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POLITICAL CYCLES AND CYCLICAL POLICIES
A new test approach using fiscal forecasts

Henry Ohlsson
Anders Vredin

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Henry Ohlsson
Department of Economics
Uppsala University
Box 513
S-751 20 Uppsala
Sweden

Anders Vredin
Department of Economics
Stockholm School of Economics
Box 6501
S-113 83 Stockholm
Sweden

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Abstract

We test how government revenue and expenditure depend on economic activity, elections, and ideology. We show how the use of fiscal forecasts makes it possible better to understand the determinants of fiscal variables and to separate fiscal policy rules from discretionary policies. The approach is illustrated using a unique, unpublished Swedish data set of fiscal forecasts and forecasts of economic activity. Revenue varies positively with nominal earnings, expenditure varies negatively with real GDP. We find partisan effects, but no political business cycle effects. Revenue and expenditure are lower with non-Social Democratic governments. The partisan effect on revenue is stronger than on expenditure. Using another unique data set, we find that there are autonomous decisions behind the reaction of expenditure, but not of revenue, to activity.

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1. Introduction

The new classical revolution in macroeconomic theory has resulted in a widespread skepticism toward Keynesian theories and policy prescriptions. Irrespective of ones view of this development, it is important to realize that also this revolution has had both positive and negative effects. On the positive side, new classical theories have improved the methods for analyzing interactions between private decision-making and policy-making. Economic policy should not be viewed as exogenous to the rest of the economic system, and private decisions cannot be assumed to ignore available information about how policy variables are set. According to Lucas & Sargent (1979), it is most useful to "think of policy as the choice of stable rules of the game, well understood by economic agents" (p. 317).

On the negative side, and somewhat paradoxically, the diminished expectations about what can be achieved by active stabilization policy have lead to a decreased interest for the actual policy pursued. To describe and interpret policy-making processes, and the outcomes of them, apparently became unfashionable in conjunction with the introduction of rational expectations econometrics. It is only recently that a renewed interest in political business cycles and partisan theories has given rise to a new wave of empirical studies of macroeconomic policy-making.[1]

One reason why analyses of policy-making became unfashionable after the new classical revolution might be that policy reaction functions are hard to specify and estimate unless one knows the policy maker's information set. In this paper we use a unique (or at least previously not explored or even published) data set to investigate the determinants of fiscal policy. Our analysis is based on forecasts made by the central government in Sweden 1968 - 1992. The forecasts cover not only central government revenue and expenditure, but also business cycle conditions. The

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[1] See, e.g., Alesina et al. (1992), Alesina & Roubini (1992), and Roubini & Sachs (1989).

data set therefore contains important information about policy-makers decision rules that is not revealed in the outcomes of fiscal and other macroeconomic variables. With the data set it is possible to estimate the coefficients of the central government revenue and expenditure functions and to separate fiscal policy rules from discretionary policy.

Economic policy in Sweden has been viewed as a Keynesian experiment and has attracted international interest. For instance, Sheffrin (1988) finds that Sweden differs from other European countries in that the volatility of economic fluctuations was significantly lower during the period 1951 - 1984 than in 1871 - 1914 and in 1922 - 1939.[2] Stanley Fischer said in a comment on Taylor (1982) that "(the paper) reaches a surprising conclusion: somewhere, sometime, a government policy worked in a way it was intended to" (Taylor (1982), p. 102).

Swedish fiscal policy from World War II to the first oil crisis is thoroughly documented (e.g., by Lindbeck (1968, 1975) and Mathiessen (1971)). Much less is known about Swedish fiscal policy during the last two decades, which are covered in this study. The general feeling seems to be that the Keynesian experiment has failed. Our results, in contrast, suggest that changes in fiscal policy have been systematically and countercyclically related to changes in expectations about business cycle conditions. We also find evidence of partisan effects but not of political business cycles.

The paper is organized as follows: Section 2 presents the definitions and determinants of fiscal policy that the paper is focused on. A simple model of the budget process is derived in Section 3. Empirical results from estimating the model are presented in Section 4. Section 5 contains additional evidence on countercyclical policies. A summary and some conclusions are given in Section 6.

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[2] Englund et al. (1992) discuss Swedish business cycle phenomena in more detail.

2. Fiscal behavior

Several assumptions are needed when studying fiscal behavior. Some of these concern the definition of fiscal policy, while other assumptions concern which determinants of fiscal policy to focus on.

Definitions of fiscal policy. We focus on the fiscal behavior of central government instead of the whole consolidated public sector. Data on central government revenue and expenditure are taken from the official government budget. No corrections of the officially reported amounts are made and we do not include off-budget items. For many purposes it may be necessary to make such corrections - see, e.g., Eisner & Pieper (1984) - but we have considered that to be beyond the scope of the present paper.[3]

The most commonly used indicator of fiscal policy is the fiscal surplus. There is, however, no macroeconomic model that gives any support for measuring fiscal stance by looking at the surplus.[4] A given surplus can have widely different effects depending on how it has come about. This is an argument for disaggregation. We choose to study central government revenue and expenditure separately.

Although our main interest is to study stabilization policy, we include all budget items and not only those explicitly intended to stabilize the level of economic activity. Most fiscal policy instruments are intended for other purposes,

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[3] We have checked the impact of some of the corrections suggested. Computing the interest payments using the real interest rate and taking net investments into account, e.g., mainly affect the level of the variables, and are therefore not of practical importance with the fixed effect modeling approach used here.

[4] Buiter (1990), p 9, writes about: "... the well-known but nevertheless systematically ignored warning of Blinder and Solow (1974) that there are no 'model-free' measures of fiscal stance. Neither the government deficit, not its change, nor the inflation-, growth-, investment- and cyclically-corrected, demand-weighted is a measure of the expansionary thrust (short-, medium- or long-run) of fiscal policy in any model of the economy that I am aware of. Similarly, none of the (doctored or undoctored) deficit measures are reliable indicators of the magnitude or even the sign of the effects of fiscal policy on interest rates, capital formation or the current account of the balance of payments ... ."

but there is no unambiguous way to identify what changes in the policy instruments that are mainly motivated by stabilization objectives. To separate "structural" and "cyclical" components of the budget, it is common practice to compute cyclically adjusted budget balances (see, e.g., Blinder & Solow (1974) and Blanchard (1990)). In one way or the other, this usually involves regressing government revenue and expenditure on various indicators of macroeconomic activity. This is also the approach of the present paper, although we have no direct purpose to uncover "structural" or "cyclical" components of the budget. As will become clear below, we will look at annual changes in the budget; we believe that this is sufficient to isolate the short run (cyclical) fluctuations from the long run (structural) trends.

Determinants of fiscal policy. Given our focus on issues of short run stabilization policy, we will concentrate on economic activity, elections, and ideology as determinants of fiscal behavior:

Economic activity. Fiscal policy may respond to changes in economic activity either through "automatic stabilizers" or through autonomous countercyclical policy changes. The income tax system is probably the most important automatic stabilizer.[5] Autonomous changes in fiscal instruments motivated by stabilization purposes may take the form of changes in indirect taxes or, which has been common in Sweden, in expenditures on job creation measures (cf. Ohlsson (1992)). Through both automatic stabilizers and autonomous decisions, government revenue and expenditure should, therefore, be expected to be systematically related to various indicators of economic activity, such as unemployment or the deviation of GDP from its trend.

Empirical studies of fiscal policy in Sweden have traditionally made a distinction between autonomous and automatic changes in fiscal policy - see, e.g.,

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[5] For a recent survey of the literature on automatic stabilizers, see Dillén (1993).

Mathiessen (1971) and Lindbeck (1975) - but the distinction between rules and discretion is more prevalent in the modern macroeconomic literature. Although the distinction may be well defined in a particular theoretical context, it is not clear that there is a more general definition, nor how the rules-discretion and autonomous-automatic distinctions are related. One issue concerns whether changes in fiscal policy are the results of direct political decisions or not, another whether there is feedback from, e.g., economic activity or not.

According to a very narrow definition of rules, these imply predetermined policy variables. No recurrent political decisions are needed, and there is no feedback from the economic activity level. A constant money supply (growth rate) rule and a rigidly fixed exchange rate are examples of such rules.

According to a wider definition, rules may be contingent. Changes in economic activity may, however, feed back to policy even without any recurrent direct political decisions. Income taxes are an example of such a rule, since tax revenue varies with economic activity. The tax rates are the policy instruments in this case. With constant tax rates, revenue will be lower in recessions than in expansions; the tax system may work as an automatic stabilizer.

The Swedish labor market training and relief works constitute another example of contingent rules. Here the policy instrument is total expenditure. It is affected by feedback mechanisms similar to those of the income tax system and other automatic stabilizers. At the same time, labor market policy differs from income taxes in that it has continuously been dimensioned by autonomous political decisions. Fiscal policy rules may, therefore, include both automatic and autonomous changes in fiscal policy.

The important difference between automatic stabilizers and autonomous feedback decisions is that if a shock hits the economy, the stabilizers automatically go into operation, regardless of whether the political system has registered the shock or not. Feedback decision-making, on the other hand, needs information before

decisions can be made.

If all systematic relationships between fiscal variables and the activity level are classified as (contingent) rules, then by definition discretion is unsystematic. Consequently, there cannot exist countercyclical discretionary policy. There would not have to be any debate over whether stabilization policy should be based on rules or discretion. This normative question is beyond the scope of the present paper, but we hope to shed some empirical light on the relative importance of rules and discretion behind the changes in fiscal policy.

Elections. Political business cycle theories predict that elections will affect the timing of revenue and expenditure. The original political business cycle model by Nordhaus (1975) predicts that governments stimulate the economy before elections to exploit a short-run Phillips-curve. The model predicts high growth and low unemployment before elections. In the rational political business cycle model of Rogoff & Sibert (1988) and Rogoff (1990) the government has an incentive to use the fiscal variables to signal competence, rather than to affect economic activity, before elections.

Ideology. According to Hibbs' (1977) partisan theory, left-wing parties are more concerned with unemployment than with inflation compared to right-wing parties. When in power the parties will choose different points on a Phillips-curve. Right-wing governments will strive for lower inflation and higher unemployment than left-wing governments. The rational partisan theory of Alesina (1987) predicts temporarily lower growth and higher unemployment when a right-wing government takes office compared to when a left-wing government does. Both versions of the theory predict that left-wing governments pursue more expansionary policies than right-wing ones.

To sum up, we assume that government revenue and expenditure can be described by the behavioral functions (1):

$$T(t) = \alpha(t) + \beta X(t) \tag{1}$$

$$G(t) = a(t) + b X(t)$$

where T(t) is log government revenue in period t, G(t) is log government expenditure, X(t) is a vector of log variables measuring economic activity, and β and b are parameter vectors. In (1) we assume that revenue and expenditure are only affected by contemporaneous activity. This restriction is relaxed in the empirical analysis. For a given activity level, revenue and expenditure vary over time because of, e.g., elections and ideology, according to:

$$\alpha(t) = \alpha_0 + \alpha_1 \text{ trend} + \alpha_2 \text{ election cycle}(t) + \alpha_3 \text{ ideology}(t) \tag{2}$$

$$a(t) = a_0 + a_1 \text{ trend} + a_2 \text{ election cycle}(t) + a_3 \text{ ideology}(t)$$

where election cycle(t) is a vector of dummies capturing preelection, election, and postelection periods while ideology(t) is a vector of dummies for the ideology of governments. The α's and a's are parameters and parameter vectors.

3. A formal model of the budget process

Each spring the so called supplementary budget bill from the Swedish government presents a long term budget for the five years following the coming fiscal year. Long term budgets for the fiscal years (t/t+1) - (t+4/t+5) are therefore presented in the spring of calendar year t-1. The purpose is to forecast revenue and expenditure under the assumption that policy remains unchanged. For instance, the long term budget presented in 1990 forecasts revenue and expenditure for the fiscal year 1991/92 (starting 1 July) and onwards based on 1990/91 years's policy. The

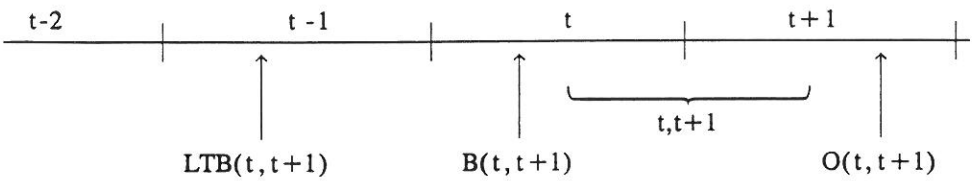

Figure 1 Timing of long term budget, budget, and outcome.

actual budget for a fiscal year (t/t+1) is presented during the spring preceding the start of the fiscal year (i.e., during the spring of year t). Deviations from the long term budget can arise, first, because the government's information about, e.g., economic activity has changed (changes in the expectations of X(t)), and, second, because policy - for a given activity level - has changed (changes in $\alpha(t)$, a(t), β, and b). The outcome may differ from the budget for the same reasons. Figure 1 shows the timing of the long term budget (LTB), the budget (B), and the outcome (O). The outcome is, however, forecasted during the fiscal year. Although the final outcome is published during fall, there are accurate forecasts available during spring.

The macroeconomic forecasts that the long term budget and the budget are based on provide the information necessary to estimate the systematic reaction of revenue and expenditure to (forecasted) activity. Let us take the long term budget for 1992/93, which was presented in the spring of 1991, as an illustration:

The starting points for the long term budget are forecasts for, i.a., real GDP growth, inflation, the growth of nominal earnings, unemployment, interest rates,

etc.. From assumptions about such variables the Ministry of Finance in spring 1991 calculated a fiscal deficit of SEK 46 billion for 1992/93. In the actual budget bill for 1992/93, presented in 1992, the deficit was calculated to SEK 102 billion. This was an increase in the forecasted fiscal deficit for a given fiscal year by SEK 56 billion. If we compare the macro forecasts in the long term budget and the budget for 1992/93, we find that the forecasts for inflation, nominal earnings, and expected real GDP growth have been revised downward. We expect these revisions to lead to an increase in the budget deficit - revenue will go down and expenditure up because of both rules and discretion - but we cannot, without further analysis, say anything more precise about these effects. Our objective is to estimate the systematic policy reaction based on a simple model in which changes in the macro forecasts explain deviations between the long term budget and the budget.

The long term budget for year t/t+1 is published slightly more than one year before the start of the fiscal year (cf. Figure 1). At that time, the Ministry of Finance has access to outcomes for macroeconomic variables for year t-2. Forecasts must be made for the years t-1, t, and t+1. Assuming that there may exist lags in the effects of activity, we may express revenue in the long term budget as a function of the expected macroeconomic variables and policy instruments as:

$$
\begin{aligned}
{}_{t-1}T^{e}(t,t+1) = {}_{t-1}\alpha^{e}(t,t+1) + {}_{t-1}\beta^{e}(t,t+1)\,{}_{t-1}X^{e}(t-1) + \\
+ {}_{t-1}\gamma^{e}(t,t+1)\,{}_{t-1}X^{e}(t) + {}_{t-1}\delta^{e}(t,t+1)\,{}_{t-1}X^{e}(t+1)
\end{aligned}
\tag{3}
$$

where ${}_{t-1}T(t,t+1)$ denotes central government revenue according to the long term budget; α, β, γ, and δ denote the policy parameters; and X represents all relevant macroeconomic information that fiscal policy responds to. The term ${}_{t-1}\alpha^{e}(t,t+1)$ represents the period t-1 expectation about the policy parameter α for the fiscal year t/t+1. The expected expenditure can be represented in an analogous way.

The long term budget for year t/t+1 is supposed to be a projection of the policy that is pursued during the fiscal year t-1/t, i.e.,

$$ {}_{t-1}\alpha^{e}(t,t+1) = {}_{t-1}\alpha^{e}(t-1,t). \tag{4} $$

Expectations about β, γ, and δ are formed in a corresponding way. In other words, the long term budget for year t/t+1 is based on, first, the policy in t-1/t, and, second, the forecast at t-1 for the important macroeconomic aggregates up to t+1.

The budget for the fiscal year t/t+1 is presented and decided upon during the spring, year t. Now the government has access to preliminary outcomes for the macroeconomic variables for year t-1. For the years t and t+1 it must make forecasts.[6] We may express revenue according to the budget as

$$ {}_{t}T^{e}(t,t+1) = {}_{t}\alpha^{e}(t,t+1) + {}_{t}\beta^{e}(t,t+1)\ X(t-1) + \tag{5} $$

$$ + {}_{t}\gamma^{e}(t,t+1)\,{}_{t}X^{e}(t) + {}_{t}\delta^{e}(t,t+1)\,{}_{t}X^{e}(t+1) $$

Suppose that the policy parameter β is set according to

$$ \beta(t,t+1) = \beta + {}_{t}\varepsilon^{\beta}(t,t+1) \tag{6} $$

where ε^{β} is a random process, and that γ and δ are determined in the same way. Disregarding election cycles and ideology, the policy parameter α is supposed to fluctuate randomly around a linear deterministic trend, i.e.,

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[6] We assume that the long term budget and the budget are based on the same information on the outcomes for the macroeconomic variables until year t-2. We disregard the possibility that information about the outcome for year t-2 affects fiscal policy between spring t-1 and spring t.

$$\alpha(t,t+1) = \alpha_0 + \alpha_1 t + {}_t\varepsilon^{\alpha}(t,t+1) \tag{7}$$

With these assumptions we can express the difference in expected revenue between the budget and the long term budget as

$$ {}_tT^e(t,t+1) - {}_{t-1}T^e(t,t+1) = \alpha_1 + \beta\,[X(t-1) - {}_{t-1}X^e(t-1)] + \tag{8}$$

$$+ \gamma\,[{}_tX^e(t) - {}_{t-1}X^e(t)] + \delta\,[{}_tX^e(t+1) - {}_{t-1}X^e(t+1)] + \varepsilon(t,t+1)$$

where

$$\varepsilon(t,t+1) = {}_t\varepsilon^{\alpha}(t,t+1) - {}_{t-1}\varepsilon^{\alpha}(t-1,t) + \tag{9}$$

$$+ {}_t\varepsilon^{\beta}(t,t+1)\,X(t-1) - {}_{t-1}\varepsilon^{\beta}(t-1,t)\,{}_{t-1}X^e(t-1) +$$

$$+ {}_t\varepsilon^{\gamma}(t,t+1)\,{}_tX^e(t) - {}_{t-1}\varepsilon^{\gamma}(t-1,t)\,{}_{t-1}X^e(t) +$$

$$+ {}_t\varepsilon^{\delta}(t,t+1)\,{}_tX^e(t+1) - {}_{t-1}\varepsilon^{\delta}(t-1,t)\,{}_{t-1}X^e(t+1).$$

The residual $\varepsilon(t,t+1)$ is a weighted average of the random shifts in the policy parameters, the weights given by the macroeconomic variables which policy responds to. The residual $\varepsilon(t,t+1)$ appears to be a meaningful operationalization of discretionary fiscal policy. The estimates of the policy parameters α, β, γ, and δ provide information about the systematic part of fiscal policy, i.e., about fiscal policy rules. It should be noted that $\varepsilon(t,t+1)$ may be autocorrelated since, e.g., $\varepsilon^{\beta}(t-1,t)$ affects both $\varepsilon(t-1,t)$ and $\varepsilon(t,t+1)$.

We can, of course, write a model corresponding to (8) for expected expenditure.

Fiscal policy reactions during the fiscal year are assumed to create divergencies between the budget and the outcome for the same reasons that create divergencies between the long term budget and the budget. The only difference is that the outcomes for the macro variables for year t-1 are known not only during the fiscal year t/t+1 but already when the budget is presented in the spring of year t. In analogy, we get the following model for deviations between revenue outcome and revenue according to budget:

$$T(t,t+1) - {}_tT^e(t,t+1) = \alpha_1^* + \gamma^*[X(t) - {}_tX^e(t)] + \tag{10}$$

$$+ \delta^*[{}_{t+1}X^e(t+1) - {}_tX^e(t+1)] + \varepsilon^*(t,t+1).$$

A corresponding model can be written for expenditure.

By estimating separate reaction functions for the behavior before (model (8)) and during the fiscal year (model (10)), we can study if there are differences in the policy reaction. This can be done by comparing the estimated parameters in (8) and (10). The rule for automatic stabilizers, for a given change in (forecasted) activity, should be the same before and during the fiscal year. Autonomously decided feedback before and during the fiscal year may, on the other hand, differ in response to activity. It may intentional government behavior not to react in the same way before and during the year. There lies a policy potential in the choice whether or not to announce policy before the start of the fiscal year. The government may want to exploit this.

In the empirical analyses reported in the next section, we estimate models (8) and (10) using data on government revenue and expenditure and on three key macro variables: the growth rates of real GDP, nominal earnings, and consumer prices (i.e., X(t) is a three-dimensional vector, and β, γ, and δ are parameter vectors). It was not possible to find long enough data series of forecasts for other

variables of potential interest, such as an interest rate, private consumption, or unemployment. The forecasts from the second half of the 1980's have been found in the published long term budgets. For the previous years we have used the Ministry's internal working material (which was saved in the archive of the Ministry of Finance) and forecasts presented in the supplementary budget bill. The data set is presented in Appendix B.

Our approach may be compared with that chosen by Miller (1991) who uses U.S. data. While we estimate the discretionary policy changes, Miller adjusts his data on outcomes with prior estimates of "policy errors" (differences between budget and outcome that are due to changes in policy) provided by the Congressional Budget Office. To examine whether budget forecasts are biased, the adjusted outcome data are regressed on budget data. Miller tests whether budget forecast errors are systematically related to forecasts of macroeconomic variables, i.e., ${}_tX^e(t)$ in our notation, while we regard the forecast error $X(t) - {}_tX^e(t)$ as a source of deviations between budget and outcome. Our data set contains more information about fiscal policy than Miller's, both because we have access to data from long term budgets and because we use longer time series.[7]

As suggested in Section 2, models (8) and (10), which relate changes in government revenue (expenditure) to revised forecasts about macroeconomic activity, can be augmented by variables representing election or partisan effects. To capture election effects we use the following dummy variables:

$$POST(t,t+1) = \begin{cases} 1 \text{ if there is an election during } t/t+1 \\ 0 \text{ otherwise} \end{cases} \tag{11}$$

[7] The X(t) variables in Miller's study are the price level, real GDP, unemployment, and the three month Treasury bill rate. With short time series, Miller is forced to condition the outcome data on these variables, one at a time.

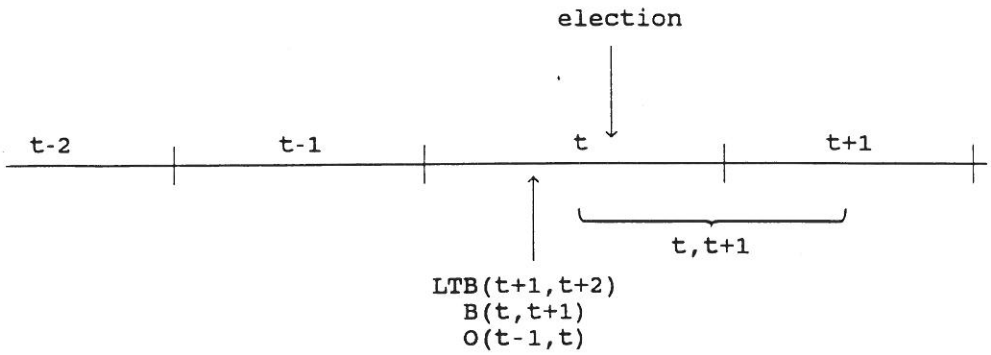

Figure 2 Elections and long term budget, budget, and outcome.

$$\text{PRE}(t,t+1) = \begin{cases} 1 \text{ if there is an election during } t+1/t+2 \\ 0 \text{ otherwise} \end{cases} \tag{12}$$

In principle, there are reasons why the long term budget for t/t+1 should be affected both because there is an election during or immediately after the fiscal year when the long term budget is presented (PRE(t-1,t) and POST(t-1,t) affect LTB(t+1,t+2)), and because there is an election during or immediately after the year that the long term budget concerns (i.e., PRE(t,t+1) and POST(t,t+1) affect LTB(t,t+1)).

In practice, however, we cannot separate these effects. In Sweden, elections have been held regularly every third year in September. Consequently, there is only a single midelection year. This means that PRE(t-1,t) = POST(t,t+1) and POST(t-2,t-1) = PRE(t,t+1). Coefficients on the dummy variables (11) and (12) in model (8) and model (10), therefore, need to be interpreted with care. Estimation of reaction functions for the levels of the long term budget, the budget, and the outcome separately, instead of for the differences between these variables, would allow us to identify more (and more interpretable) election effects, but would give

rise to other questions about trend adjustment etc..

To capture effects from ideology, we augment models (8) and (10) by the following dummy:

$$\text{NONSOC}(t,t+1) = \begin{cases} 0 \text{ if the government is Social Democratic during } t/t+1 \\ 1 \text{ otherwise} \end{cases} \tag{13}$$

We expect the long term budget for t/t+1 to be affected by whether there is a Social Democratic government or not when the long term budget is presented (i.e., by NONSOC(t-2,t-1)), and not by (any expectations about) the political regime for the fiscal year t/t+1. We similarly expect the budget to be affected by NONSOC(t-1,t) and the outcome by NONSOC(t,t+1). If differences in ideology have the same effects on the long term budget, the budget, and the outcome, differences between long term budget, budget and outcome should only occur when there are shifts in the political color of the government (i.e., because of changes in NONSOC).

4. Empirical results

Government revenue and expenditure in Sweden, as forecasted in the long term budgets, are shown by the dotted lines in Figure 3 and Figure 4. Dashed lines are budget figures, and the actual outcomes for each fiscal year are shown by solid lines. The series are deflated using the price index for public consumption, base year 1980.

The figures show that, almost without exceptions, the long term budget and the budget underestimate both revenue and expenditure. Miller (1991) finds the same pattern for government expenditure in U.S. data, while revenue seems systematically overestimated. Swedish data are in line with a "conventional wisdom" that says that

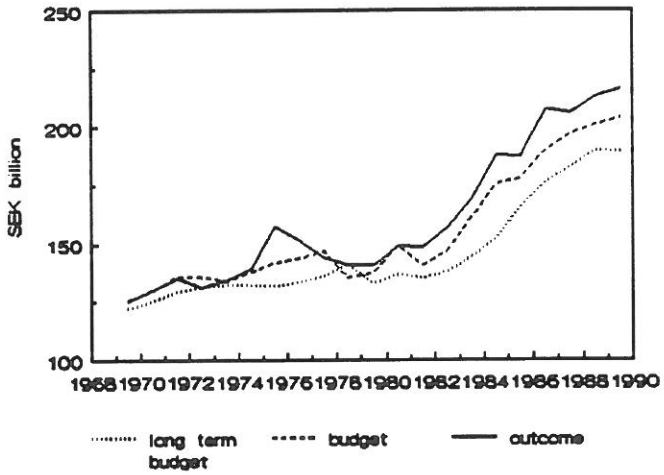

Figure 3 Central government revenue, 1969/70-1989/90, 1980 year's prices.

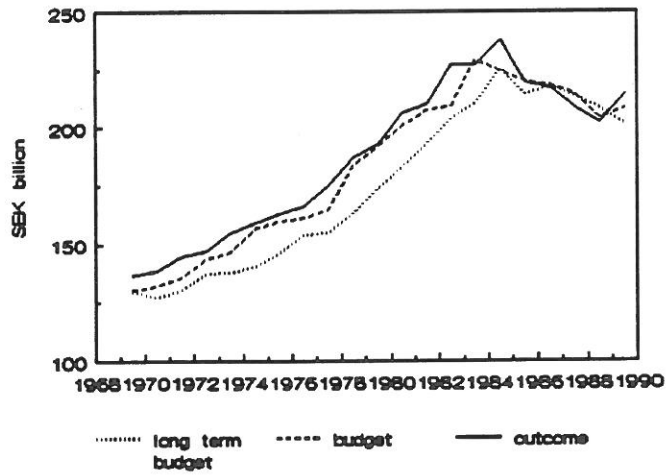

Figure 4 Central government expenditure, 1969/70-1989/90, 1980 year's prices.

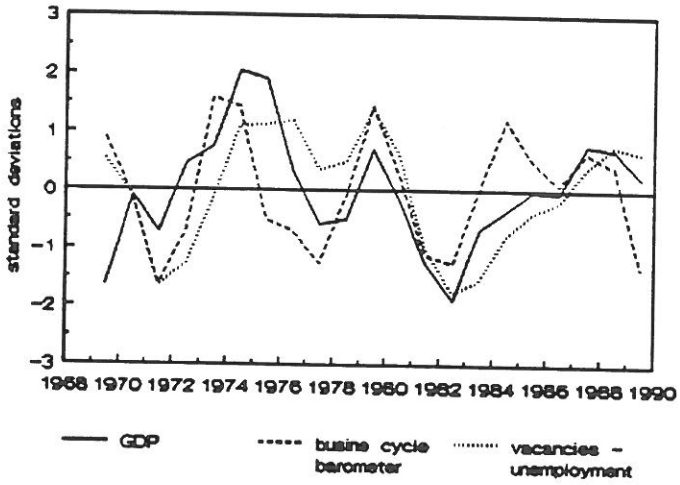

Figure 5 The Swedish business cycle, 1969/79-1989/90.

revenue is underestimated because of conservative (cautious) attitudes.[8]

In Figure 3 and Figure 4 we can also see that expenditure and revenue, as estimated in the long term budgets, are smoother than budget and outcome figures. All time series are, however, dominated by strong time trends. As a first check of whether fiscal policy has been countercyclical, we have compared trend adjusted revenue and expenditure with three trend adjusted measures of business activity: real GDP, the difference between the numbers of vacancies and unemployed (in relation to the labor force), and a measure of capacity utilization in manufacturing compiled by the National Institute of Economic Research (Konjunkturinstitutet). All series have been detrended by regression on a constant, a linear trend, and a quadratic trend. Figure 5 shows the three measures of business activity (standardized by division with the own standard deviation).

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[8] See Choate & Thompson (1990) for a theoretical analysis of this phenomenon.

Table 1 Correlations with the business cycle, 1969/70-1989/90.

indicator		t-1,t	t,t+1	t+1,t+2
	revenue t,t+1			
GDP	long term budget	**0.44**	**0.59**	**0.56**
	budget	**0.46**	**0.54**	0.34
	outcome	**0.54**	**0.53**	0.28
the business cycle barometer	long term budget	0.12	0.20	0.23
	budget	0.29	0.17	0.02
	outcome	0.33	0.11	-0.07
vacancies - unemployment	long term budget	0.09	0.34	**0.71**
	budget	-0.03	0.16	0.38
	outcome	0.02	0.19	0.38
	expenditure t,t+1			
GDP	long term budget	**-0.57**	**-0.56**	-0.24
	budget	**-0.65**	**-0.44**	-0.20
	outcome	**-0.64**	**-0.64**	-0.27
the business cycle barometer	long term budget	-0.15	0.14	0.12
	budget	-0.11	0.23	0.20
	outcome	-0.22	-0.00	0.17
vacancies - unemployment	long term budget	**-0.57**	**-0.59**	**-0.56**
	budget	**-0.51**	**-0.50**	**-0.52**
	outcome	**-0.50**	**-0.62**	**-0.66**

Notes. We calculate GDP, the business cycle barometer, unemployment, and vacancies per fiscal year from quarterly data. The standard error for estimated correlations in large samples of independent observations is $n^{-0.5}$ where n is the number of observations. Here this corresponds to approximately 0.22. Bold types show all correlations ≥ 0.40.

Table 1 reports correlations between the detrended series on revenue, expenditure, and business activity. The table provides some indications of countercyclical policies: real revenue has been higher than average in expansions (in terms of real GDP), and real expenditure has been higher than average in recessions (in terms of real GDP or employment). It is noteworthy that the evidence of countercyclical fiscal policies seems as strong in long term budgets as in actual budgets and final outcomes.

The results are suggestive but there are objections to these simple calculations that provide motivation for the derivation and estimation of models like (8) and (10). First, the decomposition in trend and cycle can always be questioned regardless of detrending method. It would be preferable to avoid detrending. Second, deflating the series is a way to find transformations that describe what has happened. There are, however, no reasons to expect that the revenue and expenditure functions are nominally neutral, i.e., homogeneous of degree zero in prices. Third, the comparisons are made using ex post data on the business cycle. The forecasted activity levels, that provide the bases for the long term budget and the budget, are indeed different from the actual activity level.

To examine whether changes in fiscal policy have been systematically related to changes in expected economic activity, we have regressed the deviations between long term budgets, budgets and outcomes on forecast revisions, as outlined in the previous section. More precisely, the following models have been estimated:

$$
\begin{aligned}
{}_{t}T^{e}(t,t+1) - {}_{t-1}T^{e}(t,t+1) &= \alpha_{1} + \beta\,[X(t-1) - {}_{t-1}X^{e}(t-1)] + \qquad (14)\\
&+ \gamma\,[{}_{t}X^{e}(t) - {}_{t-1}X^{e}(t)] + \delta\,[{}_{t}X^{e}(t+1) - {}_{t-1}X^{e}(t+1)] + \varepsilon(t,t+1) + \\
&+ \alpha_{21}PRE(t,t+1) + \alpha_{22}POST(t,t+1) + \alpha_{31}NONSOC(t-1,t) + \alpha_{32}\Delta NONSOC(t-1,t)
\end{aligned}
$$

$$T(t,t+1) - {}_tT^e(t,t+1) = \alpha_1^* + \gamma^*[X(t) - {}_tX^e(t)] + \tag{15}$$

$$+ \delta^*[{}_{t+1}X^e(t+1) - {}_tX^e(t+1)] + \varepsilon^*(t,t+1) +$$

$$+ \alpha_{21}^* PRE(t-1,t) + \alpha_{22}^* POST(t-1,t) + \alpha_{31}^* NONSOC(t,t+1) + \alpha_{32}^* \Delta NONSOC(t,t+1)$$

where $\Delta NONSOC(t-1,t) = NONSOC(t-1,t) - NONSOC(t-2,t-1)$. Analogous models can be derived for expenditure.

We have estimated similar models with different dependent variables. It can be argued that changes in nominal revenue and expenditure need not reflect policy changes, since nominal revenue and expenditure levels are not really policy instruments. For revenue, it may be more interesting to look at changes in tax rates. As to expenditure, one may argue that it is level of expenditure in real terms that is the policy instrument (e.g., volumes of government consumption and investment, number of government employees). We have, therefore, also estimated models (14) and (15) using the changes in expected average effective tax rate (expected revenue/expected GDP) and expected real expenditure (expected nominal expenditure deflated by expected price level) as dependent variables.[9] The results are, however, not very different from those using nominal revenue and expenditure as dependent variables and are, therefore, reported in Appendix A.

The explanatory macroeconomic variables are captured in X, a column vector with elements wl(s), y(s) and p(s); the first differences of the logarithms of nominal earnings (wl), real GDP (y) and the consumer price index (p) year s. Consequently, β, γ, and δ are now row vectors of coefficients. The dummy variables PRE, POST, and NONSOC are defined in the previous section, and their effects are

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[9] Government transfers constitute a middle category. They may be viewed as negative taxes, and the relevant policy instruments might be a negative tax rate. Since transfers are included in expenditure (rather than deducted from revenue), we have only studied the fluctuations in nominal and real transfers.

captured by the α's for revenue and the corresponding a's for expenditure. The residual ε is a measure of "policy errors", or "discretion".

Policy reactions before the fiscal year. For the last five years in our sample, there are two long term budget alternatives. They differ in their forecasts of macroeconomic activity (the X's). When estimating model (14), we have therefore formed a panel with 24 observations for the main alternative and 8 observations for the second alternative. Table 2 reports the results from estimations of model (14). We have estimated the full model and some, admittedly rather arbitrary, more parsimonious specifications.

Table 2 shows that expenditure is constantly (for given forecasts of the macro variables) some percentages higher in the budget than in the long term budget. If the revisions of the forecasts of macroeconomic activity were zero on average, this would reflect a trend growth in expenditure between the budget and the long term budget. (Point estimates of the intercept are similar for revenue, but standard errors are larger.) The means of forecast revisions (for nominal earnings and consumer prices) are, however, significantly positive. It is hard to tell whether these biases are intentional or not. The government may be a bad forecaster, but it may also, for some reason or the other, choose to bias the forecasts to try to affect the behavior of other economic agents. The objective might, e.g., have been to get lower wage increases and avoid pressure for higher government expenditure.

This does not, however, prevent us from estimating the policy reaction functions. Suppose that the revenue and expenditure functions (1) exist. The long term budget, the budget, and the outcome are realizations of these functions. For the estimations of the parameters of the functions it does not matter whether the forecasts of the macro variables are biased or not. We will always get an observation from the underlying function, a combination of values for the explanatory variables and the dependent variable.

Judging from Table 2, more than half of the fluctuations in changes in

Table 2 Deviations budget - long term budget, 1969/70-1992/93.

	revenue				expenditure			
constant	0.008	0.044	0.056	0.059	0.033	0.060	0.021	0.029
	(0.38)	(1.46)	(5.30)	(3.93)	(2.47)	(2.59)	(2.75)	(1.97)
difference in forecasted growth								
nominal earnings, t-1	0.52	1.64		1.53	0.36	0.15		
	(0.68)	(2.44)		(3.00)	(0.72)	(0.30)		
nominal earnings, t	0.58	0.10			-0.55	-0.82	-0.48	-0.45
	(1.03)	(0.18)			(1.48)	(1.97)	(1.79)	(1.54)
nominal earnings, t+1	0.60	0.59	1.18	0.62	0.43	0.61		
	(1.12)	(1.36)	(2.77)	(1.82)	(1.24)	(1.83)		
real GDP, t-1	0.99	1.94	1.43	1.61	-0.40	0.81		
	(1.00)	(1.93)	(1.82)	(2.47)	(0.62)	(1.06)		
real GDP, t	3.06	1.02			-0.14	-1.34		
	(2.23)	(0.80)			(0.16)	(1.38)		
real GDP, t+1	-2.12	-1.73			-1.14	-0.41	-1.41	-1.23
	(1.37)	(1.32)			(1.13)	(0.41)	(2.40)	(2.07)
consumer prices, t-1	0.98	0.05			-1.06	-0.88		
	(0.73)	(0.05)			(1.21)	(1.05)		
consumer prices, t	1.32	1.02			0.63	0.58	1.01	0.88
	(2.07)	(2.04)			(1.52)	(1.53)	(3.84)	(3.63)
consumer prices, t+1	-1.42	-1.48			0.41	0.25		
	(1.69)	(2.13)			(0.75)	(0.46)		
preelection year		-0.014		-0.008		-0.034		-0.018
		(0.52)		(0.42)		(1.67)		(1.20)
postelection year		-0.022		-0.011		-0.025		-0.018
		(0.92)		(0.63)		(1.39)		(1.27)
non-Social Democratic government		-0.023		-0.022		0.036		0.036
		(1.04)		(1.09)		(2.19)		(2.34)
shift to/from non-Social Democratic government		-0.091		-0.098		-0.044		-0.036
		(3.25)		(3.85)		(2.04)		(2.03)
R^2	0.46	0.74	0.25	0.65	0.61	0.74	0.55	0.68
$\bar{R}^2$	0.24	0.55	0.19	0.55	0.45	0.56	0.50	0.59
SEE	0.05	0.04	0.05	0.04	0.03	0.03	0.03	0.03
Durbin-Watson	1.71	2.43	1.78	2.66	1.58	1.64	1.49	1.37

Notes. The number of observations is 32. Absolute t-values within parentheses.

expenditure between the long term budget and the budget can be explained as systematic responses to changes in macroeconomic forecasts, i.e., by some policy rule. This rule involves countercyclical policy, in the sense that higher forecasts of nominal earnings or real GDP imply lower expenditure forecasts. There is, however, also evidence of partisan effects. The parameter estimates of NONSOC and ΔNONSOC can be interpreted as follows: Forecasted expenditure according to the long term budget is significantly lower with a non-Social Democratic government in office. However, a non-Social Democratic government also systematically revises its expenditure forecasts upward between the long term budget and the budget. Revenue is significantly lower with a non-Social Democratic government.

Although higher nominal earnings and higher real GDP seem to imply higher revenue forecasts, as suggested by Table 2, systematic countercyclical policy seems to play a smaller role for changes in revenue than for expenditure. The political factor is more important for revenue than for expenditure. There is a marked drop in the power of model (14) to explain changes in expenditure forecasts when the dummies are excluded. Non-Social Democratic governments produce significantly lower revenue forecasts in the long term budget than Social Democratic governments. The effect is stronger for revenue than for expenditure. This means that long term budgets from non-Social Democratic governments show larger deficits. In contrast with the case of expenditure, the negative effect on long term budget revenue from a non-Social Democratic government carries over to the actual budget.

Partisan theories suggest that right-wing governments pursue less expansionary policies than left-wing ones, because of differences in priorities with respect to unemployment and inflation. We do not allow the reaction functions of Social Democratic and non-Social Democratic governments to differ in their elasticities with respect to the macro variables, but we do find non-Social Democratic governments to be systematically (irrespective of business conditions) more expansionary in the sense of forecasting larger budget deficits. Our results may

reflect that taxes could be as important as inflation and unemployment in party utility functions.

Policy reactions during the fiscal year. Our analyses of the differences between budget and outcome are more parsimonious than the previous regression models in two respects. First, there is only one budget alternative for each year, which means that we have no panel-type data in this case. (The number of observations is 23.) Second, the outcomes for the macro variables year t-1 are supposed to be known when the budget is approved (i.e., $X(t-1) = {}_tX^e(t-1)$). Table 3 reports the results from estimating model (15).

Our suggested approach for analyses of changes in fiscal policy fit the data better for deviations between long term budget and budget than between budget and outcome. The explanatory power reported is therefore lower in Table 3 than in Table 2, in particular for expenditure. To find any evidence of countercyclical policy rules for changes in nominal expenditure, it is necessary to condition on changes in ideology.

Recall from the previous subsection that non-Social Democratic governments seemed to have stronger ambitions to cut expenditure in long term budgets than Social Democratic governments, while no such difference was visible in actual budgets. That finding does not carry over to the results in Table 3. Compared to the budgets, non-Social Democratic governments have significantly lower revenue outcomes than Social Democratic governments.

There is stronger evidence of countercyclical changes in revenue between outcome and budget than of countercyclical changes in expenditure. For changes in nominal revenue the reaction function during the fiscal year (outcome - budget) looks similar to the reaction function before the fiscal year (budget - long term budget).

When comparing Table 3 with Table 2, one remarkable finding is that model (14) explains substantially more of the changes in expenditure before the fiscal year,

Table 3 Deviation outcome - budget, 1969/70-1991/92.

	revenue				expenditure			
constant	0.004	0.009	0.004	0.023	0.023	0.041	0.021	0.037
	(0.24)	(0.32)	(0.28)	(1.25)	(2.05)	(2.23)	(3.44)	(2.46)
difference in forecasted growth								
nominal earnings, t	1.73	2.75	1.58	2.79	-0.20	0.32		
	(2.26)	(3.43)	(2.54)	(3.80)	(0.44)	(0.63)		
nominal earnings, t+1	0.60	0.08	0.80		-0.45	-0.88		-0.77
	(1.17)	(0.14)	(1.96)		(1.49)	(2.41)		(2.74)
real GDP, t	0.56	1.01		1.04	-0.26	0.19	-0.66	
	(0.63)	(1.10)		(1.41)	(0.50)	(0.32)	(1.52)	
real GDP, t+1	2.02	0.82	2.09		-0.22	-1.02		-0.87
	(2.75)	(0.91)	(3.12)		(0.50)	(1.81)		(1.88)
consumer prices, t	-0.51	-1.94		-2.15	0.08	-0.60		
	(0.39)	(1.45)		(1.78)	(0.10)	(0.71)		
consumer prices, t+1	0.29	0.34			0.36	0.40		0.35
	(0.62)	(0.78)			(1.30)	(1.47)		(1.52)
preelection year		0.010		0.005		-0.011		-0.010
		(0.41)		(0.24)		(0.68)		(0.72)
postelection year		0.007		-0.001		-0.010		-0.010
		(0.26)		(0.06)		(0.59)		(0.71)
non-Social Democratic government		-0.016		-0.023		-0.015		-0.012
		(0.63)		(1.02)		(0.94)		(0.85)
shift to/from non-Social Democratic government		-0.087		-0.102		-0.044		-0.036
		(2.45)		(3.47)		(1.96)		(1.98)
R^2	0.44	0.65	0.42	0.61	0.25	0.47	0.10	0.44
$\bar{R}^2$	0.23	0.37	0.33	0.43	-0.04	0.04	0.06	0.19
SEE	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.03
Durbin-Watson	1.54	1.92	1.67	1.57	1.78	1.51	1.87	1.67
Q(11), p-value	0.45	0.67	0.10	0.73	0.30	0.23	0.73	0.03

Notes. The number of observations is 23. Absolute t-values within parentheses.

than model (15) does of the changes in expenditure during the fiscal year. Expenditure changes during the fiscal year therefore appear to be dominated by discretion, or, more precisely, to have little systematic relation to changes in economic activity. The estimated revenue functions, on the other hand, have almost identical parameter estimates for the activity variables. This is consistent with the hypothesis that revenue mainly is governed by automatic stabilizers.

5. Autonomous fiscal policy during the fiscal year

In this section we will report the results obtained when taking a closer look at fiscal policy changes during the fiscal year using more detailed information from the Swedish National Audit Bureau (Riksrevisionsverket). The bureau forecasts the outcomes of government revenue and expenditure five times during a fiscal year. The starting point for the first forecast is the budget (B(t,t+1)) and the last forecast reports the outcome (O(t,t+1)). The deviation between outcome and budget is, therefore, identical to the sum of all forecast revisions for all revenue and expenditure items.

For all major changes in the forecasts during the fiscal year, the bureau writes a comment giving the reasons for the forecast revision. Using these comments, it is, in principle, possible to classify all major changes during the fiscal year, e.g., to separate the results of autonomous political decisions from other changes. Suppose, e.g., that the forecasted expenditure for child allowances increases. If it is a result of a decision to increase the allowance per child, this may be classified as autonomous policy (a change in a fiscal policy instrument). If, on the other hand, expenditures increase because the number of children has increased (and the instrument has not been changed) this is not an

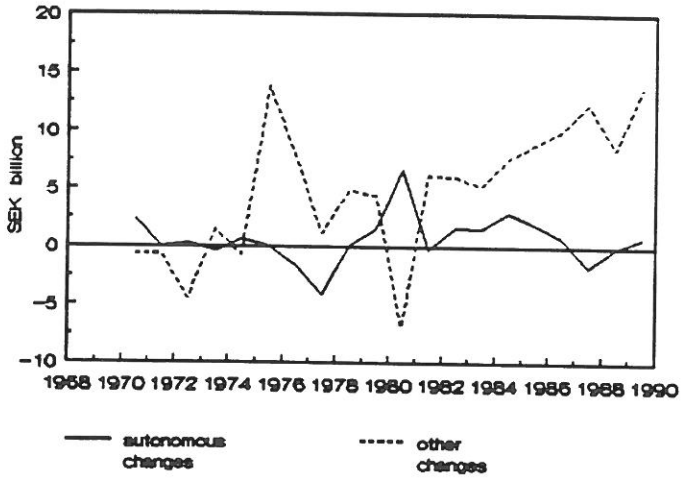

Figure 6 Central government revenue, autonomous and other changes during the fiscal year, 1970/71-1989/90, 1980 year's prices.

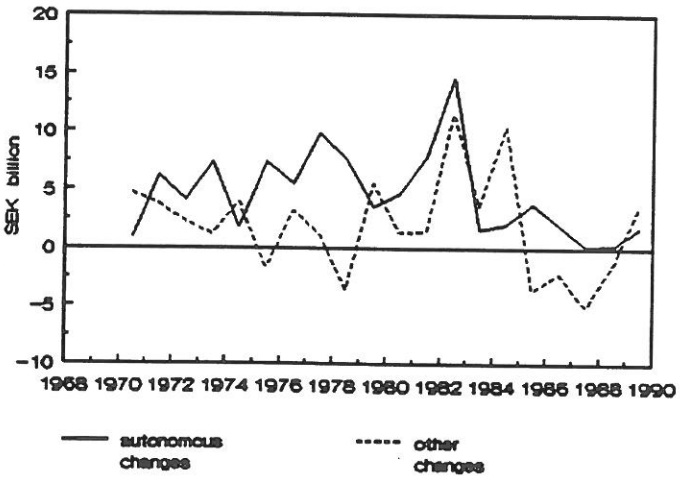

Figure 7 Central government expenditure, autonomous and other changes during the fiscal year, 1970/71-1989/90, 1980 year's prices.

autonomous change of policy.[10]

Going through the forecast revisions and comments made by the National Audit Bureau, separating autonomous changes from other changes, one obtains the time series shown in Figure 6 and Figure 7.[11] For government expenditure the autonomous changes are on average somewhat larger than the other changes, while the opposite holds for revenue. The policy changes in Figure 6 and Figure 7 can be correlated with the three business cycle measures (cf. Figure 5). The strongest indication of countercyclical policy is given by negative correlations between autonomous expenditure changes and cyclical fluctuations in the business cycle barometer and GDP.

We have estimated model (15) with autonomous and nonautonomous nominal revenue and expenditure changes as dependent variables. We cannot find any significant impact of economic activity, elections, or ideology on autonomous revenue and nonautonomous expenditure. The results are not reported here, but available on request.

Table 4 reports the remaining estimation results, i.e., for nonautonomous revenue and autonomous expenditure. The results for nonautonomous revenue are very similar to those for total (nominal) revenue presented in Table 3. The main difference is that we get positive election effects, which, however, are hard to interpret. Elections appear to give rise to systematic underestimates of revenue in the budget, but further theoretical and empirical work is required to explain this phenomenon. There is also evidence of a countercyclical policy rule behind the nonautonomous changes in revenue. This is a clear indication that the impact of

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[10] We avoid the term "automatic" and prefer to talk about "nonautonomous" or simply "other" changes. There are many different reasons behind revenue and expenditure changes which cannot be classified as autonomous. Some of these (residual) changes are the effects of automatic stabilizers, but far from all.

[11] Niklas Frank has done this work. Figure 5 and Figure 6 are reproduced from Frank et al. (1993). Frank (1992) uses a previous version of the data set. The series are deflated using the price index for government consumption.

Table 4 Deviation outcome - budget, 1970/71-1989/90.

	nonautonomous revenue				autonomous expenditure			
constant	0.030	0.006	0.029	0.014	0.027	0.022	0.020	0.010
	(2.17)	(0.35)	(3.64)	(1.46)	(3.63)	(2.22)	(4.69)	(1.46)
difference in forecasted growth								
nominal earnings, t	1.45	1.76	1.40	1.90	0.29	0.63		
	(2.83)	(3.66)	(2.99)	(4.43)	(1.02)	(2.26)		
nominal earnings, t+1	0.23	0.43			-0.32	-0.42		
	(0.70)	(1.27)			(1.78)	(2.14)		
real GDP, t	0.44	-0.35			-0.81	-0.63	-0.89	-0.82
	(0.69)	(0.58)			(2.33)	(1.80)	(3.15)	(2.85)
real GDP, t+1	0.49	0.62			-0.25	-0.52		
	(0.82)	(1.06)			(0.75)	(1.52)		
consumer prices, t	-1.87	-2.92	-2.52	-3.29	-0.76	-1.19		
	(1.79)	(2.99)	(2.99)	(4.34)	(1.31)	(2.10)		
consumer prices, t+1	-0.12	-0.25			0.03	0.10		
	(0.34)	(0.86)			(0.14)	(0.57)		
preelection year		0.033		0.028		0.003		0.009
		(2.21)		(2.17)		(0.32)		(0.99)
postelection year		0.049		0.038		0.006		0.009
		(2.87)		(2.88)		(0.63)		(1.05)
non-Social Democratic government		-0.013		-0.023		0.003		0.014
		(0.88)		(1.90)		(0.31)		(1.62)
shift to/from non-Social Democratic government		0.008		-0.010		-0.038		-0.020
		(0.31)		(0.53)		(2.65)		(1.63)
R^2	0.48	0.77	0.39	0.71	0.52	0.77	0.36	0.54
$\bar{R}^2$	0.24	0.51	0.32	0.57	0.30	0.50	0.32	0.38
SEE	0.03	0.02	0.03	0.02	0.02	0.01	0.02	0.02
Durbin-Watson	2.67	2.37	1.99	1.90	2.12	1.61	1.87	1.89

Notes. The number of observations is 20. Absolute t-values within parentheses.

activity on revenue goes through automatic stabilizers.

Recall from the previous section that it was hard to find any evidence of countercyclical expenditure changes during the fiscal year. In Table 4 we find that there is a countercyclical pattern in autonomous expenditure changes. During the fiscal year, Swedish policy makers have therefore pursued "fine tuning," i.e., autonomously decided feedback in a Keynesian tradition. These changes have, however, been largely off-set by other expenditure changes. It is evident from Figure 7 that autonomous and other expenditure changes have been negatively correlated. This explains the lack of a countercyclical pattern for expenditure in Table 3.

6. Conclusions

Political cycles or cyclical policies? No and yes. Our evidence comes from models for central government revenue and expenditure that make use of fiscal forecasts to capture the parameters of policy reaction functions more accurately than if only fiscal outcomes were used. Our empirical illustration of the approach recycles unique Swedish data sets of fiscal forecasts and forecasts of key macroeconomic variables. One data set permits us to relate fiscal policy changes before and during the fiscal year to changes in forecasts of economic activity. Using another data set, we separate fiscal policy changes (during a fiscal year) caused by autonomous decisions from other changes. Both data sets provide useful information about the reaction functions behind fiscal policy.

Changes in fiscal policy appear to be about equally governed by systematic rules and unsystematic discretion. Nominal expenditure before the fiscal year, e.g., is partly countercyclical (as reflected in deviations between long term budgets and budgets). Automatic stabilizers give rise to countercyclical changes in

revenue. There are, however, also partisan effects. Non-Social Democratic governments systematically have lower revenue. The evidence on ideological influence over expenditure is less clear. Taking business conditions into account, non-Social Democratic governments might therefore have been more "expansionary" (in terms of the budget deficit) than Social Democratic governments, in contrast with what partisan theories would lead us to expect. Total expenditure changes during the fiscal year appear to be largely discretionary (unsystematic). The autonomous expenditure changes during the year do, however, react on economic activity.

Sweden used to be viewed as a showcase of Keynesian policy. Today there is a widespread view among Swedish economists that the Keynesian experiment was a failure. To our knowledge, this view has not been supported by any detailed evidence on fiscal policy stance, let alone on the effects of fiscal policy on macroeconomic performance. Since we do find evidence of countercyclical fiscal policies, the failure must have been either that there was too little countercyclical policy, or that the countercyclical policy pursued had negative effects. It is conceivable that the countercyclical policy measures taken have been drowned by other policies. In addition, there are signs of partisan effects.

To study the macroeconomic effects of fiscal policy one needs a full macroeconometric model. It is our belief that the modeling approach presented in this paper, and the type of data used, can be useful inputs in such a model.

Appendix A Dependent variables: Average effective tax rates and real expenditure

Table A1 Deviations budget - long term budget, 1969/70-1992/93.

	average effective tax rate				real expenditure			
constant	0.008	0.044	0.020	0.049	0.033	0.060	0.026	0.022
	(0.38)	(1.46)	(2.25)	(2.99)	(2.47)	(2.59)	(3.82)	(1.73)
difference in forecasted growth								
nominal earnings, t-1	0.52	1.64		1.27	0.36	0.15		
	(0.68)	(2.44)		(2.63)	(0.72)	(0.30)		
nominal earnings, t	0.58	0.10			-0.55	-0.81	-0.73	-0.60
	(1.03)	(0.18)			(1.47	(1.96)	(2.92)	(2.21)
nominal earnings, t+1	0.60	0.60		0.54	0.43	0.61		
	(1.12)	(1.36)		(1.54)	(1.24)	(1.83)		
real GDP, t-1	-0.01	0.94		1.12	-0.40	0.81		
	(0.01)	(0.94)		(1.80)	(0.62)	(1.06)		
real GDP, t	2.06	0.02	1.48		-0.15	-1.35		
	(1.49)	(0.01)	(1.98)		(0.17)	(1.38)		
real GDP, t+1	-2.63	-2.23		-2.23	-1.14	-0.41	-0.90	
	(1.69)	(2.30)		(2.25)	(1.12)	(0.41)	(1.64)	
consumer prices, t-1	-0.02	-0.95			-2.06	-1.88	-1.52	-1.53
	(0.02)	(0.87)			(2.35)	(2.25)	(2.55)	(2.78)
consumer prices, t	0.32	0.02			-0.37	-0.42		
	(0.50)	(0.03)			(0.88)	(1.10)		
consumer prices, t+1	-1.94	-1.99		-2.02	-0.10	-0.27		
	(2.30)	(2.87)		(4.13)	(0.19)	(0.51)		
preelection year		-0.014		-0.020		-0.034		-0.010
		(0.51)		(1.08)		(1.67)		(0.75)
postelection year		-0.022		-0.029		-0.025		-0.005
		(0.94)		(1.53)		(1.39)		(0.37)
non-Social Democratic government		-0.022		-0.022		0.036		0.042
		(1.04)		(1.13)		(2.19)		(2.90)
shift to/from non-Social Democratic government		-0.092		-0.088		-0.044		-0.039
		(3.25)		(3.71)		(2.04)		(2.23)
R^2	0.33	0.68	0.12	0.66	0.42	0.62	0.34	0.50
$\bar{R}^2$	0.05	0.44	0.09	0.52	0.18	0.34	0.27	0.38
SEE	0.05	0.04	0.05	0.04	0.03	0.03	0.03	0.03
Durbin-Watson	1.71	2.44	1.68	2.28	1.58	1.64	1.49	1.33

Notes. The number of observations is 32. Absolute t-values within parentheses.

Table A2 Deviation outcome - budget, 1969/70-1991/92.

	average effective tax rate				real expenditure			
constant	0.004	0.009	0.009	0.006	0.023	0.041	0.022	0.035
	(0.24)	(0.32)	(0.73)	(0.36)	(2.05)	(2.23)	(2.50)	(2.43)
difference in forecasted growth								
nominal earnings, t	1.73	2.74	1.29	2.72	-0.20	0.31		
	(2.25)	(3.42)	(2.00)	(3.99)	(0.44)	(0.63)		
nominal earnings, t+1	0.60	0.08			-0.45	-0.89	-0.53	-0.83
	(1.17)	(0.14)			(1.49)	(2.41)	(2.29)	(3.04)
real GDP, t	-0.44	0.01			-0.26	0.19		
	(0.50)	(0.01)			(0.50)	(0.32)		
real GDP, t+1	1.52	0.32	1.53		-0.22	-1.01		-0.92
	(2.07)	(0.35)	(2.24)		(0.50)	(1.80)		(1.87)
consumer prices, t	-1.51	-2.94		-3.19	-0.92	-1.60	-1.01	
	(1.14)	(2.19)		(2.88)	(1.17)	(1.89)	(1.81)	
consumer prices, t+1	-0.23	-0.18			-0.16	-0.12		-1.38
	(0.48)	(0.42)			(0.56)	(0.45)		(2.24)
preelection year		0.010		0.011		-0.011		-0.009
		(0.41)		(0.55)		(0.68)		(0.65)
postelection year		0.007		-0.005		-0.010		-0.008
		(0.26)		(0.26)		(0.59)		(0.58)
non-Social Democratic government		-0.017		-0.019		-0.016		-0.013
		(0.64)		(0.97)		(0.95)		(0.93)
shift to/from non-Social Democratic government		-0.087		-0.092		-0.044		-0.036
		(2.44)		(3.40)		(1.95)		(1.97)
R^2	0.36	0.60	0.24	0.59	0.34	0.54	0.31	0.51
$\bar{R}^2$	0.11	0.27	0.16	0.44	0.09	0.15	0.24	0.28
SEE	0.05	0.04	0.05	0.04	0.03	0.03	0.03	0.03
Durbin-Watson	1.54	1.92	1.51	1.93	1.78	1.51	1.66	1.43
Q(11), p-value	0.44	0.67	0.45	0.68	0.30	0.23	0.51	0.03

Notes. The number of observations is 23. Absolute t-values within parentheses.

Appendix B The data

Table B1 Central government revenue, SEK billion.

fiscal year t/t+1	long term budget low	high	budget	outcome	deflator
1969/70	39.400		40.609791	40.403591	32.25
1970/71	43.980		45.575691	45.637161	35.10
1971/72	49.840		52.270222	51.830070	38.40
1972/73	54.670		56.397072	54.513271	41.55
1973/74	60.655		61.436722	61.488659	45.80
1974/75	68.902		71.992218	72.489693	52.05
1975/76	78.829		84.873840	93.934059	59.65
1976/77	92.362		99.197449	104.360397	68.90
1977/78	106.141		114.542999	112.113098	77.80
1978/79	120.111		114.780098	119.663597	84.80
1979/80	125.400		129.675903	132.490906	94.10
1980/81	142.600		155.459106	155.286804	104.09
1981/82	152.600		158.650299	167.130798	112.52
1982/83	168.400		179.537292	191.280197	121.97
1983/84	189.200		210.797501	221.165497	131.02
1984/85	211.900		244.084702	260.595890	138.76
1985/86	243.300	252.600	261.952790	275.098910	146.94
1986/87	272.000	287.000	293.189910	320.105190	154.20
1987/88	295.100	306.400	318.026490	332.551910	161.50
1988/89	328.700	331.300	347.091710	367.707400	172.96
1989/90	351.400	371.300	378.592740	401.552550	191.85
1990/91	394.100	409.600	424.405	403.487	206.95
1991/92	435.100	454.800	464.632	397.725	
1992/93	436.500	441.900	381.984		
1993/94	362.700				

Sources: long term budget, bill 19t-2/t-1:150, enclosure 1.2 or enclosure 1.3
budget and outcome, *Statsbudgetens utfall (The outcome of the government budget)*, annual
deflator, average of index for public consumption year t and t+1, the national accounts

Table B2 Central government expenditure, SEK billion.

fiscal year t/t+1	long term budget low	high	budget	outcome
1969/70	41.970		42.124	44.045952
1970/71	44.780		46.432	48.652920
1971/72	50.181		52.127	55.570271
1972/73	57.110		59.742	61.194752
1973/74	63.382		67.193	70.928131
1974/75	73.206		81.619	82.914139
1975/76	87.380		95.467	97.231728
1976/77	106.097		111.180	114.738770
1977/78	120.707		128.294	136.330994
1978/79	138.102		155.677	158.605392
1979/80	163.432		180.539	181.417053
1980/81	190.800		209.276	214.782883
1981/82	217.400		233.558	236.405594
1982/83	248.800		255.301	277.031370
1983/84	275.800		300.885	297.881320
1984/85	312.900		311.383	330.280640
1985/86	315.100	325.900	323.389	322.241240
1986/87	336.000	354.000	336.392	334.996150
1987/88	345.300	357.800	347.150	336.855530
1988/89	360.700	368.200	353.566	349.625240
1989/90	374.000	386.200	386.268	397.891390
1990/91	390.500	401.000	425.094	437.987
1991/92	451.600	465.100	470.180	478.483
1992/93	482.500	488.600	494.660	
1993/94	481.500			

Sources: see Table B1

Introductory note to Table B3 - Table B5

The budget for the coming fiscal year is presented at the same time as the long term budget for the next coming fiscal year. Consistency therefore demands that the forecasts for the budget t and t+1 are identical to the forecasts for the long term budget t-1 and t for the next coming fiscal year. The sources for the columns 7 and 8 are therefore given by the columns 3 and 4.

We have assumed that the number given for the budget t-1 not only is the preliminary outcome but also is the final. The sources for the outcome are therefore given by the sources for column 6.

There remains to give the sources for column 3 - column 6. This is done in two different ways. First, for the frequently used sources we use different fonts. Second, for more rare sources we use footnotes.

The fonts represent:

italic	internal documents, The Ministry of Finance
bold	the supplementary budget bill
	long term budget, bill 19t-2/t-1:150, enclosure 1.2 or enclosure 1.3
	budget, bill 19t-1/t:150, enclosure 1.1
`courier`	revised national budget 19t

Table B3 Forecasted nominal earnings, percentage change.

fiscal year		long term budget			budget			outcome		
t	t/t+1	t-1	t	t+1	t-1	t	t+1	t-1	t	t+1
69	1969/70	*7*	*7*	*7*	6.5[1]	7	7	6.5	7.5	11
70	1970/71	*7*	*7*	*7*	7.5	9	6	7.5	11	9
71	1971/72	*9*	*6*	*6.5*	11	9	7	11	9	8.6
72	1972/73	9[2]	7[2]	7[2]	9	10	8	9	8.6	8.1
73	1973/74	10[3]	8[3]	7[3]	8.6	8.3	14	8.6	8.1	12
74	1974/75	8.3[4]	14[4]	7[4]	8.1	12	7	8.1	12	18
75	1975/76	12[5]	7[5]	7[5]	12	12	8	12	18	13.6
76	1976/77	12[6]	8[6]	7[6]	18	7	7	18	13.6	9.3
77	1977/78	7[7]	7[7]	7[7]	13.6	7.6	7	13.6	9.3	8
78	1978/79	*7.6*	*7*	*7*	9.3	7.7	7	9.3	8	9.2
79	1979/80	**7.7**	*7*	*7*	8	8.6	8	8	9.2	11.8
80	1980/81	*8.6*	*8*	*7*	9.2	8	6.5	9.2	11.8	8.2
81	1981/82	*8*	*6.5*	*7.5*	11.8	7.5	8	11.8	8.2	6.4
82	1982/83	**7.5**	**8**	**8.5**	8.2	6	5.7	8.2	6.4	7.8
83	1983/84	*6*	*5.7*	*5.7*	6.4	7.2	6	6.4	7.8	8.2
84	1984/85	**7.2**	*6*	*5*	7.8	8	5.5	7.8	8.2	7.2
85	1985/86	*8*	*5.5* / **8**	*5* / **8**	8.2	5	5	8.2	7.2	8.7
86	1986/87	*5* / *8.5*	*5* / *7.5*	*5* / *7.5*	**7.2**	7.6	4.3	7.2	8.7	6.4
87	1987/88	**7.6**	**4.3** / **6**	**4.3** / **6**	**8.7**	6.7	3.5	8.7	6.4	7.2
88	1988/89	**6.7**	**3.5**	**3.5** / **6**	**6.4**	7.2	3.8	6.4	7.2	9.4
89	1989/90	**7.2**	**3.8**	**3.5** / **6**	**7.2**	8.6	4.6	7.2	9.4	9.3
90	1990/91	**8.6**	**4.6**	**4.8** / **7.2**	**9.4**	9.8	3.0	9.4	9.3	5.3
91	1991/92	**9.8**	**3.0** / **7.6**	**5.9** / **7.7**	**9.3**	4.0	3.2	9.3	5.3	3.6
92	1992/93	**4.0**	**3.2**	**4.2** / **7.4**	**5.3**	2.1	1.0	5.3	3.6	
93	1993/94	**2.1**	**1.0**	**2.6**	**3.6**			3.6		

[1] Bill 1969:115, enclosure 1, p. 83.
[2] Bill 1971:115, enclosure 2, p. 115.
[3] Bill 1972:90, enclosure 2, p. 38.
[4] Bill 1973:125, enclosure 1, p. 11.
[5] Bill 1974:100, enclosure 2 p. 41.
[6] Bill 1975:100, enclosure 2, p. 41.
[7] Bill 1975/76:150, enclosure 2, p. 43.

Table B4 Forecasted real GDP, percentage change.

fiscal year		long term budget			budget			outcome		
t	t/t+1	t-1	t	t+1	t-1	t	t+1	t-1	t	t+1
69	1969/70	3.9[1]	3.9[1]	3.9[1]	3.3[2]	3.7	4	3.3	5.2	4.8
70	1970/71	3.7[3]	*4*	*4*	5.2	4	3.5	5.2	4.8	0.3
71	1971/72	*4*	*3.5*	*3.5*	4.8	3	3	4.8	0.3	2.2
72	1972/73	3[4]	3[4]	3[4]	0.3	4	4	0.3	2.2	3
73	1973/74	4[5]	4[5]	4[5]	2.2	4.2	4.2	2.2	3	4.2
74	1974/75	4.2[6]	4.2[6]	4.2[6]	3	4.2	4.2	3	4.2	0.6
75	1975/76	4.2[7]	4.2[7]	4.2[7]	4.2	3	3	4.2	0.6	1.5
76	1976/77	3[8]	3[8]	3[8]	0.6	1.8	2.5	0.6	1.5	-2.5
77	1977/78	1.8[9]	**2.5**	**2.5**	1.5	1.1	3	1.5	-2.5	2.8
78	1978/79	**1.1**	*3*	*3*	-2.5	0.8	3.7	-2.5	2.8	3.8
79	1979/80	**0.8**	**3.7**	**4.3**	2.8	5.4	4	2.8	3.8	1.4
80	1980/81	*5.4*	*4*	*3*	3.8	3	0.5	3.8	1.4	0.9
81	1981/82	*3*	*0.5*	*2.5*	1.4	0.2	1	1.4	0.9	0.1
82	1982/83	**0.2**	**1**	**1**	0.9	1.2	2.3	0.9	0.1	2.3
83	1983/84	*1.2*	*2.3*	*2.5*	0.1	1.8	1	0.1	2.3	3
84	1984/85	*1.8*	*1*	*1*	2.3	2.8	2	2.3	3	2.3
85	1985/86	**2.8**	**2 / 0**	**2 / 0**	3	2.4	2.3	3	2.3	1.3
86	1986/87	*2.4* **/ 1**	*2.3* **/ 0**	*1.1* **/ 0**	**2.3**	2	1.5	2.3	1.3	2.8
87	1987/88	**2**	**1.5 /-1**	**2 /-0.5**	**1.3**	2.2	2	1.3	2.8	2.1
88	1988/89	**2.2**	**2**	**2 / 0.8**	**2.8**	2.2	1.7	2.8	2.1	2.1
89	1989/90	**2.2**	**1.7**	**1.7 / 0.5**	**2.1**	1.6	1	2.1	2.1	0.3
90	1990/91	**1.6**	**1**	**1.7 / 1**	**2.1**	0.8	0.9	2.1	0.3	-1.1
91	1991/92	**0.8**	**0.9 / 0.4**	**1.9 / 0.9**	**0.3**	-0.2	1	0.3	-1.1	-1.7
92	1992/93	**-0.2**	**1**	**2.1 / 1.5**	**-1.1**	-0.4	0.8	-1.1	-1.7	
93	1993/94	**-0.4**	**0.8**	**2.6**	**-1.7**			-1.7		

[1] Bill 1968:125, enclosure 3, p. 7.
[2] Bill 1969:115, enclosure 1, p. 2.
[3] Bill 1969:125, enclosure 2, p. 6.
[4] Bill 1971:115, enclosure 2, p. 8.
[5] Bill 1972:90, enclosure 2, p. 6.
[6] Bill 1973:125, enclosure 1, p. 9.
[7] Bill 1974:100, enclosure 2 p. 7.
[8] Bill 1975:100, enclosure 2, p. 6.
[9] Bill 1975/76:150, p. 31.

Table B5 Forecasted consumer prices, percentage change.

fiscal year		long term budget			budget			outcome		
t	t/t+1	t-1	t	t+1	t-1	t	t+1	t-1	t	t+1
69	1969/70	*2.7*	*2.7*	*3*	1.9[1]	2.8	2.5	1.9	4.6	7
70	1970/71	*2.7*	*2.5*	*3*	4.6	4	7	4.6	7	7.4
71	1971/72	*4*	*7*	*3*	7	7.4	3	7	7.4	6
72	1972/73	7.4[2]	3[2]	3[2]	7.4	5	3	7.4	6	6.7
73	1973/74	5[3]	3[3]	3[3]	6	5.9	3	6	6.7	9.8
74	1974/75	5.9[4]	3[4]	3[4]	6.7	9.6	3	6.7	9.8	9.9
75	1975/76	9.6[5]	3[5]	3[5]	9.8	8	5	9.8	9.9	10.3
76	1976/77	8[6]	5[6]	4[6]	9.9	8	4	9.9	10.3	11.4
77	1977/78	8[7]	4[7]	4[7]	10.3	10.3	4	10.3	11.4	10
78	1978/79	**10.3**	*4*	*4*	11.4	10.9	5.5	11.4	10	7.2
79	1979/80	**10.9**	*5.5*	*5.5*	10	6	6	10	7.2	13.7
80	1980/81	*6*	*6*	*5*	7.2	11	7	7.2	13.7	12.1
81	1981/82	*11*	*7*	*6*	13.7	11.9	11.5	13.7	12.1	8.6
82	1982/83	**11.9**	**11.5**	**11**	12.1	8	5.5	12.1	8.6	8.9
83	1983/84	*8*	*5.5*	*5.5*	8.6	9.2	6	8.6	8.9	6.3
84	1984/85	**9.2**	*6*	*5*	8.9	7	3	8.9	6.3	7.4
85	1985/86	**7**	**3 / 8**	**3 / 8**	6.3	5.8	3	6.3	7.4	4.2
86	1986/87	*5.8 / 8*	*3 / 7*	*3 / 7*	**7.4**	3.6	2.5	7.4	4.2	4.2
87	1987/88	**3.6**	**2.5 / 5**	**2.5 / 4.5**	**4.2**	3.9	2	4.2	4.2	5.8
88	1988/89	**3.9**	**2**	**2 / 4.5**	**4.2**	5.4	3.4	4.2	5.8	6.5
89	1989/90	**5.4**	**3.4**	**2.8 / 5**	**5.8**	7.2	6	5.8	6.5	10.4
90	1990/91	**7.2**	**6.0**	**3.3 / 5.5**	**6.5**	10	7.5	6.5	10.4	9.4
91	1991/92	**10**	**7.5 / 9.3**	**3.8 / 4.7**	**10.4**	9.6	3.2	10.4	9.4	2.4
92	1992/93	**9.6**	**3.2**	**2.6 / 4.7**	**9.4**	2.5	2.2	9.4	2.4	
93	1993/94	**2.5**	**2.2**	**3.5**	**2.4**			2.4		

[1] Bill 1969:115, enclosure 1, p. 87.
[2] Bill 1971:115, enclosure 1, p. 98 and enclosure 2, p. 30.
[3] Bill 1972:90, enclosure 1, p. 10 and enclosure 2, p. 30-31.
[4] Bill 1973:125, enclosure 1, p. 12 and enclosure 2 p. 9.
[5] Bill 1974:100, p. 116 and enclosure 2 p. 30-32.
[6] Bill 1975:100, enclosure 2, p. 41.
[7] Bill 1975/76:150, enclosure 2, p. 9 and p. 33.

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Svensk sammanfattning

Vi testar hur offentliga inkomster och utgifter beror av ekonomisk aktivitet, val och ideologi. Vi visar hur utnyttjandet av budgetprognoser gör det möjligt att bättre förstå budgetens bestämningsfaktorer och separera finanspolitiska regler från diskretionär politik. Ansatsen illustreras med hjälp av unika, opublicerade svenska data över budgetprognoser och prognoser över den ekonomiska aktiviteten. Inkomsterna varierar positivt med den nominella lönesumman, utgifterna varierar negativt med real BNP. Vi finner ideologiska effekter, men inga politiska konjunkturcykeleffekter. Inkomster och utgifter är lägre med icke-socialdemokratiska regeringar. Ideologieffekten är större på inkomsterna än på utgifterna. Med hjälp av en annan unik uppsättning av data, finner vi att det ligger autonoma beslut bakom utgifternas, men inte inkomsternas, reaktion på den ekonomiska aktiviteten.

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