Personnel Policy and Profit

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Abstract

There is a growing awareness of large differences in worker turnover and pay between firms. However, there is little knowledge about the effects of this on firm performance. This paper describes how personnel policies with respect to pay, tenure and worker flows are related to economic performance of the firm. Here we follow the population of 7118 medium-to-large sized private sector Danish firms over the period 1992-95. In an instrumental variables framework, we use changes in the personnel composition of different firms operating in the same local labour market to provide exogenous identifying personnel structure variation. It is found that personnel policy is strongly related to economic performance. At the margin, more hires are associated with lower profit, and more separations with higher profit. For the average firm, one new job, all else equal, is associated with €2680 lower annual profit. Higher wage level and lower wage growth is associated with higher profit. A workforce that has less tenure, all else equal, is more profitable.

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1. Motivation and Introduction

It is now an established fact that there are high levels of job turnover and worker flows between firms in many OECD countries. Thus, Davis and Haltiwanger (1999) report worker turnover rates of about 19 % for the manufacturing industry in the USA. Albæk and Sørensen (1998) show a similarly high turnover for Denmark. Werwatz et al. (1999) have shown that manufacturing is not the only industry with high turnover rates, and that some industries have average turnover rates that are almost 30% higher than manufacturing, while others are lower. Furthermore, it is a common finding that job creation in firms is achieved through a simultaneous hiring and firing process. Similarly, job destruction happens through simultaneous hiring and firing. High levels of worker turnover are a persistent feature of many firms. This is important for firms, because of the associated costs and benefits. Direct costs related to each newly hired worker are reported in surveys to be about 25-30% of annual base salary[1]. In addition there are indirect costs of turnover related to the disturbance of organizational structure and benefits to the firm of employing someone with new human capital (Lazear, 1997). For many years, the view has been that wages and quit rates are jointly determined by the firm. According to this view, the firm takes as given the relationship between wages and quits revealed by workers, and sets the level of wages/quits to maximize profits (Parsons, 1977). To our knowledge, there are no empirical studies that attempt to estimate the total effects of turnover on profit. One of the reasons is that such a task would be highly data demanding. Thus, it is not sufficient to use data for firm performance and turnover, because firms use wages and wage policies as a management tool to influence turnover. Wages have their own impact on firm performance. With a new dataset encompassing the population of medium-to-large sized Danish firms, we show the impact of different turnover and wage policies on performance.

Turnover is dealt with in different strands of the management and economics literature. The literature on resource-based firms considers all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc controlled by the firm. These resources can all be used to conceive of and implement employer strategies (Barney, 1991). Barney focuses on three different resources of the firm: physical capital, human capital (Becker 1964) and organizational capital

[1] HR Focus (1996) and Mitchell (1989) p 188-189.

(Tomer, 1987). Turnover plays a prominent role in the latter two, because high turnover means that human and organizational capital may be quickly eroded or transformed by newcomers. Even with respect to physical capital, turnover of employees plays a role, because utilization of physical capital depends on the experience of the work force. The consequence of this is of course that firms will use substantial resources on controlling and regulating turnover.

The Human Capital view on turnover is closely related to the idea of firm-specific human capital. The more firm-specific capital a worker has, the bigger the loss for the firm if the worker quits. The costs emerge at the time of hiring a new employee, since the costs at the time of quitting are sunk. As a consequence, the firm is expected to let the wage profile increase for each worker, reflecting the potential loss to the firm if the worker leaves. To some extent, that will reflect the accumulation of firm-specific human capital. The firm does not have to match the capital accumulation completely in terms of wages, because the worker cannot obtain the same high level of wage in another firm. By moving, the worker loses her relatively high wage in the current firm and will have to accept a much lower starting wage elsewhere. Therefore, the worker will be reluctant to change jobs.

One way of retaining the worker is to pay a wage that increases with number of years in the firm. The wage scale could even be created so that the wage starts at a level lower than the alternative wage but increases to a level where the person in the end of her career is paid above her marginal productivity. This is often called a *back-loaded wage-tenure profile*. However, the use of an increasing wage profile to retain workers is moderated by union pressure for compressed wages. Cyclicality is also important for turnover. Thus, workers will have a higher probability of quitting when it is relatively easy for them to obtain a better job quickly. This will happen when the labour market is tight. When the market is loose, one will expect that the quit rate is small.

An alternative perspective is the value to a firm of having a flow of new workers entering in terms of the new ideas, knowledge and resources brought with them. This knowledge is in the form of general human capital obtained at school and in other firms. In order to make room for new workers, older workers may have to be fired if the new hire is not part of an expansion. However, laying off too many older workers suggests the strategy of retaining other workers will be less credible and the firm will therefore have to pay higher premiums to those it wants to retain.

The firm will also be more reluctant to lay-off workers if they possess larger amounts of firm-specific capital or if their wage, due to wage compression, is lower than the value of their marginal product. Efficiency wage theories suggest that the higher the wage rate, the less likely are firings on the grounds of shirking. Workers will simply not run the risk of being fired. Furthermore, a back-loaded wage-tenure profile may induce self-selection of high productivity workers into such jobs. Finally, a high wage level means that the firm can more easily hire new people. It can be more choosy and lay-off more people at an early stage of their careers. The same argument applies to workers, since their wages are relatively low at the beginning of their careers, which means that they will lose less when they change job with low tenure.

Search theory gives similar predictions. Here workers search for jobs and if the worker receives a job offer better than the current job, she quits. Therefore, the higher the wage level in the current job, the lower the probability of a quit. Match theory says that workers with a high match quality are less likely to quit than those with a lower match quality. This has consequences for the quitting behaviour of different persons and will also mean that people who have been in a job for a long time will be more likely to stay.

The more recent theoretical and empirical background to the present study is a growing literature on different dimensions of personnel composition. It is well documented that there exist large differences between firms with regard to pay (Abowd, Kramarz and Margolis, 1999), tenure (Farber, 2000) and worker flows (Davis and Haltiwanger, 1999). This empirical background provides motivation for a larger theoretical literature, exemplified by Gibbons and Waldman (1999) focusing on pay, Lazear (1999) on tenure and Mortensen and Pissarides (1999) on worker flows.

A recent set of papers describes the empirical evidence for these pairwise relations. Barth (1997) finds no association between wage growth and tenure at the firm level. Kramarz and Roux (1998) also look at tenure and pay. Barth and Dale-Olsen (1999) find that higher wage level and higher wage growth reduce worker flows for medium and large sized firms. Burgess (1999) looks at worker flows and tenure across several countries.

A separate strand of literature has considered the relations between these various labour input measures and output measures of company performance. Leonard and Van Audenrode (1997) look at worker flows and productivity and find a negative relation; Leonard, Mulkay and Van

Audenrode (1999) find higher productivity in firms with higher wage levels and higher wage growth; Abowd and Lemieux (1996) look at pay and profit.

Some values of interest concerning personnel issues are the wage level, wage growth, the proportion of hires and separations and average tenure. However, it is a reasonable and testable hypothesis that these factors influence profit, but everything is jointly determined. The main contribution of this paper is that this simultaneity problem is addressed. We model the relationship between personnel and profit in a way that properly takes this simultaneity into account. The remainder of the paper is organised as follows. Section 2 describes the data, illustrates the variation in the dimensions of interest for measurement and details the empirical strategy. Section 3 presents and discusses results; and section 4 summarises and draws conclusions.

2. Data Description and Empirical Strategy

The data used in this study originates from the Statistics Denmark IDA (The Integrated Database for Labour Market Research) Register and the Business Statistics Register. IDA contains information on labour market conditions for persons and workplaces in Denmark over the years 1980-1995. The IDA data originates from various administrative registers in Denmark. The important feature of IDA is that it is possible to associate workplaces with the identity of all employees at a specific day in November (see Leth-Sørensen, 1998). For this paper we have matched IDA workplace information with larger firms (business units) for which we have accounting information 1992-95.

The information on employees is quite comprehensive and contains data on 3 and 5-digit industry codes (ISIC), composition of work force, union density, total employment over the year, and municipality.

Education is measured in years. Individual labour earnings data come from tax records and incorporate all labour income received in the year by an individual. Wage rates are subsequently calculated using the annual pension scheme contributions that are proportional to the number of hours worked. Firm size is measured as the number of primary workers in November. A primary worker means a worker that Statistics Denmark has determined has her/his main job at a given firm.

We are able to identify which workers are hired in a firm and which leave, all measured on a November to November basis. The limitation is that we are not able to identify those who have been employed say from December to January the following year. These limitations are no different from the US LRD data used by Davis and Haltiwanger (1999) for example. The main difference is, however, that IDA allows us not only to identify the creation and destruction of jobs but also to identify the flows of persons between firms because we also know the identity of persons.

We can follow each worker throughout her/his employment at the sampled firm. A hire in time t to t+1 is defined as a situation where the person is employed in the firm in time t+1 but was not employed there in time t. Similarly, a separation is defined where a person is observed in the firm in time t but not in t+1. For a given firm, job growth between two years, defined as hires less separations, gives a lower bound on job creation (destruction) if positive (negative), since intra-firm re-allocation of workers among jobs is unobservable to us. Worker flows aggregate to the firm level as follows:

(1) proportion of hires = hires/(hires+½(separations+stays))

(2) proportion of separations = separations/(hires+½(separations+stays))

The sample of interest consists of all firms in the Danish private sector with more than 20 employees at any time during 1992-95, the period for which we have economic information on the firms[2]. These firms are followed throughout the period and matched with all private sector employees. Characteristics of the employees are aggregated to the firm level, which is the primary unit of analysis. Table 1 shows summary statistics. There are altogether 28,265 observations on 7,118 different firms, which yields close to 4 annual observations per firm over the period. The outcome of primary interest, Profit, is defined as value added minus total wage costs. Both of these measures come from the Danish Business Statistics. Average value added per worker is DKK 476,280, average wage sum is DKK 241,590, and average profit per worker is DKK 234,690. The proportion of hires is 36%, and separations 37%. The average hourly wage rate is DKK 145 or about €20. With an average working year of about 1600 hours, this adds up to the wage sum from the Business Statistics used above. Average real wage growth over the period is 2%. Average tenure is 3.3 years. This should be seen against a censoring point of 6 years, where

all tenure above 6 years is coded to 6. The average proportion of males employed is 0.71, the average level of education is 11.3 years compared to the compulsory schooling since 1972 of 9 years. Average age is 35.7. The variable Union Density shows strictly speaking the proportion of the workforce that is member of an unemployment insurance fund, of 0.83. In most cases, membership of an unemployment insurance fund is associated with membership of a trade union. Though high, the standard deviation shows that there is some variation between firms.

Denmark provides an interesting test site for studies on effects of turnover, because of few legal and bureaucratic constrains on lay offs. For blue collar workers there exists hardly any labour protection compared to what is known from elsewhere in Europe (except Switzerland and the UK in recent years). Only white collar workers have some statutory rights in the case of dismissals. In both cases, Denmark looks much more like the US than the rest of Europe. However, the main difference is here, that Denmark has a comprehensive system of unemployment benefits and state support of training and retraining. With these features in mind, one might expect that labour turnover in Denmark is even greater than in the US.

Having outlined the nature of the data set, it is a useful preliminary to estimation, to statistically describe the variation in the data between units of observation (Table 2) and describe raw co-variation between measures of interest (Table 3). Heterogeneity of personnel and firm performance is described in Table 2. This Table contains R^2 goodness-of-fit measures of the explanatory power of a regression of dummies (defined in the column header) on variables of interest (defined in the row header). For example, the first row and first column entry shows that firm-dummies explain 76% of variation in profit-per-worker. Variation unexplained in the first column must be due to variation over time, since the basic unit of observation is firm-year. This should be compared with variation within narrowly defined (SIC5 yields 500 unique) and more broadly defined (SIC3 yields 50 unique) product markets in column 2 and 3. It is easily seen that the vast majority of variation is at the firm level. The interpretation is that firms within an industry are heterogeneous with respect to their resources and personnel policy. This is the case for hiring and separation behaviour and with respect to wage levels and wage growth.

Columns 4 and 5 show product market-year effects, which further control for micro-cycles, but do not explain much more than column 2 and 3. Column 5 shows that the variation does not come

[2] Though economic information exist for smaller firms, the link between IDA-data and the economic variables has yet

entirely from a cycle, which is common to all markets. The final two columns show local labour market heterogeneity. We are here using dummy variables for each of the 275 municipalities and these dummies are interacted with year dummies. This observed heterogeneity would be used in the empirical model to provide exogenous variation (instruments) in personnel to identify effects on business outcomes. While this has even less explanatory power than broadly defined product markets, it remains to be tested whether such variation as remains is sufficient for identification.

Raw correlations between personnel policy and business outcomes are presented in Table 3. Aspects of personnel policy (hires, separations, wage level, wage growth and tenure) are correlated, as are measures of firm performance, but there is little correlation between the two. Thus, labour market and product market outcomes appear to be only weakly related in the raw data. There could, of course, be strong associations, which are confounded by raw pair-wise correlations, without additional controls. Indeed, the premise of personnel economics is that such policies have tangible effects on business outcomes of interest.

It is the purpose of this paper to model the associations between personnel policy and firm performance, moving beyond simple correlations by accounting for: heterogeneity by way of a within-firm regression framework while controlling for a rich set of time-varying characteristics, and modelling the simultaneity of business performance and personnel policy by way of instrumental variables.

We are interested in estimating the following equation in order to analyse the determinants of form profit:

$$p_{ft} = X_{ft} b + Y_{ft} g + e_f + u_{ft}$$

where π is a vector of profits per worker for firm f in year t, X is a matrix of exogenous firm characteristics, β is an associated vector of coefficients, Y is a matrix of endogenous firm characteristics, γ is an associated vector of coefficients, ε is an error term specific to each firm but time-invariant, and ν is an idiosyncratic error term. Components of the Y matrix are elements of firm personnel policy: proportions of hires and separations, mean worker ongoing tenure, mean wage level and mean wage growth. Estimating this equation directly by ordinary least squares, may lead to biased estimates of the coefficient vectors β and γ. This is because simultaneity in the

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to be established.

determination of π and Y violates the orthogonality assumption on the error terms, required for this most desirable property of OLS.

In this context the simultaneity problem can be remedied by proposing an instrumental variables estimator. What is required is a set of exogenous variables, over and above those already included in the X matrix, which determine personnel policy Y, but can legitimately be excluded from the set of determinants of π directly. Our instrument set includes the mean personnel policies of neighbouring firms. In particular, for each municipality we calculate the mean of the Y matrix for all establishments located there. Now for each firm we are interested in using as instruments the personnel policies of firms operating in the same local labour markets. The local labour market relevant for each firm can be characterised by the most popular municipalities that its present workers commute from. Arbitrarily, we select the most popular five home municipalities for the workers in each firm. It is the mean of the Y matrix from those five municipalities that we match to each firm and use as instruments. The use of local labour market characteristics to provide instruments is valid subject to the assumption that local labour market conditions are exogenous for business location at the margin.[3]

Our IV estimator is implemented by two-stage least squares. This involves estimating a set of first stage regressions, each explaining one endogenous variable:

$$Y1_{ft} = X_{ft}a + Z_{ft}l + e'_t + u'_{ft}$$

where Y1 is one endogenous variable, say hires, X is a matrix of exogenous controls as before, Z is a new matrix of instruments excluded from X, λ is an associated coefficient vector, the error terms ε' and ν' are respectively firm-specific and idiosyncratic. This first stage regression is repeated for each vector of the Y matrix, obviously producing different estimated coefficients on the same matrices of explanatory variables X and Z. These first stage estimates can be used to make linear predictions of each of the endogenous variables. The useful property of these predictions is that they are correlated with the endogenous variable, but purged of spurious correlation with the variable of primary interest, profit. In a second stage, these predicted values, containing useful variation are substituted in place of the observed endogenous variables. Subject to a correction in the standard errors (to account for the fact that the second stage regression

[3] See Devereux and Griffiths (1998) for evidence on the effects of tax competition on multinational firm location, and Papke (1991) for evidence to the contrary.

includes variables which are themselves estimated with a variance) inference can proceed as in the regular OLS case, having now purged the estimates of endogeneity bias.

Regression coefficients may be influenced by important, but unobserved, firm related factors. Among these factors may be: market share and power in product markets, rent sharing, managerial effort and incentive schemes, technical efficiency, quality aspects of the labour force not covered by measured schooling, local labour markets, local wage levels and other regional effects. As far as these effects are constant over time, by making a within-firm transformation (fixed effects) we can control for these factors in estimation. A drawback is that we are unable to estimate the effects of time-invariant characteristics of the firm, such as industry and geographical location.

3. Results and Discussion

Results of estimating the model are reported in Table 4. As a consequence of the instrumentation procedure, and subject to the assumption of exogenous firm location, interpretation of estimated coefficients is direct from the model.

More *hires* are associated with lower profit per worker. This is in accordance with the literature on costs of turnover, which emphasises the importance of recruitment and training. *Separations* are associated with higher profit per worker. One interpretation is that separating workers are among those who are the least productive or most over-paid. If separations were randomly distributed over profit per worker, we would have expected a fall in profit by the amount of value added by the average worker, less her wage. Our result clearly indicates that separations are far from random, and are an important management tool. Gibbons and Waldman (1999) reach the same conclusion from extending arguments consistent with evidence in Gibbons and Katz (1991). *High wage levels* are associated with more profit per worker. This result is in accordance with efficiency wage and rent sharing theories. However, more *Wage growth* is related to lower profit. So it appears to be current pay, rather than future pay prospects of workers within the firm which is related to higher profit today. *More tenure,* all else equal, has a negative relation with profit. This may seem surprising, since higher tenure is often associated with greater productivity due to firm-specific capital accumulation. However, the interpretation is for a given wage level. In this context, it may be a result of not being sufficiently active in laying off unproductive, or too highly paid senior workers.

In general, the significant coefficients on personnel policy variables, even after the loss of precision due to instrumenting, show there is scope for managerial action in personnel policy which will have important relation with profitability.

A number of control variables are also included in the regression, and though that are not of primary interest, are worth briefly commenting on for their own sake. *Size*, shows that increasing the number of jobs in the firm has a negative impact on the average level of profit per worker. This result and the former concerning the effects of hiring and separations suggest the presence of decreasing returns to scale. Changes in the gender composition, *Male*, are found to be insignificant, probably because the gender proportions are quite constant, see Table 2. Moderate amounts of education are associated with high profit. Firms with either low or highly educated workers are less profitable. Age composition effects are such that young workers and older workers are associated with higher profit. The *UI-density* variable shows that increases in union membership are associated with lower profit.

Finally, the time dummies show that the first three years of observation all have relatively low levels of profit. In 1995 profit increased with 146,000 DKK per worker compared to the preceding years. The years 1992 and 1993 were close to the bottom of the business cycle, where 1994 and 1995 were years of upswing. It is likely that different parts of the business cycle effect costs of hiring and the gain in profit of separations. So far we only have 4 years of observations, but this is an interesting avenue for future research.

Instrumentation diagnostics fall into three sets. (1) F-tests with the null hypothesis that instruments do not explain the endogenous variable. These tests fail, and we conclude that our instruments do have explanatory power. (2) Durbin-Wu-Hausman tests with the null hypothesis that OLS is consistent. These tests fail, and we conclude that instrumental variables are preferable, since they are always consistent. (3) Over-identification tests the null that instruments are appropriately excluded from the set of controls in the equations of interest. This test fails for worker flows, but is not rejected for tenure or wages. The primary effects of interest are those of wages on hires and separations. Since wage instruments are appropriately excluded from the set of controls, we can be comfortable with our inferences of primary interest. Arellano (1999) shows over-identification tests have low power in large samples, suggesting our partial rejection of the restrictions is less worrying.

A numerical Example

Finally, we have constructed an example to show the effects on profit of changes in the personnel policy made necessary in order to increase employment by one more job. We use the average firm with 40 employees/jobs. Simple gross and net flow calculations show that for Denmark three hires and two separations are needed to create one new job on average (see Albæk and Sørensen, 1998). The estimated coefficients suggest that a 10% increase in the proportion of hires from the sample average of 0.3 reduces profit by DKK 171,000 per additional worker. At the same time, tenure has to change since we are employing 3 new workers with no tenure. If the rest of the workers have average tenure, the contributions from the new workers reduce tenure by 10% and that increases profit by DKK 138,000. Together, the hiring of three extra persons costs DKK 33,000 each. That is about 1/3 of the wage costs. If the firm at the same time lays off two workers, profit increases DKK 23,000. As these are assumed to have average tenure, there is no profit contribution from tenure. The overall reduction in profit from hiring three and separating two is then about DKK 11,000. This operation results in the net hiring of one person and that has a separate negative effect on profit per extra worker of DKK 384,984/40=9600. In sum, increasing the work force by one worker costs DKK 20,000 (2680 Euro).

4. Summary and Conclusions

Several aspects of the personnel structure of firms have been described recently in the empirical labour economics literature. This has largely been driven by new datasets linking many firms with many workers or looking at the personnel files of a single large corporation. Theoretical literature has begun explaining selections of these new facts. Still further empirical papers have described links between selected features of firms' personnel structure. The novelty in this paper is to draw together the most comprehensive picture of firms' personnel structure to date, using the population of 7118 medium-to-large Danish enterprises over the period 1992-95. More importantly, in a simple setting, for the first time, we produce measures of the relations between personnel policies (on wages and turnover) and profit, which allows for the simultaneous nature of their determination.

The procedure we follow allows us to control for firm heterogeneity by transforming a longitudinal matched firm-worker dataset. We address the potential simultaneity of personnel

policy and firm performance by way of instrumental variables characterising the personnel structure of all other firms operating in the same local labour markets. Subject to our identifying assumption that location is exogenous to firm personnel policy decisions at the margin, we are able to make precise measurements of the relations between tenure, pay, worker flows and profit.

We find that personnel policy, defined as wage level and growth and worker turnover, has a strong relation to firm economic performance. At the margin, more hiring is associated with lower profit, and more separations are associated with higher profit. For the average firm, one new job, created by three hires and two separations, is associated with DKK 20,000 (€ 2680) lower profit. Higher wage levels and lower wage growth are both associated with higher profit. A workforce that has less tenure, all else equal, is more profitable.

This is what we have found in Denmark for four years in the early 1990's. Our sample period is too short to take account of dynamics, and indeed the longitudinal nature of the dataset is only exploited to control for unobserved firm heterogeneity. Furthermore, we only observe part of a business cycle, and so are unable to make inferences about cyclical or secular behaviour.

With these caveats in mind, and subject to our identifying assumptions, our results are consistent with survey-based information on the costs of hiring. The new empirical result is that separations may not be as detrimental to profit as hitherto believed. High tenure per se may not be as beneficial to profit as suggested in many texts in labour economics and management.

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Table 1. Estimation Sample Descriptive Statistics (28,265 observations)

	mean	st.dev.
profit per worker	234,69	1160,92
value adder per worker	476,28	1346,28
prop. hires	0,36	0,23
prop. separations	0,37	0,25
log wage	4,98	0,27
delta log wage	0,02	0,09
log tenure	1,07	0,38
log size	3,75	0,93
prop. male	0,71	0,23
education	11,30	1,10
age	35,79	4,97
union density	0,83	0,14

Table 2. Between-Firm-Year Analysis of Variance.

Proportion of Variance Explained

	firm	SIC3	SIC5	SIC3-yr	SIC5-yr	yr	kom.	kom-yr
profit per worker	0,767	0,017	0,029	0,019	0,037	0,000	0,011	0,013
value adder per worker	0,640	0,015	0,027	0,018	0,037	0,000	0,011	0,014
prop. hires	0,474	0,082	0,129	0,114	0,198	0,022	0,024	0,064
prop. separations	0,175	0,043	0,069	0,074	0,077	0,006	0,010	0,071
log wage	0,801	0,312	0,409	0,320	0,433	0,003	0,109	0,118
delta log wage	0,224	0,023	0,041	0,144	0,202	0,092	0,010	0,131
log tenure	0,778	0,125	0,199	0,144	0,234	0,010	0,040	0,022
log size	0,883	0,089	0,184	0,093	0,201	0,001	0,033	0,040
prop. male	0,953	0,577	0,701	0,578	0,708	0,000	0,071	0,073
education	0,936	0,493	0,611	0,497	0,622	0,001	0,182	0,186
age	0,892	0,245	0,354	0,249	0,369	0,002	0,059	0,066
union density	0,875	0,371	0,455	0,376	0,469	0,001	0,065	0,072

Table 3. Raw Correlation Matrix

	Profit per worker	Value adder per worker	Prop. hires	Prop. separations	Log wage	Delta log wage	Log tenure
profit per worker	1,000						
value adder per worker	0,931	1,000					
prop. hires	0,001	-0,003	1,000				
prop. separations	-0,008	-0,008	0,158	1,000			
log wage	0,065	0,098	-0,166	-0,118	1,000		
delta log wage	0,039	0,069	0,093	0,126	0,145	1,000	
log tenure	0,003	0,010	-0,665	-0,234	0,215	-0,068	1,000

Table 4. Within-Workplace on Within-Firm-Year
Two Stage Least Squares Model Estimates *(Standard Errors)*

	Profit	
intercept	-13.5200	*2.2730*
hires	-1717.758	*156.9376*
separations	468.1727	*180.0215*
log(wage)	578.4598	*130.7658*
dlog(wage)	-1318.598	*620.2374*
tenure	-1385.669	*111.0001*
size	-384.9835	*31.292*
male	73.6526	*67.4411*
education	317.4732	*94.1630*
education2	-19.4773	*4.1725*
age	-56.2729	*26.2900*
age2	0.4938	*0.2955*
union density	-192.59	*101.4718*
yr92	-53.7357	*50.9658*
yr93	15.2145	*59.2656*
Yr95	146.7495	*4.0718*