

■ Lessons from the past: What can we learn from the history of centralized wage bargaining?

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The rise and fall of centralized wage bargaining in Sweden has, over the years, been the subject of much discussion and debate. In this article, we review the history of Sweden's experience with centralized wage determination in an attempt to use lessons from the past to inform present day policy makers. Specifically, we argue that representatives of labour and management engaged in the current round of wage negotiations should proceed cautiously when considering proposals that seek to compress wage differentials excessively. History would seem to suggest that severe compression of inter-occupational wage differentials may result in a number of undesirable and unintended consequences for firms, workers and the economy as a whole.

Introduction

Within the next six months or so, all central government employees and a large percentage of private sector workers in Sweden will enter a new round of wage negotiations. One might expect that negotiated wage increases will be modest: rates of open unemployment are relatively high by Swedish standards and, according to the Sveriges Riksbank's Inflation Report, the two most recent bargaining rounds (1998 and 2002) were models of social cooperation. There are, however, also reasons for concern. First, the higher than anticipated rate of inflation over the past two years may prompt workers to seek large, potentially inflationary, wage increases in the current round. Second, and much more significant, LO, TCO, and Saco intend to make a reduction of inter-occupational wage differentials, excessive according to them, a major issue in the current round. This, we argue below, may have consequences for unemployment and labour productivity.

As we show in this article, centralized wage bargaining and wage compression have a long and not so distinguished history in post-war Sweden. To be more precise, between 1956 and 1983, the core period of centralized wage bargaining, Sweden went from one of the more successful OECD countries in terms of output growth, unemployment, and inflation to one of the least successful.¹ Our research suggests that both the early success and the subsequent failure can be attributed to centralized bargaining and changes in wage relativities.² In what follows, we attempt first to explain the links between centralized negotiations, wage compression, and economic activity in Sweden in the period 1956–83 and then to reflect on the lessons of the past for the present.

It is often argued that centralized wage negotiations promote wage moderation and thus low rates of inflation and unemployment and high rates of economic growth.³ The link between centralized bargaining and wage moderation is usually attributed to one or the other of the following. According to some, if organized labour as a whole negotiates wage increases, labour will have an incentive to moderate its wage demands because it will internalize the impact of the wage bargain on employment.⁴ Although the case is most compelling if labour is forced to assume the full burden of unemployment insurance, it can be shown to hold even if this is not the case. Others maintain, instead, that centralized negotiations enhance the ability of labour and management to enter into an implicit contract in which labour agrees to moderate its wage demands in return for management's commitment to invest the increased profits to ensure growth of output and employment.⁵ There is a time inconsistency problem in this agreement: firms have an incentive to shirk on their investment promises once labour curtails its wage requests, while labour is similarly inclined to push up its wage demands once management fulfils its investment obligations.⁶ It is usually assumed that the government plays the role of enforcer, using taxes, subsidies, and benefits to guarantee compliance.⁷ Centralized wage bargaining is viewed as crucial to the process because it reduces the scope for opportunistic behaviour on the part of individual groups of workers and/or firms. Moreover, because cen-

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¹ It is worth noting that some form of centralized wage bargaining was introduced in the early 1950s and persisted into the 1990s. While most agree that the first phase was successful, there is a general consensus that, from the early 1970s, the system failed to deliver wage moderation, and low rates of unemployment and inflation.

² See Alexopoulos & Cohen (2003, 2004).

³ See Kindleberger (1967) and Temin (2002) for a more general discussion of wage moderation in the context of early post-war Europe.

⁴ Calmfors & Driffil (1988); Freeman & Gibbons (1995).

⁵ Eichengreen (1996); Eichengreen & Iversen (1999).

⁶ Eichengreen (1996); Temin (2002).

⁷ See Edin & Topel (1997). The government also helped to encourage compliance with subsidies, tax breaks, and welfare payments contingent on good behaviour.

Wage compression and centralized bargaining seemed to go hand in hand in Sweden and there are strong indications that the most vigorous proponent of centralized bargaining was SAF, not LO.

We try to explain why centralized bargaining was adopted, how it contributed to wage moderation, why it was abandoned, and what we can learn from the past.

tralized bargaining seems to be associated with wage compression, workers have some assurance that the future gains from current abstinence will be distributed fairly.⁸

While elements of the internalization and implicit contract explanations of the rise and decline of centralized bargaining are compelling, there are also aspects of the Swedish case that seem to be incompatible with them. First, wage compression and centralized bargaining seemed to go hand in hand in Sweden, an outcome that was neither necessary (see Austria) nor predicted by the conventional explanations of its adoption. Second, there are strong indications that the most vigorous proponent of centralized bargaining was SAF, especially the large, export-oriented firms, not LO. Third, the LO unions representing skilled workers, especially the metal workers and building trades, were at best lukewarm in their support of centralized wage determination from the 1950s. Neither the implicit contract nor the internalization arguments would lead us to expect such a mixed response from labour and such a strong endorsement on the part of management. Finally, unless changes are made to the simple models, neither the internalization nor the implicit contract argument helps us understand key features of the post-1970 period: the sharp drop in productivity and profits, the ballooning budget deficits, and the mounting dissatisfaction of skilled workers and large, export-oriented firms with centralized bargaining.

In this article, we summarize our efforts in Alexopoulos & Cohen (2003, 2004) to develop alternative explanations for the rise and decline of centralized bargaining in Sweden. We try to answer four questions: why was the institution adopted, how did it contribute to wage moderation, why was it abandoned in 1983, and what can we learn from the past for the current round of wage negotiations? Before summarizing our answers to these questions, it is useful to review briefly the history of wage determination in Sweden in the post-war period.

The first step toward centralized wage negotiations dates from the Saltsjöbaden Agreement in 1938 in which, as Olsson & Burns (1987) argue, cooperation and coordination replaced confrontation as the basis for bargaining between capital and labour. It also represented the first peak-level agreement, in that SAF and LO negotiated on behalf on their member organizations. An initial attempt to hammer out a centralized wage bargain between SAF and LO (not all LO unions were willing to participate) was made in 1952, followed in 1956 by a comprehensive

⁸ See Eichengreen & Iversen (1999).

wage agreement between the two umbrella organizations.⁹ SAF negotiated similar contracts with groups representing white collar workers; by the end of the 1950s, wages of almost all private sector workers were determined by centralized bargaining. In 1966, public sector workers obtained the right to negotiate collectively with government.

Private sector bargaining took place in three stages. Peak-level associations negotiated wage agreements in which maximum and minimum increases were determined. This was followed by ratification at industry level, and subsequently by modification and implementation at the local level.¹⁰ It is important to note that during the early years, wage increases set at the peak were often pushed up, especially for skilled workers, at the plant level. There was, in other words, considerable scope for wage drift, often amounting to over 50 per cent of total wage increases.

In answer to our first question – why was centralized wage bargaining adopted – we argue that it helped ease a serious labour supply problem faced by dominant members of SAF, the rapidly growing, export-oriented firms such as Volvo, ASEA, and Saab. In effect, centralized negotiations facilitated the reallocation of labour from slow growing, low-productivity sectors to fast growing, high-productivity ones without pushing up production costs. Our reallocation hypothesis is based on a development model for the post-war Swedish economy conceived by two labour union economists, Gösta Rehn and Rudolph Meidner.¹¹ A key feature of the model was wage compression from below, that is, wage increases for lower paid workers in excess of increases for those higher up on the pay scale.¹² The two argued that wage compression would force low productivity firms to boost productivity or, more likely, close down, thus freeing their workers for employment in the fast growing sectors. It was envisioned that the labour transfer would be facilitated by an active labour market policy on the part of the government. In the Rehn-Meidner plan, centralized wage bargaining was necessary to achieve wage compression from below and thus to increase the supply of labour to the more dynamic sectors. Wage moderation in the model was strictly sector-specific: those at the high end of the productivity scale would enjoy wage moder-

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⁹ It is worth noting that in 1957, a number of unions representing skilled workers tried to withdraw from the peak-level bargaining scheme but met with fierce resistance from their employers. Their failure to secure decent wage settlements through decentralized bargaining forced them back into the fold, much to the satisfaction of management but not to their members. We take up this issue again in the section entitled "Wage relativities and the end of centralized wage bargaining".

¹⁰ See Hibbs & Locking (2000), p. 112.

¹¹ Rehn and Meidner's objective was in keeping with the social democratic principles presented at some length in Beveridge (1967). The precise details of their model can be found in The Swedish Confederation of Trade Unions (1953), Johnston (1962), Rehn (1952), Lundberg (1985), Pontusson (1992) and Martin (1995).

¹² They stressed that it would be necessary for the government and the central bank to pursue a mildly restrictive fiscal and monetary policy to ensure that wage gains did not lead to inflation.

ation, those at the bottom would not. This is quite different from the kind of wage moderation implied by the other explanations and thus provides us with a clear-cut testable prediction.

Centralized wage bargaining found favour with most LO members and SAF because it facilitated realization of the Rehn-Meidner plan.

Centralized wage bargaining found favour with most LO members and SAF because it facilitated realization of the Rehn-Meidner plan: wage solidarity for workers, wage moderation for the high-growth, export-oriented firms. It was, in other words, a means to an end, not an end in itself. Moreover, in response to our second question – how did centralized bargaining contribute to wage moderation – we maintain that it did so through wage compression and labour release, not through the internalization of externalities or implicit contracting.

There are four broad explanations for the inability of centralized bargaining to continue to deliver wage moderation.

Why did the system of wage determination that seemed to work so well in the 1950s and 1960s lose its touch in the 1970s? The literature offers four broad explanations for the inability of centralized bargaining to continue to deliver wage moderation during the 1970s and 1980s.¹³ Those who favour the internalization argument maintain that by the 1970s the proliferation of bargaining units within the Swedish labour movement rendered internalization unfeasible. According to those who subscribe to the implicit contract/cooperation position, changes in production technology at the end of the 1960s and thus in the demand for labour undermined the ability and willingness of labour and management to act cooperatively. Edin & Topel (1997) argue, instead, that the wage compression associated with centralized bargaining in Sweden discouraged investment in human capital and, over time, led to a serious shortage in the supply of skilled labour. Hibbs & Locking (2000) also focus on wage compression but stress its negative impact on productivity, especially after 1969 with the sharp reduction in intra-industry and intra-firm wage differentials.

Many factors contributed to the inability of centralized bargaining to continue to sustain wage moderation.

Although it is likely that many factors contributed to the inability of centralized bargaining to continue to sustain wage moderation, our explanation is based on an extension of Akerlof & Yellen's (1990) fair wage hypothesis where workers are concerned not only with their absolute pay but also with their remuneration relative to those above and below them on the pay scale.¹⁴ The intensification of wage compression from below after 1969 caused wage differentials to collapse. As a result, the morale and effort of skilled workers were negatively affected, wage inflation jumped, and profits and capital formation slumped. By 1983, the costs of

¹³ Other factors that are sometimes identified as contributors to its failure include: the collapse of Bretton Woods, soaring marginal income tax rates, welfare system reforms, and changes in labour market legislation.

¹⁴ Hibbs & Locking (2000), in a related article, reject an extension of Akerlof & Yellen's (1988) argument that wage compression fosters greater effort on the part of workers.

centralized bargaining to firms such as Volvo and to skilled workers such as those represented by Metall were simply too high to tolerate; hence their decision to negotiate outside the frame agreement.¹⁵ In answer to our final question – what can the past teach us about the present – we argue that if our theory is correct, attempts to reduce inter-occupational wage differentials in the current round of negotiations may have effects similar to those that flowed from wage compression in the 1970s.

We proceed as follows. We first offer evidence to support the argument that the high-wage, high-productivity firms, dominant within SAF, faced a serious labour supply problem and thus endorsed the Rehn-Meidner plan to help resolve it. Second, we show that centralized wage bargaining did foster wage moderation through wage compression, structural change, and an increase in the flow of labour to high-growth sectors. Firms in these industries enjoyed wage moderation even as they expanded their work force. In the next section, we summarize our modified version of the fair wage hypothesis and show how it helps us link the collapse of wage differentials after 1969 to the rise in inflation, explosion of absenteeism, and the drop in productivity and profits, especially among export-oriented firms.¹⁶ We summarize our results and review their implications in the final section.

Labour supply and demand in post-war Sweden

We argue that the Rehn-Meidner plan found favour at least initially with LO unions because it promoted wage solidarity, that is, equal pay for equal work.¹⁷ Endorsement by SAF was, however, crucial to its success. The question, of course, is why were SAF members, especially the large, export-oriented capital goods firms such as Volvo, vigorous supporters of the plan and of centralized wage bargaining right from the beginning? The answer we believe lies in the conditions of the Swedish labour market in the early post-war period. Swedish manufacturers, especially capital goods producers, experienced rapidly growing demand for their products both at home and abroad but also confronted a very tight labour market. The opportunities were substantial but so were the constraints. Centralized wage bargaining in a Rehn-Meidner context promised the best of both worlds – output growth with wage moderation. To make the

The Rehn-Meidner plan found favour at least initially with LO unions because it promoted wage solidarity.

¹⁵ Our analysis is perfectly compatible with that of Edin & Topel (1997). The difference is that they tend to stress the longer run effects of wage compression – a reduction in investment in and thus in supply of human capital, while we focus on more short-run consequences.

¹⁶ The change in Swedish income taxes during the period served to exacerbate the wage compression. See The Wall Street Journal (1979) for a concise description of the effects of the change in the income tax system.

¹⁷ Although equal pay for equal work, for the most part, is compatible with the neoclassical model of wage determination, adherence to the model was not a main consideration for the labour union economists.

case, we attempt in the next two subsections to document the growth of demand and the labour supply shortage.

LABOUR DEMAND

Between 1950 and 1970 GDP in Sweden grew faster than in other OECD countries and the economy underwent substantial structural changes.

The macroeconomic data on Sweden between 1950 and 1970 indicate the following. First, GDP grew at a faster rate than in other OECD countries. Second, as was the case elsewhere in Europe, the economy underwent substantial structural changes: output and employment expanded rapidly in manufacturing, commerce, and services while it contracted in textiles, agriculture and related activities (see Table 1 and Figure 1).¹⁸ If we focus on two-digit manufacturing industries, we find that employment and output growth was particularly swift among the high-wage, export-oriented sectors and slow or negative among low-wage sectors (see Table 2).

TABLE 1. SWEDISH EMPLOYMENT, 1945–75

Industry	Year					
	1945	1950	1960	1965	1970	1975
Agriculture, forestry, hunting and fishing	732 682	639 832	433 465	407 560	276 505	227 751
Mining, construction and manufacturing	1 142 084	1 257 444	1 427 532	1 452 572	1 347 435	1 313 717
Commerce	430 792	484 804	438 526	534 243	658 909	707 012
Transport, storage and communication	219 790	249 983	241 858	246 634	247 056	254 366
Services (including electricity, gas, water and sanitary services)	462 996	467 655	643 315	795 573	874 033	1 036 699
All industries	2 988 344	3 099 718	3 244 084	3 449 897	3 412 668	3 539 545

Source: Alexopoulos & Cohen (2003).

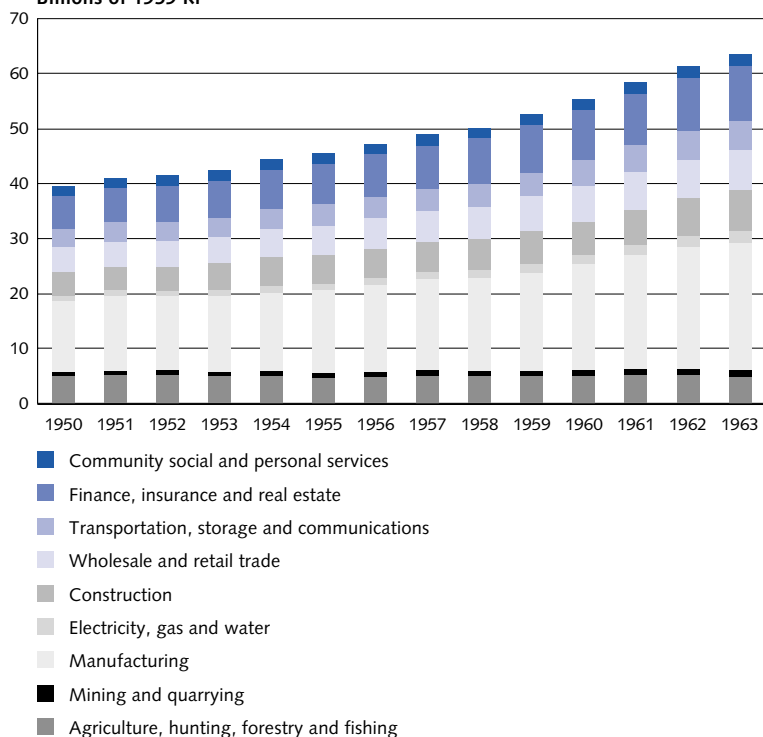
Output and employment seem to confirm our priors: Volvo and the other high-wage, export-oriented firms were expanding rapidly in the early post-war years and much in need of workers.

Even at the two-digit level, however, aggregation creates problems since differences across firms within a sector were substantial and thus dampen observable inter-industry differences. For this reason we compiled output and input series for Volvo from the company's annual reports.¹⁹ We selected Volvo because it was the perfect representative of the export-oriented, high-growth, high-productivity firm, it was a strong supporter of centralized wage bargaining in the beginning and an equally aggressive

¹⁸ Henrekson, Jonung & Szymne (1996).

¹⁹ Volvo, founded in 1927, experienced explosive growth in output, employment, productivity, productive capacity and profits during the first two decades following the second world war. For example, real turnover at AB Volvo, measured in 1947 kronor, increased over 600 per cent from 1945–55, and increased an additional 200 per cent from 1955–68. The changes in employment tell the same story of phenomenal growth. From 1947–68, AB Volvo's employment increased from 2,840 to 14,519 workers (an increase of 410 per cent). A large portion of this growth can be attributed to an increased demand for Volvo's goods abroad. As trade restrictions eased after the war, Volvo's exports soared and by 1968, statistics in their annual reports suggest that exports represented roughly 60 per cent of total sales. If anything, these numbers underestimate the amount of Volvo's sales abroad since, by 1968, the company had become a multinational with operations in Europe, North America and Oceania.

Figure 1. Real GDP per sector
Billions of 1959 Kr



Source: The statistics on one-digit industries were made available from the National Accounts Section of Statistics Sweden (SCB).

opponent at the end, and, finally, because being a public company, its records are part of the public domain. The numbers in Table 2 on output and employment would seem to confirm our priors: Volvo and, we assume, the other high-wage, export-oriented firms such as Saab, ASEA, Electrolux, Aga, and Ericsson were expanding rapidly in the early post-war years and were, therefore, much in need of workers.

Export data provide additional corroboration. For example, the real value of Swedish exports of automobiles and car parts jumped over 550 per cent between 1947 and 1958 while that of telephonic and telegraphic equipment grew approximately 260 per cent.²⁰ The challenge for these exporters, especially as competition from old rivals such Germany intensified, was to hold labour costs down as output grew; in short, to ensure that wage inflation did not choke off expansion.²¹

For example, the real value of Swedish exports of automobiles and car parts jumped over 550 per cent between 1947 and 1958.

²⁰ Data taken from the Swedish Statistical Yearbooks, various years.

²¹ Olsson & Burns (1987) and Pontusson (1992) among others recount the efforts made by the government and management to persuade labour to moderate its wage demands in the face of a very tight labour market. It is worth noting that a theoretical alternative to wage moderation was devaluation of the krona. This, however, was not considered a viable option by policy makers in the early years largely, we surmise, because it violated the spirit (if not the letter) of the Bretton Woods agreement on exchange rates. It was only with the collapse of the fixed exchange rate regime in the early 1970s that exchange rates were viewed and used by the Swedish government as an additional policy instrument.

TABLE 2. CHANGES IN EMPLOYMENT AND OUTPUT

Yearly changes in total employment, per cent

Year	High wage			Low wage					Total industry
	Metal and engineering	Manufacture of chemicals and chemical products	Printing	AB Volvo	Manufacture of wood and cork	Pulp and paper industry	Beverage and tobacco industry	Manufacture of textiles and wearing apparel	
1953-54	4.40	4.21	5.49	23.18	10.48	4.07	-1.18	-0.01	2.84
1954-55	5.91	3.74	3.44	17.51	1.57	3.94	2.71	-2.50	-0.56
1955-56	2.39	3.65	1.89	4.68	-5.31	2.23	-0.35	-2.17	0.13
1956-57	1.36	2.59	0.08	4.56	-2.15	1.00	-5.51	-4.10	0.71
1957-58	0.05	0.36	1.49	16.74	-1.08	0.38	-2.16	-6.08	-2.04
1958-59	1.72	2.16	-0.61	10.60	-0.79	2.67	-1.13	-0.37	1.86
1959-60	7.26	5.05	3.44	10.92	5.13	4.53	2.62	2.28	3.01
1960-61	6.57	3.72	3.00	3.50	-0.27	3.65	-2.77	-0.46	-0.04
1961-62	2.60	2.19	1.01	5.12	-1.59	-0.53	2.65	-2.86	-2.26
1962-63	-0.18	2.05	1.26	6.46	2.31	-1.02	-5.69	-1.84	0.92
Average	3.21	2.97	2.05	10.33	0.83	2.09	-1.08	-1.81	0.46

Change in real output, per cent

Year	High wage			Low wage					Total industry
	Metal and engineering	Manufacture of chemicals and chemical products	Printing	AB Volvo	Manufacture of wood and cork	Pulp and paper industry	Beverage and tobacco industry	Manufacture of textiles and wearing apparel	
1953-54	9.60	11.19	10.97	26.87	22.03	31.47	4.29	0.83	11.98
1954-55	7.50	4.47	5.86	6.58	3.99	6.92	-0.04	-1.59	3.03
1955-56	5.88	7.10	2.48	0.76	-8.10	-0.35	-7.26	-0.98	-2.35
1956-57	5.43	5.21	0.59	25.28	5.89	0.70	-4.30	0.98	4.02
1957-58	-0.71	0.62	2.45	15.95	-4.12	-6.39	6.17	-4.92	-3.39
1958-59	7.85	11.02	3.86	10.54	11.57	3.77	4.34	2.34	5.05
1959-60	6.50	7.06	5.70	14.88	3.85	10.12	-5.04	5.33	-1.22
1960-61	15.72	5.09	6.69	3.91	6.01	-3.82	3.20	6.51	9.85
1961-62	3.01	4.80	5.87	29.72	-1.20	-10.83	0.74	-1.35	-2.26
1962-63	1.29	3.42	7.17	4.50	9.75	11.71	8.80	5.67	5.84
Average	6.21	6.00	5.16	13.90	4.97	4.33	1.09	1.28	3.06

Sources: Statistics Sweden Yearbooks and AB Volvo Annual Reports, various years.

Data from a number of sources support the notion that Swedish employers faced a very tight labour market during the early post-war years. First, while a number of countries (for example, Germany, Italy, and Japan) were able to rely on a steady stream of immigrants or internal migrants to meet the growing demand for workers, immigration into Sweden was very modest, certainly well short of the growth in employment.²² Second, according to the estimates contained in Figure 2, based on data drawn from the Historical Yearbooks of Sweden, unemployment rates among union members dropped sharply in the 1940s and hovered around 1.5 per cent for much of the 1950s and 1960s; unemployment rates were even lower among members of Metall.²³ Moreover, the ratio of vacancy rates to job applicants jumped at the war's end, remained on average above 1.6 vacancies per applicant until the introduction of centralized bargaining in 1956 and even after that consistently exceeded 1.5 to 1.

There are, finally, data on wages that would also seem to confirm the existence of a tight labour supply. LO member unions negotiated significant wage increases in 1946 and 1947, in part, perhaps, as compensation for limited increases during the war but, without doubt, an indication of a robust demand for workers.²⁴ Wages jumped again in 1950 and would have continued their steep ascent had the social democratic government not been able to persuade the unions to accept a wage freeze.²⁵ The arrangement was, however, temporary and, in any case, did nothing to alleviate the supply shortage, especially for the high-growth sectors. The risk, of course, was that competition among firms for workers would continue to drive up labour costs, reduce profits, and choke off expansion.²⁶ It was in this context that the Rehn-Meidner plan was conceived and, we contend, quickly embraced by SAF.

Swedish employers faced a very tight labour market during the early post-war years.

Data on wages also seem to confirm the existence of a tight labour supply.

Wage compression, wage moderation, and labour release

In this section we review data on wages, productivity, output, and employment by sectors and by regions to illustrate that wage compression from below did push up costs for low-wage, low-productivity firms and did lead to a drop in the number of firms and employees in these sec-

²² See Alexopoulos & Cohen (2003) for the numbers.

²³ It should be noted that since roughly 80 per cent of Swedish workers were union members, the numbers in Figure 2 provide an accurate estimate of actual rates of unemployment.

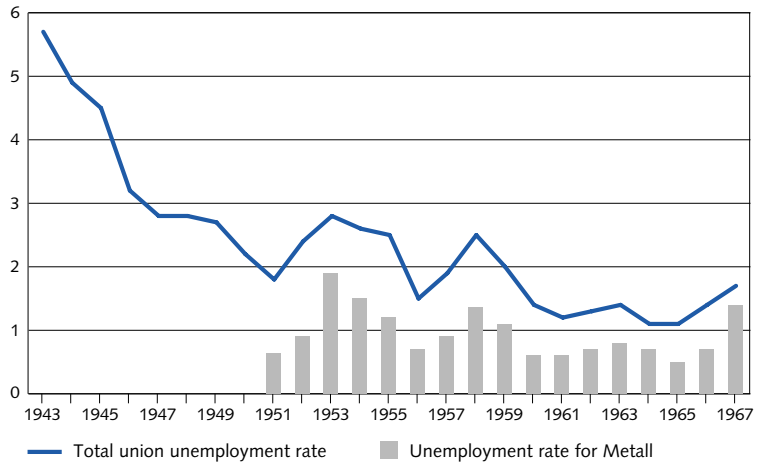
²⁴ Olsson & Burns (1987), p. 187.

²⁵ Part of the 1950 wage increase was likely due to the sharp spike in inflation associated with the outbreak of the Korean War.

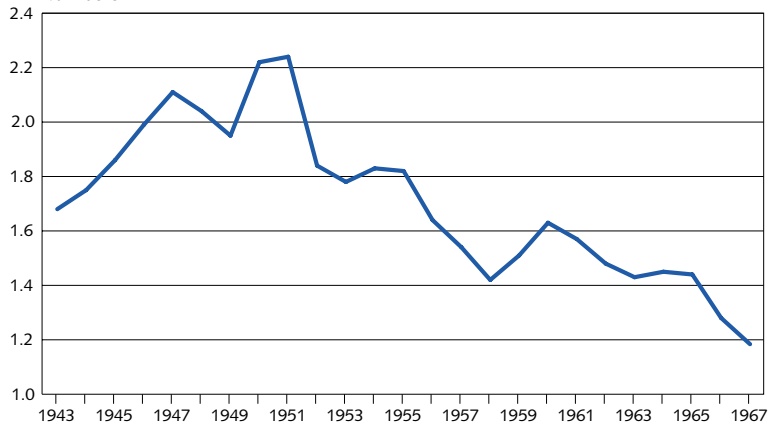
²⁶ Pontusson (1992), p. 59.

Figure 2. Labour market indicators

Unemployment rates in Sweden, 1943-67
Per cent



Vacancies per job applicant in Sweden, 1943-67
Numbers



Source: Alexopoulos & Cohen (2003).

Wage compression from below did push up costs for low-wage, low-productivity firms and did lead to fewer firms and employees in these sectors.

tors. This, in turn, freed up labour for employment elsewhere in the economy and, in effect, reduced the labour supply constraint faced by the rapidly expanding, export-oriented firms. It was, in short, wage moderation at the top and wage immoderation at the bottom. Wage compression had another important consequence – a sharp reduction in inter-industry wage differentials. We examine the implications of the latter in the following section.

Wage moderation and wage compression

If we define wage moderation as increases in total factor productivity in excess of increases in the real wage, then, at least at the aggregate level, Sweden did experience wage moderation between 1950 and 1970. The aggregate numbers, however, are deceptive because they hide significant sectoral differences in real wage growth and thus in the degree of wage moderation, exactly what we would expect in a Rehn-Meidner world. Before we consider the data, we need to address the following question. What would we expect to happen if some firms in the low-wage sectors respond to the increase in wages by investing in new equipment and pushing up labour productivity? The answer, of course, depends on the level of aggregation of our data. Since we are compelled, for the most part, to work with data based on two-digit industries, the drop in the number of firms and in employment in the low wage sectors is likely to be muted. On the other hand, we would still expect to see a contraction in intra and inter-industry wage differentials.

Rehn and Meidner argued that wage increases should be moderate for high-wage, high-productivity firms and “immoderate” (that is, wage increases in excess of increases in productivity) for those at the opposite end of the wage-productivity spectrum. We would, therefore, expect to find an inverse relationship between wage increases from 1956 (the start of centralized wage bargaining) to 1967 (the end, more or less, of phase one of the wage compression process) and the wage-productivity ranking of sectors in say 1953.²⁷ In Figure 3, we illustrate the relationship between blue-collar workers’ real wages and value added per employee for two- digit sectors in 1953 and for Volvo. Although they do not line up perfectly along both wage and productivity measures, they do seem to indicate that mining, chemicals, metalworking and engineering were, on the whole, high-wage, high productivity sectors while textiles, wood and cork, and leather were at the low end in both categories.²⁸ Two features about Volvo, our representative export-oriented firm, stand out. First, it was definitely a high-wage, high-productivity enterprise and, second, output per worker and real wages at Volvo exceeded those of other firms in metalworking and engineering.

The next question: do sectoral wage increases between 1956 and 1967 appear consistent with the Rehn-Meidner plan? The answer is, on the whole, yes. Real wages among textile workers rose 82 per cent over the period or, on an annual basis, 5.1 percent. On the other hand, wages

If wage moderation is defined as increases in total factor productivity in excess of real wage increases at the aggregate level, Sweden did experience wage moderation between 1950 and 1970.

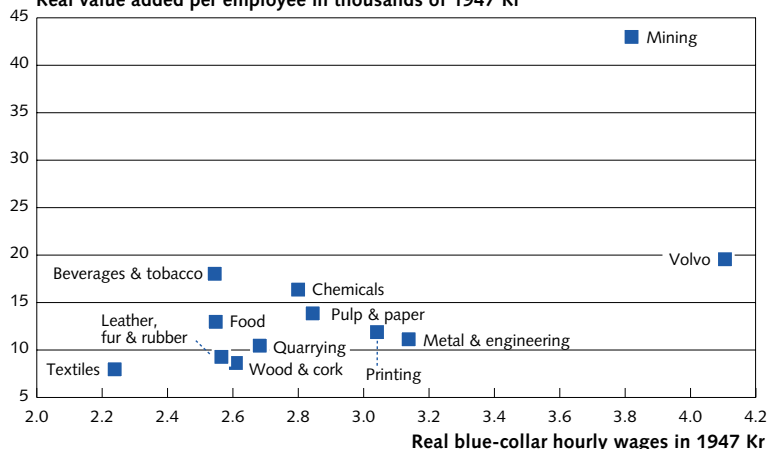
Rehn and Meidner argued that wage increases should be moderate for high-wage, high-productivity firms and “immoderate” for those at the opposite end of that spectrum.

²⁷ See also Edin & Topel (1997) and Hibbs & Locking (2000).

²⁸ The correlation between the industries’ value added per employee and blue-collar wages in 1953 is roughly 0.8. Moreover, our breakdown resembles that of Edin & Topel (1997) who rely on census data.

Figure 3. Real blue-collar hourly wages and real value added per employee by industry in 1953

Real value added per employee in thousands of 1947 Kr



Source: Alexopoulos & Cohen (2003).

On the whole, the sectoral wage increases between 1956 and 1967 appear consistent with the Rehn-Meidner plan.

of workers in metal and engineering increased 66 per cent or roughly 4 per cent per year. Wage increases at Volvo were even more modest – 36 per cent overall or 2.2 per cent annually. As the numbers in Table 3 illustrate, there was clear wage compression from below between 1956 and 1970. The results recorded in Figure 4 make the same point even more emphatically. Wages of Volvo workers dropped sharply relative to those

TABLE 3. HOURLY WAGES ACROSS SECTORS RELATIVE TO WAGES IN METAL MANUFACTURING, 1953 AND 1970

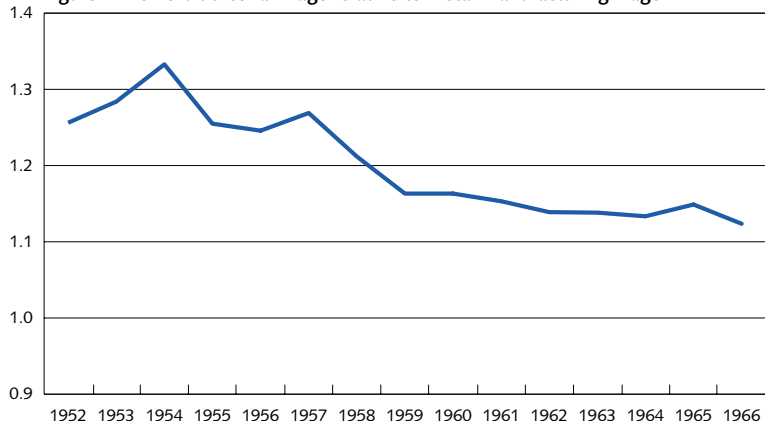
Industry	1953	1970
Mining	1.19	1.12
Metal manufacturing	1.00	1.00
Quarrying and nonmetallic manufacturing	0.86	0.96
Manufacture of wood and cork	0.82	0.91
Pulp and paper industry	0.90	0.99
Printing	1.02	1.18
Food manufacturing	0.86	0.95
Beverage and tobacco industry	0.85	0.94
Manufacture of textiles, wearing apparel	0.81	0.86
Manufacture of leather, furs and rubber products	0.89	0.93
Manufacture of chemicals and chemical products	0.93	0.95
Total manufacturing	0.94	0.98
Public works	1.00	1.05
Building and construction*	1.25	1.13
Farm wages*	0.63	0.72

* Building and construction relative wages are reported for 1953 and 1967, relative farm wages for 1953 and 1966.

** The wage series used are based on male blue-collar workers and are measured in 1947 Kr.

Source: Alexopoulos & Cohen (2003).

Figure 4. Volvo blue-collar wage relative to metal manufacturing wage



The relative wage is based on the average hourly wages for both men and women in metal manufacturing and in Volvo.

Source: Alexopoulos & Cohen (2003).

of all metal workers, whose wages, in turn, fell relative to those of textile and other low-wage employees.²⁹

Wage compression for Rehn and Meidner was not an end in itself but a means to foster labour release. For this to occur, wage increases among the low-wage, low-productivity firms had to be “immoderate” (wage increases in excess of the rise in value added per worker) and moderate for high-wage firms. The data presented in Figures 5 and 6 confirm that this pattern of wage changes did occur. As can be seen in Figure 5, the ratio of the real wage to value added per worker for textiles and leather did go up, while it remained constant for metal and engineering and declined for chemicals and Volvo.³⁰ Moreover, as revealed in the scatter plot in Figure 6, the growth rates of real hourly wages between 1953 and 1968 varied inversely with the rank ordering of industries’ value added per worker in 1953, a result consistent with wage compression from below.

It is worth noting that neither the implicit contract nor the internalization explanations of wage moderation is compatible with wage compression from below. Low-wage, low-productivity firms were unlikely to enter into an implicit agreement that threatened their survival. Moreover, high-wage firms would have had a strong incentive to break ranks on wages if nothing were done to ease the labour supply constraints they

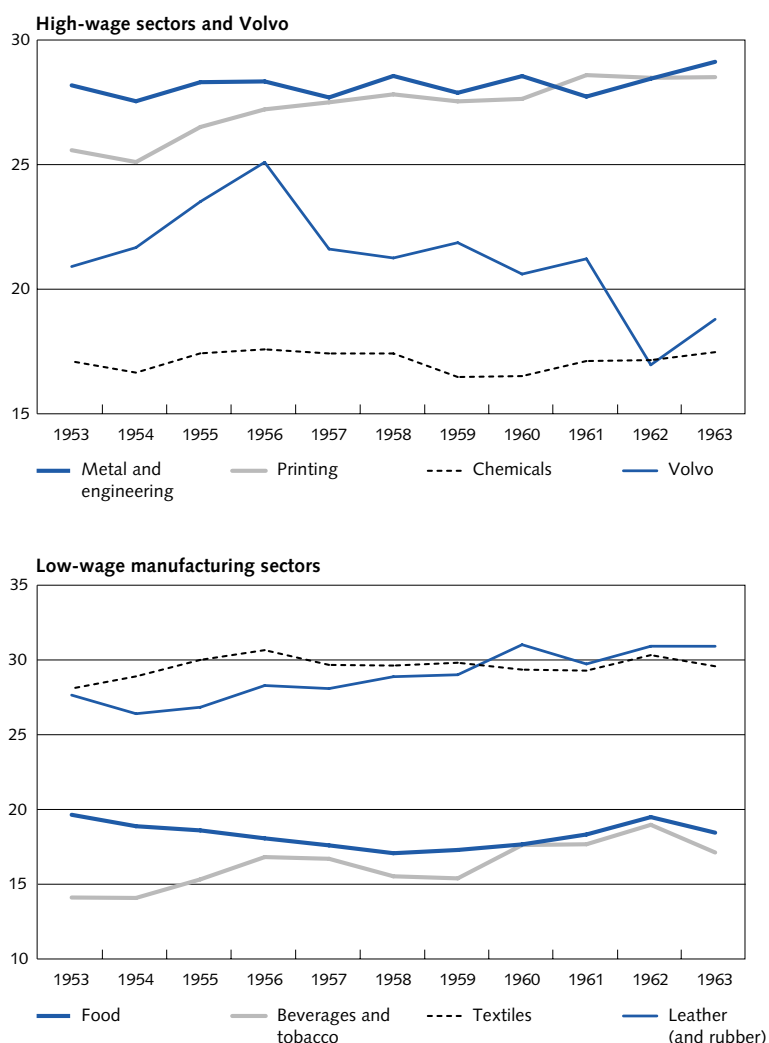
Wage compression for Rehn and Meidner was not an end in itself but a means to foster labour release.

It is worth noting that neither the implicit contract nor the internalization explanations of wage moderation is compatible with wage compression from below.

²⁹ These results, on the whole, are consistent with the findings of Hibbs & Locking (2000) and Edin & Topel (1997).

³⁰ It is worth noting that these numbers likely underestimate wage immoderation in the low-wage sectors because of attrition in the number of low-productivity firms within the sectors.

Figure 5. Real hourly wage relative to real value added per employee, 1953-63



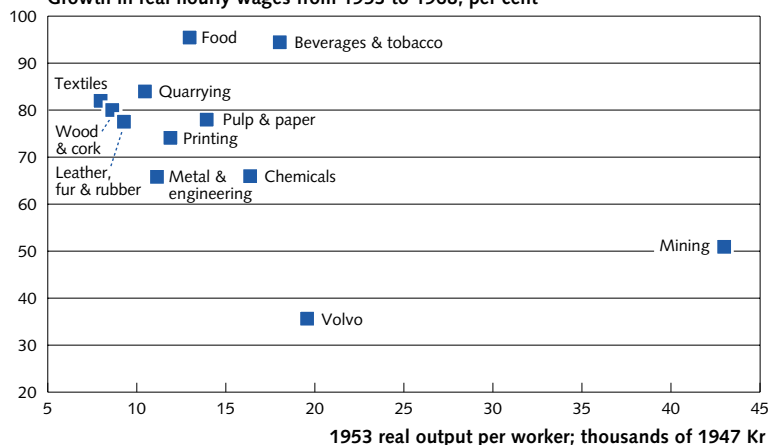
Source: Alexopoulos & Cohen (2003).

faced.³¹ The internalization argument is based on the notion that labour tailors its wage demands to achieve full employment. And yet wage compression from below as conceived by Rehn and Meidner and as implemented in Sweden was designed to promote labour release by the low-wage, low-productivity sectors. The two would seem to be mutually exclusive.

³¹ As Eichengreen (1996) and Eichengreen & Iversen (1999) point out, the government allowed firms to place retained earnings in non-taxed accounts on the understanding that the funds could be withdrawn only with government approval and used only to fund new capital projects. There was, however, nothing to prevent firms from increasing wages to attract new labour.

Figure 6. Growth rate of real hourly wages from 1953 to 1968 and real output per worker in 1953

Growth in real hourly wages from 1953 to 1968; per cent



Source: Alexopoulos & Cohen (2003).

LABOUR RELEASE

Rehn and Meidner argued that the workers released by the low-end firms would, with the help of a very active labour market policy on the part of the government, find employment in the fast-growing, high-end sectors. The data from the Swedish Statistical Yearbooks indicate that government spending on employment exchanges, vocational guidance and retraining programs jumped by a factor of ten between 1956 and 1968, from 20 million 1947 kronor to 207 million kronor. It is worth noting that by the latter date, 73 per cent of these funds, as opposed to less than 2 per cent in 1956, went to retraining displaced workers. Moreover, spending on these programs continued to rise, peaking in 1970 at 706 million 1947 kronor.³²

The government clearly played its assigned role. The key question is whether, as Rehn and Meidner intended, wage compression led to a contraction in the number of workers and firms in low-wage industries and an increase among high-wage ones. Consider first the low-wage sectors. Wage compression from below in the Rehn-Meidner plan should have caused the number of establishments and workers in these sectors to decline. If we were to assume, as seems reasonable, that in each of these sectors there existed an array of more and less productive firms, wage compression would have caused the least productive to disappear. If we were to assume further (again reasonable) that the least productive were

Rehn and Meidner argued that the workers released by the low-end firms would find employment in the fast-growing, high-end sectors.

The key question is whether wage compression led to a contraction in the number of workers and firms in low-wage industries and an increase among high-wage ones.

³² Although Edin & Topel (1997) raise serious questions about the efficacy of these expenditures, it is clear that the government was committed to maintaining low levels of unemployment and easing the transition between sectors for workers.

also the smallest, it follows that in these sectors we would expect to find a drop in the number of workers, an increase in average firm size, and a rise in productivity per establishment. The impact on the number of establishments is less clear-cut. Numbers may have fallen but if productivity, competitiveness, and output all increased, they may have remained unchanged. At the high end, although we would expect to witness an increase in employment, there was no obvious link between wage compression and the number, size, and productivity of establishments. These would, instead, depend on the degree of scale economies, the nature of technical innovations, and other features of the growth process.³³

Low-wage, low-productivity industries lost workers and establishments while average output per worker and per establishment increased.

The statistics reported in Figures 7A and 7B on establishments, employment, and firm size support our argument. As shown in the first two panels of Figure 7B, low-wage, low-productivity industries – textiles, wood and cork, and leather, fur, and rubber – lost workers and establishments while average output per worker and per establishment increased. On the other hand, the third panel reveals that investment per establishment among these firms increased sharply, suggesting that at least some chose to combat the wage pressure with new capital outlays and a consequent increase in productivity. These investment expenditures moderated but did not fully counter the forces of contraction.³⁴

Wage compression from below led to labour release by low-wage firms and labour absorption by high-wage ones.

As indicated in Figure 7A, firms in metalworking and engineering, printing, and paper increased employment and grew in size while the number of establishments remained, more or less, the same. In chemicals, employment, establishments, and size all rose. Volvo experienced a jump in employment and productivity as measured by value added per worker.³⁵ Moreover, as we showed earlier, wage increases at the high end were modest, especially when compared with the growth in productivity. We would conclude from this analysis that wage compression from below led to labour release by low-wage firms and labour absorption by high-wage ones, exactly as Rehn and Meidner intended.³⁶

Wage relativities and the end of centralized wage bargaining

As we posited in the introduction, any explanation for the rise of centralized wage determination must also be able to explain its demise. We

³³ Henrekson, Jonung, & Stymne (1996) note that the Rehn-Meidner scheme favoured existing over new firms which, if correct, would have promoted growth in size of establishments at the expense of new ones.

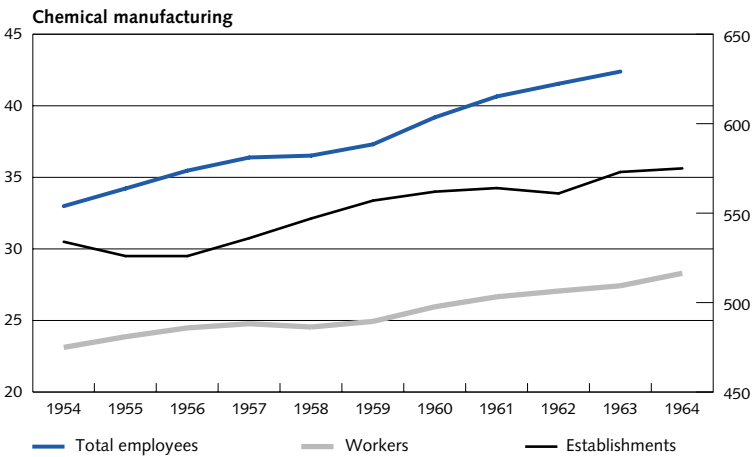
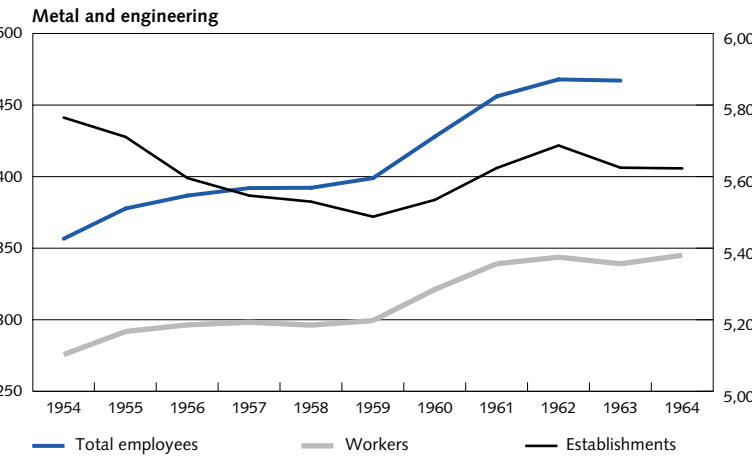
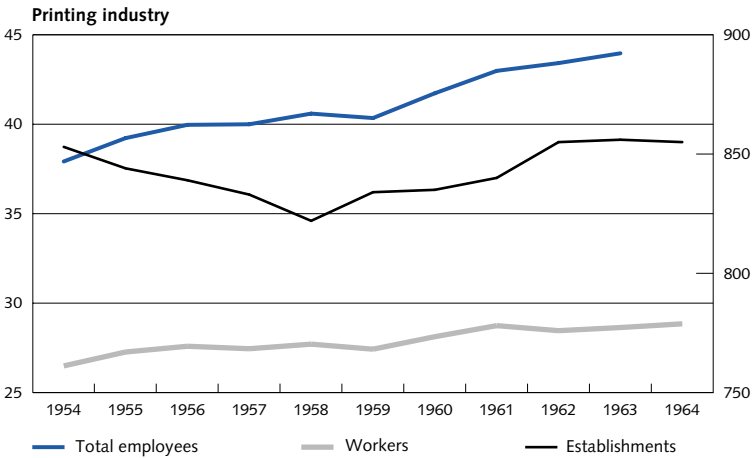
³⁴ It is interesting to note that increases in employment in these sectors correspond to increases in the amount of investment per establishment.

³⁵ In Volvo's 1966 annual report, management reported that "the Swedish labour market was normalized and the supply of manpower improved, one of the factors contributing to this being the progressive structural rationalization resulting in a manpower surplus within several branches of Swedish industry".

³⁶ Our results are consistent with those reported by Edin & Topel (1997).

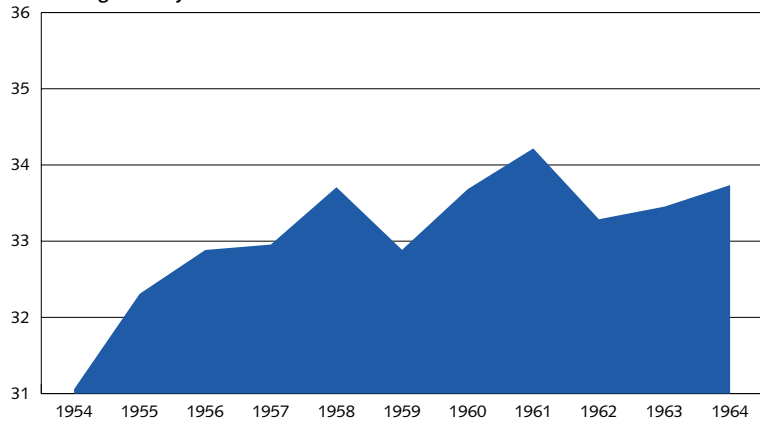
Figure 7A. Employment, establishments, firm size and real investment.
High-wage industries

Number of total employees and workers, thousands (left scale);
establishments (right scale); 1954-64

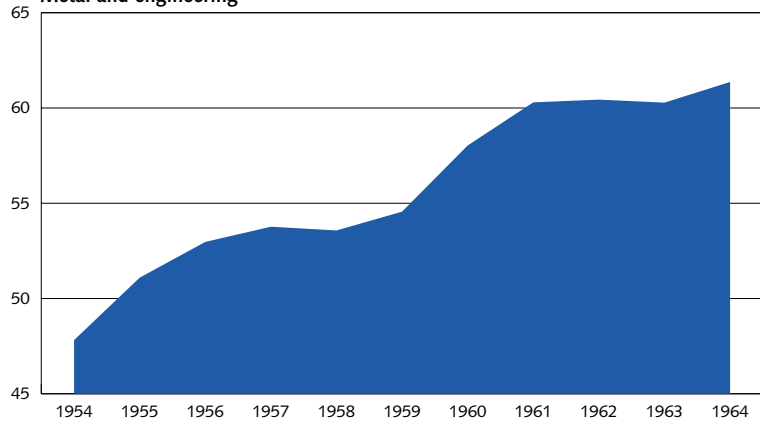


Number of workers per establishment; 1954-64

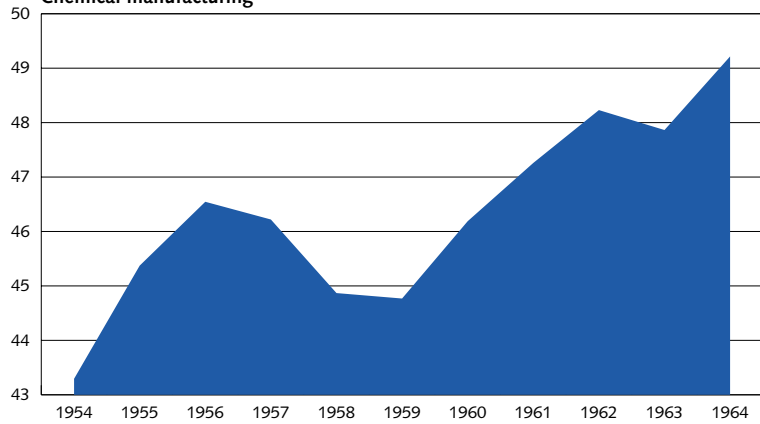
Printing industry



Metal and engineering

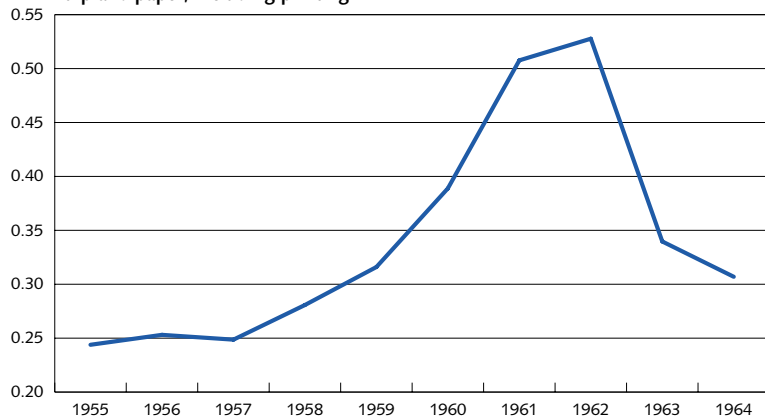


Chemical manufacturing

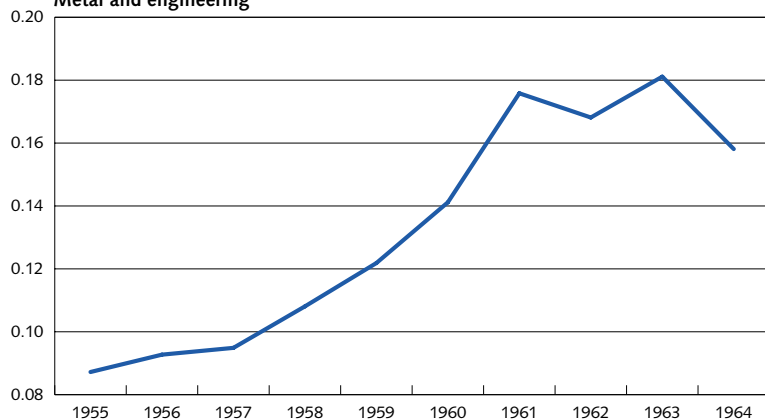


Real investment per establishment; 1955-64
Millions of 1947 Kr

Pulp and paper, including printing



Metal and engineering



Chemical manufacturing

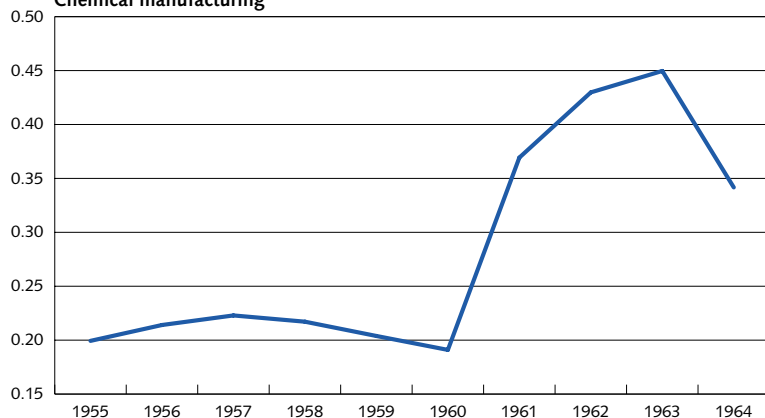
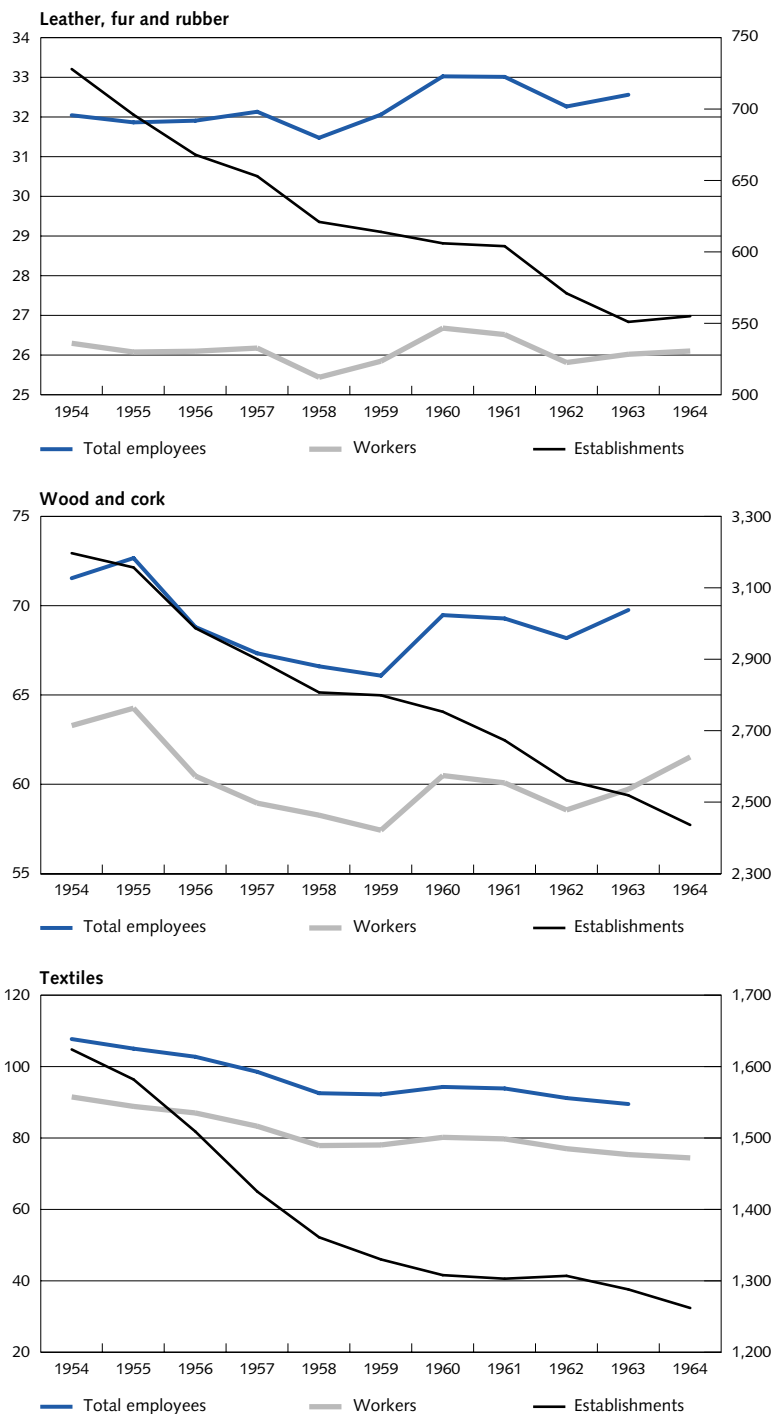


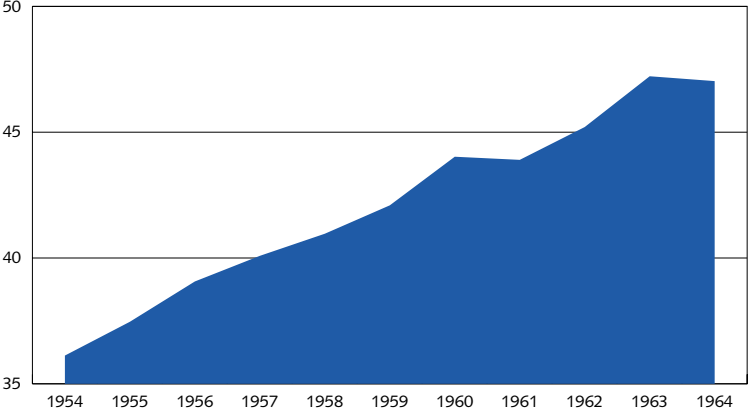
Figure 7B. Employment, establishments, firm size and real investment.
Low-wage industries

Number of total employees and workers, thousands (left scale);
 establishments (right scale); 1954-64

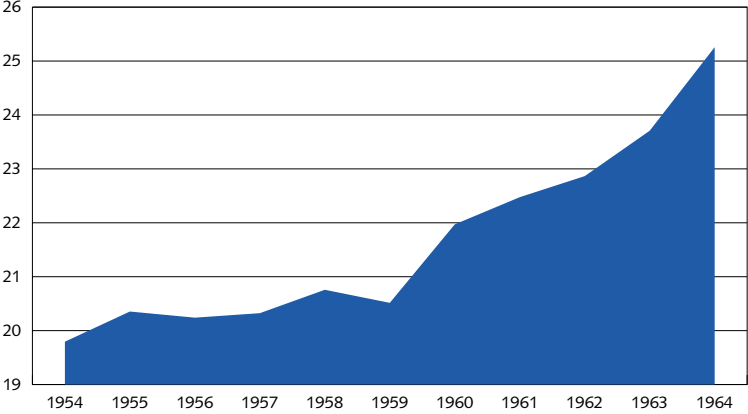


Number of workers per establishment; 1954-64

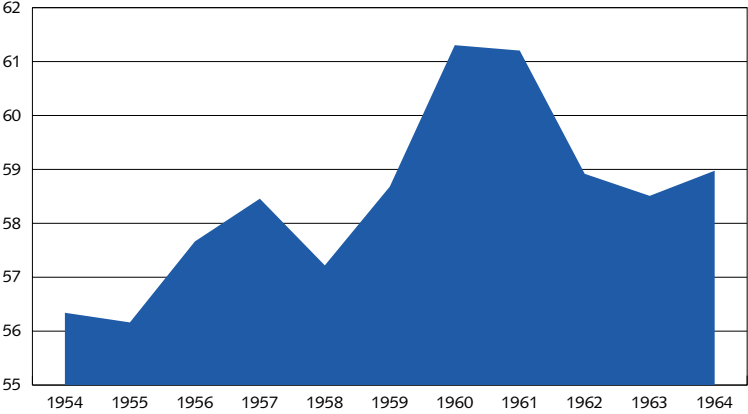
Leather, fur and rubber



Wood and cork

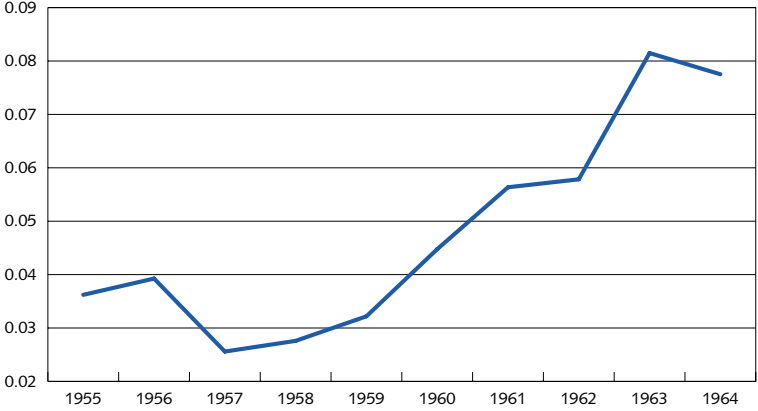


Textiles

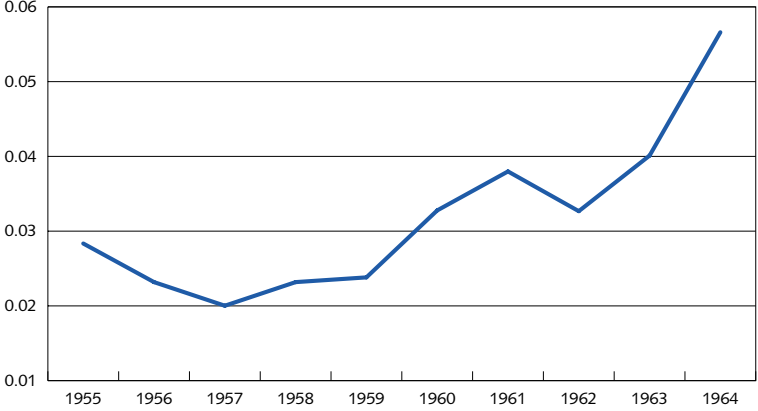


Real investment per establishment; 1955-64
Millions of 1947 Kr

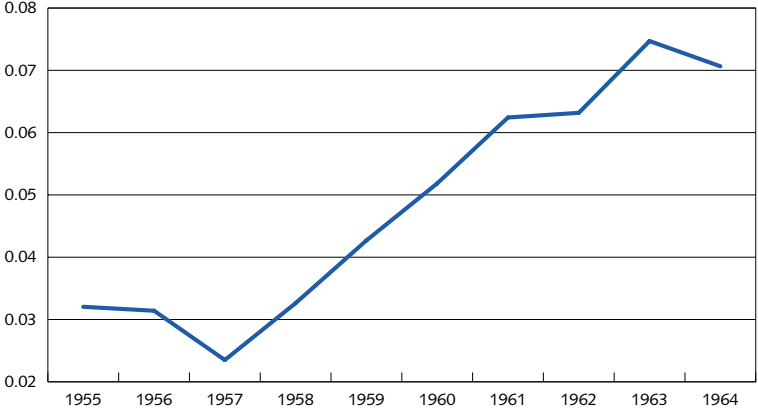
Leather, fur and rubber



Wood and cork



Textiles



Source: Alexopoulos & Cohen (2003).

argue that Sweden's economic troubles in the 1970s were closely linked to the negative impact that intensified wage compression had on worker morale and effort and, consequently, on productivity and profits. We base this contention on our modified version of Akerlof & Yellen's (1990) fair wage hypothesis in which we argue that workers care not only about their absolute pay but also about their compensation relative to that of others, both above and below them on the pay scale.³⁷ In this environment, changes in wage relativities, if perceived to be unfair (for example, excessive compression), will cause workers to reduce effort.

Is there, in fact, evidence to suggest that Swedish workers, especially highly paid ones, cared about their compensation relative to others? The answer is yes. When centralized wage bargaining in the context of the Rehn-Meidner plan was first proposed, highly paid blue-collar unions (Metall, building trades) made no secret of their lack of enthusiasm for it. The reason was simple. They feared that wage differentials between them and those lower down the pay scale would be reduced.³⁸ A similar sentiment was expressed by TCO. As Olsson & Burns (1987, p. 189) observe,

There are indications that Swedish workers, especially highly paid ones, cared about their compensation relative to others.

The central white-collar union, TCO, was initially included in the attempts to organize central negotiations. This cooperation fell through because of the LO's adherence to a principle of combined absolute/percentage increases in contract formation, whereas white-collar unions would only accept percentage forms (since the latter maintain wage and income relativities, an important goal for the white-collar unions in regard to white-collar/blue-collar income relations).

During the first phase of centralized bargaining, up to the late 1960s, wage drift served as an escape valve for those at the higher end of the pay scale. We turn, once again, to Olsson and Burns (1987, p. 189) for confirmation:

During the first phase of centralized bargaining, up to the late 1960s, wage drift served as an escape valve for those at the higher end of the pay scale.

Unauthorized wage increases (wage drift) were a persistent problem during the entire period 1956–66 ... Branch unions negotiated unauthorized increases, in part due to pressure from their members to maintain traditional relativities, not taken into account in the central agreements ... Employers often went along with these demands, either to avoid trouble with their

³⁷ See Alexopoulos & Cohen (2004).

³⁸ Despite their best efforts to maintain traditional differentials, centralized wage bargaining reduced them, especially after 1969. This is clearly demonstrated by Hibbs & Locking (2000) and Davis & Henrekson (2001).

union locals or to express genuine support for a more differentiated or what was felt to be, locally, a more suitable wage structure.

By the late 1960s the solidaristic objectives of the majority of LO members shifted from equal pay for equal work to equal pay period.

By the late 1960s, however, as Hibbs and Locking note, the solidaristic objectives of the majority of LO members shifted from equal pay for equal work to equal pay period. The escape valve was closed with the introduction of wage-drift guarantees for all workers, while low-wage pots were created to enhance the pay of low-wage workers.³⁹ Wage compression intensified, intra-industry and intra-firm pay differentials contracted, and skilled workers, with no way to maintain traditional relationships, began to shirk. Although, as Pontusson and Swenson (1996, p. 232–33) note in the following quote, engineering firms were hardest hit by the collapse of wage differentials, evidence suggests that most high-wage employers suffered.

Through the 1960s, LO-SAF agreements did little to disturb wage distributional patterns within the private-sector firms and sectors. ... From 1969 onward, however, peak-level bargaining became increasingly invasive in intrasectoral and intrafirm pay setting. ... The new invasiveness of peak-level bargaining imposed two major nuisances, according to engineering employers: interoccupational leveling and wage drift compensation clauses. ... Provisions for interoccupational leveling first introduced in 1969 in fact hit the engineering employers hardest.

Hibbs and Locking find that while equal pay for equal work may have enhanced labour productivity, more egalitarian pay schemes did not.

Hibbs and Locking (2000) use data on reduced wage differentials during this period to test a version of the Akerlof & Yellen (1988) fair wage hypothesis in which increased wage compression within firms is likely to boost morale, effort, and productivity. Hibbs and Locking find that while equal pay for equal work may have enhanced labour productivity, more egalitarian pay schemes did not. Although they reject the Akerlof-Yellen hypothesis, they do not provide an alternative explanation for the behaviour of Swedish workers. We argue that the missing link is supplied by a revised version of the fair wage hypothesis, one in which a worker's utility is affected by his absolute wage and his wage relative to those both above and below him on the pay scale.

We demonstrate in a forthcoming article (Alexopoulos & Cohen (2004)) that an excessive narrowing of wage differentials is likely to cause

³⁹ Pontusson & Swenson (1996).

the representative skilled worker to cut back on his effort and may have a negative impact on his measured productivity and on his employer's profits. With wage compression from below, high-wage firms, if there is no wage cap on the compensation they can offer their workers, will choose to raise wages to restore traditional differentials. We show that this is optimal on the part of these firms, in spite of the increased cost, because restoration of the differentials induces workers to maintain their precompression level of effort. Moreover, if labour productivity is rising, labour demand by these firms is unlikely to decrease. As it happens, this environment (wage compression along with increases in labour productivity) approximates Sweden's experience during the first phase of centralized wage bargaining, from roughly 1956 to 1968. Wage compression from below, central to the Rehn-Meidner plan, was side-stepped by Volvo and the other export-oriented firms through wage drift at the plant level. Although, as Volvo notes in its annual reports for the late 1960s, wage drift did pressure profits, for the most part, employment, output, productivity, and profits at these firms remained robust. As pointed out above, enterprises lower down on the productivity and wage scale did lose workers, either because they were forced to cut their work force in response to wage increases or because they went bankrupt.

Problems began to arise once wage-drift guarantees were introduced for low-wage workers and the wage cap for well-paid employees was enforced.⁴⁰ Consequently, wage differentials then became even more compressed. As we indicate in our model, if firms are unable to maintain traditional wage differentials, the representative worker will decrease his effort (or, the equivalent, increase his rate of absenteeism). As a result, profits, productivity and output per worker will decline. Once again, this corresponds with Swedish experience, this time with the intensification of compression in the 1970s and early 1980s.⁴¹ With the loss of wage flexibility at the upper end, wage differentials shrank, and effort levels and productivity collapsed.⁴² Absenteeism soared. Volvo, for example, reported absenteeism rates in excess of 20 percent, the highest in its history,

Restoration of the differentials induces workers to maintain their precompression level of effort.

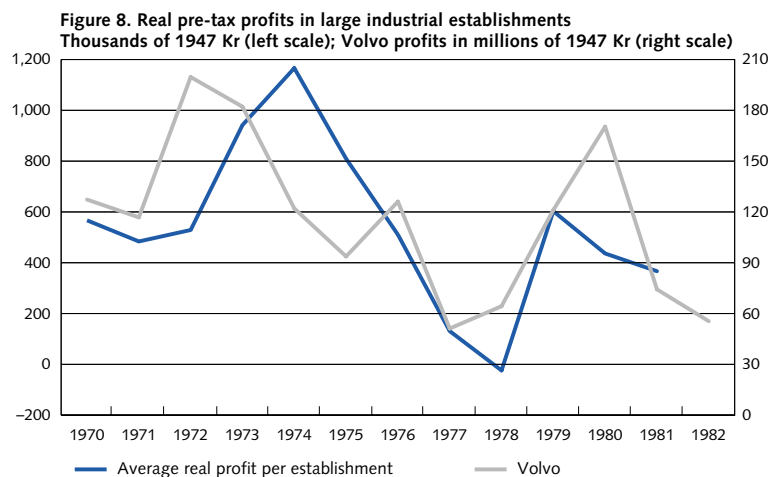
If firms are unable to maintain traditional wage differentials, the representative worker will decrease his effort. With the loss of wage flexibility, absenteeism soared and Volvo, for example, reported absenteeism rates in excess of 20 per cent.

⁴⁰ Firms that violated the upper bound set by the frame agreement were subject to fines. For example Davis & Henrekson (2001) report that Volvo was fined in the 1970s because its wages exceeded the cap.

⁴¹ Two factors, in addition to wage drift guarantees and low wage pots, contributed to the collapse of wage differentials and interoccupational wage leveling: (i) increases in the minimum contractual wage, and (ii) heavier penalties on firms that violated the upper bound on wages in the frame agreement. The concurrent changes in marginal tax rates also tended to narrow the differences in take-home pay between high paid and low paid workers. These changes would simply accentuate the problems caused by the compression.

⁴² While business cycles caused some variation in the productivity numbers, the overall trend during the 1970s and early 1980s was clearly negative.

and noted that morale touched an all-time low.⁴³ At the same time, as is clearly illustrated by the graph in Figure 8, profits plummeted.



The only solution was the elimination of centralized wage bargaining and the decompression of the pay scale.

Volvo and others did make various attempts (worker friendly plants, cooperative work arrangements) to rebuild morale and reduce absenteeism but failed on the whole. The only solution was the elimination of centralized wage bargaining and the decompression of the pay scale. This, we argue, is exactly what occurred in 1983 when Volvo and Metall agreed to bargain outside the frame agreement and, in effect, brought centralized bargaining to an end.

It is extremely important that both labour and management seek to ensure that inter-occupational wage differentials pass the fairness test for the affected workers.

It should not come as a surprise that Swedish workers still care about their relative wages. This is clearly illustrated by evidence in Agell and Lundborg (1995) and by the results of the recent survey carried out by Statistics Sweden on behalf of LO. The lesson from the past is straightforward. While some wage compression, if deemed to be fair, may boost worker morale and effort, an excessive narrowing of the differentials may have exactly the opposite effect. It is, therefore, extremely important that both labour and management seek to ensure that inter-occupational wage differentials pass the fairness test for the affected workers.⁴⁴

⁴³ The Wall Street Journal (1979) reported that from 1960–78 male absenteeism rates in Swedish manufacturing industries increased over 63 per cent. The increase continued into the early 1980s; according to a subsequent article in the Journal (1980), by this time absenteeism rates for Swedish workers had become the highest among the major industrialized countries. Volvo's (1980) annual report echoes this finding by reporting that their absenteeism rate hit 22 per cent for their Swedish companies.

⁴⁴ Although ascertaining what workers feel are fair wage differentials can be difficult, some guidance may be provided by the recent survey evidence in the January 2003 LO report, *Röster om facket och jobbet* (Voices on the union and the job).

Conclusion

We argue in this paper that SAF embraced the Rehn-Meidner plan with enthusiasm because it promised to help relieve the severe labour supply shortages that large, export-oriented firms faced in the early post-war years. Skilled workers, on the other hand, were cool to the scheme, largely because they feared, with reason, its negative impact on wage differentials.

As we explain, the purpose of the plan was to promote economic expansion with full employment and low inflation and to ensure that labour received its fair share of the growth dividend. The plan was simple and ingenious. Wage increases for low-paid workers would exceed increases for those higher up the pay scale. As a result, low-wage firms would be forced to shut down (or, less likely, raise productivity) and would thus release workers for employment in the high-wage, high-growth sectors. The government would facilitate the redeployment of labour through an active labour market policy, that is, through assistance in retraining, relocation, and job search. Centralized wage bargaining, although a key feature of the plan, was seen strictly as a means to an end – it made possible wage compression from below and fostered labour release. In short, then, it is neither internalization of externalities nor implicit contracts that explains wage moderation but, instead, an increase in the supply of labour to the most dynamic firms in the economy.

The plan appeared to work as intended until the late 1960s but then began to falter. We maintain that intensified wage compression – the result, largely, of labour's quest for equal pay for all work – eroded pay differentials, damaged the morale of workers at the top of the pay scale, and led to a sharp drop in their effort. We discuss how a modified version of the Akerlof-Yellen fair wage hypothesis can help explain the negative impact that excessive compression had on the effort of the highly paid and the consequent drop in the demand for labour and in profits. As expected, absenteeism rates in Sweden soared in the 1970s, investment in human capital tumbled, and labour productivity fell. Export-oriented firms, because they relied on a skilled workforce, were hit particularly hard. It was in this context that Volvo and Metall, in an attempt to free themselves of the constraints imposed by centralized wage bargaining, chose to negotiate outside the frame agreement.

If our analysis of Sweden's experience with centralized wage determination and wage compression is correct, the effort on the part of LO and its labour union partners to reduce wage differentials may, if pushed too far, provoke very undesirable economic outcomes. Sweden to-day does not face a labour shortage – quite the contrary, rates of unemploy-

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As our history lesson makes abundantly clear, too much of a good thing may turn out to be very bad for everyone.

ment are high – which means that if labour release were to occur as a result of wage compression, rates of unemployment would almost certainly go up. Moreover, with no cap on wages at the upper end of the pay scale, wage drift is likely to flow from excessive wage compression as high-wage workers struggle to maintain what they consider appropriate relativities. This could easily have negative effects on the demand for labour, output, and profits. And, of course, to the extent that wage drift is contained, productivity and investment in human capital will suffer. Some reduction in inter-occupational wage dispersion may resonate well with Swedish workers but, as our history lesson makes abundantly clear, too much of a good thing may turn out to be very bad for everyone.

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