

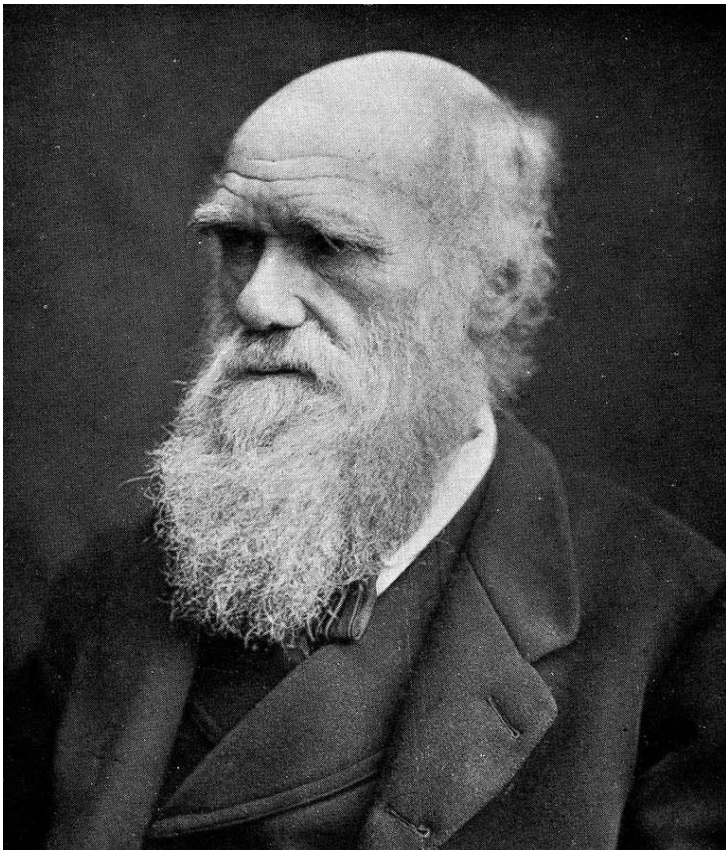
# The Financial Lifecycle of Businesses

Jonathan Hambur, Ben Watson and Gianni La Cava

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*“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change.”*



*On the Origin of Species,*  
Charles Darwin (1859)



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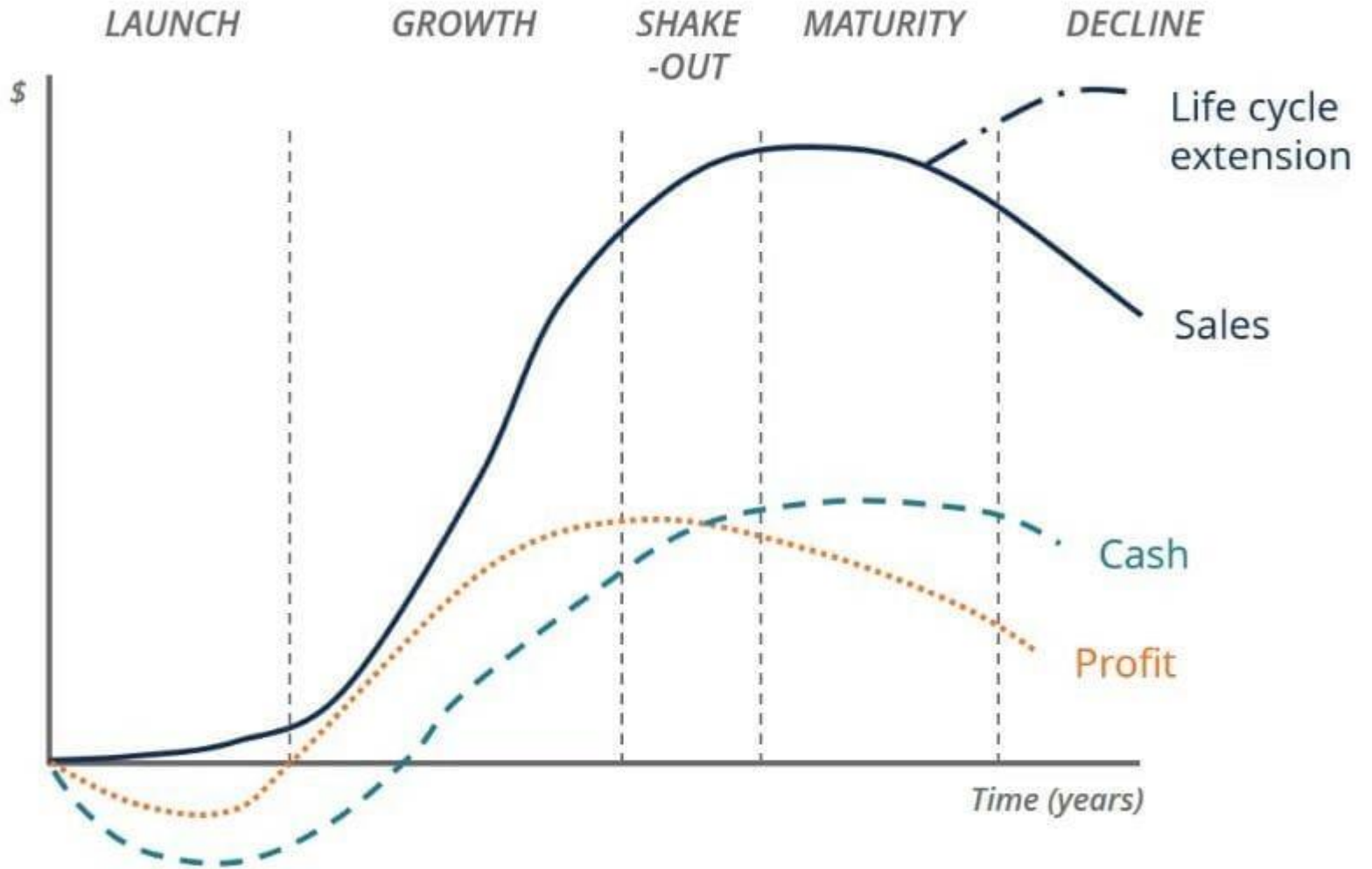


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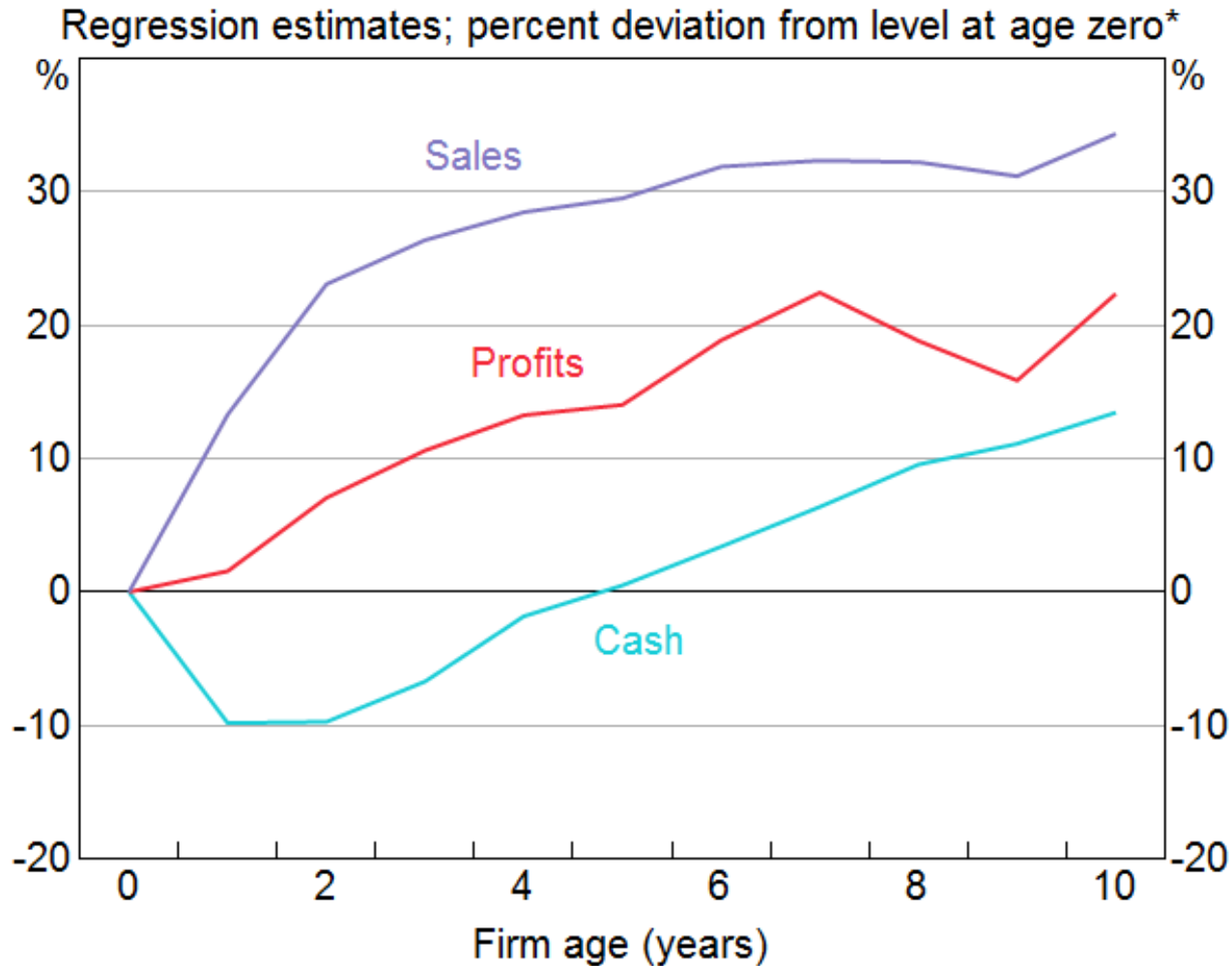
A management science talk by  
Prof. Leon Megginson (1963)

He was talking about the  
**business lifecycle!**





## The Firm Lifecycle



\* All variables deflated using the CPI

Sources: ABS; RBA



# The Dynamics of Business Finance

- **The financial lifecycle of businesses:** What do the balance sheets of Australian businesses look like when they are born? How do they evolve over time?
- **Birth cohort effects:** Are there differences in the financial structure of firms born in recessions to those born in normal times?



# Why Do We Care About the Dynamics of Business Finance?

- **Policymaker perspective:**

1. Financial stability risks (e.g. firm survival)
2. Macroeconomic risks (e.g. lower potential growth)
3. Effectiveness of government policy (e.g. tax breaks)



# What Is Our Contribution?

- **Financial side of firm dynamics**
  - Reasonable evidence on financial lifecycles
  - Limited research into birth cohort effects
- **The dynamics of all firms**
  - Long history of research into corporate finance
  - We study both companies and unincorporated businesses
- **Sample selection and firm dynamics**
  - We explore firm dynamics after controlling for selection issues

# What Do We Have in BLADE?

- **Business Longitudinal Analysis Data Environment (BLADE):**
  - Tax data (e.g. profits, sales, assets, trade credit)
  - Survey data (e.g. application for external finance; accepted/rejected)
- **Sample** = About 2 millions businesses per year
- **Sample unit** = “type of activity unit” (TAU) (e.g. Coles, Kmart, Bunnings)
- **Sample period** = 2001/02 to 2014/15



# What Do We Have in BLADE?

- **Leverage**
  - Total debt/total assets
  - Total debt is approximated with non-current liabilities
- **Liquidity**
  - Total cash/total assets
  - Cash is approximated with current assets less inventories and accounts receivable
- **Profitability**
  - EBITDA/total assets



# What Do We NOT Have in BLADE?

- **Determinants of firm entry and exit**
  - Mergers and acquisitions
  - Bankruptcy
- **Type of debt/equity finance**
  - Owner's personal wealth (e.g. housing collateral, credit card)
  - Venture capital



# The Financial Lifecycle



# Identification

## Age-cohort model:

$$y_{it} = \sum_{k=1}^K \beta_k * I(AGE_{it} = k) + \sum_{j=1}^J \delta_j * I(BIRTH_{it} = j) + \gamma X_{it} + \varepsilon_{it}$$

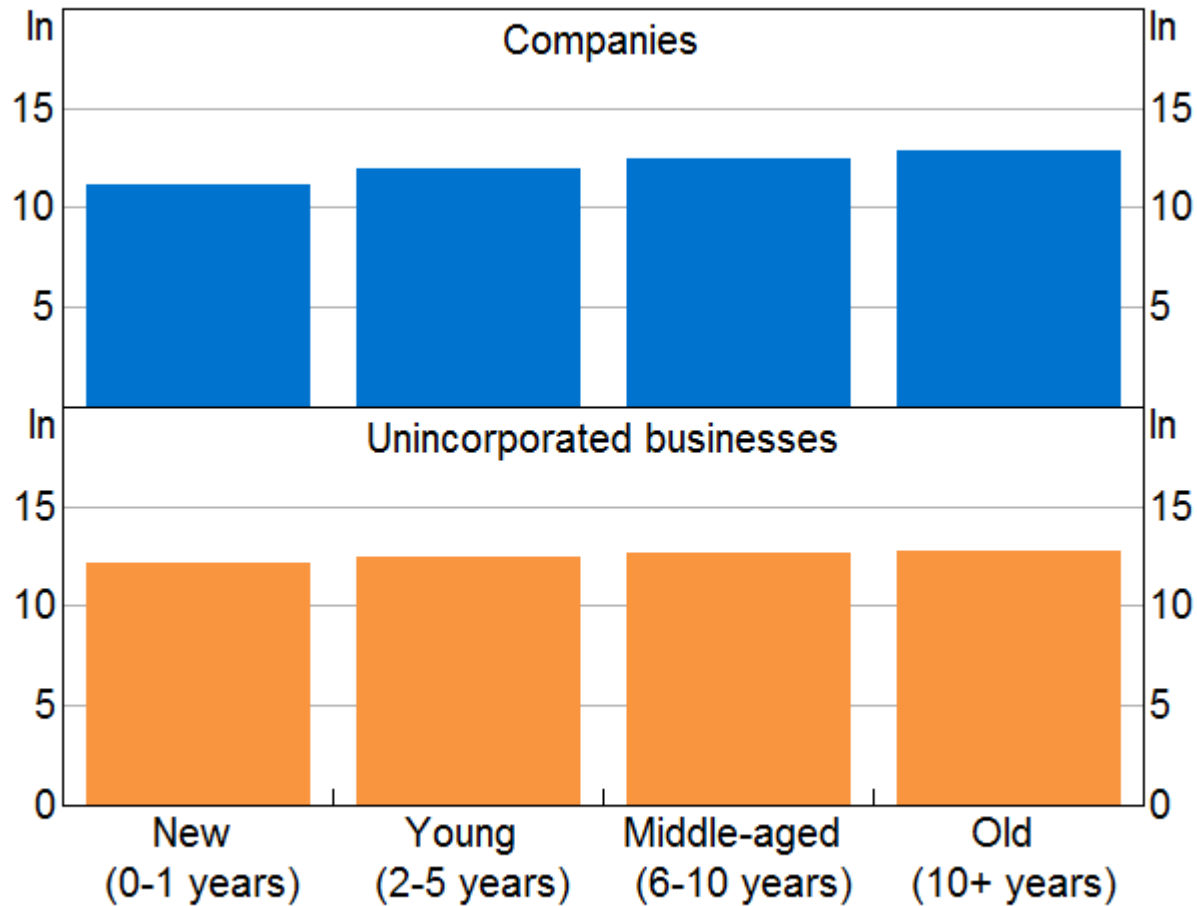
Where financial indicator ( $y_{it}$ ) of firm  $i$  in year  $t$  is a function of age, birth cohort and controls ( $X_{it}$ ).

- Financial indicators = 1) leverage, 2) liquidity and 3) profitability
- We proxy year effects with aggregate GDP growth
- Controls = firm size + industry + location + type of business (e.g. company)



## Size by Firm Age\*

Mean estimates; log levels



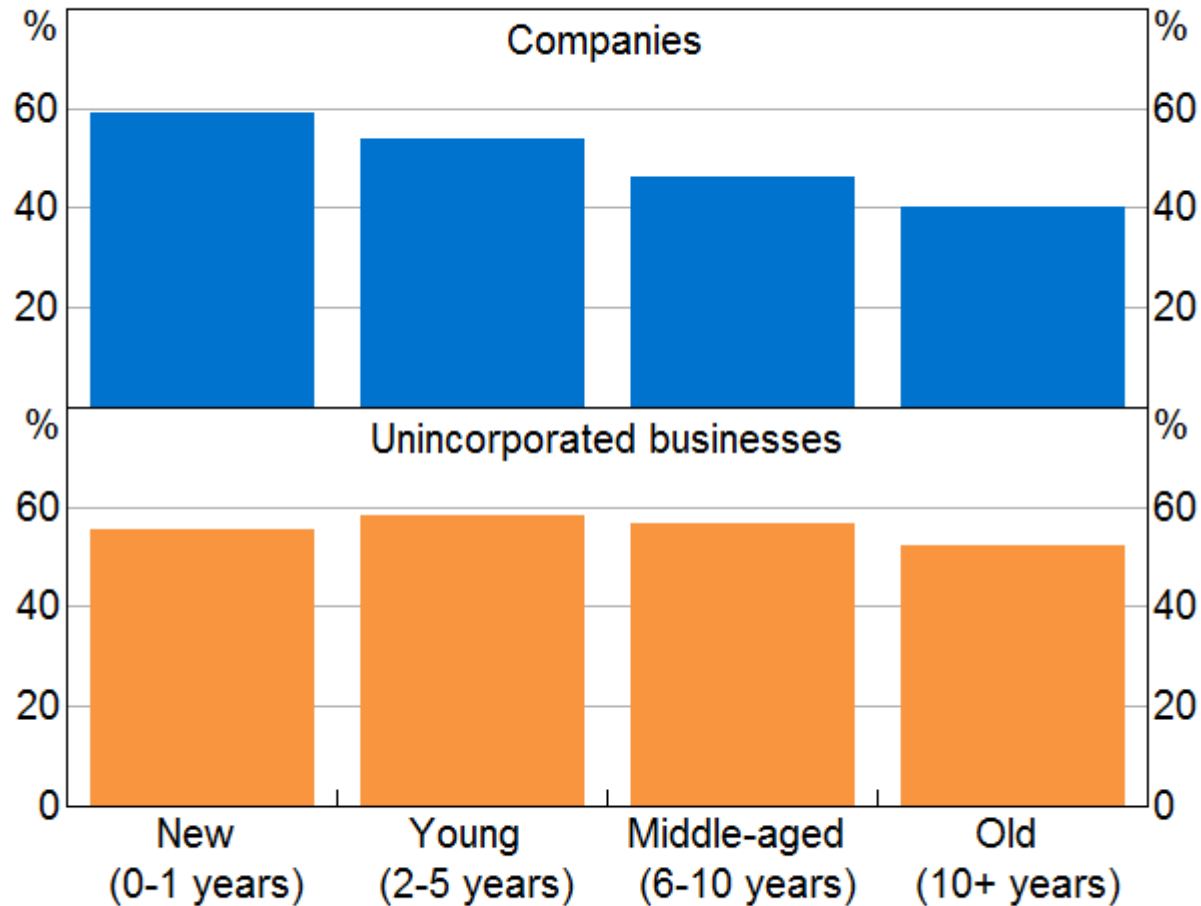
\* Total assets in 2015 dollars, indexed to CPI

Sources: ABS; RBA



## Leverage by Firm Age\*

Mean estimates



\* Total liabilities less accounts payable divided by total assets

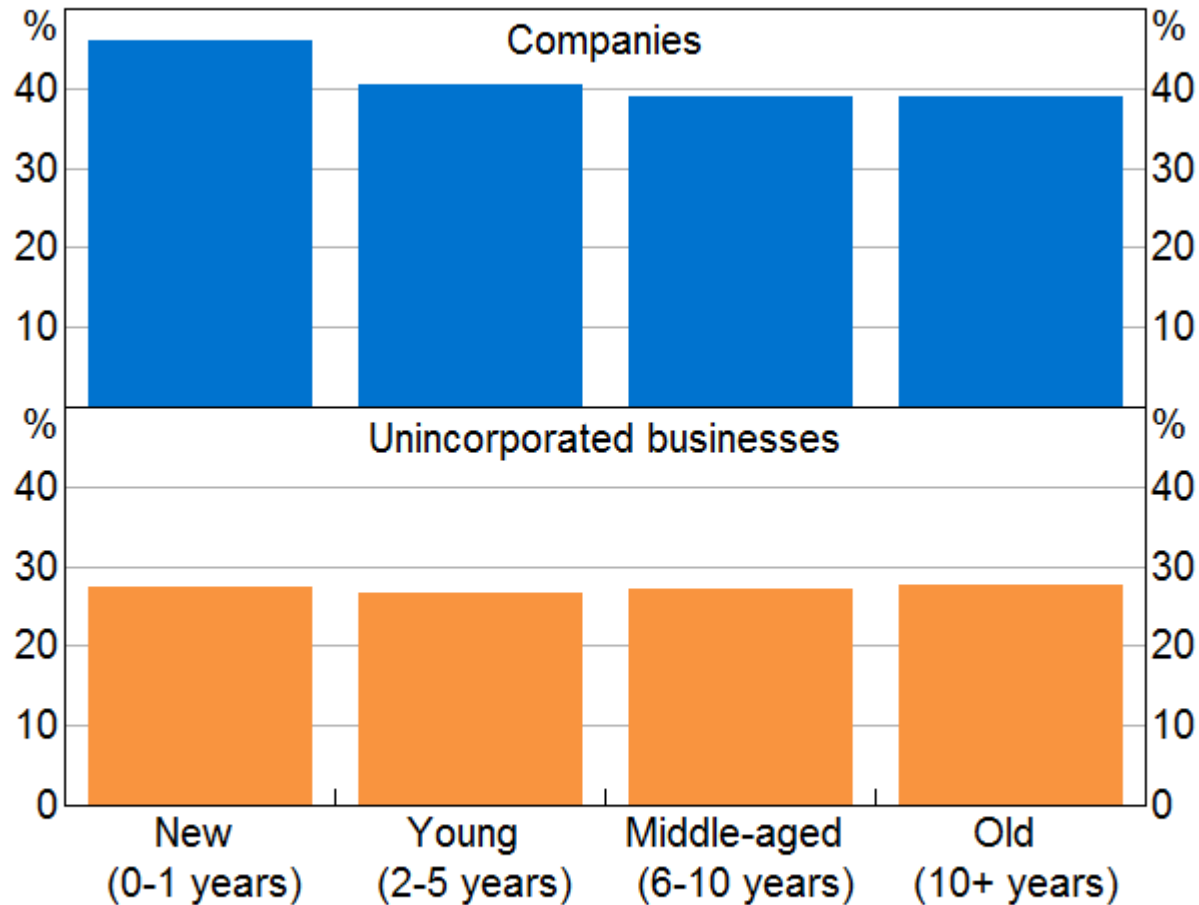
Sources: ABS; RBA





## Liquidity by Firm Age\*

Mean estimates



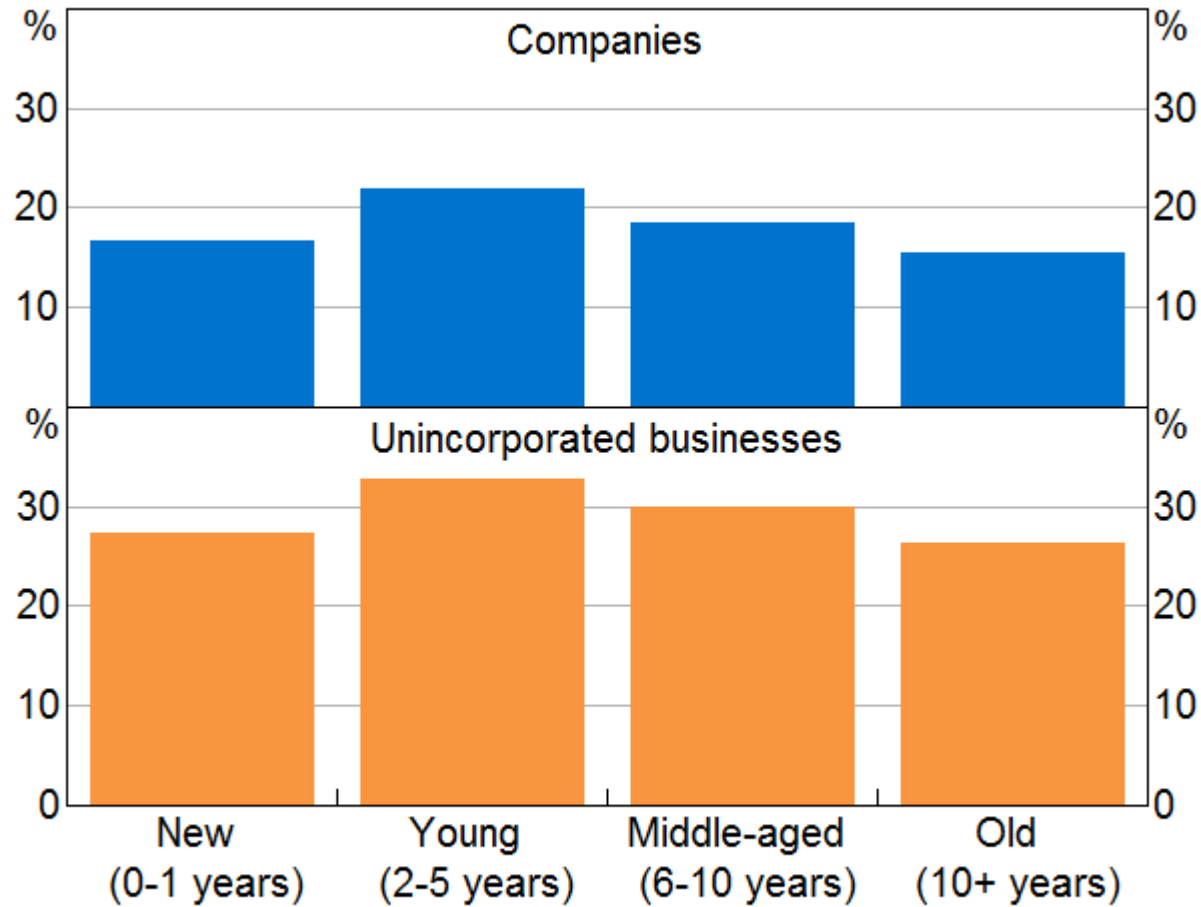
\* Total current assets less accounts receivable and inventories divided by total assets

Sources: ABS; RBA



## Profitability by Firm Age\*

Mean estimates



\* Profits before tax and depreciation divided by total assets

Sources: ABS; RBA

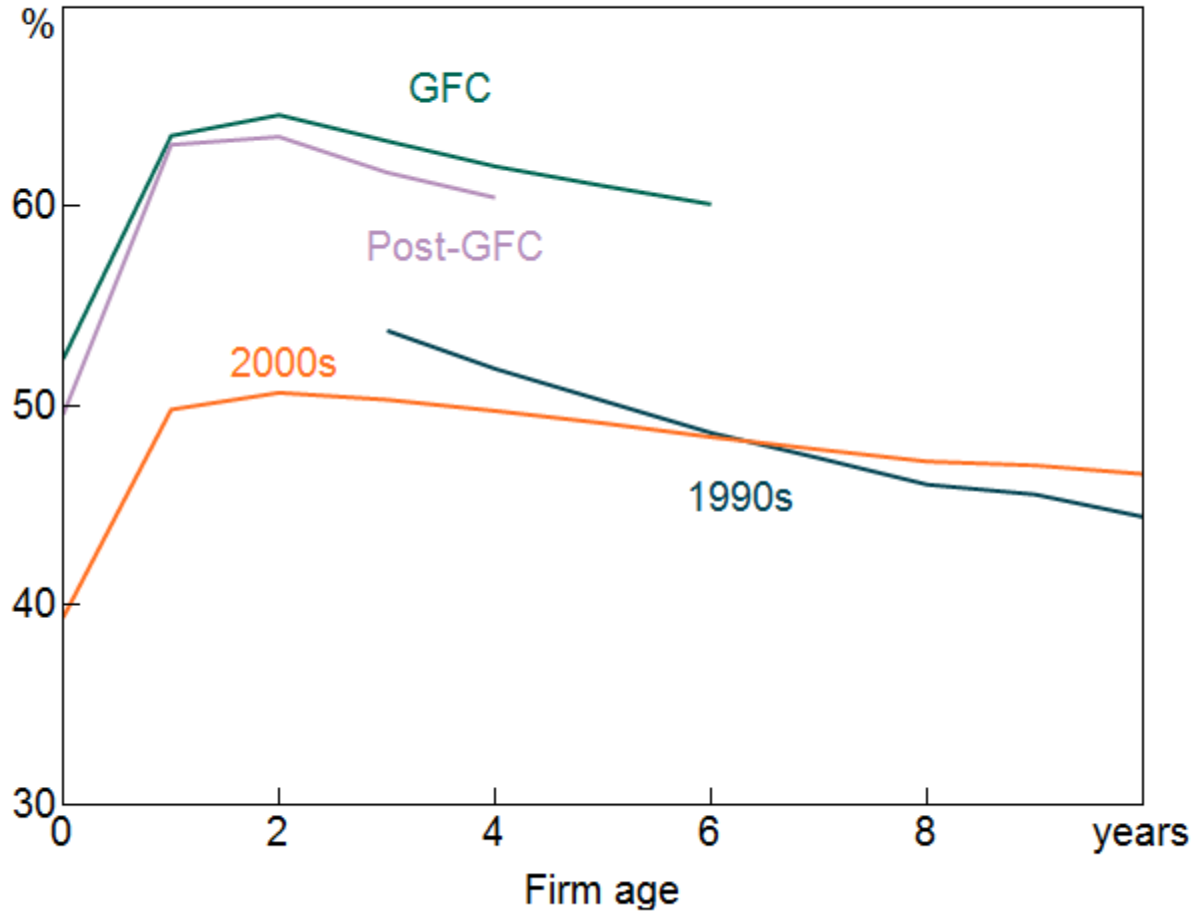


# Birth Cohort Effects



## Firm Leverage and Age

By birth cohort

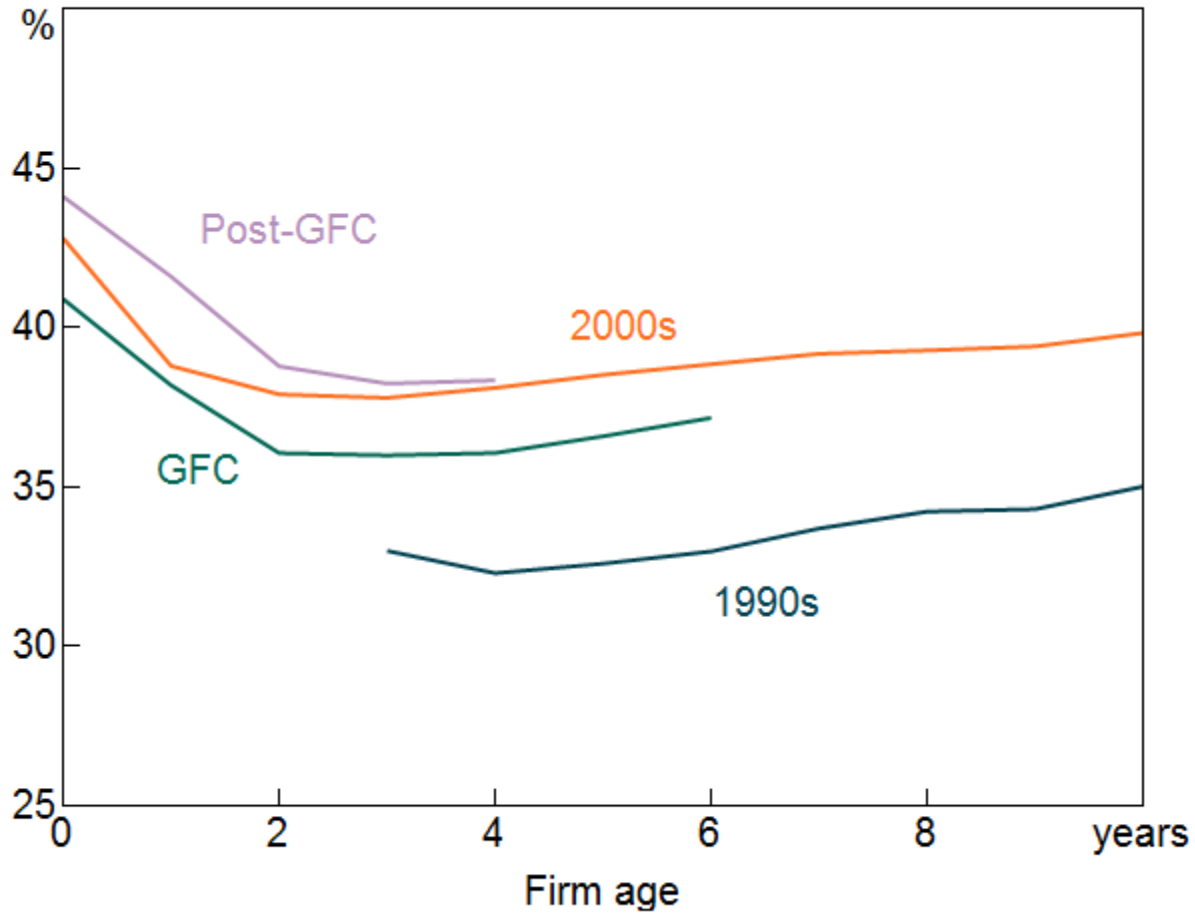


Sources: ABS; RBA



## Firm Liquidity and Age

By birth cohort

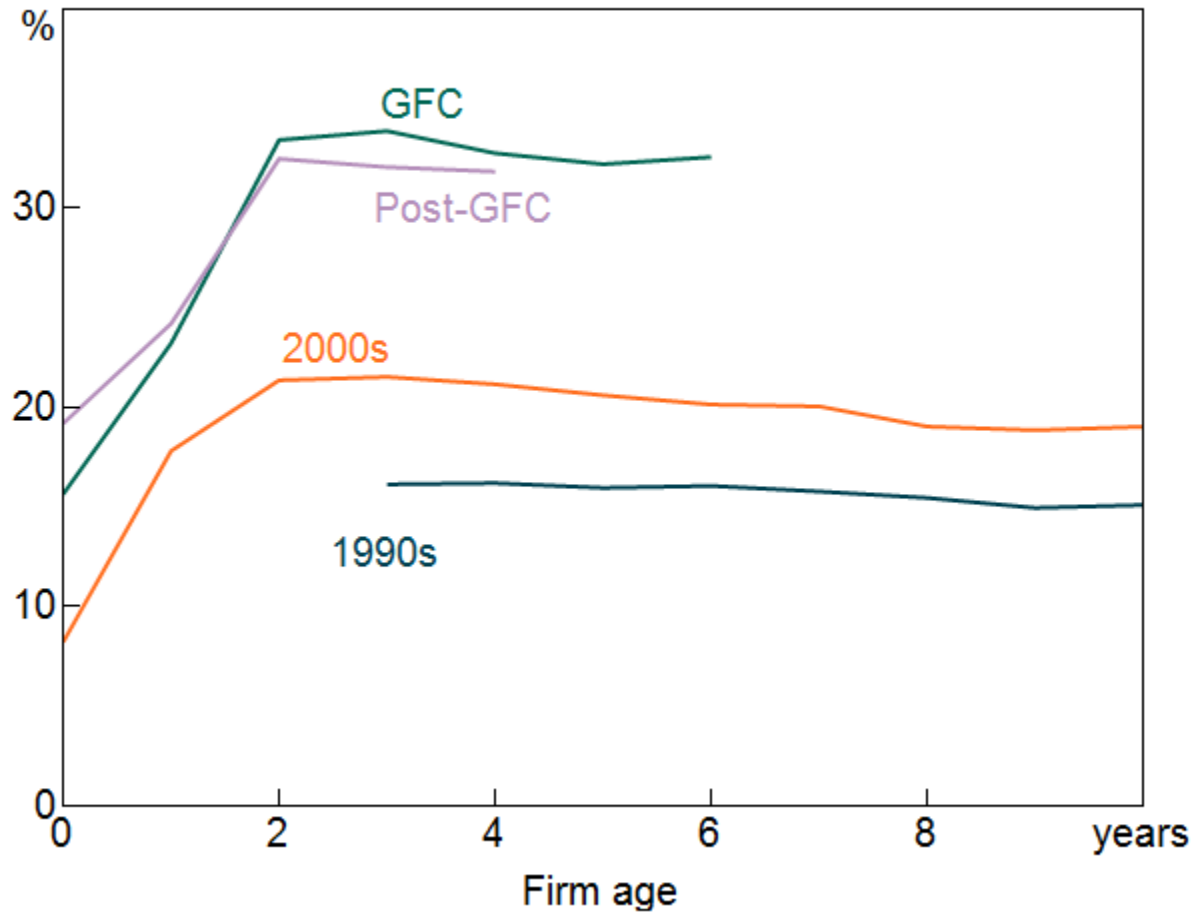


Sources: ABS; RBA



## Firm Profitability and Age

By birth cohort



Sources: ABS; RBA



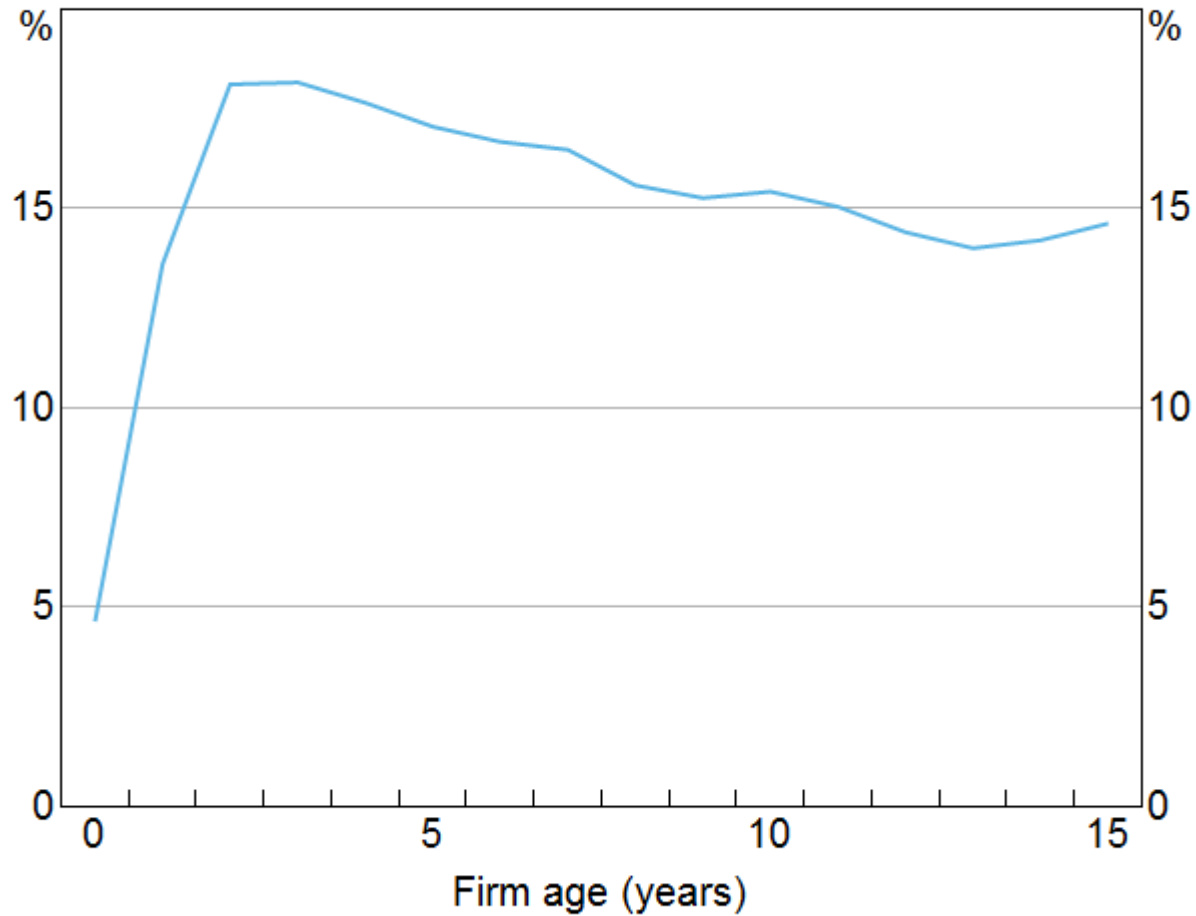
# Sample Selection and the Firm Lifecycle

- Profits increase with age
  - Is this learning by doing or survival of the fittest?
  - Ex post vs. ex ante lifecycles



## Firm Profitability and Age

Regression model estimates



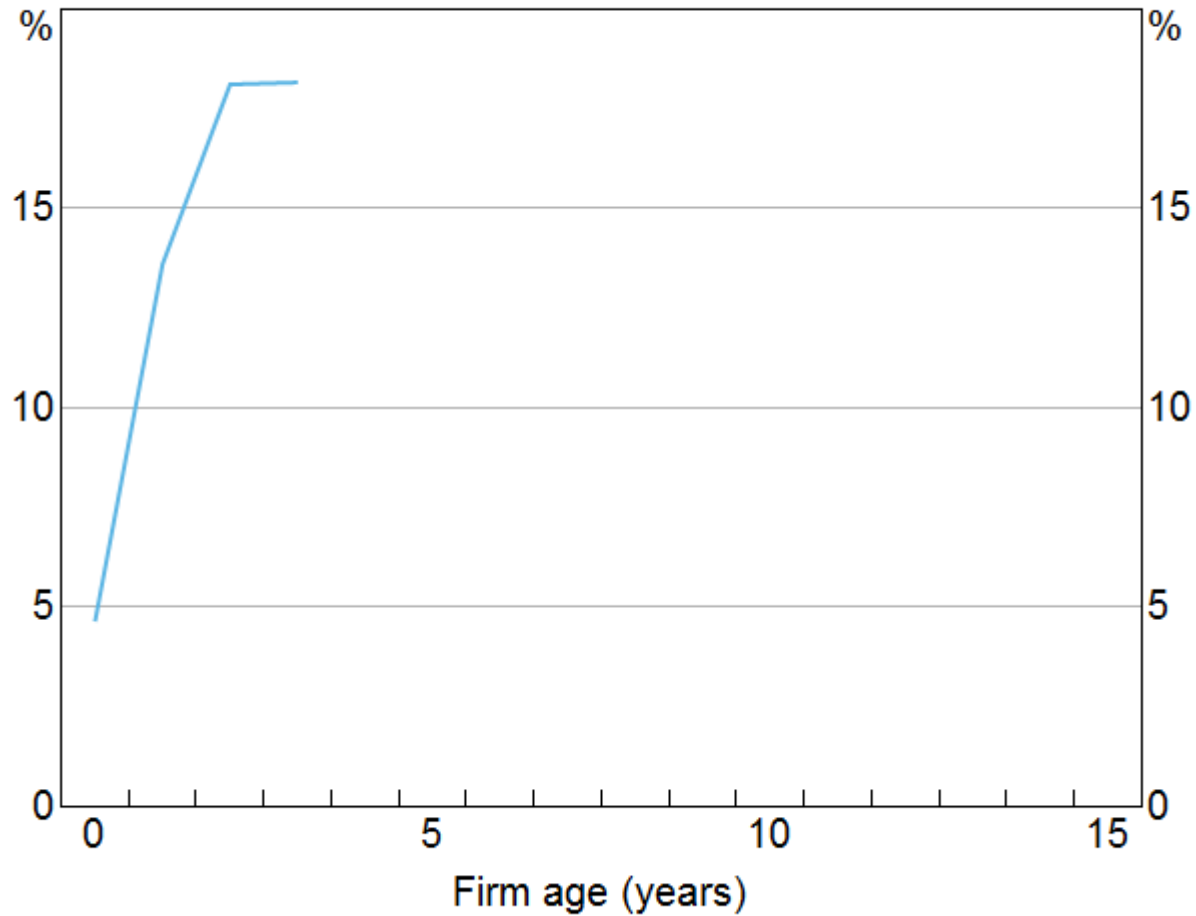
Sources: ABS; RBA





## Firm Profitability and Age

Regression model estimates



Sources: ABS; RBA



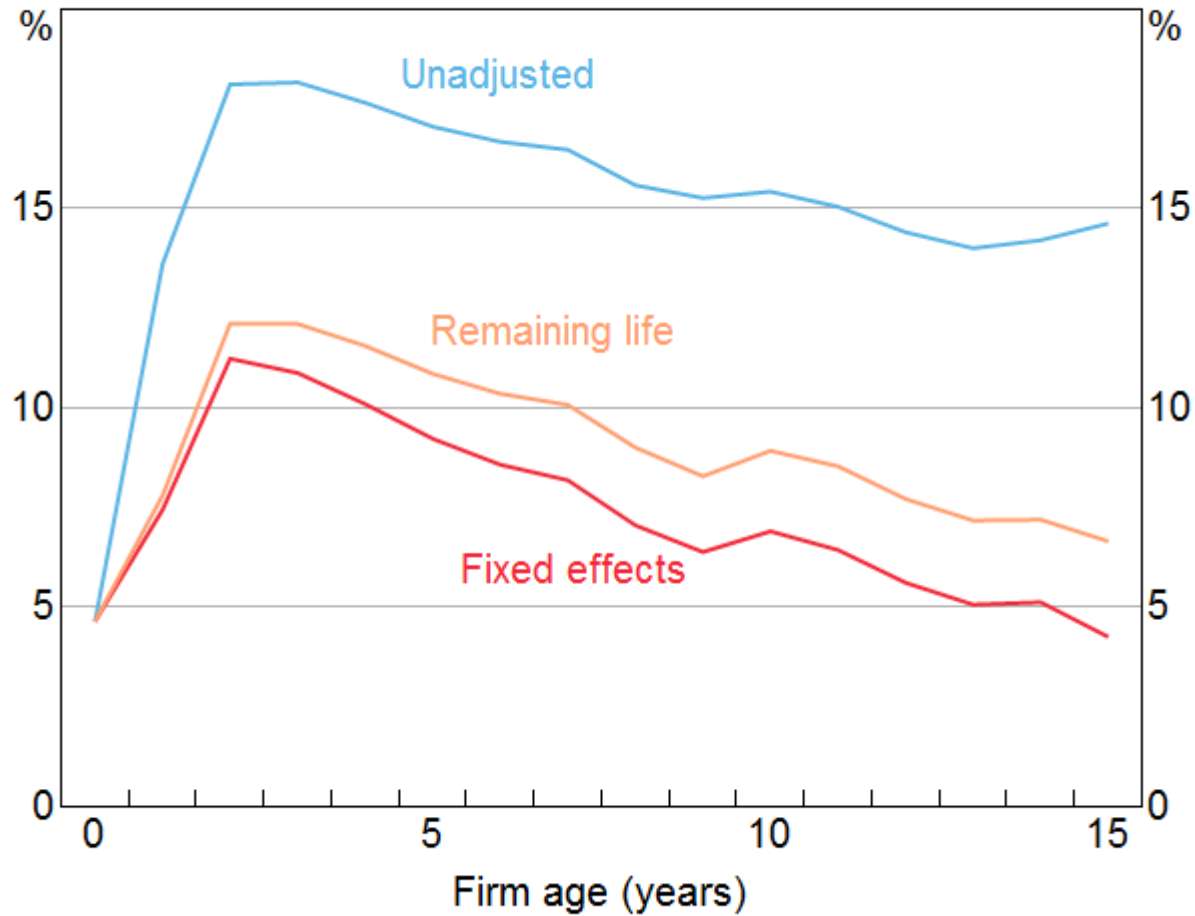
# Sample Selection and the Firm Lifecycle

- Profits increase with age
  - Is this learning by doing or survival of the fittest?
  - Ex post vs. ex ante lifecycles
- We gauge the importance of selection through...
  - Firm fixed effects
  - Controls for years of remaining life



# Firm Profitability and Age

Regression model estimates



Sources: ABS; RBA



# Conclusion

- Some new insights
  - Lifecycle matters – the first year of life is very important
  - Trends in birth cohort effects are puzzling
  - Sample selection matters a bit
- Some new work for us...
  - Explore the links between growth, financing and constraints
  - What does an ageing business population mean for the economy?