

Impact of the Great Rise in Finance on Resource Allocation and Employment

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Abstract

The objective of this project is to investigate the impact of the large increase in household debt on the allocation of labor across geographical areas and across industries. The increase in private debt is correlated with the rise in inequality at the macro level. At the same time, we have seen a secular decline in long-term real interest rates suggesting weakening aggregate demand. The purpose of this project is to test if these broad patterns are related, and if so to better understand the connections. We plan to do so by constructing long-term historical time-series data at the county-level on employment by industry and household borrowing, and to test the impact of increase in debt on spending patterns and by implication on labor allocation.

I. Research Objectives

Did the great rise in consumer finance, starting in the 80's, “distort” the allocation of labor through a debt-driven “demand-side” effect that proved to be unsustainable in the long run? The distortion we seek to document – if any – could be both across geographical areas (with employment moving towards area with increasing leverage), or across industries (with employment getting absorbed in non-tradable sector due to higher local demand).

Starting in late 1970s, there have been a series of events which have triggered the deregulation of finance in the United States. *Marquette vs. First of Omaha* in 1978 led to the abolishment of anti-usury laws in all states, and the Depository Institutions Deregulation and Monetary Control Act of 1980 removed maximum interest rates for deposit accounts. This wave of deregulation was accelerated during the Reagan Administration. In 1982, the Garn-St. Germain Depository Institutions Act deregulated thrifts almost entirely. Subsequently, a series of laws to deregulate the finance market were enacted, contributing to the significant increase in the household debt-to-income ratio observed since the early 1980s (see Figure 1).

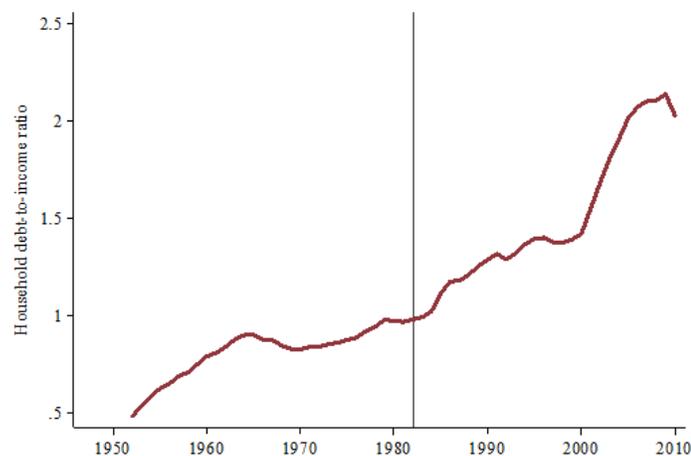


Figure 1. U.S. Household Debt-to-Income Ratio

One view of the rise in household debt is to view it as an “exogenous” shift in the credit creation process – for example, the impact of financial deregulation mentioned above. However, the push for financial deregulation could itself be driven by more fundamental imbalances in the economy. One such force is the rise in inequality starting in the 1980s as documented by Piketty and Saez (2001). It is well-known that the saving rates are much higher for individuals at the upper end of the income distribution. These gross savings of the rich are channeled back into the financial sector, creating a “push” for credit creation – for example, through financial deregulation.

Hence one view of the expansion in finance is that it is itself driven by the changing income inequality dynamics. As a greater share of output goes to the very top and is saved at higher rates, it puts upward pressure on the balance sheet of the financial sector to expand. While the financial sector expands, the question is how does that expansion create real demand in the economy? If there is sufficient domestic demand for investment goods, then the increase in

saving by the rich can always be absorbed via investment. However, investment rates have not increased by the same proportion. Hence the credit has disproportionately been used to fund consumer demand since the 1980's.

The focus of our study is to test if the credit-induced consumer demand had implications for the allocation of labor in the economy. To the extent credit is flowing towards a section of the population that is earning a smaller share of the overall economy over time, there is a concern that the expansion in demand through credit may not be sustainable in the long run. Consequently whenever there is a slowdown in credit growth – as was the case starting with 2007 – there is going to be a fundamental reallocation of labor. At the same time, the economy is going to look for alternative mechanisms for creating demand. The net result could be a persistent shortfall in aggregate demand, and lower employment.

We put together a detailed county level data over a long period of time (1946-2012) to investigate the extent to which the great rise in consumer finance shown in figure 1 impacted labor allocation through the demand channel. Our methodology is explained in the next section.

In terms of the broader literature, our proposal is connected to important strands of literature in macro, finance, and labor economics. Our work is naturally connected to the very influential literature on income inequality and the seminal work of Piketty and Saez (2001) which analyzes trends in inequality using a long series of individual U.S. tax returns data from 1913 to 1998. Regarding the impact of deregulation on credit expansion, Black and Strahan (2002) finds that deregulation increases the rate of new incorporations, and Rice and Strahan (2010) shows that states more open to cross-state branching exhibit lower interest rates, while they find no evidence on the effect of variation in state restrictions on the amount that small firms borrow. Furthermore, there is a rich literature on the impact of debt accumulation. Mian and Sufi's book *House of Debt* shows that a large accumulation of household debt followed by a significantly large drop in household spending was a root cause of the Great Recession. Eggertsson and Krugman (2012) uses a simple new Keynesian-style model of debt-driven slumps to illustrate situations in which an overhang of debt puts downward pressure on the aggregate demand. The paper argues that a sudden deleveraging, if it is large enough, can create a major macroeconomic management problem as interest rates are bound by the zero rate. Former Treasury Secretary Larry Summers goes further and suggests that low aggregate demand existed well before the outbreak of the Great Recession, but it was hidden by the housing bubble. He proposes the secular stagnation hypothesis which states that the U.S. is in a state where the natural rate of interest is permanently negative and hence the economy suffers from a low growth rate (2014).

The question that we seek to answer through this project is how this buildup of household debt can potentially explain structural changes in the allocation of labor across industrial sectors as well as geography. By doing so, we may have a potential long-term structural explanation for the *persistence* of lower employment to population ratio that we observe in the aftermath of the financial crisis. The findings of this research will help policymakers identify and understand the root causes behind the slowdown in the labor market and design better targeted policies aimed at revitalizing the macroeconomy.

II. Research Methodology

To conduct an empirical study about the financialization of the U.S. and its impact on the employment structure, at least two sources of data are required: one that shows changes in household balance sheets, and the other that describes the employment structure, preferably sorted by industry. For household balance sheet changes, the Equifax Predictive Services and Home Mortgage Disclosure Act (HMDA) contain data on household borrowing and spending. The County Business Patterns (CBP) contains industry-specific employment statistics. However, the availability of these datasets becomes limited as we go back in time.

At present, a large number of public and private sources collect data that could be used to analyze fundamental policy questions. In its current form, however, the data is of little use to researchers as it is not “clean” and sometimes not digitized, and different databases are not compatible. This project builds on an ongoing data program funded by the Julis-Rabinowitz Center for Public Policy and Finance (JRCPPF) at Princeton University that aims at compiling and analyzing such datasets so that academics can carry out policy relevant research.

One of the most common issues associated with earlier data is that the data is not available in a digitized format. For instance, although the CBP dataset is available from 1946 to current, only recent years are available in a digital format. Therefore, digitizing such dataset has been one of the primary tasks of the data program. The digitization process involves obtaining and scanning (if necessary) physical copies of data, selection of appropriate method of digitization (i.e. optical character recognition (OCR), manual entry), and coordinating a data-entry project when manual-entry proves necessary. Digitization of earlier datasets including the CBP dataset is ongoing, and once the task is completed, it will be possible to conduct in-depth analyses on earlier years.

Another important data-related issue concerns compatibility within/between datasets. Oftentimes, the same dataset may have been compiled differently across years, and we also frequently need to merge different datasets to conduct research. In such cases, we carry out a thorough data analysis to maximize data compatibility. For instance, while the HMDA dataset after 1990 has data on individual mortgage applications, prior to 1990 the data is reported only at the individual bank level. In order to compile a dataset at the state level for the entire time period, we first assemble pre-1990 state-level data from HMDA using the fact that until 1994, federal regulation prohibited interstate banking, so bank operations were confined within the boundaries of their state. For the post-1990 period we aggregate the mortgage application data at the respective state level and finally, we merge both datasets. Similarly, many of the earlier datasets suffer from geographical/industrial identifier issue, where earlier datasets are classified under different geographical/industrial schemes. FIPS code, a common geographical identifier code employed in more recent datasets, is not available in earlier years, and neither is the NAICS code, an industry identifier code. One of the primary goals of our data program is therefore to maximize the compatibility between datasets. Based on the work of Elsby, Hobijn and Sahin (2013), we have created a mapping matrix between NAICS and SIC (earlier industry code), and we have also applied various geographical mapping files to ensure that datasets can be merged.

The availability of quality data enables us to investigate the question of whether a long-term rise in consumer finance can distort the labor market. As stated above, our interest lies in testing the impact of credit-induced consumer demand on the allocation of labor in the economy.

Mian and Sufi (2014) shows that counties with larger declines in housing net worth (i.e. larger slowdown in credit growth) experience larger declines in non-tradable employment. The purpose of this study therefore is to test whether credit expansion induces growth in employment through the demand-side, particularly in non-tradable employment. To address this question, we establish the following basic regression model:

$$\Delta Y_{jc} = \alpha + \beta_{1.1} \times \Delta Debt_c + \beta_{1.2} \times \Delta Debt_c \times NT_j + \beta_{2.1} \times \Delta Income_c + \beta_{2.2} \times \Delta Income_c \times NT_j + \epsilon$$

Here, ΔY_{jc} is change in employment of type j (tradable/non-tradable) in county c . $\Delta Debt_c$ and $\Delta Income_c$ refers to change in debt and income level in county c , respectively. Finally, NT_j is a binary variable for non-tradable employment.

The key challenge is to identify the growth due to debt and isolate it from the component of growth that can be explained by rising income/productivity. Naturally, growth in income would have positive impact on employment (positive $\beta_{2.1}$). Similarly, as income rises, we'd expect more investment and hence the change in debt level itself might be positively correlated with the employment growth (positive $\beta_{1.1}$). However, the coefficients that we're interested in are $\beta_{1.2}$ and $\beta_{2.2}$, as these would capture the impact of debt growth and income growth on non-tradable versus tradable employment. The key test therefore is the following joint hypothesis: $\beta_{1.2} > 0$ and $\beta_{2.2} = 0$. If the joint hypothesis holds, then this would be a clear indication that growth in non-tradable employment was primarily driven by growth in debt, validating the claim that the massive buildup in consumer debt impacts employment through the demand-side mechanism.

III. Timeline

The project will be expected to be completed in 12 months, from September 1, 2015 to August 31, 2016. Collection of the raw data is expected to be completed by September 2015. The processing of the data and analysis will follow. Draft papers are expected to be completed by the end of the of Spring 2016, followed by presenting the results at research seminars and academic conferences. Revised papers will then be submitted to peer-reviewed journals in economics.

IV. Dissemination Plan

Once completed, the papers resulting from the analysis will be sent to academic journals for publication. The results will also be presented at academic conferences as well as at a public talk at Princeton University sponsored by JRCPPF and the Woodrow Wilson School of Public Policy. The compiled datasets will be made publicly available to all researchers by posting it online. Also, JRCPPF will produce a general audience version of the results and distribute it widely to researchers, students and policy makers.

V. Overview of Research Team

Atif Mian

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Atif Mian is the Theodore A. Wells '29 Professor of Economics and Public Affairs at Princeton University, and the Director of the Julis-Rabinowitz Center for Public Policy and Finance at the Woodrow Wilson School. He holds a bachelor's degree in Mathematics with Computer Science and Ph.D. in Economics from MIT. Prior to joining Princeton in 2012 he taught at the University of California, Berkeley and the University of Chicago Booth School of business. Professor Mian's work studies the connections between finance and the macro economy. His latest book, *House of Debt*, with Amir Sufi builds upon powerful new data to describe how debt precipitated the Great Recession. The book explains why debt continues to threaten the global economy, and what needs to be done to fix the financial system.

Professor Mian's research has appeared in top academic journals, including the *American Economic Review*, *Econometrica*, *Quarterly Journal of Economics*, *Journal of Finance*, *Review of Financial Studies* and *Journal of Financial Economics*.

Amir Sufi

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Amir Sufi is the Chicago Board of Trade Professor of Finance at the University of Chicago Booth School of Business. He is also a Research Associate at the National Bureau of Economic Research. Sufi graduated Phi Beta Kappa with honors from the Walsh School of Foreign Service at Georgetown University with a bachelor's degree in economics. He earned a PhD in economics from the Massachusetts Institute of Technology, where he was awarded the Solow Endowment Prize for Graduate Student Excellence in Teaching and Research. He joined the Chicago Booth faculty in 2005.

Professor Sufi's research focuses on finance and macroeconomics. He has articles published in the *American Economic Review*, the *Journal of Finance*, and the *Quarterly Journal of Economics*. His recent research on household debt and the economy has been profiled in the *Economist*, the *Financial Times*, the *New York Times*, and the *Wall Street Journal*. It has also been presented to policy-makers at the Federal Reserve, the Senate Committee on Banking, Housing, & Urban Affairs, and the White House Council of Economic Advisors. This research forms the basis of his book co-authored with Atif Mian: *House of Debt*, which was published by the University of Chicago Press in 2014.

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