

An Empirical Investigation of the Strategic Use of Debt*

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Abstract

This paper examines the accumulation of debt by Swedish local governments. I find that right-wing governments accumulate more debt when facing a higher probability of defeat, whereas the case is opposite for left-wing governments. These effects are sizeable: a right-wing government increases its level of debt by 15 percent while a left-wing government decreases its debt by 11 percent if they are both certain of being replaced as compared to when they are certain of remaining in office. The results are consistent with the predictions from a strategic debt model developed by Persson and Svensson (1989).

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I. Introduction

The purpose of this paper is to empirically investigate whether strategic considerations influence debt policy. The idea is that the stock of debt links past policies to future policies, as an incumbent policymaker can affect the state of the world inherited by his successors. Specifically, a government anticipating a possible defeat in the next election can use debt strategically in order to influence the policy of its successor. In other words, debt can be seen as a commitment device in a political game between current and future governments, where future tax revenues are committed to debt service.

As guidance for the empirical investigation, I rely on the two models by Alesina and Tabellini (1990), and Persson and Svensson (1989). The two models make different predictions: Alesina and Tabellini (1990) predict that both left- and right-wing governments will issue more debt when facing a higher probability of electoral defeat, whereas Persson and Svensson (1989) only predict that right-wing governments will accumulate more debt while left-wing governments will do exactly the opposite. In this paper, I will discriminate between these two models by nesting their respective hypotheses into a single regression equation.

One of the major difficulties in testing the strategic debt hypothesis is to construct good proxies for the probability of electoral defeat. To achieve this, I have constructed a very large panel data set from Swedish local governments, which gives me several advantages to previous studies. First, I have nearly 2000 observations from election years. Second, elections occur simultaneously every third year in all these localities. Third, Swedish local governments operate under the same constitutional and institutional setting. Fourth, there is a clear classification of parties along the left-right policy scale. In addition, Swedish local governments have had statutory rights to borrow money, and thus, it is justifiable to use them as a testing ground for strategic debt behavior.¹ Moreover, Swedish local governments also play a significant role in the Swedish Economy. In 1994, their total expenditures amounted to roughly 25 percent of GDP and the stock of debt to 30 percent.

¹ On this point, see Murray (1985).

This new data set enables me to use ex-post electoral outcomes to construct a proxy variable for the expectation of electoral defeat. I also use an instrumental variable approach to correct for possible endogeneity and measurement error problems associated with the proxy. Controlling for other possible economic and demographic determinants of debt behavior, the main finding of this paper is that a right wing government accumulates more debt during its term in office, the higher is the probability of electoral defeat. In contrast, a left-wing government decreases the level of debt, the higher the possibility of defeat. These effects are sizeable: a right-wing government increases its level of debt by 15 percent, while a left-wing government decreases its debt by 11 percent if they both think that they will be replaced as compared to when they are certain of remaining in power. Thus, my results are consistent with the model of Persson and Svensson (1989).

To the best of my knowledge, there are only four empirical studies of the strategic use of debt: Grilli, Masciandaro, and Tabellini (1991), Crain and Tollison (1993), Lambertini (1996), and Franzese (1998). None of these papers finds systematic evidence of strategic debt behavior. These findings are perhaps less surprising, since several potential difficulties are connected to the use of U.S. or OECD data to test the strategic explanation. U.S. data (the Federal level) contains very few observations from elections, so there is a serious lack of degrees of freedom. OECD panel data might solve this problem, but create a problem with the pooling assumption, that is, that the OECD countries are too heterogeneous with respect to institutional and constitutional matters to be pooled together.²

The remainder of the paper is organized as follows. In the next section, I give a short, non-technical presentation of the two models of strategic debt behavior. Section 3 outlines the empirical identification strategy and discusses the data to which it is applied. Section 4 presents the empirical results. Section 5 discusses further evidence supporting the strategic debt explanation. Finally, section 6 concludes.

² Using a panel data set from the U.S. states in the context of this paper might also be problematic, since these states differ with respect to balanced budget requirements, borrowing rules etc.

II. Two models of strategic debt behavior

I will test two models, Alesina and Tabellini (1990), and Persson and Svensson (1989), both of which emphasize strategic considerations in the making of debt policy. In these models, governments with different preferences alternate in office.

Alesina and Tabellini (1990) assume that the governments differ with respect to their preferences concerning the composition of government spending. As an example, consider a government that wants to spend a great deal on defense and little on welfare, and assume that it knows that it will be replaced by another government with the opposite preference. The current government then realizes that defense spending will be cut in the future, so it borrows a great deal now because the marginal cost of repaying the extra dollar of debt will fall on welfare about which it cares little. In other words, a deficit bias will emerge because the government that borrows faces an asymmetry. It can spend the additional resources anyway it wants, but uncertainty about who will be appointed in the future prevents the current policymaker from fully internalizing the future costs of spending cuts.

In Persson and Svensson (1989), in contrast, the conflict concerns the level of government spending. They consider a right-wing government, that wants less spending than a left-wing government. Suppose that the right-wing government is certain of being replaced by its opponent in the next election. Then, it faces a trade off between distortionary taxes and debt.³ By lowering taxes and issuing debt, the right-wing government constrains future spending. However, this creates a suboptimal distribution of tax distortions since taxes today are too low, implying that future taxes will be too high when the debt becomes due. If the right-wing government puts more weight on reaching its preferred level of spending than on the welfare cost of a distorted tax profile over time,⁴ it will issue more debt than its successor would prefer. On the other hand, a left-wing incumbent government has exactly the opposite incentive. By raising taxes and reducing debt, it creates surpluses to encourage increases in future spending decisions.

³ Persson and Svensson (1989) assume that the only way of raising money for government spending is through a distortionary tax.

⁴ Persson and Svensson (1989) refer to this as stubbornness.

To summarize, the two models have different empirical predictions. Alesina and Tabellini (1990) predict that there is a deficit bias irrespective of the incumbent's political ideology, while Persson and Svensson (1989) predict that only right-wing governments issue debt whereas left-wing governments reduce the debt. Nevertheless, both models predict that the strategic use of deficits or surpluses will be larger, the greater the disagreement between different policymakers and the more likely it is that the current government will be replaced.

III. The empirical identification strategy and the data

In this section, I present the empirical identification strategy in my tests of the strategic debt models and the data to which is applied. According to the model in the previous section we should expect an incumbent with a high probability of defeat in the next election to create “facts” for its successor by issuing or retiring debt. Thus, debt policy should, *ceteris paribus*, be a function of the incumbent's probability of defeat. More formally,

$$DEBT_{it} = \alpha + \beta P_{it} + X_{it}\gamma + u_{it} \quad i = 1, \dots, N; t = 1, \dots, T, \quad (1)$$

where P_{it} is the probability of defeat, X_{it} is a vector of variables affecting the level of debt and u_{it} is an error term. Equation (1) is also indexed with i and t , where i denotes local governments and t election years, since we have a panel data set from Swedish local governments.

The predictions differ between the two strategic debt models. One way of discriminating between these models is to define a dummy variable: let D be 1 if there is a left-wing incumbent government and 0 otherwise. Thus, we can write equation (1) as

$$DEBT_{it} = \alpha_1 + \alpha_2 D_{it} + \beta_1 P_{it} + \beta_2 D_{it} P_{it} + X_{it}\gamma + u_{it}. \quad (2)$$

The introduction of the dummy variable enables us to nest the predictions from the two models.⁵ Alesina and Tabellini (1990) predict that the incumbent should issue debt irrespective of its political ideology when there is a high probability of defeat. Thus, their hypothesis is that $\beta_I > 0$ and $\beta_2 = 0$.⁶ On the other hand, Persson and Svensson (1989) only predict that a right-wing government should increase debt whereas a left-wing government should decrease it, which translates to $\beta_I > 0$, $\beta_2 < 0$, and $\beta_I + \beta_2 < 0$.⁷

The crucial issue is now to find proxies for the true probability of electoral defeat P_{it} . I will use the ex-post election outcome as a proxy variable but I will also use an instrumental variable approach to correct for endogeneity and measurement error problems associated with the proxy. The ex-post election outcome variable P^*_{it} is defined as 1 if the incumbent government was ousted and zero otherwise. However, using this proxy we have an error-in-variables problem, i.e., the true probability of defeat is measured with an error $P^*_{it} = P_{it} + \eta_{it}$. It is well known that this leads to an attenuation bias, namely a slope coefficient biased toward zero.⁸ Moreover, the probability of defeat might be endogenous. In fact, some papers have stressed that debt could be used strategically to influence the election outcome (Aghion and Bolton 1990, and Persson and Tabellini 1999). To possibly solve these two problems, I will use an instrumental variable (IV) approach. The basic idea behind this approach is to specify an auxiliary equation that links the unobservable variable, that is, the expectation of electoral defeat P_{it} to a set of explanatory variables. More formally,

$$P^*_{it} = P_{it} + \eta_{it} = \mathbf{W}_{it}\boldsymbol{\omega} + \eta_{it}, \quad (3)$$

⁵ It might be the case that the control variables X_{it} have different effects on the level of debt for left-wing and right-wing governments. I will allow for this possibility in the empirical analysis.

⁶ Alesina and Tabellini's hypothesis: $\beta_R > 0$, $\beta_L > 0$ and $\beta_R = \beta_L$ where $\beta_R = \beta_1$ and $\beta_L = \beta_1 + \beta_2$.

⁷ Persson and Svensson's hypothesis: $\beta_R > 0$ and $\beta_L < 0$ where $\beta_R = \beta_1$ and $\beta_L = \beta_1 + \beta_2$.

⁸ More formally, $P^*_{it} = P_{it} + \eta_{it}$ where $P_{it} \sim N(0, \sigma_p^2)$ and $\eta_{it} \sim N(0, \sigma_\eta^2)$. The OLS estimate from a single cross-section is $\text{plim } \beta_{OLS} = \beta \cdot \beta \sigma_\eta^2 / (\sigma_p^2 + \sigma_\eta^2)$. Thus, the coefficient of P will be attenuated depending on

where P_{it} is the true expectation of defeat, W_{it} is some variables describing the formation of expectations, P^*_{it} is the ex-post election outcome variable and η_{it} is an error term. Equations (2) and (3) now constitute the basis of the IV-approach. The first step is to estimate equation (3). The second step is to use the fitted values from this regression as instruments for P^*_{it} in the estimation of equation (2).⁹ Equation (3) will be estimated with a Probit model, i.e. $\Pr(P^*_{it} = 1) = \Phi(W_{it}\omega)$, where $\Phi(\cdot)$ is the standard cumulative distribution function, to ensure that the probabilities lie within the 0-1 interval.

The crucial question is then where to find variables to include in W_{it} . To answer this question, we first need to look at municipality election data for the sample period 1974 to 1994. The sample consists of 277 municipalities and there is a synchronized and fixed election schedule every third year. There have been seven elections in the sample period: 1976, 1979, 1982, 1985, 1988, 1991 and 1994. Thus, we have a total of 1939 observations from elections. Table 1 shows the frequency of government changes for the municipalities.¹⁰ The number of government changes is very unequally dispersed among the different municipalities. For example, 117 municipalities (42 percent of the sample) had no change of power (69 had left wing and 45 right wing governments), while 90 (32

what proportion of the total variance in the measurement, $(\sigma_p^2 + \sigma_\eta^2)$, represents variation due to mismeasurement.

⁹ Pagan (1984) and Murphy and Topel (1985) show that this IV-approach yields consistent estimates of both the second-stage parameters and the second-step standard errors.

¹⁰ The classification of change of power is compiled from the distribution of seats in local councils which, due to the PR electoral system, is equivalent to vote shares. The incumbent governments are classified as left-wing, right-wing or undefined. Left wing governments include both the Left Party and the Social Democratic Party. Right-wing governments include three parties or more: the Conservative Party, the Centrist party, the Liberal Party, the Christian Democratic Party (since 1988), and the New Democratic Party (1991 to 1994). An undefined government is when neither left nor the right-wing parties constitute a majority (50 percent of the seats) and its often associated with strong local parties. The undefined government creates a problem because there is no general information about its ideological composition. Using the predictions of the strategic debt models then becomes problematic, since these are based on the assumption of the incumbent's preferences (for the level or composition of spending), due to which, I drop those observations (# 309) from the debt regression (2). The main results are, however, robust to including them.

percent of the sample) had 3 changes or more. Table 1 also shows the average vote share for the incumbent in each group of municipalities. Incumbents in those municipalities with no change of power on average obtained more than 62 percent of the votes while those who had 3 or more changes got less than 54 percent. Table 2 presents more disaggregated information about left- and right-wing incumbent governments and the number of government changes. Table 2 reveals that a left wing government held power 817 times and was ousted 107 times, whereas a right wing government held power 813 times and was ousted 194 times.

The unequal dispersion of government change across municipalities suggests that municipality fixed effects can be used as predictors of the probability of defeat. Thus, these fixed effects measure the average frequency of government change and can be interpreted as capturing the latent instability of voter's preferences in a particular municipality. In other words, I assume the distribution of the unobserved variable, the probability of defeat, to have a particular municipality component which allows me to use municipality dummies as instrumental variables.¹¹ For these variables to identify a causal effect of the probability of defeat on the level of debt, they must be validly excluded from the debt equation (2). In the empirical analysis, I test for the exclusion of municipality-specific effects from the debt equation, I cannot reject the null hypothesis of no fixed effects.¹² There are two reasons for this identifying assumption. First, by using fixed

¹¹ This is similar to Wald's (1940) binary grouping estimator. Durbin (1954) was the first to note the relationship between the IV with binary instruments and the Wald estimator.

¹² This identifying assumption might be problematic if there are unobserved and unchanging characteristics related to both debt and the probability of defeat. However, using fixed effects would aggravate the bias from measurement errors (Griliches and Hausman 1986). More formally, the bias from using a fixed effect estimator (using the notation from footnote 8): $\text{plim } \beta_{FE} = \beta - \beta \sigma_{\eta}^2 / [(1-\rho)(\sigma_p^2 + \sigma_{\eta}^2)]$ where $\rho = \text{cov}(P_{it}, P_{i,t-1}) / \sigma_p^2$, whereas the bias from using an OLS estimator is $\text{plim } \beta_{OLS} = \beta + [\text{cov}(P_{it}, \alpha_i) - \beta \sigma_{\eta}^2] / (\sigma_p^2 + \sigma_{\eta}^2)$, where α_i is the fixed effect. Hence, there is a trade off between the bias from using the FE or the OLS estimator depending on the extent of fixed effects, the extent of measurement errors, and the extent to which P is correlated across time. Since the measurement error problem looms large, i.e., both ρ and $\sigma_{\eta}^2 / (\sigma_p^2 + \sigma_{\eta}^2)$ are presumably large, and I cannot reject the null hypothesis of no fixed effects, I believe the bias to be smaller from the OLS than the FE estimator.

effects as instruments, we average the data and therefore reduce the impact of measurement errors. Second, it seems that the fixed effects are more likely to be immune to the endogeneity problem mentioned previously.¹³ It may be that the incumbent government tries to manipulate the level of debt just before the election, as suggested by the electoral business cycle literature, in order to affect the probability of defeat. But then, any time-invariant instrumental variable should be more or less unrelated to such manipulation of debt.

Since fixed effects are excluded from the debt regression, it is very important to control for variables confounded with (i.e., related to) debt. I will control for the inherited debt from the previous election, population size, population density, proportion of young (0-16) and elderly (65+), average municipality income, and time effects.¹⁴

To capture any possible effect of strategic use of debt, I control for the inherited debt from the previous election. The rationale behind this is that the inherited debt can constrain the incumbent policymaker from pursuing his preferred debt policy during his term of office. The proportion of young and elderly, is linked to the cost and benefits of government spending. These variables can also be seen as controlling for the mandatory part of municipal spending since education, childcare, and care of the elderly are mainly mandatory tasks. Population density, and Population size are included because they capture the possibility of congestion effects or scale economies in the provision of local government services. I also control for the average municipality income, since income is related to the fiscal capacity of a municipality as the bulk of revenues come from a proportional local income tax. Income could also be seen as a control for local business cycle variations. Finally, I include time effects.¹⁵ Time effects are primarily used to

¹³ A “good” instrument should be highly correlated with P^* , but otherwise independent of debt. The correlation (Pearson) is 0.6 between P^* and the instrumental variable (the fitted values from the probability of defeat regression (2)) whereas the correlation between the debt and the instrument is only 0.16. This is suggestive of a good instrument.

¹⁴ The controls are defined at the time of elections. However, using three-year period averages over the election periods does not change the results.

¹⁵ More formally, the error term in equation (2) will be defined as $u_{it} = \lambda_t + v_{it}$, where λ_t is the year-specific effect and $v_{it} \sim iid(0, \sigma^2)$.

control for variables that might have a common effect on the municipalities in a given year, such as the effect of the national business cycle, changes in the voters' preferences, etc. Including time effects is particularly important in the context of my problem, for I do not want to attribute behavioral significance to any across-municipality correlations in debt that are really due to common national influences.

The dependent variable is public debt measured in per capita terms and at constant prices.¹⁶ There are several measures of debt in the official financial position of municipalities but I have chosen to work with short- and long-term debt, not including social security liabilities.¹⁷ I made this choice so as to have a comparable measure of debt in the sample period. Table 3 provides summary statistics for the variables in the empirical analysis.

IV. Results

Table 4 shows the effect of the probability of defeat on the level of debt. The first column is the OLS regression, using the ex-post election outcome as a proxy, whereas the second column is the instrumental variable approach. Before focusing on the strategic debt hypotheses, some general comments should be made about these regressions. First, the regressions account for about 67 percent of the variation in the level of debt. Second, the main determinant of the level of debt is inherited debt. About 70 percent of the debt are transferred from one election period to the next. The proportion of young, the proportion of elderly, and the population size all have significant and positive effects on the level of debt.

I will now turn to the test of the strategic debt hypotheses. As explained in sections II and III, Alesina and Tabellini's hypothesis is $\beta_1 > 0$ and $\beta_2 = 0$, whereas Persson and Svensson's hypothesis is $\beta_1 > 0$, $\beta_2 < 0$, and $\beta_1 + \beta_2 < 0$. The coefficient of the probability of

¹⁶ I have used the implicit GDP deflator, expressed in 1991 values. The deflator is constructed by taking the ratio of GDP at current market prices to GDP at fixed market prices. I have also used two other deflators, CPI and a municipality-specific price index, but the results are very similar.

¹⁷ Long-term debts are defined as debts with a maturity of 1 year or longer, while short-term debts have a maturity of up to 1 year. Data on social security liabilities are only available from 1988.

defeat, β_1 , is positive and significant at the 5 percent level or better in both regressions.¹⁸ This strongly suggests that a right-wing government accumulates more debt the higher the possibility of its defeat. However, the coefficient in the IV-regression is nearly 3 times as large as the OLS regression. It thus appears important to correct for measurement errors associated with the proxy for the probability of defeat. Table 4 also reveals quite a substantial difference in the accumulation of debt between right-wing governments with a high probability of defeat compared to those with a low probability. The largest difference is found in the IV-regression. On average, the level of debt is 1654 SEK per capita higher (which is about 15 percent of the total debt) when an incumbent is certain of being defeated as compared to when it is certain of remaining in power.¹⁹ The coefficient of the interaction term β_2 is negative and highly significant in both regressions, thus strongly suggesting that right- and left-wing governments have different slope coefficients. The slope coefficient for a left wing government $\beta_1 + \beta_2$ is negative in both the OLS and the IV regression, -1375 and -1279 SEK per capita, respectively. This is also confirmed by a formal test: $\beta_1 + \beta_2 = 0$. The null hypothesis is rejected for both regressions.²⁰ Thus, these findings give strong support to Persson and Svensson's model, but not to Alesina and Tabellini's.

Figure 1 gives a schematic picture of the relationship between the level of debt and the probability of defeat for the IV regression. This figure shows to that left- and right-wing governments have different slope coefficients, but also that a left wing government that is certain of being defeated accumulates slightly less debt than a right-wing government certain of remaining in power. Figure I also reveals that a right-wing government, which is replaced with certainty, has an even higher level of debt compared to a left wing government which is certain of remaining in power.

I have also made a number of checks as to the robustness of my results. First, I have used the vote share of the incumbent as a proxy for the probability of defeat, which gives

¹⁸ Since both models predict that $\beta_1 > 0$, we can use a one-tail test. The critical value is 1.65 at the 5 percent level.

¹⁹ 1600 SEK per capita is roughly equivalent to \$270 per capita (i.e., 6 SEK \approx \$1 in the prices of 1991).

²⁰ Col. 1: $F(1,1612)=15.92$ (P-value 0.0001), and col. 2: $F(1,1612)=4.80$ (P-value 0.028).

qualitatively similar results as the ex-post outcome proxy. Second, I have tested for the exclusion of fixed municipality effects and I cannot reject the null hypothesis of no fixed effects.²¹ Third, my results are also robust to a correction of the standard errors, due to cross-sectional correlation.²² Fourth, I have allowed the control variables to have different effects on the probability of defeat for left and right wing governments. This does not change my results however²³ Fifth, I have run separate regressions for short and long term debt and I find significant strategic debt effects in both cases. Sixth, I have investigated whether the growth of debt is higher for municipalities with frequent government changes in my sample period and I do not find a significant difference relative to municipalities with infrequent changes. The finding that recurrent alternation between left-wing and right-wing governments does not lead to increased accumulation of debt, further strengthens the strategic debt explanation, since this is also suggestive of opposite debt behavior.

To summarize, my results strongly support the fact that the two incumbents behave differently when the probability of defeat increases. On average, right-wing governments increase their level of debt, while left-wing governments do exactly the opposite.

V. Discussion

A potential weakness in my analysis is that I do control for fixed municipality effects in the debt regression. If there are some unobserved and unchanging characteristics related to both debt and the probability of defeat, then my strategic debt story could be questioned. However, in Lidbom Pettersson (2000a), I look for electoral cycles in fiscal policy instruments, using the same sample of municipalities. As a by-product of that

²¹ I have used the Breusch and Pagan (1980) Lagrange multiplier (LM) test where $\chi^2(1) = 1.33$ (P-value 0.25).

²² I have tried the correction suggested by Beck and Katz (1995). Let \mathbf{E} denote the $T \times N$ matrix of the OLS residuals, one can then estimate $\boldsymbol{\beta}$ by $\mathbf{E}'\mathbf{E}/T$ and hence estimate $\boldsymbol{\Omega}$ by $\mathbf{E}'\mathbf{E}/T \otimes \mathbf{I}_T$. The corrected standard errors are computed by taking the square root of the diagonal element of $(\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}'(\mathbf{E}'\mathbf{E}/T \otimes \mathbf{I}_T)\mathbf{X}(\mathbf{X}'\mathbf{X})^{-1}$.

²³ I cannot reject the null hypothesis of equal coefficients.

analysis, I find evidence in support of the strategic debt explanation, even after controlling for fixed effects. The empirical identification strategy in that paper is to use only the within-municipality variation over time in the level of debt and look for election year effects. I find that reelected incumbents, left-wing or right-wing governments, induce an electoral cycle in the level of debt of similar magnitude (7.2 and 6.0 percent of total debt, respectively). However, the behavior of the ousted incumbents differs sharply. An ousted right-wing government has about twice as large a cycle (12 percent) as a reelected right wing incumbent. In contrast, an ousted left wing government has a considerably smaller cycle (1.5 percent) than a reelected left-wing government. These results further strengthen the strategic debt explanation of this paper.

Another issue that would lend support to the strategic debt explanation is that left- and right-wing governments actually pursue different fiscal policies, once in power. The explicit assumption in Persson and Svensson's strategic debt model is that left-wing governments want higher spending than right-wing governments. Lidbom Pettersson (2000b) makes an extensive test of whether different parties matter for fiscal policy choices, again using the same sample of Swedish local governments. The empirical identification strategy is now to control for both municipality fixed effects and time-specific effects. Thus, the partisanship effect is identified only when there has been a change in power. I find significant and sizeable partisanship effects; a change of power from left to right leads to an immediate spending cut of about 1.6 percent of total spending and vice versa. The long-run effect is instead in the order of 12 percent of spending.

VI. Conclusion

My results strongly suggest that a right wing government accumulates more debt during its term in office, the more likely its anticipated electoral loss. On the other hand, a left-wing government accumulates less debt, the higher the probability of its defeat. These effects are sizeable: a right-wing government increases its level of debt by 15 percent while a left-wing government decreases its debt by 11 percent, both believing they will be replaced with certainty rather than remaining in office with certainty. These results are

consistent with the predictions from the strategic debt model developed by Persson and Svensson (1989).

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TABLE 1
FREQUENCY OF GOVERNMENT CHANGES AND AVERAGE VOTE SHARES

Frequency of government changes	Number of governments	Average vote shares
0	117	62.2
1	28	57.0
2	42	55.9
3	40	53.5
4	29	52.9
5	13	52.8
6	8	52.0
7	0	-

Note. - A government change is defined as a change of power between left-wing, right-wing or undefined governments. The calculation of average vote shares only includes left- or right-wing incumbent governments

TABLE 2
INCUMBENT GOVERNMENTS

	Left wing incumbent	Right wing incumbent
Incumbent defeated, $P^* = 1$	107	194
Incumbent reelected, $P^* = 0$	710	619
Total sum	817	813

TABLE 3
ECONOMIC AND DEMOGRAPHIC VARIABLES 1974-1994^a

Variable	Mean	Standard Deviation	Minimum	Maximum
Probability of defeat P^*	0.24	0.43	0	1
Left wing incumbent government $D=1$	0.42	0.49	0	1
Debt	11209	5407	1061	49420
Average income	76022	12464	35147	162799
Population size	30226	52978	3480	692954
Population density	115	372	0.29	3700
Proportion of elderly (65+)	0.18	0.04	0.03	0.29
Proportion of young (0-16)	0.21	0.03	0.13	0.37

Note.-Debt and average income is per capita in 1991 SEK.

TABLE 4
THE IMPACT OF THE PROBABILITY OF DEFEAT ON THE LEVEL OF DEBT

Explanatory variable	Proxy variable: ex-post election outcomes P^*	Instrumental variable method
Socialist incumbent $D=1$	856 (4.54)	1097 (4.90)
Probability of defeat P	577 (2.00)	1654 (3.23)
$D * P$	-1953 (-4.27)	-2933 (-3.67)
Inherited debt	0.74 (41.65)	0.73 (40.62)
Proportion of young 0-15	10183 (1.74)	13090 (2.16)
Proportion of elderly 65+	7850 (2.11)	9515 (2.51)
Average income	-0.003 (-0.30)	-0.002 (-0.16)
Population size	0.016 (7.92)	0.015 (7.23)
Population density	-0.07 (-0.24)	0.02 (0.05)
Time effects	Yes	Yes
Number of observations	1628	1628
R^2	0.6680	0.6651

Note.- The dependent variable is the level of debt. Estimates are based on Swedish municipality data for 1974-1994, excluding municipalities, which cannot be classified as either left wing or right wing. All regressions were run with seven year specific effects; these coefficients are not reported. Col.1 uses the ex-post election outcome as a proxy for the probability of defeat. In col. 2, the probability of defeat is estimated from probit regression with fixed municipality effects. The fitted probabilities are used as instruments for the ex-post election outcome proxy. t -statistics are in parentheses. IV-standard errors were used in calculating t -statistics for the IV regression.

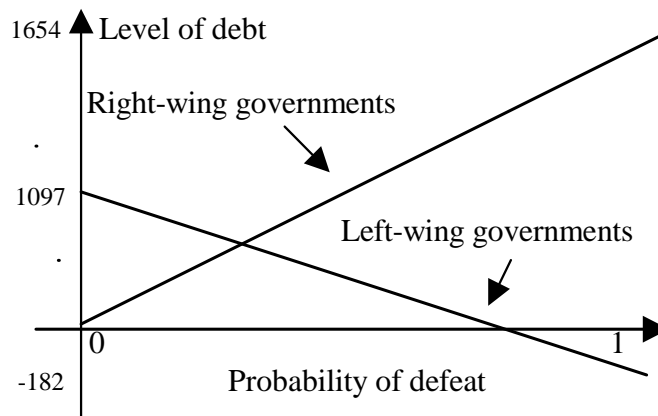


FIG. 1. -The effect of the probability of defeat on the level of debt