A Firm-Level Perspective on the Role of Rents in the Rise in Inequality

Jason Furman Peter Orszag[1]

October 16, 2015

Presentation at "A Just Society" Centennial Event in Honor of Joseph Stiglitz
Columbia University

Joseph Stiglitz has been an intellectual mentor to both of us for the past two decades, a period that looms large in our lives, but which today's celebration reminds us is just a fraction of the fifty years that Joe has been teaching students and inspiring policymakers. In Joe's honor, we thought it appropriate to collaborate on a paper that explores two of his core interests: the rise in inequality and how the assumption of a perfectly competitive marketplace is often misguided.

Joe has been a leading advocate of the hypothesis that the rising prevalence of economic rents—payments to factors of production above what is required to keep them in the market—and the shift of those rents away from labor and towards capital has played a critical role in the rise in inequality (Stiglitz 2012). The aggregate data are directionally consistent with this story, including the fact that the share of income going to capital has risen and the profit rate has risen. But this aggregate story does not fully explain the timing and magnitude of the increase in inequality. Inequality started rising in the 1970s, while the capital share of income and the profit rate did not begin its rise until around 2000. Moreover, the majority of the increase in inequality can be accounted for by an increasingly skewed distribution of labor income, not the division of income between workers and owners of capital.

This paper advances another hypothesis using firm-level data to argue that there has been a trend of increased dispersion of returns to capital across firms, with an increasingly large fraction of firms getting returns over 10, 20 or 30 percent annually—a trend that somewhat precedes the shift in the profit share. Longstanding evidence (e.g. Krueger and Summers 1988) has documented substantial inter-industry differentials in pay—a mid-level analyst may have the same marginal product wherever he or she works but is paid more at a high-return company than at a low-return company. Newer evidence (Barth et al. 2014 and Song et al. 2015) suggests that much of the rise in earnings inequality represents the increased dispersion of earnings *between* firms rather than *within* firms. This is consistent with the combination of a rising dispersion of returns at the firm level and the inter-industry pay differential model, as well as with the notion that firms are wage *setters* rather than wage *takers* in a less-than-perfectly-competitive marketplace.

---

[1] Jason Furman is the Chairman of the President's Council of Economic Advisers. Peter Orszag is Vice Chairman of Corporate and Investment Banking at Citi and non-resident senior fellow in economic studies at the Brookings Institution. The authors thank Peter Tillman, Gustav Sigurdsson, Eric Van Nostrand, Harris Eppsteiner, William Weber, Sam Himel, and Rob Seamans for assistance, Tim Koller and Bin Jiang of McKinsey & Company for updating the data in Koller et al. (2015) for us, and Steve Braun, Larry Katz, Alan Krueger, Claudia Sahm, and Jay Shambaugh for comments.

These various factors raise the question of whether another perspective on inequality trends—which is consistent with the data we present, but is not the only consistent explanation—is that (a) a rising share of firms are earning super-normal returns on capital; (b) workers at those firms are both producing and sharing in those super-normal returns, driving up wage inequality; and (c) the high returns to labor and capital at those firms reduces labor mobility by discouraging workers from leaving firms that earn higher rents.

We want to emphasize that we raise this perspective as a question that is worth further exploration rather than a definitive conclusion. Our only real conclusion is thus that more attention needs to be paid to what is driving firm-level trends in the United States, and in particular whether they reflect economic rents at the firm level. In addition, our hypothesis highlights the potential role of rents in the rise in inequality, extending their role to explain the increase in earnings inequality and pushing back the date of their importance to about 1990—when the distribution of returns on capital across firms began to grow increasingly skewed.

To be sure, the hypothesis does not explain the initial rise in inequality and likely is, at best, a partial explanation of the increase in inequality since then. However, the increase in inequality has been so substantial that there is room for a number of partial explanations and we believe that a more complete exploration of these explanations can help guide us towards the right policy solutions for addressing rising inequality.

The Definition of Rents and Their Potential Role in Increased Inequality

Economic rents are the return to a factor of production in excess of what would be needed to keep it in the market. Rents can accrue to any of the factors of production. For example, capital can extract rents by engaging in anti-competitive behavior to earn revenues well in excess of opportunity cost. On the other hand, a rent can be created by the pairing of a worker and firm that are then divided between labor and capital based on their respective bargaining power and other institutional arrangements. Moreover, labor market structure can lead to some elements of monopsony in certain industries, slanting the division of this labor contract rent toward the firm.

A central feature of rents is that, by themselves, they are statically unproductive. By definition, they are excessive returns to market activity that would have occurred anyway in their absence. Moreover, the allocation of time and energy to the pursuit of rents ("rent-seeking") hurts productivity by diverting that capital away from more innovative pursuits. But in some cases, rents can be dynamically efficient: for example, our patent system effectively promises monopoly rents to innovators should they successfully bring a new technology to market. While the patent-protected rent is not necessary to encourage a producer to sell, it is designed to encourage the initial innovation that leads to the product in the first place, with benefits for aggregate productivity.

Rents can also affect the income distribution in indirect ways. For example, if labor increases its ability to bargain for a larger share of the rent generated in the labor market, overall social welfare could potentially increase, depending on one's particular social welfare function.

There are two principal channels through which rents could play a role in increasing inequality. The first would occur if rents themselves are rising—if, for example, increased concentration led to greater monopoly power in product markets and thus a greater ability to extract super-normal returns. Second, for any given level of aggregate rents, they could be divided increasingly unequally—for example, reduced collective bargaining coverage could have led to a shift in the share of rents generated in the labor market away from labor and towards capital, or from nonsupervisory labor to management.

Accounting for the Rise in Inequality

In order to show the ways in which rents might or might not explain rising inequality, it is helpful to begin with a decomposition of the rise in inequality. This is not a causal explanation but is instead a way to show where inequality has increased in order to focus on potential explanations for that increase.

Specifically, if income is defined as the sum of labor and capital income, then the increase in the dispersion of income can be understood as deriving from three sources:

- Increased share of income going to capital, which increases inequality because high-income households, on average, derive a larger share of their income from capital.

- Increased capital income dispersion, which is the disparity of income from sources like capital gains and dividends between earners at different levels of the overall income distribution.

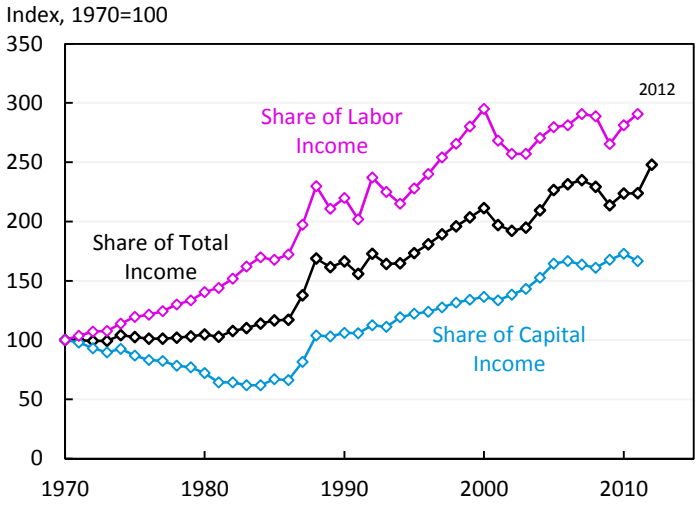
- Increased labor income dispersion, which is the disparity of earnings between earners at the different levels of the overall income distribution.

There are currently no official statistics that provide a breakdown of income into these three sources. Nevertheless, a combination of data sources can offer some insights (see Furman 2014).[2] In the United States, the top 1 percent's share of total income rose from 8 percent in 1970 to 17 percent in 2010, according to data from Thomas Piketty and Emanuel Saez available on the World Top Income Database. Throughout this period, the top 1 percent's share of labor income rose steadily, while its share of capital income only began a sustained rise around 1985, as shown in Figure 1. Overall, the 9 percentage-point increase in the share of income of the top 1 percent in the World Top Income Database data from 1970 to 2010 is accounted for by: increased inequality within labor income (68 percent), increased inequality within capital income (32 percent), and a shift in income from labor to capital (0 percent).

[2] The analysis that follows considers the dispersion of labor income and of capital income across earners ordered by overall income, rather than separate orderings of labor income and capital income. Put differently, the group depicted in Figure 1 as the "Top 1%" is the same group for all three time series. Therefore, an increase in the correlation of labor income and capital income across earners would appear as a shift in the labor or capital income dispersion, rather than an independent source of inequality.

Figure 1

Share of Total, Labor, Capital Income Accruing to Top 1%



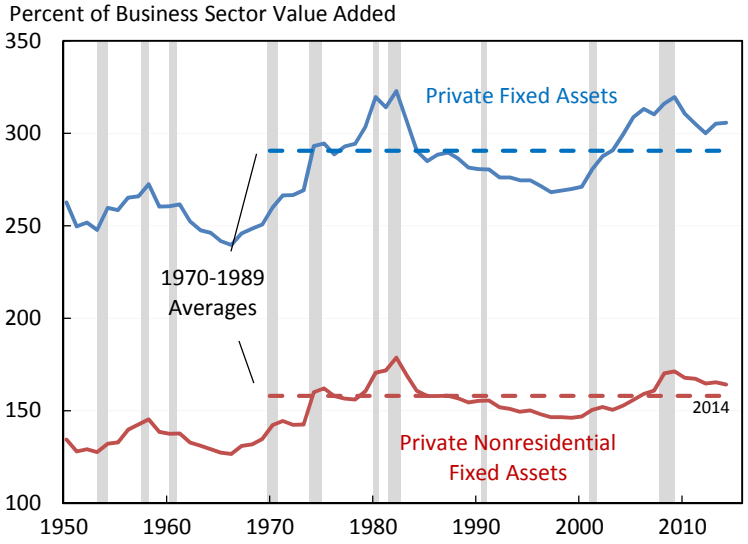
These data exhibit no change in the share of income going to capital and labor from 1970 to 2010 in part due to source and definitional differences from the standard National Income and Product Accounts (NIPA) data. Assuming the NIPA data are correct in aggregate, we find that the income shift from labor to capital is responsible for roughly 20 percent of the increase in inequality since 1970, still a considerably smaller factor than the changing distribution within labor income or within capital income.

The Rise in the Capital Share: An Aggregate Explanation That Plays a Minor Role

This taxonomy of the rise in inequality suggests that if the cause of inequality is limited to the division of income between capital and labor, then this definition can only explain at most 20 percent of the increase in the share of income going to the top 1 percent since 1970, including none of the increase in inequality prior to 2000. Further analysis of the sources of the fall in the labor share of income casts additional doubt that this perspective plays a large role in the story.

First, the capital stock itself has not grown meaningfully relative to total output. Figure 2 shows that simple metrics of the size of the capital stock relative to economic output have not shown a clear directional trend in recent decades. The ratio of the nominal value of the private fixed asset stock to business sector value added is only slightly above its historical average in the wake of the financial crisis. And most of the slight increase we have seen is attributable to the housing sector: when excluding residential assets, the capital stock is even more closely in line with its historical average.

Figure 2
Nominal Capital Stock Relative to Economic Output



Second, the decline in the labor share of income is not due to an increase in the share of income going to productive capital—which has largely been stable—but instead is due to the increased share of income going to housing capital, a point analyzed by Rognlie (2015) and shown in Figures 3a and 3b.

Figure 3a
Labor Share of Gross Domestic Income

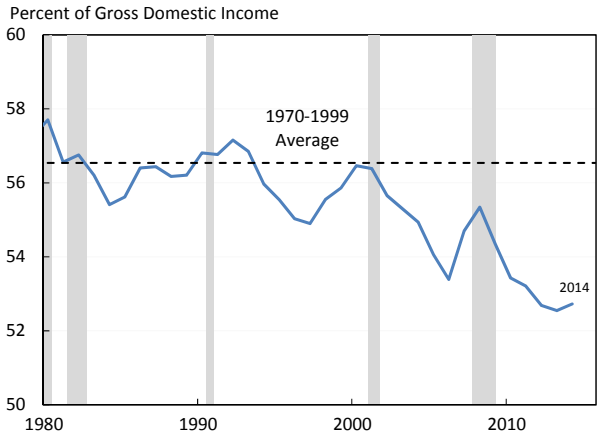
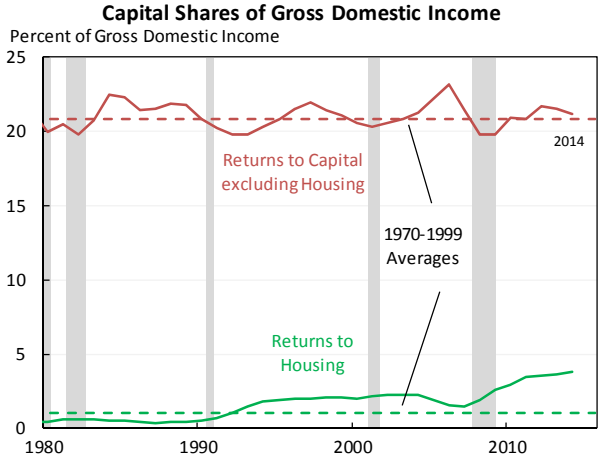


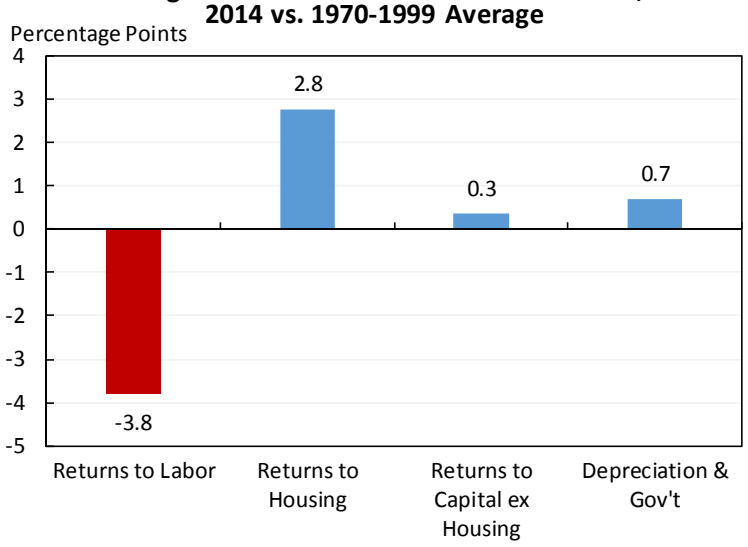
Figure 3b
Capital Shares of Gross Domestic Income



As the share of total income paid to labor in the form of compensation has decreased since 2000, housing capital has captured most of the offset. Returns to private non-housing capital have increased only slightly, as shown in Figure 4.

Figure 4

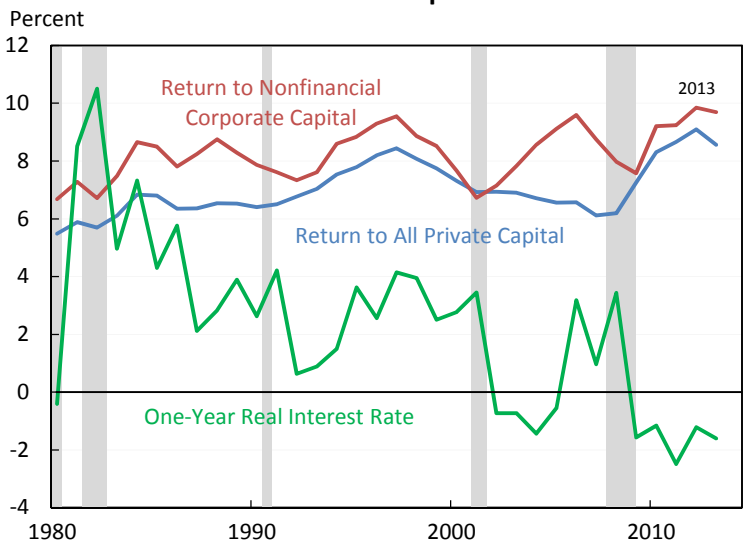
Change in Shares of Gross Domestic Income, 2014 vs. 1970-1999 Average



The above observations are consistent with some role for aggregate rents in explaining the trends. Increased rents in housing markets due to land use restrictions that create artificial scarcity may be part of the cause of the rise in the share of income going to housing and land (see Box 1). It is also noteworthy that the return to productive capital has risen recently, despite the large decline in yields on government bonds, as shown in Figure 5. One potential explanation of the disparity between these two variables is the increased prevalence of rents, although changing risk characteristics of returns to private capital or government bonds could also be playing a role.

Figure 5

Returns to Capital



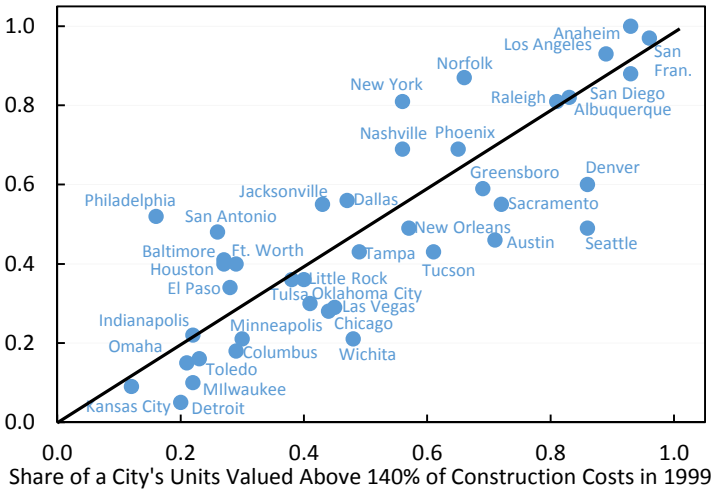
An aggregate analysis of rents leaves many questions unanswered, though, motivating an examination of rents at the firm level.

Box 1: Land Use Restrictions and Rents in the Housing Sector

A number of researchers have explored the sources of rent in the housing and land sectors. Glaeser and Gyourko (2002) found that housing values have historically tracked construction costs in most cities—suggesting that in the long run in most areas, housing markets exhibit marginal cost pricing and lack super-normal economic rents. But Glaeser and Gyourko's research identifies a large and growing set of U.S. cities—including major population centers such as New York, Los Angeles, and San Francisco—where housing prices are well above construction costs.

Figure 6 shows the share of homes in a given city where housing prices exceeded construction costs by at least 40 percent in 1989 and 1999. It offers a few notable observations. First, some of the largest cities in the United States are in the top right corner, suggesting they have consistently high housing prices relative to construction costs. Second, there is a clear positive association over time, suggesting that housing rents in a given city are persistent. And third, it shows a slight positive trend toward higher rents, as there are more cities below the 45-degree line (implying more rents in 1999 than 1989) than above it.

Figure 6
Ratio of House Prices to Construction Costs: 1989 vs. 1999



Glaeser and Gyourko argue that land use restrictions largely explain occurrences of prices substantially exceeding construction costs. In other words, land use restrictions facilitate the existence of economic rents in housing markets. Glaeser and Gyourko find a strong positive association between cities where housing costs exceed construction costs and those with more land use restrictions (as measured by the Wharton Land Use Regulatory Index).

Land use restrictions are a particular example of rents created when policies confer benefits on insiders. One specific set of examples are zoning rules that protect existing property owners. For example, a study of historic districts in New York City shows that historic preservation designation leads to higher property values both within those

districts and in immediately adjacent properties outside those districts (Been et al. 2014). More broadly, while it is difficult to compare land use regulations and zoning laws across cities and geographies, academic studies have found that land use regulations lead to higher housing prices, lower rates of new construction, and lower elasticity of housing supply (Gyourko and Molloy 2014).

The mechanism by which zoning creates rents is straightforward. Zoning regulations are best interpreted as real estate market supply constraints. Taking various forms—limiting height restrictions, highly restrictive minimum lot sizes, complicated permitting processes, or prohibitions on multifamily structures, to name just a few—such regulations effectively limit the number of housing units or non-residential buildings that can be built in a given area. This is accomplished either through direct categorical restrictions or imposing prohibitive costs on investors.

While land use restrictions are perhaps the most salient example of rents in the housing market, broader trends may be at work and a broad range of factors affect housing rents. The demographic trend of urbanization, for example, may confer rents on housing owners in places like New York and San Francisco, where housing values far exceed construction costs. Such trends are likely exogenous to the housing market itself, reflecting cultural shifts that boost demand for urban living. But they certainly provide returns to landlords well above their reservation price. These housing rents would take the form of increased producer surplus in response to an exogenous positive demand shock, rather than the negative supply shock induced by land use restrictions.

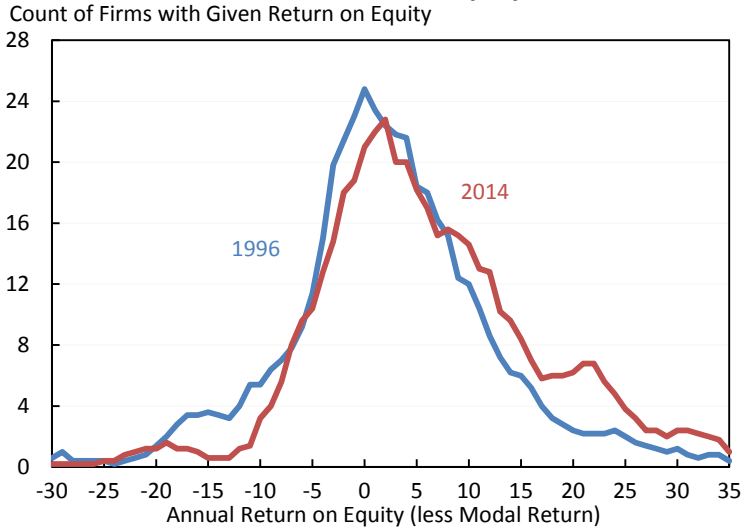
Researchers have also linked land use restrictions directly to lost productivity and output growth, recognizing that such constraints limit worker access to the highest productivity U.S. cities. Hsieh and Moretti (2015) observe that high-productivity cities including New York and San Francisco tend to have increased constraints on housing supply, resulting in a sub-optimal level of human capital being allocated to these high-productivity cities. Hsieh and Moretti find that reducing such restrictions to the level of the median city would expand an individual city's labor force and boost U.S. GDP by 9.5 percent.

To the extent that cities with especially stringent land use restrictions tend to have especially high upward mobility—and high-mobility cities do tend to have less income inequality (Chetty et al. 2014)—these rents have important implications for inequality itself and the persistence of inequality. Zoning and land use restrictions can potentially discourage low-income families from moving to high-mobility areas—effectively relegating them to lower-mobility areas, reinforcing inequality. Accordingly, housing rents have important implications for both aggregate growth and its distribution.

The Firm-Level Distribution of Returns

The limitations of the rents hypothesis at the aggregate level suggest the importance of looking also at the firm level. Firm-level analysis of returns underscores the possibility of an increased prevalence of super-normal returns over time. We examine this issue from two perspectives: the return on equity and the return on invested capital. First, with regard to equity returns, the distribution among publicly traded corporations appears to have grown more skewed to the high end with time. Figure 7 compares the distribution of returns on equity across the firms that compose the S&P 500 in 1996 and 2014, two roughly comparable years in the business cycle. The modal return on equity is subtracted from each firm's return such that both distributions are centered approximately at zero and skewness can be most clearly observed. The distribution has skewed to the high end over time as more super-normal returns are being earned by those firms at the high end of the distribution.[3]

Figure 7
Distribution of Annual Returns on Equity Across S&P 500



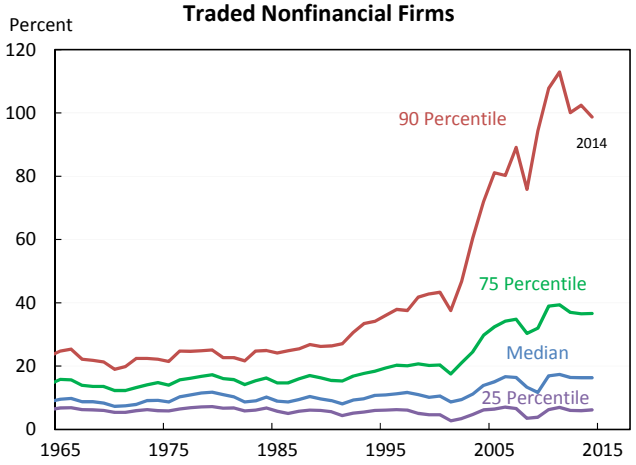
The return on equity, however, can be affected by changes in the debt-equity mix and other factors. A more comprehensive measure of the return on capital is the return on invested capital, defined as net after-tax operating profits divided by capital invested in the firm. This measure reflects the total return to capital owners, independent of financing mix. Below, we present new data on the distribution of the return on invested capital at the firm level, as compiled by the McKinsey Corporate Analysis tool.

Figure 8 presents the distribution of the return on invested capital (ROIC) for publicly traded non-financial U.S. firms from 1965 through 2014, excluding goodwill (an intangible asset reflecting the excess of the price paid to acquire a company over the value of its net assets). This analysis excludes financial firms, where ROIC data is considerably more scarce. As the chart shows, the 90th percentile of the return on invested capital across firms has grown markedly since

[3] As with the other returns on capital discussed below, it is worth noting that to the extent that some share of a super-normal return is shared with labor, the measured returns to capital (which are net of labor compensation) will be correspondingly reduced.

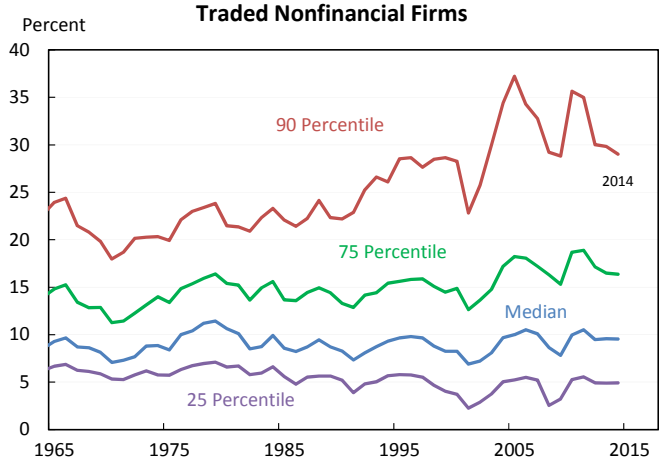
around the early 1990s. The 90/50 ratio—that is, the ratio of the 90th percentile of the distribution of capital returns to the median—has risen from under 3 to approximately 10. In addition, the dramatic returns on invested capital of roughly 100 percent apparent at the 90th percentile, and even 30 percent apparent at the 75th percentile, at the very least raise the question of whether they reflect economic rents.

Figure 8
Return on Invested Capital Excluding Goodwill, U.S. Publicly-Traded Nonfinancial Firms



The data including goodwill are somewhat less dramatic, as shown in Figure 9. Nonetheless, even on this basis, the variance has risen over time. And more importantly for our purposes, we believe the measure excluding goodwill is more insightful to use, since super-normal operating returns on capital can be partially dissipated in value-reducing acquisitions. Our focus is on the emergence of the high returns in the first place, so excluding goodwill seems more appropriate.

Figure 9
Return on Invested Capital Including Goodwill, U.S. Publicly-Traded Nonfinancial Firms



The ROIC measure is not perfect; the treatment of R&D, for example, can cause biases. But it seems unlikely that any such biases have grown so much that they can explain the dramatic trends shown here.

Figures 8 and 9 raise the question of what factors are associated with these very high capital returns. The McKinsey data show that two-thirds of the non-financial firms enjoying an average return on invested capital of 45 percent or higher between 2010 and 2014 were in either the health care or information technology sectors.

The dramatic increase in the dispersion of annual returns is not, in and of itself, evidence of an increase in rents. First, the returns need not be persistent—if all firms in the economy went from returns of 5 percent to random draws of 0 or 10 percent each year, we would not say that rents had risen, even if annual returns were more dispersed. Second, consistently higher average returns for some firms could reflect compensation for the greater risk they are bearing. Both of these explanations merit further exploration, but some tentative evidence on the persistence of returns suggests that there is at least more to the story than these two possibilities. An analysis of the set of firms underlying Figures 8 and 9 suggests relatively low probabilities of transition out of their return bucket for high-returning firms. For example, of firms with a return on invested capital above 25 percent in 2003, only 15 percent had a return on invested capital below 25 percent in 2013, while 85 percent remained in the 25-percent-plus bucket in 2013.

Consolidation may be contributing to the changing distribution of capital returns and the increased share of firms with apparently super-normal returns. The Census Bureau's data on market consolidation shows a clear trend of consolidation in the nonfarm business sector. Table 1 shows that in three-fourths of the broad sectors for which Census Bureau data is available, the 50 largest firms gained revenue share between 1997 and 2007. We use the Census Bureau's data because it includes private and public firms, whereas Compustat includes only public firms (Ali et al., 2009). While the 1997-2007 period is not ideal, consistent data only start in 1997 and the most recent data goes through 2007.[4]

Table 1

Industry	Percentage Point Change in Revenue Share Earned by 50 Largest Firms, 1997-2007
Transportation and Warehousing	12.0
Retail Trade	7.6
Finance and Insurance	7.4
Real Estate Rental and Leasing	6.6
Utilities	5.6
Wholesale Trade	4.6
Educational Services	2.7
Accommodation and Food Services	2.6
Professional, Scientific and Technical Services	2.1
Administrative/Support	0.9
Other Services, Non-Public Admin	-1.5
Arts, Entertainment and Recreation	-2.3
Health Care and Social Assistance	-3.7

[4] This metric of concentration is at best an imperfect tool for examining trends in geographically differentiated industries where national firms play a comparatively small role, like health care and social assistance. For these types of industries, it is often more meaningful to examine trends in the average level of local-market concentration. Notably, research examining hospital markets, the largest sub-industry of health care and social assistance, finds that the average local hospital market became more concentrated from 1997 to 2007, despite the fact that the share of revenue earned by the 50 largest firms nationwide fell (Gaynor et al., 2014).

Other research has shown similar trends of consolidation in specific industries. A study by the Congressional Research Service (2010) shows that, between 1972 and 2002, market concentration increased in eight of the nine agricultural industries it tracks. In a study of a related set of industries, Fuglie et al. (2012) finds an increase in market concentration among agricultural supply industries. Vogt and Town (2006) find that hospital Herfindahl-Hirschman Index (HHI, a common measure of market concentration) increased from 1,576 to 2,323 between 1990 and 2003. A study by the FCC (2014) finds wireless HHIs increasing from under 2,700 in 2008 to over 3,000 in 2013. Corbae and D'Erasmo (2013) document an increase in concentration of the loan market share and deposit market share of U.S. banks between 1976 and 2010. For example, in 1976 the four largest had 11 and 10 percent of the banking industry's loans and deposits, respectively. By 2010 these shares had grown to 38 and 37 percent, respectively. To the extent industries look more like oligopolies than perfectly competitive markets, they will generate economic rents. In the absence of some countervailing public purpose, such rents reflect an erosion of the surplus that would otherwise accrue to consumers in a competitive market.

The Role of Within and Between-Firm Earnings Inequality

As noted above, much of the increase in the share of income going to the top 1 percent, and especially to the top 10 percent, over the past several decades is due to increased inequality within labor income. Recent research has generally found that the increase in earnings inequality is, in turn, explained by increased divergence in the average earnings of workers in different firms rather than the increased divergence of earnings within individual firms. This evidence also suggests that we should be looking to firm-level analysis, not just an aggregate story, to understand the rise in inequality.

Barth et al. merge data from the Current Population Survey, the Longitudinal Business Data Base, and Longitudinal Employer-Household Dynamics data to examine changes in the variance of average earnings across establishments and the variance within establishments. They estimate that increasing inequality between establishments explains more than two-thirds of the increase in overall earnings inequality between 1992 and 2007. Among workers who continued at the same establishment from one year to the next, the increased spread in average pay between establishments explained 79 percent of the rise in earnings inequality over that period. As they conclude, "In short, the pattern of change in pay and potentially other economic outcomes in the establishments where people work has been a major factor in the much-heralded increase in inequality. We have shown that establishments matter but have only scratched the surface of analyzing the economics that have pulled establishments apart in earnings space."

Preliminary research from Song et al. reinforces this conclusion. Using Social Security earnings data, the authors were able to link earnings to firms (rather than establishments as Barth et al. were forced to do). Song et al. found that essentially all of the increase in national wage inequality from 1978 to 2012 stemmed from increasing disparities in average pay across companies. By contrast, their analysis suggests that the wage gap between the highest-paid employees and average employees within firms explains almost none of the rise in overall inequality. Figure 10 and Figure 11 show that white individual wage disparities have clearly increased in recent decades, virtually all the increased dispersion is attributable to inter-firm

dispersion rather than intra-firm dispersion. While these initial findings reinforce the Barth et al. conclusions, more longitudinal analysis linking employer and employee data before we can draw strong conclusions from this line of research.

Figure 10

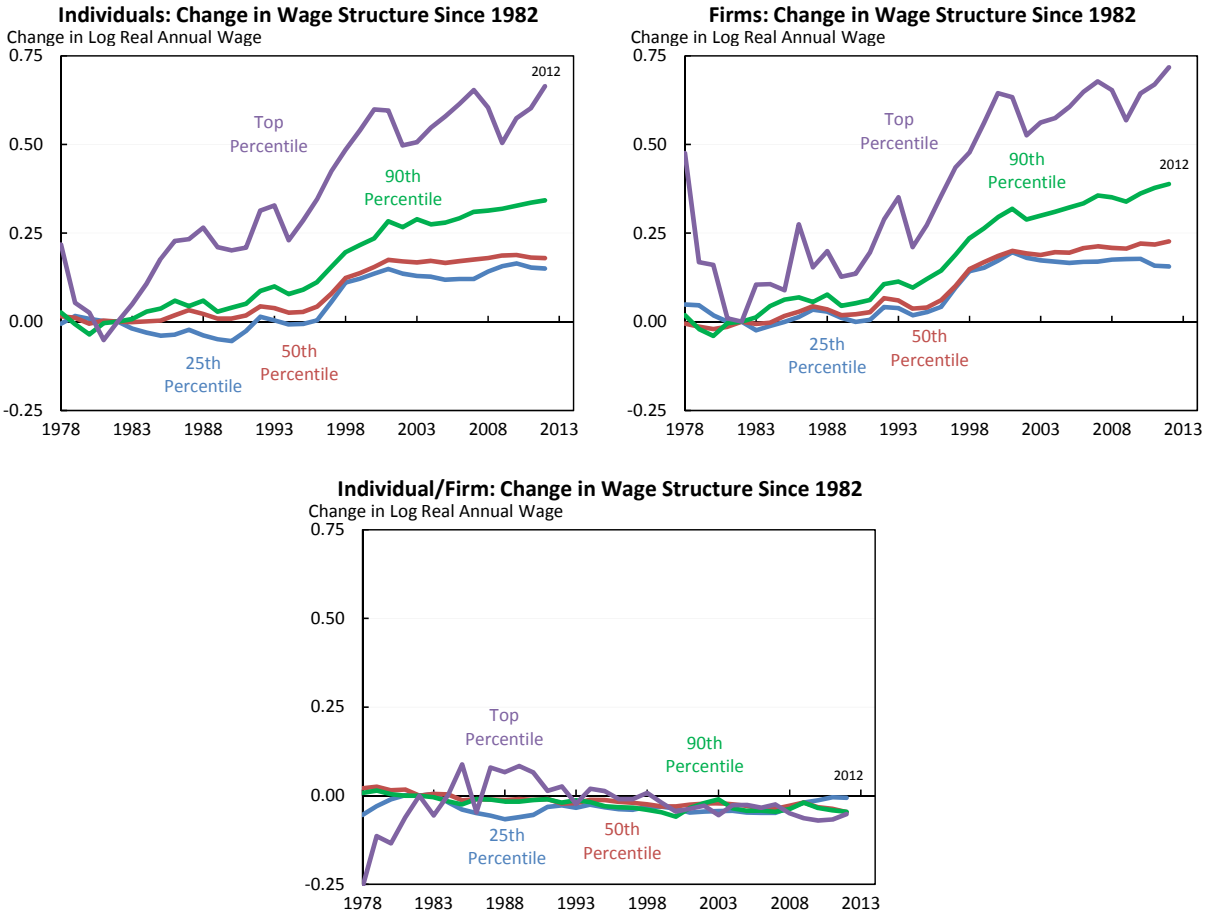
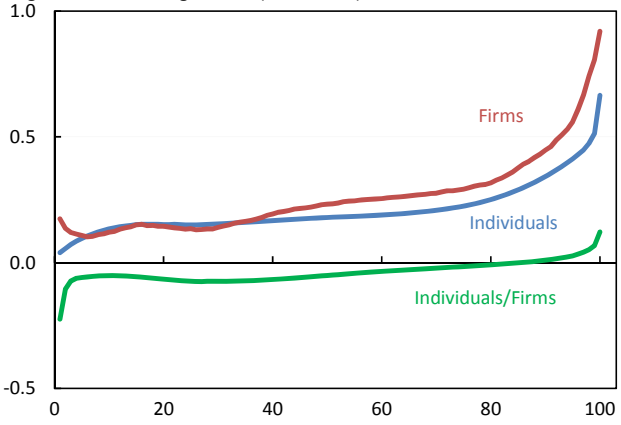


Figure 11

Wage Growth by Percentiles for Group, 1982-2012



Interpreting these facts is challenging, in part because it is not clear whether pay is diverging at the establishment and firm levels because workers are sorting themselves into more homogeneous firms, or whether the earnings trends reflect increased variance across firms even for a given distribution of workers and firms. One reasonable conclusion at this stage is that, again, the role of the firm deserves much more attention.

One explanation, however, is grounded in the inter-industry wage differentials research pioneered by Krueger and Summers (1988) which found that industry-specific wage premia cannot be explained by differences across industries in nonwage compensation, compensating differentials for working conditions, or differences in the propensity of unionization. This conclusion has been debated—for example, Gibbons and Katz (1992) stressed the role of unmeasured worker heterogeneity. But recent work including Abowd et al. (2012) also finds that firm-level effects explain more of the variance in inter-industry wage differentials than worker-level effects. Krueger (2013) found that the correlation between managers' and janitors' wages across industries remained high, at 0.8, consistent with the rent sharing stories discussed here, but that the correlation had fallen relative to earlier decades, suggesting that even at high-profit firms janitors are getting a smaller share of the rents.

All of this evidence could help explain the rise in inequality of earnings. Some firms, for example in the technology sector or the financial sector, could generate consistently high supernormal returns. Workers at these firms would share in these returns in the form of higher wages than they would get for similar work at other firms that did not receive supernormal returns.

The literature on deregulation in the airline and trucking industries supports the notion that firms and workers share product market rents. Card (1996) found that following the 1978 deregulation of the airline industry, airline workers' wages fell about 10 percent relative to wages in the rest of the economy. The declines were similar across most occupation types, including for industry-specific positions (such as pilots and flight attendants) and more general positions (such as managers and secretaries). These patterns suggest that prior to deregulation, the airline industry was characterized by rent sharing with employees. Rose (1987) tested the rent-sharing hypothesis in the trucking industry, finding that following deregulation, union wages declined substantially and the wage premium (union wages relative to nonunion wages) fell from 50 percent before deregulation to under 30 percent after deregulation. This supports the notion of rent-sharing, at least in the context of unionized workers.

The rent-sharing argument, however, hinges on some immobility in labor. To the degree that labor were perfectly mobile, it would compete away the portion of these rents going to workers, sorting workers into firms according to their marginal products and leaving the full benefit of these rents for capital. In general, however, there are frictions in labor markets that can generate persistent rents, and there is some evidence that these frictions may have grown over time, the topic we turn to next.

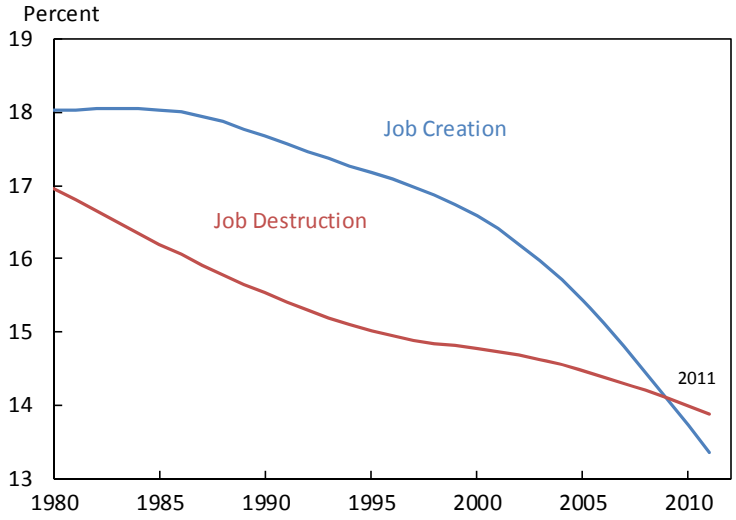
The Decline in Labor and Business Fluidity and the Persistence of Rents

Job and Geographic Mobility

One potential outcome of an increased variance in capital returns at the firm level along with increased rent-seeking in the U.S. economy could be a reduction in the overall dynamism of U.S. labor markets. An increasing number of researchers have noted that trend, with varying levels of concern, in part because the emerging literature has not reached a consensus on its causes. Labor market dynamism (or "fluidity" or "churn") refers broadly to the frequency of changes in who is working for whom in the labor market.

We know relatively more about job flows (job creation and destruction) than worker flows (hires and separations) since series data are available back to the 1980s. Literature based on these data concludes that job flows have markedly declined over the last 20 to 30 years. For example, Decker et al. (2014) and Davis and Haltiwanger (2014) document that job creation and job destruction fell from the late 1980s to just before the 2007 recession, as shown in Figure 14. Hyatt and Spletzer (2013) find larger declines, of roughly one-quarter to one-third, for both job creation and destruction between the late 1990s and 2010.

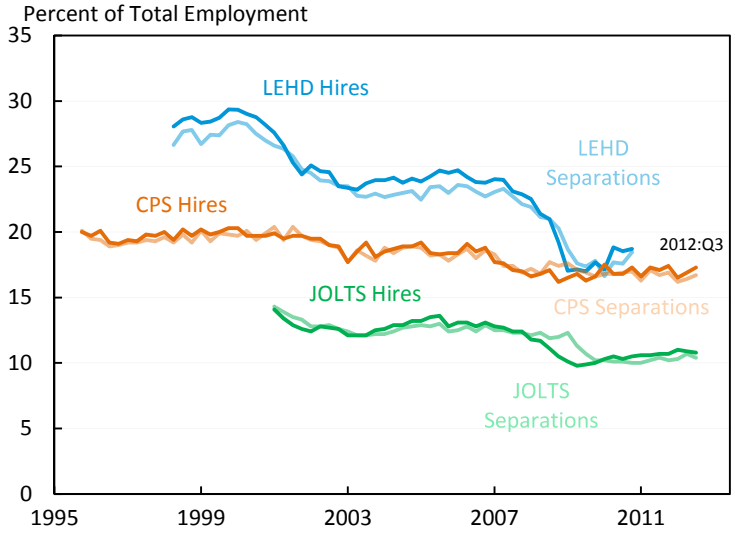
Figure 12
Job Creation and Destruction Rates: 1980-2011



Worker flows have declined since at least the late 1990s, including the entire period for which the best direct data on these flows are available from the Job Openings and Labor Turnover Survey. Hyatt and Spletzer (2013) document declines of 10 percent (using Current Population Survey data) to 38 percent (using Longitudinal Employer-Household Dynamics data) in hires and separations since 2001, as shown in Figure 15. Davis and Haltiwanger (2014) have a longer series on hires and separations that extends back to 1990, which shows a decline in worker flows over this longer period.

Figure 13

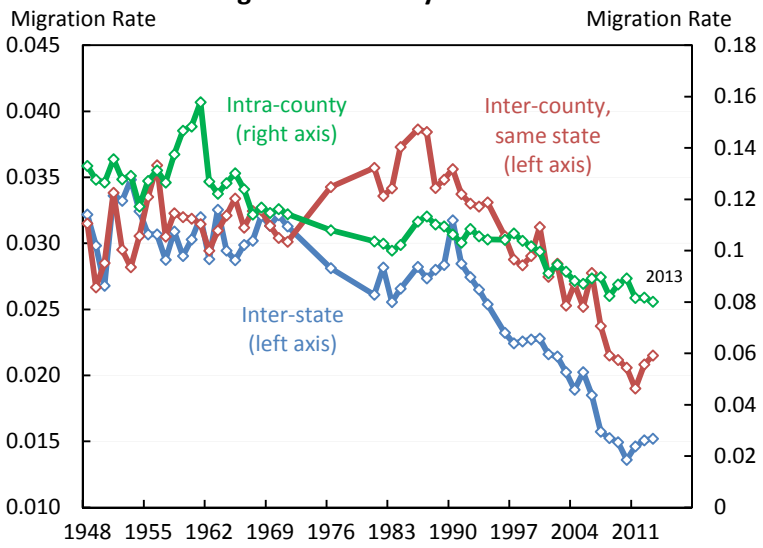
Trends in Hires and Separations, 1995-2012



Long-distance migration in the United States, which typically involves a change of employer or labor force status, has also been in a decades long decline, falling by as much as 50 percent since the late 1970s (Molloy et al. 2014; Kaplan and Schulhofer-Wohl 2012). Both intra- and inter-county migration have followed similar patterns, as shown in Figure 16.

Figure 14

Migration Rates by Distance



The empirical literature has only recently begun to examine why job and worker transitions have fallen. Some explanations, like demographic changes including the rise of two-earner couples, have been ruled out because the declines in transitions are occurring for a wide range of demographic groups. Two basic hypotheses have been explored: either that firms or that workers have changed over time in ways that lower fluidity. Evidence shows that changes in firms can explain a portion of declining fluidity.

The average age and number of associated establishments per firm have both risen in recent decades (Davis and Haltiwanger 2014; CEA calculations). Older, larger firms are associated with lower job flows, as these firms are less likely to contract or expand rapidly. The decline in firm entry and exit rates noted above are consistent with this change in firm composition. Because the change in the composition of firms has shifted in a way that, all else equal, would suggest fewer worker hires and separations, researchers have tested to see how much of the shift in worker flows can be explained by changes in firm composition. Hyatt and Spletzer (2013) and Davis and Haltiwanger (2014) decompose changes in worker flows into those due to job flows and those due to worker movements between existing jobs. They find that changes in job flows account for between one-third to one-half of the decline in worker flows. Because job flows are determined in part by firm size and age, changing firm characteristics contribute to the decline in worker flows (Hyatt and Spletzer 2013). In contrast, changes in the characteristics of the average worker, like age and education, have been found to contribute little to declines in fluidity (Molloy et al. 2014; Davis and Haltiwanger 2014).

The implications of reductions in dynamism are less clear than the trends themselves. On the one hand, reduced dynamism may be a sign of better matching in job markets or increased efforts by firms to reduce employee turnover. On the other hand, reduced flows may preclude employees from realizing the wage gains of switching jobs or make it difficult for part-time workers to find full-time work, reducing overall labor productivity. As recent working papers suggest, heterogeneity in the cyclical responsiveness of worker flows among firms may play a role in slowing wage growth among workers.[5] Other research suggests that more fluid labor markets may be more resistant to cyclical shocks, or, at minimum, experience faster recoveries after a recession (Blanchard and Wolfers 2000).

Although this literature has not reached definitive conclusions, one general theme is the importance of firm behavior in contributing to the decline in job and geographic mobility—and the ways in which this, in turn, reinforces increased wage disparities for workers. The role of the

[5] Very recent work suggests that changes in firm-side behavior may be deeply linked to decreases in dynamism through heterogeneity in the cyclical responsiveness of worker flows among firms. First, in a paper released last February, Giuseppe Moscarini and Fabien Postel-Vinay (2015) use JOLTS data and link job flows to firm size, showing that while hires were declining even before the Great Recession, around the time of the financial crisis they collapsed among large establishments but remained stable at small establishments. Along with cyclical effects on other job and work flow measures, Moscarini and Postel-Vinay offer suggestive evidence that the "job ladder"—the process by which workers move from smaller firms to larger firms as they search for higher-quality jobs—broke down during the Great Recession and has yet to recover. The drop in hiring among larger firms and the decline in larger establishments' "poaching" workers from smaller establishments has led to reduced incentives for smaller employers to hire the unemployed, both prolonging the average duration of unemployment and causing persistent slack in the labor market.

One limitation of Moscarini and Postel-Vinay's study is that they can only examine heterogeneity by firm size, and cannot study other firm characteristics—such as firm wage. Looking over a slightly longer timeframe, Haltiwanger et al. (2015) use matched employer-employee LEHD data to test Moscarini and Postel-Vinay's hypothesis. They find little support for the "job ladder" between smaller and larger firms. Instead, they find evidence of a "job ladder" along which workers reallocate from *lower-paying* firms to *higher-paying* firms. However, this firm-wage "job ladder" collapsed in the Great Recession. Likewise, Lisa Kahn and Erika McEntarfer (2014) find that separations—and particularly separations followed by employment, which are most likely to be voluntary—tend to drop more sharply in recessions among lower-paying firms. Business cycle contractions thus tend to prevent workers from progressing "up the job ladder" to higher-paying firms.

firm also appears to loom much larger in explaining wage inequality trends than the popular wisdom suggests, as we noted earlier.

Box 2: Occupational Licensing

Declines in worker mobility—in particular geographic mobility—may also be in part driven by another decades-long trend in the U.S. economy: the steady increase in the number of workers whose occupations require some sort of license or certification (Davis and Haltiwanger 2014). Work by Morris Kleiner and Alan Krueger (2013) charting the historical growth in licensing from a number of different data sources shows that the share of the U.S. workforce covered by State licensing laws grew fivefold in the second half of the 20th century, from less than 5 percent in the early 1950s to 25 percent by 2008. Although State licenses account for the bulk of licensing, the addition of local and Federal licensed occupations further raises the share of the workforce that was licensed in 2008 to 29 percent. Notably, there is considerable variation across States, suggesting that licensing can help explain reduced geographic mobility.

In part, the increase in licensing is due to growth in the number of employees in occupations that typically require a license, such as health care occupations, over the last few decades. But it is also due to a large increase in the number of occupations that have been licensed. Analysis from a recent CEA report finds that roughly two-thirds of the growth in the number of licensed workers is attributable to growth in the number of licensed occupations, with a little over one-third due to changes in the occupational composition of the workforce (CEA et al. 2015). While often based on sound concerns for health and safety protections for consumers, some occupational licensing regimes can also present a classic case of rent-seeking by incumbents, who may successfully lobby government entities to erect barriers to entry to would-be competitors. Whatever its benefits or costs, the rise of licensing may be one contributing factor behind the decades-long decrease in interstate mobility, though it is unlikely that licensing is the sole driver of this change (CEA et al. 2015).

Conclusion

As we stated at the outset, our principal conclusion is that more work needs to be done combing questions of inequality, deviations from perfect competition, and the role of rents in both arenas. Such work needs to be done at the firm level to potentially help explain the rise in inequality—including inequality in earnings, inequality in capital returns, and the shift in income from labor to capital. Joe has shined a spotlight on these questions, advanced the theory, and pointed to a range of important evidence. The next stages of this important discussion should dig deeper into the nuances of these questions at the level of the firm and of individual workers.

Notes to Figures and Tables

Figure 1
Source: World Top Incomes Database; CEA calculations.

Figure 2
Note: Shading denotes recession.
Source: Bureau of Economic Analysis (Fixed Asset Accounts, National Income and Product Accounts); CEA calculations.

Figure 3a
Note: The labor share is defined as compensation of employees by domestic employers as a share of gross domestic income. Shading denotes recession.
Source: Bureau of Economic Analysis (National Income and Product Accounts); CEA calculations.

Figure 3b
Note: "Returns to housing" is defined as the sum of rental income of persons in the housing sector, corporate profits in the housing sector, and proprietors' income in the housing sector. "Returns to capital excluding housing" is defined as the net operating surplus of all domestic enterprises excluding returns to housing.
Source: Bureau of Economic Analysis; CEA calculations.

Figure 4
Note: "Returns to labor" is defined as compensation of employees by domestic employers. "Returns to housing" is defined as the sum of rental income of persons in the housing sector, corporate profits in the housing sector, and proprietors' income in the housing sector. "Returns to capital excluding housing" is defined as the net operating surplus of all domestic enterprises excluding returns to housing. "Depreciation and government" is the sum of the consumption of fixed capital and government tax receipts for production and imports, less government subsidies. These four defined terms sum to gross domestic income, and all changes are expressed as a share of gross domestic income.
Source: Bureau of Economic Analysis; CEA calculations.

Figure 5
Note: The rate of return to all private capital was calculated by dividing private capital income in current dollars by the private capital stock in current dollars. Private capital income is defined as the sum of 1) corporate profits ex. federal government tax receipts on corporate income, 2) net interest and miscellaneous payments, 3) rental income of all persons, 4) business current transfer payments, 5) current surpluses of government enterprises, 6) property and severance taxes, and 7) the capital share of proprietors' income, where the capital share was assumed to match the capital share of aggregate income. The private capital stock is defined as the sum of 1) the net stock of produced private assets for all private enterprises, 2) the value of total private land inferred from the Financial Accounts of the United States, and 3) the value of U.S. capital deployed abroad less foreign capital deployed in the United States. The return to nonfinancial

corporate capital is that reported by the Bureau of Economic Analysis, and the one-year real interest rate is that reported by Robert Shiller at Yale University.
Source: Bureau of Economic Analysis; Federal Reserve Board of Governors; Robert Shiller, Yale University; CEA calculations.

Figure 6
Source: Glaeser and Gyourko (2002).

Figure 7
Note: The annual return to common equity is displayed for the stated year (i.e. 1996 or 2014) for all members of the S&P 500 as of the last week of May the following year (i.e. 1993 or 2015). The distribution of returns covers all members of the S&P 500 in the year indicated and buckets firms by single percentage-point intervals, smoothed by averaging over five percentage-point 20 intervals. The modal return in a given year was subtracted from each firm's return such that both distributions are centered approximately at zero. The tail ends of the distribution (above or below a 60 percent or 20 percent return on equity, respectively) were trimmed for optical clarity.
Source: Bloomberg Professional Service; CEA calculations.

Figure 8
Note: The return on invested capital definition is based on Koller et al (2015), and the data presented here are updated and augmented versions of the figures presented in Chapter 6 of that volume. The McKinsey data includes McKinsey analysis of Standard & Poor's data and exclude financial firms from the analysis because of the practical complexities of computing returns on invested capital for such firms. For further discussion of that point, see Koller et al. (2015).
Source: Koller et al. (2015); McKinsey & Company.

Figure 9
Note: The return on invested capital definition is based on Koller et al (2015), and the data presented here are updated and augmented versions of the figures presented in Chapter 6 of that volume. The McKinsey data includes McKinsey analysis of Standard & Poor's data and exclude financial firms from the analysis because of the practical complexities of computing returns on invested capital for such firms. For further discussion of that point, see Koller et al. (2015).
Source: Koller et al. (2015); McKinsey & Company.

Table 1
Note: Concentration ratio data is displayed for all North American Industry Classification System (NAICS) sectors for which data is available from 1997 to 2007.
Source: Census Bureau.

Figure 10
Source: Song et al. (2015).

Figure 11
Source: Song et al. (2015).

Figure 12
Source: Decker et al. (2014), based on Census Bureau (Business Dynamics Statistics).

Figure 13
Source: Hyatt and Spletzer (2013); Bureau of Labor Statistics (Current Population Survey); Bureau of Labor Statistics (Job Openings and Labor Turnover Survey); Census Bureau (Longitudinal Employer-Household Dynamics).

Figure 14
Source: Molloy, Smith, and Wozniak (2014).

References

Abowd, John M. et al. 2012. "Persistent Inter-Industry Wage Differences: Rent Sharing and Opportunity Costs." *IZA Journal of Labor Economics,* 1(7).

Ali, Ashiq et al. 2009. "The Limitations of Industry Concentration Measures Constructed with Compustat Data: Implications for Finance Research." *The Review of Financial Studies*, 22(10): 3839-3871.

Barth, Erling et al. 2014. "It's Where You Work: Increases in Earnings Dispersion across Establishments and Individuals in the U.S." NBER Working Paper No. 20447.

Been, Vicki et al. 2014. "Preserving History or Hindering Growth? The Heterogeneous Effects of Historic Districts on Local Housing Markets in New York City." NYU Furman Center Working Paper.

Blanchard, Olivier and Justin Wolfers. 2000. "The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence." *The Economic Journal* 110, (462): C1-C33.

Card, David. 1996. "Deregulation and Labor Earnings in the Airline Industry." NBER Working Paper No. 5687.

Chetty, Raj et al. 2014. "Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States." *Quarterly Journal of Economics,* 129(4): 1553-1623.

Corbae, Dean, and Pablo D'Erasmo. 2013. "A Quantitative Model of Banking Industry Dynamics."

Council of Economic Advisers (CEA) et al. 2015. "Occupational Licensing: A Framework for Policymakers."

Davis, Steven J. and John Haltiwanger. "Labor Market Fluidity and Economic Performance." NBER Working Paper No. 20479.

Decker, Ryan et al. 2014. "The Role of Entrepreneurship in US Job Creation and Economic Dynamism." *Journal of Economic Perspectives,* 28(3): 3-24.

Fuglie, Keith et al. 2012. "Rising Concentration in Agricultural Input Industries Influences New Farm Technologies." U.S. Department of Agriculture (USDA).

Furman, Jason. 2014. "Global Lessons for Inclusive Growth." Council of Economic Advisers.

Gaynor, Martin et al. 2014. "The Industrial Organization of Health Care Markets." NBER Working Paper No. 19800.

Gibbons, Robert and Lawrence Katz. 1992. "Does Unmeasured Ability Explain Inter-Industry Wage Differentials?" *Review of Economic Studies,* 59: 515-535.

Glaeser, Edward L. and Joseph Gyourko. 2002. "The Impact of Zoning on Housing Affordability." NBER Working Paper No. 8835.

Gyourko, Joseph and Raven Molloy. 2014. "Regulation and Housing Supply." NBER Working Paper No. 20536.

Haltiwanger, John et al. 2015. "Cyclical Reallocation of Workers Across Employers by Firm Size and Firm Wage." NBER Working Paper No. 21235.

Hsieh, Chang-Tai and Enrico Moretti. 2015. "Why Do Cities Matter? Local Growth and Aggregate Growth." NBER Working Paper No. 21154.

Hyatt, Henry R. and James R. Spletzer. 2013. "The Recent Decline in Employment Dynamics." *IZA Journal of Labor Economics,* 2(1): 1-21.

Kahn, Lisa and Erika McEntarfer. 2014. "Employment Cyclicality and Firm Quality." NBER Working Paper No. 20698.

Kaplan, Greg and Sam Schulhofer-Wohl. 2012. "Understanding the Long-Run Decline in Interstate Migration." NBER Working Paper No. 18507.

Kleiner, Morris M. and Alan B. Krueger. 2013. "Analyzing the Extent and Influence of Occupational Licensing on the Labor Market." *Journal of Labor Economics,* 31(2): S173-S202.

Koller, Tim et al. 2015. *Valuation: Measuring and Managing the Value of Companies*. Sixth Edition.

Krueger, Alan B. 2013. "Land of Hope and Dreams: Rock and Roll, Economics, and Rebuilding the Middle Class." Remarks at Rock and Roll Hall of Fame.

Krueger, Alan B. and Lawrence H. Summers. 1988. "Efficiency Wages and the Inter-Industry Wage Structure." *Econometrica,* 56(2): 259-293.

Molloy, Raven et al. 2014. "Declining Migration within the U.S.: The Role of the Labor Market." NBER Working Paper No. 20065.

Moscarini, Giuseppe and Fabien Postel-Vinay. 2015. "Did the Job Ladder Fail After the Great Recession?" Working Paper.

Rognlie, Matthew. 2015. "Deciphering the Fall and Rise in the Net Capital Share." *Brookings Papers on Economic Activity.* BPEA Conference Draft, March 19–20.

Rose, Nancy L. 1987. "Labor Rent-Sharing and Regulation: Evidence from the Trucking Industry." *Journal of Political Economy*, 95(6):1146-78.

Shields, Dennis A. 2010. "Consolidation and Concentration in the US Dairy Industry." Congressional Research Service.

Song, Jae et al. 2015. "Firming Up Inequality." NBER Working Paper No. 21199.

Stiglitz, Joseph E. 2012. *The Price of Inequality: How Today's Divided Society Endangers Our Future*. W. W. Norton & Company.

U.S. Federal Communications Commission. 2014. "Seventeenth Mobile Wireless Competition Report."

Vogt, William and Robert Town. 2006. "How has Hospital Consolidation Affected the Price and Quality of Hospital Care?" Robert Wood Johnson Foundation: The Synthesis Project, Report No. 9.

World Top Income Database. "The World Top Incomes Database." Alvaredo, Facundo et al. Accessed October 6, 2015.