LOCAL AUTHORITIES, ECONOMIC STABILITY AND THE EFFICIENCY OF FISCAL POLICY

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CONTENTS

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 80s, it is particularly important to gain more knowledge about the stabilizing or destabilizing effects of local government spending and taxing and about the way the development of the local government economy 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 80s. The simulations are carried out with the use of a growth model, in which both the spending and the taxing of local authorities are 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 channeled 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.

Figure 1   Local Government Expenditure, 1913-80

Percent of GNP
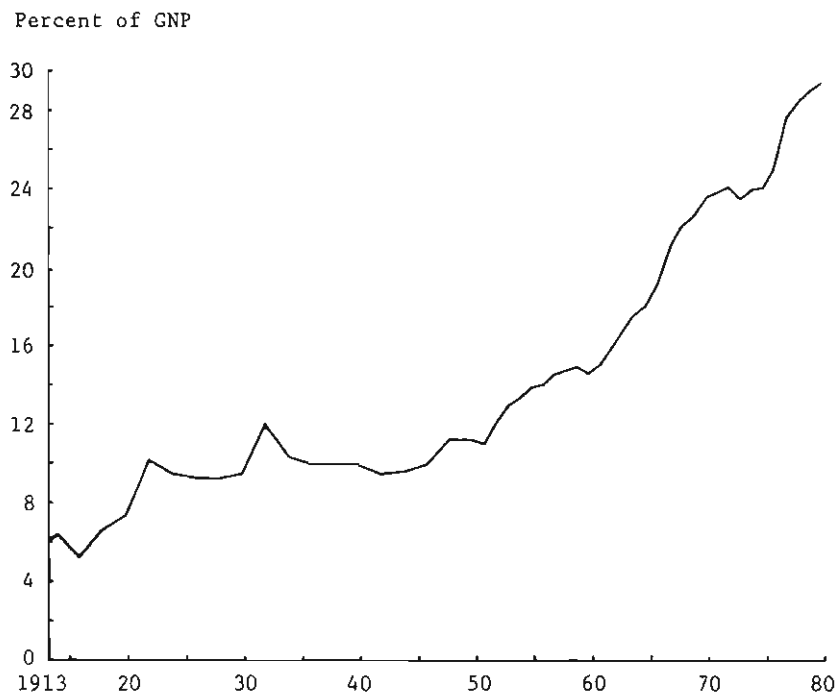
Source: Ysander-Murray (1983)

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. A matching in-
crease has occurred in the service sectors, parti-
cularly 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, medi-
cal care and social welfare. Figure 2 shows the

increasing dominance of the local governments in
public consumption.

Manufacturing industry meanwhile kept its share
both of GNP and employment relatively unchanged.
The enlarged public service provision -- and the
simultaneous increase in social insurance and
other transfer payments -- was almost entirely
paid for by taxes, which trebled relative to GNP.
Local authorities were responsible for the major
part of the income tax increase.

Organizational power has grown with the money. In
the postwar period there has been a gradual concen-

**Figure 2   Consumption, Investment and Tranfers
to Private Sector as Shares of Total
Public Expenditures, 1961-80**

Percent

Local government spending shares
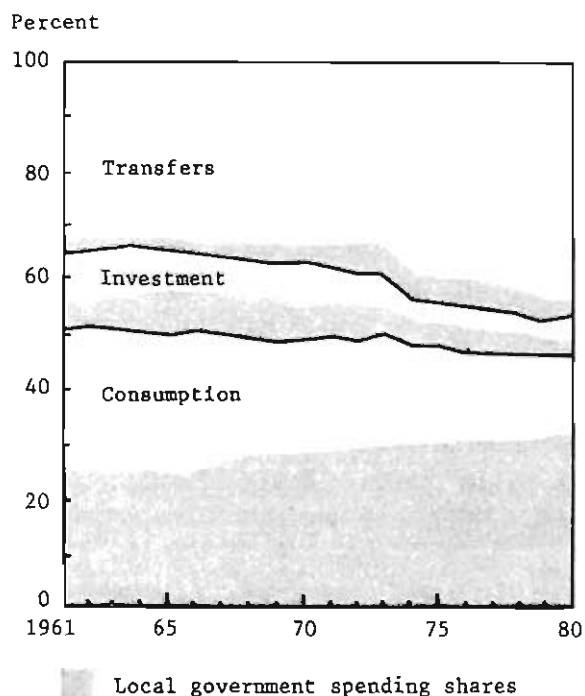
tration of the decision-making process. While the
number of local governments has decreased to about
1/4 in the last 15 years -- to 24 counties and 277
municipalities in 1981 -- some of the most expan-
sive areas of service production, like mental
health care and secondary schools, have been taken
over from the state.[1]

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 less than 25% is
on average paid by central government grants,
while local income taxes make up 45%, fees and
user charges 20% with loans and capital income
financing the remaining 10%.[2]

The degree of grant dependence varies however
greatly between different kinds of expenditures.
About 1/3 of all local government expenditure is
used for purposes which are not supported by
grants -- nor subject to central government regula-
tion. For some obligatory and highly regulated
activities, like comprehensive primary schools,
the grants however may cover as much as half of
the total cost.

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

[1] For a detailed account of the shifting demarca-
tion of local government powers cf. Murray (1981).

[2] The structure of local government finance has
changed little over the last three decades. A
survey of local government finance is given in
Ysander (1979). Cf. also SOU 1977:20, and Ysander-
Murray (1983).

rates and is thus indirectly responsible for the various disruptive tendencies connected with tax evasion and tax accomodation. It has also often been suggested that local government competition in the labor market has contributed significantly 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 to view any fluctuations in local government spending as mainly due to shifts in labor supply and participation rates.

Looking ahead into the 80s it seems fairly certain that local government expansion will not be maintained at the rate averaged through the 60s and 70s. There are neither the goods nor the people to sustain that kind of growth. Even in absolute amounts the annual increases in local government resources will probably have to be reduced if Sweden is to get rid itself of its external payment deficit before the 90s, and avoid having to lower real net wages and private standards.

In the last few years the rate of increase in local government spending and in local tax rates has indeed become considerably lower, partly undoubtedly as a belated response to the restraining efforts made by the central government since the middle of 70s. The experience however illustrates the difficulties of making municipalities, with good liquidity and rather rigid planning procedures, change fast enough into a new growth-track. To find ways of making local governments more flexible and more responsive to macroeconomic developments and to the policy aims of central government may well prove a crucial problem for medium-term economic policy in the coming years.

The experience of the 70s has also given rise to a
growing concern about the short-term cyclical be-
havior and impact of local government spending and
taxing. According to conventional wisdom in Swed-
en, building on postwar developments up to the
middle 60s, local governments tend to have a coun-
ter-cyclical and stabilizing impact, due i.a. to
the two-year lag in the disbursement by central
government of local tax payments. The annual chang-
es in local government activity during the 70s,
seem however to show a distinct cyclical, and
with that destabilizing, pattern. As illustrated
by Figure 3, this is true not only in terms of
total net impact, but also in terms of expenditure
or employment -- i.e. even when disregarding the
effects of local taxes and user charges. There is
thus an acute need for studies of the mechanisms
behind cyclical patterns in local government be-
havior, of their interaction with the rest of the
economy, and the implications of this for future
stabilization policy.

1.2   The Tasks and Limits of Fiscal Policy

Like many other west-european countries Sweden
entered the 80s with an external payment deficit
and with a manufacturing sector in need of restruc-
turing. Partly the problems were imported and con-
nected with rising oil prices and stagnating world
markets, partly new problems of our own making
were added by an over-optimistic and ill-timed
domestic demand management, that bought high em-
ployment to the price of falling shares on our
foreign markets. Being a small and exceptionally
open economy with a traditional orientation to-
wards investment goods -- wood products, iron and

**Figure 3   Local Government and the Business
             Cycle, 1970-82**
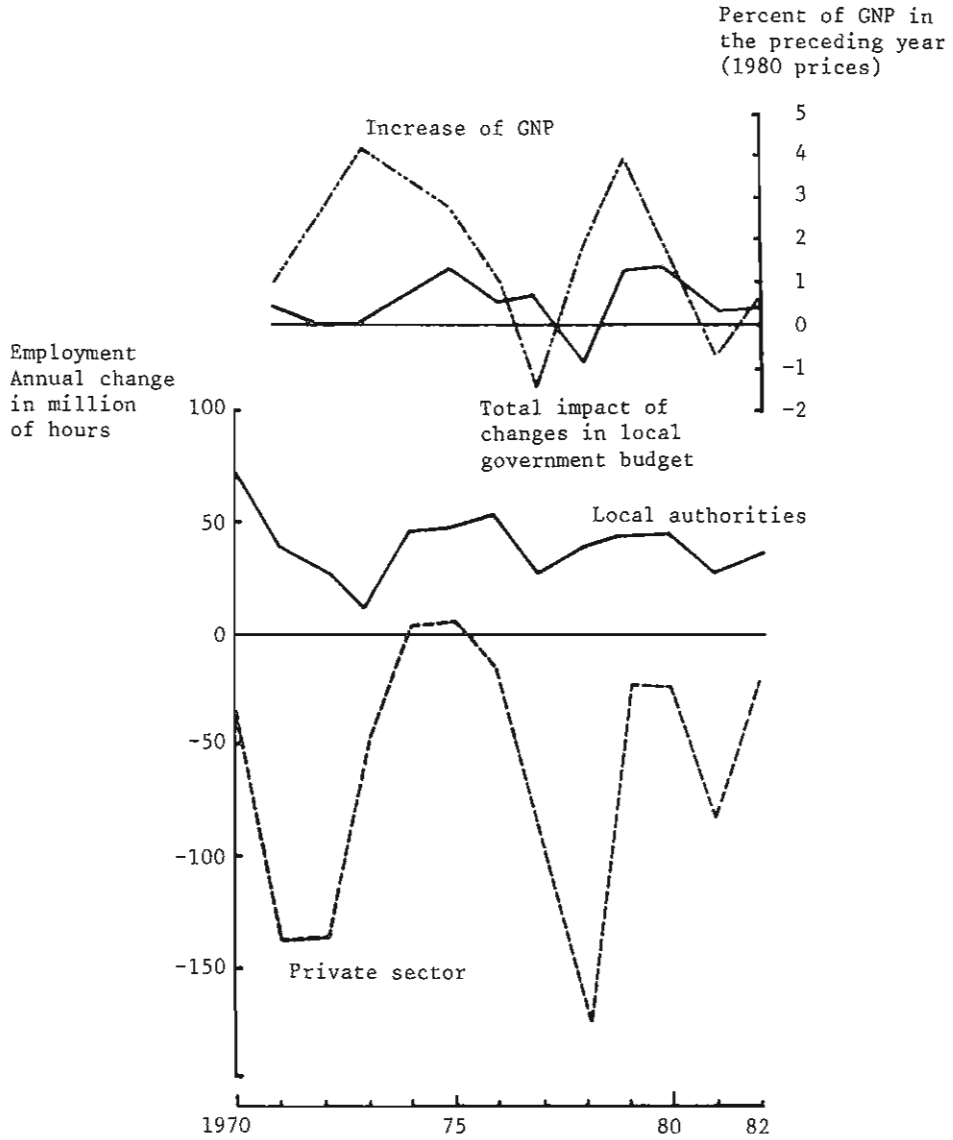
steel and heavy engineering -- Sweden is particu-
larly vulnerable to shifts in world market pro-
spects and relative unit costs.[3] A primary concern
of fiscal policies in Sweden during the remainder
of the 80s will undoubtedly be the need to shift
some of the demand from domestic to foreign mar-
kets, moderating the increase in domestic consump-
tion to make room for an expansion of the trading
sector.

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 govern-
ment, local government spending is still treated
as determined exogenously -- i.e. by control of
central government. However, the actual efforts of
central control -- working mainly by way of volun-
tary agreements on limits for local expenditure
growth -- have so far (i.e. through the early 80s)
been both inconsistent -- with grant shares conti-
nuing to rise -- and ineffective.[4]

Any attempt to deal with Sweden's stabilization
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 do local government spending and
taxing tend to stabilize or destabilize the natio-
nal economy, both as regards the long-term structu-
ral balance and the short-term fluctuations in

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[3] For an extensive discussion of our industrial
policies and problems in the 70s cf. e.g. Eliasson-
-Ysander (1983).

[4] For a detailed survey and evaluation of these
control efforts cf. Ysander-Murray (1983).

economic activity? Does the local government
sector tend to produce economic oscillations of
its own? Does it crowd out private investment and
exports? How does the existence of a relatively
independent local government sector affect the ef-
ficiency and range of fiscal policy? Can specifi-
cally 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 employ-
ment and external deficit problems?

We cannot, of course, provide any clear-cut an-
swers to these questions. But we do hope that in
analyzing the questions and simulating alternative
policy options we can contribute to a better under-
standing of the problems and uncertainties still
remaining.

Our main instrument of analysis is a macroeconomic
growth model for Sweden, in which local government
spending and taxing is endogenously determined by
way of a submodel. This enables us to study expli-
citly the interaction between the local government
sector and the rest of the economy, as well as
cyclical patterns and properties of local govern-
ment behavior and to evaluate the total impact
over time of alternative central control measures,
directed towards the local governments.

2   THE MODEL

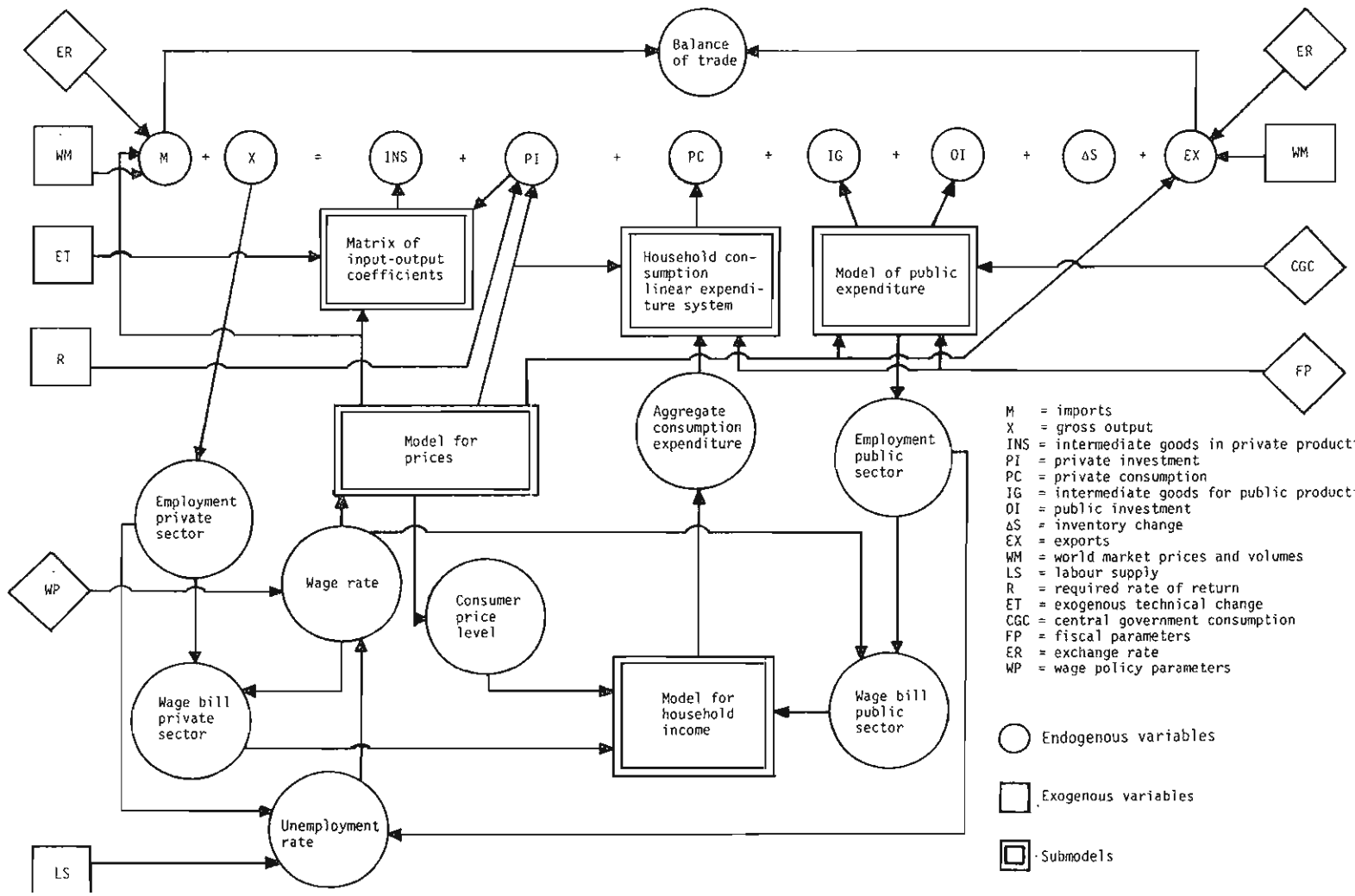**2.1   Momentum and Inertia in a Swedish Growth Model**

A synoptical view of the growth model used is given in Figure 4. 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.[5]

Since the structure of growth models of this kind is by now well known, we can restrict ourselves here 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

[5] A compact but complete presentation of the formal structure of the model -- called ISAC or Industrial Structure And Capital growth -- is given in Ysander-Nordström-Jansson (1985).

$$M + X = INS + PI + PC + IG + OI + \Delta S + EX$$

Boxes and circles in diagram:

- Balance of trade
- M (imports)
- X (gross output)
- INS
- PI
- PC
- IG
- OI
- ΔS
- EX
- ER
- WM
- ET
- R
- CGC
- FP
- Matrix of input-output coefficients
- Household consumption linear expenditure system
- Model of public expenditure
- Model for prices
- Aggregate consumption expenditure
- Employment public sector
- Employment private sector
- Wage rate
- Consumer price level
- WP
- Model for household income
- Wage bill private sector
- Wage bill public sector
- Unemployment rate
- LS

M   = imports
X   = gross output
INS = intermediate goods in private production
PI = private investment
PC = private consumption
IG = intermediate goods for public production
OI = public investment
ΔS = inventory change
EX = exports
WM = world market prices and volumes
LS = labour supply
R   = required rate of return
ET = exogenous technical change
CGC = central government consumption
FP = fiscal parameters
ER = exchange rate
WP = wage policy parameters

◯ Endogenous variables

▢ Exogenous variables

▣ Submodels

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exogenously treated in the model is the develop-
ment of labor supply and that part of labor produc-
tivity change in industry which is due to autonom-
ous technical change.

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

A vintage approach has been used in modeling capi-
tal formation within manufacturing. In most branch-
es the volume of investment each year is deter-
mined by an investment function of cash flow type.
Choice of technique for a new vintage, i.e., the
input coefficients for intermediate goods, electri-
city, fuels, labor and capital, is 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 aver-
age, some 60% of total labor productivity develop-
ment being explained by the introduction of new
vintages. The vintage approach thus helps to ex-
plain the adjustment of industrial capital to new
trends and price levels on the world markets.[6]

The formation of wages is explained by a Phillips-
curve type of wage determination. The rate of
nominal wage increase is a function of unemploy-
ment, profit margins, inflation, and finally labor

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[6] Since independent measures of capacity are avail-
able for the iron and steel industry, a slightly
more sophisticated vintage model has been applied
to this industry. Cf. Janson (1983).

productivity. With the exception of the unemploy-
ment 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 re-
flect 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 between the local govern-
ment sector and the industral sector since the
labor market is assumed to be homogeneous. 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 producer prices,
both on foreign markets and in the domestic trad-
ing 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. The exchange rate is treated as an
exogenously given policy parameter and in most of
the model simulations a fixed exchange rate regime
is assumed.

2.2   The Local Government Submodel

The core of the LOcal GOvernment Spending - LOGOS -
model is a system of ten linear equations[7].

In a simplified form they can be derived from the
following two expressions:

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[7] For a detail account of the model, see Ysander-
Mellander (forthcoming).

$$U = (Q, (1-T)Y, SC, W) \tag{1}$$

$$TY + G_0 = \Pi_Q Q + \Pi_I I + rD \tag{2}$$

Expression (1) 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 estimated for local government production. The idea behind including this argument is that free capacity to some degree is valued for its own sake and that short-term bottlenecks and capacity restrictions should affect the marginal value of further increases in current expenditure.

Finally, decision-makers are supposed to view favorably any increase in local government net wealth, W, defined as the difference between the value of capital stocks and long-term debts. As a matter of fact existing laws for local governments forbid any decrease in net wealth. This constraint has, however, hardly ever been binding.

On the left side of the budget restriction (2) are
the various sources of income for local govern-
ment. Besides tax income there are non-categorical
state grants and other kinds of income not affect-
ing marginal decisions on current expenditure, G_0.
On the right side are the various kinds of expendi-
tures. Added to current and investment expenditure
is the term rD which represents the cost of debt
management. Prices, Π, are netted for fees and
categorical state grants, and thus reflect the
unit cost actually facing the local decision-
makers.

From utility maximization over (1) and (2) expla-
nations for current expenditures and transfer pay-
ments are derived. Current service expenditures
will reflect the impact of changes in prices,
income, surplus capacity and in marginal capital-
output ratio.

The expression for the investment volume will de-
termine the gradual adjustment to the volume
needed to avoid bottlenecks and will also depend
on prices, income and the current required rate of
return on capital. The change in debt will strike
a balance between the desire to increase community
wealth and the reluctance build into the model to
raise taxes to finance investments. Finally sol-
ution of the accounting equation (2) yields the
current tax rate.

The equations actually estimated contain certain
further complications.[8] Some lags have been intro-
duced to reflect inertia in the decision-making

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[8] The authors are much indebted to Erik Mellander
who made the estimations for this version, as well
as for earlier and more disaggregated versions, of
the local government model.

process and the formation of expectations. This
also greatly simplifies estimation of the system.
There is also a two-year delay between the time
when local taxes are collected by the central
government and the time when they are finally
disbursed to the local governments. Finally shift
variables have been introduced to let expenditure
levels shift as a function of population changes
and other such influences.

In integrating the submodel of the local govern-
ment into the growth model, some further links
have to be added. The local government purchases
of goods from the business sector are described by
a matrix distributing the purchases between differ-
ent industrial branches. Employment is derived
from production levels by way of productivity as-
sumptions. In the simulation-experiments reported
below a somewhat simplified version of the LOGOS-
model was used. In fact only the five equations
determining the service volumes were used together
with the budget restriction in order to facilitate
the interpretation of the results in this first
attempt to put the two models together. Categori-
cal grants are measured as shares of gross expendi-
tures for the different services, and these shares
are used as policy variables in the simulations.
Non-categorical grants are throughout the experi-
ments assumed to develop according to total cur-
rent expenditures.

No explicit guide lines as to long-term debt
policy and liquidity positions can be derived from
the equations used in the simulations.[9] Changes in
financial assets occur only as a result of "plan-

[9] The simulations were carried out in 1981 with
1980 as the starting year.

ning 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 good liquidity. The moderating influence
of stagnating price and income developments should
therefore, according to the model, lead to 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, mean-
ing that on the average local tax 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 behav-
ior would undoubtedly be regarded by most observ-
ers 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 expendi-
ture, will be used to scale up expenditures propor-
tionately. 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 through-
out the simulations. We have, however, made simula-

tions without this rule to check that the conclu-
sions we want to draw, do not critically depend on
this ad hoc assumption.

3 THE EXPERIMENTAL SET-UP

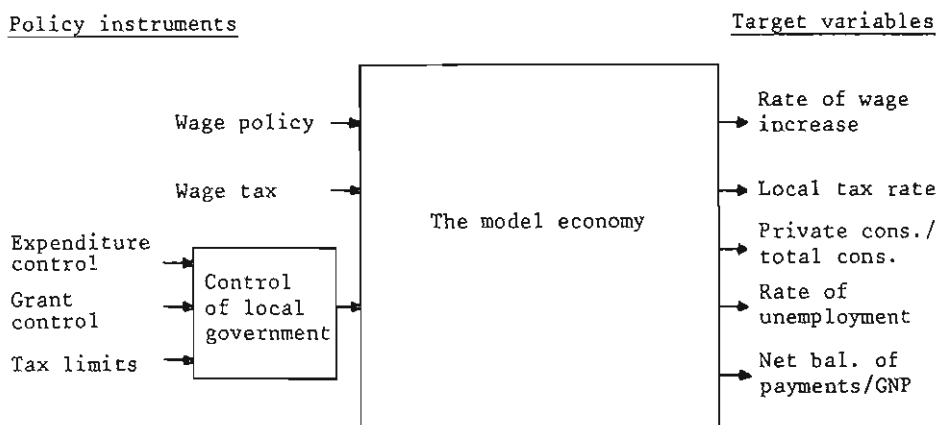### 3.1 The Targets and Instruments of Fiscal Policy

There are in principle a great many ways of con-
trolling 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 target variables we focus on are all in the
center of current policy concern. The rate of
unemployment and the net balance of payments, meas-
ured as percentage of GNP, reflect the two major
real imbalances of the Swedish economy: the low
level of domestic activity and the small export
share of total production. The rate of wage in-
crease is used as a representative measure of how
well inflation is kept in check and the competi-
tive 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 stringent regime needed in the 80s is,
finally, an intensely debated issue with strong
distributional implications.

As depicted in Figure 5 there are five different
policy instruments available in the model system
to attain the five targets. "Wage policy" really
means controlling the long term growth trend of
wages during the decade. Technically this is at-
tained 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. It should be
stressed that wage growth is assumed equal between
all sectors in the model. Shifts in relative
wages, e.g. between local government and the busi-
ness sector, are not considered.

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

**Figure 5   The Targets and Instruments of Fiscal
Policy**

Policy instruments   Target variables

Wage policy →   → Rate of wage increase

Wage tax →   → Local tax rate

Expenditure control →   → Private cons./ total cons.

Grant control →   Control of local government → Rate of unemployment

Tax limits →   The model economy   → Net bal. of payments/GNP

representative of a wide variety of tax and trans-
fer policy measures. It is, however, a natural
candidate since there are strong reasons to sup-
pose 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, since wage taxes are
deductible from gross wages when calculating
income taxes.

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

The second instrument is grant control which can
take the form of varying either the categorical
grants -- in the model treated as open-ended,
reducing the net production prices[10] -- or non-
categorical block grants giving rise to income
effects through the budget restriction. Grant con-
trol as a way of affecting the total local govern-
ments spending has so far not been much used,
although recently much talked about, in Sweden.

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[10] The few attempts made at testing this interpre-
tation of the Swedish categorical grants have all
been inconclusive but do not justify rejecting the
hypothesis. Cf. e.g. Gramlich-Ysander (1981).

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 will have
only temporary effects on target variables. 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 coopera-
tion 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. For these reasons
the exchange rate is assumed fixed in all the si-
mulations.

To investigate all effects of all possible policy
packages would obviously make the results diffi-
cult 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 discus-
sions 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.

In using the various fiscal instruments we have
not attempted any "fine tuning" of year-to-year
stabilization. We have restricted ourselves to set-
ting once and for all the levels or growth rates

of the instruments for the whole period in ques-
tion. In the majority of cases we are mainly con-
cerned with long-term balance of payment problems
etc. measured in terms of the target values in
1990.

3.2 Developments in the Eighties - the Refer- ence Case

As a measuring rod for our simulations[11] 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 1. We assume that the rate of increase in
the volume of international trade will be stable
but somewhat lower than in previous post-war de-
cades. 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.[12] There are good reasons
to expect a stagnating supply of labor in the 80s.
The number of hours worked will continue to de-
crease, although slowly, while the number of
people in the labor force will increase slightly.
In the same way as for the policy instruments,
yearly growth rates of autonomous variables are
set equal to average growth rates for the decade.

As to fiscal policy we assume in the reference
case that all policy instruments can be used to

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[11] The simulations were carried out in spring
1981.

[12] These are aggregate growth rates based on fig-
ures set for each separate branch.

Table 1   Assumptions for the Eighties

World trade development

	Annual increase 1980/90, %	
	Volume	Price[a]
Raw materials and semifinished goods[b]	2.3	5.5
Finished goods	5.7	6.4
Services	4.5	7.0

[a] In international currency.

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

Labor supply development

	1980/90
Number of persons[a]	32.7
Number of persons[b]	0.7
Hours worked per employee[b]	-1.0
Labor supply, number of hours[b]	-0.3

[a] Yearly change in thousands of persons.

[b] Yearly percentage growth.

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 6 this makes it possible to attain all
targets, i.e. to keep down unemployment to 2 per-
cent -- 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.[13] The average
growth rate during the 80s for private consumption
becomes 1.5 percent and for local government con-
sumption 1.7 percent per year.

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 pri-
vate and local government consumption. It should
be emphasized that 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

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[13] For a more detailed discussion of possible con-
ditions and results of economic development in
Sweden during the 80s, cf Nordström-Ysander (1980).

Figure 6   Development of the Swedish Economy
in the Reference Case

6a. Private consumption growth rate (————)
Local consumption growth rate (—··—··)
Local tax rate (— — — —), right scale
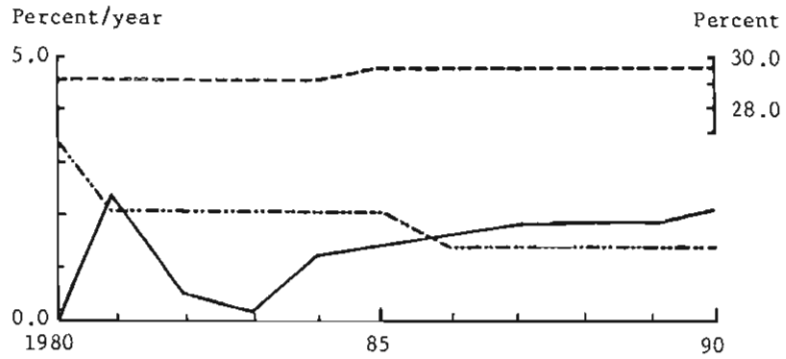
6b. Balance of payment deficit, percent of GNP (————)
Unemployment rate (—··—··)
Wage rate increase (— — — —)
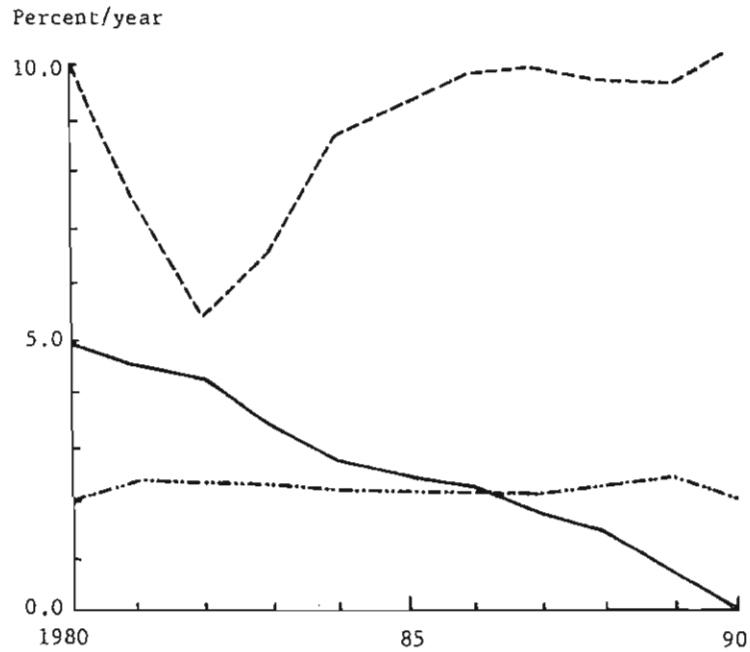
balance in external exchange. Figure 7 shows the
"consumption frontier" for the year 1990. The sub-
stitution has been generated by wage policy and by
changing local government expenditure. It turns
out that with marginal changes we can roughly get
one million worth of private consumption by sacri-
ficing one million worth of local government con-
sumption. The further we go in preferring one type
of consumption, however, the more sacrifice it
will take.

4   LOCAL GOVERNMENT AND FISCAL POLICY IN THE
     MEDIUM-TERM PERSPECTIVE

Having a macro model with endogenously determined
local government behavior enables us to study more
closely the interaction between local government
and the rest of the economy by experimental simu-
lations. Even the best planned numerical simula-
tions 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. How-
ever, when deductive analysis of the full scale
problem appears to be unmanageable, numerical simu-
lations 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 numeri-
cal examples are presented.

The main purpose here is to try to measure the
impact on the economy of central control measures
directed towards local government -- expenditure
control and grant policy. We will start, however,
with a discussion of the dynamic properties of the
local government model.

Figure 7 **The Trade-off between Private and**
Local Government Consumption
Billions of SEK, 1975 prices

Private consumption
increase 1980-90

Reference case

Local government
consumption
increase 1980-90
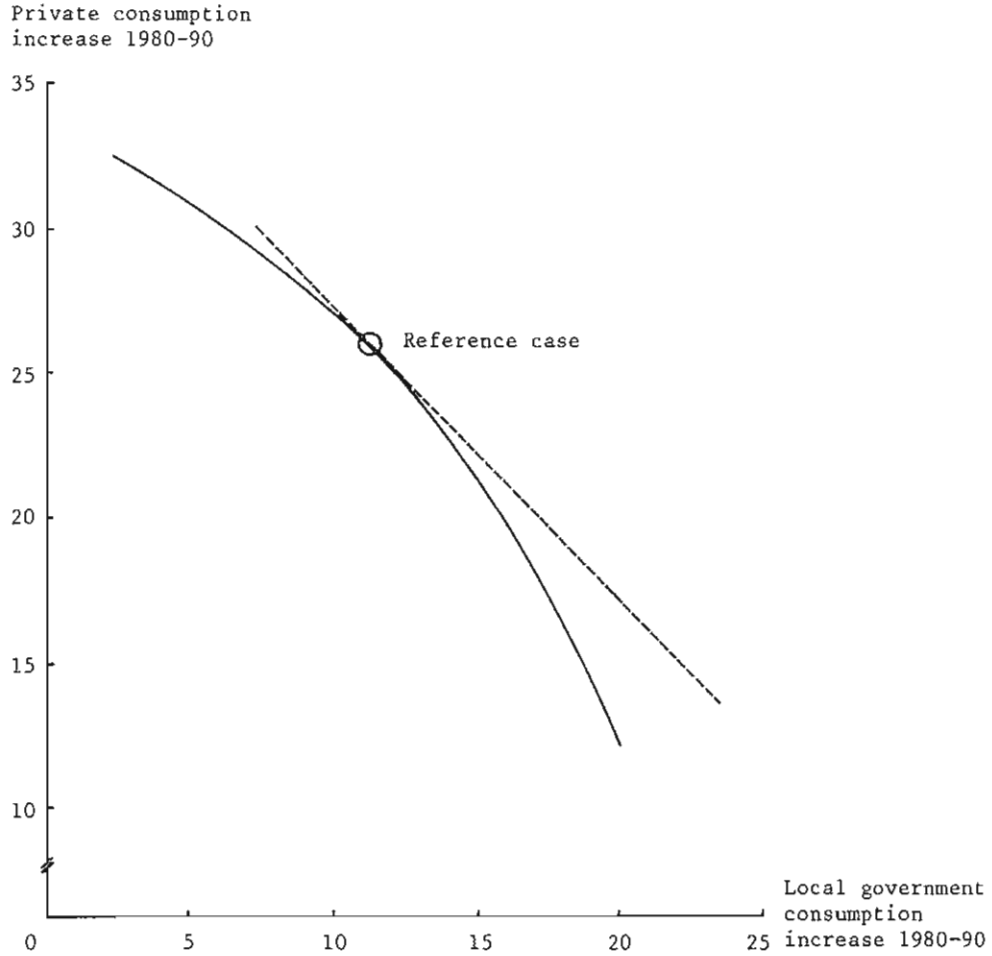
Note: The trade-off between private and local government
consumption is equal to unity along the dotted line.

4.1   Patterns of Interaction between Local
Government and the Rest of the Economy

To illustrate the possible cyclical patterns of
local government spending we have removed the cen-
tral expenditure control assumed in the reference
case, thus allowing local government spending and
taxing to develop according to the model describ-
ed in Section 2.2. We still assume, however, that
the same wage tax and wage policy is applied and
we retain all other assumptions on exogenous fac-
tors. What we then simulate is a situation, illu-
strated in Figure 8, 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 refer-
ence case. In Figure 8a real private and local
government consumption respectively are given in
index form with 100 being equal to reference case
levels for each year. For the local tax rate the
absolute difference relative to the reference case
is measured against the right hand scale. In
Figure 8b the absolute difference of percentage
points, relative to the reference case, is shown
for wage increase, unemployment and the external
deficit respectively. Figures 8c-d give growth num-
bers etc in absolute percentage terms without
using the reference case as a measuring rod.

The overall picture of the developments without
central expenditure control of local governments
is a steep rise in expenditures relative to the
reference case during the first years. The rise is
mainly due to the combination of a very high initi-
al liquidity, recent increases in tax rates and a
relatively favorable development of wage costs

during the early years of the decade. This expan-
sion will strongly affect the labour market as
well as the balance of payment as can be seen from
Figure 8b.

Towards the end of the decade neither unemploy-
ment nor the external deficit will differ much
from the levels aimed at in the reference case.
This long run stabilizing behavior is mainly due
to the wage functioning as an equilibrating mecha-
nism. 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 held
back by local tax increases.

Figure 8a shows that the balance between public
(local) and private consumption has by 1990 chang-
ed from that attained in the reference case. The
local tax rate increases that are necessary to
finance the expenditure growth cut into the income
of the households.

If we look closer at what happens in absolute
terms, in Figures 8c-d, we can discern certain
oscillations in local government spending. At the
start of the decade accumulated high liquidity
combined with a falling rate of wage increase --
making delayed tax income develop favorably rela-
tive to current wage cost -- leads to a steep rise
in service production. The increased demand for
labor can only be realized by an overbidding in
the labor market which pushes up wage inflation.

After 2-3 years, costs will, however, catch up
with incomes and with a vengeance. The high rate
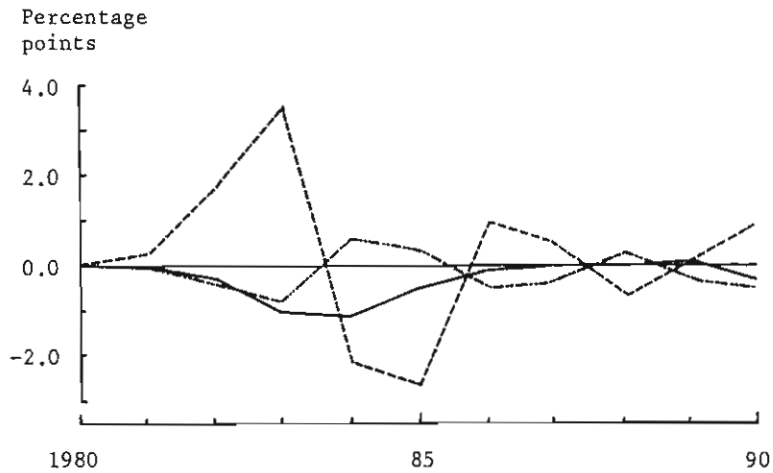of wage increase in industry has by that time been

**Figure 8   Cyclical Spending Pattern with "Un-
controlled" Local Authorities**

Relative to the reference case

8a Private consumption (————)
    Local consumption (—··—··)
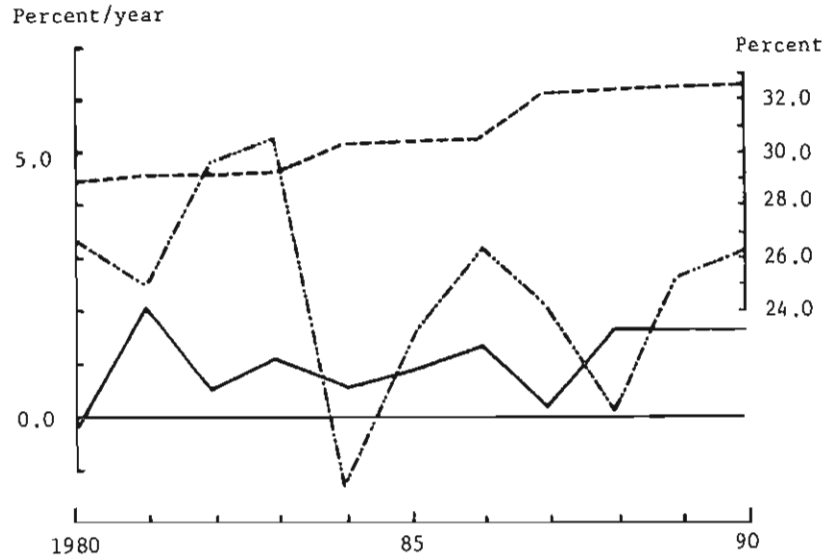   Local tax rate (————), right scale
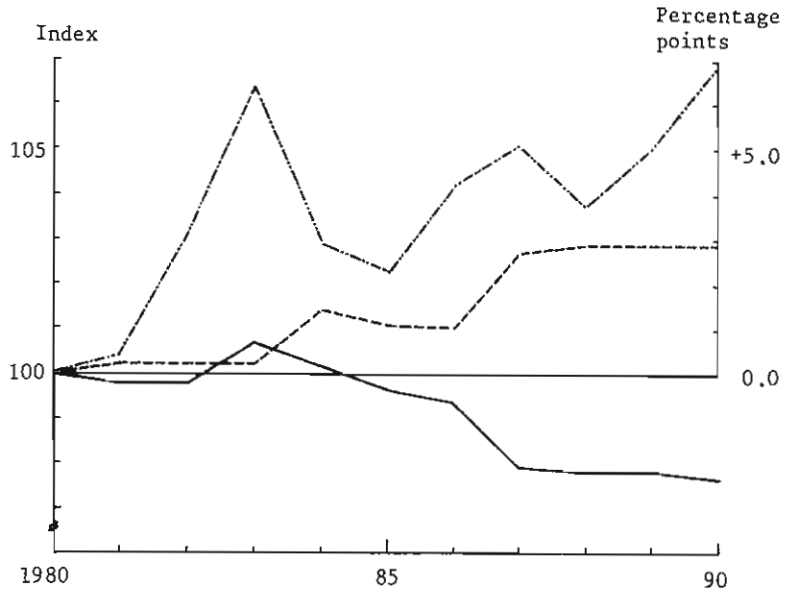
8b Balance of payment, percent of GNP (————→)
    Unemployment rate (—··—··)
    Wage rate increase (————)

In absolute terms

8c Private consumption growth (————)
   Local consumption growth (—··—··)
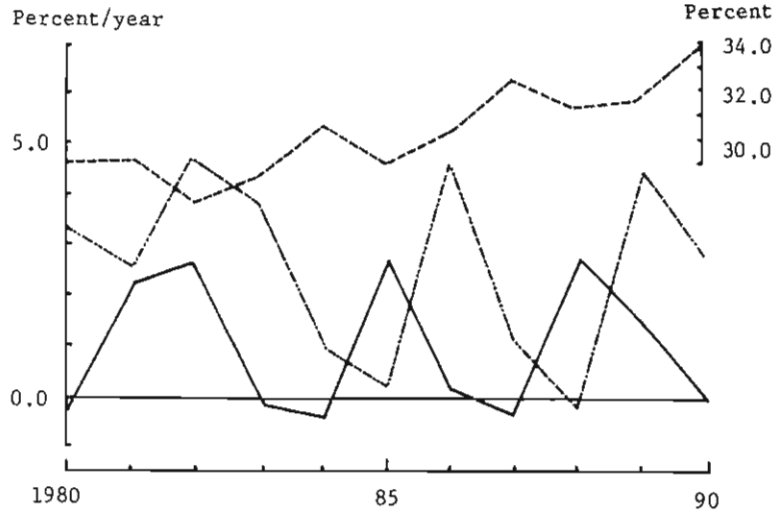   Local tax rate (————), right scale

Percent/year

8d Balance of payment deficit, percent of GNP (————)
   Unemployment rate (—··—··)
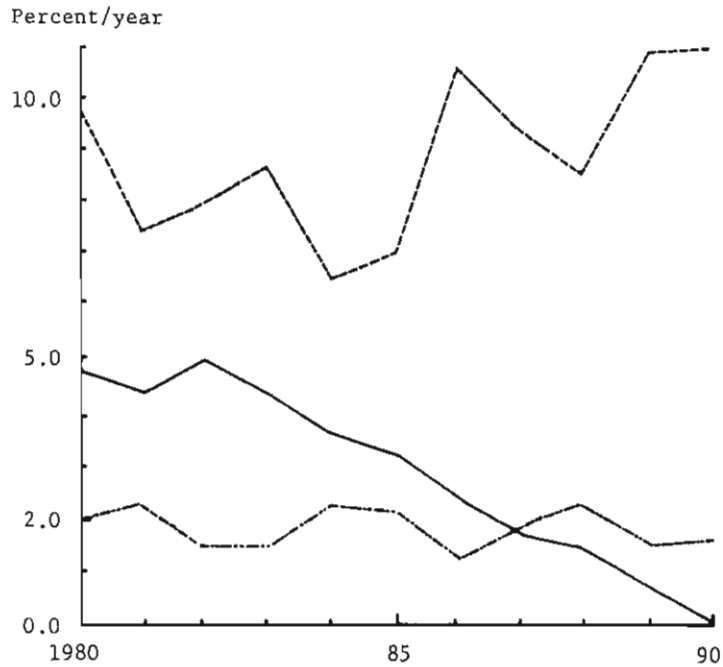   Wage rate increase (————)

Percent/year
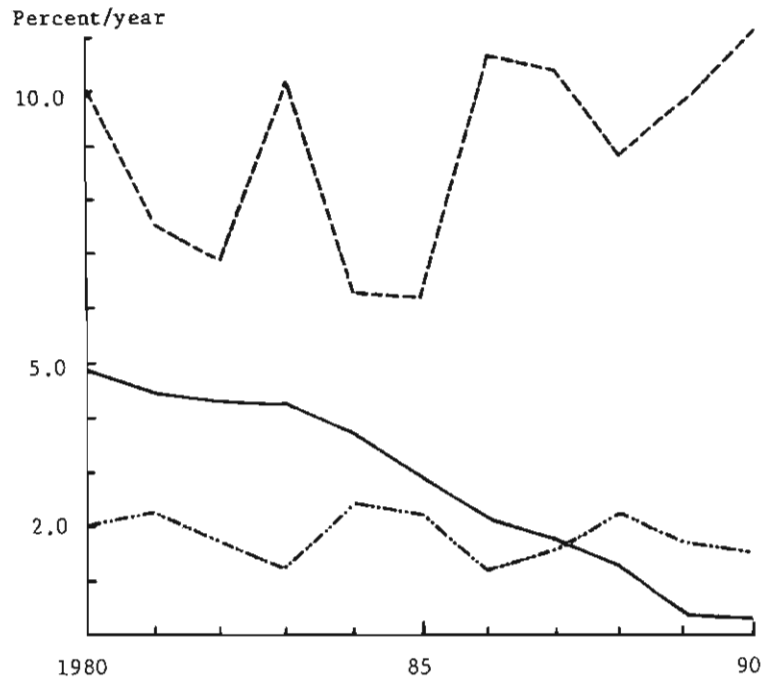
Without any ad hoc restrictions on local
government behavior

8e Private consumption growth rate (————)
   Local consumption growth rate (—··—··)
   Local tax rate (————), right scale

8f Balance of payment deficit, percent of GNP (————)
   Unemployment rate (—···—··)
   Wage rate increase (————)

braked by the unemployment problems it created,
but in the model it is assumed to hit the local
governments as compensation claims with a one-year
lag. High wage costs then combine with a stagnat-
ing tax base to dampen effectively the local gov-
ernment expansion and to necessitate a consider-
able 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 in-
comes is due, the local governments can spend the
money at reasonable prices without increasing the
local tax rate. This favorable situation, to which
is added accumulated liquidity, will 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 infla-
tionary pressures on the labor market, etc.

As can be seen from Figure 8c the interaction
between local governments and the labor market
thus leads to an oscillatory pattern with an aver-
age length of about four years, where periods with
stagnating service demand and rising tax rates are
succeeded by periods of rising demand and stagnat-
ing rates.

As Figures 8c-d also exemplify, the cycle is over-
layed and interwoven with other lag structures in
the model. One main example of this is the lagged
dependence of export demand on industrial wage
costs. 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 internatio-
nal markets. This introduces an inertia in the
system which allows wage inflation to run its
course for some time before being rectified and
compensated.

As mentioned in Chapter 2.2, two ad hoc restric-
tions have been added to the estimated expenditure
model. Local rates are assumed never to be cut and
the consequential possible liquidity surpluses are
assumed to be used to increase expenditures rather
than to be saved. These restrictions are used in
all simulations to give a more "realistic" picture
of local government behavior. Figures 8c-f illu-
strate the effects of removing these two restric-
tions.

Compared to the restricted case (in Figure 8c),
Figure 8e shows that the local government spending
cycle remains although its timing and amplitude
may differ somewhat.

As can be seen from Figure 8f, the cyclical pat-
tern in the labor market is not very much altered
either. The ups and downs are, however, somewhat
dampened. This is explained by a more smooth de-
velopment of total consumption demand (private
plus local) in the unrestricted case. As shown in
Figure 8e, letting the tax rate vary freely will
tend to give private consumption a counter-cycli-
cal role in the local government spending cycle.

4.2   Multiplier Effects of Changes in Local
or Central Government Behavior

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 govern-
ment sector and it will at the same time enable us
to learn more about the pattern of municipal reac-
tion to and reinforcement of changing conditions.

When prices or incomes for the local governments
are changed by way of grant policy a chain of
events, that can be split into two parts, goes
into motion. The immediate reaction within the
local government sector, the effect on service
volumes, can be measured by the usual (partial)
price and income elasticities. How changes in
local government spending will in turn be transmit-
ted within the national economy and what the end
results will be for employment, private consump-
tion, foreign trade and inflation can be measured
by a kind of generalized multiplier concepts.

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

Let us start by reviewing some of the partial
elasticities. In Table 2 average values of elasti-
cities for service demand in the 80's are present-
ed. Three kinds of elasticities are discerned.

Equal in absolute size but with an opposite sign
to the price elasticity, is the elasticity with

Table 2   Average Elasticities for Service Expenditure: of Local Authorities, 1980-90

Category	Price	Tax base (=-price)	Income elasticity
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
Administration, etc.	+0,28	-0,28	1,02
Σ	-0,18	0,18	0,85

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 means, that a fall in prices has the same relative effect on production volumes as a corresponding rise in tax income.

Changes in current income affect 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 satisfy new 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".[14]

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[14] For a discussion of partly divergent estimates of elasticities obtained from earlier versions of the local government model, cf. Ysander (1979).

The elasticities computed for the various catego-
ries seem to fit fairly well with common preconcep-
tions. Educational expenditures in Sweden are
strongly regulated, primarily determined by chang-
es in the youth population and therefore consider-
ed insensitive both to price and income. Stand-
ards in health and social welfare on the other
hand, although showing a relatively low price
elasticity, tend to follow the income. Since the
early 70's, roads tend to get a low priority but
budgeting decisions here seem to be rather price
sensitive. That road work appears negatively corre-
lated with current income reflects the fact that
some major cut-backs in the early seventies occur-
red in periods of growing income. The expansion of
central administration (including also things like
fire service, economic services and community plan-
ning), finally, seems to capture a constant share
of any new income -- getting a further boost from
any adverse price developments! Total local govern-
ment service expenditure appears to keep pace with
income changes but to be rather insensitive to net
prices. 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.

The total results of changing the determinants of
local government spending in a dynamic economy are
exemplified by the multipliers in Table 3 which
includes feed-back effects between the local gov-
ernment sector and the rest of the economy. To
standardize the results as far as possible we have
measured them against a balanced growth scenario,
with "uncontrolled" local governments. The result-
ing development, used as a standard of measure-
ment for the multiplier effects, is discussed in
more detail later (cf. Figure 10 below).

Table 3   Multiplier Effects

Resulting change in:	3a Of increasing "planned" service production with 2 % 1986-90						3b Of cutting categorical grants with 25 %, 1986-90						3c 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 government, percent	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, percent	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
Rate of 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 re-
mains. 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 3a is
simple and straightforward. The main effect of the
planned increase is a shifting of consumption pos-
sibilities 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 consump-
tion will shrink, leading to a slight "excess
demand" in the labor market and to external defi-
cit.

Table 3b gives 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 con-

sumption. This is already clear from the average figures, which show that the 3% decline in local government consumption is accompanied by a fall in private consumption of about the same amount absolutely, and about half percentage-wise. 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 3c, a corresponding 50% cut in bloc 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 3b is the size of the initial amount of money withdrawn from local government, being in Table 3c half the size of that in Table 3b. 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 stabilization policies using bloc grants and categorical grants respectively.

4.3   The Efficiency of Policy Instruments

We will now go on to take a closer look at the way in which various central government policy instruments work in an environment with relatively independent local governments.

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 exter-
nal deficit, only in passing registering effects
in the other targets. Also, balance is defined in
terms of the situation in 1990. 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 five instruments we study are wage policy,
wage tax, tax limits, grant policy and expenditure
control. In Figure 9 the effects of our five
policy instruments are shown as arrows. We start
from the case with "decontrolled" local govern-
ments, illustrated above in Figure 8 -- point O in
Figure 9 -- and use the five instruments in turn
to bring unemployment to "normal" levels -- 2%. A
very slight increase of wage rates (A) 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 (B), which will further force down domes-
tic consumption, we get, as a side effect, a con-
siderable strengthening of the balance of payment
situation. A 10% yearly cut in categorical grants
(D) has very similar effects. Even a very liberal
tax limit (C), restricting the annual rate in-
crease to, at most, 0.75 percent, turns out to be
equivalent in these respects to a full expenditure
control. It enables us to regain simultaneous ba-
lance on both markets although the balance between
private and local consumption will be different.

There are many reasons to be cautious in interpret-
ing and drawing conclusions from this kind of ex-
periment. What we are trying to map, very roughly

gure 9   The Direction of Policy Effects

Unemployment rate (percent) / Balance of payment/GNP (percent)
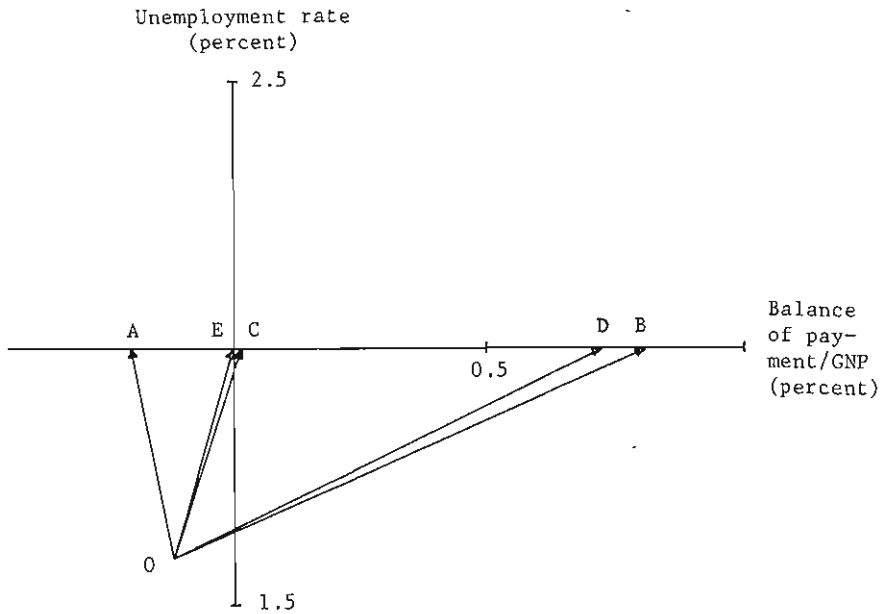
ₑ arrows show the 10-year effects of the following
licy actions:

Wage policy

Wage tax

Tax limits

Grants policy

Expenditure control (reference case)

ₑ starting point for the policy variations, 0, is the case
:h "uncontrolled" local governments shown in Figure 8a-d.

and very locally, is the set of equations relat-
ing changes in target values to changes in the
policy instruments -- with other exogenous varia-
bles 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 neighbor-
hood 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 pol-
icy 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.
Let us now, with this word of caution still in
mind, take a closer look at the arrows in Figure
9, starting with wage policy and wage tax.

A raised trend in the long-term wage (A) will
affect production costs and lead to losses in
foreign demand. These losses will not be fully
compensated by domestic demand, since local govern-
ment spending will be dampened by the rising
costs, while for private consumption the rise in
wage rates will be more than offset by high
prices, increased local tax rates and lower employ-
ment. The end result will be a higher unemployment
coupled with a slightly less favorable external
payment situation.

A raised wage tax (B) will on the other hand
directly cut down domestic consumption. Since pay-
roll taxes in the model are assumed to be shifted
backwards, the tax base of the local governments
will shrink. They will react partly by adjusting
expenditure downwards, partly by raising tax
rates. The disposable income of households is
forced down by higher local rates, as well as by
the initial wage tax increase. Decreased private
consumption will hold back imports, but the main
gain in the balance of payment is caused by the
improvement of international competitiveness which
follows from relieving the inflationary pressure
on the labor market.

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. Figure 10 shows a simulation
where changes in the instrument variables are cali-
brated to reach these goals. The variables in the
figure are related to the controlled reference
case in the same way as in Figures 8a and 8b. The
complementarity of instruments make fairly small
changes in wage tax and wage policy sufficient to
move the 1990 situation from point 0 in Figure 9
to origo. Most of the change is accomplished by
raising the wage trend, only a small increase in
wage tax being needed to improve the external
balance.

Let us now go on to look at the various means of
controlling local government, starting with expen-
diture control (E). Expenditure control means that
central government can determine at will the spend-
ing pattern of the local governments. Reimposing
expenditure control on the "decontrolled" local

Figure 10   Balance without Control of Local Authorities
but with the Use of Wage Policy and Wage Tax

10a Private consumption (————)
Local consumption (— ·· — ··)
Local tax rate (— — — —), right scale
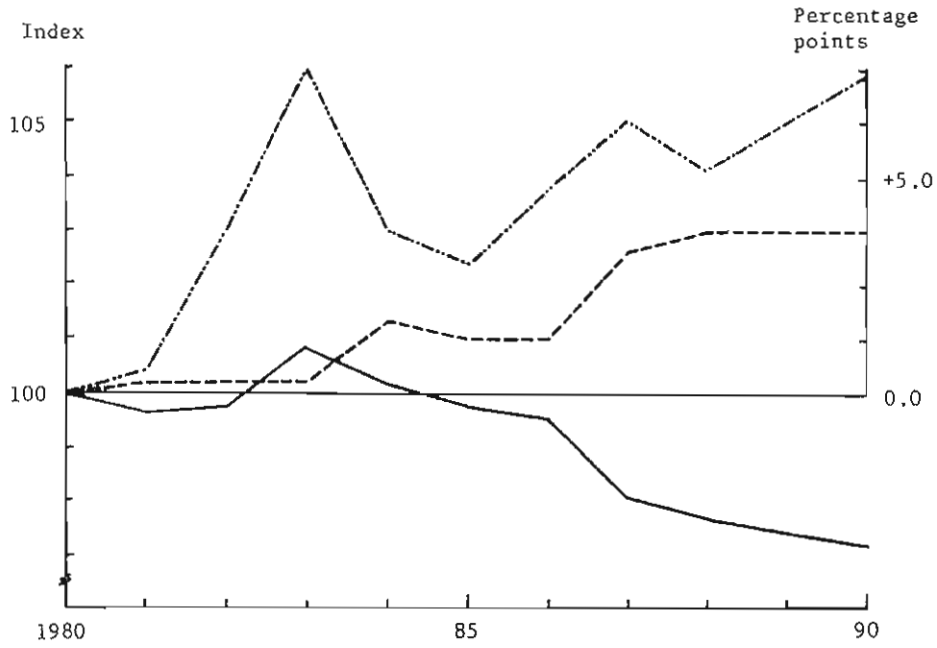
10b Balance of payment, percent of GNP (————)
Unemployment rate (— ·· — ··)
Local tax rate (— — — —), right scale
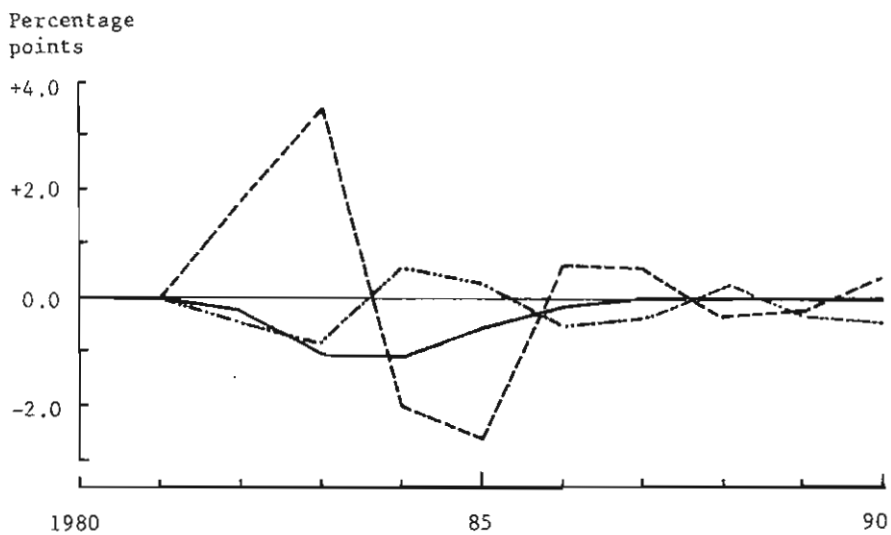
governments in point O, means by definition that
we return to the original reference case, where
local government spending was treated as exogenous
-- i.e. as centrally controlled. Cutting down
public service production by way of expenditure
control means -- ceteris paribus -- providing more
expansion room for private consumption. This expan-
sion, due to lower tax rates, will not, however,
be equivalent in size to the cuts in public spend-
ing, 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 for-
eign sales, thus strengthening somewhat the exter-
nal payment situation.

That a sufficiently tight tax limit control (C),
defined as a maximal annual increase in local
rates, can be made equivalent to an expenditure
control, is evident. Since local tax rates are
raised, although very slowly, in the reference
case, the expenditure control could at least ap-
proximately, be substituted 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 the effect lines happen to
cover each other completely in the illustrated
simulation is simply a coincidence.

Expenditure control and tax limits will however
not necessarily yield equivalent private and
public consumption shares. In Figure 9, e.g., we
limited the annual tax increase to 0.75 percentage
points for case C giving a private consumption
share that differs a good deal from the share
resulting from the use of expenditure control. How-
ever, the smaller we make the yearly permitted tax

increase the larger the private consumption share
will become. At the same time total domestic de-
mand will then be smaller, resulting in unemploy-
ment and external surplus.

With grant policy (D), finally the story is differ-
ent. Deprived of grants from central government
local authorities will react by both raising taxes
and slowing down expenditure growth. The effects
induced on the rest of the economy by this primary
response, are very much like those induced by an
increased wage tax. The fall in total consumption
will be large enough to keep wage costs down, thus
improving international competitiveness. The re-
sult will be an external surplus at the end of the
period. Compared to tax limits grant policy is a
more restrictive measure, forcing down local gov-
ernment production and advancing the time for the
necessary rate increases.

If we accept provisionally these results some prac-
tical conclusions can be drawn. In the absence of
wage control, expenditure control or tax limits
may be used to complement wage taxes in the ef-
forts 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 comple-
mentary tool of stabilization policy.

SUMMING UP

The dominant role played in the Swedish economy by
relatively independent local governments makes it
important to investigate how these local govern-
ments 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. 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 expenditure behavior, given some illu-
strations and tentative answers to these and other
related questions. Our results, although not very
dramatic and seemingly well in accord with theore-
tical 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 meas-
ured in terms of elasticities and multiplier ef-
fects 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, interact-
ing with the labor market, to develop according to
a cyclical pattern.

In trying out various fiscal policy measures we
focused on comparing the efficiency of the various
instruments in ensuring balance in the labor mar-
ket and in external payments. Of particular inter-
est 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 government 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 pri-
vate and public, tax limits can be viewed as an
imperfect expenditure control, mainly shifting re-
sources from local governments to households.

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