

Bovenberg, Lans; Teulings, Coen N.

**Working Paper**  
**Rhineland exit?**

CESifo Working Paper, No. 2186

**Provided in Cooperation with:**

Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

*Suggested Citation:* Bovenberg, Lans; Teulings, Coen N. (2008) : Rhineland exit?, CESifo Working Paper, No. 2186, Center for Economic Studies and ifo Institute (CESifo), Munich

This Version is available at:

<https://hdl.handle.net/10419/26231>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

# RHINELAND EXIT?

LANS BOVENBERG  
COEN TEULINGS

CESIFO WORKING PAPER NO. 2186  
CATEGORY 9: INDUSTRIAL ORGANISATION  
JANUARY 2008

*An electronic version of the paper may be downloaded*

- *from the SSRN website:* [www.SSRN.com](http://www.SSRN.com)
- *from the RePEc website:* [www.RePEc.org](http://www.RePEc.org)
- *from the CESifo website:* [www.CESifo-group.org/wp](http://www.CESifo-group.org/wp)

# RHINELAND EXIT?

## Abstract

We argue in favor of the shareholder model of the firm for three main reasons. First, serving multiple stakeholders leads to ill-defined property rights. What sounds like a fair compromise between stakeholders can easily evolve in a permanent struggle about the ultimate goal of the company. Second, giving workers a claim on the surplus of the firm raises the cost of capital for investments in jobs. Third, making shareholders the ultimate owner of the firm provides the best possible diversification of firm-specific risks. Diversification of firm-specific risk on capital markets is an efficient form of social insurance. Hence, firms should bear the full cost of specific investment, while workers should be paid only their outside option. Empirical results for Denmark, Portugal and the United States show that Denmark is closest to the first-best outcome, while Portugal and the United States deviate in different ways. Coordination in wage bargaining and collective norms help reduce the claim of workers on the firm's surplus. Collective action, however, is a mixed blessing because politicians also face the temptation to please incumbent workers with short-run gains at the expense of exposing workers to firm-specific risks and reducing job creation. The transition from the Rhineland towards the shareholder model is fraught with difficulties. While society reaps long-run gains in efficiency, in the short run a generation of insiders has to give up their rights.

JEL Code: E24, G32, G34.

Keywords: wage setting, optimal risk sharing, employment protection, corporate governance.

*Lans Bovenberg*  
*Netspar, Tilburg University*  
*Faculty of Economics and Business*  
*Administration*  
*Warandelaan 2*  
*P.O. Box 90153*  
*5000 LE Tilburg*  
*The Netherlands*  
*a.l.bovenberg@uvt.nl*

*Coen Teulings*  
*CPB Netherlands Bureau for Economic*  
*Policy Analysis*  
*Van Stolkweg 14*  
*P.O. Box 80510*  
*2508 GM Den Haag*  
*The Netherlands*  
*c.n.teulings@cpb.nl*

The authors gratefully acknowledge the comments of Rob Aalbers, David Autor, Arnoud Boot, Marco Becht, Nick Draper, Adam Elbourne, Jean Pisany-Ferry, Anja Deelen, George Gelauff, Egbert Jongen, Bernard ter Haar, Ruud de Mooij, Alexander Rinnooy Kan and Vino Timmerman.

## 1 Introduction

Harry Truman is purported to have asked for a single-handed economist. Whenever he asked for an economist's advice, the answer invariably would be: one the hand ..., but on the other hand .... This is indeed how economists often reason. They think in terms of trade-offs -- for example, equity versus efficiency, insurance versus incentives, and rules versus discretion. The optimal policy response is almost always a combination of various sides of the trade-offs. Extremes usually do not work that well. One should thus expect a similar response on issues of corporate governance. Should corporate governance legislation (and in line with that legislation: public norms on corporate behaviour) oblige the management of a company to weigh the interests of all of its stakeholders (that is, its workers, customers, suppliers and shareholders) equally, as is supposed to be the case in the so-called Rhineland model? Or should the law impose on management the sole duty to pursue the interest of the shareholders, as being the ultimate owners of the company, as is supposed to be the case in the so-called Anglo-Saxon model? In the tradition of Harry Truman, one would expect economists to favour the Rhineland solution, which gives all stakeholders their fair share, e.g. by giving workers the right to nominate some board members, as in Germany. The globalisation of capital markets and the recent surge in takeovers involving hedge funds and private equity have given this old debate new impetus.

This paper discusses an exception to the general rule that compromises are optimal. Indeed, we argue against the idea that management should compromise between labour and capital. We favour instead the outcome that is envisaged by the proponents of the Anglo-Saxon model as a basis for an efficient organization of production: firms should maximize long-run shareholder value. At the same time, however, we maintain that the traditional focus on corporate governance legislation is mistaken. A change in this legislation will likely be of little help to reach the optimum. In fact, countries such as the United States and the United Kingdom that have this type of legislation are further away from this optimum than some other countries. In order to explain this, we take a labour economists' perspective, and show that proper norms regarding the way excess profits should be shared between the firm and its workers are more important than corporate governance legislation in arriving at an efficient organization of production.

Why is putting shareholders first the best solution? The general answer is threefold. First, serving multiple stakeholders leads to ill-defined property rights. What sounds like a fair compromise between stakeholders can easily evolve in a permanent struggle between the stakeholders about the ultimate goal of the company. Second, giving the workers a claim on the surplus of the firm raises the cost of capital for investments in jobs, which harms the position of especially new entrants to the labour market. Third, and most importantly, making shareholders the ultimate residual claimant provides the best possible diversification of firm-specific risks. Capital markets provide a much better device for diversifying risk than labour markets do. Human capital cannot be fully insured, because this insurance would eliminate the incentives for providing effort. Financial titles can be traded rather easily, which allows investors to optimally diversify their portfolio across various firms. Whereas intensified global competition has increased firm-specific risks, globalisation of capital markets has also raised the scope for diversification. Only the aggregate risk that is identical for all firms and for all countries cannot be diversified. Hence, making capital the ultimate owner ensures that firm-specific risk is absorbed by shareholders who can diversify this risk on capital markets. Workers then have to assume only risk on their general human capital (and even that can perhaps be partly insured) and some non-diversifiable aggregate risk to the extent that the aggregate wage is correlated with this risk and to the extent that they are shareholders (e.g. via pension funds). By reducing the exposure of workers to the risks associated with international

competition, this outcome makes globalisation of markets and the associated creative destruction more legitimate, so that productivity growth can increase. All this is not to say that the management of a firm should not listen its workers, and seek to please them and learn from them, so that they feel comfortable and stay loyal to the firm and hence contribute to the firm's profits to the best of their ability. Our point is that the collective norms of a country should support a system of wage setting and surplus sharing that makes the firm –and hence its shareholders- the residual claimant.

At first sight, making capital the owner of the firm seems to amount to a massive redistribution of income from labour to capital. As we shall discuss below, this is certainly true in the short run. In most countries, workers collect substantial rents from their current employer: they collect a reward that exceeds the wage they can collect on the outside labour market. Reducing these rents raises the income share of capital at the expense of that of labour. However, in the long run, the larger return to capital raises the attractiveness of creating new jobs, thereby raising employment and the outside wage. In the end, workers are better-off giving up their stake in the company's profits, thereby creating more job openings and raising outside wages. The option of taking a job at another, more profitable, firm provides better social insurance than protecting a risky claim on the firm you work for because this option does not expose the worker to firm-specific risk.

If this Utopian model is so nice, why do we observe so many Rhinelands? The answer to this question involves again the distinction between the short run and the long run. Taking away money from shareholders is always attractive for incumbent workers and therefore also for politicians. Who cares about the minority of rich shareholders who live from the returns on their investments? In the political arena, the short-run benefits of transferring resources from rich to poor outweigh the long-run costs of raising the costs of opening new vacancies. The discussion of Rhineland versus Utopia is therefore primarily an issue of morality and political ideology. Utopia is sustainable only if the political ideology and rhetoric support a long-run commitment to the position that the surplus of the firm belongs to shareholders. Any proposal of a politician to redistribute that surplus from shareholders to workers should be immediately discussed in public opinion as a proposal endangering the employment of future generations. Similarly, trade unions that organize incumbent workers to demand higher wages should be confronted with the adverse effects on the chances for outsiders to find a job. Stated differently, collective norms should restrain the power of insiders (i.e. incumbent workers) rather than capitalists.

Two factors are helpful in bringing about such a political ideology. First, if a large share of corporate equity is held by domestic social investors such as pension funds, it is easier to explain to the public why taking part of the shareholders' returns for the sake of labour is not helpful compared to the case in which the shareholder is a rich Arabian oil sheik. Second, the voters must understand not only the basic principles of risk pooling through diversification but also why incumbent workers bargaining for higher wages hurts the creation of jobs for outsiders. This paper aims to contribute to such an understanding.

This introduction has provided the main line of the argument. The rest of the paper elaborates on this argument. First, we provide a stylized picture of the types of risks that are relevant in a modern real-life economy. This stylized picture allows us to lay out a Utopian world: who should bear what type of risk, and for what reason? Section 2 addresses this issue. Section 3 discusses the reasons why such a world might not be easy to realize. Section 4 asks the question: which country is closest to Utopia? We focus on three prototypical economies: Portugal, Denmark and the United States. Surprisingly, the prototypical Utopian economy turns out to be Denmark rather than the United States. Section 5 discusses why politicians have an inherent tendency to move away from Utopia. Employment Protection Laws (EPL) provide a typical example of the way in which politics can affect the distribution of risks, and

also why politicians are so prone to do so. Section 6 sketches the implications of our analysis for corporate governance legislation. Section 7 discusses a number of open issues, some of which require further research. Section 8 concludes by discussing the role of ideology in handling political constraints.

## 2 The grand design of Utopia

At the end of the previous century, a whole army of businessmen tried to reap the benefits of the internet. They invested effort in trying to figure out numerous new business concepts. Ten years later, most of these efforts had failed. The stock market crashed and the internet bubble all but fizzled out. Despite all of these failures, the largest commercial breakthroughs of this era – Google and E-bay – were based on the internet.

This episode underlines an unavoidable feature of reality: entrepreneurship requires risk taking. New ideas are tested all the time by investing effort and other resources. Most ideas fail, only some succeed. This permanent state of experimentation drives productivity growth. The question is: who should bear the risk on these investments? A large part of these investments takes the form of workers getting a job at a particular firm and acquiring knowledge and skills that to a greater or lesser extent are specific to the mission of the firm. The risk on these investments can be decomposed into three types: i) individual-specific risk; ii) firm-specific risk; and iii) aggregate risk. For each of these risk types, different rules determine who is the best party to bear this risk in a Utopian world of optimal risk sharing.

### *Individual-specific risks*

Individual-specific risk relates to the ability of the individual to acquire and maintain skills and the market value of these skills. Both are unknown at the moment when the worker starts learning them. Since the worker is risk averse, he would like to put the risk of these investments on others -- for example, on the shareholders of the firm. Diversified shareholders would be happy to take this risk because the shareholders' risk is reasonably diversified due to the law of large numbers: bad luck with one worker cancels against good luck with another. However, there is a problem. Acquiring skills requires effort on the part of the worker, and this effort is not easily observable by the firm (or by any other third party). If the worker obtains no monetary reward for her skills, she has little incentive to spend all this effort. We thus face a trade-off: if the firm takes all of the risk, then the worker is perfectly insured, but has no incentive to provide effort; if the worker takes all of the risk, she has optimal incentives to provide effort, but she is not insured at all. Here, the optimum is indeed a fair compromise: the individual-specific risk should be shared between the worker and another party -- whoever that may be. The worker should face some incentives, the firm should offer some insurance. Offering insurance is attractive to the firm because this reduces the expected wage bill: workers prefer a lower risk-free payment above a risky bonus that depends on their actual productivity. This is a so-called *principal-agent problem*: if information about the effort of the risk-averse agent is imperfect in the presence of individual-specific risks, then getting the incentives right in the relationship between a principal (the firm or shareholders) and a risk-averse agent (the worker) yields some loss of efficiency (see Holmstrom and Milgrom, 1987).

The idea that the firm should provide partial insurance against individual-specific risk is fine, but then, how should this insurance be organised? An answer to this question requires that we look somewhat deeper into the nature of individual-specific risk. Though most people consider unemployment as the main source of individual-specific risk, other factors are more important. Unemployment spells usually last only a couple of months, which is only a small

time span from a lifetime perspective. Changes in individual wages have a much larger and more persistent effect on lifetime incomes (Low, Meghir and Pistaferri, 2006). In fact, an upward or downward shock in a worker's productivity<sup>1</sup> today is likely to affect almost one-for-one her productivity until the date of retirement (Abowd and Card, 1989; Topel and Ward, 1992). Individual wages thus follow (almost) a geometric random walk.

This shape of an individual's productivity profile has strong implications for the type of insurance that a firm can provide. Since a negative shock today affects a worker's earning capacity from today until the date of her retirement, some form insurance by the firm implies that the firm must cover part of that lifetime cost. One likely form this insurance takes is that productivity shocks are not fully transmitted into the wage.<sup>2</sup> Individuals with positive shocks are therefore underpaid compared to their productivity, while individuals with negative shocks are overpaid.

This insurance policy would work fine if individuals would remain employed at the same firm forever. However, workers switch between firms, and this raises a serious problem. Workers who experienced positive productivity shocks will find it easy to find a new job at an equal or higher wage, since their productivity levels are above their current wages. However, for workers with negative shocks, the reverse holds. Hence, firms face an adverse-selection problem: good workers quit, bad workers stay. Workers, on their part, face a moral hazard problem: by firing the bad workers, the firm saves the wage subsidy to this group of workers. We return to this issue in Section 7.

#### *Firm-specific risks*

The second type of risk, firm-specific risk, is related to the evolution of the market for the firm's products, the market value of its R&D, etcetera. In a modern knowledge economy, the increased importance of innovation, creative destruction and international competition has raised firm-specific risks. Just like individual-specific risk, firm-specific risk is characterized by a geometric random walk (see Jovanovic, 1982).

Firm-specific risk can be well diversified on the capital market. By holding equity of a large number of different firms whose risks are uncorrelated, shareholders can ensure that the bad luck of one firm cancels against the good luck of another. In this way, firm-specific risk almost "disappears". Traditionally, the scope for diversification has been limited by the strong *home bias* in the portfolios of investors. Investors tend to hold too large a share of their investments in their home country, thereby foregoing part of the gains from diversification (see Feldstein and Horioka, 1980 and Gordon and Bovenberg, 1996). However, the most recent wave of globalisation of capital markets has undone most of the home bias in portfolios, improving the scope for risk diversification (see Rajan, 2005).

Although capital markets are quite efficient in the diversification of firm-specific risk, this diversification is not complete as far as the management of the firm is concerned. The reason for this incompleteness is analogous to the *principal-agent problem* between the management of the firm and its workers, which we came across before when discussing individual-specific risk. The optimal contract was to assign some of the individual-specific risk to workers, even though they are risk averse. The same applies to the relationship between shareholders and managers. Shareholders find it hard to monitor the effort of managers to maximize the value of their property. Hence, managers receive part of their compensation in the form of a share in the profits. Although managers are risk averse (and

---

<sup>1</sup> Empirically, we observe only the individual's wage, not her productivity, but it is likely that both series are similar in this regard.

<sup>2</sup> Another form this insurance could take is for the government to impose progressive income taxation. What mix of both types of insurance is optimal depends on the information surplus of the firm relative to the government and on the contractibility of firm-specific investment; see the discussion below.

therefore prefer a fixed compensation above a risky share in the profits), giving them part of the profits is optimal because it gives these managers proper incentives.

Since the firm-specific risk can be diversified at low cost in the capital market, it does not make much sense to assign part of it to risk-averse workers. Providing single workers with a claim on the firm's profits does not improve individual incentives much. An individual's reward should instead be tied to indicators that better measure individual performance (e.g. by comparing individual performance with that of other workers). Hence, wages of individual workers should not vary too much with the firm's well being, except in small firms; in these latter firms, the effort of each individual worker has a considerable impact on the performance of the firm as a whole. One would like to apply the same idea of diversification on the capital market to individual-specific risks, but the necessity of giving incentives limits the scope for insurance of these risks.

#### *But what about firm-specific human capital?*

If the firm bears all of the firm-specific risk, does not this imply that investments in firm-specific human capital would be too low? This is not necessarily the case but depends on whether the Hosios condition is met (see Hosios (1990)): the cost of specific investment should be shared between the worker and the firm in the same proportion as the revenues. From the perspective of optimal insurance, it is optimal to assign the full returns to the firm, since the firm is able to diversify the risk on that return on capital markets. Hence, the optimal contract allocates also the cost of investing in firm-specific human capital to the firm.<sup>3</sup> The same logic applies to forms of firm-specific capital other than human capital. Accordingly, in the absence of restrictions on shifting the cost of investing in specific capital to the firm, assigning the firm-specific risk to the firm does not impede this investment. Only if the firm cannot observe whether or not the worker has made her contribution to this investment, is it difficult for the firm to compensate the worker for the cost of this investment. In that case, the firm may have to reward the worker with a share in the risky return. But for the rest, the firm should bear as much of the cost of the specific investment as possible.

#### *Aggregate risks*

The final type of risk, aggregate risk, affects all firms in the same way. Hence, it cannot be diversified; somebody has to bear it. A simple solution would be to let everybody share in the aggregate risk in proportion to individual wealth. This would imply that the wage rate of workers varies in the same way as the stock market index does. In practice, however, capital takes a larger share of the risk than labour does, especially in the short run. We return to this issue in the next section.

#### *Conclusions*

Let us summarize the discussion thus far. Individual-specific risk must be shared in some way between the worker and some other party, either the firm or society as a whole. Although the individual is risk averse, individual-specific risk cannot be fully diversified to other parties due to the necessity of providing incentives to the individual for providing effort. Since individual-specific risks have a permanent effect on the individual's wage, the current firm might be the best party to absorb some of this risk. Firm-specific risk should be fully assigned to the holders of the firm's equity, because they can diversify their portfolio of equity holdings at low cost on the capital market. By implication, firms should pay the largest possible share of firm-specific capital. In this way, firm-specific risks "disappear". This "disappearance" of the firm-specific component in society's risk is an important contribution

---

<sup>3</sup> In fact, this conclusion is reminiscent of the old normative rule of Gary Becker in that the cost of general human capital should be born by the worker while the cost of specific human capital should be born by the firm.



to Utopia's optimal insurance system. Finally, aggregate risk cannot be diversified, since everyone is hit in the same way. This risk must therefore be distributed in some way between all agents in the economy.

### 3 Blockades on the way to Utopia

Would a decentralized society end up with an efficient assignment of the various components of risk to workers and shareholders? Or are there reasons to suspect that some components end up in the wrong hands?

#### *Individual-specific risks*

With respect to individual-specific risk, the firm and the worker have optimal incentives to work out a proper contract. If the firm provides too much insurance to the worker, so that the worker has too little incentive to provide effort, the firm's productivity will be low resulting in high costs per unit of output. The other way around, if the firm provides too little insurance, the worker will demand a high wage as compensation for the risk she is forced to take. Productivity is high, but wage costs are even higher, so that again cost per unit of output will be high. The optimal contract strikes a balance between these two, and the worker and the firm have a joint interest in ending up in that optimum.

#### *Firm-specific risks*

The problems arise with firm-specific risk. The optimal contract assigns both the full cost of specific investment and the full return, and hence all firm-specific risk, to capital because the holders of equity can easily diversify that risk on the capital market. Shareholders are thus the residual risk bearers. This contract, however, will not be easy to implement in practice for two reasons. The first reason involves the ability of the worker and the firm to shift the costs of specific investment at will from the worker to the firm. To the extent that the workers' share in these investments is not fully observable, and hence difficult to contract on, workers have to bear part of the cost themselves. In that case, the worker and the firm face a classic trade-off between insurance and incentives, like in the *principal-agent problem*: assigning a risky return to workers implies that workers face optimal incentives for specific investments but are not optimally insured.

The second reason why it is difficult to implement the optimal contract involves the ability of workers to credibly commit to not claiming part of the surplus in the future. To understand the problem, we should explore what it means for workers to share in the firm-specific risk. In particular, it implies that workers enjoy part of the excess profits if the firm performs better than expected. If, in contrast, shareholders would bear all risk, workers would not get anything of the upside. In practice, however, this outcome is unlikely to materialize, regardless of what has been negotiated in the *ex ante* contract. The *de facto* bargaining power of the incumbent workforce is such that they can capture part of the larger profits. To prevent the claim of current workers on the surplus, the firm could use the threat of hiring replacements for the incumbents. This threat, however, is hardly credible, for the incumbents have to cooperate in teaching the replacements the intricacies of the firm's production process (see Lindbeck and Snower, 1990). Obviously, both problems are related: to the extent that the workers cannot commit to exploit their bargaining power in the future, it is optimal to assign a greater share of the cost of firm-specific investments to workers today, as required by the Hosios condition.

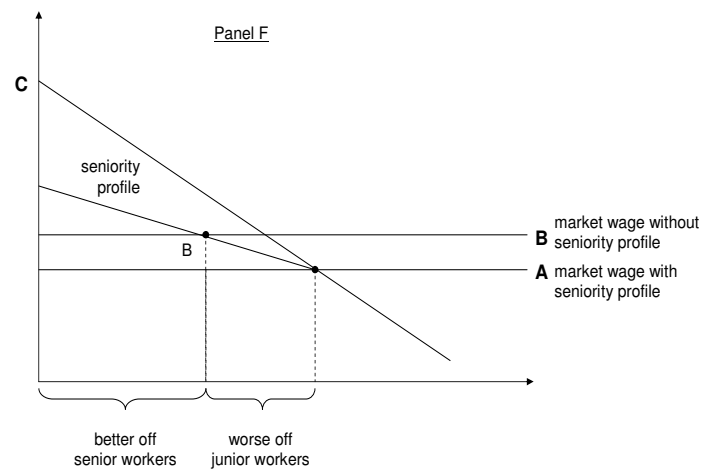
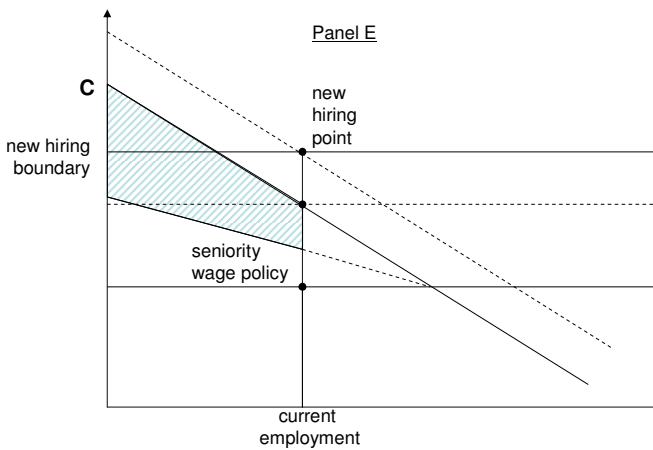
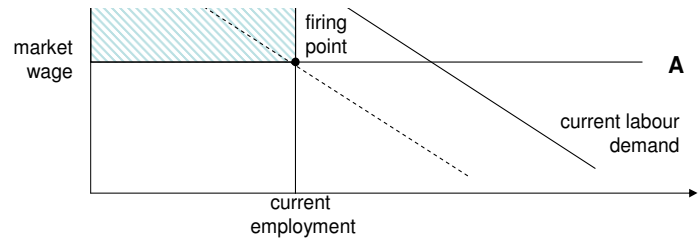
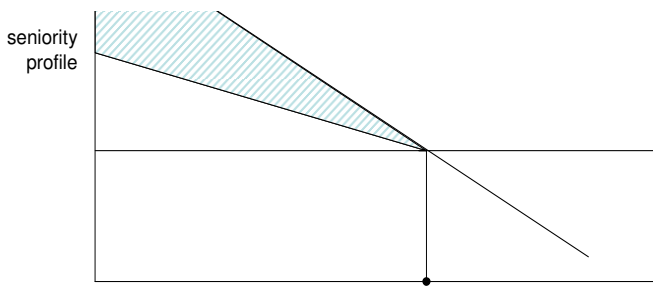
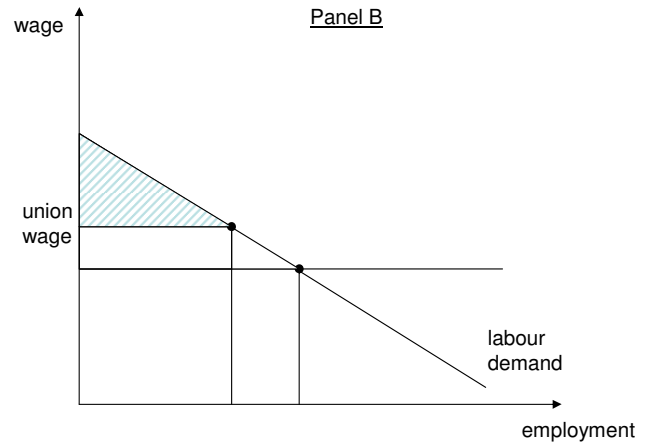
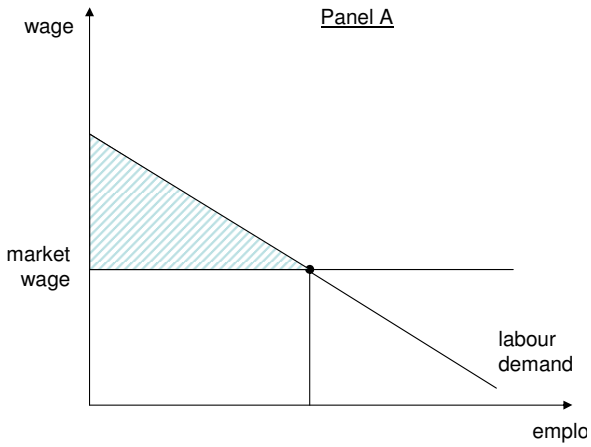
One might think that this commitment problem also has a downside: if the firm faces losses, it can use its bargaining power to impose some of these losses on workers by

threatening them with lay-offs in case they do not agree. In Utopia, however, this strategy of the firm will not work, since firms bear the full cost of the specific investment and should therefore get the full profit. If the firm would reduce wages following an adverse shock, its workers would quit and take a job in another firm. Hence, in Utopia, the relationship between the worker and the firm is asymmetric: the worker can try to claim a higher wage in case of excess profits, but the firm cannot try to shift part of the excess losses to its workers, since they will simply execute their option to quit. This asymmetry is the logical consequence of assigning all firm-specific risk to the firm. It is at the heart of the stability problem of Utopia: incumbent workers can only gain and the firm can only lose from renegotiating the contract.

The Utopian outcome seems therefore to contradict the interest of workers. Even though the firm-specific risk is a risky return, it is a positive return. Not sharing in that return thus seems just another way of relinquishing part of the remuneration. Although this may indeed be true *ex post* (after a worker has been employed by the firm), it is not true *ex ante* (before being hired). Firms invest in new jobs to maximize profits. The expected return on the investment in the marginal job must be sufficient to offset the costs of the investment. Expected returns are a weighted average of the return in good and bad states of the world. If workers are expected to capture part of the profits in good states, the expected return on the investment will be lower so that fewer jobs will be created. Since firms create fewer jobs, the demand for labour will be lower, as will starting wages. In a global capital market, where the supply of capital is almost infinitely elastic, this adverse effect on starting wages more than offsets the expected positive effect on wages of capturing part of the profits in a steady-state equilibrium.

*A more detailed analysis of insider power: the return to seniority*

Most analyses of insider-outsider problems distinguish only between employed insiders and unemployed outsiders. However, in practice, insider power varies significantly not only between workers and the unemployed, but also between workers with various degrees of seniority. In particular, in an insider-outsider society, senior workers obtain a far greater share in the firm's rents than do workers who have been recently hired. A simple model developed by Kuhn (1988) and Kuhn and Roberts (1989) -- and recently elaborated on by Buhai et.al. (2007) -- allows a better understanding of how incumbents can exploit their bargaining power to the detriment of new hires.



As a point of reference, Panel A of Figure 1 depicts the standard model of a firm's demand for labour. The horizontal line represents the market wage, while the downward-sloping line stands for the firm's labour-demand curve. The latter line corresponds to the firm's marginal revenue of hiring an additional worker, given the current employment level of the firm. Indeed, in a competitive labour market, the market wage is equal to the firm's marginal cost of hiring an additional worker. A profit-maximizing firm equates marginal revenue and marginal cost, so that employment is set at the level where labour demand crosses the market wage. The firm's profit is then equal to the shaded triangle between the labour demand curve and the market wage. Panel B shows what happens if a union manages to raise all wages above the market wage. Since the marginal cost of labour goes up, employment and profits fall, which results in involuntary unemployment. Hence, the union's policy favours employed insiders by raising their wage, at the expense of the firm's profits and of unemployed outsiders.

Panel C shows a more elaborate scheme for labour to capture part of the profits, which avoids the negative effects on employment that were visible in Panel B, where the union raised market wages across the board. Workers impose upon the firm a sequence by which workers must be laid off: the most senior workers with the longest tenure should be fired last of all, and the worker hired most recently should be fired first (LIFO: Last In, First Out). In Panel C, workers are ordered according to their seniority, with the most senior workers on the left. With sufficient bargaining power, workers can require the firm to differentiate wages according to workers' seniority, paying higher wages to more senior workers. The wage policy line in Panel C shows how wages vary between seniority levels. A profit-maximizing firm sets employment at the point where the wage policy line intersects the labour demand curve. Even though the wages of the more senior workers exceed the marginal productivity of workers so that firing these workers would raise profits, the firm cannot do so. The reason is that the LIFO rule requires the firm to fire the least senior, and hence, the cheapest (and thus most profitable) workers first. Hence, it does not fire any worker at all. This policy allows workers to capture part of the firm's profits (the shaded area between the labour demand curve and the wage policy line), without hurting unemployed outsiders.

Although Panels A-C are useful for a basic understanding of why excessive wage demands of unions depress employment and how a LIFO system allows workers to capture rents without depressing employment, these panels are not very helpful in understanding the roles of both firm-specific investment and firm-specific risk. Panel D shows the effect of these factors. Just as in Panel A, workers get paid the market wage, and hence, do not capture part of the profits. Due to the risky demand for the firm's product, the labour demand curve shifts up or down, depending on the state of market. Consider the case where the firm pays the full cost of firm-specific capital. It hires additional workers only when today's marginal revenue of an additional worker is strictly above the market wage. The surplus of marginal revenue above the market wage serves as a compensation for the cost of investing in specific capital. In the figure, the firm starts hiring if the marginal revenue is at the hiring point. Let the vertical line be the firm's current employment level, so that the firm is now at the hiring point. Any upward shock leads to additional hiring. A small downward shock, however, does not affect employment. Only if product market conditions depress labour demand below the dotted curve, so that the marginal revenue of a worker falls to the firing point, does the firm start to fire workers.<sup>4</sup> In between the hiring and the firing points the firm neither hires nor fires workers. Why is this the case?

The surplus of marginal revenue above wage costs implies that the firm captures quasi rents, which provide compensation for the cost of the investment in firm-specific capital. The

---

<sup>4</sup> In this discussion, we leave aside the option value of hiring and firing; see Buhai et al. (2007) for a discussion.

firm hopes for a future rise in demand, so that the marginal worker today will become an infra-marginal worker with higher quasi rents tomorrow. In that case, the firm realizes the upside of the return on its investment. However, the firm runs the risk of getting the downside, if demand falls instead of rises. Hence, as in Utopia, the firm bears the risk on the specific investment in Panel D. The firm captures higher quasi rents for infra-marginal workers. These higher rents are the upside on previous investments in specific capital; demand must have been lower when these infra-marginal workers were hired because more workers were hired from that moment on. Hence, the total of quasi-rents, the shaded area in Panel D, corresponds to the current return of the firm on its previous investments in the specific capital of its workforce.

Panel E shows what happens if workers impose the same LIFO rule on the firm as in Panel C, and the firm still has to pay for the full cost of firm-specific capital. This seniority wage profile shares the quasi rents for each worker (that is: the difference between the market wage and the demand curve at that employment level) between the worker and the firm. Compared to Panel D, the quasi-rents are reduced substantially. Hence, the firm obtains lower compensation for its investments in firm-specific capital. The firm will respond to this fall in the return by putting off hiring new workers. As a direct consequence, the distance between the hiring and the firing points increases.<sup>5</sup> Once hired, workers are less likely to be fired. Hence, in a world with seniority premiums, the average job tenure of a worker increases. One would therefore expect that in a world where the firm pays a greater share of the firm-specific capital than the share of surplus that it receives, the distance between the hiring and firing points is larger, and hence, the average tenure of workers will be longer, since on average it will take a longer time before the firm's demand function falls from the hiring to the firing points. The greater distance between the hiring and firing points implies that the workers are less easily relocated to more productive job opportunities. The conclusion is that the seniority wage profile does not affect the firing policy of the firm, but it does reduce job creation and worker relocation to more productive jobs.

To the extent that the worker and the firm can offset this excess bargaining power by shifting part of the cost of firm-specific investment to the worker, this problem can be undone. This implies, however, that workers bear part of the firm-specific risk. This effect cannot be undone. Firms will invest in new jobs only if their expected profits cover their share in the cost of specific investment. Hence, the introduction of the LIFO profile must be offset by a fall in the market wage. Hence, comparing both situations (see Panel F), more senior workers are better-off with a seniority profile due to their return on seniority, while the junior workers are better-off without, due to the lower market wage as a result of less job creation. Just like the simple union policy in Panel B, a world with seniority profiles as in Panel E favours senior insiders above junior outsiders. From a lifetime perspective, a worker's income is less risky without (Panel D) than with a seniority profile (Panel E). In Panel D, workers always enjoy the market wage. In Panel E, a worker's lifetime income depends on whether the firm that hires you will flourish in the future, so that it will hire new workers and you will be able to reach a senior position, or that you remain a junior worker forever, or even worse, that you will be laid off, and have to start all over again as a junior worker at another firm.

In fact, a world without seniority profile corresponds to Utopia from Section 2: workers are not subject to firm-specific risks and always collect their market wage. The strong position of senior workers in a world with seniority profiles generates resource transfers from junior workers towards those senior workers. In other words, it involves implicit pay-as-you-go transfers from one group of workers to another. Accordingly, the key social conflict in a modern economy is not between labour and capital, but between incumbent workers, who

---

<sup>5</sup> An alternative solution would be to let the worker pay a share of the specific investments.

capture part of the surplus, and new entrants on the labour market, who rely on investments by capital in new jobs to become employed.

The Utopian outcome in which incumbent workers do not exploit their strong bargaining power is not easy to realize in an economy with decentralized bargaining on wage contracts. The problem is the distinction between *ex ante* and *ex post*. *Ex ante* workers might be willing to accept an agreement with a higher starting wage and to promise not to take a share in the firm's future profits in good states; only by accepting such an agreement can workers induce firms to invest in a new job. But how credible is such an agreement *ex post*, after the investment has been made and the firm's investment turns out to be highly profitable? After the firm has sunk its investments, workers are likely to see no point in giving the firm excess profits. This time-inconsistent behaviour give rise to what economists call a *hold-up problem*. Workers cannot credibly commit *ex ante* not to capture part of the excess profits *ex post*. Decentralized bargaining in a market economy is therefore likely to assign too much of the firm-specific risk to the worker.

#### *Aggregate risks*

What about aggregate risk? There is an extensive literature on the rigidity of wages with respect to aggregate shocks (see e.g. Layard, Nickell, and Jackman, 1991). Wages adjust to aggregate shocks only after a lag, implying that capital bears most of the short-run impact of aggregate shocks. Hence, workers are well insured against these shocks in the short run. Whereas capital markets can diversify the firm-specific risk, they cannot diversify aggregate risk because these risks affect all parties in the same way. However, this excess short-run non-diversifiable risk imposed on capital is not the main problem. More problematic is rigidity of relative wages, which limits the opportunities for differentiation of wages between new hires and incumbent workers. If relative wages would be flexible, the wages for new hires would adjust so as to generate new jobs for this group. Wage rigidity prevents this from happening.

How long does it take for wages to adjust to aggregate shocks? This differs from country to country. The high unemployment rates in many European countries after the adverse aggregate shocks of the oil crises of 1974 and 1979/1980 reveal that this wage rigidity can be quite costly. Since we have little to add to this longstanding discussion, we leave it aside in what follows.

#### 4 Utopia versus the “real world”: the United States, Denmark and Portugal

We have identified some blockades on the way to the Utopia in which capital pays the full cost of firm-specific capital, receives the full surplus and bears all the firm-specific risk. This section explores how actual economies behave in this respect. Do workers indeed capture part of the excess profits, and if so, how do they do that? We explore these questions by comparing the labour-market outcomes in three prototypical countries: the United States, Denmark and Portugal.

A simple and crude way to explore how different countries perform in this respect is to estimate tenure profiles in wages: how much does your wage go up if you have a longer tenure (keeping other things equal)? Table 1 provides an overview of the wage returns to tenure for our three prototypical countries. Tenure profiles turn out to be much steeper in Portugal and, especially, the United States compared to Denmark. However, this evidence on the returns to tenure remains indicative at best. The models in Kuhn (1988) and Kuhn & Roberts (1989) imply that wages go up with tenure (because the only way to obtain seniority is to stay at the same employer), but a higher tenure does not lead automatically to seniority. It also depends also on how many more senior workers retire and on how many new workers are

hired: that is, whether or not your firm grows. Moreover, many alternative theories predict a positive relationship between wages and tenure, so that we would like to have more conclusive evidence.

Table 1: Returns to tenure in various countries

Country	% higher wage compared to a new hire after:	
	4 years of tenure	8 years of tenure
United States*	12 %	20 %
Denmark**	2 %	3 %
Portugal**	6 %	10 %

Sources: \* Teulings & Hartog (1998), \*\* Buhai et al. (2007), all coefficients are based on simple OLS regression, not using corrections for selectivity

Fortunately, we can put these ideas to a more stringent test when we have data on seniority of the worker. Wages vary not so much with the tenure of the worker, as they do with seniority of the worker, that is, her tenure relative to the tenure of other workers in the firm. It therefore does not matter so much whether or not you have ten years of tenure, but whether or not the other workers have more or less tenure than you. Buhai, Portella, Van Vuuren and Teulings (2007) tested precisely this idea for Denmark and Portugal. When no worker quits and the firm's employment is increased by 10% (meaning that your seniority goes up), then your wage increases by 0.1% in Denmark and 0.2% in Portugal. Regrettably, we do not have data on the United States for this issue. However, there is plenty of other evidence to suggest that wages include a larger share of firm-specific (quasi) rents in countries such as the United States, the United Kingdom and Portugal than in Scandinavian countries and countries such as the Netherlands (see Teulings and Hartog (1998) for an overview). First, wage differentials between industries for workers with about equal human capital are much larger for the first group of countries than for the second, and those industry differentials in wages are strongly correlated to the (quasi) rents of that industry, either due to its capital intensity, or to its market power. Likewise, fluctuations in the output prices exert a much larger effect on wages in the first group than in the second. Furthermore, an extensive literature explores the reasons why large firms pay higher wages than small firms do. At least part of this firm-size wage premium seems to be due to (quasi) rents. Again, the firm-size wage effect is larger in the first group of countries than in the second. All of this evidence corroborates our claim that there are substantial differences in the share of rents in wages across countries, with the United States, the United Kingdom, and Portugal having a large share.

The model laid out in the previous sections implies that a higher seniority profile that is not offset by a shift of the cost of firm-specific investment from the firm to the worker yields a higher average job tenure. As shown in table 2, the fraction of short tenures is rather high in the United States and Denmark, and it is low in Portugal. Hence, the difference in the tenure distribution between the three countries suggests that Denmark and the United States are closer to the satisfying the Hosios condition than Portugal is. Apparently, firms in the United States are able to offset the large returns to tenure by shifting back part of the cost of firm-specific investments to workers, while firms in Portugal have not been able to do so. We return to this issue when discussing the role of Employment Protection Legislation in the next section.

Table 2: Tenure distribution in various countries, 2006

Tenure in years	0-1	1-3	3-5	5-10	10 or more
-----------------	-----	-----	-----	------	------------

United States*	24	12	17	21	26
Denmark**	24	15	13	19	29
Portugal**	12	11	11	22	44

Sources: \* Bureau of Labour Statistics, \*\* OECD

This empirical evidence suggests two things. First, Utopia is hard to reach. In all countries, workers assume some share of the firm-specific risk.<sup>6</sup> This risk-taking benefits them in the short run, since getting part of the profits is better than getting none. It hurts them in the long run, however: lower profits for the firm imply lower job creation, so that the higher wages in good states of the world are more than offset by the lower starting wage. Second, there are substantial differences in how far various countries are away from Utopia. Denmark is closer than Portugal and the United States. Some countries thus seem to do better in addressing the *hold-up* problem. In particular, the position of the United States as a heavily decentralized economy is remarkable. Usually, its market orientation fosters the efficient operation of markets. In this case, however, Denmark seems to counter the *hold-up* problem more effectively. The whereabouts of our Utopia is surprising. Utopia is located not in New York or L.A., or in the endless wheat fields of Iowa, but somewhere around Copenhagen and the green countryside of Jutland.

### 5 The role of politics: coordinated wage setting or employment protection?

Apparently, there are substantial institutional differences between countries that affect the way in which workers and firms bargain. What causes these differences? Almost by necessity, it must be related to some form of collective action. And when we talk about collective action, it is natural to wonder about the role of politics. The outcome of bargaining processes is highly unpredictable. Small details of the bargaining process, such as who is the first to make an offer, can have a large impact on the final outcome. The evidence in Teulings and Hartog (1998) suggests that collective wage bargaining reduces the impact of firm-specific risk on wages. Collective wage contracts do not specify the wage rate for each individual worker, but they do provide a norm for wage negotiations at the individual level. To the extent that this norm is common to all firms, it restricts the impact of firm-specific factors. In this way, coordination and collective action can help to move us closer to Utopia.

Most collective action requires some form of political support, but political intervention can also easily bring us further off track. The reason for this involves the *hold-up* problem and the limited capacity of politicians to commit to future policies. The ability to commit to future policies is a crucial condition for resolving hold-up problems. In particular, workers have to be forward-looking and aware of the gains of keeping their promises today in terms of better future employment prospects for themselves and for future generations. Almost by definition, politicians exhibit only a short time horizon. An election is to a politician what market competition is to an entrepreneur: it counteracts abuse of power -- monopoly power for the entrepreneur and political power for the politician. At the same time, however, regular elections undermine the ability of politicians to commit to policies that yield long-term gains. If voters would be forward-looking and well informed about the future consequences of current actions, they would be more inclined to accept short-run losses in favour of the long-term benefits of abundant job creation. However, even then, children and future generations are not able to vote. Hence, politicians still face a strong incentive to promote policies that yield only short-term gains, and to ignore the long-run costs for future generations who are not included in today's electorate. If politicians support the claim of

<sup>6</sup> With non-contractible firm-specific investments, workers must bear some firm-specific risks. The tenure profiles can then be seen as a compensation for the firm-specific risks.



incumbent workers on the excess profits of the firm, then incumbent workers will see their pay go up, while the costs of reduced future employment prospects and lower wages for marginal workers hired tomorrow are ignored. While politics can play a useful role in coordinating the action to bring us closer to Utopia, the incentives of politicians are such that their first temptation is to carry us further away.

Employment Protection Legislation (EPL) is a perfect example of policy that caters to this temptation. It protects insiders, while it does little to help outsiders to find a job. In terms of the model laid out in Section 3, the effect of EPL can be undone by shifting part of the cost of firm-specific investment from the firm to the worker. Then, EPL is a form of *ex post* compensation by the firm of the cost of investment borne by the worker at the start of the employment relation. From this perspective, the critical question is whether the amount of EPL does not stretch too far the ability of shifting the cost of investment from the firm to the worker, and does not imply that the worker bears an excessive amount of firm-specific risk. Many countries have introduced some form of EPL. The form and degree of EPL differs between countries and over time. Lay-offs may require costly legal procedures or advance-notice periods; sometimes, laid-off workers are entitled to financial compensation, which usually varies according to age and tenure. Of the three prototypical countries, Denmark and the United States feature almost no EPL, while Portugal has quite a lot (see Deelen, Jongen and Visser, 2006, for an overview).

Although we were quick to claim that EPL is merely an instrument in the hands of politicians to transfer surplus from outsiders to insiders (just as the introduction of seniority profiles in wages), we must also ask whether EPL can play a role in insuring firm-specific risks. In Utopia, the answer to this question is negative. Workers are paid the market wage and firms bear all the risks on firm-specific investments. Hence, losing one's job is not much of a loss, since you will easily find another job at the same market wage. Accordingly, EPL is not needed in our Utopia. This is, in fact, close to the situation in Denmark.

We now turn to Portugal, which exhibits a steep seniority profile, with a 0.2% wage increase for every 10% increase in seniority. A senior worker thus has a lot to lose if she would be laid off. Hence, from the perspective of the insurance of expected life time labour income, EPL as financial compensation for being laid off seems a logical policy instrument indeed. Usually, this financial compensation is related to the last-earned wage of the worker. This system reduces downward flexibility in wages because the worker gives up part of her EPL entitlement if she accepts a wage cut. Moreover, EPL strengthens the bargaining position of workers; if the bargaining process breaks down and the worker is laid off, she can collect EPL at the expense of the firm. This raises the wages of incumbent workers. The only way to counteract the upward pressure on wages is a high unemployment rate exerting downward pressure on wages (see Blanchard and Portugal, 2001). Indeed, those who are unemployed are likely to remain so for a long period of time in view of slow job creation. EPL may thus in an indirect way raise individual-specific risks facing younger generations.

The United States is a remarkable case. It features seniority profiles, but has almost no EPL. Seniority profiles expose workers to more firm-specific risks: when they are laid off because their firm is bankrupt, they usually do not receive much financial compensation. Senior workers who are laid off lose a lot of their lifetime income. Topel (1992) shows that more senior workers lose on average 25% of their pre-displacement earnings in the first couple of years after displacement. The explanation for this paradox is likely to be the strong countervailing powers in the American political system (see Persson, Roland and Tabellini, 2000). This greatly restrains the power of politicians both to impose EPL and to facilitate central coordination in wage bargaining, which protects workers against taking firm-specific risks.

The great accomplishment of Denmark is to have been able to sail between Scylla and Charibdis. On the one hand, it has generated enough collective action for setting up institutions providing collective norms for wage bargaining such that workers do not capture much of firm's excess profits. On the other hand, it has succeeded in restraining politicians from introducing EPL. Just as the theory related to Panel A of Figure 1 predicts, this outcome yields a low unemployment rate and flat seniority profiles in wages, which takes away a major argument for introducing EPL in the first place. In other words, strong collective norms eliminate the temptation to introduce EPL, which is likely to be counterproductive by worsening the hold-up problem and further steepening seniority profiles.

EPL thus give rise to a paradox. EPL is meant to act as social insurance for income loss. At the same time, however, it generates its demand by providing a mechanism that raises the demand for insurance by pushing up the return to seniority. The net effect is an increase in uncertainty in that workers bear more firm-specific risk via their return to seniority and, when they get unemployed, also more individual-specific risk, since the lower rate of job creation reduces their chances to find a new job. Those who manage to rise in the seniority hierarchy do well. Those who do not, in contrast, end up bumping back and forth between unemployment and the lower strata of the seniority hierarchies, and with some bad luck, never get out of bad jobs. Indeed, Clark and Postel-Vinay (2006) show that workers feel most insecure about their job in those countries with the most extensive EPL. The paradox of EPL is that it creates exactly the sentiment of job insecurity that it is meant to cure. Indeed, the ease with which it is possible to find a new job, rather than the difficulty of being laid off from the current job, appears to determine the sentiment of security. To illustrate, the flexible Danish system, in which you are easily laid off but where finding a new job is as easy, provides more security than the Portuguese system, with steep seniority profiles and strong EPL.

EPL also harms labour mobility across firms, just as a seniority profiles do (see Section 3). Firms offset the cost of EPL and greater bargaining power for workers it implies by shifting the hiring point upward. This reduces worker relocation to more productive job opportunities. Hence, EPL can be expected to harm labour productivity, especially the productivity of elderly workers who are locked into their jobs because golden chains tie them to their employer.<sup>7</sup> By using differences in EPL across US states, Autor, Kerr and Kugler (2007) find evidence for the negative effect of EPL on productivity.

## 6 The role of politics: Rhineland's stakeholders or Anglo Saxon shareholders?

The rapid internationalisation of capital markets and the emergence of hedge funds and private equity has shifted the market for corporate control dramatically during the past decades. Particularly in Europe, where management's corporate control has rarely been contested, the voice of shareholders has come as an undesirable surprise. Traditionally, the balanced weighting of the interest of all stakeholders is the formal objective function of managers under the Rhineland regime, as laid down in Corporate Governance Legislation (CGL). The revolution was that financial markets demanded the objective function to be narrowed down to shareholder value. In principle, the discussion about the proper objective function affects every management decision, but the discussion becomes particularly relevant when there is a takeover threat. The interests of shareholders and management usually clash at that moment. A takeover allows shareholders to realize the option-value of their control rights -- the same control rights that the management is actually going to lose.

---

<sup>7</sup> This is especially important in the presence of so-called match-specific risk. In that case, considerations of comparative advantage make it more efficient if workers move between various firms to find the best match.

The argument put forward this paper suggests that shareholder value is the best solution. Since the firm is the best party to bear the firm-specific risk so that workers should not share in the firm's quasi rents, the only goal that management has to pursue is the creation of shareholder value, leaving all other stakeholders with their outside option only. However, the results discussed in Section 4 suggest that in economies that embrace the principle of shareholder value most wholeheartedly this outcome is not realized as easily as one would expect. Denmark seems to be closer to this outcome than the United States is. Apparently, the legal framework for corporate governance is not the only thing that matters. How can this paradox be explained?

The relationships between the firm's management and its workers involve an extremely incompletely specified contract. What type of effort workers should delivered is hard to determine *ex ante*, and if it could be determined, it would be hard to specify in a legally enforceable contract. The incompleteness of this contract demands that the management builds up a reputation of reliability *vis a vis* its workers. Only the management's reputation can provide the workers a guarantee that the management will stand up to its promises. This is also one of the most important roles of the firm: it is a nexus of implicit contracts held together by the reputation of management. Reputations require long time horizons. In many cases, a takeover is just a means to get rid of some of the firms' obligations *vis a vis* its workforce. The replacement of management implies that the commitments and promises of the previous management are eliminated, giving a new management the opportunity to conclude new deals. Sheifer and Summers (1988) claim that a large share of the gain in stock market value when a firm is taken over are (quasi) rents extracted from other stakeholders. A typical example is the airline industry, where a takeover was a means for the airline to get rid of incompletely specified defined-benefit pension obligation towards the airline's retired workers. Similarly, takeovers are often used to reduce wages.

The takeover mechanism makes it more difficult for management to commit to implicit contracts with workers and other stakeholders. In particular, the threat of a future takeover, followed by a replacement of the current management, undermines the management's ability to come to an agreement on an implicit contract with its workers because workers realize that management can be replaced at any future date by the shareholders. This mechanism might explain why there is no unequivocal road from legal structure of corporate governance to the ability of management to come to an agreement with its workers to leave most of the (quasi) rent in the hands of shareholders and to pay most investments in firm-specific capital. Without such a commitment mechanism, the various stakeholders may pursue short-run goals at the cost of pursuing the joint interest of maximizing the long-run value of the firm.

Since Thatcher, the United Kingdom has legislation that gives shareholders the strongest formal power, including the right to appoint board members, and also the right to fire them. In the United States, shareholders have fewer means to fire board members, but the law provides the board with a single and transparent goal: maximize shareholder value. Shareholders can go to court and put liability claims against managers who fail to do so. This might be an effective combination: the single goal makes managers accountable, while the protection of management against intervention by shareholders provides them the credibility to negotiate implicit contracts with the workers. More delegation of power to management is efficient if managers can be held accountable with respect to a clear objective: namely, the long-term value of the firm.

Some managers applaud the Rhineland model's balanced treatment of the interest of all stakeholders. This may, however, be a pretext for putting their own interests above those of shareholders. The lack of mission clarity associated with the Rhineland model makes it harder for shareholders to delegate decisions to management and keep them accountable (see

Tirole, 1999). The Rhineland principle of equal treatment of the interests of all stakeholders is a clear example of an incomplete contract -- or better, of incomplete legislation. This principle strengthens the moral legitimacy of the claims of workers on the surplus of a firm. Bertrand and Mullanaithan (2003) show that in US firms that are protected from takeover by all kinds of legal protection, workers enjoy a greater share in the surplus, superfluous workers are less easily laid off, and new activities are set up at a lower rate than in other firms. This corresponds exactly to the model laid out in Section 3. A greater share of the workers in the (quasi) rents increases the distance between the hiring and the firing points. Moreover, it hurts job creation and reallocation of labour to more productive job opportunities. Hence, the Rhineland idea of firewalls against takeovers gives workers a greater share in any firm-specific surplus.<sup>8</sup> The problem with CGL is that it may give moral legitimacy to the claim of insiders on the surplus of the firm, thereby exposing workers to firm-specific risks and worsening the hold-up problem.

Although giving up the moral claim on the surplus of the firm is in the long-run interests of workers, it gives rise to difficult transitional issues. Currently older workers with high seniority benefit from the system and need to be compensated if they lose the claims on the firm's surplus. Indeed, the road from Rhineland to Utopia resembles the transition path from a pay-as-you-go pension system to a funded pension system in which the transition generation has to pay twice, while all future generations benefit. Incumbent workers in Rhineland are understandably concerned about the increased activity of hedge funds and private equity. If firms are taken over, workers may lose some of their claims on the surplus when the firm is reorganized and workers are laid off. In other words, increased international trade in corporate control may further increase the firm-specific risks for workers in Rhineland. Indeed, the vague Rhineland principles no longer offer very much protection to workers. The incomplete contract gives rise to ambiguous property rights. Then, financial innovation allowing shareholders to capture a larger part of the surplus lead to distributional struggles. In this way, workers are saddled with even more firm-specific risk. This is an additional reason for moving to a model with unambiguous property rights in which workers do not derive their security from the financial stability of the firm for which they work but from the value of their own human capital. In such a world, free international trade in corporate control is more legitimate. The transitional issue, however, remains: senior workers should be compensated for their implicit claims on the firm's surplus.

One way to address the transitional issue would be to replace the implicit transfers from young, marginal workers to older, incumbent workers by temporary, explicit transfers to older workers. For example, the reduction of seniority premiums and EPL for older workers could be replaced by temporary in-work tax benefits. These explicit transfers from younger to older workers should be gradually reduced, as younger cohorts could anticipate a less steep seniority premium by saving more and by investing in their own human capital in order to maintain their value on the open labour market. However, the big risk of such explicit transfers is that they will overcompensate the elderly and that they will not be of a temporary nature, thereby aggravating what they were meant to solve.

In any case, the political rhetoric and ideology should not give legitimacy to new claims of workers on the surplus of the firm. These implicit claims should gradually be phased out. The flattening of seniority wage profiles is a cultural change involving collective norms and political rhetoric. It will thus take some time. Indeed, this process of reducing the claims of workers on the surplus of the firm can be seen as the next step in the emancipation

---

<sup>8</sup> In addition, one might wonder why stakeholders who are protected by separate legislation (such as EPL for workers, and Anti-trust and Competition Legislation for customers and suppliers against the abuse of market power) should receive additional protection during take overs. These laws provide a more complete formulation of stakeholder rights than CGL does.

of workers. The next phase in the emancipation of the worker is to better diversify human and financial capital by bringing financial capital outside the firm (e.g. through pension saving), enhancing social insurance and maintaining the value of their employability on the external labour market. Workers derive their security not from the firm that employs them but from the value of their own general human capital. Workers thus increasingly become responsible for maintaining the value of their general human capital.

## 7 Some further issues

The previous analysis has abstracted from a number of issues that might nevertheless be relevant when discussing the goals that a firm's management should pursue. First, putting the maximization of shareholder value in the driving seat raises the standard issue of the long-run interest of the firm versus the short-run orientation of shareholders. In and of itself, holding equity in a firm gives an investor a clear interest in the long-run prospects of the firm, since the value of that equity is just equal to the net discounted future cash flow of the firm. However, the great liquidity of the stock market allows shareholders to execute their exit option without noticeable delay. This liquidity implies that shareholders can benefit from short-run variations in the value of their equity. In particular, management that is under pressure by a hostile takeover may be tempted to postpone long-run investments with hard-to-verify returns and instead pursue policies that generate immediate revenue. In addition to the importance of protecting the reputation of management to keep long-run promises to stakeholders (such as workers and suppliers), this might be another reason why substantial powers of shareholders to replace management may give rise to a short-term bias in decision making.

A second issue that pops up in many debates on corporate governance is the tendency of raiders to load a company with debt immediately after takeover. There are three aspects to this phenomenon. First, loading a company with substantial debt is an effective means to put pressure on its management to combat moral hazard. The obligation to service the debt is equivalent to setting a minimum performance standard. If the management fails to achieve this standard, the firm goes bankrupt and the management loses its job. This is just a variation on the standard *principal-agent model*: it is likely to be an efficient contractual arrangement, even though the firm's management probably will not like the additional pressure and risk that these debt obligations impose on them.

The second aspect of more debt financing is more problematic. Shareholders' limited liability gives them an incentive for excessive risk taking. They enjoy the upside but their limited liability protects shareholders against large downsides. This downside risk is shifted to the other stakeholders, in general, and to debt holders, in particular. Writing more complete debt contracts is the remedy for this problem.

The third aspect of more debt financing is also not socially efficient. Most tax systems give debt a favourable tax treatment compared to equity. By loading a company with debt, raiders impose a negative externality on society in terms of lower tax collections. Reforming the tax system by reducing the non-neutralities between debt and equity financing addresses this issue.

Section 5 explained how EPL may burden individuals with more firm-specific risks if workers take advantage of the additional bargaining power provided by EPL. EPL, however, may have some desirable properties in that it provides insurance against individual-specific risk. Section 3 discussed how the firm may want to insure individual-specific risk by paying workers suffering from adverse productivity shocks a wage that exceeds the marginal productivity of these workers. EPL can enforce this contract. In particular, if the firm tries to escape paying its insurance benefit by firing the worker, EPL gives the worker a claim on the

firm. This also explains why EPL tends to provide more generous claims when an individual worker is fired than in case of a mass lay-off, even though in the former case “the worker may be to blame” by featuring a low productivity level (or even outright misconduct), while in the latter case “the firm is to blame”. In the former case, by firing the worker, the firm reveals its information on the worker’s productivity to other firms. Hence, these other firms will be prepared to pay only a low wage. By firing a whole group of workers as part of a mass lay-off, in contrast, the firm signals to other firms that it is not the workers’ fault that they are fired.<sup>9</sup> Hence, these workers will more easily find another job for a reasonable wage. Gibbons and Katz (1991) provide clear evidence for this mechanism.

The insurance of individual-specific risk provided by EPL may come at the expense of greater exposure to firm-specific risk because EPL worsens the hold-up problem by strengthening the bargaining position of incumbent workers. EPL as an instrument to insure individual-specific risk should thus be complemented by strong moral norms that discourage incumbents from using their increased bargaining power. Only in that way will workers be prevented from capturing part of the rents of the firms, thereby exposing themselves to firm-specific risk. Hence, EPL protects workers against individual-specific risk without exposing them to more firm-specific risk. EPL should protect workers against selection by the firm, where the firm lays off those workers whose productivity is less than expected due to individual-specific factors. EPL should not be an instrument for a firm’s workforce to capture part of the firm-specific surplus.

As a way to insure individual-specific risks, EPL may give rise to other costs as well. First of all, EPL can result in more selection of employers on the basis of observable features. Whereas EPL can enhance insurance of non-observable productivity levels, it can hurt job-market opportunities for those with observable features that are negatively correlated with productivity, thereby harming social cohesion. A related problem is that individuals are often not responsible for their observable features (such as skin colour, sex, age), whereas they can affect the features that are more difficult to observe (such as productivity levels). Indeed, EPL can create moral hazard in that workers face fewer incentives to maintain their human capital. This drawback becomes more important if non-contractible effort of workers becomes more important in the production of human capital. Colleagues may become demoralized when they observe that older workers are rewarded even though they do not perform well. If the costs of EPL grow, the government might have to play a larger role in insuring individual-specific risks -- for example, through a progressive income tax system. Since the government faces serious moral-hazard problems in doing so, however, less insurance may be optimal.

Our analysis gives rise to a research agenda. First of all, we should estimate the returns to seniority in various countries and investigate how they are related to labour-market and corporate-governance institutions. Another key research issue is the relationship between EPL and wage setting. Can labour-market institutions prevent EPL from raising the returns to seniority? Finally, how important are firm-specific investments in human capital, and to what extent is the cost of these investments contractible? Does the non-contractibility of investments in firm-specific capital give rise to a substantial seniority premium in order to provide workers with sufficient incentives for these investments so that these workers bear substantial firm-specific risks, as is the case in the United States, or can the Danish outcome of limited seniority premiums be reproduced in other countries?

## 8 Conclusion

---

<sup>9</sup> This is especially the case if LIFO (last in, first out) rules prevent employers from selecting the people who are laid off on the basis of their productivity levels.

Risk is an unavoidable feature of modern economic life, and we have distinguished three types of risk: individual-specific, firm-specific, and aggregate risk. In our Utopia, workers would not bear any firm-specific risk, since this risk can be well diversified on capital markets. Whereas globalisation has increased firm-specific risk by intensifying competition, globalisation of capital markets has also greatly increased the scope for diversification of this firm-specific risk. Diversification of this risk on the capital market is an efficient form of social insurance. With shareholders bearing firm-specific risks, these shareholders are the residual claimants on the full surplus of the firm; the ultimate goal of the firm is thus to maximize shareholder value. The other stakeholders collect only their outside option and are thus not exposed to firm-specific risks. The better diversification of firm-specific risks reduces the costs of international competition and creative destruction that is associated with innovation and productivity growth. The principle of maximization of shareholder value being the ultimate goal of the firm is at odds with the Rhineland philosophy of a balanced treatment of the interests of all stakeholders.

We have uncovered three paradoxes. First, workers' relinquishing all claims on the surplus of the firm does not conflict with the interests of workers as a whole. This is because capturing part of the firm's surplus raises the cost of capital for investment in new jobs. For workers as a group, the adverse effect of less job creation on wages more than outweighs the positive effect of capturing part of the firm's profits. Workers thus face a commitment problem. When entering the labour market as an outsider, they would like to promise that they are giving up future claims on the firm's surplus. After having secured their position as a senior insider, however, their interest is to claim the surplus after all. The interests of insiders thus diverge from the interests of outsiders. In open economies facing an elastic supply of capital, the associated conflict between outsiders and insiders is more serious than the traditional conflict between capital and labour.

The second paradox is that Anglo Saxon countries like the United States are not the closest approximation of the Utopian world of complete diversification of firm-specific risk in the capital market. A wealth of empirical evidence suggests that decentralized bargaining over wages allows workers to capture a substantial part of the firm's surplus. Of the three countries discussed in this paper, Denmark seems to be much closer to Utopia than is the United States. Some shared norms on what is proper compensation and some minimal forms of coordination in wage bargaining help to sustain the Utopian outcome and seem to be more important than corporate governance legislation. Since institutions such as coordination in wage bargaining and norms play an important role in getting to Utopia, collective action has an important role to play. By actively supporting the rights of outsiders and by denying insiders a share in the firm's surplus, a country can get close to Utopia, as Denmark shows. Politicians, however, face the temptation to please voters and incumbent workers with short-run gains at the expense of the surplus of future workers. Hence, while politics has an important role to play, it can be a mixed blessing.

The third paradox is that, while globalisation of capital markets has greatly increased the scope for diversification of firm-specific risk, it has also eroded the incentives for politicians to play their role properly. Globalisation has reduced the political support for protecting the claims of shareholders on the firm's surplus, since the majority of shareholders are foreigners. Hence, politicians may find it more difficult to convince voters that the claims of shareholders should be protected. However, the increased mobility of capital may help in this respect -- in that high wage claims may convince corporations at an earlier stage to move their factories abroad. In this way, the short-run labour-demand elasticity may get closer to the corresponding long-run elasticity. In any case, a more equal distribution of capital income (through e.g. pension saving of the middle class) may help to legitimise wage restraint of incumbent workers.

Finally, the transition from where we are now to Utopia is fraught with difficulties. Indeed, the problem is analogous to the transition from a pay-as-you-go to a funded pension system: one generation will have to pay twice. While society reaps long-run gains in efficiency, in the short run a generation of insiders will have to give up their rights without benefiting from increased job creation and higher starting wages: being insiders, they already have a job while having paid their dues in the past in terms of a low starting wage. Whereas the claims of older workers on the surplus of a firm may thus have some legitimacy, younger cohorts should be denied such moral claims. These problems require extreme political skill to solve. In particular, they may require some grandfathering provisions or explicit transfers from younger to older generations (e.g. by giving elderly workers temporary fiscal privileges). In any case, policymakers should avoid any step that brings them further away from Utopia. The way back is painful.

### Literature

- Abowd, J.M. and D. Card (1989), On the covariance of earnings and hours changes, *Econometrica*, 57, 411-445.
- Autor, D.H., W.R. Kerr and A.D. Kugler (2007) Does employment protection reduce productivity? Evidence from US states, *The Economic Journal*, 117, F189-F217.
- Bentolila, S. and G. Bertola (1990), Firings costs and labour demands: how bad is eurosclerosis?, *Review of Economic Studies*, 57, 381-402.
- Bentolila, S. and G. Saint-Paul (1992), The macroeconomic impact of flexible labor contracts, with an application to Spain, *European Economic Review*, 36, 1013-1047.
- Bertrand, M. and S. Mullanaithan (2003), Enjoying the quit life? Corporate governance and managerial preferences, *Journal of Political Economy*, III(5), 1043-1075.
- Blanchard, O. and P. Portugal (2001), What hides behind an unemployment rate: comparing Portuguese and US labor markets, *American Economic Review*, 91, 187-207.
- Buhai, S., M. Portela, C.N. Teulings and A. van Vuuren (2007), *Returns to tenure or to seniority?*, internal paper, Tinbergen Institute.
- Caballero, R.J., and M.L. Hammour (1999) *The limits of special interest; What causes three decades of high unemployment in Europe?*, MIT/Delta paper.
- Calmfors, L., and J. Driffill (1988), Bargaining structure, corporatism and macroeconomic performance, *Economic Policy*, 6.
- Chemla, G. (2005), Hold up, stakeholders, and takeover threats, *Journal of Financial Intermediation*, 14, 376-397.
- Clark, A. and F. Postel-Vinay (2006), *Job Security and Job Protection*, internal paper, University of Bristol.
- Deelen, A., E. Jongen and S. Visser (2006), Employment protection legislation. Lessons from theoretical and empirical studies for the Dutch case. *CPB document*, 135.
- Feldstein, M.S. and C. Horioka (1980), Domestic Saving and International Capital Flows, *Economic Journal*, 90, 314-329.
- Gibbons, R. and L. F. Katz (1991), Layoffs and Lemons, *Journal of Labor Economics*, 9, 351-380.
- Gordon, R.H. and A.L. Bovenberg (1996), Why is capital so immobile internationally? Possible Explanation and Implications for Capital Income Taxation, *American Economic Review*, 86, 1057-1075.
- Hartog, J. and C.N. Teulings (1998), *Corporatism or competition*, Cambridge: Cambridge University Press.



- Hosios, A.J. (1990), On the efficiency of matching and related models of search and unemployment, *Review of Economic Studies*, 57, 279-98
- Holmstrom, B. and P. Milgrom (1987), Aggregation and linearity in the provision of intertemporal incentives, *Econometrica*, 55, 303-328.
- Jovanovich, B. (1982), Selection and the evolution of industry, *Econometrica*, 50, 649-652
- Kraakman, R.R. *et al.* (2004), *The Anatomy of Corporate Law, A Comparative and Functional Approach*, Oxford University Press.
- Kuhn, P. (1988), A nonuniform pricing model of union wages and employment, *Journal of Political Economy*, 96, 473-508.
- Kuhn, P. and J. Robert (1989), Seniority and distribution in a two-worker trade union, *Quarterly Journal of Economics*, 485-505
- Lindbeck, A. and D. Snower (1990), Do cooperation and harassment explain involuntary unemployment?, *American Economic Review*, 80, 167-188.
- Low, H., C. Meghir and L. Pistaferri (2006), *Wage risk and employment risk over the life cycle*, IFS Working Papers, WO6/27
- Meghir, C., and L. Pistaferri (2004), Income variance dynamics and heterogeneity, *Econometrica*, 72, 101-32.
- Persson, P., G. Roland and G. Tabellini (2000), Comparative Politics and Public Finance, *Journal of Political Economy*, 108, 1121-1161.
- Rajan, R.G. (2005), *Has financial development made the world riskier?* NBER Working paper 11728.
- Shleifer A., and L. Summers (1988), Breach of trust in hostile takeovers,' in: A. Auerbach (ed.) *Corporate Takeovers: Causes and Consequences*, Chicago University Press, Chicago.
- Tirole, J. (1999), Corporate governance, *Econometrica*, 69, pp. 1-35.
- Topel, R.H. (1991), Specific capital, mobility and wages: wages rise with job seniority, *Journal of Political Economy*, 99, 145-176.
- Topel, R.H. and M.P. Ward (1992), Job mobility and careers of young men, *Quarterly Journal of Economics*, 107, 145-176.

# CESifo Working Paper Series

for full list see [www.cesifo-group.org/wp](http://www.cesifo-group.org/wp)

(address: Poschingerstr. 5, 81679 Munich, Germany, [office@cesifo.de](mailto:office@cesifo.de))

---

- 2120 Stefan Napel and Mika Widgrén, The European Commission – Appointment, Preferences, and Institutional Relations, October 2007
- 2121 Bertil Holmlund and Martin Söderström, Estimating Income Responses to Tax Changes: A Dynamic Panel Data Approach, October 2007
- 2122 Doina Maria Radulescu, From Separate Accounting to Formula Apportionment: Analysis in a Dynamic Framework, October 2007
- 2123 Jelle Brouwer, Richard Paap and Jean-Marie Viaene, The Trade and FDI Effects of EMU Enlargement, October 2007
- 2124 Kurt R. Brekke, Luigi Siciliani and Odd Rune Straume, Competition and Waiting Times in Hospital Markets, October 2007
- 2125 Alexis Direr, Flexible Life Annuities, October 2007
- 2126 Johannes Becker and Clemens Fuest, Quality versus Quantity – The Composition Effect of Corporate Taxation on Foreign Direct Investment, October 2007
- 2127 Balázs Égert, Real Convergence, Price Level Convergence and Inflation Differentials in Europe, October 2007
- 2128 Marko Koethenbueger, Revisiting the “Decentralization Theorem” – On the Role of Externalities, October 2007
- 2129 Axel Dreher, Silvia Marchesi and James Raymond Vreeland, The Politics of IMF Forecasts, October 2007
- 2130 Andreas Knabe and Ronnie Schöb, Subsidizing Extra Jobs: Promoting Employment by Taming the Unions, October 2007
- 2131 Michel Beine and Bertrand Candelon, Liberalization and Stock Market Co-Movement between Emerging Economies, October 2007
- 2132 Dieter M. Urban, FDI Technology Spillovers and Wages, October 2007
- 2133 Valentina Bosetti, Carlo Carraro, Emanuele Massetti and Massimo Tavoni, Optimal Energy Investment and R&D Strategies to Stabilise Greenhouse Gas Atmospheric Concentrations, October 2007
- 2134 David-Jan Jansen and Jakob de Haan, The Importance of Being Vigilant: Has ECB Communication Influenced Euro Area Inflation Expectations?, October 2007

- 2135 Oliver Falck, Heavyweights – The Impact of Large Businesses on Productivity Growth, October 2007
- 2136 Xavier Freixas and Bruno M. Parigi, Banking Regulation and Prompt Corrective Action, November 2007
- 2137 Jan K. Brueckner, Partial Fiscal Decentralization, November 2007
- 2138 Silvia Console Battilana, Uncovered Power: External Agenda Setting, Sophisticated Voting, and Transnational Lobbying, November 2007
- 2139 Alan J. Auerbach, Michael P. Devereux and Helen Simpson, Taxing Corporate Income, November 2007
- 2140 Lorenzo Cappellari, Paolo Ghinetti and Gilberto Turati, On Time and Money Donations, November 2007
- 2141 Roel Beetsma and Heikki Oksanen, Pension Systems, Ageing and the Stability and Growth Pact, November 2007
- 2142 Hikaru Ogawa and David E. Wildasin, Think Locally, Act Locally: Spillovers, Spillbacks, and Efficient Decentralized Policymaking, November 2007
- 2143 Alessandro Cigno, A Theoretical Analysis of the Effects of Legislation on Marriage, Fertility, Domestic Division of Labour, and the Education of Children, November 2007
- 2144 Kai A. Konrad, Mobile Tax Base as a Global Common, November 2007
- 2145 Ola Kvaløy and Trond E. Olsen, The Rise of Individual Performance Pay, November 2007
- 2146 Guglielmo Maria Caporale, Yannis Georgellis, Nicholas Tsitsianis and Ya Ping Yin, Income and Happiness across Europe: Do Reference Values Matter?, November 2007
- 2147 Dan Anderberg, Tax Credits, Income Support and Partnership Decisions, November 2007
- 2148 Andreas Irmen and Rainer Klump, Factor Substitution, Income Distribution, and Growth in a Generalized Neoclassical Model, November 2007
- 2149 Lorenz Blume, Jens Müller and Stefan Voigt, The Economic Effects of Direct Democracy – A First Global Assessment, November 2007
- 2150 Axel Dreher, Pierre-Guillaume Méon and Friedrich Schneider, The Devil is in the Shadow – Do Institutions Affect Income and Productivity or only Official Income and Official Productivity?, November 2007
- 2151 Valentina Bosetti, Carlo Carraro, Emanuele Massetti and Massimo Tavoni, International Energy R&D Spillovers and the Economics of Greenhouse Gas Atmospheric Stabilization, November 2007

- 2152 Balázs Égert and Dubravko Mihaljek, Determinants of House Prices in Central and Eastern Europe, November 2007
- 2153 Christa Hainz and Hendrik Hakenes, The Politician and his Banker, November 2007
- 2154 Josef Falkinger, Distribution and Use of Knowledge under the “Laws of the Web”, December 2007
- 2155 Thorvaldur Gylfason and Eduard Hochreiter, Growing Apart? A Tale of Two Republics: Estonia and Georgia, December 2007
- 2156 Morris A. Davis and François Ortalo-Magné, Household Expenditures, Wages, Rents, December 2007
- 2157 Andreas Haufler and Christian Schulte, Merger Policy and Tax Competition, December 2007
- 2158 Marko Köthenbürger and Panu Poutvaara, Rent Taxation and its Intertemporal Welfare Effects in a Small Open Economy, December 2007
- 2159 Betsey Stevenson, Title IX and the Evolution of High School Sports, December 2007
- 2160 Stergios Skaperdas and Samarth Vaidya, Persuasion as a Contest, December 2007
- 2161 Morten Bennedsen and Christian Schultz, Arm’s Length Provision of Public Services, December 2007
- 2162 Bas Jacobs, Optimal Redistributive Tax and Education Policies in General Equilibrium, December 2007
- 2163 Christian Jaag, Christian Keuschnigg and Mirela Keuschnigg, Pension Reform, Retirement and Life-Cycle Unemployment, December 2007
- 2164 Dieter M. Urban, Terms of Trade, Catch-up, and Home Market Effect: The Example of Japan, December 2007
- 2165 Marcelo Resende and Rodrigo M. Zeidan, Lionel Robbins: A Methodological Reappraisal, December 2007
- 2166 Samuel Bentolila, Juan J. Dolado and Juan F. Jimeno, Does Immigration Affect the Phillips Curve? Some Evidence for Spain, December 2007
- 2167 Rainald Borck, Federalism, Fertility and Growth, December 2007
- 2168 Erkki Koskela and Jan König, Strategic Outsourcing, Profit Sharing and Equilibrium Unemployment, December 2007
- 2169 Egil Matsen and Øystein Thøgersen, Habit Formation, Strategic Extremism and Debt Policy, December 2007

- 2170 Torben M. Andersen and Allan Sørensen, Product Market Integration and Income Taxation: Distortions and Gains from Trade, December 2007
- 2171 J. Atsu Amegashie, American Idol: Should it be a Singing Contest or a Popularity Contest?, December 2007
- 2172 Patricia Apps and Ray Rees, Household Models: An Historical Perspective, December 2007
- 2173 Ben Greiner, Axel Ockenfels and Peter Werner, The Dynamic Interplay of Inequality and Trust – An Experimental Study, December 2007
- 2174 Michael Melvin and Magali Valero, The Dark Side of International Cross-Listing: Effects on Rival Firms at Home, December 2007
- 2175 Gebhard Flaig and Horst Rottmann, Labour Market Institutions and the Employment Intensity of Output Growth. An International Comparison, December 2007
- 2176 Alexander Chudik and M. Hashem Pesaran, Infinite Dimensional VARs and Factor Models, December 2007
- 2177 Christoph Moser and Axel Dreher, Do Markets Care about Central Bank Governor Changes? Evidence from Emerging Markets, December 2007
- 2178 Alessandra Sgobbi and Carlo Carraro, A Stochastic Multiple Players Multi-Issues Bargaining Model for the Piave River Basin, December 2007
- 2179 Christa Hainz, Creditor Passivity: The Effects of Bank Competition and Institutions on the Strategic Use of Bankruptcy Filings, December 2007
- 2180 Emilia Del Bono, Andrea Weber and Rudolf Winter-Ebmer, Clash of Career and Family: Fertility Decisions after Job Displacement, January 2008
- 2181 Harald Badinger and Peter Egger, Intra- and Inter-Industry Productivity Spillovers in OECD Manufacturing: A Spatial Econometric Perspective, January 2008
- 2182 María del Carmen Boado-Penas, Salvador Valdés-Prieto and Carlos Vidal-Meliá, the Actuarial Balance Sheet for Pay-As-You-Go Finance: Solvency Indicators for Spain and Sweden, January 2008
- 2183 Assar Lindbeck, Economic-Social Interaction in China, January 2008
- 2184 Pierre Dubois, Bruno Jullien and Thierry Magnac, Formal and Informal Risk Sharing in LDCs: Theory and Empirical Evidence, January 2008
- 2185 Roel M. W. J. Beetsma, Ward E. Romp and Siert J. Vos, Intergenerational Risk Sharing, Pensions and Endogenous Labor Supply in General Equilibrium, January 2008
- 2186 Lans Bovenberg and Coen Teulings, Rhineland Exit?, January 2008