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.”

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

He was talking about the business lifecycle!
The Firm Lifecycle

Regression estimates; percent deviation from level at age zero

* 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:**

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

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

Companies

- New (0-1 years)
- Young (2-5 years)
- Middle-aged (6-10 years)
- Old (10+ years)

Unincorporated businesses

- New (0-1 years)
- Young (2-5 years)
- Middle-aged (6-10 years)
- Old (10+ years)

* Total assets in 2015 dollars, indexed to CPI
Sources: ABS; RBA
Leverage by Firm Age*

Mean estimates

Companies

%  
60 | 50 | 40 | 30 | 20 | 10 | 0

%  
60 | 50 | 40 | 30 | 20 | 10 | 0

Unincorporated businesses

New  (0-1 years)  Young  (2-5 years)  Middle-aged  (6-10 years)  Old  (10+ years)

* Total liabilities less accounts payable divided by total assets
Sources: ABS; RBA
Liquidity by Firm Age

Mean estimates

Companies

Unincorporated businesses

New (0-1 years)
Young (2-5 years)
Middle-aged (6-10 years)
Old (10+ years)

* Total current assets less accounts Receivable and inventories divided by total assets

Sources: ABS; RBA
Profitability by Firm Age*

Mean estimates

Companies

%  
\[\begin{array}{c}
\text{New (0-1 years)} \\
\text{Young (2-5 years)} \\
\text{Middle-aged (6-10 years)} \\
\text{Old (10+ years)} \\
\end{array}\]

Unincorporated businesses

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\end{array}\]

* 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

%

45
40
35
30
25

Post-GFC
GFC
2000s
1990s

Firm age
years

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
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Sample Selection and the Firm Lifecycle

- Profits increase with age
  - Is this learning by doing or survival of the fittest?
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- 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?