond the necessary work to know the literature on this topic, this paper inserts in the controversy around the ability of quantitative analysis to learn us something. There are no law, no generality in this literature. Econometric' literature seems only a way to tell the history of public finance with statistic. Quantitative would not useless, but would promise more than it could be deliver.

The article is composed of twenty sections organized into a theoretical and an empirical part. The last section concludes with a table summarizing all the theories proposed, the explanatory variables used and the presence or absence of a consensus on the proposed explanation. This will provide evidence of the great confusion in this field and the relative emptiness of quantitative economics.

2. Income and Wagner's Law

The first explanation is by the incomes. It is the result of inductive approach. The economists give *ad hoc* explanation. They observe a correlation between the two events and try to explain why. This section is the longer because income has been the variable more tested by the literature. The tests of Wagner's hypothesis accumulated evidence are unsupportive the law.

2.1 Theoretical approach

When in an economy, the incomes increase the public spending rise also. This explanation is either an empirical generalization (Laskey et al. 1981) or it is micro-founded on a theory of demand or supply. Income *per capita* and/or Wealth *per capita*

operate similarly (Pryor 1968, p.53). They affect not only demand but reflect taxable capacity and the cost of government services as well (Pryor 1968, p.53). That explains why there are two interpretations of the correlation income- public spending. 1) Wagner's law argues that in a society where the income progresses, government involvement in fiscal-budgetary matters rises even faster (Borcherding 1985, p.365). 2) In the leviathan fiscal theory the government is viewed as a malevolent revenue maximizer rather than a benevolent public goods provider. The size of State is a function of the capacity of citizens to limit the revenues of government to a given amount.

2.1.1 Wagner's Law

In Wagner's law perspective income *per capita* (Biehl 1998) is a variable affecting primarily demand for public consumption expenditures. It is an empirical generalization (Larket et al. 1981, p.176, Peacock and Scott 2000) or a theoretical perspective, using inductive methodology. Wagner sustained that growing population and economics demand an increasingly larger state sector to service them with collective goods. He saw three main reasons for the increased of public spending: industrialization i.e. urbanization, the rise of population and economic development. Urbanization and increased population density would give more social frictions and more expenditure on law and order. The growth in real income would facilitate the relative expansion of expenditures on certain income elastic demands (Henrekson and Lybeck 1988, p.217). Then the empirical question is "*whether the income elasticity of demand for public consumer goods is in excess of unity*" (Musgrave 1969, p.78).

Indeed, Wagner's Law assumes an elasticity of demand for public goods superior to one; $\epsilon > 1$. With an elasticity equal to one if the income doubles the demand for public goods

doubles. With an elasticity superior to one the demand for public good increases more than proportionally than the incomes.

2.1.2 The government as Leviathan

In Fiscal Leviathan hypothesis government is perceived as revenue-maximizing entities which seek to exploit the citizen through excessive rates of taxation. The degree of exploitation depends 1) on the number of competing governments and citizen mobility and 2) on the level of incomes. The rise of income *per capita* is an opportunity for Fiscal Leviathan to capture a rent. Economic development increases the table capacity of Government and *in fine* its size.

2.1.3 Causality and Keynes's Effect

It is possible also that more prosperity does not lead to higher size of State but that more size of State does lead to more prosperity. The causality is the other problem. Keynesian school considers public expenditure as a determinant of aggregate income, invoking a reverse causality, running from public expenditure to GDP. It is not a proposition about short-run co-variation. In short or long run public spending supports economic growth (Keynes's effect) and in long run economic growth explains the rise of government size (Wagner' law). Meltzer and Richard (1981) justify also a reverse relationship. When economy grows, incomes of skilled workers might increase much more than the income of unskilled workers, leading to increased inequality. Then, there are more voters for redistribution and a higher level of government spending (Oxley 1994, p.288).

2.2 Empirical Tests

Empirically, different interpretations of the Wagner's Law have been tested for many different countries (Tarschys 1975, Afxentiou and Serletis 1992, Peacock and Scott 2000, p.7):

-1- $G=f(Y)$ i.e. Peacock-Wiseman's interpretation (1961),

-2- $GC=f(Y)$ i.e. Pryor's interpretation (1968),

-3- $G=f(Y/N)$ i.e. Goffman's interpretation (1968),

-4- $G/Y=f(Y/N)$ i.e. Musgrave's interpretation (1969),

-5- $G/N=f(Y/N)$ i.e. Gupta (1967) or Michas's (1975) interpretation

and -6- $G/Y=f(Y)$ i.e. Mann's interpretation (1980) "modified Peacock-Wiseman version where G = total government expenditure¹, GC = (total) government consumption expenditure², Y = gross domestic product and N = population.

2.2.1 The great confusion around Wagner's Law

There is a great confusion in the results (Table 1).

2.2.1.1 Diversity of Methods

Bohl (1996) attributed the conflicting findings to the different econometric methodologies used. Firstly there is the traditional conflict between cross section analysis and time series studies. Bird (1971) argued that given cultural and institutional differences across countries, cross-sectional multi-country studies do not necessarily prove or disprove Wagner's Law. Secondly, before 1985 mostly studies used Ordinary least squares method for stochastic modeling (Wagner and Weber 1977).

Beginning with Henrekson (1993) all the studies employed unit root and co-integration methodologies, although not in a panel data because many studies of Wagner's law used inappropriate estimation techniques when confronted with non-stationary time series data. Co-integration approach is a mean to examine if there is any long run relationship between spending and national income (Henrekson 1993, Ansari 1997). Early studies

¹ Total general government expenditure is defined in ESA-95 §8.99 by reference to a list of categories: intermediate consumption, gross capital formation, compensation of employees, other taxes on production, subsidies, payable property income, current taxes on income, wealth, etc., social benefits, some social transfers, other current transfers, some adjustments, capital transfers and transactions on non-produced assets.

² General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation.

using co-integration used the Engle and Granger methodology whereas more recent works apply the Johansen (1988) technique (Magazino 2012). The majority of the recent studies used econometric techniques such as co-integration analysis and Granger causality test (Biswal et al. 1999, Sideris 2007). However, despite the more rigorous methods Table 1 does not show a break or convergence after 1993 i.e. the treatment of spurious regressions. So it may be not a good explanation of the diversity of results.

Table 1. No consensus around Wagner's law
(Bibliography in Appendix Table A.1, 105 articles)

Developed countries (105 developed countries have been studied in the 105 papers published between 1967- 2012)	Developing Countries (66 developing countries have been studied in the 105 papers published between 1967- 2012)	Mix Sample (15 countries have been studied in the 105 papers published between 1967-2012)
50.47% valid Wagner's Law	46.96% valid Wagner's Law	40% valid Wagner's Law
32 developed countries studied between 1967-1992 46.87%	12 developing countries studied between 1967-1992 50% valid Wagner's Law	6 mix sample between 1967-1992 33.33% valid Wagner's Law
73 developed countries studied between 1993-2012 52.05% valid Wagner's Law	54 developing countries between 1993 - 2012 46.29% valid Wagner's Law	9 mix sample between 1993-2012 44.44% valid Wagner's Law

2.2.1.2 The causality

There is also a great confusion in the analysis of the causality. At beginning Singh and Sahni (1984, Karavitis 1987) deployed the Granger method to determine the directions and patterns of causality and suggested that confirmed neither Wagnerian nor the Keynesian view. However Table 2 does not show a clear result about causality. Modern tries to limit these un-conclusive results to using instrumental variables³ to create a variation in government size that ideally can be used to properly identify the causal effect (Bergh and Henrekson 2011, p.11). Afonso and Furceri (2010) or Fölster and

³ Informally, in attempting to estimate the causal effect of some variable x on another y , an instrument is a third variable z which affects y only through its effect on x . For example, suppose a researcher wishes to estimate the causal effect of political ideology on economic growth. Correlation between political ideology (statistically) and economic growth does not imply that ideology causes a weak economic growth because other variables may affect both economic growth and political ideology, or because political ideology may affect economic growth in addition to economic growth causing ideological variations. The researcher may proceed to attempt to estimate the causal effect of political ideology from observational data by using the effect of North American political ideology on french political ideology as in instrument. If North American political ideology affect economic growth only because they affect french political ideology, correlation between political ideology and economic growth is evidence that political ideology causes changes in economic growth.

Henrekson (2001) used as instrument the share of government and revenue by its lagged value. Then instrumental variables gives a causal interpretation rather favorable at the Keynes' Effect but with a negative sign.

However the use of an instrumental variable simply produces additional evidence of a statistical relationship (in this case between 'instrumental variable' and 'G'), without providing evidence of what type of relationship it is, and without providing evidence for the type of relationship between 'GDP' and 'G'. Moreover the instruments are not plausibly all predetermined (Sims 2010, p.61). In a world where people learn, it is also always very hard to establish the sense of the causality. If the facts of the social sciences are what people think and believe then social scientists have to explain how people learn (Storr 2010, p.35). If the learning process is central then quantitative approach is not sufficient. It is obvious, for instance, in a learning process perspective, than the rise of public spending can have a negative effect on economic growth, and people knowing that can try to limit this growing. The evolution of income *per capita* is both the cause and the consequence of government size. The new methods can improve the quality of causality tests using discontinuity design and more generally quasi experiment, but if the causal relationship is circular or dialectic it is a bad question.

2.2.1.3 The diversity of interpretations

There are multiple interpretations of the relationship GDP or income *per capita* and public spending. *"Because economics is not an experimental science, economists face difficult problems of inference. The same data generally are subject to multiple interpretations"* (Sims 2010, p.60). In Fiscal Leviathan hypothesis government is perceived as revenue-maximizing entities which seek to exploit the citizen through excessive rates of taxation. The degree of exploitation depends on the number of

competing governments and citizen mobility and on the level of incomes. The falsification of Wagner's Law challenges this reasoning and impact also the *Laffer curve*. Indeed the *Laffer curve* is a good example of an economic constraint on the government's ability to collect taxes (Holcombe and Mills 1995, p.449).

2.2.1.4 Econometric theory promises more than it can deliver

The main reason to use econometric method was to define a structural model through an equation; $G = \alpha + \beta X + \varepsilon$. In Wagner's Law G denotes total government spending and X denotes GDP or total personal income (Higgs 2007, p.34). If $\beta=0.3$ then every additional dollar of personal income gave rise to an additional thirty cents of government spending (Higgs 2007, p.34). In average there is a negative effect between size of government and economic growth, but in some countries high taxes seem able to enjoy above average growth.

There are outliers. Bergh and Henrekson (2011) discuss two explanations of this phenomenon. One hypothesis is that countries with higher social trust levels are able to develop larger government sectors without harming the economy. Another explanation is that countries with large governments compensate for high taxes and spending by implementing market-friendly policies in other areas. These outliers add at the confusion. Durevall and Henrekson (2011) and our survey of literature show, nonetheless, that this structural relationship is localized in a very short time, 30 or 40 years, and in space. Each country has its own coefficient. Durevall and Henrekson (2011) show also that there are structural breaks and no regularity. Each period of public finance history has its own characteristics. It is futile, in these conditions, to look for the determinants of size of government. There are determinants for each country and each period. Wagner's Law is true but not all the time.

Table 2. Wagner's Law *versus* Keynes' Effect: the results stay ambiguous
(Bibliography in Appendix Table A.2, 40 papers)

Neither nor	Keynesian view	Wagnerian View	Short run/long Run	Bi-directional
<u>Granger Test.</u> Singh and al. (1984): Indian (1950-1981) Ram (1986): 63 countries. Demirbas (1999): Turkey (1950- 1990); Bagdigen and al. (2003): Turkey (1965-2000); Dogan and al. (2006): Indonesia, Malaysia, Philippines, Singapore and Thailand.	<u>Granger Test</u> Ghali (1999); Biswal and al (1999); Tan (2003); Chimobi (2009)	Magazzino (2012): confirms for developing countries. <u>Granger Test.</u> Ram (1988 ⁴): USA (1929-1983) Park (1996): South- Korea. Cletsos and al. (1997 ⁵): Greece Abizabeh and al. (1998): South Korean		
<u>Granger Test and Homes-Hutton test</u> Ansari and al. (1997): Ghana, Kenya and South Africa (1961-1992) <u>Cointegration</u> Anwar et al. (1996 ⁶): 88 Countries		<u>Engle-Granger error correction approach</u> Islam (2001): USA (1929-1996)		Abu-Bader and al. (2003); Dritsakis and al. (2004); Loizides and al. (2005); Samudran and al. (2009); Kucukkale and al. (2012)
Afxentiou et al. (1992) Sinha (1998) Muhlis and al (2003) Lyare (2004) Halicioglu (2006) Sinha (2007) Afzal and al. (2010) Courakis et al. (1993 ⁷): Portugal and Greece.	<u>Multivariate cointegration</u> <i>Via</i> money stock and budgetary deficits Ahsan and al. (1992) <i>via</i> money supply. Ying-Foon and al. (2002) Chandran and al. (2011)	<u>Co-integration and Granger Test</u> Oxley (1994): UK (1870-1913); Thornton (1999): Europe (XIX century); Yuk (2005): UK (1830-1993); Aregbeyen (2006); Richter et al. (2012): Greece (1833-2010) <u>Multivariate and co- integration test</u> Chow and al. (2002) Al-Faris (2002): Gulf countries.	<u>Johansen multivariate cointegration</u> Tang (2001): Malaysia (1960- 1998), short run but not in long run. <u>ARDL, VECM, Granger test</u> Akpan (2011): Nigeria (1970- 2008), Wagner Law in long run and Keynes' effect in short run.	<u>Asymmetrical relationship</u> Government expenditure react asymmetrically conditional on the state of economic growth (Wahab 2004, Kolluri and al. 2007)

So it is not a law. There is neither necessity nor regularity. It is an answer to Lewis-Beck and Rice (1985, p.26) who saw no reason why their model of government growth, although developed out of the United States' experience, would not be applicable in its

⁴ In general it seems that causality runs mainly from revenue to expenditure in the federal data, but predominantly from expenditure to revenue in data for the state and local government sector.

⁵ Chletsos and Kollias's (1997) study examines the validity of Wagner's law in the case of Greece by considering disaggregated public expenditure and found support for the law only in the case of defense expenditure.

⁶ The majority of countries do not exhibit causality running from GDP to public spending. The causality can be bidirectional (8 countries), or unidirectional (23 countries).

⁷ Courakis et al.'s (1993) study examined 2 countries (Greece and Portugal) and found significant differences in responses to some determinants of public expenditure and between the two countries.

essentials to other advanced capitalist democracies. We know now that there are problems because each period and each country (Higgs 2007, p.40) have their own determinants. Therefore, econometric theory promises more than it can deliver (Leamer 2010, p.36).

3. The costs of public goods and Baumol's Law

Wagner's Law seems therefore a bad explanation of the rise of public spending. Let's see if Baumol's Law (1967, Baumol and al. 1985) or Baumol's cost disease theory is better. It is an explanation by the costs without microeconomic foundation. It suggests that the increases in the marginal cost of government relative to that for private goods, due to the public sector's relatively intensive use of labor and slower productivity advance, will decrease the size of government (West 1991, p.368, Winer et al. 2008, p.418).

3.1 Theory

Baumol's disease is the hypothesis that productivity improvements in services sectors are less likely than in the goods-producing section of the economy because of the inherent nature of services. To understand the cost disease starts with an observation. In 1913 Ford introduced assembly line to move cars between workstations. This allowed workers, and their tools to stay in one place which cut the time to build a model T car from 12 hours to less than two. In some sectors of the economy, however, such productivity gains are much harder to come. Performing, for instance, a Mozart quartet take just as long in 2012 as it did in the late 18th century. Employers in such sectors nonetheless have always needed to increase the wage of their workers to limit their defection. The result is that the costs of production in stagnant sectors rise, firms are forced to raise prices. These increases are faster than those in sectors where productivity is improving and faster than inflation. So prices of goods from stagnant sectors must rise in real terms (Baumol 2012). Health spending or education spending

must rise as a share of GDP. The implications for government spending are important, because many of the public services provided by governments like health, education, national defense, justice suffer cost disease (Baumol 1993). Cost disease explains why the size of government increases. The theory means that cutting costs without reductions in quality may not be possible.

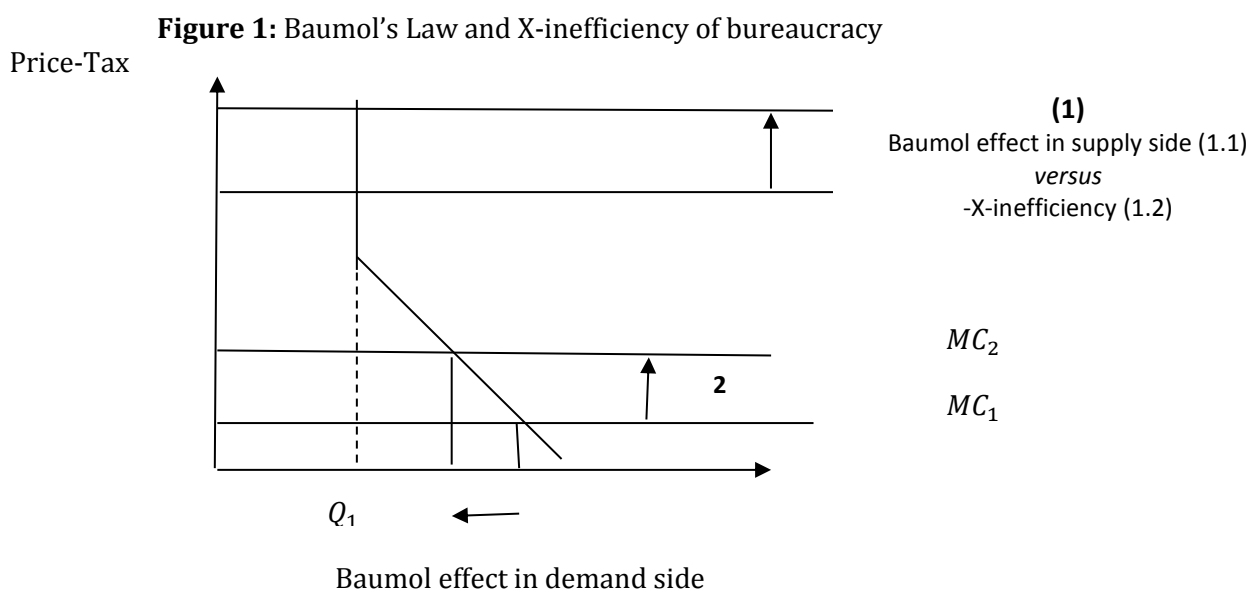


Figure 1 describes cost disease. If demand is inelastic the public spending increases mechanically (effect 1 Figure 1). If the demand is elastic, the costs of public expenditure increase and the demand decrease (effect 2, Figure 1). There is an upward shift of MC curve which leads to a decrease in the quantity of public goods. Baumol's Law is very sensible to the assumption done about the elasticity of demand.

3.2 Empirical Tests

Since Beck (1976) the usual variable to test Baumol's law is the relative price of public goods to GDP as measured by the ratio of the implicit deflator for public consumption⁸ to the GDP deflator. It is used as an approximation for the relative cost of public

⁸ Implicit deflators are calculated by dividing an aggregate measured in current prices by the same aggregate measured in constant prices.

Source: <http://www.insee.fr/en/methodes/default.asp?page=definitions/deflateur.htm>

production or Baumol's Disease effect (Lybeck and Henrekson 1988; Katsimi 1998, p.130). Bradford et al. (1974) or Ferris and West (1999) use rather a differential of wage between public and private sector (Bradford, et al. 1974).

3.2.1 Baumol's law is validated?

The explanation of government size by the cost disease would have received an empirical support (Holsey and Borcharding 1997, p. 569, or p. 574, Table 3), but the 1) the public goods are only a part of public spending beside social transfer and public redistribution and 2) the indicator which measures the cost of public goods and the causality between the variables are not clear. The measure of public productivity is difficult and may be not possible under the Mises's Theorem.

Table 3. Baumol's Law: a strong empirical support
(Appendix A.3, bibliography 20 articles)

Authors	Sample	Periods	Result
Bradford et al. (1969)	USA	1925-1965	Rising unit costs have been a major source of recent increases in local public budgets
Tussing et al. (1974)	USA	1900-1969	Support
Beck (1976)			Support
Spann (1977)			Support
Delorme/André (1978)	France	1872-1971	No support (primary education)
Beck (1979)	13 OECD	1950-1977	
Peltzman (1980)	USA	1929-1974	Support (ratio of price deflators)
Pommerhen et al. (1982)	Switzerland		
Berry et al. (1983)			
Berry et al. (1984)	USA	1948-1979	Support (Beck's indicator)
Lybeck (1986)	12 OECD		No support in France, Sweden, and USA but support for Australia, Austria, Belgium, Canada, West Germany, Italy, Norway? Netherland, and UK.
Henrekson/Lybeck (1988)	Sweden	1950-1983	Support (Beck's indicator)
Henrekson (1988)	Sweden	1950-1983	Support (Beck's indicator)
Neck et al. (1988)	Austria		
Ferris and West (1996)	USA	1959-1989	Mix. Relative productivity hypothesis is not sufficient (Beck's indicator) but relative wages explain large proportion of the change.
Ferris and West (1996)	USA	1959-1984	No support (one third of the increase in the relative costs of government services was due to increases in wages in the public sector relative to the private sector.
Ferris and West (1999)	USA	1947-1979	Support (Real wage rate in manufacturing)
Katsimi (1998)	19 countries	1961-1987	No support (Beck's indicator, opposite sign)
Borcharding, et al.(2004)	OECD	1970-1997	Support (Beck's indicator)
Neck and Getzner (2007)	Austria	1924-2002	Support (Beck's indicator)

3.2.2 Theoretical argument is not completely convincing

Moreover theoretical argument is not perfectly convincing. In Baumol's cost disease perspective the nature of public activity explains the increase in Government size. The famous example of the string quartet illustrates the operation of the cost-disease but does not recognize, nonetheless, the role of innovations in the process. In 1780 four quartet players required forty minutes to play a Mozart composition: today forty minutes of labor are still required. However, the technology of electronic reproduction has improved the productivity of the string quartet. Even if the number of musical performances does not rise, the quantity of performance output, measured in consumption units has skyrocketed (Cowen 1996, p.208). If public sector blocks innovative process, then the lag between productivity in public and private sector is more result of inefficiency than the cause of government growth (Mueller 2003, p.510). Moreover it is not sure that cost disease has not been cured. Triplett and Bosworth (2003), for instance, find that labor productivity in services industries has grown as fast recently as it has in the rest of the economy. Baumol's disease for them will be cured. It is always difficult to determine the net result (Nordhaus 2006).

The interpretation of the correlation is moreover not obvious, because we do not know precisely if cost disease is the result of the nature of public good. Katsimi (1998, p.118) gives three interpretations. Firstly, the public sector is more labor intensive (Baumol 1967) and therefore less affected by technological progress than the private sector. Secondly, the public sector assumed to be less volatile than the private sector because the public sector does not generally aim at profit maximization, is less dependent on relative price shocks and productivity shock. Public employment is more stable. These assumptions suggest that countries with more volatile output will have a higher

“*demand-driven*” size of the public sector. Katsimi (1998, p.127) called the mechanism the insurance effect on the size of public sector.

Thirdly the productivity differential may result from the absence of markets for public sector products that allows for inefficiencies. We do not know, then, if the rise of public costs is linked at the nature of public activity or at the inefficiency of public bureaucracy.

4. Bureaucracy

4.1 Theories

Indeed bureaucrat inefficiency is another explanation by the costs. In Figure 2, the price-tax rise is the result -1- of a direct attempt by bureaucrats to maximize their budget, -2- of their incompetence (X-inefficiency), -3- the self-interest on the part of public servants and/or -4- of a lack of competitive pressure. Buchanan/Tullock pointed to a disproportionate increase in the salaries of civil servants and to the transfer that is thereby effected (Cullis and Jones 1984, p.198, Figure 2, effect 1.2). Public employees have preferences for larger budgets (Niskanen 1975, 1994) and constitute a sizable share of the electorate (Mueller and al. 2010, 16.6.2).

Tullock (1972), Craswell (1975) and Buchanan and Tullock (1977) have hypothesized that when the number of employees of a government program or the number of beneficiaries grow, there will be an increasing percentage of the population in favor of even further growth in the level of spending for these programs. This makes it more likely that higher levels of expenditures will be voted for by the people’s representatives (Green and Munley 1979, p.92).

Buchanan and Tullock (1977) explained also the rise of public spending by the voting power of bureaucrats (Courant and al. 1979). This increased voting power has enabled appointed public officials to extract higher wages from elected public officials. Voting

power of bureaucrats has increased in the postwar era and leads a rise of bureau wages relative to private sector wages.

4.2 Empirical Tests

It is commonplace to consider the voting propensities of bureaucrats when testing for the validity of the others explanations by the costs (Frey et al. 1982). Bush and Denzau (1977) and/or Bennet and al. 1983) find that voter participation is higher for bureaucrats than for private sector voters. Jaarsm and al. (1986) for Netherlands do not support the assumption of a higher electoral power of bureaucrat. In general the direct empirical evidence would not very supportive of this explanation (Courant, Gramlich and Rubinfeld 1980, Kau and Rubin 1981, Lowery and Berry 1983, Garand 1988).

However, Cuzan and Heggen (1985, p.31) found that fiscal expansion erodes the political support of the incumbents in the United State (1928-1980) and Great Britain (1935-1983). In USA and UK it does not follow that more spending yields greater support (Cuzan and Heggen 1985, p.32). When size of State rise, for every vote gained in the bureaucracy and interest group, more than one vote is lost in the electorate at large (Cuzan and Heggen 1985, p.32). Therefore, the results are mixed.

5. Interest Group

Public sector employees can act as interest groups. Special interests do have substantial influence over legislative decisions. They try to beneficiary of public spending (Tullock 1959, Marlow and Orzechowski 1996). Becker (1983) developed a model of the influence of interest groups on the rise of public spending. Interest groups expand either the redistributive or the public good expenditure components, or both. The demand of redistribution will be a function of interest group strong. Each interest group demand lower taxes and higher subsidies (Mueller 2003, p.521). Special interests are Medical

association, Airplane owners and Pilots association, Labor Unions, farmers, unemployed, old and retirement, young and their families, union of civil servant, and/or the big firms. They will be highly consumer of public spending (Lewis-Beck and Rice 1985, Rice 1986).

5.1 Civil servant

Public sector employees are a strong interest group. Buchanan and Tullock (1977) predict that public sector employees will be commonly believed to favor an expanding role for the public sector. This view predicts that public sector unionism exerts a positive influence on demand for public programs through their voting and lobbying efforts (Marlow and Orzechowski 1996, p.3). Summers, Gruber and Vergara (1993) argue that corporatism increases the size of the public sector. Calmfors and Driffill (1988) constructed a corporatism index. They find some empirical evidence to support the hypothesis that a tax increase will reduce labor supply by less in a more corporatist economy. This is explained by the fact in corporatist economies the level of labor supply is controlled by a small group of decision-makers who perceives the linkage between taxes and benefits better than individual workers do. Garrett and Way (1999) or Crouch (1990) supports the hypothesis that a positive relationship exists between corporatism and public spending.

5.2 The poor and unemployed

The second group often successful in securing government funds is composed of individuals disadvantaged by unhealthy economic conditions. It is not only the poor but the unemployed and underemployed people who regularly pressure government for immediate relief from their plight.

5.3 Young and old

The third group the most prominent is the young and old. The young (and their parents) make demands for educational needs and old press for increased income assistance and

medical benefits (Rice 1986, p.242, Shelton 2008). Both labor tax rates and *per capita* transfers in advanced economies are historically positively correlated with the ratio of retirees to the working age population and negatively correlated with the ratio of children to the working-age population (Shelton 2007, 2008). This result obviously depends strongly of institutions. Social security increases mechanically the social spending of government. There is *a priori* no relationship between ageing and public spending.

Nonetheless, this literature is limited and the proxy variables constructed to measure the influence of interest group is not yet stabilized. There are: the number of consumer and business interest groups, the union membership, the number of trade union, number of political parties, the share of farm population, number of government employees, etc. There is no consensus. There is also a problem in the definition of interest groups. It is difficult to assimilate old and young at labor union or political party. The interests of farm population is likely more homogeneous than the interests of young. The empirical results are not clear because the definition are not completely stabilized and the theory imperfect.

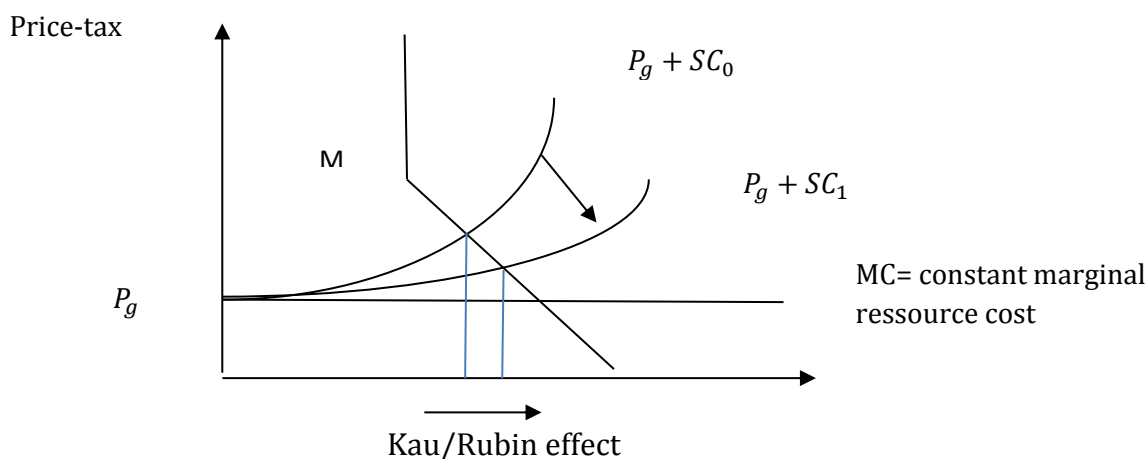
6. The cost of taxation

6.1 Theory

The demand of public good is a function of the price-tax (Figure 2). A rise in price should decrease the demand. In contrast, its decreasing should lead to the inverse effect. In Figure 2 the price of public goods P_g is equal to their (assumed) constant marginal resource cost (MC) while total social marginal costs including excess burden, compliance and evasion costs of taxation is the curve, $P_g + SC$ (Winer, Tofias, Grofman and Aldrich 2008, p.417). The reduction of the deadweight losses associated with taxation increases the demand of public spending (Kau and Rubin 1981, 2002).

An improvement in the efficiency of either taxes or spending would reduce political pressure for suppressing the growth of government and thereby increase total tax revenues and spending (Becker and Mulligan 2003). The rise of nation-State and the tax collection costs falling are correlated. Kau-Rubin (1981) discovered that one significant cost of government has fallen over time, the welfare cost of tax collection (Ferris and West 1999, p.310).

Figure 2: Kau and Rubin's effect (Winer et al. 2008)



The Kau and Rubin's explanation implies, nonetheless, *ceteris paribus*, a downward shift in the cost of government services and the potential for greater consumer surplus for consumers of government services. West (1991) considered one possible violation of *ceteris paribus* and argued government as Leviathan will attempt to capture it for itself. The downward movement in cost of public spending will be frustrated by the offsetting pressure on conventional payroll costs, thrust upwards by the opportunistic forces of Leviathan (Ferris and West 1999, p.311). Then the Leviathan hypothesis predicts that in addition to relative employment size, this created variable will be positively related to the cost providing government services.

6.2 Empirical Tests

The number of article testing Kau/Rubin hypothesis is low. Kau and Rubin (2002) consider that 1) entry of women into the labor force where they can be much more easily taxed; 2) declines in the extent of self-employment making it harder to avoid or evade taxes; and 3) increasing computerization which they think shifts the power to enforce compliance to government (Winer and al. 2008, p.417).

Table 4. Cost of taxation and size of government

(Appendix A.4, bibliography 4 articles)

Authors	Sample	Period	Result
Kau et al. (1981)	USA	1929-1970	Support
Ferris et al. (1996)	USA	1959-1989	Support
Kau et al. (2002)	USA	1930-1993	Support ⁹
Winer et al. (2008)	USA	1930-2002	No support

The debates between econometricians are also rather sharp. Winer and al (2008, p.445) conclude their paper to saying; it is fair to say that the original model of Kau and Rubin (2002) is not robust and, in particular they clearly do not support the original hypothesis about the importance of the supply-side in the growth of government. For us nonetheless the female participation could be explained 15% of total government growth in USA (Winer and al. 2008, p.441).

7. Political regime

7.1 Theory

The political regime would have also an effect on the dynamic of public sector. Indeed, Persson et al. (1997, 2000, 2007) suggest that the parliamentary form of government promotes a stronger incentive to internalize the distortions arising from taxation (Milesi-Ferretti and al. 2002, p.646).

⁹Kau/Rubin (2002) female participation is significant and positive, indicating that the ability to tax working females is an important part of the growth of government. Self-employment is significant but has the opposite sign from our prediction and from the results of our earlier paper, from 1929-70. This means that since 1970 something has happened to make it easier to tax the self employed; we have no explanation for this result.

The West's hypothesis could be moderated by a political regime which will limit the opportunism of Fiscal Leviathan. Indeed, if the marginal distortion is high the monotonic relationship in the existing theory between regime type and the size of government may even break down (Anderson 2012, p.83). Hence, with a high marginal tax distortion, the size of government and the total economic loss from the distortions can be lower in a parliamentary system than in a presidential form of government, while the opposite is more likely if taxation is less distortionary. Intuitively if the government is dominated by one strong member, all residual government revenue will be directed towards this member's constituent, and taxation will hence be perceived as less costly to these recipients. The incentive for the government to internalize the tax distortions is then relatively weak (Anderson 2012, p.84). It is a mechanism of residual claimant applied to public finance. The presidential form of government would promote a weaker incentive than the parliamentary system because there is the separation of powers.

7.2 Empirical Tests

Persson and Tabellini (1999) found that strong support for the prediction that presidential regimes have lower spending in a cross section of 50 democracies in the early 1990's. Persson and Tabellini (2004) have collected data for 80 democracies, averaging yearly outcomes over the period 1990–1998. They showed also that presidential regimes induce smaller governments than parliamentary democracies. The explanation by the costs assumes, nonetheless, an inelasticity of the demand. Fiscal illusion can explain this inelasticity. Then, fiscal illusion maintains the rise of public spending by the costs.

8. Fiscal Illusion

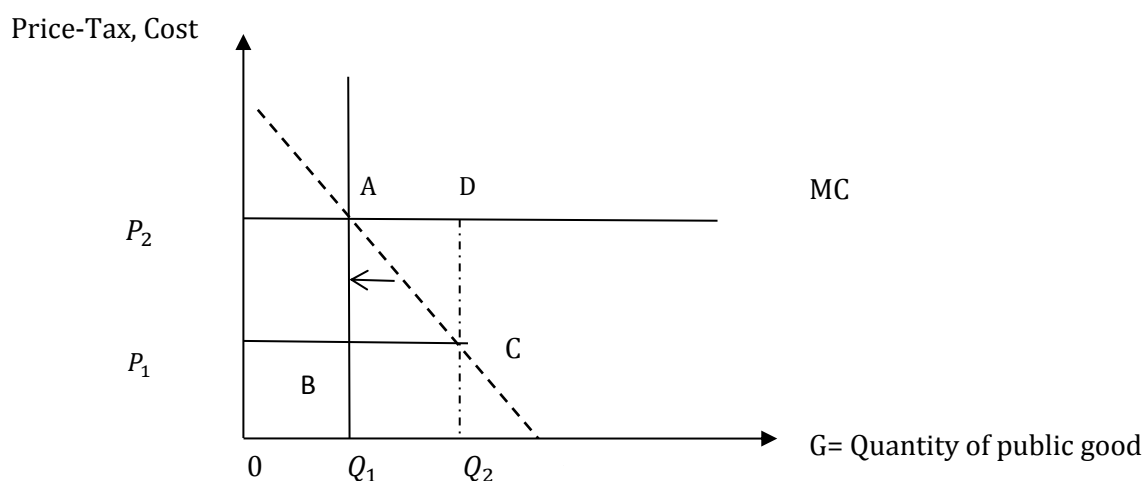
The effect of costs variation or tax-price variation on demand is, nonetheless, a function of information of voters. Individuals will not obtain perfect information but rather an

optimal amount. There are two assumptions. Either benefits of government expenditure have low visibility, being diffusive, long term and not obvious and in contrast the sacrifice of taxes are highly visible (Downs 1960) or voters systematically underestimate the cost (taxes) of public sector activity and overestimate the benefits of government expenditures (Cullis and Jones 1987, p.220).

8.1 Theory

Wagner (1976) draws attention to the role of tax structure in fiscal illusion. The complexity of the tax system increases the cost of obtaining budgetary information which leads individuals to consistently underestimate their true fiscal burden. So voters underestimate the real price-tax of public goods mainly because government manipulates the tax structure and produce perception bias of voters by public debt, public deficit, and /or share direct taxes to total taxes. Political agents choose tax structures (composition of revenues) to minimize the political costs (vote loss) of raising budget (Hettich and Winer 1984). The consequence of this political strategy is fiscal illusion (Puviani 1903, Buchanan 1967, Wagner 1976, Mueller 1987, p.140, Dollery 1996, Da Empoli 2002). Fiscal illusion would increase the quantity of public output demanded. It is another source of budget expansion.

Figure 3: Fiscal Illusion (Wagner 1976)



In figure 3 the perceived tax price is P_1 where the quantity of public output is Q_2 and the budget OP_2DQ_2 . Fiscal illusion leads voters to underestimate the actual cost of government inducing to purchase more government services than they otherwise would. Indeed if the real tax price was P_2 ; the demand should be Q_1 .

When Baumol's disease effects or bureaucratic inefficiency assumes inelasticity of demand, implicitly it takes into account fiscal illusion. The price-tax increases but the demand is always the same. Fiscal illusion can explain inelasticity of demand.

8.2 Empirical Tests

Since Wagner (1976) empirical works use direct evidence (Lewis 1982). It is not a surprise but in general results have been mixed (Dolory 1996, p.31, Table 5). This is as usual attributable to the diversity of data and models employed (Dollory 1996, p.31). As usual also this literature has some technical problems.

8.2.1 Problems of old econometric

This literature has the traditional problems of old econometric: -1- endogeneity problem, -2- unit root and co-integration problems and -3- causality problems. The solutions to these problems have led to the use of more-sophisticated estimation techniques than the simple ordinary least squares estimates used early on.

- Oates (1988) summarized the literature and argued that the existing empirical results are seriously compromised by the failure to deal with the possible endogeneity of the illusion variable and to discriminate among competing hypotheses (Marshall 1991, p.1336, Dollory 1996, p.31).
- Christopoulos and Tsionas (2003, p.440) focus on unit root and cointegration problem. Many economic time series contain unit roots and that has not

acknowledged in empirical research, with the exceptions of Ashworth (1995) and Hondroyiannis and al. (2001).

- Taking into account these two problems Christopoulos and al. (2003) estimate that deficit public illusion hypothesis is correct for their sample and their period.
- Young (2009) and Ross and Yan (2013) treated, rather the problem of causality. Young (2009) uses Granger causality test and error correction model. Ross and Yan (2013) develop natural experiment.

Table 5. Fiscal Illusion

(50% support Fiscal Illusion Hypothesis, Appendix A.4, Bibliography, 10 articles)

Authors	Sample	Period	Result
Gemmell et al. (1999)	UK	1955-1994	No effect of public deficit Positive effect of expenditure taxes to government revenues
Dikson and Yu (2000)	Canadian Province	1962-1992	Support
Mitias et al. (2001)	5 Midwestern states (USA)	1970-1980	Support ¹⁰
Hondroyiannis et al. (2001)	Greece	1961-1994	Support.
Christopoulos et al. (2003).	UE	1970-1999	Support.
Blom-Hansen (2005)	1000 Danish renters' and home owners perception	2000	No support
Neck et al. (2007)	Austria	1924-2002	No support
Young (2009)	USA	1959-2007	Support
Banzhaf and al. (2012)	USA	1998-2006	No support of rent effect
Ross and Yan (2013)	Virginia city (USA, 1997-2009)	2000-2008	Partial support

The contemporary literature despite the progress of methods is still rather inconclusive.

Banzhaf and Oates (2012) conclude that the preference for local debt over tax finance does not have its source in debt illusion. Debt illusion is not supported by their study.

Moreover fiscal illusion is not robust explanation of inelasticity of public good demand and size of State in general. It is, may be, because the models have a bad specification and does not control by fiscal decentralization measure. Fiscal decentralization increases political competition, decreases the price of tax information and *in fine* limits fiscal illusion.

¹⁰ They distinguish two alternative sources of fiscal illusion: grant illusion (creates the flypaper effect) and tax illusion.

8.2.2 The diversity of measures

The variety of the results can also be attributed at the diversity of measures to proxy fiscal illusion (problem of measure). The forms of fiscal illusion tested include:-1- complexity of the tax structure or Herfindhal index (Wagner 1976, Clotfelter 1976, Pommerhen and Schneider 1978, Baker 1983, Breeden and Hunter 1985, Cullis and Jones 1987, Dollory 1996 Table 1, p.7), -2- income elasticity of the structure¹¹ (Dilorenzo 1982, Oates 1988, Dollory 1996, Table 2, p.13), -3- public deficit illusion (Niskanen 1978, Provopoulos 1982, Khan 1988, Diamond 1989, Craigwell 1991, Tridimas 1992, Ashworth 1995, Hondroyiannis and Papapetrous 2001, Christopoulos and Tsionas 2003), -4- consumption expenditures relative to debt levels i.e. debt illusion (Dollory 1996, Table 5, p.29), -5- the flypaper effect¹² (Winer 1983, Dollory 1996, Table 3, p.19, Inman 2008) and -6- renter illusion¹³ (Dollory 1996, Table 4, p.23). Then, the first problem is that it exists a doubt on how fiscal illusion is represented empirically (Dicksons and Yu 2000).

The solution could be in the construction of a Fiscal Illusion index. This index would give homogeneity in models and tests (Dell's Anno and Dollery 2012, Mourão 2008, Alt J, Lassen 2006), would limit the doubts and leads a new question: what are the determinants of fiscal illusion. The structure of employment (self-employment as a percentage of total employment) and nominal marginal tax rates increase, for instance, the visibility of the tax burden and constitute the greatest incentives for politicians to distort taxpayers' perceptions (Dells' Anno and Dollery 2012, p.270). The education

¹¹ Fiscal illusion occurs when the structure of the tax code privileged indirect tax, or hidden or less salient taxes. In this environment voters believes that the costs of public services is less than what they perceive it to be.

¹² Fly-paper effect occurs when politicians use the grant to suggest a lower cost of taxation.

¹³The renter illusion hypothesis holds that renters underestimate their property tax burden and therefore support excessive levels of local expenditure.

level of the population would be also an important determinant of fiscal illusion (negative correlation) (Mourao 2008). Then a human capital variable could be introduced to explain fiscal illusion and indirectly size of government.

8.2.3 Ecological Inference

But the main problem is ecological inference problem. If it is true that several studies find that jurisdictions with a large number of renters spend more a local public services and have higher tax levels (Blomm-Hansen 2005, p.127, Table 1, pp.129-130), however survey on Danish renters' and home owners perception demonstrates that renters suffer from ignorance but not illusion. More tests of renters' and home-owners' perception of property taxes are needed to reach firm conclusions. There is a doubt about the micro-foundation of the renter illusion hypothesis (Blomm-Hansen 2005, p.138).

9. Fiscal decentralization

Fiscal decentralization is an institutional variable. Theoretically a greater competition can constrain the ability of all governments to expand. There are two models: competition within a governmental unit (political fragmentation) and competition between government units (Brennan and Buchanan 1980, Persson and Tabellini 1999). Fiscal decentralization should limit fiscal illusion because it is an effective check on government (Prohl and Schneider 2009).

9.1 Political competition, price of information and fiscal decentralization

The decentralization hypothesis is that *"total government intrusion into the economy should be smaller, the greater the extent to which taxes and expenditures are decentralized"* (Brennan and Buchanan 1980, p.15). Political competition decreases the price of information. Competition between central government and local authorities and between local authorities may be interpreted as an incentive to limit the underestimation of price-tax because it improves the knowledge of real tax-price.

Therefore, fiscal decentralization hypothesis argues that greater competition between governments constrains the ability of all governments to expand. Nonetheless if fiscal decentralization policy generally shifts central government employees to the sub-national government level the question is whether the decrease in central government employment at the sub-national government level overwhelms the decrease in public employment at the central level (Martinez-Vasquez and Yao 2009, p.562).

Table 6. Fiscal decentralization

(Appendix A.6, Bibliography 25 articles).

Authors	Sample/ Period	Result
Oates (1985)	43	No support
Nelson (1986)	49 USA States	Support
Marlow (1988)	Federal and State Local USA	Support
Raimondo (1989)	USA	Mixed support
Forbes and al. (1989)	345	No support
Zax (1989)	43	Support
Grossman (1989)	Federal and State Local USA	Support
Joulfaian/Marlow (1990)	48 USA (1981/1984	Support
Heil (1991)	22 OECD and 33 FMI	No Support
Joulfaian/Marlow (1991)	48 USA, 1983/1984/1985	Support
Grossman and al. (1994)	Canada (1958-1987)	Support
Ehdaie (1994)	30 countries (1987) and 26 (1977-1987)	Support
Comiskey (1993)	OECD	Support
Anderson and al. (1998)	45	No support
Persson and Tabellini (1999)	64 countries	Support ¹⁴ .
Shadbegian (1999)	USA (1979-1992)	Support
Stein (1999)	Latin America	Support
Lalvani (2002)	Indian Federation	Support
Jin an et al. (2002)	30 OECD (1980-1994)	Support
Feld et al. (2003)	26 Swiss Cantons (1980-1998)	Support
Rodden (2003)	50OECD (1976-1996)	Support
Fiva (2006)	18 OECD (1970-2000)	Support
Martinez-Vasquez (2009)	74 (1985-2005)	No support
Prohl et al. (2009)	29 countries	Support

9.2 Empirical evidence

Empirical tests of the decentralization hypothesis is assumes that appropriate definitions exclude the federal sector from the definition of the government market (Oates 1985, Nelson 1986, Raimondo 1989, Forbes and Zampelli 1989, Zax 1989) or that appropriate definitions includes all levels of government in market definitions and measures decentralization in terms of the extent of state and local activities relative to

¹⁴ The size of State is smaller under presidential regimes and majoritarian elections are associated with fewer public services.

federal activity (Joulfaian and Marlow 1991, Grossman 1989, Marlow 1988). In contrast of Golem (2010) which sustains that in the empirical literature little consensus on the relationship between fiscal decentralization and the size of government is reached (Golem 2010) table 6 assesses at 75% the papers which support fiscal decentralization. Then, in the countries where the fiscal decentralization is low, fiscal illusion should be high. An interaction variable like fiscal decentralization x Fiscal illusion could be tested.

10. Political fragmentation and ideological polarization

10.1 Political fragmentation

Political fragmentation strengthens the positive of interest group on size of government. It affects the size of government spending (Weingast, Shepsle and Johnsen 1983). In this context, political fragmentation refers of the number of different interests existing in a country. Greater fragmentation is expected to increase government expenditure, because taxation is common pool but benefits of public goods are concentrated. In politic the costs of an expense are not fully internalized. The larger is the number of agents that shares the costs the lesser the degree to which each of them internalizes the costs of the public goods¹⁵. Then, it is argued, firstly, that coalition governments (executive fragmentation) spend more than single-party governments, because each party in a coalition does not fully internalize the fiscal cost of spending. And secondly, it is sustained that coalition in Assembly spend more than single party (legislative fragmentation).

10.2 Ideological Polarization

Some paper develops the ideas that it is not the political fragmentation which is important but the political polarization (Volkerink and De Haan 2001, Nupia 2007, Eslava and Nupia 2010). Then the ideological distance between the agents measures the

¹⁵All the literature around the “pork barrel” mechanism develops this ideas which involves that the benefits of government programs are concentrated and the costs are spread among all taxpayers.

political polarization. The assumption is following: greater polarization increases the incumbent's incentives to rise spending because faced with a high risk of being replaced by someone from a different party incumbent politician may increase in his/her preferred goods (Eslava and Nupia 2010). The cost will be paid by his/her successor and fall disproportionately on the goods preferred by that successor. Ideological heterogeneity has a positive effect on size of government.

10.3 Empirical evidence

There is a great diversity of measures to proxy political fragmentation. Fragmentation is measured by the number of spending ministers and the number of parties in government coalition (executive fragmentation) and/or the number of parties, the numbers of parties in parliament, and ideological fragmentation in parliament (legislative fragmentation) (Volkerink and De Haan 2001). The number of paper is yet relatively low and it is always difficult in these conditions to conclude. However empirical evidence supports the hypothesis that a positive relationship exists between political fragmentation and public spending (Marlow and Orzechowski 1996 and Table 7). Political fragmentation would have a positive impact on the level of government spending.

However, there is some anecdotal evidence that points to the opposite direction (Matakos and Xefteris 2012, p.1). Switzerland, for instance, exhibits high levels of fragmentation and low levels of government spending and very healthy public finances. Greece, on the contrary, has a single-party government, a large stock of public debt and a lot of government spending. Matakos and Xefteris (2012, p.6) observes in Greece (1996-2010) that the government spending cuts caused an increase in fragmentation across all regions. They find the existence of a reverse causal link between government spending and electoral fragmentation. They document this result by the mean of a natural

experiment. It is a natural experiment because coalition government, formed at the aftermath of the June 2012 legislative elections, was a result of the 2010 debt crisis, not its causal factor. The Greek government has fiddled the books and under report the public deficit figures for 2006-2007. The Greek voters voted with these new informations. The action of Greek government altered voters' expectations on future government spending because public between the two electoral contests cannot be attributed to policies followed those couple of months by the present administration. Rather it is attributed to newly disclosed information (Matakos and Xeferis 2012, p.3).

Table 7. Political Fragmentation
(Appendix A.7, bibliography 13 articles)

Authors	Sample/Period	Result
Mueller and al. (1985)		Larger is the number of parties higher is the size of State.
Henrekson and al. (1988)	Sweden	Support <i>Legislative fragmentation</i> (number of parties)
Kontopoulos and al. (1999)	OECD Countries	<i>Legislative fragmentation</i> . the number of parties in the governing coalition affects positively spending but not deficits
Volkerink and de Haan 2001		Executive fragmentation. Positive effect is much smaller on the deficit than on spending Political polarization is not support.
Padovano and al. (2001)	Italian (1984-1994)	Support legislative fragmentation (number of parties in governing coalition)
Perotti and al. (2002)	19 OECD (1970-1995)	Support <i>executive fragmentation</i> (number of spending ministers in the cabinet) (number of parties in a coalition)
Mukherjee (2003).	OECD	Support <i>legislative fragmentation</i> (number of parties in a governing coalition)
Bawn and al. (2006).	OECD	Support legislative fragmentation (number of parties in a governing coalition)
Persson and al. (2007)	40 parliamentary democracy (1960-1998)	Support. Proportional election induces a more fragmented party system and a larger incidence of coalition governments than do majoritarian elections.
Neck and al. (2007)	Austria (1924-2002)	Confirms the importance of party coalition.
Elgie and al. (2008)	OECD and no OECD	Political polarization and number of ministers are not support.
Eslava and Nupia (2010)	22 developing and developed countries (1978-2005)	Legislative fragmentation has no effect on government spending in the absence of ideological polarization and a positive effect when polarization is high enough.
Le Maux and al. (2011)	French (<i>département</i>) (1992-1999)	Support <i>legislative fragmentation</i>

11. Electoral rules

Political fragmentation is also used by Persson, Roland and Tabellini (2007, p.2) to describe the mechanisms behind which electoral rules influence government spending. The electoral rules would explain political fragmentation and *in fine* its consequences on public spending. Majoritarian elections would be associated with smaller government spending and smaller welfare states than proportional elections

11.1 Theory

Persson, Roland and Tabellini (1998) and Milesi-Ferretti, Perotti and Rostagno (2002) generate contradictory hypothesis concerning the effects of electoral rules on public expenditures. 1) Persson and al. (1998) find that the majoritarian system focuses electoral competition on a few key districts, leading to fewer public goods but more redistribution than the proportional system. 2) Persson and al. (2007, p.2-18) developed another channel. They presented a theoretical model where the electoral rules explain political fragmentation and *in fine* the size of government. Majoritarian elections produce single-party governments more often than proportional elections, which instead produce fragmentation of political parties and coalitions, or minority government (Persson and al. 2007, p.1). 3) Milesi-Ferretti, Perotti and Rostagno (2002) studied how the electoral system shapes the trade-off between allegiance to a social constituency and allegiance to a geographic constituency. This trade-off is relevant to fiscal policymaking because it parallels the distinction between the two main types of government spending: transfers and purchases of goods and services. They showed that proportional systems are more geared to spending on transfers, while majoritarian systems¹⁶ are more prone to public good spending. Then total government spending is

¹⁶ "In a majoritarian, each district elects one representative. If the distribution of different social groups is similar across districts, all representatives will belong to the same social group. Hence, all elected representatives derive utility from the same type of transfers, but each derives utility from a different public good. It follows that electors will have an incentive to vote for individuals with stronger preferences for public

higher in proportional systems if the median voter values relatively little the public goods and relatively highly private consumption and transfers, lower in the opposite case (Milesi-Feretti et al. 2002, p.610).

11.2 Empirical Tests

Persson and Tabellini (1999) test their hypothesis on both electoral system and legislative structure (cross-country data from a sample of 64 countries, 1985-1990)? They found that majoritarian electoral system are associated with less expenditure in public goods but the results are weak and they don't look at the effect on transfers (Shelton 2007). 1) In both cross-section and panel regressions, Milesi-Feretti et al. (2002) found support for the predictions of their model for 40 OECD countries, and weaker results for Latin America (Milesi-Feretti 2002, p.611). The two tests have contradictory results. 2) Persson and Tabellini (2004) (80 democracy 1990-1998) confirmed these predictions. Majoritarian elections lead to smaller government and smaller welfare programs than proportional elections. In cross-section regression (100 countries 1970-2000). 3) Shelton (2007) has documented that government elected under majoritarian electoral systems spend less across the board than those elected under proportional systems. 4) Persson and al. (2007, p.29), from post-war parliamentary democracies, showed that the electoral rule affects government spending but only indirectly: proportional elections induce a more fragmented party system and a larger incidence of coalition government than do majoritarian election. Nonetheless, there are also some anecdotic evidences than majoritarian election has not this consequence. In France, for instance, the fourth republic had adopted a proportional election and the rise of public spending has been slower than under the fifth republic.

goods relative to transfers, in order to bias government expenditures on public goods toward their district. In equilibrium the result is just high expenditure on public goods" (Milesi and al. 2002, p.610).

Therefore, it is difficult to make an opinion because the number of tests are very low and the conditions of their realization conditional.

12. Political Rights

In electoral rules there is also the definition of political rights. In many countries political rights are restricted to a privileged minority (Shelton 2007, p.3235). Meltzer and Richard (1981) suggested that the government grows when the franchise (Husted and Kenny 1997) is extended to include more voters below the median income (the decisive voter), when the growth of incomes provides revenues for increased redistribution and when the income distribution becomes more uneven (Mueller 1987, p.124, Henrekson and Lybeck 1988, p.218).

12.1 Theory

In this perspective, economic theory suggests a number of different channels through which the changes in restrictions on political participation might have affected public spending (Boix 2001; Aidt and al. 2006, p.250): the poor (Meltzer and Richard 1981), the social spending *via* female franchise (Lott and Kenny 1999), the threat of revolution (Acemoglu and Robinson 2000), the interests of a population larger (Persson and Tabellini 2000 Chapter 8 and 9), and the conflicts of interest among the members of the elite (Lizzeri and Persico 2004¹⁷).

12.2 Empirical Tests

Husted and Kenny (1997) look at the extensions of the franchise to poorer votes on government expenditure using biennial US state and local data for 1950-1988. They document a strong increase in the size of welfare spending (transfers) but little effect in public goods. 1) Lott and Kenny (1999) find that the increase in voter turnout due to

¹⁷ Group within the elites benefit differently of *status-quo*. Lizzeri and Persico (2004) shown that it is possible that a majority within the elite may favor expanding the franchise. In England, substantial subgroups within the elite championed franchise expansion.

women's suffrage explains on the order of 20% of a 90% increase in expenditure over the period (Shelton 2007, p.3235). 2) Aidt and al. (2006, p.250) showed that economic franchise contributed to growth in government spending during the nineteenth and early twentieth century (1830-1938) in 12 countries mainly by increasing spending on roads, transportation and communication and internal security and administration and that female franchise had an impact on public finance mainly through an increase in spending on health, education, housing, redistribution and social insurance, but the effects are statistically weak. 3) However, Mulligan and al. (2002, 2004) find that government type (autocracy *versus* democracy) has no effect on social security expenditures. Shelton (2007) on the contrary has documented that the increased of political rights (Gastil index) has a positive effect in transfers (or social protection).

13 Pre-tax income distribution

The average level of income may affect public spending (Wagner's Law). The distribution of income in society can also have a consequence.

13.1 Theory

Stigler (1970) offered the Director's Law: "*public expenditures are made for the benefit primarily of the middle classes, and financed by taxes which are borne in considerable part by the poor and the rich*" (Borcherding 1985, p.370). Following Romer (1975) inequality in pre-tax earnings is considered to yield a larger political demand for redistributive policies. Meltzer and Richard (1983) suggested that the increases in mean voter income relative to median voter income cause greater redistribution, hence greater government expenditure (Holsey and Borcherding 1997, p.576). More recently Bénabou (2000) argued that more inequality is associated with lower, not higher, government spending on redistribution (Borge and Rattso 2004, p.806). Pryor (1968, p.54) had another hypothesis; more is unequal the distribution of income, more police services may be

desired. Under this hypothesis the size of Government increases to protect the property rights. Therefore, theoretically there is a great confusion.

Table 8. Inequality

(Source: Mello and al. 2006, Table 1, Appendix A.7 for Bibliography, 25 articles)

Authors	Sample/Period	Result
Demsetz (1982)	USA (1920-1972)	No support on the period (1920-1942) Support on the period (1950-1972) (+inequality=+redistribution)
Meltzer and al. (1983)	USA(1937-1977)	Support (Ratio of mean to median income)
Aubin and al. (1988)	France	Support (+inequality=(+)redistribution)
Lybeck (1986)	Sweden	No support (Ratio of mean to median income)
Henrekson (1988)	Sweden	No support (Ratio of mean to median income)
Henrekson and al. (1988)	Sweden	Support ((Ratio of mean to median income)
Henrekson (1990)	Sweden	Mix
Perotti (1992)	40 democracies(1970-1985)	No support (+inequality=(+)redistribution)
Kristov and al. (1992)	Cross-section	No support (Ratio of mean to median income)
Easterly and al. (1993)	1970-1988	Support (+ inequality= (+)redistribution)
Perotti (1994)	52 countries	No support (+inequality= (+)redistribution)
Persson and al. (1994)	13 OECD(1960-1981)	No support (+inequality=(+)redistribution)
Lindert (1996)	14 OECD(1962-1981)	No support (+inequality= (+) redistribution)
Perotti (1996)	49 countries (1970-1985)	No support (+inequality=(+)redistribution)
Partridge (1997)	48 US States(1960-1990)	No support (+inequality=(+)redistribution)
Figini (1998)	Up to 63 countries (1970-1990)	Support (+inequality=(+)redistribution)
Gouveia and al. (1998)	50 US States(1970-191)	Support (ratio of mean to median income)
Panizza (1999)	46 US States(1960-1990)	No support (+inequality=(+)redistribution)
Bassett et al. (1999)	Up to 54 countries (1970-1985)	No support (+inequality=(+)redistribution)
Tanninen (1999)	Up to 45 countries (1970-1988)	No support (+inequality=(+)redistribution)
Rodriguez (1999)	50 US States(1984-1988)	No support (+inequality=(+)redistribution)
Milanovic et al. (2000)	24 OECD countries (1974-1997)	No support the median voter hypothesis but greater inequality redistribute more.
Mulligan and al. (2002)	65 countries (1960-1990)	No support
Borge and al. (2004)	Norway (1996-1998)	Support (+inequality=(+)redistribution)
De Mello and al. (2006)	57 countries (1972-1998)	Support (+inequality=(-)redistribution)
Shelton (2007)	100 countries (1970-2000)	Support

13.2 Empirical Tests

Empirically the theory has not proven robust (Hosley and Borchering 1997, p.576, Borge and Rattso 2004, p.806, Table 8). It is also very sensitive to the choice of sample (Shelton 2007). Meltzer and Richard (1983) tested their theory with U.S. time series data and found that government expenditure levels are positively related to the ratio of mean to median income as well as to median income levels (Meltzer and Richard 1983). Nonetheless, more recent-country evidence is essentially inconclusive (Mello and

Tiongson 2006, Table 1, pp.286-287, Table 8). De Mello and al. (2006) shows also that more inequality is associated with lower government spending on redistribution.

As usual, there is also a problem of causality. Sinn (1996) questions whether the causality runs from inequality to redistribution or the other way around (Borge and Rattso 2004, p.806). The solution could be a non linear relationship between inequality and redistributive policies (Figini 1998, Moene, K. O. and Wallerstein, M. 2001, Mello and Tiongson 2006, p.283). In Moene and Wallerstein's model, the practice of democratic politics purportedly induces, also, democratic elites to bring demands upon government by means of competitive bidding for people's votes. The more intense the level of electoral competition, the more intense the pressure for vote-seeking politicians to expand publicly provided benefit.

14. Income volatility

14.1 Openness

The redistributive programs can explain by income volatility. In a high industrial concentration where unions have a decisive influence on public choice and the socialization of resources is more important (Cameron 1978¹⁸). Greater is the trade dependency the greater the demands on government to maintain economic stability by strategic increases in spending (Lindbeck 1976, Rodrik 1998, Kimakova 2009). Societies seem to demand (and receive) an expanded government role as the price for accepting larger doses of external risk. In other words, government spending appears to provide social insurance in economies subject to external shocks (Rodrick 1998, p.998). Katsimi (1998) argues a similar idea when he assumes that the public sector is less efficient, but also less volatile than the private sector. In a context of economic integration the voters move on the left and converge at an interventionist ideology. In contrast, another

¹⁸Openness may be interpreted as the result in a high industrial concentration where unions have a decisive influence on public choice (Cameron 1978).

literature suggests the inverse relationship. More economic integration will tend to reduce tax rates, possibly leading to smaller governments. Indeed a large public sector may cause a loss of international competitiveness and a competitive pressure to reduce government size (Alesina and Perotti 1997). Loss of competitiveness is a reason either the limit free trade or to reduce the size of government.

Table 9. Size of Government and Openness
(Appendix A.8, Bibliography, 22 articles)

Authors	Sample	Period	Result
Cameron (1978)	18 OECD	1960-1975	Support
Lewis-Beck et al. (1985)	USA	1900-1980	Support
Lane et al. (1986)	78	1960-1977	Support
Rice (1986)	Western	1950-1980	Support
	European		
Pampel et al. (1988)	18 Nations	1950-1980	No support
Hicks et al. (1992)	18 OECD	1960-1982	Support
Blais et al. (1993)	15	1960-1987	Support
Comiskey (1993)	13 OECD	1950-1983	Support
Rodrik (1998)	OECD	1985-1992	Support
Ram (1999)	143	1960-2000	No support
Iversen et al (2000)	OECD	1962-1993	No support.
Garrett (2001)	100	1970-1995	Support but conditioned by the level of growth
Adseri et al. (2002)	65	1950-1990	Support
Milesi-Ferretti et al. (2002)	OECD+Latin American	1960-1994	No support
Bretschger et al. (2002)	14 OECD	1967-1996	Support. Globalization has a negative and significant impact on corporate taxes. It tends to raise labor taxes and social expenditures.
Garen/Trask (2005).	69 lower Average growth	1961-2000	Little support. Less open economies tend to have less government expenditure, but have a great deal more government in other forms. The lower government expenditure gives a misleading view, the role of government is large in these countries" (Garent and Trask 2005, p.549).
Shelton (2007)	100 countries	1970-2000	Support. Total expenditure increases strongly with openness in both industrialized and less-developed countries.
Liberati (2007)	OECD		No support ¹⁹
Benarroch et al. (2008)	96	1970-2000	No support.
Ferris/Winer (2008)	Canada	1861-2000	No support (effect is negative)
Ram (2009)	150	1960-2000	No support.
Kimakova (2009)	87	1976-2003	Support

¹⁹Capital openness is significantly and negatively related to government expenditures in line with the conventional wisdom that capital mobility may undermine the ability of governments to maintain larger public sectors. More importantly, the compensation hypothesis originally proposed by Rodrik (1998) and traceable back to Cameron (1978) is not in general supported by the data.

14.2 Size of Nations

Moreover, Alesina and Wacziarg (1998) argue that it may be spuriously driven by country size, because small countries tend to have large public sectors and be very open (Shelton 2007, p.2231). There is a scale effect. Large fixed costs are incurred in setting up an administrative system. A country with a small population may experience higher public consumption on a *per capita* basis. Alesina and Wacziarg (1998) showed this positive correlation between size of country and size of government.

14.3 Empirical Tests

The empirical results are un-conclusive (Table 9). Moreover, political ideology explains the level of openness (Kindleberger 1951). At best openness is an indirect origin of the rise of public spending.

15. Ethnic diversity

15.1 Theory

Redistributive program has been also explained by the ethnic diversity or social affinity. Kristov, Lindert and McClelland (1992) develop the concept of social affinity to explain public sector growth. Individuals care more about themselves than others. They develop a model of political activity where interest group activities are not based solely on monetary gains or losses but on each individual's concern about other's monetary well-being as well (Hosley and Borchering 1997, p.580). Whether we associate social affinity and ethnic group then the redistribution would be a function of ethnic diversity or community resources (MacCarty 1993, Hosley and Borchering 1997, p.571). The total amount of public spending would be negatively related to a country's ethnic diversity (Stichnoth and van der Straeten 2013, p.3).

Immigration in Europe would challenge the generous welfare state (Alesina and Glaeser 2004). Voter does not want solidarity of a group which has not his/her identity: ethnic,

religious or national. Ethnic diversity theory completes community resources hypothesis which argues that lower levels of community resources increase the median voter's tax price per unit of service. The reduction of community contributions increases government expenditures levels (Hosley and Borcharding 1997, p.571).

Nonetheless in Wang's theory the public spending increases with social instability i.e. ethnic or cultural diversity (Wang 2002). Central government spends more in the Chinese provinces where there is high proportion of minority because central government tries to limit the social instability. These expenditures are public security spending and central grants. Therefore Wang suggested the reverse relationship than Alesina and Glaeser (2004).

16.2 Empirical Tests

The number of studies is low and has rather documented a negative association between ethnic diversity and some public spending like health or education (Table 10).

The correlation between ethnic diversity and total public spending is not, nonetheless, robust and the evidence for countries other than the U.S. is scarce (Hooghe and al. 2009; Stichnoth and van der Straeten 2013, p.380, Table 10).

The cross-country studies have been moreover criticized for a number of reasons (Stichnoth and van der Straeten 2013, p.366): the measurement of ethnic diversity is imperfect (Facchini 2008), these studies assume sometimes implicitly that ethnic diversity does not change or changes slowly, the comparability across countries is contestable, the uncertainty in the specification of the model should be explicitly recognized, the causality may run from the dependent variable such as the growth of GDP *per head* to the degree of ethnic diversity (Stichnoth and van der Straeten 2013, p.367). Therefore in most studies the association is much weaker than for other factors

such as own income or beliefs about the role of effort *versus* luck in determining this income (Stichnoth and al. 2013, p.380) i.e. political ideology.

17. Social Trust

17.1 Theory

The explanation by the social trust has a same perspective. The two literatures are linked *via* the relationship between social trust and ethnic diversity. The most current research documents a negative relation between ethnic diversity and trust. Hooghe and al. (2009) suggested that this pessimistic conclusion coming from North America cannot be confirmed at the aggregate level across European Countries. It is an important result, because the channel to explaining the evolution of public spending by trust is may be not ethnic diversity. The causal chain can be: ethnic diversity → mistrust → less public spending. A larger government results in lower trust (Yamamura 2010).

Bergh and Bjornskov (2011, p.1) argued the reverse effect. Trust would explain a high level of welfare State. Trusting population would be more likely to create and sustain large universal welfare states. The causal chain is more social trust → more public spending. Trusting populations are more likely to create and sustain large, universal welfare States (Bergh and Bjornskov 2011, p.1). Because social trust ensures nations from major free-riding problems and thus enables welfare states to develop and remain fiscally sustainable (Bergh and Bjornskov 2011, p.2).

17.2 Empirical Tests

In general the size of State explains social trust. The cross-country correlation between welfare state size and trust would be positive (Kumlim and Rothstein 2005, Uslaner and Rothstein 2005; Yamamura 2010). Berggren and Jordahl (2006) used cross country data to investigate the effect of government size on trust, but found no stable relationship between government size and trust (Yamamura 2010, p.32). Bergh and Bjornskov (2012, p. 4) use two instrumental variables: the average temperature in the coldest

month of the year and monarchical institutions. Publics spending are correlated at these two variables but not social trust in 77 democratic countries (for 2008).

Table 10. Ethnic diversity (Appendix A.10, Bibliography, Sources: Shelton (2007), and Stichnoth and al. 2011, pp.266-268, 13 articles)

Authors	Sample/Period	Result
Mueller and al. (1986)	OECD and few other countries	Support. + Ethic diversity= (-) public spending.
James (1987)	U.S. States	The percentage of blacks in the population is correlated with the percentage of schools that are private.
Cutler and al. (1993)	U.S. States	Ambiguous. The relationship seems to be positive at the local level and negative at the state level.
McCarty (1993)	48 countries (1987)	Mixed. In countries with greater ethnic and religious diversity the central government spends less on transfers: other government expenditure is unaffected.
James (1993)	50 countries	Ethno-linguistic and especially religious diversity are associated with a greater share of private schools in total enrollments.
Easterly and al. (1997)	African countries	A strong negative correlation between indices of ethnic fragmentation and measures of public goods (telecommunications networks, transportations networks, electricity grids and education).
Poterba (1997)	U.S. States (1960-1991)	The negative relationship between public-school spending per pupil ant the share of people aged-65 or over in a state's population is stronger in states with a substantial population of older individual who are from a different ethnic or racial group than the school'-aged population.
Alesina and al. (1999)	US city-level data	Ethnic fragmentation leads to higher levels of public employment.
Goldin and al. (1999)	U.S. States	High school movement was stronger the more homogenous a community was in terms of ethnicity, religion and income.
Kuijs (2000)	1990-1993	Ethno-linguistic fractionalization is negatively relative to health spending and to public spending on education.
Alesina, and al. (2001)	USA and European Union (1960-1998)	Support. [+ racial fractionalization = (-) ratio of transfers to GDP] and [no correlation between ethno-linguistic fractionalization and public spending].
Soroka (2006)	OECD (1960-2000)	Mixed. Countries with a high share of immigrants in the population in 1970 did not experience a smaller increase in social spending between 1970-1998. However, this increase is negatively related to the change in the population share of immigrants over the period.
Shelton (2007)	100 countries (1970-2000)	Mixed
Lind (2007)	U.S. States (1969-2000)	Income inequality (before taxes and transfers) between racial groups tends to reduce welfare spending by the State, whereas income inequality within groups increases it. Racial fractionalization is negatively related to welfare spending but the correlation is not very strong and not robust.

18. Political Ideology

18.1 Theory

The political sciences and its most cherished of all political variables, political ideology

(Blais and al. 1993, p.40) could have its revenge. Indeed in 1960-1980 the public choice

literature concluded that the cause of public spending and welfare expenditure in a country is economic growth and the mechanism that translates economic change into public policy like the demographic dynamic (Blais, Blake, and Dion 1993, p.40). Political ideology would have no consequence (Hosley and Borcharding 1997, p.587). Kalt and Zupan (1984) argued, nonetheless, that the legislators and the elites take advantage of a principal-agent slack to vote in agreement with their own ideological preferences. The preferences of political elites are not only determined by the quest of power and the reelection. They are also determined by the desire to implement their ideology (Lewis-Beck and Rice 1985, p.11). *Homo politicus* is not a *homo oeconomicus* but a *homo ideologicus*. Then it's not the self-interest which explains the public choice but the ideological preferences (Hosley and Borcharding 1997, p.585).

Political ideology legitimates or not the size of State. The legitimacy is a norm that the public actions are desirable and appropriate. It has to do "*with the opinion its leaders, processes, and policies enjoy among the citizenry*" (Cuzan and Heggen 1985, p.26). State and political parties invest in legitimacy to enhance their political survival potential and reduce political transaction costs (Gallarotti 1989, p.44). Legitimacy of public spending grows with the level of these investment in public education and/or medias and with "policy successes, victory in war, and the prestige of a nation's leader" (Cuzan and Heggen 1985, p.26). In this theoretical perspective income does not explain political preferences (pocketbook voting). In contrast, political ideology shift should explain the evolution of government size (Swank 1988; Roubini and Sachs 1989; Garrett et al. 1991; Blais and al. 1993; Garrett 1995; De Haan et al. 1993, 1997; Cusack 1997; Pickering et al. 2011, 2011). In developed countries since the 1930s the voters and political elites accept more government intervention into economy. So if the leftist composition of government

is more important and the leftist ideology is more share in electorate; there is a rise of public spending.

Table 11. Size of Government and left-wing Ideology
(Appendix A.11, bibliography, 27 papers)

Authors	Sample	Period	Result
Cameron (1978)	18 OECD	1960-1975	Support
Rao (1979)	India	1951-1972	No support
Solano (1983)	18 OECD	1968-1969	Support
Hicks et al. (1984)	18 OECD	1960-1971	Support
Lewis-Beck and Rice (1985)	USA	1932-1980	Support
Swank (1998)	17 OECD	1960-1973 1973-1980	effects of leftist and rightist parties mixed, but center parties has a positive effect
Abizadeh et al. (1988)	Canada	1945-1984	Support
Garand (1988)	USA	1945-1984	No support
Roubini/Sachs (1989)	22 OECD	1960-1994	Support
Garrett/Lange (1991)	15 OECD	1974-1987	support under some conditions
Hicks et al. (1992)	18 OECD	1960-1982	Support
Comiskey (1993)	13 OECD	1950-1983	Support
Blais and al. (1993)	15 OECD	1960-1989	little supports for partisanship effect
De Haan/Sturm (1993)	12 EU	1980-1989	Support
Garrett (1995)	15 OECD	1967-1990	support under some conditions
Schmidt (1996)			
Cusack (1997)	16 OECD	1955-1987	Support
Dikson/Yu (1997)	Canadian Province	1962-1992	Support
De Haan/Sturm (1997)	21 OECD	1982-1992	No support
Katsimi (1998)	190OECD	1961-1987	No support
Cusack (1999)	14 OECD	1961-1991	Contingent on macroeconomic condition
Knight (2000)	USA	1963-1995	Support
Rogers/Rogers (2000)	USA	1950-1990	Support
Perrotti and al. (2002)	OECD	1970-1995	Support - Left-wing government are associated with larger expenditure and deficits
Kau and Rubin (2002)	USA	1930-1993	Support
Besley and Case (2003)	USA	1950-1997	Little evidence
Tellier (2006)	Canada provinces	1983-1995	Left spending more than the Center and the Right
Neck and Getzner (2007)	Austria	1924-2002	No support
Ferris and Winer (2008)	Canada	1861 -2000	Support
Winer et al. (2008)	USA	1930-2002	Support
Ansgar/Potrafke (2011)	OECD		
Pickering and Rockey (2011)	OECD	1945-1998	Support
Bjornskov and al. (2011)	USA	1981-2005	Support
Pickering and al. (2012)	USA states	1950-1997	Support but conditioned by income

The originality of the explanation by political ideology is to develop a teleological explanation in a instrumental context of justification. Its other originality is to explain potentially all the other political variables. For instance all the demand models are founded on ideological preferences. There is no Wagner's Law or fiscal illusion if the voters do not like public intervention. It is difficult to contradict the idea that bureaucrat

believe sincerely in the agency's mission. Then they have two reasons to defend public spending. They work for the public agency (self-interest) and argue that they need even larger budgets to improve the economic performance and happiness. Ideological fragmentation or polarization transcends ethnic or linguistic fragmentation. Religious war is justified by religion and not ethnic diversity. Ideology explains the preferences for the redistribution or its aversion. It explains also the level of openness (Kindleberger 1951). In Peacock and Wiseman's theory (1961) of displacement effect, the wars and the crisis explain the ideological shift. Fiscal decentralization or fiscal federalism is also founded on political preference. The basic tenet of fiscal federalism is that increased heterogeneity in preferences should lead to a devolution of fiscal policy prerogatives to lower levels of government where heterogeneity may be less severe (Shelton 2007).

18.2 Empirical Tests

Political ideology shift towards the left-wing should explain the rise of public spending legitimacy. Nonetheless, like all independent variables the measure of ideology is difficult and its role in the dynamic of public spending remains controversial (Table 11).

19. Displacement effect or ratchet effect

19.1 Theory

The ratchet theory of government growth hypothesizes that temporary crises cause government spending to rise and to remain permanently higher if the crises had not occurred (Holcombe 1993, Holcombe 2005). The displacement effect has a long run effect if there is a ratchet effect. The displacement effect is based on the divergent opinions on the size of governments by bureaucrats/politicians (who are in favor of a bigger government) and by citizens/taxpayers, who are not willing to finance higher levels of public expenditure (Legrenzi 2004, p.191; Rowley and Tollison 1994). While in normal periods government grows regularly, during wars or economic crisis the public resistance against taxes is lowered and size of government attempts to rise. Then during

such periods public spending has much higher value than in normal up to that time. War and depression have a displacement effect on size of Government. So political leaders use national crises to increase the equilibrium levels of government revenue and spending (Carter 2012, p.3).

19.2 Empirical Tests

Lybeck and Henrekson (1988) have sustained that the Peacock and Wiseman hypothesis remains non-falsified following some thirty years of subsequent research. Table 12, nonetheless, shows a great variety in the results (Table 12). The recent research, moreover, is divided over the existence of the displacement effect among modern states and is largely focused on the developing world (Carter 2012). In fact there is no consensus, a great diversity between the countries and methodological problems.

Table 12 Displacement effect and Size of Government
(Appendix A.12 bibliography, 18 papers)

Authors	Sample/ Period	Result
Gupta (1967)	West Germany, Canada, USA, UK, Sweden (1920-1958)	Support in the case of West Germany, Canada, USA and UK
Reddy (1969)	India (1872-1966)	Support
Bonin et al. (1969)	UK (1890-1955)	Support
Goffman et al. (1971)	Caribbean (1940-1965)	No support
Tussin et al. (1974)	USA (1900-1969)	No support
Mahar et al. (1975)	Brazil (1920-1969)	Support
Delorme/André (1978)	France (1872-1971)	Rather no support
Nagarajan (1979)	India (1951-1962)	support
Nagarajan (1983)	Sweden (1920-1958)	Support
Rasler and al. (1985)		
Lane et al. (1986)	78 (1960-1977)	Support
Rasler and al. (1989)		
Henrekson (1994)	Sweden (1922-1987)	No support
Holcombe (1993)	Federal State USA (two centuries)	Mixed
Nomura (1995)	Japan (1860-1987)	Support
Bohl (1996)	Canada, (1951-1996)	Support
	France, Germany, Italy, Japan, UK, USA	No support
	UK (1870-1995)	Support
	Germany (1850-1913)	No support
Bohl (1999)		
Goff (1999)	USA (1889-1995)	Support
Legrenzi (2004).	Italy (1861-1980)	No support

20. So what did we learn?

Let us devote the least few lines to summarize what we think are the main lessons from empirical and theoretical analysis of the literature about the determinants of public spending.

- (a) Applied econometric does not seem to be able to select from among the plethora of possible explanations of public spending evolution. Each author pointed to some factor. But their applied econometric does not offer any evidence. Their test is not as evidence from a “crucial experiment”. Therefore after this overview it will be difficult to motivate future research by the absence of consensus in academic literature on the causes of public spending, because the last article has no reason to be the last and to have the statute of “crucial experiment”. Then applied econometric should think as circumstantial evidence. It is only a new way to write the history of public finance and to collect relevant data.
- (b) The convergence of econometric results is not obvious, because it not possible to compare the methods in the time. The authors use their own data, methods and sample. That prevents the evidences of “*repetitive experiments*” and explains the potential limits of controlled experiments in economic science. The sophistication of technics will not be the solution.
- (c) The problem of causality has not been resolved. Granger’s test has been un-conclusive and became today obsolete. The instrumental variables are at the fashion but their ability to resolve the problem of causality is not obvious.
- (d) The omitted variable bias is always a problem. Shelton (2007, p.2230) developed a model to avoid omitted variables bias by testing the prominent theories in a comprehensive specification and the temptation to data-mine by playing with the specification. Table 13 shows that it will be very difficult to avoid omitted

variables bias. The literature is composed of 19 theories and 73 independent variables. There is $\sum_{k=1}^{19} \binom{1}{k_i}$ possibility to specify a model to explain public spending. It will be very difficult, in these conditions, to avoid the omitted variable bias. Moreover, there are 73 independent variables, but potentially with the interaction variables their number is yet more important. We know, indeed, that modern literature multiplies this kind of variable in their models; open*OECD1975, Gini*Political Rights, (Shelton 2007), or Political Ideology*Income (Pickering and Rockey 2011, 2012).

Therefore, *“given all the weakness of econometric techniques, ... other ways of testing, such as appeals to qualitative economic history, should not be treated as archaic”* (Mayer 1980, p.176). The prescriptive consequence is that it is not possible to use quantitative analysis to discover some invariant generalizations and defend a form of causal manipulationism (Woodward 2003). We have to accept the singularity of historical facts and the importance of government’s intentions i.e. teleological explanations.

Table 13. Dependent and independent variables applied to explain government Growth

<p><u>Nominal dependent variables</u></p> <p>G: Total government expenditure; GC: Total government consumption expenditure; GT: Total government transfer payments; G/Y: Ratio of total government expenditures to GDP GC/Y: Ratio of total government consumption expenditures to GDP GT/Y: Ratio of total government transfer payment to GDP</p>	<p><u>1. Wagner's Law (rather no)</u> (1)GDP; (2)GDP/N: Ratio of GDP to population; (3) Share of total population living in urban areas; (4) Population in agriculture; (5) Nonfarm population ; (6) Total population in thousands (7); The automobile (Tussing and al. 1974, p.208). (105 paper)</p>	<p><u>5. Interest group (8 papers, not robust)</u> (18) Corporatism index ; (19) Unemployed Fraction of the population over 65 ; (20) Stock of people below the age of 65 who have obtained an early retirement for labor market reason and those included in various market programs; (21)Young; (22) Unions of civil servant; (23) Unions in general; (24) Degree of unionization, measured as the share of the total number of employees belonging to a union; (25) Big firms.</p>	<p><u>8. Fiscal Illusion (not robust)</u> (30) Herfindhal index measuring the complexity of the tax system $H = \sum_{i=1}^n P_i^2$ where P_i is the share of the ith major tax item in total tax; (31)Ratio of direct taxes to total taxes; (32) Inflation; (33) Measure of progressivity of state income tax; Fly-paper effect: (34) Estimated <i>per capita</i> tax windfall, (35) Dummy variable taking the value if municipalities practicing internal subsidization and 0 if not. Debt Illusion: (36) Consumption expenditures relative to debt levels; (37) Degree of capitalization; (38) Ratio Public debt to GDP. Renter Illusion: (39) %of electorate owing property; (40) % of tenants; (41) % of municipal housing owners occupied; (42) % homes owner occupied; (43) % of adult renters in school district; (44) Proportion of homes owners-occupied in town. Revenue: (45) Ratio of direct to indirect taxes. Public deficit illusion. (46) Ratio of government budget deficit to GDP; (47) Ratio of public expenditure financed by tax.</p>	<p><u>10. Political fragmentation</u> Executive fragmentation (51) Number of parties in Government; (51) Number of spending ministers; (52) Dummy variable taking the value 1 if government is a within-bloc coalition, 2 if it is a coalition across blocs and 0 otherwise. Legislative fragmentation. (53) Number of parties; (54) Numbers of parties in parliament. (<i>not robust</i>)</p>
	<p><u>2. Fiscal Leviathan (rather no)</u> (8) GDP; (9) GDP/N; (10) Tax revenues; (11) Tax-share on domestic product.</p>	<p><u>6. Cost of taxation (not robust, 4 papers)</u> (26) Female participation rate; (27) Self-employment; (28) Ratio of urban passage vehicule miles to total passenger vehicule miles.</p>	<p><u>7. Political Regime (no relevance)</u> (29) Dummy variable taking the value if the regime is Presidential and 0 if the regime is Parliamentary.</p>	<p><u>11. Ideological polarization (no relevance)</u> (55) Ideological distance between the agents.</p>
	<p><u>3. Baumol's Law (rather yes)</u> (12) Ratio of the implicit deflator for government consumption to the implicit GDP deflator (Beck's indicator); (13) Manufacturing output per hour; (14) Differential of wage between public and private sector.</p>	<p><u>8. Fiscal decentralization (rather yes 25 papers)</u> (48) Index of fiscal federalism that incorporates the fiscal and administrative autonomy that constitutional and statutory law grants to subnational governments; (49) Share of local source tax revenue in total revenue; (50) Share of public expenditure financed only by the source's own revenue.</p>		
	<p><u>4. Bureaucracy (Mixed 9 papers)</u> (15) The share of government employees in total employment (16)Public employment (17)Voting propensities of bureaucrats.</p>	<p><u>15. Income volatility (Not robust 22 papers)</u> (62) Ratio of the sum of exports and imports to GDP. public sectors).</p>	<p><u>16. Size of nation (no relevance)</u> (63) Total Population in Thousand (Small countries tend to have large.</p>	<p><u>12. Electoral rules (very conditional, 5 papers)</u> (56) Dummy variable taking the value if the electoral system is proportional and 0 if the electoral system is majoritarian.</p>
<p><u>13. Political rights (no relevance)</u> (57) Female franchise (57); (58) Franchise by age; (59) Gastil Index. <u>14. Pre-tax income (22 no robust)</u> (60) Gini coefficient (inequality); (61) ratio of median to mean income.</p>	<p><u>17. Ethnic diversity (not robust 13 papers)</u> (64) Religious fragmentation; (65) Ethnic fragmentation; (66) Linguistic fragmentation.</p>	<p><u>19. Political ideology (rather yes, 27papers)</u> (68) Dummy variable taking the value 1 if there is left-wing government and 0 if the government is right-wing; (69)Dummy variable taking the value 1 if there is left-wing parliament and 0 if the parliament has a right-wing majority. (70) The median state-citizen ideology.</p>	<p><u>20. Displacement effect (not robust, 18 papers)</u> (71) War; (72) War*ΔGDP; (73) Post War dummy that takes the value of 1 after the Second World War and 0 otherwise.</p>	
	<p><u>18. Social trust (no relevance)</u> (67) social trust</p>			

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Appendix A.1 Wagner Law

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