

The Geography of Labor Demand Shocks

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Project Description

Labor demand shocks are inherently local. A production plant that shuts down has a specific address. However, the economic effects of labor demand shocks will propagate in space. The workers who lose their jobs do not live at the same address as the plant but in nearby communities. The retail shops that lose revenue as a result of unemployed workers cutting their spending may be located in yet other areas. Suppliers who lose sales because the plant no longer demands their input could be located anywhere in the world.

The links between geographical areas are important for the ability of the aggregate economy to absorb shocks: stronger links make it more likely that the economy can operate at its full capacity even if positive and negative shocks are distributed unequally in space. Understanding the spatial propagation of shocks is important for policy makers who invest substantial resources in place-based policies to stimulate the economies of struggling regions: assessing the costs and benefits of these interventions requires knowledge of the geographic scope of their impact.

In this project, we explore how the economic consequences of mass layoffs propagate geographically. Such events are typically unrelated to local economic conditions and we therefore consider them as exogenous shocks to labor demand (Gathmann, Helm and Schönberg, 2018). We investigate how mechanical exposure to mass layoffs – the areas where employees live and spend before a mass layoff - as well as the ultimate economic consequences of mass layoffs – the areas that see effects on income and spending because of a mass layoff - vary with distance to the epicenter. The unit of analysis is the local area and given that shocks propagate through labor income as well as consumer spending, we consider two outcomes: the amount of income earned by the local households and the amount of money spent in the local shops. We will thus ask two types of research questions. How does the magnitude of the income and spending shocks suffered by local areas differ at 5km, 10km, 20km distance from the firm laying off workers? How much of the income and spending losses has been recovered after 6 months, 12 months and 24 months at each of these distances?

The analysis is highly demanding in terms of data as it requires detailed information of where individuals live, where they earn and where they spend at a relatively high frequency. We will thus develop a unique dataset that combines (i) information from administrative registers about home and work locations and monthly income and (ii) information from the transaction records of Danske Bank including the precise geo-location of the receiving merchant for each payment made by credit or debit card.

In terms of practical implementation, the Industrial PhD student on our team (Emil Toft Hansen) will compile the spending data at Danske Bank and prepare it to be transferred to the secure servers at Statistics Denmark (DST). We have secured the permission of Danske Bank and have prior experience with complex data transfers. To comply with data protection protocols, DST technicians will aggregate the spending data from precise spatial coordinates to geographic polygons that each include the residences of at least 100 individuals. The polygons balance the precision we need to answer the research question with the need to preserve anonymity of individuals, firms and merchants.

This project relates to the literature on local labor markets, local multipliers and place-based policies (e.g., Kline and Moretti, 2014; Moretti, 2011; Moretti, 2010; Amior and Manning, 2018). This literature focuses on the spatial distribution of employment. We will contribute by integrating an analysis of employment *and* spending, recognizing the importance of spending for understanding how and where labor demand shocks propagate. Related to this, our project will contribute to the literature on the effects of local labor demand shocks (e.g., Mian and Sufi, 2014; Autor, Dorn and Hanson, 2013; Gathmann, Helm and Schönberg, 2018). This literature defines local labor markets as fixed and independent areas (e.g., municipalities). We contribute to a growing literature that instead recognizes markets as fluid and interdependent and considers the impact of shocks and policy changes in this setting (e.g., Monte, Redding and Rossi-Hansberg, 2018; Manning and Petrongolo, 2017; Feyrer, Mansur and Sacerdote, 2017; Giroud and Mueller, forthcoming; Acemoglu et al. 2012). Finally, we relate to a nascent literature exploiting new data sources to understand the geography of consumption (Davis et al., 2018; Agarwal, Jensen and Monte, 2019; Baker, Baugh and Kueng, 2019). Relative to these literatures, our unique data collaboration represents a significant step forward in measuring the geography of income and spending and the response of each to economic shocks.

Given the importance of the research question and the scope to advance the literature, we believe that this project will lead to a paper with a chance of publication in a top-5 economics journal. We have commenced data work at both Danske Bank (recording the geo-locations of individual transactions) and at DST (constructing the mass layoff sample and estimating the effect on displaced worker income). Because of this advance data preparation, we expect to have a draft paper by the end of 2020. We apply for financial support from the Economic Policy Research Network because the project requires costly labor input from technicians at DST (as motivated above).

References

Acemoglu, Daron, Vasco Carvalho, Asuman Ozdaglar and Alireza Tahbaz-Salehi. 2012. "Network Origins of Aggregate Fluctuations." *Econometrica* 80 (5): 1977—2016.

Agarwal, Sumit, J. Bradford Jensen and Ferdinando Monte. 2019. "The Geography of Consumption." *NBER Working Paper* 23616.

Amior, Michael and Alan Manning. 2018. "The Persistence of Local Joblessness." *American Economic Review* 108 (7): 1942-1970.

Autor David H., David Dorn and Gordon H. Hanson. 2013. "The China Syndrome: Local Labor Market Effects of Import Competition in the United States." *American Economic Review* 103 (6): 2121-68.

Baker, Scott, Brian Baugh and Lorenz Kueng. 2019. "Income Fluctuations and Firm Choice." *Working Paper*.

Feyrer, James, Erin T. Mansur and Bruce Sacerdote. 2017. "Geographic Dispersion of Economic Shocks: Evidence from the Fracking Revolution." *American Economic Review* 107 (4): 1313-34.

Gathmann, Christina, Ines Helm and Uta Schönberg. 2018. "Spillover Effects of Mass Layoffs." *Journal of the European Economic Association* 00 (0): 1-52.

Giroud, Xavier and Holger M. Mueller. Forthcoming. "Firms' Internal Networks and Local Economic Shocks." *American Economic Review*.

Kline, Patrick and Enrico Moretti. 2014. "People, Places and Public Policy: Some Simple Welfare Economics of Local Economic Development Programs." *Annual Review of Economics* 6: 629-662.

Manning, Alan and Barbara Petrongolo. 2017. "How Local Are Labor Markets? Evidence from a Spatial Job Search Model." *American Economic Review* 107 (10): 2877-2907.

Mian, Atif and Amir Sufi. 2014. "What Explains the 2007-2009 Drop in Employment?" *Econometrica* 82 (6): 2197-2223.

Monte, Ferdinando, Stephen J. Redding and Esteban Rossi-Hansberg. 2018. "Commuting, Migration, and Local Employment Elasticities." *American Economic Review* 108 (12): 3855-3890.

Moretti, Enrico. 2010. "Local Multipliers." *American Economic Review Papers & Proceedings* 100 (2): 1-7.

Moretti, Enrico. 2011. "Local Labor Markets." " *In Handbook of Labor Economics, Vol. 4B, edited by David Card and Orley Ashenfelter, 1237-1313. Amsterdam: Elsevier.*