



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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Industry and Firm Analysis

Office of the Chief Economist

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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

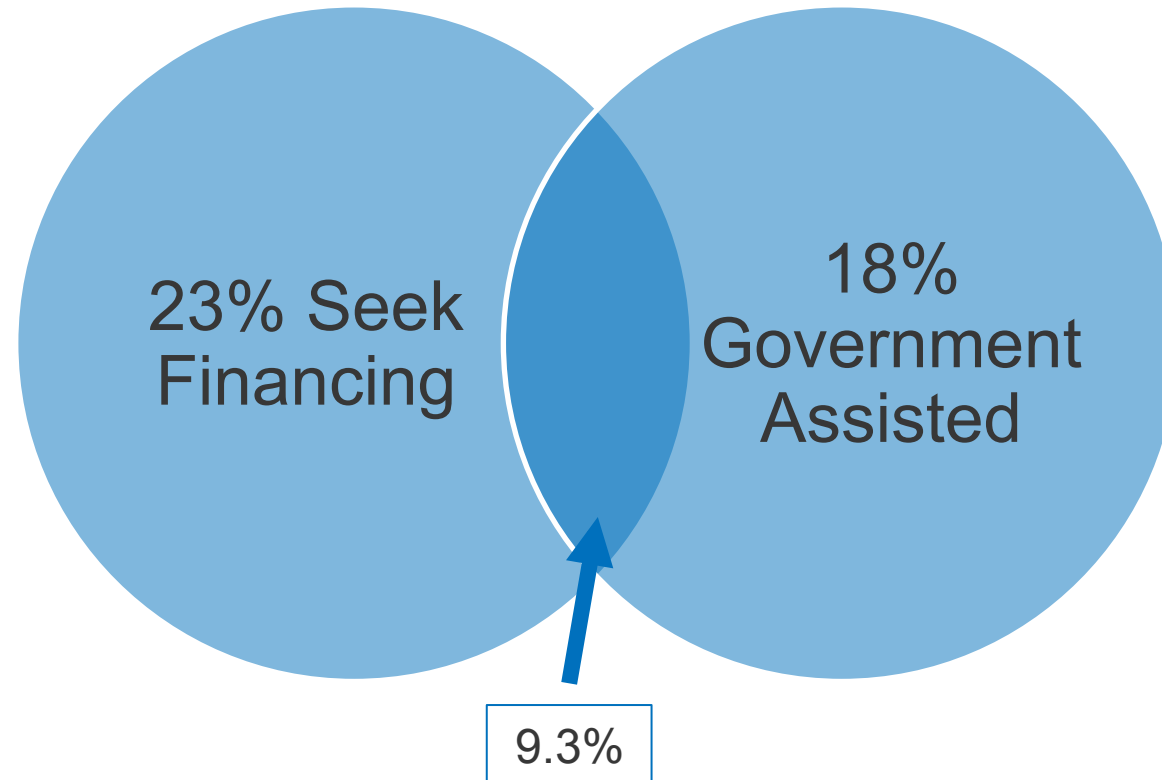
- Year 2005-2015
- About 8,000 firms a year
- Report if they sought financing
- Report if they obtained financing
- Report if they received government financial assistance
- age, etc.

Tax Reports

- Assets (current, non-current)
- Liability

Composition of data

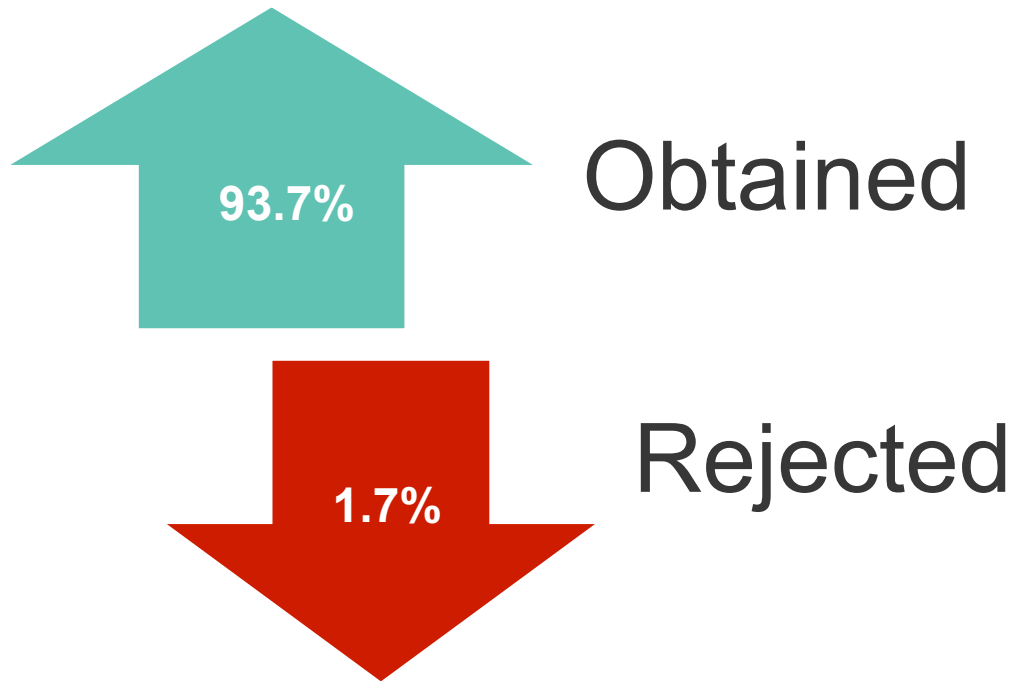
70,962 firm-
years



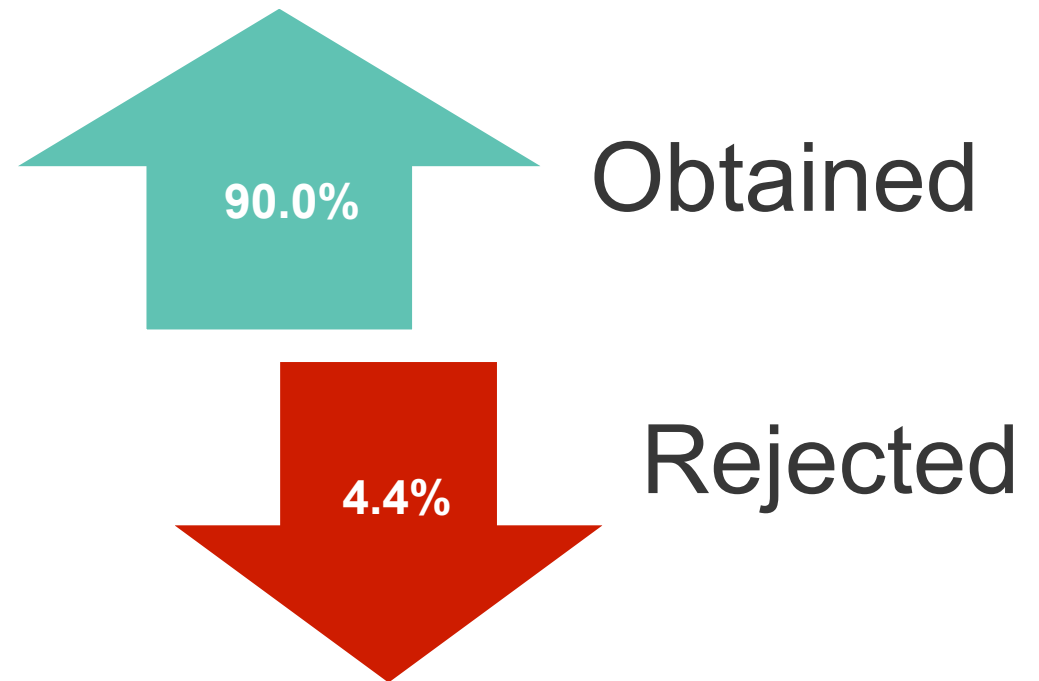
Composition of data

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*)

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

Conditional (*additionality on the part of investor*)

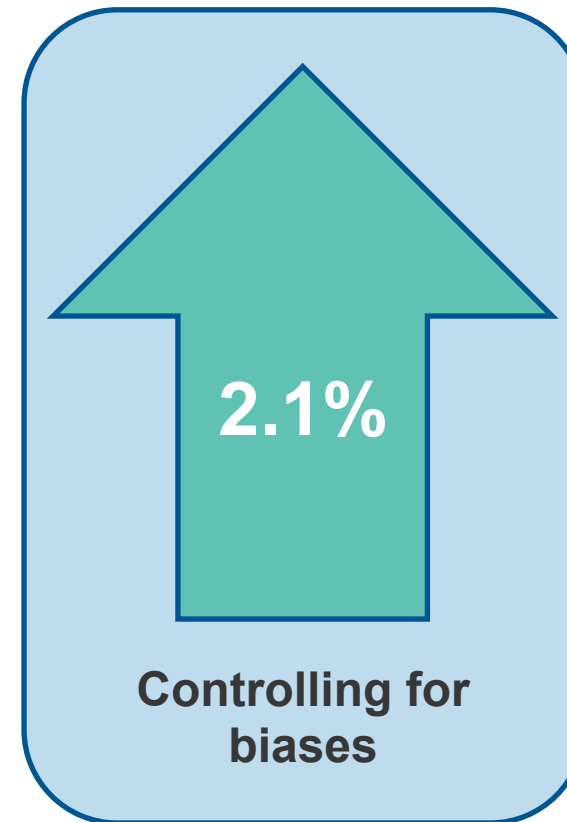
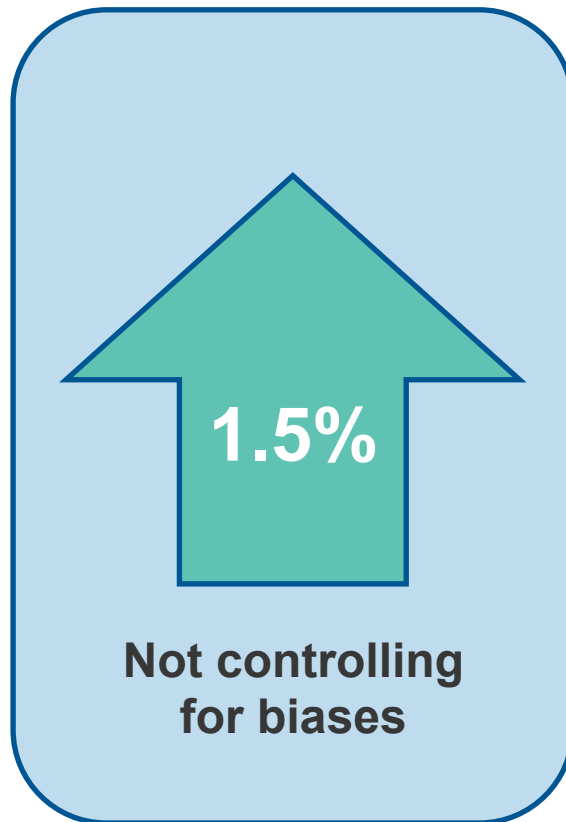
$$\text{Prob}[Obtain_{ji,t+1}=1] = \Phi(a_0 + a_1 Gov_{jit} + X_{jit}b + \nu_i + \tau_t)$$

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

Estimation results

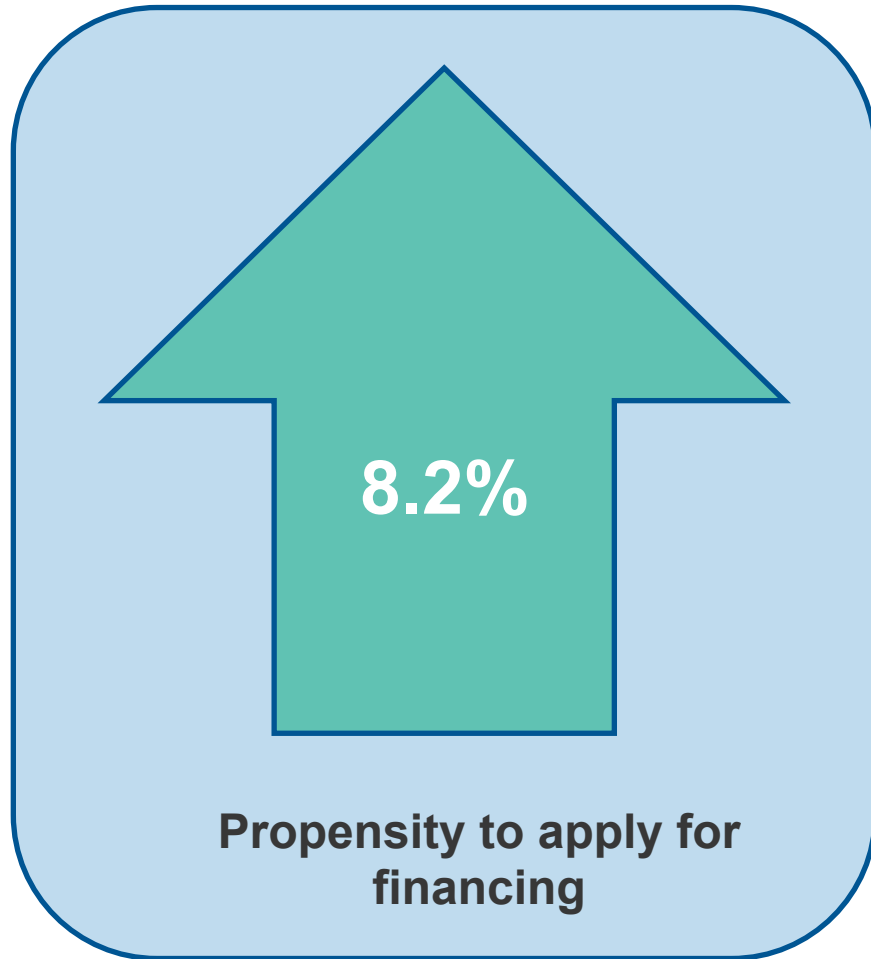
Additionality: Investors

Change in propensity to obtain financing

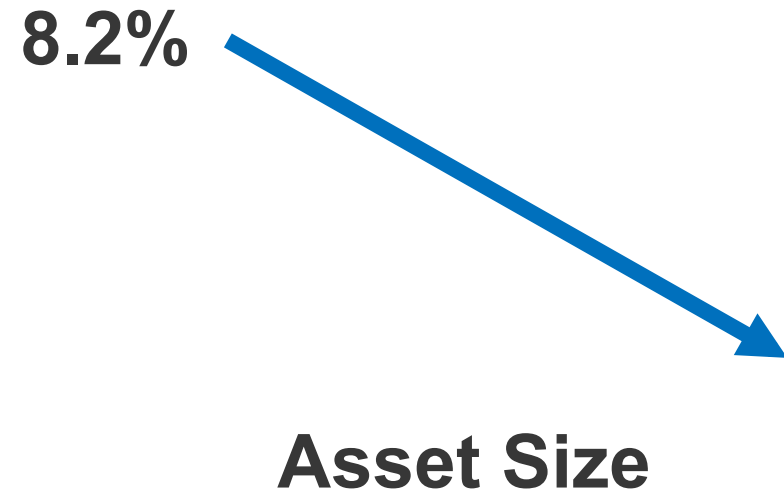


Estimation results

Additionality: Firms



The additionality diminishes with size



Financing Innovation

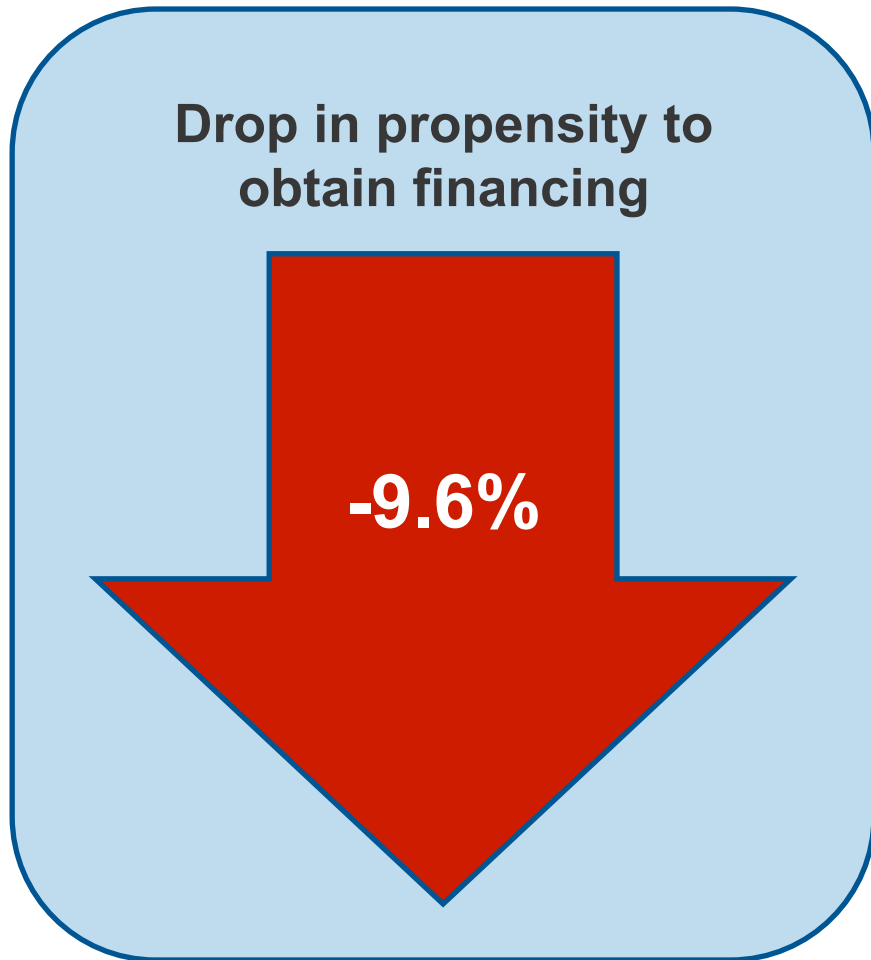
Are firms seeking financing for innovation being discriminated against?

Survey question

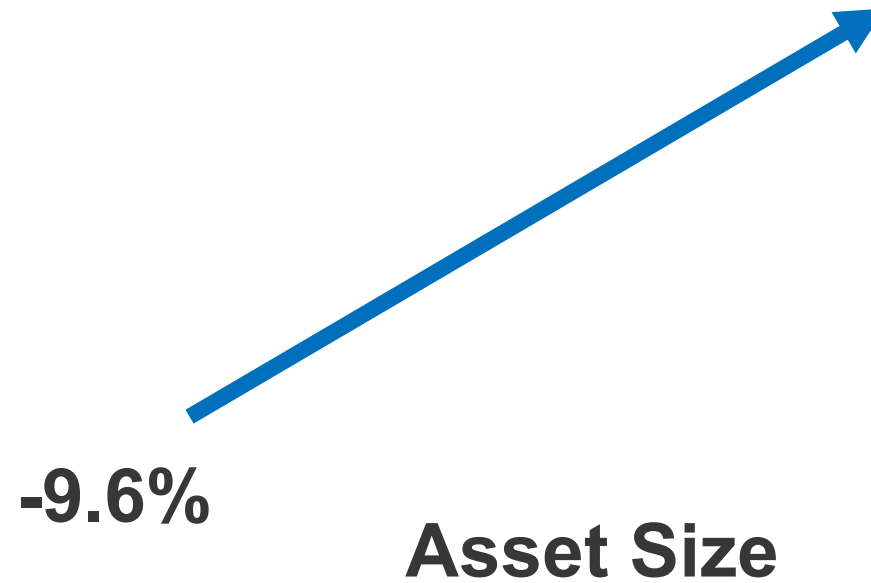
Whether firm is seeking financing to introduce new goods, services, or methods? (Yes/No)

Financing innovation

Face of discrimination



Discrimination diminishes with size

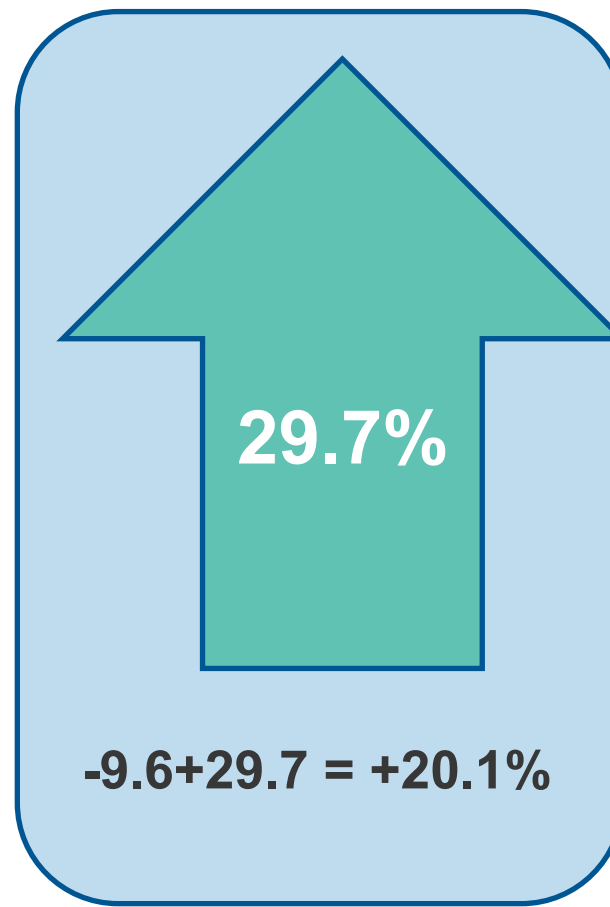


Financing innovation

Impact of government assistance

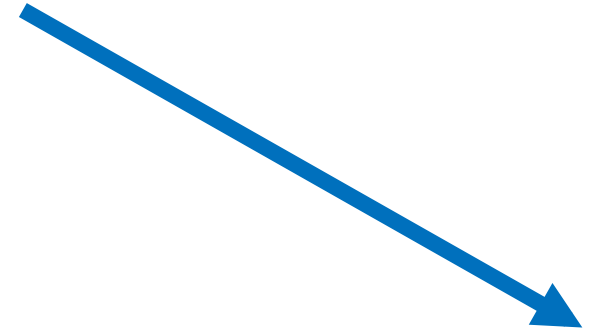


Small



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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