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Sweden - Choosing the 80ies

by

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1. The Problem

When the IUI completed its long-term survey of the Swedish economy in the summer of 1979, we called it "Choosing the 80ies"[1]. The argument was that despite the current economic "crisis", policy makers still had a range of choices between broadly defined objectives referring to inflation, restoring the external balance, economic growth, etc during the 80ies.

The common recommendations for a "rescue operation" of the Swedish economy were to roll back some of the market imperfections that had been legislated over the years relating to the labor market and the tax system, to get rid of the sizable chunk of crisis ridden industries with no future as fast as possible. In addition, a reorientation towards a tougher policy stance vis-à-vis the labor market was thought necessary, by forcing individuals to move to new jobs by reducing benefits and other support and by accepting a higher short-term turnover unemployment. A political discount rate was, so to speak, required that was low enough to award substantial value to results of policy action beyond the immediate two to three year period.

Part of such a short-term policy reversal would include abandoning excessive subsidies to bankrupt firms, especially in the southern regions, where skilled labor at the time was in short supply, and

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[1] Eliasson-Carlsson-Ysander, etc., Att välja 80-tal, IUI, Stockholm 1979. Also see IUI 40 Years. The Firm in the Market Economy, IUI Yearbook 1980/81. Stockholm 1981.

allowing for at least a doubling of the open short-term unemployment rate during the peak of the international business cycle 1979 and 1980. The issue often raised by the critics of such policy alternatives was the apparent absence of visible and known alternative job opportunities. Their argument was that it is better to keep people at work in inefficient plants and to accept a lower growth rate than have them out of work, doing nothing. We will return to the empirical rationale behind this argument in section 3.

Such a policy package was not chosen and the economy went ahead through 1980 at a 2 percent unemployment rate as officially measured, 10.5 percent inflation, 3.3 percent GNP growth and mounting deficits on external and public accounts. In retrospect, for three years the Swedish economy performed even below the lower bound of the 1979 survey projection, called the minus case, and labelled not desirable. We now have to take this lower bound as a point of reference for further discussion.

The political choice is still there, although the feasible time horizon for achieving earlier objectives has now been moved off a couple of years in time. The (political) costs of attaining them are larger, particularly because of the increasing policy constraints imposed by the continuing external deficit, the mounting foreign debt and its perceived domestic interest rate consequences. In addition an inflationary gap has been created because of the increasingly worsened supply and demand mismatch caused by the subsidy schemes on the supply side and a distorted demand, due to similar subsidizing schemes on the demand side, for housing, food, medical care etc. As long as this imbalance is maintained, inflation will go on.

By this somewhat pessimistic introduction we want to emphasize two things. First, a forecast for the next 10 years importantly

hinges on the domestic policy assumptions one makes. Here the range of possibilities is wide open, at least as far as Sweden goes. Secondly, any long-term projection of the Swedish economy will have to consider the feed back effects on economic performance of large and perhaps growing imbalances in the economy, most notably a persistent deficit on external and public account, and the consequences for inflation, the domestic real rate of interest, investments and industrial growth. Such factors are not easy to take into account in a macro forecast in view of the fact that we have no similar recorded experience from the past on which to base estimates and quantifications. Such analysis requires that we estimate relationships that are invariant to the unstable environment of the 70ies. This means that we use micro based macro models - an analytical technique still in its infancy (see section 3 c). Hence, we will proceed in a traditional fashion using the models and the estimates that we have to project and then superimpose qualifying arguments towards the end of the paper.

We will begin with a presentation of our two main projections, one on the standard format for the conference (section 2). These two projections assume an optimal and orderly policy adjustment. We will continue by discussing some policy options to manage the economy under less ideal conditions. A third, oil price shock alternative is added and an insurance system against its consequences - a variable oil use tax is discussed. In a sense then we discuss four scenarios; (I) the standard one with a fast (steady) rate of growth in real oil prices, (II) a less inflationary scenario with no real growth in oil prices, (II) a version of (I) when the real oil price hike is delivered as an unexpected shock and (IV) a version of (II) where the real oil price hike of (I) is administered to domestic consumers in the form of a (variable) oil use tax. Section 3 ends with a discussion of policy alternatives to the current subsidy program of industrial firms in distress and an evaluation of the macro effects of withdrawing subsidies.

We conclude the papers with a discussion of the conditions for long-term balanced growth - what do we mean and what factors have not been properly incorporated in our calculations.

2. A set of base projections

Two growth scenarios for the Swedish economy are presented below. They have both been computed in a large 23 sector macro model developed at the IUI particularly for the study of energy related growth and stability problems[1]. These results are technically reported on in this section.

The first scenario is roughly built on the joint set of external assumptions agreed on for the conference.

The second scenario is based on a lower real oil price assumption and a somewhat lowered assumption as to world inflation. This projection tracks the Swedish economy through the 80ies in a fashion we believe is more realistic than scenario I. We have continued the projections through the 90ies to highlight and illustrate certain long-term policy problems This discussion is, however, mainly carried out in the last section.

Our way of looking at the two scenarios - also elaborated in the next section - is that scenario two, in our view is the more realistic one of the two. It is of interest to calculate the welfare loss that occurs when we move to the more unrealistic scenario one with a fast-growing real crude price and more inflation under the assumption of stable (gradually adjusting) market prices.

The foreign trade assumptions appear inconsistent in the sense that trade volume grows at the same rate irrespective of the foreign price assumptions made. It so happened that our own world

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[1] See for instance IUI 40 years, Stockholm 1981, for a brief description and Ysander, B-C, Energi, stabilitet och tillväxt i svensk ekonomi, IUI Working Paper No. 36, 1981, or Ysander-Nordström, Offentlig service och industriell tillväxt. IUI Stockholm, 1980, for a more elaborate account.

A. Foreign trade assumptions - Swedish export market growth (percent)

Scenarios I and II

	80/90	90/00
Raw materials[x]		
volume	2.3	2.6
price, scenario I	9.3	5.5
scenario II	5.6	5.5
Manufactured goods etc		
volume	5.6	5.7
price, scenario I	10.0	6.4
scenario II	6.4	6.4
services		
volume	4.5	4.4
price, scenario I	10.6	7.2
scenario II	7.0	7.2
Total		
volume	4.5	4.7
price, scenario I	10.0	6.6
scenario II	6.4	6.4

x) Agriculture, mining, pulp, paper, iron and steel.

B. World crude oil price assumption through 1990

(average annual change, percent)

	Scenario I	Scenario II
Nominal	18.5	6.4
Real[xx]	8.5	0

xx Deflated by world market prices for manufactured goods.

C. Internal target assumptions

(1) Full employment imposed throughout simulation as a technical assumption (see discussion in section 4).

(2) Current foreign balance target imposed as

-2 percent of GNP by 1985 in Scenario I, by 1990 in Scenario II

+- 0 percent of GNP by 2000 in both scenarios.

trade volume forecast came very close to the one suggested as standard for the conference[1].

The nature of these projections of course depends very much on the calculation method used. This can only be described superficially in this brief paper. The energy-growth model used is an extended version of a demand driven input-output model (23 private, 7 national and 6 local public production sectors) earlier developed at the IUI. It has been specially adapted for energy studies with particular emphasis on energy and factor substitution in the production system[2]. Each sector is represented by vintage based production functions that shift in response to an endogenous investment function. A number of energy activities have been incorporated into the model. Energy is produced by wind, hydro power, uranium (nuclear), coal, oil and domestic fuels (peat and wood) to facilitate a simulation of the substitution characteristics on the energy side. For the industrial sectors substitution elasticities between electricity, other fuels (imported and domestic), capital and labor have been estimated[3].

The household demand side is a Stone type linear expenditure system with households trying to maintain past consumption standards. Exports are determined by world trade growth and the development of Swedish export prices relative to world market prices.

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1 Note that foreign trade volume and prices refer to Swedish export markets (the denominators in the market shares shown in figure 2) and not to world trade.

2 The energy modelling project is headed by Dr. B-C Ysander at the Institute. A series of reports is currently being produced. The simulation runs have been made by Tomas Nordström at the IUI. He and B-C Ysander have also been very helpful in commenting upon the paper.

3 See Dargay (1980).

The interest rate, the exchange rate, the wage level[1] and a spectrum of policy parameters related to the tax and transfer system of the Swedish economy are exogenous. These parameters have been manipulated so as to fullfil the target assumption.

More precisely, the projections I and II assume an optimal period-to-period adjustment with no economic political bungling on the part of politicians. These projections can be achieved in principle, but they are not very likely to be achieved.

The overall results on economic growth (GNP) and inflation are exhibited in Figures 1 A and C and in Tables 1 and 2 and compared with the corresponding projections from the 1979 long-term survey. Obviously the years 1979-80-81 have turned, and will turn out somewhat worse in terms of GNP growth even compared to the worst (bad policy, minus) projection made early in 1979. For scenario II, which exhibits no real oil price growth, the average for the first half of the 70ies is, however, just on par with or just below the minus case. Many reasons for this outcome can be given. In terms of the discussion behind the 1979 projection a higher inflation rate than predicted, and the reasons behind this higher inflation rate, are the main sources of bad cyclical performance. The assumption for 1979 and 1980 on oil price increases entered in all projections made early in 1979 were somewhat on the low side. The world market growth projection made was considered very pessimistic (at the time) but turned out to be slightly on the optimistic side. Part of the explanation, however, may lie in the efficiency loss due to excessive subsidizing of crisis stricken industries of a magnitude that we were unable at the time even to imagine. Among other things this meant that the "productivity gap", that existed in Swedish industry in 1978, could not be exploited to the extent we assumed.

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[1] The wage level is currently being endogenized through a Phillips curve device. Since this extension of the model is not yet ready and calibrated we have chosen the older, more traditional version with "manipulated wages" for our projections.

Table 1. Scenario I with fast real growth in crude prices

GNP and its component break down	1950/59	1960/69	1970/79	1980	1981°	1980/85	1985/89	1990/00
	Percentage change per annum							
Private consumption	2.5	3.9	2.0	-0.1	-2.5	0.2	1.2	2.7
Government consumption	4.8	5.5	3.3	2.9	1.9	1.9	1.0	2.1
Gross fixed investment	5.8	5.3	0.5	1.7	-4.9	2.3	3.4	2.3
public sector[xxx]	7.3	7.0	-1.3	-	-	0.5	0.5	0.3
residential (all)	4.0	4.8	2.3	-	-	1.0	1.1	1.2
"private" non residential	5.4	3.9	1.3	-	-	3.4	5.0	3.0
Change in stock building[x]	0.6	-1.8	-3.5	1.4	-0.9	-	-	-
Export of goods and services	4.7	7.5	4.4	-2.5	-2.0	5.0	5.5	4.3
Import of goods and services	5.9	6.8	3.2	0.7	-7.0	1.8	4.4	4.9
GNP	3.3	4.4	2.0	1.4	-1.1	2.1	2.3	2.5
Employment (hours)	-	-	-	-	-	0.0	-0.3	0.1
Unemployment rate (end of period)	-	-	-	2.0	2.7	(2.0)	(2.0)	(2.0)
Manufacturing output	3.1	6.0	1.1	0.3	-3.0	2.7	3.1	2.7
Labor Productivity, GNP	3.5	4.8	2.6	1.2	0.8	2.1	2.6	2.3
Ditto, manufacturing	3.6	7.2	3.5	2.6	1.6	3.9	4.3	3.9
Current account balance (end year)[xx]	-0.0	-0.4	-3.8	-4.2	(-3.8)	-3.7	-2.0	0.0
CPI (annual change, %)	4.7	3.7	8.8	13.7	13.0	9.7	10.6	6.8

x Percent of GNP previous year.

xx Percent of GNP at factor cost.

xxx Excl. of Government companies. They have been entered under "private" non residential.

o Forecast, Federation of Swedish Industries, June 1981.

Table 2. Scenario II with zero real growth in crude prices

GNP and its component break down	1950/59	1960/69	1970/79	1980	1981[xx]	1980/85	1985/89	1990/00
	Percentage change per annum							
Private consumption	2.5	3.9	2.0	-0.1	-2.5	1.0	2.8	3.1
Government consumption	4.8	5.5	3.3	2.9	1.9	1.9	1.0	2.1
Gross fixed investment	5.8	5.3	0.5	1.7	-4.9	2.2	3.3	2.4
public sector	7.3	7.0	-1.3	-	-	0.5	0.5	0.3
residential	4.0	4.8	2.3	-	-	1.0	1.0	1.1
"private" non residential	5.4	3.9	1.3	-	-	3.1	5.0	3.3
Change in stock building[x]	0.6	-1.8	-3.5	1.4	-0.9	-	-	-
Exports of goods and services	4.7	7.5	4.4	-2.5	-2.0	5.0	5.5	4.4
Imports of goods and services	5.9	6.8	3.2	0.7	-7.0	2.5	5.5	5.2
GNP	3.3	4.4	2.0	1.4	-1.1	2.3	2.6	2.5
Employment (hours)	-	-	-	-	-	0.0	-0.3	0.1
Unemployment rate (end year)	-	-	-	2.0	2.7	(2.0)	(2.0)	(2.0)
Manufacturing output	3.1	6.0	1.1	0.3	-3.0	2.9	3.4	2.8
Labor Productivity, GNP	3.5	4.8	2.6	1.2	0.8	2.3	2.9	2.4
Ditto, manufacturing	3.6	7.2	3.5	2.6	1.6	4.1	4.7	4.2
Current account balance (end year, percent of GNP)	-0.0	-0.4	-3.8	-4.2	(-3.8)	-1.8	0	0
CPI (annual change, %)	4.7	3.7	8.8	13.7	13.0	8.0	7.1	6.7

x Percent of GNP previous year.

xx Forecast Federation of Swedish Industries, June 1981.

The reason for this lower performance in turn is the economic policy strategy chosen to preserve employment at any cost and to prop up ailing firms. One consequence has been a tight labor market (the official open unemployment rate has been kept close to two percent and whoever has lost his job has been tied up in various labor market programs) at reservation wages close to before tax market wages making supply of labor to expanding industries scarce, and skilled labor in particular. The tight labor market may have pushed up the general wage level in the economy to a not negligible extent[1]. The consequences for Swedish export performance are nicely illustrated in Figure 2.

Any explanation of the performance of the Swedish economy during recent years and what will come ahead will have to assess the impact of the subsidy scheme enacted. Fortunately, we can draw on results from a large IUI study just concluded[2]. Since this study uses a differently structured model of the economy and for reasons of presentation, we postpone this discussion to section 3 noting here that the projections have been designed to incorporate (roughly) the consequences of the subsidy program.

The projection in tables 1 and 2 assume public consumption to expand at the same rates in both cases. As a consequence there wil be a deep cut in private consumption growth. In scenario I a much larger share of resources than before has to go into ex-

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1 Experiments on the micro-to-macro model developed at the institute suggest that this policy has maintained a higher wage share throughout industry than would have been the case with a tough restructuring policy of the kind carried out in, for instance, Finland. See for instance Eliasson-Lindberg (1981), and Carlsson-Bergholm-Lindberg (1981). Calculations made on an econometric labor market model also developed at the institute suggest that the open unemployment rate would then have been 4-5 percent, if no active labor market policies had been carried out. See Holmlund (1980).

2 See Carlsson-Bergholm-Lindberg (1981).

Figure 1A. Swedish GNP growth 1950-1985

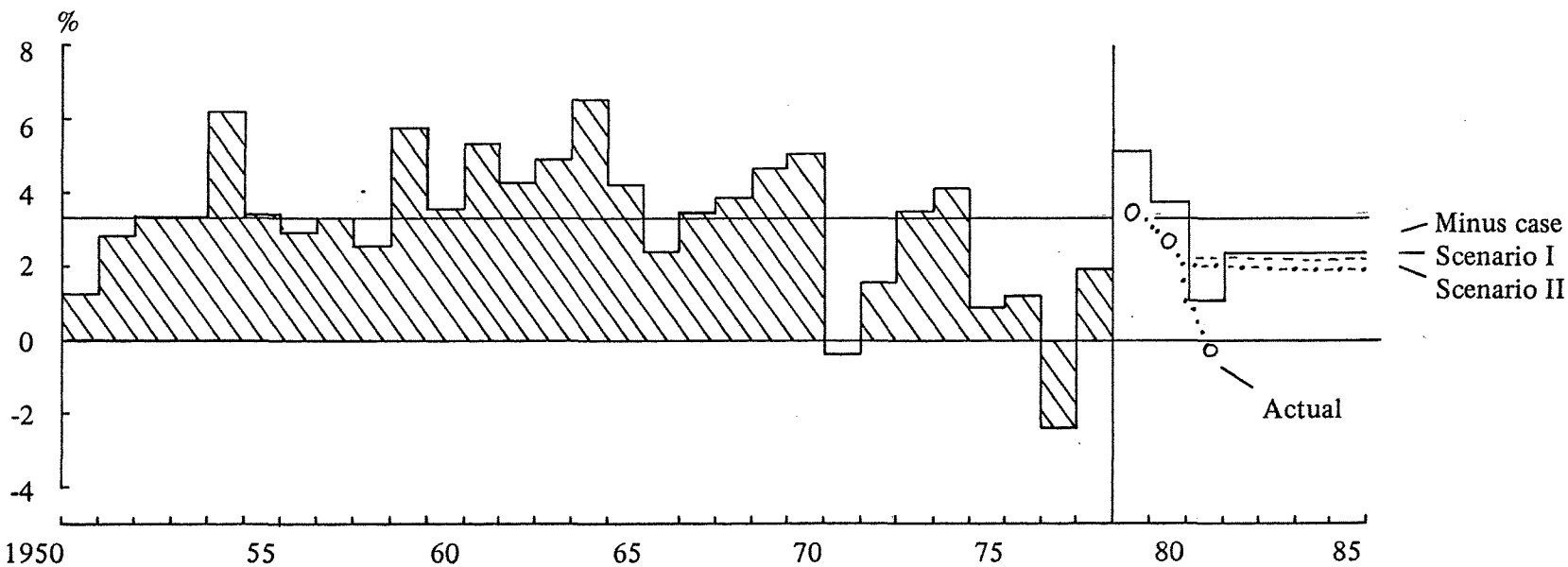


Figure 1 B. Swedish Industrial Output 1869-1977

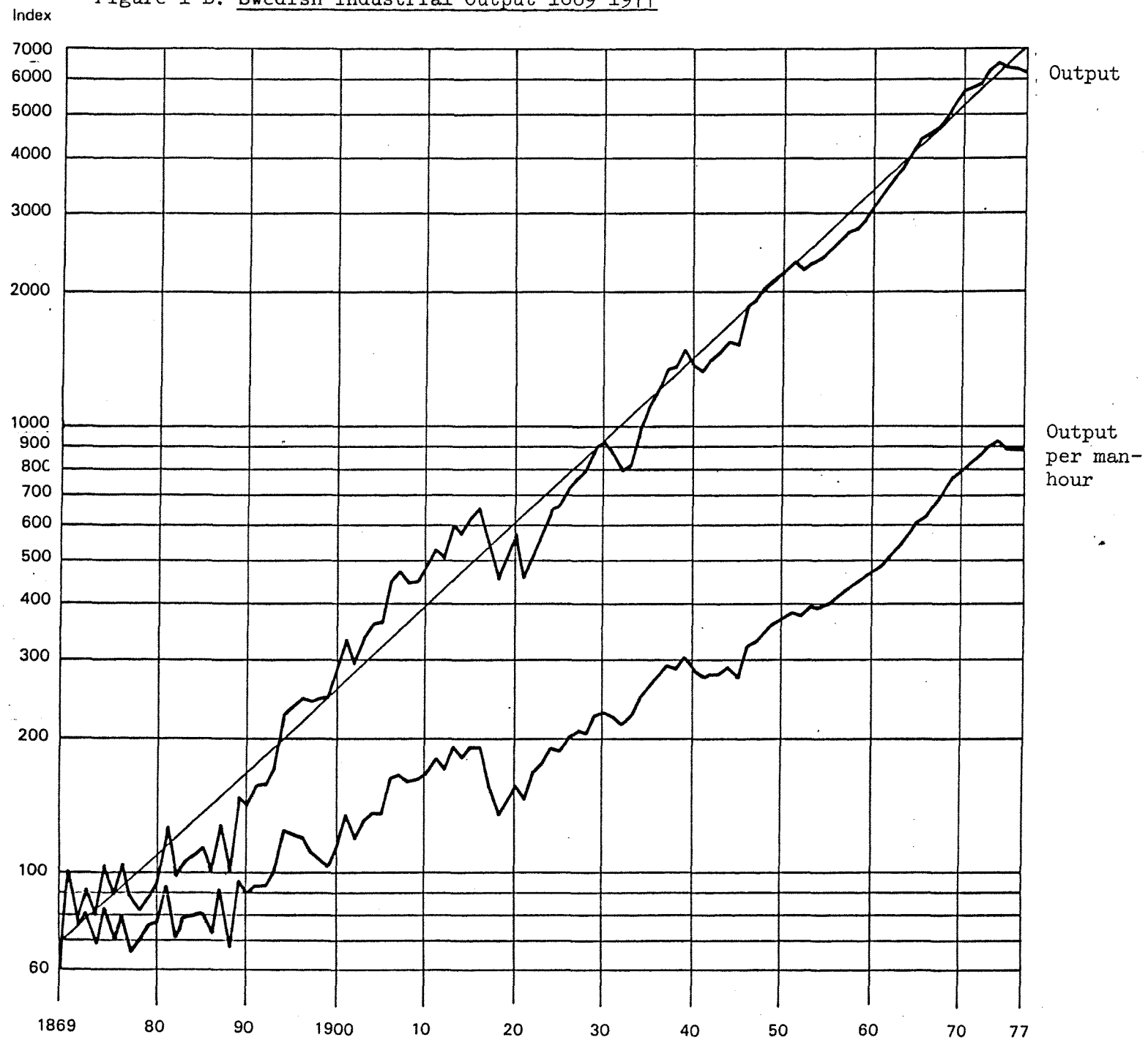
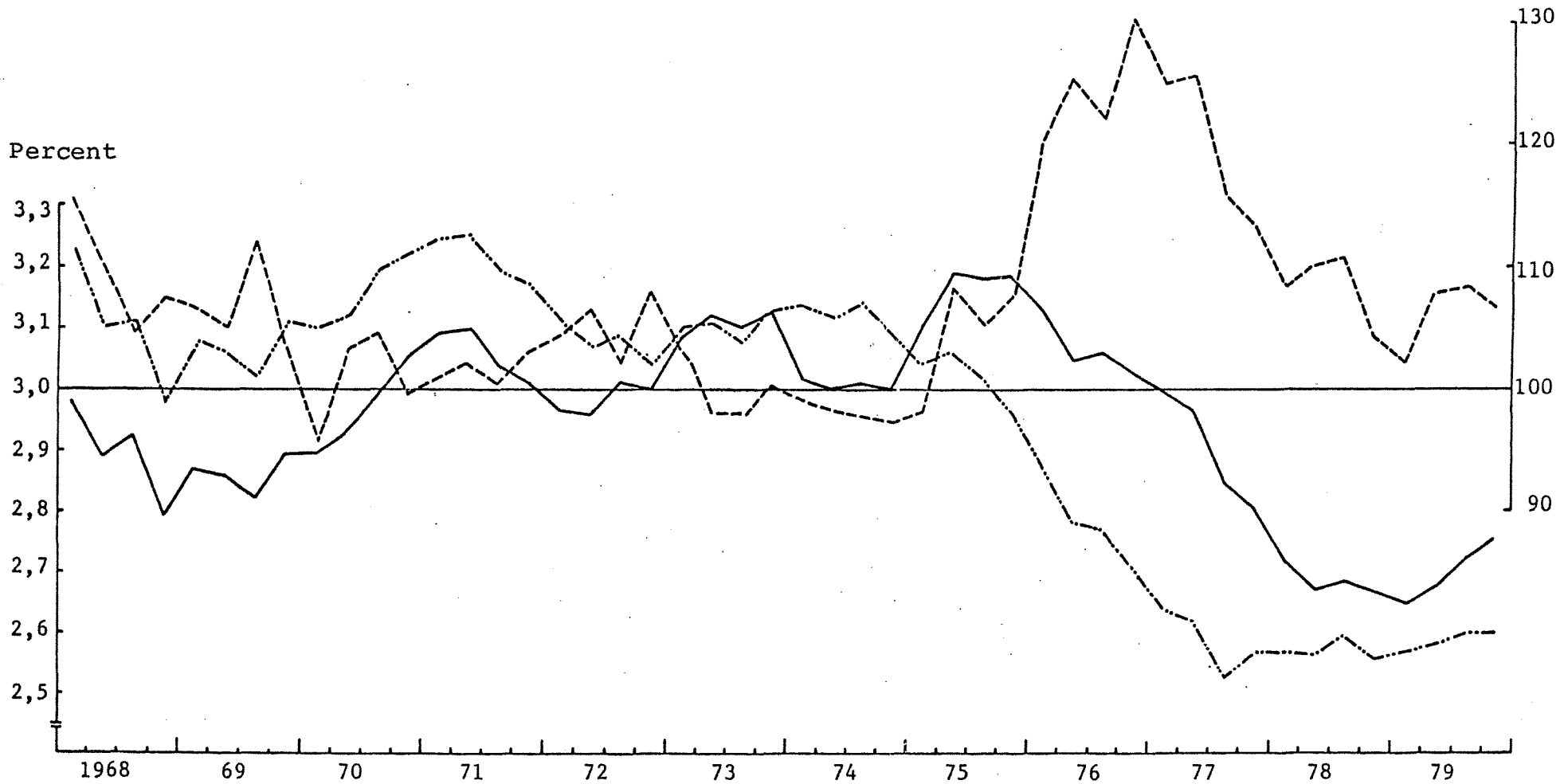


Figure 2. Swedish Market Shares and Unit Labor Costs 1968-79



Source: Eva Christina Horwitz, IUI

Figure 1 B. Swedish Industrial Output 1869-1977

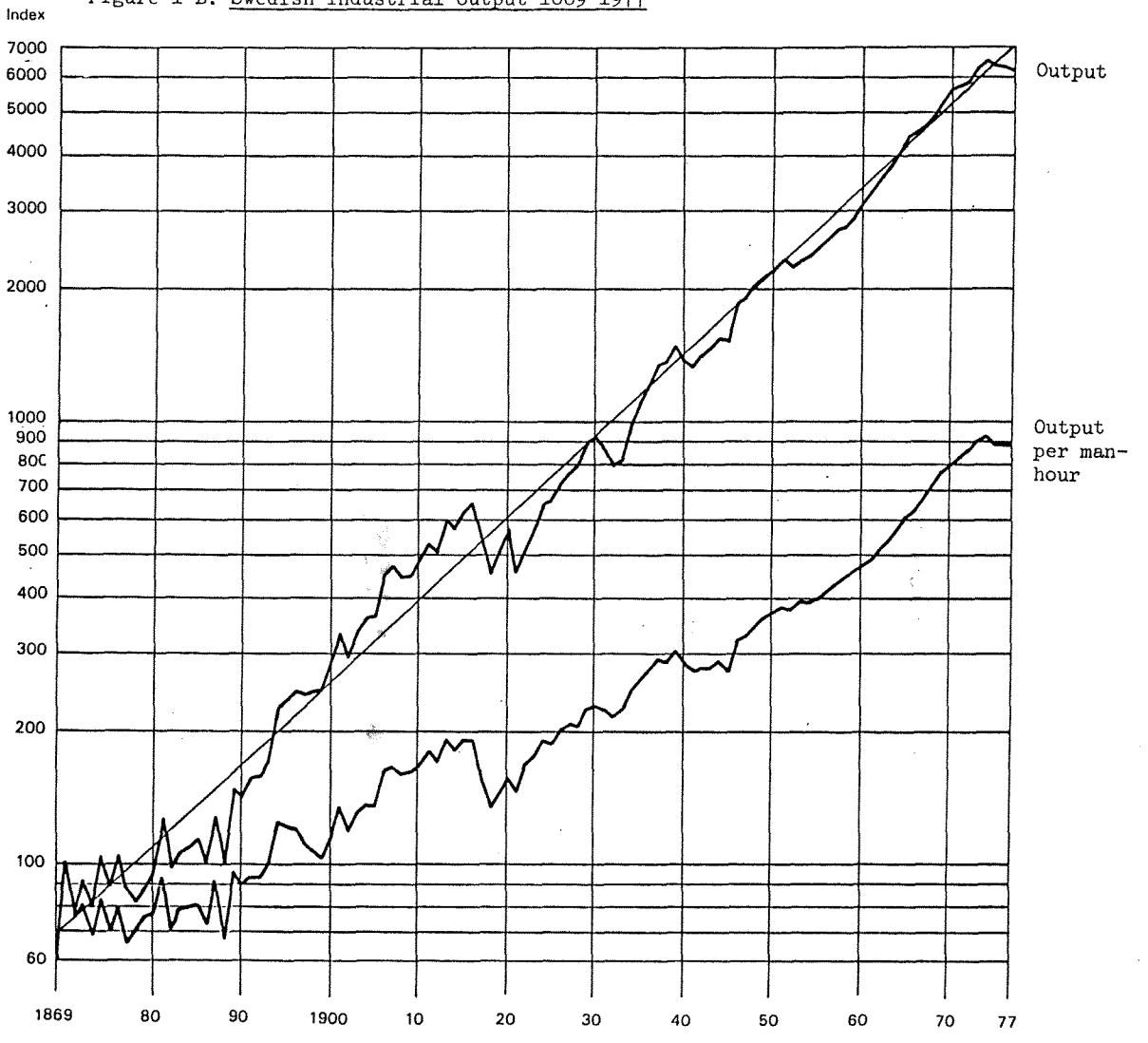
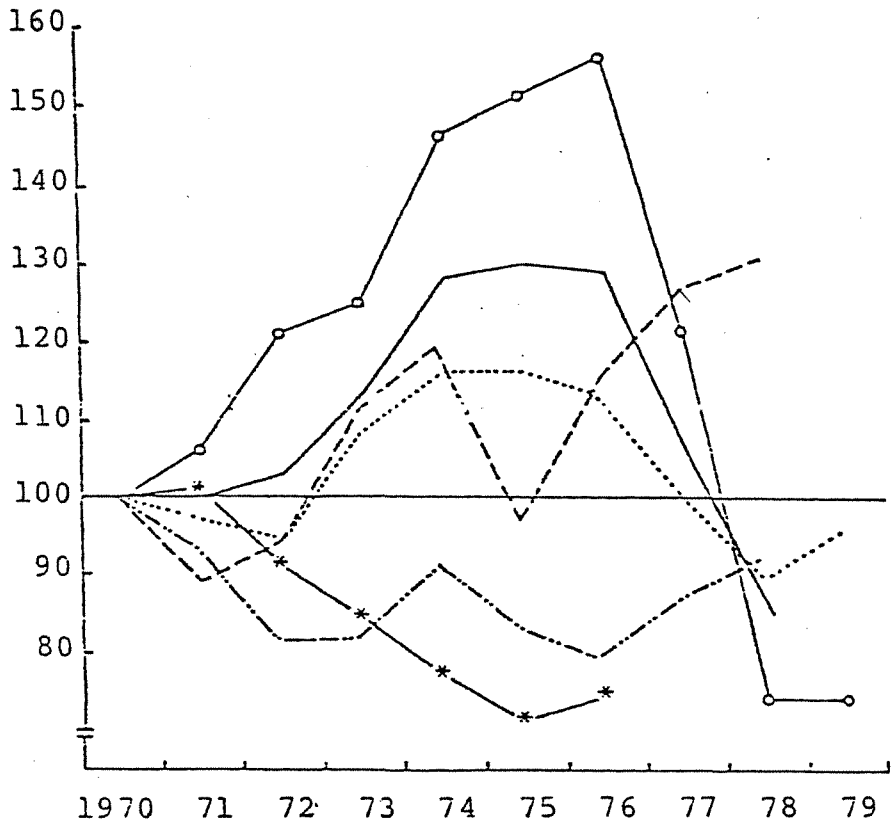


Figure 3. Development of industrial investments in Sweden, W. Germany, G. Britain and U.S.A., 1970-1979
Index 100 = OECD level



——— Sweden, all manufacturing

– – – – U.S. manufacturing

– – – – – U.K. manufacturing

..... Swedish manufacturing exclusive of crisis stricken industries

o——o Swedish crisis stricken industries (Mining, steel, forest industries and shipyards)

—— West Germany

Source: Eliasson-Ysander, Picking Winners or Bailing out Losers - a study of the Swedish State holding compamy and its role in the new Swedish Industrial policy, IUI working paper No. 37, 1981.

port production to eliminate the external deficit by 1990. In scenario I with a fast growth in real oil prices the impact on domestic consumption appeared so strong that the external balance target was moved off from 1990 to 2000. Even so exports have to continue at the 5 percent growth rate of scenario II. The "cost" of the fast growing oil price in scenario I thus shows up in a lower level of private consumption and a continuing deficit on current account.

When we lower the oil price assumption to zero growth in real prices (scenario II) the effects on the real economy turn out marginal, the negative GNP growth effect is only a fraction of a percent (0.2 per annum) for the 80ies. However, with lower oil prices, less exports are needed to pay for the imports and more of total output is available for internal use. Private consumption now can grow through the 80ies at a rate of 1.9 percent per annum rather than 0.7. This smal GNP effect of course whol y depends on the smooth price assumptions made in the model projections we have used so far. With a jumpy oil price increase in scenario I (an "oil price crisis") and/or instabilities in the adjustment and allocation mechanisms al owed, the real cost of higher oil prices should be of quite another order of magnitude.

As wil be argued in the next section, for instance, the major losses in output during the past oil crisis years of the 70ies are due to instabilities in the economic system because of erratic and uncoordinated policies between and within the industrial nations[1] and the corresponding domestic instability problems.

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[1] See Eliasson, G (1975) and Ysander, B-C (1981).

3. Range of policy options

a) External balance

One side of both scenarios presented above is a mounting foreign debt - due to the fact that the deficit on current account will only slowly diminish as a percentage of GNP during the 80ies. Such a development should exert an upward pressure on the domestic interest rate (compared to the international rate) to a level that may affect investment and growth in the long-run (see next section). A series of policy simulations around the projection in table 1 suggests that some improvement in the debt situation can be obtained by forcing the growth rate of public consumption down by one percentage point per year or by forcing a rapid modernization on industry by withdrawing support and al owing crisis stricken industries to close down at a fast rate. These two policy alternatives barely save us from the Danish foreign debt situation of today by the late 80ies. The net foreign debt begins to decrease in the late 80ies from a level just below or just above 20 percent of GNP respectively. None of these alternatives, however, seem political y realistic to hope for.

A far more likely scenario, which is considered in some important political circles, is to continue borrowing in order not to have to cut down on the welfare program or to raise taxes (extreme borrowing case), by postponing the external balance target al the way to the year 2000.

The magnitude of the external deficit may be such that it destabilizes the domestic, economic mechanisms. We wil return to that problem in section 4. In this section we wil first discuss the possibility of a more jumpy crude price development than assumed in the previous two projections, and what can be done to

prevent a repetition of our past experiences in this respect. More important, however, for the state of the Swedish economy by 1990 than the external balance as such and crude prices may be the very long-term allocation effects of the subsidy program of failing Swedish firms. A discussion of the alternatives to this program concludes this section on policy options.

b) Oil substitution in the 80ies[1]

The assumptions as to crude oil price development during the 80ies quite correctly have been made a focal point in the international growth projections for the decade. Most forecasts suggest a continued but somewhat reduced growth in energy use during the 80ies across the industrialized world, but a complete stagnation or even a decrease in oil use. To a large extent the forecasts depend on an expected, continued increase in real energy prices. Only a relatively small part of the predicted reduction can be explained by economic growth rates that have been lowered or are expected to decrease.

Three factors explain the fast decrease in oil use per unit of GNP in the Swedish economy. A relatively minor part of the decrease is accounted for by an ongoing shift in industrial structure towards less energy intensive activities. New oil saving technologies are of importance. However, the major reason is the substitution of oil for alternative energy sources, mostly coal, but also peat, electricity of non-oil origin, including nuclear energy.

A particular feature of the growth projection reported on above is the requirement of a zero deficit on current external account by 1990 and that this be achieved through export growth and import substitution. To obtain export growth at the rate necessary Swedish world market shares (see Figure 2) have to be restored

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[1] This section is a condensed version of Ysander (1981). The energy model is described in Ysander-Jansson-Nordström (1981).

through price competition; that is through a lowering of terms of trade. This makes oil import increases on the margin extra expensive in terms of exported goods to pay for the oil, and places a premium on substituting oil for other, domestic energy sources, and the more so the more real world market oil prices are expected to grow. Stil these calculations only account for the welfare loss during a relatively smooth adjustment process in response to a changing oil price.

As in 1973/74, however, the oil price change can occur as a sudden and unexpected shock. The vulnerability of the economy then of course depends on the intensity in its use of oil as a source of energy at the time of the shock. If such a shock is expected at some unpredictable future point in time a strategy to stimulate oil saving or a faster substitution of oil for other energy sources would yield an expected welfare pay off in terms of a lowered vulnerability. The cost would be a loss in efficiency in case the forecast on the expected shock (oil price increase) turns out wrong.

Such an oil substitution strategy could be achieved by a variable tax on the use of oil.[1] A smooth relative increase in the real cost (price) of oil to domestic users can be engineered by a variable oil tax, designed to compensate for world market price instabilities. Besides insuring the economy for the instabilities created by a jumpy crude price the tax wil also stimulate saving of oil. The energy model of the Swedish economy developed at the IUI can be set up to study also the consequences of oil price shocks. To begin with the differences between scenarios I and I in tables 1 and 2 il ustrate that the total output loss from a higher real oil price is quite smal over a 10 year period if the price change is gradual, adjustment slow and if utilization rates in the economy can be kept up by increased foreign debt. What suffers is domestic consumption.

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[1] See Ysander (1981).

The following scenario was set up for the energy model. A reference simulation through the 80ies and the 90ies with a low (1.5 percent) real oil price growth is compared with an alternative simulation where a sudden, 60 percent extra oil price hike occurs in 1990. The simulations are monitored so that internal and external balance is restored by 2000. This can only be obtained through a deliberate lowering of terms of trade combined with severe restrictions on private consumption during the first half of the 90ies. Private consumption wil grow by 0.6 percent per year to compare with an annual increase of 2.7 percent without an oil price shock. Public consumption growth has been assumed to be the same in both cases.

If the shock is global and disturbances reinforced by inconsistent policy making among countries as in 1973/74 the disturbances on each economy are magnified[1]. The fact that real crude oil prices may move for several years in a direction opposite to where they wil go in the end - as was the case after 1974 and perhaps currently is the case - underscores the potential importance of the stability problem. The simulations try to capture these disturbances, which wil affect an open economy like the Swedish one very strongly. In addition, disturbances created through demand effects can be demonstrated to spin off a new sequence of relative price disturbances[2].

If a stable domestic oil price increase is careful y monitored throughout the period by way of a variable oil tax, oil use wil be reduced by 30 percent compared to the reference case by 1990 and about 0.7 percent a year taken off the impact on consumption (the increase is 1.4 percent per year).

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[1] See Eliasson (1975) and Sarma (1981).

[2] Simulation experiments on the micro-to-macro model of the institute suggest that shocks of the 1973/74 type may throw the relative price system substantially out of order for a period longer than 5 years. This theoretical result is also supported by empirical findings from the energy project. See Josefsson-Örtengren (1980) and Genberg (1981).

The premium for this "insurance" is the loss in potential consumption due to decreased efficiency, if the oil price shock does not occur. With a gradual increase in the oil tax through the 80ies and then no tax change as in the above experiment some, but quite smal , welfare (al ocation) losses occur through the 80ies. They do, however, increase quite rapidly through the 90ies. The effect is slow to show up because inefficiencies develop through new investments and the phasing out of less efficient capital vintages.

c) Alternatives to the subsidy program of Swedish industry

More important for Swedish long-term economic development than oil prices may be the "to be or not to be" of the current, excessive subsidy program of failing Swedish firms. Oil prices do affect the industrial economies more or less equal y. The subsidy program is a domestic policy response to the effects of the "oil crisis", with long lasting al ocation effects on the domestic economy. While Swedish industry belonged to the relatively unmanipulated industries until the early 70ies, with subsidies amounting to only 5 percent of value added in mining and manufacturing (1970), the central Government is now supplying subsidies in various forms at the rate of almost 16 percent (1979).[1] Over some future time period such extreme inputs of "business welfare", being al ocated to the extreme low performers among firms should lead to al ocative distortions and possibly reduced long-term economic growth. The question is how long lasting and how large the initial, demand stimulating effects wil be and to what extent they lock in resources in the wrong places. We have analyzed this question on a micro-to-macro simulation model developed at the IUI that al ows quantification of the time profile of the macroeconomic effects. This tool is stil an experimental device and the results should be viewed accordingly. Its micro, individual firm

[1] See Carlsson-Bergholm-Lindberg (1981).

part, the manufacturing sector, rests on real data for some 150 manufacturing firms accounting for some 80 percent of employment and output in manufacturing industry, al firms being systematical y integrated in the Swedish national accounts framework. Its macro part appears as a traditional, estimated sector model like the one used in the projections above. On that score the micro-to-macro model probably rests on an empirical footing that is as good as or better than alternative macro models. A micro-to-macro model is, however, stil an unconventional tool. Since few economists wil be familiar with it the reader wil have to invest a substantial effort on his own to evaluate the results presented[1].

The alternative to wage subsidies to ailing firms is an another policy package. Among several possibilities experimented with we have chosen here to design our policy experiment as fol ows. One could also describe the set of experiments as fol ows. We start from a 14 year scenario for the Swedish economy through 1994 with no wage subsidies to ailing firms. This scenario has been generated in the micro-to-macro model. We then increase the income tax to produce a time profile of Government income that roughly corresponds to what had been paid out as subsidies and what can be expected to be paid out for a subsidy program that is terminated by the end of 1984. Final y, we administer two doses of "stimulus" to the economy; one temporary wage subsidy to ailing (low performance) firms - the real ones - and approximately as was done in reality (subsidy program). Alternatively we administer an equal y sized temporary wage subsidy to all firms in the model economy. Note that both programs are terminated by the end of 1984. Also observe that the doses of fiscal stimulus to either low performance or al firms, besides being of approximately equal size and time dimension, are very large. The subsidy program corresponds roughly to halving the total pay rol tax for the years 1977-84; from 40 to 20 percent.

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[1] Those interested in the specifications of the model that relate specifically to this set of experiments should consult Eliasson (1978) or Eliasson-Lindberg (1981).

The two experiments have both been based on the zero crude oil price assumption of table 2 (scenario II) and a public sector growth assumption somewhat lower than in the projections reported on earlier.

We find that the dynamic "supply effects" from growth industries associated with the temporary lowering of the pay rol tax to al firms are fairly slow in coming but grow substantial y with time, while the immediate production and export losses from cutting out subsidies are large. The firms in need of help then immediately close down. The direct and indirect demand effects on GNP associated with the subsidy program dominate over the supply effects until 1983. This is a direct consequence of the large unused capacity prevailing at the end of the 70ies being represented very accurately at the micro level in the model. Production in basic export industries could be subsidized for some years without causing inflationary bottlenecks elsewhere. On the average the model estimates the level of GNP to be 1.5 percent higher during the 5 year period 1980/85 in the subsidy case than in the case with general fiscal stimulus to al firms, but 2.1 percent lower during the fol owing 5 year period 1985/89.

These experiments indicate that policy solutions including subsidies wil be preferred by politicians who want to see immediate effects and who tend to disregard long-term consequences. They also indicate that at least as long as the subsidy program is maintained growth is held back somewhat in other industries due to the wage inflationary consequences of a tighter labor market. The optimal policy program for an industry with a concentrated competitive fal out of large firms - the Swedish case - however, does <u>not</u> seem to be no subsidies at al . The reduction in industrial output and exports (given the Swedish industrial structure) is large and immediate (some 4 percent in output). Even though the model generates a fairly rapid real ocation of released labor

(about 3 years) the alternative allocation of investment and labor takes some 5 years to generate an output level that passes above the falling output level from the terminated subsidy program. No further quantifications should be ventured, however, at this stage of modeling work as to the temporal dimensions of an optimal subsidy and general stimulus program.

Since the policy experiments on the micro-to-macro model have been based on somewhat different assumptions as to public sector growth than the earlier projections, it would only be confusing to report on the results in any detail. Suffice it to note that the "subsidy case" with subsidies being phased out by 1984[1] gives just about the same growth path of industrial output as in scenario I (2.6 and 3.9 percent per annum on the average 1980/85 and 1985/89 respectively). The supply oriented policy alternative with a temporary pay roll tax reduction to all firms means somewhat less growth in industrial output through 1981 and just about the same rate of growth until 1986/87. A somewhat higher growth rate follows for the rest of the decade. It is sustained until 1994, when the experiment was terminated. The difference in favor of faster growth in the temporary general fiscal stimulus scheme is growing from the middle 80ies to reach a rate of growth close to the high growth conditions of the middle 60ies in the first half of the 90ies. The permanence and the long-run stability of the higher growth path attained, however, require much further analysis on the model to establish. The conclusion is that significant dynamic allocation effects of the kind expected in the two alternative policy scenarios discussed do exist within the context of these model experiments. They are, however, not of such magnitude as to make the policy implications very clear and obvious.

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[1] This is roughly the assumption in the projections in tables 1 and 2, even though no explicit assumptions as to the subsidy program can be made in the macro model.

We can only say that to reap the benefits of the long-term al oca-tion effects from a non interventionist industrial policy with no subsidies you need farsighted politicians with the stamina to wait for the results. Barring another major oil crisis this constitutes the core of the policy problem facing the Swedish politicians today.

4. Balanced economic growth

The 100 years of superb economic performance of the Swedish economy shown in Figure 1B gives the superficial impression of a steady state development of stability that should make a theoretician joyful. Closer inspection reveals, however, that this semblance is an il usion. Economic development is in fact characterized by large swings around the trend line and the present slump (crisis) is by no means the deepest one since 1870. A further break down reveals even more of irregular development at the micro level. Even though the cycle seems to dampen, the question raised here concerns the possibility of maintaining stable and high growth rates of the kind experienced from the middle fifties to the middle seventies (Figure 1 B) for very long without building up imbalances that eventual y break the "steady state" situation.

The method used in the earlier projections was first to feed a set of exogenous assumptions into a consistent macro model of the Swedish economy and to calculate a set of future accounts for the economy. These are our projections or forecasts as recorded in tables 1 and 2.

The energy model of the Swedish economy incorporates a number of dynamic mechanisms that al owed us to study the response patterns of unexpected oil price shocks under various policy alternatives. This was done in Section 3. There stil remains a number of problems that this model cannot handle wel or only partial y, that have to be considered in a realistic projection of the Swedish economy. To some extent they have to do with the degree of stickiness of relative prices in the economy and the corresponding effects in the structural adjustment process. To some extent they have to do with the particular policy strategies chosen. The question is to what extent policies have been and wil continue

to be destabilizing at the macro level (Eliasson (1975, 1978, pp 105 ff). To a large extent such problems have to do with price and monetary feedback in various forms. If policies chosen are inflationary, how does inflation affect the growth process? How long does it take for a disrupted relative price system to settle on a new, stable pattern? What impact do large foreign deficits and cumulating foreign debts, that have to be refinanced every now and then, have on the domestic financial system, the interest rate, investment and growth? Some projects at the IUI have dealt with these issues separately: what we think we know is already included in the assumptions that have gone into the scenarios in Section 2 and the verbal presentation there. In this section we wil simply wrap up the paper with some qualifying remarks about what we have not, so far, been able to incorporate into an empirical y verified, numerical calculation on the Swedish economy.

The previous analysis has assumed an orderly wage and profit development during the transition phases, that no feedback effects take place when it comes to inflation and the money supply and that the external deficit and foreign debt developments do not influence the domestic interest rate.

Figure 2 showed the development of Swedish world market shares in values and volumes and unit labor costs. There is a clear tendency for market shares to vary inversely with unit labor costs, as should be expected. This situation has been labeled the "cost crisis" of the 70ies. We know from econometric studies that the development shown in the diagram means smal er profit margins on exports. Either less exports or losses on export trade fol ow with secondary repercussions on investment. The interesting question, however, is what caused costs to soar in 1975-77. To what extent was it due to overly optimistic expectations on the part of firms or on domestic economic policies? Both factors probably

were at work. But the question that we have touched upon already is whether the full employment policy ambitions were important in generating the cost overshooting that occurred in the 70ies. Subsidies to ailing industries or fast public employment growth at deficit financing to observe full employment can soak up supplies in the labor market to the extent that any expansion becomes inflationary. At some degree of excess demand competitive wage bidding of a destructive kind will develop and as a consequence a larger wage share and higher unit costs are established, than would otherwise be prevailing. In particular, this can be shown to be the consequence of subsidies to ailing firms and as a secondary effect investments and growth in other industries are held back.[1] One would expect this to be a serious case against the full employment assumption of the earlier scenarios. More important, however, is the question whether the low rate of unemployment as measured per year has got anything at all to do with supply conditions in the labor market.

Finally, the question is to what extent the chronic external deficit on current account and the servicing of a growing foreign debt will force the domestic real interest rate to settle at a higher level than the international one. This was argued on pure deductive grounds in the 1979 long-term survey by the IUI. The prediction, however, still has to be demonstrated empirically, allowing for the complexities of exchange rate developments and changing inflationary expectations. Nevertheless, a higher relative real interest rate is a possibility that has to be considered. If so, what would it mean for investment and growth?

We have argued and demonstrated in several IUI studies that the allocation of investment resources to begin with, and as a consequence labor resources, has deteriorated over the post-war period. It has also been demonstrated[2] that the structural adjust-

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1 See Eliasson-Lindberg (1981) and Carlsson-Bergholm-Lindberg (1981).

2 Eliasson (1980) and Carlsson (1981).

ment process at the micro level is the major explanation of sector productivity growth as we measure it. We have also argued that the "misal ocation process" has been stepped up during the second half of the 70ies. It is seen in Figure 3 that the boom in manufacturing investment after 1973 occurred in the crisis industries rather than in the healthy part of the manufacturing sector. The rest of industry exhibited a quite normal investment pattern and as far as can be seen a fairly normal performance in general. The conclusion is that a better screening of investment resources not only would have avoided the excessive locking up of labor in ailing industries that took place in the 70ies. It would also have produced a faster growth in other industries. In that respect a higher real interest rate and somewhat less investment as a consequence may even be beneficial for the recovery of Swedish industry.

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