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Sweden: Selected Issues

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SWEDEN

Selected Issues

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Sweden: Basic Data

Area	486,661 square kilometers
Population (March 1998)	8.85 million
Labor force (1997 average)	4.26 million
GDP per capita (1997)	SDR 19,518
Exchange rate (End-March 1997)	SKr 7.96 per US\$1

Social and Demographic Indicators (1990)

Life expectancy at birth	
Male: 74	
Female: 80	
Infant mortality (aged under 1) in percent of live births:	0.07
Population per physician:	398
Population per hospital bed (1989):	84.9

	1992	1993	1994	1995	1996	1997
<u>Economic Data</u>						
	(Annual percentage change)					
<u>Demand and Supply (at constant prices)</u>						
GDP	-1.4	-2.2	3.3	3.9	1.3	1.8
Total domestic demand	-1.8	-5.2	2.6	2.6	0.1	0.9
Private consumption	-1.4	-3.1	1.8	0.8	1.3	2.0
Public consumption	0.0	0.2	-0.7	-0.9	-0.2	-2.1
Gross fixed investment	-10.8	-17.2	2.0	12.4	3.7	-4.8
Business	-15.5	-13.0	18.6	27.7	4.7	6.4
Public	0.6	6.8	11.1	-5.7	-8.0	-9.4
Housing	-7.3	-32.8	-35.9	-23.5	13.1	-25.7
Imports of goods and nonfactor services	1.1	-2.5	13.2	10.2	3.7	11.7
Exports of goods and nonfactor services	2.3	7.6	14.0	12.9	6.1	12.8
<u>Selected domestic indicators</u>						
Unemployment rate (in percent of labor force)	5.3	8.2	8.0	7.7	8.1	8.0
Hourly wage costs (industry)	4.2	0.1	3.3	6.2	6.9	4.6
Productivity (industry) 1/	5.3	6.6	8.7	5.4	2.4	6.5
GDP deflator	1.0	2.6	2.5	3.7	1.0	1.2
Consumer prices (average)	2.3	4.6	2.2	2.8	0.8	0.9
Broad money (M3)	3.2	4.0	0.3	2.7	11.5	1.3
Three-month interbank rate	13.0	8.5	7.6	8.8	6.0	4.4
Ten-year government bond yield	10.0	8.5	9.4	10.2	8.0	6.7

Sources: Data provided by the Swedish authorities; and staff calculations.

1/ National income data.

Sweden: Basic Data (Continued)

	1992	1993	1994	1995	1996	1997
	(In percent of GDP)					
Gross saving	13.0	11.3	14.5	17.5	17.1	18.2
Public sector	-4.0	-7.6	-7.2	-5.0	-0.1	1.2
Business sector	9.5	11.0	14.3	16.2	11.7	12.6
Household sector	7.4	7.8	7.4	6.2	5.5	4.4
Gross investment	16.5	13.3	14.1	15.4	14.6	15.0
Public sector	2.7	1.1	3.0	2.9	2.4	2.5
Business sector	11.5	10.4	9.7	11.1	10.7	10.9
Household sector	2.3	1.8	1.5	1.4	1.5	1.6
Financial saving 1/	-3.5	-2.0	0.4	2.0	2.5	3.2
Public sector	-6.7	-8.7	-10.2	-7.9	-2.5	-1.3
Corporate sector	-1.9	0.7	4.7	5.1	1.0	1.7
Household sector	5.1	6.0	5.9	4.8	4.0	2.8
Household saving rate (in percent of disposable income)	7.7	8.3	8.0	6.6	4.4	0.8
	(In percent of GDP)					
<u>General Government</u>						
Financial balance	-7.8	-12.3	-10.3	-7.8	-2.1	-1.1
Central government	-10.1	-15.2	-11.7	-8.9	-3.2	-1.3
Social Security Fund	1.3	2.2	1.7	1.2	1.0	0.6
Local authorities	1.1	0.7	-0.2	-0.1	0.2	-0.4
	(Annual percentage change)					
<u>Selected External Indicators</u>						
Real effective exchange rate (relative normalized ULC)	0.5	-24.1	-3.3	-2.0	10.2	-5.0
Export volume (merchandise)	0.3	8.7	16.9	8.1	5.5	10.0
Import volume (merchandise)	-1.4	1.5	15.2	8.4	1.0	9.2
Terms of trade (f.o.b./c.i.f.)	-0.1	-3.3	0.4	4.6	-1.4	-1.0
	(In billions of Swedish kronor)					
<u>Balance of Payments</u>						
Trade balance	34.3	53.1	67.1	106.0	125.0	138.0
Exports, f.o.b.	322.4	384.2	471.6	567.7	569.2	631.5
Imports, c.i.f.	288.0	331.1	399.1	460.5	448.7	499.6
Invisible balance	-79.5	-82.6	-61.3	-74.5	-85.5	-96.3
Current balance	-45.2	-29.5	5.8	31.5	39.5	41.7
(in percent of GDP)	-3.1	-2.0	0.4	1.9	2.3	2.4
Financial account	...	...	...	...	-24.1	-42.6 3/
Official reserves 4/						
SDR billion	16.7	14.1	16.1	16.3	13.5	8.2
In weeks of imports	29.0	25.0	23.0	18.0	15.0	9.0
Net external debt (in percent of GDP) 4/	37.4	46.3	45.7	37.6	42.4	45.3
Net external interest payments						
Relative to exports of goods and services	...	...	...	...	1.4	0.6 3/
Relative to GDP	...	...	...	...	2.5	1.1 3/

1/ Excluding capital transfers

2/ Change in ratio of real effective exchange rate based on manufacturing export unit values to real effective exchange rate based on unit labor costs.

3/ Limited compatibility over time due to new definitions from October 1997.

4/ The decline in external reserves and increase in net external debt in 1996-97, notwithstanding current account surpluses, reflect the winding down of the Riksbank's forward contracts which had been used to boost reserves in previous years.

I. FISCAL DEVELOPMENTS 1994-98¹

A. Introduction

1. Sweden was in truly dire straits in 1994 when the current administration took office following elections in September that year. The general government financial deficit was headed for 10½ percent of GDP,² the long-term interest differential against the deutsche mark was almost 5 percentage points and the exchange rate of the krona was more than 30 percent below the level at which it had been pegged against the ECU prior to the forced de-linking in late 1992. The administration's response was to formulate over the winter 1994-95 a **Consolidation Program** containing deficit reducing revenue and spending measures, in about equal measure, equivalent to about 7½ percentage points of GDP to take effect over 1995-98, with considerable front-loading.³ In 1996, the program was augmented by additional measures equal to ½ percentage point of GDP. The aim of the Consolidation Program was to meet the Maastricht fiscal deficit criterion of 3 percent of GDP in 1997 and achieve balance in general government finances in 1998.

2. The Consolidation Program has been an unqualified success. The main goals have been met, and with considerable margin to spare. The general government deficit was 1.1 percent of GDP in 1997 and a surplus equal to 1.6 percent of GDP is estimated for 1998. Furthermore, the long-term spread against the deutsche mark had by the late summer of 1998 narrowed to around ¼ percentage point and the exchange rate of the krona was well off its earlier lows, although still somewhat undervalued in the estimation of the authorities.⁴ This paper reviews fiscal developments under the Consolidation Program and compares the actual outcome to what was projected at the Program's launch. It also reviews the development of structural balances of general government finances in Sweden.

¹Prepared by Birgir Arnason.

²The recorded deficit in 1993 was 12¼ percent of GDP; however, one-off bank support measures added about 3 percentage points of GDP to the deficit that year. For a review of the deterioration in Sweden's government finances in the early 1990s see B. Arnason, **The Deterioration in the Fiscal Position in the Early 1990s**, in SM/96/226.

³For a description of specific measures, see International Monetary Fund, **Challenges to the Swedish Welfare State**, Occasional Paper 130, September 1995. Sweden had, of course, at that time recently become a member of the EU and was required by the Maastricht treaty to prepare a convergence program.

⁴Turbulence in international financial markets in recent weeks has led to a widening of the long spread vis-a-vis the deutsche mark of ½-¾ percentage points and some weakening of the krona.

B. Developments in General Government Finances 1994–98⁵

3. In 1994, the general government expenditure-to-GDP ratio stood at 70 percent, up from below 60 percent of GDP in the late 1990s; meanwhile, the revenue-ratio was just under 60 percent of GDP, down from around 65 percent of GDP in the late 1980s (Figure 1). On the expenditure side, transfers to households accounted for 37 percent of general government expenditure in 1994, subsidies and other transfers to businesses 10 percent, consumption 39 percent, investment 4 percent and interest payments 10 percent (Table 1).

4. On the revenue side, taxes and social security contributions accounted for 83 percent of the total in 1994, while interest receipts and other revenues accounted for 10 percent and 7 percent, respectively; of the tax revenue, direct taxes accounted for about two-thirds of the total and indirect taxes about one-third.

5. Over 1994–98, expenditure is estimated to have fallen by 9 percentage points of GDP to 61 percent, in largely equal annual installments. In absolute terms the decline has been largest in transfers to households, almost 3 percentage points of GDP, largely reflecting the cut in the income replacement ratio of social insurance benefits that were part of the Consolidation Program. Subsidies and transfers to business have declined by 1 percentage point of GDP. Public consumption and public investment have both contracted by about 1½ percentage points of GDP at their low point, which for investment represents more than a halving of the 1994 level. Most of the reduction in public consumption spending, however, is estimated to be reversed in 1998. Interest expenditure declined by 1 percentage point of GDP, with lower interest rates after 1995 offsetting the earlier rise in gross government debt.

6. Revenues have risen by almost 3 percentage points of GDP between 1994 and 1998, to 62½ percent. The increase was sharpest in 1996 when the revenue-ratio recorded a 4½ percentage points of GDP increase, to some extent owing to one-off factors which were subsequently partly reversed, such as a switch in the timing of VAT collections which caused eleven months of VAT to be collected in 1995 and thirteen months in 1996. Higher revenue from taxes and social insurance contributions accounted for all the increase in the revenue ratio, as interest revenue declined and other revenue remained largely unchanged.

7. Notwithstanding new spending initiatives in 1997 and 1998 that raised 1998 expenditure in excess of 1 percent of GDP, general government finances are estimated to record a surplus of more than 1½ percent of GDP in 1998.⁶ This brings the cumulative

⁵This section draws on Ministry of Finance, **Sweden's Economy**, April 1998 and data provided by the authorities.

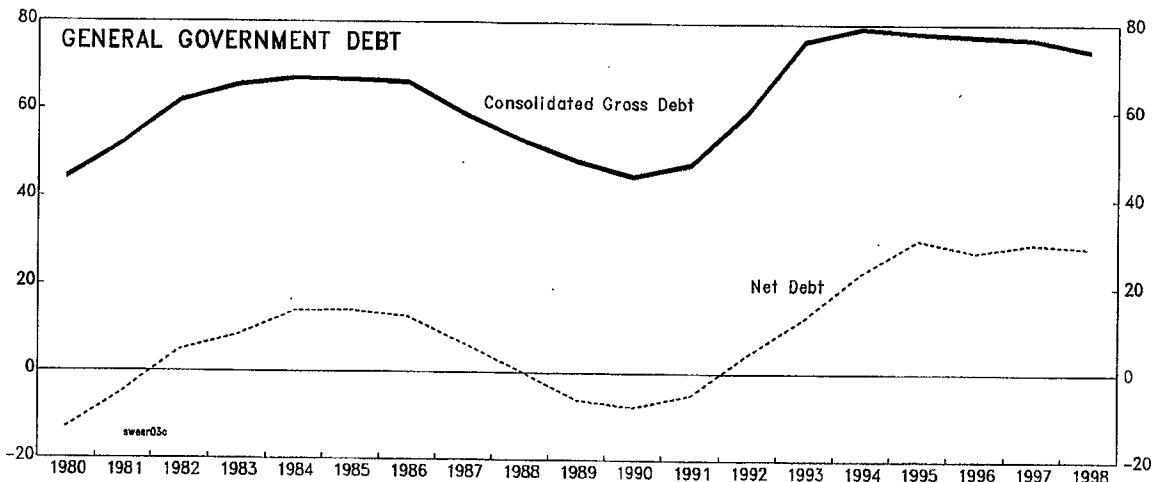
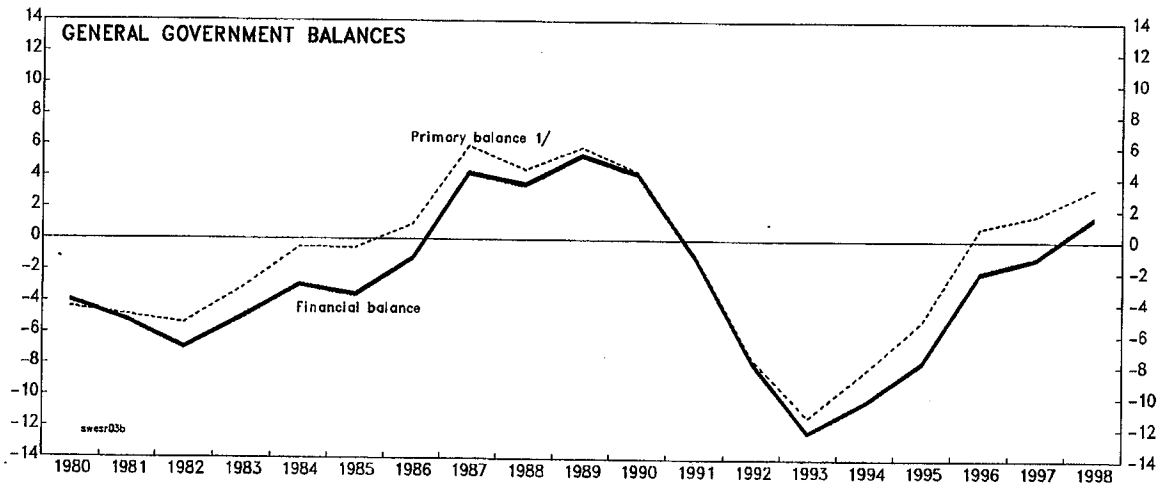
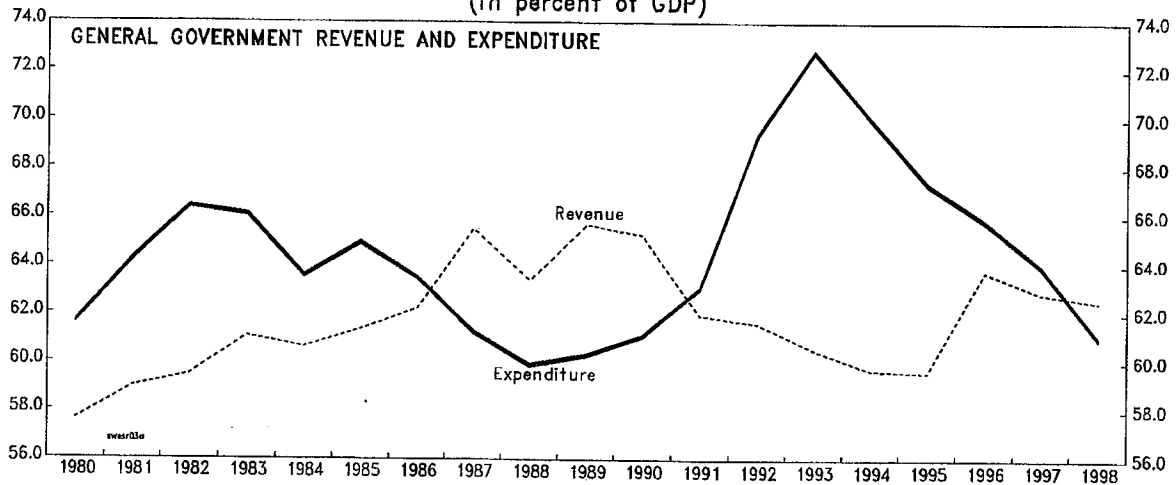
⁶Swedish accounting practices for government finances differ in important respects from the accounting rules of the European System of National Accounts (ESA), notably in the

(continued...)

FIGURE 1
SWEDEN

FISCAL DEVELOPMENTS AND PROSPECTS

(In percent of GDP)



Sources: Statistics Sweden and Ministry of Finance.

1/ Excluding interest expenditure and income.

Table 1. Sweden: General Government Finances 1/

(In percent of GDP)

	1994	1995	1996	1997	1998
Revenue	59.7	59.2	63.7	62.8	62.5
Taxes and contributions	49.8	49.9	54.1	54.2	53.9
Interest	5.8	5.8	5.5	4.9	4.7
Other	4.1	3.9	4.1	3.7	3.9
Expenditure	70.0	67.3	65.8	63.9	61.0
Transfers to households	25.6	23.7	22.9	22.3	22.9
Subsidies and transfers	7.2	7.7	7.4	6.8	6.1
Consumption	27.2	25.8	26.2	25.8	26.9
Investment	3.0	2.9	2.0	2.4	1.4
Interest	6.8	7.1	7.2	6.6	5.7
Financial balance	-10.3	-7.8	-2.1	-1.1	1.6
Structural balance 2/	-6.9	-6.3	-0.1	1.0	2.8
Primary balance 3/	-9.5	-6.5	-0.4	0.6	2.6
Structural primary balance 2/	-6.1	-5.0	1.9	2.7	3.8
Gross consolidated debt	79.3	78.0	77.2	76.9	74.3
Memorandum item:					
Output gap	-3.8	-1.7	-2.2	-2.3	-1.3

Sources: Ministry of Finance; National Institute of Economic Research; and staff calculations.

1/ The 1998 figure includes one-off factors of 0.8 percent of GDP associated with the incorporation of the real estate holdings of the National Pension Fund.

2/ The elasticity of the the financial balance with respect to the the output gap is taken to be 0.9.

3/ Excludes interest revenue and expenditure.

improvement in the fiscal balance since 1994 to 11¾ percentage points of GDP. Most of the improvement took place during 1995–96—more than 8 percentage points of GDP, compared with less than 4 percentage points during 1997–98. The improvement in the general government primary balance has been equally impressive. It recorded a deficit of 9½ percent of GDP in 1994, but a surplus of more than ½ percent of GDP in 1997, which is expected to widen to above 2½ percent of GDP in 1998, for an overall improvement of 12 percentage points of GDP over 1994–98.

C. Comparison with the Consolidation Program

8. While the Consolidation Program set ambitious goals, the actual outcome has been even more impressive. Adjusting for a one-off factor equal to ¾ percentage points of GDP in 1998 associated with the incorporation of the real estate holdings of the National Pension Insurance Fund,⁷ the actual improvement between 1994 and 1998 in the general government financial balance is 11 percentage points of GDP, or 1½ percentage point higher-than-expected at the launch of the Consolidation Program (Table 2). Clearly, lower-than-expected net interest payments are one reason for this as the actual improvement in the primary balance is only ½ percentage point of GDP better than foreseen. However, taking into account the more than 1 percentage point of GDP in new spending initiatives introduced over the last two years raises the better-than-expected improvement—in relation to the Consolidation Program—in the primary balance to about 1 ½ percentage points of GDP.

9. It is notable that, on the revenue side, taxes and social insurance contributions have contributed more than 4 percentage points of GDP to the improvement in the fiscal balance, more than twice as much as was expected in the Consolidation Program. This has more than offset lower revenue from other sources, notably lower interest receipts. Overall, revenues have strengthened by 1 percentage point of GDP more than expected.

10. On the expenditure side, the decline in total expenditure of ½ percentage point of GDP more than projected in the Consolidation Program masks that actual interest expenditure has turned out more than 2 percentage points lower than expected. Clearly, financing for the spending initiatives of the last two years has been found in the lower-than-expected interest payments.

⁶(...continued)

treatment of interest expenditure and in the booking of taxes and subsidies, which is done on a cash basis in the Swedish accounts. Applying the ESA rules to the Swedish accounts would lower the 1997 deficit from 1.1 percent of GDP to 0.8 percent but also lower the 1998 surplus from 1.6 percent of GDP to 0.8 percent.

⁷From an accounting standpoint, the establishment of an incorporated holding company for the National Pension Fund's real estate assets, which were previously not recorded in general government accounts, constitutes financial savings.

Table 2. Sweden: Contributions to Fiscal Consolidation, Cumulative Change over 1994-98
(Percent of GDP)

	Consolidation Program	1998 Spring Budget Bill 1/
Revenue	1.9	2.8
Taxes	1.8	4.1
Other	0.1	-1.3
Expenditure	-7.6	-8.2
Transfers to households	-4.8	-3.8
Other transfers	-0.8	-0.9
Consumption and investment	-3.1	-2.3
Interest expenditure	1.1	-1.1
Primary balance 2/	10.8	11.3
Financial balance	9.5	11.0

Source: Ministry of Finance.

1/ Excludes a one time adjustment in 1998 of 0.8 percent of GDP associated with the incorporation of the real estate holdings of the National Pension Fund.

2/ Excludes interest revenue and expenditure.

11. Higher-than-anticipated taxes, on the one hand, and lower-than-expected interest payments, on the other, account for most of the difference between the projections underlying the Consolidation Program and the outcome as it is now estimated. The latter is easily enough explained with reference to the virtuous cycle of declining fiscal deficits and falling interest rates. The former is harder to explain as economic growth has been about the same over the period 1994–98 as assumed in the Consolidation Program—around 2½ percent per year on average—with the same applying to important tax bases, such as the wage bill and private consumption.⁸ Hard-to-predict taxes, such as on business profits and individual capital gains, appear to have yielded significantly more revenue than had been expected.

D. Developments of Structural Balances

12. In net terms, the Consolidation Program and subsequent initiatives should have, in the authorities' original estimation in 1995, strengthened the structural—or underlying—general government balance by 7 percentage points of GDP,⁹ with 3½ percentage points taking effect in 1995, 2 percentage points in 1996 and 1½ percentage points in 1997. With economic growth only marginally higher than estimated potential during 1994–1998,¹⁰ most of the improvement in the overall fiscal balance and the primary balance must have been of a structural nature. Estimates prepared by the authorities and by staff indeed confirm this.

⁸The somewhat poorer-than-expected development of private consumption has been offset by a stronger-than-expected development of the wage bill.

⁹The initial measures of 7½ percentage points of GDP plus the ½ percentage point of additional measures in 1996, less the 1 percentage point of GDP spending initiatives in 1997 and 1998.

¹⁰Sweden's government finances are notoriously sensitive to cyclical developments. However, with average growth of only 2½ percent per year over 1994–98 the cyclical improvement in the fiscal position will at most have been 1½–2 percentage points of GDP, assuming a rate of growth of potential output of 2 percent per year and an elasticity of the fiscal balance with respect to the output gap of between ¾–1. While it is difficult to imagine higher output gap elasticities, it is conceivable that the rate of growth of potential output is slower than this; Swedish growth averaged 1.7 percent per year during 1960–1997 and showed a trend-wise decline during this period. This range of output gap elasticities is consistent with estimates that have been obtained by the staff—see A. Magnier, **Developments in the Government Structural Balance**, in SM/97/205—as well as by the OECD Secretariat and the EU Commission.

13. While the authorities do not present estimates of the underlying fiscal position, they present estimates of changes to that position.¹¹ For the period 1994–98, they estimate that the improvement in the underlying position was in excess of 10 percentage points of GDP—out of a total improvement in the fiscal balance of 12 percent—with 3½ percentage points taking effect in 1995, almost 5 percentage points in 1996, 1¼ percentage points in 1997 and ½ percentage point in 1998. The cumulative improvement in the underlying fiscal balance is well in excess of the original assessment of the impact of the Consolidation Program of 7 percentage points of GDP. The very strong improvement in the underlying balance in 1996 is particularly notable.

14. Estimates prepared by the staff point in the same direction (see Table 1). According to these, the structural primary balance improved by 10 percentage points of GDP between 1994 and 1998, going from a deficit of 6.1 percent of GDP to a surplus of 3.8 percent. These estimates point to an even more intense fiscal withdrawal of between 6–7 percentage points of GDP in 1996; they are, however, of an aggregate nature and do not provide an insight into the underlying factors at work.

E. Conclusion

15. Fiscal performance under Sweden's Consolidation Program of 1994–98 has indeed been impressive, and even more so than expected. However, neither the initial assessment of the measures contained in the Consolidation Program along with subsequent initiatives nor cyclical developments over this period fully explain the improvement in the fiscal position. Two contending, and possibly also complementary, explanations are on offer: either the initial assessment of the impact of the measures contained in the Consolidation Program was underestimated or the cyclical recovery of the fiscal accounts has been stronger than currently estimated. The strong performance of the profit tax—with GDP growth on target—points to structural factors, as enterprises strove to lower costs in the recession environment. On the other hand, the strong performance of taxes on capital gains, in the aftermath of the stock market surge, points to a fortuitous—and perhaps temporary—improvement.

¹¹Ministry of Finance, *Review of the Swedish Convergence Program*, April 1995.

II. THE WAGE BARGAINING STRUCTURE AND REAL WAGE DEVELOPMENTS ¹²

A. Introduction

16. Over the past ten years, considerable debate has arisen regarding the relationship between labor market institutions and employment performance. This debate was kindled by a seminal paper by Calmfors and Driffil (1988) showing that there was an inverted U-shaped cross-country relationship between the degree of centralization in wage bargaining and the unemployment rate, with the transmission mechanism occurring through real wage developments. Since the publication of this paper a number of researchers have tried to pinpoint weaknesses in the original analysis, in particular by pointing out the difficulty in ranking countries according to the degree of centralization because of the existence of multilevel bargaining. However, various alternative rankings for the degree of centralization have not been able to disprove the empirical connection between the variables (see in particular the work of Freeman (1988), Rowthorn (1992) and Bleaney (1996)). The purpose of this paper is to document and analyze the behavior of wages within Sweden's wage bargaining framework which, up until the early 1980s, was fairly centralized but which has subsequently become dominated by industry/sectoral level bargaining.

B. Theoretical Considerations

17. One of the main drawbacks of a wage bargaining framework at the industry level is that it creates negative externalities. For example, when separate groups achieve independent wage increases, there are significant possibilities to shift pay rises onto consumers through an increase in the relative output price. As a result, the increase in the real product wage and the resulting employment loss are moderated. However, consumers of the industry's products are worse off because they must pay higher prices for the products. In contrast, when wage bargaining takes place at the central level, consumption wages are raised uniformly across all sectors and therefore there is no relative price change. Moreover, wage increases are moderated because unions recognize that higher wages raise product prices which have to be paid by their own members.

18. Centralized bargaining units can also internalize unemployment and fiscal externalities. The unemployment externality results from workers who become unemployed making it more difficult for unemployed workers in other sectors to find work. In a decentralized system, bargaining is by individual unions which are less likely to be concerned about the effects on other unemployed people of one of their own members becoming unemployed. In contrast, in a centralized system the unions bargain as a group and incorporate into their wage bargaining strategy the understanding that their actions affect the likelihood that their own members become unemployed. The fiscal externality relates to the fact that high wage bargains which result in unemployment impose a cost to the union members if the unemployment benefit

¹² Prepared by Alun Thomas

system is partially financed by employee contributions. Bargaining units at the industry level can free ride on the understanding that an increase in unemployment benefits is financed by increased premiums paid by all workers whereas centralized bargaining units are more likely to internalize this externality.¹³

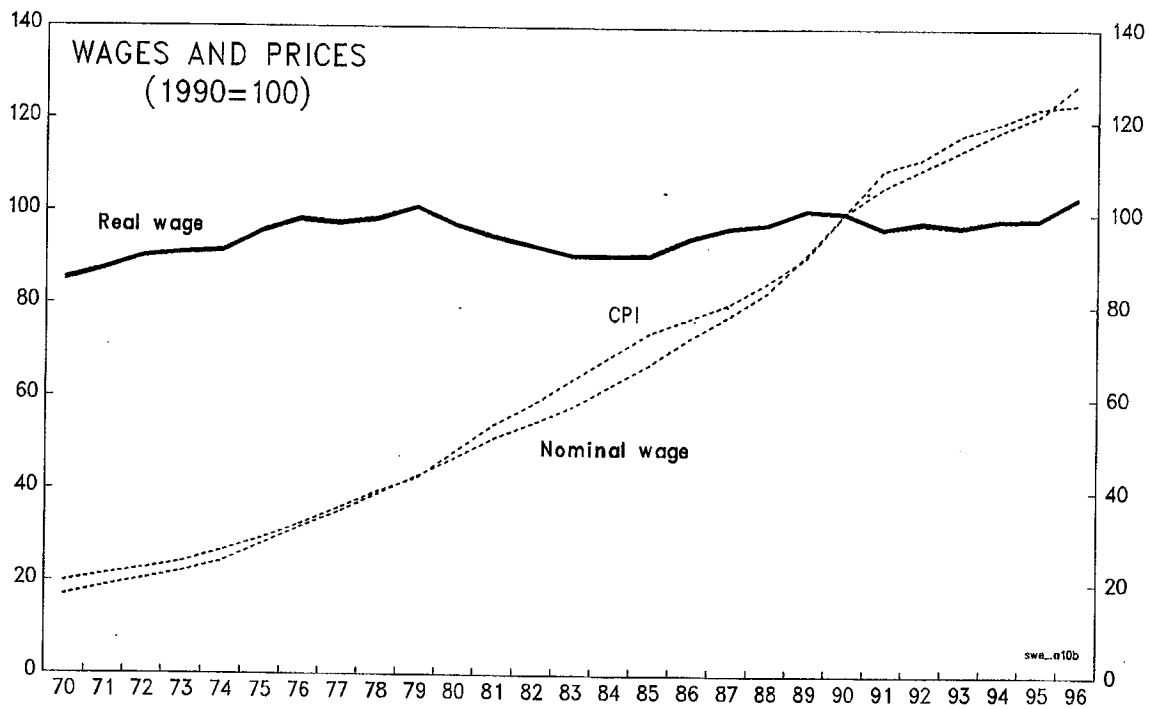
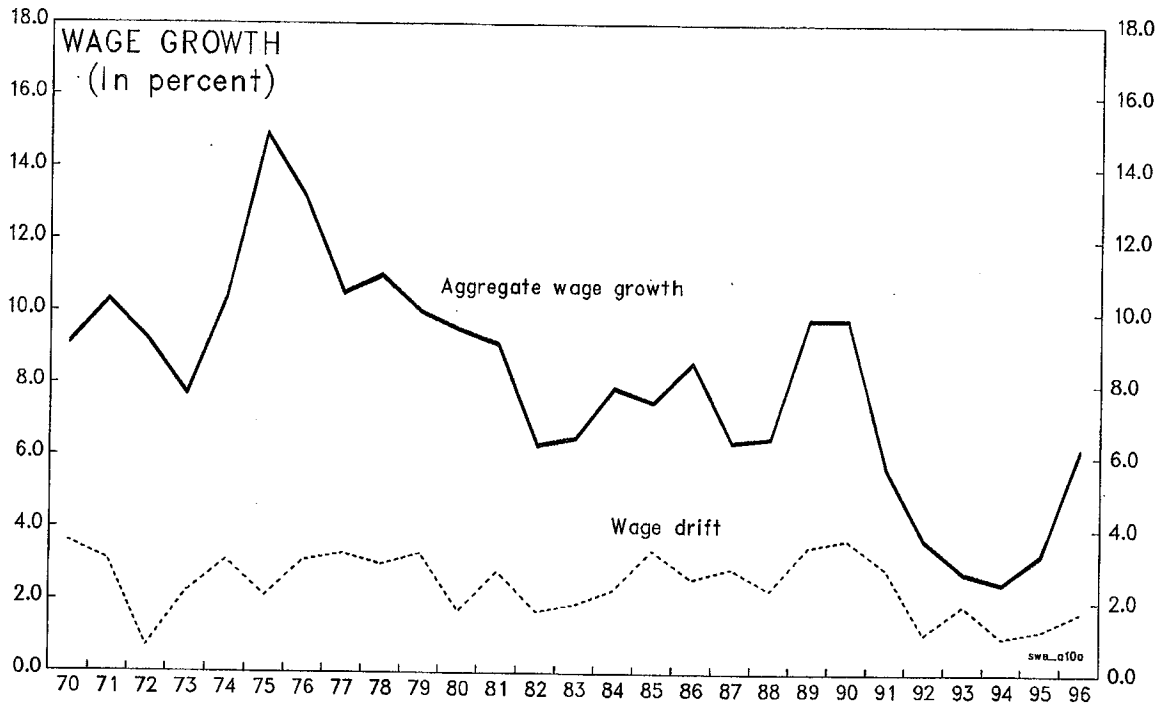
19. One of the advantages of wage bargaining at the sectoral level over centralized bargaining is that, to a certain extent, it can incorporate different labor market conditions across sectors and therefore can reward work according to its market valuation. It must be recognized, however, that many wage agreements contain both local and centrally negotiated elements. In fact, some commentators have argued that the local bargain rarely reverses the centralized bargain, which acts essentially as a floor to which the local wage bargain is added. The evidence on this proposition for Sweden is mixed. Flanagan (1990) fails to find any interdependence between both variables whereas Flanagan et al. (1983) find that negotiated wage increases at the centralized level have compensated for the difference between the allowable wage increase according to the Scandinavian model (the sum of labor productivity and world market prices) and wage drift.¹⁴ Moreover, Holmlund and Skedinger (1990) find that, on average, wage drift has partially offset the negotiated wage increase. Centralized bargaining agreements do not consider differences in productivity across major sectors of the economy, and since productivity improvements are typically smaller in the service sector than in the manufacturing sector, a centralized wage agreement based on developments in the manufacturing sector is likely to result in uncompetitive wage increases in the service sector.

20. Figure 1, panel 1 presents the total wage increase and the proportion attributable to wage drift received by workers in both the private and public sectors. Historically wage drift has varied much less than the aggregate wage change in Sweden, ranging from 0.7 to 3.7 percent. Over the 1970–1991 period, wage drift averaged 2 ½ percent but since then it has fallen to 1 percent, with the outcome for 1997 the lowest in thirty years. Part of the explanation for the fall in wage drift in the recent period is lower inflation expectations because the aggregate real wage has risen over this period (Figure 1, panel 2).

¹³One way of addressing this problem is to set premiums in such a way that those industries which press for high wage bargains are forced to pay for the resulting increase in benefits.

¹⁴This component of the Swedish model, the so-called EFO model was developed by three economists of the white-collar trade union, the employers' organization, and the blue collar trade union-Edgren, Faxen, and Odhner. The main thrust of the model was to maintain the international competitiveness of Swedish industry through forcing wage increases to be determined by the sum of international price inflation and the rate of growth of labor productivity in the sector.

WAGES AND PRICES DEVELOPMENTS



C. Historical Perspective

21. Centralized wage bargaining in Sweden goes back to 1938 when the two main labor organizations, LO, the union confederation and SAF, the employers' confederation, concluded the Saltsjöbaden Agreement which regulated the relations between labor and management with regard to collective bargaining and industrial action. Two other unions were formed during the following decade, the Confederation of Professional Employees (TCO) in 1944 and the Confederation of Professional Associations (SACO) in 1947. During the heyday of Swedish labor market policies in the 1950s and 1960s both unions followed the lead taken by LO in requesting moderate wage increases. However, in 1973 a common bargaining unit encompassing private sector unions from both TCO and SACO was formed and, over the 1974-87 period, it concluded wage agreements with SAF independently of LO. Moreover, since the early 1980s some unions have split ranks even within LO. In 1983, the engineering industry broke away from the central agreement arguing that centralized wage contracts were not taking adequate account of conditions prevailing in specific industries; in the following year, central negotiations gave way to bargaining at the industry level. During the late-1980s a variety of bargaining systems were tried which led to the abandonment of centralized wage bargaining by SAF in 1990. Since then, negotiations have been carried out at the sectoral level between national employers' associations and trade unions. In contrast to the experience in the private sector, wage bargaining in the public sector has been fairly well coordinated between the public sector union and the three separate public-sector employer organizations for the central, regional, and local governments.

22. During the early 1970s, wage increases were moderate, growing in line with the sum of productivity increases and inflation (Figure 1, panel 2). However, in the mid 1970s, significant wage increases were triggered by imported price increases in connection with world-wide inflation and by increases in payroll taxes whose effects the government tried unsuccessfully to quell through the Haga agreements. As a result, the growth of product real wages far out paced the growth of labor productivity leading to a loss of competitiveness and export market shares. A number of discretionary exchange rate devaluations were undertaken to restore competitiveness (1976, 1977, 1981, 1982) and nominal wage increases returned to levels experienced prior to the mid-1970s. Following the 1982 devaluation, the government obtained a tacit understanding from LO that it would accept the pending real wage losses without claiming compensation. In 1984 and in 1985 the government reinforced this request by offering tax scale adjustments and tax-deductible union membership fees in return for modest wage increases.

23. During the recession of the early 1990s, following sharp increases in nominal wages and in inflation, the government advocated a voluntary incomes policy in conjunction with a sharp disinflation policy. This enabled a fairly high degree of wage coordination involving virtually all employer organizations and most of the unions and helped to generate a 3 percent

decline in the real wage in 1991.¹⁵ However, since then the policy has been less successful because real wages have risen at a time when the aggregate unemployment rate has hovered around an extremely high level (by Swedish standards) of 12 percent.

24. Sweden, in common with the other Scandinavian countries, employs a large fraction of its workforce in the public sector. Currently, roughly 22 percent of working time is carried out in the public sector, slightly lower than in Norway at 27 percent (Table 1). As in many other countries, hours worked in service industries have increased rapidly over the past quarter century displacing workers in agriculture and in manufacturing industries. At present, the banking sector accounts for about 8 percent of total hours worked and other services account for roughly 28 percent. The proportion of workers in retail and wholesale trade has remained fairly steady for many years at about 12 percent whereas the downward trend in hours worked in manufacturing has stabilized at 16 percent since the early 1990s. The smallest categories are construction, communication, and agriculture, each representing about 4–5 percent of total hours worked.

25. A major focus of this paper is to consider the extent to which wage movements in the tradables and service sectors are determined by economic variables within those sectors rather than by economy-wide variables. Before addressing this issue empirically we consider some stylized facts about wage and productivity differentials across industrial sectors in Sweden.¹⁶ Figure 2, panel 1 shows the evolution of the real consumption wage across industries relative to the economy-wide average over the 1980–96 period.¹⁷ The sizeable differential between wages in the service industries and in the tradables industries reflects the use of data on white collar workers for the service industries and blue collar workers in tradables. Replacing the wages of blue collar workers with the wages of white collar workers in manufacturing and construction indicates a fairly narrow wage spread across industries which has remained

¹⁵The degree of government involvement during the early 1990s contrasts with its passive role in previous decades. Historically, the Swedish government has not followed Norway and Finland's example of reaching tripartite agreements between the unions, the employers and the government. Moreover, the recent tendency towards decentralized wage bargains has likely reduced the scope for such contracts in future.

¹⁶In this paper the agricultural and public sectors are excluded from the analysis and the focus is on the different evolution of wages and employment in the manufacturing, construction, communication, banking, insurance, and retail industries.

¹⁷The aggregate analysis is confined to this period because consistent time-series data on the banking sector is only available from 1980.

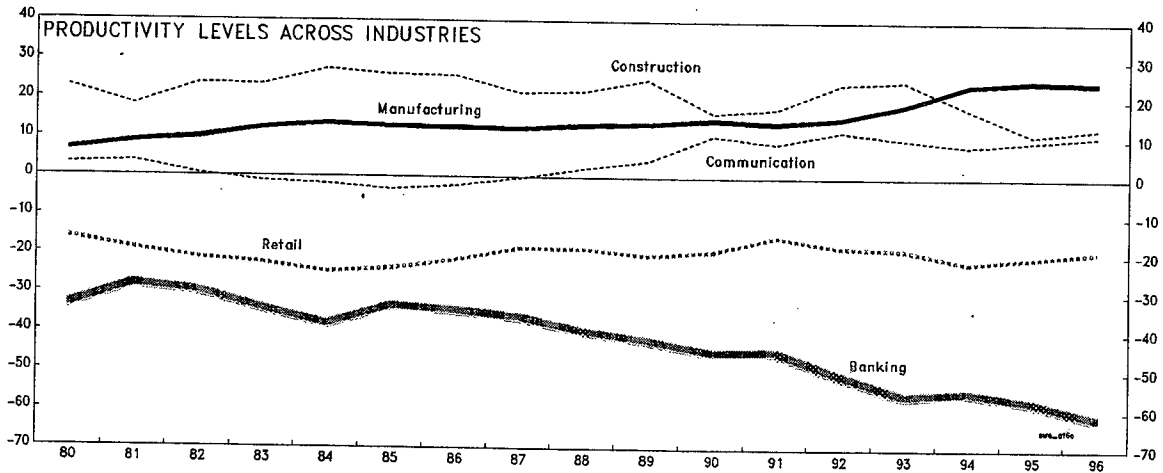
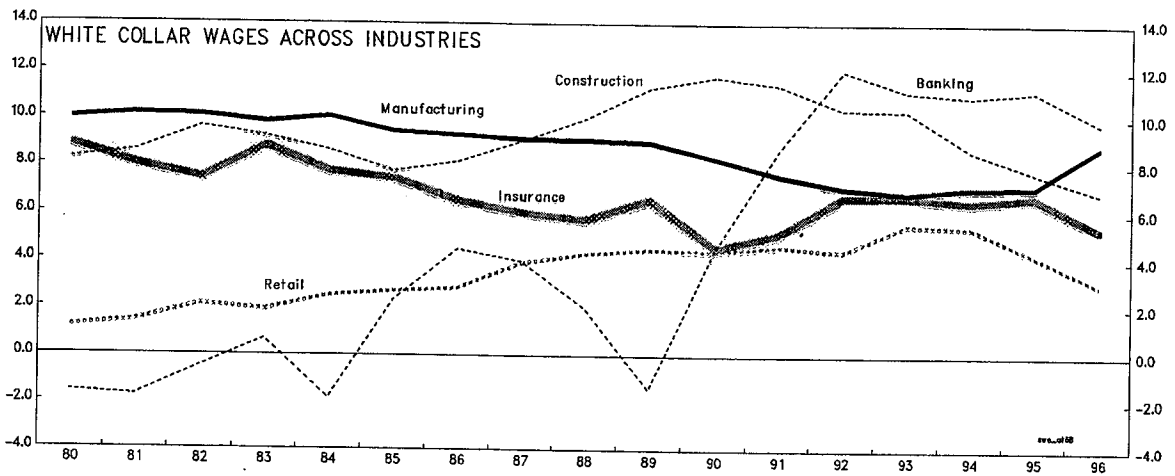
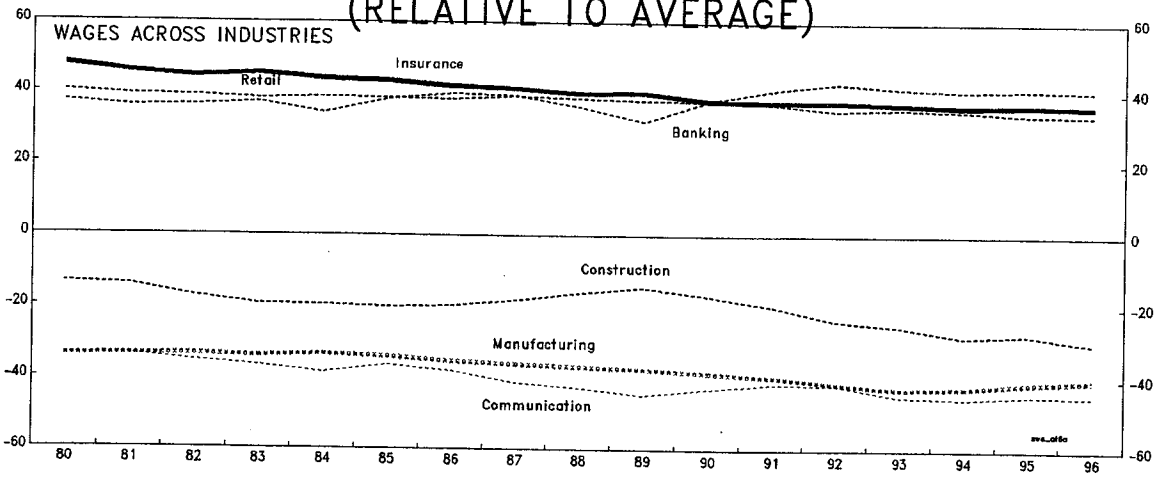
Table 1. Sweden: Employment Shares across Industries

(In percent of total hours worked)

Industry	1994	1995	1996
Agriculture	3.7	3.4	3.2
Manufacturing	15.7	16.4	16.5
Construction	4.7	4.7	4.7
Communication	5.6	5.5	5.4
Trade	11.8	11.7	11.7
Banking	7.8	8.2	8.4
Other services	28.5	28.3	28.3
Central government	3.6	3.6	3.7
Local government	18.7	18.3	18.1

FIGURE 2
SWEDEN

WAGES AND PRODUCTIVITY ACROSS INDUSTRIES (RELATIVE TO AVERAGE)



constant over time (Figure 2, panel 2).¹⁸ This is a noticeable feature of the Swedish labor market and contrasts with more decentralized labor markets such as in the United States where the wage differential between the highest and lowest paying 1-digit sector is about 40 percent (OECD Jobs Study). Turning to productivity developments, we notice a sizeable improvement in productivity in the communication sector since the mid-1980s and a similar improvement in the manufacturing sector since the early 1990s (Figure 2, panel 3). In contrast, productivity has remained at the economy-wide average in retail trade but has declined significantly in relative terms in the banking sector.

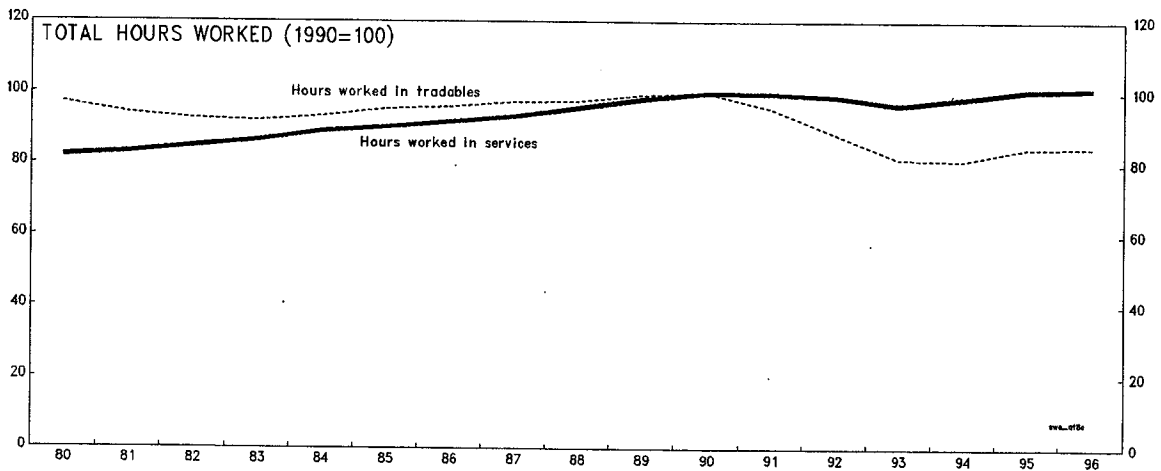
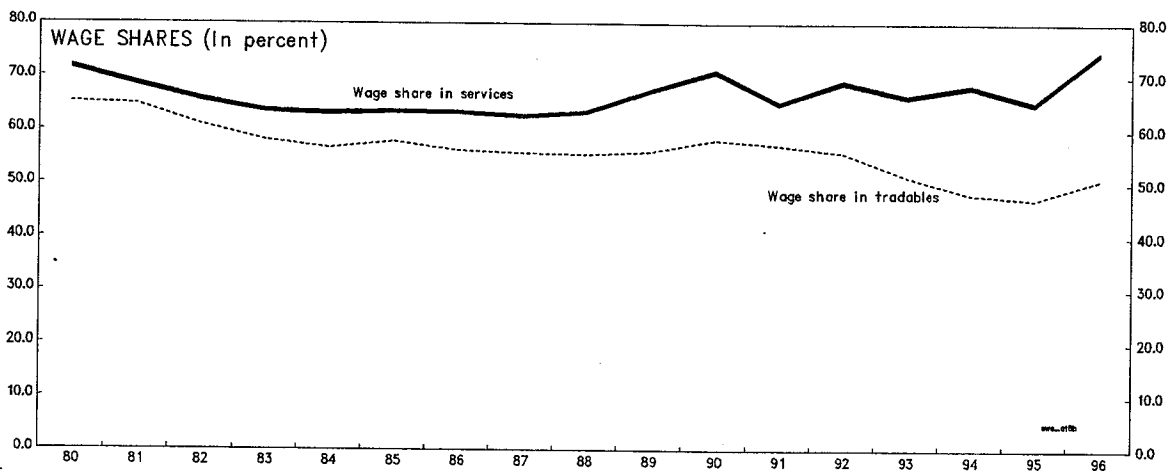
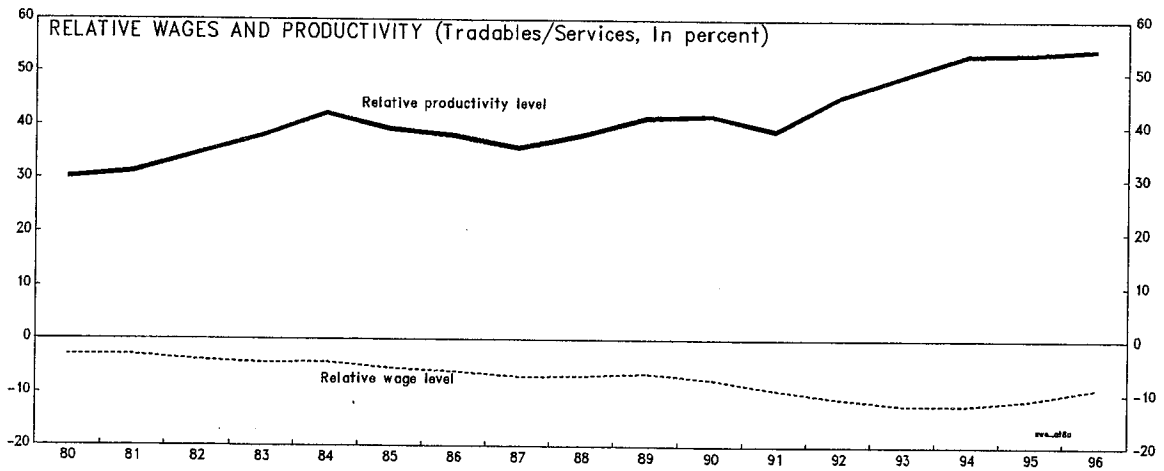
26. To gain a more aggregative view of the contrasting real wage and productivity developments in the sectors that are most exposed to international competition (manufacturing, construction, and communication) versus the less exposed service sectors (banking, insurance, and retail trade), the panels in Figure 3 aggregate both categories using weights based on total hours worked for the various sectors.¹⁹ The results appear to confirm that real wages in both sector groups have moved closely together even though the productivity profiles differ considerably. In particular, the real consumption wage in tradables has declined relative to the corresponding wage in services even though since 1991, its relative productivity level has risen sharply (Figure 3, panel 1). This is shown more starkly in Figure 3, panel 2 which shows the historical profile of the wage shares in tradables and in services. The wage share in tradables has trended down since 1980 except for the most recent observation in 1996 when real wages rose sharply. In services, the wage share has remained fairly constant over time except for the large increase in 1996. Real wages in the service sector appear to mimic developments in the sectors that are more exposed to international competition. In the exposed sectors, wages have grown in line with productivity developments in these sectors, although the most recent uptick in the wage shares of both sectors is troubling.

27. Part of the explanation for the strong performance of productivity in the exposed sectors is the labor shedding that has taken place since the peak of the previous cycle in 1990. Between 1990 and 1993 employment in the tradables sector fell by roughly 20 percent whereas employment in the service sectors remained fairly flat (Figure 3, panel 3). Since 1993 employment has recovered in the exposed sectors but productivity has continued to rise, albeit at a slightly slower pace than over the 1990–93 period.

¹⁸White collar wage data for the communication sector is not available.

¹⁹ The communication sector has only become competitive since the late 1980s and therefore referring to it as an exposed sector over the whole period is debatable. However, the lack of degrees of freedom preclude splitting the sample into two sub-periods. Moreover, although the construction sector is not generally regarded as an exposed sector, it is often included with the manufacturing sector when considering wage developments.

FIGURE 3
SWEDEN
COMPARISON OF TRADABLES AND SERVICES



D. Real Wage Developments Across Swedish Sectors

28. In recent years a number of authors have estimated wage relationships using Swedish data (see, in particular, Bean, Layard, and Nickell (1986), Calmfors and Forslund (1990), Calmfors and Nymoen (1990), and Pencavel and Holmlund (1989)). The major finding which is common to all analyses is that the real wage is very sensitive to changes in the unemployment rate. The effects of changes in payroll taxes on the real wage are more equivocal because some studies find a pass-through effect of between 0.4–0.6 whereas other studies find no effect. Moreover, the effects on the real wage of increases in labor market programs among Scandinavian countries is also subject to debate. In Calmfors and Forslund (1990), the ratio of labor market program participants to the total unemployed pool has a positive effect on the Swedish real wage, controlling for movements in the total unemployment rate. In contrast, Raaum and Wulfsberg (1995) find that active labor market programs reduce wage pressure in Norway.

29. Drawing on the empirical work summarized above, the wage-setting schedule estimated in this paper is defined as follows:

$$w_i = \eta(pty_i, u, \tau, accr, dum92-96)$$

where w is the real wage, defined as the hourly wage deflated by the CPI index, pty is real GDP divided by total hours worked, u is the unemployment rate, τ is the payroll tax rate, $accr$ is the accommodation rate, i.e. the ratio of participants in active labor market programs to the total pool of unemployed, and $dum92-96$ is a dummy variable for the post-91 period which was characterized by high real wages.²⁰ The industry specific variables are indexed by i . We also interact the unemployment rate with the dummy variable to assess whether the close historic relationship between the real wage and the unemployment rate has been maintained during the 1990s.

30. In order to conserve degrees of freedom, estimates were obtained by pooling the data across sectors, with a distinction made between exposed sectors and less exposed sectors. The time period analyzed for the exposed sector was 1970–96 whereas the corresponding period for the less exposed sectors was shortened to 1980–96 owing to lack of data. Weighted Symmetric t test statistics and Phillips z - τ statistics indicate that all of the variables have trended upwards over time although in some cases the first differences of the variables appear

²⁰ The importance of blue collar work in tradables and white collar work in services determined the choice of blue collar wages for the tradables sector and white collar wages for the non-tradables sector.

to be stationary (Table 2).²¹ The relationships were analyzed in log first differences to maintain consistency with previous research in this area.

31. Tests were also conducted to discover whether the real wages in the exposed sectors were cointegrated with the productivity level and with unemployment and whether the real wage in the less exposed sector was related to the real wage in the exposed sector (under the assumption that the exposed sector is the leading sector) and to productivity developments in the less exposed sectors. However, no cointegrating vector was obtained for either relationship, possibly related to the short sample period.

32. Real wage changes in the exposed sectors were regressed on lags of the dependent variable, lagged changes in productivity and in the payroll tax rate, and lagged changes in the unemployment rate with and without the interaction term. Two lags were chosen to conserve degrees of freedom. In the initial analysis the payroll tax and accommodation variables were always insignificant and were dropped from the specification presented in Table 3. The table shows that the most significant explanatory variables are the first lag of the dependent variable and of the change in productivity, the second lag of the change in the unemployment rate and its interaction term, and the dummy for the post 1991 period. The coefficient on the unemployment rate is large, consistent with previous work, but is mainly offset in the post 1991 period, suggesting that real wages have not responded to the cyclical position in recent years. This observation is reinforced by the coefficient estimate on the post 1991 dummy suggesting that, holding all other factors constant, real wages have grown by 3½ percent annually over this period. An alternative interpretation of these results is that the structural rate of unemployment has risen sharply in recent years on the realization that employment could not be sustained by further increases in public employment. In this case raising the estimate of the structural rate of unemployment would raise the sensitivity of the real wage to unemployment movements around this new structural rate. Finally, the insignificance of the dummy coefficients for the three sectors indicates that wage developments have followed each other closely in the exposed sector.

33. It could also be argued that the lack of real wage adjustment in recent years reflects the undershooting of the inflation target. Wage settlements are made two or three years in advance based on the prevailing inflation expectations. Since the early 1990s inflation expectations have come down rapidly, far more quickly than either the social partners or the Riksbank anticipated. Therefore, if real wages were measured based on inflation expectations rather than actual inflation outcomes, the recent lack of adjustment for cyclical conditions would be more moderate.

34. A comparable relationship to that proposed for the exposed sectors was estimated for the less exposed sectors, with the addition of the real wage in the exposed sectors as a further explanatory variable for wage changes in the less exposed sectors. In this case the second lag

²¹The inconclusive stationarity tests partly reflect the limited degrees of freedom.

Table 2. Sweden: Unit Root Tests 1/

Variable	Phillips-Perron Z (τ) Test	Weighted-Symmetric τ Test
w_t	-5.5	-1.6
Δw_t	-7.1	-1.8
w_s	-6.3	-1.1
Δw_s	-7.3	-2.0
pty_t	-5.6	-1.9
Δpty_t	-9.1	-3.8 *
pty_s	-8.4	-2.3
Δpty_s	-26.1 *	-4.9 *
τ	-1.8	-1.3
$\Delta \tau$	-13.7	-2.9
accr	-4.8	-2.7
$\Delta accr$	-15.1	-3.0 *
u	-1.3	-2.0
Δu	-4.5	-2.6

1/ See text for data definitions. An asterisk denotes a variable or test statistic that is significant at the 10 percent level.

Table 3. Sweden: Estimated Equation for Real Wage Growth

	Traded goods wage growth		Services wage growth	
$\Delta pty (-1)$	0.09*	0.09*	0.002	0.07
$\Delta pty (-2)$	0.03	0.04	0.19*	0.11*
$\Delta w (-1)$	0.23*	0.27*	0.10*	-0.11*
$\Delta w (-2)$	-0.16	-0.14	-0.17*	-0.2*
$\Delta u (-1)$	-1.22		0.62*	
$\Delta u (-1) * d_{9296}$	0.31		0.04	
$\Delta u (-2)$	-3.28*	-3.81*	-1.27*	-2.19*
$\Delta u (-2) * d_{9296}$	2.52*	2.87*	0.45*	1.06*
Δw_{tg}			0.71*	0.45*
d_{9296}	0.04*	0.03*	0.001	0.02*
d_{man}	-0.001	-0.003		
d_{con}	-0.003	-0.004		
d_{com}	-0.003	-0.004		
d_{ret}			0.002	0.002
d_{bank}			0.01*	0.01*
d_{ins}			0.003	0.002

An asterisk denotes significance at the 10 percent level.

of the productivity variable is significantly positive and its coefficient estimate is larger than the corresponding estimate for wages in the exposed sector. It appears therefore that in Sweden, real wages in the service sectors adjust just as much to productivity movements in their own sectors as do real wages in the exposed sectors. These results differ from a comparable analysis of sectoral wage developments in Norway in which the real wage in the less exposed sectors is negatively related to productivity movements in the sector.²² Turning to the unemployment rate, the coefficient estimates demonstrate a similar pattern to the analysis of wages in the exposed sectors in that the negative coefficient on the second lag is partially offset in the post 1991 period. Eliminating the first lag of the unemployment rate from the analysis confirms this finding. The coefficient estimates for the unemployment rate are considerably smaller than the corresponding estimates in the equation for wage changes in the exposed sectors which is consistent with the general observation that service industries are less sensitive than goods industries to cyclical conditions. Finally, the real wage in the less exposed sector is strongly related to the real wage in the exposed sector although the relationship is significantly less than one-to-one and the banking sector has experienced significantly higher real wage growth than the other two service sectors over this period.

35. The finding that real wages have become unresponsive to movements in the unemployment rate during the 1990s led to a consideration of the extent to which this lack of adjustment has curbed employment creation. To accomplish this it was necessary to estimate labor demand equations for the various sectors and simulate the counterfactual situation in which wages maintained their earlier close relationship with the unemployment rate through the 1990s. The specification of the labor demand equations for the tradables industries included two lags of the dependent variable (the change in hours worked), two lags of the change in productivity and a long-run relationship between the level of hours worked and the real wage.²³ It was not possible to identify a cointegrating relationship in the aggregate and therefore the three tradables sectors were considered separately. A cointegrating relationship was found for manufacturing and construction with long-run real wage elasticities of -0.68 and -0.50 respectively. No cointegrating relationship could be found for communication and therefore we excluded this sector from further analysis. The coefficient estimates in Table 4 indicate that cyclical movements in productivity have strong effects on the total number of hours worked but no long-run effect because the two coefficient estimates cancel each other out. Dummy variables were included for the years 1991–93 to proxy the unprecedented fall in hours worked over the period which was unrelated to the cyclical movements in other variables. The coefficient estimates indicate that hours worked fell on average by 5 percent in each of these years. The error-correction terms are negative but differ considerably between manufacturing (significant) and construction (insignificant).

²² See the analysis in Norway-Selected Issues SM/98/39.

²³ The change in the real wage was left out of the analysis to minimize the effects of cyclical fluctuations in the simulation.

Table 4. Sweden: Estimated Equation for the Change in Hours Worked

	Manufacturing, construction hours worked	Retail trade hours worked
Δ pty (-1)	0.21*	-0.63*
Δ pty (-2)	-0.28*	0.98*
Δ h (-1)	0.65*	-0.54*
Δ h (-2)	-0.36*	0.12
d 91	-0.04*	-0.03
D 92	-0.05*	-0.04*
d 93	-0.07*	-0.11*
ec man	-0.12*	
ec con	-0.04	
ec ret		-0.16*

An asterisk denotes significance at the 10 percent level.

36. The same specification was estimated for total hours worked in the service industries and once again no cointegrating relationship could be found for the aggregate service sector variables. When the retail trade and banking sectors were distinguished, a cointegrating relationship was found for retail trade with a real wage elasticity of -1.01 but no relationship was found for banking. Focusing on the retail trade industry, Table 4 indicates that the productivity terms are significant, but broadly cancel each other out. Moreover, the error-correction term and the dummy variables for 1991 through 1993 are significant.

37. An indication of the magnitude of the employment loss following the reversal of the historical relationship between the real wage and the unemployment rate is presented in Figure 4. This figure was constructed from simulations of the real wage profiles across industries assuming that the pre-1992 relationship held through 2000 and reveals the change in the level of the real wage and the resulting employment gains under this assumption.²⁴ In panel 1 the divergence between the wage profiles in the baseline and simulation gradually increases over time to reach 15 percent and 19 percent by the year 2000 for tradable and non-tradable industries respectively. The stronger wage effect for non-tradables reflects the combination of the recent reversal of the influence of the unemployment rate on real wages for both sectors. In panel 2 the more moderate wage profiles in the simulation generate a 10 percent increase in hours worked in manufacturing and a 17 percent increase in hours worked in retail trade industries by the end of the period, broadly consistent with the long-run labor demand elasticities estimated for both industries. Moreover, even over a shorter seven year horizon, the effects are quite significant with hours worked increasing by 5 percent in manufacturing and 7 percent in retail trade industries by 1998.

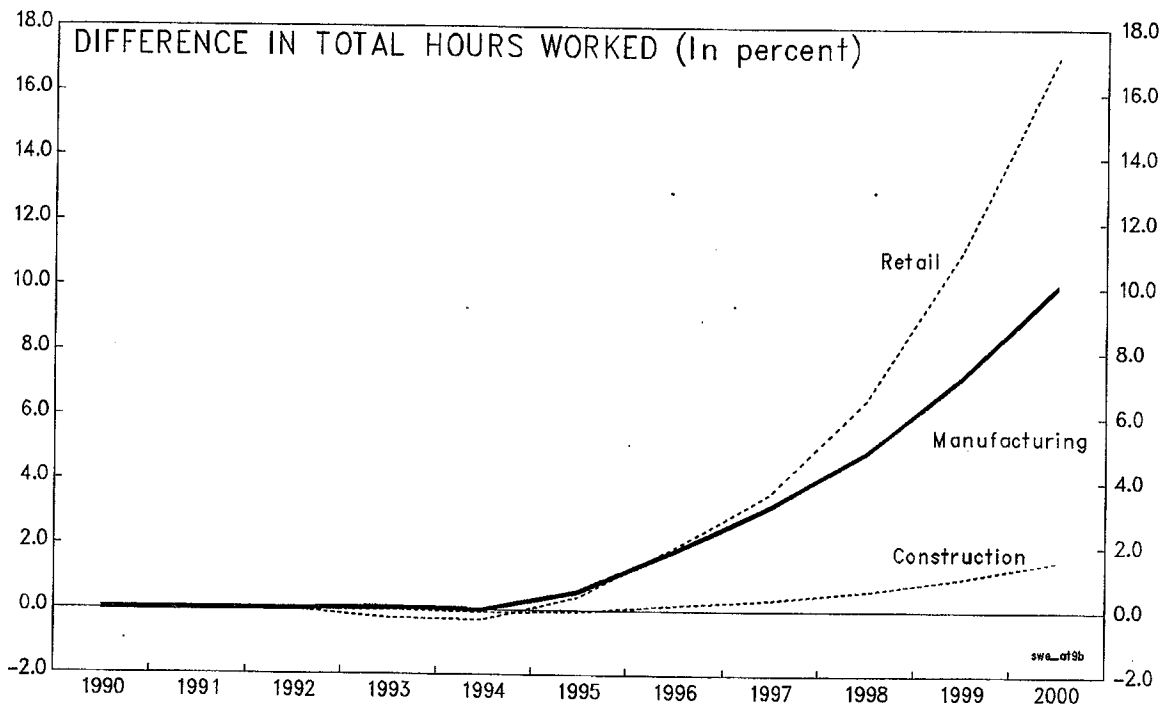
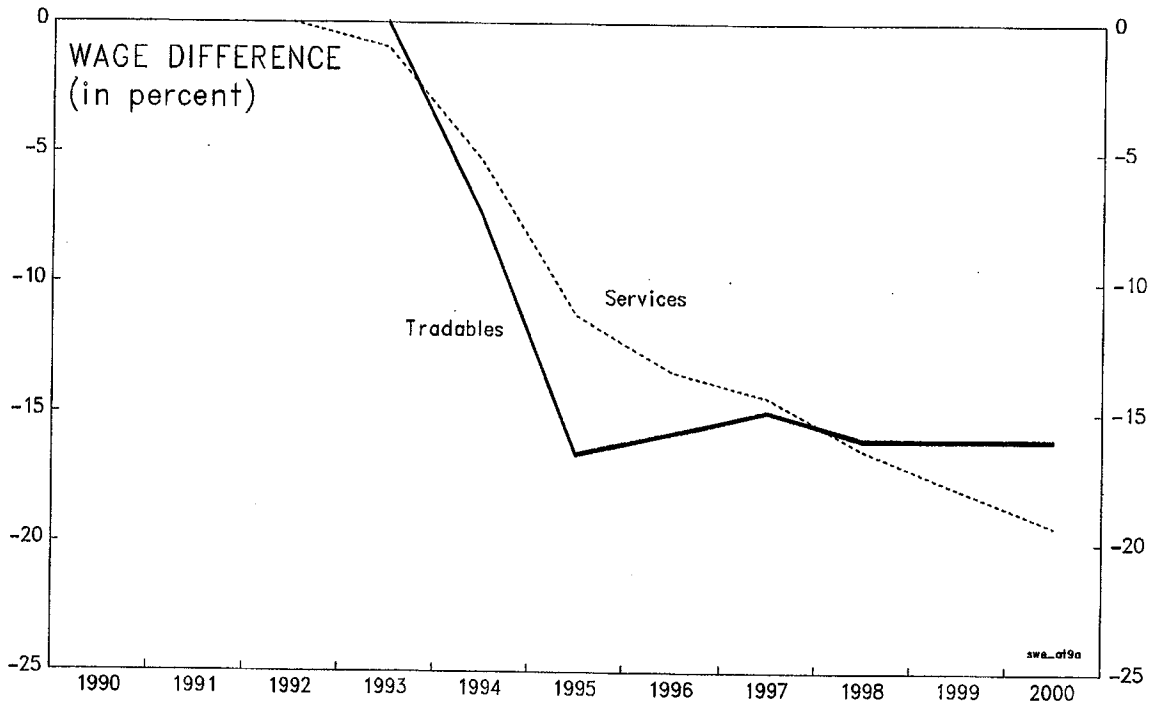
E. Conclusion

38. This paper has analyzed real wage behavior across sectors of the Swedish economy and finds that wage behavior in Sweden is broadly consistent with the stylized facts of wage determination in the Scandinavian economies as a whole. In particular, wages in the exposed sectors are dependent on economic conditions within those sectors, whereas wages in the less exposed sectors are determined by the wage increases granted in the exposed sectors. However, wages in the less exposed sectors in Sweden are also dependent on local economic conditions in contrast to the experience of Norway. This finding may be related to the more decentralized nature of wage setting in Sweden. On the other hand, the traditionally strong sensitivity of real wages to changes in the unemployment rate has virtually been eliminated during the 1990s, contributing to the weak development of private sector employment. In fact, simulating the real wage profiles assuming that the pre-1992 sensitivity to the unemployment rate was maintained over the 1992–2000 period indicated a 15 and 19 percentage point fall in the level of the real wage in tradables and non-tradables respectively by 2000. Moreover, this decline in the real wage would have led to an increase in total hours worked of about

²⁴ The simulation extends through the year 2000 to provide a sufficient number of years for the error-correction term to affect the outcome.

FIGURE 4
SWEDEN

DIFFERENCE BETWEEN SIMULATION AND BASELINE



10 percent in manufacturing and 17 percent in retail trade although no effect could be found for the other industries. Greater flexibility in real wages could therefore assist in creating the appropriate climate for Sweden to return to the levels of private employment it experienced during the early 1970s.

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III. TAX WEDGES, HOURS WORKED, AND UNEMPLOYMENT²⁵

A. Introduction

39. The rise in unemployment across a wide variety of industrialized countries over the past 25 years has led analysts to look for determinants of the phenomenon on a cross-country basis. One of the determinants that has come to the fore in policy discussions is labor taxation. This partly reflects the concurrent increase in both labor taxes and unemployment across a wide variety of OECD countries: between 1978 and 1992 taxes on labor rose by 2½ percent on average with particularly large increases for Italy, Finland, and Canada (see OECD 1995). Many analysts have argued that the rise in labor taxation is related to the rise in unemployment because it increases the cost of labor and as a result, it reduces the demand for labor. However, there is considerable debate about the length of time required for the labor market to adjust to an increase in the labor tax rate.

40. In standard theoretical models, the effects of changes in taxes on employment and on unemployment depend on whether the reservation wage is related to unemployment benefits or to non-wage benefits more generally. In the former case, an increase in taxes will affect both the employee wage and the reservation wage and should therefore have little effect on unemployment in the long run. In the latter case an increase in taxes will decrease the wage compared to the reservation wage and lead to a decline in employment and a rise in unemployment (see Pissarides (1998) for a more detailed discussion of this issue).

41. The empirical literature on the incidence of labor taxation is mixed. In a study of 10 OECD countries, Knoester and Van den Windt (1987) find that the cost of increased social security contributions are shifted forward onto the employees through lower net wages. Moreover, Calmfors and Nymoén (1990) find only a short-term impact of the tax wedge on wages in Denmark, Sweden, and Norway, and Eriksson et al. (1990) find only a weak long-term link between the tax wedge and wages for Finland. On the other hand, Tyrvainen (1995) argues that the responsiveness of the employee real wage to changes in payroll taxes in Canada and Germany is very weak, and Andersen and Risager (1990) find a significant effect of payroll taxes on gross wages in Denmark.

42. The purpose of this paper is to discuss the theoretical and empirical effects of labor taxes on the real wage, employment and unemployment in Sweden. Previous work on Sweden indicate a wide range of estimates of the effects of tax changes on unemployment, comparable to those found in other OECD countries. In particular, Bean, Layard, and Nickell (1986), Calmfors and Forslund (1990), and Pencavel and Holmlund (1989) find that the long-run effect of a 1 percent increase in the tax wedge on the gross real wage is between 0.4–0.6 percent whereas Holmlund (1990) and Tyrvainen (1995) find no effect. Moreover, Pencavel and Holmlund (1989) find that a 1 percentage point increase in payroll taxes lowers

²⁵Prepared by Alun Thomas

employment by approximately $\frac{1}{2}$ percentage point and Tyrvainen documents comparable employment effects from changes in income taxation (in contrast to the negligible effects found from changes in the payroll tax rate). This paper finds that each percentage point increase in payroll and total taxes raises the cost of labor by about $\frac{1}{2}$ percent and lowers total hours worked by $\frac{1}{2}$ and 0.3 percentage point respectively over a 5–10 year horizon. Therefore it is possible that future reductions in the tax wedge could have sizeable and lasting effects on employment in Sweden.

B. Description of the Swedish Labor Market and the Labor Tax Rate

43. From the late 1970s through the 1980s, the Swedish labor market offered contrasting developments to those in most European countries. While the unemployment rate in the latter rose to double digit levels, the Swedish unemployment rate remained fairly stable between 2–3 percent although the real wage remained fairly flat. However, the vaunted Swedish model which combined active labor market policies, an unemployment insurance system with a fixed duration of benefits, and centralized wage bargaining to deliver wage moderation, began to break down in the early 1990s.

44. Since the mid 1970s, the real wage in Sweden has been maintained at a fairly stable level, notwithstanding cyclical fluctuations. In the mid-1970s large wage increases were triggered by imported price increases associated with the world-wide inflation (Figure 1, panel 1). However, the growth of real wages far out paced the growth of labor productivity, leading to a sharp fall in the profit share, a serious external balance problem, and significant losses of export market shares. In response to the deteriorating economic situation, a series of discretionary exchange rate devaluations (in 1976, 1977, 1981, and 1982) were undertaken which resulted in a decline in real wages to more moderate levels. During the late 1980s real wages picked up strongly only to falter at the onset of the recession in the early 1990s. Since then, the real wage has remained essentially flat except for a sizeable increase in 1996.

45. The behavior of private sector employment over this period has been disappointing, evidenced by a gradual downward trend (Figure 1, panel 2). Up until the early 1990s continuous increases in public sector employment compensated for the downward trend in private sector employment. However, following the financial crisis in the early 1990s, public and private employment fell by roughly 10 percent, the open unemployment rate rose by roughly 7 percentage points to 8.2 percent in 1993 while participation in active labor market programs peaked at 5.1 percent of the labor force in 1994 (Figure 2, panel 1). Up until early 1997, the modest gains in the booming manufacturing sector associated with a depreciated krona were offset by employment declines in the public sector so that the open and total unemployment rates remained stable at around 8 and 13 percent respectively. However, the subsequent strong upturn in the economy and the decline in the participation rate associated with more generous education allowances have contributed to a decline in the open unemployment rate to 6.9 percent in June 1998.

FIGURE 1
SWEDEN

WAGES AND HOURS WORKED

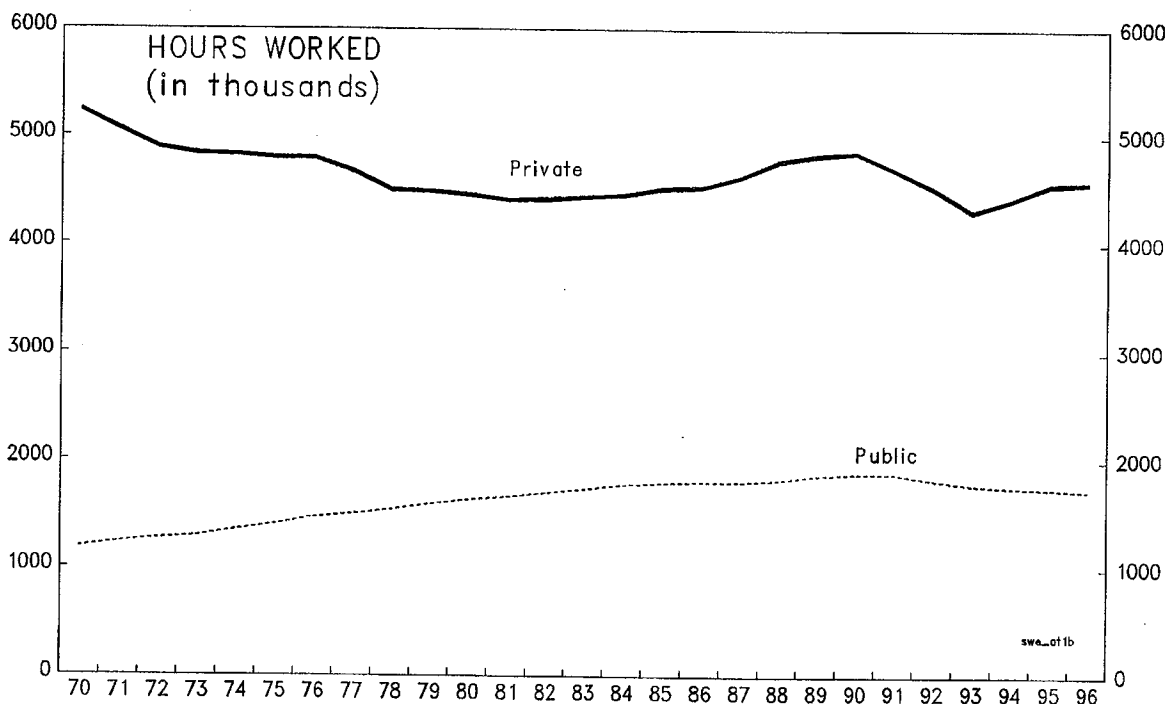
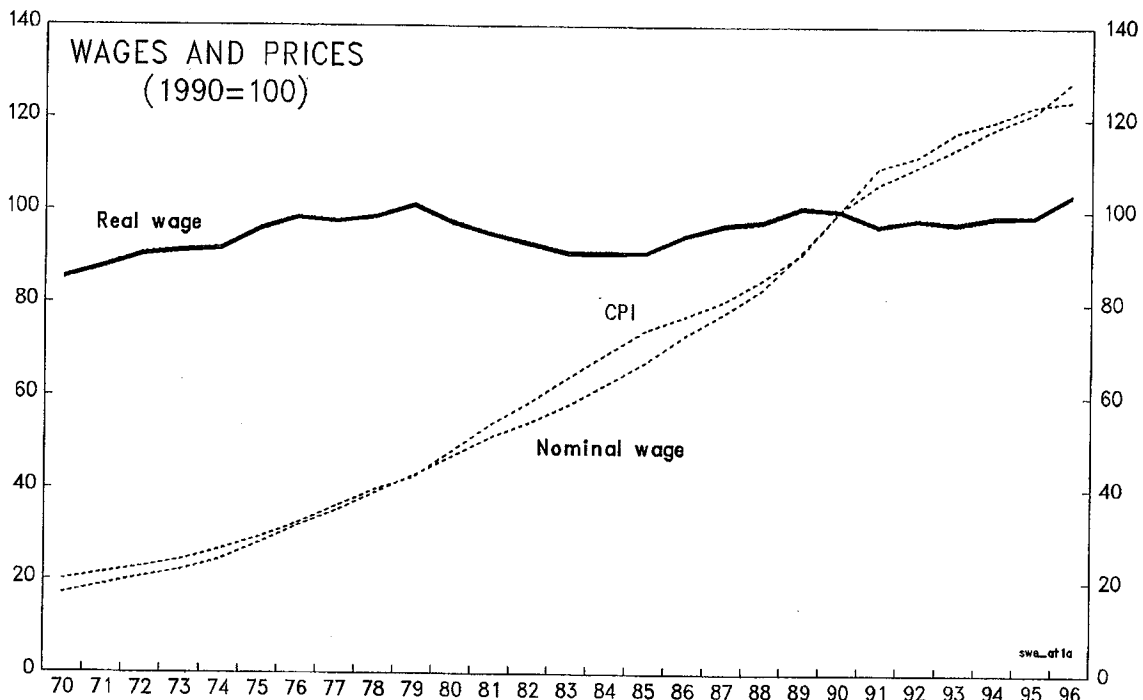
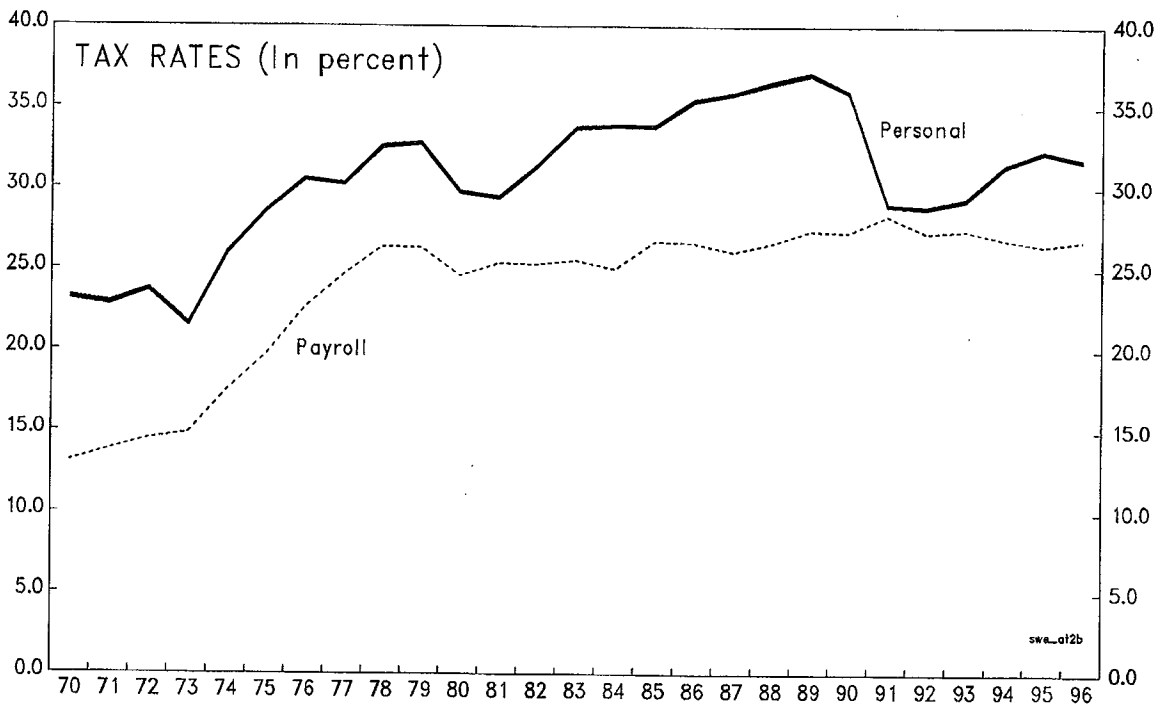
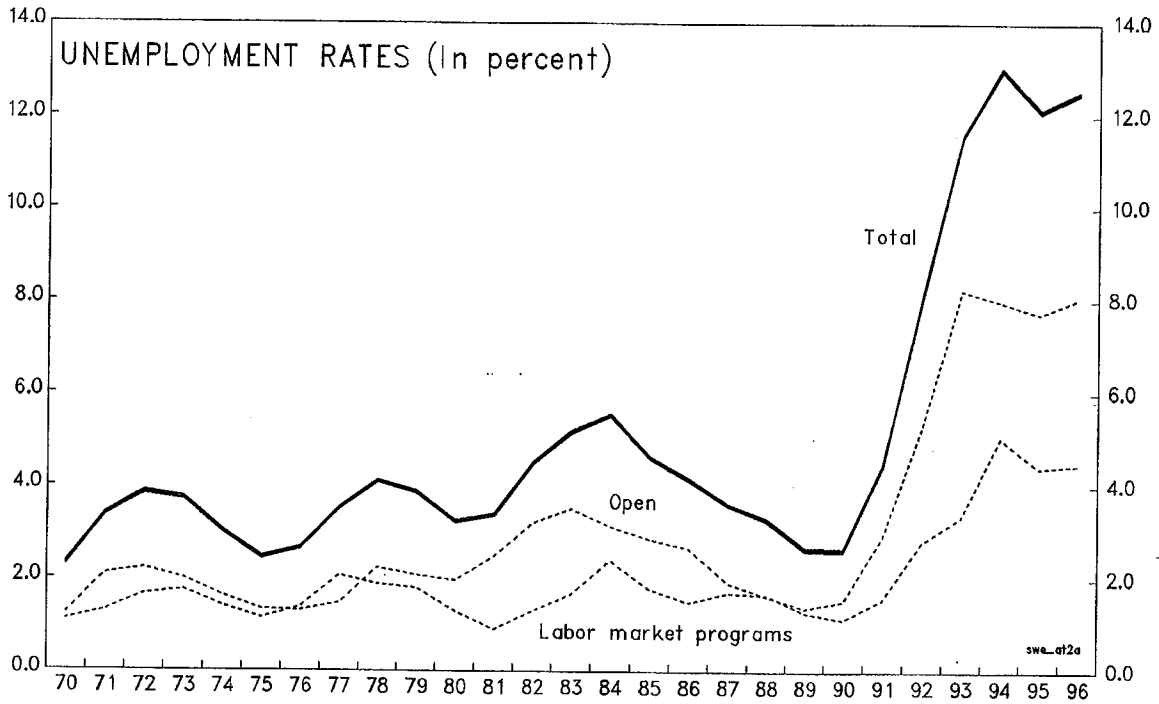


FIGURE 2
SWEDEN

UNEMPLOYMENT AND TAX RATES



46. A number of factors have been advanced to explain the sudden rise in Swedish unemployment since the early 1990s. These include cyclical factors associated with the substantial fall in house prices and the large increase in precautionary savings, labor shedding by firms to maintain competitiveness in the face of a fixed exchange rate vis-a-vis the ECU, and the contraction of public sector employment. Structural factors for the rise in unemployment include the break down of the centralized wage bargaining system in the early 1980s, which was replaced with wage setting arrangements at the industry and local level, arguably, the type of wage bargaining framework which is least conducive to employment creation (see, in particular, the work of Calmfors and Driffil). The continuous rise in labor taxation has also been put forward as a strong causal factor for the recent high unemployment level not least because labor taxes in Sweden are considerably higher than the average among OECD countries, although this situation has been prevalent for a long time.²⁶ Assarsson and Jansson (1998) also argue that hysteresis has become noticeable in Sweden in recent years.

47. Currently, Sweden conducts a pay-as-you-go pension system financed through social security contributions. Contributions are also earmarked for health insurance and sick-pay benefits which are related to income. Traditionally, payroll taxes were paid entirely by employers, with a contribution rate in 1997 of 32.9 percent of wage and salary costs (31.2 percent of net income for the self-employed). However, since the beginning of 1997, employees have also contributed 1 and 4.95 of their wage income (below SKr 277,500) towards pension and health insurance premiums respectively, with the contribution projected to rise by an additional percentage point next year.²⁷

48. During the 1970s and 1980s personal income taxes were steadily raised to cover increases in social expenditures. However, this situation changed drastically in 1991 when a new tax reform was introduced. Under the reform, the tax on employment and business income is 20 percent of incomes above a limit of SKr 200,000, which is periodically indexed to inflation. When added to the 31 percent municipal tax, the maximum marginal tax on earned income is now 51 percent compared to 80 percent for the top income brackets before the reform took place. Figure 2, panel 2 shows the steep decline in the average tax rate as a result of the reform in 1991, with slight increases since then.²⁸ In 1995, an extra 5 percent tax

²⁶ According to the OECD Jobs Study, the average tax wedge in Sweden was approximately 50 percent in the early 1990s, compared to an OECD average slightly above 30 percent.

²⁷ Sweden is in the process of modifying its pension system to allow for defined contributions, with a further increase in the employee contribution rate to 9.25 percent. See the accompanying paper on the pension reform for more details on this issue.

²⁸ Data on the personal income tax was provided by Lennard Flood who has calculated an average tax rate from a sample of 8000 households over the 1983-93 period. Data for the other periods was estimated based on a relationship between the data supplied by Flood and

(continued...)

levied on earnings above the income limit was introduced as a temporary measure motivated by a need to consolidate public finances. This tax will be abolished on January 1, 1999.

C. Theoretical Effects on the Labor Market of Changes in Labor Taxes

49. In labor market models which allow for unemployment in equilibrium, the extent to which a change in taxes leads to a change in employment depends on the wage setting process. Under the assumption that wages are determined in a union bargaining framework, an upward sloping wage-setting curve can be generated. This wage-setting curve, combined with a downward sloping labor demand curve and an upward sloping labor supply curve, defines a labor market model with unemployment. Text Figure 1 presents a graphical depiction of such a labor market prior to and following a rise in taxes. The initial equilibrium is at A with unemployment $L_{s0} - L_{e0}$. In response to a rise in taxes, firms will hire less labor at the initial net wage W_0 because wage costs have increased as a result of the increase in taxes.²⁹ The resulting short-run equilibrium at B at the intersection of LD_1 and WS_0 is characterized by a slight reduction in the net wage to make workers more attractive to firms. However, this does not represent a long-run equilibrium because over time unemployed workers are expected to bid down wages further. For example, the wage-setting locus may shift downwards from WS_0 to WS_1 , leading to a new equilibrium at C . The relative importance of the unionized employees versus the unemployed workers in the wage setting process is a key factor in determining the ultimate degree of wage adjustment and the extent to which a rise in taxes reduces employment.

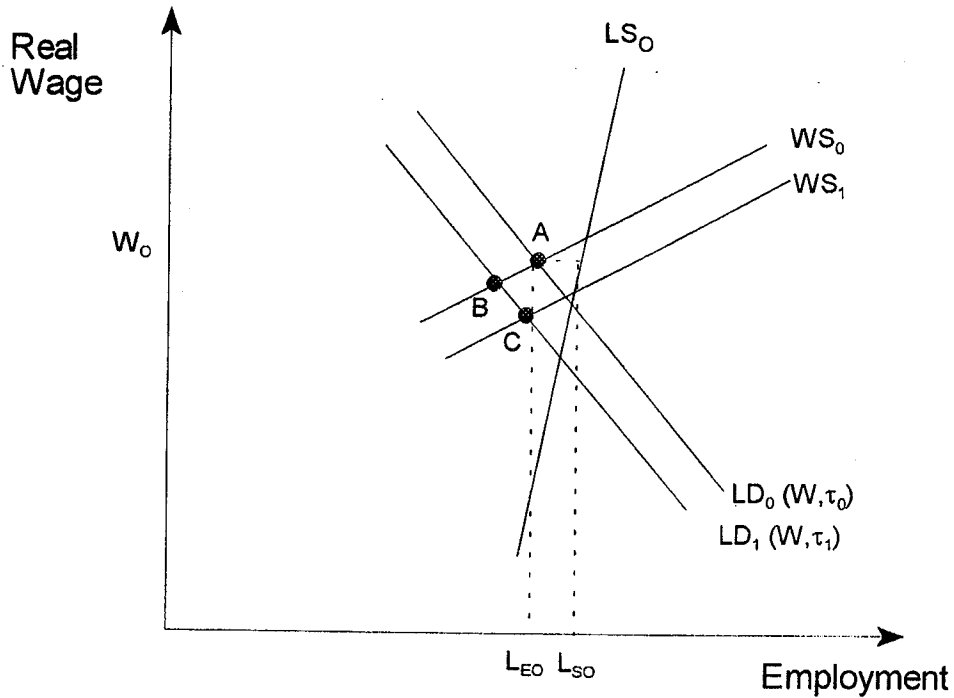
50. The degree of wage adjustment also affects labor supply decisions because the decline in the net wage received by employees generated by a rise in taxes will lead to a reduction in the labor force. For example, labor supply at the long-run equilibrium C is lower than at the initial equilibrium A . Therefore the extent to which a rise in taxes affects unemployment depends both on the behavior of labor demand and supply.

²⁸(...continued)

the ratio of household direct taxes to gross wages.

²⁹ In the case of an increase in payroll taxes, gross wage costs to the firm immediately rise by the amount of the tax. In situations where the personal income tax rate is increased, the incidence depends on the extent to which the unions can insulate themselves from an increase in the income tax rate through bargaining with employers for higher wages. Therefore, increases in the payroll tax have more direct effects on the gross wage than comparable increases in income taxes.

Figure 1. Sweden: The Labor Market



D. Empirical Labor Market Model

51. The estimated labor demand function comparable to LD_0 is as follows:

$$h = \zeta(w, pty) \quad (2)$$

where h is the total number of hours worked in the private sector, w is the aggregate real wage per hour worked inclusive of payroll taxes, and pty is aggregate labor productivity per hour worked. The productivity variable is included in the specification because in the standard two factor model with labor and capital, the firm's choice of whether to increase employment depends on the capital stock (or equivalently on labor productivity) as well as the real gross wage.

52. The wage setting equation is an upward sloping relationship between the level of real wages and hours worked; both the payroll and total tax rates are included to isolate the effects

of taxes and the open and total unemployment rates control for the effects of cyclical conditions on the real wage.³⁰

$$w = \xi(h, \tau, accr, u) \quad (3)$$

where τ is the payroll/total tax rate, $accr$ is the accommodation rate, i.e. the ratio of labor market program participants to the total stock of unemployed, and u is the aggregate unemployment rate.

53. The labor supply equation is an upward sloping relationship between the level of net wages and labor force participation and includes the growth rate of output to capture cyclical movements in the participation rate.

$$pr = \psi(w(1 - \tau), \Delta gdp) \quad (4)$$

where pr is the labor force participation rate and Δgdp is the growth in output.

54. The above equations were estimated using annual data over the period 1970 to 1996. Weighted Symmetric and DF t test statistics indicate that, with the exception of the level of productivity, which, according to the DF test statistic is stationary in levels, all of the variables are borderline stationary in first differences (Table 1). Therefore, it is necessary to consider the extent to which the relationships are cointegrated. Cointegration tests based on the Johansen methodology were conducted on the two systems of equations which differ in the inclusion of the payroll or total tax rate. The tests revealed the existence of four cointegrating vectors for both systems of equations (Table 2) so that all three equations can be reparameterized in log levels.

55. The estimated system of equations is as follows, with two sets of coefficient estimates for the wage and participation rate equations depending on whether the payroll tax rate or the total tax rate was used.

³⁰In a number of empirical applications productivity is also included as a determinant of wages. However, the inclusion of this variable makes it impossible to separately identify the labor demand and wage setting equations unless the system is recursive. Manning (1993) presents a number of theoretical models of the labor market that exclude productivity from the wage setting equation and argues that this exclusion allows the proper identification of both the labor demand and wage setting curves. We therefore adopt this approach in this paper.

Table 1. Sweden: Unit Root Tests 1/

Variable	Weighted Symmetric τ Test	Dickey-Fuller τ Test
h	-2.1	-2.7
Δh	-3.1*	-0.3
w	-1.8	0.3
Δw	-2.2	-4.7*
pty	-1.3	-11.6*
Δpty	-2.9	-3.1
τ	-2.3	-2.2
$\Delta \tau$	-2.9	-4.1*
pr	-1.5	0.4
Δpr	-2.7	-1.6
u	-1.3	-2.8
Δu	-1.1	-1.8

1/ See text for data definitions. The Weighted Symmetric τ test involves a weighted double-length regression in which the dependent variable is regressed on leads and lags of its own changes. See Pantula (1994) for more details. The Dickey-Fuller τ test involves regressing the dependent variable on its own lags and its own lag level; asymptotic probability values for the DF τ test were obtained from Mackinnon (1994). An asterisk denotes significance at the 10 percent level.

Table 2. Sweden: Johansen Maximum Likelihood Tests of the System of Equations
(Cointegration likelihood ratio test based on trace of the stochastic matrix)

Null hypothesis	Alternative	Test Statistic
System with Payroll Tax Rate		
$r=0$	$r \geq 1$	512*
$r \leq 1$	$r \geq 2$	437*
$r \leq 2$	$r \geq 3$	326*
$r \leq 3$	$r \geq 4$	164*
$r \leq 4$	$r \geq 5$	17.1
System with Total Tax Rate		
$r=0$	$r \geq 1$	257*
$r \leq 1$	$r \geq 2$	220*
$r \leq 2$	$r \geq 3$	183*
$r \leq 3$	$r \geq 4$	159*
$r \leq 4$	$r \geq 5$	12.8

An asterisk denotes significance at the 10 percent level.

$$h_t = a_0 + \sum_{i=1}^n b_i h_{t-i} + \sum_{i=1}^n c_i w_{t-i} + \sum_{i=1}^n d_i pty_{t-i} + \epsilon_t \quad (5)$$

$$w_t = \sum_{i=1}^n f_i w_{t-i} + \sum_{i=1}^n h_i \tau_{t-i} + \sum_{i=1}^n i_i h_{t-i} + \sum_{i=1}^n j_i u_{t-i} + k_1 accr_{t-1} + \epsilon_t \quad (6)$$

$$pr_t = \sum_{i=1}^n l_i pr_{t-i} + \sum_{i=1}^n m_i w(1-\tau)_{t-i} + n_0 gdp_t + \epsilon_t \quad (7)$$

56. The choice of lag length for estimation purposes is always a subjective issue. In this paper each equation was estimated with two lags for each variable. This choice was based on averaging the variety of optimal lag lengths identified by the Schwarz-Bayes and Akaike criterion for the system of equations (Table 3). In an OLS regression of nonstationary variables the standard estimate of the variance-covariance matrix is invalid because the off-diagonal elements are non-zero. Therefore it is necessary to use a Generalized Method of Moments estimator which eliminates the autocorrelations on the off-diagonal of the variance-covariance matrix. Tables 4 and 5 present the estimated coefficients and the corresponding *t*-statistics corrected for autocorrelation.

57. In the wage setting equation, both lags of the dependent and payroll tax variables are significant. Moreover, the coefficients on the lags of the payroll tax variable partially offset each other so that an increase in payroll taxes raises the gross wage by a factor of 1.4 after the first year, but this increase is mostly reversed in the following year. The hypothesis of equal but offsetting coefficients was rejected indicating that changes in payroll taxes have long run effects on the net wage. The coefficients on the total unemployment rate also offset each other although the second lag is considerably larger than the first lag so that when account is taken of the offsetting effects, increases in the unemployment rate raise the real wage. This effect may be influenced by recent developments in which real wage outcomes have been unresponsive to the high level of unemployment.³¹ The variable representing the ratio of participants in labor market programs to the total number of unemployed (the accommodation rate) is significantly positive indicating that a rise in the unemployment rate on account of an increase in labor market program participants leads to upward pressure on the real wage. This finding is also supported by the work of Calmfors and Nymoén (1990) on Sweden. They argue that systematic government policies to offset unemployment cushion workers and weaken incentives for unions concerned with employment to restrain wages. Nymoén,

³¹ This effect is found in the background paper on the wage bargaining structure in Sweden.

Table 3. Sweden: Criteria for Selecting Lag Length

Model Criteria	Number of Lags		
	1	2	3
Labor demand equation:			
Akaike	-9.6	-9.7	-9.5
Schwarz	-14.9	-14.7	-14.1
Wage setting equation:			
Akaike	-9.5	-10.1	-10.1
Schwarz	-14.6	-14.8	-14.4
Labor supply equation:			
Akaike	-10.4	-11.6	-11.3
Schwarz	-15.6	-16.7	-16.2

Table 4. Labor Market Model Using Payroll Tax Rate 1/

	Dependent Variable		
	Real Wage	Employment	Participation Rate
w(-1)	0.62 *	0.17	
w(-2)	-0.21 *	-0.30 *	
w(1- τ)(-1)			0.08 *
w(1- τ)(-2)			-0.06
h(-1)	-0.11	1.32 *	
h(-2)	0.23	-0.61 *	
pty(-1)		0.42 *	
pty(-2)		-0.38 *	
τ (-1)	1.44 *		
τ (-2)	-1.09 *		
PR(-1)			1.57 *
PR(-2)			-0.62 *
u(-1)	-0.77		
u(-2)	1.19 *		
accr(-1)	0.03 *		
dum8385	-0.01		
dum9296	0.03 *		
Δ gdp			0.30 *
Goodness of Fit Statistics			
R ²	0.91	0.88	0.97
DW	1.93	2.27	2.44

1/ An asterisk denotes a variable or test statistic that is significant at the 10 percent level.

Table 5. Labor Market Model Using Total Tax Rate 1/

	Dependent Variable		
	Real Wage	Employment	Participation Rate
w (-1)	0.30 *	0.17	
w (-2)	-0.001	-0.30*	
w(1- τ)(-1)			0.02
w(1- τ)(-2)			-0.01
h (-1)	-0.39	1.32*	
h (-2)	0.51	-0.61*	
pty (-1)		0.42*	
pty (-2)		-0.38*	
τ (-1)	0.79*		
τ (-2)	-0.50*		
PR (-1)			1.60*
PR (-2)			-0.63*
u (-1)	-1.41*		
u (-2)	1.50*		
accr(-1)	0.04*		
dum8385	-0.02*		
dum9296	0.06*		
Δ gdp			0.33*
Goodness of Fit Statistics			
R ²	0.94	0.88	0.96
DW	1.92	2.27	2.97

1/ An asterisk denotes a variable or test statistic that is significant at the 10 percent level.

Rodseth, Raaum and Wulfsberg (1997) also find a significant positive effect of the accommodation rate on the real wage in Norway. Finally, dummy variables were also included for the periods 1983–85 and 1992–96 respectively to control for low real wage growth during the devaluation period of the mid-1980s and for the uncharacteristically high real wage increases during the early 1990s. The coefficients on the dummy variables indicate that the real wage over the 1983–85 period was not significantly different than at other times whereas the real wage over the 1992–96 period was 3 percentage points higher.

58. In the labor demand equation, both employment and productivity lags are significant, together with the second lag on the real wage. The sum of the two coefficients on the real wage is small however (about -0.13), although this generates a sizeable long-run labor demand elasticity of -0.45.

59. To trace the dynamic path of the variables in response to changes in payroll taxes, it is useful to examine impulse response functions computed using the coefficient estimates and corresponding confidence intervals based on replications of Monte-Carlo simulations.³² The panels in Figure 3 show the impulse response functions and corresponding confidence intervals for the real gross wage and total hours worked in response to a permanent 1 percentage point rise in the payroll tax rate. Within one year the gross wage rises by the amount of the tax increase. Over time, the effect of the tax on the gross wage gradually weakens settling at 0.5 percent over the medium-term, i.e. a 0.5 percent decline in the net wage. The initial sharp rise in the gross wage generates a 0.6 percent decline in total hours worked after seven years which is subsequently reduced to 0.25 percent as the gross wage stabilizes.³³

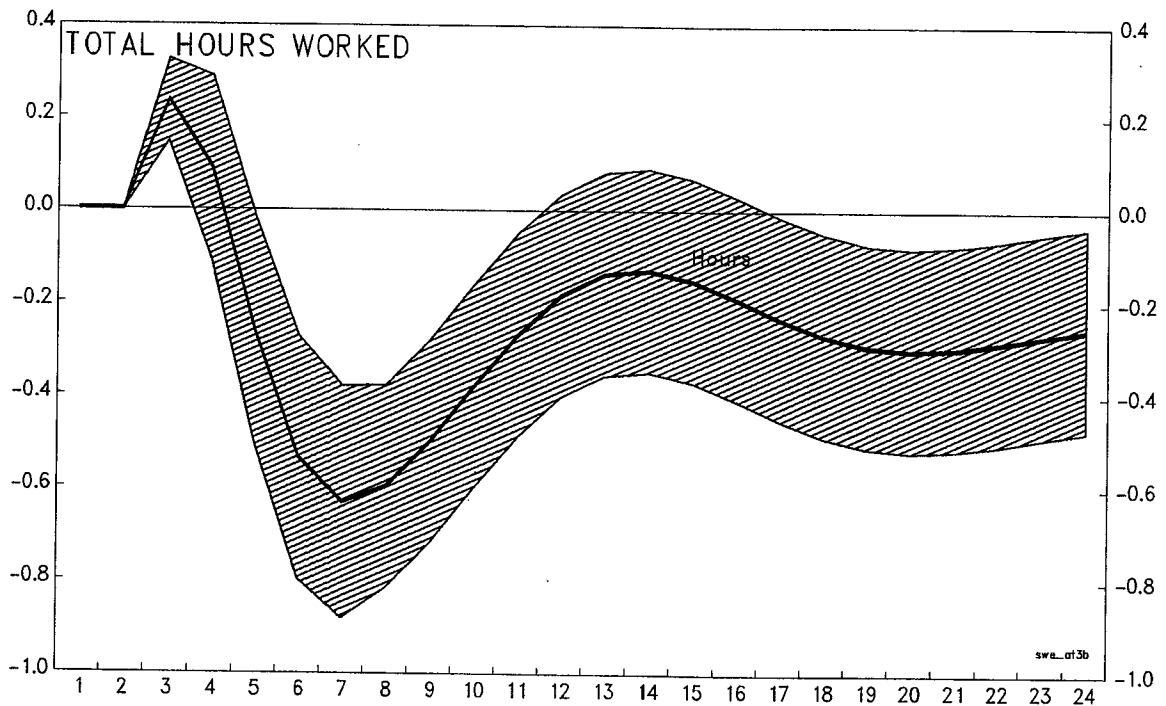
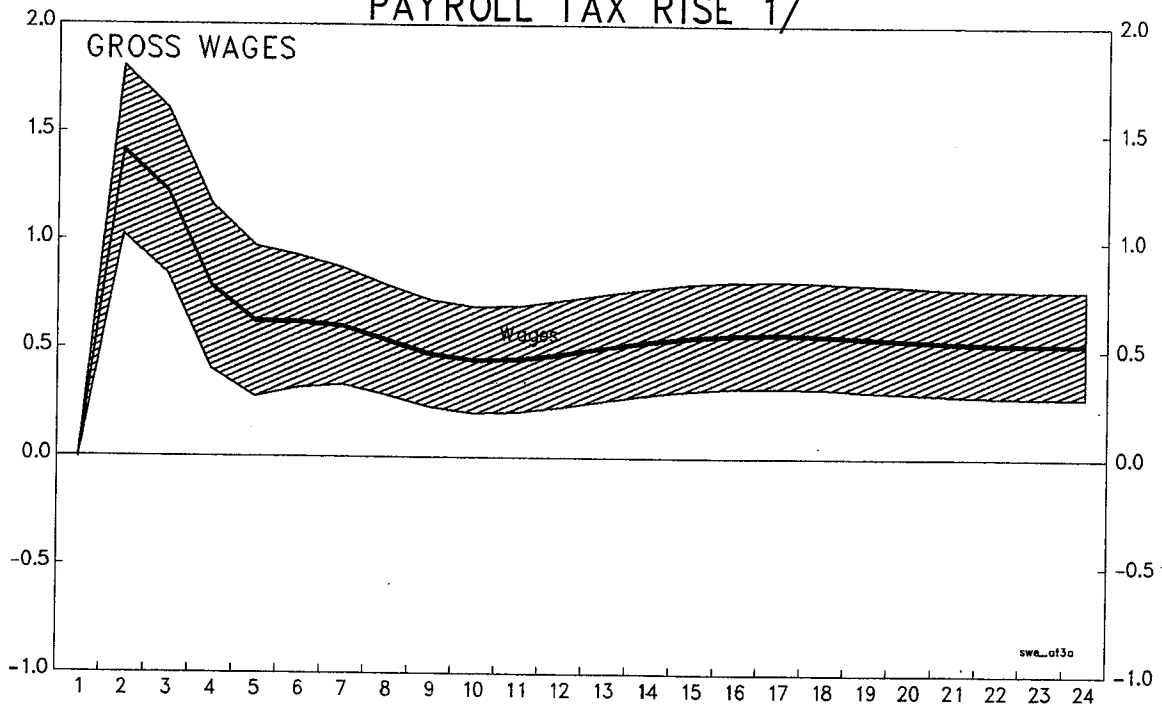
60. The results derived in this paper are comparable to those of Pencavel and Holmlund (1989) who analyze wage and employment behavior in the mining and manufacturing sectors. They find that the long-run effect on the gross real wage of a 1 percent increase in the payroll tax rate is 0.6 and this leads to a ½ percentage point decline in employment in these sectors. A recent study conducted by the Employers Association using the macroeconomic model of the Konjunktur-Institutet finds that a 6 percent reduction in payroll taxes would lower wage costs by 4.5 percent, slightly higher than the effect found in this paper. Moreover, this reduction in labor costs would lead to a 4 ½ percentage point increase in employment within five years. For comparison, a 6 percentage point decline in the payroll tax rate would, using the estimates presented above, generate a 3 percentage point increase in total hours worked over a 5–10 year horizon.

³²One thousand replications were conducted and averaged.

³³The delayed response of employment to changes in payroll taxes is the result of excluding contemporaneous variables from the system of equations to minimize endogeneity problems. Excluding the dummy variables has little effect on the impulse responses.

FIGURE 3
SWEDEN

IMPULSE RESPONSES IN RESPONSE TO PAYROLL TAX RISE 1/



1/ Shaded area indicates confidence interval.

61. When we substitute the total tax variable for the payroll tax variable in the wage equation, the main changes occur to the estimates of the tax variable itself. The first lag of the total tax rate is significantly below unity at 0.79 and its effect on the real wage is partially moderated by the negative coefficient on the second lag. The lagged coefficients on the wage term are considerably smaller than in the specification with payroll taxes so that a positive impulse to the real wage does not build up as rapidly. The other changes to the coefficient estimates include a greater responsiveness to the unemployment rate and a considerably larger real wage estimate for the 1992–96 period. In terms of the impulse responses, the effect on the real wage of a 1 percentage point increase in the total tax rate is more moderate than for a comparable payroll tax hike, leveling off at about a 0.4 percent increase compared to 0.5 percent increase in response to the payroll tax increase (Figure 4). The trough of the decline in hours worked occurs after eight years at 0.35 percent and the effect levels off at 0.2 percent over the medium term (slightly below the hours response to the payroll tax hike at 0.25 percent).

62. Changes in payroll taxes also affect the supply of labor. In order to determine its effects on the unemployment rate, it is necessary to consider the impact of taxes on the participation rate. The coefficients in Table 4 indicate that the participation rate responds to an increase in the net wage in the previous period but that this response is offset in the following period. Moreover, when the wage is expressed net of income tax payments, the initial effect is even weaker (Table 5). The coefficient on the growth rate of output is significantly positive indicating that a 1 percentage point increase in the growth of output leads to a 0.3 percentage point increase in the participation rate. The participation rate has traditionally been very flexible in the Nordic countries partly on account of the open labor market which operates between them.

63. The impulse response for the participation rate was derived by subtracting the 1 percentage point increase in the tax rate from the profile of the gross wage and feeding the resulting net wage profile through the coefficient estimates of the participation rate equation. The impulse response profiles indicate that the participation rate falls slightly in response to the permanent decline in the net wage in both specifications (Figure 5).

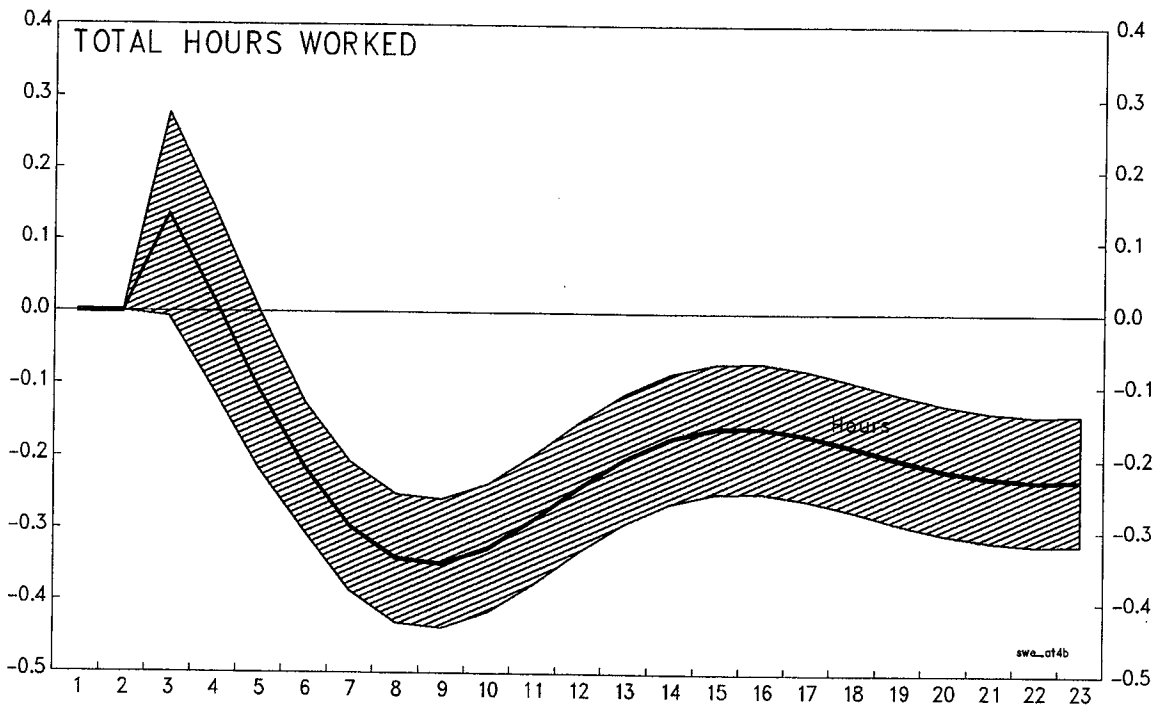
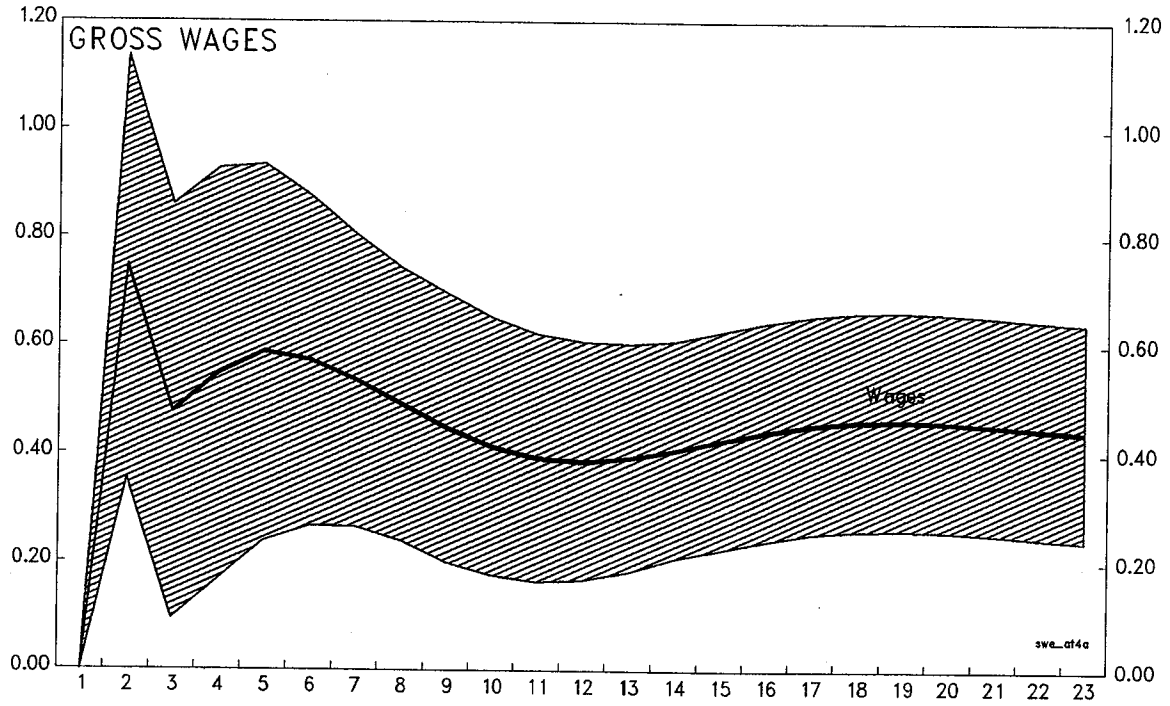
64. The net effect on the unemployment rate of changes in employment and in the participation rate can be derived by assuming that the population and yearly average hours worked are fixed and using the following identity between total hours worked, yearly average hours worked, the participation rate, population and the unemployment rate.

$$u = 1 - \left(\frac{thrs/ahrs}{pop.pr} \right) \quad (8)$$

65. Where u is the unemployment rate, $thrs$ and $ahrs$ refer to total and average hours worked, pop is the working-age population and pr is the participation rate.

FIGURE 4
SWEDEN

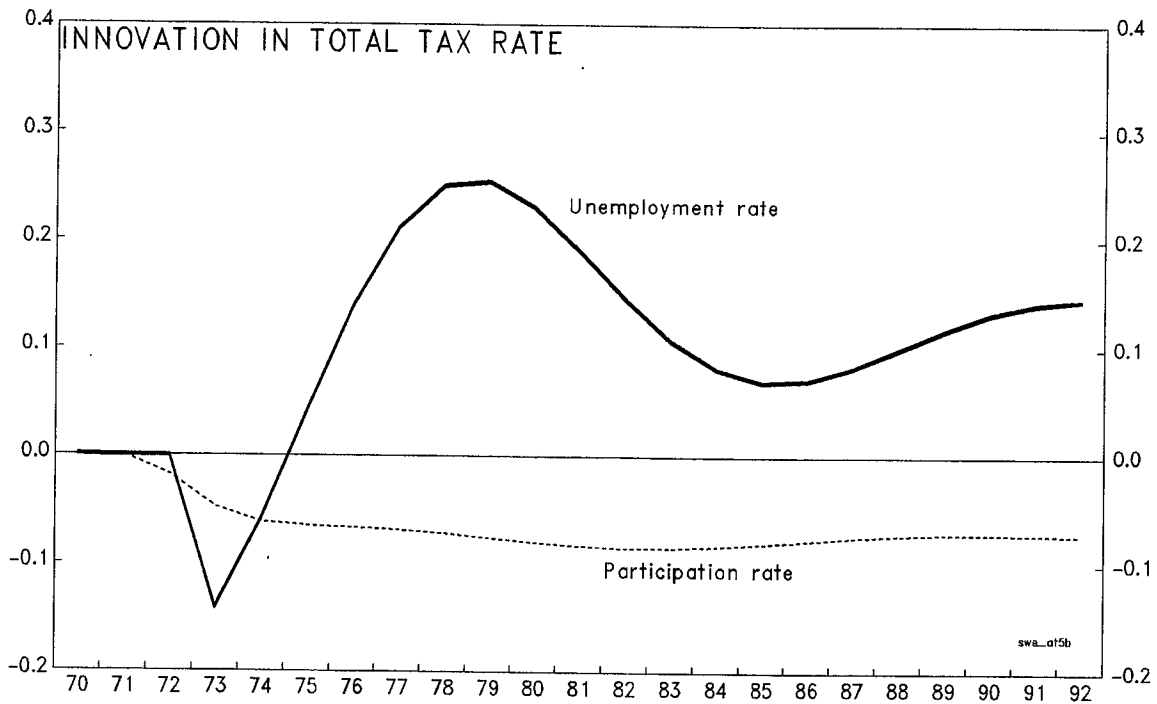
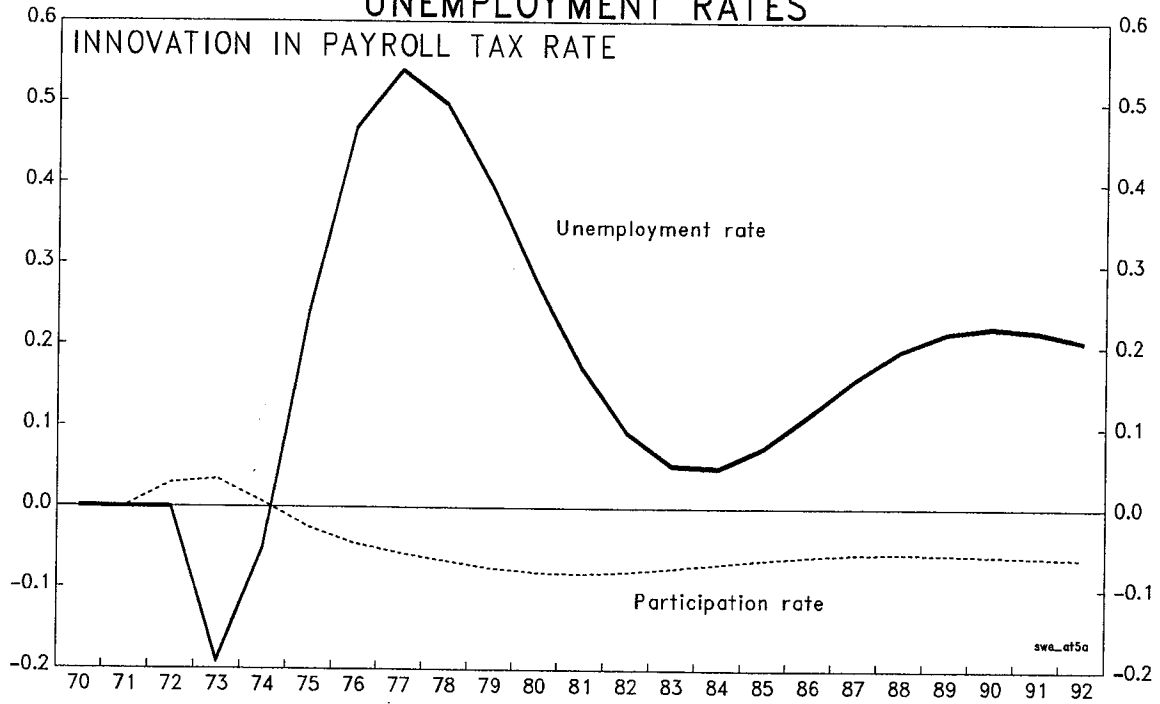
IMPULSE RESPONSES IN RESPONSE TO TOTAL TAX RISE 1/



1/ Shaded area indicates confidence interval.

FIGURE 5
SWEDEN

IMPULSE RESPONSES FOR PARTICIPATION AND UNEMPLOYMENT RATES



66. In the simulation with the payroll tax hike, the increase in the unemployment rate peaks at 0.5 percentage point eight years following the shock to payroll taxes but the effect subsides to a 0.2 percentage point increase in the long-run (Figure 5). In the simulation with the total tax hike, the increase in the unemployment rate peaks at 0.25 percentage point eight years following the shock to payroll taxes, but falls to 0.15 percentage point above the baseline in the long-run. Tyrvaïnen (1995) in his analysis of 10 OECD countries finds no effect of payroll tax hikes on the gross wage and hence on employment but finds that a 1 percentage point rise in the total tax rate is completely passed through to the employer, generating a 0.5 percentage point rise in the unemployment rate in the long-run.

67. The above discussion has focussed on the effects on the labor market of an increase in payroll taxes and the question arises whether these effects are symmetric. It is difficult to isolate the effects of a reduction in taxes in Sweden because they have risen almost continuously over the past quarter century. Nevertheless, a number of studies have based simulations on the effects of a reduction in payroll taxes on the assumption that the historical relationships would continue to hold in the future (see for example, the work of the Employers Association). Commentaries and results from other countries are less sanguine, however. Kesselman (1996) argues that reducing employer payroll taxes in Canada may yield much less boost to employment than the employment lost from a comparable size of tax increase. This is because there is much less resistance to wage hikes than wage cuts, making the adjustment process more rapid for the former. Moreover, Gruber (1995) has found in analyzing a recent large discrete cut in employer tax rates in Chile that the entirety of the cut was reflected quickly in higher gross pay for employees. On the other hand, a reduction in the tax rate could have significant beneficial effects in Sweden if it was implemented as part of a social compact with all parties aware of the employment gains that could result by not offsetting payroll tax cuts with wage increases.

E. Conclusion

68. This paper has described the effects of taxes on the real wage, employment and unemployment using a standard labor market model and has estimated these effects using Swedish data. The extent to which changes in taxes affect employment in the long run depends on institutional features of the labor market. If the wage setting locus shifts in response to changes in taxes, the effects on the labor market are short-lived. If, on the other hand, the wage setting locus does not respond to eliminate the effects of changes in taxes on the gross wage, employment and unemployment will be affected permanently.

69. The paper finds that increasing payroll and total labor taxes raises the cost of labor by about ½ percent and lowers total hours worked by about ½ and 0.3 percentage point respectively over a 5–10 year horizon. Therefore, it appears that increases in taxes have adversely affected employment and unemployment in Sweden. However, the potential effects of a reduction in taxes in Sweden are more difficult to ascertain because taxes have risen almost continuously in Sweden over the past quarter century. Nevertheless, assuming that the

effects of tax changes on the labor market are symmetric, it is likely that considerable private employment could be generated by lowering the tax wedge in Sweden.

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IV. PENSION REFORM³⁴

A. Introduction

70. Reform of the Swedish universal, mandatory, public pension system—essentially a defined-benefits scheme financed on a pay-as-you-go (PAYG) basis—has been on the political agenda for more than a decade.³⁵ A Pension Commission was appointed in the mid-1980s to review the Swedish pension system—consisting of the National Basic Pension and the National Supplementary Pension—with a view to increasing its fairness and putting it on a sounder financial footing. The proposals the Commission presented in 1990 did not find general favor and a Working Group on Pensions, comprising representatives of seven political parties, was set up. Based on the work of this Group, a bill containing guidelines for a reformed system for old-age pensions was submitted to the Swedish parliament in 1994. Parliament decided that these guidelines—which called for a defined-contribution plan, but one still financed on a PAYG basis—should form the basis of a new pension system. Following parliament's decision, a Working Group on the Implementation of Pension Reform—comprising representatives of the five mainstream parties that support reform—was established to work out the details of the new pensions system and prepare draft legislation. The Working Group had completed most of its task in the spring of 1998. With a strong parliamentary majority behind it, a new old-age pension system will be introduced beginning in 2001.

71. After briefly discussing the current pension system in Sweden, this paper reviews the main features of the new pension system by looking at the objectives the reform serves and how they are to be achieved.

B. The Current Pension System³⁶

72. As noted in the introduction, the current public old-age pension system in Sweden consists of two components, a basic pension and a supplementary pension. The basic pension is the social safety net component of the system, and originates from before the First World War, while the supplementary pension, introduced in 1960, is based on previous earned income. The age of retirement varies between 60 and 70 but the majority of people begin to draw their pension at the age of 65.

³⁴Prepared by Birgir Arnason

³⁵Although occupational and private pensions exist, public pension provides 80–90 percent of post-retirement income in Sweden.

³⁶For factual information, this section draws on the Swedish Institute, *Social Insurance in Sweden*, August 1997. See also *Challenges to the Swedish Welfare State*, Occasional paper 130, International Monetary Fund, September 1995.

73. Entitlement to a basic pension is acquired by everyone aged 16–65 who is resident in Sweden. Each year of residence entitles the recipient to one-fortieth of a full basic pension; residence of less than three years does not confer a right to a basic pension and years over and above forty confer no additional right. For an individual the full basic pension is 96 percent of the base amount, an amount equivalent to about US\$4,500 per year in 1997.³⁷ For couples, the basic pension is 157 percent of the base amount.

74. Over the years, the supplementary pension has become the more important of the two components of the pension system. A person aged 16–65 earns entitlement to this pension if he/she resides in Sweden and, in a given calendar year, has an income in excess of one base amount. Incomes between 1 and 7½ times the base amount are pensionable, and the maximum pension is attained after thirty years of pensionable income.³⁸ The size of the pension is calculated with reference to the recipient's fifteen years of highest income, as 2 percent of the mean income for those years multiplied by the number of years in which income was earned, subject to a maximum of thirty years. For a person who has worked for thirty years, this entails a supplementary pension of 60 percent of his/her average pensionable income. For 1997, the maximum annual supplementary pension was about US\$18,000.

75. With the supplementary pension taxable,³⁹ the net income replacement ratio for the basic and supplemental pensions combined for a person, who during his/her working life earned the average salary of an industrial worker, is just over 70 percent. This retirement income is protected against inflation by being linked to the base amount.

76. The supplementary pension scheme is entirely financed by a payroll charge of 13 percent paid by employers and the self-employed which accrues in the National Pension Insurance Fund. This Fund has, over the years, accumulated resources equivalent to about 40 percent of GDP, sufficient to cover about five years worth of pension payments at present. About one-half of the outlay on basic pensions is covered by a special basic pension payroll

³⁷A special income supplement is available to pensioners with no or only a small entitlement to supplementary pension. This brought the minimum retirement income of a single person with rights to a full basic pension to close to US\$7,000 in 1997. A recipient of the basic pension may also be entitled to a means-tested state housing allowance.

³⁸A person belonging to this scheme earns the right to one-thirtieth of a full basic pension each year, which explains why the first base amount of earnings is not pensionable.

³⁹Personal deductions are set high enough to make the basic pension and income supplement tax-free.

charge of almost 6 percent, which accrues to the government budget, and the remainder from general revenues.⁴⁰

77. The two main concerns raised about this pension system were that: (i) it was not financially sustainable in light of the foreseeable aging of the population in the first decades of the twenty-first century and the lessened ability of the economy to support generous pensions; and (ii) it lacked actuarial fairness in that eventual pension benefits had no direct link to the lifetime contributions the pensioner had made or had been made on his/her behalf.

78. Concerning the first point, simulations prepared for the Swedish authorities indicate that—depending on a number of factors, such as the growth rate, fertility, mortality and net immigration—the contribution rate would need to rise from the current 18–19 percent of the wage bill to 22–30 percent to ensure sustainability of the current pension scheme.⁴¹ The needed increase in the contribution rate may appear surprisingly small given that pension benefits are relatively generous and that Sweden faces a similar aging of the population as many other industrialized countries. Two factors explain this: first, the contribution rate is already fairly high; second, although it is essentially PAYG, the system is, nevertheless, supported by considerable previously accumulated resources. This conclusion is supported by a comparative study done by Fund staff, which found that the net pension liability of the Swedish public pension system—20 percent of GDP—was relatively small when compared to that of some industrial countries, and that an increase in the contribution rate of only about 15 percent was needed to fully fund the pension scheme.⁴²

C. The New Pension System⁴³

79. The aim of the pension reform is to address the concerns about: (i) the lack of connection between contributions made and benefit entitlements earned; (ii) the financial sustainability of the public pension system over the long run; and (iii) to achieve more flexibility for people to combine work with partial retirement late in working life and to choose the age of retirement beyond the statutory minimum, which will be set at 61.

⁴⁰For employers, the total payroll charge to finance social insurance, including basic and supplementary pensions, was 32.92 percent in 1997; for the self-employed, the charge was 31.25 percent.

⁴¹Edward Palmer, *The Swedish Pension Reform Model—Framework and Issues*, mimeo, May 1998. This is also the source for illustrative examples presented in subsequent footnotes.

⁴²International Monetary Fund, *Aging Populations and Public Pension Schemes*, Occasional Paper 147, December 1996.

⁴³This section draws on Ministry of Health and Social Affairs, *Pension Reform in Sweden*, March 1998.

80. The new system will also increase the transparency of redistribution in public pensions. The basic pension and basic pension supplement will be replaced by a guaranteed minimum income in old age which will be financed with general tax revenue from the state budget. In addition, contributions into the pension scheme will be made from the budget and other social insurance schemes to cover insured periods without work-related earnings; in other words, unemployment, and sickness and disability benefits, for example, will constitute pensionable income. Furthermore, time spent in military conscription and higher education will also give pension rights paid for from general state revenue.

81. The principal feature of the new system is that it is a defined-contribution PAYG scheme. In this scheme, each individual will have a notional account to which a fixed percentage of his/her earnings will be accredited each year. The account value at the end of a given year will consist of the sum of the amount accredited during the year and the account value at the end of the previous year, carried forward with an imputed rate of return, linked to wage growth. The pension annuity—also indexed to a rate of growth and inflation—will then be based on the value of the notional account at the time of retirement and the average life expectancy of both men and women in the age cohort to which the person retiring belongs. Coupled with this notional account pillar of the new pension scheme is a mandatory funded pillar with privately managed individual accounts (a premium reserve scheme). In addition to the contributions accumulated, the annuity from the funded pillar will depend on the financial returns obtained during the accumulation period. The total contribution rate has already been set at 18.5 percent of (the expanded) earnings, 16 percentage points will go to the notional account, defined-contribution PAYG plan, while 2.5 percentage points will go to the premium reserve plan.

82. This scheme provides a fairly transparent link between the contributions made and the pension entitlements earned, especially since participants in the scheme will be informed every year of changes to the value of their notional accounts. The scheme is also actuarially fairer than current arrangements. This contributes to the sustainability of the public pension system by making it more politically acceptable. The scheme, furthermore, puts in place automatic stabilizers to counteract the demographic instability associated with an aging society by letting life expectancy at retirement determine the pension annuity; if life expectancy rises the pension declines and vice-versa.⁴⁴ Also, the scheme creates a strong incentive for people to delay retirement beyond the statutory minimum of 61 because of the direct impact such a decision has on the pension annuity.⁴⁵

⁴⁴ In a typical example, an increase in life expectancy at 65 from 14 years to 16 years requires a person to work an additional year and a half to get an unchanged pension benefit.

⁴⁵ An illustrative calculation indicates that for a given life expectancy (14 years at age 65) the replacement ratio of the pension annuity would rise from 46 percent for a person retiring at 61 to 82 percent for a person retiring at 68. Two factors are at work here, first, the person

(continued...)

83. A number of factors have a bearing on the financial stability of the new scheme. Among the more important is the manner in which the imputed rate of return on the notional account values and the indexation of the pension annuity are determined. In principle, a notional account, defined-contribution PAYG plan with a fixed contribution rate is stable if the imputed rate of return on the notional accounts is equal to the growth rate—positive or negative—of the earnings base on which the contributions are levied, provided a reserve buffer exists to take care of particularly large age cohorts. Indexing to the earnings base allows for changes to wages and also to changes in the labor force. Under the reformed system, the notional accounts will be indexed to per capita wage growth, while the pension annuity will be set at the age of retirement, assuming a norm real rate of growth of 1.6 percent. However, in order to safeguard the financial stability of the system, the annuity benefit will be adjusted when actual economic growth deviates from the norm. This adjustment mechanism will shield the pension system from adverse economic developments.

84. Another important issue for the financial sustainability of the reform is how the transition from the old to the new arrangements is handled. Persons born prior to 1938 will be covered entirely by the old scheme while persons born after 1954 will be covered entirely by the new arrangements.⁴⁶ For persons born between 1938–1953 the transition from one scheme to the other is gradual.⁴⁷ However, pension benefits paid under the old rules will be subject to the same adjustment for the deviation of real growth from the norm as in the new scheme, lending some additional resilience to the system.

85. An additional factor worth noting is that the cost of the minimum guaranteed income in old age is highest in the beginning—equivalent to about 1 percentage point of pension contributions—but then declines as an ever larger majority of people become entitled to substantial earnings-related pension payments; this contrasts with the basic pension, the cost of which essentially grows in line with the number of recipients.

86. The question remains whether the new scheme along with the transition arrangements is financially robust with a fixed contribution rate of 16 percent; the premium reserve component is, of course, fully funded. Simulations prepared for the authorities indicate that this is the case provided that a sufficiently large buffer is provided to cover adverse demographic developments, such as a relative decline in the labor force, the extra costs

⁴⁵(...continued)

continues to contribute to his/her notional account while working, and second, life expectancy at the age of retirement declines.

⁴⁶This is feasible because historical earnings records are available from 1960.

⁴⁷A person born in 1938 will have 20 percent of his/pension based on the new system and 80 percent on the old. The proportions then change in increments of 5 percentage points for each year.

associated with the slow transition from the old to the new scheme during the first decades of the next century, and the financial risk associated with not adjusting pension annuities annually in response to changing life expectancy. It is estimated that the resources of the National Pension Insurance Fund—equivalent to about 40 percent of GDP—are more than adequate for this purpose, and that in fact a substantial portion of the Fund can be returned to the central government to partially compensate for the budgetary costs associated with making pension contributions on a number of benefits and to lower central government debt.⁴⁸

D. Conclusion

87. The new pension system in Sweden represents a political compromise among the main political parties with very different ideological outlooks. Many aspects of the new defined-contribution, PAYG system are debatable, including the very circumscribed role given to the privately managed component of the system and the broad granting of entitlements for periods when a person is out of work. However, the new pension system does address the main concerns raised about the old system, notably the latter's lack of transparent link between contributions made and benefits earned and its financial robustness in the face of adverse economic and demographic developments.

⁴⁸The required buffer could be of the order of 10–15 percent of GDP. In addition to government bonds, the National Pension Insurance Fund holds an extensive portfolio of mortgage bonds. The exact details of the transfer of resources from the Fund to central government accounts are yet to be worked out.

Table A1. Sweden: GDP and Expenditure Components

	1997	1992	1993	1994	1995	1996	1997
	(In billions of kronor)	(Volume changes in percent)					
Private consumption	922.9	-1.4	-3.1	1.8	0.8	1.5	2.0
Public consumption	449.3	-0.0	0.2	-0.7	-1.0	-1.7	-2.1
Gross fixed investment	237.9	-10.8	-17.2	2.0	12.4	3.7	-4.8
Final domestic demand	1,610.1	-2.9	-4.7	1.1	2.1	1.3	-0.3
Change in inventories 1/	6.8	1.1	-0.5	1.4	0.5	-1.1	0.7
Total domestic demand	1,616.9	-1.8	-5.2	2.6	2.6	0.1	0.4
Exports of goods and services	761.4	2.3	7.6	14.0	12.9	6.1	12.8
Imports of goods and services	639.5	1.1	-2.5	13.2	10.2	3.7	11.7
Foreign balance 1/	121.9	0.4	2.9	0.9	1.5	1.2	1.4
Gross domestic product	1,738.9	-1.4	-2.2	3.3	3.9	1.3	1.8
GDP deflator, percentage change		1.0	2.6	2.4	3.7	1.0	1.3
Memorandum items:							
Contributions to GDP growth							
Private consumption		-0.7	-1.6	0.9	0.4	0.7	1.02
Government consumption		-0.0	0.1	-0.2	-0.3	-0.0	-0.53
Investment		-1.0	-3.5	1.7	2.3	-0.5	-0.41
GDP growth in partner countries 2/		2.7	1.4	1.5	1.1	3.7	2.9

Sources: Statistics Sweden; and IMF, *World Economic Outlook*.

1/ Changes in percent of previous year's GDP.

2/ Weighted by the geographic distribution of Sweden's 1986-88 average exports.

Table A2. Sweden: Household Disposable Income, Consumption, and Saving

	1997	1992	1993	1994	1995	1996	1997
	(In billions of Skr)	(Percentage changes at current prices)					
Household disposable income	930.2	5.8	3.1	4.4	1.6	0.5	0.4
Of which:							
Wages and salaries	756.6	0.2	-2.0	4.2	4.9	5.8	4.0
Public pensions	216.2	8.0	4.7	5.0	2.7	1.6	0.8
Private pensions	30.2	-16.6	15.6	-3.0	1.8	5.2	7.2
Other social transfers received (net)	171.4	13.9	9.9	5.2	-2.7	-4.6	-0.2
Entrepreneur income	67.9	-7.3	7.7	9.0	3.7	-1.7	-0.2
Net interest payments	-13.2	13.8	9.4	34.0	38.8	-9.8	-5.4
Other factor income	106.9	19.9	7.6	5.1	4.5	-0.1	1.8
Direct taxes	-405.7	0.4	1.2	9.1	10.0	8.7	7.8
Private consumption	922.9	0.8	2.5	4.8	3.5	2.5	4.3
Household net savings ratio (level in percent)		7.7	8.3	8.0	6.3	4.4	0.8
		(Percentage changes in real terms)					
Household disposable income		3.5	-2.5	1.4	-1.0	-0.7	-1.7
Of which:							
Wages and salaries		-2.0	-7.3	1.3	2.2	4.5	1.8
Public pensions		5.7	-0.9	2.0	0.0	0.4	-1.4
Private consumption		-1.4	-3.1	1.8	0.8	1.3	2.0
Of which:							
Automobiles		-21.3	-16.0	25.6	3.0	10.1	22.8
Other durables		182.0	-6.2	0.2	0.2	-2.0	4.7
Nondurables		9.8	-0.1	1.5	0.2	0.9	-0.9
Rents		1.2	0.6	0.3	0.3	0.2	0.3
Other services		1.9	-0.8	3.1	4.0	3.4	4.4
		(In percentage points)					
Change in the saving ratio		4.6	0.6	-0.3	-1.7	-1.9	-3.6

Sources: National Institute of Economic Research; and data provided by the Swedish authorities.

Table A3. Sweden: Gross Fixed Investment

	1992	1993	1994	1995	1996	1997
	(Volume changes in percent)					
Business investment, excluding housing	-15.5	-13.0	18.6	27.7	4.7	6.4
Of which:						
Agriculture and forestry	-11.1	-14.0	15.5	6.4	6.0	7.1
Manufacturing and mining	-19.4	-2.2	29.4	44.3	13.3	-6.7
Energy	-1.6	-19.2	-1.2	14.3	-4.1	3.3
Construction	-40.2	-18.8	4.5	19.1	-2.0	13.4
Trade	-10.9	-23.1	12.0	8.6	0.4	4.3
Finance and real estate	-19.8	-8.4	22.0	16.7	3.0	7.9
Communication	-12.2	-18.1	17.4	39.3	-3.0	-2.5
Other services	-6.2	-24.8	8.9	16.0	10.2	5.0
Housing	-7.3	-32.8	-35.9	-23.5	13.1	-25.7
Public authorities	0.6	6.8	11.1	-5.7	-8.0	-9.4
Gross fixed investment	-10.8	-17.2	2.0	7.6	8.3	-4.8
	(In percent)					
Memorandum item:						
Gross operating surplus/value added	31.3	33.6	35.2	37.5	32.9	33.3

Source: Statistics Sweden.

Table A4. Sweden: Output, Employment (Hours), and Productivity by Sector 1/

	1997	1992	1993	1994	1995	1996	1997
	(Share in total output)	(Volume changes in percent)					
Agriculture, forestry and fishing							
Output	2.5	-2.9	1.8	1.9	5.7	-3.0	4.6
Employment		-2.3	-2.4	1.3	-1.6	-4.2	-3.0
Productivity		-0.6	4.2	0.6	7.4	1.2	7.8
Mining and manufacturing							
Output	25.9	-3.4	1.2	14.0	12.5	2.1	5.4
Employment		-8.2	-5.1	4.9	6.7	-0.3	-1.0
Productivity		5.3	6.6	8.7	5.4	2.4	6.5
Electricity, gas, and water							
Output	3.0	-1.9	-0.4	-0.2	2.7	0.2	1.8
Employment		1.2	-2.7	-1.0	-1.1	2.5	0.0
Productivity		-3.1	2.4	0.8	3.8	-2.3	1.7
Building and construction							
Output	5.7	-4.5	-9.9	-4.2	-0.5	0.8	-5.4
Employment		-9.5	-13.5	-4.0	0.3	0.7	-3.9
Productivity		5.5	4.2	-0.3	-2.0	0.1	-1.5
Private services							
Output	46.7	1.0	-2.3	4.9	4.0	2.6	2.9
Employment		-1.7	-3.2	3.1	2.7	0.9	0.9
Productivity		2.7	1.0	1.8	1.2	1.7	2.0
Public services							
Output	20.3	-2.5	-2.4	-1.4	0.2	-0.4	-1.2
Employment		-2.8	-2.7	-1.3	-0.9	-0.4	-2.4
Productivity		0.3	0.3	-0.1	0.7	-0.0	1.2
GDP, at producer prices							
Output	100.0	-1.0	-1.9	3.8	4.7	1.4	2.0
Employment		-3.4	-4.2	1.4	2.0	0.1	-1.1
Productivity		2.4	2.5	2.4	2.6	1.3	3.1
Of which:							
Business sector		3.4	2.7	1.8	1.6	1.4	2.7

Source: National Institute of Economic Research.

1/ Output estimated from the production side in value added at 1991 producer prices. Productivity measured in hours worked.

Table A5. Sweden: Labor Market

	1992	1993	1994	1995	1996	1997
Labor force, thousands	4,428	4,320	4,266	4,320	4,310	4,264
Change, in percent	-1.7	-2.4	-1.2	1.3	-0.2	-1.1
Employment, in thousands	4,195	3,964	3,926	3,988	3,963	3,922
Change, in percent	-4.1	-5.5	-0.9	1.6	-0.6	-1.1
Hours worked, percentage change	-3.4	-4.2	1.4	2.0	0.1	-1.1
Manufacturing	-8.3	-5.1	4.9	6.7	-0.3	-1.0
Construction	-9.5	-13.5	-4.0	-0.3	0.7	-3.9
Private services	-1.7	-3.2	3.1	2.7	0.9	0.9
Public sector	-2.8	-2.7	-1.3	-0.9	-0.4	-2.4
Unemployment rate	5.3	8.2	8.0	7.7	8.1	8.0
Men	6.2	9.7	9.1	8.4	8.5	8.4
Women	4.1	6.6	6.7	6.8	7.5	7.5
Participation rate	81.4	79.1	77.4	78.2	77.8	76.8
Men	83.4	80.9	79.4	80.3	80.0	74.5
Women	79.4	77.2	75.7	76.1	75.7	16.2
Vacancies, thousands	10.1	8.5	11.8	15.0	14.0	16.2
Labor market programs, thousands	236	186	226	190	194	183
As percent of labor force	5.3	4.3	5.3	4.4	4.5	4.3

Sources: Statistics Sweden; Ministry of Finance, *Sweden's Economy*; and data provided by the Swedish authorities.

Table A6. Sweden: Average Hourly Earnings, Wage Costs, and Unit Labor Costs

(Annual percentage changes)

	1992	1993	1994	1995	1996	1997
Aggregate hourly earnings	3.7	3.7	3.8	2.9	5.6	4.4
Of which:						
Contractual increase	2.6	0.9	1.5	2.1	4.5	3.7
Wage drift	1.1	2.8	2.3	0.8	1.1	0.7
Real wage 1/	1.4	-0.9	1.6	0.1	5.1	3.9
Hourly wage costs in manufacturing	4.2	0.2	3.3	6.2	6.9	4.6
Hourly earnings	4.5	3.3	3.3	5.1	6.9	4.7
Negotiated 2/	2.6	0.8	1.3	3.0	3.9	3.1
Wage drift 2/	1.9	2.5	2.0	2.1	3.0	1.6
Social security contribution	-0.3	-3.1	0.0	1.1	0.0	-0.1
Real output per man-hour 3/	5.2	6.7	8.8	5.4	2.5	6.5
Unit labor costs 3/ 4/	-1.0	-6.5	-5.5	0.8	4.4	-1.9
Memorandum items:						
Hourly earnings by sectors						
Private sector	6.0	3.5	3.0	4.1	5.9	4.3
Public sector	5.3	3.7	2.4	1.8	6.2	4.7
Consumer price inflation	2.3	4.6	2.2	2.5	0.5	0.5

Sources: National Institute of Economic Research; and data provided by the Swedish authorities.

1/ Deflated by the consumer price index.

2/ Due to the construction of pay agreements, the breakdown is not meaningful in 1987.

3/ In manufacturing.

4/ Derived as hourly wage costs in manufacturing minus real output per manhour.

Table A7. Sweden: Saving–Investment Balances

(In percent of GDP)

	1992	1993	1994	1995	1996	1997
Public sector						
Gross saving	-4.0	-7.6	-7.2	-5.0	-0.1	1.2
Capital transfers	-1.1	-3.6	-0.2	0.1	0.0	0.4
Gross investment	2.7	1.1	3.0	2.9	2.4	2.5
Financial saving	-7.8	-12.3	-10.3	-7.8	-2.5	-0.8
Households						
Gross saving	7.4	7.8	7.4	6.2	5.5	4.4
Capital transfers	0.0	0.0	0.0	-0.0	-0.0	0.0
Gross investment	2.3	1.8	1.5	1.4	1.5	1.6
Financial saving	5.1	6.0	5.9	4.8	3.9	2.8
Enterprises						
Gross saving	9.5	11.0	14.3	16.2	11.7	12.6
Capital transfers	1.1	3.6	0.1	-0.0	0.0	-0.4
Gross investment	11.5	10.4	9.7	11.1	10.7	10.9
Financial saving	-0.9	4.2	4.8	5.1	1.0	1.3
Total economy						
Gross saving	13.0	11.3	14.5	17.5	17.1	18.2
Gross investment	16.5	13.3	14.1	15.4	14.6	14.1
Financial saving	-3.5	-2.0	0.4	2.0	2.5	4.1

Sources: National Institute of Economic Research; and data provided by the Swedish authorities.

Table A8. Sweden: General Government Accounts 1/

	1992	1993	1994	1995	1996	1997
(In billions of Swedish kronor)						
Taxes	530.0	527.0	463.5	492.3	655.3	672.5
Social security contributions	138.3	134.5	134.5	133.8	135.2	137.0
Other	145.3	138.5	241.8	283.1	215.2	216.9
Total revenue	888.1	875.3	913.6	982.9	1,076.0	1,092.7
Interest payments	78.0	89.7	104.6	117.2	119.3	113.9
Transfers to households	349.1	373.2	391.6	394.7	387.8	387.9
Other transfers	131.3	168.3	113.6	125.2	119.8	116.9
Consumption	402.5	406.1	416.2	425.7	443.1	449.3
Of which: Military spending	33.6	34.0	34.4	34.7	33.6	0.0
Investment	39.1	15.5	45.7	48.1	41.0	43.9
Total expenditure	1,000.1	1,052.8	1,071.7	1,110.9	1,111.0	1,111.9
Financial savings	-112.0	-177.5	-158.2	-128.0	-35.0	-19.1
Central Government	-145.7	-219.6	-179.8	-146.3	-54.7	-22.9
Local authorities	15.4	10.0	-3.6	-1.6	-2.6	-7.2
Social security sector	18.3	32.1	25.3	18.0	17.2	10.9
(In percent of GDP)						
Total revenues	61.6	60.5	59.7	59.9	63.7	62.8
Of which: Taxes	46.4	45.7	39.1	37.9	44.8	46.5
Total expenditure	69.4	72.8	70.0	67.3	65.8	63.9
Public sector financial saving	-7.8	-12.3	-10.3	-7.8	-2.1	-1.1

Sources: National Institute of Economic Research; and Ministry of Finance.

1/ National accounts basis. Excluding nonfinancial public enterprises.

Table A9. Sweden: The Tax Ratio

(In percent of GDP)

	1992	1993	1994	1995	1996	1997
Direct taxes	20.5	20.8	15.3	15.5	22.3	22.7
Households	18.9	18.7	18.7	18.6	19.1	19.5
Firms	1.5	2.1	-3.4	-3.1	3.2	3.2
Indirect taxes	16.3	15.6	14.9	14.4	16.5	16.0
VAT	7.9	8.5	8.1	7.1	8.0	7.2
Other	8.4	7.2	6.8	7.3	8.5	8.8
Payroll charges	9.6	9.3	8.8	8.1	8.0	7.9
Total taxes and charges	46.4	45.7	39.1	37.9	46.8	46.5

Source: Ministry of Finance, *Sweden's Economy*.

Table A10. Sweden: General Government Revenue and Expenditure in Real Terms 1/

(Annual change in volume; in percent)

	1992	1993	1994	1995	1996	1997
Revenue	-3.1	-6.7	1.4	4.8	8.2	-0.7
Expenditure	4.4	-4.1	4.8	-1.9	-3.6	-1.1
Transfers to households	8.4	1.1	1.9	-1.9	-2.9	-2.2
Other transfers	21.7	20.2	-17.4	9.2	-2.0	-7.6
Interest expenditure	3.7	12.1	13.9	8.1	0.8	-5.7
Consumption	-0.0	0.2	-0.7	-0.9	-0.2	-2.1
Of which:						
Central government	1.8	4.8	-0.0	-2.1	-0.6	-5.0
Local government	-0.8	-1.8	-1.0	-0.4	0.0	-0.7
Fixed investment	0.6	6.8	11.1	-5.7	-8.0	-9.4

Sources: National Institute of Economic Research; Ministry of Finance; and staff calculations.

1/ The private consumption deflator was used to deflate revenues and transfers to households; the GDP deflator was used to deflate other transfers and interest expenditures.

Table A11. Sweden: Selected Interest Rates

(Period averages, in percent)

	Treasury Discount Notes			Marginal Borrowing Rate for Banks from Riksbank	Government Bond Yield 1/	Sweden- Germany Differential 2/
	3-month	6-month	12-month			
1994						
1st qtr	7.00	6.89	6.71	7.39	6.64	1.17
2nd qtr	7.03	7.05	7.40	7.08	8.47	1.79
3rd qtr	7.57	8.19	9.19	7.07	10.61	2.60
4th qtr	8.01	8.47	9.28	7.37	10.45	2.78
1995						
1st qtr	8.20	8.62	9.22	7.80	10.52	3.14
2nd qtr	8.90	9.16	9.66	8.46	10.48	4.35
3rd qtr	9.11	9.29	9.53	8.90	9.84	4.75
4th qtr	8.77	8.68	8.66	8.91	8.66	4.81
1996						
1st qtr	7.64	7.52	7.37	8.72	8.00	4.25
2nd qtr	6.09	6.06	6.13	6.69	7.63	2.80
3rd qtr	5.13	5.19	5.42	5.47	7.26	1.90
4th qtr	4.31	4.23	4.47	4.58	6.10	1.15
1997						
Jan	3.76	3.81	...	4.10	5.39	0.67
Feb	3.93	4.00	...	4.10	5.61	0.77
Mar	4.13	4.23	4.42	4.10	6.17	0.89
Apr	4.03	4.15	...	4.10	6.27	0.82
May	4.09	4.20	...	4.10	6.09	0.94
June	4.05	4.15	4.44	4.10	5.89	0.94
July	4.06	4.21	...	4.10	5.62	0.93
Aug	4.17	4.33	...	4.10	5.79	0.93
Sept	4.11	4.25	4.63	4.10	5.70	0.82
Oct	4.23	4.41	...	4.10	5.76	0.69
Nov	4.31	4.51	5.13	4.10	5.88	0.61
Dec	4.42	4.70	5.06	4.19	5.71	0.72
1998						
Jan	4.41	4.55	...	4.35	5.33	0.86
Feb	4.33	4.50	4.68	4.35	5.19	0.84
Mar	4.48	4.56	4.69	4.35	5.06	0.98
Apr	4.47	4.58	...	4.35	4.99	0.86
May	4.49	4.51	4.45	4.35	4.98	0.89
June	4.20	4.20	4.26	4.18	4.70	0.66

Sources: The Riksbank, *Quarterly Review*; and IMF, *International Financial Statistics*.

1/ Bonds with five years to maturity.

2/ Three-month Treasury discount notes minus three-month Interbank rate (Germany).

Table A12. Sweden: Selected Exchange Rates

(Period averages)

	Bilateral rates			Effective exchange rates (Indices: 1990=100)		
	Skr/US\$	Skr/DM	Skr/ECU	Nominal	Real based on	
					normalized ULC	CPI
1994						
1st qtr	8.001	4.640	9.005	82.4	74.1	84.9
2nd qtr	7.802	4.696	9.069	82.1	74.1	85.0
3rd qtr	7.683	4.918	9.414	79.7	71.7	82.8
4th qtr	7.378	4.781	9.144	81.8	72.9	85.0
1995						
1st qtr	7.374	4.986	9.382	80.1	70.8	83.2
2nd qtr	7.296	5.226	9.721	77.5	68.3	80.6
3rd qtr	7.177	5.014	9.428	80.0	71.4	83.4
4th qtr	6.686	4.696	8.803	86.0	76.1	89.7
1996						
1st qtr	6.776	4.615	8.729	86.8	76.8	90.1
2nd qtr	6.734	4.424	8.447	89.2	80.2	92.1
3rd qtr	6.634	4.429	8.543	89.3	79.1	91.7
4th qtr	6.679	4.364	8.433	89.3	78.9	91.2
1997						
Jan.	7.067	4.405	8.579	87.0	76.6	88.5
Feb.	7.400	4.419	8.631	86.0	75.6	87.1
Mar.	7.654	4.511	8.807	84.2	73.8	85.5
Apr.	7.671	4.484	8.794	84.4	73.8	85.9
May	7.673	4.505	8.819	84.0	73.2	85.2
June	7.742	4.482	8.808	83.8	73.0	85.0
July	7.805	4.355	8.629	84.9	73.9	86.2
Aug.	7.996	4.340	8.565	85.1	74.0	86.3
Sept.	7.699	4.300	8.473	86.7	75.5	88.2
Oct.	7.572	4.310	8.480	86.8	75.7	88.2
Nov.	7.544	4.358	8.619	86.1	75.2	87.7
Dec.	7.785	4.382	8.658	85.3	74.4	87.6
1998						
Jan.	8.009	4.408	8.717	84.5	73.5	86.2
Feb.	8.078	4.453	8.795	83.7	72.6	84.9
Mar.	7.968	4.362	8.639	85.2	73.8	86.1
Apr.	7.812	4.305	8.534	86.6	75.0	87.8
May	7.695	4.336	8.535	87.0	75.1	88.2
June	7.907	4.413	8.712	85.4	73.6	...

Source: IMF, *International Financial Statistics*.

Table A13. Sweden: Measures of Liquidity

(Annual percentage change)

	1992 Dec.	1993 Dec.	1994 Dec.	1995 Dec.	1996 Dec.	1997 Dec.	1997 Mar.	1998 June
M0	-0.8	4.3	2.6	-0.4	5.3	3.0	1.3	4.4
M3	3.2	4.0	0.3	2.7	11.4	1.3	-0.6	2.8

Source: The Riksbank.

Table A14. Sweden: Balance of Payments 1/
(In billions of Swedish kronor)

	1996	1997
CURRENT ACCOUNT	47.6	43.5
Trade in goods (f.o.b. - f.o.b)	138.5	124.8
of which: net trade of goods	131.7	120.5
Services	-18.7	-12.1
Transportation	5.3	1.5
Travel	-24.9	-18.8
Other services	0.8	5.2
Compensation of employees	-1.7	-1.8
Investment income	-45.6	-48.7
Direct investment	22.6	21.2
Portfolio investment excl. fin. Derivatives	-25.3	-16.4
Income on equity	-6.1	-6.9
Income on debt (interest)	-19.2	-9.5
Other investment	-42.9	-53.5
Current transfers	-25.0	-18.7
CAPITAL ACCOUNT	-0.3	-4.9
FINANCIAL ACCOUNT	-36.1	-24.1
Direct investment	-9.6	2.8
Abroad	-84.5	-31.3
In Sweden	74.9	34.0
Portfolio investment excl. fin. Derivatives	-140.1	-83.2
Assets	-121.1	-88.3
Equity securities	-93.7	-50.4
Debt securities	-27.4	-37.9
Liabilities	-19.0	5.0
Equity securities	-13.0	27.2
Debt securities	-6.0	-22.2
Financial derivatives	13.4	10.0
Other investment	50.1	4.6
Reserve assets	50.0	41.9
NET ERRORS AND OMISSIONS	-11.1	-14.5

Source: Riksbank

1/ New definitions were adopted in October 1997 and consistent data are available only for 1996 and 1997.

Table A15. Sweden: Competitiveness Indicators

(Annual percentage change)

	1991	1992	1993	1994	1995	1996	1997
Total trade							
Terms of trade							
(f.o.b./c.i.f.)	-0.1	-0.1	-3.3	0.4	4.6	-1.4	-1.0
Export unit value	0.7	-2.2	9.6	5.0	11.4	-4.9	0.9
Import unit value	0.7	-2.1	13.3	4.6	6.4	-3.5	1.9
Volume of exports (merchandise)	-2.7	0.2	8.7	15.6	8.1	5.5	10.0
Export market growth 1/	2.4	4.9	2.0	10.5	9.1	5.6	6.5
Volume of imports (merchandise)	-7.7	-1.4	1.4	14.1	8.4	1.0	9.2
Domestic demand growth	-1.8	-1.8	-5.2	2.6	2.6	0.1	0.9
Manufactures							
Volume of exports							
(to 14 OECD countries)	-0.8	-4.6	0.6	4.55	19.2	14.3	3.9
Export market growth							
(of 14 OECD countries)	5.2	0.5	2.8	-1.5	12.2	7.6	4.6
Changes in market shares							
(to 14 OECD countries)	-4.1	-5.0	-2.1	6.1	6.2	6.2	-0.6
Nominal effective exchange rate 2/	-0.2	1.4	-18.4	-1.3	-0.7	9.6	-3.7
Real effective exchange rates 2/							
Relative normalized unit labor costs	-0.5	0.5	-24.2	-3.4	-2.1	9.9	-5.3
Relative export unit value	0.5	-1.1	-11.4	2.9	7.3	4.4	...

Sources: IMF, *International Financial Statistics*; National Institute of Economic Research, *The Swedish Economy*, and staff estimates.

1/ Total market growth defined as growth in the volume of non-oil imports of Swedish partner countries, export weighted; estimated by the IMF Research Department.

2/ Depreciation is indicated by a decline; IMF Research Department estimates.

Table A16. Sweden: Direction of Trade

(In percent of total)

	Exports				Imports			
	<u>1989-94</u> Average	1995	1996	1997	<u>1989-94</u> Average	1995	1996	1997
Industrial countries	85.0	80.2	79.4	77.6	86.7	84.2	85.0	84.0
United States	8.4	7.9	8.3	8.3	8.7	5.4	5.8	6.0
Japan	2.3	2.9	3.2	2.9	5.0	2.9	2.4	2.6
Belgium 1/	4.2	4.2	4.4	3.9	3.3	3.7	3.6	3.7
Finland	5.4	5.0	5.1	5.3	6.5	5.9	5.6	5.3
France	5.4	5.2	4.6	4.6	5.2	5.3	5.6	5.7
Germany	14.4	12.8	11.7	11.1	18.7	19.6	18.8	18.4
Italy	4.2	3.6	3.2	3.2	3.9	3.1	3.2	3.0
Netherlands	5.3	5.5	5.5	5.6	4.3	7.2	7.5	7.6
Norway	8.3	7.6	8.5	8.3	7.0	7.1	7.8	7.7
Denmark	6.9	6.4	6.1	6.1	7.4	7.1	7.5	7.2
Switzerland	2.1	2.0	1.8	1.6	1.9	2.1	1.9	1.6
United Kingdom	9.9	9.5	9.5	9.2	8.8	9.4	10.0	9.7
Other industrial countries	8.2	7.7	7.5	7.5	5.9	5.3	5.3	5.3
Developing countries	14.9	19.7	20.5	22.4	13.2	15.8	15.0	16.0
Africa	1.1	1.1	1.1	1.1	0.5	0.3	0.4	0.4
Asia	5.7	6.9	8.1	8.2	6.0	4.5	4.6	5.0
Europe	3.4	7.7	7.2	8.4	3.7	8.7	7.8	8.4
Middle East	2.8	2.1	2.0	2.2	1.3	1.0	1.0	1.1
Western Hemisphere	1.9	1.9	2.1	2.6	1.7	1.3	1.1	1.2
Memorandum items:								
European Union	61.1	56.9	55.0	53.7	63.2	65.8	66.4	65.3
Oil exporting countries	2.5	1.6	1.9	2.2	1.7	1.2	1.2	0.8
Non-oil developing countries	12.5	18.1	18.6	20.2	11.5	14.7	13.9	15.2

Sources: IMF, *Direction of Trade Statistics*; and staff calculations.

1/ Figures for Belgium include trade with Luxembourg.

Table A17. Sweden: Official International Reserves

(In millions of SDRs; end of period)

	1991	1992	1993	1994	1995	1996	1997
Official reserves							
Gold 1/ SDRs	212.4	212.4	212.4	212.4	164.6	164.6	165.3
Reserve position in the Fund	289.6	32.6	42.2	46.4	296.8	198.9	276.7
Foreign exchange assets	308.4	451.4	451.4	451.4	451.4	451.4	589.1
	12,217.3	15,970.2	13,375.5	15,431.0	15,431.7	12,637.3	7,156.8
Gross official reserves	13,027.7	16,666.5	14,081.4	16,141.2	16,344.5	13,452.3	8,187.9
Official foreign liabilities	0.0	1,287.9	6.9	20.3	352.0	418.5	374.8
Net reserves	13,027.7	15,378.7	14,074.5	16,121.0	15,992.5	13,033.7	7,813.1
Memorandum item:							
Reserves in weeks of merchandise imports	17.8	28.8	25.0	22.9	18.3	15.4	9.1

Source: IMF, *International Financial Statistics*.

1/ Valued at SDR 35 per fine ounce.

Table A18. Sweden: External Assets and Liabilities 1/
(In billions of Swedish kronor)

	1993	1994	1995	1996	1997
Central government	-467.4	-470.4	-510.1	-534.2	-567.2
Foreign exchange reserve	175.7	178.0	171.3	140.2	91.0
Banks	-199.0	-195.5	-115.8	-81.6	-147.8
Other financial institutions	-227.0	-214.5	-198.3	-153.3	-98.5
Other companies	-119.4	-85.3	-43.1	-70.4	-105.1
Municipalities	-32.9	-42.2	-44.2	-40.4	-42.5
Other sectors	-4.5	-2.5	1.9	2.9	8.9
Financial net position	-874.5	-832.6	-738.3	-736.8	-870.1
Direct investment	263.0	276.0	276.0	252.0	287.0 2/
Portfolio shares	-56.2	-131.6	-130.5	-227.9	-205.3 2/
Total	-667.6	-688.2	-592.8	-712.7	-788.4
Percent of GDP	46.2	44.9	35.9	42.2	45.3

Source: Riksbank.

1/ Net transactions

2/ Estimates based on flows and including valuation effects.