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Survey evidence on wage rigidity and unemployment: Sweden in the 1990s[#]

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Abstract
This study reports the results from a repeat survey among managers in Swedish manufacturing, designed to explore how a severe and prolonged macroeconomic shock affects wage rigidity and unemployment. Our second survey was conducted in 1998, when the unemployment rate was much higher, and the inflation rate much lower, than when we conducted the first survey in 1991. We find no evidence that the increase in unemployment has softened the mechanisms generating wage rigidity. On the contrary, we conclude that – because of severe downward nominal wage rigidity – real wages have become more rigid during Sweden's move to a low-inflation environment. We also report a range of new evidence on underbidding, efficiency wage mechanisms, job security legislation, workers' wage norms, and to what extent the long-term unemployed are subject to statistical discrimination.

Keywords: Unemployment; wage rigidity; repeat survey; recession

JEL Classification: E24, J41, J63

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1. Introduction

Wage rigidity has been a recurrent theme among economists during the twentieth century. An interesting episode is the inter-war years, when Britain's labor market was in a depressed state. Despite high unemployment and a tight monetary policy to reduce prices, nominal wages were slow to fall. In the Committee of Economists,[1] appointed by the government in 1930, Lionel Robbins argued that unions, unemployment insurance, and certain restrictive practices had an important role in generating wage rigidity and persistent unemployment. Arthur Pigou suggested that a main problem lay in a geographical mismatch between jobs and job-seekers, aggravated by unemployment insurance. The chairman, John Maynard Keynes, took the position that wage rigidity was a social fact of life, related to workers' concerns about justice and relative income, that institutional reform could do little about.

Seventy years later economists still argue about wage rigidity. Although we today are equipped with numerous theories and econometric studies dealing with issues of wage setting and unemployment, there is still not much consensus on the substantive mechanisms. In search for more evidence, some economists have recently embarked on an unorthodox research program, which attempts to discriminate between theories of wage rigidity by asking questions to the people that actually is involved in setting wages, and designing firms' personnel policy. Though these field surveys provide many useful insights,[2] they have been conducted under fairly stable macroeconomic

[1] For an account of the views among the members of the Committee of economists, see Moggridge (1992, Chapter 19). For a general discussion about wage rigidity during these years, see Hicks (1974).

[2] This small but expanding literature includes the works of Kaufman (1984), Blinder and Choi (1990), Agell and Lundborg (1995), Bewley (1995,1998), and Campbell and Kamlani (1997). Kaufman (1984) interviewed a small sample of managers in non-unionized firms in Greater London, Wales, and the West Midlands. Blinder and Choi (1990) approached 19 firms in New Jersey and eastern Pennsylvania. Agell and Lundborg (1995) interviewed compensation executives and managers in 179 firms in Swedish

conditions, and aimed at a single cross-section of firms. As a consequence, they provide little information about the anatomy of wage rigidity during a severe and prolonged recession.

To overcome this limitation this paper reports the results from a repeat survey of wage setting and other work practices in 157 firms in Swedish manufacturing, carried out in two years (1991 and 1998) of highly different macroeconomic conditions. As our second survey was preceded by an extended period of high unemployment, and very low inflation, we are provided with a unique opportunity to explore how persistent labor market slack and a move from high to low inflation affect the nature of wage rigidity. Has high unemployment made employees and local unions more willing to relax their wage claims? Is Tobin (1972) right in speculating that the labor market functions less well when inflation is very low, since downward money wage rigidity then prevents real wages to fall in times of slack capacity?

Moreover, by comparing our results for the unionized and regulated Swedish labor market to those obtained in surveys among US managers we can assess the role of country specific mechanisms in generating wage rigidity and unemployment persistence. The preliminary results of Blanchard and Wolfers (1999) suggest that the interaction between aggregate shocks and labor market institutions holds promise in explaining high and persistent unemployment in Europe. They report indications that, because of job security legislation and generous unemployment benefits, employment in the average European economy takes a longer time to bounce back after a negative macroeconomic shock. Our microeconomic evidence, gathered during the Swedish

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manufacturing. Bewley (1995,1998) interviewed managers and labor leaders in 258 firms in Connecticut. The sample of Campbell and Kamlani (1997) consists of 184 firms, most of which belong to *Business Week* 1000 corporations.

macroeconomic crisis of the 1990s, provides an interesting possibility to shed further light on the issue.

We find no evidence that high and persistent unemployment has softened the mechanisms generating wage rigidity. We document the near-absence of nominal wage cuts during a prolonged period characterized by very high unemployment and low inflation. We trace this pervasive nominal wage rigidity to the compound influences from various legal provisions of the wage contract, and from employees' concerns about relative income and fairness. We also conjecture, based on indirect evidence, that wage rigidity is aggravated by certain aspects of the safety net provided by the Swedish welfare state. The apparently quite solid nature of the nominal wage floor seems to suggest – in line with Tobin's argument – that Sweden's move to a low inflation environment has been accompanied by increased rigidity of real wages.

We also discuss several other pieces of information. We report substantial evidence that unemployment raises effort and weeds out substandard performance, as predicted by efficiency wage theory. In addition, we were surprised to learn that so many managers appear to ascribe such an important motivational role to (non-economic) psychological and sociological factors. We examine to what extent employers view job-seekers with an history of long-term unemployment as potentially less productive, and conclude that many managers view people with an unemployment record as less productive. Finally, and in accordance with the macroeconomic evidence of Blanchard and Wolfers (1999), our respondents point at the stringent Swedish job security legislation as an important reason for the weak recovery of labor demand after the initial macroeconomic bust.

2. Macroeconomic environment, sample and survey design

When we conducted our first survey in the fall of 1991, the Swedish economy was headed for the most severe economic downturn since the early 1930s. Throughout the postwar period, between 1945 and 1990, unemployment never exceeded 4 percent. Between 1991 and 1993 GDP fell by more than five percent, and total unemployment (including those enrolled in labor market programs) increased from almost 4 percent to more than 12 percent of the work force.[3] The rate of job destruction was particularly pronounced in manufacturing; between 1990 and 1993 the number of employees in manufacturing decreased by 22 percent. Inflation decelerated from above 10 percent in 1991, down to almost 4 percent in 1993, reaching zero in 1996. By the time we re-interviewed our firms in the fall of 1998 inflation was still very close to zero. But unemployment remained high – more than 10 percent of the workforce was still either unemployed, or enrolled in a labor market program.

In our 1991 survey 179 firms participated, and when we updated our address register in 1998, it turned out that nine of these had closed down operation.[4] The remaining 170 firms constitute the population for our repeat-survey. After three written reminders (that contained copies of the questionnaire), and a final reminder on phone, we obtained responses from 157 firms, which implies a very high response rate of 92.3

[3] For a discussion of the origin and nature of the Swedish economic crisis of the 1990s, see Calmfors (1993).

[4] We based our original 1991 sample on an address register compiled by the Swedish Association of Industries, designed to provide a balanced coverage of the manufacturing industry. In 1991 the register included 300 firms, employing approximately 40 percent of all employees in Swedish manufacturing. Of these firms, 179 responded to our first survey, implying a response rate of 59.7 percent. This sample is dominated by large firms; in 1991 the average number of employees was 1 154. It is also heavily dominated by machinery and equipment, which is not surprising, given this sector's traditional role in Swedish manufacturing. The average unionization rate is 92 percent, and the average share of white collar workers is 35.7 percent. For more detail on survey and sample design, see Agell and Lundborg (1993, 1995).

percent. Below, when we make comparisons across surveys, we will confine attention to this balanced sample, where we have two observations for each firm.[5]

In designing the new questionnaire, an overriding objective was to obtain comparability over time. In most instances, we simply re-cycled the old questions. We maintained the standard of requiring respondents to indicate the likelihood or frequency of various events on an integer scale from 1 to 9, with 1 indicating that a certain event is most unlikely, and 9 that it is very likely. We also maintained some questions of an open-ended nature, asking respondents to provide a short answer in their own words. In other instances, we made some slight changes in the original phrasing of the questions, either because factual developments made modifications necessary, or because we judged the old phrasing to be somewhat clumsy.[6] Both in 1991 and 1998 the field-work was conducted in November and December.

3. Stylized facts on wage cuts and underbidding

In 1991 we did not find it worthwhile to ask firms whether they had experienced episodes when money wages had been cut. Because Swedish unemployment used to be very low, and inflation quite high, and because of the collective nature of Swedish wage bargaining institutions, we considered nominal wage cuts as a theoretical peculiarity, of little practical relevance. However, in 1998 we were curious to see whether the new

[5] As an illustration of the extent of job destruction that occurred during the crisis, many firms reported that they had reduced their work-force in a very substantial manner since 1990. Sixteen firms (10.4 percent) answered that they had reduced employment by more than 50 percent, while another 41 firms (26.6 percent) had reduced employment with up to 50 percent.

situation of high unemployment, and zero inflation, had created an environment that was more conducive to wage cuts. Specifically, we asked firms whether they at any time during the 1990s, covering a period of 6-7 years of very low inflation and high unemployment, had reduced nominal wages.

Out of 153 responding firms, only two had experienced money wage cuts. For those two firms the wage cuts can hardly be classified as very extensive (the following information was obtained in phone conversations). In one firm, with several hundred employees, two office clerks got reduced pay as they were re-assigned to less qualified duties. As part of a general revision of its pay system, the other firm (a window-manufacturer in southern Sweden) re-negotiated and lowered the piece rates for a handful of its employees. In our view, the almost virtual absence of nominal wage cuts among firms that had a total of 187 000 employees in 1991, is *prima facie* evidence that it may take more than several years of very high unemployment and very low inflation to create a hole in the Keynesian wage floor. Below, we will analyze the reasons for this deeply rooted nominal wage rigidity in some detail.[7]

An elementary insight is that unemployment would not arise if unemployed workers would underbid the employed ones, and if firms would hire the underbidders. According to Solow (1990, p .38), however, the absence of underbidding and active wage competition is a key stylized fact that ought to be accounted for in models of unemployment. In 1991 and 1998 we asked firms the following:

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[6] As we judged it instrumental to obtain a high response rate we went to great length to design the new questionnaire in a way that made it easy to respond to. The second survey is more limited in scope than the first one, and it contains less information about background variables. For example, we removed a number of questions about employment structure, unionization patterns, and pay systems.

[7] For a comparison with the USA, one may note that Blinder and Choi (1990, p. 1005) report that five of their 19 firms recently had cut wages. However, when interviewing 409 employed persons in the

> Does your firm presently have external job applicants who offer to work for less than the going wage for employees with the same qualifications and experience? (The question should be answered even if your firm presently has no vacancies and if local union or collective bargaining contracts prevent these people from being hired.)

In 1991 we found, in contradiction of Solow's conjecture, that underbidding was not all that uncommon. Ten percent of firms replied that they presently encountered underbidding blue-collar workers, and 13.6 percent did the same for white-collar workers. We also asked about underbidding in the past, and found a similar pattern. In 1991 43.5 percent had previously encountered underbidding blue-collar workers, and 52.3 percent had encountered underbidding white-collar workers. However, as predicted by standard efficiency wage theory, firms always or nearly always rejected underbidders.[8] Managers responded that hiring underbidders would violate their internal wage policy, and that they considered underbidders to have inferior skills.

In 1998 we expected to find that underbidding had got more common. However, we found the precise opposite – in spite of much higher unemployment, wage competition had got much *less* common. Only three percent of firms reported that they presently encountered underbidding blue-collar workers, and 5.2 percent reported underbidding white-collar workers. We also asked about underbidding in the past, during the crisis of the 1990s, and found that the percentages had dropped significantly to 25.7 and 28.4, respectively.

Washington DC area in 1995, Akerlof, Dickens and Perry (1996) report that only seven had experienced wage cuts during the previous year.

[8] Similarly, Bewley (1995) reports US evidence that underbidding does occur, but that firms do not appear to exploit the situation. For experimental results on underbidding, see Fehr and Falk (1999).

It is easy to think of reasons why wage competition ought to be uncommon in a welfare state. Due to unemployment benefits and income dependent taxes and transfers, many unemployed Swedes gain relatively little from acquiring a job. This explains why an adverse unemployment shock is unlikely to lead to very intensified wage competition in a welfare state. It may also explain why underbidding appears to be more frequent among white collar workers than among blue collar workers, as white collar workers typically have lower compensation rates when unemployed.[9] But it does not explain why underbidding got less intense between 1991-98. To explain the reduced intensity of wage competition, we are left with the simple conjecture that the circumstances of a severe macroeconomic shock discourage active job search. During (and shortly after) a period when firms reduce their workforce substantially, applying for a new job might not appear to be a worthwhile activity.[10]

4. Job security and managers' perceptions of firing costs

After the immediate crisis in 1991-93 manufacturing recovered strongly. Between 1993 to 1998 production grew, spurred by a huge depreciation of the Krona in 1992, at an annual rate of nine percent. But at the same time the number of manufacturing employees grew at an annual rate of only one percent. Can this period of "jobless

[9] See e.g. the micro-simulations reported by *The Expert Group on Public Finance* (1998). In these simulations, based on the tax and benefit provisions applying in 1998, the unemployed are given their former wage, or in some cases an estimated wage, and then all taxes, housing allowances, social assistance, and child care fees are recalculated. The results indicate that 4 percent of the unemployed would gain nothing from acquiring employment, that 38 percent have a disposable income that is between 90-99 percent of income if employed, and that 36 percent have a disposable income that is between 80-89 percent of income if employed.

[10] In this context it is important to note that Swedish labor market legislation requires a firm to recall laid-off workers before it can have a pick among other job-seekers.

growth" be due to the provisions of Swedish job security legislation? Recent theoretical research, supported by cross-country regressions, suggests that employment protection may have an important effect on employment dynamics.[11] By reducing hirings during an upswing and firings during a downturn, job security lowers the variance of employment over the business cycle.

We confronted managers with statements about job security designed to capture mechanisms emphasized in the literature.[12] In both 1991 and 1998 a majority of managers (58 percent in 1991, 51.3 percent in 1998) indicated strong support[13] for the proposition that job security made them careful in screening job seekers. In both years a majority (56.7 percent in 1991, 54.5 percent in 1998) also indicated strong support for the proposition that job security lowered their propensity to hire people in an economic upturn, and increased the propensity to rely on overtime hours. In 1998 a substantial minority (36.4 percent) indicated strong support for the proposition that the seniority principle inhibited layoffs in recessions, because firms otherwise faced the risk of having to layoff competent, recently employed, workers. We interpret this as fairly robust evidence that recent theories about employment dynamics and job security have validity.

In Sweden, as in many other countries with stringent laws, there are flexible arrangements open for a firm that wants to avoid a permanent employment contract, like trial employment, and hirings from temporary work agencies. In *table 1* we show the

[11] For theory and evidence suggesting that job protection has little effect on average employment, but a stronger effect on employment composition, see e.g. Bentolila and Bertola (1990), Bertola (1990), and Nickell and Layard (1997). For an alternative view, see Lazear (1990).

[12] According to the OECD employment protection index, Sweden belongs in a group of countries with tough regulations. In addition to requiring severance pay and advance notification, Swedish law requires that layoffs must follow a strict seniority principle.

responses when we asked how job security for permanent employees affects firms' demand for flexible contracts. A far greater share of managers replied that job security boosted the use of temporary contracts in 1998 than in 1991. This is consistent with the fact that the number of employees on temporary contracts rose substantially during the 1990s. It also fits with the view that a more unstable environment increases firms' demand for flexibility; see e.g. Blanchard et al. (1986).

5. Work morale and the business cycle

Previous field surveys of wage rigidity have found much support for efficiency wage mechanisms, broadly interpreted. An implication common to all efficiency wage models is that outside opportunities affect effort on the job. In 1991 a great number of managers accepted this contention. Ninety percent thought that an increase in the local unemployment rate would stimulate work effort, and about 60 percent believed that the same thing would happen if unemployment benefits were to be lowered.

If these prior beliefs of managers make sense, their employees ought to work harder in 1998 than in 1991, when unemployment was much lower. This is precisely what we find. In both years we asked "How common is it for your employees to provide less effort than expected, i.e. to shirk?". In 1991 most managers did not regard sub-standard performance as very common. But when we asked the same question in 1998 51.6 percent of managers reported that sub-standard performance had got less common, 34.2 percent reported that it was as common as before, while 14.2 percent reported that

[13] By "strong" we mean that a respondent answers with a numerical score of at least seven on our integer scale from 1 to 9.

it had got more common.[14] *Figure 1* indicates a strong business cycle effect on work morale, as perceived by managers.

This response is compatible with both a fair wage and a shirking interpretation of the efficiency wage model. According to the fair wage model, higher unemployment stimulates effort since workers become more "grateful" to be employed (Akerlof (1982)). According to the shirking model, higher unemployment increases effort, as it raises the economic penalty of being caught as a shirker (Shapiro and Stiglitz (1984)). The positive relation between effort and unemployment is also consistent with the conjecture that firms exploit recessions to get rid of their least productive employees.[15]

A noteworthy finding of previous field surveys is that all report strong support for theories that emphasize fairness and morale as important factors in explaining effort and wage rigidity.[16] There is also reasonably strong support for models based on turnover costs, and – to some extent – adverse selection mechanisms. However, there is very little support for the shirking model, the model that has attracted most attention in the literature.[17] Managers do not appear to view punishment threats as good motivators. In 1991 our managers replied that employees who were repeatedly caught shirking were punished by a simple verbal rebuke, and that penalties with an economic content were

[14] A t-test reveals that the change in the average score between 1998 and 1991 is statistically significant.
[15] However, this presupposes that firms somehow find a way to circumvent the seniority provisions of Swedish job security legislation.
[16] Blinder and Choi (1990), Bewley (1998), and Campbell and Kamlani (1997) report evidence suggesting that that there is a strong negative relationship between work morale and wage *cuts*, while they find a much weaker link between work morale and wage *levels*. Our questions on the relation between effort and wages did not distinguish between wage levels and wage cuts. We simply asked about the probability that employees reduced effort if the firm upheld a wage structure that was considered to be "unfair", without specifying whether this was because wages had been cut, or because the level of wages had grown at a relatively low rate. With this formulation of the question, the answers we received were less clear cut. While most firms acknowledged that an unfair wage structure might lead to reduced effort, few firms replied that the relationship was a very strong one. This pattern applies in both 1991 and 1998.
[17] However, as noted by Malcolmson (1998), all field surveys have targeted their questions specifically at the Shapiro-Stiglitz model, where there is a very simple relation between effort, wages, and unemployment. There are more elaborate shirking models, on which these surveys have no bearing.

very rare. If the Shapiro-Stiglitz model really is correct in portraying workers as deriving utility from shirking, such lax penalties ought to be accompanied by incentive problems on a massive scale, no matter the extent of monitoring.

In 1998 we borrowed a question from Campbell and Kamlani (1997), and asked managers to assess the importance of four factors in boosting the effort of their employees: close supervision, high wages, good management-worker relationships, and high unemployment. *Table 2* reports the percentage of managers that rank each of the factors as the most important one, and a comparison with the results for the US managers surveyed by Campbell and Kamlani. In both surveys the not-so-neoclassical sounding ”good management-worker relationships” comes out much ahead. Managers in both countries also appear to assign the *least* weight to close supervision, a factor emphasized in the shirking literature.[18] But Swedish managers appear to attribute a much less important motivating role to high wages. It seems likely that this reflects the much higher unionization rates in Sweden, and the less individualistic nature of industrial relations and wage bargaining. Swedish managers have probably less discretion than US ones in designing incentive compatible wage hierarchies.

In field surveys, semantics is important, as are framing effects. To reduce the risk that the choice between ”good relationships” and ”close supervision” is biased by the fact that the former sounds so much nicer, our 1998 survey asked managers to list, in their own words, the factors that they judged to be most important in motivating their employees. Although some stressed the importance of incentives, in the form of productivity-related pay, and career tracks, most managers emphasized other incentive

[18] In our Swedish survey 61 percent of managers indicated that close supervision was the least important factor among the four.

devices. They answered that their employees ought to be given stimulating work assignments, and to feel involved in decision-making. They answered that it was important that all employees felt noticed and trusted, and provided with continuous feedback and appreciation. Some managers pointed to the benefits from creating a friendly atmosphere, and one answered that people work hard as long as they have fun.

It is interesting to note that these responses are practically identical to those given by the US managers interviewed by Bewley (1998). Both Swedish and US managers seem to ascribe a more important motivational role to psychological and sociological factors than to the factors that are stressed in neoclassical economics. Thus, work morale depends on much more than management's ability to impose sanctions and measure out economic prizes.

6. The nominal wage floor

Our stylized facts indicate that nominal wage cuts are highly rare. To probe deeper we asked managers a number of questions on the nature and sources of rigid money wages. We were interested to learn how managers assessed their employees' resistance to wage cuts. For this purpose we asked the following:

> Assume that the management in the midst of an acute crisis suggests an identical percentage wage cut for all employees in your firm, so that the wage hierarchy is retained. What share of the jobs do you believe must be at stake if the proposed cut is to be accepted?

It goes without saying that it might be difficult to come up with a very well-informed answer to this hypothetical question.[19] It seems reasonable to conjecture that many managers provided us with their gut reactions, rather than a reasoned response. Even so, a gut reaction can be quite revealing.

The responses shown in *table 3* suggest that subjectively perceived wage rigidity is intense and prevalent. In both 1991 and 1998 a large majority of managers believed that a proposal to cut pay to safe jobs would be strongly resisted. In both years an overwhelming majority of managers thought that *more than 50 percent* of the jobs must be at risk if their employees are to accept a proposal to cut pay. These responses can be contrasted to the natural idea, put forth in the union literature, that wage reductions occur when the job of the median employee is at risk; i.e. a shock that threatens the jobs of exactly 50 percent of the workforce would be enough to make the local union accept a pay cut.

There are many ways of rationalizing downward rigidity of money wages. In our view three types of argument have particular appeal in the Swedish context: (i) the legal and bargaining framework that surrounds the wage contract; (ii) reservation wages and the level and generosity of welfare state institutions; (iii) employees' concerns over relative wages. Let us discuss each argument in turn.

Legal and bargaining framework. A basic observation is that Swedish employers are not allowed to unilaterally reduce nominal wages. This stipulation applies also in a situation when the old wage contract has expired; the terms of the old contract prevail until the

[19] Indeed, a few managers complained that they judged the question to be too speculative. But the great majority of them still responded – 153 in 1991, and 151 in 1998.

parties have reached a new agreement.[20] But even if a local union agrees to accept a new wage contract which prescribes reduced pay, it is not obvious that the new contract can be implemented. The consent from the local union is a necessary, but not sufficient, requirement for a pay cut.

First, for employees covered by collective union contracts, the union contract is included in the individual wage contract. Even if a local union agrees to reduce the money wage specified in the union contract, individual union members must give their consent to change the individual contract before the wage cut can be expedited. Second, many employees have their wages set in a two-tier bargaining system, where industry level negotiations precede local level negotiations. The (minimum) wage levels specified in the industry level agreement defines a floor, which must not be undercut by the local wage agreement. This reduces the scope for local level pay cuts.

Net replacement rates and resistance to wage cuts. As discussed in Section 3, the combination of unemployment insurance and various income dependent taxes and social benefits implies that the net income reduction from job loss is relatively modest for many Swedes. Because of the social insurance provided by the welfare state, one may reasonably expect that employees become more prone to resist proposals to cut pay. Because the net replacement rate in case of job loss is higher for blue collar workers than for white collar workers,[21] one may also expect that resistance to pay cuts is stronger in firms with a greater share of blue collar workers.

[20] See Holden (1994) for a theoretical analysis of how this property of the wage contract ("holdout") can lead to nominal wage rigidity.

[21] More generally, people with higher incomes have lower replacement rates than people with lower incomes. In 1991, when we conducted our first survey, the Swedish unemployment compensation system prescribed that an unemployed person was to be provided with a compensation rate of 90 percent (later to

This pattern is indeed what we find in our data. In our 1991 survey, consisting of 179 responding firms, we have background information about firms' employment structure. We divide these 179 firms in two groups, according to the resistance to pay cuts, as perceived by managers. We assign the number 1 to firms where wage cut resistance is very high (in the sense that wage cuts will never be accepted, or acceptable in case of a shock which threatens *all* jobs), and the number 0 to the other firms, where wage cut resistance is more moderate. We then estimate probit models for the probability that firms belong to the group where wage cut resistance is very high.

In the estimated equations firms' share of white collar workers have the expected negative sign (see Table A1 in the appendix). On average, managers in firms with a large share of white collar workers are more confident that their employees would accept a proposal to cut pay to avoid major redundancies. The white collar variable remains negatively significant when we add a set of industry dummy variables, and measures of firm size, and the overall wage level of the firm, to the regression. As white collar workers are less unionized than blue collar workers, and because unionization might have an independent effect on wage cut resistance, we also run regressions where we include the unionization rate among the explanatory variables. The white collar variable remains negative, but the significance level drops somewhat (the unionization variable has a positive, but far from significant, effect).

This evidence is clearly of an indirect nature, and there are probably alternative ways of rationalizing a negative partial correlation between wage cut resistance and the share of white collar workers. Our regressions do suggest, however, that there is no easy

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be lowered to 80 percent) of previous earnings up to a maximum amount. This cap on benefits is of no importance for blue collar workers, but implies that many white collar workers will have lower (or much lower) effective compensation rates in times of job loss.

way of dismissing the natural idea that the safety net of the welfare state contributes to the downward rigidity of money wages. It seems appropriate to conclude this discussion with the customary call for future research.

Employees' concerns over relative wages. A classic explanation for nominal wage rigidity is the argument of Keynes that workers care about relative wages. Because of this they oppose money wage cuts, unless wages can be cut everywhere in the economy, so as to maintain wage relativities. But if such interpersonal comparisons are to explain more than a trivial amount of rigidity, they should reasonably extend beyond workers in the same firm. Surveys among US managers suggest, however, that employees mainly care about the wage structure *within* firms. Campbell and Kamlani (1997, p. 780) found that notions of fair pay depend on workers' own past wages, firm's profits, and wages of other workers in the same firm. Bewley (1998, p. 485) argues that Keynes's relative wage theory is off the mark, since workers in the firms he approached had "…little systematic knowledge of pay rates at other firms."

Our Swedish evidence, in contrast, indicates that employees pay great attention to the wage distribution within *and* across firms. In 1991 there was much consensus among managers that employees care about external wage relativities, see *table 4*. Blue collar workers compared wages both within and across establishments, while white-collar workers in general, and management in particular, put a relatively greater emphasis on the inter-firm wage structure.[22] In 1998 we found that inter-firm wage

[22] Our result that employees frequently point at external wage relativities in local wage bargaining is not in itself a strong indication of any particular model of the labor market. In principle, it is even consistent with the competitive model. In the absence of a Walrasian auctioneer the way to infer the going market wage is to look at wages payable in neighbouring firms before quitting a firm that pays a non-competitive wage. We would then expect relative wage comparisons to be more important in low-wage firms than in high-

comparisons have got significantly more common among white collar workers, and marginally less common among blue collar workers. Thus, to the extent that wage rigidity is due to relative wage comparisons, there is no ground to conclude that it has got less pronounced during Sweden's move from a low unemployment/high inflation equilibrium, to one with high unemployment/low inflation. Further support for this conclusion is provided by the responses we obtained when we directly asked managers about the plausibility of Keynes's theory of nominal wage rigidity; see *table 5*. In 1991 managers' support was lukewarm – in 1998 it had increased substantially.[23]

What can explain the greater role of inter-firm wage comparisons in Swedish field surveys? No doubt, institutions play a role. Union coverage is very high in our firms, ranging from 60 to 100 percent, while Bewley (1998) and Campbell and Kamlani (1997) interview managers in firms with little or no union coverage. Since unions can be expected to disseminate information about pay and pay scales across firms, and across industries, this is likely to make a difference. Bewley (1998, p. 485) describes the non-union firms that he interviewed as "isolated islands," where workers know little about pay in other locations. In Sweden, local unions have ample access to data on wage structure and wage changes throughout the country.

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wage firms. This does not fit the facts, however. Relative wage comparisons seem equally important in all firms. Another finding is that employees' standard of comparison seems to extend well beyond other groups of employees. The percentage of firms that reported that it was "common" or "very common" that employees or local unions pushed for higher wages or salaries in times of high company profits increased from 36.7 percent in 1991 to 46.1 percent in 1998.

[23] It is tempting to speculate that the increased support for Keynes's relative wage theory is due to the fact that inflation had been low for several consecutive years when we asked the question in 1998. When we asked about the theory in 1991 price and wage inflation had been high for a number of years, and many managers might not have found the question very relevant. However, the comparison is complicated by the fact that the questions differed somewhat between years. The question on the top of table 5, emphasizing the role of inter-firm wage relativities, is the one we used in 1998. The question that we used in 1991, taken from Blinder and Choi (1990, p. 1006), stressed the role of wage relativities more generally.

From this perspective one may well argue that Keynes's relative wage theory of nominal wage rigidity is more suited for the unionized European economies, than for the USA, where the union sector is much smaller. In this context, it is also of some interest to note that Keynes's own thoughts on nominal wage rigidity appear to be based on the experience of the U.K. in the 1920s,[24] when unions played a much more important role than has ever been the case in the USA.

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In the informed policy debate, the legal details of the wage contract, the generosity of the welfare system, and considerations of fairness and relative income, have all been pointed at as potentially important determinants of downward money wage rigidity. Taken separately, each of these factors may explain a nontrivial amount of rigidity. When combined, a nominal wage floor of exceptional endurance appears to materialize. From this perspective, the documented absence of nominal pay cuts during the Swedish macroeconomic bust should come as no surprise.

As first noted by Tobin (1972) the existence of a nominal wage floor implies that *real* wages will become more rigid as the inflation rate goes to zero. For this reason, some inflation might be needed to grease the wheels of the labor market. In view of the *Riksbank's* demonstrated ability in achieving price stability, this raises some disturbing questions about the Swedish labor market's ability to cope with future, as yet unforeseen, macroeconomic shocks.

[24] Keynes's relative wage explanation for nominal wage rigidity is often traced to *The general theory* (1936, p. 14). But Keynes (1925) is an earlier publication, which discusses British coal-miners' resistance to wage cuts in terms of fairness and relative income.

7. Signals of unobservable productivity and the stigma of unemployment

Much modern theorizing about the labor market starts with the assumption that information is asymmetric. To shed light on the relevance of these theories we asked managers a number of questions that were designed to shed light on to what extent they looked out for various signals of unobservable productivity when they make hiring decisions. We were also interested to see whether the appearance of very high unemployment had altered managers' perceptions of these signals.

According to the adverse selection model firms may offer wages that are above the market clearing ones because they want to attract a superior pool of job applicants. To see whether managers interpret a high wage claim as a signal of high productivity, we asked the same question as Blinder and Choi (1990):

> Assume that two persons are competing for the same job. From interviews, experiences, education, etc., both seem equally qualified. One of the two accepts the wage offered by the firm, while the other demands a higher wage. Would you consider the latter, who demands a higher wage, to be potentially more productive?

As can be seen in *table 6* few managers indicated strong support for the idea that a high wage claim can be interpreted as a signal of high productivity.[25] The responses we got when we asked managers about their attitudes to underbidders in other parts of our survey suggest the existence of asymmetric reputation effects. While many managers appear to interpret an offer to work for *less* than the going wage as a signal of low productivity, they appear to pay little attention to high wage signals.

[25] Still, in both 1991 and 1998 the most common response was a "5" on our integer scale. This can be contrasted to the findings of Blinder and Choi (1990), who report that not one of their respondents answered the question in the affirmative.

Another possibility, much discussed in the context of European unemployment, is that firms may view job-seekers with a history of unemployment as less productive. This is also one of the mechanisms that may generate unemployment persistence in the wake of an adverse macroeconomic shock. To examine whether the long-term unemployed are subject to statistical discrimination, we asked

> Assume that two persons are competing for the same job. From interviews, experiences, education, etc., both seem equally qualified. However, one of the two is unemployed, and has been so for a longer period. Would you consider this person to be potentially less productive?

From *table 7* we can see that the stigma of unemployment appears to be more severe in 1998 than in 1991. The percentage of managers that view long-term unemployment as a strong signal of low productivity increases from 21 percent in 1991 to 27 percent in 1998.[26] This finding runs counter to the intuitive argument that the scars from unemployment ought to be less severe in a situation when it is shared among the many.

Active labor market policy has for long been Sweden's main strategy for combating unemployment, and the extreme crisis of the 1990s is no exception. During the 1990s between four and five percent of the work force has been enrolled in various labor market programs. In view of the large volumes involved, many economists have cautioned that these programs are subject to inefficiencies. In our 1998 survey we asked managers questions designed to capture reputation effects from participation in labor market training, or measures like relief work and work life development (which are specific to the active Swedish labor market policy). *Table 7* shows that a number of

[26] However, a t-test reveals that the increase in the mean score from 4.62 to 4.93 is not statistically significant at conventional levels.

managers appear to view participation in labor market programs as a strong signal of low productivity. But the results still suggest that an unemployed person is well advised to join a program – unemployment seems to be associated with a stronger stigma than either labor market training or relief work/work life development.[27]

[27] It is only the difference in the mean score between unemployment (according to the 1998 survey) and labor market training that passes a t-test for statistical significance.

8. Conclusions

This paper reports the results from a repeat survey among managers in Swedish manufacturing, designed to explore how a severe and prolonged macroeconomic shock affects wage rigidity and unemployment. Our second survey was conducted in 1998, when the unemployment rate was much higher, and the inflation rate much lower, than when we conducted the first survey in 1991. Subject to the usual caveat that survey evidence must be interpreted with caution, we believe that our study casts new light on a number of important issues.

We find no evidence that the increase in unemployment has softened the mechanisms generating wage rigidity. In 1998 employees seem as determined to resist wage cuts as in 1991, even at the cost of additional – and substantial – job losses. Another surprising finding is that underbidding and active wage competition from the unemployed appear to have got less intense when they were most needed, i.e. during the macroeconomic bust. We attribute this to a discouragement effect from high lay-off rates and low vacancy rates.

An important part of our study focuses on the scope for nominal wage cuts. We document the virtual absence of nominal wage cuts in an environment characterized by very low – or zero – inflation. The downward stickiness of money wages appears to depend on a number of interacting factors, including institutional aspects of the wage contract, and the two-tier Swedish bargaining system. In addition, we find support for the old idea of Keynes that employees' concerns about relative wages and fairness strengthen nominal rigidity. We also report some indirect – but far from decisive – evidence, consistent with the idea that the safety net provided by the welfare state reinforces nominal rigidity. Taken separately, each of these factors may explain a

nontrivial amount of nominal wage rigidity. When combined, a nominal wage floor of exceptional endurance appears to materialize. The existence of a nominal wage floor also implies that *real* wages become more rigid as the inflation rate goes to zero. In view of the *Riksbank's* apparent ability in achieving price stability, this raises some disturbing questions about the Swedish labor market's ability to cope with future, as yet unforeseen, macroeconomic shocks.

We also present new evidence about mechanisms capable of explaining unemployment persistence (i.e. why unemployment appears to return to normal at such a slow pace in the years following an adverse macroeconomic shock). We examine to what extent employers view job-seekers with an history of long-term unemployment as potentially less productive, and find that a sizable minority of our respondents view long-term unemployment as a strong negative productivity signal. In addition, our respondents point at the stringent Swedish job security legislation as an important factor that limits new hires during an economic upturn. Both these mechanisms – scars from unemployment and job security – may certainly go some way towards explaining the weak recovery of labor demand after the initial macroeconomic bust.

Finally, we discuss a range of evidence concerning effort and motivation. We present substantial evidence that unemployment raises effort and eliminates substandard performance, an implication common to many efficiency wage models. We conclude that much recent theorizing about effort and incentives is potentially misplaced. Most managers appear to ascribe a more important motivational role to psychological and sociological factors than to economic sticks and carrots.

References

Agell, Jonas and Per Lundborg, 1993, "Theories of pay and unemployment: survey evidence from Swedish manufacturing firms," Working Paper No. 1993:7, Department of Economics, Uppsala University.

Agell, Jonas and Per Lundborg, 1995, "Theories of pay and unemployment: survey evidence from Swedish manufacturing firms," *Scandinavian Journal of Economics* 97, 295-307.

Akerlof, George, 1982, "Labor contracts as a partial gift exchange," *Quarterly Journal of Economics* 97, 543-69.

Akerlof, George, William T. Dickens, and George L. Perry, 1996, "The macroeconomics of low inflation," *Brookings Papers on Economic Activity*, 1996:1, Brookings Institution, Washington D.C.

Bentolila, Samuel and Bertola, Guiseppe, 1990, "Firing costs and labor demand: How bad is Eurosclerosis?" *Review of Economic Studies* **57**, 381-402.

Bertola, Guiseppe, 1990, "Job security, employment and wages," *European Economic Review* **34**, 851-886.

Bewley, Truman, 1995, "A depressed labor market as explained by participants," *American Economic Review* **85** (Papers and Proceedings), 250-54.

Bewley, Truman, 1998, "Why not cut pay?" *European Economic Review* **42**, 459-490.

Blanchard, Olivier, et al., 1986, "Employment and growth in Europe: A two-handed approach." In O. Blanchard et al. (eds.) *Restoring Europe's prosperity.* Cambridge (MA): MIT Press.

Blanchard, Olivier and Justin Wolfers, 1999, "The role of shocks and institutions in the rise of European Unemployment: The aggregate evidence," mimeo, MIT.

Blinder, Alan and Don Choi, 1990, "A shred of evidence on theories of wage Stickiness," *Quarterly Journal of Economics* **105**, 1003-15.

Calmfors, Lars, 1993, "Lessons from the macroeconomic experience of Sweden," *European Journal of Political Economy* 9, 25-72.

Campbell, Carl M. and Kunal S. Kamlani, 1997, "The reasons for wage rigidity: Evidence from a Survey of Firms," *Quarterly Journal of Economics* **112**, 759-89.

Fehr, Ernst and Armin Falk, 1999, "Wage rigidity in a competitive incomplete contract market," *Journal of Political Economy* 107, 106-134.

Hicks, John, 1974, *The crisis in Keynesian economics*. Oxford: Basil Blackwell.

Holden, Steinar, 1984, "Wage bargaining and nominal rigidities," *European Economic Review* 38, 1021-1039.

Kaufman, Roger, 1984, "On wage stickiness in Britain's competitive sector," *British Journal of Industrial Relations* **22**, 101-112.

Keynes, John Maynard, 1925, *The economic consequences of Mr. Churchill*. Reissued in 1972 in *The collected writings of John Maynard Keynes*, Volume IX (*Essays in persuasion*). London and Basingstoke: Macmillan.

Keynes, John Maynard, 1936, *The general theory of employment, interest and money*. London: Macmillan.

Lazear, Edward P., 1990, "Job security provisions and employment," *Quarterly Journal of Economics* **105**, 699-726.

Malcolmson, James M., 1998, "Individual employment contracts," Discussion Paper No. 9804, Department of Economics, University of Southampton.

Moggridge, D.E., 1992, *Maynard Keynes. An economist's biography*. London and New York: Routledge.

Nickell, Stephen and Richard Layard, 1997, "Labour market institutions and economic performance," Discussion Paper series No. 23, CEP, University of Oxford.

Shapiro, Carl and Joseph E. Stiglitz, 1984, "Equilibrium unemployment as a worker discipline device," *American Economic Review* **74**, 433-444.

Solow, Robert, 1990, *The labor market as a social institution*, Cambridge (MA.): Basil Blackwell.

Tobin, James, "Inflation and unemployment," *American Economic Review* 62, 1-18.

Table 1. *”Indicate to what extent you agree with the following proposition: Job security legislation makes your firm more prone to offer flexible short-term employment contracts (e.g. contracts based on trial employment)”*

	Average score	Percentage of managers indicating strong support for the proposition
1991 sample	4.94	33.76
1998 sample	6.11	57.69

Note: The scores are given on an integer scale 1-9, where 1 stands for ”no support”, and 9 for ”very strong support”. In the third column we show the percentage of managers responding with a numerical score of at least seven.

Table 2. Percentage of managers in Sweden and the USA that rank each of the factors below as the most important one in motivating their employees.

Factor	Percentage of managers that rank the factor as most important in motivating their employees	
	Our 1998 survey of Swedish managers	Campbell and Kamlani survey of US managers
Close supervision of work effort	3.24	6.13
High wages	5.95	24.24
Good management-worker relationships	81.62	58.91
High unemployment	9.19	10.75

Note: The numbers in the third column are adapted from C-K (1997, p. 775) as follows. First, while C-K report results for three types of employees, we just compute the average. Second, C-K include a fifth factor in their comparison, ”good working conditions”, which we eliminate. We re-scale the percentages reported by C-K for the other factors accordingly.

Table 3. *"Assume that the management in the midst of an acute crisis suggests an identical percentage wage cut for all employees in the firm, so that the wage hierarchy is retained. What share of the jobs do you believe must be at stake if the proposed cut is to be accepted by employees."*

Share of jobs that must be at stake	Percentage of firms; 1991 sample	Percentage of firms; 1998 sample
≤ 50 %	20.26	13.91
50 < ...<100 %	49.67	56.95
100 % (closing down)	22.22	19.21
Not even a threat of closing down is enough	7.84	9.93
Total	100.0	100.0

Table 4. *"How common is it for your employees (directly or via local union representative) to compare their wage with wages of employees in other firms in wage negotiations?"*

	Average score	Percentage of managers that identify inter-firm wage comparisons as common or very common
White collar workers; 1991 sample	6.12	49.04
White collar workers; 1998 sample	6.76	61.29
Blue collar workers; 1991 sample	6.74	59.62
Blue collar workers; 1998	6.35	51.31

Note: The scores are given on an integer scale 1-9, where 1 stands for "very uncommon", and 9 for "very common". In the third column we show the percentage of managers responding with a numerical score of at least seven.

Table 5. *”According to some academic researchers the reason that nominal wages seldom fall is that wage relativities might be altered. Employees protect their position in the wage hierarchy, and they resist a wage cut because they are afraid that they will fall behind employees in other firms. How important is this explanation for the fact that nominal wages seldom fall?”*

	Average score	Percentage of managers that consider the theory as important or very important
1991 sample	4.81	24.03
1998 sample	5.65	41.18

Note: The scores are given on an integer scale 1-9, where 1 stands for ”unimportant”, and 9 for ”very important”. In the third column we show the percentage of managers responding with a numerical score of at least seven.

Table 6. *"Assume that two persons are competing for the same job. From interviews, experiences, education, etc., both seem equally qualified. One of the two accepts the wage offered by the firm, while the other demands a higher wage. Would you consider the latter, who demands a higher wage, to be potentially more productive?"*

	Average score	Percentage of managers that views a high wage claim as strong positive productivity signal
1991 sample	3.61	4.52
1998 sample	3.72	5.33

Note: The scores are given on an integer scale 1-9, where 1 stands for "never", and 9 for "always". In the third column we show the percentage of managers responding with a numerical score of at least seven.

Table 7. *"Assume that two persons are competing for the same job. From interviews, experiences, education, etc., both seem equally qualified. However, one of the two is (unemployed OR enrolled in labor market training OR subject to measures like relief work/work life development) and has been so for a longer period. Would you consider this person to be potentially less productive?"*

	Average score	Percentage of managers that view the activity in question as strong negative productivity signal
Unemployment (1991 survey)	4.62	20.92
Unemployment (1998 survey)	4.93	26.92
Labor market training (1998 survey)	4.48	14.19
Relief work, work life development (1998 survey)	4.72	20.65

Notes: The scores are given on an integer scale 1-9, where 1 stands for "never", and 9 for "always". In the third column we show the percentage of managers responding with a numerical score of at least seven.

Figure 1. ”How common is it for your employees to provide less effort than expected (to shirk)?”

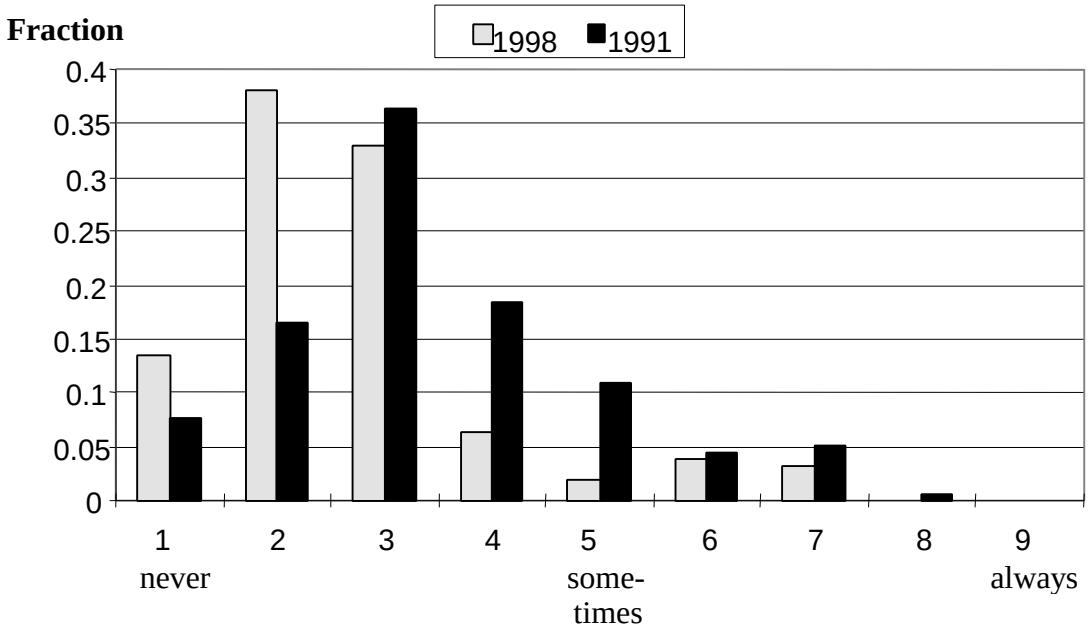

Table A1. *Maximum likelihood estimates of binary probit models for subjectively perceived wage cut resistance* (Standard errors in parentheses. An asterisk denotes significance at the 5 percent level)

	1	2	3	4	5
Constant	0.175 (0.345)	0.173 (0.347)	-0.648 (0.659)	-2.036 (1.940)	-1.057 (1.804)
White collar share	-2.065* (0.772)	-2.067* (0.775)	-2.246* (0.799)	-1.790* (0.908)	-1.651 (0.872)
Size		0.0000 (0.0001)			
Overall wage level			0.172 (0.106)	0.186 (0.108)	
Unionization rate				1.231 (1.782)	1.161 (1.731)
No. of firms where dependent variable takes the value one	51	51	51	46	46
No. of firms	174	174	172	156	158

Notes: The dependent variable is described in the main text. *White collar share* is the share of the firm's workforce that the manager classifies as white collar workers, *Size* is the total number of employees in the firm, *Overall wage level* is a self-reported measure of how the manager assesses firm's wage level compared to other firms in the same industry, *Unionization rate* is the share of a firm's employees that are union members. All regressions in columns 1-5 include a set of industry dummy variables (not shown). Because of missing values, the number of observations differ across specifications.