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Worker turnover in German exporting establishments

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Abstract

This paper examines the relationship between worker flows and the export status at the establishment level. Using a large panel of German manufacturing establishments between 2000 and 2017, I document that exporters are characterized by lower fluctuation rates. These results are especially pronounced in large exporting establishments. Furthermore, the results are driven in particular by low separation rates, indicating higher employment stability in exporting establishments.

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1. Introduction

While there is a substantial amount of evidence that trade is beneficial on average, the adjustment process is neither costless nor evenly distributed. One major concern in the public debate is that trade increases employment volatility and therefore economic insecurity.[1] While a large share of previous work addresses the impact of trade on volatility at the aggregate or industry level, a recent strand of literature focuses on the firm or plant level. Kurz and Senses (2016) document for the US a series of new stylized facts. Most importantly, they find that employment volatility is lower for exporting firms than for non-exporting firms.[2] Employment volatility at the employer level is an important aspect because it affects workers in terms of their likelihood of being displaced and thus introduces a potential income risk, factors that have a direct effect on the public perception of globalization. However, focusing on employment volatility may hide some important aspects of labor market dynamics. For example, one could observe stable employment but at the same time a large number of simultaneous hirings and separations, i.e., large fluctuations and labor turnover. In fact, a large part of worker flows into and out of employment does not lead to changes in employment levels but rather represents churning flows (Burgess et al., 2000).[3] Put differently, one could observe a low volatility in employment levels in conjunction with a large labor turnover. Low labor turnover, however, implies low employment volatility. In that sense, labor turnover measures are more precise in the context of trade and the employment stability of (incumbent) workers.

This paper contributes to the literature on employer-level job stability in the context of internationally active enterprises by providing robust empirical evidence on low worker flows in German exporting plants. The results are consistent with the findings in the US but offer additional insights into the underlying mechanisms (relative to net employment changes, i.e., net worker flows).[4] Germany is very well suited for the analysis because it is one of the largest trading economies, is highly internationally integrated and has a higher export orientation than the US. The analysis is based on a rich plant-level survey, augmented by administrative data on worker flows over a period of 18 years.

[1] A recent international survey in 12 countries around the globe shows that, although the majority of respondents have a positive attitude towards globalization in general and appreciate the opportunities for economic growth and the general standard of living, a large share are also concerned that trade reduces job security and thus increases insecurity (Bertelsmann Stiftung, 2018).

[2] In a similar approach, Bas et al. (2018) document a lower employment volatility of high-skilled workers in French exporting firms. Additionally, Kurz and Senses (2016) find a higher volatility for importing firms. Since information on imports is not available throughout the whole sampling period, I follow Bas et al. (2018) and focus on the export status.

[3] I follow Lazear and McCue (2018) and define churning flows at the level of the employer as hirings directly replacing separations without changing the level of employment. Formally, churning is defined as the minimum of hirings and separations. Suppose a plant hires five workers and separates from three within a given period; then, the number of churning flows is three, and the remaining two are expansion flows.

[4] Baumgarten (2015) also studies the relationship between the export/import status and worker flows with similar data, but the analysis is restricted to just three years because information on the import status is only available for the years 1999, 2001 and 2003. The results are by and large similar, but the emphasis is on net worker flows (employment growth) and not on gross worker flows.

2. Data and Definitions

The analysis is based on the IAB Establishment Panel, an annual survey of approximately 16,000 German establishments, conducted by the Institute for Employment Research (IAB). The IAB Establishment Panel is a stratified random sample of all plants with at least one employee subject to social security distributions. The data contain information on the plant's size (the number of employees) and other workforce characteristics, as well as on industrial labor relations and whether part of its revenues are generated on foreign markets. For more detailed information, see Ellguth et al. (2014). The IAB Establishment Panel can be supplemented with information from the Establishment History Panel (BHP) of the IAB. The BHP comprises all establishments with at least one employee subject to social security contributions or in marginal employment on June 30th of a given year. The BHP therefore provides valuable additional information on the employment structure of a plant. Most importantly, it also contains information on worker flows (see Schmucker et al., 2018, for details). The IAB Establishment Panel and the BHP information can be linked by a common identifier. I include all establishments in manufacturing industries, where trade in goods is much more relevant than in the service sector, for the years 2000 to 2017. I focus on plants with more than 10 employees because at this threshold, legal protection against unfair dismissal becomes binding and, therefore, labor turnover in very small plants may differ fundamentally. Furthermore, I exclude all observations with missing information on the main explanatory variable, the export status, or the dependent variables.

Hirings (H_{it}) of establishment i in year t are defined in the BHP as the number of employees who work in an establishment on June 30th of the current year but not on June 30th of the previous year $t-1$. Accordingly, separations (S_{it}) are defined as the number of employees who do not work in an establishment on June 30th in year t but did work on June 30th of the previous year. Total fluctuations are defined as the average of hirings and separations, $F_{it} = (H_{it} + S_{it})/2$. Churning fluctuations are defined as hires that replace separations, $C_{it} = min(H_{it}, S_{it})$. Total employment on June 30th in year t is denoted by L_{it}. To calculate the worker flow rates, I follow the standard practice and divide the worker flows by the average of current and lagged employment, i.e., $N_{it} = (L_{it} + L_{it-1})/2$. For instance, the fluctuation rate is denoted by $FR_{it} = F_{it}/N_{it} * 100$.

3. Empirical Analysis

To quantify the differences between exporters and non-exporters, I estimate the following specification:

$$y_{it} = \alpha EXP_{it} + \beta X_{it} + \theta_{jbts} + \epsilon_{it}, \tag{1}$$

where y_{it} denotes the respective worker flow rate (fluctuation, churning, hiring, or separation rate) of establishment i in year t. EXP_{it} is a dummy variable indicating the plant's export status in year t.[5] θ_{jbts} is a set of fixed effects for each industry, federal state, year, and size class combination.[6] ϵ_{it} is an error term. In some specifications, I also include a set of plant characteristics X_{it} to control for other factors that are potentially related to worker flows and the export status. However, including these plant characteristics is even more descriptive in nature because these are potential outcomes of the export status themselves.[7] Therefore, in my preferred specification, I exclude these additional controls and include them as a robustness check to verify that these factors do not qualitatively change the results. More precisely, X_{it} includes the presence of a workers council (dummy), the recognition of an industry- or firm-level collective agreement (dummy), an indicator of whether the establishment is younger than 5 years (dummy), the median establishment wage and its interquartile range (both in ln), and the mean age of employees (linear and squared), as well as the shares of EU foreign nationals, third-country foreign nationals, female workers and low-qualified workers and labor productivity (ln). All of the results are based on ordinary least-squares (OLS) estimates with standard errors clustered at the establishment level to allow error correlations at the employer level over time.

Table I shows the main results. The dependent variable in all of the specifications is the fluctuation rate, which is a useful indicator for overall worker flows, as it comprises hiring and separations together. In column 1, the export indicator is the only explanatory variable, in addition to the constant. Since all rates are expressed as percentages, the coefficient implies that the unconditional mean of total labor fluctuations is 3.4 percentage points lower for exporters than for non-exporters. This difference is also quantitatively relevant, given an unconditional fluctuation rate of approximately 15% for non-exporters in the sample. Column 2 adds industry-state-year fixed effects. Column 3 presents the results of the main specification by controlling for industry-state-year- and size-class specific factors.[8] The fluctuation rate of exporters is approximately 1.5 percentage points lower for exporters than for non-exporters on average. Columns 4 and 5 add the plant controls as robustness checks, and the results

[5] The vast majority of plants in the sample do not change their export status (approximately 85%). Thus, there is too little variation in the main explanatory variable to include plant fixed effects, resulting in unreliable and imprecise estimates.

[6] The IAB Establishment Panel is stratified by ten establishment size classes, 19 industries, and federal states (Ellguth et al., 2014). The set of dummy variables θ_{jbts} is constructed according to this structure and therefore also controls – beyond industry-, state- and size-specific effects in a given year – for the stratification dimensions (Bossler et al., 2018).

[7] I thank an anonymous referee for emphasizing this distinction.

[8] One might argue that the plant size is not fully pre-determined when the export decision is made. However, using size categories instead of a continuous measure mitigates this concern. Moreover, size classes are still useful proxy controls and mirror the stratification structure of the data.

remain qualitatively unchanged. Overall, the results in Table I show that exporting plants consistently display a lower fluctuation rate that is statistically significantly different from zero and economically relevant.

Table I: Exports and fluctuation rate

Dependent variable: Fluctuation rate					
	(1)	(2)	(3)	(4)	(5)
Exporter (dummy)	-3.421***	-2.784***	-1.515***	-0.966***	-0.665***
	(0.175)	(0.175)	(0.192)	(0.169)	(0.177)
Labor productivity (ln)					-0.969***
					(0.153)
Ind.-state-year-FE	–	Yes	–	–	–
Ind.-state-year-size-FE	–	–	Yes	Yes	Yes
Control variables	–	–	–	Yes	Yes
Observations	43,613	43,613	43,613	41,546	36,885
R^2	0.026	0.081	0.224	0.315	0.321

Note: Columns 4–5 include as additional controls: the presence of a workers council (dummy), the recognition of an industry- or firm-level collective agreement (dummy), an indicator of whether the establishment is younger than 5 years (dummy), the median establishment wage and its interquartile range (both in ln) and the mean age of employees (linear and squared), as well as the shares of EU foreign nationals, third-country foreign nationals, female workers and low-qualified workers. Standard errors clustered at the establishment level. $^{*}p < 0.10,^{**}p < 0.05,^{***}p < 0.01$.

The change in the estimated coefficient from column 2 to column 3, when size is also accounted for, is interesting and deserves some discussion. On the one hand, controlling for size has an important impact on the estimated coefficient of the export status. On the other hand, size is already accounted for in the definition of the fluctuation rate, as larger employers have more nominal fluctuations. This points to differential effects of plant size. Therefore, Table II shows the results for different size classes separately. The difference between non-exporters and exporters is increasing with plant size, and therefore, the larger the firm, the lower is the fluctuation rate of exporters.

Table II: Differential effect of export status by size

Dependent variable: Fluctuation rate				
	(1)	(2)	(3)	(4)
Size category	<= 49	50-99	100-499	>= 500
Exporter (dummy)	-0.933***	-1.594***	-2.180***	-3.515***
	(0.268)	(0.414)	(0.339)	(0.835)
Ind.-state-year-size-FE	Yes	Yes	Yes	Yes
Observations	16,921	7,539	14,255	4,898
R^2	0.178	0.172	0.204	0.287

Note: Columns 1–4 show results of separate regressions by establishment size categories. Standard errors clustered at the establishment level. $^{*}p < 0.10,^{**}p < 0.05,^{***}p < 0.01$.

The fluctuation rate summarizes the overall labor turnover of an establishment. This turnover may result from employment expansion or reduction. In many cases, however, hirings just replace contemporary separations, which leaves the employment level unchanged. This "churning" is an important component of labor turnover for employees and employers alike. In the next step, these different aspects of worker turnover are considered separately. Table III shows the results for churning, hiring, and separation rates as dependent variables. Panel A shows the results using only the full pre-determined factors (by industry-state-year), and Panel B further includes size as an additional dimension. In all of the specifications, exporters exhibit a lower fluctuation rate than non-exporters. The lower churning rate in column 1 suggests less "growthless" job turnover. Furthermore, the lower hiring rate in column 2 in exporting plants is outweighed by even lower separations in both panels of column 3, implying a higher employment stability in exporting plants.

Table III: Churning, hiring, separation and rates

	(1)	(2)	(3)
Panel A	Churning rate	Hiring rate	Separation rate
Exporter (dummy)	-1.762***	-2.703***	-2.865***
	(0.122)	(0.196)	(0.212)
Ind.-state-year-FE	Yes	Yes	Yes
Observations	43,613	43,613	43,613
R^2	0.111	0.077	0.054
Panel B	Churning rate	Hiring rate	Separation rate
Exporter (dummy)	-1.030***	-1.421***	-1.609***
	(0.133)	(0.216)	(0.243)
Ind.-state-year-size-FE	Yes	Yes	Yes
Observations	43,613	43,613	43,613
R^2	0.252	0.219	0.182

Note: Standard errors clustered at the establishment level. $^{*}p < 0.10,^{**} p < 0.05,^{***} p < 0.01$.

4. Conclusions

Utilizing a rich panel of German manufacturing plants between 2000 and 2017, this paper documents lower fluctuation rates for exporters than for non-exporters, especially in large exporting plants. These results are mainly driven by lower separation rates, which suggests higher employment stability in exporting plants.

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