Characteristics & Determinants of Self-Employed Women in Australia

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Characteristics and Determinants of Self-Employed Women in Australia

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Abstract

Recent years have seen a strong growth in female employment and, with it, a rise in the level of female self-employment. Between 1985 and 1999 the latter increased by 25.6 per cent. By 1999 women accounted for nearly one third (31.3 per cent) of all (unincorporated) self-employed workers. Notwithstanding the strong growth in the level of female self-employment and their importance within this sector, little is known or understood about female self-employment. This paper makes a modest attempt to fill this gap. Using shift-share analysis as well as multivariate techniques the paper examines the incidence, growth and characteristics of self-employment disaggregated by gender. Comparisons are made in relation to wage and salary employment.

Introduction

Over the latter part of the last century profound changes occurred within the female labour market in Australia. Participation rates increased dramatically (particularly amongst married women) as did average educational and experience levels; the gender wage gap narrowed; and female career opportunities, aspirations and choices changed. The economic context within which these changes occurred also altered. Micro-economic reforms in response to the competitive pressures of an increasingly globalised economy contributed to a growth in the services sector and a parallel reduction in the size of the manufacturing sector. The reforms have also delivered a significant change in the structure of employment as reflected in a shift away from standard employment (full-time, on-going, waged employment) towards part-time employment, casual employment and self-employment.

Women are disproportionately represented in part-time and casual employment[1] and available evidence suggests that the number of women in self-employment is also rising.

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In 1997 self-employed women (incorporated and unincorporated businesses) accounted for 14.8 per cent of all female jobs, 2.6 percentage points higher than corresponding rates in 1978 (ABS Cat. No. 6203, 1997).[2] Rising levels of female self-employment is not a unique Australian trend. It is a phenomenon with parallels in a number of other countries. In the US, for example, the number of women classified as self-employed more than doubled between 1975 and 1990 (Divine, 1994).

Despite there being a substantial number of women engaged in self-employment within Australia it remains a relatively under-researched area. Little is known about the characteristics of self-employed women. Who are they? How do they compare to their wage and salary counterparts? Are there any gender differences in the incidence and characteristics of self-employment? Using Census data, as well as ABS Labour Force Survey data, this paper examines the incidence, determinants and characteristics of female self-employment in Australia. The paper proceeds as follows. It begins with the outline of a theoretical framework for the study of self-employment. Thereafter the paper discusses available data and issues of measurement; presents a shift-share analysis of self-employment growth to assess its origins and studies the characteristics of the self-employed vis a vis wage and salary earners. A logit analysis is later used to examine self-employment propensity. The paper ends with a summary and conclusion.

Theoretical Framework

The self-employed constitute a diverse, heterogeneous, group. Typical stereotypes include successful professionals (eg. accountants) and struggling ethnic minorities (eg. outworkers in the textile and clothing industry) suggesting, perthaps, no single theory of self-employment.

Within the literature the determinants of self-employment have been broadly defined as 'push' and 'pull' factors. High levels of corporate downsizing and outsourcing, privatisation together with government programs to encourage self-employments (e.g. the New Enterprise Incentive Scheme which provides training and income support to the unemployed wishing to enter self-employment) constitute some of the 'push' factors. Identified 'pull' factors might include increasing sophistication and accessibility of computer technology, liberalisation and new opportunities for entrepreneurship, attractive taxation arrangements as well as non-pecuniary determinants such as autonomy, flexibility (eg. to combine work and family responsibilities) and status.

In the simplest neo-classical model developed by de Wit (1993), self-employment may be regarded as income maximisation behaviour within a competitive labour market. The decision whether or not to enter into self-employment (having first determined whether or not to supply labour to the market) is made in relation to expected returns from wage or salary employment. The latter is, in turn, affected a number of other determinants, notably managerial/entrepreneurial ability (e.g. human capital, business experience) (Lucas, 1978) and discrimination or perceived discrimination (Clark and Drinkwater, 2000; Boden, 1999a). If discrimination lowers earnings in the wage and salary sector, or

lowers the utility derived from wage and salary employment, those most affected will more likely shift into self-employment, *ceteris paribus*.

Within the literature the simplistic model has been extended to allow for other determinants such as liquidity constraints (Evans and Jovanovic, 1989) and risk (Appelbaum and Katz, 1986). Other developments allow for the effects of age and learning capacity on self-employment. In these models it is assumed that learning capacity and age vary across individuals, such that an acceleration of technical progress would tend to favour the entry of younger more inherently capable persons into self-employment (Calvo and Wellisz, 1980).[3]

The model has also been augmented to capture some nonpecuniary determinants, the most obvious being a preference for flexibility. Carr (1996), Boden (1999) and Chapman, Gregory and Klugman (1998) all find a significant and positive relationship between the presence of young children and female self-employment propensity suggesting that, for women, the self-employment decision is often tied to family considerations.

Female self-employment decisions may also be influenced by joint family income considerations. Eardley and Bradbury (1997) show a strong link between the employment status of married couples. In 1990, 75 per cent all employed men with a self-employed wife were also self-employed (*ibid.*, p.35). The suggestion is that many of these self-employed couples may be in partnerships (and thus able to take advantage of tax-splitting opportunities), however, the absence of data restricts further testing of this hypothesis.

Turning, now, to a model of the self-employment decision. Within the economic framework outlined above an individual's tendency to be self-employed may be written as follows: $I_i^* = X_i\hat{\beta}_i + \varepsilon_i$ where I_i^* is an index of self-employment, assumed to be a linear function of a vector of characteristics *X*, $\hat{\beta}$ a vector of estimated coefficients and ε an error term.[4] Whether or not an individual is self-employed depends on a comparison of I_i^*, which reflects an individual's particular circumstances, with a critical value of the index $\bar{I}$. The determination of the self-employment/wage-and-salary employment status is then give as: if $I_i^* > \bar{I}$, the individual is self-employed, otherwise the individual is employed as a wage and salary earner. I_i^* is an unobservable index. All that may be observed is a binary indicator variable (SE) which takes the value of one if the individual is self-employed. Hence, the case where SE takes the value of one corresponds to $I_i^* > \bar{I}$, and the case where SE takes the value of zero corresponds to $I_i^* < \bar{I}$. To link the observable indicator of self-employment status (SE_i) to the characteristics of the individual (X_i) the conditional probability of being self-employed may be written as:

$$\text{Prob}(SE_i / X_i) = \text{Prob}(I_i^* > \bar{I}) = F(X_i'\beta), \qquad (1)$$

where F denotes a cumulative distribution function.

The dichotomous choice between self-employment and wage and salary employment may be examined by several techniques, including logit and probit methods of estimation. In the empirical section below the logit method of analysis is used.

Data and Issues of Measurement

The analyses described below are based on data from the ABS (Australian Bureau of Statistics) Labour Force Survey (Catalogue Number 6203.0) and the 1981 and 1996 Census Confidentialised Unit Record Files (CURFs). The labour force survey data are for 1985 and 1999 and are used to assess the origins of self-employment growth using shift-share techniques. The Census data provide further insight into the characteristics and determinants of self-employment.

Defining and measuring self-employment is fraught with difficulty. Conceptually, self-employment may be defined according to income source (eg. the share of taxable income derived from running a business), legal status (eg. 'genuinely' self-employed or actually dependent contractors) or labour force status. Within the Census and the Labour Force Survey the ABS the employed may be classified as either wage and salary earners, employers or self-employed (ie. 'own account workers' or unincorporated businesses). Incorporated self-employed workers are technically defined as employees. The ABS data and Census data thus *underestimate* the number of people running their own business. (For further details on defining self-employment in Australia see Eardley and Bradbury (1997)). This limitation should be borne in mind when considering the analysis below as the focus is specifically on own account workers (i.e. unincorporated businesses).[5]

Determinants of Recent Growth in Self-Employment

Between 1985 and 1999 the number of self-employed women increased by 25.6 per cent (to 264,3000)[6]. Over the same period total employment increased by 38.5 per cent, thus reducing the share of female own-account workers as a proportion of total female employment to 7 per cent (down from 7.9 per cent in 1985).[7] Amongst males the numbers in self-employment grew by 19.3 per cent (to 579,800) while total male employment grew by 18 per cent.[8] By 1999 male own-account-workers accounted for 11.7 per cent of total male employment, almost equal to the corresponding share for 1985 (11.6 per cent). These aggregate figures, however, mask some important trends occurring within specific industry sectors.

Data reported in tables 1 and 2 below (for women and men, respectively) show a significant decline in the importance of the Agricultural, forestry and fishing sector. In 1999 this sector accounted for 19.3 and 20.1 per cent of all self-employed women and men; 10 percentage points lower than the share recorded for 1985 (see Tables 1 and 2). The Retail Trade sector similarly declined in importance over this period. In 1999 14.3 all self-employed women were employed in this sector. This compares to a 24 per cent share

in 1985. Amongst self-employed men the proportion employed in Retail Trade declined by 2 percentage points to 11.1 per cent over the same period.

Strong growth was, however, recorded in Property and Business Services. By 1999 15.2 per cent of self-employed women were employed in this sector, up by 7.2 percentage points from 1985 rates. The corresponding share for self-employed men was 11.7 per cent, an increase of 5.1 percentage points on 1985 rates. Health and community services, Manufacturing and Personal and Other Services also experienced an increase in the share of self-employed women, growing by 4.7, 2.6 and 2.3 percentage points respectively. Similar trends were evidence amongst self-employed males, although the magnitude of change somewhat lower.

Overall it is apparent that the self-employed are clustered into a few industrial sectors. Agriculture, Forestry and Fishing together with Retail Trade and Property and Business Services account for 48.9 per cent of total female self-employment. These same three industries account for 43 per cent of all male self-employment. Relative to men, self-employed women have a higher concentration in the service sector[9], with 43.7 per cent of self-employed women working in these industries. The comparable share for self-employed men is 24.9 per cent. One interpretation that might be placed on these strong gender differences in the distribution of self-employment across industries is that family partnerships probably account for a relatively small proportion of self-employed female jobs.

In the remainder of this section shift-share analysis is used to ascertain how much of the observed growth in self-employment in these industries is a result of structural 'shifts' in the economy or an increased preference for self-employment (known as the 'share effect'). It may be that the strong growth in self-employment within industries such as Property and Business Services has arisen because of strong overall industry employment growth (ie. a structural or shift effect) rather than any specific increased preference for this type of employment. Shift-share analysis allows us to decompose these alternative growth effects. Expressed algebraically, the growth in self-employment may be decomposed as follows:

$$\sum (SE_{i99} - SE_{i85})/((SE_{i85} + SE_{i99})/2) * 100 =$$

$$\sum (E_{99} - E_{85})/((E_{85} + E_{99})/2) * 100 \quad \text{(national growth effect)} +$$

$$\sum (s_{i99} - s_{i85})/((s_{i85} + s_{i99})/2) * 100 \quad \text{(share effect)} +$$

$$\sum (w_{i99} - w_{i85})/((w_{i85} + w_{i99})/2) * 100 \quad \text{(structural effect)}$$

Where:

E = Total Employment
SE_i = Numbers Self-Employed in the *i'th* industry

s_i = Within (intra) industry self-employment shares (i.e. SE_i/E_i)
w_i = Across (inter) industry employment shares (i.e. E_i/E)

The subscripts '85' and '99' refer to the two separate periods of analysis, in this case 1985 and 1999. The data, as noted above, are drawn from the ABS Labour Force Survey. For each year an annual average measure is used. The results from the shift-share analysis are reported in the last four columns of Tables 1 and 2 (the final column reports the overall change and is the sum of the three decomposed components (i.e. national growth, share effect and structural effect).[10] Both tables show that observed self-employment growth is due to both a share and structural effect.

The 'share effect' is the crucial calculation. As previously noted, it captures the change in self-employment due to within industry changes in the incidence of self-employment. The effect is positive if self-employment within the industry grows at a faster rate than industry total employment. The structural effect measures changes in self-employment arising from differences in the national and industry growth rates.

The results with respect to women show that 'share effects' dominated the growth of female self-employment in the industries of: Manufacturing, Communication Services Education, Health and Community Services, and Personal and Other Services. The strong growth in self-employment within Property and Business Services was primarily as a result of structural effects (strong industry employment growth). Share effects dominated the growth of male self-employment in Manufacturing, Communication Services, Education, and Health and Community Services. Structural effects were more important in explaining growth in Property and Business Services and Personal and Other Services.

Overall the results show that, in the absence of structural effects (strong national employment growth), total female self-employment would have grown by 12.4 per cent or 13.2 percentage points less than the actual growth reported. In other words, structural effects explain almost half of the growth in female self-employment. This finding is also consistent with analysis reported in Eardley and Bradbury (1997) who found that most of the overall increase in female self-employment between 1985 and 1990 could be explained by a shift effect.

In the case of males the data suggest an adjusted self-employment growth rate equal to 20.6 per cent, suggesting that the growth in male self-employment may be primarily attributed to an increasing preference for this form of employment.

Table 1: Decomposition of the growth in self-employment, Females: 1985 to 1999

	Share SE 1999 %	Change 1985-99 %-Point	National Growth %	**Share Effect** %	Structural Effect %	Total % Change 1985-99 %
Agriculture, forestry, & fishing	19.3	-9.5	38.5	-31.9	-21.2	-14.4
Mining	0.1	0.0	38.5	13.5	-51.3	0.0
Manufacturing	7.0	2.6	38.5	72.0	-40.9	69.8
Construction	6.7	-0.9	38.5	-21.0	-4.7	13.2
Wholesale trade	3.5	0.2	38.5	-3.0	-5.0	30.7
Retail trade	14.3	-9.7	38.5	-61.7	-1.1	-25.7
Accommodation, cafes & restaurants	2.5	0.0	38.5	-32.2	19.9	26.3
Transport & storage	2.9	-0.1	38.5	-38.2	21.3	21.6
Communication services	1.3	0.9	38.5	107.9	-9.5	127.1
Finance & insurance	0.9	0.1	38.5	15.3	-17.9	36.0
Property & business services	15.2	7.2	38.5	5.9	44.1	84.2
Education	4.7	1.4	38.5	19.9	1.2	58.4
Health & community services	7.8	4.7	38.5	69.4	6.4	105.8
Cultural & recreational services	3.6	0.9	38.5	-2.3	16.7	52.2
Personal & other services	10.1	2.3	38.5	18.0	-5.5	50.4
All Industries	100.0	0.0	38.5	-13.2	0.0	25.6

Source: ABS *Labour Force Survey*, Cat. 6203.

Table 2: Decomposition of the growth in self-employment, Males: 1985 to 1999

	Share SE 1999 %	Change 1985-99 %-Point	National Growth %	**Share Effect** %	Structural Effect %	Total % Change 1985-99 %
Agriculture, forestry, & fishing	20.1	-10.4	18.0	-21.3	-19.0	-22.3
Mining	0.2	-0.3	18.0	-43.6	-45.5	-69.6
Manufacturing	5.7	0.9	18.0	40.8	-23.3	35.6
Construction	25.9	3.0	18.0	-0.5	14.2	31.6
Wholesale trade	3.7	-0.1	18.0	0.7	-2.3	16.4
Retail trade	11.1	-2.0	18.0	-33.5	18.8	3.1
Accommodation, cafes & restaurants	1.0	-0.1	18.0	-52.6	46.9	12.0
Transport & storage	7.4	-1.0	18.0	3.7	-15.1	6.7
Communication services	1.6	1.0	18.0	118.2	-28.8	110.8
Finance & insurance	1.2	-0.2	18.0	1.1	-17.0	2.2
Property & business services	11.7	5.1	18.0	0.7	55.4	72.2
Education	1.4	0.8	18.0	81.5	-3.4	93.3
Health & community services	1.3	0.5	18.0	38.8	6.2	61.5
Cultural & recreational services	3.0	1.0	18.0	8.6	32.3	57.6
Personal & other services	4.7	1.8	18.0	14.5	36.8	67.2
All Industries	100.0	0.0	18.0	1.3	0.0	19.3

Source: ABS *Labour Force Survey*, Cat. 6203.

Characteristics of the Self-Employed

We turn now to a study of the characteristics of self-employed persons within the unincorporated business sector. The data are drawn from confidentialised unit record 1981 and 1996 Census files and include persons aged between 15 and 65. There are 45,100 self-employed and employees in the 1981 sample and 49,032 in the 1996 sample.[11] A summary of the characteristics of wage and salary earners and self-employed, disaggregated by gender is presented in Table 3.

The data show that over this period the importance of women in self-employment has grown. In 1981 women represented 29.3 per cent of all self-employed persons; by 1996 their share had increased to 34.1 per cent. (Over the same period women as a proportion of total wage and salary employment grew by 5 percentage points to 43.4 per cent). The share of self-employed women as a proportion of the total female workforce was equal to 6 per cent in 1996; the corresponding share for males was 9.5 per cent.[12]

Overall the results show similar patterns in the changing characteristics of the two employment states studied (self-employed and wage and salary earners). Both states have seen a decline in the share of young person (15-24 years) employment and increase in the proportion of 'baby-boomers'. Both employment states have similarly experienced a decline in the proportion of married workers and an increased representation of people without dependant children. Consistent with the expansion of educational opportunities in Australia the results also show a strong growth in the share of degree holders in the workforce and a decline in the proportion of unqualified workers. Trends in hours of work reveal a shift towards part-time work for men and women in both wage and salary employment and self-employment.

There are gender differences in some of the trends outlined above, although the differences are not all that striking. For example, the representation of Australian born women in the pool of self-employed women has fallen. In contrast, the share of Australian born men as a proportion of all self-employed men increased between 1981 and 1999.

Some interesting divergences in the patterns of employment by age are also worth noting. Within the wage and salary workforce there was a small increase in the share of 25-34 year olds between 1981 and 1991. In contrast the proportion of self-employed persons aged between 25 and 34 fell quite significantly between 1981 and 1996. It is difficult to fully explain what accounts for these differences, although it is noteworthy that differing age/employment-status patterns are also evident for persons aged 55-64. The movement of this age group into self-employment (and out of wage and salary employment) suggests an age effect unrelated to simply the baby-boom effect. It may simply reflect a movement of retirees into self-employment and, amongst the group of self-employed, a delayed retiring effect (Eardley and Bradbury, 1997).

Table 3: Characteristics of Self-Employed (Own-Account-Worker) and Wage and Salary Earners, 1981 and 1996.

	Wage and Salary Earners				Self-Employed				Changes 1981-1996			
	women		men		women		men		women		men	
	1981	1996	1981	1996	1981	1996	1981	1996	W&S	SE	W&S	SE
Birthplace				- % -						%-point change		
Australian	75.7	76.7	72.6	74.8	78.0	75.2	73.6	75.5	1.0	-2.8	2.2	1.9
ESB	12.2	10.1	12.8	10.6	8.8	11.4	9.4	11.4	-2.1	2.6	-2.2	2.0
NESB	12.1	13.2	14.6	14.6	13.1	13.3	17.0	13.1	1.1	0.2	0.0	-3.9
Age												
15-24 years	32.8	19.5	24.0	17.0	4.0	3.6	6.3	3.6	-13.3	-0.4	-7.0	-2.7
25-34 years	26.6	27.9	28.6	28.7	28.7	18.9	28.9	20.1	1.3	-9.9	0.2	-8.8
35-44 years	20.9	27.1	21.0	27.2	31.5	33.3	29.4	32.0	6.2	1.7	6.2	2.6
45-54 years	14.1	20.3	16.0	19.5	24.5	29.3	22.5	28.7	6.2	4.7	3.6	6.2
55-64 years	5.6	5.2	10.4	7.5	11.2	14.9	12.9	15.6	-0.3	3.7	-2.9	2.7
Marital Status												
Never married	34.4	33.2	29.9	34.0	4.1	10.1	12.1	16.9	-1.2	6.0	4.0	4.8
Married	55.5	53.1	63.9	57.2	90.6	79.8	82.1	73.6	-2.4	-10.9	-6.7	-8.5
Widowed, Separated, Divorced	10.1	13.7	6.1	8.8	5.3	10.2	5.7	9.4	3.6	4.8	2.6	3.7
Presence of Dependant Children												
Children not present	65.9	67.7	59.2	65.2	36.7	56.3	42.1	58.0	1.8	19.6	6.0	15.9
Children present	34.1	32.3	40.8	34.8	63.3	43.7	57.9	42.0	-1.8	-19.6	-6.0	-15.9
Educational attainment												
Did not complete high school	35.0	19.9	29.7	15.3	46.2	27.1	31.7	17.4	-15.0	-19.1	-14.4	-14.2
Completed high school	34.6	39.0	29.0	32.3	28.9	35.2	22.9	24.2	4.4	6.2	3.3	1.3
Certificate (e.g. Trade)	16.2	13.6	28.1	31.4	14.7	14.9	34.4	39.0	-2.6	0.3	3.3	4.6
Diploma	7.9	7.2	4.6	3.1	6.2	7.4	4.2	4.0	-0.7	1.2	-1.6	-0.2
Degree or higher	6.3	20.3	8.6	18.0	4.0	15.4	6.9	15.4	14.0	11.4	9.4	8.5
Hours worked												
1-14	10.9	14.8	2.2	4.4	16.7	21.5	4.0	6.9	3.9	4.8	2.2	2.9
15-24	11.9	14.3	1.5	3.5	10.5	12.4	3.6	5.3	2.4	1.8	2.0	1.7
25-34	10.8	13.6	3.6	5.0	8.3	11.7	5.7	8.0	2.8	3.3	1.4	2.3
35+	66.4	57.2	92.8	87.1	64.4	54.4	86.7	79.9	-9.2	-10.0	-5.6	-6.9

Source: 1981 and 1991 Census household sample files. Industry and occupation data have not been reported due to changes in the coding of these variables between the two survey years. Information on the composition of self-employment across industry may be obtained from Tables 1 & 2 above.

A related trend has seen a significant growth in the share of self-employed men and women without dependant children. In 1981 women without dependant children represented 36.7 per cent of all self-employed women; by 1996 this share had grown 19.6 percentage points to 56.3 per cent. The share of self-employed men without dependant children similarly exhibited a strong increase, from 42.1 per cent to 58 per cent over the same period.

Overall the data suggest that, as at 1996, the typical self-employed women in Australia was Australian born, aged between 35 and 44 years, married, without dependant children (aged 0 to 15) and employed full-time. Her highest level of education was most likely to be a High School credential. The typical self-employed male in 1996 had much the same profile, although his highest level of education would most likely have been a Trade certificate. The two relatively surprising characteristics in this 'typical woman' profile are the findings on children and hours of work. As noted earlier, the empirical literature finds strong support for the hypothesis that women are choosing self-employment over wage and salary employment because it provides an opportunity to blend work and family responsibilities. Studies show that the need for flexibility and a desire to spend time with their family were prime reasons explaining the shift of women the corporate sector and into self-employment (Carr, 2000). In the data reported in Table 3 the presence of children appears not to be related to self-employment. Similarly, the share of self-employed women working full-time is only slightly lower than the corresponding female share in the wage and salary sector. It is noteworthy, however, that a larger proportion of self-employed women work short hours (1-14 per week) compared to women in the wage and salary sector.

Determinants of Self-Employment Vis a Vis Wage and Salary Employment

In this section multivariate techniques are used to further understand the characteristics and determinants of self-employment. The advantage of multivariate analysis over the simple approach adopted in the previous section is that it allows us to isolate the relationships between variables.

Following the procedure outlined above (equation (1)), self-employment probability is modelled as a choice between self-employment and wage and salary employment. The model is estimated separately for women and men, thus allowing the relationships between the dependent variable and the regressors to differ by sex. The results are reported in Table 4.

The determinants (a vector of individual characteristics (X_i)) include: human capital characteristics (ie. measures of skill and entrepreneurial ability), age (an important consideration for learning capacity (Calvo and Wellisz, 1980) and a proxy for start up capital (Kidd, 1993)), birthplace (capturing treatment disadvantage in the labour market and/or cultural predisposition to self-employment), marital status (serving as a proxy for risk and/or availability of financial capital) hours of work, industry and occupation. The industry and occupation controls capture differing opportunities for self-employment

across these groups. Differences may derive from differing technology (giving some industries greater scope for self-employment) and differing taxation opportunities. Some industries may have a greater ability to under-report income, thus affecting the probability of self-employment.

The model also controls for the presence of dependants. Previous studies find that, for women, children are a positive and significant determinant of self-employment (Blanchflower and Oswald, 1998; Boden, 1999; and Chapman *et al*, 1998). As previously discussed there is a general consensus that self-employment allows mothers the flexibility to balance work and family commitments (Boden, 1999; Cromie, 1987; Brush, 1992; Losocco, 1997; Department of Industry, Technology and Commerce, 1991).[13]

Consistent with the theoretical model the result show that education (and in particular higher education) is an important determinant of self-employment (the omitted group are persons not completing High School). Gender differences in the relationship between education and self-employment are apparent, with female certificate holders having a higher probability of self-employment relative to their male counterparts. The positive education effect supports Lucas' (1978) hypothesis which suggests that education enhances an individual's managerial skills and ability and, in turn, their chances of entering self-employment. The positive effect on the part of women is also consistent with the idea that women require flexibility and that more qualified women have a greater ability to obtain flexible work contracts.

Demographic factors such as age, marital status, birthplace and the presence of children are also important determinants of self-employment, although once again gender differences are present. With regard to age the results show that the relationship between age and probability of self-employment is non-linear. Self-employment rises with age at a decreasing rate (a similar result is reported in Chapman *et al*, 1998; and Boden, 1999). The relationship may reflect the effects of capital accumulation on the ability to enter self-employment (ie. the young face greater capital constraints) and learning capacities of older workers. The link between age and the probability of entering self-employment is significantly stronger for men than women. The partial effects show that for men an additional year increases the probability of moving into self-employment by 0.72 percentage points. Amongst women the corresponding effect is 0.27 percentage points.

Consistent with the above, the study also shows the importance of marital status as a predictor of self-employment. Being married (and having a spouse that is present) raises the probability of female self-employment by 1.41 percentage points relative to other relationship forms. The partial effect of marital status (married-spouse present) is smaller for males, equal to 0.88 percentage points. As noted earlier, this effect most likely picks up some of the risk considerations associated with moving into self-employment, with marriage and spouse present being a proxy for financial capital (Bernhardt, 1994). Other studies finding a significant and positive relationship between marriage and self-employment propensity include Evans and Leighton (1989), Le (1999a) and Blanchflower and Oswald (1998).

An interesting feature of the results is the absence of any significant gender differences in the relationship between dependant children and self-employment. The hypotheses outlined above suggest a strong motivator for female self-employment is the ability to balance work and family life. One might, therefore, expect a significant gender difference in the effect of children on self-employment propensity. Although the presence of children does increase the probability of self-employment there is no evidence that this variable is more important for women than men. Differences in the parameter estimates or partial effects observed are not statistically different. It may be that gender differences are apparent when the controls for age of dependants are also present in the model, however, data limitations prevented such an analysis here. Boden (1999) using US data for 1995 finds that the presence of young children is a significant determinant of female self-employment and an insignificant determinant of male self employment. A similar pattern is observed in Chapman *et al*. (1998) using the Australian 1994/95 Income and Expenditure Survey.

Birthplace is a significant determinant of male self-employment – with Australian born males more likely to be self-employed than migrants from English and non-English speaking countries. Amongst females there is no birthplace effect on the probability of self-employment.

Turning to structural controls such as hours of work, industry, occupation and location the results confirm the overall importance of these variables as determinants of self-employment and suggest few differences in the determinants by gender. Rural workers are more likely to be self-employed than city workers (consistent with the importance of self-employment in the agricultural sector). Gender differences are most prevalent in the self-employment propensities in Health and Welfare and Property and Business Services sector. The data suggest no significant difference in the probability of female self-employment in Property and Business Services relative to the base group (Wholesale Trade). Men, however, have a significantly higher probability of self-employment in Property and Business Services relative to Wholesale Trade. The gender differences may relate to differences in opportunity for self-employment within the Property and Business Services sector. A similar interpretation may be placed on the Health and Welfare sector results.

The results for occupation show no significant difference in the self-employment probabilities for males employed as Managers, Associate-Professionals or Tradesmen relative to the omitted group (Advanced Clerical and Service Workers). The corresponding results for women show that all those groups, including Professionals, are significantly more likely to be self-employed relative to their counterparts employed as Advanced Clerical and Service Workers. Within both groups, men and women are significantly less likely to be self-employed if they are labourers and related workers (relative to the omitted group).

Table 4: Determinants of Self-Employment (Own-Account-Worker) Propensity Vis a Vis Wage & Salary Employment, 1996.

	WOMEN				MEN				Sex
Variable	Partial Effects	Coefficient	Sample Means	t-ratio	Partial Effects	Coefficient	Sample Means	t-ratio	Differences (t-ratio)
Constant		-8.535		10.540		-9.663		13.226	
Education									
High School	0.34	0.175	0.388	1.421	-0.20	-0.063	0.321	0.562	1.429
Certificate	0.82	0.416	0.138	2.684	0.10	0.033	0.311	0.313	2.043
Diploma	0.32	0.165	0.073	0.776	0.27	0.087	0.031	0.446	0.270
Degree	0.93	0.477	0.197	2.737	1.72	0.556	0.173	4.274	0.363
Demographics									
Age	0.27	0.140	36.221	3.795	0.72	0.232	37.364	8.530	2.007
$Age^2/100$	-0.21	-0.105	14.382	2.362	-0.67	-0.215	15.302	6.766	2.013
Married, spouse present	1.41	0.717	0.506	6.014	0.88	0.283	0.551	3.174	2.915
Dependant children present	0.73	0.371	0.314	3.197	0.50	0.160	0.337	1.963	1.488
Born English-speaking country	0.12	0.063	0.100	0.402	-1.07	-0.345	0.106	2.979	2.094
Born non-English-speaking country	0.33	0.168	0.132	1.220	-0.71	-0.230	0.144	2.321	2.346
Hours of work									
Works 35 or more hours per week	0.45	0.230	0.556	2.200	1.52	0.492	0.848	4.070	1.639
Location									
Resides metropolitan area	-1.39	-0.707	0.697	6.432	-1.70	-0.549	0.680	6.923	1.166
NSW	0.34	0.175	0.336	1.021	-0.39	-0.125	0.340	1.074	1.448
VIC	-0.63	-0.322	0.248	1.717	-0.91	-0.294	0.245	2.375	0.125
QLD	0.19	0.095	0.186	0.526	-0.42	-0.135	0.186	1.071	1.044
SA	0.32	0.163	0.077	0.741	-0.48	-0.154	0.078	0.976	1.171
TAS	-0.57	-0.289	0.022	0.828	-1.57	-0.508	0.024	2.158	0.520
NTACT	-2.53	-1.289	0.032	3.031	-3.51	-1.134	0.028	3.793	0.298
Industry									
AFFH	3.39	1.728	0.021	6.090	5.92	1.911	0.040	10.047	0.536
Mining	-21.91	-11.180	0.003	0.054	-6.13	-1.978	0.021	2.720	0.044
Manufacturing	-0.16	-0.083	0.084	0.278	-0.71	-0.230	0.178	1.166	0.411
EGW	-21.65	-11.046	0.003	0.053	-7.17	-2.316	0.012	2.282	0.042
Construction	2.87	1.464	0.016	4.928	3.30	1.064	0.097	5.757	1.143
Retail Trade	1.98	1.008	0.148	3.921	4.31	1.393	0.113	7.910	1.236

Table 3: continued

Variable	WOMEN Partial Effects	WOMEN Coefficient	WOMEN Sample Means	WOMEN t-ratio	MEN Partial Effects	MEN Coefficient	MEN Sample Means	MEN t-ratio	Sex Differences (t-ratio)
Restaurant, Cafes & Accommodation	1.22	0.622	0.060	2.180	3.67	1.186	0.039	5.454	1.572
Transport & Storage	2.07	1.054	0.026	3.284	1.43	0.461	0.059	2.048	1.513
Communication	-0.39	-0.200	0.016	0.354	-3.73	-1.203	0.026	2.523	1.357
Finance & Insurance	-3.34	-1.702	0.058	3.064	-2.41	-0.779	0.033	2.388	1.433
Property & Business Services	-0.38	-0.193	0.105	0.681	1.76	0.569	0.099	3.155	2.268
Public Administration & Defence	-6.25	-3.188	0.049	3.095	-9.92	-3.201	0.059	4.409	0.010
Education	-5.52	-2.815	0.118	5.779	-10.99	-3.547	0.050	5.878	0.944
Health & Welfare	-2.72	-1.389	0.185	4.522	0.94	0.305	0.043	1.474	4.574
Entertainment	-0.67	-0.341	0.026	0.789	0.31	0.100	0.021	0.323	0.830
Personal Services	1.10	0.561	0.039	1.832	0.47	0.152	0.032	0.609	1.035
Occupation									
Manager	1.63	0.830	0.059	4.031	-0.23	-0.073	0.143	0.167	1.869
Professional	0.98	0.499	0.217	2.145	2.51	0.811	0.136	1.861	0.632
Associate Professional	2.58	1.315	0.106	7.104	0.92	0.296	0.126	0.685	2.168
Tradesperson	1.77	0.903	0.031	3.718	-0.14	-0.046	0.212	0.106	1.908
Intermediate Clerical, Sales & Service	-1.19	-0.607	0.266	2.692	-4.36	-1.406	0.097	2.898	1.493
Intermediate Production & Transport	-1.21	-0.619	0.031	1.702	-3.17	-1.024	0.134	2.258	0.697
Elementary Clerical, Sales & Service	-2.24	-1.141	0.118	4.009	-2.27	-0.734	0.041	1.511	0.723
Labourers & Related Workers.	-1.42	-0.727	0.087	2.711	-3.11	-1.003	0.103	2.189	0.520
$\chi^2(42)$	1419.6				1751.8				
McFadden R^2	0.272				0.191				
Sample size	26,234				32,716				

Notes: (a) Absolute t-statistics are reported; (b) The dependent variable is a binary variable, equal to 1 if the individual is self-employed and 0 if employed in the wage and salary sector. The base or reference groups are as follows: education - did not complete high school; birthplace - Australian born; Marital status - married spouse not present, never married and widowed, separated and divorced; State - Western Australia; Industry - Wholesale Trade; Occupation - Advanced Clerical and Service Worker; (c) The partial effects for the categorical variables in this paper should be viewed as an approximation only. The right interpretation is the probability of a change in employment status for the relevant dummy variable changing from zero to one. The partial effects may be calculated as $\partial SE / \partial X_i = \overline{SE}(1-\overline{SE})\hat{\beta}_i$; (d) The McFadden R^2 is calculated as 1-(l_m/l_o), where l_m is equal to the log-likelihood value of the model and l_o is equal to the log-likelihood value if the non-intercept coefficients are restricted to zero (Veall and Zimmermann, 1996).

Summary and Conclusion

Recent years have seen a strong growth in female employment and, with it, a rise in the level of female self-employment. Between 1985 and 1999 the latter increased by 25.6 per cent. By 1999 women accounted for nearly one third (31.3 per cent) of all (unincorporated) self-employed workers. Notwithstanding the strong growth in the level of female self-employment and their importance within this sector, little is known or understood about female self-employment. This paper makes a modest attempt to fill this gap. Using shift-share analysis as well as multivariate techniques the paper examines the incidence, growth and characteristics of self-employment disaggregated by gender. Comparisons are made in relation to wage and salary employment.

The results with respect to women may be summarised as follows. Firstly, shift-share analysis suggests that around half of the observed strong growth in female self-employment between 1985 and 1999 (25.6 per cent) reflects a shift in the distribution of total employment to industries with higher rates of female self-employment (thus tending to increase the incidence of self-employment amongst women). In the absence of strong national female employment growth total female self-employment would have grown by only 12.4 per cent.

A study of the changing characteristics of the self-employed sector suggests that between 1981 and 1996 growth in female (incorporated) self-employment tended to be amongst migrants from English-speaking countries. Other defining characteristics included age (with the older moving into self-employment), the absence of dependant children, more 'never-married' women and more highly qualified women. There was also an increase in the share of self-employed women working short hours (1-14 per week). Between 1985 and 1999 female self-employment grew fastest in Property and Business Services, followed by Health and Community Services and Personal and Other Services (equal to 7.2, 4.7 and 2.3 percentage points, respectively).

Logistic analyses of self-employment propensities found that, for women, important determinants were: education (with higher levels of education increasing the propensity to choose self-employment); marital status (with marriage having a positive effect); the presence of dependant children; age (with the propensity increasing at a decreasing rate); hours of work (the propensity being higher for those working full-time); geographic location (women in rural areas were more likely to be self-employed) and occupation (relative to advanced clerks managers, professionals and para-professionals exhibited higher rates of self-employment propensity).

The patterns are consistent with the theoretical model which suggests that self-employment is affected by entrepreneurial ability (captured by education) and access to capital (reflected in the age and marital status variables). The results are also consistent with the hypothesis that non-pecuniary factors (e.g. the ability to balance work and family) are also important determinants of self-employment, although it is noteworthy that there is no significant gender difference. The presence of dependant children is a significant determinant of *both* male and female self-employment probabilities. The absence of a gender effect is at odds with other empirical studies

and may reflect a failure to control for age of dependants (a limitation with the data set employed).

Overall the results presented in this study suggest that the choice of self-employment over wage and salary employment is intricately linked to stages in the life-cycle, with decisions influenced by constraints and opportunities. Future work might build on this study and examine the consequences of female self-employment. For example, does self-employment open up opportunities and allow women to circumvent the 'glass ceiling'? How transferable are skills across the self-employed and wage and salary sectors? How frequently do women move across these employment states? What is motivating female self-employment within Australia?

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Appendix 1A: Variable Definition Means and Standard Deviations

Dependent Variable	Description
Self-Employed	equal to 1 if self-employed; 0 if employed in wage and salary sector
Highest level of Education (dummy variable)	
High School	Highest level of education: Year 12
Certificate	Highest level: certificate
Diploma	Highest level: diploma
Degree	Highest level: degree or post-graduate
Demographic Characteristics	
Age	age of individual
$Age^2/100$	age of individual squared
Married, spouse present	reference group are those who are widowed, separated, divorced, married (but spouse not present) or have never married
Presence of dependant children	reference group: those without children
Birthplace (dummy variable)	
Australian born	reference group
Born English-speaking country	
Born non-English-speaking country	
Hours:	equals 1 if works 35+ hours per week; else equal to 0
Works 35 or more hours per week	
Geographic Location (dummy variable)	
Resides metropolitan area	reference group = rural
State of Residence (dummy variables)	
New South Wales	
Victoria	
Queensland	
South Australia	
Tasmania	
Northern Territory and Australian Capital Territory	
Western Australia	reference group
Industry of Employment (dummy variables)	
One digit industry codes used	reference group: Wholesale Trade
Occupation (dummy variables)	
One digit occupation controls used.	reference group: Advanced Clerical and Service Worker

[1] Women currently hold around 73 per cent of part-time jobs and 54 per cent of all casual jobs (Preston, 2000).

[2] The corresponding self-employment shares for men were 23 per cent in 1997 and 18.9 per cent in 1978.

[3] For a formal derivation of this basic model of self-employment and a detailed discussion of theories of self-employment see Le (1997).

[4] The approach detailed here follows Miller and Neo (1997).

[5] It should be noted that the self-employment data do not include unpaid family helpers.

[6] The denominator for this calculation is based on a sum of the average of the quarterly data for 1985 and 1999. ABS *Labour Force* data from February 2000 onwards are not strictly comparable with earlier years thus restricting the comparative period to 1999.

[7] When the incorporated business sector is included in the measurement of self-employment, self-employed women as a proportion of all employed persons rises to 14.8 per cent (based on 1997 statistics).

[8] If the Agricultural sector is excluded the self-employment growth rates are even more striking. Amongst women levels of self-employment increased by 37.9 per cent between 1985 and 1999; the corresponding increase for men was 33.1 per cent. The changes between 1985 and 1999 are summarised in the following table.

	Women		Men		All Persons	
	Non-farm	All Ind.	Non-farm	All Ind.	Non-Farm	All Ind
% Change in Self-Emp.	37.9%	25.6%	33.1%	19.3%	34.6%	21.3%
% Change in Total Emp.	39.3%	38.5%	19.4%	18.0%	28.0%	26.7%

[9] The service sector is defined here as including: Communication Services, Finance & Insurance, Property and Business Services, Education, Health & Community Services, Cultural & Recreational Services and Personal & Other Services.

[10] Slight differences in the summation of the three components and the overall total percentage change may be attributed to rounding errors.

[11] The following table provides further details on the sample composition.

	1981			1996		
	SE	W&S	Total Employed	SE	W&S	Total Employed
Women	1921	15122	17043	1319	20762	22081
Men	4645	23422	28067	2551	24400	26951

[12] These shares are slightly lower than more current estimates from the ABS Labour Force Survey. As noted previously, in 1999 self-employed women accounted for 7 per cent of the female workforce while the corresponding share for men was 11.7 per cent.

[13] For further details on the variables in the model, their definition and the omitted groups, see Appendix A.