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THE OPPOSITE CYCLES OF LAWS AND DECREES

ABSTRACT

We test two predictions of the political legislation cycle theory, that legislators maximize their reelection probabilities concentrating the approbation of general purpose laws, in the interest of unorganized voters, before the elections, while they satisfy special interest groups' demands in return of rents at the beginning of the legislature by means of less visible decrees. This discrimination in time and the choice of legislative instruments with different degrees of visibility minimizes the electoral costs of satisfying lobbies' interests. A multilevel analysis of the sample of Italian legislation between 1948 and 2008, carried out by a Poisson regression with bivariate random effects, accounts for correlation at different levels of the data and strongly supports the hypothesis of opposite cycles in decrees and laws.

KEYWORDS: Economic theory of legislation - Multilevel models - Poisson regression - Political legislation cycle - Random effects - Voters - Special interest groups

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1. *Introduction*

This paper examines two joint empirical restrictions of the theory of the political legislation cycle (Lagona and Padovano, 2008; Wittman, 1997; Padovano, 1995) that have not been tested so far, namely: a) legislators tend to use different legislative instruments to satisfy the demands of organized special interest groups and unorganized voters; b) to maximize political returns, they concentrate the supply of these legislative acts in two separate periods of the legislature.

The theory underlying these predictions is based on Lagona and Padovano (2008) and Padovano (1995), but can also be related to the literature on composition cycles (Rogoff, 1990; Shi and Svensson, 2006). To avoid repetitions, here we will describe only the logic of the argument. The model is based on the interactions between organized special interest groups, unorganized voters and elected legislators. Interest groups and voters demand legislation in exchange of, respectively, resources and votes. Legislators supply legislation and maximize a utility function that includes resources from interest groups and votes from voters. To legislators resources obtained from interest groups represent a rent from holding office, while votes are needed for reelection. To supply legislation, legislators must gather a 51\% majority of votes in the Parliament throughout the duration of the legislature. In line with the economic theory of legislation, laws (of any type) are assumed to be redistributive in nature; legislators act as brokers, in that they supply laws to groups that are politically more rewarding to benefit at the expense of groups that are politically less costly to damage. It is an established result (Weingast and Marshall, 1988) that this implies concentrating the benefits on interest groups that are high demanders of a particular legislation and spreading the costs over the largest possible pool of unorganized voters. This creates a trade-off between satisfying the demands of interest groups' and those of voters (Olson, 1970; McCormick and Tollison, 1981). Lagona and Padovano (2008) show that the finite horizon created by the legislature generates incentives to discriminate in time the supply of legislative acts to special interest groups and to voters, thus solving the trade-off. Specifically, legislators concentrate on special interest group legislation at

the beginning of the legislation, when re-election concerns are discounted away and resources must be gathered. As the next election draws near, time discounting raises the value of votes relative to the marginal utility of (the already gathered) resources, and makes it now optimal for legislators to satisfying voters' demands, by means of broad based, public goods type of legislation. Lagona and Padovano (2008) show that the strategy of discriminating the two types of legislation in time keeps the majority cartel, viz. the government coalition, together. This because such a strategy leaves enough time to punish eventual defectors when the majority is satisfying the demands of special interest groups', by switching immediately to a vote-maximizing strategy, from whose returns in terms of reelection the defector gets excluded. (Padovano, 1995; Harrington, 1987). Finally, insofar as rents do not go beyond an optimal value, voters find it rational to keep the majority in office because a strategy of not reelecting legislators that had appropriated a positive amount of rents would incentivize them to divert all they can grab while they are in office (Persson et al., 1997). Only if legislators appropriate more rents than this optimal amount, then voters vote for the opposition at the end of the legislature - only to face the same trade-offs as before.

The model generates a number of interesting predictions. The first is that the legislative acts that favor interest groups and voters at large should have opposite cycles: the production of special interest group legislation should peak close to the beginning of the legislature and then taper off as the next election draws near; conversely, general type of legislation that favors voters should be at a minimum at the beginning of the legislature and peak at the end of the legislature. Although anecdotic evidence of these opposite cycles has been found (Pasquino, 1995), distinguishing between types of legislation - narrow focused vs. general, public goods oriented - is arbitrary and inevitably leads to controversial categorizations. To avoid these problems we exploit a feature of the comparative statics of the model, namely that legislators have an incentive to minimize the visibility (i.e., the information costs) of legislative acts that favor special interest groups, to tilt the trade-off between interest groups and voters' interests in favor of the former. In

terms of the model, this pushes the optimal time to switch to the satisfaction of voters' demands closer to the end of the legislature, which allows legislators to secure a higher amount of rents while holding their reelection probabilities constant. The legislative procedures that govern the production of legislation in most countries provide legislators with a menu of legislative instruments they can choose from, each characterized by different degrees of visibility/information costs. There are the ministerial decrees, which do not require an explicit vote of the parliament due to their administrative nature and hence are hardly visible to voters; the legislative decrees, which are often approved by parliamentary committees; the formal laws that, when they require an explicit vote of the plenary assembly, have a maximal visibility and engender lower information costs to voters. Furthermore, because the legislative procedures regarding the choice of these instruments are often vague or even conveniently interpreted, if not ignored, legislators enjoy considerable discretion in the choice of the type of act to implement any type of decision. They will prefer a less visible legislative instrument, such as administrative and legislative decrees, to implement decisions that favor special interest groups. Conversely, legislation that aims at satisfying the interests of voters at large will tend to be enacted by means of very visible legislative instruments, such as formal laws that require a majority vote in the plenary assembly. Hence we assume that the different types of legislation can be identified by the legislative instrument. This correlation probably engenders a high degree of approximation; but to the extent that such approximation exists, it slants the empirical estimates against the predictions of the model. If general purpose legislation is passed by decrees and laws are used to approve narrow interest decisions, the cycles should be less evident and the precision of the estimates should fall below statistically significant levels.

The model generates two more empirical restrictions that help to identify the conditioning phenomena to be introduced in the estimating equation. First, insofar as voters' rewards in terms of votes must be shared between all members of the government coalition, the magnitude of the cycle should be positively correlated with the number of

legislators (or parties) in the coalition. In other words, larger majorities (larger number of legislators supporting the government) should approve both a higher number of decrees to satisfy interest groups' demands and a higher number of laws to satisfy voters. Second, if any conditioning phenomena, such as a war of attrition within the coalition, prevent attaining the legislative production required to ensure re-election, a change of the government coalition should take place. In this case we should observe no peak in legislative production at the end of the legislature, but still observe one in the production of decrees at the beginning of the legislature. In other words, interest groups will be satisfied, but voters won't.

2. *Data*

The empirical analysis exploits a newly assembled dataset about the legislative production of the Italian Parliament from May 1948, when the Constitution of the Italian Republic was enacted, to April 2008, when the XV legislature, the last one, ended. The dataset reports the monthly counts of ordinary laws, constitutional laws and government legislative acts (such as the 'decreti legge', the 'decreti legislativi' and the 'decreti delegati'), that require a vote of the Parliament to come into effects, as well as the monthly counts of legislative instruments that do not require such a vote to be implemented, namely the decrees of the President of the Republic (D.P.R.s), the ministerial decrees ('decreti ministeriali') and the administrative decrees ('decreti amministrativi') directly implemented by the Ministries. Moving from the underlying assumption explained in the previous section, the first group of legal instruments fits into the category of 'general interest legislation', while the second group is composed by the preferred instruments to promote 'special interest' legislation.

The first 11 legislatures, generally known as those of the first Republic, i.e., before a series of scandals and an electoral reform completely overhauled the party system, saw 47 different governments. Notwithstanding this number, there were few effective changes of coalitions and of political equilibria, as the Christian Democracy was the leading party of

all the government coalitions, and the Socialist Party participated in almost all of them since 1962. Only from 1994, i.e., with the XII legislature, the first of the so-called 'Second Republic', has an effective alternation in government taken place, with center-left and center-right coalitions replacing each other. In this period, a change of government coalition always implied a change of legislature, at the cost of calling an early election. From 1994 to 2008 the count of Italian governments rises to 56.

The legislative production of the Italian Parliament represents an ideal sample to test the PLC theory. Not only it provides a very large number of observations (719 months of legislative activity) that ensures the efficiency of the estimates; it also offers a considerable variability in the conditioning variables foreseen by the model. The time length of the legislatures, for instance, shows a remarkable amount of variation. Only 7 legislatures out of 15 ended in the 5 year period set by the Constitution (specifically, legislatures I, II, III, IV, X, XIII and XIV), while in the other 8 elections were called in advance. This variability in the length of the legislature is important, since the PLC model restricts the prediction of the legislation cycle to the case that the length of the legislature be known in advance. If the legislature comes to an unexpected end, as it is the case when elections are called early, there should not be an increase of the production of laws in the final months of the legislature, but we should still observe a cycle of the decrees in the first months.

We have two dependent variables in the model, *LAW*, which includes all legislative acts voted by the Parliament; and *DEC*, which features all decrees that do not require a vote of the Parliament. These variables report the counts of the legislative instruments of each type approved in each month. According to the theory, the production function underlying these two types of legislative acts is the same, only the preferred timing for their approval within the legislation changes.

This prediction is subject to a series of *ceteris paribus* conditions that must be proxied in the empirical analysis. We have therefore grouped the explanatory variables in three vectors: the proper PLC variables, the war of attrition controls, and the other controls.

PLC variables are *STARTGOV*, a dummy that denotes the first three months of activity of each government, and *ENDGOV*, that takes the value of 1 in the last 3 months of activity of the government, and 0 otherwise. Theory predicts that the production of decrees (*DEC*) should be positively correlated with *STARTGOV* and negatively with *ENDGOV*. Three are the regressors included in the wars of attrition vector. The first is *MAJ*, that reflects the minimum percentage of votes that the government majority received by either Parliamentary chamber at the time of the initial confidence vote. Since the Italian parliamentary system is a perfect bicameralism (all laws must be approved in the same reading by both Chambers), not disposing of the majority in either Chamber *de facto* reduces the government to a minority one. The PLC theory assigns to *MAJ* the role of a scale factor, which should be positively correlated with both *LAW* and *DEC*. The second is *HOM*, which meters the degree of homogeneity of the government coalition, weighted by the heterogeneity of the opposition. In month t, the homogeneity index is given by:

$$H_t = HG_t \times (1 - HO_t)$$

where

$$HG_t = \sum_{g=1}^{G} f_{gt}^2$$

$$HO_t = \sum_{o=1}^{O} f_{ot}^2$$

where f_{gt} and f_{ot} are the relative frequencies of the number of the total parliamentary seats (Chamber of Deputies plus Senate) held by the government and the opposition coalition, respectively, in month t. The theoretical range of *HG* and *HO* is between 0 and 1. They are equal to 1 when there is a single party in the coalition (maximum cohesion), while they tend to 0 as the number of parties increases (maximum heterogeneity). As it might be expected, the *HG* and *HO* indexes are highly correlated; we have then decided to mix them into the regressor *H*, to avoid problems of multicollinearity. Empirical tests of the war of attrition literature (Padovano and Venturi, 2001) show that in the Italian Parliament more homogeneous government coalitions (compared to the opposition) are

less plagued by internal hold-out problems; a positive sign should be associated to this regressor with respect to laws, while a negative one with respect to decrees. The idea is that more homogeneous majorities should have fewer problems to obtain a favorable parliamentary vote, while more fragmented one eschew likely parliamentary defeats by approving more non-voted decrees. The third war of attrition control variable is *NMIN*, which captures the heterogeneity of the government coalition at the cabinet level. *NMIM* is the number of the with and without portfolio ministers that composed the Council of Ministers of each of the 57 governments in the history of the Italian Republic. In Italy, as elsewhere, more fragmented and more ideologically polarized government coalitions require a larger number of ministerial positions to find a political equilibrium in the cabinet. Since *NMIN* is linear in fragmentation, it should be positively correlated with *DEC* and negatively with *LAW*. Finally, the vector of the other controls includes two covariates: *SUMMER*, a dummy equal to 1 in the months of Parliamentary recess (usually August), when the production of laws basically drops to nihil, and should be negatively correlated with both dependent variables; and *PARLESP*, drawn from the literature on the quality of politicians (Besley, 2005; Galasso and Nannicini, 2011), which counts the average number of years that the ministers of each government had served as either deputies or senators (or both) at the time they sworn in. If they had never been members of the Parliament before (as it is the case for the so-called technical ministers), the reported value is 0. More experienced ministers, with greater political weight, should find it easier to make legislation pass through the hurdles of a parliamentary debate and the subsequent vote. Other things being equal, we expect parliamentary experience to be negatively correlated with *DEC* and positively with *LAW*. Table 1 summarizes the expected signs.

3. *A bivariate multilevel Poisson regression model*

Our data are in the form of bivariate counts $\mathbf{y}_{tgl} = (y_{1tgl}, y_{2tgl})$, which respectively indicate the number of ordinary laws y_{1tgl} and decrees y_{2tgl}, approved in the t-th month, under government g and during legislation l, $t = 1,\ldots t_g$, $g = 1\ldots G_l$, $l = 1\ldots L$, where t_g is the life span

in months of government g, G_l is the number of governments during legislation l and L is the number of legislations considered in the analysis. The data are then clustered according to a three-level hierarchy, where months (level-1 units) are nested within governments (level-2 units), which are then nested within legislatures (level-3 units). These responses are also associated with the row profiles $\boldsymbol{x}^{\mathrm{T}}_{\mathrm{tgl}} = (x_{1tgl}, x_{2tgl})^T$ of a number of covariates, which are expected to influence the legislative production process, as discussed in section 2.

The bivariate, non-normal nature of the response and the hierarchical structure of the data increase the complexity of estimating of the impact of the covariates on the two dependent variables. The battery of covariates included in our analysis can only partially capture the complex association structure between the observations under analysis. While these covariates describe the relevant restrictions under which governments choose between the alternative legislative strategies, they often provide only an approximate representation of the political scenario within which each government operates. Insofar as relevant covariates are omitted in the specification of the model, we will have unobserved heterogeneity, which will lead to incorrect inferences if not appropriately accounted for. To address this problem, we introduce a common latent structure in the model specification by considering a three-level bivariate random effects generalized linear mixed model.

To see how this class of models solves the problems related to unobserved heterogeneity, let us introduce two bivariate random effects $\boldsymbol{b}^{(2)}$ and $\boldsymbol{b}^{(3)}$ at the second and third level of the hierarchy, which are independent of random effects at any other levels. Let us also assume that the conditional densities of the responses, i.e. the ordinary laws and the decrees, given the covariates and the random effects, are independent Poisson random variables

$$Y_{jtgl}|\lambda_{jtgl} \sim Poisson\left(\lambda_{jtgl}\right), j = 1, 2 \tag{1}$$

with canonical parameters $\lambda_{jtgl} = E\left[Y_{jtgl}|\mathrm{x}_{jtgl}, b^{(2)}_{jgl}, b^{(3)}_{jl}\right]$ modeled as follows:

$$\log\left(\lambda_{jtgl}\right) = \mathbf{x}^{\mathrm{T}}_{tgl}\boldsymbol{\beta}_j + b^{(2)}_{jgl} + b^{(3)}_{jl} \tag{2}$$

In this context $\boldsymbol{\beta_j}$ is a response-specific vector of coefficients, while the second-level random effects $b_{jgl}^{(2)} = \left(b_{1gl}^{(2)}, b_{2gl}^{(2)}\right)$ are drawn from a bivariate normal distribution, $R(\cdot)$, with zero mean and covariance matrix. Many different association structures can establish the link with the higher level random effects. For instance we may define $b_{2l}^{(3)} = \psi b_{1l}^{(3)}$, where ψ is a free parameter, actually, a factor loading. This parameterization implies that the same sources of heterogeneity affect the ordinary laws and the decrees at the legislature level with effects of proportional size. This assumption also implies positive and unit correlation between the outcomes on the scale defined by the link function.

The two components of the random intercept vector $\boldsymbol{b}^{(3)}$ indicate the legislation-specific departures from the expected number of ordinary laws and decrees, predicted by the covariates through the regression coefficients $\boldsymbol{\beta}$. Additional departures due to the heterogeneous behavior of governments of the same legislature are captured by the level-2 random intercepts $\boldsymbol{b}^{(2)}$. The variances $\sigma_{j(2)}^2$ and $\sigma_{j(3)}^2$ hence measure the amount of latent heterogeneity between the production strategies of different governments in terms of a 'legislation effect' and a 'government effect'. The model thus simultaneously considers a correlation between the counts of legislative acts approved during the life span of a single government and between those associated to a single legislature, because they share the same random intercepts at the government and at the legislation level. The two variance components reflect the hypothesis that legislative activities of different governments during the same legislation period are less correlated than those associated to a single government. The responses associated to different legislatures are instead considered to be independent.

The covariance $\sigma_{12(2)}$ proxies the government-specific strategy in the choice of a particular legislative instrument. A positive covariance value would indicate that governments alternate periods of intensive and of reduced legislative production, without a specific preference between a decree and an ordinary law. The theory under investigation, however, predicts a negative covariance value, which indicates that periods when decrees are the preferred as legislative instruments are alternated with periods

when ordinary laws are instead used more. Random intercepts at the legislation level are instead uncorrelated, because a legislation-specific strategy in the choice between ordinary laws and decrees is difficult to motivate.

Given the assumptions of the model, the likelihood function can be written as:

$$
\begin{aligned}
L(\cdot) = & \prod_{l=1}^{L} f(y_l) = \prod_{l=1}^{L} \int \int f\left(y_l | \mathbf{b}_l^{(3)}\right) dR\left(\mathbf{b}_l^{(3)}\right) \\
& \prod_{l=1}^{L} \int \left\{ \prod_{g=1}^{G_l} f\left(y_{gl} | \mathbf{b}_l^{(3)}\right) \right\} dR\left(\mathbf{b}_l^{(3)}\right) \\
& \prod_{l=1}^{L} \int \left\{ \prod_{g=1}^{G_l} \int f\left(y_{gl} \middle| \mathbf{b}_l^{(3)}, \mathbf{b}_{gl}^{(2)}\right) dG(\mathbf{b}_{gl}^{(2)}) \right\} dR\left(\mathbf{b}_l^{(3)}\right) \\
& \prod_{l=1}^{L} \int \left\{ \prod_{g=1}^{G_l} \int \prod_{t=1}^{T_g} f\left(y_{tgl} \middle| \mathbf{b}_l^{(3)}, \mathbf{b}_{gl}^{(2)}\right) dG(\mathbf{b}_{gl}^{(2)}) \right\} dR\left(\mathbf{b}_l^{(3)}\right) \\
& \prod_{l=1}^{L} \int \left\{ \prod_{g=1}^{G_l} \int \prod_{t=1}^{T_g} \prod_{j=1}^{J} f\left(y_{jtgl} \middle| \mathbf{b}_{jl}^{(3)}, \mathbf{b}_{jgl}^{(2)}\right) dG(\mathbf{b}_{gl}^{(2)}) \right\} dR\left(\mathbf{b}_l^{(3)}\right)
\end{aligned}
\tag{3}
$$

For Gaussian assumptions about random effects distributions, the marginal likelihood cannot be written in closed form, even if some specifications are possible, provided that certain specifications for the covariance structure of the random coefficients are adopted. To obtain Maximum Likelihood estimates, we may choose among several alternatives, such as numerical integration techniques based on standard or adaptive Gaussian quadrature (Rabe-Hesketh and Skrondal, 2001; 2005). Using Gaussian Quadrature formulas, the integrals are replaced by summations over M_1 and M_2 quadrature points, with associated mass equal to$\{\pi_{m1}, \pi_{m2}\}$. The likelihood function can be approximated by

$$
L(\cdot) = \prod_{l=1}^{L} \sum_{m_1=1}^{M_1} \left\{ \prod_{l=1}^{G_l} \sum_{m_2}^{M_2} \prod_{t=1}^{T_g} \prod_{j=1}^{J} f\left(y_{jtgl} \middle| \mathbf{b}_{m_2}^{(3)}, \mathbf{b}_{m_2}^{(2)}\right) \pi_{m_1} \right\} \pi_{m_2} \tag{4}
$$

where $\mathbf{b}_{m_2}^{(2)}$ is a quadrature vector with associated mass equal to $\pi_{m_1} = \prod_{j=1}^{2} \pi_{m_1 j}$ (similarly for π_{m_2}). In this case $m_1 = (m_{11}, m_{12})$ represents a multiple index with $m_{1j} \in \{1, \ldots, M_1\}$ if M_1 quadrature points are used in each dimension (similarly for m_2). The integral can be approximated to any practical degree of accuracy by setting M_1 and M_2 sufficiently large. Rabe-Hesketh *et al.* (2002) showed that in some situations the number of quadrature points needs to be very large.

4. Results

The empirical model to estimate the determinants of the choice of the legislative instruments can therefore be specified as follows:

$$\log(\lambda_{jtgl}) = \beta_{0j} + \beta_{1j}STARTGOV_{jtgl} + \beta_{2j}ENDGOV_{jtgl} + \beta_{3j}MAJ_{jtgl} + \beta_{4j}H_{jtgl} + \beta_{5j}NMIM_{jtgl} + \beta_{6j}SUMMER_{jtgl} + \beta_{7j}PARLESP_{jtgl} + + b_{jgl}^{(2)} + b_{jl}^{(3)} \quad (5)$$

Table 2 reports the estimates of equation (5). Starting from the PLC variables, *STARTGOV* is positively related the production of less visible decrees and negatively with the production of more visible laws, with both correlations being statistically significant. On the other hand, the dummy *ENDGOV*, which captures the final months of activity of the government, appears negatively correlated with the production of decrees and positively with the production of laws. This result is all the more noteworthy, as the production of laws and decrees is a time related process; the model thus captures the deviations from the trend, i.e., the periods of peaks and lows determined by the opposing cycles of laws and decrees. These joint results are squarely consistent with the prediction of opposing cycles in the production of decrees and laws, as a strategy that enables legislators to maximize the extraction of rents from lobbies with a minimum loss of electoral support from unorganized voters. The comparison of the coefficients on $STARTGOV_{DEC}$ and $ENDGOV_{LAW}$ shows that the net magnitude of the cycles of decrees is smaller than that of laws ($STARTGOV_{DEC}$ = 0.176 while $ENDGOV_{LAW}$ =0.498). The estimated covariance between the two processes for laws and decrees is negative ($\sigma_{12(2)} = -0.288$), which further reinforces the evidence found of opposing cycles.

The other predictions of the PLC model receive support from the data. More homogeneous government coalitions are more confident about their stance in the parliament, and tend to pass policies more through the parliament by means of laws (H_{LAW}=2.3). Conversely, governments supported by more fragmented coalitions fear parliamentary ambushes more and are more likely to choose decrees to have their decisions implemented: the correlation between the homogeneity of the governments

parliamentary majority and the approbation of decrees is -2.13, i.e., a coefficient of opposite sign but almost equal size, in absolute value, as that of H_{LAW}. The same pattern of results is found for wars of attrition at the government level. More fragmented cabinets, with more ministers to satisfy the demands of the members of a more fragmented coalition, tend to use decrees more ($NMIN_{DEC}$=0.529) than more homogeneous governments with a smaller number of ministers ($NMIN_{LAW}$=-0.087). In the context of the PLC theory, the size of the parliamentary majority is a scale factor, as it facilitates, other things being equal, the approbation of any legislative decision. In line with this prediction, *MAJ* appears positively correlated with the approbation of both decrees and laws. The size of the coefficient on MAJ_{LAW} is, however, about three times larger than that of MAJ_{DEC} (2.055 vs. 0.785). This is quite plausible, since having a larger number of MPs makes it relatively easier to pass legislative instruments that require the approbation of the parliament. As for the other controls, the seniority of members of the government helps in the approbation of both decrees and laws, but, as in the case of the parliamentary majority, a longer seniority in the parliament is more helpful in the approbation of laws than decrees: $PARLESP_{LAW}$=0.179 while $PARLESP_{DEC}$=0.097. Parliamentary experience hence works as an income, rather than as a substitution effect in the approbation of legislative instruments. Finally, as expected, the summer months cut down the approbation of both decrees and laws; yet, quite interestingly, the drop is much more evident for laws ($SUMMER_{LAW}$=-1.044) than for decrees ($SUMMER_{DEC}$=-0.242). The Parliament closes in August, but Ministries remain open; moreover interest groups seem to take advantage of the fact that holidays distract the unorganized voters.

As a further check of the appropriateness of our model, we have estimated equation (5) separately for laws and decrees, i.e., as two univariate models. The results do not change noticeably for the dependent variable *LAW* (table 3), neither in terms of statistical significance nor of size of the coefficients; the estimates are, however, slightly less precise for *DEC* (table 4). In particular, the correlations between the approbation of decrees and the $ENDGOV_{DEC}$ and H_{DEC} are no longer significant. This confirms that the two opposing

cycles of laws and decrees are joined by an underlying phenomenon, as the PLC theory indicates, and are best analyzed by a unified estimation model, as the bivariate one of table 2. To corroborate this conclusion, the log-likelihoods of the two univariate models are always lower than that of the bivariate one (-4322.83 for *LAW*, -1470.5669 for *DEC*, -5683.3664 for the bivariate model) and the sum of the AIC values for the univariate models is higher than that of the bivariate one (8677.658+2961.134=11638.792 *vs.* 11578.04).

An important result found in Lagona and Padovano (2008) that does appear immediately evident in these estimates of table 2 is the peak in legislative production at the end of legislatures. Multicollinearity between the dummy for end of the governments and that for the end of the legislatures is the likely cause for the lack of significance of the end of legislature dummy, because there will always be a government at the end of its tenure when the legislatures ends, prematurely or regularly. The peak does exist, however: the analysis of the residuals from the bivariate estimate of equation (5), reported by the normal Q-Q plot of figure 1, shows that the model underpredicts the number of laws approved at the end of the life of the government. The most plausible explanation is that the governments that are at the natural end of a legislature produce more laws than the others. The analysis of the residuals for decrees, reported in figure 2, instead shows that the model underpredicts the number of decrees approved at the beginning of the life of the government, i.e., the magnitude of the cycle of decrees is actually slightly greater than the one captured by the estimates. This is probably due to the low number of decrees passed by governments in the first legislatures (until the mid-1960s) that, although similarly characterized in terms of the independent variables as the governments of later period, still resorted to this legislative instrument less.

5. Conclusions

This paper tests an important restriction of the PLC theory, not examined so far for lack of suitable data, namely, that the political legislation cycles of decrees and laws are countercyclical. Decrees in fact peak at the beginning of the legislature and taper off

towards the end, while the number of laws approved increases as the next elections draw near. Padovano and Lagona (2008) were able to test the latter implication of the theory on a dataset of the first XIII legislatures of the Italian Parliament. Here we extend the test to XV legislatures (i.e., 7 more years) and, most of all, to the series of decrees of the President of the Republic, of ministerial and administrative decrees, none of which needs a parliamentary vote to come into effect. As such they can be considered less 'visible' to unorganized voters than formal laws, which instead must be approved by the parliament, often in plenary session.

The analysis, conducted via joint GLM estimates of the responses to both types of legislative instruments, lends strong support to the core predictions of the theory. Also the controlling factors, which proxy the ceteris paribus conditions of the model, are in fact satisfied in the estimates. Furthermore, the estimate of a joint, bivariate model for laws and decrees appears more informative than the estimate two single models for laws and decrees. This further reinforces the interpretation that the same underlying process jointly determines the two cycles and, in turn, supports the theoretical interpretation of the cycles offered by the PLC theory, namely, that legislation cycles are a strategy for governing coalitions to remain cohese and to satisfy the conflicting demands of organized interest groups and of unorganized voters with a minimum of political costs. Concentrating the approbation of legislative instruments, that are poorly visible for unorganized voters but not for special interest groups, such as the abovementioned decrees, at the beginning of the legislature (or of the government activity) and of highly visible legislative instruments, such as formal laws, at the end of the legislature, is a way to maximize lobby support (and resources) when the next election loom large and voters suffrages when, instead, elections draw near. More tests on non-Italian datasets seem the logical next step ahead in this strand of literature.

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Table 1. Expected signs

Covariate	*LAW*	*DEC*
STARTGOV	-	+
ENDGOV	+	-
MAJ	+	+
H	+	-
NMIN	-	+
SUMMER	-	-
PARLESP	+	+/-

Table 2. Regression results: bivariate model

Response	Coefficient	Std. err.	z-stat	P>z
$STARTGOV_{LAW}$	-1.03	0.055	-18.57	0.000
$ENDGOV_{LAW}$	0.498	0.159	3.13	0.002
MAJ_{LAW}	2.055	0.189	10.88	0.000
H_{LAW}	2.305	0.147	15.68	0.000
$NMIN_{LAW}$	-0.087	0.003	-24.51	0.000
$SUMMER_{LAW}$	-1.044	0.037	-28.32	0.000
$PARLESP_{LAW}$	0.179	0.015	12.13	0.000
$STARTGOV_{DEC}$	0.176	0.087	2.02	0.043
$ENDGOV_{DEC}$	-0.729	0.249	2.93	0.003
MAJ_{DEC}	0.785	0.297	2.64	0.008
H_{DEC}	-2.131	0.278	7.66	0.000
$NMIN_{DEC}$	0.529	0.006	8.03	0.000
$SUMMER_{DEC}$	-0.242	0.072	-3.37	0.001
$PARLESP_{DEC}$	0.097	0.036	2.66	0.008
C_{LAW}	2.235	0.195	11.43	0.000
C_{DEC}	-0.679	0.301	-2.25	0.024
Log likelihood	-5683.3664			
AIC	11578.04			
$\sigma_{12(2)}$	-0.288			
N level 1 units	1442			
N level 2 units	54			
N level 3 units	15			

Table 3. Regression results: univariate model, dependent variable LAW

Response	Coefficient	Std. err.	z-stat	P>z
$STARTGOV_{LAW}$	-1.018	0.055	-18.32	0.000
$ENDGOV_{LAW}$	0.643	0.165	3.88	0.000
MAJ_{LAW}	2.54	0.206	12.32	0.000
H_{LAW}	1.959	0.132	14.81	0.000
$NMIN_{LAW}$	-0.086	0.004	-23.42	0.000
$SUMMER_{LAW}$	-1.044	0.037	-28.24	0.000
$PARLESP_{LAW}$	0.106	0.021	4.95	0.000
C_{LAW}	2.254	0.194	11.64	0.000
Log likelihood	-4328.83			
AIC	8677.658			
N level 1 units	721			
N level 2 units	54			
N level 3 units	15			

Table 4. Regression results: univariate model, dependent variable DEC

Response	coefficient	Std. err.	z-stat	P>z
$STARTGOV_{DEC}$	0.172	0.087	1.97	0.049
$ENDGOV_{DEC}$	-0.016	0.272	-0.06	0.952
MAJ_{DEC}	1.133	0.334	3.39	0.001
H_{DEC}	-0.552	0.378	1.46	0.144
$NMIN_{DEC}$	0.6	0.009	6.81	0.000
$SUMMER_{DEC}$	-0.245	0.072	-3.42	0.001
$PARLESP_{DEC}$	-0.223	0.036	-6.22	0.008
C_{DEC}	-0.446	0.347	-1.29	0.198
Log likelihood	-1470.5669			
AIC	2961.134			
N level 1 units	721			
N level 2 units	54			
N level 3 units	15			

Figure 1. Q-Q plots of legislative instruments