

## Labor Earnings in One-Company Towns: Theory and Evidence from Kazakhstan

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*One-company towns, characterized by the presence of a large employer in a local labor market, are a frequent legacy of state-led development strategies. How will downsizing or closing unprofitable state-owned enterprises affect these towns? This article develops a simple model combining monopsony power in the labor market with a Keynesian closure of the product market and uses it to interpret the findings of previous studies. The article evaluates the impact of the company's employment level on the town's labor earnings in Kazakhstan, where one-company towns are still prevalent. The evaluation is based on data from the 1996 Living Standards Measurement Survey. The results show that labor earnings in the town decrease roughly 1.5 percent when the share of its population working for the company decreases 1 percent. The results are robust to changes in the definition of labor earnings and to the inclusion of a variety of other community characteristics in the analysis. These results and the theoretical model are combined to evaluate the welfare impact of company downsizing and, consequently, to derive the optimal extent of labor retrenchment.*

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Many developing countries, and especially transition economies, have one-company towns whose distinctive feature is the presence of a large employer in a local labor market. In spite of their name, one-company towns are not necessarily urban agglomerations. In some transition economies, the label applies to the rural area surrounding a large agricultural producer, such as a state-owned farm. More often, however, it applies to mining towns and to the communities developed next to large manufacturing plants, such as steel mills or armament factories. In all cases, the company accounts for a substantial share of the jobs in the town, and even those who do not work for the company depend on it to make a living. If the company were to cease its operations, the one-company town could easily become a ghost town.

One-company towns also exist, or at least existed, in industrial countries. The coal mining company towns in the U.S. region of Appalachia at the turn of the century were in some respects similar to the one-company towns in transition economies and developing countries nowadays. In coal mining company towns, a vertically integrated enterprise provided a variety of affiliated services

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to its workers, from housing to stores to medical services. However, in some of the coal mining company towns no positive externality stemmed from the company because the only jobs in town were company jobs. In this respect, the one-company towns in developing countries and transition economies may resemble more the independent towns considered by Fishback (1992), where housing and stores do not belong to the main employer.

Central planning, state ownership, and directed credit have made the one-company town setting more prevalent in developing countries than it was in industrial countries by fostering the settlement of large plants in relatively isolated communities. Large plants were supposed to exploit economies of scale, reduce import dependence, or satisfy sentiments of national pride. Remote locations were sometimes justified by the availability of a key natural resource, but they were also chosen to promote regional development, to assert the nation's sovereignty, or to hide plants from the outside world. At present, most of those plants are inefficient and overstaffed. The demise of state-led development will be incomplete, it seems, until these plants are dramatically downsized, truly privatized, or closed altogether.

Decisions affecting state-owned enterprises in one-company towns should not be based solely on considerations of profitability. Keeping these companies in operation certainly entails a cost for the rest of society because their deficits translate into higher taxes or lower social expenditures. But shutting them down, or significantly downsizing their operations, entails a cost for the populations that surround them and depend on them to sustain their economic activity. The optimal policy decision involves a tradeoff between these two costs. Unfortunately, relatively little is known about the magnitude of the cost to the surrounding populations. As in other areas of public policy, externalities are more difficult to quantify than deficits. In the absence of information about the impact of the company's size on the town's earnings, decisions regarding labor retrenchment could be misguided.

This article analyzes the one-company-town problem from both a theoretical and an empirical point of view. The theoretical part develops a simple model of the one-company-town setting, combining aspects of the monopsony model of the labor market and the Keynesian model of the product market. The monopsony aspect of the model is warranted because the company may not behave as a wage taker in the town's labor market. After all, the one-company-town setting provides a textbook example of market power by employers. The Keynesian aspect of the model captures the fact that many of the other, smaller businesses in town cater to the company and its employees. This simple model is used as a framework to interpret the findings of previous studies, to derive the specifications for the empirical analysis, to evaluate the welfare impact of downsizing, and to discuss the corresponding policy implications.

The empirical part uses data from Kazakhstan, a country with several features that make it relevant for our study. First, it is to some extent representative of the transition economies in Central Asia and Eastern Europe. Its output per

capita is close to the median for this group of countries, and other indicators of economic development occupy a roughly intermediate position as well. Second, the one-company-town setting is still prevalent in Kazakhstan, and, because of the vast surface of the country, one-company towns tend to be quite isolated from one another. Third, the data on individual earnings and community characteristics that are needed for the empirical analysis have been collected and processed recently. A previous use of these data in the context of a poverty assessment indicates that they are of reasonable quality (World Bank 1998).

Section I discusses the one-company-town problem in an intuitive way. Section II formalizes this discussion under the form of a simple analytical model. In section III, this model serves as the background for a review of the literature. Section IV provides a brief description of Kazakhstan and its labor market. Section V addresses data issues, including the construction of the variables measuring labor earnings and company size. Section VI regresses labor earnings on individual characteristics and the size of the largest employer in town. Section VII shows that the results are not affected when other community characteristics, apart from the size of the largest employer, are taken into account. Section VIII combines the empirical results and the theoretical model to assess the welfare impact of company downsizing and to derive the policy implications. Section IX concludes.

## I. THE PROBLEM

The textbook partial equilibrium diagram of the labor market can be used to discuss the one-company-town problem in an intuitive way. This diagram represents the determinants of employment and labor earnings in an integrated, relatively frictionless labor market. Consider the labor market of a town, under the assumption that neither local firms nor individuals can move easily in or out of it. Suppose that no local firm is able to affect labor market outcomes on its own. Suppose also that a large number of individuals can either work or perform other activities, such as studying or rearing children. In this simple setting, it is possible to analyze how the settlement of a large firm in the town affects its labor market equilibrium. The results shed light on what would happen if an existing large firm were to cease or downsize its activities.

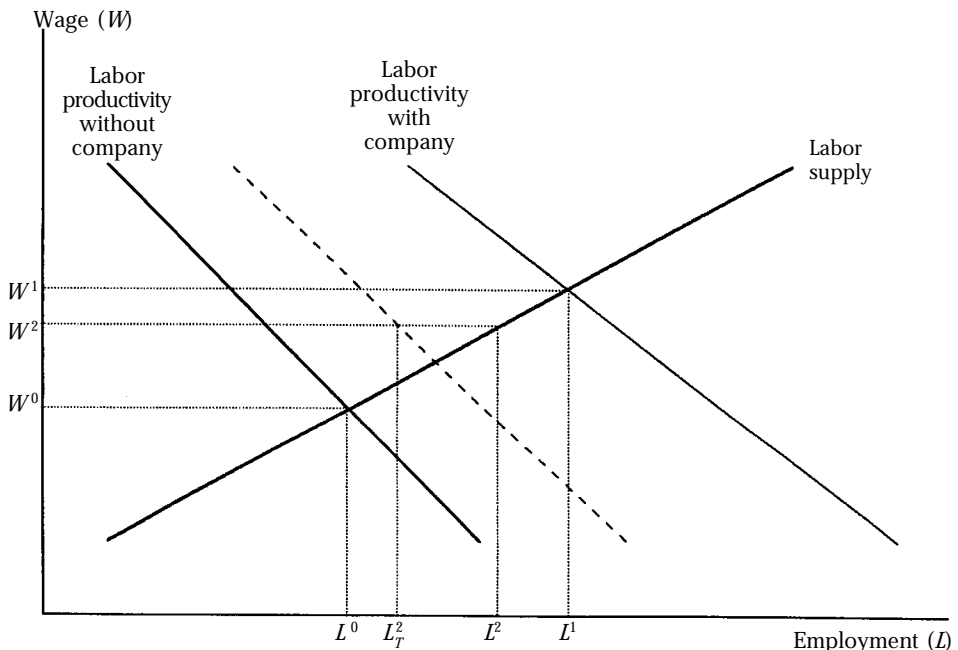
The upward-sloping line in figure 1 represents labor supply. It indicates how many individuals ( $L$  on the horizontal axis) would prefer to work rather than perform other activities for any given wage rate ( $W$  on the vertical axis). The downward-sloping line marked "labor productivity without company" represents labor demand by local firms. It indicates the marginal productivity of labor in these firms or, conversely, the number of workers these firms would be willing to employ at any given wage rate. This line is downward-sloping under the assumption of a decreasing marginal productivity of labor; it would be flat if labor productivity were constant. In the absence of a large company, the labor market equilibrium would lie at the intersection of the supply and demand lines.

The equilibrium wage in the town would be  $W^0$ , and the equilibrium employment level would be  $L^0$ .

When a large company settles in the town, at least some workers can be employed more productively, as shown by the upward shift of the marginal productivity line in figure 1 (the new line would be flat if labor productivity at the company were constant). Assume first that the company behaves in the same way as local firms. Under this assumption, the new labor market equilibrium would obtain for an employment level  $L^1$  and a wage level  $W^1$ . However, it could be in the interest of the company to pay less than  $W^1$ . At a lower wage level, more individuals would prefer to perform other activities rather than work for a wage. Because some of those who work for a wage are employed by local firms, employment in the large company would fall. The company's output would fall, but its labor costs would fall, too. It is in the interest of the company to pay less than  $W^1$  as long as the resulting fall in output is smaller than the corresponding fall in labor costs.

Let  $W^2$  be the wage level that maximizes the profits of the company. This level is necessarily higher than  $W^0$ ; otherwise, the company would be unable to compete for workers with local firms. It follows that the equilibrium level of employment is higher than it would be in the absence of the company ( $L^2 > L^0$ ). Employment by local firms, however, may be either higher or lower than before, depending on the impact of increased employment and wages on local consumption. There are many goods and services that cannot be "imported" from other

Figure 1. *Employment and Wages in a One-Company Town*



towns, so their prices would increase with consumption, and local firms would find it profitable to hire more workers after the company settles in the town. The broken line in figure 1 represents the labor demand of local firms in the new equilibrium (as the model in the next section shows, this line is not necessarily downward-sloping). For a wage level  $W^2$  employment by local firms would be  $L_T^2$ . This new employment level is larger than  $L^0$  when local goods and services account for a large share of the town's consumption. It is also larger than  $L^0$  when the productivity of labor is constant.

Whether the company behaves as a wage taker or as a wage maker depends, among other things, on its objectives. In state-owned enterprises, those objectives are not always clearly specified. And even when they are, managers do not necessarily face the appropriate incentives to fulfill them. However, figure 1 shows that the presence of a large company raises labor earnings in town as long as labor market equilibrium lies on the town's labor supply line. This result holds regardless of whether the company exploits its ability to push wages down.

## II. A SIMPLE MODEL

To interpret the findings of previous studies as well as to implement the empirical study of the case of Kazakhstan, we organize the preceding discussion under the form of an analytical model. This model does not thoroughly describe the one-company-town setting. Instead, it highlights how the size of the company can affect employment and earnings in the town. With this objective in mind, we keep our hypotheses regarding technology and preferences simple. The introduction of a Keynesian closure in an otherwise standard monopsony model of the labor market distinguishes this model from the previous literature (see Boal and Ransom 1997).

Assume that local firms use labor only and that their productivity is constant regardless of their volume of output. An example of a local firm with these characteristics would be a barbershop. Haircuts involve little more than the barber's time, and the average time per haircut does not vary much with the size of the shop. If units are chosen appropriately, each employee produces one unit of output over the relevant time period. Assume that labor productivity is constant in the company as well, at level  $K$ . Parameter  $K$  can be seen as a measure of the capital stock or the size of the company. These assumptions on technology can be written as follows:

$$(1) \quad Y_T = L_T$$

$$(2) \quad Y_C = KL_C$$

where  $Y$  is output,  $T$  refers to local firms, and  $C$  refers to the company. Under these assumptions, the demand lines in figure 1 would be flat.

Total employment in the town is the sum of employment in local firms and employment in the company. But for the town's labor market to be in equilib-

rium, total employment must equal the number of individuals willing to work at the prevailing wage rate. Those individuals who have a better alternative prefer not to work, unless the wage rate increases enough to match the value of that alternative. This value represents their reservation wage,  $R$ . As the wage rate goes up, individuals with increasingly higher reservation wages are drawn into the labor force, and total employment expands:

$$(3) \quad L = L_T + L_C$$

$$(4) \quad W = R$$

$$(5) \quad R = R(L) \quad \text{with} \quad \frac{dR}{dL} \cdot \frac{L}{R} = \frac{1}{\varepsilon}.$$

Parameter  $\varepsilon$  can be interpreted as a measure of the elasticity of the town's labor supply. The larger is  $\varepsilon$ , the more responsive is labor supply to changes in the wage level. Increased labor mobility between towns should therefore raise the value of  $\varepsilon$ .

Finally, it is assumed that the output of local firms is consumed in town, whereas the output of the company is sold out of town. The unit price of the company's output is supposed to be given. The unit price of local output, in turn, is determined by supply and demand. On the supply side, competition between local firms implies that this price has to be equal to the wage level  $W$  (in the example above, the price of the haircut cannot be distinguished from the earnings of the barber). On the demand side, it is assumed that a fraction  $\alpha$  of total income in the town is spent on locally produced goods. (This assumption corresponds to the case where the households' utility function is of the Cobb-Douglas type, exhibits constant returns to scale, and includes the consumption of local goods among its arguments.) Total income is the sum of the value added by local firms and the wage bill of the company. Equilibrium in the market for local goods is attained when the supply of local goods measured in money terms  $WY_T$  equals demand  $D_T$ :

$$(6) \quad WY_T = D_T$$

$$(7) \quad D_T = \alpha(WY_T + WL_C).$$

Parameter  $\alpha$  can be interpreted, in Keynesian terms, as a marginal propensity to consume.

Employment by local firms depends on the employment and pay decisions of the company because those decisions affect income and, therefore, the demand for local output.<sup>1</sup> It follows from equations 1, 3, 6, and 7 that

1. The simple specification chosen for  $D_T$  implies that there is no equilibrium in the absence of a company, except as a limit case when  $K \rightarrow 0$ . A full analysis of the case where no large company operates in town would require the introduction of a second group of local firms, producing goods that can be sold out of town. This would complicate matters without shedding additional light on the consequences of downsizing.

$$(8) \quad L = \frac{1}{1 - \alpha} L_C.$$

This relationship between  $L$  and  $L_C$  is reminiscent of the Keynesian multiplier. For every job created by the company, more than one job is created overall. The size of this multiplier depends on the marginal propensity to consume local goods  $\alpha$ . The number of jobs created by the company, in turn, depends on whether it behaves as a wage taker or as a wage maker.

The company's profits  $\pi$  are a function of its labor productivity, its labor costs, and its employment level:

$$(9) \quad \pi = (K - W)L_C.$$

If the company treats the wage level as given, it expands its employment level as long as  $K$  is higher than  $W$ . But for more individuals to be drawn into the labor force, the wage level  $W$  has to increase. Eventually, the marginal profit from hiring an extra worker falls to zero, and the labor market reaches a new equilibrium. In this equilibrium the wage level  $W^1$  verifies

$$(10) \quad W^1 = K.$$

The company could take advantage of its size to influence labor costs, however. This is because the number of workers  $L_C$  it attracts varies with the wage level  $W$  it pays. The relationship between  $L_C$  and  $W$  depends on the elasticity of labor supply by individuals, as well as on the endogenous response of employment by local firms to changes in employment and pay in the company. In analytical terms, equations 4, 5, and 8 imply

$$(11) \quad W = R \left[ \frac{1}{1 - \alpha} \cdot L_C \right].$$

Equation 11 can be interpreted as the labor supply curve faced by the company. The company's labor supply curve is flatter than the town's labor supply curve because a higher wage level leads to a higher labor demand by local firms, so that  $L_C$  increases by less than  $L$ . However, under the chosen assumptions, the elasticity of the company's labor supply curve is the same as that of the town's labor supply curve, namely  $\epsilon$ .

The optimal wage level from the point of view of the company,  $W^2$ , can be obtained by replacing the labor supply curve faced by the company in the profit function represented by equation 9. The first-order condition for this problem is

$$(10) \quad W^2 = \frac{K}{1 + (1/\epsilon)}.$$

As long as the local labor supply curve is not infinitely elastic, this wage level is lower than  $W^1$ . Because fewer individuals are drawn into the labor force, total employment is lower when the company behaves as a wage maker.

### III. PREVIOUS STUDIES

Previous studies have evaluated the empirical relevance of some of the key assumptions in the model. For instance, in the model the town's labor supply is not infinitely elastic, implying that workers do not move in and out of town in large numbers in response to regional differences in labor earnings. The literature on local labor markets has implicitly dealt with this assumption, by assessing whether the labor earnings of otherwise similar workers vary across regions in a country. The model also assumes that the company is large enough to enjoy a significant monopsony power and possibly take advantage of it. Several studies have focused on labor markets with only a few employers and tried to determine whether wages in those markets are below their competitive levels. Another key assumption is that employment and pay in the company have an impact on labor earnings in the town. Some research has implicitly dealt with this assumption by documenting everyday life in one-company-town settings.<sup>2</sup>

Even in a well-integrated economy, with good infrastructure and transportation, efficient housing markets, and a highly mobile labor force, regional disparities in labor earnings can be significant. In the United States, wage inequality has increased considerably over the past quarter of a century, but it has done so at markedly different paces depending on the region. Using data from population surveys covering almost two decades, Topel (1994) estimates the determinants of the relative wages of low-skilled and high-skilled males at the regional level. His results suggest that distinctly local factors affect relative wages. The extent of labor markets thus appears to be limited by geography. In a previous study in the same spirit, Topel (1986) also shows that wages are responsive to employment shocks at the state level. The specification he uses can be interpreted as a version of the labor supply function in equations 4 and 5, with controls added for education, experience, marital status, and other characteristics of workers, all measured at the state level. Topel finds that wages are indeed responsive to local employment shocks, particularly in the case of older and less-educated workers. This finding suggests that local labor supply is upward-sloping, as is assumed in the theoretical model.

A related issue is whether large employers enjoy some monopsony power in local labor markets. This issue has been addressed for workers with specific labor skills in well-delimited geographic areas. The market for hospital nurses is

2. There is also a vast literature on the consequences of company downsizing on the earnings of the workers dismissed by the company. Whereas these consequences tend to be sizable, workers in other firms are not necessarily affected by the downsizing process. Actually, most analyses in this literature are carried out under the assumption that downsizing entails no externalities. As a result, this literature does not shed much light on the one-company-town problem.



a case in point. Because there are only a few hospitals in each city, monopsony power by hospitals could be considerable. Frequent complaints about the “chronic shortage of nurses” indicate that hospitals would be willing to hire more nurses at the prevailing wage rate, but not to raise their wage rate to attract them. Equilibrium vacancies of this sort can be expected when firms pay wages below the relevant marginal product.

Sullivan (1989) assesses the monopsony power hypothesis by estimating the elasticity of the supply curve of nurses faced by individual hospitals. The specification used by Sullivan is similar to that of the labor supply function faced by the company, as described by equation 11, with wages and employment measured at the hospital level. Sullivan’s model includes controls for employment, wages, number of patient-days, and average length of stay in other hospitals. The regression analysis yields values of the elasticity  $\epsilon$  ranging from 1.3 in the same year to 3.8 over a three-year period. From these results, Sullivan concludes that hospitals enjoy a significant monopsony power in the market for nurses.

Surprisingly, however, the estimated values of  $\epsilon$  are similar for metropolitan and nonmetropolitan areas. Because there are many more hospitals in metropolitan areas, the labor supply curve they face should be much flatter (that is,  $\epsilon$  should be higher). Therefore, Sullivan’s results may capture something different from monopsony power. They would be consistent, for instance, with efficiency wages. If the probability of being caught shirking fell with the size of the hospital, large hospitals would have to pay higher wages than small hospitals in order to elicit the same level of effort from their nurses. But in that case, the equation estimated by Sullivan could not be interpreted as a quasi labor supply curve.

Monopsony power by employers was also likely in the coal mining company towns of Appalachia at the turn of the century. Miners in some of these towns lived in company housing and were paid in scrip that could be used only in the company store. Some of the companies controlled even the police. If these companies could not set wages below the corresponding marginal product of labor, then it is difficult to claim that companies elsewhere can do it. Boal (1995) contends that they could not. His regression analysis, based on data from 30-odd coal mining counties in West Virginia over the period 1897–1932, explains county-level wages as a function of county-level employment in the same year and in the previous year. His specification is similar to that of the local labor supply curve in equations 4 and 5. The population of the county and county dummies are included among the independent variables in the regression. Controls for average wages and employment in the other mining counties are also added, depending on the monopsony hypothesis used. Boal finds a large coefficient for employment in the same year, but the coefficient is almost as large, and has the opposite sign, for employment in the previous year. He concludes that employer monopsony power was limited in turn-of-the-century coal mining, except in the short run.

These findings have led to a reinterpretation of the Appalachian coal mining company town. Fishback (1997) argues that company housing and company

stores were mutually advantageous arrangements for workers and employers, rather than mechanisms set up by employers to exploit their workers. But it is worth mentioning that Appalachian company towns were not far apart and were linked by rail lines built to haul the coal. Findings concerning Appalachian company towns may therefore be of limited relevance for evaluating the impact of downsizing on more isolated one-company towns.

Detailed case studies are another source of information about one-company towns. The history of the town of Pullman (currently a suburb of Chicago) by Buder (1967) confirms how difficult it is to disentangle paternalism from exploitation, or mutually advantageous arrangements from monopsony power. George Pullman, who revolutionized railroad travel with his development of the sleeping car, also had a serious interest in the labor problems of the time. In 1880, he launched the construction of a model town to house his workers next to his new factory. His intention was to apply principles of business efficiency to meet the needs of his workers and establish a more peaceful system of labor relations. The bitter strike of 1894 suggests that workers thought otherwise.

Another case study implicitly dealing with monopsony power concerns gold mining in southern Africa. The account of this history by James (1992) makes it clear that the Southern African Chamber of Mines was not as enlightened as George Pullman. This chamber was formed in 1889 to organize labor supply and mitigate competition for workers between mines. Shortly after it was formed, it established centralized labor-recruiting agencies that fixed the African workers' food supply, length of shift, working day, and wage rate. Individual mines could set their own wage scales, but their average wages could not be higher than those of other mines. This system ensured that wages for miners remained constant, in real terms, between 1911 and 1969. Although James's account does not prove that gold mines paid wages below the corresponding marginal productivity of labor, it suggests that they did.

#### IV. THE CASE OF KAZAKHSTAN

From an empirical point of view, it would be ideal to have detailed data not just on one but on several one-company towns. Variation in the size of the company relative to the size of the town could then be used as a natural experiment. Conceptually, the experiment would involve a comparison of the labor earnings of workers who are alike in all respects, except that some live in towns where large companies operate whereas others live in towns with smaller companies. If the labor earnings of these workers differed in a systematic way across towns, the difference could be attributed to the externality created by the company. The regression analysis in section VI emulates this natural experiment.

Kazakhstan has dozens of one-company towns. Labor mobility in and out of them is quite low, both for geographic and for institutional reasons. Kazakhstan is the ninth largest country on earth, with a population of less than 17 million people scattered across 2.7 million square kilometers. Labor mobility is con-

strained, among other reasons, by the system of unemployment benefits. Unemployed workers need to hold a *propiska* (a local passport) in order to draw these benefits, which may dissuade them from searching for jobs outside their region of residence. Mobility is also constrained by a poorly developed housing market outside Almaty. The provision of social services by firms may further discourage mobility, although substantial progress has been made in transferring these services to local authorities.

Kazakhstan has some features that make it rather atypical among transition economies. For example, the sharp ethnic divide between the Russian north and the Kazakh south has not so far led to conflicts such as those experienced by some of the other former Soviet republics. We take into account this divide when we assess the robustness of the empirical results. Another atypical feature is that during the Soviet period Kazakhstan received the highest amount of subsidies under the old system. This massive transfer of resources is probably one of the reasons underlying the large number of one-company towns.

In other respects Kazakhstan is not an exceptional country. Its level of development is close to the median for transition economies. With an output per capita of roughly \$3,000 measured at purchasing power parity, it ranks number 14 among 23 former socialist countries in Eastern Europe and Central Asia. The private sector's share in the economy is not particularly low. A gradual process of privatization and enterprise restructuring has occurred since 1991, and the assets of many nonagricultural firms were transferred to managers' and workers' collectives in 1993. Since then, privatization has been extended to more than 90 percent of farms and 80 percent of farmland.

Finally, few institutional constraints exist on the employment and pay decisions of firms in Kazakhstan (Klugman and Scott 1997). Unionization is high, but it is widely believed that trade unions are not a significant source of labor market rigidity. The minimum wage has been drastically eroded by price liberalization and high inflation, to the point where it lacks any significance, except as a scalar for wages in the public sphere (but even the lowest-paid public sector worker earns three times the minimum wage). Also, employers obtained the right to set wages in 1987 and to lay off workers in 1990. Workers are entitled to "adequate" notice before dismissal and to severance pay amounting to three months of wages. However, newly privatized firms are under no direct or indirect obligation to maintain employment levels. In light of these weak institutional constraints, the labor market equilibrium concepts used in the theoretical part of the article should be appropriate for Kazakhstan.

## V. THE DATA

Another factor that makes Kazakhstan an interesting case is the availability of good data. An integrated multipurpose household survey was conducted in 1996. This survey had the same features as the Living Standard Measurement Surveys (LSMS) implemented with the assistance of the World Bank in many de-

veloping countries and transition economies since 1985 (see Grosh and Glewwe 1995 for a description of these surveys). The LSMS for Kazakhstan covered a nationally representative sample of more than 7,200 individuals in about 2,000 households. A probability sample was used, instead of the old quota sample of the existing Family Budget Survey, which was typical of the former Soviet Union. Because the data were collected during a single month, the survey can be seen as a pure cross-section of households, with no time dimension involved. The survey gathered information on individual characteristics and earnings, as well as on household consumption. In addition, its community questionnaire reported the distance between each community and the nearest large farm or industrial enterprise, as well as the number of individuals from the community who worked for that farm or enterprise.

Measuring labor earnings in a transition economy like Kazakhstan is not an easy task. Official wages do not provide a complete picture of official labor compensation. Official wages may underestimate total earnings because they do not include nonmonetary benefits. During the Soviet period, these benefits tended to be an important component of total labor earnings because they served to attract and retain workers when the firms' autonomy to set wages was limited. Typically, nonmonetary benefits took the form of social services, such as health and child care, or access to sanatoriums and recreational places (Klugman and Scott 1997). A portion of these benefits has been retained. Alternatively, official wages may overestimate total earnings, due to substantial arrears in their payment. Many firms facing a decline in demand for their output have refrained from adjusting employment downward, relying instead on reduced hours and "administrative" leave. To compensate for the shortfall in earnings, workers increasingly combine attachment to their formal employers with growing involvement in informal activities (Murthi 1998).

In light of these measurement problems, in the empirical analysis we use three different measures of labor earnings: wages officially earned, wages actually received, and per capita consumption. The first two measures are defined at the individual level, whereas the third one is calculated at the household level. Because of nonmonetary benefits, wage arrears, and informal activities, consumption per capita could in principle provide a better picture of actual earnings from labor than the other two measures. However, consumption per capita is also affected by the size, composition, and asset ownership of households, so that it is not strictly comparable across individuals. These shortcomings imply that none of the three earnings measures is entirely reliable on its own. But econometric results that are consistent across the three measures should carry some credibility.

Table 1 reports the means and standard deviations of the three earnings measures and the individual characteristics that are usually considered among the determinants of labor earnings. Figures for consumption per capita are constructed using the same methodology as in the poverty assessment of Kazakhstan in World Bank (1998). Table 1 shows that the average per capita consumption is similar to the average wage, although some household members do not earn

Table 1. *Sample Statistics from the Kazakhstan Living Standards Survey, 1996*

<i>Variable</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Number of observations</i>
Age (years)	37.162	9.707	2,278
Gender (male = 1)	0.522	0.497	2,278
Schooling (years)	12.122	2.332	2,278
Wages officially earned	5,077.3	4,593.8	2,278
Wages actually received	5,791.0	6,492.4	1,311
Per capita consumption	5,063.9	3,595.5	2,354
Company's population share	0.055	0.096	98

*Note:* Monetary variables are measured in tenges per month, at 1996 prices.

*Source:* Authors' calculations based on survey data.

any income. This similarity confirms that households have other earnings that are not necessarily legal or reported in addition to their wage earnings. However, the importance of these other earnings should not be overstated because labor force participation rates are high in Kazakhstan. Moreover, ethnic Russian families, who account for roughly 40 percent of the population, typically have one child. As a result, the number of household members not earning any income is lower than elsewhere.

Other measurement issues concern the size of the company. Unfortunately, the number of individuals who work for the nearest large employer is not available for 34 of the 132 communities. Table 2 displays the medians and standard deviations of the available data, expressed as percentages of the community's population. When there is no large employer in or close to the community, a zero is reported. Unfortunately, the questionnaire did not foresee the possibility

Table 2. *The Company's Population Share, Kazakhstan, 1996*

(distance at which the nearest large employer is located)

<i>Nature of the community</i>	<i>In the community</i>	<i>Within a 10-kilometer range</i>	<i>Between 10 and 50 kilometers</i>	<i>More than 50 kilometers</i>
<i>Town</i>				
Median	0.013	0.108	0.009	0.015
Standard deviation	0.037	0.147	0.016	0.008
Number of observations	25	11	4	2
<i>Other urban</i>				
Median	0.035	0.043	0.013	0.000
Standard deviation	0.093	0.042	0.018	0.000
Number of observations	8	4	2	1
<i>Rural</i>				
Median	0.178	0.005	0.000	0.000
Standard deviation	0.145	0.029	0.031	0.048
Number of observations	12	7	10	12

*Note:* The company's share of population is defined as the fraction of total population in the enumerating district working for the largest local employer.

*Source:* Authors' calculations based on survey data.

of more than one large employer per community. The data are disaggregated according to the three types of community considered by the LSMS and the distance from the community to the company. We use this disaggregation to impute the company's share of population for the communities with missing data. Consider, for instance, the case of a town where the nearest large company is within a 10-kilometer range but where data on its employment level are missing. Our imputation procedure assumes that the share of the town's population working for the company is equal to 0.108. Econometric analyses using the imputed data are likely to yield more significant estimates than those obtained using the reported data only. If the results turn out to be consistent regardless of whether imputed data are used, these estimates should carry some credibility.

## VI. COMPANY SIZE AND EARNINGS

The impact of the size of the company on the town's labor earnings is assessed by estimating a quadratic version of the quasi labor supply curve in equation 11, as follows:

$$(11') \quad \log W = \beta_0 + \beta_1 X_1 + \cdots + \beta_n X_n + \beta_{n+1} L_C + \beta_{n+2} L_C^2.$$

The  $X$  variables capture earnings determinants such as education and experience. These variables and the earnings variable  $W$  are measured at the individual level. The share  $L_C$  of the population employed by the company, however, is measured at the community level. Consequently, equation 11' can be interpreted as an earnings function augmented so as to include one community characteristic among its explanatory variables.

The idea of introducing community characteristics among the determinants of individual earnings or individual consumption is not new. For instance, Borjas (1995) shows that individual wages in the United States are affected not only by individual educational attainment but also by the average educational attainment of the neighborhoods in which the individuals grew up. Community characteristics are also included among the determinants of consumption per capita in developing countries. Thus, Narayan and Pritchett (1997) show that village social capital (measured as the membership of a variety of groups, such as burial societies) has an impact on individual consumption in Tanzania. Similarly, Ravallion and Wodon (1997) find that location dummy variables are important in explaining per capita consumption in Bangladesh. To our knowledge, the size of the largest employer in town has not been considered among the relevant community characteristics.

The quadratic specification chosen for equation 11' allows the elasticity of the labor supply curve faced by the company to vary with its size. More specifically,

$$(12) \quad \varepsilon = \frac{d \log L_C}{d \log W} = \frac{d L_C}{d \log W} \cdot \frac{1}{L_C} = \frac{1}{\beta_{n+1} L_C + 2\beta_{n+2} L_C^2}.$$

It follows that the company has no monopsony power (that is, the labor supply curve it faces is infinitely elastic) when it employs a negligible share of the community's population. How this elasticity varies as  $L_C$  increases depends on the estimated values of coefficients  $\beta_{n+1}$  and  $\beta_{n+2}$ . If both coefficients are equal to zero, the labor supply curve faced by the company is infinitely elastic regardless of the company's size.

Table 3 presents the results obtained when estimating equation 11' using each of the three measures of labor earnings, both with and without imputed data on the size of the company. The regressions using consumption per capita as a measure of labor earnings also include several household characteristics among their explanatory variables. These characteristics are the household's size, its dependency ratio, and the number of rooms it occupies in its house or apartment (shared housing is still common in Kazakhstan). The number of rooms occupied can be seen as an indication of household wealth in a country where capital and housing markets are not well developed yet. The coefficients on individual characteristics should be smaller in the regressions where consumption per capita is the explained variable because earnings are pooled in a household.

The absolute size of the estimated coefficients  $\beta_{n+1}$  and  $\beta_{n+2}$  is larger when earnings are measured through wages, either officially earned or actually received, than when they are measured through per capita consumption. The statistical significance of coefficients  $\beta_{n+1}$  and  $\beta_{n+2}$  is higher as well. The last row in table 3 reports the implicit effect of a change in the company's size on the town's labor earnings, evaluated at the sample mean (that is, for  $L_C = 0.055$ ). The average of this effect across all six specifications is roughly 1.5, implying that labor earnings in town would decrease around 1.5 percent if the share of the town's population employed by the company were to decline 1 percent. The impact appears to be higher (around 2.2) when labor earnings are measured through wages actually received and to be lower (around 0.6) when they are measured through per capita consumption.

These results suggest that large employers enjoy a significant monopsony power in the one-company towns of Kazakhstan. The elasticity of the labor supply curve faced by large employers can be assessed using equation 12. At the sample mean, this elasticity ranges from 6.7 to 15.5 in the specifications where labor earnings are measured through wages (either officially earned or actually paid). If the estimates of Sullivan (1989) and Boal (1995) are to be taken literally, the labor supply curve faced by large employers in the one-company towns of Kazakhstan would be more elastic than the supply of nurses faced by U.S. hospitals but less elastic than the labor supply curve faced by Appalachian coal mining companies. Only the results from the specifications where labor earnings are measured through per capita consumption are close to those obtained by Boal for Appalachian coal mining towns.

Figure 2 shows the levels of labor earnings  $W$  and of labor productivity  $K$  associated with different sizes of the company, under the assumption that large

Table 3. Determinants of Individual Earnings in Kazakhstan, 1996

Variable	Earnings measure					
	Wages officially earned		Wages actually received		Per capita consumption	
	a	b	a	b	a	b
Company's population share ( $L_C$ )	1.6313*** (3.520)	2.7475*** (6.788)	2.5764*** (3.424)	3.9988*** (6.202)	0.8991** (2.189)	0.5978* (1.666)
Company's population share squared ( $L_C$ ) <sup>2</sup>	-4.1558*** (-3.247)	-6.5079*** (-5.599)	-8.2478*** (-3.487)	-11.7943*** (-5.464)	-1.6377 (-1.444)	-1.0214 (-0.993)
Years of schooling	0.0746*** (9.383)	0.0837*** (13.134)	0.0922*** (7.546)	0.0812*** (8.228)	0.0172** (2.399)	0.0234*** (4.117)
Years of experience	0.0302*** (5.141)	0.0251*** (5.229)	0.0229** (2.338)	0.0275*** (3.458)	-0.0040 (-0.724)	-0.0006 (-0.140)
Years of experience squared	-0.0006*** (-4.167)	-0.0004*** (-3.852)	-0.0005** (-2.205)	-0.0007*** (-3.429)	0.0001 (0.412)	-0.0000 (-0.035)
Gender (male = 1)	0.4447*** (12.706)	0.4304*** (15.144)	0.3682*** (6.836)	0.3664*** (8.368)	0.0409 (1.311)	0.0389 (1.542)
Independent term	6.8119*** (58.302)	6.6700*** (71.694)	6.7247*** (36.335)	6.7875*** (45.506)	11.0838*** (95.753)	11.0189*** (116.632)
Household characteristics	No	No	No	No	Yes	Yes
Adjusted R <sup>2</sup>	0.146	0.166	0.112	0.123	0.185	0.201
F test	44.51	75.09	19.51	31.13	39.64	63.67
Number of observations	1,534	2,239	880	1,294	1,533	2,238
Downsizing impact (dlog W/dL <sub>C</sub> ) at the mean	1.17	2.03	1.67	2.70	0.72	0.48

\* Significant at 10 percent.

\*\* Significant at 5 percent.

\*\*\* Significant at 1 percent.

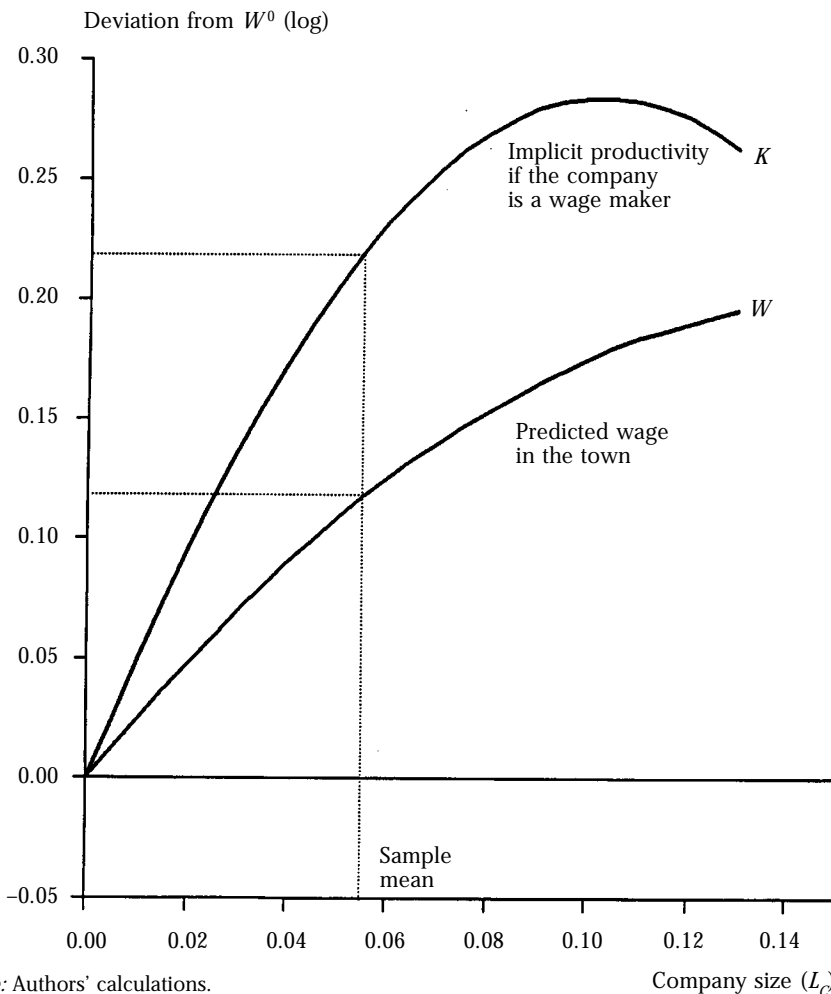
Note: The dependent variable is the log of earnings, log W. For each earnings variable, the regressions in column a are based on the company's actual share of population, whereas the regressions in column b also include imputed shares of population. All regressions were estimated by ordinary least squares. t-values are reported in parentheses.

Source: Authors' calculations.



employers behave as wage makers. This figure was constructed based on equations 11', 12, and 10', using the values of the coefficients  $\beta_{n+1}$  and  $\beta_{n+2}$  reported in the third column in table 3. The figure illustrates the tradeoff between the Keynesian and the monopsony effects of an increase in the size of the company. As the company expands its employment, it gains power over the local labor market, as shown by the widening gap between the two curves in figure 2. Therefore, the monopsony effect becomes more important in relative terms. However, the Keynesian effect dominates over the relevant range of company sizes, as shown by the upward slope of the lower curve. Based on the coefficients in the third column in table 3, wages in town increase with  $L_C$  as long as the company employs less than 15.6 percent of the town's population. Because the largest employer employs less than this in more than 90 percent of the districts in our

Figure 2. *Wages in the Town and the Size of the Company*



sample, company downsizing can be expected to reduce the town's labor earnings. This conclusion remains valid when estimates from other columns in table 3 are used instead.

We also tried several modifications to the specification in equation 11' to check the robustness of our results. One of the modifications was to replace years of education by a series of dummies for education degrees (primary, secondary, vocational, technical college). The results did not change much. Another modification was to include dummy variables for the distance between the main employer and the town, as defined in table 2. These dummies, either alone or interacted with the company's size, reduced the overall fit of the regressions without yielding any consistently different pattern. Finally, we tried to classify individuals depending on whether they worked for the company. Because this information was not provided by the LSMS survey, this attempt was based on the sector of activity of the main employer in a district and that of the individuals surveyed in that district. Unfortunately, too many individuals were difficult to classify, so we did not pursue this line of analysis.

## VII. TOWN CHARACTERISTICS AND EARNINGS

The results in section VI could be objectionable on the grounds that association is not causation. Labor earnings in communities where large companies operate could be higher not because of a positive externality from employment in the company but rather because of other differences between these and other communities. For instance, the average educational attainment in communities with large companies could be higher, or the social capital could be more developed, than in communities with smaller companies. To the extent that downsizing in the company does not affect these other community characteristics, it would be inappropriate to predict the impact of downsizing on labor earnings based on the estimated values of coefficients  $\beta_{n+1}$  and  $\beta_{n+2}$ . The results in section VI could therefore be biased due to the omission of relevant community characteristics.

The one-company towns of Kazakhstan are admittedly different from other communities. Table 4 reports the correlation coefficients between the share of the town's population working for the largest employer and a variety of other community characteristics. These coefficients are calculated with and without using imputed data on the company's size. They suggest that one-company towns tend to have a larger share of their employment in manufacturing, to be more Russian (as opposed to Kazakh), and to be more Orthodox (as opposed to Muslim). Table 4 also reports the correlation coefficients between  $L_C$  and the  $X$  variables in equation 11'. These correlations are much weaker than the correlations with community characteristics. The gender composition and average educational level of one-company towns are roughly the same as those of other communities. If anything, one-company towns could have a slightly younger population.

Table 4. *Companies, Towns, and Individuals in Kazakhstan, 1996*  
(correlation coefficients with the company's share of population)

<i>Variable</i>	<i>Actual share</i>	<i>Imputed share</i>
<i>Community characteristics</i>		
Population in the community	-0.121	-0.079
Kazakh share of population	-0.117	-0.152*
Russian share of population	0.125	0.145*
Muslim share of population	-0.136	-0.157*
Orthodox share of population	0.166	0.185**
Manufacturing share of working-age population	0.204**	0.205**
Agriculture share of working-age population	0.092	0.008
Commerce share of working-age population	-0.131	-0.075
Unemployment share of working-age population	-0.058	-0.051
Illiteracy share of adult population	-0.027	0.034
Number of observations	98	132
<i>Individual characteristics</i>		
Age (years)	-0.055*	-0.038
Gender (percentage male)	0.005	-0.005
Schooling (years)	-0.038	-0.015
Number of observations	1,534	2,239

\* Significant at 10 percent.

\*\* Significant at 5 percent.

*Note:* Values are correlation coefficients between the share of the town's population that is working for the largest employer and a variety of other community and individual characteristics.

*Source:* Authors' calculations.

The main results remain roughly unchanged when these other community characteristics are included among the right-hand-side variables in equation 11', as shown in table 5. (Strictly speaking, not all the community characteristics listed in table 4 are included in the regressions, due to multicollinearity problems. For instance, the correlation coefficient between the Russian and Kazakh shares of population is close to -1.) Only when labor earnings are measured through officially earned wages do the coefficients  $\beta_{n+1}$  and  $\beta_{n+2}$  become statistically insignificant. But the coefficients obtained when measuring labor earnings through per capita consumption, which are statistically insignificant in table 3, are now significant. The average effect of a change in the company's size on the town's labor earnings, evaluated at the sample mean, is 1.25. This is not very different from the average effect in table 3. Of course, there could be other community characteristics, not captured by the 1996 LSMS, that underlie the observed association between company size and labor earnings. But the community characteristics considered in table 5 cover a wide variety of aspects, from ethnicity and religion to employment structure and literacy. It is thus likely that coefficients  $\beta_{n+1}$  and  $\beta_{n+2}$  appropriately capture the kind of externality considered in the theoretical model.

**Table 5. Individual Earnings and Town Characteristics in Kazakhstan, 1996**

Variable	Wages officially earned		Wages actually received		Per capita consumption	
	a	b	a	b	a	b
Company's population share ( $L_C$ )	0.6977 (1.454)	0.6728 (1.531)	1.6343** (1.966)	2.0310*** (2.631)	2.6327*** (5.958)	2.3566*** (5.605)
Company's population share squared ( $L_C$ ) <sup>2</sup>	-0.0198 (-0.015)	-0.1238 (-0.103)	-4.1381* (-1.654)	-5.0016** (-2.095)	-7.1830*** (-6.059)	-6.6121*** (-5.749)
Russian share of population	0.3196*** (4.290)	0.4035*** (6.481)	0.4017** (3.162)	0.3751*** (3.377)	0.8762*** (11.995)	0.7619*** (11.997)
Manufacturing share of working-age population	0.0331 (0.284)	0.1645* (1.691)	-0.1862 (-1.023)	-0.3500** (-2.256)	-0.4177*** (-3.883)	-0.3422*** (-3.676)
Agriculture share of working-age population	-0.7753*** (-11.419)	-0.6425*** (-11.502)	-0.8408** (-7.252)	-0.8349*** (-8.455)	0.0325 (0.514)	0.0408 (0.754)
Commerce share of working-age population	-1.2052*** (-5.030)	-0.8435*** (-3.818)	-1.2281** (-2.493)	-0.7633* (-1.649)	-1.2283*** (-5.510)	-1.5709*** (-7.381)
Unemployment share of working-age population	0.2276 (1.035)	-0.0665 (-0.371)	0.6663* (1.831)	0.2257 (0.735)	-0.0797 (-0.393)	-0.3550** (-2.068)
Illiteracy share of adult population	0.1236 (0.179)	0.0495 (0.076)	1.2915 (0.875)	1.1790 (0.830)	-1.5198** (-2.379)	-1.5981** (-2.576)
Individual characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Household characteristics	No	No	No	No	Yes	Yes
Adjusted R <sup>2</sup>	0.303	0.324	0.207	0.209	0.290	0.292
F test	54.24	80.16	19.31	25.22	40.91	55.30
Number of observations	1.468	1.981	843	1.100	1.467	1.980
Downsizing impact (dlog W/dL <sub>C</sub> ) at the mean	0.69	0.66	1.18	1.48	1.84	1.63

\* Significant at 10 percent.

\*\* Significant at 5 percent.

\*\*\* Significant at 1 percent.

Note: The dependent variable is the log of earnings, log W. For each earnings variable, the regressions in column a are based on the actual population share of the company, whereas the regressions in column b also include imputed population shares. All regressions were estimated by ordinary least squares. t-values are reported in parentheses.

Source: Authors' calculations.

## VIII. POLICY IMPLICATIONS

The estimated externality from employment in the company to labor earnings in the town is an important input with which to assess the socially optimal extent of downsizing, but this assessment has to be based on welfare comparisons rather than on earnings comparisons. The fact that the estimated externality is positive and statistically significant suggests that the theoretical model discussed in section II is empirically relevant. This model can therefore be used to calculate the welfare effect of downsizing in the company and to derive the appropriate policy implications. We illustrate this approach by discussing the optimal subsidy to an inefficient plant operating in a one-company town. A more general analysis should also consider other policy instruments, such as subsidies to local firms and income transfers to individuals who do not have jobs. Therefore, the rule we propose to determine the subsidy rate will be optimal only to the extent that no other policy instruments are available. We leave a more general analysis of the problem to the interested reader.

A benevolent government should care not only about the well-being  $V$  of persons whose lives are directly affected by economic activity in the one-company town but also about the well-being  $F$  of those who pay taxes to support that activity. The first group includes those who work for the company, those who work for local firms, those who live in the town but do not perform economic activities, and the owners of the company. In analytical terms,

$$(13) \quad V = WL + \int_L^1 R(x)dx + (K - W)L_C.$$

The first term on the right-hand side of equation 13 represents total labor earnings in the town. If welfare is proportional to income (that is, if there is no risk aversion), this term measures the well-being of the town's workers. The second term measures the well-being of those who live in the town but perform noneconomic activities. In this term,  $x$  is an integration variable. The third term measures the profits made by the owners of the company, thus reflecting their own well-being. This third term is included under the assumption that the company behaves as a wage maker.

Supporting the company entails a double burden for the rest of the society. A first, direct cost is represented by the amount of resources that are transferred to the company and thus cannot be used for consumption or investment purposes. A second, more subtle burden results from the use of distortionary taxes to raise those resources. Because these taxes may affect private sector decisions regarding labor force participation, on-the-job effort, and savings, among others, transferring one tenge to the company costs more than one tenge to the rest of the society. In analytical terms, the function  $F$  can be written as

$$(14) \quad F = (1 + \lambda)SL_C$$

where  $S$  is the subsidy per worker and parameter  $\lambda$  captures the marginal tax burden. Parameter  $\lambda$  is larger the more inefficient the tax system. It could be quite large in transition economies and developing countries.

The problem faced by a benevolent government is to choose the level of the subsidy  $S$  that maximizes total well-being,  $V - F$ . Let  $K^*$  be the “true” labor productivity of the company in the absence of transfers from the government. The subsidy  $S$  is thus equivalent to

$$(15) \quad S = K - K^* = sK$$

where  $s$  represents the subsidy rate. Equation 15 and the model described in section II are the constraints of the government’s maximization problem. Its solution is easier to interpret if we solve separately for the effects of  $S$  on  $V$  and on  $F$ .

The impact of the subsidy on the well-being of those who are directly affected by economic activity in the town can be evaluated by totally differentiating equation 13, using Leibniz’s rule, and replacing equations 8, 10’, 11, and 15. This yields

$$(16) \quad \frac{dV}{dS} = \frac{1}{1 - \alpha} \cdot \frac{1}{1 + (1/\epsilon)} \cdot L_C.$$

The impact of the subsidy is bigger the larger the marginal propensity  $\alpha$  to consume local goods. This is because those who work for the company spend on local goods, so that the subsidy creates jobs both in and out of the company. But the allocation of the newly created jobs between the company and local firms is inefficient because of the wedge between wages and labor productivity in the company. The impact of the subsidy is therefore higher the higher the elasticity  $\epsilon$  of the town’s labor supply.

The impact of the subsidy on the well-being of those who are asked to support the company, in turn, can be assessed by differentiating equation 14 and, again, replacing equations 8, 10’, 11, and 15. The following result obtains:

$$(17) \quad \frac{dF}{dS} = (1 + \lambda)(1 + s\epsilon)L_C.$$

The cost of the subsidy to the rest of society is higher the larger the elasticity  $\epsilon$  of labor supply. This is because more individuals are drawn into the labor force as the wage paid by the company increases. Employment in the company thus expands more substantially, and the total bill for the taxpayer ends up being higher. Not surprisingly, the cost to the rest of society is also higher the larger is the inefficiency  $\lambda$  of the tax system.

The optimal subsidy rate can be obtained by equating  $dV/dS$  with  $dF/dS$  and solving for  $s$ . That rate verifies

$$(18) \quad s = \frac{1}{\varepsilon} \cdot \left( \frac{1}{1 + \lambda} \cdot \frac{1}{1 - \alpha} \cdot \frac{1}{1 + (1/\varepsilon)} - 1 \right).$$

Equation 18 makes it clear that in our simple model of the one-company town, the rationale for subsidizing the company comes from the Keynesian closure of the product market. If all goods and services could be imported from other towns,  $\alpha$  would be equal to zero and  $s$  would become negative. The larger is the Keynesian effect, the higher is the optimal subsidy rate. It is also clear that the optimal subsidy rate decreases as the inefficiency  $\lambda$  of the tax system increases. Finally, the elasticity  $\varepsilon$  of the town's labor supply has opposite effects on the optimal subsidy rate. On the one hand, a high value of this elasticity makes the subsidy very expensive because employment in the company increases substantially. But on the other hand, a higher  $\varepsilon$  reduces the monopsony power of the company, thus making the labor market of the town more efficient. The net effect of a higher elasticity of labor supply is therefore ambiguous.

## IX. CONCLUSION

The results in this article suggest that a town's labor earnings increase when a large company settles in, and they can be expected to decline if this company downsizes or closes. This positive association between company size and labor earnings could hold even in cases where the company takes advantage of its monopsony power to set wages below the marginal productivity of labor. Labor earnings in the town could be even higher if the company behaved as a wage taker. But even if it behaved as a wage maker, there should be a positive externality of the company on the town's labor earnings provided that the local labor supply is not infinitely elastic and that some of the goods and services consumed by the local population are locally supplied. These two conditions are likely to be verified in many developing countries and transition economies.

In the case of Kazakhstan, this article estimates the externality at around 1.5 percentage points for every 1 percent of the local population employed by the company. But the externality could be larger in the short run. This 1.5 percent figure results from a comparison between communities harboring companies of different sizes, so it captures differences in labor earnings between equilibrium situations. Most of those companies, if not all of them, were presumably in operation when the transition to a market economy started, almost a decade ago. In spite of limited labor mobility, there must have been some labor reallocation across these communities in response to differences in earnings. The extent of labor reallocation ought to be much smaller over shorter periods of time, so that a downsizing process affecting 1 percent of the local population would probably reduce local labor earnings more than 1.5 percent.

Whereas the estimates in this article highlight a potential side effect of downsizing operations in one-company towns, their implications for public policy

are not straightforward. Even if the 1.5 percent figure could be taken literally (which it cannot), policy analysis should not be based on this earnings effect only but rather on the overall welfare impact of company downsizing. Assessing that impact requires a theoretical model such as the one we have proposed here. We interpret the positive earnings externality from the company as evidence that our theoretical model may be empirically relevant. But fully exploiting that model to identify the optimal government policy toward one-company towns is clearly beyond the scope of this article. Our discussion of the optimal subsidy to the company should be interpreted as an illustration only. A more general discussion should consider other policy instruments, such as subsidies to local firms or income transfers for those who do not work.

A cautionary note is warranted. The theoretical part of the article is based on assumptions that are not too restrictive, so that its implications may have general validity. The empirical part of the article, however, concerns a specific country. Other transition economies and developing countries may differ from Kazakhstan in the extent of their labor mobility across communities or in the degree to which the product markets of those communities are connected. Consequently, the effect of the company's employment on the town's labor earnings may be quite different from the effect estimated in the case of Kazakhstan. The effect estimated here should be seen as indicating a plausible order of magnitude. Careful studies of actual downsizing operations, in Kazakhstan and elsewhere, would be needed to assess its relevance.

#### REFERENCES

- The word "processed" describes informally reproduced works that may not be commonly available through library systems.
- Boal, William M. 1995. "Testing for Employer Monopsony in Turn-of-the-Century Coal Mining." *Rand Journal of Economics* 26(3):519–36.
- Boal, William M., and Michael R. Ransom. 1997. "Monopsony in the Labor Market." *Journal of Economic Literature* 35(1, March):86–112.
- Borjas, George J. 1995. "Ethnicity, Neighborhoods, and Human-Capital Externalities." *American Economic Review* 85(3):365–90.
- Buder, Stanley. 1967. *Pullman: An Experiment in Industrial Order and Community Planning, 1880–1930*. New York: Oxford University Press.
- Fishback, Price V. 1992. "The Economics of Company Housing: Historical Perspectives from the Coal Fields." *Journal of Law, Economics, and Organization* 8(2):346–65.
- . 1997. "Operations of 'Unfettered' Labor Markets: Exit and Voice in American Labor Markets at the Turn of the Century." NBER Working Paper Series on Historical Factors in Long-Run Growth 105. National Bureau of Economic Research, Cambridge, Mass.
- Grosh, Margaret E., and Paul Glewwe. 1995. *A Guide to Living Standards Measurement Study Surveys and Their Data Sets*. LSMS Working Paper 120. Washington, D.C.: World Bank.



- James, Wilmot G. 1992. *Our Precious Metal: African Labour in South Africa's Gold Industry, 1970–1990*. Bloomington: Indiana University Press.
- Klugman, Jeni, and Kinnon Scott. 1997. "Measuring Labor Market Activities in Kazakhstan: The Implications of Using Official Statistics." In Jane Falkingham, ed., *Household Welfare in Central Asia*. New York: St. Martin's Press.
- Murthi, Mamta. 1998. "Kazakhstan: Labor Market Study." Europe and Central Asia Human Development Sector Unit, World Bank, Washington, D.C. Processed.
- Narayan, Deepa, and Lant Pritchett. 1997. "Cents and Sociability: Household Income and Social Capital in Rural Tanzania." Policy Research Working Paper 1796. Policy Research Department, World Bank, Washington, D.C. Processed.
- Ravallion, Martin, and Quentin Wodon. 1997. "Poor Areas or Only Poor People?" Policy Research Working Paper 1798. Policy Research Department, World Bank, Washington, D.C. Processed.
- Sullivan, Daniel. 1989. "Monopsony Power in the Market for Nurses." *Journal of Law and Economics* 32(2, October):S135–78.
- Topel, Robert. 1986. "Local Labor Markets." *Journal of Political Economy* 94(3):S111–44.
- . 1994. "Regional Labor Markets and the Determinants of Wage Inequality." *American Economic Review: Papers and Proceedings* 84(5):16–22.
- World Bank. 1998. "Kazakhstan: Living Standards during the Transition." Report KZ-SR-19398. Europe and Central Asia Human Development Sector Unit, World Bank, Washington, D.C. Processed.