Le présent document n'est pas la version préliminaire mais l'amorce d'un article. Il n'a pour but que de susciter questions, commentaires et suggestions sur le sujet abordé.

The Political Economy of the Public Finances Situation: An Empirical Investigation with French Data, 1970-2006

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1. Introduction

In this paper, we conducted a deep empirical analysis of the evolution of public finances over the long term in France. This is motivated by at least three elements.

First, public finances have recently received a great attention due to the setting of the European Union institutions. On the one hand, since monetary policy is in the exclusive remit of an independent central bank, the fiscal policy remains the sole instrument at the disposal of national governments. On the other hand, the deficit is one of the major indicators followed within the framework of the Stability and Growth Pact. So it is important to know precisely the determinants of the evolution of public finances.

Then, fiscal variables are always treated as exogenous by economic bodies and their macroeconometric models, but this leads to poor forecasts. So, endogenizing these variables may improve their forecast.

Finally, this paper provides an opportunity to update the empirical work on the politico-economic determinants of public finances in France. There exists very few contributions with such an aim. We can hardly count five studies (Lecaillon, 1981, Roubini and Sachs, 1989b, Aubin *et al.*, 1985, 1987, Auberger, 2004) and we can note that no study was published in the last two decades.

The paper is organized as follows: the model is presented in section 2 and the estimations are shown and discussed in section 3. Section 4 concludes.

2. The model

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The dependent variable

The dependent variable is the "situation of public finances" (noted SPF). Under this expression, we mean the net lending / net borrowing from the general government[1]. It is computed as the sum of three balances: the central government account balance, the local government account balance and the social security account balance. This balance can be positive (surplus) or negative (deficit)[2]. We have retained the widely used measure of surplus / deficit in % of GDP despite the fact that we have variables related to GDP among our explanatory variables since we hold that this influence on the left side is weak.

Explanatory variables

We have envisaged 16 different explanatory variables, each resting on a different theory[3]. With some differences in the definitions, about sixty variables have been tested. We then opted for an a-theoretical approach because we strongly believe that no single theory can explain alone all the evolution of the public finances situation.

One of the most widespread explanation of surpluses/deficits is the so-called "Wagner's law"[4]. According to this law, the growing industrialization leads to greater State interventionism as the State is in charge of correcting externalities. The desire for social progress also leads to a growing public sector. The variable usually retained to account for the Wagner's law is *per capita* income, in level or in log (Golden and Poterba, 1980, Castles, 1982, Murrell, 1985, Lane and Ersson, 1986, Pampel and Williamson, 1988, Hicks and Swank, 1992, Blais *et al.*, 1993, Pétry and Harmatz, 1994, Clingermayer and Wood, 1995, Franzese, 2000, Milesi-Ferretti *et al.*, 2002, Brender and Drazen, 2003, 2005, Persson and Tabellini, 2005, Streb *et al.*, 2005, Alt and Lassen, 2005, Drazen and Eslava, 2005)[5]. We use these two variables named respectively GDPPC or lnGDPPC.

[1] The unit is the current million of euro.
[2] In France, we speak about "déficit public" which must not be confused with the primary deficit ("deficit budgétaire") that is the balance of the central government account only.
[3] Some of these theories are surveyed by Alesina and Perotti (1995) or Imbeau (2004).
[4] We have not read the publications of Adolph Wagner, exclusively written in German. We refer to the translation of the main passages of these publications in Musgrave and Peacock (1958, 1-15).
[5] One finds also the percentage of children attending school (Castles, 1982), the urbanization rate (Lowery and Berry, 1983) or the number of households (Berry and Lowery, 1987).

In Meltzer and Richard (1981), the size of the State not only depends on the level of the income but also of its distribution. In particular, income's inequalities increases public spending. The Gini's index (McCarty, 1993, Persson and Tabellini, 2005) or the ratio of the mean income on the median income (Meltzer and Richard, 1983) is therefore included. Unfortunately, data necessary to build these variables are not yearly available in France. A related measured can be the electoral turnout. A high turnout means that people with low income participate more which moves the median income from the mean income. This leads to a greater redistribution and then to a larger government size (Murrell, 1985, Mueller and Murrell, 1986, Hicks and Swank, 1992, Comiskey, 1993, Bosch and Suarez-Pandiello, 1995, Brady *et al.*, 2005). We have then included PTURN and LTURN, the turnout rate at the first round of the presidential and legislative elections respectively.

The third theory we mobilize is the demand from socio-demographic and/or economic groups that are highly consumer of public spending. . In this respect, we have identified the young, the old, the unemployed or the veterans but also big firms demanding for larger subsidies or unions asking for more transfers since they usually represent less favoured classes. We can also include the bureaucracy theory according to which the administration asks for public spending in order to increase her welfare (Garand, 1988, Hicks and Swank, 1992, Pétry and Harmatz, 1994)[6]. Overall, we have retained the following variables: sum of the percentage of young and old in the total population (noted YO), the "dependency ratio" (ratio of the sum of people aged 0-14 and people aged 65 and over on people aged 15-64, noted DEP), the unemployment rate (noted UNEM)[7], and the unionization rate (noted UNION). A last variable, not directly linked to a particular group, is a strike variable defined as the total number of working days lost in generalized and localized conflicts in metropolitan France (noted STRIKE).

Linked to the bureaucracy theory, we can mention the incrementalism theory according to which the administration is reluctant to changes which leads to slow fiscal adjustments (Wilenski, 1975*). Scholars often use the lagged endogenous variable is often used to account for this hypothesis (see, among others, Hicks, 1984, Alesina *et al.*, 1992, 1993, de Haan and Sturm, 1994, 1997, Cusack, 1999, Schuknecht, 1999, 2000, and all the works by Bruno Frey

[6] A degree of ethnic fractionalization can also be included to account for the number of groups to be satisfied (McCarty, 1993, Cusack, 1997, Persson and Tabellini, 1999, 2005).
[7] This rate can be taken on December, 31 (UNEM1) or computed as the mean of the quarterly rates (UNEM2).

and Friedrich Schneider) and so do we. This variable accounts for inertia in public finances and for the fact that public spending and revenues are by large renewed year-on-year.

The attention paid by the government to certain socio-economic groups like the unemployed can also express an adjustment of the public finances to the business cycle. Public finances are viewed as a stabilizing or a counter-cyclical policy tool: in recession (respectively, expansion) periods, public spending raises (respectively, decreases) and public revenues diminish (respectively, increase)[8]. The growth rate and/or the unemployment rate are often used to account for this (Golden and Poterba, 1980, Hicks, 1984, Lewis-Beck and Rice, 1985, Berry and Lowery, 1987, Alesina *et al.*, 1992, 1993, Blais *et al.*, 1993, Pétry and Harmatz, 1994). We have retained both here. The unemployment variable, noted UNEM, has been defined previously. GDP is the growth rate of the gross domestic product.

Among classical macroeconomic variables, inflation can also matter (Cowart, 1978, Golden and Poterba, 1980, Alt and Chrystal, 1981, Minford and Peel, 1982, Robertson, 1982, Hicks, 1984, Lowery, 1985, Hibbs, 1987, Pampel and Williamson, 1988, Pack, 1988, Soh, 1988, Hicks *et al.*, 1989, Tabellini and La Via, 1989, McCubbins, 1991, Hicks and Swank, 1992, Blais *et al.*, 1993, Ohlsson and Vredin, 1996, Alesina *et al.*, 1997, Katsimi, 1998, Kontopoulos and Perotti, 1999, Franzese, 2000, Oatley, 1999, Perotti and Kontopoulos, 2002, Mulas-Granados, 2003, Garand and Kapeluck, 2004, Lambertini, 2004, Brady *et al.*, 2005, Streb *et al.*, 2005). It may influence the deficit / surplus in several, and sometimes opposite, ways. For example, inflation makes the deficit easier to finance (since for a fixed nominal interest rate, the real interest rate is reduced) but it also constrains the government not to make an expansionary policy for fear of rising inflation. Three measures of inflation are used here: the growth rate of the Consumer Price Index computed from the annual mean of monthly data (INF1), the growth rate of the Consumer Price Index computed year-on-year on December (INF2) and the GDP deflator (DEF).

Public spending will be all the more significant as the openness degree of the economy is high. Indeed, an economy strongly involved in the international trade will be more exposed to shocks and then the government will have to react accordingly notably by a transfers policy

[8] This can be linked to the fiscal smoothing theory of Barro (1979, 1986) according to which when the economy experiences a recession, it is optimal for the government to maintain the tax constant what leads to deficit and debt accumulation. The reverse occurs during expansion periods.

(Cameron, 1978). The openness degree is usually measured by ratio of the sum of the imports and the exports on the GDP (Cameron, 1978, Castles, 1982, Lewis-Beck and Rice, 1985, Lane and Ersson, 1986, Rice, 1986, Pampel and Williamson, 1988, Cusack *et al.*, 1989, Garrett and Lange, 1991, Hicks and Swank, 1992, Blais *et al.*, 1993, Comiskey, 1993, Cusack, 1999, Schuknecht, 1996, 1999, 2000, Franzese, 2000, Persson and Tabellini, 1999, 2005, Dreher and Vaubel, 2001, Milesi-Ferretti *et al.*, 2002, Brender and Drazen, 2003, 2005, Streb *et al.*, 2005, Alt and Lassen, 2005). We have made this choice as well (variable noted TRADE).

A legal disposal that may affect deficit/surplus is the so-called Maastricht criterion. Since 1992, countries of the Euro area are constrained in their public finances. The yearly deficit cannot exceed 3 % of the GDP. Countries that do not respect this mark face penalties. To see if this framework is dissuasive, we include a dummy variable (noted MAA) that is worth 1 from 1992 and 0 before.

According to the fiscal illusion theory, due to a complex tax system, individuals do not perceive the true cost of public goods and then tend to increase their demand (Buchanan and Wagner, 1977, chapter 9). Fiscal illusion can be measured by, for example, the part of revenues coming from indirect taxes in the total revenues (Garand, 1988, Franzese, 2000) or by an index of complexity of the tax system (Pétry and Harmatz, 1994). We retained the first one (variable noted FISCILL).

The centralization degree of the political system also matters: public spending is better controlled when the system is centralized. The centralization degree can be taken into account through a dummy variable federal system / unitary system as in Castles (1982), Solano (1983), Hicks and Swank (1992) and Persson and Tabellini (2005) or by the ratio spending of central government on spending of general government as in Solano (1983), McCarty (1993), Hicks and Swank (1992), Franzese (2000) and Persson and Tabellini (1999). The last one will be included (variable noted CENT).

The existence of governments formed by a coalition of parties can favour high public spending. Indeed, political objectives that may be conflicting have to be conciliated to satisfy all the parties in the coalition (Solano 1983, Roubini and Sachs, 1989a,b, Grilli *et al.*, 1991, Edin and Ohlsson, 1991, Alesina *et al.*, 1992, 1993, 1997, Blais *et al.*, 1993, Comiskey, 1993,

de Haan and Sturm, 1994, 1997, Borrelli and Royed, 1995, Hahm *et al.*, 1996, Carlsen, 1997, Cusack, 1997, Feld and Kirchgässner, 1999, Kontopoulos and Perotti, 1999, Franzese, 2000, Perotti and Kontopoulos, 2002, Mulas-Granados, 2003, Tavares, 2004). The traditional measure used here is an index built from the number of parties in government. We have followed this choice although we have distinguished between the number of parties among the ministers only (COALa) and among the total government that is the ministers and the secretaries of State (COALb). The problem with such variables is that a party can be represented by only one minister or by only one secretary of State. To take this into account, we have defined COALc and COALd that are the shares of the portfolios held by the Prime minister's party (portfolios of ministers only for COALc and total portfolios for COALd).

Divided governments ("cohabitations" in France) are associated to higher deficits because they usually lead to a lack of reactivity to shocks (Alt and Lowry, 1994, 2000, Poterba, 1994). When different parties control the legislative and executive branch, each brings its own response to shocks whereas when the government is unified, there is a single response. If the government is divided, the negotiation about the response to bring delays the response itself and then leads to a higher deficit. This hypothesis has been tested by Berry and Lowery (1987), McCubbins (1991), Alt and Lowry (1994), Clingermayer and Wood (1995), Bohn and Inman (1996), Garand and Kapeluck (2004), and Lambertini (2004). To account for divided governments in France, we use a simple dummy variable, noted DIV, that is worth 1 the years of divided government and 0 otherwise.

Sometimes, the size of government (*i.e.* the number of ministers in government) is also viewed as a factor that may enhance the deficit (Kontopoulos and Perotti, 1999, Perotti and Kontopoulos, 2002, Mulas-Granados, 2003). We include such a variable (noted GOVMIN). A second variable, noted GOVTOTAL, includes the secretaries of State beside the ministers.

When the election is tight, parties in competition have to multiply campaign promises to satisfy various interest groups which leads to high deficit (Rogers and Rogers, 2000, Besley and Case, 2003). Here, party competition (noted COMP) is measured by the electoral margin in seats which is computed as the percentage of seats held by the winner of the last legislative election minus 50.

Finally, public finances move according to the electoral calendar. It is referred as "Politico-economic cycles". Two kinds of politico-economic cycles can be distinguished.

According to the first one, prior the election, the incumbent creates a deficit to enhance her probability to win (Nordhaus, 1975, Tufte, 1978, Rogoff and Sibert, 1988, Rogoff, 1990). This is the so-called "political business cycle" or "opportunistic cycle" theory. Classical dummies (Golden and Poterba, 1980, Blais and Nadeau, 1992, van Dalen and Swank, 1996), the proximity to the election (Hicks, 1984) or the popularity index (Lecaillon, 1981, Golden and Poterba, 1980, Hicks, 1984, Pétry and Harmatz, 1995) are used to test this theory. We defined three dummies for our study: OPPORT1 is worth 1 on the election year and 0 otherwise; OPPORT2 is worth 1 on the election year and the year before and 0 otherwise; OPPORT3 is worth 1 on the year prior to the election year and 0 otherwise. PROX is an index that is worth 1 on the election year, 2 on the year before, and so on until the previous election. POPPM is the ratio between people who were satisfied with the Prime Minister and those who were not and POPDIV is the ratio between people who were satisfied with the President and those who were not except during periods of divided government where the popularity under consideration is the Prime minister's one. POPPM and POPDIV are labelled a, b, or c if the measure is taken in quarter 1, 2, or 3 the year prior to the election year. For all these variables, we include legislative and presidential elections and only elections that could be expected (we removed the 1974 presidential election and the 1997 legislative election). As we can see, all these variables suppose that the opportunistic manipulations are systematic (*i.e.* occur prior to each election). In line with the works of Bruno Frey and Friedrich Schneider[9], we can also suppose that the government make a deficit only if she is unsure about her re-election. They built a popularity index by using a threshold so that before the election, the incumbent pursue her ideological goals if her popularity is above the threshold and exhibits an opportunistic behaviour if her popularity is below the threshold. The problem here is to find the correct value of the threshold. For example, in France, the Prime Minister won the 1978 legislative election with a ratio of popularity of 0.9 and loss the 1988 legislative election with a ratio of 1.1. We have therefore chosen to move this option apart.

The second type of politico-economic cycles is labelled as "partisan". The study of partisan behaviour of government goes back to Downs (1957), Kirschen *et al.* (1964), Frey and Lau (1968), and Hibbs (1977). Unfortunately, no test of the partisan theory in French

[9] See for example, Frey and Schneider (1978a,b) and also Aubin *et al.* (1985, 1987) in the French case.

fiscal variables exists[10]. In other countries, several variables have been used to test the partisan hypothesis. The first one is the percentage of ministerial portfolios held by the Left or by the Right (Comiskey, 1993, Blais *et al.*, 1993, 1996, van Dalen and Swank, 1996, de Haan and Sturm, 1997, Boix, 2000, Mulas-Granados, 2003). The second one is the "gravity centre" computed as the sum of the percentage of ministerial portfolios, vote, or seats multiplied by an index on a Left-Right scale (Cusack, 1997, 1999, Franzese, 2000). In addition, we find the vote for the Left or the Right (Solano, 1983, Hicks and Swank, 1984), the percentage of seats held by the Left or the Right at the parliament (Castles, 1982, Robertson, 1982, Laney and Willett, 1983, Murrell, 1985, Rice 1986, Swank, 1988, Kirchgässner and Pommerehne, 1997, Perotti and Kontopoulos, 2002, Besley and Case, 2003) or the classical dummy variable (among others, Hibbs, 1987, Alesina, 1988, Alesina *et al.*, 1997). We have not considered here the first measure since in France, with very rare exceptions[11], the Left (or the Right) holds all the ministerial portfolios when she is ruling. In a similar vein, the gravity centre was excluded since it was too difficult to rank some parties on the Left-Right scale[12]. We finally retain the percentage of legislative vote (VOT), the percentage of parliamentary seats (SEATS) and the classical dummy variable (PART)[13]. In order to account for the fact that the partisan effect could be amplified, we add two variables taking into account the power of Communists when the Left is ruling: COM is a dummy variable that is worth 1 when Communists are part of the government and 0 elsewhere and MIN_COM is the percentage of minister portfolios held by Communists.

Before closing this paragraph, a particular kind of partisan variables has to be mentioned. The traditional Left / Right dummy can be corrected to test the strategic use of debt theory. In a fiscal regression, Pettersson-Lidbom (2001) introduces an interaction term between the probability of defeat of the incumbent and a partisan dummy variable (1 if left is incumbent, 0 otherwise). A negative coefficient thus indicates a strategic use of the deficit in line with Persson and Svensson (1989). The general idea is that prior to an uncertain election, the incumbent party spends according to her ideological goals, leaving her successor a debt to reimburse and a debt-servicing to pay. The incumbent government can therefore constrain the incoming government by reducing her room to manoeuvre. Persson and Svensson (1989) show that the less (more) spendthrift party diminishes (increases) tax and then raises

[10] Siné (2006) concludes in the absence of partisan differences but his not *ceteris paribus* analysis can cast the doubt on this conclusion (he does not use an econometric regression but simply a plot of fiscal data over time).
[11] The 1988-1991period with some centrist ministers in a left-wing government.
[12] Notably ecologist parties.
[13] All these variables are defined for the Left.

(decreases) the debt, which constrains (helps) the new government. The problem with using probability of defeat (or victory) is always the same: how to compute this probability? Several methods have been proposed in the literature: to take the actual result of the election (known ex-post) (Pettersson-Lidbom, 2001), to estimate a probit model where the probability is determined by the politico-economic situation in a style-like vote-equation (Pettersson-Lidbom, 2001), to take one minus the incumbent vote from vote intentions polls (Lambertini, 2004), to compute a probability by using the forecasted vote from a vote-equation (Chappell and Keech, 1988) or from vote intentions polls (Cohen, 1993[14]). Unfortunately, none of these methods are satisfying here. All the methods using a vote-equation rest on the strong hypothesis that the incumbent has this equation in mind. Furthermore, the sample to estimate such an equation is rather short (8 presidential elections and 13 legislative elections since 1958). For methods involving vote intentions polls, the problem lies in the availability of the data. Frequent vote intentions polls outside the electoral campaign go back to the middle of the 1980's only. For these reasons, we used the ex-post probability. Then, STRAT is worth 1 (resp. -1) in the election year if the Right (resp. Left) lost the election, and 0 otherwise. Of course, it is not entirely satisfying since it supposes that the incumbent perfectly forecasts her result in the forthcoming election.

Since in France elections usually take place in Spring, most of these variables are labelled "1" or "2" according to the status of the election year, "1" meaning that the election year is counted for the previous government and "2" meaning that the election year is counted for the new government. The concerned variables are PTURN, LTURN, DIV, LEFT, GOVMIN, GOVTOTAL, SEATS, VOTE, COMP, COM, MIN_COM, and the four COAL variables. The choice of variables of type 2 can be justified by the practice of the so-called "rectifying laws"[15] that enables to update, during the year n, the budget of the year n voted in Fall the year n-1. For example, in 1981, the Left won the elections in May and June and the National Assembly voted four rectifying laws between June and December 1981. So the 1981 budget can be considered as a left-wing one.

[14] We have not read the Ph.D. dissertation of Gerald Cohen. We refer to what Alesina *et al.* (1997) say about this work.
[15] In French "collectif budgétaire" or "loi de finances rectificative".

To summarize all the hypotheses that need to be tested, we report in Table 1 the expected sign of each variable. We recall that positive (resp. negative) values of the dependent variable indicate a surplus (resp. deficit) in budget balance.

Table 1. Expected signs

Variable	Theory tested	Expected sign
CENT	Centralization	positive
COAL	Coalition	negative
COM, MIN_COM	Partisan cycles	negative
COMP	Electoral competition	positive
DEF, INF1, INF2	Inflation	?
DEP, YO	Socio-economic group	negative
FISCILL	Fiscal illusion	negative
GDP	Business cycle	positive
GDPPC, LNGDPPC	Wagner's law	negative
GOVMIN, GOVTOTAL	Size of government	negative
LEFT	Partisan cycles	negative
MAA	International constraint	positive
OPPORT	Opportunistic cycles	negative
POPDIV, POPPM	Popularity	positive
PROX	Opportunistic cycles	positive
PTURN, LTURN	Inequalities	negative
SEATS	Partisan cycles	negative
SPF (lagged)	Incrementalism	positive
STRAT	Strategic use	negative
STRIKE, LNSTRIKE	Socio-economic group	negative
TRADE	Socio-economic group	negative
UNEM	Business cycle	negative
UNION	Socio-economic group	negative
VOT	Partisan cycles	negative

Other variables not considered here

Our study concerns a single country. As a consequence, several theories will not be tested since they are relevant to explain observed differences between countries only. Most of these theories or hypotheses rely on institutional design: political system (presidential / parliamentary), electoral rule (plurality / majority), budgetary rules, the democratic nature of the regime, and the political instability (among others).

Some non-testable theories due to the lack of data are also not considered here. This is the case for example of the neo-marxist theory labelled as "economic structuralism". For the capitalist State, one of the main concerns is capital accumulation. The monopoly sector is viewed as an efficient mean to achieve this accumulation and the State has to be benevolent toward this sector. Monopoly sector development is then associated with large size of government (O'Connor, 1973). The measure usually used was the assets of monopoly sector

firms expressed in % of GDP. This information, quite widespread in certain reviews designed for the general public, is, to our knowledge, no longer available. Data availability also prevents us from including many other controls such as the percentage of civil servants or veterans in the population, the urban population, the number of interest groups, etc.

We can also note that many studies include debt-servicing among the determinants of deficits (Roubini and Sachs, 1989a,b, Edin and Ohlsson, 1991, Alesina *et al.*, 1992, 1993, 1997, de Haan and Sturm, 1994, 1997, Borrelli and Royed, 1995, Hahm *et al.*, 1996, Carlsen, 1997, Franzese, 2000, Boix, 2000, Lambertini, 2004, Alt and Lassen, 2005). Although this fact that this variable is often relevant, it has not been considered here since we believe that it amounts to explain the deficit by itself.

3. Estimates

Our sample ranges from 1970 to 2006, a period that corresponds to the availability of the data. Moreover, it is composed of yearly data since most variables are not available at an infra-annual level (for example, all the socio-demographic variables).

Since the sample is rather small, we have to be very cautious regarding the way the estimation is performed.

First, we have stationarized all the non stationary series following the conclusions of the Phillips-Perron test[16]. Even if a long-term relationship was hard to find, we have checked if there were some co-integration between our dependent variable and other controls that were I(1)[17]. To do so, we have implemented the two-step Engle-Granger procedure by testing the stationarity of the residuals from the co-integrating regression[18]. We can also suspect the presence of co-integration among explanatory variables. For example, DEP and YO obviously share a long-term relationship. As far as these cases are concerned, there is no need to treat co-integration since these variables will not enter simultaneously in the regression. The pair of I(1) variables that may imply a treatment is COAL and GOVMIN. It is well-known that governments forming a coalition tend to be large. We have tested a possible co-integration relationship between these two variables but failed to find any.

[16] See Table 4 in annex. Since the test is meaningless for dummies, it has then not been performed for COM, DIV, LEFT, MAA, OPPORT, SGP, and STRAT. Stationarity of COALa, COALb, LTURN, PTURN, SEATS, and VOT has not been tested either due to their particular step-shape.
[17] See Table 5 in annex.
[18] We used the augmented Dickey-Fuller test for this purpose.

Let us turn to the estimation now. Since we have a lot of potential explanatory variables but a small sample, we have to be stingy regarding the number of degrees of freedom. The strategy is the following one. First, we have tested the group of socio-economic variables (DEP, GDPPC, SPF(-1), STRIKE, TRADE, UNION, YO) and business cycle variables (DEF, GDP, INF1, INF2, UNEM1, UNEM2). The reason for that lies in the fact that these variables are used to test early theories of the literature. They can be regarded as "traditional" explanations of surplus / deficit. In a second step, we have added the politico-economic cycles variables since, among all the political economy theories developed until now, the politico-economic cycles explanation is the older one (COM, LEFT, MIN_COM, SEATS, VOT for the partisan theory and OPPORT, POPDIV, POPPM, PROX for the opportunistic theory). Finally, we have included all the remaining variables[19].

Before entering each variable, we have examined possible multicolinearity with other explanatory variables[20]. For each regression, we have also performed three tests: the Ljung-Box test to detect auto-correlation in the residuals (Q-statistics), the Ljung-Box test to detect conditional heteroskedasticity in the residuals (Q^2-statistics), and the Jarque-Bera test to check the normality of the residuals (JB-statistics)[21]. The latter test is particularly important for us since we have a small sample and we are not sure about the validity of the asymptotic theory. Finally, each estimate is made robust to heteroskedasticity by applying the White correction.

Table 6 displays the first set of results.

[19] Before entering each variable, we have checked for possible multicolinearity among explanatory variables (see Table 6 in annex). Please note that in a subsequent version of the paper, partial correlations will be tested according to the "ridge regressions" method.

[20] The correlations matrix, too large to be shown here, is available upon request from the author.

[21] For the three of them, we only report the p-values. The null is respectively the absence of auto-correlation in the residuals, the absence of conditional heteroskedasticity in the residuals and the normality of the residuals.

Table 6. Estimate results: Business cycle

Explanatory variables	Dependent variable: SPF					
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-0,66**	0,02	0,03	-0,08	-0,08	-0,08
	(2,29)	(0,15)	(0,22)	(0,55)	(0,53)	(0,52)
GDP	0,23**	-	-	-	-	-
	(2,56)					
UNEM1	-	-0,60***	-	-	-	-
		(2,86)				
UNEM2	-	-	-0,70***	-	-	-
			(3,76)			
INF1	-	-	-	-0,06	-	-
				(1,10)		
INF2	-	-	-	-	-0,04	-
					(0,70)	
DEF	-	-	-	-	-	-0,08
						(1,18)
N	36	36	36	36	36	36
Adj. R^2	0,14	0,17	0,27	0,01	0,00	0,01
P-value Q	0,42	0,37	0,72	0,30	0,20	0,23
P-value Q^2	0,53	0,72	0,91	0,77	0,67	0,74
P-value JB	0,73	0,63	0,52	0,62	0,62	0,64

The business cycle hypothesis is supported by our data when GDP or UNEM is used as measure of it. For the next step, we have retained UNEM2. None of the inflation variables are significant at an acceptable level. INF1 and DEF may be kept in the regression since their Student t is above 1 but when they are included with UNEM2, their Student t fall below 1.

Table 7. Estimate results: Socio-economic groups

Explanatory	Dependent variable: SPF					
variables	(7)	(8)	(9)	(10)	(11)	(12)
Intercept	-0,45	-0,01	0,03	0,03	-0,03	-0,26
	(0,27)	(0,07)	(0,24)	(0,27)	(0,06)	(1,54)
UNEM2	-0,74***	-0,75***	-0,74***	-0,70***	-0,69***	-0,44*
	(3,72)	(3,92)	(3,67)	(3,71)	(2,99)	(1,90)
lnSTRIKE	0,07	-	-	-	-	-
	(0,30)					
DEP	-	-0,23	-	-	-	-
		(0,73)				
SPF(-1)	-	-	-0,08	-	-	-
			(0,59)			
lnGDPPC	-	-	-	-1,27	-	-
				(0,23)		
UNION	-	-	-	-	0,01	-
					(0,23)	
TRADE	-	-	-	-	-	0,23*
						(1,84)
N	35	36	35	36	31	36
Adj. R^2	0,25	0,26	0,26	0,25	0,22	0,31
P-value Q	0,57	0,66	0,73	0,77	0,83	0,69
P-value Q^2	0,91	0,86	0,92	0,94	0,89	0,50
P-value JB	0,52	0,42	0,50	0,49	0,47	0,73

None of the socio-economic groups variables significantly improve the results. Only TRADE is significant at 10 % but it comes with the wrong sign. Moreover, since TRADE and UNEM2 are slightly correlated (r=0.65), the inclusion of TRADE leads to a loss of significativity regarding the coefficient of UNEM2. For this reason, we have chosen not to keep TRADE for the next step. We can also note that substituting STRIKE to lnSTRIKE, GDPPC to lnGDPPC, or YO to DEP, does not change the results.

Table 8a. Estimate results: Opportunistic cycles

Explanatory variables	Dependent variable: SPF				
	(13)	(14)	(15)	(16)	(17)
Intercept	0,20	0,29	0,03	-0,31	-0,30
	(1,54)	(1,65)	(0,17)	(1,26)	(1,25)
UNEM2	-0,63***	-0,69***	-0,70***	-0,68***	-0,66***
	(3,84)	(4,03)	(3,80)	(3,84)	(3,36)
OPPORT1	-0,84***	-	-	-	-
	(3,56)				
OPPORT2	-	-0,56**	-	-	-
		(2,33)			
OPPORT3	-	-	0,02	-	-
			(0,07)		
PROX	-	-	-	0,12	-
				(1,58)	
POPDIVb	-	-	-	-	0,24
					(1,46)
N	36	36	35	36	36
Adj. R^2	0,41	0,36	0,25	0,29	0,28
P-value Q	0,26	0,41	0,73	0,54	0,63
P-value Q^2	0,79	0,68	0,92	0,91	0,75
P-value JB	0,70	0,74	0,51	0,42	0,59

Our data strongly support the opportunistic view of politico-economic cycle as indicated by OPPORT1. Electoral manipulations seem to take place on the election year and not the year before (OPPORT3 not significant). There is also evidence of continuous manipulations (*i.e.* outside the election year) as shown by PROX and POPDIVb[22] but these effects are weak. It can be noted that the correlation between UNEM2 and OPPORT1 is only equal to 0.15. This means that there is no opportunistic cycle in unemployment or, at least, that this cycle is not strong enough.

[22] We have to mention that POPDIVd is the only popularity variable that has a Student t larger than 1.

Table 8b. Estimate results: Partisan cycles

Explanatory variables	Dependent variable: SPF					
	(18)	(19)	(20)	(21)	(22)	(23)
Intercept	0,42**	1,81*	0,60*	0,42**	0,42**	0,21
	(2,28)	(1,93)	(1,73)	(2,23)	(2,23)	(1,52)
UNEM2	-0,66***	-0,58***	-0,62***	-0,65***	-0,65***	-0,63***
	(4,00)	(3,44)	(3,76)	(3,80)	(3,78)	(3,83)
OPPORT1	-0,93***	-0,92***	-0,90***	-0,94***	-0,94***	-0,86***
	(4,15)	(3,90)	(3,70)	(4,04)	(4,03)	(3,75)
LEFT2	-0,46**	-	-	-0,54*	-0,56*	-
	(2,10)			(1,88)	(1,95)	
VOT2	-	-0,03*	-	-	-	-
		(1,78)				
SEATS2	-	-	-0,01	-	-	-
			(1,37)			
COM2	-	-	-	0,16	-	-
				(0,56)		
MIN_COM2	-	-	-	-	0,02	-
					(0,70)	
STRAT	-	-	-	-	-	-0,16
						(0,72)
N	36	36	36	36	36	36
Adj. R^2	0,46	0,44	0,42	0,45	0,45	0,40
P-value Q	0,86	0,71	0,56	0,86	0,85	0,25
P-value Q^2	0,85	0,66	0,72	0,89	0,91	0,83
P-value JB	0,95	0,93	0,89	0,95	0,95	0,68

For Alesina *et al.* (1997), the French case is emblematic of the partisan theory. When we read the table above, even if the partisan cycle is present in the data, one can say that its effect is weak. The presence of Communists in governments does not have any impact[23]. Finally, the strategic use of deficit theory is rejected. One can note that all the partisan variables in this table consider that the election year belongs to the newly elected party (since they are labelled "2"). Taking the alternative definition does not change the results.

[23] There is obviously a high correlation between LEFT2 and the communist variables since Communists only take part in left-wing governments.

Table 9. Estimate results: Remaining variables

Explanatory variables	Dependent variable: SPF							
	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)
Intercept	0,65	0,44**	0,34	0,44**	-3,10	0,42**	0,42	0,79*
	(0,40)	(2,06)	(0,21)	(2,28)	(1,31)	(2,13)	(1,36)	(1,94)
UNEM2	-0,66***	-0,68***	-0,66***	-0,70***	-0,75***	-0,66***	-0,66***	-0,70***
	(3,74)	(3,59)	(3,94)	(3,22)	(4,34)	(4,19)	(3,86)	(4,03)
OPPORT1	-0,94***	-0,93***	-0,93***	-0,90***	-0,92***	-0,93***	-0,93***	-0,95***
	(4,03)	(4,12)	(4,09)	(3,92)	(4,42)	(3,89)	(4,09)	(3,92)
LEFT2	-0,47*	-0,47**	-0,45*	-0,45*	-0,52**	-0,45**	-0,46*	-0,42*
	(2,02)	(2,08)	(1,90)	(1,92)	(2,25)	(2,05)	(1,82)	(1,98)
CENT	-0,01	-	-	-	-	-	-	-
	(0,14)							
MAA	-	-0,05	-	-	-	-	-	-
		(0,17)						
FISCILL	-	-	0,00	-	-	-	-	-
			(0,05)					
DIV2	-	-	-	-0,11	-	-	-	-
				(0,40)				
PTURN2	-	-	-	-	0,04	-	-	-
					(1,46)			
GOVMIN2	-	-	-	-	-	0,00	-	-
						(0,15)		
COMP2	-	-	-	-	-	-	0,00	-
							(0,00)	
COALd2	-	-	-	-	-	-	-	-0,00
								(1,24)
N	36	36	36	36	36	36	36	36
Adj. R^2	0,44	0,44	0,44	0,45	0,48	0,44	0,44	0,47
P-value Q	0,84	0,86	0,86	0,85	0,94	0,83	0,86	0,87
P-value Q^2	0,85	0,86	0,85	0,86	0,95	0,86	0,85	0,94
P-value JB	0,97	0,92	0,95	0,95	0,68	0,95	0,95	0,95

Once again, no additional controls are significant at a conventional level. Only COAL and PTURN slightly improve the results, the latter coming with the wrong sign. We can note that including LTURN2 instead of PTURN2, GOVTOTAL2 instead of GOVMIN2, or COALa, b, c instead of COALd does not change anything. Using type 1 variables neither.

To be added here: endogeneity, robustness and stability checking (bootstrap, CUSUM).

Finally, among all the potential explanatory variables considered here, few are relevant in explaining the situation of public finances in France, over the period 1970-2006. Table 10 summarizes the findings.

Table 10. Summarize of the findings

Variable	Theory tested	Conclusion
CENT	Centralization	rejected
COAL	Coalition	mixed
COM, MIN_COM	Partisan cycles	rejected
COMP	Electoral competition	rejected
DEF, INF1, INF2	Inflation	rejected
DEP, YO	Socio-economic group	rejected
FISCILL	Fiscal illusion	rejected
GDP	Business cycle	accepted
GDPPC, LNGDPPC	Wagner's law	rejected
GOVMIN, GOVTOTAL	Size of government	rejected
LEFT	Partisan cycles	accepted
MAA	International constraint	rejected
OPPORT	Opportunistic cycles	accepted
POPDIV, POPPM	Popularity	mixed
PROX	Opportunistic cycles	mixed
PTURN, LTURN	Inequalities	rejected
SEATS	Partisan cycles	mixed
SPF (lagged)	Incrementalism	rejected
STRAT	Strategic use	rejected
STRIKE, LNSTRIKE	Socio-economic group	rejected
TRADE	Socio-economic group	mixed
UNEM	Business cycle	accepted
UNION	Socio-economic group	rejected
VOT	Partisan cycles	mixed

Most of the old theories and hypotheses are rejected except the business cycle one. Among political economy theories and hypotheses, only politico-economic cycles ones are relevant. It is interesting to note that both opportunistic and partisan views are supported by the data.

In future, at least two issues, already mentioned above, will have to be examined. The first one is the fact that GDP appears in both sides of the equation to be estimated. It is in the dependent variable of course but also in GDP, GDPPC, lnGDPPC, and TRADE. One can think that it would be relevant to change the measure of surplus / deficit. Gross figures of surplus / deficit are too large to be used and one cannot take the logarithm since the series includes negative values. A track would be to take the log of the level of debt. If this series is a DS process (and if it has to be differentiated), a measure of the evolution of surplus / deficit is obtained. The second point is the frequency of data. Our sample is probably too small to emphasize specific influences. We took annual data because some variables were not available at a lower level (DEP, YO, UNION and maybe CENT, FISCILL, TRADE). In future, one will have to estimate a quarterly model. To do so, quarterly interpolations of annual data will be necessary.

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Annex

Table 2. Sources of data

Variable	Source
CENT, DEF, INF1, INF2, FISCILL, GDPPC, LNGDPPC, GDP, SPF, TRADE, UNEM	SourceOECD
COAL, COM, MIN_COM, GOVMIN, GOVTOTAL	Computations of the author from the composition of goverment as displayed by the National Assembly website
COMP, PTURN, LTURN, SEATS, VOT	Computations of the author from his own database of electoral results (ultimate source: ministère de l'Intérieur)
DEP, YO	World Bank
POPDIV, POPPM	Computations of the author from his own database of IFOP surveys (ultimate source: IFOP)
STRIKE, LNSTRIKE	EUROSTAT

Table 3. Descriptive statistics (after stationarization if needed)

Variable	Minimum	Maximum	Mean	Median	Standard Dev.
CENT	39,27	51,64	43,30	42,10	3,38
COALa1	2,00	5,00	3,08	3,00	1,05
COALb1	25,00	93,55	65,48	69,09	18,69
COALc1	2,00	6,00	3,53	4,00	1,32
COALd1	16,67	95,35	61,97	71,43	23,20
COALa2	2,00	5,00	3,11	3,00	1,04
COALb2	25,00	93,55	64,72	65,91	18,19
COALc2	2,00	6,00	3,61	4,00	1,32
COALd2	16,67	95,35	61,45	71,43	22,74
COM1	0,00	1,00	0,22	0,00	0,42
COM2	0,00	1,00	0,22	0,00	0,42
COMP1	2,25	34,68	14,78	10,89	10,82
COMP2	2,25	34,68	14,44	10,89	10,47
DEP	-1,16	0,35	-0,20	-0,09	0,43
DEF	-3,89	4,88	0,14	-0,39	2,26
DIV1	0,00	1,00	0,25	0,00	0,44
DIV2	0,00	1,00	0,25	0,00	0,44
FISCILL	29,71	38,42	32,23	31,54	2,32
GDP	-0,97	6,55	2,53	2,34	1,63
GDPPC	-586,87	599,31	16,99	66,07	339,01
GOVMIN1	-11,00	14,00	0,36	0,00	4,42
GOVMIN2	-11,00	14,00	0,36	0,00	4,42
GOVTOTAL1	30,00	51,00	39,69	39,50	5,54
GOVTOTAL2	30,00	51,00	39,89	39,50	5,38
INF1	-4,90	6,02	0,14	-0,16	2,63
INF2	-4,32	6,61	0,17	-0,35	2,62
LEFT1	0,00	1,00	0,42	0,00	0,50
LEFT2	0,00	1,00	0,42	0,00	0,50
LNGDPPC	-0,06	0,04	0,00	0,00	0,02
LNSTRIKE	6,38	8,68	7,55	7,50	0,63
LTURN1	65,12	83,25	72,75	70,18	6,60
LTURN2	65,12	83,25	72,33	69,50	6,60
MAA	0,00	1,00	0,39	0,00	0,49
MIN_COM1	0,00	12,50	2,41	0,00	4,60
MIN_COM2	0,00	12,50	2,41	0,00	4,60
OPPORT1	0,00	1,00	0,22	0,00	0,42
OPPORT2	0,00	1,00	0,47	0,00	0,51
OPPORT3	0,00	1,00	0,25	0,00	0,44
POPDIVa	0,41	2,71	1,27	1,25	0,53
POPPMa	0,37	2,43	1,08	1,06	0,48
POPDIVb	0,48	3,00	1,34	1,24	0,59
POPPMb	0,45	3,35	1,29	1,15	0,69
POPDIVc	0,47	2,54	1,36	1,29	0,57
POPPMc	0,49	2,86	1,36	1,21	0,64
PROX	1,00	5,00	2,69	2,50	1,35
PTURN1	72,84	84,90	80,53	81,48	3,47
PTURN2	72,84	84,90	80,39	81,48	3,68
SEATS1	15,32	68,14	42,51	41,98	16,86
SEATS2	15,32	68,14	42,85	41,98	16,48
SPF	-2,15	1,42	-0,09	-0,04	0,90
STRAT	-1,00	1,00	-0,03	0,00	0,38
STRIKE	589,00	5883,20	2282,21	1816,50	1398,33
TRADE	-1,62	4,82	1,05	0,88	1,25
UNEM1	-1,30	1,40	0,18	0,20	0,66
UNEM2	-1,30	1,60	0,17	0,20	0,69
UNION	9,64	22,17	14,66	12,47	4,99
VOT1	36,07	56,85	47,44	47,20	5,88
VOT2	36,07	56,85	47,53	47,20	5,82
YO	-0,48	0,15	-0,08	-0,04	0,18

Table 4. Stationarity test

Variable	Step 1		Step 2		Step 3	Conclusion
	Trend	PP stat	Drift	PP stat	PP stat	
CENT	-0,42	-1,52	3,10***	-3,64***	-	stationary
COALa1	-0,64	-3,09	2,74***	-3,09**	-	stationary
COALa2	-0,48	-3,11	2,81***	-3,14**	-	stationary
COALb1	1,72*	-2,70	1,96*	-2,13	-0,13	DS without drift
COALb2	1,61	-2,67	2,01*	-2,19	-0,13	DS without drift
COALc1	-1,60	-3,26*	2,34**	-2,77*	-	DS with drift
COALc2	-1,62	-3,24*	2,34**	-2,73*	-	DS with drift
COALd1	1,82*	-2,72	1,90*	-2,21	-0,49	DS without drift
COALd2	1,61	-2,62	1,94*	-2,25	-0,49	DS without drift
DEF	-2,19**	-2,38	-	-	-	TS
DEP	1,58	-0,96	2,20**	-1,78	-	DS with drift
FISCILL	0,06	-1,80	2,87**	-2,98**	-	stationary
GDP	-1,29	-4,30***	3,32***	-4,08***	-	stationary
GDPPC	2,56**	-2,90	-	-	-	TS
GOVMIN1	1,09	-2,68	2,39**	-2,40	-	DS with drift
GOVMIN2	1,11	-2,67	2,38**	-2,37	-	DS with drift
GOVTOTAL1	-0,92	-3,35*	3,21***	-3,29**	-	stationary
GOVTOTAL2	-0,68	-3,43*	3,34***	-3,44**	-	stationary
INF1	-2,20**	-2,45	-	-	-	TS
INF2	-2,65**	-2,92	-	-	-	TS
LNGDPPC	2,90***	-3,29*	-	-	-	TS
LNSTRIKE	-3,30***	-5,92***	-	-	-	stationary
SPF	-0,87*	-2,26	-1,95*	-2,09	-0,84	DS without drift
POPDIVa	-1,74*	-3,61**	2,74***	-2,96**	-	stationary
POPDIVb	-1,61	-5,09***	4,22***	-4,71***	-	stationary
POPDIVc	-1,30	-3,71**	3,16***	-3,39**	-	stationary
POPPMa	-1,16	-3,32*	2,77***	-2,99**	-	stationary
POPPMb	0,10	-4,39***	3,86***	-4,46***	-	stationary
POPPMc	-0,07	-6,54***	5,09***	-6,87***	-	stationary
PROX	0,35	-4,97***	4,47***	-5,03***	-	stationary
MIN_COM1	0,35	-2,73	1,23	-2,75*	-2,41**	stationary
MIN_COM2	0,21	-2,71	1,23	-2,75*	-2,41**	stationary
STRIKE	-2,96***	-5,98***	-	-	-	stationary
TRADE	1,27	-0,81	-0,11	1,47	5,51	DS without drift
UNEM1	-1,08	-0,64	2,55**	-1,93	-	DS with drift
UNEM2	-1,20	-0,53	2,50**	-1,99	-	DS with drift
UNION	0,24	-0,92	-0,42	-0,87	-2,86***	stationary
YO	1,53	-0,98	2,19**	-1,76	-	DS with drift

Note: For the truncation lag, we have retained the default value suggested by Eviews.

Table 5. Cointegration test (between SPF and explanatory variables)

Variable	Number of lags	Step 1		Step 2		Step 3	Conclusion
		Trend	ADF stat	Drift	ADF stat	ADF stat	
COALb1	0	-0,44	-2,18	-0,49	-2,11	-2,13	No cointegration
COALb2	0	-0,54	-2,05	-0,46	-2,20	-2,23	No cointegration
COALc1	0	-0,89	-2,91	-0,16	-2,87	-2,91	No cointegration
COALc2	0	-1,19	-3,35	-0,17	-3,18	-3,23	No cointegration
COALd1	0	-0,37	-1,92	-0,55	-2,17	-2,20	No cointegration
COALd2	0	-0,47	-1,99	-0,54	-2,21	-2,23	No cointegration
COMP1	0	-0,86	-2,04	-0,61	-2,04	-2,06	No cointegration
DEP	1	-0,54	-2,96	-0,02	-2,95	-2,99	No cointegration
GOVMIN1	1	-1,25	-3,09	-0,33	-2,95	-2,97	No cointegration
GOVMIN2	0	-1,44	-3,33	-0,20	-3,04	-3,08	No cointegration
SEATS1	1	-1,40	-2,58	-0,49	-2,22	-2,24	No cointegration
SEATS2	0	-0,76	-2,02	-0,65	-2,11	-2,14	No cointegration
TRADE	0	0,34	-1,79	-0,11	-2,02	-2,04	No cointegration
UNEM1	0	0,01	-2,81	-0,01	-2,85	-2,89	No cointegration
UNEM2	0	-0,11	-2,82	-0,01	-2,86	-2,90	No cointegration
VOT1	0	-0,86	-2,04	-0,60	-2,03	-2,05	No cointegration
VOT2	0	-0,78	-2,14	-0,65	-2,23	-2,26	No cointegration
YO	1	-0,55	-2,95	-0,03	-2,94	-2,99	No cointegration

Note: The critical values at 5 % for a number of observations equal to 50 and a number of variables equal to 2 are -3.67 for a number of lags equal to 0 and -3.29 for a number of lags equal to 4 (Engle and Yoo, 1987, 157 and 158). The number of lagged differences terms has been chosen according to the Akaike information criterion.