



Australian Government  
Department of Industry,  
Innovation and Science

Office of the  
Chief Economist

# Government Financial Assistance as Catalyst for Private Financing

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July 2018

# Financing markets

Recipe for market failure

- **Asymmetry:** Firm knows more about itself than investors
- **Lemons:** Investors, assuming the worst, refuse to finance or ask extraordinary concessions (Akerlof 1970)
- **Market Failure:** Anticipating this, firms do not seek financing (Myers & Majluf, 1984)

# Risky firms



Small

- Lack of collateral



Young

- Lack of collateral
- Lack of history



Innovative

- Uncertain outcomes  
(Westhead & Story, 1997; Freel, 1999, 2007; Carpenter & Petersen, 2002)

# Government assistance

Help is coming ...



can signal  
capability



makes firms  
financially more  
secure.



can act as  
collateral.



**R&DTI** increases likelihood  
and amount of financing to hi-  
tech and innovative firms  
(Lerner, 1999; Feldman & Kelley,  
2006; Takalo & Tanayama, 2010;  
Meuleman & De Maeseneire,  
2012)



# Behavioural additionality

Government policy can change behaviour of both sides (Buisseret et al., 1995)

**Investors**

- More willing to lend

**firms**

- More willing to apply for financing

**Testing for Australia**

# Data

Business Longitudinal Analytical Data Environment (BLADE)

## **Business Characteristics Survey**

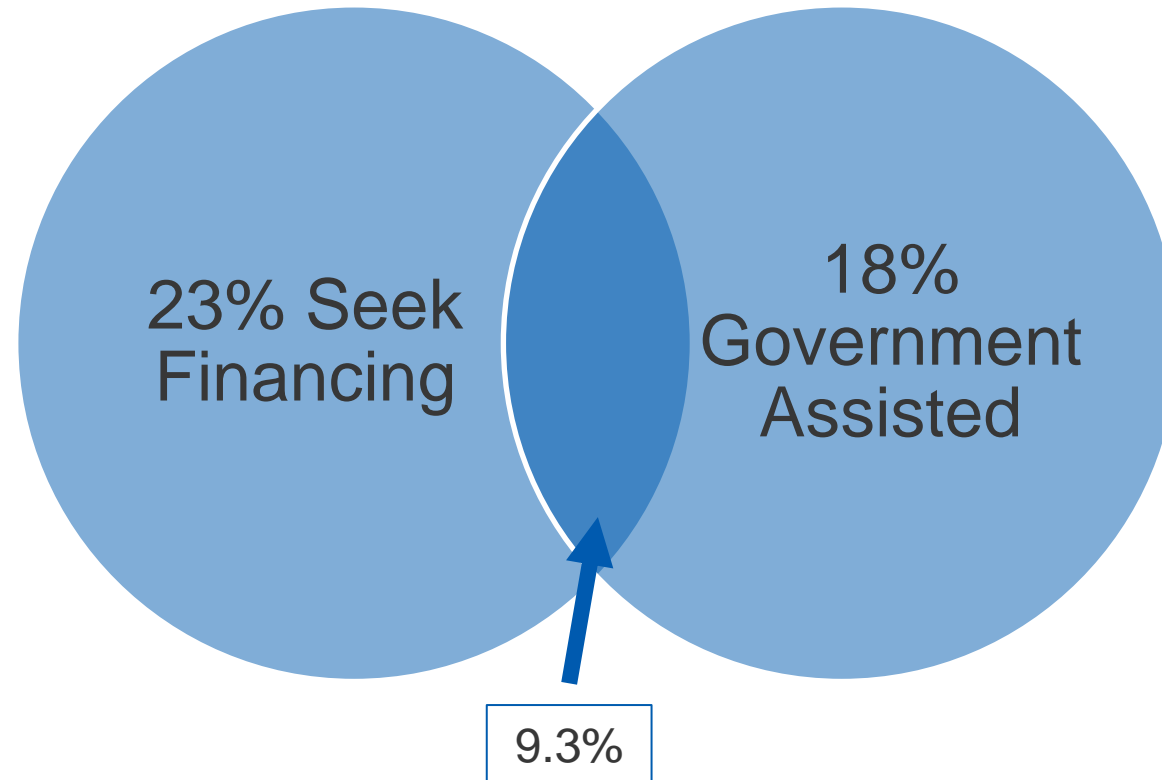
- Year 2005–2015
- About 8,000 firms a year
- Report if they sought financing
- Report if they obtained financing
- Report if they received government financial assistance
- age, etc.

## **Tax Reports**

- Assets (current, non-current)
- Liability

# Composition of data

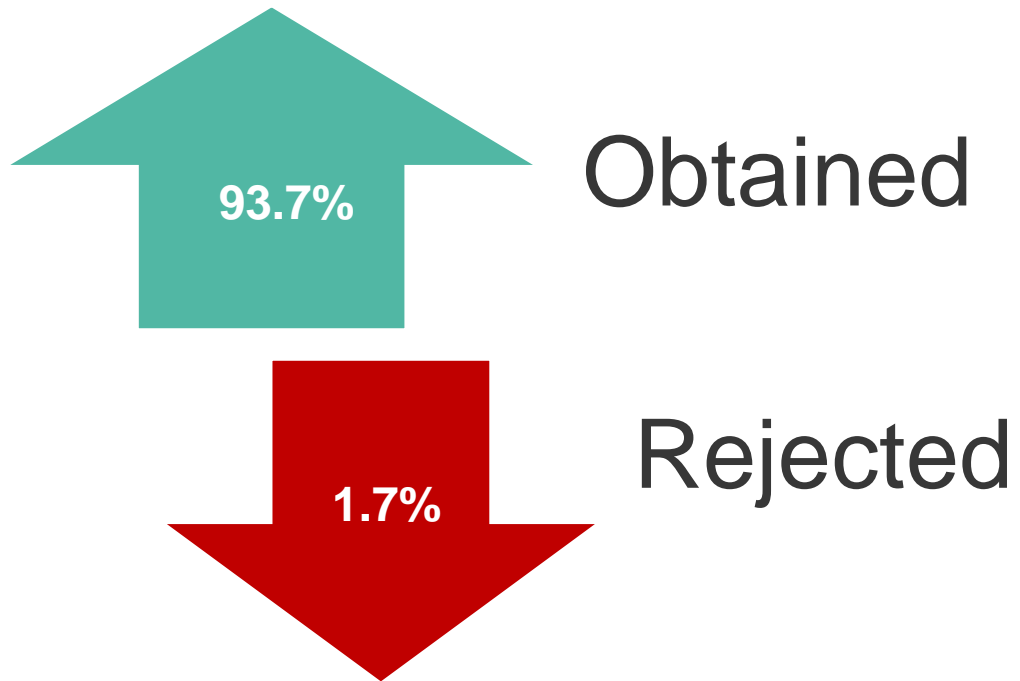
70,962  
firm-years



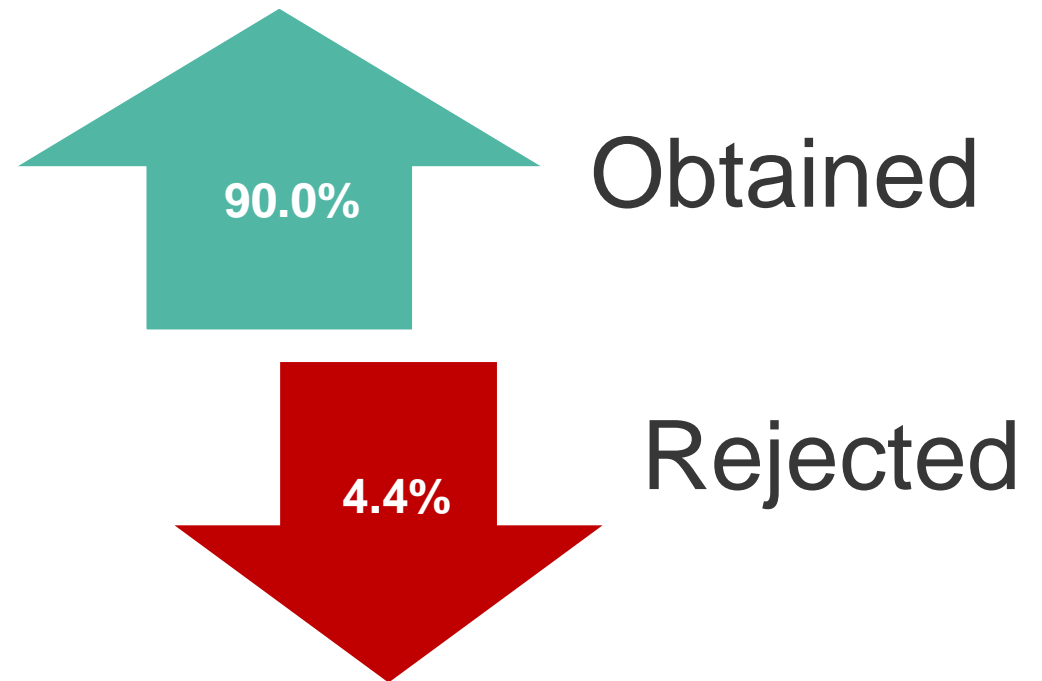
# Composition of data

Of firms seeking financing

Government assisted



Not government assisted





# Estimation process

## Selection biases

### One

Firms that apply for financing are generally more credit-worthy

**Solution:** Estimating a selection equation simultaneously with the main equation (Van de Ven & Van Praag, 1981)

### Two

Firms receiving government assistance are less credit-worthy

**Solution:** Apply inverse propensity weighting (Wooldridge, 2010)

# Estimation process

Full model

## **Selection** (*additionality on the part of firm*)

$$\text{Prob}[Finance_{ji,t+1}=1] = \Phi(\alpha_0 + \alpha_1 Gov_{jit} + X_{jit}\beta + \gamma Abandon_{jit} + \iota_i + \tau_t)$$

## **Conditional** (*additionality on the part of investor*)

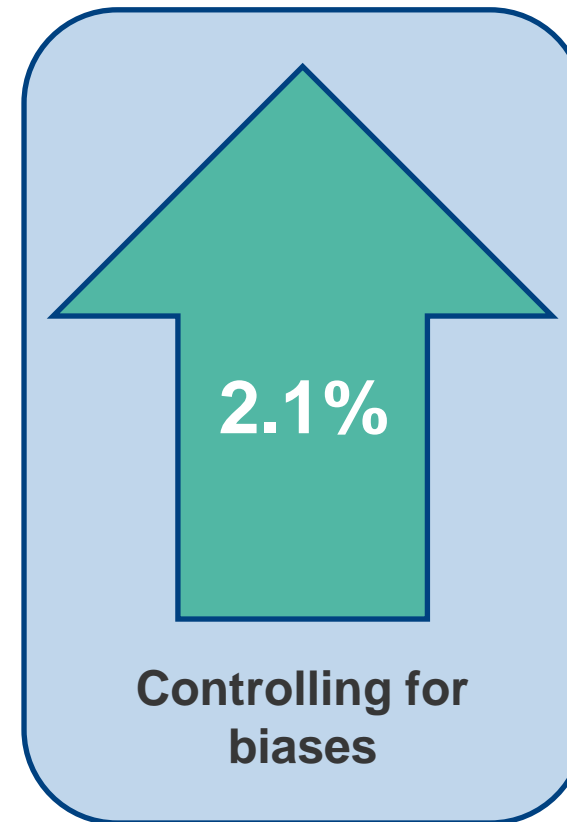
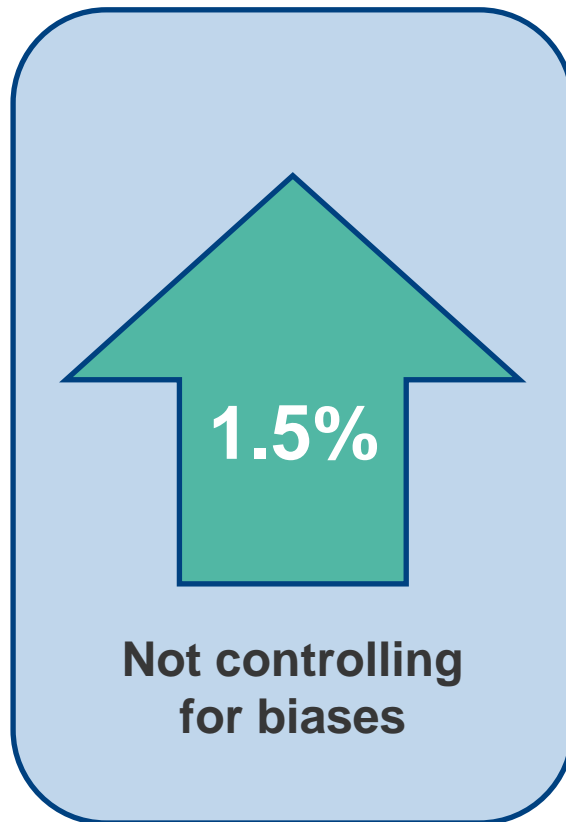
$$\text{Prob}[Obtain_{ji,t+1}=1] = \Phi(a_0 + a_1 Gov_{jit} + X_{jit}b + \iota_i + \tau_t)$$

- Controls: log assets, liquidity, leverage, whether the firm is young
- Applying a time lag to reduce reverse causality
- Inverse propensity weights applied

# Estimation results

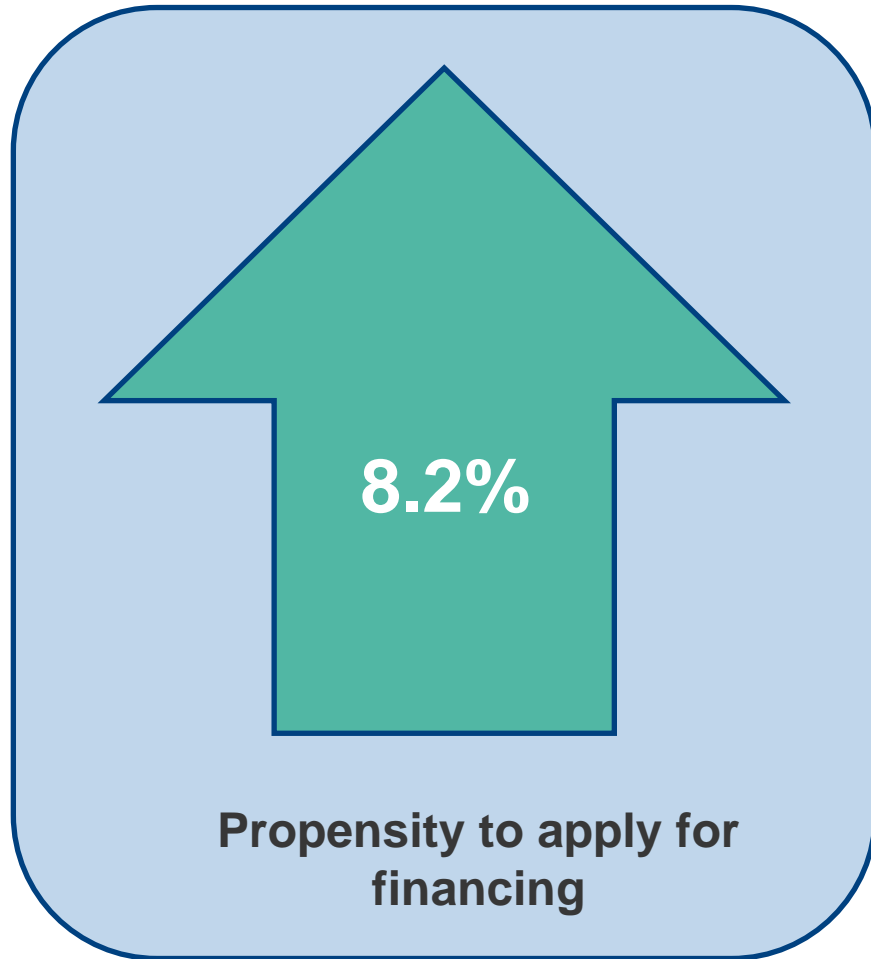
## Additionality: Investors

Change in propensity to obtain financing

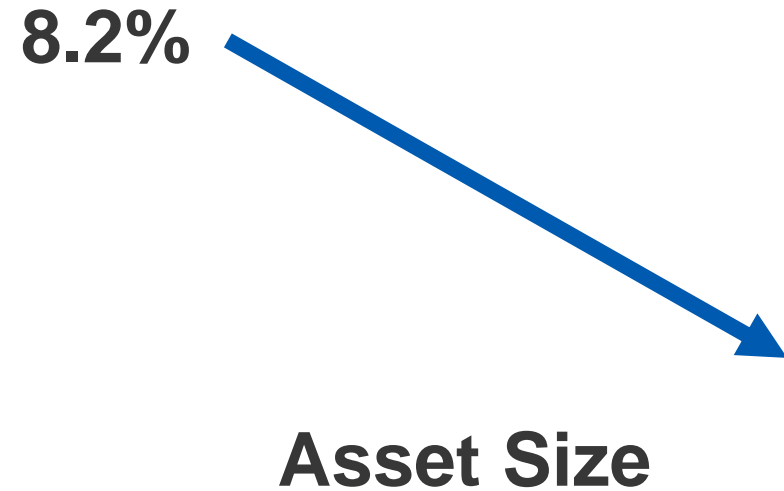


# Estimation results

## Additionality: Firms



The additionality diminishes with size



# Financing Innovation

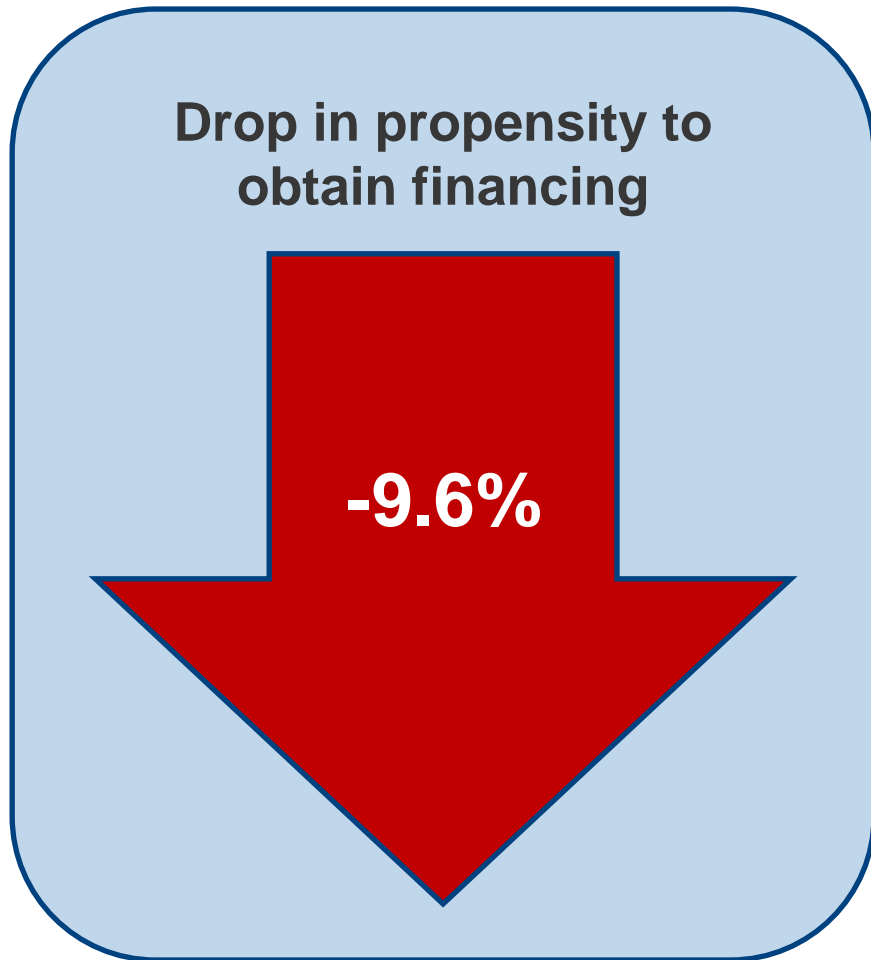
Are firms seeking financing for innovation being discriminated against?

## **Survey question**

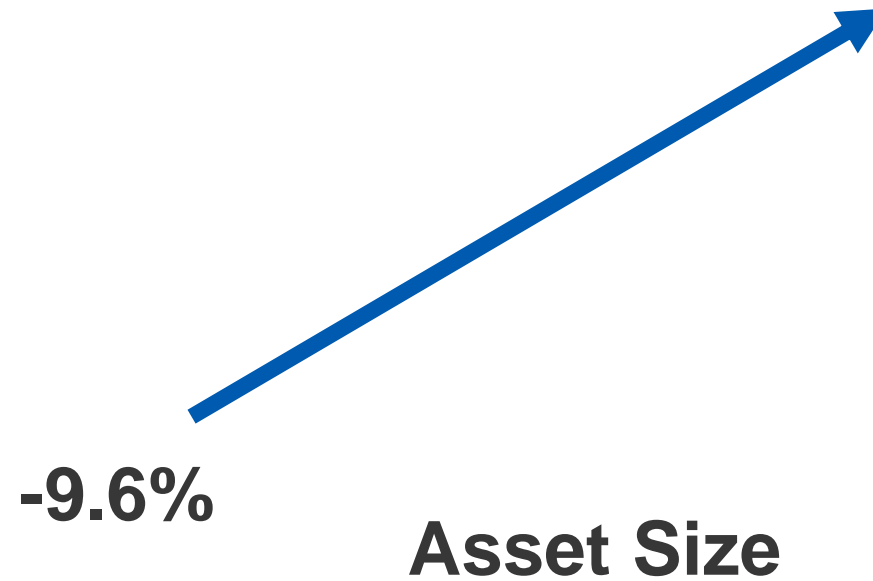
Whether firm is seeking financing to introduce new goods, services, or methods? (Yes/No)

# Financing innovation

Face of discrimination

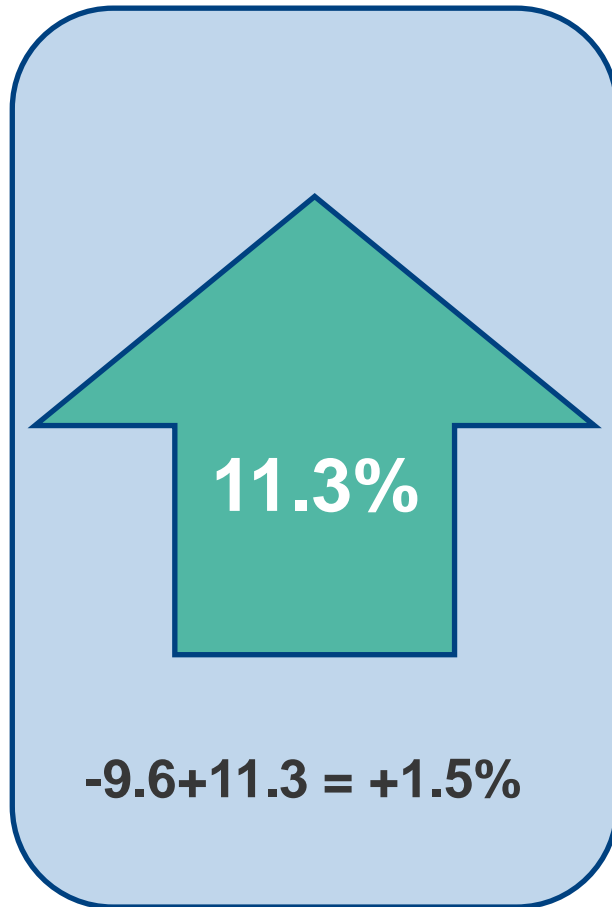


Discrimination diminishes with size

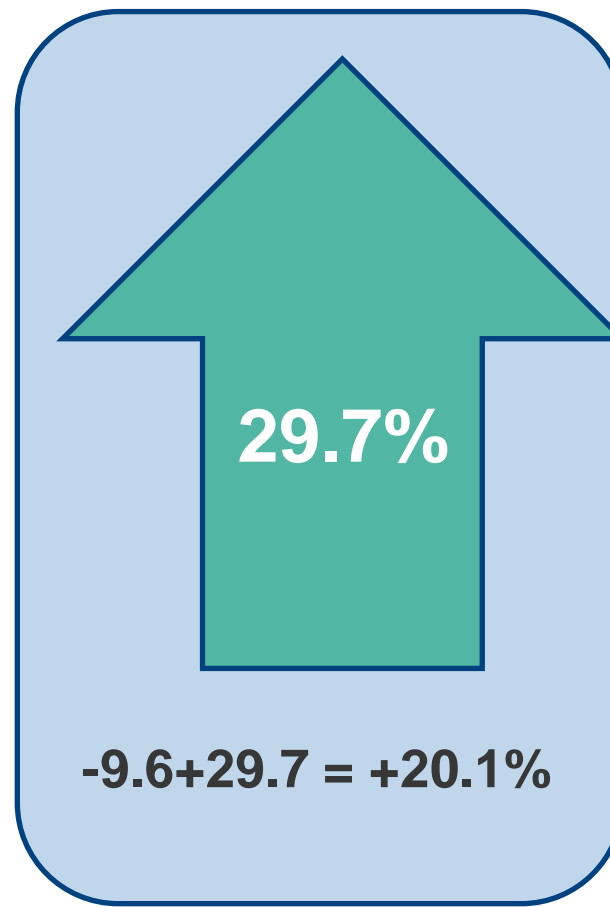


# Financing innovation

Impact of government assistance

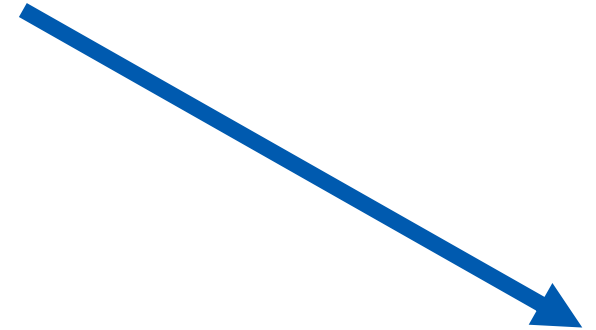


Small



Small & Young

The additionality  
diminishes with size



**Asset Size**

## Other results

- Subsidies and cash rebates increase the likelihood of financing
- Tax concessions increase likelihood of financing only for firms seeking to innovate (collateral effect)
- A larger number of simultaneous grants increase the likelihood of financing
- With too many grants, the likelihood falls.



# Conclusion

- Government assistance generates behavioural additionality on both sides
  - Investors are more willing to lend
  - Firms are more willing to apply (the larger effect)
- Innovative firms face larger discrimination
- Innovative firms get largest additionality from government assistance.
- Small and young firms are the biggest beneficiaries.

**Find the full paper on SSRN**  
**<http://www.ssrn.com>**

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