



Australian Government
Department of Industry,
Innovation and Science

Office of the
Chief Economist

Market Power and Entrepreneurship Decline: the Case for Australia

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Office of the Chief Economist
Australian Dept. of Industry, Innovation and Science

ACE 2019, Melbourne

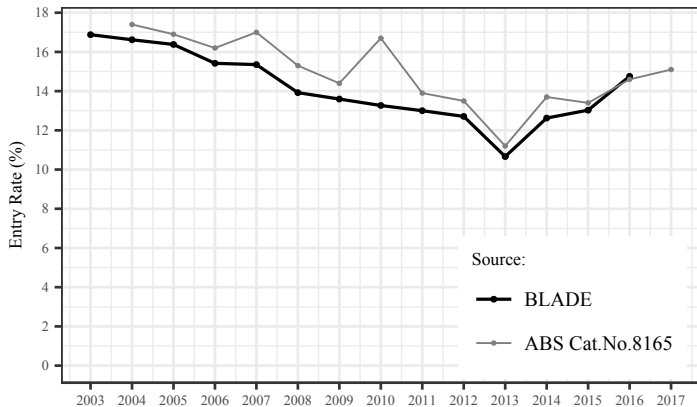


Background

- Entrepreneurship has been in decline in many industrial countries.
- Australia, too, experienced a steep decline till 2013.
- What caused the decline in entrepreneurship?



Firm entry rate in Australia



Source: BLADE and ABS

Is it market power?

Market concentration increased slightly since 2005.

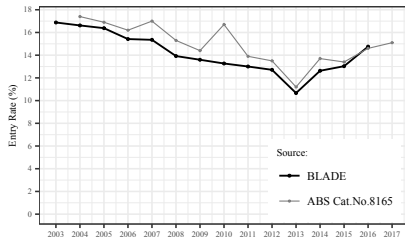
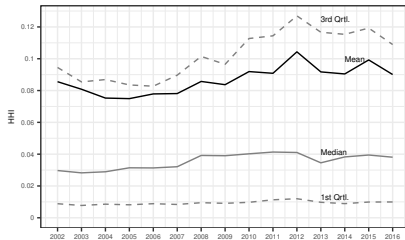


Number of entrepreneurs in Australia has been falling in tandem.

Competition in concentrated markets.



Market concentration in Australia

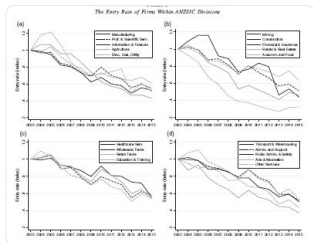




Andrew Leigh ✓
@ALEighMP

Follow

I've been arguing in recent years that Australia has a start-up problem. Now, a study using BLADE data find that the decline in firm entry rates has occurred across most industries. We need more new firms & fewer monopolies onlinelibrary.wiley.com/doi/10.1111/14... #ausecon



4:06 PM - 21 Apr 2019

Elsewhere ...

Market concentration is increasing:

- US: Autor et al. (2017) and Shambaugh et al. (2018).
- OECD: Gushanski & Onaran (2018).
- North America and EU: Bajgar et al. (2019).

Shambaugh et al. (2018) discusses the connection between increasing market concentration and falling entrepreneurship in the US.



Research plan

1. Defining a measure of market power.
2. Parametric estimation of market power-firm entry nexus.
3. Semi-parametric estimation of market market power-firm entry nexus.
4. Using semi-parametric model to quantify the impact of market power.



Data

Business Longitudinal Analysis Data Environment (BLADE)

- Provided by Australian Bureau of Statistics.
- Universe of firms registered for taxes.
- Covers years 2001–02 (2002) to 2015–16 (2016).
- Around two million firms a year.
- Turnover, exports, FTE, etc.

Dropping:

- * Government sector (ANZSIC 751–772, 621),
- * Financial asset investing (ANZSIC 6240),
- * Superannuation funds (ANZSIC 6330)



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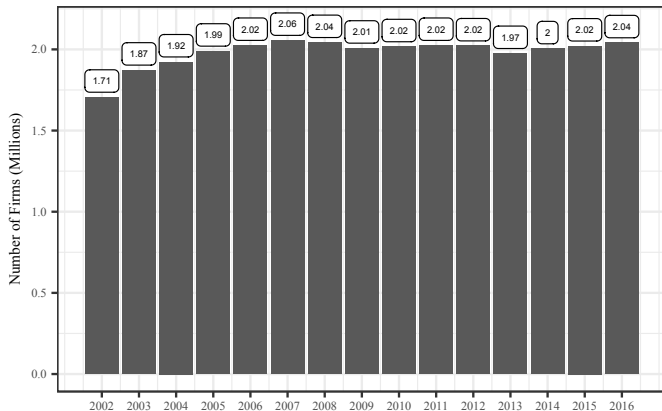
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Count of firms



Source: BLADE

Part 1

Index of Market Power



Market power

Step 1: Market concentration

- Focusing on monopoly (horizontal) power.
- Herfindahl–Hirschman Index (HHI).
- Imperfect measure of market power.
- Lerner's index: requires unobserved information.

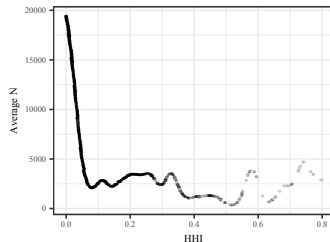


Market power

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Average firm population by HHI



Source: Bakhtiari (2019)

Market power

Step 2: Derivation of market power index

Point 1: Market power high where markets concentrated and firm population low.

Point 2: Market power low where markets concentrated and firm population high.

Market power index:

Principal component of HHI and log of firm population.

- Really monopoly power
- Includes natural monopolies



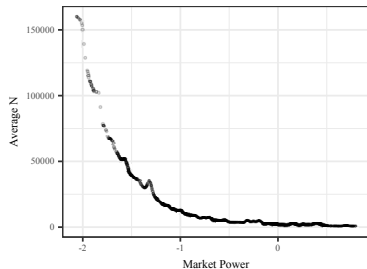
Inspecting the index

Statistic	HHI	N	E	Market Power
Mean	0.087	9,760.4	1,301.1	0
Std.Dev.	0.134	19,438.7	2,645.6	1.222
10th Pctl.	0.003	245	7	-1.304
1st Qrtl.	0.009	641	44	-0.868
Median	0.036	2,615	253	-0.182
3rd Qrtl.	0.102	9,339	1,050	0.669
90th Pctl.	0.227	27,120	4,191	1.487
#Obs		3,045		



Inspecting the index

Average firm population by Market Power



Source: Bakhtiari (2019)

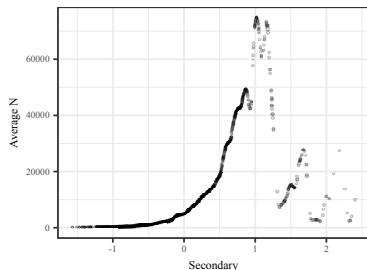
Correlations:

	HHI	N	E	ExpInt
N	-0.226			
E	-0.220	0.885		
ExpInt	0.047	-0.176	-0.174	
Market Power	0.864	-0.519	-0.505	0.159



Secondary index

Average firm population by Secondary



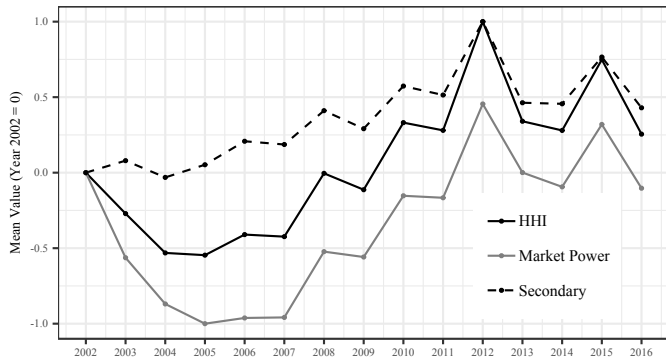
Source: Bakhtiari (2019)

Correlations

	Secondary
HHI	0.504
N	0.442
E	0.430
ExpInt	-0.179
Market Power	0



Time trends



Note: Series shifted to start from zero

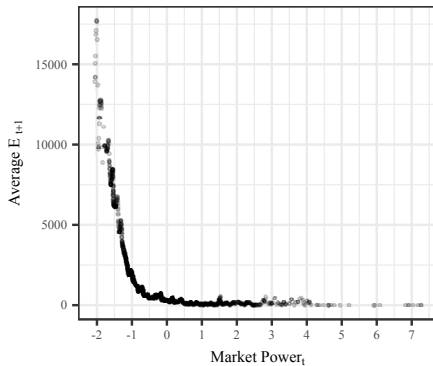
Source: Bakhtiari (2019)

Part 2

Parametric Modelling



Firm entry and market power



Source: Bakhtiari (2019)



A Negative Binomial Regression

Firm entry is count data:

$$\mathbb{E}[E_{i,t+1}] = \exp \left(a_0 + a_1 \text{Market Power}_{it} + a_2 \text{Secondary}_{it} + \tau_t \right).$$

- τ : year dummies
- i : industry
- t : time
- $\Delta \text{Market Power}_{it} = \text{Market Power}_{it} - \text{Market Power}_{i,t-1}$.



Estimation results

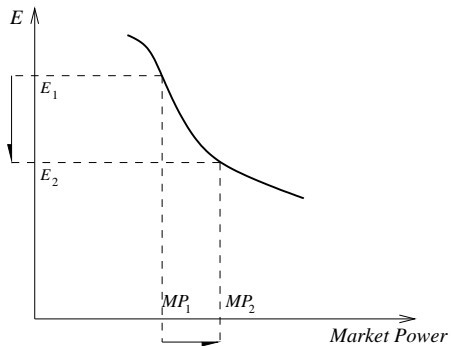
Variable	Dependent: Number of firm entries		
	(1)	(2)	(3)
Market Power _t	-1.310*** (0.009)	-1.306*** (0.009)	-1.288*** (0.020)
Secondary _t	1.397*** (0.014)	1.419*** (0.015)	1.426*** (0.017)
ΔMarket Power _t		-0.114*** (0.033)	-0.116*** (0.033)
Market Power × Market Power			-0.009 (0.009)
Log Likelihood	-18,361.3	-17,008.1	-17,007.6
Wald χ^2	4.10×10^5	3.78×10^5	3.78×10^5
#Obs	2,842	2,639	2,639

Part 3

Semi-parametric Modelling



The idea



Source: Bakhtiari (2019)



Yatchew's method

General specification

$$E_{+1,k'} = G(\text{Market Power}_{k'}) \times \exp \left(\alpha_A \text{Secondary}_{k'} + \sum_{s=2002}^{2015} \alpha_s T_{k',s} \right),$$

– $G(\cdot)$ smooth function with bounded derivatives

– Taking a log to linearise the specification

$$\log(E_{k'}) = \log(G(\text{Market Power}_{k'})) + \alpha_A \text{Secondary}_{k'} + \sum_s \alpha_s T_{k',s}.$$



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Yatchew's method

Step 1:

- Sort observations by ascending order of Market Power,
- Take difference of neighbouring observations,
- $\log(G(*_k)) - \log(G(*_{k-1})) \simeq 0$,
- Estimate α_A and α_S using OLS.

Step 2:

- Subtract the parametric part from $\log(E)$,
- Estimate $G(\cdot)$ using kernel regression, splines, etc.



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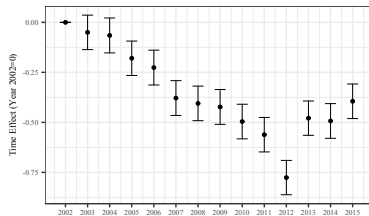


Step 1

Estimation results

Variable	Coefficient	Std.Err.
Secondary	1.420***	(0.020)
R ²	0.662	
F	424.4***	
#Obs	2,831	

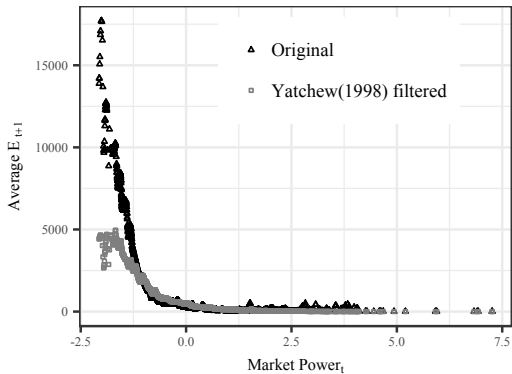
Estimated time effects



90% CI shown

Source: Bakhtiari (2019)

Step 2: Estimation result



Source: Bakhtiari (2019)

Predictions

Change in firm entry from t_1 to t_2

- keep all fixed except Market Power
- find changes by 3digit ANZSIC and sum up

From	Years		Average Δ Market Power	ΔE_{+1}	$\widehat{\Delta E}_{+1}$
		To			
2002		2015	0.046	-14953	93,544.6
2002		2007	-0.116	-31698	107,371.0
2007		2012	0.101	-73786	3,908.8
2012		2015	0.062	90532	321,903.9



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Conclusion

- I propose a new way to measure market power based on readily observable data.
- Firm entry has been declining in tandem with an increase in market power.
- Market power does not offer any clues.
- Most of the drop in firm entry is due to a secular trend.



Further Information

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