Growth, Stagnation, and Inequality: Reconciling the New Stylized Facts

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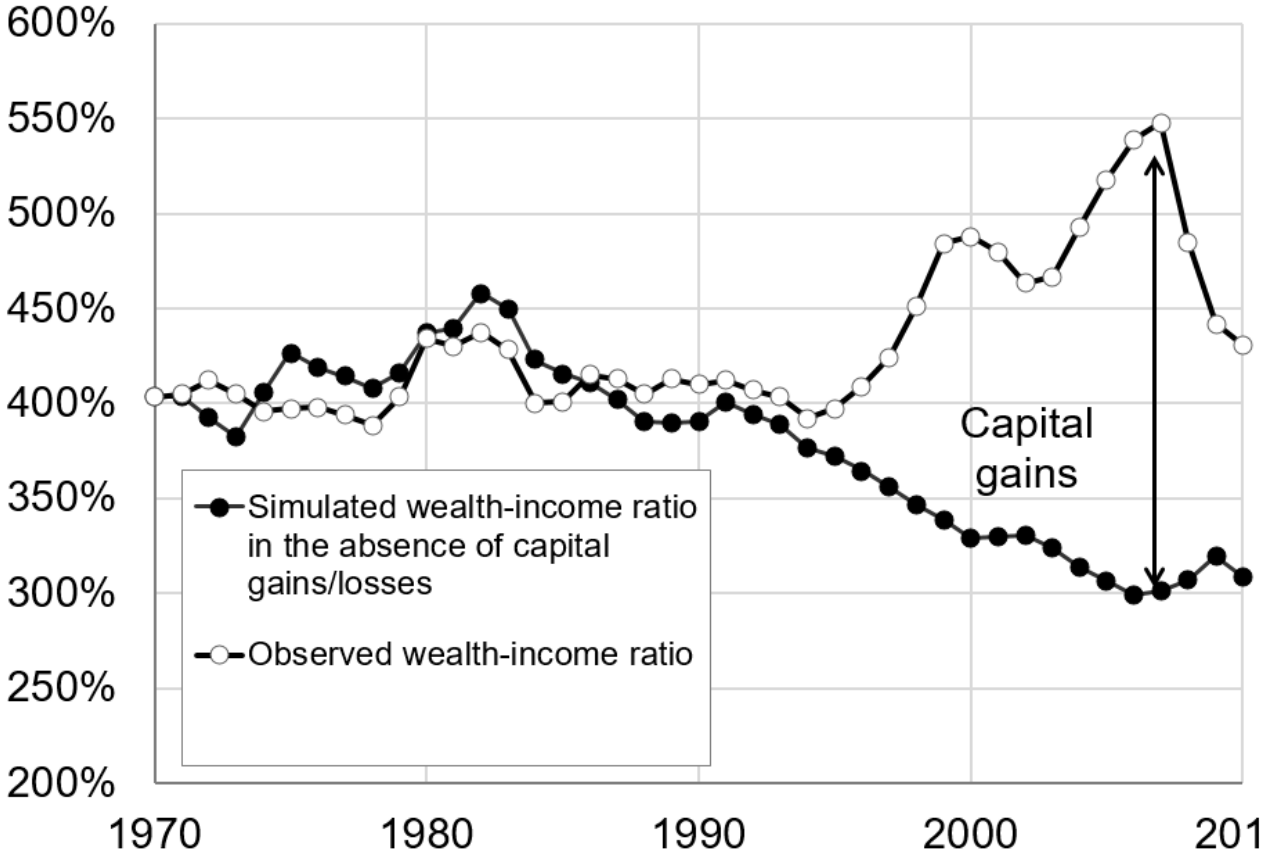
Recent events have presented several puzzles that need to be reconciled with each other and standard macro-models

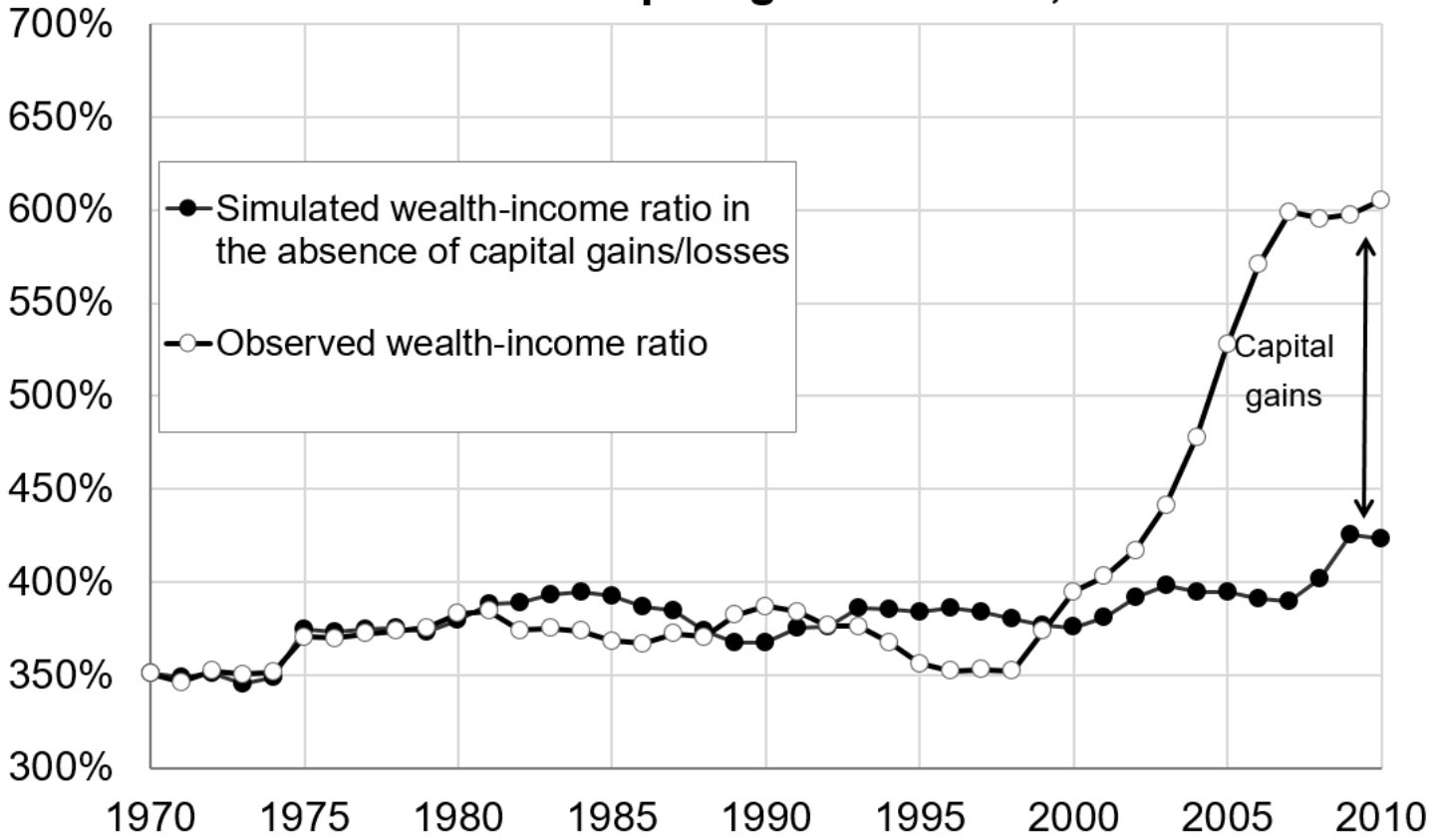
- Increasing wealth income ratios, declining capital income ratios
  - By most metrics (though there remain some controversies in the measurement of capital)
  - Large gap between wealth and capital

Simulated national wealth-income ratios in the absence of capital gains: U.S. 1970-2010



Authors' computations based on 1970 wealth-income ratios, 1970-2010 natinoal saving flows (including other volume changes) and real income growth rates.
Source: *Capital in the Twenty-First Century*, Thomas Piketty.

Simulated national wealth / national income ratios in the absence of capital gains: France, 1970-2010



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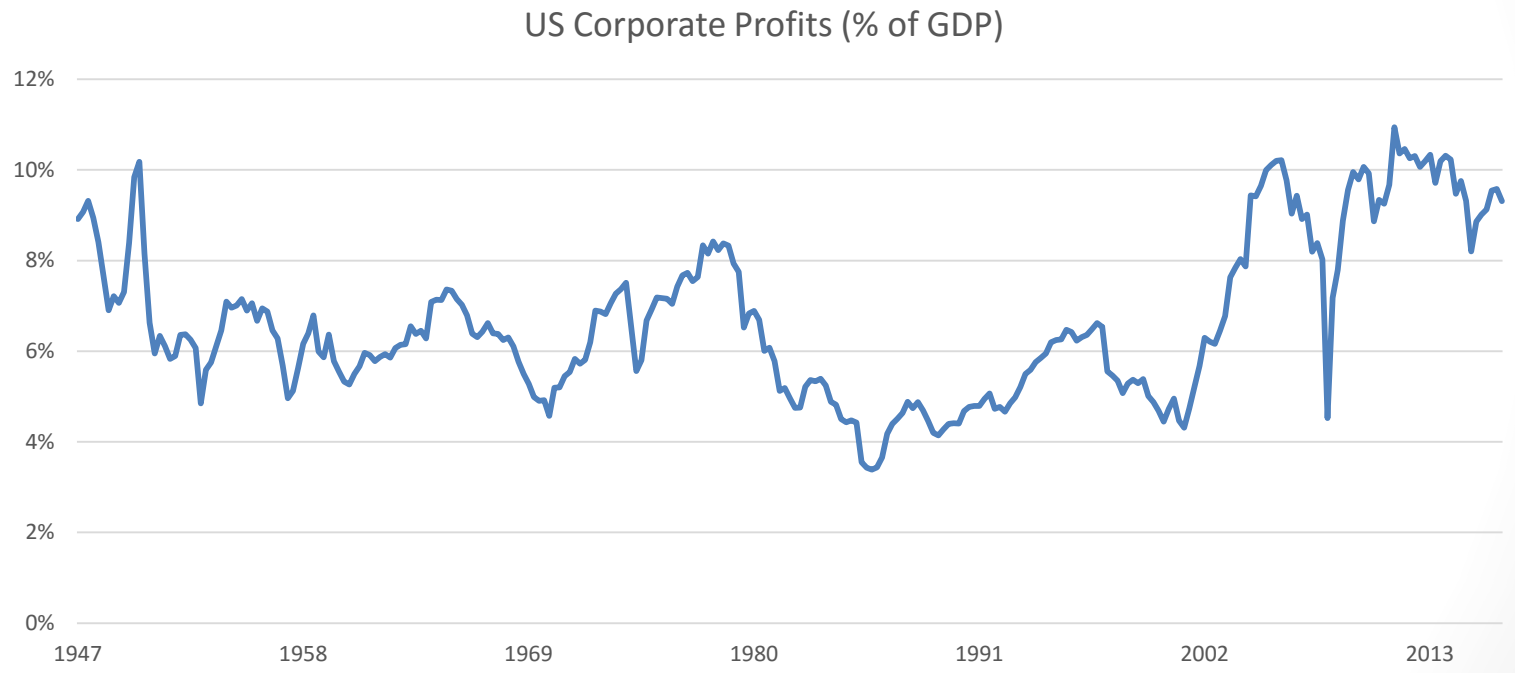
Investment puzzle

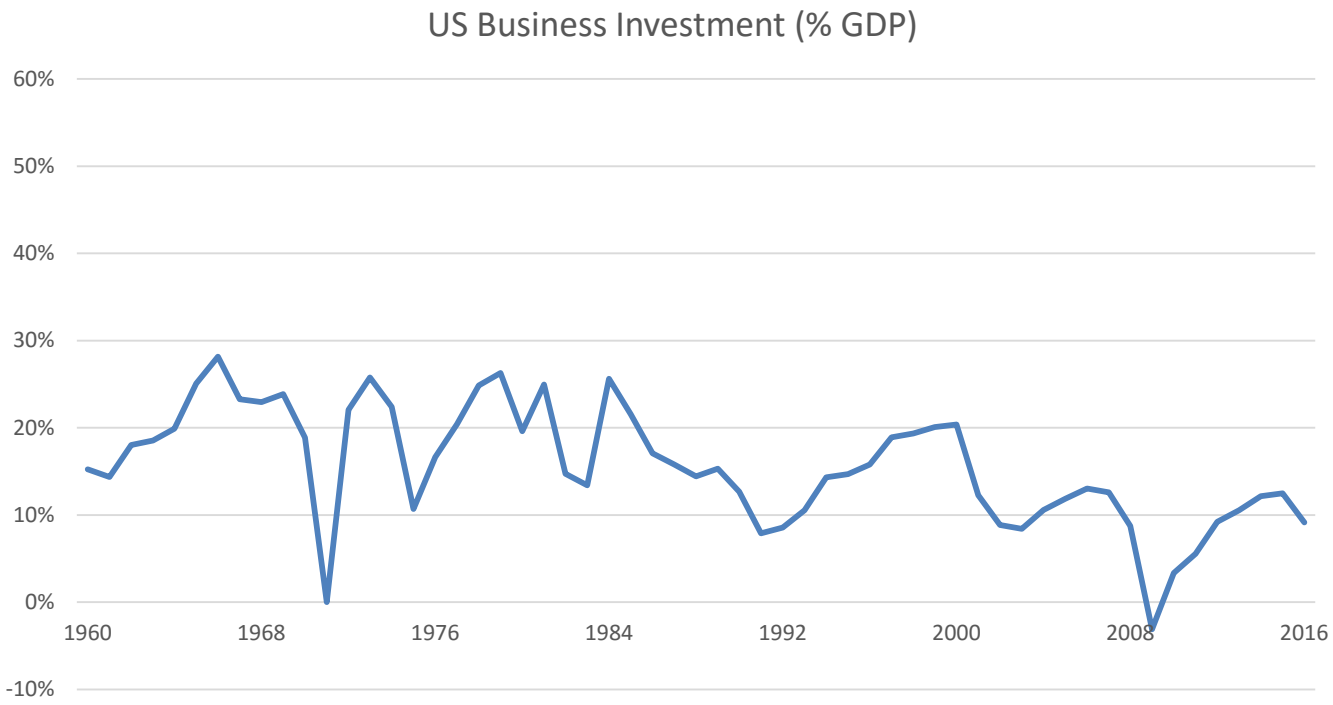
- Low investment rates even with low (nominal and real) interest rates and high value of “q” (and in spite of seemingly high *average* returns)
  - Finance not constraint
    - Large firms sitting on trillions in cash
    - Real interest rates have been negative for many periods, small in others

Growing profits and low business investment



Source: Federal Reserve Bank of St. Louis

Growing profits and low business investment

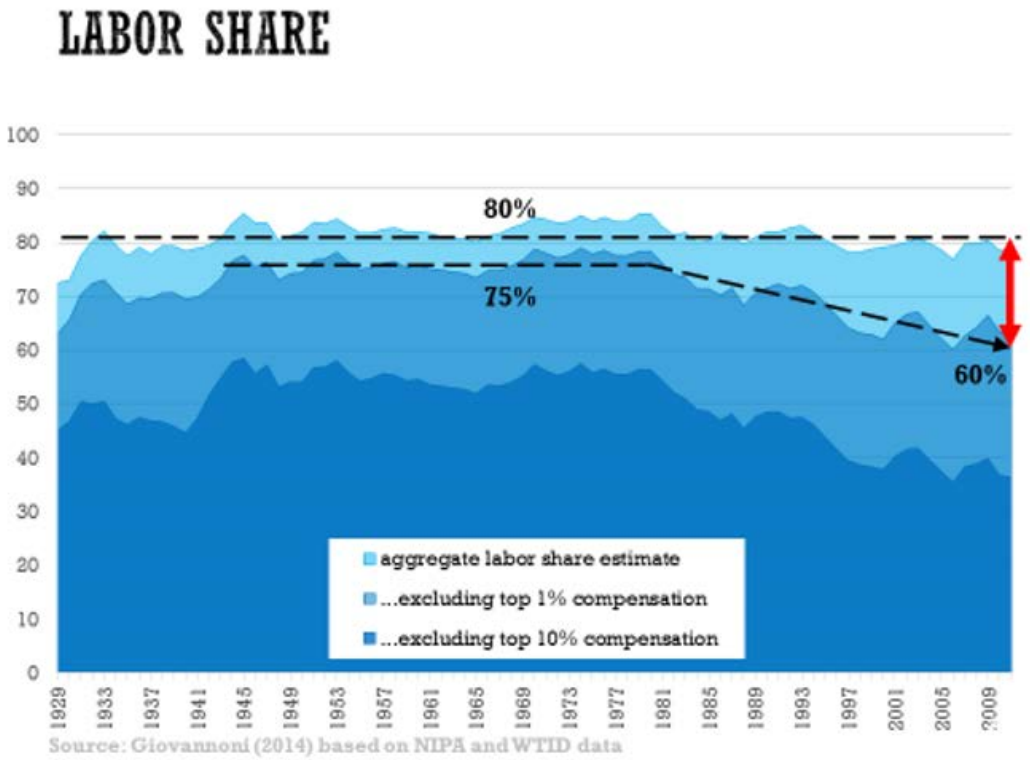


Source: Federal Reserve Bank of St. Louis

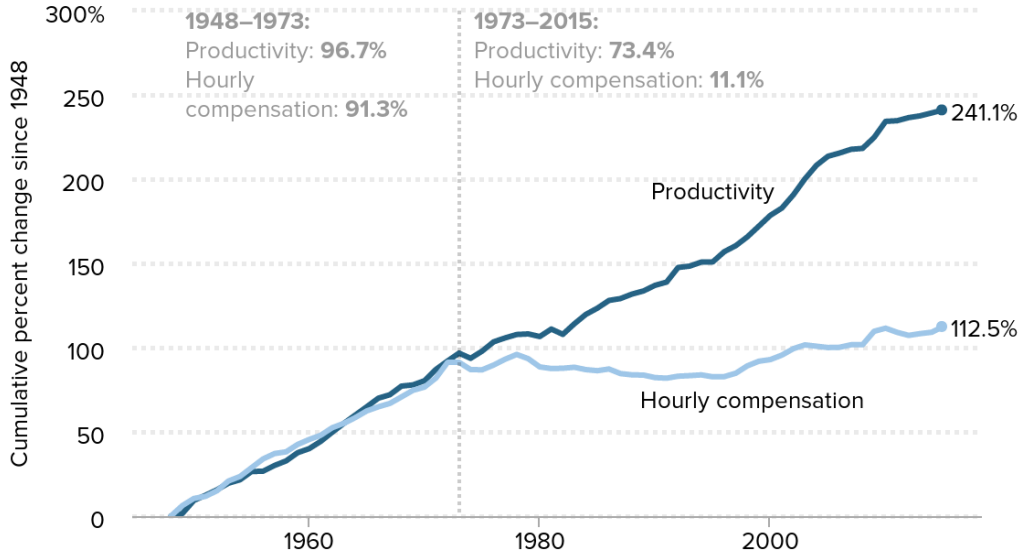
High levels of inequality

- Decreased share of labor, especially if one excludes top 1% of "workers" (CEO's, bankers, etc.)
- *Average* compensation not kept pace with productivity, with relatively sudden break in patterns in 70s
  - Average real wages close to stagnant
  - No sudden change in technology that can explain sudden change
  - Can be explained by changes in laws, rules, norms, including globalization
- Can't be explained by "skilled bias technological change": this is about average pay, and with any production function where aggregate output is a function of aggregate capital, an increase in aggregate capital relative to labor must increase real wages, and decrease share of capital if elasticity of substitution is less than one

Decreased share of labor—especially if one focuses on bottom 99% of labor



US: Disconnect Between Productivity and a Typical Worker's Compensation, 1948-2015

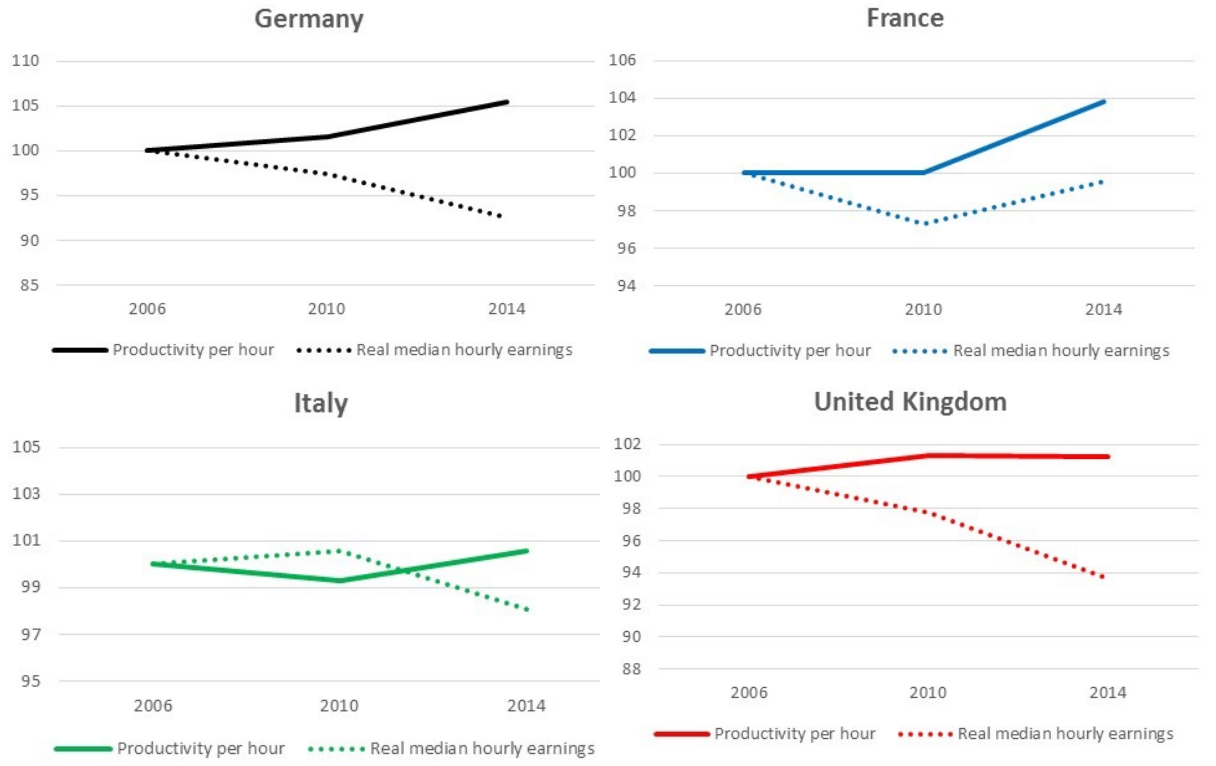


Note: Data are for average hourly compensation of production/nonsupervisory workers in the private sector and net productivity of the total economy. "Net productivity" is the growth of output of goods and services minus depreciation per hour worked.

Source: EPI analysis of data from the BEA and BLS (see technical appendix of *Understanding the Historic Divergence Between Productivity and a Typical Worker's Pay* for more detailed information)

Economic Policy Institute

Europe: Disconnect in Productivity and Compensation

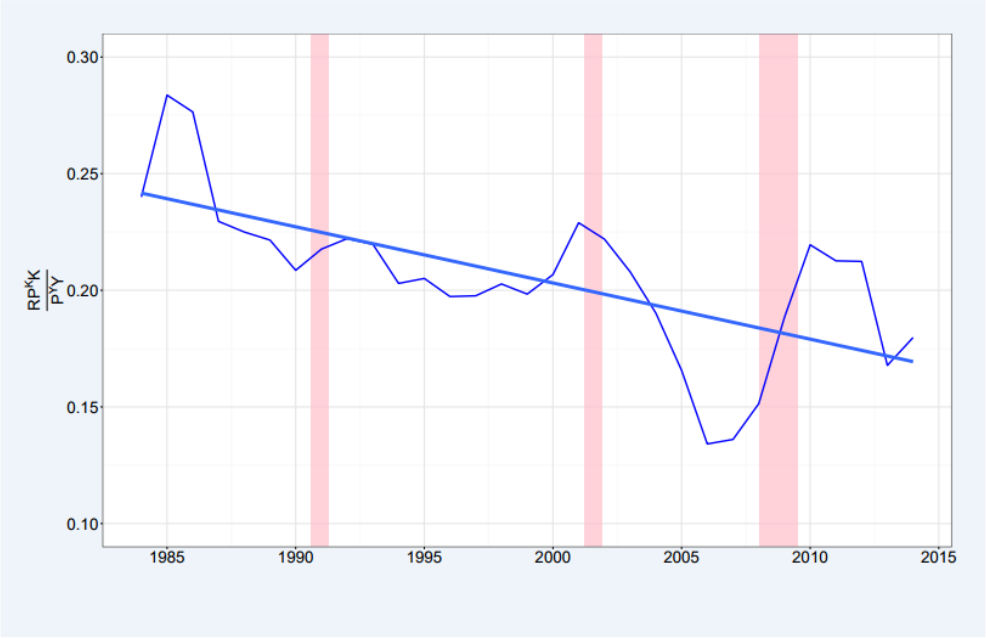


Source: Eurostat.

Even share of capital down

- By any reasonable accounting framework
- Flip side of the gap between “capital” and “wealth”
- What is up is the share of rents

The capital share of gross value added is declining

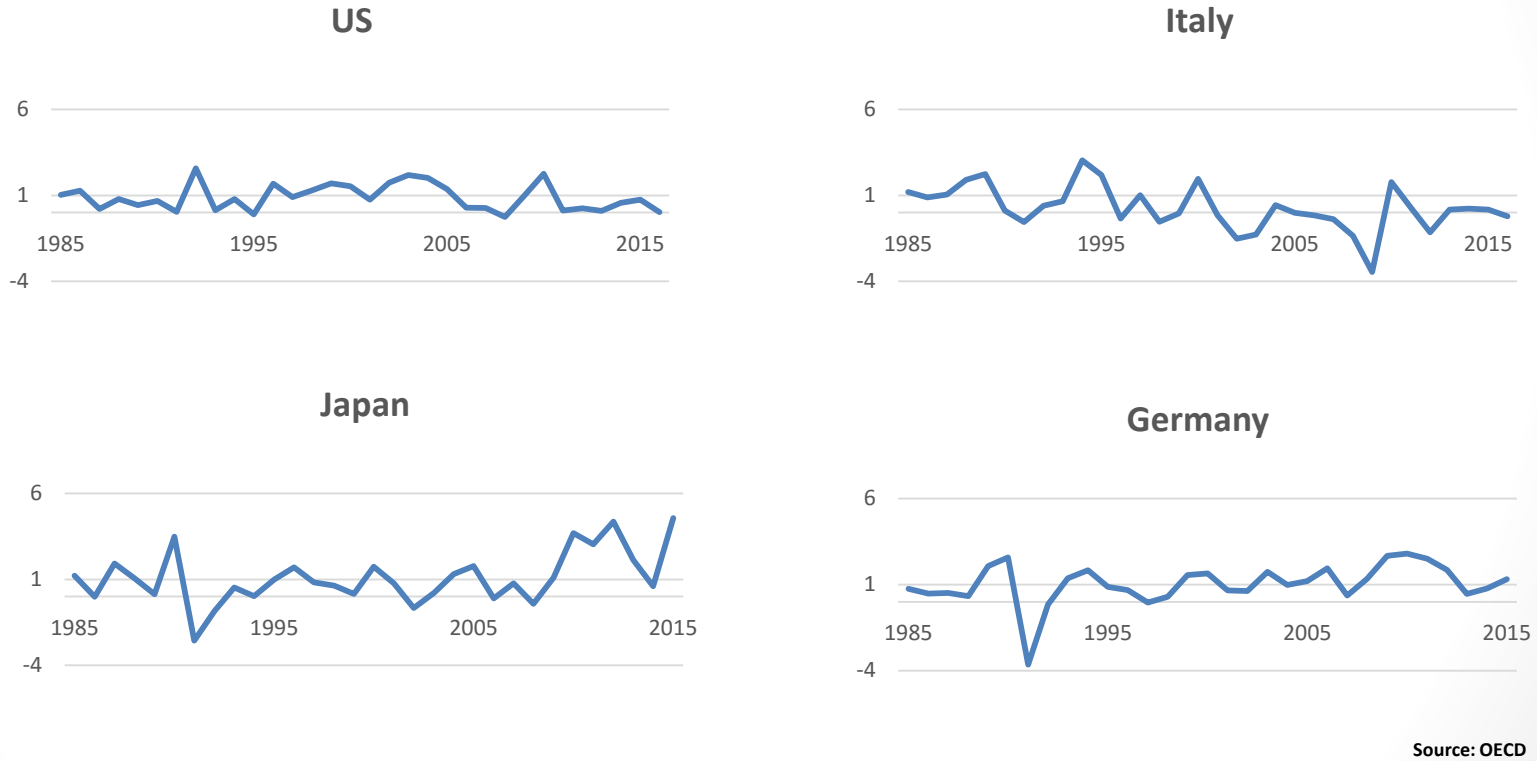


The figure shows the capital share of gross value added for the U.S. non-financial corporate sector over the period 1984–2014. Capital payments are the product of the required rate of return on capital and the value of the capital stock. The capital share is the ratio of capital payments to gross value added. The required rate of return on capital is calculated as $R = (i - \mathbb{E}[\pi] + \delta)$. Capital includes both physical capital and intangible capital. The cost of borrowing is set to Moody's Aaa and expected inflation is calculated as a three-year moving average.

Source: Simcha Barkai, University of Chicago

In a supposedly innovation era, productivity growth is low

Growth in GDP per capita



Source: OECD

Growth in share of new firms in Italy outpaces the US

Source: OECD

Hard to reconcile these facts with standard neoclassical model with competition

- Easy to reconcile in model with rents
  - Third factor (land, knowledge)
  - Monopoly power
  - Can explain new "stylized facts"
- Disparity between growth in wealth (W) and capital (K) reflects an increase in capitalized value of rents, R
  - W = K + R
  - Disparity has grown
  - In many models, an increase in R leads to a decrease in real capital accumulation: **R crowds out K.**
  - Decrease in K (relative to what it otherwise would be, or in the rate of increase of K) leads to lower economic growth, at least in the short to medium run
  - Since the wealthy own the assets whose value has increased, the increase in R helps "explain" growth in wealth and income inequality
  - Key message: at least part of the explanation of the increase in R is policy—changes in policy could reduce R, increase K, increasing growth, reducing inequality

Increased rents leads to decreased capital accumulation: *simple flow perspective*

Thus increase in rents as part of the *cause* of low growth

- Not only lower rates of capital accumulation but sectoral distortions

From household perspective ΔR is both part of income and of savings.

Simplest formulation: households save fraction of their income

- $I + \Delta R = s(Y + \Delta R)$

  where I is investment, ΔR is the change in the capitalized value of rents, e.g. increase in equity value as a result of the (anticipated) increase in market power, Y is national income

- $I = sY - (1 - s)\,\Delta R$

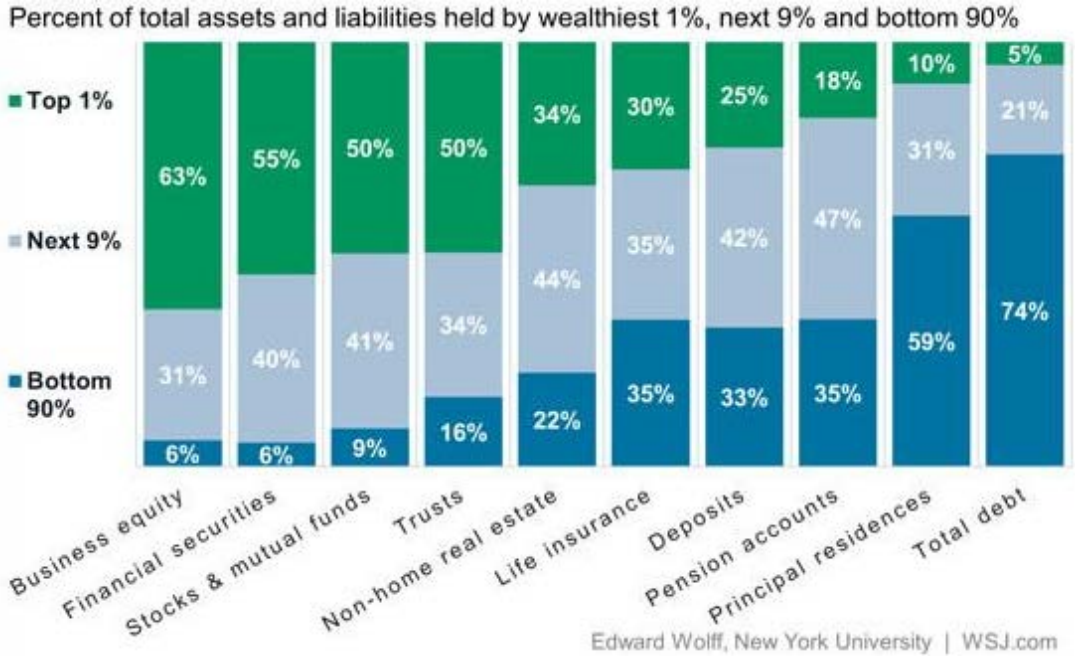
  Holding everything else constant, an increase in R lowers I.

Similar results in Stock Perspective (e.g. OLG model, savings for retirement can be held in form of K or R. (In this respect, similar to an increase in real money. An increase in R_{t+1} reduces K_{t+1}.)

An important aside

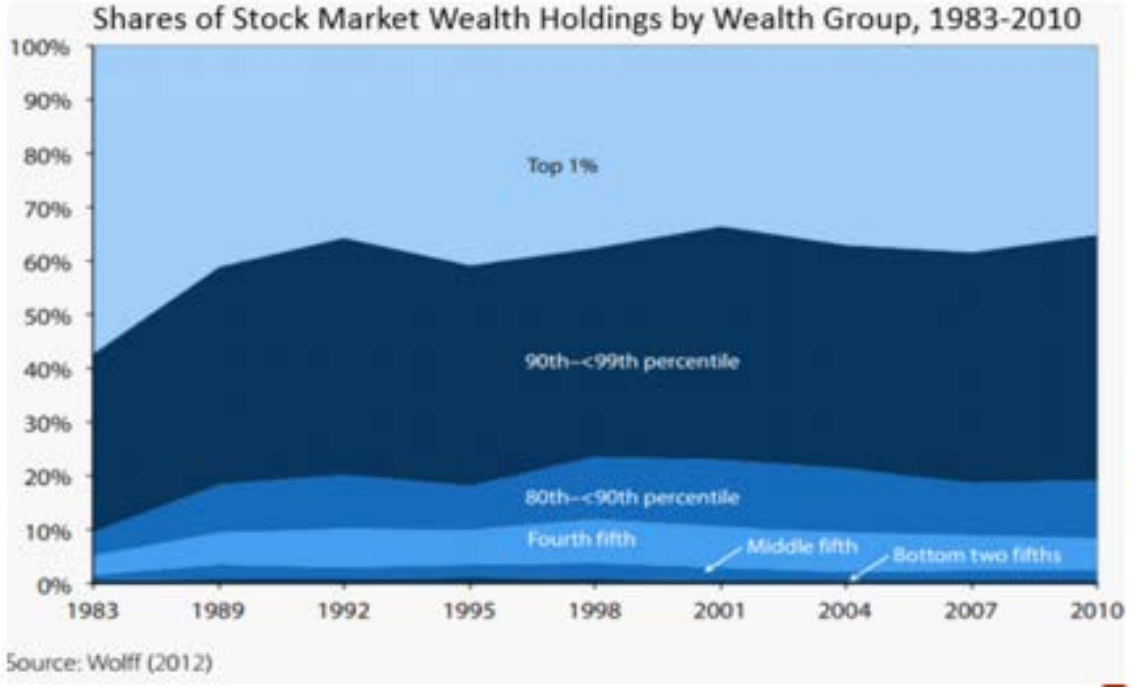
- Large differences in the forms in which the wealthy or workers hold their assets
  - The wealthy own a disproportionate share of equity
  - Workers put a disproportionate share of wealth in bonds
- This has large implications
  - The increase in R (capitalized value of rents) has played an important role in increase in inequality
    - Different theory of increase in inequality than that of Piketty
  - Low interest rate policies which have led to low bond yields but high stock prices have increased inequality
  - Macroeconomic models which assume constant elasticity utility functions are missing something important

Debt


Percent of total assets and liabilities held by wealthiest 1%, next 9% and bottom 90%
Top 1%
Next 9%
Bottom 90%
63%
31%
6%
55%
40%
6%
50%
41%
9%
50%
34%
16%
34%
44%
22%
30%
35%
35%
25%
42%
33%
18%
47%
35%
10%
31%
59%
5%
21%
74%
Business equity
Financial securities
Stocks & mutual funds
Trusts
Non-home real estate
Life insurance
Deposits
Pension accounts
Principal residences
Total debt
Edward Wolff, New York University | WSJ.com

Those at the top hold more equity

STOCK MARKET WEALTH



Explaining increase in R

- Tautologically: either an increase in rent flows or in discount rate
- Source of rent flows
  - Land rents
  - Knowledge rents
  - Monopoly rents/monopsony rents
    - High prices (mark-ups), low wages help explain increase in inequality
    - Weakening of bargaining power of workers
      - Globalization
      - Changing in labor laws
      - Weakening of unions
  - Appropriation of public resources
  - Other forms of exploitation
  - Quasi-rents: short term rents earned on assets while supply increases; arises from costly adjustment of stocks

Rents and well-being

- Some forms of rent seeking redistribute rents among rentier
  - Corporate governance rents
    - Could even show up as a decrease in corporate market value
- Not all rents are included in R
  - Only those reflected in capital assets that can be bought and sold
  - Labor rents are not included
- Transfers of wealth from ordinary citizens to “capitalists” shows up in an increase in R, but social welfare likely reduced
  - Exploitation of public sector (bank stocks)
  - Increased ability to extract consumer surplus (through Big data)
  - Social welfare reduced through inefficiencies
  - Social welfare reduced through transfers from ordinary citizens to well-off
- Next set of slides will discuss in greater detail different forms of rent
  - Some of changes in “R” linked with monetary policy
  - Some of changes may affect effectiveness of monetary policy
  - Monetary authorities may need to be more sensitive to effects of policy on inequality

A. Land rents

- Natural consequence of increase in population and urbanization
- Link between urban land rents and aggregate transportation costs
  - For instance, in some simplified models of the city, simple relationship between land rents and aggregate transport costs (Arnott-Stiglitz, 1978)
  - If agglomeration economies increase, land rents and aggregate transport costs will increase
- More important: collateral constraints and credit availability (Stiglitz, 2015, part IV)
  - Lowering of collateral constraints and/or increase in credit availability will increase equilibrium price of land
  - Consequence of financial market liberalization
  - Again associated with increase in inequality

B. Change in Monopoly/monopsony rents

- Multiple pieces of evidence of increased market power:
  - Increased market concentration
  - Increased mark-ups and other behavior consistent with market power (in both labor and product markets)
- Increase in R greater than can be explained by an increase in value of land or value of intellectual property or other intangibles
  - Increase in R: growth in gap between W and K
  - Analysis at both the corporate and national level
  - Kurz estimates that almost 80% of equity value of publicly listed companies associated with rents, almost a quarter of value added
    - Much linked to the IT sector

Explaining growth in monopoly/monopsony rents

- Can arise from changes in technology
  - Network externalities
  - Increased ability to price discriminate—extracting more consumer surplus
    - Especially associated with control of data and control of platforms
- From changes in the structure of the economy
  - Move from manufacturing to service based economy
    - Greater importance of local services—importance of reputation, location effects
- **From changes in policy (laws and their enforcement), institutional changes**
  - Changes in labor law (including NLRB decisions), globalization help explain weakening of workers bargaining power
  - Rules of the market economy have been rewritten over last third of a century in ways which increase rents

New view of monopoly

- Schumpeterian/Chicago view: innovation associated with monopoly; monopolies only temporary; fight to be monopolist spurs innovation
  - Shouldn't be worried about market power
  - Government interventions more likely to distort economy and "chill" innovation
- New view refutes each of these propositions

a) Monopolies have attenuated incentives to innovate, and distorted pattern of innovation

b) Monopoly power can be sustained with very limited R &D: spur to innovation less than previously thought

c) Monopoly power, once established, can persist for a long time

d) Monopolists have been innovative in devising better ways of exploiting, amplifying, leveraging, and perpetuating market power
   - Better exploitation of data—better extraction of consumer surplus
   - Acquisitions in mergers at early stages of potential competition—avoiding scrutiny of anti-trust authorities
   - New forms of predatory behavior

Market power and monetary policy

- In US, there has been a decrease in the pace of creation of new firms
- Is part of the problem lack of availability of credit, or the more stringent terms at which credit is available for new and small enterprises?
- Many governments have realized that there is a market failure in the provision of loans to SME's, and accordingly have formulated policies to increase access to credit
  - And some central banks have seen it as within their purview to ensure that there is a flow of credit to SME's and other underserved communities
  - In US, under CRA—but breadth of mandate could be expanded with a focus on promoting competition

Link between "q" and investment broken

- An increase in monopoly rents (or the anticipation of an increase in monopoly rents) would lead to an increase in q, without a commensurate increase in real investment
  - marginal return to investment lower because of downward sloping demand curves for product
  - Creation of new asset ("capitalized value of monopoly") crowds out real investment in individuals' portfolios
    - In SR, central bank can drive down nominal interest rate, and in an economy with weak aggregate demand, this will lead to low "capitalization" rate, i.e. high value of R, and hence q
    - Liquidity created does not go into investment (in spite of high stock market value, low investment) (discount rate to be discussed more extensively below)

Corporate taxes and q

- Observed q reflects average future expected returns.
- Investment related to marginal returns.
- The two may not move together, and may even move in different directions.
- Increase in monopoly power one of explanations for increase in q
- Changes in taxes another
  - Investment tax credit lowers marginal cost of investment, but (if flow is small relative to stock) leaves q relatively unchanged
  - A decrease in the corporate income tax with interest deductible leaves investment for most firms unchanged (since most firms finance investment at the margin by debt and cost of capital and return to investment changed by same amount) but increases average returns (Stiglitz, 1973)
    - Owners of share better off, but macro-economy only affected through "trickle down" effect of more consumption by the rich
  - In a "contestable democracy," where a low tax rate regime may be followed by a high tax regime and vice versa, a lower dividend tax today is associated with lower investment but higher q (Korinek and Stiglitz 2009)

Aside: difficulty in modeling corporate behavior

- Dividend paradox: hard to reconcile firm dividend behavior with rationality
  - Always pays to distribute returns in the form of a share buy back except if (i) difference between dividend tax rate and capital gains tax rate is small and (ii) there is an expectation that the capital gains tax rate will be lower in the future
  - While since this was realized in the 1970s (Stiglitz, 1973) a substantially larger fraction of corporate profits distributed to households has been done in tax favored manners
  - Still, the lags and the extent to which even today there are large tax arbitrage opportunities cannot be reconciled with any model of firm and investor rationality

C. Increased intellectual property rents

- Could be more knowledge
- Could be change in laws or skills in appropriating returns
  - Considerable evidence
  - Again, in part appropriation of consumer surplus
- In either case, created an asset that is a substitute for K in individuals' balance sheets
  - For firms, investments in increasing appropriation of IPR substitute for investments in K or productivity increasing innovation
- But cannot explain gap between K and W by this or other forms of intangible capital (Barchai (spelling))

D. Other exploitation rents can raise q but lower incentives to invest/crowd out real investment

- **Bail-out** rents increase value of banks at expense of taxpayers
  - Change in pdv of bail-out rents occur either with a change in regime or a change in circumstance
  - As economy gets weaker, pdv of bail-out rents increases—crowding out of real income may weaken it further
  - If taxpayers were fully aware of what was going on, transfer effect would depress aggregate demand (average owner of shares richer, many foreign, so aggregate consumption decreased; distortion in economy weakens economy)
- Credible bail-in policy (Cappponi *et al)* mitigates increase in bank R, but poses an increased risk to banking system
  - Could discourage lending
- Taxpayers' decreased well-being not reflected in W, except to extent bail-out is financed by capital taxes

Other forms of corporate welfare increase R

- Similarly for other forms of **corporate welfare**—selling assets to firms at below market prices, paying above market prices for goods and services
  - Increased corporate profits reflected in W
  - Taxpayers worse off, but not directly reflected in W

Impact of digital economy

- New ways of exploiting consumers decrease consumer surplus enjoyed by individuals, increase profits
  - Discriminatory pricing, facilitated through advanced in Data
  - Innovations in “Phishing for Phools” (Akerlof and Shiller)
    - For some firms more important source of profits than real innovations
  - Former is reflected in W, latter is not
- With exploitation rents, even when an increase in q leads to an increase in investment, it does not mean that societal welfare is being increased.
  - Investments may be directed at improving capacity for exploitation
  - May not even stimulate GDP—households reduce consumption

Rent Sharing

- Puzzle: why workers (of a given ability) in high productivity firms get paid more
  - (Result being questioned by some new comprehensive data sets, but sufficient evidence to make investigating question worthwhile.)
  - Inconsistent with standard competitive theories
  - Interfirm wage differences explain much of wage inequality
    - Some debate about explanation
- Efficiency wage theories (Stiglitz, Akerlof-Yellen)
  - Turnover costs
    - Information about what is going on inside the firm can leak out
    - Such information can be deleterious to the long term well-being of the firm.
    - Higher profit firms thus seek to discourage labor turnover more than lower profit firms
    - And that means they pay higher wages
    - Also may take more skills to preserve and extend market power, high value of doing so
  - Morale

Explaining rent sharing

- *Leading to Vertical disintegration*
  - Limit the extent of rent sharing, by engaging in vertical disintegration
  - Workers may be more sensitive to their pay relative to others in the same firm than to others in different firms
  - New evidence on quit behavior
- Alternative theory of boundaries of firm
  - Coase: transactions cost
  - Greenwald-Stiglitz: diffusion of knowledge vs. diseconomies of scale

In short: increase in rents simultaneously explains increase in inequality and stagnation

- Multiple explanations of increase in rents
- Different explanations for each type of rent
  - Political rents: especially important in countries with large role of money in politics
  - Economic inequality leads to political inequality which is used to amplify and perpetuate economic inequality
  - May exist multiple equilibria:
    - lower corporate taxes leads to increased incentive for rent-seeking
    - Increased rents leads to increased lobbying to get low corporate tax rate

2nd source of increase in R: Change in discount rate

- Preferences (unpersuasive)
- Slow down in rates of increase in standards of living in dynastic models lowers discount rate
  - Also in OLG models, but analysis is different
- Decrease in taxes on capital increases individual's marginal return to capital
  - But in LR, there can be offsetting supply response (more savings)
  - In some models, in LR no effect at all
  - In long run, R may not change at all, but in short run R may increase

Dominant effect—monetary policy

- Lowering interest rate lowers discount rate, increase R
  - Even when the action is announced to be temporary
  - Can this be reconciled with rational markets?
- But for firms whose profit flows are really rents, higher market value (q) does not necessary induce much more investment
  - Depends on the nature of the rents, and how they expand with the scale of the firm
  - Main effect may be increasing wealth of equity owners—increasing inequality
    - Old view: lower interest rates helps debtors (poor) at expense of creditors (rich)
    - Newer perspective: lower interest rates helps equity holders (very rich) at expense of those who hold short term bonds (elderly, less rich)
- Some of those who are wealthier may consume more
  - Magnitude depends presumably on the uncertainty associated with the future evolution of prices—there could be more precautionary savings and portfolio shifting
  - Has to be contrasted with adverse effects on poorer elderly who are cash constrained
    - Effect may be the dominant one when investment does not respond

Some Policy implications of New Perspective

- Decreasing (after tax) rents would increase K and growth, decrease inequality
- Land (and other natural resource) taxes are non-distortionary, lower R and lead to more capital accumulation
- Stronger anti-trust policies reduce monopoly rents, increase economic efficiency, and increase real investment
  - Even though they may lower q
- Weaker IPR has similar effects
  - Better designed IPR may even lead to a better flow of innovations

Implications of New Perspective for Monetary policy

- Directing credit towards real capital formation rather than real estate speculation would lower R, and increase the ability of firms to finance their *real* investments and the level of investment
  - Higher collateral requirements for real estate
  - Other regulatory measures
  - Presumption has been that market allocates capital efficiently
    - Ample theory and evidence against this presumption
    - Especially in presence of information asymmetries and other market imperfections
    - Bankers' incentives distorted—they are able to capture some of the rents associated with lending
  - *In short, some forms of directed credit may be more effective and more efficient way of stimulating economy*
  - *In absence of "direction," disproportionate share of new finance goes to increase "R", with little going to increase demand for newly produced capital goods and to increasing growth of economy*

Steering—or even guiding—a modern economy is far more complicated than in textbook models

- In those models, economy naturally, on its own, returns to full employment quickly, and uses resources efficiently.
- Not even clear that there is a need for monetary policy—market could solve on its own for efficient dynamic path without the guidance of monetary policy from central bank
  - Central bank in general is not privy to differential information
- In representative agent model, not even need for cooperation
- But with significant (meaningful) heterogeneity, macro-economic externalities and endogenous information asymmetries and credit, equity and mobility constraints one cannot rely on market based "control" through a single instrument "r".
- Need a panoply of regulatory and control instruments
  - And coordination between monetary and fiscal authorities
  - Including regulatory instruments beyond those traditionally viewed as "macro"

At the very least

- Monetary authorities should be aware of the complex economic environment in which they are operating
- Overwhelming evidence that the simple competitive model does not provide a good description of modern capitalist economies
  - Rents are important
  - Assumption that there is significant market power provides a simple, coherent explanation of many phenomenon that are otherwise hard to explain
- The breadth of the mandate should be expanded to include all macro-economic variables—not just inflation, growth, employment, and financial stability, but also inequality
- All are interrelated
  - Policy is often conducted in a constrained world—sometimes monetary policy is the only game in town
  - And any "collateral damage" (e.g. in inequality) won't be undone by other policies

Concluding Comments

- Stagnation and inequality are related on both demand and supply sides
  - Inequality weakens aggregate demand
  - Inequality is the result of distorting rents
  - An increase in rents results in decreased capital accumulation
  - Less progressive taxation (regressive taxation) may result in more rent-seeking
- More generally: increased inequality and decreased growth is the result of *policy*, including how the rules of the economy have been rewritten in last third of a century
  - There are policies that can lead to greater output, faster growth, and less inequality

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