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**Survey Evidence on Wage Rigidity:  
Sweden in the 1990s\***

by

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We present the results from a repeat survey on wage rigidity in a sample of 159 Swedish firms, conducted during a prolonged period of very high unemployment and very low inflation. We document the virtual absence of wage cuts, and trace this pervasive nominal rigidity to a set of interacting factors, including the legal status of the wage contract, the structure of bargaining institutions, and the design of social insurance. But employees' concerns about fairness and relative wages also appear to play an important role. In addition, we report new results on underbidding, efficiency wage mechanisms, and unemployment persistence.

**Keywords:** Nominal wage rigidity; Panel data; Recession; Effort models; Unemployment persistence

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## I. 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,<sup>1</sup> appointed by the government in 1930, Lionel Robbins argued that unions, unemployment insurance, and certain restrictive practices had an important role in preventing wage cuts. 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, appeared to take 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.

Although seventy years later several theories and econometric studies deal with issues of wage rigidity and unemployment, one can hardly claim that the profession has reached an agreement on the substantive mechanisms. In search for more evidence, some economists have recently embarked on an unorthodox research program, which attempts to evaluate theories by asking questions to the people that actually set wages.<sup>2</sup> These field surveys provide useful insights, but they have all been conducted under stable macroeconomic conditions, and aimed at a cross-section of firms. As a consequence, they provide little information about the anatomy of wage rigidity during a severe and prolonged recession.

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<sup>1</sup> For an account of the proceedings of the Committee of economists, see Moggridge [1992, Ch. 19].

<sup>2</sup> This small 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] interviews a small sample of managers in non-unionized firms in London, Wales, and the West Midlands. Blinder and Choi [1990] approach 19 firms in New Jersey and eastern Pennsylvania. Agell and Lundborg [1995] survey compensation executives and managers in 179 firms in Swedish manufacturing. Bewley [1995, 1998] interviews managers and labor leaders in 258 firms in the Northeast of the United States, while Campbell and Kamlani [1997] survey 184 firms, most of which belong to *Business Week* 1000 corporations.

Our novel twist is that we do it twice, during two years of highly different macroeconomic conditions. We thus report the results from a panel survey of wage setting and other work practices in a sample of 157 identical firms in Swedish manufacturing, carried out in 1991 and 1998. 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 wage rigidity. Moreover, by comparing our results for the unionized and regulated Swedish labor market to those obtained in recent U.S. field surveys we can assess the role of country specific institutions.

We document the virtual absence of nominal wage cuts during several consecutive years characterized by very high unemployment and almost no inflation. We trace this pervasive nominal rigidity to a set of interacting factors, some of which reflect the influence of European-style labor market laws, bargaining institutions and social insurance systems. But unlike recent U.S. field surveys, we also find substantial evidence in support of the idea of Keynes [1936, p. 14] that employees' concerns about relative wages reinforce nominal rigidity. We trace these conflicting results to the fact that most Swedes belong to a union, and that unions can be expected to disseminate information about relative pay in other parts of the economy.

The sharp increase in Swedish unemployment also allows us to evaluate some specific theories of effort and unemployment dynamics. We report substantial evidence that the increase in unemployment has boosted effort, and reduced substandard performance, as predicted by efficiency wage theory. But we were surprised to learn that so many managers responded that essentially psychological tools – like being appreciative, or demonstrating that they trusted their employees – were more effective motivators than economic carrots and sticks. This emphasis on

nonmaterial factors is not easy to reconcile with standard neoclassical models, but it appears to corroborate some conjectures put forth in recent work on “psychological” game theory. Finally, the results of Blanchard and Wolfers [1999] suggest that the interaction between aggregate shocks and labor market institutions, like job security legislation, may explain high and persistent unemployment in Europe. Our panel evidence allows us to shed microeconomic light on the issue.

## **II. 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 1930s. Throughout the postwar period, until 1990, unemployment never exceeded 4 percent. Between 1991 and 1993, however, GDP fell by more than five percent, and total unemployment (including those enrolled in labor market programs) increased from almost 4 percent to almost 13 percent of the work force.<sup>3</sup> The rate of job destruction was particularly pronounced in manufacturing; between 1990 and 1993 the number of employees in manufacturing decreased by 22 percent. By the time we re-interviewed our firms in late 1998 unemployment remained high; more than 10 percent of the workforce was still unemployed, or enrolled in a labor market program.

From the early 1970s to the early 1990s Swedish inflation (as measured by the CPI) hovered between five and twelve percent. The sharp increase in unemployment brought about a rapid end to the period of high inflation. Inflation decelerated from above 10 percent in 1991, down to 2.4 percent in 1994. In the five year period preceding our second survey, average inflation was 1.4 percent, and during each of

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<sup>3</sup> For discussions of the origin and nature of the Swedish economic crisis of the 1990s, see Calmfors [1993] and Lindbeck *et al.* [1994].

the years 1996-98 inflation was below one percent. In 1998 the year-to-year inflation rate was even negative for five consecutive months.

In our view this extended period of low inflation and slack activity makes our panel survey ideally suited for an analysis of nominal wage rigidity. By contrast some recent studies of nominal rigidity have relied on data for periods when inflation is fairly high, and the activity level has fluctuated within the normal interval. Under such macroeconomic circumstances, it is hard to think of any country where nominal wage cuts ought to be common. Thus, there is an obvious risk that such studies overstate the downward rigidity of nominal wages.<sup>4</sup>

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.<sup>5</sup> 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 replies from 157 firms, which implies a very high response rate of 92.3 percent. Below, when we make comparisons across surveys, we confine attention to this balanced sample, where we have two observations for each firm.

Our overriding objective in designing the 1998 questionnaire 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

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<sup>4</sup> For an elaboration of this point, see the comment of Gordon [1997] on the well-known paper by Akerlof, Dickens, and Perry [1997] on nominal wage rigidity in the United States.

<sup>5</sup> We based our first 1991 survey on an address register compiled by the Swedish Association of Industries, designed to provide a balanced coverage of the manufacturing sector. In 1991 the register included 300 firms, employing approximately 40 percent of all employees in 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 dominated by machinery and equipment, which is not surprising, given this sector's traditional role in Swedish

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.<sup>6</sup> In both 1991 and 1998 the field work was conducted in November and December.

### **III. The nominal wage floor**

In 1991 we did not find it worthwhile to ask firms whether they had experienced episodes of money wage cuts. 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 situation of high unemployment, and practically 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 5-6 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

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industry. 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].

<sup>6</sup> As we judged it instrumental to obtain a high response rate we went to great length to design the 1998-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.

for less than ten percent of its employees. In our view, the 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 nominal wage floor.<sup>7</sup>

To probe deeper we asked managers a number of questions on the sources of rigid money wages. In both years 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.<sup>8</sup> 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 1 suggest that subjectively perceived wage rigidity is intense and prevalent, and that the move to a macroeconomic environment of high unemployment and very low inflation has done little to soften wage cut resistance. In both 1991 and 1998 a large majority of managers believed that a proposal to cut pay to save 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, often put forth in the union literature, that wage

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<sup>7</sup> For a comparison with the United States, 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 Washington DC area in 1995, Akerlof, Dickens and Perry [1996] report that only seven had experienced wage cuts during the previous year.

reductions ought to 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. As we discuss below, we believe that four factors are particularly promising in explaining nominal wage rigidity: (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; (iv) the seemingly peculiar pattern of wage competition from the unemployed.

#### *A. Legal and bargaining framework.*

Like in many countries Swedish employers are not allowed to cut nominal wages in a unilateral manner. This is so also in a situation when the old wage contract has expired; the old contract prevails until the parties have reached a new agreement.<sup>9</sup> But even if a majority of employees, acting via the 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 wage 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

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<sup>8</sup> 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.



(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 magnitude of local level pay cuts; see e.g. Holden [1998] for further analysis.

*B. Net replacement rates and resistance to wage cuts.*

The combination of – by U.S. standards – quite generous 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 conjecture that employees become more prone to reject proposals to cut pay than would otherwise have been the case. The background information that we have gathered allows us to test one implication of this hypothesis: because the net replacement rate in case of job loss is higher for blue collar workers than for white collar workers, resistance to cut pay ought to be stronger in firms with a larger share of blue collar workers.<sup>10</sup>

This pattern is indeed what we find. In our 1991 survey, consisting of 179 responding firms, we have information about firms' employment structure. We divide these 179 firms in two groups, according to subjectively perceived resistance to pay cuts, as reported in Table 1. 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 accepted in case of a shock which threatens *all* jobs), and the number 0 to firms where wage cut

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<sup>9</sup> See Holden [1994] for an analysis of how “holdout” can lead to nominal wage rigidity.

<sup>10</sup> Swedish unemployment insurance offers a compensation rate of 80 percent of previous earnings, up to a maximum amount. This cap is of no importance for blue collar workers, but implies that most white collar workers have lower effective compensation rates. An indication of the magnitudes involved is provided by micro-simulations reported by the *Swedish Ministry of Finance* [1997, p. 108]. In these simulations people in work are assumed to become unemployed, and their net replacement rate (NRR) is calculated, allowing for the impact of income dependent taxes and welfare provisions (including benefits, housing allowances and social assistance). The average NRR for an employed Swede is 78 percent. For an average blue collar worker NRR is 79 percent, while NRR is 72 percent for an average white collar worker, and 68 percent for an average senior white collar worker.

resistance is less intense. We then estimate probit models for the probability that a firm 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 2. 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 (column 2), and a measure of firm size (column 3) 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 a regression where we include the unionization rate among the explanatory variables (column 4). The white collar variable remains negative, but the significance level drops to six percent.

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 way of dismissing the natural idea that the safety net of the welfare state contributes to the downward rigidity of money wages.

### *C. Employees' concerns over relative wages.*

A classic explanation for nominal wage rigidity is the argument of Keynes [1936, p. 14] that workers care about relative wages. Because of this they oppose money wage cuts, unless wages can be cut in a coordinated manner throughout 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 Kamalani [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 both within *and* across firms. In 1991 there was much consensus among managers that their employees cared as much about external wage relations as about internal ones, see Table 3. Blue collar workers compared wages both within and across establishments, while white-collar workers put a relatively greater emphasis on the inter-firm wage structure.<sup>11</sup> In 1998 we found that inter-firm wage comparisons have got more common among white collar workers, and somewhat less common among blue collar workers. Thus, to the extent that wage rigidity is due to external wage comparisons, there is no ground to conclude that it has got less pronounced during Sweden's move from low to high unemployment. Further support for this conclusion is provided by the responses we obtained when we directly asked about the plausibility of Keynes's theory of nominal wage rigidity; see Table 4. In 1991 managers' support was lukewarm – in 1998 more than 40 percent responded that they viewed the theory as important or very important.<sup>12</sup>

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<sup>11</sup> Our result that employees care about external wages is not in itself a strong indication of any particular labor market model. It is even consistent with a competitive model. In a basically competitive labor market the way to infer the going wage is to look at wages payable in other firms before quitting a firm that pays a non-competitive wage. We would then expect external wage comparisons to be more common in low-wage firms than in high-wage firms. This does not fit the facts. External wage comparisons are common in *all* firms. Another finding is that the standard of comparison seems to extend beyond other groups of employees. Many managers responded, as did those interviewed by Campbell and Kamalani [1997], that employees pushed for higher wages in times of high profits.

<sup>12</sup> For comparison, one may note that when we asked managers to assess the relevance of the well-known insider-outsider model in 1991, only 7.7 percent replied that they viewed the theory as important or very important; for further details, see Agell and Lundborg [1995]. It is tempting to speculate that the increased support for Keynes's relative wage theory between surveys is due to the fact that inflation had been low for several years when we asked the question in 1998. When we asked about the theory in 1991 inflation was still high, and many managers might not have found a question

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 his non-union firms 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.

From this perspective one may argue that Keynes’s relative wage theory of nominal rigidity is more suited for the unionized European economies, than for the United States, 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 United Kingdom in the 1920s,<sup>13</sup> when unions played a much more important role than has ever been the case in the United States.

#### *D. Reduced wage competition from the unemployed*

Wage rigidity would not arise if unemployed workers tried to underbid the employed ones, and if firms hired underbidders. According to Solow [1990, p. 38], however, the absence of underbidding 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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about wage cuts to be very relevant. However, the comparison is complicated by the fact that the questions differ somewhat between years. The question on the top of Table 4, stressing the role of inter-firm wage relations, is the one we used in 1998. The question that we used in 1991, taken from Blinder and Choi [1990, p. 1006], stresses the role of wage relativities more generally.

<sup>13</sup> Keynes’s relative wage explanation for nominal wage rigidity is often traced to Keynes [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.

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 that underbidding was in fact not 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.<sup>14</sup> Yet, as predicted by efficiency wage theory, firms always or nearly always rejected underbidders. Managers responded that hiring underbidders would violate their internal wage policy, and that they considered underbidders to have inferior skills.

In 1998, when unemployment was much higher, we expected to find that underbidding had got more common. However, we found exactly the opposite – 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.

It is easy to think of reasons why underbidding ought to be uncommon in a welfare state, where most unemployed gain (as already discussed) relatively little from acquiring a job. This explains why an adverse unemployment shock is unlikely to lead to very intensified wage competition. It may also explain why underbidding

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<sup>14</sup> For further details, see Agell and Lundborg [1995]. Bewley [1995] reports US evidence that underbidding does occur, but that firms do not appear to exploit the situation. For experimental results suggesting that underbidding is prevalent and intense, see Fehr and Falk [1999].

appears to be more frequent among white collar workers than among blue collar workers, as the former have lower replacement rates. But it does not explain why underbidding appears to have got *less* intense between 1991-98.

To explain the reduced intensity of wage competition, we are left with the conjecture that the circumstances of a severe macroeconomic shock discourage job search. In times when firms reduce their workforce, applying for a new job might not appear to be a worthwhile activity. As an illustration of the extent of job destruction that occurred during the crisis, many firms reported that they had reduced employment quite substantially 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. In this context it is also important to note that Swedish job security requires a firm to recall laid-off workers before it can choose among other job-seekers. Thus, even as the business cycle situation improves, an underbidder has little prospect of jumping the queue outside a firm that has started to hire.

#### *E. A summing up*

At least since the discussion among the members of the Committee of Economists, economists have argued about the relative importance of the union wage contract, the generosity of the welfare system, and considerations of fairness and relative pay in explaining downward rigidity of money wages. Our analysis suggests, though, that it would be wrong to view these factor as mutually exclusive. The Swedish nominal wage floor appears to be of exceptional durability, not because of the strength of any single factor, but because of the compound influences from fairness norms that assign a large weight to wage relativities that are external to the firm, collective bargaining institutions that reduce the scope for wage flexibility at the level of the individual plant, and a social

safety net that insures people against a large part of the income loss in case of unemployment.

A finding which we have not seen documented before is that active wage competition from the unemployed appears to have got less intense when it was needed the most, during and after a sharp macroeconomic contraction. Whether this is a general characteristic of *all* severe recessions, or whether it is a characteristic which is specific to our sample, remains to be seen. It seems appropriate to conclude this section with the customary call for additional research.

#### **IV. Work morale and the business cycle**

An implication common to all efficiency wage models is that outside opportunities affect effort on the job. In particular, this class of models predicts that there ought to be a positive link between unemployment and effort. In 1991 a great number of Swedish managers accepted this basic premise. When we asked the hypothetical question how they thought that an increase in the local unemployment rate would affect the effort of their employees, no less than ninety percent answered that effort would increase.

If these prior beliefs make sense, employees ought to work harder in 1998, when unemployment was so much higher than in 1991. 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 it had got more common. 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 observation of Bewley [1998, p. 479] that firms exploit recessions to get rid of their least productive employees.<sup>15</sup>

A noteworthy finding of previous field surveys is that all report support for theories that emphasize fairness and morale as important factors in explaining effort and wage rigidity.<sup>16</sup> However, there is very little support for the shirking model,<sup>17</sup> the model that has attracted most attention in the theoretical literature. 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 very rare; see Agell and Lundborg [1995]. If the Shapiro-Stiglitz model really is correct in portraying workers as deriving utility from shirking, such lax penalties ought to be accompanied by massive incentive problems, no matter the extent of monitoring.

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<sup>15</sup> However, this would require our firms to find a way to circumvent the seniority provisions of Swedish job security legislation, discussed below.

<sup>16</sup> Blinder and Choi [1990], Campbell and Kamlani [1997], and Bewley [1998] all report evidence suggesting that there is a strong negative relation between work morale and unilateral wage *cuts*, but a much weaker link between work morale and wage *levels*. Because Swedish firms are not allowed to cut pay unilaterally, our own survey includes no questions about the relation between unilateral wage cuts and effort. Instead, we simply asked how managers assessed the likelihood that employees reduced effort if the firm upheld a wage structure that was considered to be unfair. While most firms acknowledged that an unfair wage structure might lead to reduced effort, few firms seemed to believe that the relationship was a very strong one. This pattern applies in both 1991 and 1998.

<sup>17</sup> See Campbell and Kamlani [1997] and Bewley [1998]. As noted by Malcolmson [1998], however, 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 – including our own ones – have no immediate bearing.



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 5 reports the percentage of managers that rank each of the factors as the most important one, and a comparison with the results for the U.S. 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.<sup>18</sup> 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 U.S. 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 devices. They answered that their employees ought to be given stimulating work assignments, and to feel involved in decision-making. Managers also stressed 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

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<sup>18</sup> In our Swedish survey 61 percent of managers indicated that close supervision was the least important factor among the four.

creating a friendly atmosphere, and one answered that people work hard as long as they have fun.

These responses are practically identical to those given by the U.S. managers interviewed by Bewley [1998]. Both Swedish and U.S. managers seem to ascribe a surprisingly important motivational role to psychological and sociological factors. This emphasis on what appears to be essentially nonmaterial incentives (“appreciation”, “demonstration of trust,” etc.) is not easy to understand from the perspective of standard neoclassical effort models. However, it does seem to corroborate some of the implications from recent psychological models of game theory. In the well-known bilateral fairness model of Rabin [1993] players care about material pay-off, but also about intentions.<sup>19</sup> Most importantly, Rabin’s model incorporates the possibility that an individual is willing to sacrifice her own material well-being to assist an individual who is perceived to be kind. From this perspective “appreciation” and “demonstration of trust” might be interpreted as management’s way of signaling their kindness and good intentions to their employees.

## **V. Unemployment persistence and job security legislation**

Why is European unemployment so high? A popular view emphasizes the role of adverse labor market institutions in increasing the natural rate of unemployment. But as noted by several commentators, this view is not easy to reconcile with the observation that these institutions were already present in the 1960s, when European unemployment used to be very low. A potentially more promising line of explanation focuses on the interaction between adverse macroeconomic shocks and labor market institutions. European unemployment is high because strict employment security and

generous unemployment benefits slow down the equilibrating force that pulls the economy back towards the natural rate after an adverse macroeconomic shock. In a recent study Blanchard and Wolfers [1999] show that an econometric model incorporating aggregate shocks and indicators of labor market institutions appears to explain most of the evolution of unemployment over time, and across countries, in a panel of 20 OECD countries.

Our microeconomic panel sheds light on how one prominent labor market institution, job security legislation, interacts with aggregate shocks. After the immediate crisis in 1991-93, when manufacturing employment decreased by more than 20 percent, production 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 growth” be due to the provisions of Swedish job security legislation?<sup>20</sup>

We confronted managers with a number of statements about job security. In both 1991 and 1998 a majority of managers (58 percent in 1991, 51.3 percent in 1998) indicated strong support<sup>21</sup> for the proposition that the commitments associated with 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

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<sup>19</sup> For other recent approaches to fairness and reciprocity, see Fehr and Schmidt [1999], Dufwenberg and Kirchsteiger [1998], and Falk and Fischbacher [1999].

<sup>20</sup> According to the OECD employment protection index, Sweden has traditionally belonged 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.

<sup>21</sup> By “strong” we mean that a respondent answers with a numerical score of at least seven on our integer scale from 1 to 9. In interpreting our results it should be noted that the future of job security in Sweden has been much debated during the 1990s. To reduce the risk that our respondents provided us with strategic answers, accommodating the views of organized business interests, our questions on job security were of a detailed and concrete nature, emphasizing mechanisms discussed in e.g. Bertola [1990] and Bertolila and Bertola [1990]. An indication that strategic response bias might be less of a problem follows from the fact that the average scores on most of our job security questions were about the same in 1991 (when job security was a less sensitive political issue) as in 1998.

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 an economic *downturn*, because firms otherwise faced the risk of having to layoff competent, recently employed, workers.

These responses are well in line with the theoretical analyses of Bentolila and Bertola [1990] and Bertola [1990] on how strict job security ought to affect employment dynamics over the course of a regular business cycle: job security reduces hirings during an upswing, and firings during a downturn. The views of our managers are also perfectly consistent with the aggregate evidence of Blanchard and Wolfers [1999], according to which job security is a factor that slows down the recovery of labor demand after an adverse macroeconomic shock.

In Sweden, as in many other countries with stringent laws, there are flexible arrangements open for a firm that wants to avoid the job protection that comes with a permanent employment contract. Here we note an interesting difference between years. A far greater share of managers replied that job security for permanent employees boosted the use of trial employment in 1998 than in 1991; see Table 6. 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, and penalizes job seekers in search of a protected, tenured job.

## **VI. Conclusions**

Subject to the usual caveat that survey evidence must be interpreted with caution, we believe that our repeat survey in a sample of identical firms casts new

light on a number of important issues. We document the virtual absence of nominal wage cuts during several consecutive years characterized by very low inflation and quite high unemployment. The downward stickiness of money wages appears to depend on a number of interacting factors, including institutional aspects of the wage contract, the social insurance provided by the welfare state, and employees' concerns about relative wages and fairness, along the lines of Keynes [1936, p. 14]. The existence of a nominal wage floor implies that real wages become more rigid as the inflation rate goes to zero. As suggested by Tobin [1972], some inflation might then be needed to grease the wheels of the labor market. As the *Riksbank's* main objective is to secure price stability, this appears to raise some disturbing questions about the Swedish labor market's ability to cope with future, macroeconomic shocks.

In this respect Sweden is probably not very different from most members of the European monetary union. A common argument of those in charge of European monetary policy is that the trade-off between price stability and unemployment can be improved by institutional reforms that promote wage flexibility. But to the extent that we are right in concluding that fairness and workers' concerns about relative wages are important reasons for nominal rigidity, institutional reform may accomplish little. Developing models of how social norms of fairness interact with the legal constraints emphasized in the political debate seems like an important topic for future research on nominal wage rigidity.

The sharp increase in Swedish unemployment also allows us to evaluate some specific theories of effort and unemployment. We present substantial evidence that unemployment raises effort and eliminates substandard performance, an implication common to many efficiency wage models. But we still conclude that much recent theorizing about effort and incentives is misplaced. Swedish managers seem as

convinced as the U.S. managers interviewed by e.g. Campbell and Kamlani [1997] and Bewley [1998] that the shirking model misses crucial aspects of reality. Finally, we present new evidence on unemployment persistence. In line with macroeconometric work emphasizing the interaction of shocks and labor market institutions in explaining persistent European unemployment, our respondents point at Swedish job security legislation as an important factor that has limited new hires during the recovery after the immediate crisis.

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1-18.

Table 1. *“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
$\leq 50\%$	20.26	13.91
$50 < \dots < 100\%$	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 2. *Maximum likelihood estimates of binary probit models for subjectively perceived wage cut resistance (1991 survey)*

	1	2	3	4
Constant	-0.011 (0.240)	0.175 (0.345)	0.173 (0.347)	-1.057 (1.804)
White collar share	-1.534** (0.641)	-2.065** (0.772)	-2.067** (0.775)	-1.651* (0.872)
Size			0.0000 (0.0001)	
Unionization rate				1.161 (1.731)
Industry dummy variables	No	Yes	Yes	Yes
No. of firms where dependent variable takes the value one	51	51	51	46
No. of firms	174	174	174	158

Notes: The dependent variable is described in the 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, *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. Standard errors are in parentheses (\*\* denotes significance at the five percent level, and \* significance at the ten percent level).

Table 3. "How common is it for your employees to compare their wage with the wages of employees in (your firm OR other firms) in wage negotiations?"

	Percentage of managers that identify (internal OR external) wage comparisons as <i>common</i> or <i>very common</i>	
	Internal wage comparisons	External wage comparisons
White collar workers; 1991 sample	40.76	49.04
White collar workers; 1998 sample	56.13	61.29
Blue collar workers; 1991 sample	58.71	59.62
Blue collar workers; 1998	56.58	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 4. *"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 <i>important or very important</i>
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 5. 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	
	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

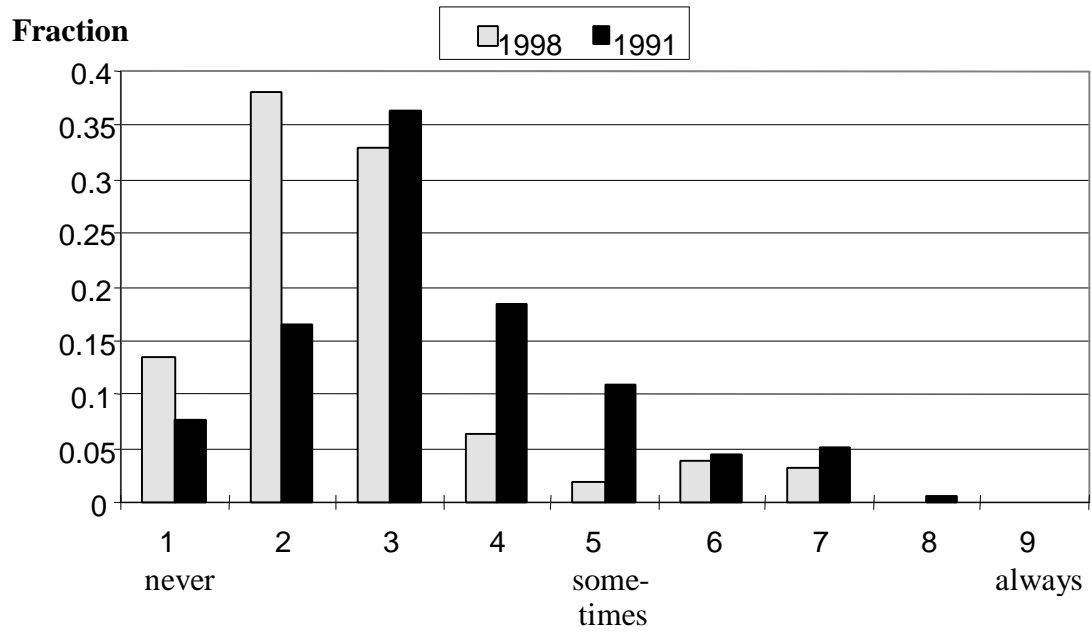
Note: The numbers in the third column are adapted from Campbell and Kamlani [1997, p. 775] as follows. First, while Campbell and Kamlani report results for three types of employees, we just compute the average. Second, Campbell and Kamlani include a fifth factor in their comparison, "good working conditions",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

Table 6. *"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, in particular 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.

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





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