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MARKET REFORM: A CONTRACT
THEORY APPROACH**

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ABSTRACT

Unemployment and Labour Market Reform: A Contract Theory Approach*

Why do many democracies fail to reform their labour market institutions? We study the feasibility of reforms that include the compensation of the insiders for the removal of labour market regulations. In our model, workers differ in their ability to perform well on a liberalized labour market. The workers' ability is unobservable for the government. This informational asymmetry generates additional costs for a government that wants to implement a compensation package together with a labour market reform. Under asymmetric information, a reformer who wants to 'buy' the approval of voters has to pay them an informational rent in addition to the pure costs of compensation that would arise under symmetric information. In this setting unemployment may be constrained Pareto-efficient. Consequently, no reform is accepted unanimously by voters. We show that this result can further be strengthened: under majority voting, labour market reforms may fail politically because there exists no reform package that gets the approval of a majority of voters. Our model explains the emergence of political deadlocks, where low rates of unemployment can be removed in the political process, but high rates of unemployment tend to be politically stable.

JEL Classification: D70, E61, J68

Keywords: unemployment, labour market reform, political deadlocks

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NON-TECHNICAL SUMMARY

Why do many democracies fail to reform their labour market institutions? Recent politico-economic literature has begun to address this important question. In particular some attempts have been made to analyse the likelihood of labour market reform programs surviving the political process. The main argument of this literature is that the labour market reforms which are discussed are not Pareto-improving moves. Instead, they redistribute income from employed insiders to the unemployed outsiders. This point has been put forward by Gilles Saint Paul who argues that 'many of the reforms that would reduce unemployment are unpopular because they would remove regulations that benefit the insiders'. Given that insiders outnumber the outsiders, it is plausible that reforms fail politically. Although this view contributes to our understanding of the failure of reforms, one key question remains open: why do democracies not select programs for labour market reform that do make everybody better off?

This Paper addresses that question. Our proposed answer is that asymmetric information about the gains and losses from a reform may make it impossible to design a reform package that makes everybody better off. Under asymmetric information, a reformer who wants to 'buy' the approval of voters has to pay them an informational rent in addition to the pure costs of compensation that would arise under symmetric information. This is why a reformer may be unable to design a balanced-budget compensation scheme for all the losers of a reform. If this is the case, then unemployment is constrained Pareto-efficient. This means that a planner who is subject to informational constraints cannot propose a mechanism to the population that makes everybody better off. The fact that unemployment may be constrained Pareto-efficient explains why it cannot be removed without political conflict. We will show that this result can be further strengthened: under certain conditions, no reform package exists that gets the approval of a majority of the voters. Under asymmetric information a labour market reform may be non-implementable, because even the compensation of a majority of voters is too costly.

We address these issues, applying the tools of contract theory to a stylized model of a labour market with asymmetric information. Our main assumption is that the losers from a labour market reform can be grouped into different categories according to their ability to cope with the liberalized system. Some high-ability workers do not suffer significantly from a labour market reform, because they can easily adjust to the more competitive conditions, while a second group of agents incurs significant losses even if these agents provide additional effort. Finally, there are low-ability agents who do not have the skills

to adjust to the liberalized system. These agents are the biggest losers from an uncompensated labour market reform.

The *status-quo* of our economy is characterized by real wages above the market clearing level. For this reason there is unemployment. We consider a situation where policy-makers know what type of reform they have to implement in order to reduce unemployment. A labour market reform leads to lower wages and lower unemployment and it increases the aggregate payoff of workers. With full information a reform that is combined with appropriate side-payments from outsiders to insiders can make everybody better off. In a world with asymmetric information, additional costs for the government arise. This is why a reform may become non-implementable. Our model exhibits the interesting feature that low rates of unemployment can be removed more easily than high ones. An economy may get politically deadlocked in a situation with high-unemployment and low acceptance for reforms.

1 Introduction

High unemployment is considered as the major economic and political problem in many societies. There is an unanimous agreement that high rates of unemployment are bad and that governments should try to reduce them. A reason for this consensus may be that involuntary unemployment is apparently Pareto-inefficient. Loosely speaking: if everybody worked, the size of the pie would be larger and everybody could be made better off. In the light of this argument it is surprising that unemployment is not easily removed in the political process. Why do some democracies fail to reduce unemployment? A recent politico-economic literature has begun to address this important question. In particular some attempts have been made to analyze the chance of labor market reform programs to survive the political process.¹ The main argument of this literature is that the labor market reforms that are discussed are not Pareto-improving moves. Instead, they redistribute income from employed insiders to the unemployed (outsiders). This point has been put forward by Saint Paul (1996a) who argues that "many of the reforms that would reduce unemployment are unpopular because they would remove regulations that benefit the insiders". Given that insiders number out the outsiders, it is plausible that reforms fail politically. Although this view contributes to our understanding of the failure of reforms, one key question remains open: Why do democracies not select programs for labor market reform that do make everybody better off? Or, stated in more technical terms: if only full employment is Pareto-optimal, then why do politicians not propose and implement Pareto-improving reforms?

This paper addresses this question. Our proposed answer is that asymmetric in-

¹c.f. Saint Paul (1995, 96a,b, 97) and Olson (1997). Coe and Snower (1997) argue that the failure of reforms may be due to the fact that complementarities among different labor market reforms often remain unexploited.

formation about the gains and losses from a reform may make it impossible to design a Pareto-improving reform package. Under asymmetric information, a reformer who wants to "buy" the approval of voters has to pay them an informational rent in addition to the pure costs of compensation that would arise under symmetric information. This is why a reformer may be unable to design a balanced-budget compensation scheme for all the losers of a reform. If this is the case then unemployment is constrained Pareto-efficient. This means that a planner who is subject to informational constraints cannot propose a mechanism to the population that makes everybody better off. The fact that unemployment may be constrained Pareto-efficient explains why it cannot be removed without political conflict. We will show that this result can further be strengthened: under certain conditions no reform-package exists that gets the approval of a majority of the voters. A labor market reform may be non-implementable because even the compensation of a majority of voters is too costly.

We address these issues applying the tools of contract theory to a stylized model of a labor market with asymmetric information. Our main assumption is that the losers from a labor market reform can be grouped into different categories according to their ability to cope with the liberalized system. Some high-ability workers do not suffer significantly from a labor market reform because they can easily adjust to the more competitive conditions while a second group of agents incurs significant losses even if these agents provide additional effort. Finally, there are low-ability agents who do not have the skills to adjust to the liberalized system. These agents are the biggest losers from an uncompensated labor market reform.

The status-quo of our economy is characterized by real wages above the market clearing level. For this reason there is unemployment. We consider a situation where policymakers know what type of reform they have to implement in order to reduce unemployment. A labor market reform leads to lower wages and lower unemployment and it increases the aggregate payoff of workers. With full information a reform

that is combined with appropriate side-payments from outsiders to insiders can make everybody better off.² In a world with asymmetric information additional costs for the government arise. This is why a reform may become non-implementable. Our model exhibits the interesting feature that low rates of unemployment can be removed more easily than high ones. An economy may get politically deadlocked in a situation with high-unemployment and low acceptance for reforms.

This paper is related to a growing number of contributions that study the political viability of policy reforms. It is most closely related to the seminal work of Fernandez and Rodrik (1991) who discuss the viability of a reform when individuals are uncertain about whether they are among the winners or the losers of the reform. In their paper individuals and politicians are symmetrically uninformed about the individual consequences of a reform. The present paper takes an orthogonal view, granting the individuals an informational advantage with respect to the government's agencies.

In Section 2 we present our model. In Section 3 we study in detail the allocative efficiency of states with unemployment and we provide an example where neither a compensated nor an uncompensated reform is politically implementable. Section 4 studies how changes in the unemployment rate affect the political equilibrium. In Section 5 we discuss other applications of our theoretical framework.

²Note that, insofar as the labor market reform increases the payoffs of the owners of capital, one could also imagine side payments from these agents to the insiders. We neglect the side of capital owners in our analysis for two reasons. Firstly, our main point can be made by restricting ourselves to side payments among workers; adding taxes on capital would not affect the logic of our argument. Secondly, in a world with mobile capital and immobile labor the possibilities for a country to raise taxes on capital are very limited. In absence of international fiscal coordination it is more likely that compensation schemes must be financed through taxes on the relatively more immobile factor.

2 The Model

2.1 Agents and Information Structure

We consider a voting population consisting exclusively of workers of total mass one. A worker can be more or less productive when he is employed in a firm. His productivity is either high (H) or low (L). Workers differ in their ability. The ability of a worker may take three values: high h , medium m , and low l . We denote the share of agents with ability j by $\mu_j > 0$, $j = h, m, l$. A worker's productivity depends upon his effort. The productivity is high if and only if the worker provides effort. Effort comes at a finite cost c_j ($j = h, m, l$) which is measured in monetary units. We assume that $\infty = c_l > c_m > c_h > 0$. For a low ability agent effort is infinitely costly, he always has a low productivity level. A worker's productivity (or equivalently his effort) is verifiable and contractible for firms and for the government. A worker's ability is his private information.

2.2 Sequence of Events

The model has two stages, in both stages firms employ labor and produce output. At date 1 labor market institutions are such that all firms must pay all their employed workers the same excessive wage w^+ . We will refer to this situation as the status-quo. At the wage w^+ the labor market does not clear; hence, at date 1 the working population consists of a share of $1-u$ employed and u unemployed workers, $1 > u > 0$. The employment status of an agent at date 1 is indexed with $I = E, U$. A worker is characterized by his employment status at date 1 and by his ability. We denote the share of agents with employment status I and ability j by μ_j^I . We assume for simplicity that at date 1 the abilities are distributed in the same way among the

employed and the unemployed³, i.e.:

$$\mu_j = \frac{\mu_j^U}{u} = \frac{\mu_j^E}{1-u}, \quad j = h, m, l. \quad (1)$$

We normalize unemployment benefits to zero; adding positive unemployment benefits would not add anything but notation. Hence, a worker's payoff is w^+ if he is employed and zero otherwise. No worker provides effort because by assumption w^+ has to be paid independently of the workers' productivity.⁴

At date 1 the government may propose a labor market reform to the agents. The program gets implemented if a majority of the working population (employed and unemployed) votes in favor of it. Otherwise the status quo prevails. At date 2 either the labor market regulations are removed or the wage remains fixed at w^+ and the employment status of the agents does not change.

On a liberalized labor market there are no legal restrictions on the contracts between a worker and a firm. Hence, it is possible to link a worker's salary to his productivity. We assume that on a liberalized labor market all workers are employed. After a labor market reform all productive workers receive a wage of w_H , and all unproductive workers receive a wage of $w_L < w_H$. Throughout the paper we take the wages w_L , w_H as well as the initial wage and unemployment rate as exogenously given. We show in the appendix of the paper how one can derive the values of w_H and w_L as well as the relationship between w^+ and u endogenously from some decreasing

³Assuming instead that the distributions differ would not affect any of our results.

⁴Assuming instead that w^+ is a minimum wage would not affect any of our results, but it would complicate the analysis slightly. Under a minimum wage, the status quo (date 1) may be characterized by contracts that link the wage to a worker's productivity. A low-productivity worker would have to be paid w^+ while a high-productivity worker could be paid more. A political reform could then condition transfers on date 1 productivity. However, informational rents would still accrue to workers in this setting and this would raise the cost of compensation.

returns production technology, assuming that firms hire labor competitively. We do not present this microfoundation in the body of the paper because it adds nothing important to our story.

The costs of effort are such that providing effort yields a higher surplus to the medium ability worker than shirking:

$$w_H - c_m > w_L. \tag{2}$$

Note that this implies that high-ability agents want to provide effort too.

If the reform does not get implemented, the wage for all workers remains at the level w^+ at date 2. Besides disutility from providing effort there is no disutility from work. All agents maximize expected date 2 income.

3 Reform Programs

3.1 The Government's Budget Constraint

A policy is called a labor market reform if it includes the removal of the labor market regulations. A labor market reform may also include taxes on some agents' income and transfers to others. We require the transfers to be financed through taxes, i.e. the reform includes the way in which it is financed. Since workers' ability is unobservable, the taxes and transfers can only be made contingent on the employment status at date 1 and on the market wage of the agent at date 2.⁵ We denote the transfer to an agent with employment status I and with wage w_J by t_J^I ($J = H, L$). The vector of

⁵The corresponding direct mechanism asks each worker for his type and assigns each type a monetary payoff (wage plus transfer) and an effort level. Obviously, such a mechanism is incentive compatible if and only if agents with identical employment status and effort level obtain the same monetary payoff. Otherwise some agents would not report their type truthfully.

all transfers is denoted by $t = (t_H^U, t_L^U, t_H^E, t_L^E)$.

At date 2 a reform induces the effort of type j agents with employment status I if:

$$w_H + t_H^I - c_j \geq w_L + t_L^I \Leftrightarrow \quad (3)$$

$$s_j \quad : \quad = w_H - w_L - c_j \geq t_L^I - t_H^I. \quad (4)$$

This means that the surplus s_j that is generated by the effort of a type j agent must exceed the transfer differential $t_L^I - t_H^I$. Note again that if medium ability agents provide effort then high-ability agents do so too. We may write the productivity of a worker of type (I, j) as a function of the transfer vector t :

$$e_j^I(t) = \begin{cases} 1 & \text{if } s_j \geq t_L^I - t_H^I \\ 0 & \text{otherwise.} \end{cases} \quad (5)$$

The budget constraint of the government is then:

$$\sum_I \sum_j \mu_j^I \left[e_j^I(t) t_H^I + (1 - e_j^I(t)) t_L^I \right] = 0. \quad (6)$$

3.2 Implementable Reforms

A reform gets the support of an employed agent of ability j if:

$$e_j^E(t) (w_H + t_H^E - c_j) + (1 - e_j^E(t)) (w_L + t_L^E) \geq w^+. \quad (7)$$

It gets the support of an unemployed agent if:

$$e_j^U(t) (w_H + t_H^U - c_j) + (1 - e_j^U(t)) (w_L + t_L^U) \geq 0. \quad (8)$$

We may define:

Definition 1 *A reform is called implementable if it fulfills the government's budget constraint (6) and if it is supported by a majority of voters. A reform is called Pareto-improving if it fulfills the government's budget constraint and if it makes every voter better off, i.e. if (6), (7) and (8) hold for $I = U, E$; $j = h, m, l$.*

4 The Impossibility of Reforms

4.1 Informational Rents of Winners and Losers

In the above framework reforms may be non-implementable although the status-quo is Pareto-inefficient. A reformer faces two difficulties. The first problem is that under asymmetric information it is overly costly to compensate the insiders for the losses from a reform. A reform that makes the medium ability agents provide effort, generates additional costs since the government cannot distinguish between medium and high-ability agents who provide effort. Any transfer that is paid to medium-ability agents is also paid to high ability agents. If one does not want to pay excessive transfers to the high-ability agents then medium ability agents do not provide effort. If medium ability agents shirk then they get the same compensation as their low-ability colleagues. This may be too costly if there are too many medium ability agents. To study this issue formally we denote the aggregate losses of insiders from a reform without compensation by

$$L^E := \mu_l^E (w^+ - w_L) + \mu_m^E (w^+ - (w_H - c_m)) + \mu_h^E (w^+ - (w_H - c_h)). \quad (9)$$

Our first proposition states that the costs of compensation of the insiders under imperfect information exceed those under perfect information.

Proposition 1 *It costs strictly more than L^E to compensate all insiders for the re-*

moval of labor market regulations.

PROOF We have to distinguish three cases: (i) $w^+ \geq w_H$, (ii) $w_H > w^+ \geq w_H - c_m$, (iii) $w_H - c_m > w^+ > w_L$. We proof the proposition for case (i), the proof for the other two cases works analogously. The compensation of the low-ability insiders necessitates transfers of at least $t_L^E = w^+ - w_L$. If, after the reform, medium or high-ability agents do not provide effort then they also get this transfer. Suppose that medium ability agents do not provide effort while high ability agents do. In this case the total cost is at least $(\mu_m^E + \mu_l^E)(w^+ - w_L) + \mu_h^E(w^+ - (w_H - c_h))$ which from (2) is more than L^E . If both medium and high ability agents do not provide effort then costs are at least $(1 - u)(w^+ - w_L) > L^E$. Next consider a reform that induces effort of high and medium-ability agents. Transfers must be $t_H^E = w^+ - (w_H - c_m)$ to compensate medium ability agents. This is more than would be needed under full information in order to compensate the high-ability agents. The total cost in this case is at least $\mu_l^E(w^+ - w_L) + (\mu_m^E + \mu_h^E)(w^+ - (w_H - c_m)) > L^E$. Q.E.D.

The second problem concerns the unemployed. These agents gain from a labor market reform. Part of this gain could be used to compensate the insiders for their losses. However, under asymmetric information one cannot tax the high-ability unemployed more than the medium unemployed although they generate a higher surplus. Otherwise this would eradicate incentives to provide effort for the medium ability workers. Hence, one cannot extract the whole surplus from these agents. We denote the maximum amount that can be raised from the outsiders by T^{\max} and their gains from reform by

$$G^U := \mu_l^U w_L + \mu_m^U (w_H - c) + \mu_h^U (w_H - c_h). \quad (10)$$

We have:

Proposition 2 *It is impossible to extract the gains from reform from the unemployed, i.e. $T^{\max} < G^U$.*

PROOF The entire surplus is extracted from the high ability agents only if $t_H^U = w_H - c_h$ and from the low-ability agents if $t_L^U = w_L$. If both conditions hold then the medium ability agents' incentive constraint is violated. These agents get a zero payoff if they do not provide effort. If they provide effort they get a net wage of $w_H - t_H^U = c_h$ and their payoff is:

$$w_H - c_m - t_H^U = \tag{11}$$

$$w_H - c_m - (w_H - c_h) = \tag{12}$$

$$c_h - c_m < 0. \tag{13}$$

Q.E.D.

4.2 Constrained Pareto-Optimal Unemployment

An immediate consequence of Proposition 1 and 2 is that unemployment may be constrained Pareto-optimal. This means that, although Pareto-superior allocations exist (if one only considers technological constraints), a planner who is subject to the economy's informational constraints cannot implement one of them. We have:

Corollary 1 *There are wage levels w^+, w_H, w_L , costs c_j , unemployment rates u , and shares μ_j such that (i) the status-quo is Pareto-inefficient and (ii) there is no Pareto-improving reform.*

To proof the corollary it suffices to consider any situation where the gains of outsiders are just sufficient to cover the losses from insiders, i.e. $G^U = L^E + \varepsilon$, where ε can be chosen arbitrarily small. It then immediately follows from Proposition 1 and 2 that there is no Pareto-improving transfer scheme.⁶ The next proposition further

⁶Note that our explanation for the constrained efficiency of unemployment differs from the one provided in efficiency wage models such as Shapiro and Stiglitz (1984). In these models workers'

strengthens this result. We show that there are cases where a reform cannot be implemented through majority voting despite the fact that the status quo is Pareto-inefficient.

Proposition 3 *There are wage levels $w^+ > w_H > w_L$, costs c_j , unemployment rates u , and shares μ_j such that simultaneously, (i) the status quo is inefficient, (ii) an uncompensated reform is opposed by all insiders, and (iii) any balanced-budget reform with compensation is rejected by a majority of voters.*

PROOF It suffices to provide an example. Consider the following situation where the unemployment rate is ten percent, $u = 0.1$. Table 1 displays the values of μ_j^I .

Table 1: μ_j^I

$I \setminus j$	l	m	h
E	0.6	0.2	0.1
U	0.0666	0.0222	0.0111

In this situation a policy reform is adopted if and only if it benefits the low-ability employed agents. We normalize $w_L = 1$ and fix

$$w^+ = 1.15, \tag{14}$$

$$w_H = 1.14, \tag{15}$$

$$c_m = 0.05. \tag{16}$$

effort is not perfectly observable for firms. If monetary incentives for workers are excluded then unemployment is needed as a worker discipline device. In the present model monetary incentives for workers are feasible. However, unemployment may be constrained efficient because worker's types are unobservable.

Moreover, we fix c_h arbitrarily close to zero. We first check whether the allocation without reform yields a lower total surplus to workers than the one with reform. The incomes of all agents without reform is $(1 - u) \cdot w^+ = 0.9 \cdot 1.15 = 1.035$. Note that no worker provides effort. After a reform there are 0.666 low ability workers, 0.22 medium ability workers who provide effort and 0.11 high-ability employed agents. The surplus is $0.666 + 0.222 \cdot 1.09 + 0.111 \cdot 1.14 = 1.0356 > 1.035$.

What is the maximum amount of taxes that can be raised from the unemployed? Two possibilities have to be considered. One can either fix taxes such that the medium ability unemployed prefer working to shirking, i.e.:

$$t_L^U = -w_L. \quad (17)$$

$$t_H^U = -(w_H - c_m). \quad (18)$$

The per capita revenues are then approximately $0.0666 \cdot 1 + 0.0333 \cdot 1.09 = 0.1029$.

Otherwise one may fix

$$t_L^U = -w_L. \quad (19)$$

$$t_H^U = -(w_H - c_h). \quad (20)$$

In this case only the high-ability workers provide effort. This yields revenues of $0.0888 \cdot 1 + 0.0111 \cdot 1.14 = 0.10155$. Hence $T^{\max} = 0.1029$.

An implementable reform has to include transfers of 0.15 to the low-ability employed workers. This would cost $0.6 \cdot 0.15 = .09 < T^{\max}$. However, if one does not pay a transfer to the productive employed workers then the medium ability ones do not provide effort and get the full transfer of 0.15. This costs at least $(0.6 + 0.2) \cdot 0.15 = 0.12$. If, instead one pays them the amount of at least $t_H^E = 0.15 - 0.05 = 0.1$, then they will work. The total cost of the transfer scheme is then $0.6 \cdot 0.15 + 0.3 \cdot 0.1 = 0.12$ which is also more than T^{\max} . Q.E.D.

Figure 1 provides a graphical exposition of our proof. On the ordinate we have arranged the different types of workers, first the u unemployed, then the $1 - u$ employed. They are ordered according to their ability, from l to h (left to right). On the abscise we have the payoffs of the different agents. The areas A and B characterize the aggregate gains of the unemployed from a labor market reform without compensation package. The areas C , D , and F represent the aggregate losses from such a reform for the low-, medium- and high-ability insiders. Unemployment is Pareto-inefficient since $A + B > C + D + F$. A reformer who wants to compensate the low-ability insiders has to pay more to all the insiders than just $C + D + F$. If the reformer pays the low-productivity agents a transfer $t_L = w^+ - w_L$ then the medium and high ability agents need a net payoff of w^+ if they shall provide effort. The reform then costs $C + D + F + G > A + B$. A reform that eradicates incentives of medium ability agents costs at least $C + D + E$ which again is more than $A + B$.

5 Political Deadlocks

Some European countries that are characterized by increasing rates of unemployment do not make much progress in liberalizing labor markets. Does a deterioration of the situation on the labor markets increase chances for a labor market reform or are the two disconnected? Our model permits us to address this question. In order to study the issue formally we consider an economy where the competitive wages w_H and w_L and the shares μ_i are given. So far we have taken both the rigid wage w^+ and initial unemployment u as given. We now assume that they are linked through a labor demand schedule $u(w^+)$; hence only the rigid wage or initial unemployment is exogenous. We shall assume that full employment without effort can only be maintained when $w^+ = w_L$, i.e.: $u(w_L) = 0$.

We begin by characterizing the combinations of excessive wages w^+ and unem-

ployment u such that the status quo is Pareto-inefficient. Inefficiency requires that the aggregate wages in the status quo are less than wages minus costs of effort after a reform, i.e.:

$$(1 - u)w^+ < \mu_l w_L + \mu_m (w_H - c_m) + \mu_h (w_H - c_h). \quad (21)$$

The inefficient combinations of w^+ and u are depicted in Figure 2, they lie below the curve $e(u)$. Next we want to characterize the combinations of w^+ and u where unemployment is not removable in a reform. We consider a situation where the low-ability employed workers constitute a majority of the population when unemployment is not too large. First consider that a reform where the medium ability agents work is not implementable if:

$$\mu_l^E (w^+ - w_L) + (\mu_m^E + \mu_h^E) (w^+ - (w_H - c_m)) > \mu_l^U w_L + (\mu_m^U + \mu_h^U) (w_H - c_m) \Leftrightarrow \quad (22)$$

$$(1 - u)w^+ > \mu_l w_L + (\mu_m + \mu_h) (w_H - c_m). \quad (23)$$

A reform where the medium ability agents shirk is not implementable if:

$$(\mu_l^E + \mu_m^E) (w^+ - w_L) + \mu_h^E (w^+ - (w_H - c_h)) > (\mu_l^U + \mu_m^U) w_L + \mu_h^U (w_H - c_h) \Leftrightarrow \quad (24)$$

$$(1 - u)w^+ > (\mu_l + \mu_m) w_L + \mu_h (w_H - c_h). \quad (25)$$

Note that the right-hand side of (21) exceeds the right-hand sides of (23) and (25). In Figure 2 the status-quo situations above the curve $r(u)$ are the ones where no reform is implementable.

The labor demand schedule passes through point A in Figure 2 which lies below $r(u)$ since w_L is smaller than the right-hand sides of (23) and (25). At points on the labor demand schedule close to A a labor market reform is still feasible. However, if labor demand is not too elastic, an increase of w^+ leads the economy into a political deadlock where Pareto-inefficient unemployment cannot be removed. Rising unemployment may therefore be associated with lower chances for political reform. Higher unemployment only increases the chances for a labor market reform if either (i) the demand schedule leaves the area between $r(u)$ and $e(u)$ or (ii) if unemployment is so high that the low-ability insiders no longer constitute a majority of voters.

6 Conclusion

Three disenchanting conclusions can be drawn from our analysis. Firstly, blatant inefficiencies such as unemployment may be something a democratic society has to live with. Secondly, higher unemployment may adversely affect the chances of a political reform. Thirdly, unemployment may be constrained Pareto-efficient, i.e. the Pareto-criterion is not sufficient to identify unemployment as an undesirable state. Unemployment can only be coined as undesirable if one is willing to employ additional criteria of fairness.⁷

Policy reforms may be unfeasible if winners and losers are better informed about their ability to adjust to the reform than the government. Asymmetric information generates additional costs for any reform package that is designed to compensate the losers. It also reduces the revenues that can be raised from those who gain from the reform. In the present model the agents had an informational advantage concerning

⁷One such criterion is the one according to which equal agents should be treated equally. Involuntary unemployment is certainly at odds with this basic criterion of justice.

their ability to cope with the reform. Another source of informational rents that was not considered here is the agents' unknown ability to cope with the status quo in the future. In particular, one should expect that (un-) employed agents have an informational advantage concerning their future chances to become unemployed (find employment) if rigidities are not removed.

While our particular model was designed to show that asymmetric information may render a labor market reform impossible, our insights are of more general relevance. Many reforms such as removing subsidies to firms, trade liberalization, agricultural reform, etc. are likely to increase the size of the pie that can be distributed among agents. Under symmetric information, a government could easily design an appropriate compensation scheme for the losers from the reform. However, in all three cases it may be difficult to distinguish those who can easily adjust to a reform from the real losers who need a larger compensation. In such a situation a government faces difficulties to get the support of all the agents who are affected by a reform.

7 Appendix

This appendix provides a microfoundation for the values w_H and w_L and for the labor demand schedule. We normalize the number of workers to one. An unproductive worker generates one unit of productive labor and a productive worker generates $1 + a$ units, $a > 0$. There are many identical firms with a concave technology $y = f(l)$ where l measures productive labor. All firms act as price takers. We denote the average productivity of all employed workers by ϕ . The aggregate technology when all firms have identical inputs is $Y = F(L)$ where $L = (1 - u)\phi$. In the status-quo the wage is w^+ . The expected productivity of a worker is 1 since no worker provides effort when employed at the fixed wage w^+ . Firms are price takers, hence aggregate

labor demand satisfies:

$$F'(1 - u) = w^+. \quad (26)$$

On a liberalized market *an equilibrium* is characterized by a wage for productive and unproductive workers, w_H and w_L and by effort decisions of all workers such that

(i) the effort decision of each worker is optimal given the wages and the transfer scheme t ,

(ii) the wages of the two types of labor equal their marginal product,

(iii) there is full employment.

As a consequence of (ii) the equilibrium wages must satisfy:

$$w_H = (1 + a)w_L. \quad (27)$$

We first consider a possible equilibrium where high- and medium ability workers provide effort. In this case $1 + (\mu_h + \mu_m)a$ units of productive labor are employed.

The wage w_L equals the marginal product of efficient labor:

$$w_L = F'(1 + (\mu_h + \mu_m)a). \quad (28)$$

Next consider a possible equilibrium where only high-ability workers provide effort.

The wage w_L equals the marginal product of efficient labor:

$$w_L = F'(1 + \mu_h a). \quad (29)$$

Our example from Proposition 3 can be derived from any technology that satisfies $a = 0.14$, $F'(0.9) = 1.15$ and

$$F'(1 + 0.3333 \cdot 0.14) = 1 \Leftrightarrow F'(1.0467) = 1. \quad (30)$$

In the body of the paper we assumed for simplicity that the wages w_H , w_L do not change if medium-ability workers provide effort. This requires that $F'(1 + 0.1111 \cdot 0.14)$ is close to 1. These three conditions are satisfied by an infinity of concave production functions.

Figure 1

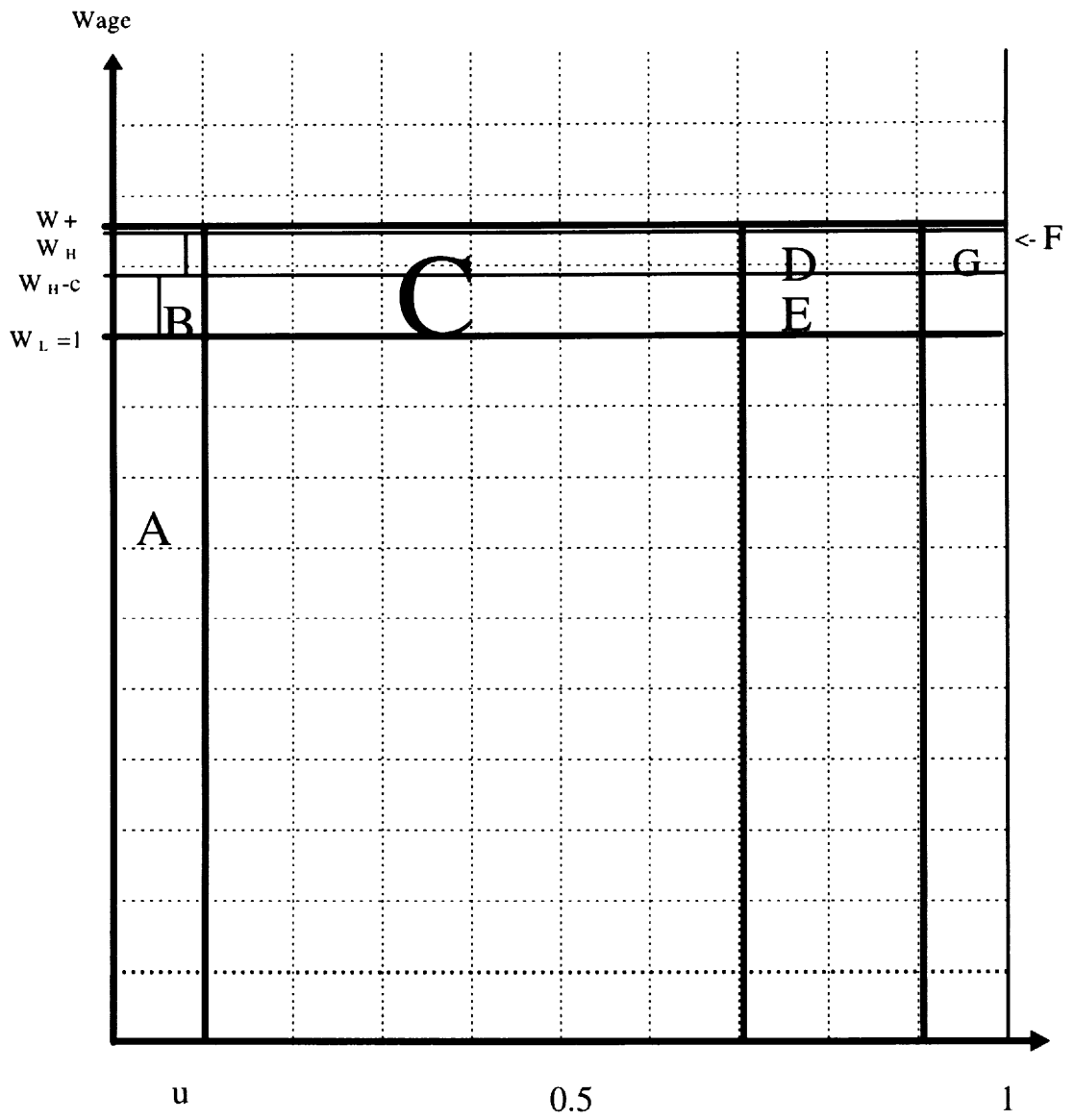
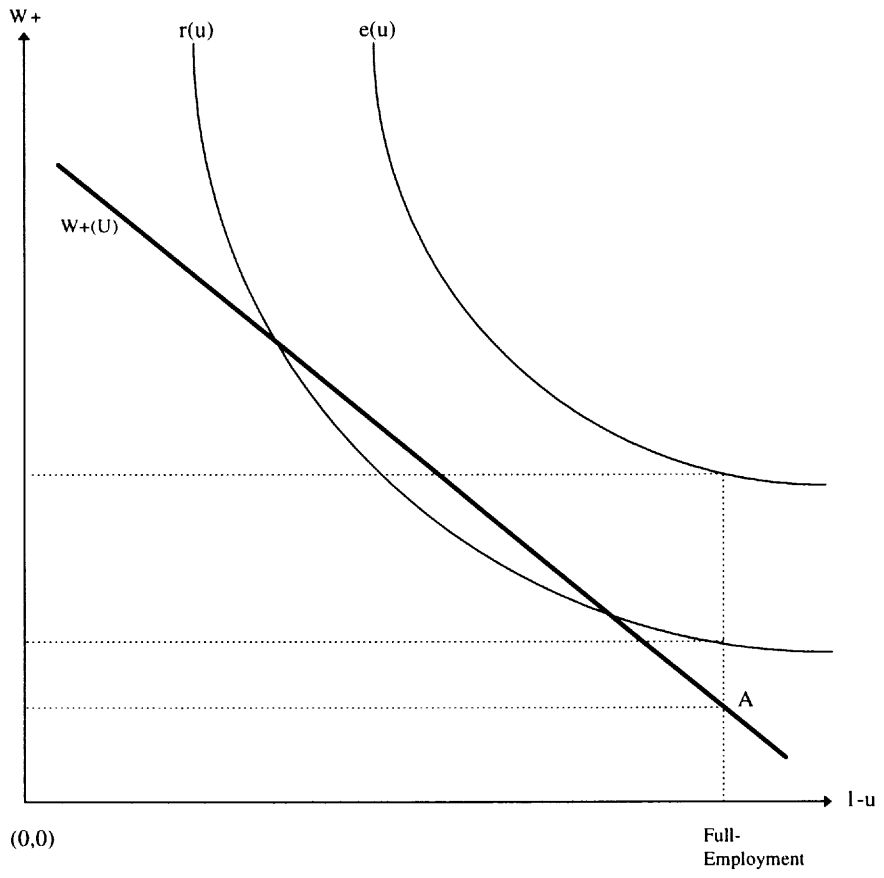


Figure 2



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