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Victor Polterovich

Employment- wage decisions in the insider-owned firm

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Bank of Finland Institute for Economies in Transition (BOFIT)
P.O. Box 160 FIN- 00101 Helsinki
Phone: +358 9 183 2268 Fax: +358 9 183 2294 Email: bofit@bof.fi (firstname.surname@bof.fi)
Web: www.bof.fi/bofit

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Victor Polterovich[1]

Employment-wage decisions in the insider-owned firm[2]

Abstract

The paper is intended to explain low sensitivity of employment decisions observed in transition economies where insider ownership prevails and capital markets are not highly developed. We introduce a stability concept for employment levels of a labor-managed firm and prove that there exists a segment of stable employment levels. If a level belongs to the interior of the segment then the firm keeps the same labor input level under any not too large changes. By contrast, the wage rate is responsive. Only the firms on the boundaries of the segment may reconsider employment decisions. Deterioration of market conditions entails decreasing labor inputs for firms with much excess labor and, the same time, increases employment for firms with low levels of labor input. This creates inter-firm flows of workforce and restrains the rise of total unemployment. Stability segments exist also for firms where employment-wage decisions are made by bargaining between workers and managers, and may exist for manager-dominated firms as well. Several concepts of labor hoarding are discussed.

Keywords: Labor-owned enterprises, transition, Russia

[1] Central Economics and Mathematics Institute and New Economic School, Nakhimovsky prospekt 47, 117418 Moscow

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1 Introduction

Labor markets in transition economies have exhibited a number of unexpected phenomena, which immediately attracted the attention of many researchers (see, in particular, Commander and Coricelli (1995), Polterovich (1993), Layard and Richter (1995), Dolgopyatova (1995), Commander, Fan, and Schaffer (1996)). For a number of countries, statistical data and surveys show that firms' employment decisions display low responsiveness or even insensitivity to changes in price and demand. In this respect Russian firms demonstrate the most surprising behavior (Blanchard, Commander, and Coricelli (1995)). During 1992-1996 Russia's GDP fell about 38% whereas unemployment amounted to 9.3% and officially registered unemployment was 3.4% of total labor force in 1996 (Social-Economic Situation... (1996, p. 179). Employment in industry decreased by 26%, a larger drop than for the whole economy, and industrial production was roughly halved (see Table 1). Even if we take into account involuntary layoffs[3], the figures for output decline and employment decline turn out to be incomparable.[4] Surveys confirm that comparatively high employment coexists with huge excesses of production capacities in Russia (Results of a survey of Russian enterprises economic activity (1996).)

Striking evidence of labor hoarding is revealed by a survey described in Moskovskaya (1998): 45% of respondents (managers) pointed out that in 1996 their enterprises would have been able to produce the same outputs using a smaller number of workers. The average wage was 13% lower for enterprises with excess labor.

Of course some of these firms fire workers, but surprisingly many of them also hire workers. This fact is stressed in Commander, McHale, and Yemtsov (1995).

[3] This would increase the unemployment rate by 1.5 percentage points (Rossiysky statisticheskiy ezhegodnik (1996), p.104.)

[4] Developments in 1997 and 1998 do not change the conclusion. For these two years GDP drop amounted to 4%. In 1998 the unemployment rate was 11. 8 % according to the ILO definition, and thr officially registered unemployment rate was 2.7% (Rossiyskiy statisticheskiy ezhegodnik (1998), p.16; Sotsial'no-ekonomicheskoye polozheniye (1998), pp.7, 279).

Researchers are not as unanimous with respect to wages. Layard and Richter (1995) assert that wage rates are much more flexible in Russia than in developed countries. Commander, Dhar, and Yemtsov (1995), using World Bank Survey data, found that wages respond weakly to firm-specific financial characteristics. Indeed, after the shock of January 1992, when real wages dropped drastically, the average wage rate for Russian industry did not change, or even increased slightly over a period of a year and a half. However, the wage fell in 1994, and the decrease in 1995 was much larger than the decline in output. The decrease in average wage rate amounted to 48% for the Russian economy and to about 50 % for industry during 1992-1996, which was the same as the fall in output.[5] These observations lead to the conclusion that wage rates revealed much greater flexibility than employment rates.

The high degree of solidarity between workers and managers is another important fact. During the transition period, conflicts between these two groups were rare. Of 2.2 million enterprises and organizations, only 8300 were involved in strikes in Russia in 1996, and among them, 7400 were educational organizations. There were about 450 strikes in coal industry and only 82 in all other industrial sectors. Most of the strikes were directed not against managers but against federal government. Not only worker involuntary discharges but also manager layoffs were rare. A very significant number of managers were able to retain their positions from the Soviet period, which certainly does not promote fast restructuring.

In attempting to explain these observations, many researchers stress the fact that most Russian firms are insider-owned. The processes involved in the transition of property rights to insiders have been analyzed in a number of works (Polterovich (1993), Frydman, Rapadzinsky (1993), Rutgaizer (1993), Boyko, Shleifer, and Vishny (1995)). Strong evidences and detailed empirical analysis of insider influence are contained in Earle, Estrin, and Leshchenko (1996), Earle and Estrin (1997), Linz and Krueger (1998), Jones (1998), and Djankov(1999) [6] Therefore we take this fact as given and

[5] This figures do not take into account wage arrears and benefits in kind, which play an important role in Russia.

[6] "In companies that had participated in some form of privatization, we find that, on average, insiders had 66.1 percent of all shares, divided between workers….with 46.2 percent and managers with 19.6 percent: the remaining 15 percent of shares were still held by the state." (Earle and Estrin (1997), p.24). In the sample consid-

try to develop a theoretical model to explain the stylized facts described above.[7]

Table. Selected Russian Economic Indicators (%)

	1992/91	1993/92	1994/93	1995/94	1996/95	1996/91
GDP	85.5	91.3	87.3	95.9	96.5	62
Real wage in the economy per employee	67	100.4	92	74	105	48
Employment in the economy	98	98	98	97	98	89
Investment	60	88	76	90	82	30
Industrial production	82	86	79	97	95	51
Real wages in industry per employee	71	92	89	80	108	50
Employment in industry	95	98	89.5	92.5	93	74

	1992	1993	1994	1995	1996	1997
Unemployment rate	4.7	5.5	7.4	8.8	9.9	11.2
Officially registered unemployment	0.8	1.1	2.2	3.2	3.4	2.7

Sources: Rossiyskiy statisticheskiy ezhegodnik (1996), pp. 30, 84, 93, 122. Rossiyskiy statisticheskiy ezhegodnik (1998), pp. 16, 173. Uroven' zhizni naseleniya Rossiyskoy Federatsii (1996), Goskomstat, pp.8-11. Sotsial'no-ekonomicheskoye polozheniye (1996), pp. 17, 193. Promyshlennost' Rossii (1996), Goskomstat, p. 5. Sotsial'no-ekonomicheskoye polozheniye (1997), p. 283.

ered in Djankov (1999), Russian insiders owned 51.4 percent of shares in 1995, and 59.6 percent in 1997.

[7] Firms' employment decisions were low responsive also in NIS and Czech Republic (Djankov (1999), Basu, Estrin, and Svejnar (1997)).

Domar (1966) was the first to mention that the labor-managed firm theory developed by Ward (1957) is not realistic because it does not take into account the tradeoff between the positive utility of an increasing wage rate and the negative effect of a decrease in the number of workers employed. The hypothesis of this tradeoff was supported by empirical investigations (Craig and Pencavel (1993), Prasnikar, Sveinar, Mihaljek, and Prasnikar (1994)). Now a conventional assumption is that the worker's utility function depends on earnings and on employment. It is clear that if the substitution elasticity of employment level for wages is small, then low responsiveness of employment should be observed. It is temptating to derive low responsiveness from special properties of a utility function or to refer to the influence of managers and political authorities. We argue, instead, that the nature of low responsiveness is more fundamental and suggest a simpler explanation.

Insider ownership can be efficient if capital (partnership) markets are properly developed (Dreze (1976, 1989), Sertel (1987)). However, this is hardly expected for the early stages of transition. This is clearly not the case in Russia. Insider ownership simply prevents outsider control. Workers probably do not recognize themselves as owners who can employ additional labor or sell their part of future returns. There is no real institutional difference between workers who own some shares and those who not, since dividends are insignificant and mechanisms for control of the firm by stockholders do not work. Under these circumstances, it is reasonable to consider workers as a team lobbying for an increase in short-run utility. However, their utility is similar to that usually assumed for trade unions, and we know from McDonald and Solow (1981) that bargaining between a trade union and managers entails stickiness of wages, not employment.

An attempt to explain labor hoarding using a modification of the conventional model of the labor-managed firm was made in Commander, McHale, and Yemtsov (1995). Their results rest crucially on two assumptions: the firm is a monopolist and its production function is of the Leontief type. In this case, the firm's value-added reaches an absolute maximum as a function of labor input, L. The firm may choose a level of labor L higher than its maximizing level so that some employees arel not used at all. This is labor hoarding. In this set-up the wage rate is a constant and does not depend on either technological coefficients or output prices. Thus the model predicts high wage stability, which is not supported by the data.

Below we use a framework very similar to that of McDonald and Solow (1981) to explain the stylized facts described above. However, McDonald and Solow consider the trade union to be a player whereas we take the firm's employees to be the main bargaining participants. Employment decisions do not change the number of trade union members but do change the number of decisionmakers in the insider-owned firm. This seemingly minor modification in the set-up leads to the concept of stable employment levels and, as we will see, entails quite different conclusions.

In fact, stability of special employment decisions (optimal by Ward's definition) and their insensitivity to output price increase were proved in Steinherr and Thisse (1979) and Bonin (1981)). These authors got similar partial results also for worker-owned firms using compensation schemes to dismiss workers (see also Miyazaki and Neary (1985)).

Below, we define the concept of a stable employment level for a labor-managed firm and prove that the set of all such levels forms a segment. If a firm's labor input belongs to the interior of the segment, then the input is kept constant, independently of variations in market and technological conditions (if the variations are not too large). For every shock, only firms with employment levels in certain neighborhoods of the edges of the segment will reconsider employment decisions. The wage rate turns out to be flexible. It is also shown that deterioration of market conditions entails decreasing labor inputs for firms with large excesses of labor and, the same time, increasing employment for the firms with low labor inputs. This creates inter-firm flows of workers and restrains the rise of total unemployment.

We argue that the use of sophisticated compensation schemes is hardly possible in the underdeveloped and uncertain institutional settings of transition economies, such as Russia, and that use of a simple outside earning approach does not bring about sensitivity of employment decisions.

In the next Section, the stability concept is introduced and the existence of a stability segment is proved for labor–owned firms. Comparative statics results are contained in Section 3. Section 4 presents a modification of the model, in which insiders are allowed to earn additional wages outside of their firm. Different concepts of labor hoarding are discussed in Section 5. We show in this Section that a firm may keep workers, that cannot be used at all. Section 6 discusses the roots of manager-worker solidarity and demonstrates that insensitivity of employment decisions may take place in manager-dominated firms as well. The main results are then generalized in

the context of a bargaining model in which the players are managers and workers (Section 7). Section 8 concludes.

2 Stable employment levels in the labor-managed firm

Let us assume that the labor input of a firm consists of identical individuals, each taking part in the decisionmaking process and maximizing the expected value of a utility function

$$max\ U(\delta,w) = \delta u(w) + (1-\delta)u(b) \tag{1}$$

subject to

$$w = (V(N) - c) / N, \tag{2}$$

$$N \geq \delta L, \tag{3}$$

$$1 \geq \delta \geq 0. \tag{4}$$

Here 1- δ is the probability of being dismissed (assumed equal for all workers}, w is the wage rate, u the wage utility, b the reservation wage, and L the initial labor input.

$V(\ )$ - c represents the firm's value-added as a function of labor, N. For convenience, we assume $V(0) = 0$ and denote fixed costs by c. If $\bar{\delta} < 1$ for a solution ($\bar{\delta}$, $\bar{N}$) of (1)-(4) then obviously $\bar{N} = \bar{\delta} L$. This means that the probability of prolongation of a job contract, δ , must be equal to the ratio of the new and current levels of labor input. We also assume that the total value added is equally distributed among workers and that the capital stock is fixed. Material resources are chosen optimally in order to derive the value added function.

This part of the setting is almost identical to the well-known model of McDonald and Solow (1981). However the following stability concept, which is a central point of our paper, does not seem to be used in the literature.

Definition 1. An employment level L is stable if the pair ($\delta = 1$, L) is a solution for the problem (1)-(4).

In other words, the current employment level is stable if the workers do not want to change it.

In this and in the next sections, we assume that

(i) $V(N)$ is a nondecreasing, concave, smooth function, $V(0) = 0, V'(N) \to 0$ as $N \to \infty$, $V''(N) < 0$;

(ii) $u(w)$ is an increasing , concave, and smooth function, $u(0) = 0$;

(iii) there exists $N > 0$ such that $W(N) > b$.

Let L^* be the employment level that maximizes the employment -wage function, $W(N) = (V(N) - c)/N$. Obviously, L^* is stable. But our model generates a multiplicity of stable solutions.

Proposition 1. There exists $\hat{L} > L^*$ such that the set, E, of all stable employment levels is the segment $[L^*, \hat{L}]$.

Proof. It is simple to show that (1)-(4) is a concave programming problem. Necessary and sufficient conditions for L to be stable are:

$$\Psi(L) = u(W(L)) + u'(W(L))W'(L)L - u(b) \geq 0 \qquad (5)$$

$$L \geq L^*, \qquad (6)$$

where “prime” denotes first derivative.

One can check that

$$LW' = V' - W \qquad (7)$$

$$LW'' = V'' - 2W' \tag{8}$$

Therefore

$$\Psi' = u''(W')^2 L + uV'' < 0\,. \tag{9}$$

This means that Ψ is decreasing. Due to our conditions $\Psi(L^*) > 0$ and $\Psi(L) < 0$ if $W(L) = b$, $L > L^*$ since $W'(L) < 0$ in this case. Hence E is a segment $[L^*, L^\wedge]$ where $L^\wedge$ is the unique root of the equation $\Psi(L) = 0$ and $L^\wedge > L^*$. The proof is complete.[8]

It follows from this proof that $W(L^\wedge) > b$. Fig 1 illustrates Proposition 1.

The setting considered above can be also described as follows. A firm wishes to increase $N(u(W(N)) - u(b))$ provided N does not exceed the initial employment level L. If the maximum is reached for $N=L$, then the firm tries to increase $u(W(N))$. If $L \geq L^*$, this is impossible, and L remains unchanged.

If an employment level L of a firm is not stable, i.e. if it does not belong to E, then the firm looks for a solution (δ^1, L^1) of the problem (1)-(4) to change its employment level. It might happen that the new level, L^1, is unstable as well. If so, the decision process should be continued. Surprisingly it is not the case.

Proposition 2. If $L < L^*$, then L^* is a solution of (1)-(4). If $L > L^\wedge$, then $L^\wedge$ is a solution of (1)-(4).

The first part of the proposition is obvious. The second statement follows immediately from the fact that the first order conditions for (1)-(4) under $L > L^\wedge$ can be reduced to the equation $\Psi(N) = 0$.

Proposition 2 says that a firm can reach its stable segment in one step. Therefore it is reasonable to believe that most of the firms have stable employment levels even if prices and technologies change quickly. Our next task is to describe the firm's reaction to the environment changes.

[8] Another way to prove Proposition 1 is based on the observation that the left hand side of inequality (5) is the derivative of a concave function, Lu(W(L)).

3 Explaining insensitivity of employment decisions

Let us consider the volume of raw materials, x, used in the production process. One may assume that the value-added function, $V- c$, is derived from the following maximization problem.

$$V(L, p, q) = max_{x \geq 0} (pF(x, L) - qx), \qquad (10)$$

where F is a concave increasing production function, p and q are positive prices of the output $y = F(x, L)$ and the material resources x. Then V is concave and increasing with respect to L.

Below we assume that the wage utility function u is strictly concave so that $u'' < 0$.

Proposition 3. Let F be a homogeneous function. Then the left endpoint, L^*, of the stability segment is a decreasing function of p and an increasing function of q and c.

Proposition 4. Assume F has a positive mixed partial derivative, $F_{xL} > 0$. Then the right endpoint, $L^{\wedge}$,of the stability segment is an increasing function of the output price p and a decreasing function of the input price, q, of the reservation wage, b, and of the fixed costs, c.

The Cobb-Douglas function fulfills conditions of both Propositions 3 and 4.

The result in Proposition 3 is well known (see, for example (Domar (1966)). It is simple to check that if the function V depends on a parameter z, $V = V(L, z)$, then the derivative of L^* with respect to z is

$$L^*_z = (V_z - LV_{Lz})/LV_{LL}.$$

Let ν be the degree of homogeneity of the function F, $0 < \nu \leq 1$. First order conditions and Euler's formula for homogeneous functions entail the relations

$$V_p = F, \; LV_{Lp} = \nu F + (1- \nu)(F_x)^2/F_{xx}, \quad V_q = - x,$$

$$LV_{Lq} = - x - (1 - \nu)F_x/F_{xx},$$

and we conclude that $L^*_p < 0$, $L^*_q > 0$.

To prove Proposition 4, one can use the equality[9]

$$\Psi_z = u''W_z(V_L - W) + u'V_{Lz},$$

where $W_z = V_z/L$, $W_p > 0$, $W_q < 0$; $V_{Lp} = F_L - F_x F_{Lx}/F_{xx} > 0$, $V_{Lq} = F_{Lx}/F_{xx} < 0$, since $F_{Lx} > 0$. Also $V_L < W$, since $L^\wedge$ falls to the right of L^* (see fig.1). Therefore Ψ is increasing with respect to p and decreasing with respect to q.

Proofs of the statements concerning the reservation wage, b, and the fixed cost, c, are similar and we omit them.

The picture of the firm's behavior now seems clear. If the labor input of a firm belongs to interior of its stability segment, then the firm's employment level is not sensitive to changes, provided they are not too large. By contrast, wage levels are responsive. Only those firms located near the edges of the segment can reconsider employment decisions. It is noteworthy that a deterioration of market and technological conditions entails an increase in employment for firms with low levels of labor hoarding and a decrease in employment for the firms with large amounts of excess labor. An improvement in the conditions enlarges the segment but does not change the labor inputs, since former edges turn out to be interior points of a new stability set. The last phenomenon may cause the so-called ratchet effect.

Thus the labor equilibrium distribution is path-dependent in our model. Two technologically identical firms may have different stable levels of employment and different wage rates. Certainly, such a system is inefficient. It is characterized by large interfirm wage differentials.

It is worthwhile to compare the picture given above with data for Yugoslav labor-managed firms. In Prasnikar, Svejnar, Mihaljek, and Prasnikar (1994) a 147 firm sample for the 1975-1979 period and an 18 firm (nonrandom) subsample were studied. The output price – employment effect

[9] One notes that the point ($L^\wedge$, $W(L^\wedge)$) belongs to so-called contract curve. The statement of Proposition 4 may be derived from the contract curve properties studied in McDonald and Solow (1981).

was found to be statistically insignificant for the large sample but negative and statistically significant for the subsample, indicating perverse behavior for some firms and weak total response. A longer time period was considered for the subsample, and the conclusion was confirmed. The existence of firms with qualitatively different responses to changes in output prices is an argument for the use of our model, though it remains to be proved that differences in employment levels are responsible for the difference in responses. Large interfirm wage differentials were also observed for Yugoslav firms and were the subject of a long debate (see Estrin and Svejnar (1993) for a discussion).

Different employment responses must entail interfirm labor flows. In fact, the flows arise if some firms like to hire workers, suggesting comparatively high wage rates; in our model this happens at the left edge of a stability segment under a deterioration of market conditions. This explains an empirical observation made in Commander, McHale and Yemtsov (1995). Interfirm flows restrain a possible rise of total unemployment rate within the system.

The worker's utility function, $U(1, W(L)) = u(W(L))$, is decreasing on the stability segment, E. Therefore one can argue that firms located in the stable segment must reduce their labor hoarding due to voluntary layoffs, so that all of them will gradually approach the optimal employment level, L^*. While this is plausible, the process depends on the opportunities of finding better jobs and it can turn out to be quite slow. The equilibria defined are transitional, but they still do not explain transitional phenomena.

4 Insiders with outside earnings (free-range insiders system)

The equality $\Psi(\hat{L}) = u(W(\hat{L})) + u'(W(\hat{L}))(V'(\hat{L}) - W(\hat{L})) - u(b) = 0$ (see (5) and (7) above) implies that the marginal added value, $V'(\hat{L})$, of the maximal stable employment level, $\hat{L}$, is inferior to the reservation wage, b, if the utility function, u, is strictly concave. Therefore firms can increase the average wage if some of their employees earn the reservation wage for the firm. This idea can be realized through different institutional settings. If the capital (partnership) market is developed, some workers will find it profitable to sell their shares to the firm and to leave it voluntary to work for the reservation wage. Under a proper price, this would be profitable also for all those who stay with the firm (Dreze (1976), Sertel (1987)). An-

other institutional option is the use of a compensation scheme to encourage voluntary dismissals (Steinherr and Thisse. (1979), Bonin (1981)). The third possible option permits workers-founders to hire additional workers for a competitive wage. All three options assume clear property rights which establish a difference between insiders-owners and non-owners, as well as strong law enforcement of mutual obligations. This is not the case in Russia. Most privatized Russian enterprises are joint stock companies. However, their shares are generally not traded on stock exchanges, dividends are usually not paid, and standard mechanisms of firm control by stockholders do not work. There are no institutional differences between workers who hold company shares and those who not. It appears that workers collectives do not recognize themselves as owners who can sell their property or hire additional labor. Managers face too much uncertainty to take on the long-run obligations entailed in compensation schemes.

However, there is a strategy that allows for increasing average wages without demanding any complicated institutional setting, and some Russian firms do use it.

They give long leaves to some of their employees formally or permit them in fact to work outside the firm for a period of the time. Then the worker's total wages comprise the sum of a wage paid by the firm and a reservation wage. In this case the reservation wage, b, cannot be interpreted as an unemployment benefit but rather as wages for a part time job, including shadow activity, or as an implicit wage for home and private plot work.

To take this policy into account[10], let us consider a modified value-added function $R(N) - c$, where

$$R(N) = \max_{M \geq 0} (V(N-M) + b\,M).$$

The firm maximizes the sum of its value added and outside earnings with respect to a number M of free-range workers. Let L^o be the solution of the equation $V'(L) = b$. Since $V'(L^\wedge) < b = V'(L^o) < V'(L^*)$, one has

[10] In a more realistic set-up, variability in work hours must also be taken into account (compare Miazaki and Neary (1985)). We assume that working hours are fixed.

$$\hat{L} > L^o > L^*. \qquad (11)$$

It is simple to check that

$$R(N) = \begin{cases} V(N) & \text{if } N \le L^o, \\ V(L^o) + b(N-L^o) & \text{if } N \ge L^o, \end{cases}$$

so that L^o is the optimal quantity of labor that should actually be used really inside the firm if N is large enough.

In Section 2 we used conditions (i) to find a right end-point of the stability segment. Now we cannot do this since R does not approach zero when $N \to \infty$. Let $Z(N) = (R(N) - c)/N$ be the modified wage function and Φ the corresponding modification of the function Ψ,

$$\Phi(L) = u(Z(L)) + u'(Z(L))(R'(L) - Z(L)) - u(b).$$

If $L > L^o$ then $R'(L) = b$ and $\Phi(L) \ge 0$, due to concavity of u (see fig. 2). Therefore the stability set in this case is the infinite segment $[L^*, \infty)$, and all labor exceeding L^o is «employed» outside the firm.

Definition 2. A stable employment level is effectively stable if it is used totally within the firm.

The considerations above show that for the free-range insiders system the following statement holds.

Proposition 5. The set of all stable employment levels is the segment $E = [L^*, \infty)$. The set of all effectively stable employment levels is the segment $E^o = [L^*, L^o]$, where $V'(L^o) = b$ and L^o fulfills (11).

It is noteworthy that E and E^o are both determined by the value-added function and do not depend on the utility function, u.

Let us assume now that the function V is derived from the maximization problem (10). Then the following analogue of proposition 4 is valid.

Proposition 6. Let F have a positive mixed partial derivative, $F_{xL} > 0$. Then the right end-point, L^o , of the effective stability segment is an in-

creasing function of output price p, and a decreasing function of input price q and reservation wage b.

This proposition can be established directly by differentiating the identity $V'(L^o(\zeta), z) = b$ with respect to parameters $z = p, q,$ and b, taking into account that $V_{Lp} > 0$, $V_{Lq} < 0$.

Thus in the free-range insiders system, the stability segments are larger and effective stability segments smaller than the stability segments in the system in which outside earning is not allowed. But the main features of employment decisions are similar for both kinds of systems. The difference is that free-range insiders' firms with right end-point employment levels do not fire workers when market conditions deteriorate. Instead they encourage them to seek outside earnings. However, these workers are happy to accept job offers from firms that pay higher wages. Therefore there are interfirm labor flows in this system as well.

In what follows, we assume again that outside earnings schemes are not institutionally available, bearing in mind that all results can be reformulated little efforts to apply to a free-range system.

5 Labor hoarding

Insensitivity of employment decisions to market conditions means there is labor hoarding. To ensure that this is totally clear, one should define the concept of labor hoarding or excess employment. However there is no conventional measure of labor hoarding, and different authors defined it differently (Bonin (1992), Commander, Dhar, and Yemtsov (1995)).

Indeed, any definition of excess labor depends on the concept of «normal» or «optimal» employment level L_{norm} : if L_{norm} is given and L is the current employment level, then L- L_{norm} measures labor hoarding.

One might be inclined to the notion that a labor level is redundant if a worker earns a wage higher than his marginal productivity. This leads to the conclusion that the appropriate normal employment level would be $L^* = argmax\ W(L)$, i.e. L_w such that $V'(L_w) = w$, where w is the actual wage paid by the firm. Then every level $L > L^*$ would be considered as an excess level. However this approach, though acceptable for the long-run, is hardly appropriate for the short-run. The unique efficient labor distribution among identical firms assigns an equal quantity to each firm. It is natural to consider the difference between a current level and the average as a true meas-

ure of firm labor hoarding. If a firm employs more then L^* but less then the average, one should say that it experiences a lack of labor.

Thus the correct approach would be based on a comparison of an actual and an efficient labor distribution. However, the calculation of such a distribution is so difficult in practice that there is a little hope of solving it. One needs less pretentious and more constructive methods to estimate short-run labor hoarding.

If a part of the system is competitive, then one can compare current employment and the profit maximizing employment, L_c , under the actual competitive wage rate and take the difference L- L_c as a measure of labor hoarding. This measure is also doubtful with respect to imperfect transitional markets.

The minimal estimation of labor hoarding corresponds to the 'normal' employment, taken as the minimal labor quantity needed to support the current production level. This assumes that the value-added function does not increase if the employment level exceeds a critical value, L_0**.** A survey mentioned in the Introduction (Moskovskaya (1998)), showed that almost half of Russian enterprises had a larger numbers of employees than their respective critical values.[11] It is an extreme case of labor hoarding when some workers employed workers do not work at all. Could our model explain this seemingly irrational behavior?

The answer is positive. We only need to use the function

$$Q(N)=\begin{cases} V(N), & N \le L_0 \\ V_0 = V(L_0), & N \ge L_0 \end{cases}$$

instead of $V(N)$. The function Q does notfulfill all of the conditions (i). It is smooth everywhere except one point, L_0 , and has zero first derivative for $N > L_0$. Instead of the function $\Psi(L)$ (see (5)), we have now

$$\Psi_Q(L) = u(W_Q(L)) + u'(W_Q(L))W_Q'(L)L - u(b)$$

[11] The main reasons for this were lack of demand and lack of credit (see Results…(1996)).

where $W_Q(L) = (Q(L) - c)/L$,

$$W'_Q(L) = \begin{cases} W'(L), & L < L_0 \\ -(V_0 - c)/L^2, & L > L_0 . \end{cases}$$

Assume $u'' < 0$, $L_0 > L^*$, and $\Psi_Q(L_0 + \xi) > 0$ for a positive ξ. Then there exists a stability segment $[L^*, L\square_Q]$ which contains L_0 as an interior point (fig. 3). The right edge $L\square_Q$ is the root of the equation $\Psi_Q(L) = 0$. Since $W_Q'(L)L = V'(L) - W_Q(L) = -(V_0 - c)/L\square_Q$, the corresponding wage rate, $w\square_Q = (V_0 - c)/L\square_Q$, is the solution to the equation $u(w) - u'(w))w - u(b) = 0$ and does not depend on market conditions. Therefore the maximal stable employment level,

$$L\square_Q = (V_0 - c)/w\square_Q ,$$

depends on market conditions only through V_0. If $L_0 < L \leq L\square_Q$ then $L - L_0$ is a lower estimate of labor hoarding.

How does the level of labor hoarding respond to a deterioration in market conditions? One might expect tighter external constraints, ie a reduction in L_0. If L stays inside the stability segment, the firm does not change its employment level and the estimate of labor hoarding increases. The right edge of the segment shifts to the left and the left one shifts to the right, as above, which slows unemployment growth.

Thus labor hoarding arises if a worker-owned firm is forced to cut its supply due to external constraints, and workers' decisions take into account the risk of layoffs.

6 Insider-owned open joint-stock company: the puzzle of oversolidarity

In Russia (and some other transition economies) the same governance mechanism was imposed for all types of privatized enterprises (outsider-owned, worker-owned, etc.). Most of them were transformed into 'open' joint-stock companies regardless of their ownership structures. A number of 'closed' joint-stock companies were created at the preliminary sponta-

neous stage of privatization, but a special presidential order was issued in 1993 that prescribed to transform them into open companies. There was a strong hope that immediately after privatization workers would begin to sell their shares so that all enterprises would be taken over by outsiders. However things did not turn out this way; surveys did not reveal any substantial shifts of ownership to outsiders.

Another surprising phenomenon is the absence of serious conflicts between managers and workers. Managers do not dismiss workers and workers do not discharge managers. The number of people involved in strikes was insignificant (357,000 in 1992, 120,000 in 1993, 664,000 in 1996) (Russian Statistics Annual (1996), Social-Economic Situation in Russia (1996)). Most of the strikes were conducted by school teachers and were actually directed against government, not against managers. Out of 8,278 strikes taking place in 1996, 7,396 were in education (Social-economic situation in Russia (1996), p. 182).

A number of different explanations for these surprising features could be discussed (see Layard and Richter (1993) for a list of causes). I would emphasize both the local governments' resistance to mass layoffs and peculiar mentality of Russian managers, which is the result of a long history and a certain kind of public pressure, which have been effective up to now: mass worker layoffs are considered to be destructive[12].

However, there is a hypothesis, that seems important but which is not discussed in the literature[13]. I try to formulate it below.

The combination of insider ownership and governance structure of open joint stock companies is the worst type of industrial organization. It creates a network of relations between outsiders, managers, and workers that hampers restructuring. Both managers and workers groups want to avoid attracting outsiders for fear of layoffs. This in turn restricts the possibilities

[12] A model developed in Shleifer and Vishny (1996) is based on the assumption that politicians subsidize managers to keep excess employment. The influence of the cultural inheritance is studied in Linz (1998).

[13] It was written in 1997. I did not know that substantially the same observations as described below were made by Aghion, and Blanchard in their presentation to an EBRD conference in 1996. They use the observations to explain insiders collusion in resale of shares to outsiders (Aghion and Blanchard (1998)).

to attract new restructuring capital. However this is not the only consequence of the disparity between the organizational structure and ownership structure. This disparity has a strong impact on bargaining between managers and workers and creates specific threat strategies for both parties. If workers hold a significant proportion of shares, then mass worker layoffs are impossible for managers who want to keep their positions within the firm. Layoffs would lead to mass selling of workers' shareholdings to outsiders, who might prefer to change managers. In many firms, the managers had a substantial number of the available shares. Workers then have good reasons not to want to discharge managers, even if they hold a majority of shares. In fact the discharged managers might sell their shares to outsiders, which increases the chances for mass worker layoffs. Since both worker and manager groups are unsure of the intentions of their own members as well, they have no absolute power, even if they hold a majority of the shares and are forced to search for a compromise. In spite of natural contradictions between managers and workers, the situation should entail a high degree of insider solidarity. This is precisely what has been observed in Russia.

Note that such «strategic trap» situations do not arise in closed joint stock company structures. In this case, a dismissed insider has no right to sell his shares to outsiders. My hypothesis is that the structure of the closed joint stock company is more efficient than that of open ones owned by insiders.

For the latter case, insensitivity of labor inputs may arise even if the firm is manager-dominated.

Consider an extreme situation in which outsiders hold almost half of all the firm's outstanding shares so that just one additional share is enough to control the firm. Let 1-q be the probability that a dismissed worker will sell a share. Assume a fixed (competitive) wage rate, w , and let L_m* be the employment level that maximizes the firm's profit function $P(N) = V(N) - c - wN$. Then $V'(L_m^*) = w$.

We say that an employment level L is stable if L is a solution to the problem

$$max_N U(N,L),$$

where

$$U(N,L) = min\ \{q^{L-N};\ 1\}[V(N) - c - wN] + (1 - min\{q^{L-N};\ 1\})a, \quad (12)$$

and a is the manager's reservation salary. $U(N,L)$ is the manager's expected revenue.

If $L < L_m^*$, then L_m^* is the solution of the problem (12), and L is not stable. The set of stable employment levels is a segment $[L_m^*,\ L_m\hat{}]$, where $L_m\hat{}$ is the solution of the following equation

$$\Psi_m(L) = V'(L) - w - ln\ q[V(L) - wL - c - a] = 0,$$

provided $V(L_m^*) - w\ L_m^* > c + a$.

Similar to the situation of section 2, $\Psi_m(L)$ is a decreasing function. If $\Psi_m(L) > 0$ then $U(N,L)$ increases with respect to N in a left neighborhood of the point $N = L$. Therefore $U(N,L) < U(L,L)$ for all $N < L$. Workers layoffs are unprofitable for managers in this case.

Let $V = V(L,p)$ be an increasing function of price p. Then the edges of the stability segment, $L_m^*(p)$ and $L_m\hat{}(p)$ are functions $L_m^*(p)$, $L_m\hat{}(p)$ of p as well. It is easy to check that

$$dL_m^*/dp = -V_{Lp}/V_{LL},$$

$$dL_m\hat{}/dp = (V_{Lp} - V_p\ ln\ q) / [(V_p - w)ln\ q - V_{LL}].$$

If $F_{VL} > 0$ for a production function F, then $V_{Lp} > 0$ and functions $L_m^*(p)$ and $L_m\hat{}(p)$ are increasing (compare proposition 4). If p decreases, then only firms with the largest labor hoarding dismiss workers. The others do not respond.

Thus manager employment decisions may be weakly responsive as well if managers experience pressure from outsiders.

Our discussion shows that there are at least two mechanisms by which a worker can be dismissed, if a decision is made to decrease the labor input. The first, the direct mechanism, is the base for the models described in previous sections. If one takes into account the second mechanism (based on share reselling), then stability intervals and labor hoarding would increase. This is one of the results that we derive in the next section.

7 Managers and workers bargaining

There is a general consent among researchers that employment-wage decisions are results of compromises between managers and workers. Surveys reveal that managers take the main strategic decisions and that workers' influence in this respect is weak though not negligible (Dolgopyatova (1995), Jones (1998)). On the contrary, both parties have strong influence on employment and wages (Jones (1998), table 3).

Hence, the labor-managed and manager-dominated firms should be considered as special cases of the insider-owned enterprise, and our approach should be developed to model possible compromises between workers and managers.

Let s be the total salary of managers treated as a consolidated bargaining participant. We keep the notation of section 2 to describe a group of workers as the second participant. A state of the system is defined as a pair (L, s) consisting of an employment level, L, and a size of managers' salary, s, or as a pair (L,w).

If N is an employment level and s is a level of managers' salary, then the workers' wage rate is equal to $W(N, s) = (V(N) - c - s)/ N$. Let us denote

$$E = \{(\delta, N, s) \mid N \geq \delta L,\ 0 \leq \delta \leq 1,\ 0 \leq s \leq V(N) - c\}.$$

Let $U(\delta,w)$ and $M(\delta, s)$ be worker and manager utility functions.

Definition 3. A state (L, s) and an employment level L are Pareto stable if the triplet $(1, L, s)$ is Pareto optimal with respect to the functions $M(\delta, s)$ and $U(\delta, W(N, s))$ on the set E. If (L, s) is Pareto stable and $w = W(L,s)$ then the pair (L,w) is also Pareto stable.

We postulate that

$$U(\delta,w)= \Lambda(\delta)u(w) + (1- \Lambda(\delta))u(b),$$

$$M(\delta, s) = \Gamma(\delta)f(s) + (1- \Gamma (\delta))f(a),$$

where $f(s)$ is manager utility of a salary s, a is the manager reservation salary, $\Lambda(\delta)$ and $\Gamma(\delta)$ are the probabilities that a worker or a manager[14], respectively, will keep her job. Both probabilities depend on a proportion δ of workers slated for dismissal.

We argue in section 6 that the worker's probability of keeping his job is defined by two mechanisms. Therefore it is reasonable to presume that $\Lambda(\delta)$ is the product of two probabilities.

We assume that $\Lambda(\delta) = \delta\varphi(\delta)$; the functions $ln\Gamma(\delta)$, $ln\varphi(\delta)$ are nondecreasing, smooth and concave, with $0 \le \Gamma(\delta), \Lambda(\delta) \le 1$; and that there exists an N such that $W(N, a) > b$. Then first-order Pareto optimality conditions are necessary and sufficient. They imply that (L, s) is stable iff the following relations hold:

$$\lambda T(w) \ge w - V'(L) - \gamma G(s)/L, \tag{13}$$

where

$$T(w) = (u(w) - u(b)) / u'(w), \quad G(s) = (f(s) - f(a))/f'(s),$$

$$\lambda = \Lambda'(1)/\Lambda(1)), \quad \gamma = \Gamma'(1)/\Gamma(1).$$

$$w = W(L, s), \tag{14}$$

$$V'(L) \le w, \tag{15}$$

$$b \le w \le W(L,a). \tag{16}$$

The contract curve, $w = C(L)$, is defined as a solution to the equation

$$\lambda T(w) = w - V'(L) - \gamma G(S(L, w))/L. \tag{17}$$

Differentiating (17), one obtains

[14] The model captures also the case where managers do not fear to be fired

$$C'(L) = (- V''L^2 - \gamma LG'(V'-w) +\gamma G)/ L^2 d, \qquad (18)$$

where

$$d = \lambda T' -1 - \gamma G'.$$

The numerator in (18) is positive whereas the sign of d in the denominator is indefinite.

Taking into account $\Lambda(\delta) = \delta\varphi(\delta)$, where $\varphi(\delta)$ is nondecreasing, one obtains $\lambda \geq 1$. It follows from the definition of T and G that

$$T' = 1- Tu''/u', G' = 1 - Gf''/f'. \qquad (19)$$

Therefore $T' \geq 1$, $G' \geq 1$, $T'(b) = 1$, $G'(a)= 1$. If $\gamma \leq \lambda-1$, then d is definitely positive for $s = a$. Let us assume that

$$d > 0 \text{ for } w > b. \qquad (20)$$

The assumption is valid if $\lambda=1$, $\gamma =0$. It is also valid for every $\lambda>1$ if γ is small enough. The assumption means that the probability of being fired due to workers' dismissal in a small proportion is not changed more significantly for managers than for the employed workers. In view of (18) and (20), the contract curve is upward sloping.

The point (L^0_b, b) , $b = V'(L^0_b)$ is Pareto stable and lies above the contract curve.

Consider L_b such that $W(L_b , a) = b$. Since $T(b) = G(a) = 0$ and $W(L_b , a) > V'(L_b)$, the point (L_b , b) is located below the contract curve. Therefore the contract curve intersects the line $w = b$ at some point K, and the boundary of the Pareto stable set includes a horizontal segment BK (Fig. 4). Since $C(L^0_b) < W(L_b)$ and $C(L_b) > W(L_b)$, there is L_D such that $L^0_b < L_D < L_b$ and $C(L_D) = W(L_D, a)$.

The conditions (13) - (16) define a quadrilateral area $ABKD$ on the plane (L, w) (Fig. 4).

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but nevertheless would, for cultural reasons, not like to dismiss workers.

We are studying a problem that seems to be similar to those considered in trade union theory (Booth (1995)). However, there is a subtle distinction between the union theory setting and ours that leads to important differences in conclusions. A trade union has a fixed number of members, L, so that every employment decision, N, implies a definite probability of being fired: $(L - N)/L$, where N is assumed to be strictly inferior to L. In our setting, L is the number of workers employed by a firm; it can be changed in the process of decision making. A decision, N, means zero probability of being dismissed if $N \geq L$, and stability means that the employment level is not changed in the decision process. The corresponding optimal problem is parameterized by initial employment. That is why we have a two dimensional 'contract set' rather than a one dimensional contract curve[15].

It is straightforward to check that the following relations hold for derivatives of C with respect to parameters λ, γ, a, b, p:

$$C_\lambda = -T/d < 0 \text{ if } w > b; \quad C_\gamma = -G/Ld < 0 \text{ if } s > a; \; C_a = -\gamma G_a/Ld > 0 \text{ if } \gamma > 0;$$

$$C_b = -\lambda T_b/d > 0 \text{ if } \lambda > 0; \; C_p = (LV_{Lp} + \gamma G_s V_p)/d > 0 \text{ if } V_{Lp} > 0.$$

Thus the following proposition is valid.

Proposition 7. Pareto stability sets expand if the parameters of unemployment disutility λ, γ increase and contract if reservation wages, reservation salaries, or output prices increase.

Using different bargaining approaches, one might obtain more restricted sets of possible outcomes. As a rule, the set must be one dimensional, not just a point as would usually be expected.

For example, let us consider a generalized Nash bargaining approach (Svejnar (1986)).

Let $w = b$ and $s = a$ be threat points and consider a nonsymmetric Nash bargaining problem:

[15] In a general case, one can say that a point x is Pareto stable on a set X with respect to functions

$F_i(x, z)$, $i = 1,...n$ if x is Pareto-optimal on X under $z = x$. Pareto stable sets can have rather complicated structures even for quasiconcave functions.

$$(f(s) - f(a))^{\beta}[u(w) - u(b)]\,\Gamma^{\beta}(\delta)\Lambda(\delta) \rightarrow max \qquad (21)$$

$$w = (V(N) - c - s) / N \geq 0 \qquad (22)$$

$$N \geq \delta L \qquad (23)$$

$$0 \leq \delta \leq 1, \qquad (24)$$

where β is an indicator of manager power in the bargaining, $\beta>0$.

Definition 4. An employment level L is Nash stable if $(1, L, s^{)}$ is a solution of the problem (21)-(24) for some $s^{\cdot}$ The set of all (L, w), such that L is Nash stable and w is the corresponding wage rate, is called the Nash stability curve.

Obviously every Nash stable level is Pareto stable.

Assume that the problem (21)-(24) has a unique solution under $L= 0$. Denote it by (δ_1 , L_1 , s_1). Then obviously $\delta_1 = 1$, and L_1 is Nash stable.

Denote

$$S(N,w) = V(N) - c - wN. \qquad (25)$$

One can check that $Nu(W(N, s))$ is concave with respect to (N,s) and strictly concave with respect to N. If $L \leq L_1$, then the employment solution of the problem (21)-(24) is equal to L_1. If $L \geq L_1$, then (23) is fulfilled as an equality and (21) -(24) turns out to be equivalent to a concave programming problem. Therefore an employment ,L ,is Nash stable iff there exist w and $s = S(L,w)$ such that (14), (16) and the following relations are fullfiled :

$$G(s) = \beta LT(w), \qquad (26)$$

$$(\beta\gamma + \lambda)T(w) \geq w - V', \qquad (27)$$

where G, T are defined as above.

The inequality (27) is a consequence of (13) and (26). Equations (26), (25) define a Nash stability curve $w = H(L)$. By the definition of (L_1 , s_1), we have

$$w_1 = W(L_1, s_1) = H(L_1) = V'(L_1).$$

Denote $e = L(\beta T' + G')$. Thus

$$H' = (G'S_L - \beta T)/e < 0 \qquad (28)$$

on the Pareto stable set, since $G' > 0$, $T > 0$, $T' > 0$ and $S_L = V'(L) - w < 0$. Thus $H(L)$ is downward sloping.

Now let us chose L so large that $W(L, a) < b$ and consider a solution (δ_2 , L_2 , s_2) of the Nash problem (21)-(24). Obviously, $\delta_2 < 1$ (otherwise, (21) would be negative) and condition (27) is fulfilled as an equality. All the conditions (14), (16), (26) are also valid for (L_2 , s_2). Thus L_2 is Nash stable and $(L_2 , w_2 = W(L_2 , s_2))$ belongs to the contract curve. The Nash stability curve looks like $N_1 N_2$ in fig.4, and its projection, L_1L_2 , is a Nash stability segment.

Thus we have proven the following statement.

Proposition 8. The set of all Nash stable employment levels is a segment $[L_1, L_2]$, and the corresponding wage rates are given by a downward sloping curve, $H(L)$, such that the points $(L_1, H(L_1))$, $(L_2, H(L_2))$ are the bargaining results for very small and very large initial labor inputs.

If an initial employment level, L, is not Nash stable, then the Nash bargaining outcome may be L_1 or L_2. Similarly to the simplest case of section 2, the Nash stability segment is reachable in one step. If L belongs to the interior of the segment, then the firm maintains this employment level independently of (not too large) external shocks.

Let z be a parameter and $H(L_1(z), z) = V'(L_1(z),z)$. Then $L_{1z} = (V_{Lz} - H_z)/g$, where H_z is the derivative of H with respect to the second variable, $g = H_L - V_{LL}$. The function $H - V_L$ is increasing with respect to L in a neighborhood of L_1 (see fig.4) and thus $g > 0$. Considering z = a, b, β, p ,where p is an output price, one obtains

$$H_a = G_a/e < 0,\ H_b = -\beta L T_b/e > 0;\ H_\beta = -LT/e < 0;\ H_p = G'V_p/e > 0.$$

Therefore

$$L_{1a} = -G_a/eg > 0,\ L_{1b} = \beta L T_b/eg < 0.$$

$$L_{1\beta} = LT/g > 0.$$

$$L_{1p} = (V_{Lp} - G'V_p/e)/g = (V_{Lp} L\beta T' + G'(V_{Lp} L - V_p))/eg. \quad (29)$$

If the production function is homogeneous, then the second term in (29) is negative (see the proof of proposition 4), and the sign of L_{1p} is indefinite and depends on β.

Consider now what does happen with L_2. One must study the equation $C(L_2, z) = H(L_2, z)$ to calculate L_{2z}. However, it is simpler to use the equation $Y(L_2, z) = H(L_2, z)$, where Y is a solution of the equation

$$(\lambda + \beta\gamma)T(w) = w - V'. \quad (30)$$

Denote $t = (\lambda + \beta\gamma)T' - 1$, and assume $\lambda + \beta\gamma > 1$. We have

$Y_L = -V_{LL}/t > 0$; $Y_\beta = -\gamma T/t$; $Y_\gamma = -\gamma T/t < 0$; $Y_\lambda = -\beta T/t < 0$;
$Y_b = -(\lambda + \beta\gamma)T_b/t > 0$;

$Y_p = -V_{Lp}/t < 0$.

Since $L_{2z} = (H_z - Y_z)/(Y_L - H_L)$, $Y_L - H_L > 0$, we obtain from (20) that
$L_{2\gamma} > 0$; $L_{2\lambda} > 0$.

$(Y_L - H_L)L_{2\beta} = -Lt/e + \gamma T/t = -LdT/te < 0$.

$L_{2a} < 0$; $(Y_L - H_L)L_{2b} = -\beta LT_b/e + (\lambda + \beta\gamma)T_b/t = (\lambda + \beta\gamma)LT_b(\beta + G')/te < 0$.

$L_{2p} > 0$.

The following statement is a straightforward consequence of the above calculations.

Proposition 9. The stability segment $L_1\ L_2$ expands when indicators of unemployment disutilities, λ and γ, increase and shrinks when the manager power, β, or the reservation salary, a, increase. It also shrinks if β is small and the worker reservation wage b increases.

The difference in behavior of the L_1 and L_2 derivatives with respect to reservation values, a and b , can be easily explained. Having a stronger status quo position, managers are able to obtain a larger salary by increasing employment at L_1 or reducing it at L_2. An improvement of a worker's status quo position entails lower unemployment disutility and a wish to raise the wage rate via a decrease in employment at L_1 or at L_2. If β=0, then s =0 and L_1 does not depend on b. The larger the value of β the higher manager salary and the easier it is for workers to get a concession at L_1 to reduce employment.

If the indicator of manager power β increases, then, in accordance with Proposition 9, the Nash stability curve shifts down and the stability segment shrinks (Fig. 4). When managers strongly dominate (β is large), the wage rate is close to its reservation value b. If $\gamma = 0$, then $L_K = L_b$ in the limit and employment decisions are responsive. Otherwise, the Nash stable employment segment cannot be shorter than $[L_b, L_K]$.

8 Concluding remarks

This paper is based on six stylized facts extracted from a number of empirical studies devoted to labor markets in Russia and some other transition economies.

1 Employment decisions are insensitive to changes; labor hoarding prevails.
2 Wage rates are responsive.
3 There are large interfirm workforce flows (even if market conditions deteriorate).
4 Employment decisions are more responsive for manager dominated firms, though the difference is not too large.
5 Insider ownership dominates.
6 Capital markets are poorly designed.

The approach developed above first explained four stylized facts and then employed the last two of these. We have shown that insensitivity of employment decisions is a substantial feature of insider-owned firms. The insensitivity takes place for both worker-controlled and manager-controlled firms, were managers feel pressure from outsiders, as well as for firms in which employment decisions are made via bargaining between two groups. The insensitivity entails a continuum of equilibria. Even if the firms are identical with respect to technologies and preferences, they may have different employment levels and hence different wage rates.

Moreover, identical firms may respond qualitatively differently to external shocks.

This makes the problem of investigating such a system much more complicated than would usually be expected. This may be the main source of difficulties that many researchers face in trying to discover connections between the behavior of a firm and its ownership structure.

The insensitivity entails efficiency losses when firms refuse to hire or fire workers in spite of different marginal labor productivities. For a country like Russia, however, a probable alternative would be a huge rise in unemployment, up to 35-40 percent. This can hardly be considered as a better option.

The theory developed and the experience gained to date suggest that the collective enterprise, established by law, may be a more efficient ownership form for transition economies than the joint stock company owned by insiders. Efficiency losses would be much lower if worker collectives could trade their memberships and hire additional workers for competitive wage rates. This assumes a formal distinction between insider-owners and workers who are recently employed. It is reasonable to consider a reform that would introduce this Japanese-type system in Russia.

The results of this paper do not contradict the standard hypotheses regarding an important question: « Why is the insiders behavior so different in different transition countries?» The size of unemployment benefits, cultural factors, managers' power and, in addition, the initial locations of firms in their stability segments are among the possible explanatory variables. However, additional work is needed to produce a convincing answer- an interesting area of future research.

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Appendix. Figures 1 – 4

Figure 1.

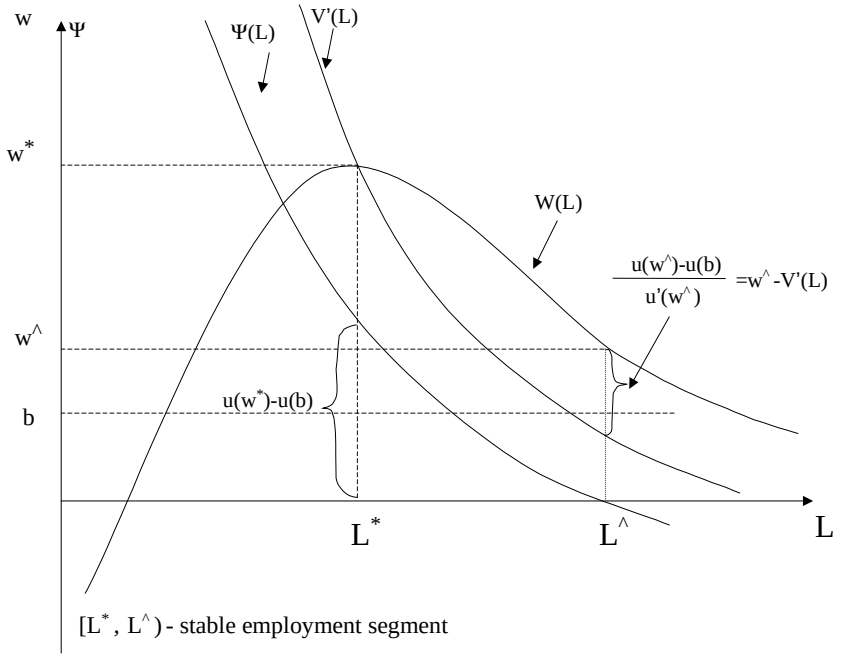


Figure 2.

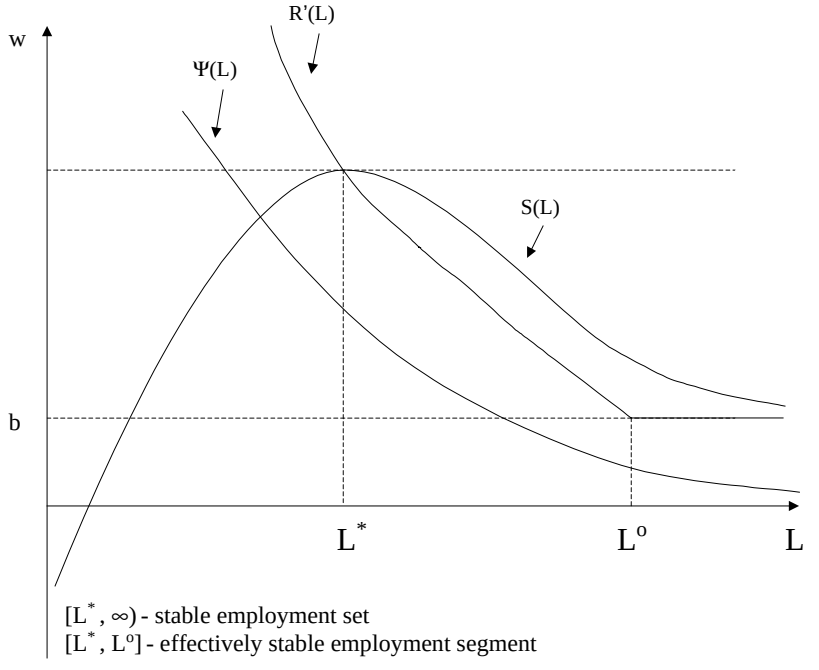

w
R'(L)
Ψ(L)
S(L)
b
L*
Lo
L
[L*, ∞) - stable employment set
[L*, Lo] - effectively stable employment segment

Figure 3.

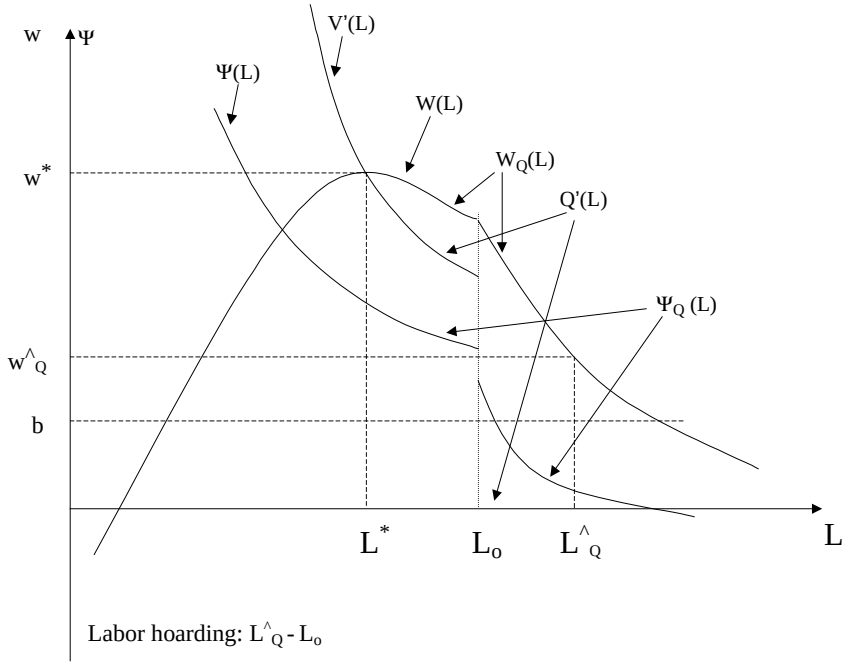
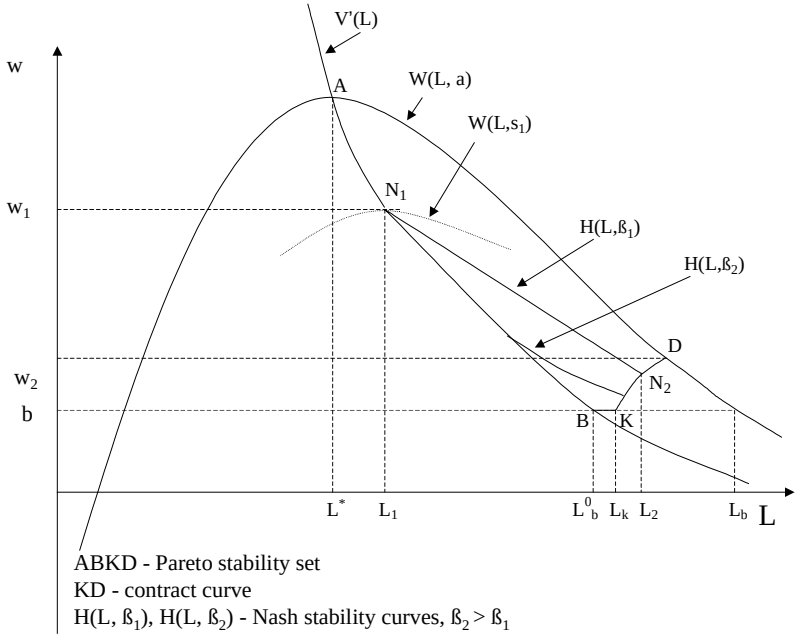

w
Ψ
V'(L)
Ψ(L)
W(L)
W_Q(L)
w^*
Q'(L)
Ψ_Q (L)
$w^\wedge_Q$
b
L^*
L_o
$L^\wedge_Q$
L
Labor hoarding: $L^\wedge_Q - L_o$

Figure 4.



ABKD - Pareto stability set
KD - contract curve
H(L, ß$_1$), H(L, ß$_2$) - Nash stability curves, ß$_2$ > ß$_1$

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Editor-in-Chief **Jukka Pirttilä**

Bank of Finland Institute for Economies inTransition
(BOFIT)
P.O. Box 160
FIN-00101 Helsinki
Phone: +358 9 183 2268
Fax: +358 9 183 2294
bofit@bof.fi
www.bof.fi/bofit