

Working Paper No 20/11

Recession, HR and change

by

**Lasse B. Lien
Tore Hillestad**

SNF project no 1306

“Crisis, Restructuring and Growth”

CRISIS, RESTRUCTURING AND GROWTH

This working paper is one of a series of working papers and reports published by the Institute for Research in Economics and Business Administration (SNF) as part of its research programme “Crisis, Restructuring and Growth”. The aim of the programme is to map the causes of the crisis and the subsequent real economic downturn, and to identify and analyze the consequences for restructuring needs and ability as well as the consequences for the long-term economic growth in Norway and other western countries. The programme is part of a major initiative by the NHH environment and is conducted in collaboration with The Norwegian Ministry of Trade and Industry, The Research Council of Norway, The Confederation of Norwegian Enterprise/ABELIA and Sparebanken Vest/Bergen Chamber of Trade and Industry/Stavanger Chamber of Trade and Industry.

INSTITUTE FOR RESEARCH IN ECONOMICS AND BUSINESS ADMINISTRATION

BERGEN, JULY 2011

ISSN 1503-2140

© Dette eksemplar er fremstilt etter avtale med KOPINOR, Stenergate 1, 0050 Oslo. Ytterligere eksemplarfremstilling uten avtale og i strid med åndsverkloven er straffbart og kan medføre erstatningsansvar.

Recession, HR and Change

Lasse B. Lien

Norwegian School of Economics

Department of Strategy and Management

Helleveien 30

NO-5045 Bergen

Tel: +47 55 959726

E-mail: lasse.lien@nhh.no

Tore Hillestad

Norwegian School of Economics

Department of Strategy and Management

Helleveien 30

NO-5045 Bergen

Tel: +47 55 959567

E-mail: tore.hillestad@nhh.no

Key words: Change, Recession, Human Resources, Signaling

15.04.2011

Acknowledgements:

This work is written as part of the research projects “Krise, omstilling og vekst” and “Focus” at the Norwegian School of Economics. The authors would like thank these projects for financial support and Eirik Sjøholm Knudsen for assistance with data collection.

Abstract

We document how the recession in the wake of the financial crisis created a general surge in pro-change attitudes and behavior. Next, we examine variation across firms with respect to this change boost. In particular, we focus on how and why a firm’s use of HR-measures such as training, pay changes and layoffs matters. We find that training and layoffs increase the relative size of the effect, while pay cuts reduce it. We make sense of these findings by looking at managers’ choice among HR-measures as a signal used by employees to determine their employment risk. The level of employment risk is in turn linked to employees’ investments in change in a nonlinear, U-shaped fashion.

1. Introduction

Despite all the research on change and HR over the past 50 years surprisingly little has addressed the situations in which change really booms throughout the economy (Armstrong, 2003; Beer and Nohria, 2000; Towers, 1996). We are of course referring to recessions. Though the publication pipeline is hopefully full of papers on this issue, a Google Scholar search still results in less than a handful of relevant published papers, and none on the issues we address here.

We first document how the recession following the financial crisis created a general surge in pro-change attitudes and behavior. Next, we focus on variation across firms in the size of this boost to employees' willingness to invest in change. In particular we examine how this variation is linked to a firm's use of key HR-related variables, specifically training, pay changes and layoffs. We find that investments in employee training increases the positive effect more than any of the other HR-measures, next comes layoffs, then pay freezes, while pay cuts reduces the relative size of the effect. We suggest an explanation for this pattern where a firm's use of HR-measures is interpreted by its employees as a signal about how severely the firm is affected by the recession, and consequently their employment risk. The level of employment risk in turn is what actually leads to differences in employees' willingness to invest in change. We predict and find evidence consistent with a U-shaped relationship between employment risk and employees' investments in change. The main reason HR-measures affect employees' change behavior is in other words via sending a signal to employees about where on this U-shaped curve the firm, and thereby its employees, are located.

To the best of our knowledge both the empirical findings and the interpretation of these findings is new to the literature. Our source of data is a survey of 1249 Norwegian

CEOs' experiences during the recession that followed in the wake of the financial crisis. For each firm/CEO in our sample, we also merge survey data with accounting information from publicly available databases.

The paper is organized as follows: In section 2 we discuss relevant literature and present our hypotheses and the reasoning behind them. Section 3 provides details on data, sample and methods. Section 4 presents our empirical findings. In section 5 we summarize, discuss alternative interpretations, and conclude.

2. Theory and Hypotheses

A recession obviously increases the “demand for change” as managers are forced to take action to adapt their firms to changed- and harsher business conditions. What we document here is that there is also an increased “supply of change” from employees. We find a general surge in pro change attitudes and behavior among employees in the wake of the recession spurred by the financial crisis. This increase in the supply of change is as expected from received theory. The reason is that important mechanisms that make change difficult are weakened in the context of an external threat such as a recession.

First, support for change involves overcoming a communication barrier around the question of “why change” (Beer and Nohria, 2000; Romanelli and Tushman, 1994). In ordinary times managers must provide the information and evidence for why change is necessary (Kotter, 1995; Beer and Nohria, 2000). In contrast, during a recession information supporting that change is likely to be necessary comes from “everywhere”. Media will be filled with stories about the recession and the painful consequences it brings. Similar signals are likely to be transmitted through personal networks since most people have a friend, a relative or a neighbor that is affected. Also employees may observe that firms the same industry, suppliers or customers are undergoing change. The convergence of signals from management and other sources means that the “why change?” barrier is substantially easier to overcome.

A second barrier concerns the “what’s in it for me” question (Lawler, 1987). This refers to the need to convince employees that they will prefer the situation *with* the change over the situation *without* the change. Under normal times it falls on management to convince people that change is in their self interest. While the costs of undergoing change are often clear and visible to employees, the gains may be perceived as vague and hypothetical (Vroom,

1964; Nadler and Lawler, 1995). During a recession, on the other hand, the gains from change are less vague and ambiguous. Important benefits are to avoid being laid off, avoid having to take pay cuts, or shorten spells of pay freezes. Changes that reduce the likelihood of such outcomes are clearly consistent with self interest, and thus they should be welcome.

A third mechanism concerns the finding that the importance of leaders and leadership increases with uncertainty and turbulence (Nadler and Tushman, 1990). In other words, people look to leaders for guidance in difficult times to a greater extent than they do in periods of stability and growth (Meindl, 2004; Flynn and Staw, 2004). Since a recession is indeed a period of turbulence and uncertainty, the greater faith in leadership during such periods will presumably make employees more prone to accept and buy into change initiatives.

Finally, the opportunity costs for employees of investing in change may be lower during a recession. Imagine for example a sales person that receives bonus for exceeding a given sales-quota. For such a person to take time away from selling is obviously costly. This makes investing in change costly for the salesperson. If a recession means that the bonus is out of reach, or that the salesperson has a lot excess capacity, focusing time and attention on change is less costly. Even if we eliminate the bonus part of this example, the opportunity costs of change will be lower when employees' other responsibilities are reduced. Also, the cost of *not* investing in change may be higher if resisting change increases the likelihood of being chosen in a round of layoffs.

In sum, the prediction from all of this is that managers should experience a surge in positive attitudes towards change under a recession, as indeed we find. Though there is a general increase in the willingness to change, there will still be variation across firms due to the fact that firms are to varying degrees affected by the recession, and because managers choose different responses to the crisis (and more). Here, we shall focus on a subset of those responses; how some key HR-measures impact employees' willingness to invest in change.

These are investments in employee training, pay cuts and pay freezes, and layoffs. Before turning to each specific measure we will briefly discuss some relevant general theory. Note that it is not our aim to review all theories that impact willingness to change. Here, we are interested in the general patterns related to employees' incentives to invest in change, and we admittedly abstract from many important details, such as employee confidence in management (Bennis, 2000), how managers communicate changes to employees (Beer and Nohira, 2000), how change processes are run (Shapiro and Kirkman, 1999; Bies and Tyler, 1993), the credibility of the firm's strategy in the eyes of employees (Hatch and Schultz, 2001), etc. The large sample dataset we use forces us to focus on aggregate patterns that are identifiable without detailed information about each firm, but we do acknowledge that these abstractions will imply a substantial amount of unexplained variation.

The perspective of employees as investors that allocate time and effort where the returns are highest¹ is usually linked to Nobel laureate Gary Becker. He famously pointed out the link between job security and employees' willingness to undertake firm-specific investments (Becker, 1962). It makes a lot of sense that the lower the job security, the lower the willingness to make investments that would be worthless if one is laid off. In general, this means a HR-measure that signals to employees that job security is lower (higher) than previously thought, will lead to reduced (increased) investments in change. We assume here that reaping the benefits from engaging in change requires continued employment with the firm, i.e. there is a nontrivial firm-specific component in employees' investment in change.

Investments can be made to reap future benefits, but they can also be made to avoid a future negative outcome, such as being laid off or having to accept a pay cut. Being laid off is both more likely and more costly during a recession since more firms struggle and alternative employment is more difficult to find (Ferris and Cook, 2006). This generates exactly the

¹ Returns are not restricted to monetary benefits

opposite prediction. A HR-measure that signals to employees that job security is lower (higher) than previously thought, will lead to increased (reduced) investments in change.

The problem with these two arguments is that it seems to make predicting the sign of the different HR-measures quite arbitrary. Consider investments in training. When the firm invests in training this signals that the firm does not intend to layoff the employee receiving the training. If this signal increases the job security of the employee the first argument suggests that this should increase investments in change, while the second says that the increased job security should do the opposite. Consider next layoffs. If we assume that layoffs increase the perceived probability of further layoffs, one argument says this will unleash more change, the other suggests less. In neither situation is it a priori clear which effect should dominate.

To make sense of this, we suggest a simple model that not only predicts the signs of the coefficient on the different HR-measures, but also their relative sizes. We start out with the assumption that during a recession employees will be uncertain about how adversely affected their firm is, and hence the probability of being laid off. Which HR-measures managers select will be read by employees as signals about this probability. Not only are different HR-measures a signal, but they can also affect that same probability (as we elaborate below). The reason the choice of HR-measures is a credible and interpretable signal is that we assume that managers have a known ranking of these measures that depends on the severity of the situation. If the firm is mildly affected they will only invest in employee training (use idle capacity for training), if they are somewhat more affected they will also instigate pay freezes, if they are even more affected they will negotiate pay cuts, and only the worst affected firms will turn to layoffs. Note that we assume this ranking is known to employees. We also assume that both of the arguments presented above are relevant, but that which matters most will depend on the employees interpretation of how likely they are to be

laid off. HR-measures that reveal a high layoff probability will motivate investments in change to reduce this probability, while measures that reveal a low layoff probability will increase employees' confidence in making firm specific investments, and hence also stimulate investments in change. Each of these tendencies become weaker as we move towards intermediate levels of layoff probabilities, and in the intermediate region they will also tend to cancel each other. This results in a response curve for employees investments in change as a function of layoff probabilities as shown in Figure 1 below. Figure 1 shows two response curves, one during recessions and another for periods outside recession. As can be seen, the recession curve is shifted upwards and have a steeper slope for most values of the layoff probability. This change of the response curve reflects the noted general increase in employees' willingness to change during recession, and also their heightened sensitivity to both of the two key opposing mechanisms. In regression terms, this hypothesized shift means

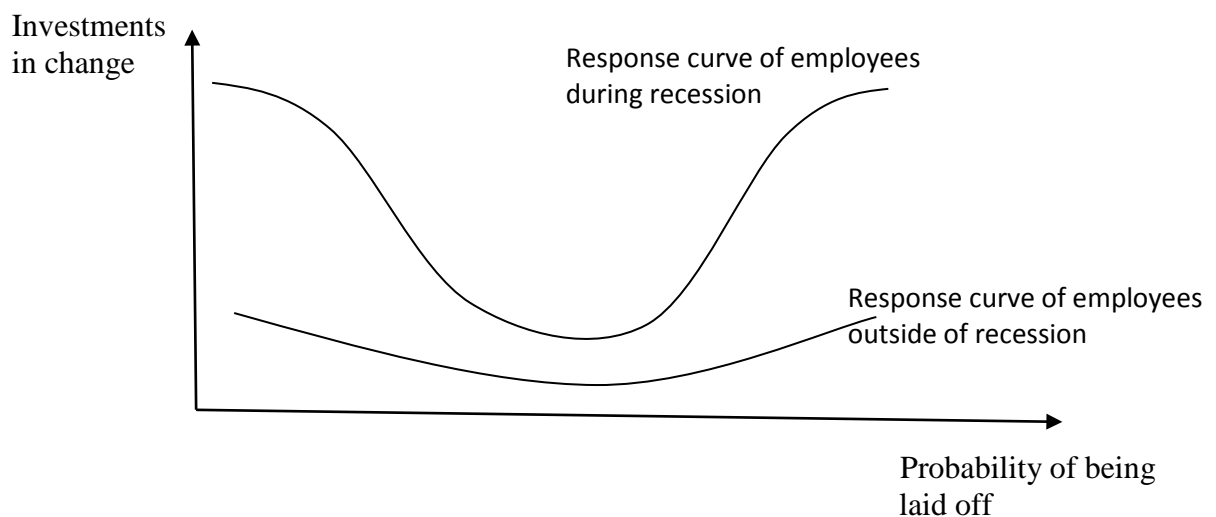


Figure 1: The response curve of employee investments in change as a function of different layoff probabilities.

that a regression on 'Δ investments in change during the recession' should have a significant positive constant term. Also the coefficient on a variable that affects layoff probability should be larger in absolute value during the recession, since with the exception of the flat region in the middle, the 'recession' response curve is steeper than the 'outside recession' response curve, making investments in change more sensitive to changes in layoff probability.

Let us now turn to discuss the different HR-measures. To reiterate; the importance of the different HR measures is that they locate employees on the response curve by signaling how severely affected the firm is, and thus how high the layoff probability is. They will also cause movement along the curve since the HR- measures will affect the layoff probability. However, we stress that we do not suggest that the HR-measures cause the upward shift or the shape of the response curve. They merely locate a firm on this curve, and cause movement along the curve.

We start with employee training. Employee training is in many ways particularly attractive during a recession (Aghion and Saint-Paul, 1998; Davis and Haltiwanger, 1990). Reduced demand leaves employees less than fully employed in normal activities. This means that taking time off from ordinary production activities is not necessary to conduct training. Under full capacity utilization some other activity must suffer if training is given priority, but not so (or less so) when capacity utilization is below normal. However, it also means retaining underemployed staff, which is of course costly, and training will in most cases involve some out of pocket expenditures. This alternative is therefore most attractive to firms that are financially in reasonably good shape, and that wish to maintain and increase its capacity to grow as soon as demand normalizes. It is on the other hand not a realistic option for firms in dire straits. From an employee perspective, investment in training is a signal that the firm is in good shape to handle the recession and it also represents a commitment not to layoff the persons receiving training. Furthermore, the increased training will presumably increase the

value of the employee to the firm and therefore have an effect of reducing the layoff probability further.

In figure 2 below we use the recession response curve presented in figure 1 to show that investments in training signals to employees that the firm is on the left side; i.e. the “low probability of layoffs” side. This realization will in itself result in increased incentives to invest in change. In addition, the act of investing in employees make them more valuable to the firm which reduces the layoff probability further. The dot on the response curve in figure 2 reflects the realization of the signal and the arrow the change as a result of training. The steepness of the response curve indicates the coefficient size on training in a multiple regression with training and other HR-measures as regressors.

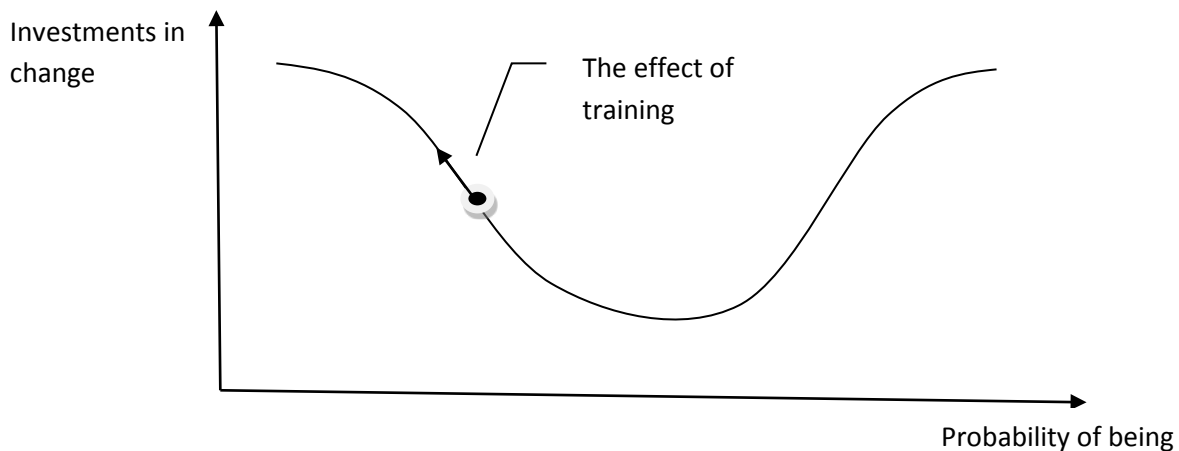


Figure 2: The effect of investments in training on employees' investment in change and the probability of being laid off

Next we turn to pay freezes. Like training, a pay freeze is a signal that the firm is not in severe problems. If it were, pay cuts or layoffs would be necessary. However, a pay freeze doesn't have the offensive properties that investments in training have, and it is also an indication that cost increases would be problematic and possibly lead to pay cuts or layoffs. Therefore it reveals a somewhat higher degree of recession impact than investments in

training. In figure 3 this is illustrated by means of placing pay freezes to the right of training on the response curve, in the somewhat flatter region of the curve. The dot on the response curve in figure 3 reflects the realization of the signal and the arrow the change that result because the pay freeze (by reducing cost increases) reduces the probability of layoffs. Again, the steepness of the response curve indicates the coefficient size on a pay freeze in a multiple regression with a pay freeze and other HR-measures as regressors. As we can see the prediction is that the coefficient is positive, but smaller than the coefficient for training.

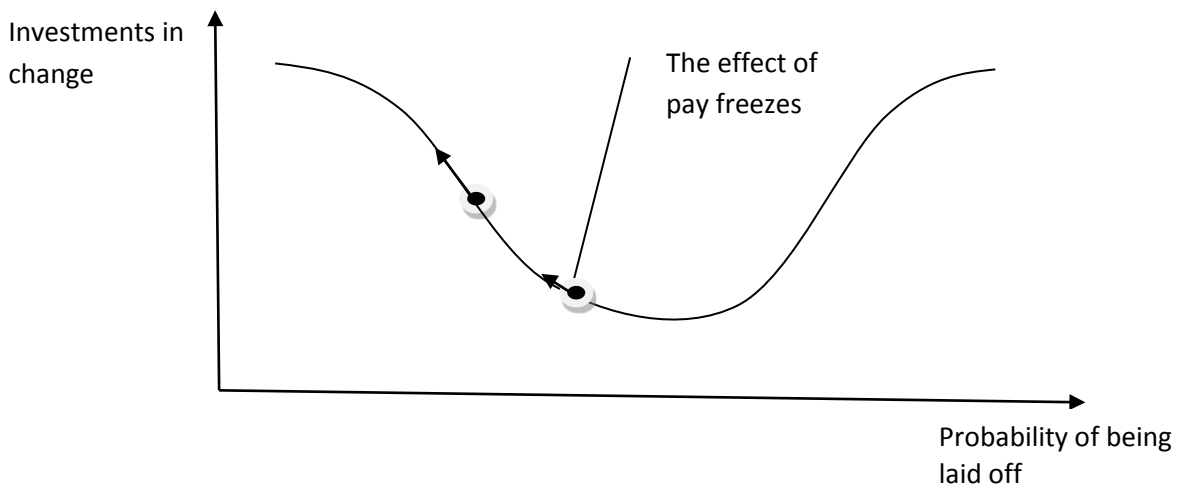


Figure 3: The effect of pay freeze on employees' investment in change

We now turn to pay cuts. A pay cut is obviously a more dramatic measure than a pay freeze, and it is therefore a signal that the firm is even further to the right on the employees' response curve. As before, we show the realization of this signal as the dot in Figure 4 below. In terms of the effect of a pay cut it is important to note that in Norway, which is where our data comes from, strong unions and labor law means that pay cuts cannot be unilaterally

dictated by management. Pay cuts need to be negotiated and the carrot used by management to reach such an agreement is almost always assurances that this will prevent future layoffs. Indeed, if employees did not believe that pay cuts would reduce employment risk, it is hard to see why they would accept ever accept pay cuts. However, even if there was no need to sell the idea of pay cuts to employees the cost reductions a pay cut provides would presumably reduce the layoff risk somewhat. We illustrate this effect with the arrow in figure 4. What is important to note is that the coefficient on pay cuts is likely to be negatively signed since the signal places the firm on the right side of the curve, but moves it towards the left. The slope is negative for such a movement.

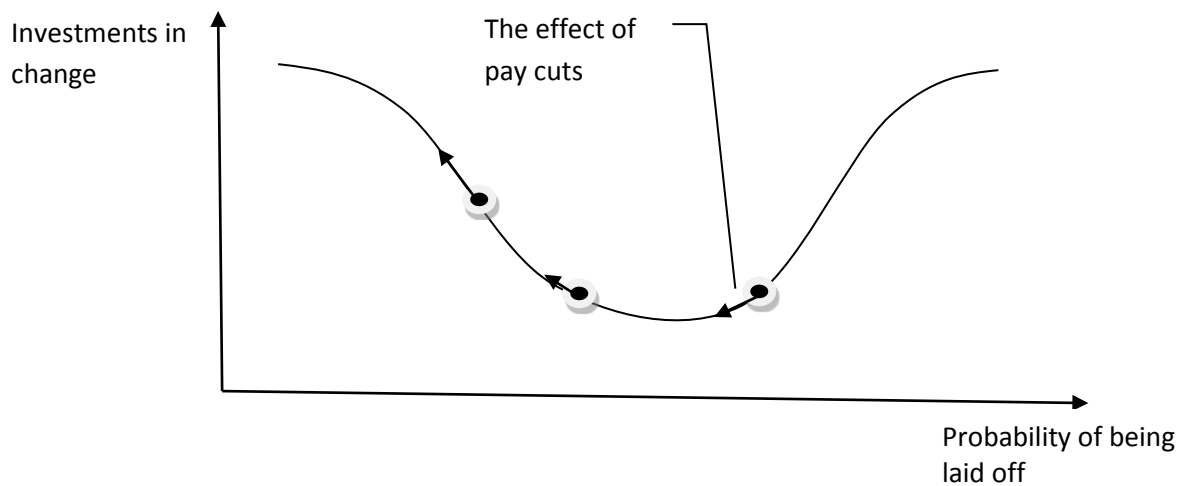


Figure 4: The effect of pay cuts on employees' investment in change

Finally we turn to layoffs. Layoffs are, of course, the worst signal about the state of the firm, and therefore it places the firm further to the right than any of the other measures. Also, if the firm has turned to layoffs, it presumably knows that other measures will not suffice, and if the situation should worsen it will need to undergo further rounds of layoffs. Layoffs

therefore increase the probability of more layoffs in the eyes of employees. This is illustrated by the rightward arrow in Figure 5. Note also that the slope is positive for such a movement, so the coefficient on layoffs should be positive while as we recall the coefficient on pay cuts was predicted to be negative. Also, since layoffs locate the firm in the steeper part of the response curve, the absolute value of the coefficient on layoffs should be higher than the coefficient on pay cuts. The reason the response curve is steep in this region is that the incentives to invest in change to avoid being laid off are particularly strong in such firms, while the other effect, the incentive to make firm specific investments, is strong for the firms that invest in training. The other two measures are located in the flatter region - where these two effects are weaker and more prone to cancel each other.

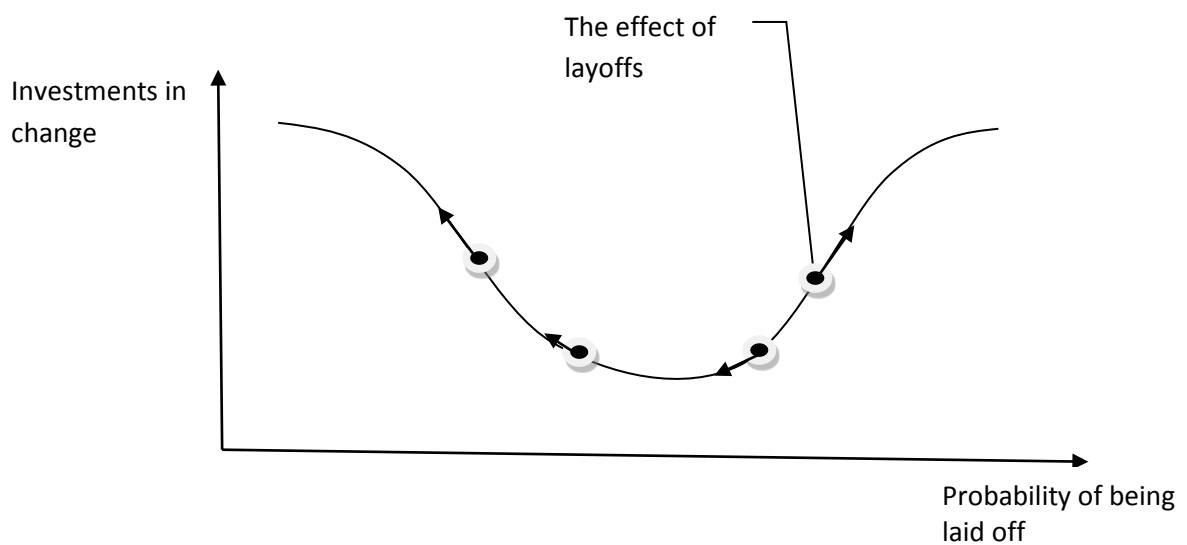


Figure 5: The effect of pay cuts on employees' investment in change

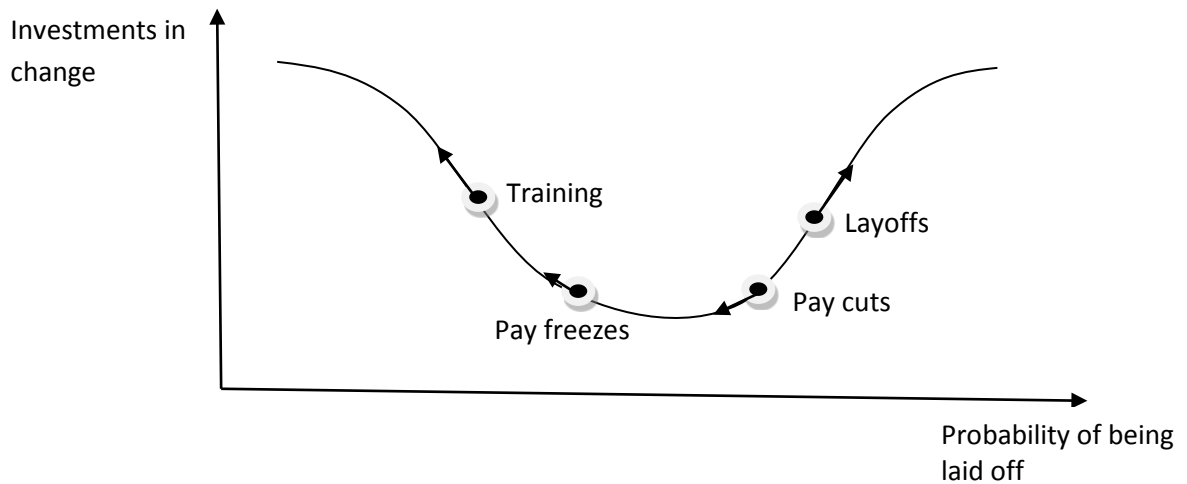


Figure 6: The effect of HR-measures on employees' investment in change

If we summarize the above, we obtain the following hypotheses for how these HR-measures affect investments in change during a recession:

- H1: The higher the emphasis on employee training, the more employees are willing to invest in change during the recession.
- H2a): The higher the emphasis on pay freezes, the more employees are willing to invest in change during the recession.
- H2b): The coefficient on pay freezes is smaller than the coefficient on training
- H3: The higher the emphasis on pay cuts, the lower employees' willingness to invest in change the recession.
- H4a): The higher the emphasis on layoffs, the more employees are willing to invest in change.
- H4b): The absolute value of the coefficient on layoffs is larger than the absolute value of the coefficient on pay cuts.

In addition we have the hypothesis regarding the upward shift of the response function:

H5: The regressions on willingness to change during the recession will have a positive constant term.

3. Methods

Data and sample

Our data comes from a survey of Norwegian CEOs conducted at the end of 2010. The timing roughly coincides with the time the recession was considered over for most firms and industries in Norway. The survey data is therefore retrospective in the sense that we surveyed managers about their experiences during the recession, just after the recession had ended. Our survey data is therefore potentially vulnerable to biases and lapses in respondent's memory. We have no way to check for lapses in memory, but the fact that we collected data just as the recession had ended will at least minimize this problem. Also, this is presumably a random source of error. More problematic is a potential single respondent bias, since we only use the CEO as the respondent in each firm. If CEOs have a systematic motive to provide biased answers to any of our questions, we will have biases in our data. For example, one might expect that CEOs of firms that were failing for other reasons than the recession might blame poor performance on the recession and insufficient willingness to change on the part of employees. As far as we can tell all such potential biases will work conservatively with respect to our analyses, that is, they reduce the chance of finding the relationships we do find. Accordingly, our coefficient estimates are more likely to be deflated than inflated.

The sampling procedure we used is the following: We started with the population of all Norwegian firms. We subtracted all firms that were non profit, owned by local or central government. We also subtracted some industries that are heavily regulated in Norway or that obtains all or most of its income from government, since these industries are shielded from normal market forces. This includes agriculture, healthcare and culture. We also deleted the financial sector, since we were primarily interested in the effects of the financial crisis (and subsequent recession) on the real sector in this project.

Furthermore, we deleted firms that had less than NOK 10 million in sales revenue and NOK 3 million in salary expenses. This corresponds roughly to about \$ 1.7 millions and \$ 0.5 million, respectively. The reason for omitting the very smallest firms is that, in Norway, tax motives lead to the establishment of a vast number of very small firms with very little activity and with no intention of growing to become a ‘normal’ firm. The size criteria allow us to avoid these tax motivated constructions. By including the salary cost criteria, we also remove firms that are just legal instruments that own other “real” firms or the assets of real firms. Such constructions are typically without employees. From this final, screened population, we randomly drew a sample of 5000 firms which received a survey instrument addressed to the CEO. From these 5000 firms we obtained 1249 responses, a response rate of about 25%. This response rate is in line with, or even slightly higher, than what is common in surveys of CEOs. Missing data on one or more of the variables used in this study reduced the effective sample to 1070 respondents.

The survey instrument provided us with the firm identity number of each responding firm, which made it possible to get accounting and other secondary data for both responding and non-responding firms. We could therefore examine whether the respondents were different from the screened population or the sample of 5000 on a number of variables, including size, pre crisis growth, pre crisis debt ratio, pre crisis profitability, geography, industry participation, etc. Without exception, these checks told us that we have no detectable response bias.

Dependent variable

The dependent variable was based on two items. The first was the question: “How did the recession affect employees’ willingness to undertake change processes?”. The second was the question: “How did the recession affect employees’ understanding of the need to change?”.

The scale used for each of these items was a balanced 7 point scale, ranging from -3 to 3, with 0 as the neutral middle value that reflects no change. -3 reflects a strong reduction and 3 a strong increase. The scale was recode to a 1-7 scale for the purpose of analysis, which means that the neutral value is 4 instead of 0 in our subsequent analyses. The final dependent variable: $\Delta Change Investment$ is calculated as the product of these two items. It thus ranges from a minimum of 1 to a maximum of 49. We also examined whether calculating the dependent variable as the sum of the two items would make a difference. All key findings remained the same.

Independent variables

The variable $\Delta Training$ was also based on two items. One was the question: “How did the firm change its investment in training of employees in response to the recession?” This item used the same scale as the items in the dependent variable. The other item was: “How important was increased investment in employee training in the firms response to the recession?” The scale for this item was slightly different. It includes a 0 if there was no increase in training, and ranges between 1 and 7 depending on the importance attached to increased investments in training. The variable $\Delta Training$ is the sum of these two items. It therefore ranges between 1 and 14.

The second dependent variable is *pay freeze*. This variable was based on a single item. This item asked the question: “How important were pay freezes to the firm’s response to the recession?”. The third variable, *pay cut*, was also a single item variable. The question asked was: “How important were pay cuts to the firm’s response to the recession?”. Both these items had a scale ranging from 0 = not undertaken. Given that pay cuts/pay freezes were undertaken, it ranges from 1 to 7, depending on the importance attached to these measures. Both variables therefore have a total range of 0 – 7.

The final independent variable is *layoffs*. This variable was based on two items. One asking: “How important were temporary layoffs to the firm’s response to the recession?”. The other asked “How important were permanent layoffs to the firm’s response to the recession?”. Both these items had a scale ranging from 0 = not undertaken, and given that they were undertaken, it ranges from 1 to 7 depending on importance. The variable *layoffs* is the sum of these two items. It therefore has a range of 0 – 14.

Control Variables

We also control for a number of pre-recession characteristics that may possibly affect employees’ propensity to invest in change. These include the firm’s ROA in 2007, which is the last year of accounting data before the financial crisis set in. We also control for the firms debt ratio in 2007, the age of the firm, the number of employees before the recession, and the share of employees without higher education. The first three were obtained from secondary sources, while two latter were obtained from the questionnaire.

	mean	S.D.	1.	2.	3.	4.	5.	6.	7.	8.
1. ROA	0.15	0.22								
2. Debratio	0.73	0.25	-0.51 ***							
3. FirmAge	17.8	12.4	-0.04	-0.11 ***						
4. Education	60.4	35.6	-0.09 ***	0.10 ***	0.03					
5. Size	56.7	250	-0.04	-0.02	0.06 **	-0.00				
6. ΔTraining	7.60	3.13	0.05 *	0.01	-0.04	-0.02	-0.01			
7. Pay freeze	3.77	2.77	-0.01	-0.00	0.06 **	-0.01	0.07 **	0.18 ***		
8. Pay cut	1.60	1.58	-0.02	0.04	-0.03	-0.05 *	-0.00	0.03	0.34 ***	
9. Layoffs	5.35	4.41	-0.05 *	0.07 **	0.04	0.07 **	0.09 ***	0.08 ***	0.46 ***	0.32 ***

Table 1: Mean, SD and Correlations of all Independent- and Control Variables.

* = $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4. Findings

We start out by presenting some simple nonparametric evidence on how the recession caused a surge in employees' willingness to invest in change. In figure 7 below we show a histogram over the distribution of responses to the two items that make up our dependent variable.

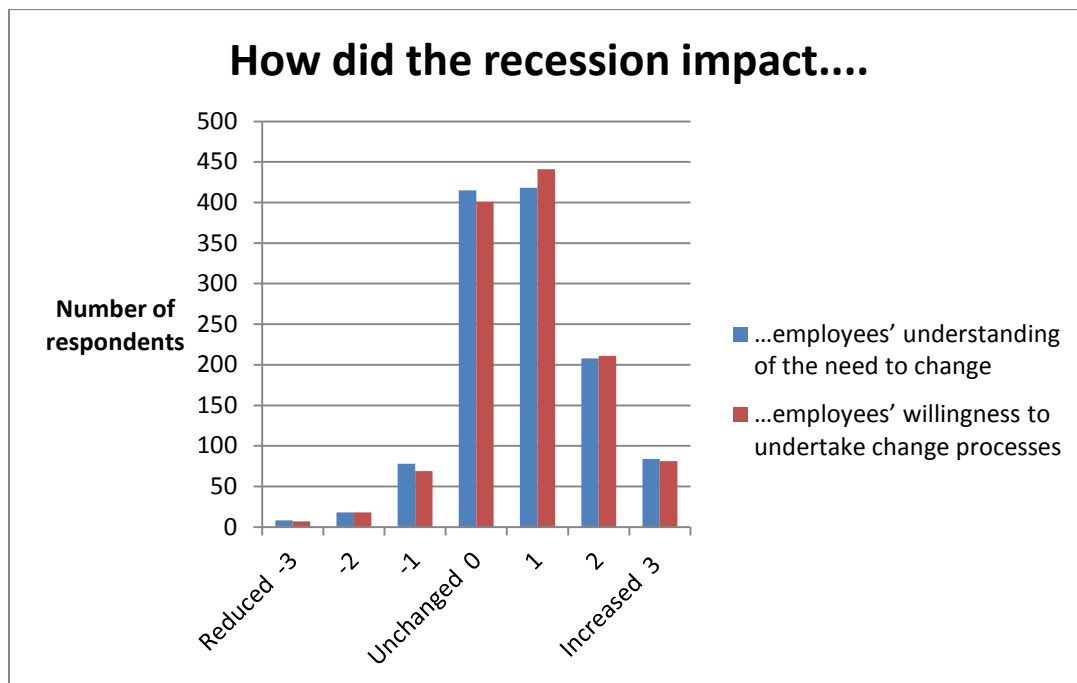


Figure 7: Recession impact on understanding and willingness to change

It is quite evident from this simple illustration that CEOs perceive a substantial increase in pro change attitudes and behavior among employees. In terms of parametric evidence we refer to the large and positive constant term in the regressions in Table 2 below. Again, we would like to emphasize that the HR-measures we are analyzing below does not cause this shift, but locates the firm on a shifted response curve, and causes movement along that curve.

In table 2 we present two OLS-regression models. Model 1 contains only control variables and a constant. Model 1 performs poorly. Though the F-value is significant at the 5%-level an adjusted R^2 of 0.01 is quite unimpressive. However, we do find that the constant term is large, positive, and significant at the 0.01-level. This is also holds for the constant term in model 2. H5 predicted such a positive constant because of the upward shift in the response curve, and is therefore supported.

	Model 1		Model 2	
	Standardized Coefficients	Coefficient (Std error)	Standardized Coefficients	Coefficient (Std error)
<i>Control variables</i>				
<i>ROA</i>	-0.074**	-3.247** (1.543)	-0.094***	-4.032*** (1.470)
<i>Debratio</i>	-0.066*	-2.595* (1.386)	-0.088***	-3.362*** (1.325)
<i>FirmAge</i>	-0.035	-0.029 (0.025)	-0.045	-0.036 (0.024)
<i>Education</i>	-0.039	-0.011 (0.008)	-0.041	-0.012 (0.008)
<i>Size</i>	0.057*	0.002* (0.001)	0.035	0.001 (0.001)
<i>Independent variables</i>				
Δ <i>Training</i>			0.192***	0.612*** (0.094)
<i>Pay freeze</i>			0.122***	0.437*** (0.123)
<i>Pay cut</i>			-0.062**	-0.382** (0.197)
<i>Layoffs</i>			0.154***	0.346*** (0.076)
<i>Constant</i>		27.397*** (1.396)		20.628*** (1.526)
<i>N</i>	1,113		1070	
<i>Adj R²</i>	0.01		0.10	
<i>F</i>	2.367**		14.249***	

Table 2: OLS regressions. Dependent variable is Δ *Change Investment*.

* = $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

H1 predicted that the higher the emphasis on employee training, the more employees would be willing to invest in change during the recession. In other words the coefficient on $\Delta Training$ should be positive. As we see from Model 2. This is indeed the case, the coefficient is positive and significant at the 0.01 level. H1 is therefore supported.

H2a) predicted that the higher the emphasis on pay freezes, the more employees would be willing to invest in change during the recession. This implies a positive coefficient on *Pay freeze*. Model 2 also shows that this to be the case. The coefficient is indeed positive and significant at the 0.01 level. H2b) predicted that the coefficient on *Pay freeze* would be smaller than the coefficient on $\Delta Training$. If we look at the standardized coefficients we see that the coefficient on $\Delta Training$ is in fact larger in absolute value than all other coefficients, including *Pay freeze*. The difference between these coefficients is also statistically significant, so this implies that H2b is also supported.

H3 predicted that the higher the emphasis on pay cuts the lower employees' willingness to invest in change the recession. This means that the coefficient on *Pay cut* should be negative. In Model 2 we find that the coefficient is indeed negative, though barely significant at the 0.05 level. The somewhat small absolute value of the coefficient suggests that firms that use pay cuts are those that are in the rather flat region of the response curve. At any rate, the negative and significant coefficient means support for H3.

H4a) predicted that the higher the emphasis on layoffs, the more employees would be willing to invest in change, or in other words a positive coefficient on *Layoffs*. H4b) predicted that the absolute value of the coefficient on *Layoffs* would be larger than the coefficient on *Pay cut*. As can be seen from the standardized coefficients in Model 2 the coefficient is positive, significant, and also larger than the coefficient on *Pay cut*. The difference between

the two coefficients is significant on the 0.01 level. We therefore conclude that also H4a) and H4b) were also supported.

Finally, it is also obvious that the model with the HR-measures (Model 2) performs significantly better than the model without them (Model 1). The Adjusted R^2 increases by an order of magnitude, from 0.01 to 0.10, and the F-value from 2.37 to 14.25.

5. Discussion and Conclusion

As we have seen, the firm's choice of HR-measures is correlated with changes in employees' investments in change (as perceived by CEOs). We have suggested a reason for this pattern where the choice of HR-measures signal to employees where on a response curve that links layoff probability and change investments the firm is located. The location on this curve will in turn determine the marginal effect of each HR-measure on investments in change. The U-shape of the curve is determined by the opposing forces of fear of layoffs on the one hand, - and confidence to make specific investments on the other.

There are other possible interpretations of our data. The effects we measure may be caused by unobserved differences before the crisis, i.e. that firms that chose different HR-measures during the crisis, were systematically different before the crisis. In particular one may speculate that the response curve before the crisis was curved in an inverted U-shape, and the response curve during the recession is relatively flat. See Figure 7. If we furthermore assume that the firms that chose a high emphasis on training or layoffs were the ones that had *lowest* willingness to invest in change before the crisis, but that this difference decreased substantially during the recession, we might reproduce the observed coefficients. Note that this also means that the firms that emphasized pay freezes, and even more so, pay cuts, were the firms with the *highest* willingness to change before the recession.

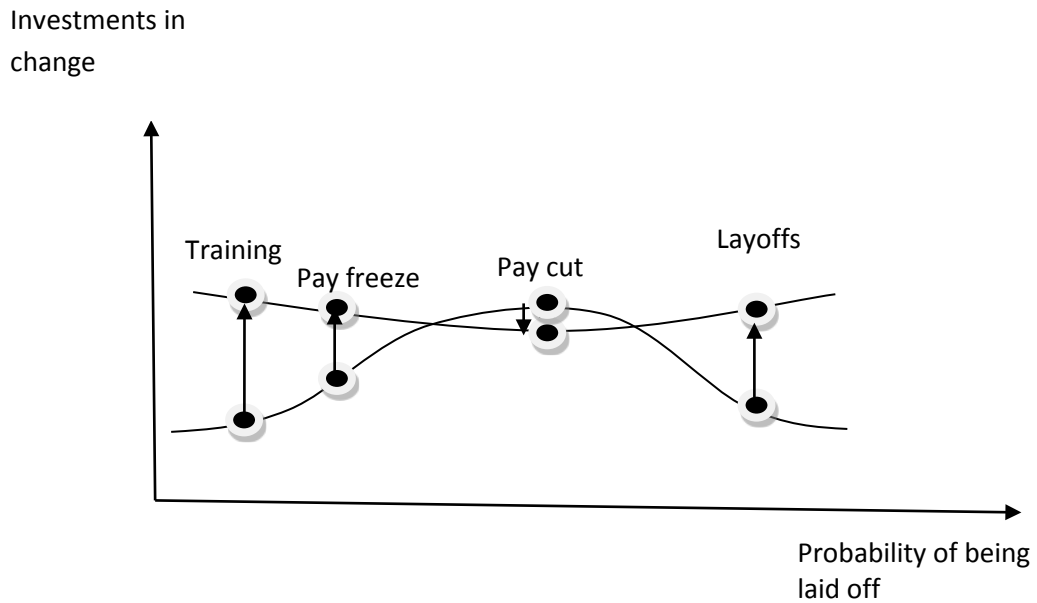


Figure 8: An alternative interpretation, where firms choose HR-measures based on unobserved pre-recession differences.

There are two reasons why we favor our main interpretation. One is that we do try to control for variables that one might assume correlates with pre-recession willingness to invest in change. This includes pre-recession ROA, debt ratio, firm age, firm size and the education level of employees. The coefficients on the HR-measures are virtually identical with and without these controls. We also ran a series of regressions with each of the HR-measures as regressand and these pre-recession conditions as regressors. These regressions all resulted in an R^2 of less than 0.01. This suggests that these pre-recession conditions are very poor predictors of the choice of HR-measures, which is inconsistent with the alternative interpretation. Of course we cannot rule out that it simply means that we failed to capture the relevant pre-recession properties.

The second reason against the alternative interpretation is theoretical. If the pre-recession response curve has an inverted U-shape needed to reproduce the coefficients we found, it means that willingness to invest in change is lower for high and low levels of employment risk, and high for intermediate levels of employment risk. This exactly the opposite of what theory suggests, and it is in our opinion also somewhat counter-intuitive. However, we do not claim to have evidence that allows us to rule out this alternative interpretation definitively.

There are also, as always, concerns about measurement. The most important one is that employees' willingness to change is measured by surveying CEOs. Clearly our findings would have been strengthened if we could show the same by surveying the employees themselves. In addition there are the concerns over single respondent bias and memory lapses as was discussed in section 3.

Also, in this paper we have abstracted from how managers learn about how severe the recession is for their firm. Surely managers will learn as the situation evolves and therefore escalate to the more serious HR-measures if the situation worsens - or the opposite if it gets better. One might for example assume that many of the firms that go to layoffs have tried with pay freezes and pay cuts first, and found that this still wasn't enough. How this affects HR-measures as a credible signal to employees is uncertain.

Given these caveats and limitations we still think it is interesting to get a documentation of how a recession results in a massive increase in employees' willingness to change, and how and why different HR-measures influence this. We think that the perspective of HR-measures as a signaling mechanism is a promising one, but obviously also one that needs further work.

References

- Aghion P and Saint-Paul G. 1991. On the Virtue of Bad Times: An Analysis of the Interaction Between Fluctuations and Productivity Growth. In *CEPR Discussion Paper*. London.
- Becker G. 1962. Investment in Human Capital: A Theoretical Analysis. *Journal of Political Economy* **70**: 9-49.
- Beer, M. and Nohria, N. 2000. Cracking the code of change. *Harvard Business Review* (May-June): 133-141.
- Beer, M. and Nohria, N. (eds) 2000. *Breaking the Code of Change*. Boston. Harvard Business School.
- Bennis, W.G. 2000. Leadership of Change. In Beer, M and Nohria, N. (eds): *Breaking the Code of Change*. Boston, Harvard Business School Press.
- Bies, R.J. and Tyler, T.R. 1993. The "Litigation Mentality" in Organizations: A Test of Alternative Psychological Explanations. *Organizational Science* **4**: 352-366.
- Bligh, M.C J.C. Kohles and Meindl, J.R. 2004. Charisma under crisis: Presidential leadership, rhetoric, and media responses before and after the September 11th terrorist attacks. *The Leadership Quarterly*:**15**: 211- 239.
- Towers B. (ed.). 1996. *The handbook of human resource management*. Oxford, Blackwell.
- Cook, D.S. and Ferris, G.R. 2006. Strategic human resource management and firm effectiveness in industries experiencing decline. *Human Resource Management* **25**: 441-457.
- Davis SJ, Haltiwanger J. 1990. Gross Job Creation and Destruction: Microeconomic Evidence and Macroeconomic Implications. *NBER Macroeconomics Annual* **5**: 123-168.
- Flynn and Staw, 2004. Lend me your wallets: the effect of charismatic leadership on external support for an organization. *Strategic Management Journal*, **25**: 309- 330.
- Hatch M.J and Schultz, M. 2001. Are the strategic stars aligned for your corporate brand? *Harvard Business Review* February: pp. 128-134.
- Kotter, J.P. 1995. Leading Change: Why transformations efforts fail. *Harvard Business Review*. March/April pp. 59- 67.
- Lawler, E. 1987. The design of effective reward systems. In : Lorsch, J.W. (eds): *Handbook of Organizational Behavior*. Englewood Cliffs, Prentice Hall.

Nadler, D.A and E.E Lawler 1995. Motivation: A Diagnostic Approach: In Staw, B.M. (eds): *Psychological Dimensions of Organizational Behavior*. Englewood Cliffs, Prentice Hall.

Nadler, D.A. and M.L Tushman 1990. Beyond the Charismatic Leader: Leadership and Organizational Change. *California Management Review*, Winter: 77 – 97.

Romanelli, E. and M. Tushman. 1994. Organizational Transformation as Punctuated Equilibrium. *Academy of Management Journal* **37**: 1141- 1166.

Shapiro, D.L and B.L. Kirkman. 1999. Employees' reaction to the change to work teams: The influence of "anticipatory" injustice. *Journal of Organizational Change Management* **12**:51 – 67.

Vroom, V.H 1964.: *Work and Motivation*. New York, John Wiley.

**PUBLICATIONS WITHIN SNF'S RESEARCH PROGRAMME "CRISIS,
RESTRUCTURING AND GROWTH"**

2010-

- | | |
|---|--|
| Lasse B. Lien
Tore Hillestad | <i>Recession, HR and change</i>
SNF Working Paper No 20/11 |
| Bård Støve
Dag Tjøstheim
Karl Ove Hufthammer | <i>Using local Gaussian correlation in a nonlinear
re-examination of financial contagion</i>
SNF Working Paper No 14/11 |
| A.G. Garcia Pires
Tom Stephan Jensen | <i>Effects of flat tax reforms on economic growth
in the OECD countries</i>
SNF Working Paper No 12/11 |
| K. G. Nyborg
P. Östberg | <i>Liquidity, ideas and the financial crisis</i>
SNF Working Paper No 17/10 |
| L. B. Lien | <i>Recessions across industries: a survey</i>
SNF Working Paper No 16/10 |
| I. Almås
G. Doppelhofer
J. C. Haatvedt
J. T. Klovland
K. Molnar
Ø. Thøgersen | <i>Crisis, restructuring and growth: A macroeconomic perspective</i>
SNF Report No 05/10 |