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## **Does Wage Compression Explain Rigid Money Wages?**

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# Does Wage Compression Explain Rigid Money Wages?

by

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## Abstract

There is a literature on the causes of wage rigidity and there is a literature on within-firm wage structures. We use a survey of CEOs to show that the two are interlinked in that the proposed explanations for the compression of wages within firms also provide an explanation for wage rigidity.

**Keywords :** Wage compression, wage rigidity.

**JEL Classification:** J24, J31, J42.

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## 1. Introduction

Explaining wage rigidity is central to our understanding of persistent unemployment as well as the business cycle. Another field of study in labor economics focuses on wage structures within firms. We follow Romer (1992) in taking seriously the contention that these two are linked in that the literature on wage dispersion goes a long way towards explaining the causes of wage rigidity. Put simply, managers do not want to lower wages because this may cost them their better workers and they do not want to lower the wages of the less productive workers only because this would skew the internal wage structure.<sup>1</sup> A recession makes firms lay off the workers who contribute least to profits while the more valuable workers are spared. We test this hypothesis by surveying the managers of 401 companies in Iceland.

## 2. Wage Compression

Wages are compressed when the difference between the productivity of two individuals working in the same firm exceeds the difference in wages.<sup>2</sup> Multiple reasons for wage compression can be found in the literature. Lazear (1989) explains why managers may decide to compress intra-firm wages in order to create harmony among workers.<sup>3,4</sup> Bewley (1999) interviewed 300 managers and found strong support for the impact of wage cuts on morale. Efficiency-wage models – such as Akerlof and Yellen (1990) – show how workers' effort depends on a comparison of actual wages and perceived fair wages. Teulings and Hartog (1998) describe the role of norms and contracts in affecting the distribution of the surplus generated in employment contracts within the corporatist setting. Romer (1992) shows how the compression of wages relative to marginal productivity can raise productivity when workers' perceptions of fairness – and hence their effort – depend on an inter-firm comparison

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<sup>1</sup> This explanation contrasts with the idea of adverse selection because in our story managers observe the productivity of workers – and can choose whom to hire and fire – value the more productive more than the less productive ones, and try to retain their stock of productive individuals through selective layoffs in recessions instead of wage reductions.

<sup>2</sup> See Booth and Zoega (2004) on different definitions of wage compression and the relationship between wage compression and firms' training decision.

<sup>3</sup> In contrast, tournament theory demonstrates how the intra-firm wage distribution can be used to motivate workers (see Lazear and Rosen, 1981). Another model explaining the dispersion of wages is that of Calvo and Wellisz (1979) who argue that if shirking at the top is more expensive than at the bottom – because when a manager shirks his duties all his subordinates may follow his example – the manager needs to be paid more.

<sup>4</sup> A similar argument is found in Milgrom and Roberts (1990). They argue that wage inequalities may give rise to rent-seeking behaviour within firms when workers change their behaviour with the aim of ensuring wage increases.

of wages. In Frank (1984) wage compression within firms can be an equilibrium phenomenon if workers differ in their preferences for relative standing or prestige.<sup>5</sup> In a recent paper, Booth and Zoega (2005) demonstrate how wage compression arises if the more productive workers face fewer employers due to the sophistication of the tasks they perform.

### **3. Wage Rigidity**

It is beyond the scope of this paper to survey the vast literature on nominal and real wage rigidity. What is important from our perspective is to note that a great majority of these models is based on the representative-agent framework. Union models and models in the insider-outsider tradition (such as Lindbeck and Snower, 1989) do distinguish between employment states; employed workers and the unemployment ones; entrenched employed workers and new entrants, but they do not distinguish between workers of different attributes. The same applies to efficiency-wage models.<sup>6</sup>

In this paper we want to explore the hypothesis that the causes of wage rigidity are to be found in models of heterogeneous agents, in particular the models of wage compression surveyed above. If some workers are observationally better than others and if – due to wage compression – these are worth more to firms than the less able ones, it follows that firms would want to respond to a recession by selectively laying off the least able workers instead of cutting all wages. Lowering wages risks losing the better workers making the firing of the least able ones desirable. This explanation provides an alternative to the ones based on the representative-agent model.

### **4. The Survey**

Our empirical analysis has three objectives. First, we are interested in using survey data to establish managers' perception of the degree of wage rigidity. Secondly, and most importantly, we would like to test whether our proposed explanation for wage rigidity has any support, i.e. whether wage rigidity is due to the compression of wages. Finally, we will attempt to establish some of the reasons for wage

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<sup>5</sup> He finds support for his theory in the case of salespeople and university professors (high-wage individuals are paid less than their marginal product and vice versa for the low-wage individuals).

<sup>6</sup> An important exception is the work in the adverse-selection tradition (see Weiss, 1990), where workers differ in abilities but employers do not observe these innate differences between workers. Employers then resort to paying wages likely to attract and retain qualified workers. In this scenario, employers are less prone to cutting wages in recessions and more likely to fire workers because they assume that the better workers have better opportunities elsewhere and will quit, leaving the inferior ones to stay on.

compression, hence testing some of the multiple explanations for wage compression surveyed in Section 1 above.

Our survey is comparable to that of Agell and Lundborg (1995) who surveyed a sample of large Swedish, manufacturing firms. They found that workers' concerns about relative wages and fairness were important in explaining why firms do not cut wages in downturns. This contrasts with some of the Anglo-Saxon studies; Blinder and Choi (1990) found that – in addition to considerations of fairness – concerns about higher turnover prevent firms from cutting wages and Campbell and Kamlani (1997) attribute wage rigidity to managers' fear of losing the better workers through wage cuts, which they explain as adverse selection. A study of British firms by Kaufman (1984) found that managers feared the effect of wage cuts on worker's effort. It seems that while the Anglo-Saxon studies provided some support for efficiency wage theories of the adverse selection and moral hazard type, the Swedish study provided support for a model where effort depends on workers' subjective notion of what constitutes a fair wage. Finally, Franz and Pfeiffer (2003) surveyed German firms and found strong support for explanations based on labor union contracts and implicit contracts, in particular for the less skilled.

Our survey will enable us to compare survey results in Iceland to those in the countries listed above. Iceland has a population of 293,000 people, the vast majority of the working-age population belonging to the service sector. Its labor market is well integrated geographically and the population mass is urban and concentrated in the capital city Reykjavik and vicinity. Union density is around 84% (in 1998) and coverage almost complete. Union contracts in many cases serve as *de facto* minimum wages, actual wages being negotiated between employer and employee. However, in some cases – especially in the lower segments of the labor market – negotiated wages are also paid wages. There is significant coordination between unions and between employers. Unemployment benefits are not generous – not dependent on past income – and their duration is limited. Finally, firms have flexibility in the hiring and firing of workers, legalized firing restrictions being minimal (1-3 months of notice depending on tenure and not severance pay). Perhaps partly due to the flexibility of labor market, the country ranked ninth in the world in terms of (PPP-adjusted) GDP per capita in 2002 and second in terms of a quality-of-life index (*The Economist, World in Figures*).

## 4.1 Method

Our sample consisted of 718 firms in Iceland with more than 3 employees each<sup>7</sup>. It is randomly selected from the *National register of firms*. These are all independent firms, not branches of larger companies. They are located in all parts of the country and include firms in manufacturing, services and retail/whole-sales. In each firm, either the CEO or the CFO answered the survey questions. Of the 718 firms contacted, 236 managers refused to answer and 81 could not be reached. Therefore, 401 completed the questionnaire, which amounts to a 56% response rate.

The survey was done via telephone between March 9 and April 11 2005.<sup>8</sup> Calls were made during weekdays by trained interviewers and they always asked for the CEO. If he or she was not in, the interviewer asked for the CFO. If neither was in, a call was made later same day or the following day.<sup>9</sup>

The questionnaire had 12 questions in addition to some background questions. It started with a question addressing the issue whether more productive workers obtain relatively lower pay than those who are less productive and why that would be the case. The question that follows concerns the reasons why managers valued the more productive workers so highly – assuming they answered the first question in the affirmative – giving three possible reasons based on our discussion in Section 1 above. A random half of the respondents obtained these last two questions and the other half was not asked. This was done in order to be able to evaluate whether the mention of the importance of more productive workers would affect answers to the questions that followed. As it turned out, no difference was found between the two groups when it came to the following five questions that followed.

All respondents were then asked whether they would cut wages in a recession. Those who answered that they would not cut wages were then asked about the importance five specific reasons played as to why it would be difficult to cut wages on the scale of 1-4 (1 = not important, 2 = of minor importance, 3 = moderately important, 4 = very important). These are the five most important reasons out of eight

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<sup>7</sup> The survey was a part of an omnibus Gallup Iceland conducts a few times a year with Icelandic businesses constituting the sample. Gallup Iceland has acquired an ISO-9001:2000 quality certification for all its operation.

<sup>8</sup> The survey was conducted by Gallup in Iceland.

<sup>9</sup> Questions were programmed in CATI (computer assisted telephone interview) software called NIPO. When a call was made and a respondent accepted the interview, each question appeared on a computer screen in front of the interviewer and answers were immediately punched in at the keyboard. All answers were saved in a database and after the last interview transformed to SPSS, which was subsequently used to analyse the results.

asked by Campbell and Kamlani (1997) using the same response scale. The questions were asked in a random order between interviews. Finally, the respondents were asked to name the reasons as the most important and the second most important in order to obtain an additional measure of their importance.

We first show descriptive results that address the issue of wage compression directly. We then look at its role in causing wage rigidity.

## **4.2 Wage compression**

The first question addressed the issue of whether the more able workers contributed more, less than or the same to profits. This is a direct test of the hypotheses put forth in Section 1 above. Responses – shown in the first line of the table below – reveal that 55.5% of respondents agreed that the more able workers contribute more to profits while 40.9% said they contribute as much as others. Only 3.6% said that they contribute less.<sup>10</sup> Those who said that the more able workers contributed more to profits were then asked about the likely reason why the more able or productive workers were paid less in comparison to their productivity. The responses are shown in the second line of Table 1. By far the most important reason had to do with the effect on the morale of other workers, 39.6% stated this as the main reason. About 16% claimed that they are paid less because outside job opportunities are more limited for these workers; there are relatively fewer workplaces where they can get desirable jobs. The asymmetric information explanation – that other employers don't know about the abilities of able workers – received less support, or 10.1%. Over 34% mentioned other reasons.<sup>11</sup>

## **4.3 Wage rigidity and its causes**

We have set forth the hypothesis that the greater value attached to the more able workers may be the real reason behind the observed rigidity of wages. In the third line of the table below we ask directly about wage rigidity. An overwhelming majority of 90.6% claim that they would not lower wages during recession and the rest (9.4%), on the other hand, said they would lower the wages. No significant difference was

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<sup>10</sup> Background variables included: urban versus rural location; annual turnover; number of employees; number of office workers; consumer versus business-to-business markets; industry. Cross tabulation of these responses with the background variables revealed no significant differences.

<sup>11</sup> Almost 50% of managers of manufacturing companies said the reason for not paying more able workers more was morale reasons, as did about 30% the managers of firms in services and retail or whole sales. On the other hand, about 60% of managers of companies in retail or whole sales mentioned other reasons than those three listed, compared to less than 35% in the sample in general.



observed with respect to the background questions. Those who said they would not lower wages during a recession were then asked why not in an open-ended question. The four main reasons are presented in the fourth line of the table. Over 20% of respondents claimed that wages are not reduced because of union contracts. The second largest group, or 16.1%, stated that it was very difficult or impossible, 11.7% said that they would prefer selective layoffs instead and 10.0% fear the impact of wage reductions on voluntary quits while 40% gave miscellaneous other reasons.<sup>12</sup>

Given the large proportion of respondents giving miscellaneous and unclear reasons in response to the previous question, we attempted to come close to managers' intuition by proposing a set of five explanations of the eight put forth in Campbell and Kamlani's research (1997). The first column of the lower half of Table 1 gives the proposed reasons for wage rigidity. The managers were asked to say whether each reason was very important, moderately important, of minor importance or not important at all. After rating the reasons, each manager then ranked them as the most important and the second most important one. The average score is shown in the second column; the proportion of those who rated the reason as very important is in the third column. The number in the last column is the percentage of those who put the relevant reason as the most important multiplied by two plus the percentage of those who put the reason as the second most important, divided by three.

Over 60% of the managers responded that the reason for not lowering wages is the fear of losing the most experienced workers is very important. The fear of increasing quits and turnover and the risk of losing the most productive workers received similar average scores. Of the two, the fear of losing the most productive workers is ranked as more important than reducing quits and turnover. Hence, two of the most important reasons stated for not cutting wages were based on the idea of heterogeneous workers. Efficiency-wage theory in the form of lower wages reducing effort obtained somewhat less support and implicit-contract theory did not have many adherents among the respondents.<sup>13</sup>

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<sup>12</sup> Over 30% of managers of larger companies mentioned union contracts as the main reason for not being able to reduce wages during recessions. About 22% of managers of companies in consumer markets said that it would be impossible or very difficult to lower wages while 13% of managers of companies in business-to-business stated this reason.

<sup>13</sup> However, the implicit-contracts explanation was given greater importance by managers of smaller companies, both measured by the number of employees and yearly turnover.

**Table 1.** Summary of important results

(1)	Able workers' contribution to profits in comparison to that of the less able ones	More 55.5	As much 40.9	Less 3.6		
(2)	Able workers get paid less relative to their productivity because...	Morale would suffer among other workers 39.6	Limited job opportunities 16.1	Other potential employers are imperfectly informed 10.1	Other reasons 34.2	
(3)	Would your company lower wages in a downturn?	Yes 9.4	No 90.6			
(4)	Why would your company NOT lower wages?	Union contracts 22.2	Very difficult 16.1	Prefer to lay off workers 11.7	Raise quits 10.0	Other 40.0
(5)	<p>Wage reduction may cost the firm its most experienced workers who embody the most firm-specific human capital.</p> <p>Wage reduction risks losing the most productive workers while layoffs can target the least productive ones.</p> <p>Wage reduction would increase quits and turnover and hence raise the cost of hiring and training.</p> <p>Wage reduction would reduce effort and productivity and lead to less customer satisfaction.</p> <p>Workers dislike unanticipated wage changes, hence the implicit contract that wages not be reduced in a downturn or raised in an upturn.</p>	<p>Average score (1-4)</p> <p>3.48</p> <p>3.08</p> <p>3.12</p> <p>2.91</p> <p>2.60</p>	<p>Very important (%)</p> <p>61.4</p> <p>38.4</p> <p>40.8</p> <p>35.6</p> <p>20.9</p>	<p>Most (2) and second most (1) important (weighted %)</p> <p>37.9</p> <p>25.1</p> <p>15.6</p> <p>12.1</p> <p>9.4</p>		

## **5. Conclusions**

In sum, we have found that managers avoid wage reductions in slumps because of the effect of a general reduction in wages on the likelihood that desirable workers – either because of experience or inherent ability – leave the firm and – to a lesser extent – concerns about the overall level of quitting. While the latter support models in the quitting variant of efficiency wage models (such as Salop, 1979), the former provides direct support for models of a compressed internal wage structure, in contrast to macroeconomic models based on the representative-agent model. Finally, implicit contract theory receives scant support and the effort variant of efficiency wage theory some but not great support.

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