

WEPAU

Education and aggregate participation rates: A dynamic analysis

by

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ABOUT WEPAU

The Women's Economic Policy Analysis Unit ("WEPAU") was founded in April 1999 in response to a growing void - within Australia and internationally - in the gender analysis of the economic and social policy issues that confront women. To most effectively address this void, WEPAU was established as an inter-disciplinary research program, spanning two divisions of Curtin University, the Curtin Business School (CBS) and the Division of Humanities.

WEPAU is committed to producing high quality quantitative and qualitative feminist research on a broad range of issues that women identify as undermining their ability to achieve equity and autonomy in the current context. Meeting this commitment is enabled by the breadth of experience and expertise brought to WEPAU by an increasing range of researchers.

Through its academic and consultancy research into women's experiences of social and economic policies WEPAU provides a meaningful gender analysis of policy. An analysis strongly put forward via active contribution to government policy debates.

Our broad objectives include:

- Identifying the cases and causes of women's disadvantaged social and economic status and to contribute appropriate policy initiatives to address this disadvantage;
- Demonstrating the way in which social factors, particularly gender, influence the construction of economic theory and policy;
- Extending current theory and research by placing women and their social context at the centre of analysis;
- Contributing an interdisciplinary approach to the understanding of women's position in society. In turn, this should enable the unit to better reflect the interrelatedness of the social, economic and political discourses in policy and their consequent implications for women;
- Fostering feminist research both nationally and internationally;
- Expanding linkages with industry;
- Establishing and supporting a thriving Curtin University postgraduate research community with a common interest in feminist scholarship.

For further details see: <http://www.cbs.curtin.edu/research/wepau/> and/or contact WEPAU at wepau@cbs.curtin.edu.au.

Education and aggregate participation rates: A dynamic analysis

This paper explores the possible ongoing effects on aggregate labour force participation rates of an increase in enrolments in higher education among young women. A theme pursued in this paper is that education will affect women's labour force participation behaviour throughout the whole of their working lives. Thus, an increase in educational enrolments at one point of time will continue to impact on aggregate participation rates over a relatively long time period.

The background and context of this discussion is the comparative female labour force participation rates of Canada and Australia. Women's labour force participation rates are, today, around 10 percentage points higher in Canada than Australia, a fact that has great significance given the current policy focus on population ageing and the need to offset the effects of this demographic change on labour supply through an engineering of higher participation rates¹.

There are few differences in the *current* demographic, economic and social circumstances of the two countries that provide clear reasons for the difference in women's labour force participation rates. For example, fertility rates are similar in the two countries², the proportion of women with university degrees is currently about the same (see Figure 1, below), and the countries have similar (although not identical) approaches to family welfare and early childhood education³.

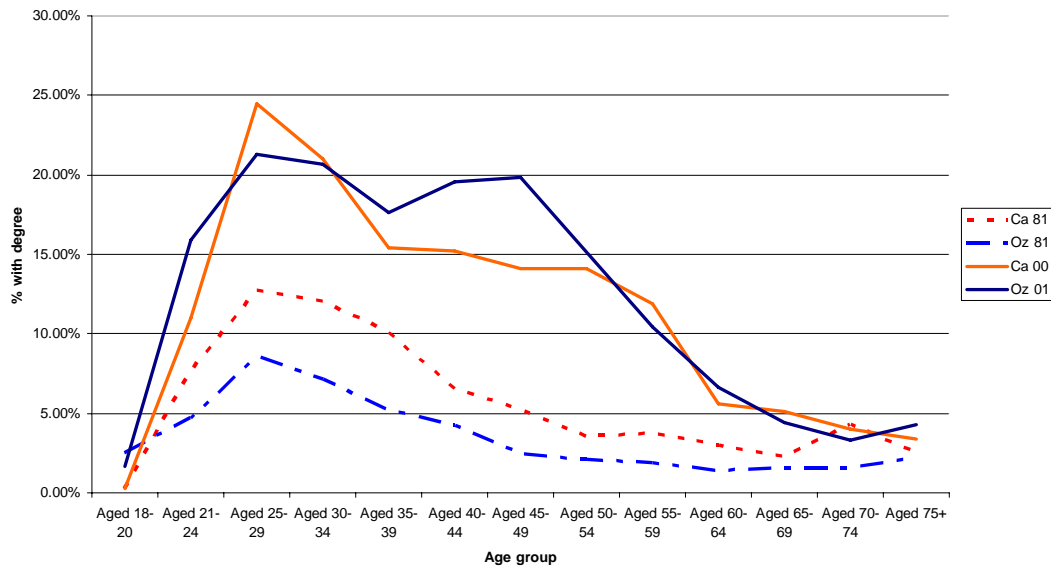
Where the two countries differ most (and where some reasons for the different participation rates might be found), is in the history of women's involvement in education and the labour market. Canadian women started to enter universities in large numbers in the 1960s. In Australia this trend did not emerge until the 1970s (Figure 2). One direct consequence of this was that, up until the 1980s at least, the proportion of women holding a university qualification was substantially lower in each age group in Australia than it was in Canada (Figure 1)

¹ Recent research by Nobel Laureates Finn Kydland and Edward Prescott, which shows an important relationship between labour utilisation and national economic performance, adds to the significance of studies of participation rates.

² The average number of live births per woman per year is currently 1.59 in Canada and 1.75 in Australia (ABS, Births Australia 3301.0.0, 16 March 2001)

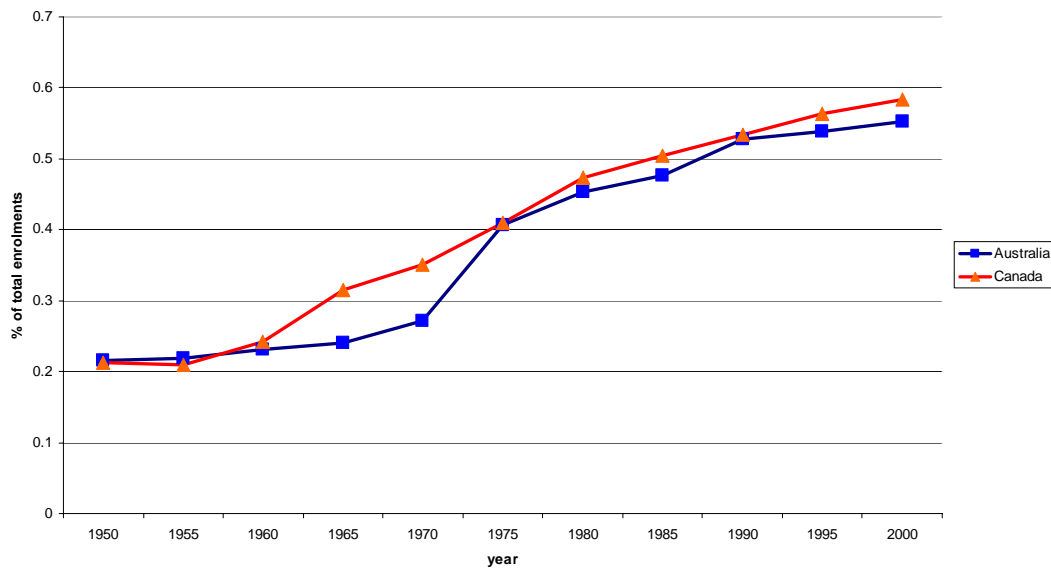
³ The Canadian government provides a relatively large amount of tax relief for child care costs, whilst the Australian currently provides none. However, neither country has guaranteed child care coverage for children aged under 5 years (see Gornick, Janet C., Marcia K. Meyers, and Katherin E. Ross. 1997. "Supporting the Employment of Mothers: Policy Variation Across Fourteen Welfare States." *Journal of European Social Policy* 7(1): 45-70).

Figure 1: Proportion of Women with University Qualifications, Canada and Australia, 1981 and 2000



Source: Luxembourg Income Study, various data sets, <http://www.lisproject.org>; ABS, *Survey of Income and Housing Costs 2000-01*, CURF, Cat. No. 6541.0.3

Figure 2: Women's Share of University Enrolments: Canada and Australia, 1950-2000



Source: Department of Employment, Science and Training (2004), Higher Education Statistics, accessed at <http://www.dest.gov.au/highered/statistics/timeseries/hestudents.xls> on November 5, 2004;
 Statistics Canada (2004), Historical Statistics of Canada (Education), accessed at <http://www.statcan.ca/english/freepub/11-516-XIE/sectionw/sectionw.htm>, on November 4, 2004.

Education has a well known influence on participation rates. Women with degrees are much more likely than other women to work at each stage of the life course⁴. This relationship can be explained directly via the increased work opportunities available to women with higher levels of education. However, there is also a possible positive dynamic relationship between education and participation. That is, because the receipt of higher education increases the chances that a woman will work in the early stages of her working life (and, thus, helps her gain labour market skills and contacts), it will produce additional positive impacts on the chances of participation by older women.

In the context of the Canada-Australia example, these ideas generate a hypothesis that the spike in enrolments that occurred in Canada in the 1960s is contributing to the difference in aggregate female labour force participation rates in the two countries we observe today. Specifically, the difference in the incidence of university degrees among young women across the two countries in the circa 1970-1980 period can be expected to have pushed participation rates among younger women higher in Canada in this time period. In turn, as these 'early educated' women moved through the life course, this 'direct' impact on participation rates may have had an on-going effect on participation rates among older women – thus, potentially, helping explain the different aggregate female labour force participation rates observed in Australia and Canada today.

The data required to implement even a basic test of this hypothesis are relatively large. First, to assess the initial or direct impact of the one-off spike in education enrolments on aggregate participation rates, at a minimum⁵, requires information on how the participation behaviour of young women (for example, women in the post-degree age group of 22-30 years) varied within the relevant time period (and in each country) according to the level of education received. An assessment of the direct impact of the spike also requires data on the importance of this demographic group in relation to the total female working age population of each country at that time.

To assess the long-term effects of the spike in educational enrolments on aggregate participation rates, cohort data is required on differences in labour force participation rates associated with different levels of education in a number of key age groups (for example, when the women were in their thirties, forties and fifties). Again, population weights are needed to relate the effects on age-specific labour force participation rates to the aggregate female participation rate.

The remaining sections of this paper review some apparent patterns in the relationship between educational enrolments and labour force participation rates in the two countries. This data exercise is not intended to test the above the hypothesis. Rather, it is conducted to identify the potential for further investigation and some of the data issues that need to be addressed.

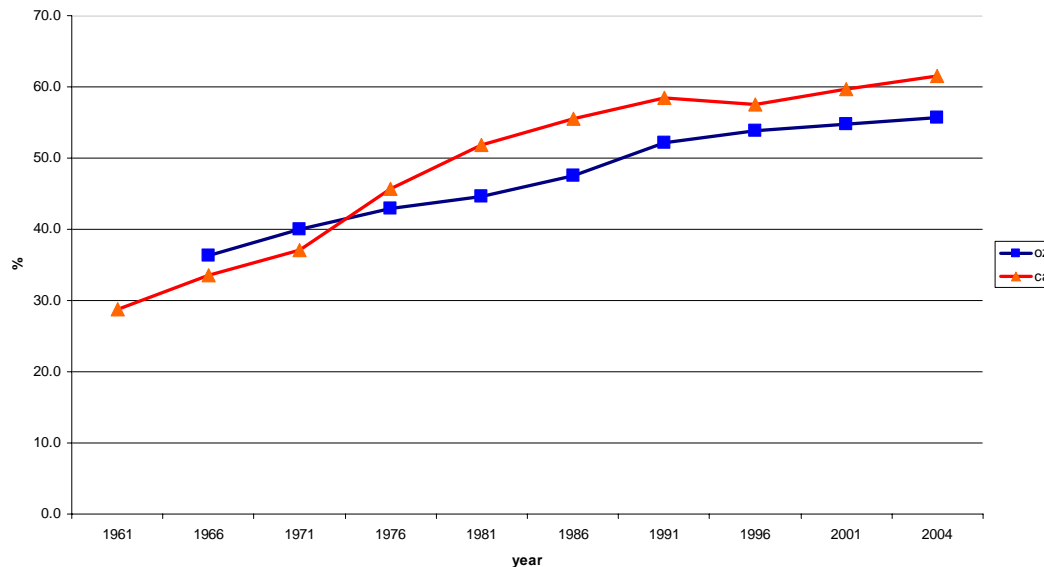
The first piece of evidence to consider is the data on changes in aggregate female labour force participation rates over the 1961-2004 period (as shown in Figure 3). It is interesting to note that a gap in aggregate participation rates between the two countries began emerging in the early 1970s, a period of time when many of the women who had entered Canadian universities in the 1960s would have become labour market

⁴ For an overview of the determinants of participation rates see Killingsworth, Mark, (1983), *Labour Supply*, Cambridge, Cambridge University Press.

⁵ That is, within a *ceteris paribus* environment.

participants. This may support the part of the hypothesis relating to the 'direct' impacts of the spike in education but further details on age-specific participation rates and population weights are needed before any strong conclusions can be made.

Figure 3: Women's Labour Force Participation Rates, Canada and Australia, 1961-2004, all age groups



Sources: ABS (2004), Labour Force, Australia, Cat. No. 6291001; Gregory, R., McMahon, P and Whittingham, B. (1985), 'Women in the Australian Labour Force: Trends, Causes and Consequences', *Journal of Labour Economics*, 3(1), S293-309; Canada Statistics, Labour Force Survey, various years.

Further evidence to consider relates to the 'dynamic' effects of education on participation over a woman's life time. Information on these effects can be derived from longitudinal or life course data, such as that available in Australia through the results of the Negotiating the Life Course Survey (NLCS)⁶.

As part of an initial study of this particular question, we made use of data from Wave 1 of the NLCS, conducted in 1997, to study the participation behaviour across key parts of the life course of a group of Australian women who were born in 1950s. In an attempt to further focus attention on the role played by education in producing differences in participation behaviour in different age groups we limited our sample to those women who had had a young child in their late twenties but who did not have a young child in their late thirties. In total, our study group comprised 173 women.

The group of women born in the 1950s have special relevance to this particular study in that this was the first generation of Australian women who had significant exposure to tertiary education. This group was also old enough by the 1997 survey date for there to be a reasonable record of their labour market experience (the oldest woman in the cohort was 47 years old at the survey date). In other words, the study group is unique in

⁶ Baxter, J., Jones, F., McDonald, P., and Deborah Mitchell, (2001) *Negotiating the Life Course*, 1997 [computer file], Canberra: Social Science Data Archives, The Australian National University. The author acknowledges the Social Science Data Archives as the source of this data.

providing an opportunity to measure the possible effects of higher levels of education on labour force participation behaviour *across* the life course. By focusing on a single cohort we were also able to largely eliminate from our study the important generational changes affecting women's participation behaviour.

The decision to restrict the study to those women in the cohort who were mothers of young children in their late twenties but mothers only of older children in their late thirties was also motivated by a range of factors. The most important of these reasons was the need to remove from the analysis the large effects that young children have on the participation behaviour of women. In other words, the chosen sub-sample enables a comparison to be made of the participation behaviour of women with similar family circumstances but different levels of education when they are in their late twenties. A similar comparison can be made of women with different levels of education when they are in their late thirties (and their children are older). Importantly, the links between the participation behaviour of women in their twenties and thirties, and as they make the important life transition associated with their children moving into the school age years can also be assessed.

Before the results of this analysis are presented some comments on the measures of participation derived from the NLCS data are warranted. The measures are based on each respondent's recollection of her labour market status in each year since she turned 15. Respondents were asked to identify their primary type of activity in each year from a list of 9 possible work/study combinations (ranging from "full time work, no study" to "no work, no study"). These responses, together with information on each woman's date of birth, were then used to identify the work/study status of each woman in the years when she was aged between 26 and 30 years, and between 36 and 40 years. For each age group a summary measure of participation was calculated that measured the fraction of the 5 year period⁷ the woman recalled her work study status as being, primarily, "no work, no study". The measure of participation in each age group is, thus, an inverse one that has one of 5 possible values – ranging from 0.0 (implying the woman's primary work/study status involved some paid work over the 5 year period) to 1.0 (implying the opposite).

The reliance of this paper's analysis on recall data is likely to be the source of some inaccuracies, the direction of which are hard to predict and which are, therefore, difficult to make allowances for. The use of "full year" measures of labour market participation is another source of inaccuracy in the participation data. A common feature of mother's participation behaviour is the working of part-years. Standard labour force survey data (conducted at one point of time and surveying current labour market activity) will typically 'capture' some of these women as labour market participants, whilst others will be defined as non-participants. By contrast, the NLCS is unlikely to have recorded the labour market status of any woman who worked part of the year as a non-participant (defined by the '*no work, no study*' option). As a result, it is likely to produce higher measured levels of labour market involvement than the standard surveys. These discrepancies need to be kept in mind as the measured levels of participation are presented below.

⁷ The base was reduced by the number of years the woman was in full time study, in the few cases where this applied.

The table below summarises the measured participation behaviour of the cohort of women born in the 1950s when these women were in their late thirties. Attention is focused on the correlation between this behaviour and the women's level of education (measured by their status as degree holders or otherwise), as well as the correlation between the observed participation behaviour of the women when they were aged in their late twenties and when they were in their late thirties.

The figures in the table show, first, the nexus between women's level of qualifications and their involvement in the paid workforce. 35.1 per cent (13/37) of the women with degrees spent more than half the years when they were aged 26-30 out of the paid workforce. By contrast, 50.7 per cent (69/136) of the women without degrees spent more than half of their late twenties out of paid work. This difference persisted when the women were in their late thirties. The proportion of degree holding women who spent more than 50 percent of their time out of paid work fell to only 5.4 per cent; and the equivalent figure for non-degree holders was 16.2 per cent.

Table 1: Women's Participation Characteristics by Level of Education (NLCS data)

Group	Participation characteristics when in late twenties (young child/ren present)	Education	Average fraction of time in some form of paid work when in late thirties (no young children present)	Number
1	Less than 50% of years in paid work	No degree	72.2	69
		degree	77.7	13
2	At least 50% of years in paid work	No degree	91.8	67
		degree	99.9	24

The role of young children in determining participation rates is clearly reflected in the figures contained in Table 4. The average fraction of years that women aged in their late twenties (and who had young children) spent in paid work was 65.9 percent for degree holders and 47.5 percent for non-degree holders. However, among the women aged in their thirties (and who didn't have a young child at that time), the average fraction of time spent in paid work was 91.6 percent for degree holders and 81.9 percent for non-degree holders.

The possible role that participation in early life has on future participation behaviour is a particular focus of this paper's analysis and something that, unlike the relationships between participation and education and participation and young children, has not been widely studied to date. The existence of such a link is suggested by the data in Table 4 that shows the much higher average participation rates recorded by those women in their late thirties who had relatively high levels of participation in their late twenties. Among non-degree holders the difference in 'late thirties' participation rates associated with 'low' and 'high' participation rates in the late twenties was 19.6 percentage points. Among degree holders this difference was 22.2 percentage points.

In summary, then, the data provided by the NLCS suggests that women with higher levels of education are more likely to participate in paid work when they have young

children and, also, more likely to return to paid work when their children are older. The simple cross tabulations presented here also indicate that the positive effects of higher education on 'older' women's participation are partly the product of the positive link between education and workforce experience when women are younger.

These preliminary findings add weight to the argument that an increase in enrolments in higher education at one point of time will have effects on aggregate participation rates into the future. The findings are, however, preliminary, and there is a need for additional, multivariate analyses of participation behaviour. Such studies should investigate the strength of the relationship between education and participation behaviour once account is also taken of factors affecting within-cohort participation behaviour, such as spouse income, the number of children and parental characteristics (such as parent's level of education and workforce experience). It is also possible to use the NLCS data to explore other aspects of women's employment (such as their involvement in full time work) and how this varies with education.

There are several good reasons to pursue the study of these relationships. As was mentioned in the introduction, the determinants of women's participation rates have growing policy significance now that demographic change is undermining more traditional sources of labour supply. The basic data presented in this paper suggests that participation rates are, in part at least, the product of a dynamic process. Information on the nature of this process will be significant both for the development of economic policy and for theoretical understandings of the labour market.