



## The Impact of Firm-Level Shocks on Labor Flows

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### Introduction

Using very comprehensive Swedish micro data, we examine how labour flows respond to permanent idiosyncratic variations in firm-level production functions and demand curves. Physical productivity shocks have just a minor impact on firm-level employment decisions. In response to firm-level demand shocks, we observe rapid and significant employment adjustments through hiring and separations. The choice of adjustment margin is determined by the sign of the shock: if the shocks are positive, firms respond by increasing hiring, and if the shocks are negative, firms adjust by increasing separations.

Every year, about one out of every five jobs is produced or eliminated. The majority of this labour adjustment at the business level is actually idiosyncratic, as enterprises in the same sector and location downsize and grow at the same time. As a result, even in industries with stable net employment, jobs are swiftly generated and eliminated. The importance and extent of these job flows have been shown for a large number of nations following the pioneering work of Davis. Similarly, there are usually more worker hires and separations for every position created or deleted at the firm level. Following in the footsteps of Abowd, other research have looked into the relationship between employment adjustments of various signs and magnitudes on the one hand, and worker flows on the other. While the empirical regularities of job and worker flows have been well established, little is known about how they respond to structural firm-level shocks. We show in this paper that permanent shocks to companies' idiosyncratic product demand are a significantly more substantial source of job reallocation between firms than idiosyncratic technological shocks, using detailed Swedish register data. We further show that the job reallocation produced by these persistent demand shocks results in excessive worker flows, because firms respond to negative demand shocks by separating employees rather than reducing hiring.

### Long-Run Model with Permanent Shocks

Following Foster, we sum up the range of idiosyncratic disturbances that may modify businesses' demand for labour inputs as technology and demand shocks. Demand shocks are defined as shifts in the businesses' ability to sell at a given price (i.e., shifts in the firms' demand curve), whereas technology shocks are defined as shifts in the firms' ability to produce at a given amount of inputs (i.e., shifts in the firms' physical production function). We construct a set of requirements from a stylized model of monopolistically competitive enterprises to obtain empirical measurements of permanent technology

and demand shocks. We simply assume that our derived requirements are valid in the long run to avoid imposing additional limits on enterprises' short-run adjustment behaviour. As a result, we follow Franco's lead and employ structural vector autoregression (SVAR) methods to estimate the shocks, as described by Blanchard and Quah (1989). Without making any assumptions about short-run dynamics, we can use the SVAR to filter out empirical measures of permanent idiosyncratic demand and technological shocks from observed data. The findings of Guiso et al. (2005), Franco and Philippon (2007), and Roys (2016), which show that workers are protected from transitory idiosyncratic shocks, are reflected in our empirical application.

Demand shocks cannot alter the physical gross Solow residual in the long run, which is the most crucial imposed limitation. The long-run element of this constraint is critical, because it means that demand shocks, changes in factor utilisation, or inventories can have a temporary impact on the physical Solow residual without influencing our measured technology shocks. We also extract enough constraints to detect permanent demand shocks without placing any constraints on the type of short-run shocks or dynamics, while explicitly allowing for shocks to factor prices, which are likely to be crucial in a small open economy.

### Identifying Permanent Shocks

We gain from thorough Swedish register data encompassing the universe of workers and manufacturing enterprises with at least ten workers during a 12-year period when applying the analysis to the data. Our data include a firm-specific price index, which allows us to calculate estimates of firm-level actual output volumes, which are needed to distinguish between technology and demand shocks. Standard macro-data concerns concerning the actual implementation of SVARs coming from imprecisely determined parameter vectors and covariance matrices of the underlying set of reduced-form equations are also mitigated by the data. In our situation, we estimate these parameters using dynamic panel data methods based on Arellano and Bond (1991), which allow us to identify the critical parameters using cross-sectional variation. In comparison to typical time-series applications, such as Franco and Philippon (2007), who estimate similar processes using time-series variance among businesses, this delivers significant gains in power.

Two key new ideas emerge from the empirical study. The first is that changes in labour demand caused by persistent shocks to the product demand side, rather than cost-cutting technology shocks, are the fundamental driving force behind employment adjustments. Despite having huge influence on firm-level prices and output, firm-level technology shocks have a comparatively modest effect on labour inputs. Permanent idiosyncratic fluctuations in product demand, on the other hand, have a significant impact on firm-level labour adjustments. According to our preferred estimates, a one-standard-deviation permanent idiosyncratic demand shock boosts employment by 6%, while technological shocks boost employment by 0.5%. These findings are unaffected by a wide range of measurement and empirical technique modifications. We also discover that the majority of the adjustment occurs within a year, implying that the amount of short- and long-run employment adjustments generated by permanent demand shocks is similar. We demonstrate evidence that, in contrast to the reactions to permanent demand shocks, companies' responses to transitory demand shocks are more subdued.

This is the first study to show how firm-level technology and demand shocks effect labour adjustments via hiring and separations in response to shocks of various types, indications, and magnitudes. When faced with a persistent negative idiosyncratic shock, we believe we are the first to show that firms cut their labour input through higher separations rather than reduced hires. Our finding that transitory demand shocks have a far less influence on employment adjustment than permanent demand shocks is in accordance with Guiso's findings, which show that companies insure workers' pay in the face of transient (but not permanent) value added shocks. Moreover, we argue that our reduced-form findings on the impact of idiosyncratic product-demand

shocks for worker reallocation should be directly relevant to the theoretical literature on the link between firm-level revenue productivity and labour adjustments. Our findings suggest that careful modelling of shocks to the product-market environment is a viable way forward in order to provide a better understanding of the process where workers are reallocated across firms. The literature tends to emphasise technology shocks as the primary driving force behind labour adjustments, but our findings suggest that a careful modelling of shocks to the product-market environment is a viable way forward in order to provide a better understanding of the process where workers are reallocated across firms.