

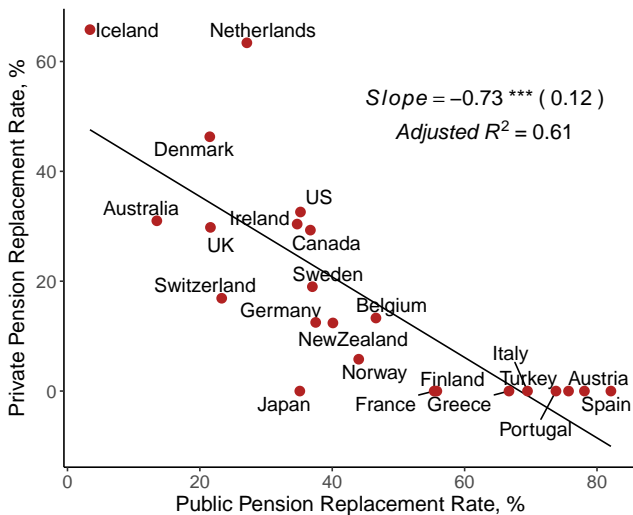
Pension Policy and the Financial System

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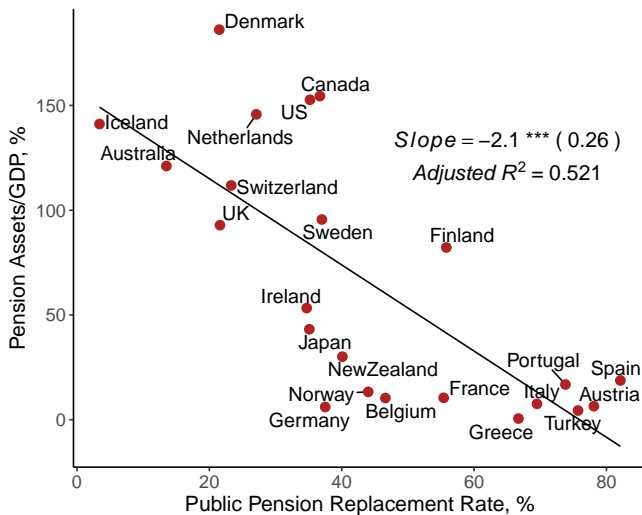
January 6, 2018

Substitution between Public and Private Pensions



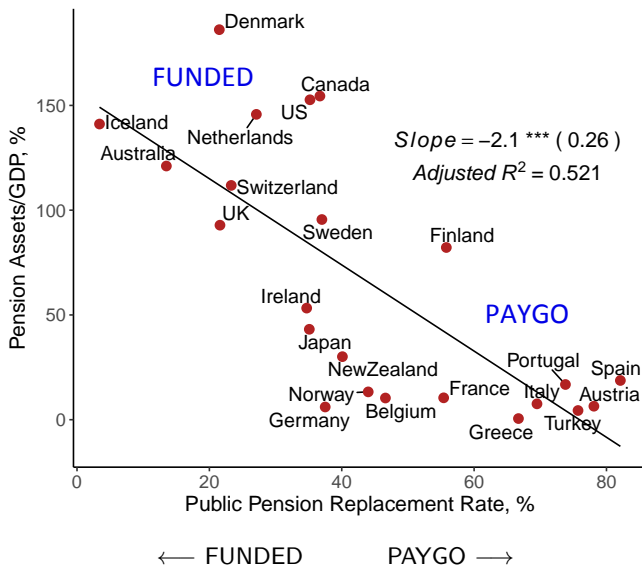
Data Sources: *OECD Pensions at a Glance 2015*

Total Pension Assets and Public Pension Benefits

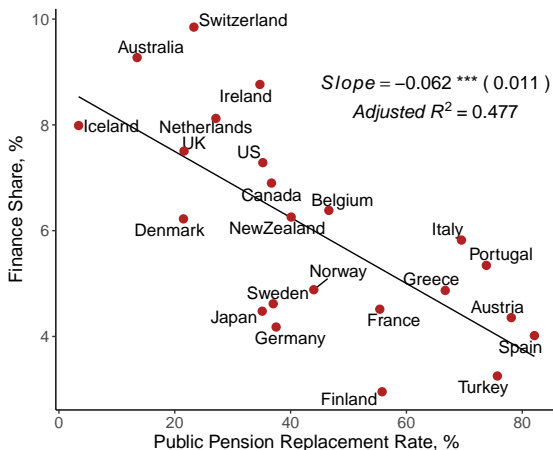


Data Sources: *OECD Pensions at a Glance 2015*;
OECD Pension Statistics Database

Total Pension Assets and Public Pension Benefits



Finance Share and Public Pensions



← FUNDED PAYGO →

- ▶ Finance Value Added = Profits + Compensation
- ▶ Finance Share \equiv Finance Value Added/GDP

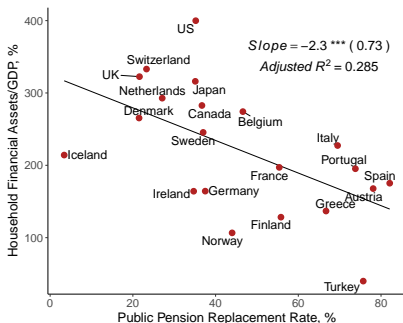
Main Idea

Policies that promote pension savings also promote the development of capital markets. I explore the implications for:

- ▶ Corporate Finance
 - ▶ Bank vs. bond financing
 - ▶ Firm size
 - ▶ Ownership
- ▶ Household Finance
 - ▶ Asset Holdings: Deposits, Housing, Other Financial Assets
 - ▶ Household Leverage
- ▶ Banking
- ▶ Size of the Financial Sector
- ▶ Financial Stability

Pension Savings and Household Financial Assets

- ▶ Key assumption: private pensions add to household savings
 - ▶ Public pensions crowd out private savings (Feldstein, 1974)
 - ▶ Private pensions do not crowd out all non-pension savings (Poterba, Venti and Wise, 1996)
- ▶ Some debate about the magnitude of the effect but reasonable to assume private pensions add to household savings



← FUNDED

PAYGO →

Theory

- ▶ Model banks per William Diamond (2017)
 - ▶ Households have demand for safe, money-like assets (e.g. Gorton and Pennachi, 1990; Stein, 2012; Greenwood, Hanson and Stein, 2015)
 - ▶ Banks issue deposits to meet this demand
 - ▶ Bank hold low-risk assets to back safe deposits rather than issue a lot of costly equity
 - ▶ Households own relatively risky assets in the capital market
 - ▶ Banking in this model is about "safety transformation," not about monitoring
- ▶ Embed these banks in a general equilibrium model to explore the role of pension savings in shaping the financial system

Further Modeling Assumptions

- ▶ Exogenous savings, s , distributed uniformly on $[m^*, m^* + 2\alpha]$ within an economy
- ▶ α indexes savings in an economy: on average, higher α in countries with more private pension funding. (Italy = low α ; Denmark = high α)
- ▶ Household must hold minimum amount of deposits, m^*
- ▶ Production economy with low risk and high risk projects in infinite supply
- ▶ High risk project also has higher expected payoff
- ▶ Fixed cost of investing in the capital market, K
- ▶ In model extensions, I will introduce mortgages and asset management costs

Basic Results

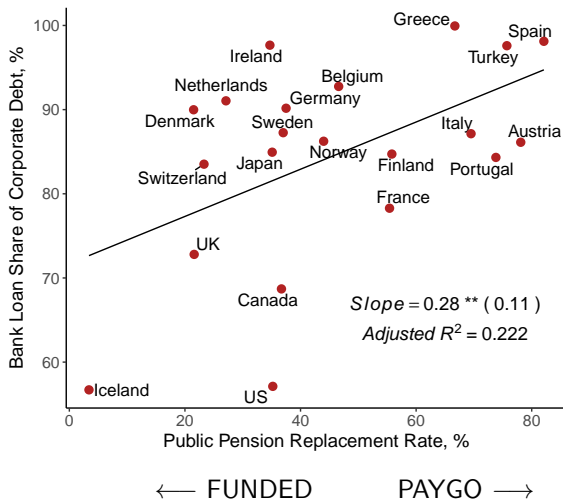
- ▶ Households invest in capital market if they have enough savings to make it worthwhile to pay K ; otherwise they keep their savings in the bank
- ▶ As a result, in high pension savings economies more households want to invest in the capital market and they put less of their savings in bank deposits
- ▶ **Proposition:** In high pension savings economies, more investment activity goes through the capital market rather than through banks. More high risk, high value projects are taken.

Interpretation: Countries with more private pension funding will be more capital markets oriented; PAYGO countries will be more bank-centered

Implications for Corporate Finance

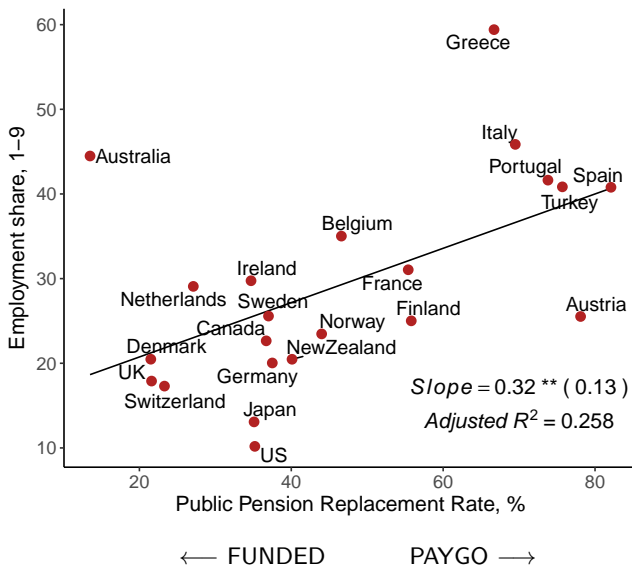
- ▶ More bank-dependent firms in PAYGO countries
- ▶ Smaller firms in PAYGO countries
 - ▶ Evidence that banks with market power constrain firm growth (Black and Strahan, 2002; Weinstein and Yafeh, 1998)
 - ▶ Bank risk limits (Ivashina, 2009)
- ▶ More inside ownership in PAYGO countries

Share of Bank Loans in Corporate Debt

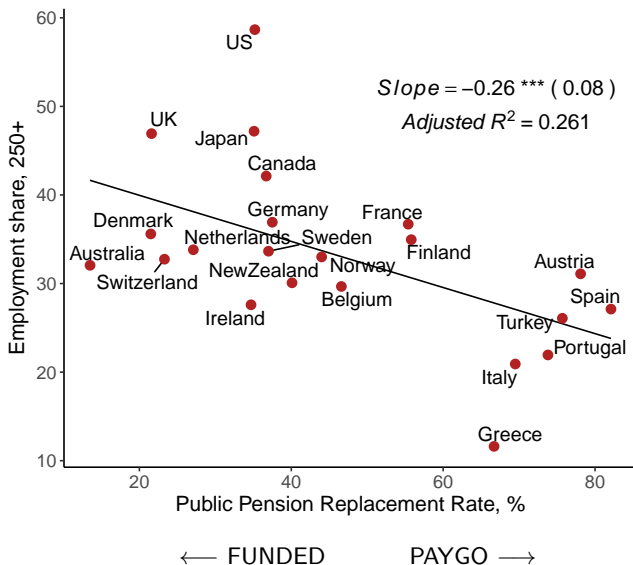


Data Sources: OECD Pensions at a Glance 2015;
OECD National Accounts Statistics Database

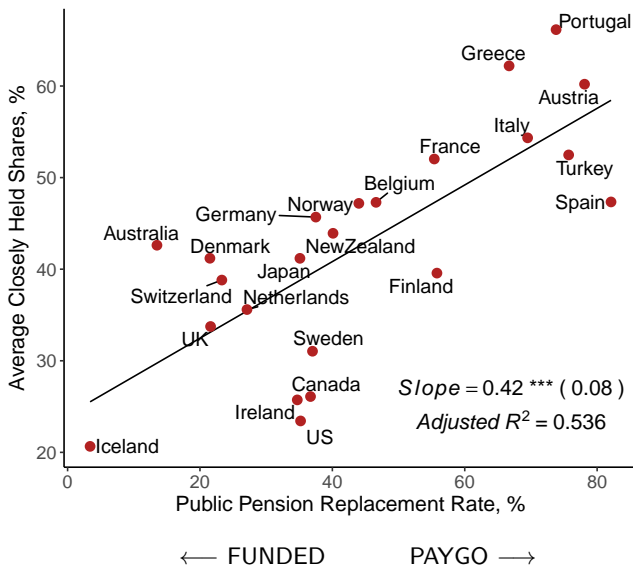
Firm Size: Small Firm Share of Employment



Firm Size: Large Firm Share of Employment



Inside Ownership



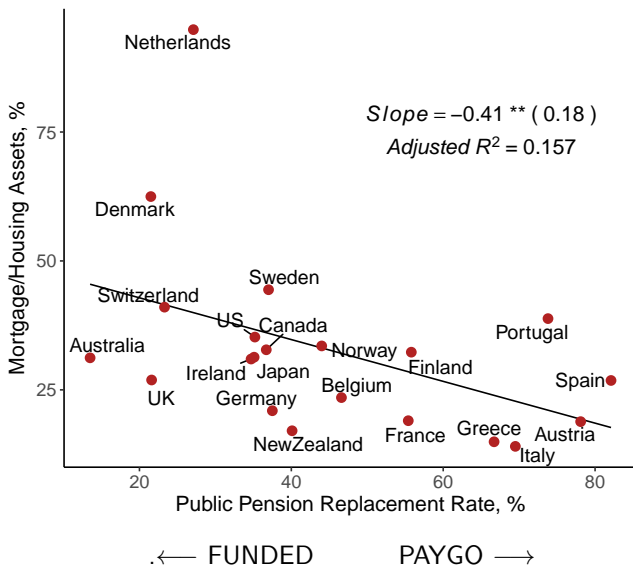
Extending the Model to Include Mortgages

- ▶ Everyone has to own H units of housing
- ▶ Housing is low risk so can be used to back deposits
- ▶ The financial returns on housing equity are lower than the returns on capital market investments
- ▶ As before, households can hold deposits and capital market investments, but now also housing equity
- ▶ Now everyone holds minimum deposits, m^*
- ▶ Low savers put the rest of their savings in housing equity
- ▶ High savers "borrow" (sell off equity in the house) so they can invest as much as possible in capital market, which has higher financial returns than housing equity.

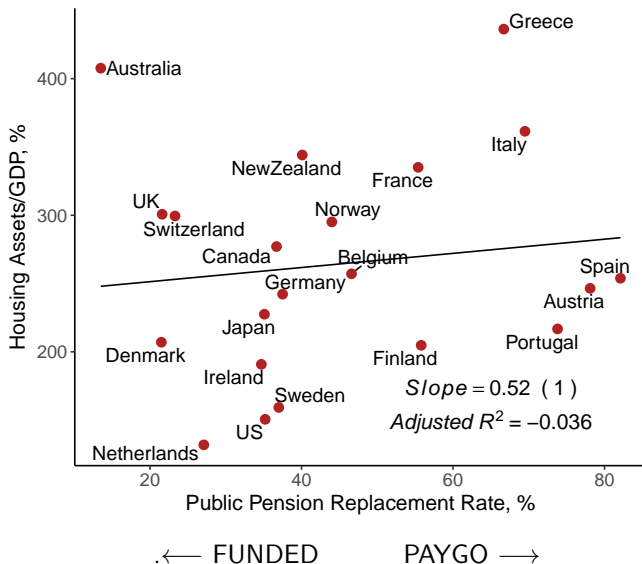
Proposition: Household Finance

- ▶ Housing Leverage (LTV) and Household Debt to GDP are higher in economies with more private pension savings
- ▶ Deposits are a smaller share of financial assets in economies with more private pensions; Deposits to GDP do not vary with pension policy
- ▶ Mortgages are a larger share of loans on bank balance sheets in economies with more private pension savings

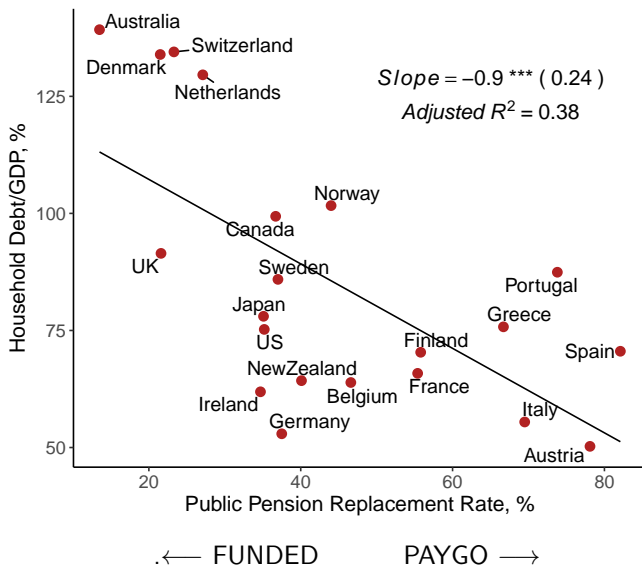
Housing Leverage (Loan-to-Value Ratios)



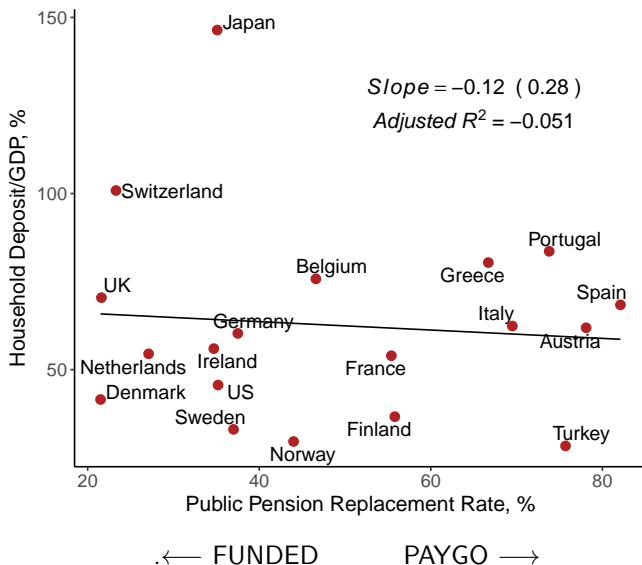
Housing Assets Relative to GDP



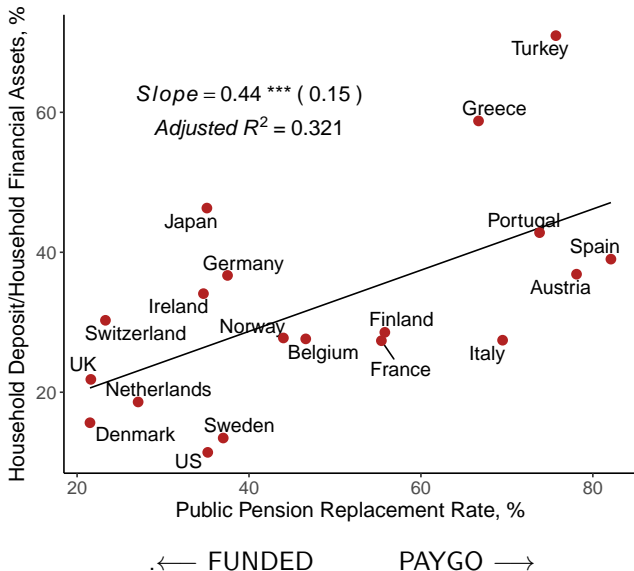
Household Debt as a Share of GDP



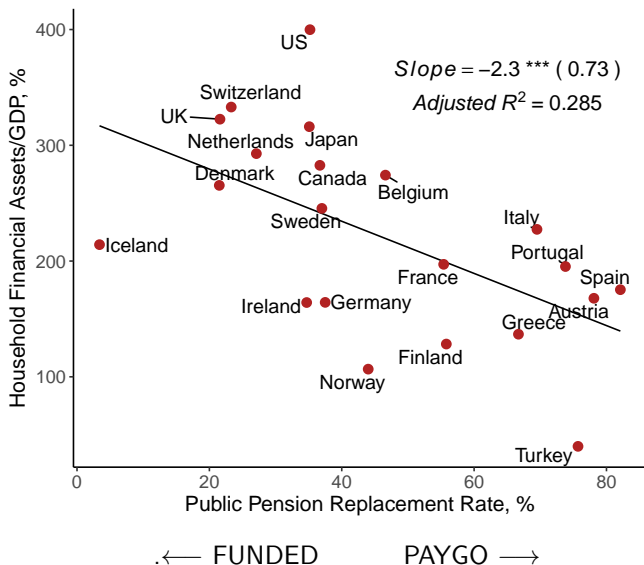
Deposits as a Share of GDP



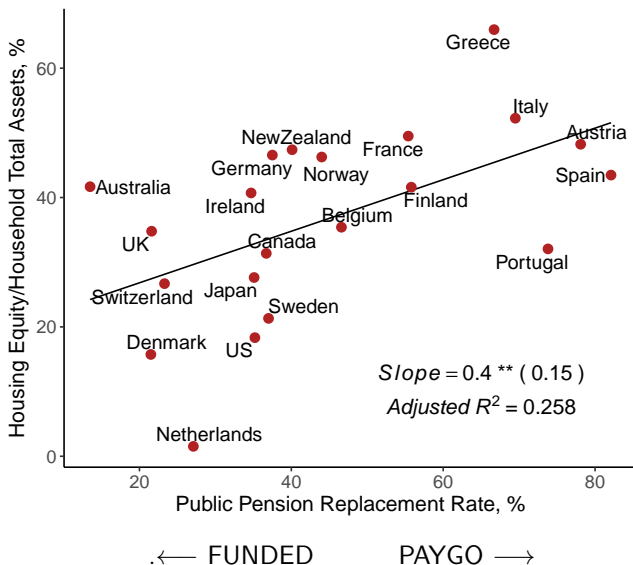
Deposits as a Share of Household Financial Assets



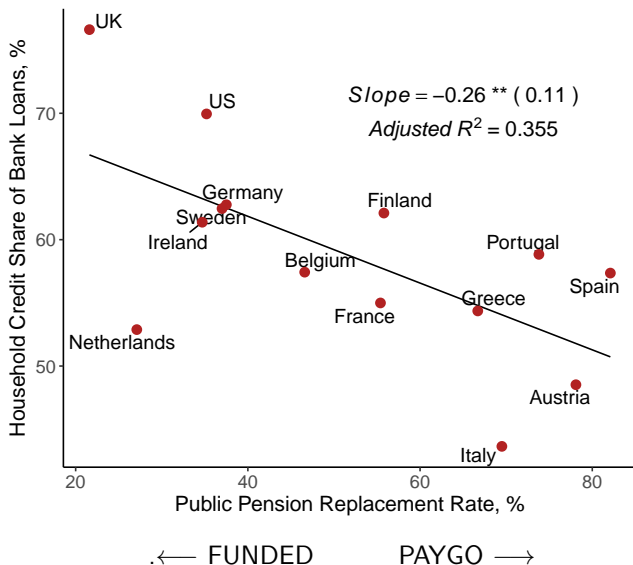
Financial Assets Relative to GDP



Housing Equity as a Share of Household Assets



Household Credit as a Share of Bank Loans



Capital Market Deepening

- ▶ Households hire a (pension fund) manager to invest in the capital market; fee of f per unit of assets under management
- ▶ Fees lower capital market investment, increase bank lending
- ▶ Now suppose there is fixed cost of asset management, F
- ▶ Zero-profit condition implies the asset management fee such that:

$$f \times E[\text{Capital Market Investment Output}] = F$$

Fee, f , is decreasing in capital market investment

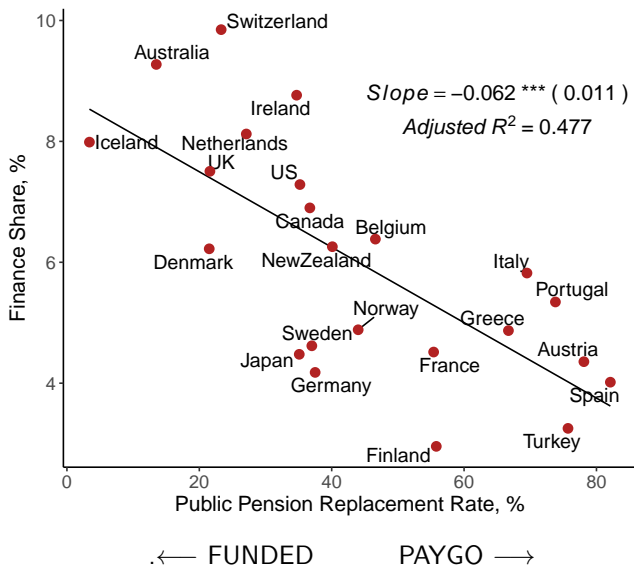
- ▶ Multiple Equilibria:
 - ▶ Low capital market investment \Rightarrow High fee \Rightarrow Low capital market investment
 - ▶ High capital market investment \Rightarrow Low fee \Rightarrow High capital market investment

Proposition: Capital Market Deepening

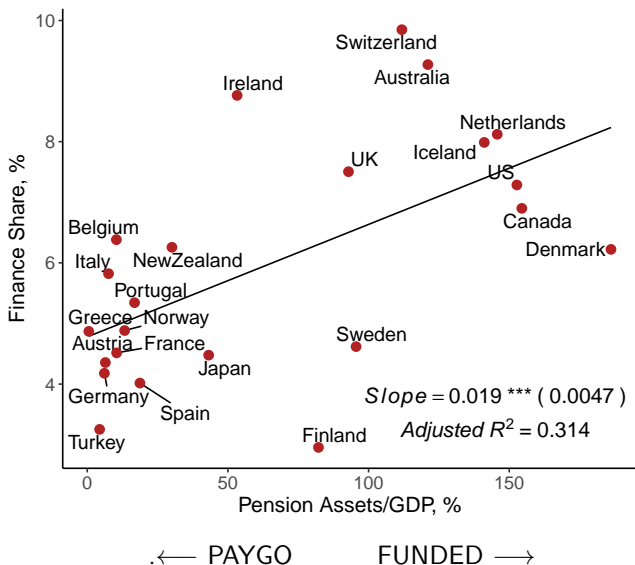
- ▶ With fixed costs of asset management, an increase in aggregate pension savings leads to a reduction in the threshold for investing in the capital market.
- ▶ Households at lower savings levels choose to invest in the capital market
- ▶ This amplifies the effect of an increase in private pension savings on the size of capital market.

Capital Market Deepening: In high pension savings economies, capital market investment is high, which lower fees and brings less wealthy households into the capital market

Finance Share and Public Pension Replacement Rates



Finance Share and Pension Assets



Why is Finance Share Increasing in Pension Assets?

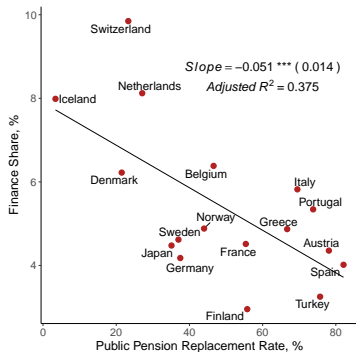
Each dollar increase in pension assets increases finance value added by 1.9 cents (1.9%)

- ▶ Asset management fees are only part of the story
 - ▶ Value added \approx half of revenue in securities business
 - ▶ Thus, need fees to be 3.8% of AUM to explain the result, an implausibly high number
 - ▶ US asset management fees were about 0.75% in mid-2000s (French, 2008), probably lower now
 - ▶ Fees generally higher outside US, but not 5x higher
- ▶ Could be other costs on supply side of assets (underwriting, origination, etc.) as suggested in Philippon's (2015) analysis of costs of finance
- ▶ But the large number could reflect capital market deepening whereby pension savings stimulates more capital market participation and a larger financial sector

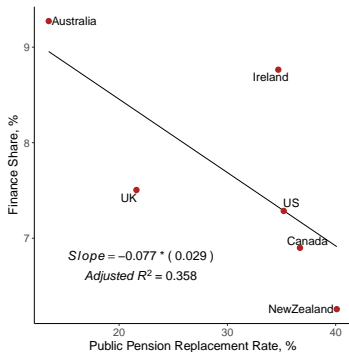
Alternative Explanations

- ▶ Legal Origins (LLSV, 1997 and 1998)
- ▶ Faith in Finance
 - ▶ Social Capital and Trust (Guiso, Sapienza and Zingales, 2004)
 - ▶ Wealth Destruction: Wartime Experience 1913-1945 (Roe, 2004)
 - ▶ Wealth Destruction : Hyperinflation (Perotti and Schweinbacher, 2009)
- ▶ Reverse Causality: Capital Market Development → Funded Pensions, not the other way around

Legal Origins, Pension Policy and Finance Share



Civil Law Countries



Common Law Countries

Data Sources: OECD Pensions at a Glance 2015;
OECD National Statistics Database; La Porta et. al., 1998

Implications for Financial Stability and Pension Policy

- ▶ Risks of private pension systems identified in public economics literature
 - ▶ Risks largely borne by individuals and/or employer
 - ▶ PAYGO mitigates risk through redistributive policies within and across generations, but increases fiscal risk
- ▶ My analysis points to other risks of private pension systems
 - ▶ Greater household debt
 - ▶ Mortgage exposure of banks implicated in financial crises (Jorda, Schularick and Taylor, 2014)
 - ▶ Household debt amplifies business cycles (Mian, Sufi and Verner 2017)
 - ▶ Greater capital market reliance
 - ▶ May increase risk because of less stable funding (Gorton and Metrick, 2010)
 - ▶ May decrease risk as borrowers can substitute bonds for bank loans when banks contract lending (Kashyap, Stein and Wilcox, 1993; Becker and Ivashina, 2014)
- ▶ Implications for Policy