

# Job creation, job destruction, labour mobility and wages in Poland, 1988–1998<sup>1</sup>

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## Abstract

Longitudinal data from interviews with Poles of working age conducted in 1988, 1993 and 1998 combined with longitudinal firm-level data present a detailed view of the transition from a state-dominated to a market economy. Job losses in state firms and job creation in new private firms are the dominant employment changes, other than retirements from the labour force. In the Polish case, a significant proportion of this movement over the 1988–1998 period involves a spell of unemployment or exit from the labour force before obtaining a private sector job. This results in considerable job competition between workers leaving the state sector and those who are out of the labour force or unemployed. Income differences between the state sector and the *de novo* sector appear to have little association with mobility. These results suggest that movement to the new private sector is more likely to be the result of job loss than the result of people looking for better, higher paying jobs. Self-employment plays an important role in the development of the private sector. People working on their own account have higher incomes than wagedworkers and are likely to become owners employing

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additional workers. Incomes are higher in regions with high rates of job creation and depressed in regions with job destruction.

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## 1. Introduction

It is now widely recognized that labour market mobility is an important contributor to economic growth as workers move from lower to higher productivity jobs. This often means moving from older declining firms, industries and sectors to newly created and expanding firms. The transition economies in East-Central Europe continue to provide important evidence about labour market mobility and how it contributes to, and is affected by, job creation and destruction. We first review some of the theoretical and empirical literature on transition economics and labour mobility. We then analyse longitudinal data on Polish workers collected before and during the Polish transition to test propositions found in this literature. Some of these propositions concern changes in the employment and incomes of individual workers, which makes longitudinal data a necessary source of information. The data and analysis corroborate some existing findings on job mobility, but we develop several new propositions as well. One of these new thrusts concerns the relationship between rates of regional job creation and job destruction and changes in incomes and employment, which we study by incorporating information on local labour markets into models of job and income change. Another proposition, based on the finding that the self-employed have incomes that match or exceed those of waged workers, posits that the self-employed are very likely to be or to become employers rather than just own-account workers. We conclude with some observations comparing the Polish evidence with that of studies in other transitional economies.

## 2. Theory and evidence on labour markets during the transition in East-Central Europe

The processes of job destruction, job creation and labour mobility are inextricably connected. Schumpeter's description of economic development depends heavily on the creation of new firms and, by implication, on workers moving from older and declining firms to these newer ones. Caballero and Hammour (1996a,b) present a formal model of this process and comment specifically on the rates and timing of destruction, creation and unemployment. An important feature stressed in their model is the Schumpeterian argument that productivity in the new private sector will be higher than that in the sclerotic older sector. As resources are

reallocated to the new sector, this higher productivity will be reflected in increased aggregate growth rates and ultimately in higher wages for the workers in this sector.

Caballero and Hammour (1996b, footnote 1) suggest that their model may not apply to the transitions from a state to a private economy but their propositions are directly mirrored in the formal models of transition developed for East-Central Europe. (See Aghion and Blanchard, 1994; Castanheira and Roland, 2000; Dewatripont and Roland, 1994; Fidrmuc, 1998, 2000a,b; Rodrik, 1995; Roland, 1992, 2000.) These models' central idea, as in Caballero and Hammour, is about how fast job destruction in the state sector should proceed. The presumption is that destruction can be controlled by the government, will precede creation and will lead to periods of high unemployment. Too slow a rate of destruction means resources remain in the less or unproductive sector too long, inhibiting growth and maintaining the status quo. Too rapid a collapse of the outmoded state sector and too slow a rate of job creation in the new sectors leads to unemployment, to workers leaving the labour force and/or to self-employment as a default (Caballero and Hammour, 1996b, p. 162). This under- and unemployment has both economic and political costs, as it reduces output and capital accumulation, imposes costs on the public budget to provide security payments and fosters opposition to the reforms and the governments that pursue them. From these considerations, one hopes to deduce the optimal speed of transition and presumably a desired trajectory for unemployment.

The unemployment featured in these models has important implications for labour mobility and wages during the transition. The under- and unemployed compete for jobs in the private sector with workers in state firms who might be attracted to the private sector because of expected wage gains, work opportunities or from fear of unemployment. The competition from the under- and unemployed reduces job-to-job movements and depresses wages for those who do find employment. Thus, at least in the short run, wages may not be higher in the new private sector even if productivity is higher. Tichit (2006) developed a model of transition in which long-run development is aided by this short-run depression of wages. Jackson (2003) made the same point with a computational model of transition, although his main emphasis was on the political implications of the timing of the job creation and destruction processes.

Schumpeterian models and Caballero and Hammour (1996a,b) presume that job creation will take place in *de novo* firms that form to replace the declining enterprises. The transition models applied in East-Central Europe, however, are generally silent on this question. At times authors seem to imply that the private sector job creation will occur among privatized and restructured former state firms. Certainly, the more policy-oriented literature at the time made this assumption, with a stronger emphasis on privatization than on entrepreneurship. (Lipton and Sachs, 1990, are typical; an important exception is Murrell, 1992.)

Caballero and Hammour's reference to self-employment as underemployment or secondary work, following much of the earlier development literature, misses

a potentially important aspect of the job creation process. Some proportion of self-employment in East-Central Europe will be as just described. But other self-employed individuals are or become entrepreneurs. (See Earle and Sakova, 2000; Haltiwanger and Vodopivec, 2002; Maloney, 2004; Slomczynski and Osborn, 2005 for discussion and evidence.) Their role, far from being undesirable, both individually and socially, may be valuable on both counts. As early entrepreneurs they may be responsible for important amounts of the job creation and capital accumulation assumed in the formal models.

The empirical work on transitional economies shows several countries that resemble the models discussed and one that does not. The Polish transition is described by Jackson *et al.* (1995, 1999, 2005) and Konings *et al.* (1996) using firm-level longitudinal data from 1990 to 1997 and for the early 1990s, respectively. These studies document the rapid and early decline of state enterprise employment, the unemployment rate of nearly 17 percent in the early 1990s and the subsequent growth of employment in *de novo* firms, in accordance with the theoretical models.

Estonia's transition also fits this pattern. Haltiwanger and Vodopivec (2002) and Jurajda and Terrell (2001, 2003) analyse individual employment data and report two important features of that country's transition that are similar to Poland's and thus to the theoretical models. First, destruction preceded creation by several years, leading to a period of high unemployment. Haltiwanger and Vodopivec (2002, table 2, p. 609) report that 47 percent of those leaving a job report doing so for involuntary reasons. Secondly, virtually all the job creation was from *de novo* enterprises and not in restructured older firms. Haltiwanger and Vodopivec (2002, p. 617) report that 'job creation by owners and self-employed workers surged'.<sup>2</sup> They also find a subsequent increase in job destruction among owners, which they attribute to firm failure. They also report low separation and destruction rates among the self-employed.

Jurajda and Terrell (2001, 2003) and Sorm and Terrell (1999) report a different transition pattern for the Czech Republic. These studies also show that most job creation was by *de novo* firms and not by older firms, whether privatized or not (though most were). The Czech transition, in contrast to Poland's and Estonia's, involved a high level of job-to-job mobility directly from the state to the private sector, avoiding the period of high unemployment. The difference in mobility patterns can be related to the different transition policies in each country. The Czech Republic effectively continued soft budget constraints through the banking system for the privatized enterprises. These hidden subsidies forestalled the large and early job destruction seen in Estonia and Poland. The Czech job-to-job movement, however, decreased substantially after 1996 when subsidies were tightened and there was aggregate economic decline. These studies make it clear that the Czech case does not fit the pattern predicted by the formal models.

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<sup>2</sup> Owners are distinguished from the self-employed based on whether they employ other workers.

The formal models discussed above assume a homogenous workforce and compatibility between the newly created jobs and the skills of workers in the old jobs, allowing for job shifts once there is sufficient job creation. A second set of propositions treats the labour force as more heterogeneous and discusses which workers are more likely to make a transition and how wages are likely to change as a result. Diewald and Mach (2006), Lehmann and Wadsworth (2000), Neal (1995) and Newell and Socha (1998) all propose that the transition will change the value of different forms of human capital. The more general the capital acquired in the state sector the greater its value in the new private sector and the more specific the capital acquired, the less its value. There will be increasing returns in the form of higher wages to education and possibly managerial experience but decreasing returns to firm and job tenure, with overall work experience falling somewhere in between. The analysis of individuals' mobility adds information about the formal models' predictions. If education or other attributes have higher earnings in the private sector these attributes should be associated with an increased probability of moving from state to private firms if mobility is motivated by job attractiveness rather than job destruction.

The data on individuals' transitions necessary to explore these propositions are sparser than the evidence on job destruction and job creation. The evidence, though, is quite consistent and very much in line with the theoretical propositions. (See Boeri and Terrell, 2002; Diewald and Mach, 2006; Lehmann and Wadsworth, 2000; Newell and Socha, 1998; Sorm and Terrell, 1999.) Job separations decreased with tenure, age and education and were higher for women. In terms of wages, returns to education increased whereas returns to more specific forms of human capital, as measured by job and firm tenure, decreased. Newell and Socha (1998), however, find that these increased educational returns in the private sector were limited to men with college educations and that for all other workers the state sector rewarded schooling more highly than the private sector.

Sorm and Terrell report that new firms, particularly in Estonia, pay less than older state firms. Newell and Socha show a strong negative relationship between wages and firm size in the private sector but not in the state sector. This result does not speak directly to the newness of firms although age and size are probably negatively correlated. That new private firms pay less than older and larger state and private firms possibly contradicts the expectation that wages will be higher in these new firms because their productivity will be higher. There are two mitigating factors here. One is that over time, new firms' wages rise proportionally with their productivity, size and success (Jackson *et al.*, 2005), approaching the levels of the older firms. Second, wages in the short run will be affected by local labour markets, not just by productivity. Workers in regions with high rates of destruction and/or low rates of creation are likely to see smaller wage benefits from movement to the new, private firms independent of productivity because of job competition.

### 3. Propositions and data

There is still more to learn about transition processes and the dynamics of job destruction, job creation and labour mobility. We merge two unique datasets – a three-wave panel study of Polish workers from 1988 to 1998 and annual longitudinal data on Polish firms from 1990 to 1997 – to address several specific questions related to job mobility and wage changes:

1. Did Polish workers experience periods out of the labour force and/or unemployment as the formal models predict, as the firm-level data suggest and as was observed in Estonia? Or, was there mostly job-to-job movement as in the Czech Republic? Evidence on this point goes to the heart of the question about whether job mobility is push or pull driven.
2. Do these non-workers and unemployed subsequently obtain jobs, thus competing with those in the state sector who want to change jobs?
3. Is self-employment a realistic prospect for entrepreneurship?
4. Are wages negatively related to local job destruction because of the competition it creates between current workers and the not working and unemployed, and positively related to regional job creation because of increased demand for labour?
5. Are variations in human capital such as schooling, current job tenure and being a manager related to job mobility and to wage differences between the state and private sectors?

The individual data are the result of a longitudinal study of workers and occupations begun in 1988 by the Polish Academy of Sciences (see Slomczynski, 2005). Selected respondents were re-interviewed in 1993 and again in 1998, with an oversample of those who were self-employed and/or college graduates in 1988. (The data are described in Appendix A.) Each wave contains extensive data on respondents – such as employment, by industry and ownership type, job tenure, wages and occupation; individual characteristics such as education, age and gender. Data on the number of new firms and gross job creation and destruction in the respondent's region are from Jackson *et al.*'s (2005) longitudinal firm data. These data, described in Appendix A, measure employment, payroll and sales annually between 1990 and 1997 for firms existing in 1990 with more than five employees, identified by product code, ownership type, size and whether they added or lost jobs. These data also identify and track the subsequent yearly survival, employment, payroll and sales of firms entering each year with more than five employees, again identified by product code and ownership type. These data are disaggregated by region so that they can be matched to respondents' location to create the information on the local labour market.<sup>3</sup>

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<sup>3</sup> There were 49 regions or voivodships in the period we analyse so that the job destruction and creation data cover a relatively small area.

The timing and the structure of the data are well suited to test the propositions discussed above. The 1988 wave provides detailed and accurate information about workers' situations and wages prior to the transition.<sup>4</sup> The 1988 to 1993 interval corresponds to the period with the most job destruction (unemployment peaked at 16.5 percent in 1993) providing evidence about who left the state enterprises and what happened to them. The 1993 to 1998 interval is a very successful transition period. *De novo* firm and job creation were high, resulting in substantial aggregate growth and a sharp decline in unemployment, to 10.2 percent. The timing then, corresponds to the formal models in that massive job destruction preceded successful job creation. This correspondence to the cycles in the transition makes 1988 to 1998 the appropriate period for study even though the panel data extend beyond 1998. The integrated panel and regional data enable us to examine better the full range of propositions about the interactions among job mobility, income differences and local labour conditions.

#### 4. Descriptive summary

The first analysis describes the patterns of job retention and mobility during the two transition periods. Although descriptive, these results begin to answer several substantive questions. Of particular concern are the movements from 1988 jobs to new jobs and the proportion of moves that entailed a period of unemployment. A related question is whether these unemployed dropouts subsequently take jobs, competing with current workers. Second, we can examine whether self-employment is a main job or default option akin to unemployment. Following Earle and Sakova (2000), Haltiwanger and Vodopivec (2002) and Slomczynski and Osborn (2005) the self-employed are separated into two groups: 'owners' who employ other workers and 'own workers' who work only on their own account. Unemployment is defined as not working but actively searching for a job while not working and not searching is defined as not working. A worker in a privatized firm is someone who said they worked for a private firm and that the firm had been fully privatized.<sup>5</sup> We excluded from all analyses the 169 respondents who classified themselves as not working, primarily associated with retirement, in all three waves.

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<sup>4</sup> Other studies (Haltiwanger and Vodopivec, 2002; Jurajda and Terrell, 2001, 2003) rely on post-1989 recall data to examine mobility, which may be faulty over a several year period and is limited in the amount of information collected.

<sup>5</sup> Workers in firms whose ownership structure had changed but which were not fully privatized are classed as still working in the state sector.



### 4.1 Job movement: 1988 to 1993

Table 1 shows the transition matrix for job movements between 1988 and 1993. As expected, there is a significant increase in unemployment, which did not exist in 1988, to 9.8 percent of the respondents, which corresponds to 12.3 percent of the active 1993 workforce in the survey. An additional 14 percent of the state workers in 1988 reported being out of the workforce in 1993. This means that among state workers in 1988 but excluding retirees in 1993, a quarter were either unemployed or out of the workforce in 1993. Even considering the hidden unemployment in state firms, this is a substantial loss in production in a short period. What is not shown in the table is that 6 percent of those working in 1988 and 1993 experienced at least one unemployment spell between 1988 and 1993, meaning that a sixth of those working in 1988 were or had been unemployed during the job destruction phase of the transition. Taking into account the 14 percent who stopped working between 1988 and 1993 means that a third of state workers in 1988 experienced some period of not working. This pattern fits the formal transition models that assume that job destruction precedes job creation, creating under- and unemployment.

The possibly unanticipated result is that 16 percent of the small number of private firm workers in 1988 were unemployed in 1993, and a fifth left the

**Table 1. Employment transition probabilities, 1988–1993**

Empl. 1993	Employment 1988							1993 Share	N	Net diff.
	Not work	Pvt. farm	Private	Own work	Owner	State	1993 Share			
Not work	<b>0.363</b>	0.147	0.194	0.064	0.048	0.143	0.170	353	+69	
Pvt. farm	0.070	<b>0.687</b>	0.065	0.106	0.024	0.045	0.143	296	-4	
Private	0.102	0.023	<b>0.290</b>	0.064	0.071	0.069	0.070	145	+114	
Own work	0.039	0.013	0.032	<b>0.340</b>	<b>0.310</b>	0.029	0.041	85	+38	
Owner	0.011	0.003	0.032	<b>0.213</b>	<b>0.500</b>	0.022	0.032	66	+24	
State	0.218	0.013	0.194	0.128	0.000	<b>0.547</b>	0.399	826	-542	
Privatized	0.007	0.000	0.000	0.000	0.000	0.023	0.016	34	+34	
Unemp.	0.190	0.017	0.161	0.064	0.048	0.098	0.098	203	+203	
Retire	0.000	0.097	0.032	0.021	0.000	0.024	0.031	64	+64	
1988 Share	0.137	0.145	0.015	0.023	0.020	0.660	1.000			
N	284	300	31	47	42	1368		2072		
Creation		90	136	69	45	78		395		
Destruction		-94	-22	-31	-21	-620		-765		

*Notes:* Entries are proportion of people employed in 1993 category given 1988 employment category. Bold type indicates proportion staying in the same sector.

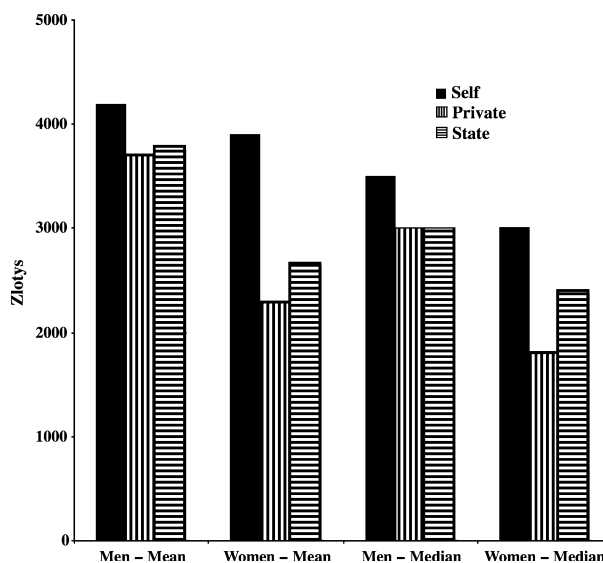


workforce between 1988 and 1993. These numbers indicate substantial job destruction in the private sector created within the planned economy. These proportions are consistent with firm-level evidence that private firms, particularly larger ones, experienced more job loss in percentage terms early in the transition than did the state enterprises (Jackson *et al.*, 1995, 2005). This outcome is not surprising, as these large private firms were just as protected and subsidized as their state-owned equivalents but were likely to be the first to be thrown under the wheels of the capitalist reform train that eliminated subsidies.

As reported in previous studies, the *de novo* private sector created a significant number of jobs, both for waged workers and the self-employed. The large movement to self-employment raises the question of whether this is simply a default option for those without primary jobs. Clearly, the 66 owners do not fit the depiction of self-employment as a secondary job and are clearly part of the job creation process. One way to assess the quality of the own worker jobs is by hours worked, with part-time work being associated with a lower quality job. If we define a part-time job as less than 20 hours per week, 7 percent of men and 10 percent of women who are own workers were part-time workers. These proportions contrast with 7 percent of male and female private sector workers and less than 1 percent of the men and 5 percent of the women in the state and privatized sectors. On the basis of part-time work, own work differs little from wage employment.

Monthly income is a second way to assess job quality. If own work is an inferior job, it should be reflected in substantially lower income, which incorporates both wages and hours worked. The surprising result, depicted in Fig. 1, is that

Figure 1. Monthly 1993 income: by employment and gender



own working men and women had higher mean and median job incomes than men and women in the private and state sectors. Particularly interesting is the gender wage gap, which is much smaller among the own workers than elsewhere, and particularly compared with the private sector. We analyse wages and incomes in more detail in a subsequent section, taking into account many factors in addition to gender and sector. The important point here is that except for a slightly higher proportion of part-time workers, there is little to support the proposition that self-employment is a secondary job.

## 4.2 Job movement: 1993 to 1998

Table 2 shows the job movement for the second phase of the transition. As expected, job destruction is down, particularly in the state sector, and job creation is higher both in the private and privatized sectors. As predicted by the transition models, about 30 percent of those unemployed or not working in 1993 found jobs in private or privatized firms, including self-employment. This movement from not working and unemployment provides significant competition for state workers contemplating a move to the private sector.

Job destruction between 1993 and 1998 is concentrated in the state sector where over 40 percent of the 1993 jobs were lost, and in agriculture where almost 60 percent of the workers left, most deciding to retire or to not work. Although not large in terms of numbers, the job destruction rate in the private sector is higher than that in the state sector. This suggests the maturing of this sector where job turnover related to firm exits in a market economy might be quite high over a 5-year period. (See Brown *et al.*, 1990; Davis and Haltiwanger, 1992; Jackson *et al.*, 1999.) Jackson *et al.* (1999, 2005) show that the failure rate of new private enterprises in Poland was higher than that in a comparable market economy in the beginning of the transition but dropped substantially by the mid-1990s. Notably, job destruction among the self-employed and owners is lower than in either the state or private sectors.

Self-employment and ownership both increased between 1993 and 1998. Among the own workers shown in Table 2 a fifth of the men and 37 percent of the women are part-time workers. Among owners the proportions are 6 percent and 10 percent, respectively. In the private sector part-time work increased to a quarter of all workers. These are larger proportions than in 1993 and are larger percentages than in the state sectors where about 5 percent of the workers work part time. Despite the increase in part-time work a substantial number of the own workers are full-time workers. It is also possible that with the improving economy some of the part-time employment may be a family choice.<sup>6</sup>

The incomes of own workers relative to wage incomes are similar to what was observed in 1993. Both men and women own workers on average make

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<sup>6</sup> Two-thirds of the self-employed women working part time report a spouse with a full-time job.

Table 2. Employment transition probabilities, 1993–1998

Empl. 1998	Employment 1993								1998	
	Not work	Pvt. farm	Private	Own	Own	State	Privtzd	Unemp	Share	N
Not work	<b>0.290</b>	0.171	0.262	0.127	0.063	0.149	0.000	0.281	0.187	283
Pvt-farm	0.031	<b>0.451</b>	0.056	0.000	0.021	0.020	0.000	0.019	0.096	145
Private	0.073	0.039	<b>0.383</b>	0.016	0.063	0.020	0.000	0.100	0.069	98
Own work	0.031	0.027	0.094	<b>0.476</b>	<b>0.146</b>	0.033	0.046	0.044	0.055	90
Owner	0.016	0.012	0.000	<b>0.191</b>	<b>0.563</b>	0.009	0.000	0.019	0.036	54
State	0.093	0.016	0.103	0.064	0.042	<b>0.580</b>	0.000	0.106	0.291	441
Privatized	0.062	0.020	0.000	0.048	0.042	0.110	<b>0.955</b>	0.094	0.087	131
Unemp	0.057	0.043	0.028	0.048	0.021	0.041	0.000	<b>0.244</b>	0.063	95
Retire	0.347	0.222	0.075	0.032	0.042	0.039	0.000	0.094	0.117	177
1993 Share	0.127	0.170	0.071	0.042	0.032	0.439	0.015	0.106	1.000	
N	193	257	107	63	48	664	22	160		1514
Net diff.	+90	-112	-9	+27	+6	-223	+109	-17		
Gross job creation and job destruction, no. jobs										
Creation		+29	+57	+60	+27	+56	+110			+339
Destruction		-141	-66	-33	-21	-279	-1			-541

Notes: Entries are proportion of people employed in 1998 category given 1993 employment category. Bold type indicates proportion staying in the same sector.

more than workers of the same sex in private and state firms, although the medians for own work men and women are the same as in the state sector. (Workers in privatized firms are included with state workers for this discussion.) A second important observation about the own workers is that 19 percent of them in 1993 expanded their operations to be classed as owners in 1998 whereas 15 percent of the owners became own workers. In terms of absolute numbers almost twice as many own workers expanded to become owners, as there were owners who shed workers to become own workers. These movements to and from ownership along with the data on part-time work and income reinforce the earlier point that among Poles, most self-employment appears to be a regular form of employment, not a default or secondary option.

## 5. Statistical models

This section estimates models of the probability of individuals moving from one sector to another for each time period and of the incomes associated with these

job changes. The first is a multinomial logit model of the probability of a state worker in 1988 staying in the state sector, moving to the private sector, becoming self-employed, becoming unemployed or leaving the workforce.<sup>7</sup> A second multinomial logit model compares the probabilities of non-workers, unemployed and state workers in 1993 being in the private sector, self-employed, unemployed or not working relative to being in the state sector in 1998. These probabilities are related to four measures of human capital, and to log of income at  $t - 1$ , gender, age and the amount of new firm creation and job destruction in the respondent's region. The human capital variables, from most to least general, are years of schooling, a position as a manager, total work experience and tenure within the current firm. The new firm variable for 1993 is the number of firms in 1990 with fewer than 100 employees that survived to 1993 plus the number of yearly entrants that survived to 1993 divided by the size of the 1993 workforce. Job destruction is the gross job loss in large state enterprises between 1990 and 1993 as a proportion of their 1990 employment. For 1998 the new firm variable is the net increase in new firms between 1993 and 1998 divided by the 1998 workforce. Job destruction is the gross job loss in large state firms between 1993 and 1997 divided by their employment in 1993. All continuous variables are measured as deviations about the sample means so the constant terms measure the expected logit value for an average state worker in an average region. Instead of discussing the coefficients in the logit models we discuss the probabilities of job movement predicted by these equations. The estimated job mobility equations and related statistics corrected for clustering within regions are shown in Table B1.

### *5.1 Statistical model of employment mobility from 1988 to 1993*

In modelling the probability of an average state worker remaining in the state sector or moving to one of the other categories, we are particularly interested in what proportion find another job versus what proportion leave the workforce or experience unemployment. As the models predict and as seen in the descriptive tables a substantial proportion of those leaving state employment were unemployed or out of the workforce between 1988 and 1993. The top row in Table 3 shows the expected probability of an average state worker in 1988 being in one of the 1993 job categories (or for any time between 1988 and 1993 in the case of unemployment). These state workers have a 0.62 chance of keeping their job. Those losing their job have a far higher probability of becoming unemployed or dropping out, 0.26, than they do of finding a new private job or of being

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<sup>7</sup> State workers who retired or who became farmers are included in the 'not working' category as both mean that the person effectively left the workforce. The unemployment variable for 1993 is defined as one for any worker who is unemployed in 1993 or who is employed but experienced a spell of unemployment between 1988 and 1993. Own work and ownership are combined to make a single self-employment category.

**Table 3. 1988–1993 Employment change from state employment in 1988**

	Job category in 1993				
	State <sub>t</sub>	Private <sub>t</sub>	Self-emp <sub>t</sub>	Unemp <sub>t</sub>	Not work <sub>t</sub>
Expected probability*	0.624	0.073	0.053	0.157	0.093
Difference from expected probability associated with difference in variable					
% New firms†	-0.018	0.030	0.009	-0.003	-0.018
% Lost jobs†	-0.019	0.010	0.002	-0.001	0.009
1988 Tenure†	0.071	-0.025	-0.021	-0.031	0.006
1988 Experience†	-0.017	0.031	-0.015	-0.013	0.015
1988 Supervisor‡	-0.069	0.061	-0.003	-0.014	0.024
1988 Income†	-0.031	0.013	0.018	-0.009	0.008
1988 Age†	-0.151	-0.019	0.009	0.003	0.158
1988 Age = 25‡	0.011	-0.007	-0.028	0.075	0.011
1988 School†	0.099	-0.015	0.004	-0.050	-0.038
Female‡	0.011	-0.022	-0.015	-0.013	0.039

*Notes:* \*Expected probability of state worker in 1988 working in 1993 sector with all variables at their means, Female = 0, Age > 30 and non-supervisor.

†Probability difference associated with a one sample deviation increase in %New Firms, % job loss, tenure, experience, age, school or income.

‡Probability differences for persons with average characteristics but who had a supervisory rather than a non-supervisory job in 1988; or who was 25 in 1988; or was a female rather than a male.

self-employed, 0.13. Again these results suggest that in Poland the people who lose a wage job are more likely to be unemployed or to leave the workforce than they are to immediately get private sector jobs or to become self-employed.

The remaining entries in Table 3 show the differences in the probabilities of a 1988 state worker being in each 1993 sector associated with differences in the individual and regional variables. The propositions about how variations in different forms of human capital affect mobility are generally borne out. Those with more job tenure, the most specific form, are more likely to stay in the state sector and less likely to be unemployed or in either of the private sectors. Supervisors in state firms, a more general form of capital, were more likely to leave the state sector for the private sector. Schooling, however, was associated with an increased likelihood of staying in the state sector and as expected with a lower probability of leaving the workforce or of being unemployed. These results suggest that movement to the private sector may not be voluntary but forced by layoffs in state firms as presumably the better educated would be less likely to be terminated involuntarily and thus to keep their state job. Finally, the regional rate of *de novo* firm creation increases the probability that workers will be in the private sector and decreases their likelihood of staying in the state sector or of being

out of the workforce. Regional job destruction was not statistically associated with job changes although it is associated with small increases in the likelihood the person leaves the state sector and gets a private job.

The coefficients on the log of income indicate that the higher workers' 1988 income the more likely they were to leave the state sector for the private sector and for self-employment. These results contradict the idea that people are likely to leave the state sector for higher paying jobs in the private sector. If this were the case there should be a negative relationship between 1988 income and leaving the state sector. We will elaborate this point when we examine the wage changes associated with job changes. The positive association between 1988 income and becoming self-employed reinforces the finding of Earle and Sakova (2000) that those with greater financial means were more likely to start businesses. They relate this phenomenon to the role played by access to capital, the primary source of which is one's own income.

## 5.2 *Statistical model of employment mobility from 1993 to 1998*

The second model compares the probabilities of state workers and non-workers and the unemployed in 1993 remaining in those categories or moving to the private sector or to self-employment by 1998. In this model we are interested in the probability of state workers moving to the *de novo* private sector, including self-employment, or being unemployed or not working. We then want to know the mobility of those unemployed or not working in 1993 as the higher the probability of these individuals getting private sector jobs the greater the competition presented to state workers wanting to relocate. Table 4 shows the probabilities of different mobility patterns between 1993 and 1998. (The unemployed and those out of the workforce are combined in Table 4, as the coefficients for these two groups in Table B2 are not statistically different.)<sup>8</sup>

The rows labelled 'Expected Probability' in Table 4 show the probability of average state workers or non-workers in 1993 being in each employment category in 1998. The relevant contrast is the probability of a state worker leaving that sector and getting a private job or not working compared with the probability of a non-worker remaining a non-worker or getting a job. This comparison indicates the amount of competition between members of these two groups for jobs in the new private sector. Conditional on leaving the state sector, a state worker has an expected probability of 0.37 of getting a private sector job. The unconditional probability that a non-worker or unemployed person gets a private sector job is 0.29. Thus, for respondents with average characteristics, those leaving the state sector have only a slightly higher probability of getting a private sector job than a comparable unemployed or non-working person. The implication here is that

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<sup>8</sup> The chi-squared test for the equality of the coefficients is 5.51 with four degrees of freedom, which has a *P*-value of 0.24.

Table 4. 1993–1998 Employment change probabilities

State emp. 1993	Job category in 1998				
	State <sub>t</sub>	Private <sub>t</sub>	Self-emp <sub>t</sub>	Unemp <sub>t</sub>	Not work <sub>t</sub>
Expected probability*	0.665	0.125	0.059	0.025	0.126
Difference from expected probability associated with difference in variable					
% New firms†	-0.001	0.037	0.011	-0.005	-0.041
% Lost jobs†	-0.004	-0.003	0.014	-0.005	-0.001
1993 Tenure†	-0.027	0.012	0.003	-0.005	0.015
1993 Experience†	-0.029	-0.021	-0.016	-0.003	0.065
1993 Supervisor‡	-0.133	0.090	-0.026	0.001	0.068
1993 Income‡	0.014	-0.014	0.016	-0.007	-0.009
1993 Age†	-0.176	-0.028	0.003	-0.005	0.206
1993 Age = 25‡	0.101	0.012	-0.018	0.002	-0.097
1993 School†	0.070	-0.022	0.028	-0.013	-0.063
Female‡	0.046	-0.048	-0.025	0.008	0.019
Not work/unemp 1993					
Expected probability§	0.162	0.291	0.091	0.114	0.342
Difference from expected probability associated with difference in variable					
% New firms†	0.005	0.099	0.019	-0.019	-0.104
% Lost jobs†	0.001	-0.003	0.022	-0.021	0.001
1988 Experience†	-0.021	-0.072	-0.031	-0.006	0.130
1993 Age†	-0.079	-0.133	-0.025	-0.051	0.288
1993 Age = 25‡	0.080	0.121	-0.010	0.047	-0.239
1993 School†	0.068	0.018	0.080	-0.046	-0.120
Female‡	0.020	-0.103	-0.035	0.046	0.071

*Notes:* \*Expected probability of state worker in 1993 working in 1998 sector with all variables at their means, Female = 0, Age > 30 & non-supervisor.

†Probability difference associated with a one sample deviation increase in %New Firms, % job loss, tenure, experience, age, school or income.

‡Probability differences for person with average characteristics but who had a supervisory rather than a non-supervisory job in 1993; or who was 25 in 1993; or was a female rather than a male.

§Expected probability of non-worker or unemployed in 1993 working in 1998 sector with all variables at their means, Female = 0, Age > 30 and non-supervisor.

early job destruction creates a group of unemployed and non-working individuals who then compete for jobs as they are created in the private sector. A consequence of this competition will be continued unemployment and a downward pressure on wages.

The remaining entries in Table 4 show the differences in probable 1998 employment associated with differences in individual characteristics and regional



firm creation and job destruction for those in the state sector and either not working or unemployed in 1993. Higher rates of *de novo* firm creation are associated with more employment in the private sector and fewer non-workers, but with little change in state sector employment. A probable explanation is that without the jobs these new private firms create more state workers would be not working and more non-workers would remain not working. It does not appear that an expanding *de novo* sector attracts state workers who might otherwise keep their state sector job. Between 1993 and 1998 there is little association between job destruction and job mobility, possibly because there was less job destruction during these years than earlier in the transition.

Among those in the state sector in 1993, workers with more schooling, who are under 30 and who are female are more likely to remain in the state sector than state sector workers with average schooling and age or who are male. As between 1988 and 1993 supervisors in 1993 are more likely than non-supervisors to leave the state sector for the private sector. Among those unemployed or not working in 1993, schooling is associated with increased employment in all categories and particularly with self-employment. Being under 30 is associated with getting a private sector job. Women, relative to men, are more likely to become unemployed or not work and less likely to take a private sector job. The results suggest that men, those with more schooling and younger workers, offer the most competition for the new private jobs. Incomes in 1993 are not associated with job changes, again suggesting that the opportunity for higher wages may not be motivating job change even during the job creation phase of the Polish transition.

### 5.3 Incomes

The analysis of incomes during the transition addresses three questions. One is whether people moving from the state sector to the private sector have higher incomes. If workers move to the private sector for higher wages these movers should have higher incomes than similar individuals who stay in the state sector. If movement is forced by job destruction in the state sector then we would not expect an income gain from such a move. Furthermore, if job destruction is creating unemployment it should have a depressing effect on private sector wages unless there is a large amount of job creation in new firms. Finally, individual attributes, such as schooling, job tenure and experience will be valued differently in a market economy, permitting some workers to compete better for jobs in the new sector, which will produce increased income differences related to these attributes.

The panel data provide an excellent test of propositions about how income differences are associated with job changes since we can compare incomes for those keeping and switching jobs as well as control for individual and local factors. Our analytical strategy is to relate the log of income at time  $t$  to a set of individual and regional explanatory variables for people currently in the

workforce and reporting a salary. Income is monthly income from the main job in 1998 zlotys. Using the log of income means that difficulties in estimating the inflation rate correctly, which is surely the case between 1988 and 1993, only affects the constant term and not the coefficients, which assess differences in relative incomes. The equation estimated is,

$$\begin{aligned} \log(\text{Inc}_t) = & B_0 + B_1\text{SOEothr}_{t-1} + B_2\text{SOEothr}_t + B_3\text{Pvt}_{t-1} + B_4\text{Pvt}_t + B_5\text{Self}_{t-1} \\ & + B_6\text{Self}_t + B_7\text{Own}_{t-1} + (B_8 + B_9\text{Size}) * \text{Own}_t + B_{10}\text{Pvtzd}_{t-1} \\ & + B_{11}\text{Pvtzd}_t + B_{12}\text{NotWork}_{t-1} + B_{13}\text{Unemp}_{t-1} + B_{14}\text{Farm}_{t-1} + XA + u. \end{aligned}$$

The constant  $B_0$  is the expected income for someone employed in the state manufacturing sector at both time  $t$  and  $t - 1$ . The other coefficients indicate how incomes differ for those employed in a different sector at  $t - 1$  and/or  $t$ . Thus, workers moving from the state manufacturing sector to the private sector are expected to have a log of income at time  $t$  of  $B_0 + B_4$ . A significant positive value for  $B_4$  suggests that movers are being attracted to the private sector by higher wages whereas a zero or negative value suggests that workers are being pushed to the new private sector by job reductions. The variable 'SOEothr' refers to workers in the non-manufacturing state sector so that  $B_1$  and  $B_2$  assess the relative wages of non-manufacturing state employees. 'Size' is the log of the number of workers an owner employs. The coefficients  $B_7$  and  $B_8$  assess how incomes for own workers and owners with one employee differ from incomes of wagers in the state manufacturing sector. A comparison of these coefficients with  $B_4$  indicates how the incomes of these self-employed individuals differ from those of wagers in the private sector. The variables denoted by  $X$  represent a set of individual and regional characteristics expected to be related to incomes. They are measured as deviations from the means for each employment category so the  $B$  values compare the incomes of average workers in each employment category. Farmers are omitted from these models because their incomes proved hard to assess in real terms.

There are several different propositions about the expected wage differences for workers moving between the state and private sectors. In theory, the *de novo* private firms are more efficient and productive than the state firms, which in the long run means that wages in the private sector should be higher if wages reach their marginal product in each set of firms. (For evidence on the higher productivity of *de novo* firms, see DeLoecker and Konings, 2005 and Jackson *et al.*, 2005.) This, of course, assumes that the state firms face hard budget constraints and that their wages are not subsidized. The reality is that state firms did not face perfectly hard budget constraints and governments, particularly those elected with support from workers in the subsidized sector, find ways to maintain wage and employment subsidies.<sup>9</sup> The softer the budget constraints, the higher the state sector

<sup>9</sup> Clearly this proposition is not unique to the so-called 'transition political economies'.

wages. The wage differences associated with harder versus softer budget constraints are likely to be particularly evident in the Polish panel data. The reform government in office until 1993 made a point of hardening budget constraints and enacted an excess wage tax on state firms. Private and privatized firms were exempt from this tax. The post-Communist parties that took control after the 1993 election campaigned on a promise to end this tax and to be more sensitive to the 'needs' of the state sector firms and their workers. Newell and Socha (1998) note that state sector wages increased relative to private sector wages between 1992 and 1996 and attribute this to increased demand without mentioning the political explanation. For this analysis state workers are separated by whether they work in mining, manufacturing or construction, or in other state enterprises.

The proposition about employment in the private sector having higher productivity and thus higher wages is a long-term effect, however. At the firm level there is substantial evidence that in the beginning new firms pay less than more established firms but that among the surviving, growing firms wages rise faster than among average firms, catching up to wages in the older firms. (See Jackson *et al.*, 2005; Jackson, 1994; Sorm and Terrell, 1999; and Jackson and Lu, 2004, for evidence on wage growth in new firms in Poland, Estonia and Michigan, respectively.) In an economy dominated by very young firms, such as Poland's in the transition, wages in the new private sector may be lower than elsewhere as these new firms get established.

The vector  $X$  contains variables measuring local labour market and individual characteristics,

$$\begin{aligned} XA = & (A_1 \text{Educ} + A_2 \text{Super}_{t-1} + A_3 \text{Exper}_{t-1} + A_4 \text{Tenure}_{t-1}) * \text{Pvt}_t \\ & + (A_5 \text{Educ} + A_6 \text{Super}_{t-1} + A_7 \text{Exper}_{t-1} + A_8 \text{Tenure}_{t-1}) * \text{State}_t \\ & + A_9 \text{Educ} * \text{Self}_t + A_{10} \log(\text{hours}) + A_{11} \text{JC} + A_{12} \text{JD} \\ & + A_{13} \text{Female} + A_{14} \text{Age} \geq 50. \end{aligned}$$

The evidence from the job mobility analysis indicates that the unemployed and non-workers compete for *de novo* jobs, exerting downward pressure on wages in the new sector regardless of the productivity differences. This implies that the coefficient on job creation, JC, in the income equation should be positive whereas that on job destruction, JD, should be negative. Regional job creation between 1988 and 1993 is measured by the 1993 employment in firms with less than 100 employees in 1990 plus the employment in firms existing in 1993 that started after 1990 denominated by the size of the regional workforce in 1993. For 1993 to 1997 it is the growth in the employment in these firms between 1993 and 1997 plus the 1997 employment in new firms started between 1993 and 1997 as a share of the workforce. *De novo* job creation rather than firm creation is used here, as it is a better measure of labour demand. Job destruction is the same variable used in the mobility analysis.

The third set of propositions relate to changes in how firms value human capital. These propositions are that wage differences related to education and possibly to having been a supervisor will be higher in the private than in the state sector, that is,  $A_1 > A_5$  and possibly  $A_2 > A_6$ . Education is measured by years of schooling. Conversely, work experience and job tenure will be more highly valued in the state sector, implying that  $A_7 > A_3$  and  $A_8 > A_4$ . We also include variables for age  $\leq 50$  and gender, as these factors are routinely associated with wage discrimination in all sectors.

The estimated coefficients and standard errors corrected for the clustering within regional districts for the income equations are shown in Table 5. The first column shows the income equation for 1988, which establishes a baseline for subsequent comparisons. Private sector workers have slightly lower but not statistically different incomes than state manufacturing workers in 1988. Workers in non-manufacturing state jobs earn less whereas both groups of self-employed earn more than state manufacturing workers. An owner employing one worker earns slightly more than an own worker and the owner's income increases with the number employed. There is virtually no return to schooling in the private and self-employed sectors. There are higher and statistically different returns to schooling in the state sector. State worker incomes increase significantly with additional job tenure and experience and are higher among supervisors. Women and workers aged  $\geq 50$  have substantially lower incomes than younger and male workers.

During the 1988 to 1993 transition job-to-job movements are not associated with significant income differences except for becoming an owner.<sup>10</sup> State manufacturing workers in 1988 are expected to have essentially the same income in 1993 regardless of where they are employed in 1993, unless they became an owner. The  $F$ -test for whether the coefficients on 1993 employment other than ownership are zero is 1.02, which has a  $P$ -value of 0.41, meaning that we are very unlikely to reject the null hypothesis of no difference. The results for 1998 show that those who were able to remain in the state manufacturing sector had significantly higher incomes than waged workers in the private, the privatized and the non-manufacturing state sector. This result is consistent with Newell and Socha's (1998) finding although we suggest it is a probable consequence of the post-Communist government that came into office in 1993 fulfilling its campaign pledge to relax wage controls on state manufacturing firms. It is also consistent with the findings in Jackson *et al.* (2005) who show with enterprise data that between 1993 and 1997 payroll per worker in state firms increased faster than in private firms and faster than either sales or productivity growth. The incomes of own workers matched those of the state manufacturing workers whereas the incomes of owners with one employee exceeded those of state manufacturing

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<sup>10</sup> The variable unemployed in 1988 refers to those who experienced an unemployment spell between 1988 and 1993. There was no official unemployment in 1988.

Table 5. Income equations\*

	1988		1993		1998	
	Coeff	St. Err	Coeff	St. Err	Coeff	St. Err
log(hours)†	0.240	0.054	0.444	0.089	0.253	0.054
Self × School†	0.020	0.032	0.034	0.029	0.055	0.030
Pvt × School†	0.011	0.017	0.116	0.018	0.120	0.025
State × School†	0.048	0.003	0.085	0.006	0.067	0.007
Pvt <sub>t</sub> × Tenure† <sub>t-1</sub>			0.010	0.015	0.124	0.095
State × Tenure† <sub>t-1</sub>	0.044	0.012	0.017	0.009	0.094	0.029
Pvt <sub>t</sub> × Exper† <sub>t-1</sub>			0.025	0.044	-0.043	0.076
State <sub>t</sub> × Exper† <sub>t-1</sub>	0.077	0.011	0.041	0.021	-0.002	0.045
Pvt <sub>t</sub> × Super <sub>t-1</sub>			0.069	0.169	-0.017	0.111
State <sub>t</sub> × Super <sub>t-1</sub>	0.090	0.031	0.082	0.047	0.233	0.070
Own work <sub>0</sub>	0.264	0.091	-0.002	0.152	0.019	0.175
Own work <sub>1</sub>			0.090	0.110	0.062	0.126
Owner <sub>0</sub>	0.310	0.113	-0.158	0.149	0.123	0.141
Owner <sub>1</sub>			0.445	0.141	0.275	0.139
log(owner size)	0.237	0.152	0.351	0.109	0.516	0.083
Private <sub>0</sub>	-0.086	0.085	-0.092	0.129	0.111	0.107
Private <sub>1</sub>			-0.084	0.070	-0.309	0.104
Privatized <sub>0</sub>					-0.131	0.104
Privatized <sub>1</sub>			0.090	0.091	-0.043	0.080
State – Other <sub>0</sub>	-0.115	0.037	0.083	0.036	0.181	0.094
State – Other <sub>1</sub>			-0.025	0.049	-0.307	0.095
Farm <sub>0</sub>			0.304	0.235	-0.329	0.168
Not work <sub>0</sub>			-0.088	0.080	-0.288	0.091
Unemployed <sub>0</sub>			-0.118	0.073	-0.041	0.109
Δ % New jobs†			3.134	0.377	2.122	0.479
%Δ State – Large†			-0.287	0.129	-0.1425	0.231
Female	-0.290	0.020	-0.301	0.037	-0.264	0.042
Age ≥ 50	-0.182	0.034	-0.175	0.055	-0.144	0.065
Constant‡	-1.238	0.054	1.187	0.057	0.144	0.068
R <sup>2</sup>	0.39		0.43		0.50	
N	1411		1122		745	

Notes: \*Equation for log(Income) in year  $t$ , given characteristics in year  $t - 1$  and jobs in year  $t$  and  $t - 1$ , except 1988 where there is no  $t - 1$  information.

†Variable set to the mean value for that occupation category, e.g. private worker.

‡Expected log(Income) for an average male state manufacturing worker at time  $t - 1$  and  $t$ .

workers and then increased substantially as the number of employees grew. The results in Table 5 strongly suggest that workers were not moving from the state to the private sector for higher wages.

The propositions that local job creation and destruction affect wages are supported, although weakly, in one instance. Respondents in regions with higher rates of *de novo* job creation had significantly higher incomes in both 1993 and 1998. A one standard deviation increase in *de novo* job creation is associated with a 9.7 percent higher income in 1993 and a 10.3 percent higher income in 1998. A one standard deviation increase in job loss among large state enterprises is associated with a 2.8 percent lower income in 1993 and a 1.1 percent lower income in 1998 although the 1998 coefficient is not statistically significant. The coefficients on *de novo* job creation and large-scale job destruction indicate that local labour market conditions have important impacts on incomes.

Finally, there are mixed results for the propositions about the income differences associated with various aspects of human capital. Returns to schooling were higher for those in the private sector than in the state sector by 0.031 in 1993 and by 0.053 in 1998. A standard deviation difference in schooling is associated with about a 9 percent higher income in 1993 and about a 10 percent higher income in 1998 in the private relative to the state sector. The coefficients on job tenure and total work experience are not statistically different in the two sectors and only tenure is consistently related to higher incomes. Supervisors moving to the private sector, contrary to expectations, had incomes comparable with supervisors staying in the state sector in 1993 and lower incomes in 1998. Women and workers aged  $\geq 50$  consistently have lower incomes even after controlling for such factors as hours worked and schooling. We included interaction variables for self-employed women and although the coefficients were positive they were relatively small and statistically insignificant.

The income equations provide important evidence about job mobility in addition to estimates of the returns to human capital and of the effects of the local labour market. There is no evidence that those moving to private firms did so because they received higher incomes. In fact, between 1993 and 1998 those remaining in state manufacturing or privatized enterprises had higher incomes than those who moved. The estimates of the returns to education and to having been a supervisor in a state firm reinforce this conclusion. The coefficients on schooling suggest that private sector jobs probably offered higher returns to additional schooling, which might have encouraged those with more education to change jobs. The results of the analysis of job change in Tables 3 and 4 show just the opposite. The probability of leaving the state sector for a private firm decreased with schooling, which is opposite to that found for supervisors, who had higher incomes if they stayed in the state sector, but the evidence in Tables 3 and 4 is that supervisors were more likely than non-supervisors to move to private firms in both periods. These analyses

clearly suggest that job mobility, at least in Poland during the 1990s, was push rather than pull driven.

## 6. Conclusions

These panel data present a detailed view of the transition from a state-dominated to a market economy that closely parallels the conventional economic transition models. Individual transitions from the state sector to the private sector are the dominant job change, other than exits from the labour force. Substantial job destruction preceded job creation, which was done by *de novo* enterprises rather than privatized state firms. Furthermore, a significant proportion of this movement over the 1988 to 1998 period involved a period of unemployment or exit from the labour force before obtaining a private sector job.

These results are consistent with the Estonian transition (Haltiwanger and Vodopivec, 2002) but in stark contrast with that in the Czech Republic (Jurajda and Terrell, 2001, 2003; Sorm and Terrell, 1999). Terrell and colleagues report sectoral restructuring, but with most employment changes being job-to-job moves without periods of unemployment. When the Czech economy began its decline after 1996 they find more movement into unemployment, consistent with the Polish data. These Polish–Czech differences up to 1996 are very likely a result of the difference in the rate at which the state enterprises were closed or restructured, as distinct from being privatized.

The Polish transition and the results of our analysis of this transition highlight an important feature of some transition models. The rapid and early job destruction in the state sector, when it precedes job creation as in Poland and Estonia, creates a high level of under- and unemployment as many workers experience spells of joblessness. Both the theoretical models and our empirical results show that this puts downward pressure on local wages, which are only raised as the *de novo* sector expands. In some of the theoretical models (Burda, 1993; Jackson, 2003; Tichit, 2006) this unemployment contributes directly to the success of the new private sector and thus to the success of the transition. Burda (1993, p. 102) says, 'Unemployment is not merely a by-product: it is necessary for the transformation'. Our evidence is that former state workers are likely to experience a spell of joblessness and those under- and unemployed workers compete for jobs in the new private sector. That incomes are then negatively related to job destruction and positively to job creation is completely consistent with these models and the labour market models on which the propositions are based. Overall, these results lend considerable support to the traditional economics of transition models, with additional detail about individual and regional attributes that facilitate these movements.



The lessons from the Polish transition as seen in these results go beyond support for these traditional models of transition. They indicate that self-employment is an integral part of the *de novo* sector and in many cases own account workers become owners employing other workers. The own workers are only slightly more likely to be part-time and their incomes match or exceed those of wage-workers in the private and public sectors. Finally, the evidence that job mobility is more likely push rather than pull driven implies that for the Schumpeterian model to work in any economy there must be stringent constraints placed on outmoded sectors and firms that force the reallocation of resources, human and physical, to the *de novo* sector. Simply relying on higher incomes in the new enterprises may not be sufficient for this transfer.

## References

- Aghion, P. and Blanchard, O. (1994). 'On the speed of transition in Central Europe', *NBER Macroeconomics Annual*, vol. 9, pp. 283–320.
- Boeri, T. and Terrell, K. (2002). 'Institutional determinants of labor reallocation in transition', *The Journal of Economic Perspectives*, 16(1), pp. 51–76.
- Brown, C., Connor, J., Heeringa, S. and Jackson, J. E. (1990). 'Studying (small) businesses with the MESC longitudinal data base', *Small Business Economics*, 2, pp. 261–277.
- Burda, M. (1993). 'Unemployment, labour markets and structural change in Eastern Europe', *Economic Policy*, 8(16), pp. 101–137.
- Caballero, R. J. and Hammour, M. L. (1996a). 'On the timing and efficiency of creative destruction', *Quarterly Journal of Economics*, 11(3), pp. 805–852.
- Caballero, R. J. and Hammour, M. L. (1996b). 'On the ills of adjustment', *Journal of Development Economics*, 51, pp. 161–192.
- Castanheira, M. and Roland, G. (2000). 'The optimal speed of transition: A general equilibrium analysis', *International Economic Review*, 41(1), pp. 219–239.
- Davis, S. J. and Haltiwanger, J. (1992). 'Gross job creation, gross job destruction, and employment reallocation', *The Quarterly Journal of Economics*, 107(3), pp. 819–863.
- DeLoecker, J. and Konings, J. (2005). 'Job reallocation and productivity growth in a post-socialist economy: Evidence from Slovenian manufacturing', *European Journal of Political Economy*, 22(2), pp. 388–408.
- Dewatripont, M. and Roland, G. (1994). 'Economic reform and dynamic political constraints', *Review of Economic Studies*, 59, pp. 703–730.
- Diewald, M. and Mach, B. (2006). 'Comparing paths of transition. Employment opportunities and earnings in East Germany and Poland during the first ten years of transition', in Diewald, M., Goedicke, A. and Mayer, K. U. (eds), *After the Fall of the Wall: Life Course in the Transformation of East Germany*, Stanford, CA: Stanford University Press.
- Earle, J. S. and Sakova, Z. (2000). 'Business start-ups or disguised unemployment? Evidence on the character of self-employment from transition economies', *Labour Economics*, 7, pp. 575–601.

- Fidrmuc, J. (1998). 'Political sustainability of economic reforms: Dynamics and analysis of regional economic factors', *Journal of Policy Reforms*, 3(2), pp. 139–156.
- Fidrmuc, J. (2000a). 'Political support for reforms: Economics of voting in transition countries', *European Economic Review*, 44(8), pp. 1491–1513.
- Fidrmuc, J. (2000b). 'Economics of voting in post-communist countries', *Electoral Studies*, 19(2–3), pp. 197–217.
- Haltiwanger, J. and Vodopivec, M. (2002). 'Gross worker and job flows in a transition economy: An analysis of Estonia', *Labour Economics*, 9, pp. 601–630.
- Jackson, J. E. (1994). 'Firm size and the dynamics in a market economy', Paper prepared for the 1995 White House Conference on Small Business, Washington, DC.
- Jackson, J. E. (2003). 'A computational political economy model of transition', in Fidrmuc, J. and Campos, N. (eds), *Political Economy of Transition and Development: Institutions, Politics, and Policies*, Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Jackson, J. E. and Lu, X. (2004). 'Turning rust to chrome: Michigan employment dynamics between 1978–1998', Ann Arbor, MI: Center for Local, State, and Urban Policy, Gerald R. Ford School of Public Policy, University of Michigan.
- Jackson, J. E., Klich, J., Poznańska, K., Zienkowski, L. and Chmiel, J. (1995). 'Economic change in Poland: 1990–1993', *Research Bulletin*, 4(3), pp. 3–14; Warsaw: Polish Central Statistical Office and the Polish Academy of Sciences.
- Jackson, J. E., Klich, J. and Poznańska, K. (1999). 'Firm creation and economic transitions', *Journal of Business Venturing*, 14(5/6), pp. 427–450.
- Jackson, J. E., Klich, J. and Poznańska, K. (2005). *The Political Economy of Poland's Transitions*, Cambridge, New York: Cambridge University Press.
- Jurajda, Š. and Terrell, K. (2001). *What Drives the Speed of Job Reallocation during Episodes of Massive Adjustment*, Ann Arbor, MI: William Davidson Institute, University of Michigan.
- Jurajda, Š. and Terrell, K. (2003). 'Job growth in early transition: Comparing two paths', *Economics of Transition*, 11(2), pp. 291–320.
- Konings, J., Lehmann, H. and Schaffer, M. E. (1996). 'Job creation and job destruction in a transition economy: Ownership, firm size, and gross job flows in Polish manufacturing 1988–91', *Labour Economics*, 3, pp. 299–317.
- Lehmann, H. and Wadsworth, J. (2000). 'Tenures that shook the world: Worker turnover in Russia, Poland and Britain', *Journal of Comparative Economics*, 28, pp. 639–664.
- Lipton, D. and Sachs, J. (1990). 'Creating a market economy in Eastern Europe: The case of Poland', *Brookings Papers of Economic Activity*, 1, pp. 75–133.
- Maloney, W. F. (2004). 'Informality revisited', *World Development*, 32(7), pp. 1159–1178.
- Murrell, P. (1992). 'Evolution in economics and the economic reform of the centrally planned economies', in Clague, C. and Rausser, G. (eds), *The Emergence of Market Economies in Eastern Europe*, Cambridge, MA: Blackwell.
- Neal, D. (1995). 'Industry-specific human capital: Evidence from displaced workers', *Journal of Labor Economics*, 13(4), pp. 653–677.
- Newell, A. and Socha, M. (1998). 'Wage distribution in Poland: The roles of privatization and international trade 1992–96', *Economics of Transition*, 6(1), pp. 47–65.
- Rodrik, D. (1995). 'The dynamics of political support for reforms in economies in transition', *Journal of Japanese and International Economics*, 9(4), pp. 403–425.
- Roland, G. (1992). 'On the speed and sequencing of privatisation and restructuring', *The Economic Journal*, 104, pp. 1158–1168.

- Roland, G. (2000). *Politics, Markets, and Firms: Transition and Economics*, Cambridge, MA: MIT Press.
- Slomczynski, K. M. (2005). *The Polish Panel Study POLPAN, 1988–1993–1998–2003*, Warsaw: IFiS Publishers.
- Slomczynski, K. M. and Osborn, E. (2005). *Open for Business: The Persistent Entrepreneurial Class in Poland*, Warsaw: IFiS Publishers.
- Sorm, V. and Terrell, K. (1999). 'Restructuring and labor mobility', *Journal of Comparative Economics*, 27(1), pp. 33–60.
- Tichit, A. (2006). 'The optimal speed of transition revisited', *European Journal of Political Economy*, 22(2), pp. 349–369.

## Appendix A: Data sources

### *Polish social structure and social mobility panel study*

The Polish Panel is composed of selected respondents from a 1988 study of 5854 men and women aged 21–65. A randomly selected sample of these respondents plus an oversample of self-employed and college graduates in the 1988 sample were re-interviewed in 1993, 1998 and again in 2003. Table A1 shows the sample sizes for each of the first three waves of the panel study used in this paper and the respective oversamples. The most important feature is the fact that 2268 of the 1993 interviews and 1775 of the 1998 interviews were with respondents who had been interviewed in 1988, providing the longitudinal information that spans the beginning of the transformation in 1989. Twenty-seven 1993 respondents and twenty-nine 1998 respondents were dropped because the 1993/1998 data strongly suggested they might not be the targeted 1988/1993 persons or the data did not match the 1988/1993 data. For details of this study, see Slomczynski (2005).

**Table A1. Polish social structure and social mobility panel**

	1988	1993	1998
N – Original sample	5854	2102	1648
N – Oversample from original (entrepreneur + college)		166	127
N – Total		2268	1775

### *Longitudinal firm data: 1990–1997*

The firm data on job creation and job destruction are based on a dataset prepared jointly with the Research Center for Economic and Statistical Studies of the Polish Central Statistical Office. These data constitute a longitudinal file on the year end employment, payroll and sales of firms with more than five employees existing in Poland at any point between 1990 and 1997. These longitudinal data are based on information firms are required to report to the Central Statistical Office on an annual basis. The firm data are linked to provide a history of each firm's employment, payroll and sales. The firms are stratified by size, region, product code, and ownership type – state, private or foreign-owned. These data allow us to count the number of growing and declining firms and the number of failed firms over this period, and the jobs, wages and sales gained or lost by these firms in various categories. The data also count the number of entering firms each year. The data on entrants indicate their survival, employment, payroll and sales in each succeeding year, again stratified by region, product code and ownership type. Consequently, it is possible in any year to estimate the gross job creation in firms entering since 1990 and surviving to that year. It is also possible to estimate the gross job creation of these firms and of entering firms in any subsequent period, such as 1993 to 1997. Table A2 shows the numbers of firms and employment in several categories in 1990 and 1997. For a full description and assessment of these data, see Jackson *et al.* (2005; Appendix A).

**Table A2. Numbers of firms and employment, longitudinal database**

	1990		1997	
	Firms	Employment	Firms	Employment
State*	18,409	7003.8	16,350	3454.9
Large private†	803	212.2	294	55.9
Small private	14,365	259.2	4375	165.3
New: 1991–1997‡			89,663	2311.1
Totals	33,577	7475.2	110,682	5987.2

*Notes:* \*Includes state-owned, cooperatives and firms privatized by 1997.

†Large private equals firms in 1990 with more than 100 employees.

‡Firms existing in 1997 that entered after 1990.

## Appendix B

Table B1. Multinomial logit for 1988 to 1993 employment\*

1993 Job Variable	Private job		Self- employment		Un- employment		Not work		Sig.†
	Coeff	St. Err.	Coeff	St. Err.	Coeff	St. Err.	Coeff	St. Err.	
Tenure <sub>0</sub> ‡	-0.599	0.155	-0.658	0.199	-0.360	0.129	-0.053	0.091	
Experience <sub>0</sub> ‡	0.364	0.265	-0.303	0.309	-0.058	0.193	0.166	0.151	0.22
Supervise <sub>0</sub>	0.724	0.254	0.069	0.412	0.024	0.267	0.351	0.189	0.04
Log(Income <sub>0</sub> )‡	0.551	0.292	0.877	0.358	-0.012	0.211	0.352	0.380	0.04
Schooling‡	-0.126	0.055	-0.024	0.051	-0.177	0.034	-0.228	0.027	
Female	-0.373	0.250	-0.356	0.319	-0.107	0.181	0.333	0.197	0.17
Age/10‡	-0.032	0.258	0.432	0.330	0.292	0.197	1.273	0.208	
Age < 30	-0.061	0.310	-0.025	0.397	0.912	0.223	2.105	0.317	
New firms‡,§	0.477	0.112	0.228	0.141	0.014	0.114	-0.239	0.135	
% Lrg loss‡,¶	1.619	1.083	0.660	1.441	0.222	0.866	1.195	0.866	0.44
Constant	-2.149	0.176	-2.456	0.253	-1.376	0.135	-1.906	0.169	
N	1368								

Notes: \*Log odds of moving to specific employment group relative to staying in the state sector.

†Wald test for statistical significance of variable. No entry indicates statistically significant at less than the 0.001 level.

‡Variable computed as deviation from sample mean.

§Number of small firms in 1990 plus firms entering from 1991 to 1993 divided by size of workforce in voivodship.

¶Job destruction in large state firms between 1990 and 1993 divided by large enterprise employment in 1990 in voivodship.

Table B2. Multinomial logit for 1993 to 1998 employment\*

1998 Job Variable	Private job		Self- employment		Un- employment		Not work		Sig.†
	Coeff	St. Err.	Coeff	St. Err.	Coeff	St. Err.	Coeff	St. Err.	
State <sub>0</sub>	-1.672	0.189	-2.414	0.333	-3.289	0.393	-1.648	0.211	
Unemployed <sub>0</sub>	0.551	0.308	-0.669	0.319	-0.251	0.318	0.635	0.277	
Not work <sub>0</sub>	0.683	0.391	-0.346	0.515	-0.791	0.523	1.005	0.419	
Tenure <sub>0</sub> ‡	0.144	0.164	0.108	0.256	-0.124	0.205	0.180	0.127	0.45
Experience <sub>0</sub> ‡	-0.122	0.213	-0.236	0.286	0.073	0.287	0.408	0.201	0.03
Supervise <sub>0</sub>	0.765	0.274	-0.358	0.478	0.253	0.652	0.658	0.335	0.06
Log(Income <sub>0</sub> )‡	-0.330	0.344	0.524	0.454	-0.880	0.570	-0.239	0.328	0.43

Table B2. (cont) Multinomial logit for 1993 to 1998 employment\*

1998 Job Variable	Private job		Self- employment		Un- employment		Not work		Sig.†
	Coeff	St. Err	Coeff	St. Err	Coeff	St. Err	Coeff	St. Err	
Educ <sub>0</sub> ‡	-0.096	0.033	0.094	0.054	-0.285	0.058	-0.260	0.042	
Female	-0.561	0.253	-0.631	0.264	0.264	0.289	0.055	0.213	0.02
Age <sub>0</sub> /10‡	0.050	0.225	0.318	0.367	0.176	0.290	1.225	0.205	
Age <sub>0</sub> < 30	0.043	0.303	0.089	0.534	0.182	0.454	0.656	0.288	0.21
New firms‡,§	0.129	0.040	0.079	0.073	-0.108	0.077	-0.192	0.049	
% Lrg loss‡,¶	-0.228	0.959	2.566	1.699	-2.411	1.591	-0.222	0.932	0.29
N	1059								

Notes: \*Log odds of moving to specific employment group relative to being in the state sector, given that the respondent was in the state sector or was not working in 1993.

†Wald test for statistical significance of variable. No entry indicates statistically significant at less than the 0.001 level.

‡Variable computed as deviation from sample mean.

§Number of firms entering from 1993 to 1997 divided by size of workforce in voivodship.

¶Job destruction in large state firms between 1993 and 1997 divided by large enterprise employment in 1993 in voivodship.