



Australian Government
Productivity Commission

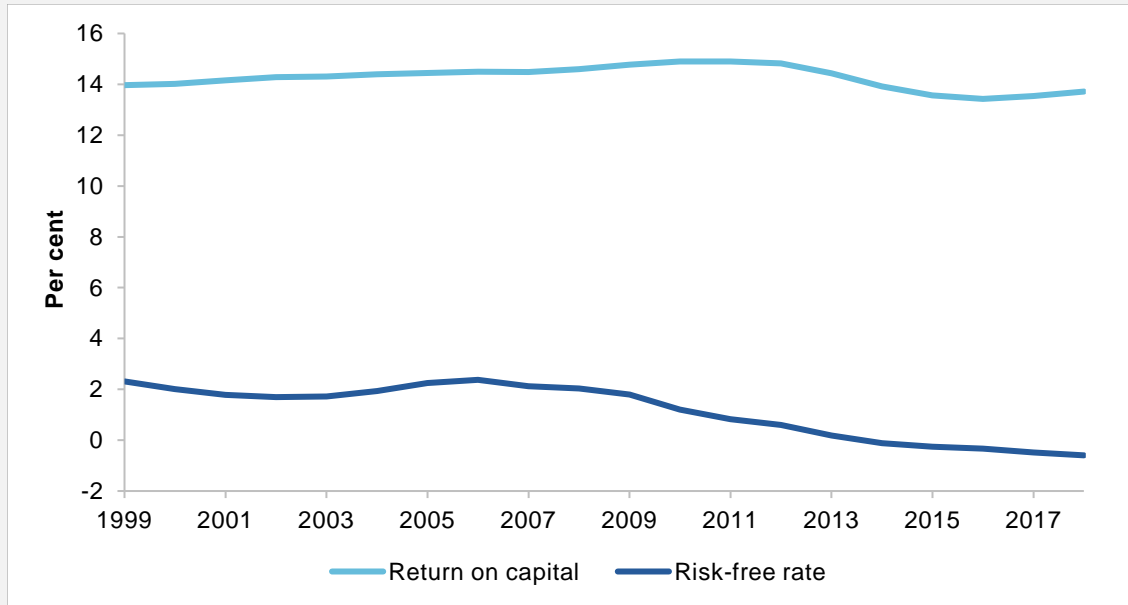
Does a rising risk premium contribute to capital shallowing in Australia?

Australian Conference of Economists, Hobart, 12 July 2022

Shane Evans

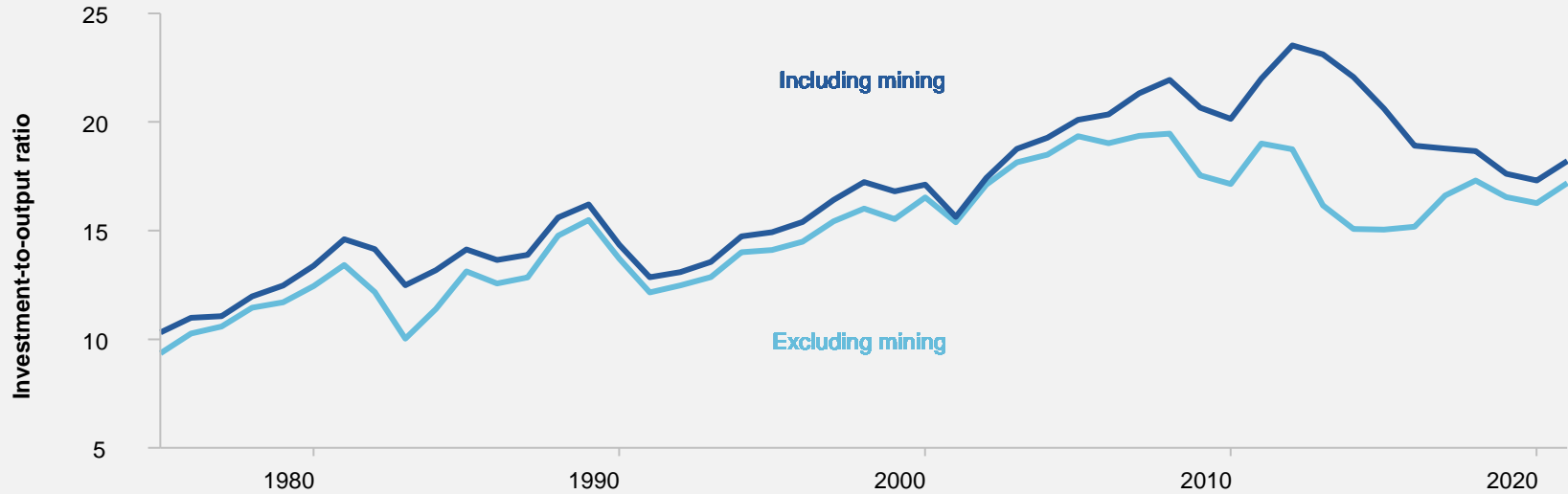
James Thiris

Returns to private capital and the risk free rate



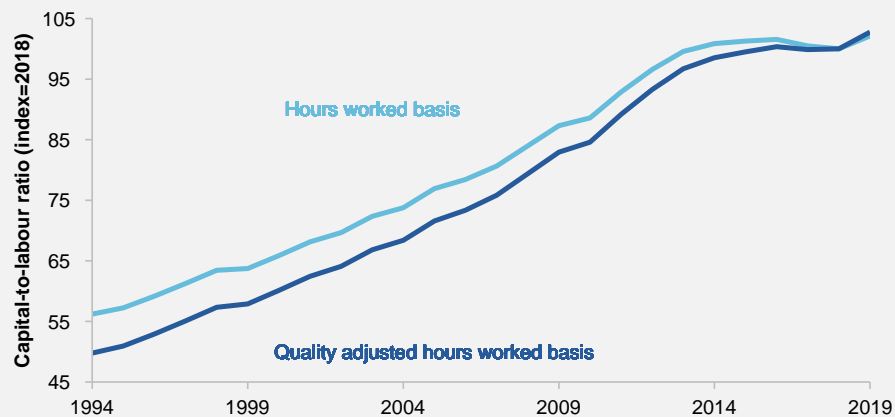
What is the contribution of
(1) risk and
(2) market power
to this growing wedge?

Private investment has been stagnating

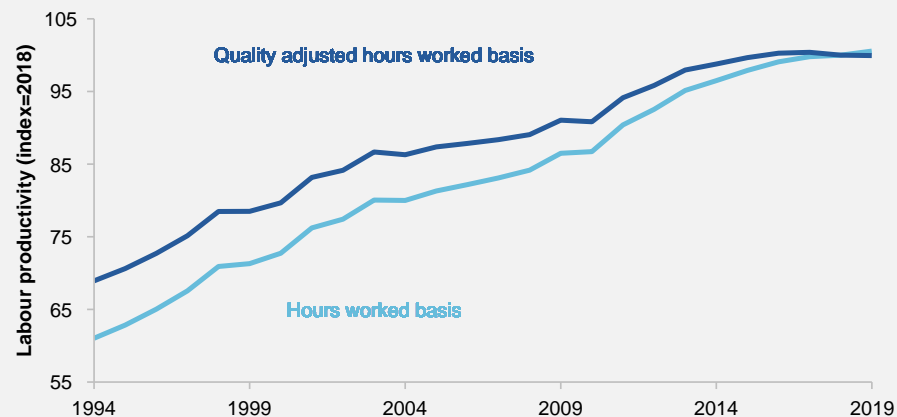


Labour productivity and capital shallowing

Capital-labour ratio growth has slowed



Labour productivity growth has slowed



Risk & market power in a macro-finance framework

- Use Farhi & Gourio's 2019 macro-finance accounting growth framework
- Apply Australian data to estimate changes to ERP and market power

Risk preferences

Zin-Epstein preferences
separate risk from time

- *CRRA*
- *IES*

Shocks

- Productivity
- Capital

Gordon growth formula

Market power

Market power affects the income
distribution

- Common markup $\mu > 1$
- Labour share $s_L = 1 - \alpha/\mu$
- Pure profit share $s_\pi = \mu - 1/\mu$
- True capital share $s_C = \alpha/\mu$

Risk-adjusted BGP

Euler equation is adjusted for
risk and has market power

On the BGP, the Euler equation
is the condition that the risk-
adjusted user cost of capital
equals marginal revenue

Decomposing the 'wedge'

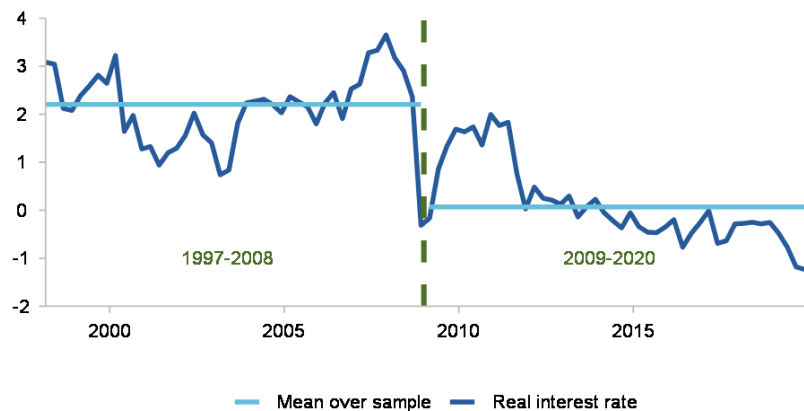
The model's parameters can be identified using the measurements of 'big ratio' moments for Π/Y , I/K , P/D estimated over the pre- and post- GFC eras

$$MPK = \underbrace{(r_f + \delta + g_Q)}_{\text{Riskless user cost}} + \underbrace{\frac{\mu - 1}{\alpha}}_{\text{Market power}} \underbrace{(r_f + \delta + g_Q)}_{\text{Riskless user cost}} + \underbrace{(r^* - r_f)}_{\text{Risk premium}}$$

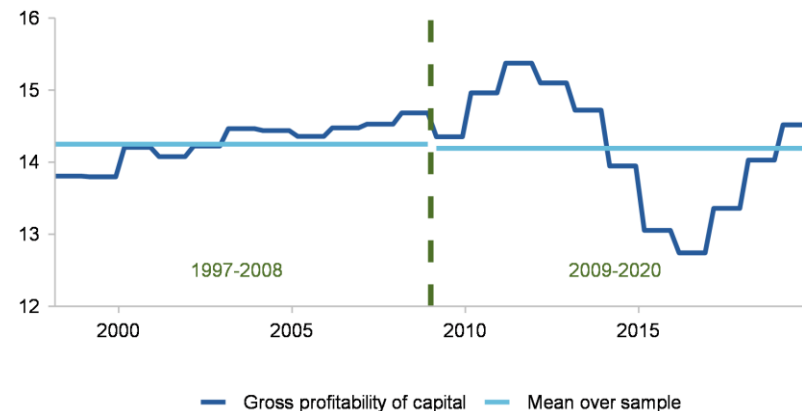
Matching to the big ratio moments allows for an estimate of each component of the wedge and its change over time

Moments use in the calibration...

Real interest rates

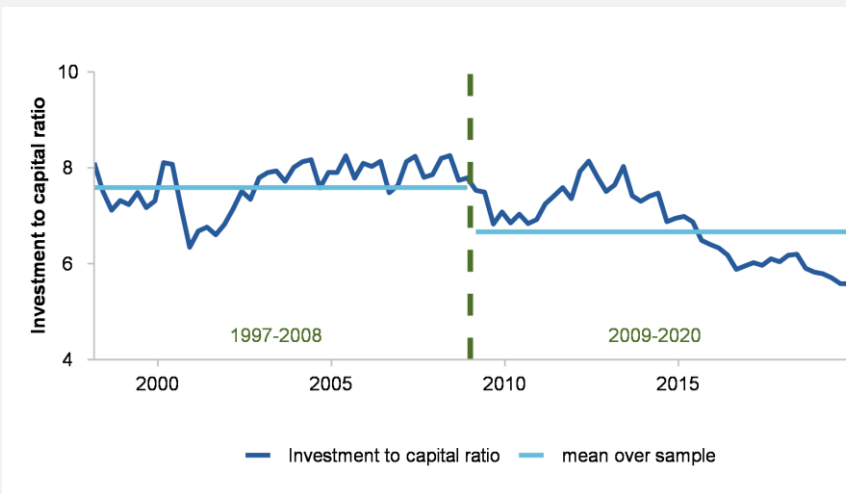


Gross profitability of capital

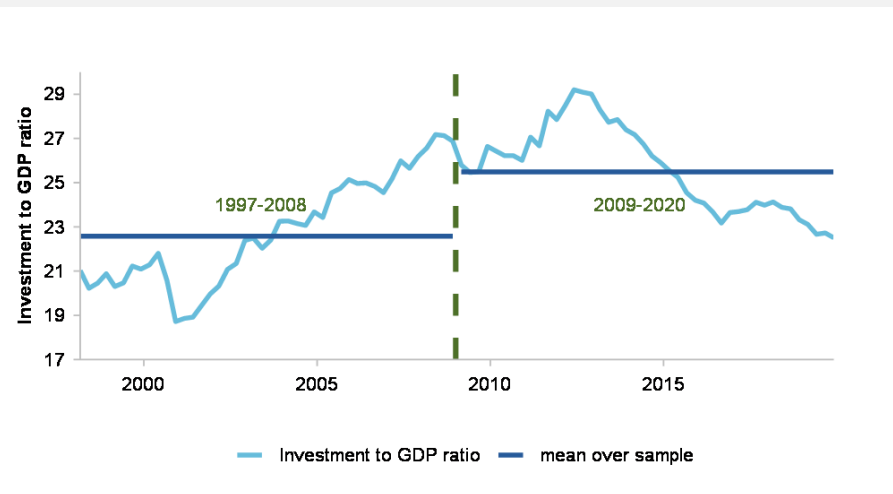


Moments use in the calibration...

Investment to capital

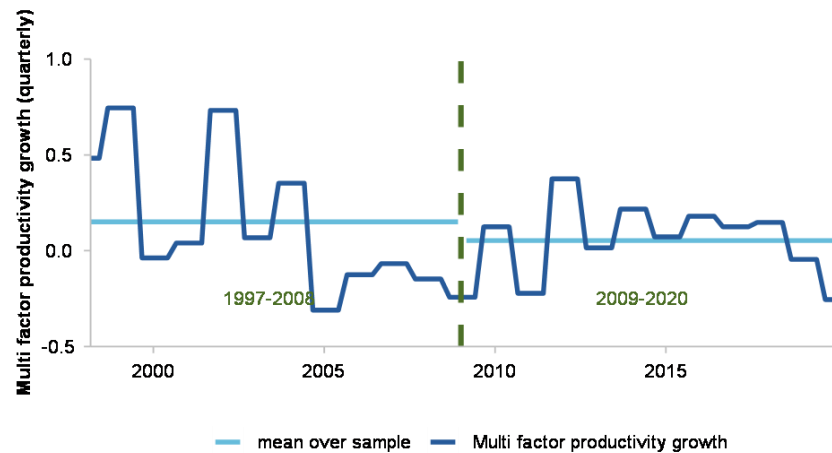


Investment to GDP ratio

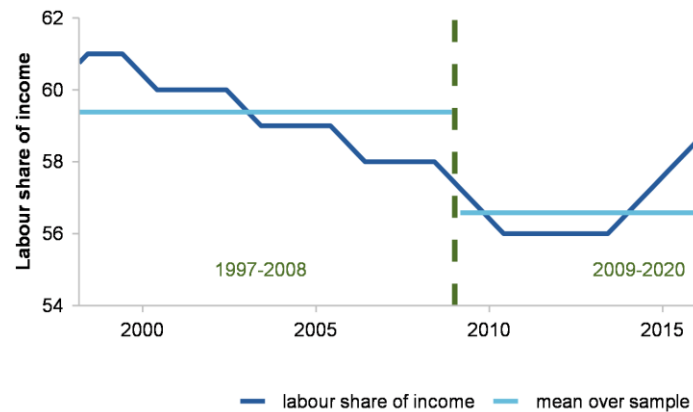


Moments use in the calibration...

Productivity



Labour share of income



Data used to determine model parameters

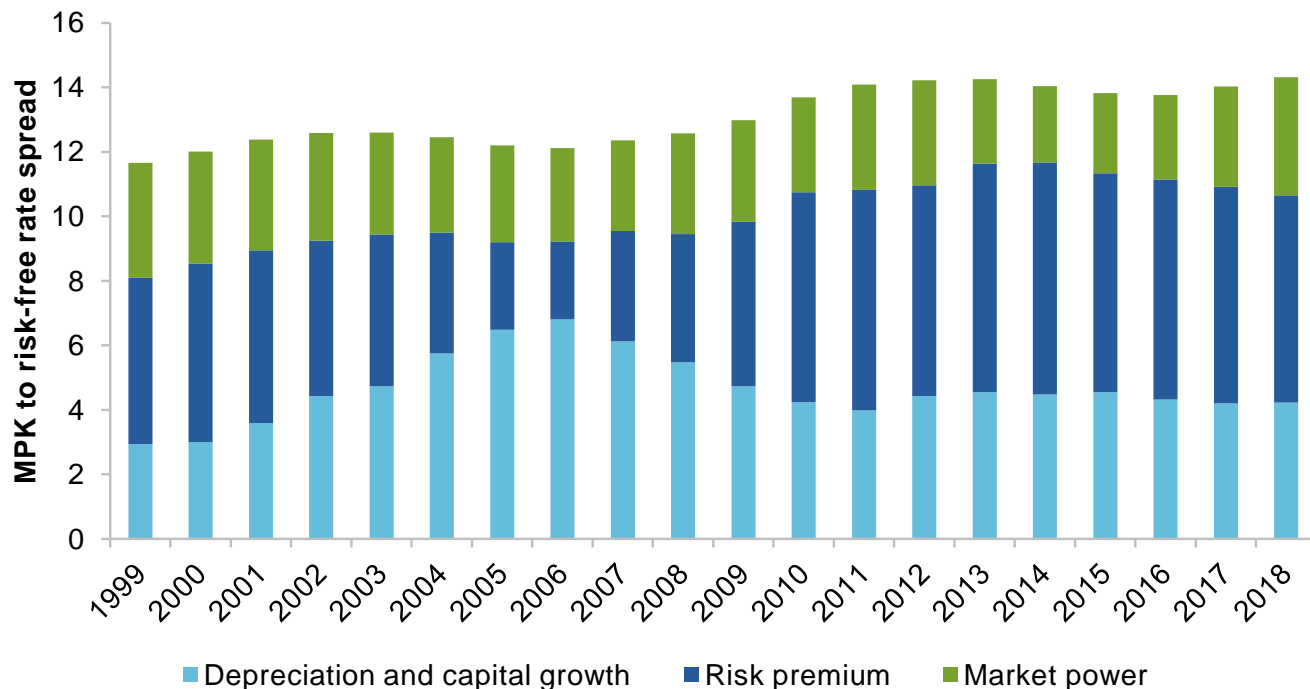
Moments		1997-2008 (mean)	2008-2019 (mean)	Difference
Gross profitability	Π/K	13.859	13.894	0.035
Profit share	$1 - s_L$	40.620	43.418	2.799
Risk free rate	r_f	2.205	0.069	-2.136
Price-dividend ratio	P/D	29.487	24.040	-5.447
Investment capital ratio	I/K	6.328	6.541	0.213
Growth rate of TFP	g_T	0.604	0.213	-0.390
Growth rate of investment prices	g_Q	0.882	0.570	-0.312
Growth rate of population	g_N	1.322	1.562	0.240
Employment-population ratio	L/N	59.973	61.607	1.634

Decomposing the marginal product of capital

$$MPK - r_f = (\delta + g_Q) + \frac{\mu - 1}{\alpha} (r_f + \delta + g_Q) + (r^* - r_f)$$

<i>MPK to risk-free rate wedge</i>	<i>1997-2008</i>	<i>2009-2020</i>	<i>Difference</i>
Total spread ($MPK - r_f$)	12.04	14.12	2.08
Depreciation and capital price change	4.62	4.34	-0.28
Market power	3.17	3.21	0.04
Risk premium	4.26	6.58	2.32

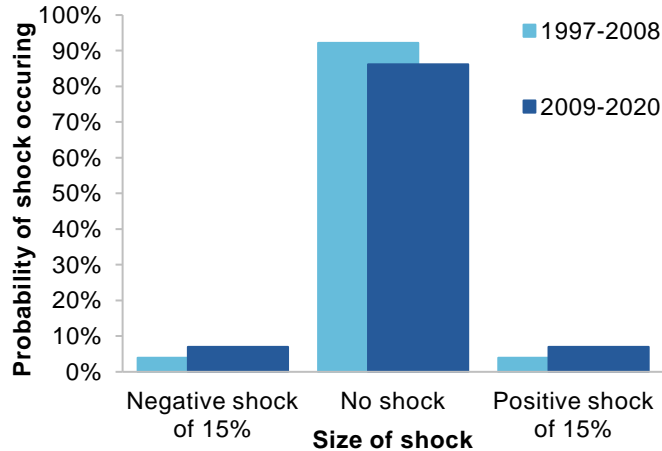
Contributions to the wedge change over time



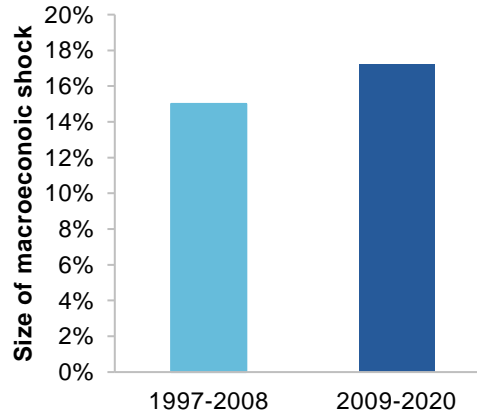
Data sources: Commission estimates based on ABS (Australian National Accounts: National Income, Expenditure and Product, September 2021, Cat. no. 5206, table 2, 4, 6 and 58), ABS (Australian System of National Accounts, June 2021, Cat. no. 5204, table 1, 6, 56 and 58), ABS (National, state and territory population, March 2021, Cat. no. 3101, table 1), ABS (Estimates of Industry Multifactor Productivity, Australia, 30 November 2020, Cat. no. 5260.0.55.002, table 6), RBA (Capital Market Yields – Government Bonds, 2021), RBA (Inflation expectations, 2021) and Market Index (2021).

Why has the rising risk premium risen?

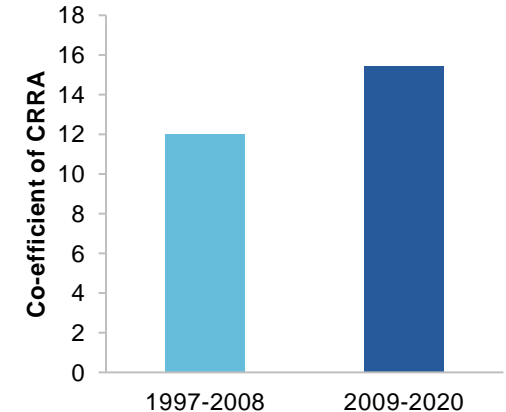
Either the probability of the shock has increased...



...the expected size of the shock has increased...



...or risk aversion has increased.



Next steps

- Discounts rates for government projects
- Discount rates and long term threat mitigation



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