Financial Development and Wage Inequality: Theory and Evidence from US States

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Abstract

We provide an explanation for the joint occurrence of the widening wage inequality and changes in organizational form in response to financial market developments in the US economy in the last two decades. We present an endogenous growth model with imperfect credit markets and establish how improving the efficiency of these markets affects modes of production, innovation and wage dispersion between skilled and unskilled workers. We argue that financial market development is an independent source of the rise in the skill premium in the US since the 1980s, as well as a factor magnifying the effects of technological progress and trade. We provide evidence in support of the model’s predictions.

PRELIMINARY. PLEASE DO NOT CITE.
1 Introduction

In recent years the widening US wage distribution has received a lot of attention from economists. Researchers have documented the increase, since the 1980s, in overall wage differentials (measured as the log wage gap between the 90th and the 10th percentiles of the wage distribution) as well as the increase in wage differentials measured within education, age and experience groups. The factors usually identified with the increase in wage inequality are trade, technological progress, and organizational change (itself brought about by technological progress). In this paper we explore the role of financial market development (in particular the rise in entrepreneurial finance) as an independent source of the increase in the skill premium, as well as a factor magnifying the effects of technological progress and trade.

The interaction between entrepreneurial finance, organizational change and technological progress has become an increasingly important component of the innovation process in the US in recent decades. Following the 1979 amendment to the Employee Retirement Income Security Act (ERISA), which permitted pension funds to invest in risky asset vehicles such as venture capital, the amount of capital flowing into venture capital firms increased substantially (Gompers & Lerner, 2004, Chapter 1). Subsequently, venture capital financing was found to have a positive impact on innovation (Kortum & Lerner, 2000). Associated with these developments was a change in organizational form in the US economy. Smaller firms employing workers of relatively similar skill levels rose in prominence, whereas the large scale corporations that mixed workers of differing skills declined. Kremer & Maskin (1996) document that the correlation between wages of US manufacturing workers in the same plant rose from 0.76 in 1975 to 0.80 in 1986 and argue that this “segregation by skill” contributed to the rise in wage inequality. The coincident timing of these developments, along with the increase in venture financing activity during this period, suggests that venture capital firms, and more sophisticated financial markets, may have facilitated the change.

1Autor, Katz and Kearney (2005).
in organizational form (and thus the widening of the wage distribution) by promoting the emergence of smaller, innovative start-up firms.

We build on these insights and construct a model which demonstrates that increase in financial market sophistication leads to organizational change, an acceleration in growth, and the widening of the wage distribution. The framework we develop implies that for a given change in productivity of skilled workers, economies with greater degree of financial market development should experience a greater increase in wage inequality. The second part of the paper confronts these predictions with evidence from US states. We find that the states which experienced higher volumes of mergers and acquisitions, as well as higher venture capital activity, also experienced larger increases in the college premium.

The paper is organized as follows. Section 2 summarizes the related literature and discusses the developments in the US economy over the last twenty years that have motivated our analysis. The model is presented in Section 3.

2 Explanations for rising wage inequality in the US

There exists an extensive literature documenting and attempting to explain the rise in wage inequality over the last 25 years in the US, the UK and several other countries. The sources usually identified with the increase in wage inequality in the US are trade, changes in labour market institutions such as the minimum wage and unionization, technological progress, and organizational change (itself brought about by technological progress). A number of studies have questioned the importance of trade as an explanation for the rise in inequality in the US since the relative price of skill-intensive goods has not increased to the extent that would explain the rise in inequality (Acemoglu, 2002). Studies have also documented that the bulk of the increase in inequality has been in the upper tail of the wage distribution, which would not be directly affected by changes in the minimum wage or by de-unionization (Autor, Katz and Kearney, 2005).

Papers that study the role of technological change in causing the increased dispersion in
wages often rely on the idea of skill-biased technology (Acemoglu, 1998; Krusell et al. 2000). The idea is that technological progress over the recent decades has disproportionately improved the productivity of skilled workers. There indeed appears to be substantial empirical evidence of skill-bias brought about by the information and telecommunications technology (IT). On the theoretical side, skill-bias can be modelled as having a direct or indirect effect on productivity of skilled workers. A direct effect is an increase in the productivity of skilled labor in producing a final good. This can occur, for example, due to an increase number of intermediate goods designed to complement skills, or an improvement in the quality of capital, assuming capital-skill complementarity. An indirect effect can be a consequence of neutral technological change in the final goods production that nevertheless alters the relative productivity of skilled labor in other sectors. For example, Aghion and Howitt (1998) present a model where the arrival of a new general purpose technology (GPT) ushers in a period of diffusion and adoption. The adoption and learning of new and unfamiliar technology requires the use of skilled labor. As more and more firms adopt new technology, skilled workers become scarce and their wages are pushed up, leading to an increase in wage inequality. In the long run, when all firms master the new technology, skilled and unskilled workers again become perfect substitutes and the wage inequality falls. Our approach is similar in spirit to the Aghion and Howitt model as we do not assume a skill-biased technological progress in the production of final goods. In contrast to their model, we do not rely on the GPT nature of technology. Instead, we focus on the interplay between technological change and financial market efficiency.

Explanations for rising inequality based on skill biased technological change rely on the rising relative supply of college graduates in the 1970s to provide the “pull mechanism” that induces a shift in new technologies developed towards those complementary to educated workers. These explanations do not incorporate frictions in the financing of the high upfront costs of research faced by innovating firms as they pursue the development of skill biased technologies, or the rationing of entrepreneurial finance. Changes in financial sophistication
that ease the rationing of credit to research projects therefore play no role at all in these analyses. Our model incorporates imperfect credit markets and traces out the implications of enhanced efficiency (brought on, for example, by financial deregulation) for organizational change, growth and inequality. The increased flow of entrepreneurial finance following improvements in the sophistication of financial markets facilitates greater innovation and a shift in production methods as high skilled workers cluster together and separate from low skilled workers. As high skilled workers get reallocated across firms, the skill premium increases.

Previous researchers have also studied organizational change as a factor driving inequality (Kremer and Maskin, 1996; Acemoglu, 1999). These papers emphasize that the quality of jobs created by firms (i.e. their hiring decisions) are driven by the supply of skills in the labour market. As the mean skill level rises, firms that previously hired both high and low skill workers now start focusing only on one or other type in their hiring decisions, and the composition of jobs changes. While these papers explain how the changing composition of jobs and sorting of workers across firms can lead to higher inequality, they do not address other important contributors to organizational change - financial development and technological progress. Our model makes explicit the connections between financial deregulation, changes in organization of production and more rapid technological progress, and demonstrates how the interaction between these factors has led to the widening of the wage distribution in the US in the last 25 years.

3 A Model of Financial Development, Innovation, and Organizational Change

We present an endogenous growth model with imperfect credit markets and establish how improving the efficiency of these markets affects growth, organizational change and the dispersion in wages between skilled and unskilled workers. Unskilled workers can only be used in manufacturing of the final good. Skilled workers, on the other hand, can either work
in manufacturing or in research.² Firms in the manufacturing sector produce final output using one of two production methods - one which combines skilled and unskilled workers (we refer to this as the “old economy”) and the other which combines skilled workers with an expanding variety of capital goods (we call this the “new economy”).

Technological progress takes place through the expansion in the number of intermediate capital goods, in the style of Romer (1990). When the variety of intermediate capital goods increases, the relative productivity of skilled workers rises and they get reallocated away from firms in the old economy that combine their services with unskilled labor input. As the number of skilled workers in the new economy firms decreases, the relative productivity of unskilled workers falls and the skill premium in wages increases.

Skilled workers are the only ones capable of innovation. We think of innovation in a broad sense as including invention of new and better intermediate goods, but also improvements in the production process of final goods. A reallocation of skilled workers from the manufacturing sector to the innovation sector can be thought of as another route through which un-pairing of skilled and unskilled workers in the production process takes place (one of the empirical facts documented by the recent literature on changes in the organization of firms). The key point is that the presence of skilled workers in the old economy manufacturing firms that combine skilled and unskilled labor directly increase unskilled workers’ productivity in the final goods sector, whereas when these skilled workers work in manufacturing firms in the new economy, they do not. As we discuss in more detail below, skilled workers in the innovation sector do contribute indirectly to unskilled workers’ productivity through a spillover effect enjoyed by the old economy firms when the number of intermediate capital goods in the new economy expands. The total supply of skilled workers is allocated between the manufacturing and innovation sectors.

Furthermore, we assume that credit markets are imperfect. In particular, we assume that

²Although the model emphasizes research devoted to producing new varieties of capital goods, we have in mind a broad range of innovative activities including problem-solving and cognitive tasks associated with implementing new business ideas, legal, accounting and strategy consulting.
skilled workers capable of innovation are constrained from borrowing and cannot undertake their projects without outside financing. Financial intermediaries exist that are capable of borrowing from households and financing innovation projects. However, because of asymmetric information, moral hazard, monitoring problems, etc. significant frictions exist in the credit market. We model these using search and matching approach from the labor literature (see Wasmer and Weil 2005 and Jerzmanowski and Nabar 2007). We thus assume that skilled workers and intermediaries engage in a costly search process before an appropriate match is made and a research project can be financed. This can be thought of as capturing the fact that the appropriate financial intermediary can overcome the problems of asymmetric information, moral hazard, etc due to prior experience or expertise with research projects of a similar nature. However, due to heterogeneity of projects and intermediary expertise, not every financial intermediary is appropriate for every project, and hence the need for search. Because credit markets are imperfect, entry into the innovation sector is not frictionless. This drives a wedge between the wages of skilled workers in manufacturing and those in the innovation sector. In this setup, a change in the productivity of the innovation sector (an arrival of new technological paradigm, say the internet) or a reduction in the degree of imperfection in the credit market will affect the allocation of skilled workers across sectors and the skilled/unskilled wage differential.

3.1 The basic set-up

There is one final good produced by competitive firms with access to two types of production technologies - one which combines unskilled labor and skilled labor (the old economy) and the other which combines skilled labor with an expanding variety of intermediate goods (the new economy). This final good is used for consumption, investment (in R & D), and for manufacturing intermediate goods. Time is continuous and the economy is populated by infinitely lived agents of two types - skilled and unskilled. Unskilled workers can only be used in manufacturing of the final good, whereas skilled workers can also work in research. There are constant measures of both types of workers, \( L \) and \( H \) respectively.
Households

Households maximize present discounted value of linear utility with a discount rate \( \rho \). This pins down the interest rate.

3.2 Production, Innovation and Growth

Final Goods Producers

The final good is manufactured by perfectly competitive firms with access to two types of production technologies. In the new economy technology, firms employ skilled labor together with an expanding variety of intermediate capital goods \( x_j, j \in [0, A] \) according to

\[
Y_{N,t} = H^{1-\alpha}_{N,t} \int_0^A x_j^\alpha \, dj, \quad 0 < \alpha < 1
\]

In the old economy technology, firms combine skilled and unskilled labour according to a CES production technology

\[
Y_{O,t} = B_t \left[ H^\rho_{O,t} + L^\rho \right]^\frac{1}{\rho}, \quad \rho < 1
\]

where \( B_t (\leq A_t \text{ for all } t) \) is a technology parameter which captures spillovers from innovation in the new economy sector.

Skilled labor is mobile between the old economy firms and the new economy firms. Skilled workers are allocated across sectors so that, in equilibrium, skilled wages are equalized across old and new economy firms.

Let \( p_{j,t} \) the price of intermediate good \( j \), \( w_{L,t} \) denote the wage of unskilled workers and \( w_{H,t} \) denote the wage of skilled workers. Profit-maximization in the competitive final goods sector is consistent with the following conditions in factor markets:

\[
p_{j,t} = \alpha H^{1-\alpha}_{N,t} x_j^\alpha \]

(1)

\[
w_{L,t} = B_t \left[ H^\rho_{O,t} + L^\rho \right]^\frac{1-\rho}{\rho} L^{\rho-1}
\]

(2)

\[
w_{H,t} = (1 - \alpha) H^{-\alpha}_{N,t} \int_0^A x_j^\alpha \, dj \quad \text{(skilled wage in the new economy firms)}
\]

(3)

\[
= B_t \left[ H^\rho_{O,t} + L^\rho \right]^\frac{1-\rho}{\rho} H^{\rho-1}_{O,t} \quad \text{(skilled wage in the old economy firms)}
\]

(4)
Intermediate Goods Producers

This component of the framework builds on the expanding variety endogenous growth model of Romer (1990). Each unit of intermediate goods costs one unit of final output to produce. Intermediate goods producers hold perpetual monopoly rights. At each point in time, they maximize the flow profit

$$\pi_{j,t} = (p_{j,t} - 1)x_{j,t} = \alpha H_{N,t}^{1-\alpha} x_{j,t}^{\alpha} - x_{j,t}$$

The optimal choice of $x_{j,t}$ solves

$$\alpha^2 H_{N,t}^{1-\alpha} x_{j,t}^{\alpha-1} - 1 = 0$$

$$\Rightarrow x_{j,t} = \left( \frac{1}{\alpha^2} \right)^{\frac{1}{1-\alpha}} H_{N,t}$$

(5)

In equilibrium, the amount of intermediate good produced is identical across all sectors. It follows that all intermediate goods are priced at the same mark-up over marginal cost

$$p_{j,t} = \frac{1}{\alpha},$$

and the flow profits

$$\pi_{j,t} = \frac{(1 - \alpha)}{\alpha} \left( \frac{1}{\alpha^2} \right)^{\frac{1}{1-\alpha}} H_{N,t}$$

(6)

are also identical across all intermediate sectors in equilibrium.

Innovation and Growth

Skilled workers can also conduct research, i.e. they have ideas for new varieties of intermediate goods. However, they need to obtain financing and, due to imperfect observability of output in research, moral hazard, etc., this not a frictionless process. Venture capital firms incur costs in searching for the appropriate researcher to match with. If a successful match is formed the skilled worker begins research and, with flow probability $\eta$, produces a measure $\delta A$ of new intermediate goods. Thus $\delta$ measures the productivity of skilled workers in the research sector and $A$ captures the “giants’ shoulders” spillover from past research.

Note that this implies that this model exhibits strong scale effects (see Jones 2005).
Let $N$ be the number of researchers with financing, then aggregate growth in the number of varieties is

$$\dot{A} = \eta \delta A N = \eta \delta A (H - H_o - H_N)$$

(7)

where the second equality follows from the market clearing condition for skilled workers

$$H = N + H_o + H_N$$

As the number of intermediates $A_t$ expands, the technology parameter for the old economy evolves according to

$$\frac{\dot{B}_t}{B_t} = \lambda \left( \frac{A_t}{B_t} \right)^\gamma, \quad 0 < \gamma < 1$$

(8)

The growth rate of $B$ is a function of the gap between the two technology indexes, $A$ and $B$. As the gap gets larger, the bigger is the spillover effect and the growth rate of $B$ increases exponentially. In the limit, with a very large gap, the spillover effect is infinite. We restrict $\lambda$ to be such that

$$\lambda < \eta \delta N$$

for all $N$

to ensure that

$$\frac{\dot{B}_t}{B_t} < \frac{\dot{A}}{A}$$

for the early time periods when $B$ can be argued to be close to $A$. But then after that the gap widens until the steady state gap is reached. In steady state (BGP), we will have

$$\frac{\dot{B}_t}{B_t} = \frac{\dot{A}_t}{A_t} \text{ and } \frac{A_t}{B_t} = Z \text{ (a constant)}$$

3.3 The Capital Market

Ideas and Financing: the Matching Process

We assume that skilled workers can work in their current jobs in manufacturing while waiting to be matched with an appropriate financial intermediary. The number of new firms that are formed in each instant as a result of the search and matching process is given by the following matching function

$$M = \zeta F^\phi(H - N)^{1-\phi}$$

(9)
where $F$ is the number of financial intermediaries seeking researchers, $H - N$ is the total number of researchers seeking financing (i.e. all skilled workers in manufacturing), and $\zeta \geq 0$ indexes the efficiency of the matching process. An increase in $\zeta$ indicates an enhancement in the quality of financial intermediation. Note that with $\zeta = 0$, no matches are possible and no new research firms are formed. All skilled workers are employed in manufacturing and technological progress stalls.

Define $\theta = (H - N)/F$, i.e. the ratio of searching skilled workers to financial intermediaries. Then the probability of a financial intermediary being matched to a skilled worker is given by

$$\frac{M}{F} = \zeta \left( \frac{H - N}{F} \right)^{1-\phi} = \zeta \theta^{1-\phi} \equiv f(\theta),$$

and the probability of a skilled worker getting matched to a financial intermediary is

$$\frac{M}{H - N} = \frac{f(\theta)}{\theta}$$

where $f' > 0$.

The number of research firms evolves according to

$$\dot{N} = M - \eta N,$$  \hspace{1cm} (11)

where $\eta N$ is the measure of research firms that innovate.

### 3.4 The Labor Market

Our focus is on labor market outcomes. In particular, we are interested in how the skill premium responds to changes in financial markets.

**Skilled Wages**

Recall from (3) that the skilled wage in the new economy sector is

$$w_{\alpha,t} = (1 - \alpha)H_N^{-\alpha} \int_0^{A_t} x_{j,t}^{\alpha} dj.$$
Substituting for \( x_{j,t} \) from (5) we get

\[
w_{H,t} = (1 - \alpha) H_{N,t}^{-\alpha} \int_0^{A_t} \left( \frac{1}{\alpha^2} \right)^{\frac{\alpha}{1-\alpha}} H_{N,t}^{\alpha} \, dj = (1 - \alpha) \left( \frac{1}{\alpha^2} \right)^{\frac{\alpha}{1-\alpha}} A_t. \tag{12}
\]

In equilibrium, wages of skilled labor equalized across the old and new economy sector. Combining the expressions from (4) and (12), in equilibrium:

\[
(1 - \alpha) \left( \frac{1}{\alpha^2} \right)^{\frac{\alpha}{1-\alpha}} A_t = B_t \left[ H_{O,t}^\rho + L^\rho \right]^{\frac{1-\alpha}{\rho}} H_{O,t}^{\rho-1}. \tag{13}
\]

As \( A_t \) evolves, skilled labor is drawn out of the old economy by the higher wage. \( H_o \) declines and \( H_N \) increases. But there’s a limit to how long this reallocation will continue. The labor market equilibrium condition in (13) defines \( H_o \) as a function of the ratio \( \frac{A_t}{B_t} \). In steady state, for a given number of research firms \( N \), the ratio \( \frac{A_t}{B_t} \) assumes the constant value \( Z \). It follows that we will have a stable \( H_o \) (and hence \( H_N \)) in steady state. But until the ratio stabilizes, skilled labor will move out of the old economy and into the new economy firms. Once the ratio stabilizes, we will have fixed \( H_o \) and \( H_N \). With fixed \( H_N \) in steady state, we will have fixed \( x_{j,t} \) and \( \pi_{j,t} \) for all sectors for all time.

**Unskilled wages**

The wage of unskilled workers is given by

\[
w_{L,t} = B_t \left[ H_{O,t}^\rho + L^\rho \right]^{\frac{1-\alpha}{\rho}} L^{\rho-1}
\]

which is increasing in \( H_o \). As the number of skilled workers in the old economy declines, the wage of unskilled workers may initially fall, but in steady state (once \( H_o \) stabilizes) it will rise at the rate at which \( B \) increases. The model does not rule out an absolute decline in real wages of unskilled workers followed by a rebound (which is consistent with the pattern in the US data for wages at the 20th percentile and below over the last 25 years - Yellen 2006).

**Skill premium**

The skill premium is given by

\[
\frac{w_H}{w_L} = \left( \frac{H_o}{L} \right)^{\rho-1}
\]
which is diminishing in the ratio $H_o L$, and therefore increases as the ratio $H_o L$ falls.

In the comparative statics below we will show that as financial markets improve, the steady state ratio $H_o L$ declines. The intuition for this result is that as financial markets improve, more research firms are formed and the growth rate of $A$ increases with the more rapid expansion of varieties of intermediate capital goods. Some of the skilled workers from the old economy firms get matched with financiers and move into the research sector. Furthermore, as the wage of skilled labor in the new economy rises (Equation 12), skilled workers prefer to move to those firms. The number of skilled workers in the old economy firms declines on account of the combination of exit to the research sector and to the new economy firms.

**Compensation of researchers**

Consider now the determination of the wage in the innovation sector. As is standard in the search literature, we assume that the wage $\omega$ that innovating firms pay to skilled workers is an outcome of a Nash bargaining process between the financial intermediary and the skilled worker, where $\beta$ measures the bargaining power of financial intermediaries and $1 - \beta$ measures the bargaining power of workers.

Let $S$ be the value of a financial intermediary without a skilled worker (searching state), let $J$ be the value of a financial intermediary with a skilled worker, let $U$ be the value for a skilled worker of being in the searching state, and finally let $Z$ be the value, to the worker, of being in a match. Let $\omega$ be the wage of innovative skilled workers. In addition, assume that if an innovation occurs the entire value (PDV of profits) goes to the financial intermediary.\(^3\) Let $\kappa A$ be the search cost incurred by venture capital firm, which increases with the amount of intermediates since the level of expertise required to find the appropriate match rises with the level of productivity. Finally, we assume that skilled workers can work in their current jobs in the intermediate sector while searching. This leads to the following arbitrage

\(^3\)This can be thought of as a risk-sharing arrangement.
All these equations are simple arbitrage equations equating the flow return from holding an asset to the return from lending the asset’s value at the interest rate \( \rho \). For example, the flow return for an innovating firm is equal to the sum of the wage cost (\(-\omega\)), the expected capital gain (the gain of the perpetual stream of monopoly profits \( \pi/\rho \) from \( \delta A \) new blueprints), and the appreciation in the value of the asset (\( \dot{J} \)).

In order to obtain a closed form for the wage we impose the balanced growth path assumption (we consider the off-BGP dynamics later). To find the wage denote the total productivity-adjusted surplus\(^4\) from a match by \( \tilde{D} = \tilde{J} - \tilde{S} + \tilde{Z} - \tilde{U} \). The solution to the Nash bargaining process calls for the following division of the surplus

\[
\tilde{Z} - \tilde{U} = (1 - \beta) \tilde{D},
\]

\[
\tilde{J} = \beta \tilde{D},
\]

where, by free entry, we have \( \tilde{S} = 0 \).

Using the arbitrage equations and the solutions to the bargaining process, we get the following expression for the productivity-adjusted value of the researchers’ wage \( \tilde{\omega} \) (see appendix for details of the derivation)

\[
\tilde{\omega} = (1 - \beta) \frac{\eta \delta \pi}{\rho} + \beta \frac{\tilde{w}_H(\rho + \eta - \eta \delta N)}{\rho + \eta - \eta \delta N} + (1 - \beta) \frac{f(\theta)/\theta}{\rho + \eta - \eta \delta N} \]

(20)

Notice that if the bargaining power rests solely with the skilled workers (i.e. \( \beta = 0 \)) then the researcher wage is simply the expected value of the profits \( \eta \delta \pi/\rho \). If on the other hand,

\(^4\)The productivity-adjusted surplus is simply the value normalized by productivity. For example \( \tilde{J} = J/A \)
skilled workers have no bargaining power (i.e. \( \beta = 1 \)) then the researcher wage is simply equal to the \( \text{(productivity-adjusted) wage of skilled workers in manufacturing, } \tilde{w}_H. \)

The research wage and within-group inequality

An important question is whether the compensation of researchers is increasing or decreasing in the number of research firms \( N \). Above we have established that when workers have some bargaining power, the research wage will lie between the PDV of the profit stream associated with a new type of capital good and the wage of skilled workers in manufacturing. If profits are increasing in \( N \), and if workers have some bargaining power, the research wage will also increase in the number of research firms \( N \). We first need to determine conditions under which profits are increasing in \( N \).

Notice that the steady state ratio \( \left( \frac{A}{B} \right) = Z \) is given by
\[
Z = \left( \frac{n_\delta N}{\lambda} \right)^\gamma
\]
and that (13) implicitly defines steady state \( H_0 \) as a function of \( Z \), and hence of \( N \). Furthermore, since
\[
H_N = H - H_0 - N
\]
and since profits are proportional to \( H_N \) (see equation 6), we have that
\[
d\pi/dN = dH_N/dN = -dH_O/dN - 1
\]
Since \( dH_O/dN < 0 \), this expression will be positive if \( -dH_O/dN < -1 \). In the appendix we show that
\[
dH_O/dN = -\frac{(1 - \alpha)\alpha^2\alpha/(\alpha - 1) \eta_\delta \lambda (\eta_\delta N)^\gamma - 1}{(1 - \rho)(H_O^\rho + L^\rho)(1 - \rho)H_O^{\rho - 2}(1 - \frac{1}{1 + (L/H_O)\rho})}.
\]
In order for \( d\pi/dN > 0 \), we need
\[
(1 - \alpha)\alpha^2\alpha/(\alpha - 1) \eta_\delta (\eta_\delta N)^\gamma - 1 > (1 - \rho)(H_O^\rho + L^\rho)(1 - \rho)H_O^{\rho - 2}(1 - \frac{1}{1 + (L/H_O)\rho})
\]
The RHS is decreasing in \( H_O \), and it is infinite when \( H_O = 0 \). The LHS is decreasing in \( N \), and it is therefore increasing in \( H_O \). It is zero when \( H_O \) is zero. The two sides of the expression are graphed as shown below in Figure (1).
Figure 1: When does $H_N$ increase with $N$?

To the right of $H^*$, $H_N$ and profits increase with $N$. As $N$ goes up, skilled workers are reallocated away from old economy firms and the net inflow into the new economy firms is positive ($H_N$ rises). However, we know that as $N$ increases, $H_O$ falls. If $N$ is sufficiently big (so that $H_O$ is sufficiently small and is to the left of the threshold $H^*$), we are in the region where $H_N$ and profits decrease with $N$. Since profits have been high of late we assume that the economy starts and remains to the right of $H^*$ for the time period of analysis.\footnote{An interesting implication is that continued improvements of financial markets (or acceleration of technological progress) may reduce profits.}

Either way, the model predicts an increase in the skill premium in response to financial development since skilled workers are drawn out of the old economy firms as the number of intermediate capital goods expands more rapidly with the improved functioning of financial markets. Furthermore, as long as profits increase with $N$, the model predicts that the wages of skilled workers in research also increase when their bargaining power is greater than zero. The skill premium calculated not just on the basis of manufacturing wages but on the basis of all wages of skilled workers therefore also increases.
3.5 Balanced Growth Path

Along the balanced growth path, $\dot{N} = 0 \Rightarrow N = M/\eta$. Furthermore, the asset values grow at the same rate as productivity

$$\frac{\dot{J}}{J} = \frac{\dot{S}}{S} = \frac{\dot{Z}}{Z} = \frac{\dot{U}}{U} = \frac{\dot{A}}{A} = \eta \delta N.$$ 

Our hypothesis is that improvements in financial markets contribute to entry of more research firms, faster growth and widening wage inequality. In order to demonstrate this, we first derive a two-equation system in $(J, N)$ which will help us pin down equilibrium $N$.

Free entry into financial intermediation implies $S = 0$ and, from (15), it follows that

$$-\kappa A + f(\theta)J = 0$$

$$\Rightarrow J = \frac{\kappa A}{f(\theta)}$$

Dividing by $A$ to convert the above value function into a productivity-adjusted value we get

$$\tilde{J} = \frac{\kappa}{f(\theta)} \text{ FE} \quad (21)$$

Similarly, dividing equation (14) by $A$ and using $\dot{J} = \eta \delta N J$ we obtain the following expression for $\tilde{J}$

$$\tilde{J} = \frac{\eta \delta \pi/\rho - \tilde{\omega}}{\rho + \eta - \eta \delta N} \text{ JJ} \quad (22)$$

As we make more explicit below, the two equations FE and JJ define a two equation system in $(J, N)$ space which can be solved to get a value of $N$ along the balanced growth path. Define

$$\vartheta \equiv \frac{f(\theta)}{\theta} = \frac{\eta N}{H - N}$$

so that $\vartheta'(N) > 0$. Recall also that from equation (10) we have

$$f(\theta) = \zeta \theta^{1-\phi},$$

so that

$$\vartheta(N) = \zeta \theta^{-\phi}.$$
From this expression we see that $\theta(N) = \vartheta(N)^{-1/\phi} \zeta^{1/\phi}$, and therefore

$$f(\theta) = \zeta \theta^{1-\phi} = \zeta \left( \vartheta(N)^{-1/\phi} \zeta^{1/\phi} \right)^{1-\phi} = \zeta^{1/\phi} \vartheta(N)^{-\phi/\phi}$$

the equilibrium condition (21) becomes

$$\tilde{J} = \frac{\kappa}{f(\theta)} = \frac{\kappa}{\zeta^{1/\phi} \vartheta(N)^{(1-\phi)/\phi}} = \kappa \vartheta(N)^{(1-\phi)/\phi} \zeta^{-1/\phi}$$  \hspace{1cm} \text{(Free Entry)} \hspace{1cm} (23)

This relationship is upward sloping in the $(J, N)$ space. As the value of research firms increases, more financial intermediaries enter in search of a match until the value of a searching firm is driven back down to zero. Since the number of financial intermediaries increases, the number of matches $(M)$ increases and so does the number of research firms in equilibrium $(N = M/\eta)$.

Combining condition (22) with the above expression for the wage of skilled workers yields

$$\tilde{J} = \frac{\beta \left( \eta \delta \pi(N) \frac{6}{\rho} - \bar{w}_H \right)}{\rho + \eta - \eta \delta N + (1 - \beta) \vartheta(N)}$$  \hspace{1cm} (JJ) \hspace{1cm} (24)

This relationship is also upward sloping in $(J, N)$ space. We show in the appendix that the two curves JJ and FE must intersect as depicted in Figure (2) for plausible parameter values. Equations (23) and (24) are a system in $J$ and $N$, which together determine the BGP equilibrium.

**Comparative Statics**

Consider for example a reduction in credit frictions, illustrated in Figure 3 as a downward shift in the FE curve. This pulls more skilled workers into research since a larger number of searching skilled workers get matched to research firms. The increase in the number of researchers $N$ leads to a faster expansion in the variety of intermediate capital goods ($\hat{A}$ rises). This drives up the wages of skilled labor in the manufacturing sector. As was shown above, under certain circumstances, skilled wages in the research sector also increase. At the same time, due to the spillover effect, the productivity of unskilled labor rises. But the rate at which unskilled wages rise is lower than the rate at which skilled wages rise. Initially, unskilled wages may even fall as the number of skilled workers in the old economy $(H_O)$
declines. This increases wage inequality. In the long run all wages grow at a faster steady state rate due to the accelerated pace of innovation (which results from greater financial sophistication and the employment of skilled workers in the innovation sector).

4 Empirical Evidence

The model presented above predicts that, ceteris paribus, the greater the degree of financial market development, the higher the ratio of skilled to unskilled wage (skill premium). It is also possible that the ratio of skilled wage in research $\omega$ to skilled wage in manufacturing increases (degree of within group inequality increases) in response to financial market development. This section presents an attempt to test this prediction.

We use data for the U.S. states and undertake two exercises. First, we test the relationship between rate of return to education and financial deregulation using a panel over the period

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6Kremer & Maskin (1996) argued that organizational change has contributed to widening inequality as higher skilled workers match with other high skilled workers in smaller, specialized firms. Previously, the prevalence (and dominance) of large-scale companies ensured that high skilled workers mixed with low skilled workers. Low skill workers benefitted in these large corporations, since their productivity (and wages) were boosted by working along side high skill workers.
Figure 3: Comparative statics of improvement in financial markets.

1970-2000. We also do the same for residual (within group inequality). We use the measure of financial deregulation from Jayaranta and Strahan (1999), who document the timing of legal changes allowing for out-of-state bank branches to be established. Second, we look at the data on venture capital activity across states between 1995 and 2000 and again relate it to the rate of return to education and the degree of residual wage inequality.

In the first stage of each exercise we use census data from 1970-2000 to estimate a Mincerian wage equation

$$w_{is} = \alpha + \eta_s I_s + X_i \beta + \gamma E_i + \gamma_s E_i I_s + \epsilon_{is},$$

where $w$ is the log of weekly wage, $X$ is a vector of personal characteristics which includes experience, experience squared, sex and race, $E$ is years of education and $I_s$ is a dummy variable for state $s$. This specification allows for different rates of return to education across states. We use these rates of return, $\gamma + \gamma_s$, as well as the standard deviation of residuals $\epsilon_{is}$ for each state, in the second stage regressions.
4.1 Banking Deregulation

We begin by looking at the rate of return to education. Table 1 shows the fixed effects estimates. The first column includes only the measure of financial deregulation, column two includes a measure of average years of education and the last column adds a measure of real output per worker (from Baier et al.). All regressions include time effects. In all the specifications, banking deregulation enters with a positive sign and is significant, indicating that states that have deregulated financial markets have seen faster increases in rate of return to education than those states that have not. These results suggest an existence of a relationship between financial development and the skill premium. However, in Table 1 all the right hand side variables are treated as exogenous. While the banking deregulation can plausibly be thought of as exogenous (see Jayaranta and Strahan), both income and education are likely to be endogenous. In addition, the likely high degree of persistence in rates of return to education implies we should include a lagged level as one of the regressors. Of course, this invalidates the fixed effects approach. To deal with these two issues we re-estimate the model using the system GMM estimator of Blundell and Bond (1998).

<table>
<thead>
<tr>
<th></th>
<th>Fin.Dereg.</th>
<th>Education</th>
<th>Income</th>
<th>Constant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.374*</td>
<td>0.001</td>
<td>0.007</td>
<td>0.064***</td>
</tr>
<tr>
<td></td>
<td>(0.202)</td>
<td>(0.003)</td>
<td>(0.012)</td>
<td>(0.001)</td>
</tr>
<tr>
<td></td>
<td>0.376*</td>
<td>0.000</td>
<td>0.006</td>
<td>0.051</td>
</tr>
<tr>
<td></td>
<td>(0.202)</td>
<td>(0.003)</td>
<td>(0.013)</td>
<td>(0.036)</td>
</tr>
<tr>
<td></td>
<td>0.383*</td>
<td></td>
<td></td>
<td>-0.005</td>
</tr>
<tr>
<td></td>
<td>(0.200)</td>
<td></td>
<td></td>
<td>(0.125)</td>
</tr>
<tr>
<td></td>
<td>0.382*</td>
<td></td>
<td></td>
<td>-0.005</td>
</tr>
<tr>
<td></td>
<td>(0.201)</td>
<td></td>
<td></td>
<td>(0.126)</td>
</tr>
</tbody>
</table>

\[ \text{R}^2 \]
\[ N \quad 204 \quad 204 \quad 204 \quad 204 \]

Table 1: Return to education. Fixed effects treating education and income as exogenous variables. Robust standard errors in parentheses; significance levels: * 10%, ** 5% and *** 1%.

The results in table 2 confirm the above findings. The point estimates of the effect of
deregulation on return to education are slightly lower but remain significant. They are also economically significant - deregulation increases the return to education by 0.34 percentage points (or about 30% of the standard deviation of returns in 2000). Note that the coefficient on education turns negative once we account for endogeneity of education, which is in line with the idea that higher supply of skills reduces their price. The coefficient, however, remains insignificant.

<table>
<thead>
<tr>
<th></th>
<th>Fin.Dereg.</th>
<th>Lagged Ret</th>
<th>Education</th>
<th>Income</th>
<th>Constant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.306*</td>
<td>0.396**</td>
<td>0.340***</td>
<td>0.015**</td>
<td>0.049***</td>
</tr>
<tr>
<td></td>
<td>(0.175)</td>
<td>(0.156)</td>
<td>(0.124)</td>
<td>(0.006)</td>
<td>(0.011)</td>
</tr>
<tr>
<td></td>
<td>0.505***</td>
<td>0.718***</td>
<td>0.615***</td>
<td>0.013***</td>
<td>-0.101**</td>
</tr>
<tr>
<td></td>
<td>(0.122)</td>
<td>(0.101)</td>
<td>(0.053)</td>
<td>(0.004)</td>
<td>(0.047)</td>
</tr>
<tr>
<td></td>
<td>-0.003</td>
<td>-0.002</td>
<td></td>
<td>0.013***</td>
<td>-0.081*</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.002)</td>
<td></td>
<td>(0.004)</td>
<td>(0.049)</td>
</tr>
<tr>
<td></td>
<td>0.049***</td>
<td>-0.101**</td>
<td>-0.081*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.047)</td>
<td>(0.049)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>153 153</td>
<td>153 153</td>
<td>153</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Return to education. System GMM treating education and income as endogenous variables. Robust standard errors in parentheses; significance levels: * 10%, ** 5% and *** 1%.

Tables 3-4 show the regressions for residual inequality. In all cases we find a positive coefficient on banking deregulation, but it is never significant at the 10% level.
Table 3: Residual inequality. Fixed effects treating education and income as exogenous variables. Robust standard errors in parentheses; significance levels: * 10%, ** 5% and *** 1%.

<table>
<thead>
<tr>
<th></th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fin.Dereg.</td>
<td>0.212</td>
<td>0.214</td>
<td>0.376</td>
<td>0.379</td>
</tr>
<tr>
<td></td>
<td>(0.506)</td>
<td>(0.507)</td>
<td>(0.451)</td>
<td>(0.451)</td>
</tr>
<tr>
<td>Education</td>
<td>0.001</td>
<td></td>
<td>-0.014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td></td>
<td>(0.008)</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td>0.128***</td>
<td>0.143***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.033)</td>
<td>(0.034)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.482***</td>
<td>0.468***</td>
<td>-0.866**</td>
<td>-0.875**</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.102)</td>
<td>(0.347)</td>
<td>(0.343)</td>
</tr>
<tr>
<td>N</td>
<td>204</td>
<td>204</td>
<td>204</td>
<td>204</td>
</tr>
</tbody>
</table>

4.2 Venture Capital

Our second test of the model’s predictions employs data on venture capital activity across states. The enormous growth of this type of financing (especially for start-ups in the high tech business) during the latter part of the 1990s is well documented. We use data on the amount of VC disbursements per $1000 of Gross State Product as a measure of financial development/activity. The data come from the NSF’s Science and Technology Indicators (2006).7

Tables 5-6 show the results for the rates of return on education. The coefficient estimates on venture capital activity are positive and once again economically large - with a one standard deviation change in venture capital disbursement accounting for about one fifth of the standard deviation in rates of return to education across states. However, these effects are not significant once we control for state productivity (column 3 of Table 5) or treat venture capital activity as endogenous (Table 6).

Tables 7-4 repeat the above exercise using the residual wage inequality as the dependent

---

7 The venture capital data are for the years 1995 and 2000 while our data for education, returns to education and residual wage inequality are from 1990 and 2000. For the results below we match up the 1990 data with 1995 venture capital disbursement. In the future, we plan to use CPS data to calculate our wage inequality variables for 1995.
Table 4: Residual inequality. System GMM treating education and income as endogenous variables. Robust standard errors in parentheses; significance levels: * 10%, ** 5% and *** 1%.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient 1</th>
<th>Coefficient 2</th>
<th>Coefficient 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fin.Dereg.</td>
<td>0.167</td>
<td>0.320</td>
<td>0.312</td>
</tr>
<tr>
<td></td>
<td>(0.403)</td>
<td>(0.343)</td>
<td>(0.201)</td>
</tr>
<tr>
<td>Lagged sd</td>
<td>0.369***</td>
<td>0.410***</td>
<td>0.403***</td>
</tr>
<tr>
<td></td>
<td>(0.079)</td>
<td>(0.098)</td>
<td>(0.040)</td>
</tr>
<tr>
<td>Education</td>
<td>0.022***</td>
<td>0.008</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.005)</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td>0.100***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.013)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.357***</td>
<td>0.043</td>
<td>-0.860***</td>
</tr>
<tr>
<td></td>
<td>(0.041)</td>
<td>(0.079)</td>
<td>(0.111)</td>
</tr>
<tr>
<td>N</td>
<td>153</td>
<td>153</td>
<td>153</td>
</tr>
</tbody>
</table>

variable. Here the results are both economically meaningful - a one standard deviation change in venture capital activity explains about 25% of the standard deviation in residual wage inequality - as well as statistically significant, even when we control for education and productivity.

We take the above results as highly suggestive of a relationship between financial development and wage inequality as predicted by our model. The exact channel of this effect cannot be uncovered in these simple exercises and so we cannot conclude, even if the relationship is indeed causal, if this is because of the mechanism emphasized by the model - namely the organizational change in the form of drawing skilled workers out of the old economy sector, where they worked with unskilled workers, to new sectors where they either work with other skilled workers only or are engaged in innovation. It is interesting to note the difference in results using banking deregulation and venture capital activity. In our model financial market quality has a single dimension expressed by the efficiency of the the matching process. An improvement in this quality is predicted to increase both the return to skill as well as within group inequality (if wages of workers in innovation rise with the $H_N$). In the data,
Table 5: Return to education. Fixed effects treating education, income and venture capital activity as exogenous variables. Robust standard errors in parentheses; significance levels: * 10%, ** 5% and *** 1%.

<table>
<thead>
<tr>
<th></th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venture Capital</td>
<td>0.059***</td>
<td>0.025**</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.010)</td>
<td>(0.018)</td>
</tr>
<tr>
<td>Education</td>
<td>0.022***</td>
<td>0.020***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.006)</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.017)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.092***</td>
<td>-0.189***</td>
<td>-0.216</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.049)</td>
<td>(0.130)</td>
</tr>
<tr>
<td>N</td>
<td>102</td>
<td>102</td>
<td>102</td>
</tr>
</tbody>
</table>

however, we saw evidence of banking deregulation leading to a rise in skill premium, but not in residual inequality, while venture capital activity lead to an increase in the latter, but not the former. Since the issue is of statistical significance and not of the estimated direction of the effect, this may simple reflect noisy data. However, it may be the case that different types of financial innovation affect differentially the two aspects of wage dispersion. This is something we leave for future research to explore.
### Table 6: Return to education. System GMM treating education, income and venture capital activity as endogenous variables. Robust standard errors in parentheses; significance levels: * 10%, ** 5% and *** 1%.

<table>
<thead>
<tr>
<th></th>
<th>Estimate 1</th>
<th>Estimate 2</th>
<th>Estimate 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venture Capital</td>
<td>0.022</td>
<td>0.027</td>
<td>0.029</td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.018)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Lagged Return</td>
<td>0.270***</td>
<td>0.393***</td>
<td>0.401***</td>
</tr>
<tr>
<td></td>
<td>(0.073)</td>
<td>(0.107)</td>
<td>(0.111)</td>
</tr>
<tr>
<td>Education</td>
<td>-0.004</td>
<td>-0.003</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.006)</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>-0.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.072***</td>
<td>0.118</td>
<td>0.136</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.078)</td>
<td>(0.134)</td>
</tr>
<tr>
<td>N</td>
<td>102</td>
<td>102</td>
<td>102</td>
</tr>
</tbody>
</table>

### Table 7: Residual inequality. Fixed effects treating education, income and venture capital activity as exogenous variables. Robust standard errors in parentheses; significance levels: * 10%, ** 5% and *** 1%.

<table>
<thead>
<tr>
<th></th>
<th>Estimate 1</th>
<th>Estimate 2</th>
<th>Estimate 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venture Capital</td>
<td>0.298***</td>
<td>0.206***</td>
<td>0.080*</td>
</tr>
<tr>
<td></td>
<td>(0.058)</td>
<td>(0.042)</td>
<td>(0.042)</td>
</tr>
<tr>
<td>Education</td>
<td>0.057***</td>
<td>0.013</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.015)</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>0.128***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.528***</td>
<td>-0.221</td>
<td>-1.027***</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.141)</td>
<td>(0.201)</td>
</tr>
<tr>
<td>N</td>
<td>102</td>
<td>102</td>
<td>102</td>
</tr>
<tr>
<td>Variable</td>
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<td>Coefficient 2</td>
<td>Coefficient 3</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td>(Standard Dev)</td>
<td>(Standard Dev)</td>
<td>(Standard Dev)</td>
</tr>
<tr>
<td>Venture Capital</td>
<td>0.166***</td>
<td>0.119***</td>
<td>0.083***</td>
</tr>
<tr>
<td></td>
<td>(0.031)</td>
<td>(0.033)</td>
<td>(0.027)</td>
</tr>
<tr>
<td>Lagged sd</td>
<td>0.675***</td>
<td>0.350***</td>
<td>0.346***</td>
</tr>
<tr>
<td></td>
<td>(0.082)</td>
<td>(0.104)</td>
<td>(0.064)</td>
</tr>
<tr>
<td>Education</td>
<td>0.047***</td>
<td>0.017</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.011)</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td>0.066***</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.018)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.190***</td>
<td>-0.261*</td>
<td>-0.583***</td>
</tr>
<tr>
<td></td>
<td>(0.041)</td>
<td>(0.138)</td>
<td>(0.151)</td>
</tr>
<tr>
<td>N</td>
<td>102</td>
<td>102</td>
<td>102</td>
</tr>
</tbody>
</table>

Table 8: Residual inequality. System GMM treating education, income and venture capital activity as endogenous variables. Robust standard errors in parentheses; significance levels: * 10%, ** 5% and *** 1%.
5 Conclusion

Although considerable research has been done on the causes for the widening wage distribution in the US in the last two decades, little attention has been paid to the role of financial markets in this process. This paper attempts to fill this gap in the literature. The last two decades have also been a time of increasing financial deregulation and the emergence of specialized financial intermediaries that focus on high risk investment typically in the form of small, innovative start-ups. Kremer and Maskin (1996) have previously argued that the change in organizational form in the US has been a contributor to the widening wage gap between skilled and unskilled workers. In this paper, we argue for an independent role played by financial markets in facilitating this organizational change. Financial deregulation and alterations to labor laws that permit pension funds to invest in high risk assets have led to a reduction in financing frictions for new research projects and facilitated the entry of small firms that promote new ideas but had previously been constrained from doing so by a lack of investment funds. In our model, as high skilled workers leave manufacturing and enter the research sector in response to the ease of access to funds, the shortage of skilled manufacturing workers in the old economy firms, together with the rising productivity of skilled workers in the new economy firms drives up the wage of skilled workers. At the same time, since low skilled workers have fewer high skilled workers to work with, their productivity does not rise as fast and their relative wage falls. The model developed in this paper provides an explanation for the joint occurrence of the widening wage inequality and changes in organizational form in response to financial market developments in the US economy in the last two decades.
References


