The Macroeconomics of Establishment-Level Employment Outcomes

Dissertation Abstract

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A perennial debate in economics concerns the extent to which difficulties in reducing nominal wages affect employment outcomes. While there exists a large literature documenting the existence of wage rigidity in several modern, industrial economies, quantifying an empirical relationship between wage rigidity and employment outcomes has proven difficult. Further, no research to date has been able to quantify the cost to an establishment for reducing the wage in the presence of wage rigidity. A recent debate, with the onset of the Great Recession, concerns the extent to which banking shocks affect employment outcomes in firms exposed to those banking shocks. As the literature is realtively young, there exists little empirical evidence quantifying the relationship between bank shocks and employment outcomes. Both debates are of central importance to macroeconomics and the formation of macroeconomic policy, yet the extent and signfinicance of both topics are subjects of considerable uncertainty.

The research of this dissertation uses individual-level, employer-employee linked, administrative data from Germany to quantify the relationship between microeconomic employment adjustment and variables of key interest to macroeconomic policy: wage rigidity and financing constraints. A significant advantage of this research over pervious work is that it uses high quality, adminstrative data with a rich set of covariates from a modern industrial economy to quantify these relationships at the level where the employment decisions are made: the establishment. The main findings in the research on wage rigidity and employment outcomes are that there is a significant relationship between wage rigidity and layoffs, quits, and hires and that only moderate costs to cutting nominal wages are necessary to generate these movements in employment. The main findings in the research on banking shocks and employment outcomes are that, in response to a local banking shock, establishments reduce their levels of employment and that privately held establishments reduce their levels of employment by even more than establishments that are part of a publicly traded company. Below, I discuss the results from each chapter in more detail.

1 Wage Rigidity and Employment Outcomes

This chapter examines the empirical relationship between downward nominal wage rigidity and employment outcomes using linked employer-employee data from Germany and has three novel contributions. First, this chapter introduces a unique approach to measuring wage rigidity at the establishment level and provides evidence from monte carlo simulations that the proposed measure is unbiased in the small sample sizes often found in the establishments of the sample. Second, using

the proposed measure of wage rigidity, this chapter provides evidence on the degree of wage rigidity and the dispersion of wage rigidity present in the sample along with estimates of wage rigidity across supersectors, occupation classes, and education levels to provide context as to "where" wage rigidity is present in the sample. Establishment-level estimates suggest that wage rigidity prevents 24 percent of counterfactual wage cuts with an estimated standard deviation of 27 percent across all establishments. Further, wage rigidity is estimated to be most prevalent in the public administration supersector and least prevalent in the construction and mining/manufacturing supersectors, more prevelant in the skilled occupation classes compared to their unskilled counterparts, and increasing in the level of completed education.

Finally, this chapter estimates the empirical relationship between wage rigidity and layoffs, quits, and hires at the establishment-level. An establishment with the sample average level of measured wage rigidity is predicted to have a 0.7 percentage point increase in the layoff rate, a 1.8 percentage point reduction in the quit rate, and a 1.3 percentage point decrease in the hire rate relative to an establishment with no measured wage rigidity. Wage rigidity interacts with movements in establishment revenue in economically meaningful ways, amplifying its relationship with employment outcomes. An establishment with the sample average level of measured wage rigidity is predicted to have a 1.4 percentage point increase in the layoff rate, a 3.5 percentage point decrease in the quit rate, and a 2.6 percentage point decrease in the hire rate in response to a one standard deviation movement in revenue growth.

2 Estimating the Cost of Wage Rigidity (with Gabriel Ehrlich)

This chapter builds off the results from chapter one and estimates the cost of downward nominal wage rigidity to an establishment using the linked employer-employee data from Germany. The chapter models establishment layoff, hiring, and wage setting decisions in the presence of wage rigidity, where wage rigidity enters through an explicit cost function to cutting nominal wages. The wage cutting cost function contains a fixed menu cost, a linear cost, and a quadratic cost to reducing nominal wages. The chapter derives the simple analytics of the establishment decision making model to establish the intuition of how wage rigidity effects establishment choices. Wage rigidity works through two channels in the model. The first channel is immediately clear: a cost to cutting wages deters establishments from reducing the current wage of its workers, leading the establishment to pursue employment adjustment through increased layoffs and reduced hiring to lower the wage bill in the face of an adverse shock. Further, not reducing the wage in response to a negative shock leads to a lower quit rate at the establishment, further exacerbating the need for layoffs and reduced hiring to adjust employment. The second channel through which wage rigidity works in the model is similar to that of Elsby (2009): establishments are forward-looking and will

reduce the cost of wage rigidity in future periods through dampening wage increases in response to positive shocks in the current period.

This chapter has three novel contributions. First, using the administrative, establishment-level, individual employment biographies from Germany, this chapter estimates the structural parameters of the establishment decision making model relating the sensitivity of quits to fluctuations of the establishment's wages relative to the average wage in the economy, labor's share of value added, and the persistence and standard deviation of establishment-level productivity shocks. The estimates show that the elasticity of demand to the deviation of the establishment's wage from the economy average is 5.75. Average labor's share of income across all establishments in the sample is calculated as 0.65. The persistence of establishment-level productivity shocks estimates at .312, annually, while the standard deviation of the productivity shocks estimates at .18. The second contribution of this chapter is that it is the first study to estimate the cost of wage rigidity at the level where employment and wage setting decisions are made: the establishment. Estimation of the parameters in the wage cutting cost function implies that wage rigidity reduces profits by approximately 3.3 percent at the avearage establishment. These estimates suggests that even moderate costs of cutting nominal wages generate meaningful effects on employment outcomes. The final contribution of chapter two is that it performs a series of counterfactual policy simulations with the estimated model for low, moderate, and high levels of inflation. Increasing the inflation rate in the theoretical model mitigates the effects of downward nominal wage rigidity, providing evidence that inflation may "grease the wheels' of the labor market.

3 Regional Bank Shocks and Employment (wth Martin Schmalz, Denis Sosyura, and Daniella Hochfellner)

This chapter uses a novel linked employer-employee administrative dataset from Germany combined with German equity market data and Bundesbank balance sheet data of the savings banks for each of the German federal states to explore the differential effect of stock market and banking shocks on labor demand in publicly traded and private firms and its consequences on aggregate labor market outcomes. A particular feature of the German financial system makes this dataset particular suited to answer these questions. Landesbanken are partly owned by local savings banks (directly or through regional associations). Therefore, shocks to the equity of Landesbanken transmit to the savings banks' balance sheets. In addition, there are significant costs to firms associated with switching from the local savings bank to a different bank. Therefore, a shock to the capital of a Landesbank that is entirely unrelated to the local economy can have consequences for the provision of credit to local businesses. Our dataset therefore allows us to measure the effect of

an “exogenous” shock to the banking system on employment outcomes, i.e., a reduction in the capacity of local banks to lend to local businesses that is unrelated to a change in the demand for loans by local businesses.

The results are as follows: First, the employment policy of publicly traded corporations is more sensitive to equity market shocks than the employment policy of comparable untraded privately owned corporations: publicly traded firms hire more employees when equity markets rally and reduce their net hiring more when equity markets fall. Moreover, employees who get terminated in publicly traded firms in times when public equity markets are in distress more likely find employment in private firms. Second, the reverse comparison holds for banking shocks: when local credit supply is reduced for reasons that are exogenous to firms’ economic prospects, privately held firms reduce employment even more than publicly traded firms, because the latter also have access to capital from other sources, possibly including overseas equity markets. The dataset enables this study to be the first to speak to the question whether employees dismissed (or not hired) at private firms due to a shock to the banking system find employment in publicly traded firms or instead go into unemployment, thus describing a mechanism at the core of the most pressing questions both from a social welfare perspective and from the perspective of a financial regulator in Europe at this time.