

Final Progress Report – Project: MON (*Parasnis*) Graduate Teacher Labour Supply Considerations

Co-Investigators: Dr Jaai Parasnis and Prof Max Tani

Progress on Research Outcomes and Timetable

We are on track to meet the original timeline proposed at the start of this project. The budget for the project was allocated towards two items (i) employment of research assistants for data preparation and (ii) travel expenses for the two Chief Investigators to collaborate. The funds were allocated according to the budget submitted at the time of application.

The funds have been acquitted. Monash Research Office is preparing the final financial acquittal statement, which will be forwarded to GCA.

Summary of findings:

Using the data from Australian Graduate Survey, we find that majority of teachers are female. Further, even within teaching, females are more likely to be preprimary and primary teachers while the few male teachers are likely to be secondary teachers. The existing literature tends to explain this with differences in individual preferences, and flexibility of working hours due to fertility choices. We complement the existing literature by showing that in fact this gender allocation responds to economic incentives. In particular, we find that working as teachers gives females graduates the best relative returns in the labour market, while this is not the case for males. We, hence, show that difference in salaries for males and females are consistent with females making these occupational choices.

GCA data:

We would particularly like to acknowledge the usefulness of data from the Australian Graduate Survey in helping us understand graduate teacher labour supply considerations. The coverage of all fields and occupations and the long time series enabled us to reach these new insights.

Next Steps:

We are working on a drafts for (i) a piece in *The Conversation* based on the findings outlined in this report and (ii) a research paper for submission to journal such as *Economics of Education Review* (an education and policy focused journal, ranked ‘A/A*’ in ABDC journal lists). We expect the piece for *Conversation* to be ready the next 3-4 weeks and the research paper soon after. We will submit both drafts to the GCA.

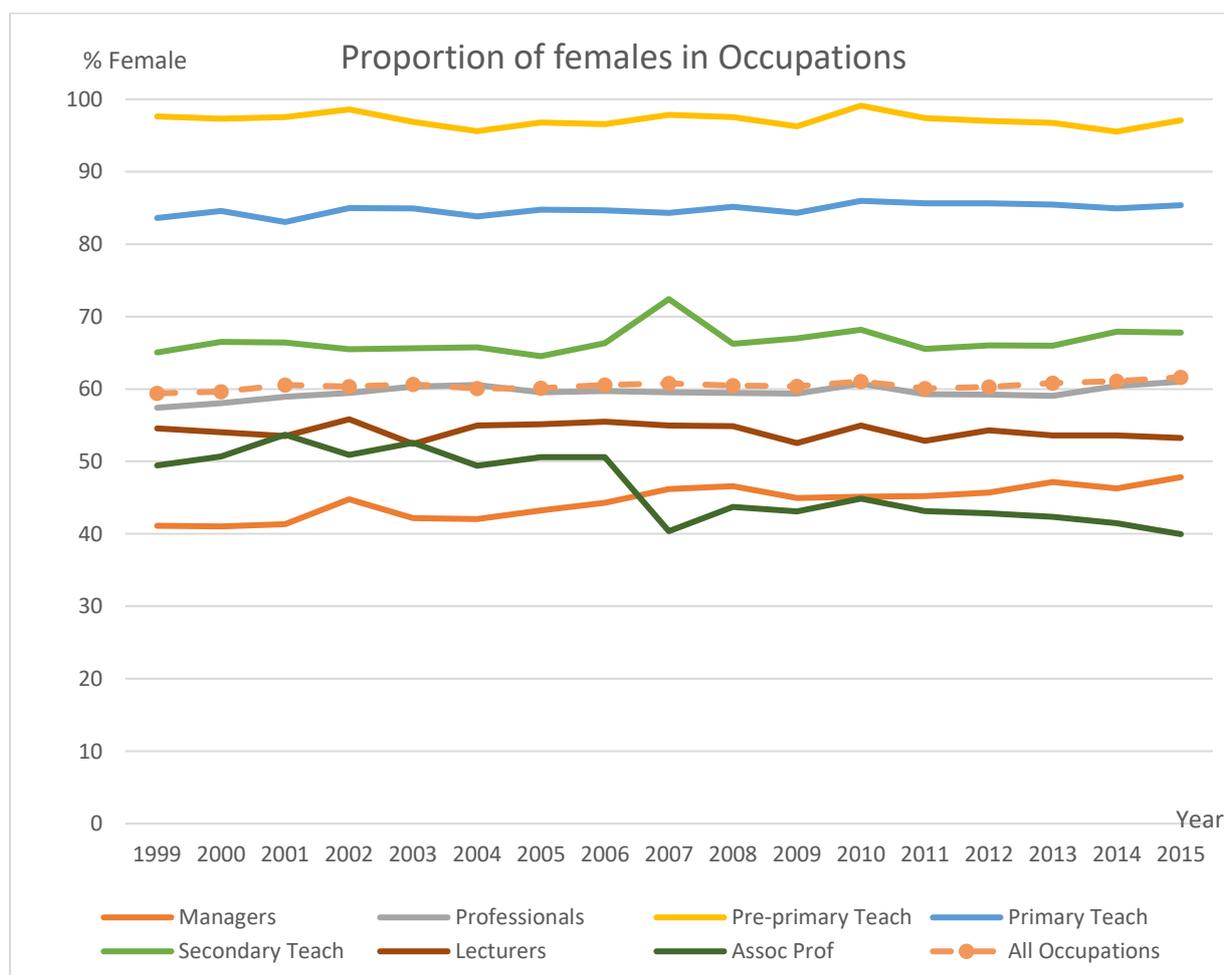
WORK IN PROGRESS: Please do not quote without prior approval from the authors.

Main Findings

In light of the current policy focus and proposed measures to improve both the quality and productivity of schoolteachers in Australia, we propose to investigate the labour supply considerations around teaching employment, focusing on recent graduates. Given that the government is the biggest employer in this labour market, understanding the labour supply is important for managing the workforce and providing better outcomes, both for the graduate teachers and for the education sector as a whole.

The labour market for graduate teachers is striking in terms of gender composition. Figure 1 compares the proportion of females across occupations.

Figure 1: Proportion of females across occupations 1999-2015



The figure clearly demonstrates that the workforce in teaching consists overwhelmingly of females. Compared to overall gender composition of occupations with females constituting about 60 percent of all occupations, 97 percent of pre-primary teachers, 86 percent of secondary

teachers and 68 percent of secondary teachers are female. This gender differential shows no sign of improvement over years. In contrast, less than 50 percent of Managers are female, though the proportion of females in this occupational category has increased from 41 percent in 1999 to 48 percent in 2015.

What explains the observed concentration of females in this particular occupation? We model the determinants of choosing teaching as a career and estimate the returns to teaching relative to other professions. Theories of occupation choice suggest that the costs of obtaining a qualification and returns to a qualification (both absolute and relative to other fields or occupations), individual preferences and job attributes are the main determinants. We employ data from the Australian Graduate Survey from 1999 to 2015 to empirically investigate the returns in labour market for teachers relative to other occupations for males and females. Data is consistent within this time span while adjustments to some GCA survey questions are necessary to extend the time series to previous years. We are currently working on this.

While the literature so far has discussed qualitatively the role of preferences and female choices about fertility and family formation, we explore the role of relative returns in the labour market, that is, relative salaries to explain the particular attractiveness of teaching as an occupational choice for female graduates. Figure 2 illustrates the salaries for teachers relative to the salaries for non-teachers for males and females.

Figure 2: Mean salary for teachers compared to non-teachers, by gender 1999-2015

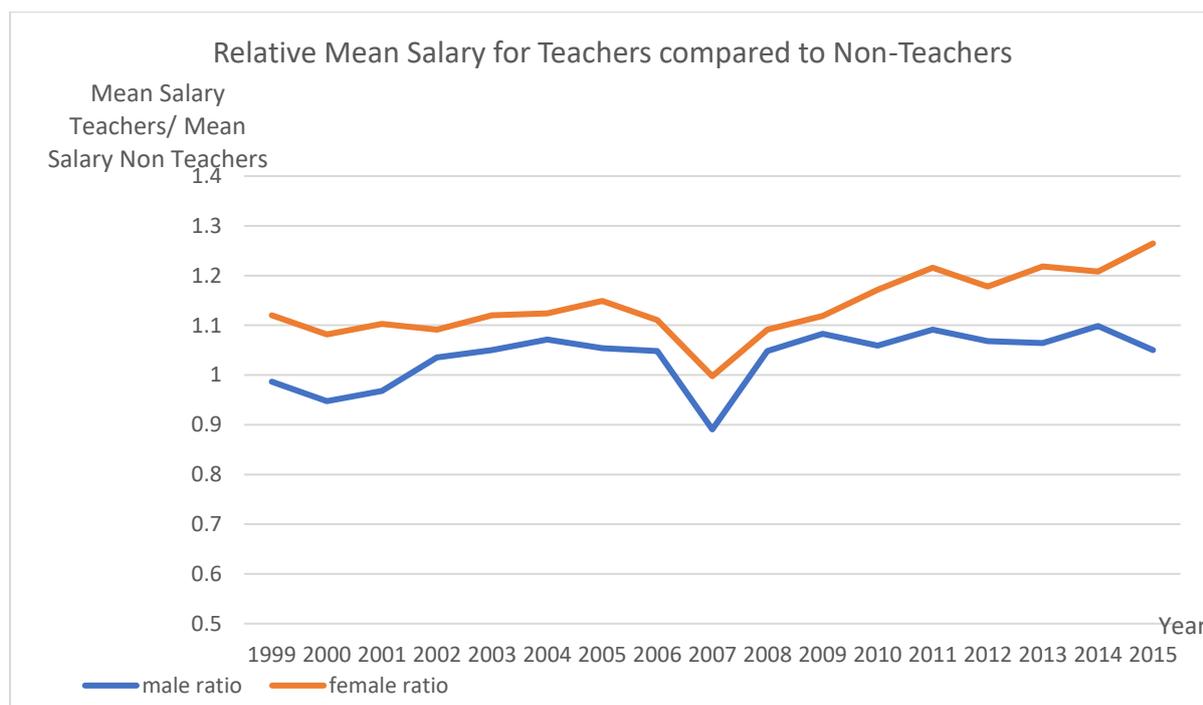
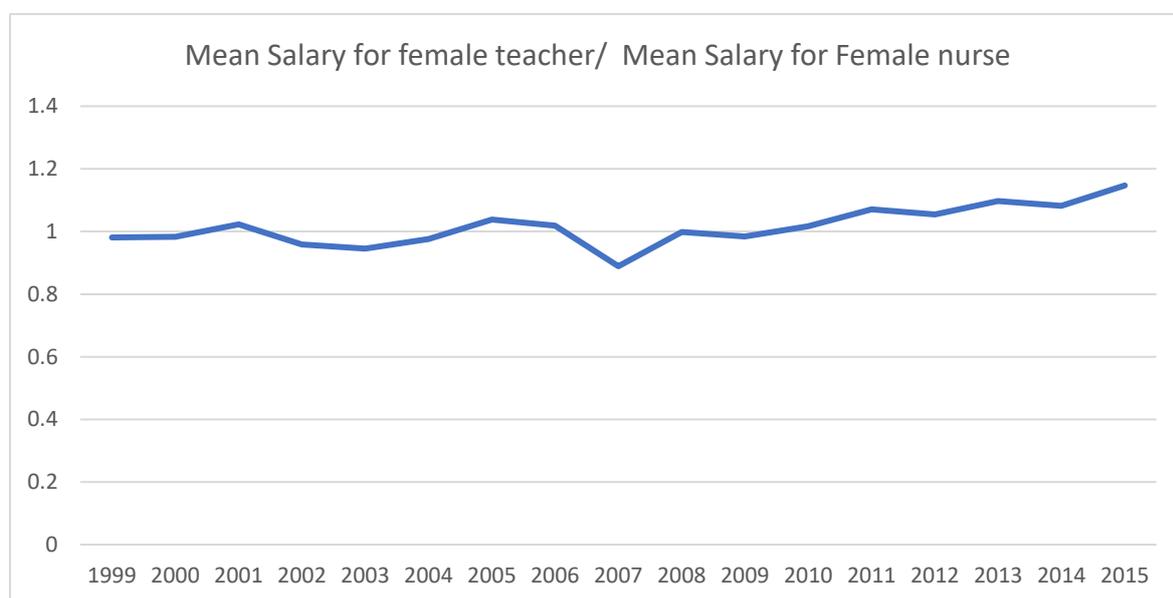


Figure 2 brings forth two salient features of the salaries reported by the graduates. (i) Relative to other occupations, average salaries in teaching are higher for females but not for males and (ii) this gap between males and female relative salaries has been increasing since 2010, when the effects of the global financial crisis were most felt in the labour market.

To further illustrate that the female teachers are experiencing relative wage advantage, we compare the average salary for a female teacher to average salary for a female nurse, nursing being another female dominated occupation. Figure 3 shows that the salary for female teachers relative to nurses has increased since 2010.

Figure 3: Mean salary of female teachers compared to female nurses, 1999-2015



In order to further explore whether the relative salaries can explain the observed occupational choices of male and female graduates, we first document the mean salary difference for teachers versus non-teachers by gender. We then use Binder- Oaxaca method to decompose the observed differential into (i) differences in the observed endowments between the two groups and (ii) unexplained differences in the returns to the endowments between the two groups and (iii) differences due to the simultaneous presence of differences in endowments and coefficients. Results are reported in Table 1. We control for age, year, state and employment type.

TABLE 1 Blinder Oaxaca decomposition of the salary differential between teachers and non-teachers by gender.

Overall Difference in Mean salary	Females		Males	
	Coefficient	P>z	Coefficient	P>z
With Bachelors qualification				
Non-teachers	36,065	0.000	48,525	0.000
Teachers	40,069	0.000	42,182	0.000
Difference	-4,004	0.000	6,343	0.265
endowments	461	0.003	33	0.860
coefficients	-1,604	0.000	4,899	0.567
interaction	-2,861	0.000	1,410	0.825
With Graduate Diploma qualification				
Non-teachers	50,179	0.000	70,182	0.000
Teachers	41,793	0.000	46,222	0.000
Difference	8,386	0.000	23,960	0.000
endowments	40	0.801	1,132	0.000
coefficients	8,081	0.000	19,227	0.000
interaction	265	0.195	3602	0.000
With Masters qualification				
Non-teachers	60,713	0.000	79,041	0.000
Teachers	56,171	0.000	63,766	0.000
Difference	4,542	0.000	15,275	0.000
endowments	-1,083	0.000	163	0.676
coefficients	9,148	0.000	22,372	0.000
interaction	-3523	0.000	-7259	0.000

The results clearly show that for graduates with Bachelors degree, female teachers earn close to A\$ 4,000 more than comparable females in non-teaching occupations. This difference is statistically significant, and supports the hypothesis that females have higher incentives to join the teacher labour market because it pays more than other job markets for a given level of education. In contrast, the difference between teaching and non-teaching males is almost A\$ 6,000 in favour of non-teachers and is not statistically significant, implying that males have other alternatives to teaching relative to females. The salary advantage for female teachers disappears at higher levels of qualifications. Like their male counterparts, females with Graduate Diploma or Masters earn higher salaries in non-teaching occupations.

This evidence regarding relative returns to qualifications are consistent with the observed distribution of males and females in teaching. As discussed earlier in context of Figure 1, the vast majority of teachers are female and within teaching, females are concentrated in pre-primary and primary schools. Pre-primary and primary school teaching requires equivalent of Bachelors in most jurisdictions in Australia while secondary teachers are increasingly required to hold Masters degree. Our analysis shows for females considering Bachelor's degree; teaching is an attractive occupational choice due to higher returns compared to other occupations. However, this is not the case for males and for females with further qualifications, who get higher returns outside teaching.