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**LOCAL AUTHORITIES, ECONOMIC STABILITY  
AND THE EFFICIENCY OF FISCAL POLICY**

Some Experimental Simulations for Sweden  
in the Eighties

by

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**CONTENTS**

## INTRODUCTION

## 1. THE PROBLEM

1.1 The crucial role of local authorities in the Swedish economy

1.2 The tasks and limits of fiscal policy

## 2. THE MODEL

2.1 Momentum and inertia in a Swedish growth model

2.2 Incentives and restrictions of local authorities

2.3 The targets and instruments of fiscal policy

2.4 Developments in the eighties  
- the reference case

## 3. LOCAL AUTHORITIES IN A CHANGING ECONOMY

3.1 Cyclical patterns in local authority expenditure

3.2 Expenditure adjustments to changes in price and income

3.3 Multiplier effects of changes in expenditure and grants

4. FISCAL POLICY AND ECONOMIC STABILITY

4.1 The efficiency of policy instruments

4.2 Business cycles and the control  
of local authorities

SUMMING UP

List of figures

1. Local government expenditures as percentage of GNP, 1913-1980
2. The structure of the ISAC model
3. The targets and instruments of fiscal policy
4. Development of the Swedish economy in the reference case
5. The trade-off between private and local government consumption in the reference case
6. Cyclical patterns in local authority expenditure
7. Balance without control of local authorities
8. The direction of policy effects
9. Policy measures towards local authorities:  
The efficiency of grant policy and tax limits
10. The impact of a world market cycle

List of tables

1. Equations explaining local government expenditures
2. Assumptions for the eighties
3. Average elasticities for service expenditures of local authorities 1980-1990
4. Multiplier effects

## **LOCAL AUTHORITIES, ECONOMIC STABILITY AND THE EFFICIENCY OF FISCAL POLICY**

### **Some Experimental Simulations for Sweden in the Eighties**

#### **INTRODUCTION**

The rapid expansion of the local government sector in the postwar period has led to an intensified interest in the mechanisms of the local government economy and its impact on the rest of the national economy. With the threat of a prolonged stagflation dominating the prospects of the eighties, it is particularly important to gain more knowledge about the stabilizing or destabilizing effects of local government spending and taxing and about the way it affects the efficiency and range of the stabilization policies of central government. The aim of this paper is to illustrate some of these problems by simulating and comparing alternative stabilization policies for the Swedish economy in the eighties. The simulations are carried out on a growth model, in which the spending and taxing of local authorities is endogenously determined.

#### **1. THE PROBLEM**

##### **1.1 The crucial role of local authorities in the Swedish economy**

One of the most striking features of the Swedish economy today is the growing dominance of the local government sector. Out of the national income almost 1/3 is channelled through the budgets

of local governments, which employ 1/5 of the labor force. As can be seen from figure 1 local government spending has been outrunning GNP with a growing margin, doubling its share over the last 20 years.

The restructuring of the Swedish economy in post-war years has been rapid, although not exceptional compared to other western countries. Over the 30 years since 1950 agricultural employment has been drastically reduced and corresponds today to less than 5 % of the total labor force. The matching increase has occurred in the service sectors, particularly in the public services, which doubled their share of GNP and trebled their employment share.

The major part of this expansion took place within the local government sphere - in education, medical care and social welfare. Manufacturing industry meanwhile kept its share both of GNP and employment relatively unchanged. The enlarged public service provision was almost entirely paid for by taxes, which trebled relatively to GNP. It was again local governments that were responsible for the major part of the tax increases.

Organisational power has grown with the money. In the postwar period there has been a gradual concentration of the decision making process. While the number of local governments has decreased to about 1/4 in the last 15 years - 24 counties and 277 municipals right now - some of the most expansive areas of service production, like mental health care and secondary schools have been taken over from the state.<sup>1</sup>

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<sup>1</sup> For a detailed account of the shifting demarcation of local government powers cf Murray (1981).

Figure 1. Local government expenditure as percentage of GNP,  
1913-80



Throughout this expansion the local governments have retained a degree of financial independence, which is rather high by west-European standards. Of their total gross expenditures only about 1/4 is paid by state grant today (1979), while local taxes make up 45 percent, fees and user charges 20 percent, with loans and capital income making up the remaining 10 percent.

For highlighting the degree of tax financing of the local services, another way of calculating may however be more relevant. If one includes only net profits - or losses - of public utilities, net new borrowing and net transfers from the state (i.e. subtracting taxes and fees paid by local governments to central government) a somewhat different financial picture emerges. Of the total local government spending directed toward the private sector about 90 percent was paid by taxes of which only 1/6 was channelled through the state budget. The remaining 10 percent was made up of some 7 percent for fees and only about 3 percent of new loans.<sup>1</sup>

In recent years there has been a rising concern in Sweden about the development of local government expenditures. Rapid expansion of local government services explains the major part of the rising tax rates and is thus indirectly responsible for the various disruptive tendencies connected with tax evasion and tax accommodation. It has also often been suggested that local government competition in the labor market has contributed significantly

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<sup>1</sup> A survey of local government finance is given in Ysander (1979). Cf also SOU 1977:20.



to wage inflation and recruitment problems within Swedish industry. There are at the same time other groups and observers who tend to regard the local government employment as non-competing with industrial employment and any fluctuations in local government spending as mainly due to shifts in labor supply and participation rates.

Looking ahead into the eighties one of the few things we can be fairly certain about is that local government expansion cannot be allowed to continue at the rate established through the sixties and seventies. We have neither the goods nor the people to sustain that kind of growth. Even in absolute amounts the annual increases in local government resources will have to be somewhat reduced if we want to get rid of our external payment deficit before the nineties, and avoid having in the meantime to lower real net wages and private standards. However, making the municipalities change fast enough into a slower growth-track, in spite of good liquidity and rather rigid long-term-plans, may well prove to be one of crucial economic problems in the next few years.

## 1.2 The tasks and limits of fiscal policy

Like many other west-european countries Sweden entered the 80's with an external payment deficit and with a manufacturing sector in need of restructuring. Partly the problems were imported and connected with rising oil prices in stagnating world markets, partly we added new problems of our own by an over-optimistic and ill-timed domestic demand management, that bought high employment to the price of falling shares on our foreign markets. Being a small and exceptionally open economy with a traditional orientation towards investment goods - wood products, iron and steel and heavy engineering - Sweden is particularly vulnerable to shifts in world market prospects and relative unit costs<sup>1</sup>.

The Swedish external deficit - approaching a 5% of GNP - may still be judged relatively modest compared to the situation of some other west-european countries. However, the prolonged stagnation of industrial investment and employment - coupled with a steep increase of the public budget deficit - accentuates the need for new and sustained policy efforts. A primary concern of fiscal policies in Sweden during the remainder of the 80's will undoubtedly be the need to shift some of the demand from domestic to foreign markets, moderating the increase in domestic consumption to make room for an expansion of the trading sector.

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<sup>1</sup> For an extensive discussion of our industrial policies and problems in the 70s cf e.g. Eliasson-Ysander (1981).

While everyone recognizes the strategic role of local government spending, there is still much uncertainty and controversy about the way the spending could and/or should be controlled. In the planning documents of the Swedish central government, local government spending is still treated as exogenously determined and one outcome of the long-term surveys are norms for the allowable rate of local government expansion. While official policy thus would seem to assume a central control of local government expenditure, the actual efforts of central control - working mainly by way of voluntary agreements - have so far shown themselves singularly ineffective.

Any attempt to deal with these problems must face a series of general questions about the impact of local government on the tasks and limits of fiscal policy. In what way and to what extent does local government spending and taxing tend to stabilize or destabilize the national economy, both as regards on the one hand the long-term balance of the labor market and of the external payments and on the other hand, the short-term fluctuations in economic activity? Does the local government sector tend to produce economic oscillations of its own? How does the existence of a relatively independent local government sector affect the efficiency and range of fiscal policy? Can specifically the task of redressing the proportion of domestic relative to foreign demand be fulfilled without effective control of local government

spending? Is effective control of local government spending possible, is it necessary and does it perhaps even enable us to dispense with some other instruments for stabilization policy like wage policy? How does grant policy compare to tax limits as an instrument not only for reallocating total consumption but also for alleviating employment and external deficit problems?

We cannot, of course, provide any clear-cut answers to these questions. But we do hope that our policy simulations can contribute to a better understanding of the problems and uncertainties still remaining.

## **2. THE MODEL**

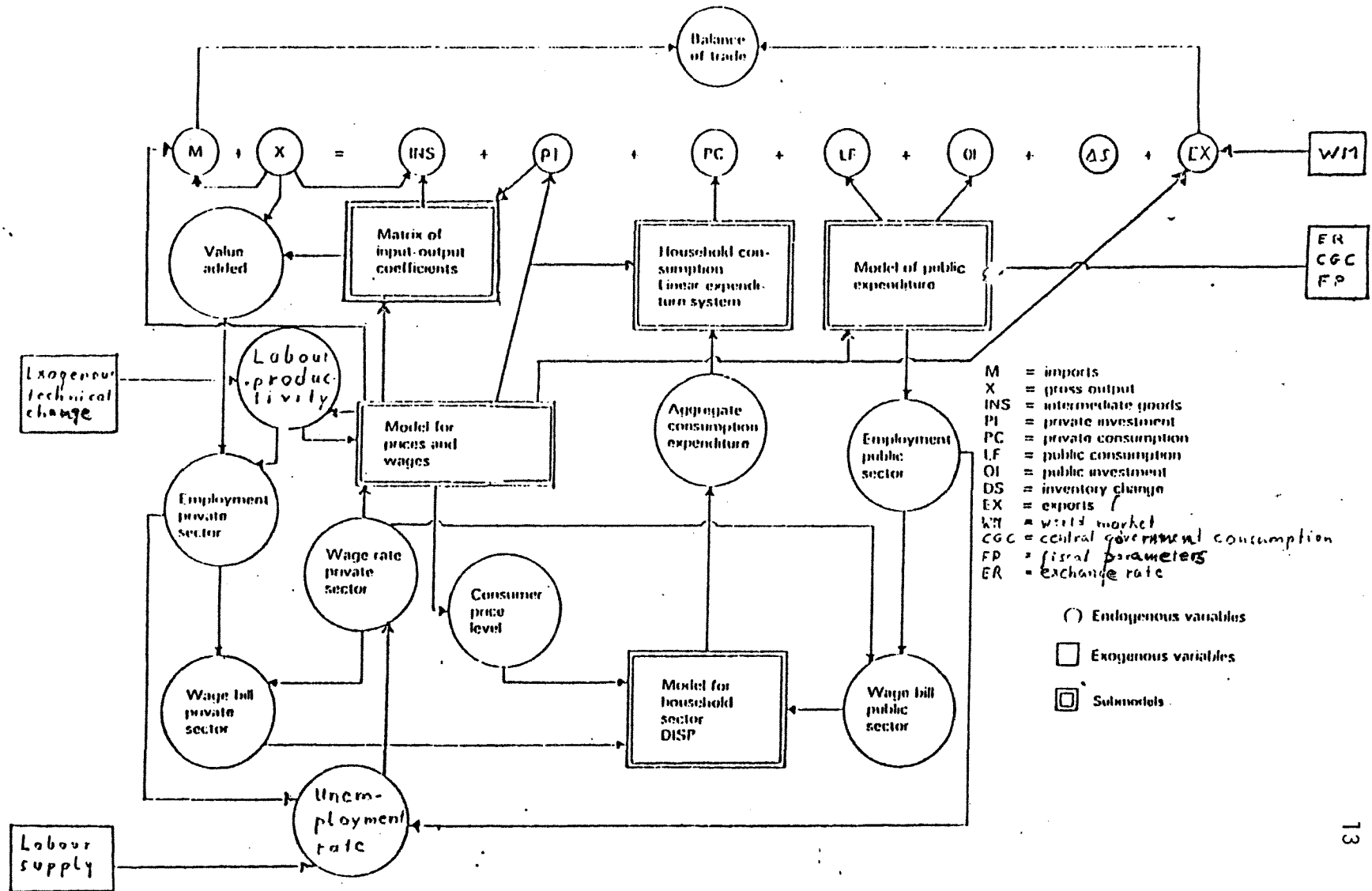
### **2.1 Momentum and inertia in a Swedish growth model**

A synoptical view of the growth model used is given in figure 2. The balance equation at the top of the figure represents a 23 sector model which can be characterized as a dynamic Keynes-Leontief model. The arrows emerging from the sector products indicate roughly the way in which an exogenously initiated change would work itself through the model<sup>1</sup>.

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<sup>1</sup> A compact but complete presentation of the formal structure of the model - called ISAC or Industrial Structure And Capital Growth - is given in Jansson-Nordström-Ysander (1981).

Figure 2. Main structure of the ISAC-model 1981



Since the structure of growth models of this kind is by now well known, we can restrict ourselves to briefly mentioning some of the features that determine the dynamic properties of the model.

Let us start by pinpointing the exogenous factors that introduce change and give momentum to the growth process in the model. There are four types of exogenous factors specially marked (by single-line square frames) in the block diagram.

A major determinant of growth in the Swedish economy is the development of the world markets. These are linked with the domestic economy by import and export functions which mainly depend on the development of Swedish producers prices relative to world market prices. Other important factors are the central government consumption and the development of the various fiscal policy parameters. Also exogenously treated in the model is the development of labor supply and that minor part of labor productivity change in industry which is due to autonomous technical change.

How various exogenous changes work their way through the economy depends to large extent on the rigidities and adjustment mechanisms built into the model. Three sources of inertia deserve special attention: they are connected respectively with capital formation and with the formation of wages and prices.

A vintage approach has been used in modelling capital formation within manufacturing. In most

branches the volume of investment each year is determined by an investment function of cash flow type. Choice of technique for a new vintage, i.e. the input coefficients for intermediate goods, electricity, fuels, labor and capital, are determined by an ex-ante production function. The vintages are depreciated in proportion to the quasi-rent they are earning. The result will be a slowly moving aggregate input/output matrix with, on the average, some 60% of total labor productivity development being explained by the introduction of new vintages. The vintage approach thus helps to explain the adjustment of industrial capital to new trends and price levels on the world markets.<sup>1</sup>

The formation of wages is explained by a Phillips-curve type of wage determination. The rate of nominal wage increase is a function of the variations in unemployment, in profit margins, in inflation and finally in labor productivity. With the exception of the unemployment rate these independent variables are all lagged one year. Industrial wage thus works as an equilibrating mechanism for the labor market in the current period but the wage claims also reflect the developments of last year. The estimated dependence on current unemployment turns out to be fairly strong which means that we have in this way provided a direct link

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<sup>1</sup> Due to independent measures of capacity being available for the iron and steel industry, a slightly more sophisticated vintage model has been applied to this industry. Cf Jansson (1981).

between the local government sector and the industrial sector. During periods of rapidly increasing inflation rates this link is further enforced by the assumption that wage changes in the public sector are the same as in the business sector, although lagged one year.

Finally, the change in Swedish producers prices, both on foreign markets and in the domestic trading sector, is a weighted average of the change in domestic production cost and the change in world market prices. Gross profits will thus act as a buffer between costs at home and competitors' prices abroad.



## 2.2 Incentives and restrictions of local authorities

Of special interest to us here is the submodel describing local government behavior.<sup>1</sup>

The core of the model is a system of eight linear equations explaining the expenditure for five different service categories, two different categories of transfer payments and finally for investment purposes. The expressions are derived from a model using a quadratic goal function. To facilitate the understanding of this underlying model we shall start by sketching a possible interpretation of a quadratic goal function in terms of the budgetary process of local governments.

Let us assume that the behavior of a local government is determined by a quadratic goal function and a restriction to a given amount of tax money:

$$U = \sum_i (a_i Q_i - \frac{b_i}{2} Q_i^2) \quad a, b > 0 \quad (1)$$

$$T = \sum_i \pi_i Q_i \quad i=1 \dots n \quad (2)$$

where the  $Q$ :s stand for volumes of various service categories,  $\pi_i$  is the corresponding net price or production cost facing the local government, and  $T$  represents the given amount of tax money.

<sup>1</sup> For a detailed account of the background model, see Ysander (1981 b).

Maximizing the utility function (1) within the budget restriction (2) and solving for  $Q$ , we can easily derive the following expression:

$$\Pi_i Q_i = \frac{a_i}{b_i} \Pi_i - \gamma_i \left[ \sum_i \left( \frac{a_i}{b_i} \Pi_i \right) - T \right] \quad (3)$$

where

$$\gamma_i = \frac{\frac{\Pi_i^2}{b_i}}{\sum_i \frac{\Pi_i^2}{b_i}}$$

This way of formulating the expenditure equations readily lends itself to a interpretation in terms of budgetary behavior. The term  $a_i/b_i$  represents the maximum of the utility function with regard to category  $i$ . The first term on the right side thus gives the maximum amount of money that local government in the current period could usefully spend on category  $i$ . These maximal claims must be somehow cut down to fit into the given tax income limits. The expression within brackets measures the total amount of this "excess demand". The "cutting ratios",  $\gamma_i$ , determine how much of the total reduction required that will have to fall on category  $i$ . Cutting ratios for all kinds of local government expenditures sum to unity. We see that the cutting ratio for a certain category varies directly with the price of the service and inversely with the rate of decline of the marginal utility for the service,  $b_i$ .

In proportioning the relative reduction, local government would thus be answering the following question. How much does the service volume dec-

rease and how big is the utility loss then involved if we cut this claim? The less the decrease in volume - i.e. the higher the price - and the less the utility decreases with a reduction in volume - the less  $b_i$  is - the more you cut. This is the not unreasonable interpretation of the budgetary process suggested by the use of a quadratic goal functions.

After this brief interpretive note we can go on to present the equations, from which are derived the explanations of local government expenditures actually used in the model. In a simplified form they can be represented by the following two expressions:

$$U = (Q, (1-T)Y, SC) \quad (4)$$

$$TY + G_0 + W_0 = \Pi_Q Q + \Pi_I I + rD \quad (5)$$

Expression (4) is a quadratic utility function. The first argument,  $Q$ , represents seven different kinds of current expenditures. The first five are service volumes in respectively education, health, social welfare, roads and central administration etc. Number six and seven stand for transfer payments that are subsidies to public utilities and housing respectively. All direct subsidies from local government to households are here interpreted as "housing subsidies".

The second type of argument is disposable income here defined as total taxable income minus the proportionate local taxes,  $(1-T)Y$ . The inclusion of this argument is meant to reflect the fact that local government in its budgetary decisions must

strike a balance between private and collective consumption. The third type of argument is aggregate surplus capacity,  $SC$ , here measured by the fluctuations around a long term capital-output trend. The idea behind including this argument is that free capacity to some degree is valued for its own sake and the short-term bottle-necks and capacity restrictions should effect the marginal value of further increases in current expenditure.

On the left side of the budget restriction (5) are the various sources of income for local government. Besides tax income there are non-categorical state grants,  $G_0$ , and  $W_0$ , which covers all other kinds of income not affecting marginal decisions on current expenditure. On the right side are the various kinds of expenditures. Added to current and investment expenditure is the term  $rD$  which represents the cost of debt management. Prices,  $\Pi$ , are netted for fees and categorical state grants, and thus reflect the unit cost actually facing the local decision makers.

From utility maximization over (4) and (5) explanations for current and investment expenditures are derived. Current service expenditures will reflect the impact of changes in prices, income, surplus capacity and in marginal capital-output ratio.

In deriving the corresponding equations for the transfer payments a detour is made. The subsidised commodities - public utilities and housing - are marketed and sold like any other commodities in

the business sector. What local government supposedly can do to affect the consumption of these commodities, is to pay out price subsidies, calculating the effects of the subsidies on private consumption. Besides price and income, both consumption volumes and market prices of the commodities in question will thus determine the development of the transfer payments.

The expression for the investment volume, finally, will determine the gradual adjustment to the volume needed to avoid bottle-necks and will also depend on prices, income and the current required rate of return on capital.

As can be seen from table 1<sup>1</sup> the equations actually estimated contain certain further complications. There are a number of smaller items clattering up the income side of the budget restriction. There is also a two-year delay between the time when local taxes are collected by the state and the time when they are finally disbursed to the local governments. Finally shift variables have been introduced to let the maximum claim levels shift as a function of population changes etc. In adjusting the model to the conventions of the national accounting statistics, according to which all the business activities of local governments are imbedded in the business sector, the investment consequences and the capacity restrictions of

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<sup>1</sup> The authors are much indebted to Erik Melander who made the estimations for this version, as well as for earlier and more disaggregated versions, of the local government model.

Table 1. Equations explaining local government expenditures 1960-77.<sup>1</sup>

All variables are in index form.

Dep.var.	$Z_{1i}$	$Z_{2i}$	$Z_{3i}$	$Z_{4i}$	$Z_{5i}$
$Q_1$ (Education)	1.97 (0.12)	-0.55 (0.04)	-0.02 (0.00)	-1.02 (0.25)	0.63 (0.20)
$Q_2$ (Health)	1.82 (0.18)	-0.38 (0.04)	0.02 (0.01)	-1.71 (0.55)	1.27 (0.39)
$Q_3$ (Social welfare)	1.73 (0.25)	-0.20 (0.05)	0.04 (0.01)	-1.60 (0.79)	1.06 (0.59)
$Q_4$ (Roads)	2.03 (0.18)			-1.41 (0.33)	0.41 (0.18)
$Q_5$ (Admin.etc.)	0.88 (0.72)	-0.18 (0.17)	0.04 (0.03)	-0.93 (1.36)	1.19 (0.76)

where  $Z_{1i}$  are shift variables,  $Z_{2i}$  reflects investment consequences (= the marginal capital output ratio divided by the aggregate capital stock) and  $Z_{3i}$  capacity restriction (= the increase in relative surplus capacity multiplied by  $Z_{2i}$ ), while  $Z_{4i}$  and  $Z_{5i}$  represent the impact of changes in prices, local rates and relative prices ( $Z_{4i}$  = relative price, net of grants and fees, multiplied by the ratio of taxable income during current year and the year  $t-2$ ;  $Z_{5i} = Z_{4i}$  multiplied by disposable income).

<sup>1</sup> The equation have been estimated on annual data from local government financial statistics 1960-77.

Table 1. cont.

Dep.var.	$Z_{6i}$	$Z_{7i}$	$Z_{8i}$
$t_1$ (public utilities subsidy)	1.09 (0.25)	-1.51 (0.20)	1.37 (0.18)
$t_2$ (housing subsidy)	1.31 (0.12)	-0.47 (0.06)	0.11 (0.11)

where the dependent variable  $t_i$  stands for the relative amount of local government subsidy (= the ratio between the subsidy and the consumers' net expenditure for that category),  $Z_{6i}$  measures the relative price divided by disposable income (and in  $Z_{62}$  multiplied by a population shift variable),  $Z_{7i}$  also reflects income development (=  $Z_{6i}$  multiplied by relative price and current income over income (t-2)) and  $Z_{8i}$  finally takes account of variations in local rates and disposable income (=  $Z_{7i}$  multiplied by disposable income).

Dep.var.	Constant	$Z_1$	$Z_2$	$Z_3^1$	$Z_4$
$\dot{K}$ (growth of capital stock)	1.59 (0.37)	0.16 (0.00)	0.05 (0.02)	-2.87 (2.51)	2.27 (2.15)

where the actual rate of growth of the aggregate capital stock,  $\dot{K}$ , is explained by an adjustment to the desired growth rate,  $Z_1 = \dot{K}^*$ , by the change in liquidity,  $Z_2 = \Delta LIQ_{t-1}$ , by  $Z_3$  which is the product of the "normal" rate of return on the capital stock and the ratio of current taxable income and income in year (t-2), and finally by  $Z_4$ , which is  $Z_3$  multiplied by disposable income.

<sup>1</sup> The submodel originally included an equation explaining the debt management of local authorities. This is the reason why the rate of interest appears in  $Z_3$ . The debt equation has here been discarded, its influence being negligible.

transfer payments had to be left out.

In integrating the submodel of the local government into the total model, some further links have to be added. The government purchases of goods from the business sector are described by a special distribution matrix. Employment is derived from production levels by way of productivity assumptions. Finally and most importantly the local rate is determined residually from the budget restriction. In this way, and through the competitive pressure on the wage level, changes in local government activity affect the volume of private consumption.

Some interpretative problems have arisen in connection with the use of the local government model for simulations during the 80s.

There are reasons to believe that subsidy ratios will not in the future be shifted upward in response to price and income developments. In the policy simulations we have therefore chosen to let these ratios remain constant during the eighties.

No explicit guide lines as to long-term debt policy and liquidity positions can be derived from the estimated equations. Changes in financial assets occur only as a result of "planning failures". In the model, local governments plan their expenditure volumes for next year on the basis of price forecasts, mainly depending on the observed wage development. Errors in these price estimates can thus give rise to unplanned deficits or surpluses.



Local governments in Sweden, however, started the 80s with an extremely good liquidity. The moderating influence of stagnating price and income developments should therefore, according to the model, lead to considerable cuts in the local rates during the next few years. No such cuts have, however, occurred since the middle of the 50s and a reoccurrence now seems for many reasons unlikely. To make our simulations more "realistic" we have therefore chosen to introduce an ad hoc floor restriction on local rates, meaning that on the average local rates can rise but never fall.

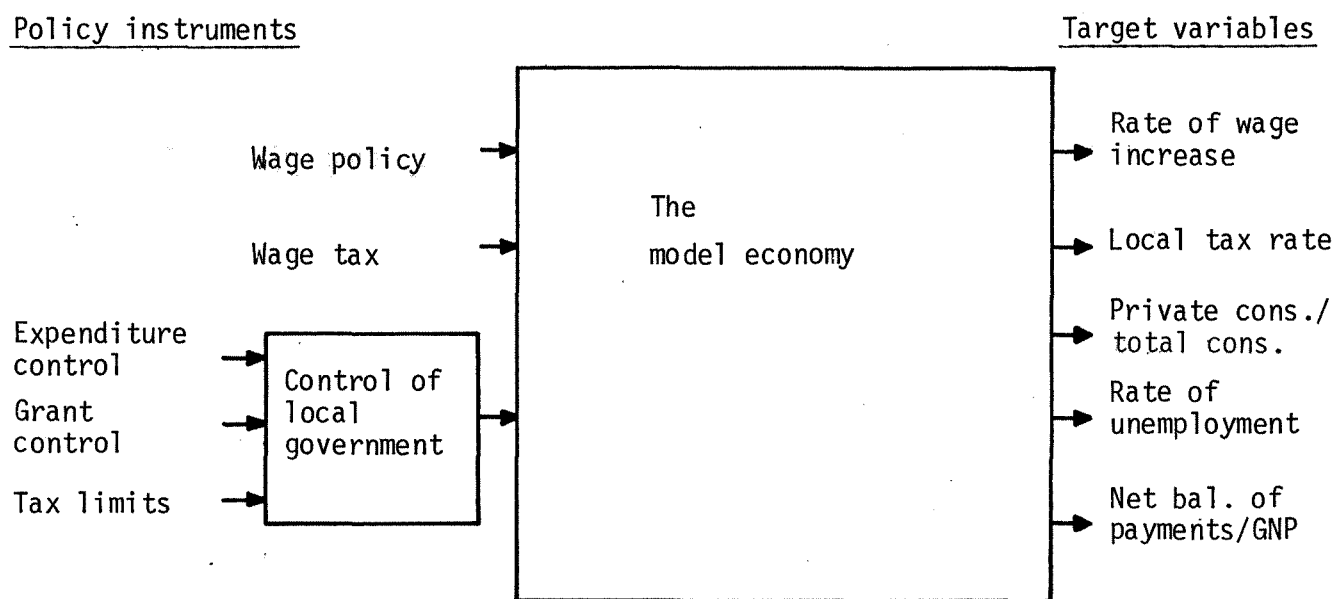
Such a floor restriction obviously means that during certain periods local governments would be accumulating considerable liquid assets. All this money would then by definition be used for paying off the still rather small amount of outstanding debt, without affecting expenditure. Such a behavior would undoubtedly be regarded by most observers of the Swedish local government scene as very improbable. We have therefore supplemented our floor restriction with a rule, saying that any surplus, accumulated over the last two years, in excess of two percent of the corresponding expenditure, will be used to scale up expenditures proportionately. This is equivalent to say that we have restricted the possible annual rate of improvement in local government liquidity. Unless otherwise stated this liquidity rule has been used throughout the simulations. We have, however, made simulations without this rule to check that the conclusions we want to draw, do not critically depend on this ad hoc assumption.

### 2.3 **The targets and instruments of fiscal policy**

There are in principle a great many ways of controlling our model economy and of measuring the results. Our choice for the simulations has been guided both by the actual priorities in current Swedish policy and by our wish to explore the interaction between local governments and the rest of the economy.

The five target variables we focus on are all in the center of current policy concern. The rate of unemployment and the net balance of payments, measured as percentage of GNP, reflect the two major real unbalances of the Swedish economy: the low level of domestic activity and the too small export share of total production. The rate of wage increase is used as a representative measure of how well we succeed in keeping inflation in check and improving our competitive situation abroad. The proportionate local income tax rate, which by now dominates the total rate for personal income tax, will be decisive for the outcome of the current efforts to bring down the marginal tax rates and to keep average rates from rising. The relative development of private and local government consumption respectively during the straightened regime of the 80s is, finally, very much in the center of the current political controversy in Sweden.

As depicted in figure 3 we use alternatively five different policy instruments to attain our five targets. "Wage policy" really means controlling

Figure 3. The targets and instruments of fiscal policy

the long term growth trend of wages during the decade. Technically this is attained in the simulations by varying the constant term in the estimated expression for the growth rate of nominal wages. In actual life this could correspond to the efforts, frequently exemplified during the 70s, to keep down the nominal wage claims in the collective bargaining by various fiscal adjustments, particularly directed towards the rates of personal income tax.

The second type of policy instrument is the wage tax, which is assumed to be entirely shifted back onto the wage earners. It can be looked upon as a representative of a wide variety of tax and transfer policy measures. It is, however, a natural candidate since there are strong reasons to suppose that future increases in state taxation will predominantly take this form. It also has the characteristic, important in our simulations, that its variations affect local governments directly by changing their tax base.

Finally we experiment with three different ways of controlling local government spending. The first one is a full control of aggregate local government expenditures. One could read many of the current planning documents in Sweden, all treating local government spending as exogenously determined, as presupposing some kind of expenditure control. The experience over the last few years does, however, suggest that any such assumption is very ill founded.

The second type is grant control which can take the form of varying either the categorical grants - in the model treated as open-ended, acting as reduction in net production prices <sup>1</sup> - or non-categorical block grants giving rise to income effects through the budget restriction. Grant control as a way of affecting the total local governments spending has so far not been much used, although recently much talked about, in Sweden.

Finally we also experiment with tax limits, which in the simulations take the form of restricting the annual increase of the local government tax rate.

Among our policy instruments we have not included an active exchange policy. The reason is that, in the model, changes of the exchange rate appear to be a substitute rather than a complement to wage policy. The price compensation claims, built into the equation explaining the rate of wage increase, tend to counteract and, after a while, almost completely neutralize any change of the exchange rate. That an active exchange rate thus requires the cooperation of the parties on the labor market would seem to agree rather well with our experiences from the 70s. On the other hand, the effects of wage policy in the model, seem to run rather parallel to those of an active exchange policy.

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<sup>1</sup> The few attempts made at testing this interpretation of the Swedish categorical grants have all been inconclusive but do not justify rejecting the hypothesis. Cf.e.g. Gramlich-Ysander (1980).

To investigate all effects of all possible policy packages would obviously make the results difficult to survey and account for. We have therefore chosen to restrict our questions. Although we throughout account for the development of the five target variables we mainly concentrate our discussions to what happens to unemployment and the balance of payment deficit. On the policy side we focus on studying the possibility of attaining the desired results by coupling two of the policy instruments or by changing a single instrument. We have been particularly concerned with the possibility of substituting some kind of control of local government for wage policy.

In using the various fiscal instruments we have not attempted any "fine tuning" of year-to-year stabilization. We have restricted ourselves to setting once and for all the levels or growth rates of the instruments for the whole period in question. In the majority of cases we are mainly concerned with long-term balance of payment problems etc. measured in terms of the target values in 1990.

#### **2.4 Developments in the eighties - the reference case**

As a measuring rod for our simulations we have used a "reference case", i.e. a standard scenario for the development of the Swedish economy in the 80s. The assumptions concerning the international markets and the domestic labor supply are listed

in table 2. We assume that the rate of increase in the volume of international trade will be stable but somewhat lower than in previous post-war decades. For raw materials and semifinished goods this will mean an annual rate of increase of 2.3 percent while the trading in finished goods is supposed to increase annually 5.7 percent and that of services 4.5 percent. There are good reasons to expect a stagnating supply of labor in the 80s. The number of hours worked will continue to decrease, although slowly, while the number of people in the labor force will increase slightly.

As to fiscal policy we assume in the reference case that all policy instruments can be used to maximal advantage. This means that the economy will be directed not only by wage tax and wage policy but also by exercising full control over local government expenditures. As can be seen from figure 4 this makes it possible to attain all targets, i.e. to keep down unemployment to 2 percent - usually considered the "natural" rate of frictional unemployment in Sweden - to get rid of the balance of payment deficit by 1990, to keep wage inflation under two digits, to avoid any considerable rise in the local rates and, finally, to share out the shrinking margins of consumption increase roughly proportionally between private and local government consumption.<sup>1</sup> The average growth rate during the 80s for private consumption becomes 1.5 percent and for local government consumption 1.7 percent per year.

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<sup>1</sup> For a more detailed discussion of possible conditions and results of economic development in Sweden during the 80s cf Nordström-Ysander (1980).

Table 2. Assumptions for the eighties  
World trade development

	Annual increase 1980/1990, %	
	Volume	Price <sup>a</sup>
Raw materials and semifinished goods <sup>b</sup>	2.3	5.5
Finished goods	5.7	6.4
Services	4.5	7.0

<sup>a</sup> In international currency

<sup>b</sup> Includes the following branches: Agriculture, forestry and fishing; mining and quarrying; manufacture of wood products, pulp and paper; basic metal industries.

Labor supply development

	1980/1990
Number of persons <sup>a</sup>	32.7
Number of persons <sup>b</sup>	0.7
Hours worked per employee <sup>b</sup>	-1.0
Labor supply, number of hours <sup>b</sup>	-0.3

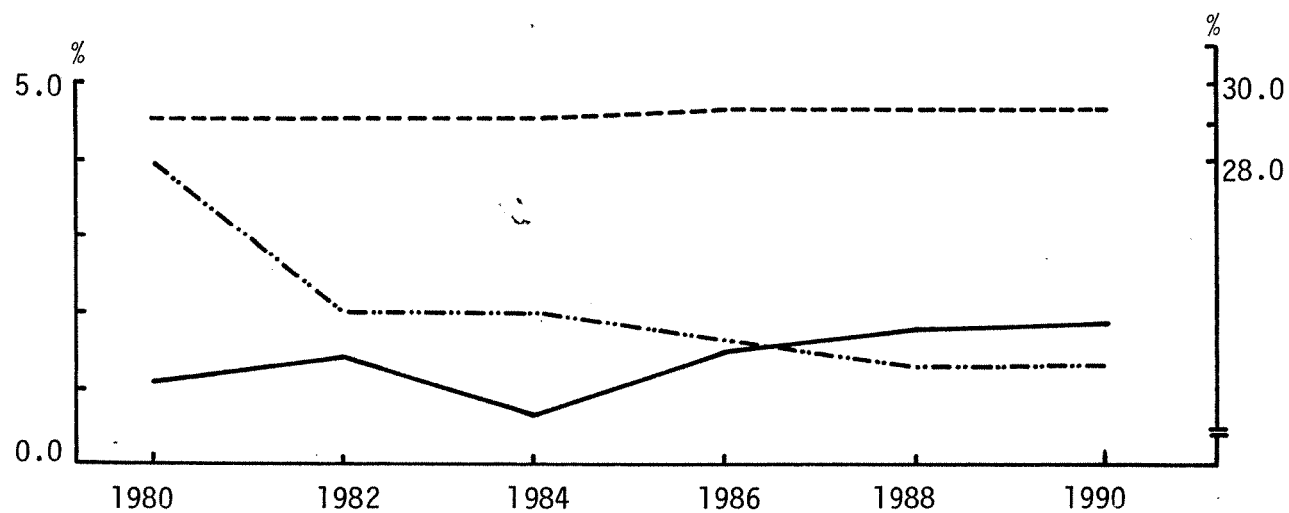
<sup>a</sup> Yearly change in thousands of persons

<sup>b</sup> Yearly percentage growth

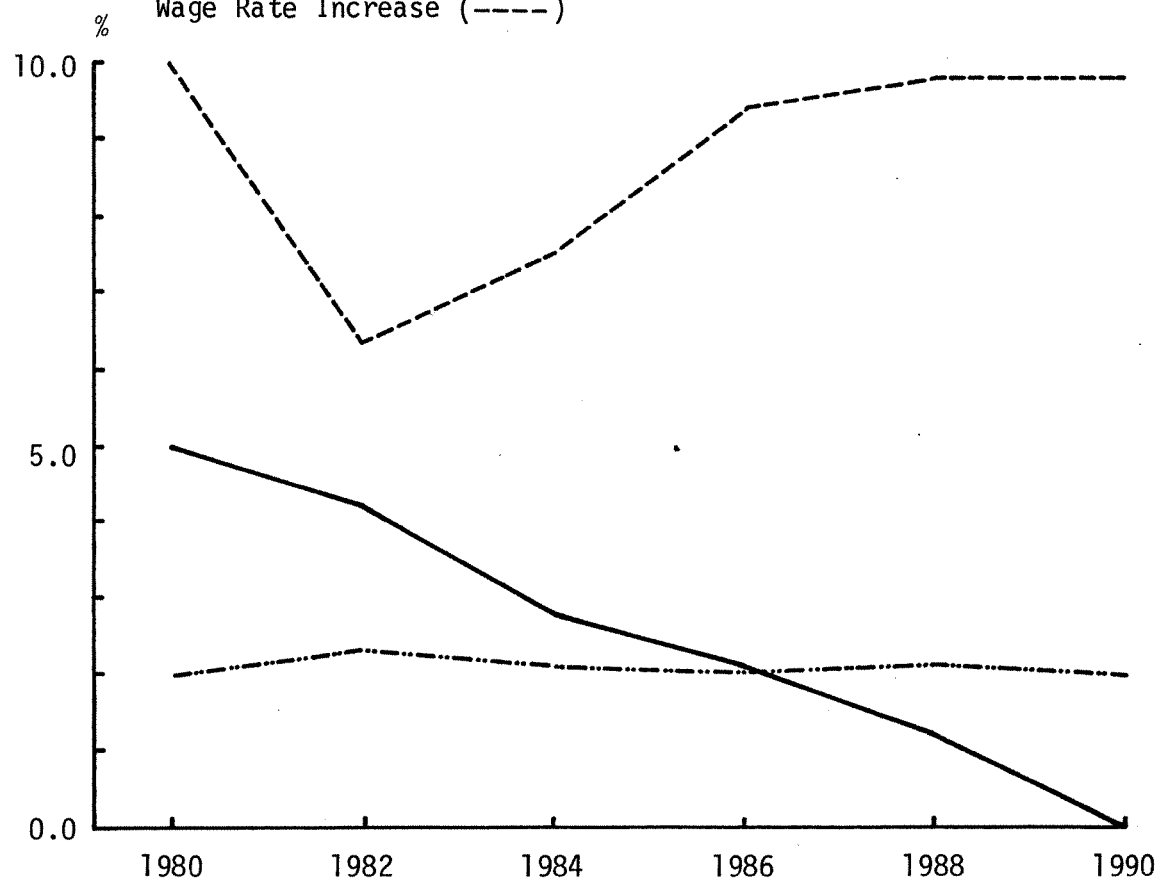


Figure 4. Development of the Swedish Economy in the Reference Case

- 4a. Private Consumption growth (—)  
 Local Consumption growth (— · —)  
 Local Tax Rate (---), right scale



- 4b. Balance of Payment Deficit, per cent of GNP (—)  
 Unemployment (— · —)  
 Wage Rate Increase (---)

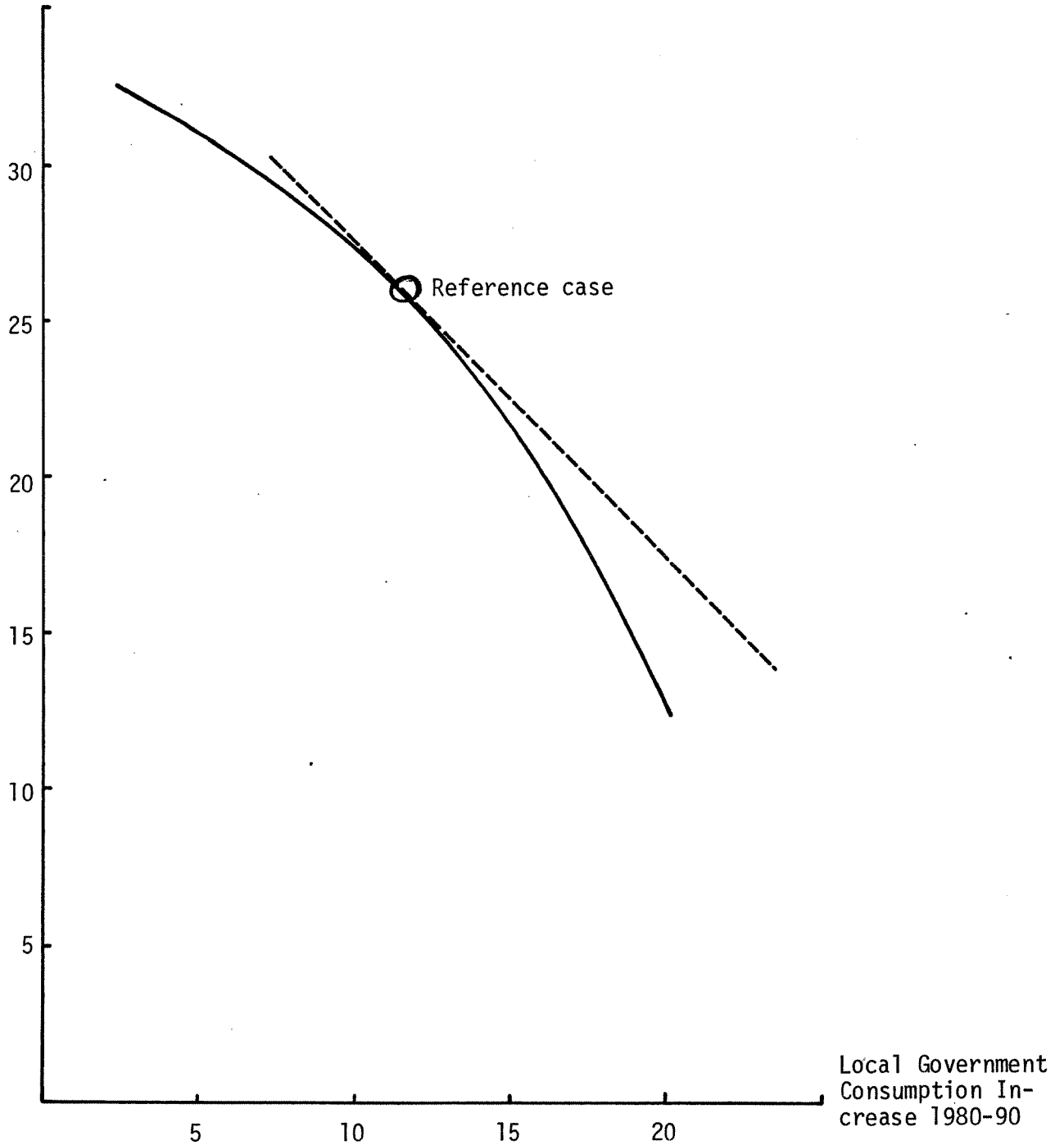


Unless otherwise stated we have in the following simulations used the same general assumptions as in the reference case, while varying the policy instruments.

Since the distribution between private and local government consumption within the narrow margins of increase expected for the 80s is so much in the center of present controversy, it may be of some interest to illustrate the reference case by looking more closely at the trade-off between private and local government consumption. It should be emphasized that what we are here dealing with the trade-off possible within a retained balanced growth path, i.e. without giving up either the goal of full employment or the 1990 target of a balance in external exchange. Figure 5 shows the "consumption frontier" for the year 1990. The substitution has been generated by wage policy and by changing local government expenditure. It turns out that with marginal changes we can roughly get one million worth of private consumption by sacrificing one million worth of local government consumption. The further we go in preferring one type of consumption, however, the more sacrifice it will take.

Figure 5. The Trade-off between Private and Local Government Consumption  
Billions of SKr, 1975 year prices

Private consumption  
Increase 1980-90



Note: The trade-off between private and local government consumption is equal to unity along the dotted line.

### 3. LOCAL AUTHORITIES IN A CHANGING ECONOMY

Having a macro model with endogenously determined local government behavior enables us to study closer the interaction between local government and the rest of the economy by experimental simulations. Even the best planned numerical simulations are of course bad substitutes for analytical solutions. They can never systematically cover the full range of possible situations and must appeal to a fallible intuition when it comes to entangling the web of causal chains involved. However, when deductive analysis of the full scale problem appears to be unmanageable, numerical simulations may help to map the problems and possible solutions and to trace the need for more detailed partial analysis. It is with this aim - and with all due reservations - that the following numerical examples are presented.

The simulations in this section have two different purposes. We start by trying to investigate, if the dynamic interaction between an "uncontrolled" local government sector and the rest of the economy tends by itself to set up oscillations or dampen existing ones - whether and when local government spending and taxing acts stabilizing or destabilizing on the total economy. We then try to measure the impact on the economy of central control measures directed towards local government - expenditure control and grant policy.

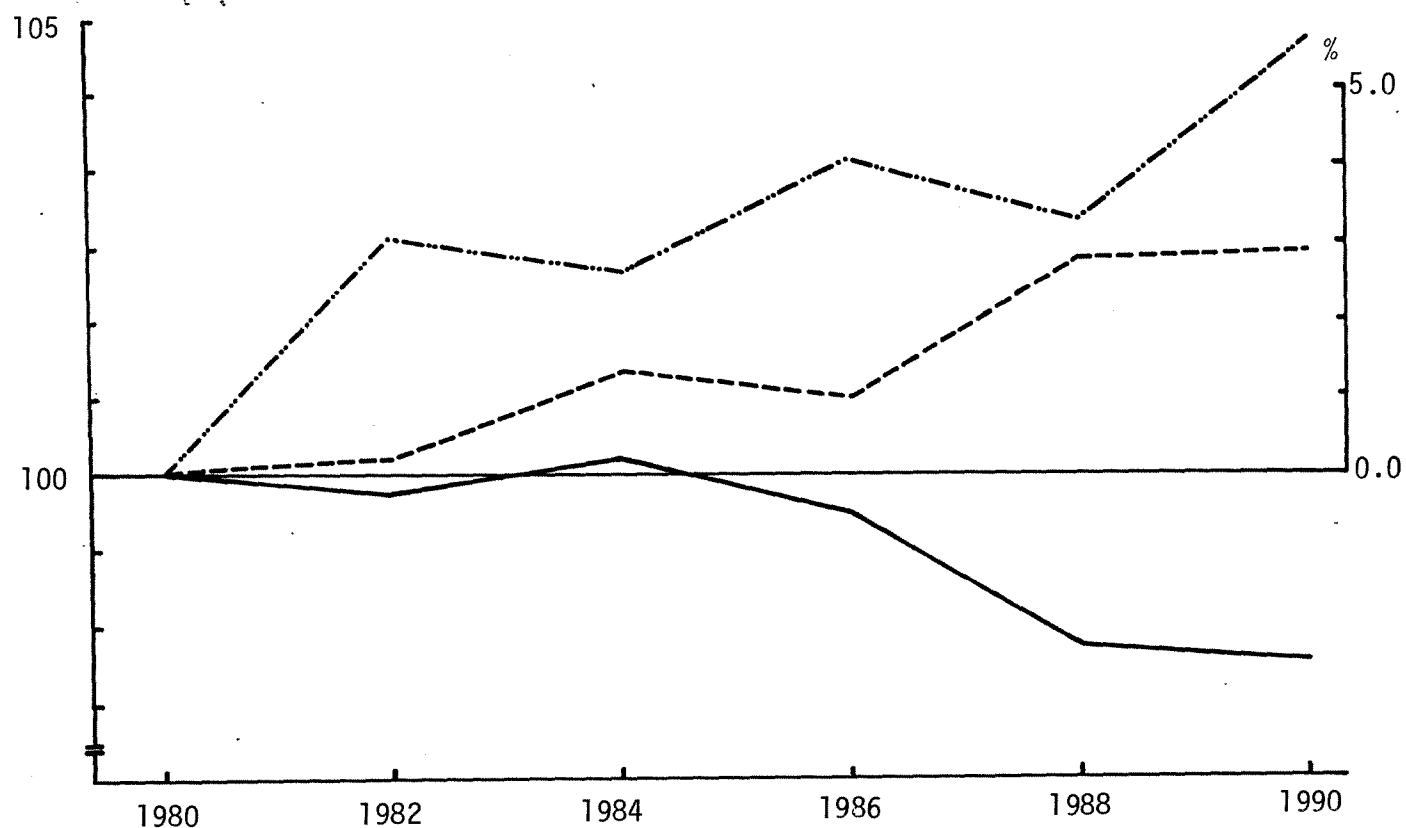
### 3.1 Cyclical patterns in local authority expenditure

To illustrate the possible cyclical patterns of local government spending we have removed the central expenditure control assumed in the reference case, thus allowing local government spending and taxing to develop freely. We still presume, however, the same wage tax and wage policy being applied and retain all other assumptions on exogenous factors. What this case, illustrated in figure 6, simulates, is a situation where a long-term policy aiming at balanced growth is kept unchanged even though the intended expenditure control on local government is ineffective. The development over the 80's of our five target dimensions are shown in the figure and measured relative to the reference case. In 6a private and local government consumption respectively are given in index form with 100 being equal to reference case levels. For the local tax rate the absolute difference relative to the reference case is measured against the right hand scale. In figure 6b the absolute difference of percentage relative to the reference case is shown for wage increase, unemployment and the external deficit as percentage of GNP, respectively.

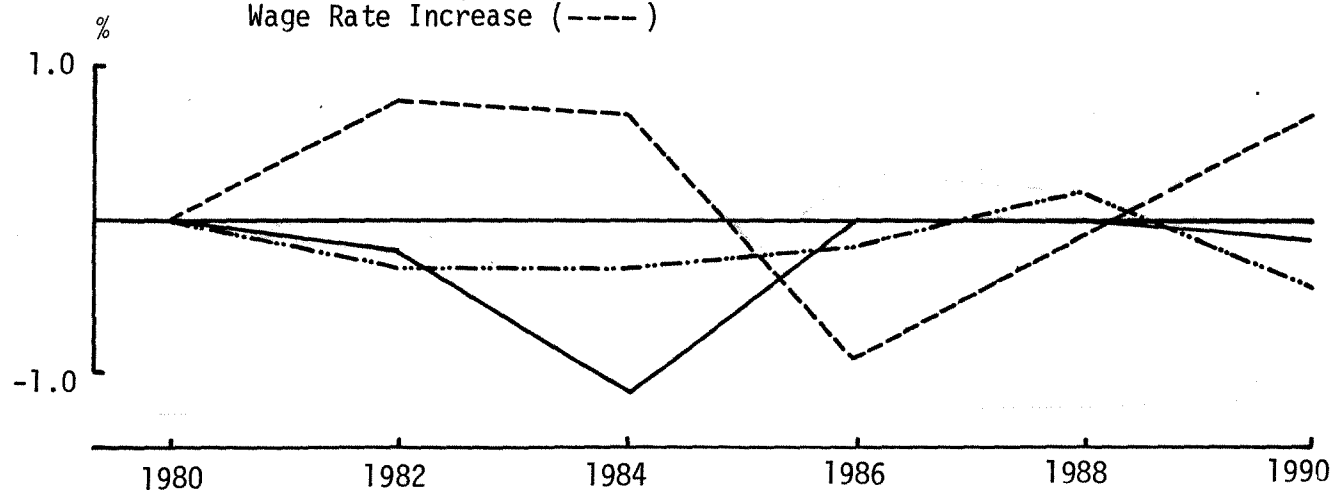
Taking a bird's-eye-view of the developments in figure 6, the first impression is that the consequences of having uncontrolled local government seem rather undramatic. There is indeed a shift from private consumption to local government consumption. The balance of payment deficit, however,

Figure 6. Cyclical Patterns in Local Authority Spending<sup>a</sup>

6a. Private Consumption (—)  
 Local Consumption (-·-·-)  
 Local Tax Rate (- - -), right scale



6b. Balance of Payment, per cent of GNP (—)  
 Unemployment (-·-·-)  
 Wage Rate Increase (- - -)



<sup>a</sup> All variables in the two diagrams in figure 6 are related to the reference case (see figure 4). Private and local consumption are shown as indexes with reference case variables equal to 100 each year. Local tax rate is the difference to the reference case tax rate. Also the three variables in the lower diagram are calculated as differences from corresponding reference case variables.

will still be rather close to the intended zero figure at the end of the decade. The one noticeable unbalance in 1990 is a slightly overheated labor market, showing a lower unemployment and a higher rate of wage increase than originally planned in the reference case. That the economy does not get more out of balance under the impact of a fast local government expansion seems to be mainly due to the wage functioning as an equilibrating mechanism. High wages tend to bring down demand not only in the foreign markets but even within local governments. The loss of exports is compensated by the shifts into import saving public consumption with import intensive private consumption is held back by local tax increases.

If we look closer at what happens within the local government sector we can discern certain oscillations set up by what might be termed the "liquidity cycle" in local government spending. At the start of the decade accumulated high liquidity combined with a falling rate of wage increase - making delayed tax incomes develop favourably relative to current wage costs- leads to a steep rise in service production which can only be realized by an overbidding in the labor market which pushes up wage inflation. After about 2-3 years, costs will, however, catch up with incomes and with a vengeance. The high rate of wage increase in industry has by that time been braked by the employment problems it created, but it hits the local governments as compensation claims with a one-year lag. High wage costs then combine with a stagnating tax base - the latter being moreover hollowed out by a still high inflation - to dampen effectively the local government expansion and to necessitate a

considerable tax rate increase. The relatively weakened demand of the local governments tends in turn to keep the rate of wage increase stable for a while. When the delayed disbursement of inflated tax incomes are due, the local governments can spend them at reasonable prices without increasing the local tax rate. This favourable situation, to which is added accumulated liquidity, will then unleash a new bout of expansion which simultaneously drives up employment figures and wage inflation rates. This again sets the scene for the new reversal - with the cost push making the local governments revise their plans downwards, relieving some of the inflationary pressures on the labor market etc. As can be seen from figure 6a the interaction of local government and labor market thus leads to an oscillatory pattern, a liquidity cycle, with an average length of about four years where periods with stagnating service demand and rising tax rates are succeeded by periods of rising demand and stagnating rates.

As figure 6 also exemplifies this liquidity cycle is overlaid and interwoven with other lag structures in the model. One main example of this is the wage cost-export demand lag in industry. Rising wage costs tend to be absorbed to a certain extent by squeezed profit margins. It also takes some time before the rising relative unit costs in Swedish industry is fully registered in terms of falling market shares on the international markets. This introduces an inertia in the system which allows wage inflation to run its course for some time before being rectified and compensated.



### 3.2 Expenditure adjustments to changes in price and income

After having seen the results of "decontrolling" local government, we shall next try to measure the effects of various means of control - expenditure control and grant policy. This means estimating elasticities and multipliers for the local government sector and it will at the same time enable us to learn more about the pattern of municipal reaction to and reinforcement of changing conditions.

When you change prices or incomes for the local governments by way of grant policy you set into motion a chain of events that can be split into two parts. The immediate reaction within the local government sector, the effect on service volumes, can be measured by the usual price and income elasticities. How changes in local government spending will in turn be transmitted within the national economy and what the end results will be for employment, private consumption, foreign trade and inflation can be measured by a kind of generalized multiplier concepts.

The results of such measurements will, however, necessarily depend on when, in what phase of the fluctuating economic events, the change is introduced. We shall therefore be content to give some numerical examples of the possible sizes involved.

Let us start by reviewing some of the elasticities. In table 3 average values of elasticities for service demand in the 80's are presented. Three kinds of elasticities are discerned. Equal in abso-

Table 3. Average elasticities for service expenditure: of local authorities 1980-1990

Category	Price	Tax base (=-price)	Income
Education	-0,21	0,21	0,33
Health	-0,36	0,36	1,03
Social Welfare	-0,33	0,33	0,84
Roads	-0,76	0,76	0,34
Adm etc.	+0,28	-0,28	1,02
∑	-0,18	0,18	0,85

lute size but with an opposite sign to the price elasticity, is the elasticity with regard to the tax base. This measures the impact on service production of changes in taxable income in the year  $t-2$ . Together with the current tax rate, the tax base will determine the tax income actually disbursed to local governments during the current year. It thus corresponds to a particular kind of "income elasticity", working by way of the budget restriction. The absence of pure substitution effects in the model mean, that a fall in prices has the same relative effect on production volumes as a corresponding rise in tax income.

Changes in current income affects demand by way of the goal function, where disposable private income is one of the arguments. Increases in current income make the political decision makers more inclined to let through added service claims. If this effect is added to the tax base effect, together measuring the effect of a sustained income rise from year  $t-2$  and onwards, we get what in the table is called "income elasticity".<sup>1</sup>

The elasticities computed for the various categories seem to fit fairly well with common preconceptions. Educational expenditures in Sweden are strongly regulated, primarily determined by changes in the youth population and therefore considered insensitive both to price and income. Standards in health and social welfare on the other hand, although showing a relatively low price elas-

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<sup>1</sup> For a discussion of partly divergent estimates of elasticities obtained from earlier versions of the local government model, cf Ysander (1979).

ticity, tend to follow the income. Since the early 70's roads tend to get a low priority but budgeting decisions here seems to be rather price sensitive. That road work appears negatively correlated with current income is probably due to the fact that some major cut-backs in the early seventies occurred in periods of growing income. The expansion of central administration (including also things like fire service, economic services and community planning) finally seem to capture a constant share of any new income - getting a further boost from any adverse price developments. Total local government service expenditure appears to keep pace with income changes ( $E = 0.85$ ) but to be rather insensitive to net prices ( $\xi = -0.18$ ). The low price elasticity can, however, still be enough, as we will see below, to make categorical grant policy a worthwhile instrument of stabilization policy.

### **3.3 Multiplier effects of changes in expenditures and grants**

The total results of changing the determinants of local government spending in a dynamic economy are exemplified by the multipliers in table 4. To standardize the results as far as possible we have measured them against a balanced growth scenario, with "uncontrolled" local governments. This we attained by taking the "uncontrolled" development, shown in figure 6 above, correcting the overheated labor market and the small external deficit at the end of the decade by suitable policy measures (raising slightly both the wage tax and the long-term wage trend). The resulting development, used as a standard of measurement for the multiplier effects, is discussed in more detail later (cf figure 7 below).

Table 4. Multiplier effects

Change in:	<u>4a</u>						<u>4b</u>						<u>4c</u>					
	Of increasing "planned" service production with 2 % 1986-90						Of cutting categorical grants with 25 %, 1986-90						Of cutting bloc grants with 50 %, 1986-90					
	86	87	88	89	90	Average	86	87	88	89	90	Average	86	87	88	89	90	Average
Local authority consumption, percentage	1,3	2,1	-0,1	4,7	1,0	1,8	-2,3	-2,9	-3,6	-3,8	-3,9	-3,0	0,6	0,3	2,0	-1,4	-1,9	-1,2
Local tax rate	-	1,6	1,1	-	-	0,6	0,1	0,7	0,6	0,6	0,7	0,5	-	1,2	0,7	-	-	0,2
Private consumption, percentage	0,2	-1,8	-0,8	-1,0	-0,5	-0,8	-0,3	-1,5	-1,7	-1,9	-1,9	-1,5	0,1	-1,5	-1,0	-1,4	-1,4	-1,0
Rate of wage increase	1,0	0,4	-1,7	2,7	-1,0	0,3	-2,1	-1,1	-1,0	-0,1	0,3	-0,8	-0,7	-0,2	-1,1	-0,2	-0,1	-0,4
Percentage unemployment	-0,2	-	0,4	-1,0	0,3	-0,1	0,7	0,5	0,5	0,3	0,3	0,5	0,1	0,1	0,4	0,1	0,2	0,2
Net balance of payment as percentage of GNP	-0,2	-	0,1	-	-0,2	-0,1	0,2	0,9	1,2	1,4	1,4	1,0	0,1	0,6	0,7	0,9	0,9	0,6

In the first experiment we increase with 2 percent the "planned" service production during the years 1986-90. The production volume determined by the equations in the model are simply multiplied by a factor 1.02, as would be the case with a shift upwards of local government spending attitudes. Due to the liquidity rule superimposed on the model, the actual extra production increase may, as shown in the table, be both smaller and bigger depending on how much surplus tax money that remains. If we look at the actual added production, we can as well interpret the experiment as a way of studying the efficiency of central expenditure control. Without the liquidity rule the results of a decrease would be largely symmetrical.

The story told by the numbers in table 4a is simple and straight-forward. The main effect of the planned increase is a shifting of consumption possibilities from households to local governments. As it happens, however, the given initial tax rate allows an overall expansion of consumption to occur, driving up the wage rate. The next few years will therefore show a reinforced liquidity cycle. The tax rate will rise sharply, providing financial room for a new and stronger expansion later on. Summed over the years local government consumption will expand more than private consumption will shrink, leading to a slight "excess demand" in the labor market and external deficit.

If we pass on to table 4b, we see there the effects of cutting categorical grant each year

1986-90 with 25%. Compared to the foregoing experiment on expenditure control, this change in grant policy not only aims at shifting consumption between private and public hands, but is also a way of controlling total domestic consumption. This is already clear from the average figures, which show that the 3% decline in local government consumption is paralleled by a fall in private consumption of about the same amount absolutely, and half percentagewise. The weakening of domestic demand leads, as could be expected, to more unemployment, more moderate wage increases and a considerable strengthening of the external payment situation.

In table 4c, a corresponding 50% cut in block grants is made. We already know that the effects of a loss of budget income are equivalent to those of a comparable general price rise (cf above on the equivalence between the elasticities with regard to price and tax base). This table then does not really have a new story to tell. What really differs from table 4b is the size of the initial amount of money withdrawn from local government, being in table 4c half the size of that in table 4b. Already a cursory glance will reveal that the various effects in the two tables are roughly analogous. We will therefore have no further need to distinguish between grant policies using block grants and categorical grants respectively.

#### **4. FISCAL POLICY AND ECONOMIC STABILITY**

Having gained some knowledge of elasticities and multiplier effects we are now equipped to take a closer look at the way various fiscal policy instruments work in an environment with relatively independent local governments.

As a starting point for the policy experiments we use the scenario in figure 6 with "uncontrolled" local governments, which left us at the end of the decade with an overheated labor market and a slight remaining external deficit.

We first attempt to regain balance in the two markets without in any way directly controlling local governments. The easiest way to do this is to raise the wage trend slightly, compensating this with a corresponding raise of the wage tax. The result, shown in figure 7, is to reinforce the unemployment effects during periods of rising wage costs and tax rates. The equilibrating mechanism in the labor market then becomes better attuned to the task of dampening the fluctuations in wage inflation. Over the whole period total consumption is slightly lower, but with roughly the same proportion of public consumption.

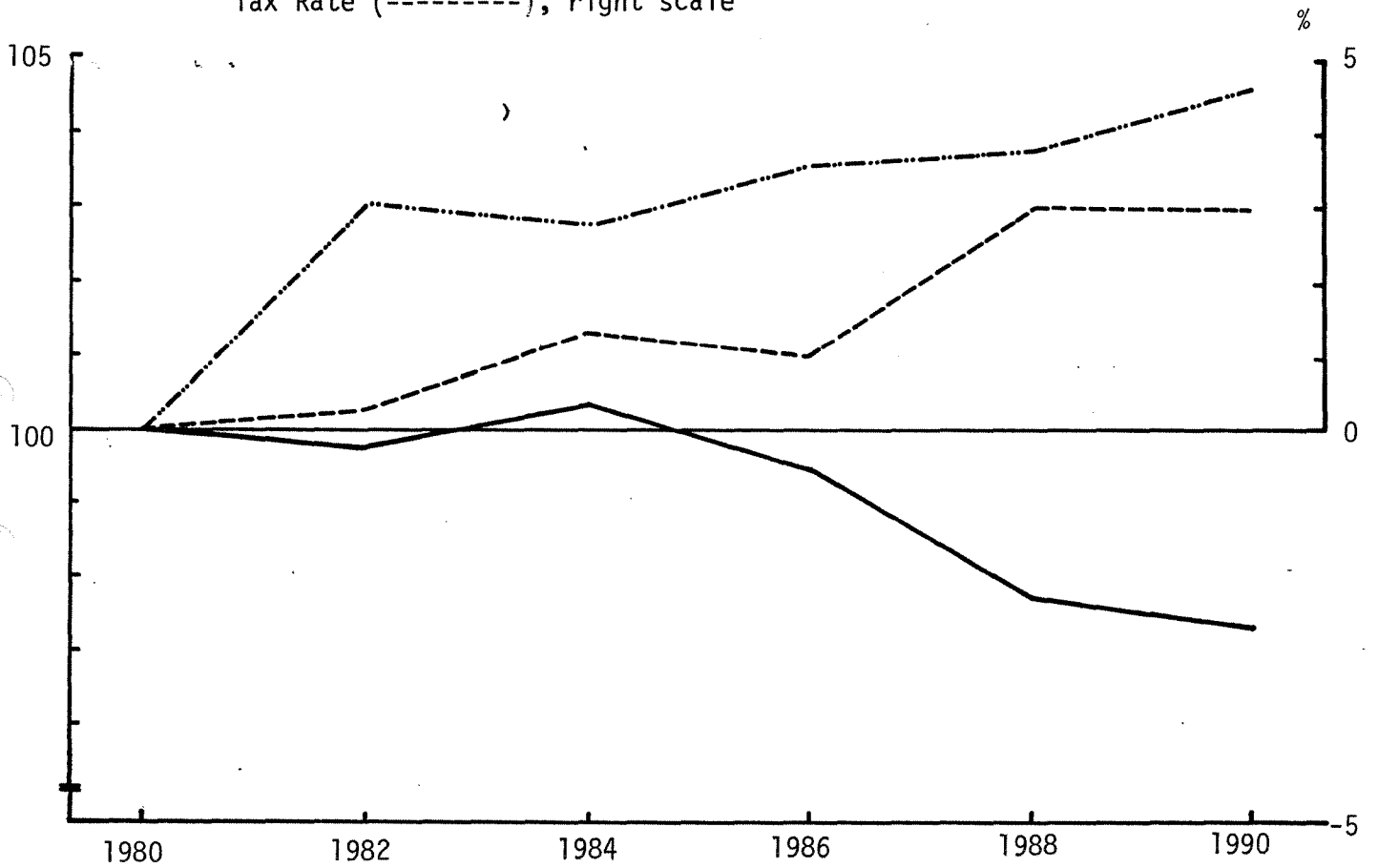
##### **4.1 The efficiency of policy instruments**

We next want to study the possibilities of achieving long-term balance (defined in terms of the situation 1990) by changing one single policy para-

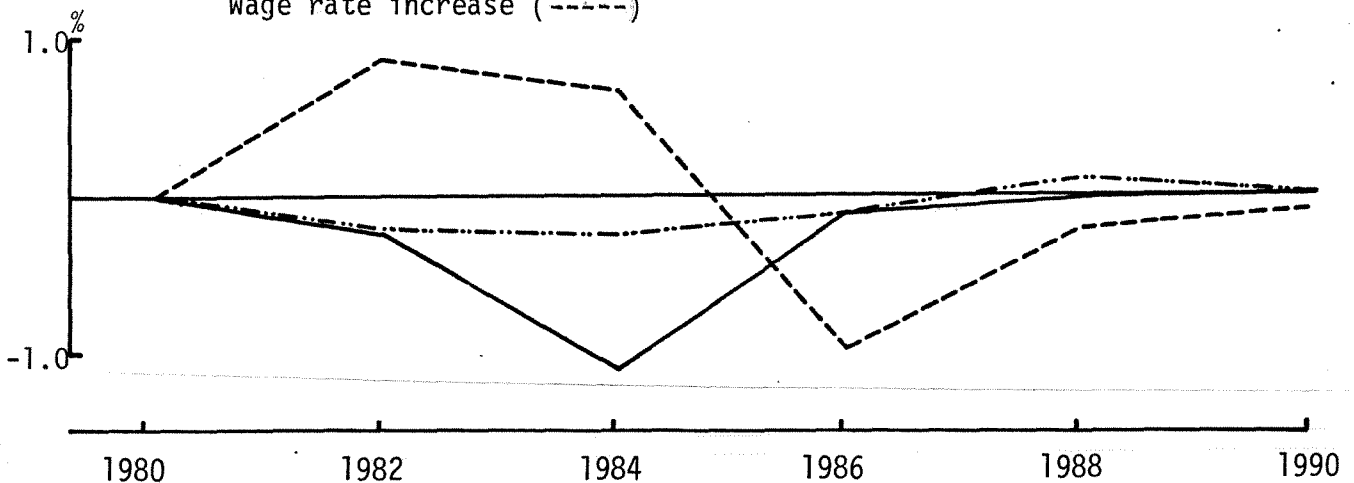


Figure 7. Balance without Control of Local Authorities

7a. Private Consumption (—)  
 Local Consumption (-.-.-.)  
 Tax Rate (-----), right scale



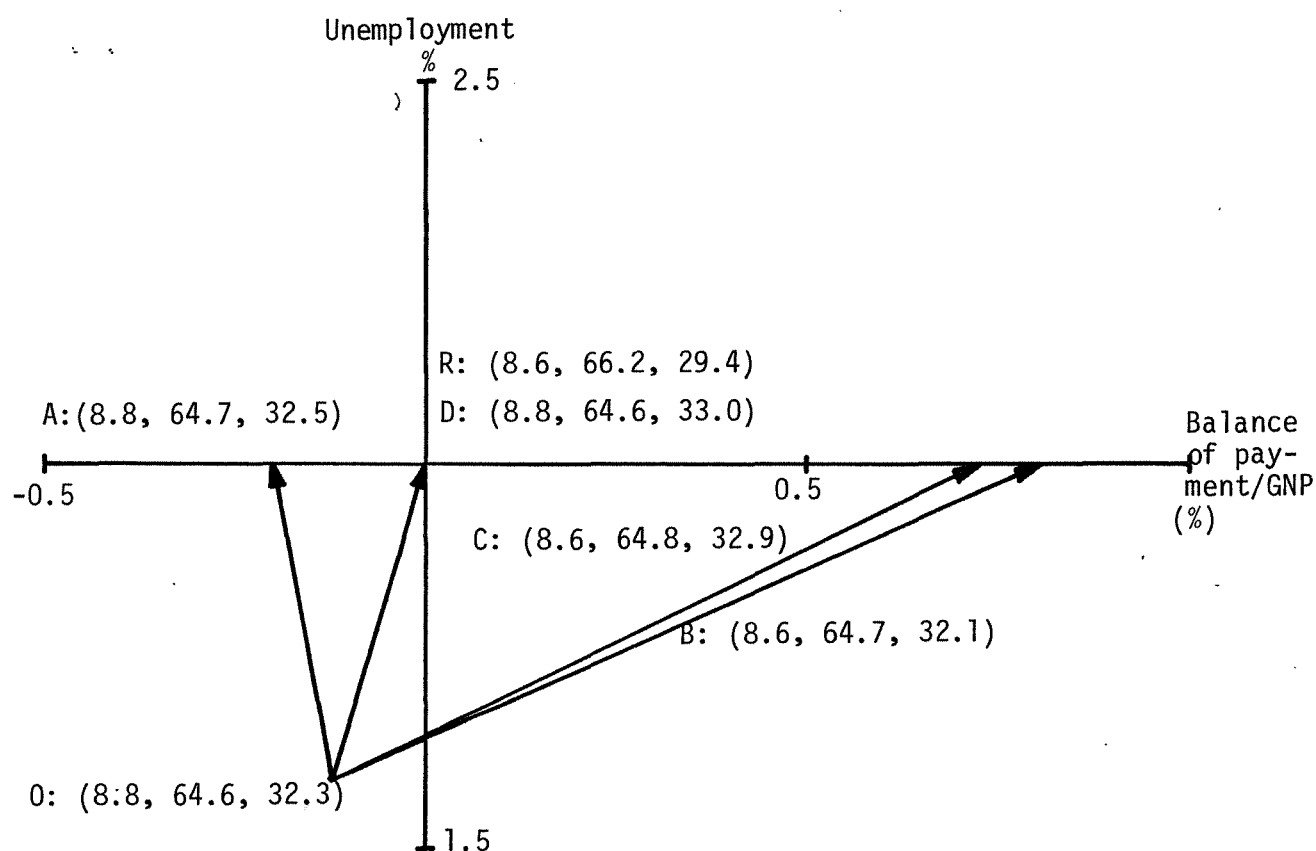
7b. Balance of payment (—)  
 Unemployment (-.-.-.)  
 Wage rate increase (-----)



<sup>a</sup> See note to figure 6 for explanation of the variables.

meter. By "policy" we mean , as stated before, a level or a rate of growth of a policy parameter, set for the whole decade. Our discussion is thus concerned with long-term guide-lines, not with year-to-year compensatory policies. We further restrict our task by dealing mainly with unemployment and external deficit, only passively registering effects in the other targets. The simulation runs are standardized by using each instrument to regain a balanced employment situation and then reading off the attained change in deficit.

The four instruments we study are wage policy, wage tax, grant policy and tax limits. In figure 8 the effects of our four policy instruments are shown as arrows. In brackets by each arrow there are registered the effects on the other targets. A very slight increase of wage costs turns out to be sufficient to raise unemployment to "normal" levels, without more than a marginal worsening of the balance of payment situation. If we try to accomplish the same with a small increase of the wage tax, which will further force down domestic consumption, we get, as a side effect, a considerable strengthening of the balance of payment situation. A 10% yearly cut in categorical grants had very similar effects. Even a very liberal tax limit, restricting the annual rate increase to, at most, 0.75 percent turns out to be equivalent in these respects to a full expenditure control i.e. enable us to regain simultaneous balance on both markets.

Figure 8. The Direction of Policy Effects

The arrows show the effects of the following policy actions:

- A: Wage control
- B: Wage tax
- C: Grants policy
- D: Tax limit
- R: Expenditure control (reference case)

Within the brackets are given in percent respectively:  
Average wage rate growth 1980-90, private consumption share  
of total consumption, local tax rate.

The starting point for the policy variations, O, is the case  
shown in figure 6.

There are many reasons to be cautious in interpreting and drawing conclusions from this kind of experiment. What we are trying to map, very roughly and very locally, is the set of equations relating changes in target values to changes in the policy instruments - with other exogenous variables all regarded as given. Even if restricted to the two target values immediately relevant here, it would indeed be astonishing if a change in one instrument always pushes the targets along a line in one unique direction, irrespective of the values of other policy instruments. What we at most can hope for, is that in a certain neighborhood the "effect curves" of an instrument does not veer too far from a main direction. If we can ascertain that much - and this we have tried to do by repeated experiments from different starting points and with different sign and size of the change in the instrument variable - we can put the results to some practical use. Since the policy effects of different instruments will then be approximately additive within that neighborhood, we can look for instruments which complement each other by having roughly orthogonal effect curves. We can also try to estimate the cheapest way of redressing unbalances in terms of the other relevant targets.

Let us now, with this word of caution still in mind, take a closer look at the arrows in figure 9, starting with wage tax and wage policy.

A raised wage tax cuts down domestic consumption. Local government consumption falls with falling

incomes and the rising local tax rates encroach further on private consumption. Unemployment will then rise. In general, private consumption will experience a sharper drop than local government consumption, making imports fall more than proportionately and more than employment. The slow and gradual shift towards increased foreign demand is a secondary effect that will further strengthen the balance of payment.

A raised trend in the long-term wage will on the other hand directly affect production costs and lead to losses in foreign demand. These losses will not be fully compensated by domestic demand, since local government spending will be dampened by the rising costs at least during certain faces of the "liquidity cycle", while for private consumption the rise in wage rates will be more than offset by high prices, increased local tax rates and lower employment. The end result will be a higher unemployment coupled with a slightly less favourable external payment situation.

Within the neighborhood investigated, wage tax and wage policy thus seem complementary and suitable to be paired off for the task of simultaneously rectifying both the employment and the external deficit problems.

Let us now go on to look at the alternative means of controlling local government, starting with expenditure control. Expenditure control means that central government can determine at will the spending pattern of the local governments.

Cutting down public service production by way of expenditure control means - *ceteris paribus* - providing more expansion room for private consumption. This expansion, due to lower tax rates, will not, however, be equivalent in size to the cuts in public spending, part of which is payed by grants. One would thus expect a certain increased unemployment to be a dominant effect in this case. The moderation in wage increase, induced by increased unemployment, will gradually lead to a shift towards more foreign sales, thus strengthening somewhat the external payment situation. In figure 8 the direction is however given in advance since the reference case was already defined in terms of a expenditure control, made to ensure balance in both the relevant markets.

That a sufficiently tight tax limit control, defined as a maximal annual increase in local rates, can be made equivalent to an expenditure control of a continuously growing local government sector, is evident. Since local rates are raised, although very slowly, in the reference case, the expenditure control could at least approximately, be substituted there by a tax limit. Even where no such equivalence exists, the direction of the effects should be the same for both kinds of control. The fact that in figure 8 the effect lines happen to cover each other is, however, simply a coincidence.

With grant policy the story is different. Instead of inducing more private consumption as expenditure control and tax limits do, grant cuts force

down total domestic consumption, making the immediate unemployment effect stronger, saving on import through lower private consumption.

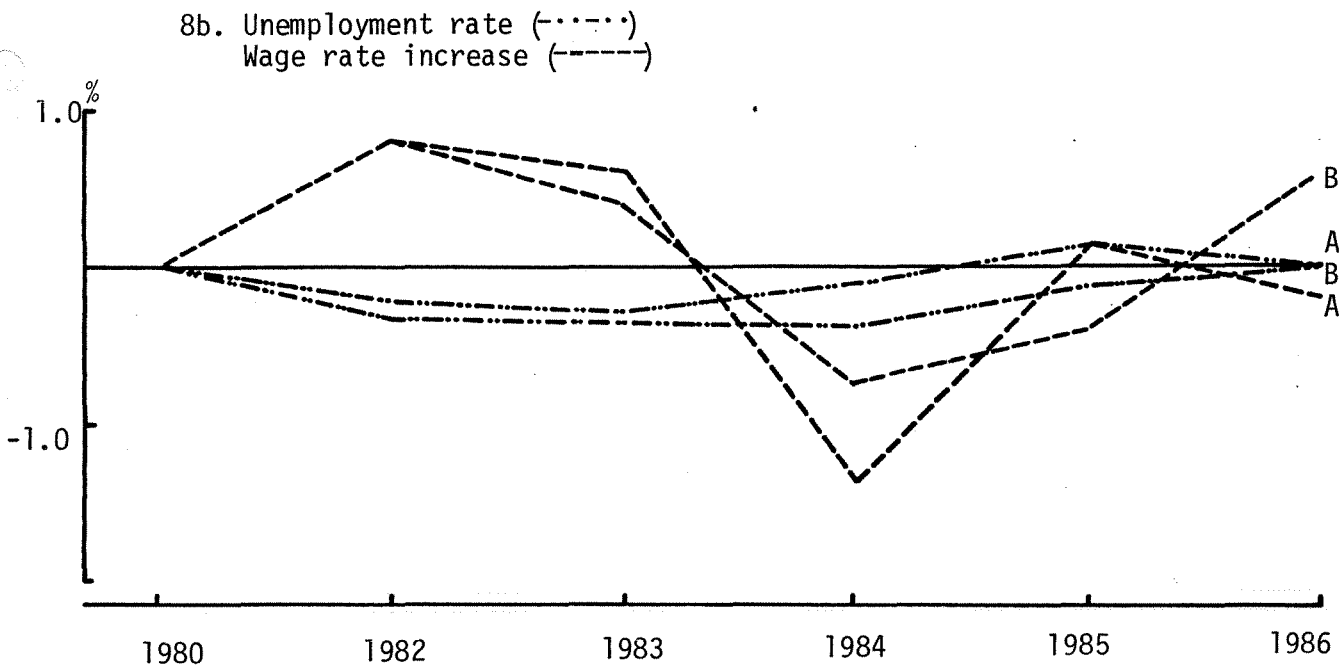
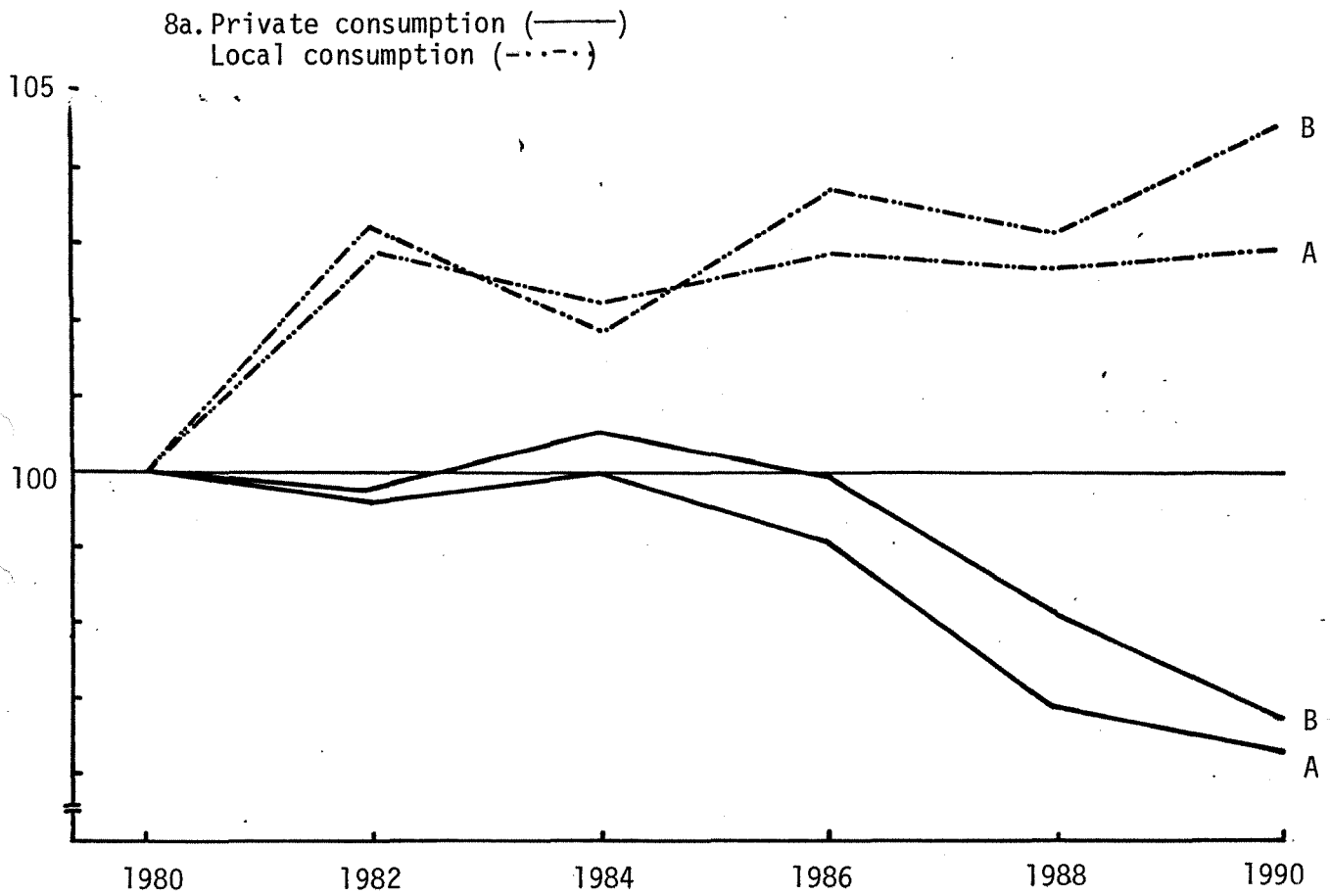
The difference in results between grant policy and tax limits is shown in figure 9a-d. It is apparent from the figure that grant policy is a more restrictive measure, forcing down local government production and advancing the time for the necessary rate increases. The grant cuts therefore result in less wage inflation and a positive balance of payment both at the end of the decade and over the whole period.

If we accept provisionally these results some practical conclusions can be drawn. In the absence of wage control, expenditure control or tax limits may be used to complement wage taxes in the efforts to regain balance both on the labor market and in our external payments. The effects of grant policy on the other hand seem to run too parallel with those of wage tax to be useful as a complementary tool of stabilization policy.

#### **4.3 Counter cyclical policy and the control of local authorities**

We have so far been concerned exclusively with long-term stabilization problems and policies. Independent local governments do, however, also interact with the business cycle, raising interesting

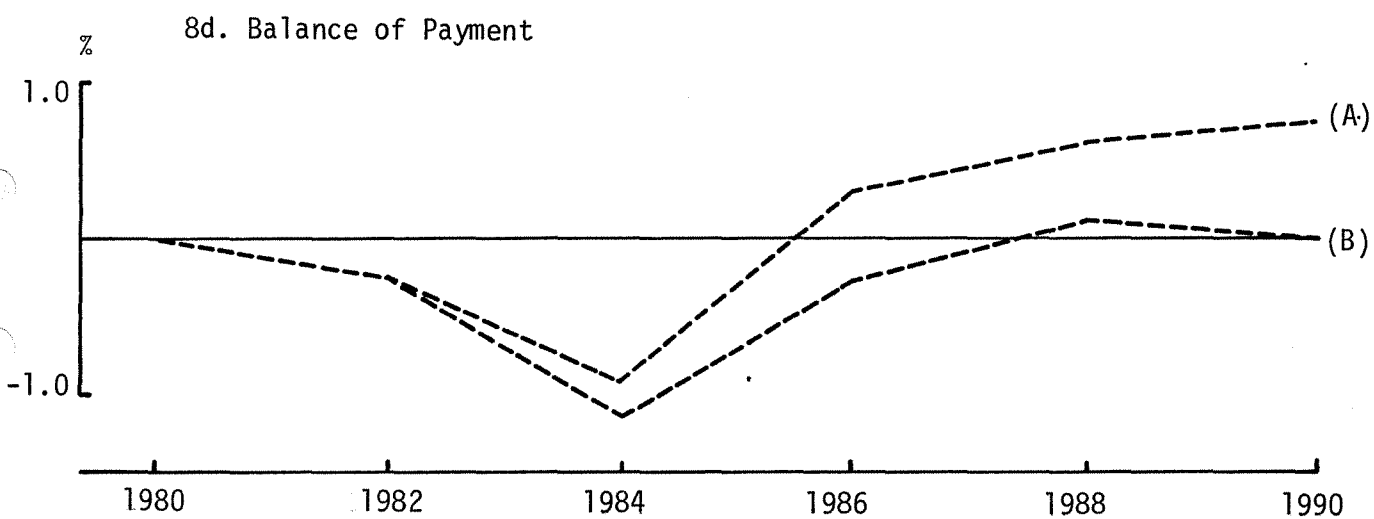
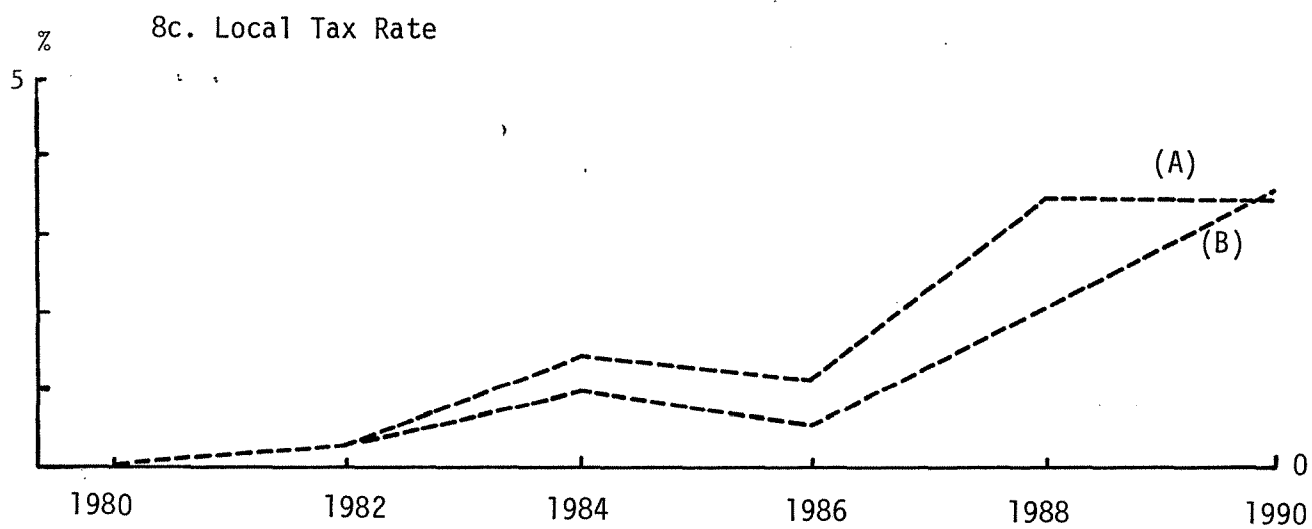
Figure 9. Policy Measures towards Local authorities: The efficiency of Grant Policy (A) and Tax Limit (B)<sup>a</sup>



<sup>a</sup> See note to figure 6 for explanation of the variables.



Figure 9. Cont.



questions about the need of control of local government spending in a medium term stabilization program. To investigate these aspects thoroughly is in itself, a major undertaking, requiring i.a. a much better description of the monetary mechanisms and markets, than our model here provides. We will therefore restrict ourselves to a simple experiment, demonstrating the role of local government in transmitting disturbances and fluctuations in foreign markets. The results of the experiment are shown in figure 10.

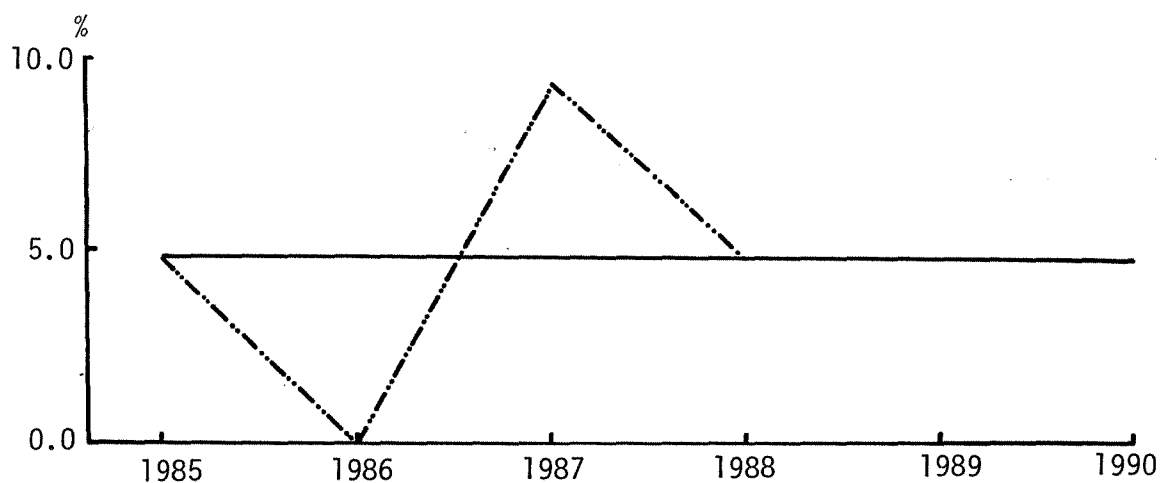
We introduced ad hoc a "business cycle" (or rather a recession) in the world markets for the years 1986-88. Figure 10a shows the assumed fluctuations in the international market growth. In figure 10b-f the repercussions on domestic consumption and tax rates are described, for a situation with respectively without full expenditure control, compared in each case with the development that would result if world markets were stable.

The world market cycle will be reflected in a corresponding cycle for unemployment and wages in the Swedish economy. Falling foreign demand leads to employment problems in the export industries, and to lower down wage increases. With expanding foreign markets this situation is reversed. As seen in figure 10b the main overall effect of the recession is a lower rate of increase for private consumption. Local government consumption is here assumed to be determined by an unchanged expenditure control without interacting with the cycle. The loss of tax base, however, forces the local governments to a further raise of the tax rate.

Figure 10. Consequences of a World Market Cycle

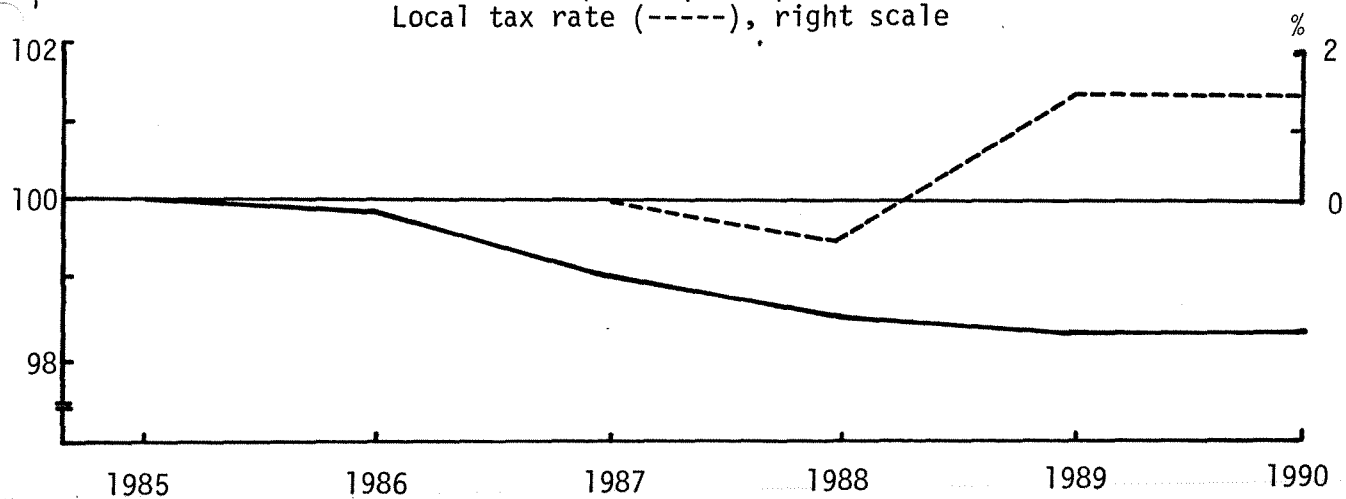
10a. The world market  
Percentage change from previous year.

Reference case (—)  
Variation (---)

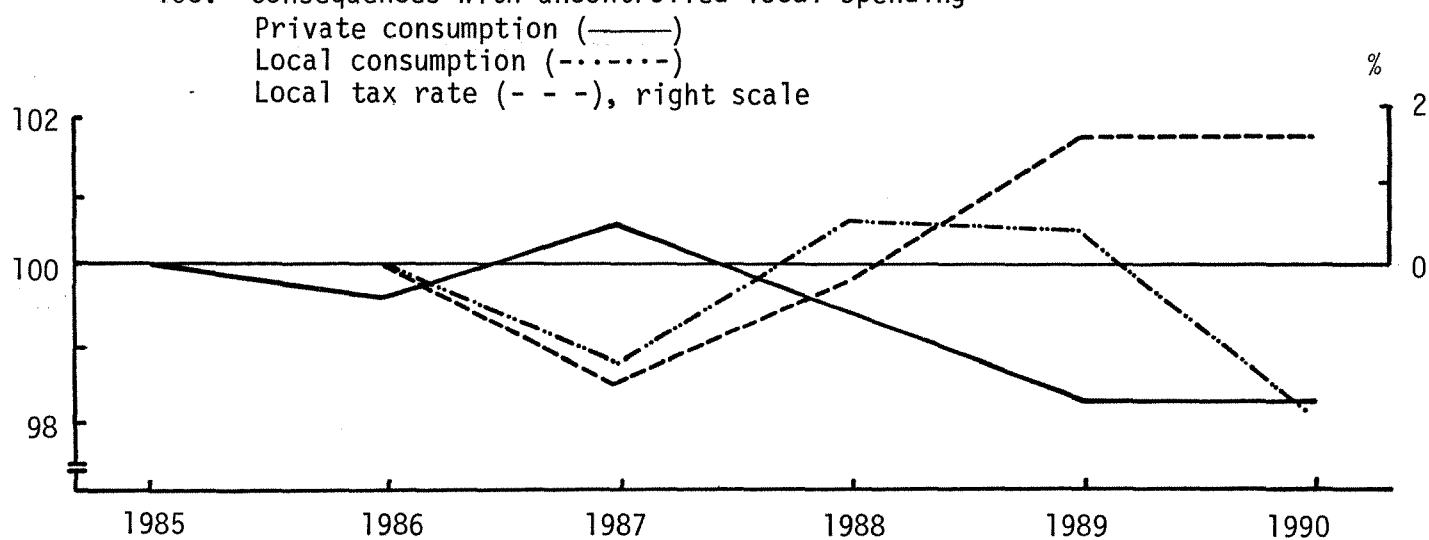


10b. Consequences when local spending is controlled<sup>a</sup>

Private consumption (—)  
Local consumption (= 100)  
Local tax rate (-----), right scale



<sup>a</sup> See Figure 10c.

10c. Consequences with uncontrolled local spending<sup>a</sup>

<sup>a</sup> In diagrams 10 developments with a world market cycle is related to a case with steady world market growth. Private and local consumption are indexes for the disturbed case with the reference world market case equal to 100 for each year. The tax rate curve shows the difference between the disturbed case and the reference case. Diagram 10c is of course set up analogously.

When we abandon the assumption of expenditure control, the situation changes, as can be seen in figure 10c. Local government consumption will now also be affected by the fluctuations in price and income. The consumption decline in the recession will be more equally shared by private and public consumption, with a stabilized tax rate effecting the redistribution. The more parallel fluctuation of private and public spending will tend to reinforce the effects on unemployment and finally on wage inflation. These added effects, although marginal, provide an argument for an active use of control measures towards local government as part of a stabilization program.

On the choice of suitable control measures for the medium-term stabilization we do not have anything new to add. Our test runs indicate that the same general conclusions, reached above for the long-term perspective, also hold for medium term policies.

### **Summing up**

The dominant role played in the Swedish economy by relatively independent local governments makes it important to investigate how these local governments can affect the stabilization problems facing the economy during the 80s. How can the local governments be expected to react to price and income developments, do they have their own built in tendencies for short-term fluctuations, and/or do they reinforce disturbances imported from abroad? How can their spending be controlled by

central government and how does for instance grant policy and tax limits compare as to effects and efficiency? We have in the present paper, with the help of a growth model with endogenously determined local government behavior, tried to give some illustrations and tentative answers to these and other related questions. Our results, although not very dramatic and seemingly well in accord with theoretical preconceptions, have at least demonstrated the danger inherent in the common practice of treating local government spending as if it was subject to central control.

The dynamics of local government spending was measured in terms of elasticities and multiplier effects and its interaction with the rest of the economy was illustrated by simulations of economic developments. These simulations revealed i.a. a tendency for local government spending, interacting with the labor market, to develop according to a pattern of "liquidity cycles". When world market cycles were introduced the fluctuations of local government spending again tended to reinforce the cyclical changes in the labor market.

In trying out various fiscal policy measures we chose not to concentrate on the local government share of total consumption, having dealt with this in an earlier paper.<sup>1</sup>

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<sup>1</sup> Cf. Nordström-Ysander (1980).

We focused instead on comparing the efficiency of the various instruments in ensuring balance in the labor market and in external payments. Of particular interest and relevance to the current Swedish policy debate is the question of what kind of control of local government spending, that could be used to complement central tax measures in a situation where no efficient control of wage trends is possible. In comparing grant policy and tax limits from this point of view, we found reason to stress the difference in overall effects on domestic consumption. While grant cuts first and foremost hold back total consumption, only marginally affecting the distribution between private and public, tax limits can be viewed as an imperfect expenditure control, mainly shifting resources from local governments to households.

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