Temporary contracts and the dynamics of job turnover

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Abstract

We report results indicating that job turnover is not countercyclical in general but rather reflects the inability of smooth labor adjustment through the use of temporary employment contracts. Service establishments with a high share of temporary employment exhibit acyclical job reallocation, while only permanent jobs within manufacturing are found to be countercyclical.

1 Introduction

The dominant picture from previous research is that job turnover is countercyclical.[1] These studies have initiated a body of theoretical work taking countercyclical job turnover as a stylized fact (see e.g. Mortenson and Pissarides (1994)). Boeri (1996), however, argues that countercyclical job reallocation is specific to the manufacturing sector dominated by large firms. This paper focuses on another possible source of counter-cyclical pattern of job turnover, namely the firms' limited use of temporary workers as an adjustment buffer.[2] The purpose of this paper is to reexamine job turnover dynamics looking specifically at differences by contract types, temporary or permanent.

We address the following question: is job turnover countercyclical in general or do job turnover rates exhibit such a pattern only when there are small shares of temporary workers limiting the possibility of smooth labor adjustment? High adjustment costs associated with permanent contracts implies that firms concentrate job reallocation to periods of low activity when adjustment costs due to production loss are lower. On the other hand, the smaller hiring and firing costs for temporary contracts means that firms with a high share of temporary contracts can restructure their economic activity more evenly over time. This in turn implies that job turnover becomes countercyclical for firms with high share of permanent workers and acyclical for firms with relatively high share of temporary contracts.

This question whether job turnover is countercyclical or not is examined by studying the dynamics of job reallocation in manufacturing and services, two sectors characterized by varying use of temporary employment contracts. Our data contain quarterly data on hires and separations for permanent and temporary workers for approximately 10,000 Swedish private establishments from $1989 - 1999$. Data of this kind, covering a substantial cyclical variation in job flows, have not previously been used to study labor flow dynamics.

This paper contributes to the literature by analyzing the impact of temporary contracts on gross job and worker flows during a sufficiently long period, thereby enabling an analysis of the cyclical variation of these flows. Our results imply that job reallocation associated with temporary contracts is acyclical in both the manufacturing and non-manufacturing sectors. For permanent contracts, a countercyclical pattern for job reallocation is found in manufacturing only.

The remainder of the paper is organized as follows. The data and measurement issues are described in Section 2. Section 3 presents the results and Section 4 concludes the paper.

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[1]See Davis and Haltiwanger (1999) for a comprehensive survey of the literature on job turnover.

[2]See Saint-Paul (1996), Alonso-Borrego (1998), Boeri (1999) and Goux *et al.* (2001) for analyzes of temporary and permanent employment. See also Garcia Serrano (1998) for an analysis of worker and job flows for temporary and permanent contracts in Spain.

2 Data and Measurement

The data are from the Short Term Employment Statistics (*Kortperiodisk Syssel-sättningsstatistik*) collected by Statistics Sweden. Data contain quarterly information on worker turnover and employment stocks for a representative (stratified according to industry and establishment size) panel of around 10,000 establishments of all sizes in the non-agricultural private sector, during the period 1989:2 – 1999:4. Information on establishment employment as well as hires and separations is available for both permanent (time-unlimited) and temporary (time-limited) contracts. For details, see Arai and Heyman (2000, 2002).[3]

The standard measure of job flows is the change in the stock of employees over time.[4] Job flows can also be computed from direct information on worker flows into and out of establishments. Our measures of the job creation rate (JCR) and the job destruction rate (JDR), based on direct information on hires (h_{et}) and separations (s_{et}) for establishment e with the number of employees n_{et} during period t in sector k, are as follows:

$$JC(D)R_{kt} = \Sigma_e(|h_{et} - s_{et}|)/n_{et}; \qquad if \quad h_{et} \geq (\leq)s_{et}. \tag{1}$$

The job reallocation rate is the sum of job creation and job destruction rates ($JRR = JCR + JDR$). Note that our measures yield qualitatively the same result on the cyclical pattern of job flows as the traditional measure of changes in the stock of employees (see Arai and Heyman (2000, 2002) for details).

3 Dynamics of Job Flows

Annual job creation for permanent contracts ranges between over 10 percent at the peak of the economic boom in 1989 to below 5 percent at the bottom of the slump in 1993. Gross job destruction for permanent contracts varies between 8 percent in 1995 and 13 percent in 1992. This can be compared to job flow rates for temporary contracts that are, on average, 10 times larger.

The very high flow rates for temporary contracts indicate that these contracts function as an adjustment buffer. To further examine this, we analyze the relationship between the share of temporary contracts and the variation in net employment over time. First, we find that the share of temporary contracts in

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[3]We know of only three other studies using direct information on worker flows, i.e., hires and separations. Hamermesh (1996) with Dutch firm data and Abowd *et al.* (1999) with French establishment data and Garcia Serrano (1998) with Spanish data. These data sets, however, cover only a few years each. Abowd *et al.* use monthly hires and separation for a sample of around 2,000 establishments with 50 employees or more, during 1987-1990. Hamermesh *et al.* use Dutch data for a few years. Garcia Serrano use data for Spanish establishments with more than 500 employees in 1993-1994. Our data, covering more than a decade, avoid the problem of capturing a particular state in the business cycle which may be the case when data cover only 2-4 years.

[4]The standard measure of job creation (destruction) rates is as follows: $JC(D)R_{kt} = \frac{\Sigma_e(|n_{et} - n_{e,t-1}|)}{\Sigma_e 0.5(n_{et} + n_{e,t-1})}; \quad if \quad n_{et} \geq (\leq)n_{e,t-1}.$

expanding establishments is 13 percent while it is 8 percent in shrinking establishments. Moreover, we estimate a model with change in the share of temporary employment ($\Delta TEMP$) at the establishment level as the dependent variable and net employment change (ΔNET) as the explanatory variable controlling for establishment fixed-effects ($\Delta TEMP_{et} = \beta \Delta NET_{et} + \nu_e + \varepsilon_{et}$ for establishment e in time t). By controlling for establishment fixed-effects we try to isolate other factors that influence use of temporary contracts than those governed by change in employment. The estimated coefficient is $+\ 0.26$ and is highly significant ($p = 0.000$). These results indicate that establishments use temporary contracts to expand and lay off workers on temporary contracts as they adjust employment.

The employment share of temporary jobs is around 10 percent in the private sector, varying between 6 percent in manufacturing and 12 percent in services. Annual job reallocation rates for permanent contracts are, on average, 13 percent in manufacturing compared to 20 percent in non-manufacturing. Examining job flows in 14 industries (6 in manufacturing and 8 in non-manufacturing), job reallocation is found to be largest in the Hotel and Restaurant, Construction and Service sectors. The lowest job reallocation rates are observed in the Food, Mining and Electricity sectors with a rather low fraction of temporary employment.

Previous studies examine the cyclical pattern of gross job flows based on raw correlations on aggregated time-series. Aggregated job reallocation for all contract types can vary as a result of firms' adjustment during the business cycle and as a result of sectoral shifts. The aggregated measures are sensitive to changes in the relative employment shares of various industries with different shares of temporary employment. As an example, the share of manufacturing employment with only 6 percent temporary jobs (and thus low job reallocation rates) decreased from 39 percent in 1989 to 32 percent in 1999.

Raw correlations using industry time-series data indicate that job reallocation for all contract types is pro-cyclical in Trade, Transport, Banking and Services while Metal and Machinery, Construction, Chemistry and Textile exhibit a significant countercyclical pattern. For other sectors, job reallocation is acyclical. The previous findings on countercyclical job reallocation are only supported for traditional manufacturing industries dominated by permanent contracts. These findings are in line with Boeri (1996), suggesting that the countercyclical job reallocation is specific for manufacturing.

A final systematic examination of the cyclical pattern of gross job turnover is done using our panel of 14 industries over 43 quarters. In this way, we exploit the rich variation in various industry cycles and can estimate overall as well as within-industry cyclical patterns of job flows. By including industry dummies we control for permanent differences across industries. In this way the estimations with industry fixed-effects serves as robustness analysis of our results.

Results reported in Table 1 indicate that job reallocation for all types of contracts is acyclical in specifications with and without industry fixed-effects. The same pattern is observed for job reallocation for permanent contracts (see panel a, Table 1). Separate regressions for manufacturing and services based on our panel of industries disclose a conflicting pattern. We find a stable countercyclical

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Table 1: Cyclical pattern of job reallocation rate, 1989:2-1999:4. Employment weighted regressions. Dependent variable is job reallocation rates for different contracts. Robust standard errors in parentheses. Boldface coefficients are significant at conventional levels.

	All Jobs		Permanent Jobs	
a: Private Sector				
Δ Employment	0.21	−0.03	0.21	−0.04
	(0.29)	(0.15)	(0.14)	(0.08)
Industry Dummies	NO	YES	NO	YES
Quarterly Dummies	YES	YES	YES	YES
R^2	0.07	0.77	0.13	0.66
OBS	602	602	602	602
b: Manufacturing				
Δ Employment	-0.44	-0.11	**-0.29**	**-0.29**
	(0.30)	(0.17)	(0.08)	(0.08)
Industry Dummies	NO	YES	NO	YES
Quarterly Dummies	YES	YES	YES	YES
R^2	0.23	0.67	0.11	0.20
OBS	258	258	258	258
c: Non-manufacturing				
Δ Employment	-0.16	-0.04	0.12	0.06
	(0.34)	(0.20)	(0.16)	(0.11)
Industry Dummies	NO	YES	NO	YES
Quarterly Dummies	YES	YES	YES	YES
R^2	0.15	0.71	0.00	0.51
OBS	344	344	344	344

pattern of job reallocation for permanent contracts in manufacturing, while job reallocation in services exhibits an acyclical pattern. That our results hold when we control for industry fixed-effects indicate that our results are not due to other sources of heterogeneity across industries that determines the relation between employment and job reallocation.

Our conclusion is that industries that can adjust employment by using temporary workers are characterized by smooth job reallocation and thus, do not exhibit any cyclical pattern in job reallocation. The observed countercyclical job reallocation in manufacturing might reflect this sector's limited possibilities of using temporary contracts as an adjustment buffer leading to sluggish labor adjustment.

4 Conclusions

We find no clear cyclical pattern of job reallocation with the exception of permanent contracts in manufacturing, characterized by a low fraction of temporary

contracts. Services, employing a higher fraction of temporary contracts, exhibit no cyclical pattern in job reallocation, implying that establishments in the service sector use temporary contracts as an adjustment buffer and can adjust their labor input more smoothly.

The main message of these results is that the distinction between permanent and temporary contracts is crucial in analyzing the cyclical pattern of job flows.

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