

# Understanding the Gender Gap in Financial Literacy: Evidence from Australia

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# Motivation

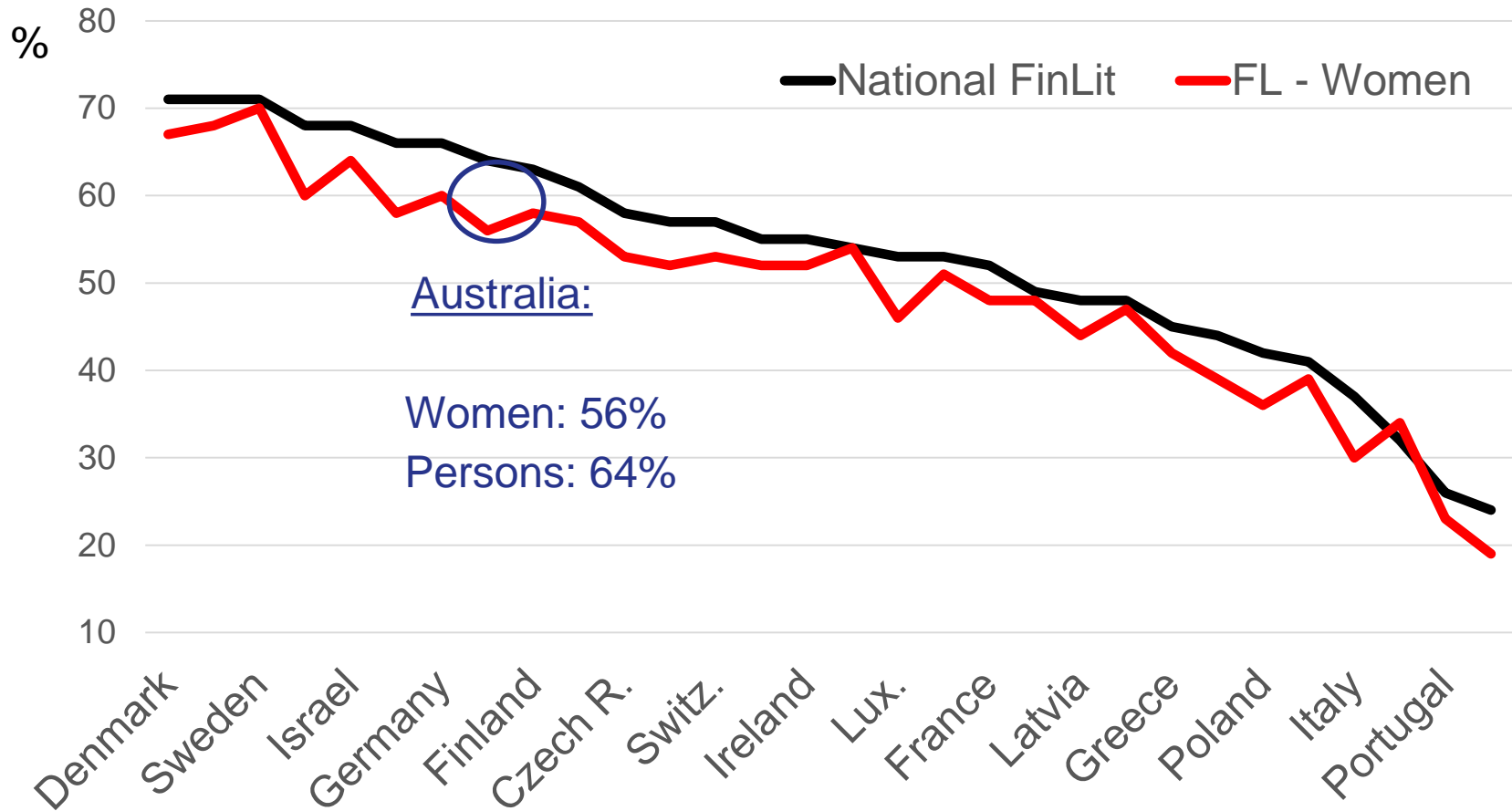
- Financial literacy within Australia above OECD average ... but, within the OECD, Australia has one of the largest gender gaps in financial literacy (Hasler and Lusardi, 2017).
- Such gaps are concerning given the evidence showing the importance of financial literacy (FL) for retirement planning, wealth accumulation, economic empowerment and even the stability of the financial system.
  - Low FL thought to have contributed to sub-prime mortgage crisis in US.
  - A UBS survey found that 1/3<sup>rd</sup> of Australian mortgage holders were not aware that they had an interest only mortgage (Janda, 2017).
  - FL (or lack of) has also been linked to domestic violence (Postmus et al. 2013)

Hasler, A. and Lusardi, A. (2017), 'The Gender Gap in Financial Literacy: A Global Perspective', Global Financial Literacy Excellence Centre, George Washington University

Janda, M. (2017). 'Interest-only home loans a ticking time-bomb, warns UBS' 4 October 2017. ABC News. Available from: <http://www.abc.net.au/news/2017-10-04/consumers-unaware-they-have-interest-only-home-loans/9014448>

Postmus, J., Plummer, S., McMahon, S., and Zurlo, K. (2013), 'Financial Literacy: Building Economic Empowerment with Survivors of Violence', *Journal of Family Economic Issues*, **34**, 275-284.

## Basic Financial Literacy Rates, OECD, 2014



Source: data based on the S&P 2014 Fin.Lit. Survey as reported in Hasler and Lusardi (2017).

# Outline of Presentation

1. What is financial literacy?
2. How is it measured?
3. Literature
4. Data and method
5. Estimates
6. Concluding comments

# 1. What is financial literacy?

- The OECD define financial literacy as the “... *knowledge and understanding of financial concepts and risks*, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life.” (OECD, 2005, Principle I.1).
- Financial literacy is NOT numeracy. Numeracy is the ability to use maths and arithmetic in a practical manner at a personal level ... although clearly there is an overlap.
- Financial literacy is considered a form of human capital (a skill one invests in)

## 2. How is FL measured?

- Lusardi, Mitchell and others have developed a battery of questions which are increasingly used to assess financial literacy knowledge.
  - (1) “Big-3”: set of three questions covering interest rate, inflation and diversification.
  - (2) “Big-5”: Five question set [which contains (1)]
  - (3) Seventeen question set [which contains (2)]
- In Wave 16 of the Household, Income and Labour Dynamics Australia (HILDA) the survey included, for the first time, a financial literacy module.
  - The module contained a set of five basic financial literacy questions.

# HILDA Interest Rate Question

**Q1:** Suppose you put \$100 into a no-fee savings account with a guaranteed interest rate of 2% per year. You don't make any further payments into this account and you don't withdraw any money. How much would be in the account at the end of the first year, once the interest payment is made?

- Response options: record number; irrelevant answer; don't know or don't understand the question; refused.

## % Adult Australians Answering Question Correctly

PERSONS (N=16886)	MALE (N=7973)	FEMALE (N=8913)	Gap (%-point)	% gap
85.2%	91.7%	79.4%	12.3***	15.5%

\*\*\*t-test. Significant 1% level.

# HILDA Inflation Question

**Q2:** Imagine now that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, would you be able to buy more than today, exactly the same as today, or less than today with the money in this account?

- Response options: more than today; exactly the same as today; less than today; don't know / don't understand the question; refused.

## % Adult Australians Answering Question Correctly

PERSONS (N=16886)	MALE (N=7973)	FEMALE (N=8913)	Gap (%-point)	% gap
70.9%	77.8%	64.8%	12.9***	20.1%

\*\*\*t-test. Significant 1% level.



# HILDA Diversification Question

**Q3:** Buying shares in a single company usually provides a safer return than buying shares in a number of different companies.

- Response options: true; false; don't know or don't understand the question; refused.

## % Adult Australians Answering Question Correctly

PERSONS (N=16886)	MALE (N=7973)	FEMALE (N=8913)	Gap (%-point)	% gap
76.7%	79.3%	74.4%	4.9***	6.6%

\*\*\*t-test. Significant 1% level.

# HILDA Risk Question

**Q4:** An investment with a high return is likely to be high risk.

- Response options: true; false; don't know or don't understand the question; refused.

## % Adult Australians Answering Question Correctly

PERSONS (N=16886)	MALE (N=7973)	FEMALE (N=8913)	Gap (%-point)	% gap
84.1%	88.5%	80.2%	8.3***	10.4%

\*\*\*t-test. Significant 1% level.

# HILDA Money Illusion Question

**Q5:** Suppose that by the year 2020 your income has doubled, but the prices of all of the things you buy have also doubled. In 2020, will you be able to buy more than today, exactly the same as today, or less than today with your income?

- Response options: more than today; exactly the same as today; less than today; don't know / don't understand the question; refused.

## % Adult Australians Answering Question Correctly

PERSONS (N=16886)	MALE (N=7973)	FEMALE (N=8913)	Gap (%-point)	% gap
78.0%	79.7%	76.4%	3.3***	4.3%

\*\*\*t-test. Significant 1% level.

# The Adult Financial Literacy Gender Gap in Australia, 2016



## FL Rate: % Answering 'Big-3' Correctly (Q1-Q3)

PERSONS (N=16886)	MALE (N=7973)	FEMALE (N=8913)	Gap (%-point)	% gap
56.3% [0.004]	64.8% [0.005]	48.8% [0.005]	16.0***	33.8%

Standard errors in parenthesis; \*\*\* indicates significant at 1% level (t=21.196).

## FL Rate: % Answering all 5 Correctly (Q1-Q5)

PERSONS (N=16886)	MALE (N=7973)	FEMALE (N=8913)	Gap (%-point)	% gap
44.7% [0.004]	52.6% [0.006]	37.7% [0.005]	14.9***	39.5%

Standard errors in parenthesis; \*\*\* indicates significant at 1% level. (t=19.555).

## FL Rate: Mean # of Correct Responses (0-5)

PERSONS (N=16886)	MALE (N=7973)	FEMALE (N=8913)	Gap (%-point)	% gap
3.95 [0.010]	4.17 [0.013]	3.75 [0.014]	0.42***	11.2%

Standard errors in parenthesis; \*\*\* indicates significant at 1% level. (t=21.550).

# Literature

- Typically FL is studied within a human capital framework; investment in FL analogous to investing in education. Unlike education, the incentive is not higher lifetime earnings but a desire to save for retirement (smooth consumption).
- Important determinants are: age, marital status, education and socialisation factors (eg. parent's investment and saving habits).

# Literature continued

- Even after controlling for gender differences in human capital women have lower FL rates.
  - Some suggest that it reflects choice (eg. married women less likely to be financial decision makers within households and thus less likely to invest in FL until approaching widowhood) (Hsu, 2016)
  - Endogeneity issues: eg. if public policy guarantees pension in retirement → may have reduced incentive to invest in FL (Lusardi et al., 2017)
- Literature limited and faces challenge of:
  - Different dependent variables; different estimation approaches
  - Lack of representative data (eg. studies of university students)
  - Small sample sizes
  - Limited covariates

- HILDA (Household, Income and Labour Dynamics Australia). Advantages are:
  - Nationally representative
  - Large sample size: Wave16 N=16,886 adults (aged 18+)
  - Contains rich set of socioeconomic and labour market variables
  - Wave16 included five financial literacy measures discussed above
  - Panel (wave1 conducted in 2001) allowing construction of measures which capture prior labour market activity

- 1st estimated pooled wage equation with a dummy variable =1 if respondent is male

$$\overline{\log(FL)}_i = \hat{\beta}_0 + \hat{\beta}_i \overline{X}_i + \varepsilon \quad (1)$$

- Dependent variable: log of number of correct answers (0, 1, 2, 3, 4 or 5)
  - In log form the variable transformed as follows:  
 $\ln(\text{count}+1)$
- Estimate using OLS.
  - Advantage of OLS is easier interpretation and can decompose using the Blinder-Oaxaca technique.



# Method (continued)

## Blinder-Oaxaca Decomposition

- Estimate model separately for males and females and decomposed using the Blinder-Oaxaca technique (basically subtract equation (3) from (2))

$$\overline{\log(FL)}_m = \hat{\beta}_0 + \hat{\beta}_m \overline{X}_m + \varepsilon \quad (2)$$

$$\overline{\log(FL)}_f = \hat{\beta}_0 + \hat{\beta}_f \overline{X}_f + \varepsilon \quad (3)$$

$$\overline{\log FL}_m - \overline{\log FL}_f = (\overline{X}_m - \overline{X}_f) \hat{\beta}_m + \overline{X}_f (\hat{\beta}_m - \hat{\beta}_f) + (\hat{\beta}_{0m} - \hat{\beta}_{0f}) \quad (4)$$

Raw gender gap

Gap due to  
means

Gap due to  
coefficients

Diff Constants

Explained component

Unexplained component

# Method (continued)

- LHS =  $\ln(\text{count}+1)$
- RHS (Basic specification)
  - Age (11 dummies in 5 year intervals)
  - Sibling status (whether has sibling and if younger or older)
  - Marital status (5 dummies)
  - Birthplace (2 dummies)
  - Presence dependent child (1 dummy)
  - Highest education attainment (6 dummies)
  - Field of highest post-high school qualification (14 dummies)
  - Geographic location (12 dummies)
- RHS (extended specification): above plus
  - Labour market (emp ft, pt, unemp, tu mem etc: 7 dummies)
  - Sector (3 dummies)
  - Occupation (8 dummies); Industry (19 dummies)

# Select Results [ $Y = \ln(\text{count}5 + 1)$ ]

	Pooled		Male		Female	
	Basic	Extended	Basic	Extended	Basic	Extended
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
male	0.099*** [0.006]	0.093*** [0.006]				
Oldest sib	-0.015 [0.013]	-0.014 [0.012]	-0.038** [0.015]	-0.039*** [0.015]	0.003 [0.020]	0.004 [0.019]
Younger sib	-0.034*** [0.013]	-0.028** [0.012]	-0.047** [0.015]	-0.045*** [0.014]	-0.024 [0.019]	-0.018 [0.019]
Married	0.113*** [0.009]	0.091*** [0.009]	0.094*** [0.012]	0.069*** [0.012]	0.130*** [0.013]	0.111*** [0.013]
Has dependent child	-0.041*** [0.007]	-0.031*** [0.007]	-0.019** [0.009]	-0.020** [0.009]	-0.054*** [0.011]	-0.037*** [0.012]
Born ESB	0.009 [0.008]	0.012 [0.008]	0.020** [0.009]	0.023*** [0.009]	0.000 [0.013]	0.001 [0.012]
Born NESB	-0.179*** [0.011]	-0.148*** [0.011]	-0.123*** [0.014]	-0.100*** [0.014]	-0.226*** [0.016]	-0.189*** [0.016]
Degree	0.208*** [0.011]	0.139*** [0.011]	0.215*** [0.014]	0.155*** [0.015]	0.200*** [0.016]	0.125*** [0.017]

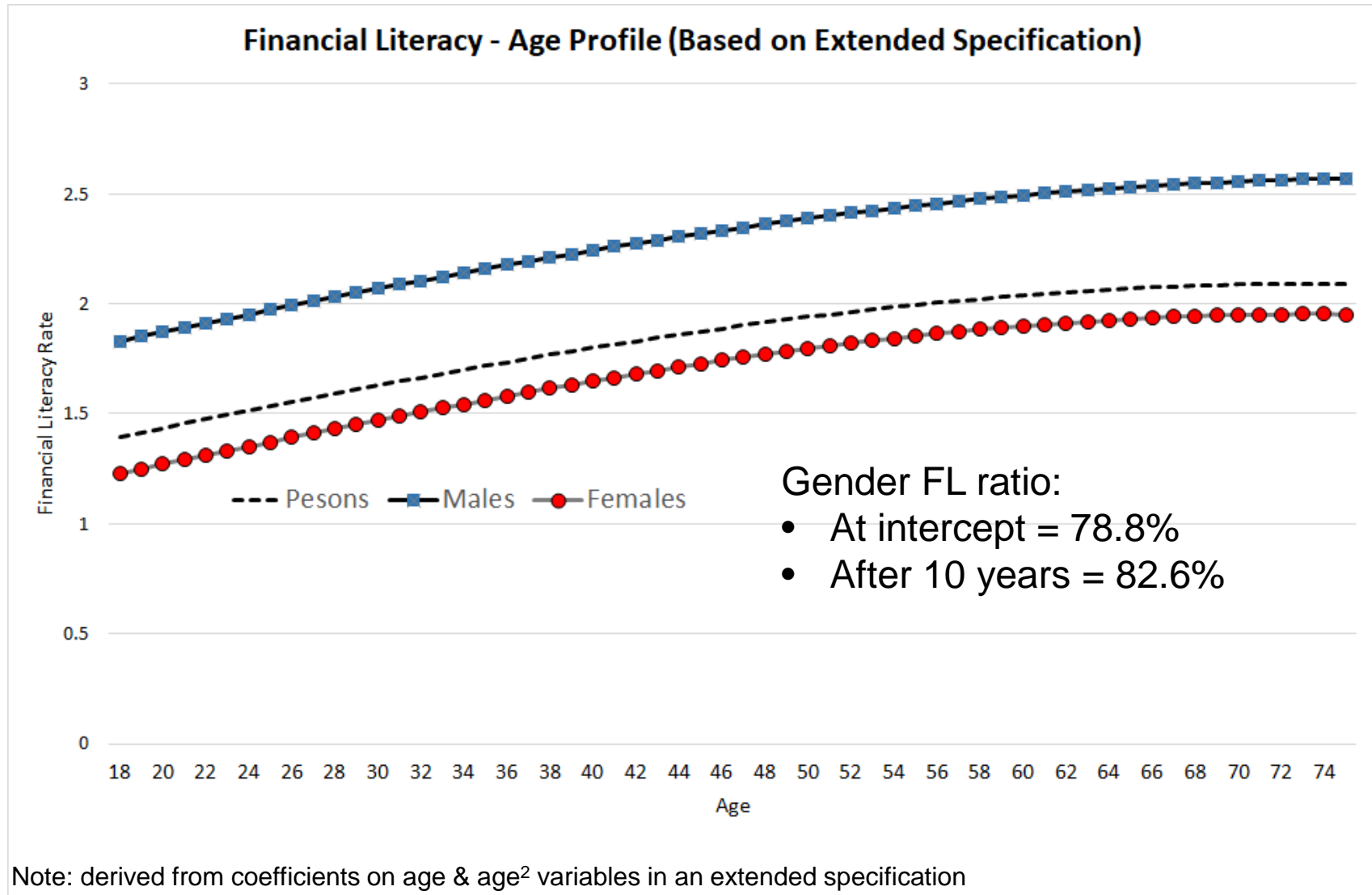
Standard errors in parentheses; \*\*\* indicates significant at the 1% level.

# Select Results: continued

	Pooled		Male		Female	
	Basic	Extended	Basic	Extended	Basic	Extended
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
R <sup>2</sup>	0.153	0.196	0.127	0.175	0.152	0.195
% change in R <sup>2</sup> moving from basic to extended model		28.10%		37.80%		28.30%
F-test		24.15***		12.33***		12.89***

\*\*\* indicates significant at the 1% level

# Select Results: continued. FL & Age



Note: derived from coefficients on age & age<sup>2</sup> variables in an extended specification  
Intercept based on the constant term from the separate male and female regressions

# Blinder & Oaxaca Decomposition Results

- Decomposition: “human capital model” (basic)

Mean FL Men	Mean FL Women	Raw GFLG	Explained Gap	Unexplained Gap	% Raw Gap Explained	% Raw Gap Unexplained
1.604	1.496	0.107	0.006	0.101***	5.5%	94.5%

- Decomposition: HC + occ, ind, sector & lab.mkt (extended)

Mean FL Men	Mean FL Women	Raw GFLG	Explained Gap	Unexplained Gap	% Raw Gap Explained	% Raw Gap Unexplained
1.604	1.496	0.107	0.015	0.092***	14.0%	86.0%

# Results using information on wrong answers, don't know responses & refused responses as dep. var.

## Blinder-Oaxaca Decomposition using alternative dependent variables

Dependent Variable	Raw Gap	Explained Share	Unexplained Share
ln(count # wrong+1)	-0.114***	0.000	-0.114***
ln(count # don't know +1)	-0.155***	-0.003	-0.151***
ln(count # refused to answer +1)	0.011*	0.011	-0.000

Note: All dependent variables are based on a count of responses across all five HILDA FL questions; specification includes occupation and industry (i.e. extended); \*, \*\* and \*\*\* indicate significance at 10%, 5% and 1% levels, respectively

# Summary findings

- Basic FL in Australia is above the OECD average but there is a large gender gap
- Fewer than 50% of adults in Australia could correctly answer five basic FL questions in the 2016 HILDA survey.
- FL typically modelled within a human capital framework, however, human capital variables (eg. age, education, marital status) are only able to explain a small share (15%) of the variation in FL across individuals.
- Including labour market variables (employment status, union membership, sector, occupation and industry) increases the explanatory power of the model by btw 28-38%, but overall explanatory power still not particularly large at around 20%.



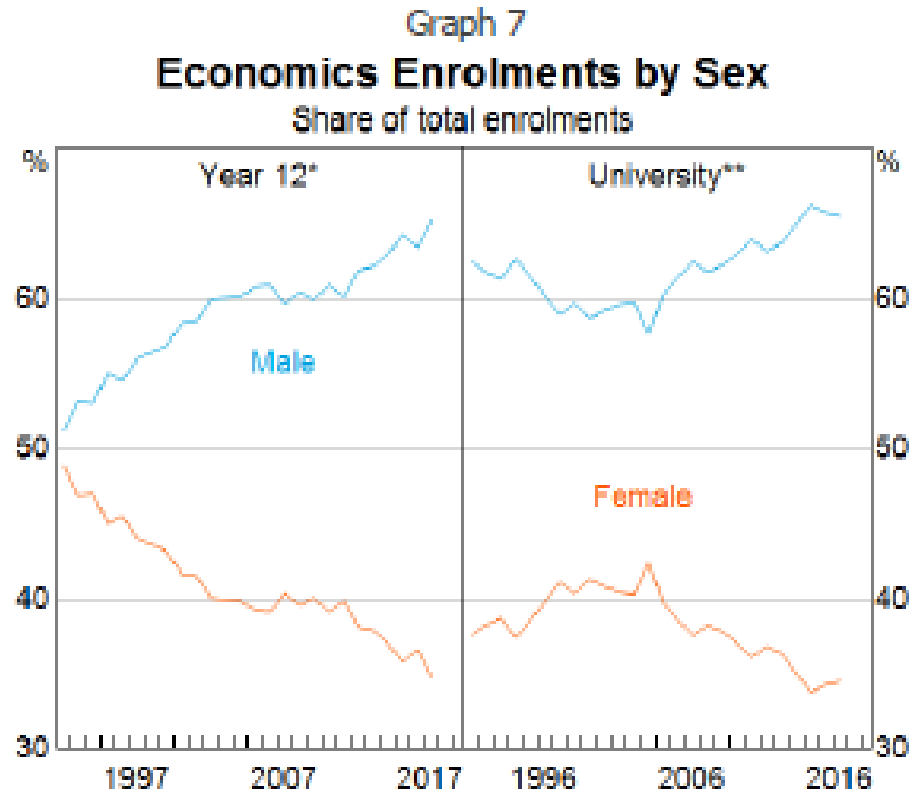
# Summary findings (continued)

- **When measuring financial literacy using a count measure (count of # of correct responses to a set of five questions) the:**
  - Raw (unadjusted) gender financial literacy gap (GFLG) is 11%
  - The adjusted (after taking into account gender differences in characteristics) GFLG is around 9%
- **The Blinder-Oaxaca decomposition analysis shows that the GFLG is driven by gender differences in returns to characteristics (i.e. the coefficients) indicating that men and women produce (i.e. *acquire*) FL differently**
  - Results not driven by gender differences in 'refuse to answer' rates
- **Conclusion: GFLGs exist before entering the labour market ... which suggests that FL affected by activities in schools and/or the home during the pre-labour market years.**
  - Women have relatively steeper FL age profiles during early adult years

## Policy

- USA – more than 20 states have mandated financial literacy as a requirement for graduation
- Australia – since early 1990s dramatic fall in economic Year12 high school enrolments, particularly amongst women → maybe time to require course in economics for graduation &/or mandate FL requirement for high school graduation
- Future research:
  - Understand FL determinants amongst teenagers
  - Explore effects of socialisation (eg. parents)

# Appendix: Economic Enrolments



\* Data from New South Wales, Queensland and Western Australia included from 1992; South Australia included from 1993 and Victoria included from 1995

\*\* Undergraduate; excludes Macquarie University

Sources: DET; NEBA; QCAA; RBA; SACE Board; SCOA; VCAA