Determinants of Women's Marriage Decisions in South Africa

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Abstract

This paper investigates the determinants of women's marriage decisions. We use availability of women's jobs to account for the potential endogeneity of women's labour force participation decisions in their marriage decisions.

Data were from the nationally representative household surveys. We have given evidence of simultaneity bias when the endogeneity of female labour force participation is ignored in a marriage model.

As expected, the estimation results confirm that labour force participation and education have a negative effect on women's marriage decisions. This suggests that women who are economically active and capable are less likely to choose marriage, compared to those women who are economically inactive and incapable. Age was found to have a positive effect on the likelihood of marriage. Also, availability of economically attractive men, which was proxied by sex ratio using employed men, positively increases the likelihood of marriage.

1 Introduction

Marriage rates in South Africa have been declining for some time. In the United States of America and other developed countries, similar patterns are not a new phenomenon. For example, lower marriage rates for black Americans compared to their white counterparts are well documented and extensively studied (for example Espenshade, 1985; Mare and Winship, 1991). However, there is still a gap in the literature regarding what determines marriage decision.

In South Africa, most studies interested in declining marriage have focused more on the decline itself, and hence, have only generated marriage patterns[1]. This paper fills this gap in South African marriages literature and puts emphasis on the determinants of marital behaviour. Moreover, South Africa is potentially a rich source of data on declining marriages in developing countries, yet this country has not been included in international comparative studies of marriages and family formation.

[1]For example, Hosegood, McGrath and Moultrie (2009) studied marriage patterns in rural KwaZulu-Natal, South Africa from 2000-2006.

Harwood-Lejeune (2000), Lesthaeghe and Jolly (1995) and Van de Walle (1993) show evidence of exceptional marriage patterns in South Africa, relative to other countries in sub-Saharan African region[2]. Being one of the few countries characterised by declining marriage rates in the developing world, South Africa provides a unique case study for evaluating declining marriage rates for this group of countries.

More than a decade after the abolition of apartheid in 1994, improved labour market policies have led to a change in several patterns, including that of marriages and labour force participation. Marriages have declined, while labour force participation has increased, especially for African women [3]. Opportunities in the labour market resulting from change in the political environment may affect the decisions that women make regarding market work and homework. One possible reason for this affecting marriage choices is the fact that marriage demands much of a woman's time in the home. Nevertheless, we can not make a causal statement as far as female labour force participation and marriage decisions are concerned, because causality can go either way. In other words, labour force participation can affect marriage, and at the same time, be affected by it. In this paper, we address the question "what determines women's marriage decisions?", with emphasis on the effect of female labour force participation.

Most of the previous empirical studies on the interaction between labour force participation and marriage decisions have ignored the joint determination characteristic of these two decisions. Those studies which have taken this element into account have focused on the impact of endogenous marriage decision on labour force participation decision (for example Lee, 2005; Van der Klaauw, 1996). Some of these studies have ignored the joint determination problem by considering only married women (for example Mincer, 1962; Mroz, 1987). Other studies have treated marriage as an exogenous dummy variable or ignored it altogether. However, assuming completed choices may result in a sample selection bias.

Our interest in the current research runs in the other direction, the impact of endogenous participation on marriage decision. While the impact of labour force participation decisions on marriage outcomes is expected for women, we have not come across any studies that have examined the nature and magnitude of this relationship. It is important to mention that schooling may also be jointly determined with marriage, as with labour force participation (for example Sander, 1992; Boulier and Rosenzweig, 1984; Goldin, 1995; Gould, 2003)[4]. For simplicity, we ignore the potential endogeneity of schooling in this study but we recommend accounting for this problem in future research.

[2]They show that by the 1980s, marriage patterns were already exceptional in South Africa, relative to other countries in the sub-Saharan Africa. The mean age at marriage for women was one of the highest in the region, at 23.3 years of age and marriages were far from universal.

[3]Mainly for the purposes of tracking performance in post-apartheid indicators, South Africa continues to racially categorize her subjects into black and white. Blacks are further divided to include Indians/Asians, coloureds and indigenous South Africans. Indigenous South Africans are called Africans, to separate them from the rest of the black population, and according to Census 2001, they make up about 80 percent of South Africa's population.

[4]Sander (1992) proved the endogeneity of schooling for white men in the United States using a Hausman test.

Empirical investigation of the interrelationship between female marriage and labour force participation decisions raises one main difficulty. The probable endogeneity of labour force participation decision in the marriage equation (and vice versa) has to be accounted for. This suggests that estimating a standard univariate probit model may be inappropriate since it may give biased estimates. The presence of an endogenous variable calls for a simultaneous equation modeling, which complicates the analysis. For example, an instrumentation approach is required and finding a good instrument is an empirical challenge.

To capture interdependence between labour force participation and marriage, we undertake a two-step estimation procedure. In the first step, we estimate a labour force participation model, and in the second step, a marriage model is estimated with the predicted values of labour force participation generated in the first step included as one of the explanatory variables. The procedure is estimated using three sets of models, namely, a probit model, a linear probability model and a standard bivariate model. These models will be discussed in detail in the methodology section.

To understand what determines women's marriage decisions, we present the estimates for each of the cross-sections. The estimates are similar for most of the cross-sections from 1995 to 2006. We therefore focus only on one cross-section, the 1998 October Household Survey, to discuss the estimates in detail. The analysis generally produces expected results. The estimation results confirm that labour force participation has a negative effect on women's decision to marry, as predicted by economic theory. This suggests that the probability of marriage for women who are in the labour force is lowered, compared to that of women who are out of the labour force. Other control variables are also considered. For example, age is found to have a positive effect on the likelihood of marriage. The older a woman is, the more likely it is that she will be married. Education, which is captured in categories of dummy variables, is also generally found to have a negative effect on the likelihood of marriage. The results indicate that having at least some secondary education generally reduces the likelihood of marriage. Also, availability of mates, which is proxied by sex ratio, positively and significantly increases the likelihood of marriage, as predicted by economic theory.

The rest of the paper progresses as follows. In section 2, we review both the theoretical framework and the empirical literature on marriage. In section 3, we outline the empirical strategy for jointly modeling labour force participation and marriage decisions. We use a female sample in the marriageable age group of 20-49 years using datasets from the nationally representative surveys from 1995 to 2006. Data is also discussed in section 3. Econometric estimates are presented in section 4 along with the discussion of the results and finally, section 5 concludes the paper.

2 Literature Review

2.1 Theoretical Framework

Becker's (1973) theory of marriage is a pioneering work in the economics of marriage, provid-

ing a framework for analyzing marriage behavior using the principles of economics. Becker bases his theory on the theory of preferences and the concept of utility maximization. In principle, marriage is perceived as a manifestation of utility maximizing behavior of rational agents. Equivalent to utility are gains from marriage, which form the heart of the theory. An individual's decision to marry or remain single is synonymous with a constrained utility maximization problem, with gains from marriage as the objective bounded by budget and time constraints. Thus, a marriage between two people would occur if, for both partners, the gains from marriage exceed the gains from being single. Becker assumes that utility from marriage depends not only on the consumption of the goods and services purchased in the market place, but also on the consumption of the commodities produced within and/or by the household. Husbands are typically expected to be breadwinners and produce the former, and wives are more often homemakers, specializing in the later. In other words, Becker' economic theory is based on the notion of production complementarities. This is typically understood as specialization of labour within the household, believed to make couples more efficient than singles.

According to Becker (1973), the list of household-produced commodities include the quality of meals, quality and quantity of children, prestige, recreation, companionship, love and health status. For simplicity, Lam (1988) asserts that market-purchased and household-produced commodities are aggregated into a single composite good, Z. Each household, single or not, has a production function to produce Z, whose inputs are market goods and services and own time of different household members. Becker (1973) formalises these ideas as follows. The production function is given as:

$$Z = \phi\left(x_i, t_j, E\right)$$

where x_i represents various goods and services, t_j is household member's time inputs, and E are environmental factors.

Therefore, in Becker's (1973) language, if M and F represent two individuals who must decide whether to marry each other or remain single, then Z_{m0} and Z_{0f} represent the maximum outputs of a single M and a single F respectively. Analogously, M_{mf} and F_{mf} respectively represent a married man's output and a married woman's output and the production function of M_{mf} and F_{mf} is similar to that of Z above. Therefore, focusing on F, she will decide to marry if her output from marrying M is at least as much as her single state output (analogously, the output of M from marrying F should be at least as much as his single state output).

Let us assume that the married woman's output and the single woman's output are respectively determined by:

$$F_{mf} = x_{mf}\beta + \mu_1$$

$$Z_{0f} = x_{0f}\delta + \mu_2$$

where x_{mf} and x_{0f} are subsets of x_i and t_j. They respectively represent vectors of factors required for the married woman's and the single woman's outputs. μ_1 and μ_2 are error terms synonymous to E, each of which is assumed to be normally distributed with zero mean and unit variance.

Following ideas from Lee, Jang and Sarkar (2008)[5], experiencing marriage is identified with output of the marriage and a woman will marry if this output is at least as much as the amount she can produce if she is unmarried. A woman's decision to marry is therefore determined by x_i and a neccessary condition for F to marry M can be rewritten as:

$$x_{mf}\beta - x_{0f}\delta > \mu_2 - \mu_1 \tag{1}$$

If we define $\upsilon = \mu_1 - \mu_2$, also assumed to be normally distributed with zero mean and constant variance, σ_1, then inequality (1) can be rewritten as:

$$\frac{x_{mf}\beta - x_{0f}\delta}{\sigma_1} > \frac{-\upsilon}{\sigma_1}$$

The probability of marriage is given by $P = 1 - \Phi\left(\frac{-\left(x_{mf}\beta - x_{0f}\delta\right)}{\sigma_1}\right)$ where Φ is a cumulative distribution function. A probit estimation method is used if $\frac{\left(x_{mf}\beta - x_{0f}\delta\right)}{\sigma_1}$ is assumed to follow a normal distribution.

The vector of the determinants of marriage decision contains labour force participation, and as alluded to in the previous paragraphs, labour force participation is likely to be endogenous. Economic thinking claims that the decision to participate in the labour force should be analyzed in the context of the family (for example Mincer, 1962). Given the interrelationship between these two decisions, then it is implied that the decision to marry should be analyzed in the context of an individual's labour market status.

Other determinants of the gains from marriage include physical capital, age, race, height, beauty, intelligence, personal chemistry and attitude towards marriage. Ideally, an increase in the value of the potential spouse's and own traits would generally increase the gains from marriage, and hence, increase the desirability of marriage.

Another factor affecting the probability of marriage is availability of partners. Wilson (1987) argues that marriage behavior is highly likely to be affected by availability of men, in particular, good quality men. Availability of men gives an indication of performance of the marriage market. In practice, sex ratio is used as a proxy for the supply of partners. A sex ratio which is greater than one, for instance, means that there are more men than there are women, and vice-versa for a sex ratio which is less than one. Shortage of men implies that a number of women would not have husbands, especially in monogamous societies, resulting in fewer marriages.

With limited information in the marriage market, individuals engage in a costly[6] search process to find a suitable marriage partner. The concept of searching for a potential spouse

[5]They modelled the effect of endogenous marriage on female labour force participation.

[6]Emotional rather than monetary.

in the marriage market is analogous to that of searching for a job in the labour market (for example Lichter, McLaughlin, Kephart and Landry, 1992; Wood, 1995; Brien and Sheran, 2003). Like in the labour market where the employer will look for a potential employee with a minimum set of qualifications, each individual looking for a potential spouse to marry will have a minimum set of acceptable characteristics, below which, a match will not occur. In that case, a marriage proposal will not be accepted (Lichter et al., 1992). Some of these characteristics include economic attractiveness, age, race, height, beauty, intelligence, personal chemistry and attitude towards marriage. Essentially, a large supply of suitable potential spouses will reduce the cost of search for a marriage partner and increase the potential benefits from marriage. Therefore, like a typical market, the marriage market will not clear if demand and supply of potential partners do not equilibrate.

The theoretical prediction is that areas where there is a greater availability of unmarried men, especially men with high levels of education or good jobs, should have more marriages for women. On the other hand, relative scarcity of men means women would have fewer men to choose from and more women to compete with for a potential spouse. Others have related the notion of sex ratio to bargaining power within the household (for example Angrist, 2002; Chiappori, Fortin and Lacroix, 2002; Grossbard-Shechtman, 1993). Ideally, women would hold a higher degree of bargaining power if they attain a relatively larger share of the marriage market. In other words, they would play a more influential role in the decision making processes regarding how resources are allocated within the household[7].

Evidence in the literature supports the hypothesis that sex ratios influence the decision to enter into marriage. In considering the marriage market, issues of how to calculate sex ratio should be considered. This involves going past the numeric supply of potential partners (Becker, 1991; Oppenheimer, 1988). Considerations of power relations between the two genders (Guttentag and Secord, 1983), marriageability/quality (Wilson and Neckerman, 1986; Wilson, 1987), demography (for example age of marriageable partner) and geographical boundaries where meetings with potential partners are likely to occur are highlighted. Nevertheless, identical behaviour is predicted under similar conditions, regardless of how sex ratio is defined. Wilson's (1987) argument that shortage of marriageable men results in fewer marriages for women has spurred fruitful research into changing marriage patterns and has mostly been applied to declining marriage rates among African Americans. This argument has found ample empirical support (for example McLaughlin and Lichter, 1997; Angrist, 2002; Brien, 1997; Wood, 1995; Gustafsson and Worku, 2006; Posel and Casale, 2010) as evidenced in the empirical literature review below.

[7]For example, Porter (2007) demonstrates that children whose mothers were born when the Chinese government enacted the one-child policy in 1979 that resulted in what Amartya Sen (1990, 1992) calls "missing women" benefited significantly. These children's health measures are believed to have significantly improved due to higher marriage market ratios. The explanation is that their mothers had more say in the allocation of household resources, and invested more of the resources in children than their fathers would have done, due to maternal altruism.

2.2 Empirical Literature Review

A considerable amount of research has attempted to analyze the determinants of marriage or union formation. Literature summarizes key influences on family formation into four broad categories namely, demographic, economic, socio-cultural, and psychological influences. The specific influences include non-marital childbearing and (un)availability of men under demographic influence (for example Angrist, 2002; Kiecolt and Fossett, 1995; Sampson, 1995). Women's economic independence and men's economic status fall under economic influence (for example Testa and Krogh, 1995). Gender role expectations and the meaning of marriage are viewed as socio-cultural influences and finally, psychological influences constitutes issues like interaction processes and attitude towards marriage (for example Tucker and Mitchell-Kernan, 1995).

The literature on the topic is enriched by examinations of the effect of sex ratios on marriage decisions. The empirical results are broadly consistent with views which postulate that higher sex ratios increase the likelihood of marriage.

McLaughlin and Lichter (1997) base their argument on the grounds that marriage provides one route out of poverty[8]. They use data from the US National Longitudinal Survey of Youth to examine first marriage transitions for poor young women while controlling for differences in economic independence, mate availability, family culture and living arrangements. They found that lower mate availability in a local area depressed the probability of marriage among poor women but had no influence on the probability of marriage among women who are not poor.

Angrist (2002) used data from the US 1910 and 1940 Censuses to study the effects of sex ratios on the incidence and quality of marriage. He used variation in immigrant flows as a natural experiment to study the effect of sex ratios on the marriage prospects of children and grandchildren of immigrants. His empirical results suggest that high sex ratios had a large positive effect on the likelihood of female marriage. Angrist suggests that the implication of his finding is that female children born to parents in a high sex ratio environment were better off in the marriage market.

Brien (1997) studied the role of the marriage market in the timing of first marriage among Afro-Americans and whites using longitudinal data. He used five definitions of marriageable men: 1) all men; 2) all employed men; 3) all men who were employed, in school or short-term unemployed; 4) all men who were full-time employed; and 5) all men with earnings above a certain amount. He used the 5 percent sample of the US Census 1980 data to construct the sex ratios and he distinguished different level of geography (county, SMSA, state) for all the sex ratios; his definition of marriageable men coincided with that of Wood (1995)[9]. He concluded that residing in a state that had a favorable marriage market shortened the

[8]This would be the case only if marriage is not perfectly positive assorted on income.

[9]Wood (1995) identified the causal effect of economic prospects on marriage rates and found that only about 4 percent of the decline in the marriage rates of black American females could be explained by the drop in the number of black Americans men with good economic prospects.

waiting time to marriage. Using more sophisticated measures of mate availability[10], Lichter, LeClere and McLaughlin (1991) have also found similar results.

In South Africa, Gustafsson and Worku (2006) studied the effects of local marriage markets on the marital decisions of women with at least one child. Their study was motivated by the low proportion of African mothers who were married, which was only up to 48 percent in Census 2001. Using the Census 2001 dataset, they test the hypothesis that a low sex ratio results in less attractive marital outcomes for women. They use the following measures for marriageable men: 1) all men 2) the number of employed men; 2) the number of men with completed education higher than grade 12 (standard 10); 4) the number of men with an income greater than R800[11] per month. They estimate an ordered probit model with different marital types ranked from less desirable (never married) to more attractive (married civil). The estimation results support the hypothesis that a low sex ratio reduces the likelihood of marriage. The results are robust, regardless of whether the quantity or quality measure of marriageable men is used.

More recently, Posel and Casale (2010) examined the relationship between alternative definitions of sex ratios and marriage outcomes among African and white women in South Africa. Using matched data from the 2001 Population Census and the South African Labour Force Surveys, they find that both the quantity and quality of unmarried men relative to women in local marriage markets are significant predictors of African marriages. They however find that economic-based measures of marriageability perform better than simple sex ratios in explaining marriage outcomes for the African population group.

With regard to the effect of female labour force participation on marriage, the literature remains sparse. The economic variables that have mostly been studied in the literature include women's employment, hours of work and earnings. The research findings on the effect of women's employment on marriage have been varied. While some find negative effects of women's employment on marriage (for example Blau, Kahn and Waldfogel, 2000; Cready, Fossett and Kiecolt, 1997; Lloyd, 1996; Schultz, 1992) others have found positive effects (for example McLaughlin and Lichter, 1997; Olsen and Farkas, 1990; Raley, 1996; South, 1991; Sweeney, 2002), and still others found no effects (for example Manning and Smock, 1995).

3 Methodology

Clearly, marriage trends alone cannot fully explain the marital behaviour that characterizes African women in South Africa. Here, in order to take into account the fact that marriage and labour force participation decisions are potentially endogenous, we use a two-step estimation procedure.

[10]They consider economic attractiveness of prospective male partners by including the unemployment rate and mean earnings of full- time, full-year male workers.

[11]About US$100 in 2010 prices.

3.1 Model Specification

3.1.1 The Simultaneous Equation Probit Model

Based on the theoretical framework above, a baseline probit model is specified as:

$$m^* = \mathbf{x}\boldsymbol{\gamma} + \upsilon \tag{2}$$

where $\mathbf{x}$ denotes a $(1 \times K)$ vector of observable characteristics explaining the marriage decision, $\boldsymbol{\gamma}$ denotes a $(K \times 1)$ vector of estimable parameters, and m^* denotes the unobserved gains from marriage. m^* is equal to the difference between gains from marriage, F and the gains from being single, Z in the theoretical framework above. We let indicator variable m be the self-reported marital status measured in the form of a dichotomous variable with two possible values $\{0, 1\}$. m takes the value of 1 if the latent m^* is positive (indicating that she has ever married to include the married, cohabiters, the widowed and the divorced[12]), and 0 otherwise. $\upsilon \sim N(0, 1)$ is a normally distributed stochastic component with zero mean and unit variance. The binary marital status choice problem is determined according to:

$$\left.\begin{array}{c} m = 1 \text{ if } m^* > 0 \text{ (experience marriage)} \\ m = 0 \text{ Otherwise (remain single)} \end{array}\right\} \tag{3}$$

If we denote P as the probability that $m = 1$ and $(1 - P)$ is the probability that $m = 0$, then $E[m] = P = \Phi(\mathbf{x}\boldsymbol{\beta})$, where $E[.]$ is the expectation operator and $\Phi(.)$ represents the standard normal cumulative density function (CDF) of the error term υ. In this case, the coefficients of the binary choice equation can be estimated in a maximum likelihood framework by probit analysis, provided that the variance of υ is normalised to 1.

However, as alluded to in the previous paragraphs, one problem associated with estimating a probit model is that $\mathbf{x}$ contains labour force participation, which is potentially an endogenous variable. Ignoring this problem may result in biased estimates of the effect of labour force participation on marriage for young women. To address the endogeneity problem, we rewrite equation (2) to capture the following structural model:

$$m^* = \alpha_1 p^* + \beta_1 x_1 + \mathbf{z}\boldsymbol{\gamma}_1 + \upsilon_1 \tag{4}$$

$$p^* = \alpha_2 m^* + \beta_2 x_2 + \mathbf{z}\boldsymbol{\gamma}_2 + \upsilon_2 \tag{5}$$

Analogous to the marriage model, p^* denotes the net benefits of participating in the labour force, indicator variable p is self-reported labour market status measured in the form of a

[12]Strictly speaking, a rational individual cannot choose to be widowed. However, if an individual is widowed, it follows that they chose to be married at some point. Similar arguments can be made for the divorced. Accordingly, we assume that every person who has ever married still has the qualities that made them choose marriage in the first place. We also consider cohabiters as being married, because they signal preference for marriage rather than remaining single by choosing to live with a partner, even though the union is not legal. This essentially means that they are deriving a higher utility from the "union" compared to the utility they derive in a single state.

dichotomous variable with two possible values $\{0, 1\}$. $p = 0$ implies that the individual is out of the labour market and $p = 1$ is restricted to the economically active, including the employed, the self-employed and the unemployed. The binary labour force participation choice problem is determined according to:

$$\left.\begin{array}{c} p = 1 \text{ if } p^* > 0 \text{ (in the labour market)} \\ p = 0 \text{ Otherwise (out of the labour market)} \end{array}\right\} \tag{6}$$

x_1 is a variable that features only in the marriage equation and x_2 is a variable featuring only in the participation equation. $\mathbf{z}$ is a vector of explanatory variables common to both the marriage and participation equations. α_1 measures the effect of participation on marriage and α_2 measures the impact of marriage on labour force participation. υ_1 and υ_2 represent normally distributed random errors for the marriage and the participation equations respectively such that $(\upsilon_1, \upsilon_2) \sim N(0, 0, 1, 1, \rho)$.

Following Maddala (1983, pp. 246), the structural model can be estimated by a two-step maximum likelihood procedure. In the first step, we estimate a probit model for the labour force participation equation using the availability of women's jobs as the instrumental variable along with other exogeneous variables. The fitted values of labour force participation probabilities are then obtained. In the second step, we estimate a probit model for the marriage equation using the fitted labour force participation probabilities from the first step.

One major problem, however, is that the imputed unobservables applied in the second step are measured with error. An adjustment is necessary, otherwise this will give rescaled structural estimates if used directly as a regressor in the second step. Otherwise, we can just interpret the sign of the coefficients while ignoring the size. Also, for valid statistical inference, it is necessary to adjust the estimated asymptotic covariance matrix in this step to allow for the first-step estimation. The basic idea is that the two-step method fails to account for the fact that the unobservable regressors have been estimated in calculating second-step coefficients and standard errors. Therefore, a third step is necessary, where a correction in the covariance matrix is done. Maddala (1983, pp. 247) provides such a correction for our type of model.

3.1.2 The Simultaneous Equation Linear Probability Model

The simultaneous equation linear probability model is naturally an attractive option in the wake of the estimation difficulties of the simultaneous equation probit model (Heckman and Macurdy, 1985). The model has observed outcomes instead of unfathomable latent variables and can be written as follows:

$$m = \alpha_1 p + \mathbf{z}\boldsymbol{\gamma}_1 + \upsilon_1 \tag{7}$$

$$p = \alpha_2 m + + \mathbf{z}\boldsymbol{\gamma}_2 + \upsilon_2 \tag{8}$$

Clearly, the expectations of the error terms are unlikely to be zero since m and p are likely endogenous. The latent variable formulation which corrects for the endogeneity problem is specified as in structural equations (4) and (5) above. Therefore, instead of estimating probit models for the structural model above in the first and second stages as in Maddala (1983), Heckman and Macurdy (1985) use a two-stage least squares (2SLS) estimation procedure. Heckman and Macurdy's (1985) model is a categorical data analogue for the conventional linear simultaneous equation for continuous endogenous variables. The simultaneous equation LPM is capable of estimating unconditional relationships among jointly endogenous continuous random variables. Put differently, the linear simultaneous equation model is easy to interpret because it captures the effect of latent labour force participation on latent marriage (the effect of the propensity to work on the propensity to marry). In that case, the estimates are better than the ones generated from the naïve marriage probit model because the approach adequately accounts for the serially correlated unobserved variables that are causing the endogeneity problem. In addition, we are able to talk about the magnitude and the statistical significance of the effect of the variables, unlike Maddala's (1983) approach, where only the direction of the effect is shown.

3.2 Identifying the Coefficients and Investigating the Validity of the Instrumental Variable

Identification in this system is achieved by including at least one variable in the participation equation (marriage equation), not contained in the marriage equation (participation equation). Our exclusion restriction in the identification of the marriage equation is availability of local women's jobs[13].

In order to be considered a plausible instrumental variable, the women's job variable must not be directly related to marriage. However, the two variables should be related only through the impact of women's jobs on women's labour force participation, which in turn impacts women marriage. The idea is that there is some sort of gender discrimination in jobs (for example Ntuli, 2007; Casale, 2003). This implies that gender discriminatory jobs would be demand driven. However, women's jobs need to be created irrespective of marital status of a woman. This means, the jobs are not created with married or single women in mind. If for example an employer wants to establish a business in a locality, he will not do so because there are women of a particular marital status in that locality, whom he expects to employ. If this is true, availability of women's jobs does not directly affect women's marriage decision. Availability of woman's jobs affects marriage through women's labour force participation decision, making the instrument valid.

[13]Finding an instrument was perhaps the biggest challenge of this research project as we did not come across any related studies which already argued for "valid" instruments.

A local women's job variable is measured as a proportion of women jobs in a district council. This variable is generated by first calculating the proportion of women in a particular occupation in the labour force. The occupation dominated by women (at least 50 percent being women where 50 percent cut off was arbitrarily chosen) was considered to be a woman's job. We coded such jobs with a one and collapsed all women's jobs by district council. This gave the proportion of women's jobs in a district council. This variable indicates the extent of employment opportunities available to women in a particular locality. We chose to calculate women's jobs at a local level. The reason is that, just like sex ratio, a woman's likelihood of participating in the labour market may depend on the availability of jobs in her locality. In addition, different local labour market conditions may have different consequences on outcomes for individuals of that particular locality. Simply put, the effects of availability of women's jobs may [unusually] vary across areas.

A second condition for a valid instruments requires that the women's jobs variable be exogenous to the labour force participation equation. This condition means that the women's jobs variable is not correlated with the error term, but does help to explain female labour force participation decisions. We expect women's jobs variable to positively impact women's labour force participation decisions. Demonstrating this condition of a valid instrument is straightforward and requires estimating the reduced form labour force participation model. The performance of women's job in its capacity as an instrument is informed by results from specific models discussed in detail in section 4.

To identify the participation equation, we follow the literature by using sex ratio (also at a district council level) as an instrument. In that regard, sex ratio needs to be significantly related to marriage. Empirical evidence to support this claim is adequately discussed in the empirical literature review section above. The expectation is that availability of potential spouses, which is proxied here by sex ratio, should positively impact marriage. In addition, we require sex ratio to affect women's labour force participation only through its impact on marriage.

3.3 Data Description

Our main sources of data are the 1995-1999 October Household Surveys (OHSs) and the September wave of the 2000-2006 Labour Force Surveys (LFSs). Although this series of surveys was initiated in 1993, we have left out the 1993 and 1994 datasets because their sampling methodology significantly differs from the 1995 survey onwards. In 1993 and 1994, a sample of 30000 households was drawn from 1000 enumeration areas. From 1995 onwards, the sample was drawn from 3000 enumeration areas. Moreover, in 1993, the TBVC states[14] were not included in the sample. Varying sampling methodologies like these challenge survey to survey comparisons. For these reasons, we work with the more consistent cross-sectional dataset from 1995 onwards.

The OHSs are annual independent cross-sectional surveys, and different samples were

[14]Transkei, Bophuthatswana, Venda and Ciskei were bantustans or black African homelands.

designed for each of them. However, in a standard OHS, the sample was explicitly stratified by province, magisterial district, urban/rural and population group. A sample was drawn by applying a two-stage sampling procedure. In the first stage, enumeration areas (EAs) represented primary sampling units (PSUs) were systematically selected by means of probability proportional to size principles in each stratum to ensure adequate representation. The measure of size was the number of households in each PSU. The database of EAs, as established during the demarcation phase of Census 1996, constituted the sampling frame for selecting EAs. In the second stage, households were randomly selected from the selected EAs. Depending on the availability of funding, the number of sampled households ranged from 16000 in 1996 through to 20000 in 1998 and 30000 in 1995, 1997 and 1999.

The LFS replaced the OHS after their discontinuation in 2000. The sampling design for the standard LFS is similar to that of the OHS. The main feature distinguishing these two surveys is that the LFS were designed to be a twice yearly rotating panel with the waves running in March and September. A twenty percent rotating scheme was designed, implying that new dwelling units would be included to replace the dropped ones in the second wave (SADA, 2001). For the purpose of this study, we will only make use of cross-sectional information and the September wave in particular.

While we report the estimates for all the cross-sections, we focus on the 1998 OHS to understand the determinants of women's marriage decisions. OHS 1998 is not necessarily a typical year but was mainly chosen because the instrument worked better than in the other years. We define the married as everyone who has ever married (including the married, cohabiting, widowed and divorced). We restrict the estimable sample to African women in the age range 20 to 49 years. We also do analysis for a sub-sample of women aged 20 to 34 years.

The explanatory variables included in regression estimation include individual level and regional characteristics. The choice of explanatory variables was largely guided by theory, past empirics and the availability of data.

A set of individual characteristics include age, education, labour market status, language and location where one resides. Age is captured as cohort-level dummies in 5 year bands. Education and labour market status are also captured as dummies. Empirical evidence supports the hypothesis that education and labour market status may be important in a woman's marriage decision. For example, Lichter et al. (1992) and Oppenheimer (1994), using data from the National Longitudinal Survey of Youth in the USA, have shown that women with higher education, higher earnings, and better employment are more likely to marry than women with less education and lower earnings. However, these findings are contrary to the predictions of the women's economic independence hypothesis. The hypothesis suggests that as women's education and earnings increase or the gender differential of these narrows, women will be less reliant on marriage for financial support, resulting in a decrease in women's incentive to marry (McLaughlin and Lichter, 1997). This is in relation to the partner search process discussed in the theoretical framework section.

Bridewealth (or *ilobolo*) is expected to significantly influence marriage. However, information on bridewealth was not collected in either the OHS or the LFS. We therefore proxy the traditional bridewealth payment culture with language. The justification is that, brideprice payment is widely practiced among African people. A traditional family would typically speak an ethnic language in the home. For that reason, including language as one of the explanatory variables will enlighten on the influence bridewealth may have on marriage decision for African women. Language is captured as a 0/1 dummy for each of the languages.

Location characteristics are represented by a set of provincial dummies. We also include a urban/rural dummy, which takes the value of one if the woman resides in a rural area, and zero otherwise. In addition, we consider a variable capturing the availability of men. Supply of partners in a local marriage market is considered, and is proxied by sex ratio at the district council (DC) level[15]. The district council is assumed to be the geographical area where women would search for potential partners. We consider the province to be too broad to measure the local marriage market. The district council is the third level of hierarchy from high (country) to low (enumeration area).

For the estimates to be comparable with those from other years, it is fundamental that the census geography from which the surveys are based should be comparable. In our case, OHSs and LFSs were based on the 1996 and 2001 census, respectively. In that case, the DCs are not comparable. We reconcile this problem by re-allocating data from the OHSs and LFSs according to a common set of boundaries. This is achieved through the centroid location of enumeration areas (point-in-polygon location). Centroid locations in magisterial district polygons were generated using 1996 spatial data and these were intersected with the 1996 DCs. The results were merged with the 2001 DCs to generate matched DCs for 1996 and 2001. Geographical Information System (GIS) software called ArcView[16] was used to reconcile district council information in 1996 and 2006. There are 53 DCs in total for all the cross-sectional datasets.

The local marriage market is calculated by considering the geographical and racial "marriage markets", to take account of the fact that most people marry someone of the same race who lives relatively close to them (Gustafsson and Worku, 2006). In addition, we consider the age-specific aspect of sex ratio. For men, we only consider employed men in order to

[15]South Africa's hierarchical geography progresses with 9 provinces. Below the provinces are the 365 (231) local municipalities in 1996 (2001), each of which have clearly defined boundaries. The municipalities are grouped into 53 district councils. Out of these there are 6 metropolitan areas namely City of Cape Town Metropolitan Municipality, Ethekwini Municipality (Durban), City of Johannesburg Metropolitan Municipality, Ekurhuleni Metropolitan Municipality (East Rand), Nelson Mandela Metropolitan Municipality (Port Elizabeth) and City of Tshwane Metropolitan Municipality (Pretoria). The main place is level five in the geographical area hierarchy structure and there are 2,674 main places in total. 15,966 sub-places follow in the sixth level. Enumeration Areas (EAs) are at the lowest level of hierarchy and have been created by Stats SA for census administrative purposes to create small units of manageable size for enumeration. There were approximately 94,000 EAs in Census 96 and 80,787 EAs were demarcated for Census 2001 (StatsSA, 1998; StatsSA, 2003).

[16]ArcView is full-featured geographic information system (GIS) software for visualizing, managing, creating, and analyzing geographic data. Using ArcView, one can understand the geographic context of the data. I am highly indebted to Nicholas Lindenberg, the manager of the GIS lab at the University of Cape Town for his assistance in reconciling the District Council information in the 1996 and 2001 Censuses.

capture the 'quality' measure of the sex ratio.

Sex ratios used for analysis were calculated from datasets obtained from large-scale surveys because of the problem of few observations with data from the household surveys. We used Census data for 1996 and 2001 to interpolate sex ratios in between the censuses and to extrapolate for 1995. Between 2001 and 2006, we interpolate sex ratios using 2001 Census data and 2007 Community Survey[17]. Conceptually, the interpolation process has two stages. First, fit an interpolating function, $f(x)$, to the data points provided, and second, evaluate that interpolating function at the target point, $x = 1998$[18].

In Table 1, we present the mean values (and the standard deviations) of the variables controlled for in the OHS 1998 sample. The results indicate that in 1998, about 50 percent of African women had ever married. There is also a good representation of women in the work force, at about 65 percent.

The distribution of education among the women is standard, with relatively fewer women at the tails. For example, while a total of 20 percent have some primary schooling and 6 percent have some tertiary education, close to 60 percent of the women have some secondary schooling. The distribution of age shows that our sample is mostly young. For instance, we find that nearly 65 percent of the women are under 34 years of age. Only about 20 percent of the sample consists of women who are at least 40 years old.

The provincial dummies show that there are fewer African people in Northern Cape and they make up a total of about 1 percent of the whole sample. On the other hand, KZN and Gauteng Provinces are relatively well represented, with representation at around 20 percent. Urban/rural distribution is quite equal, with near-equal percentage of women in the sample residing in each of these area types.

Also interesting are the means from the sex ratio. The sex ratio is less than one. At 0.78, sex ratio indicates that there were more women than there were "good quality" men in 1998. With fewer men than women, the likelihood of marrying may go down, and even more when potential men with good jobs and good education are few.

With regard to language, we observe that the sample is to a large extent made up of Xhosa and Zulu speaking people, who together make up about 50 percent of the sample. On the other hand, the proportion of Afrikaans and English speaking people, as well as people who speak other languages as German, Italian, Portuguese, Swahili and others collectively represent only about 1 percent of the sample.

4 Estimation Results and Discussion

In this section, we present and discuss econometric results. We first demonstrate the performance of women's job as an instrumental variable. We report the reduced form labour

[17]Censuses 1996 and 2001 are the only censuses conducted under the new democratic government. Since Census 2006 was not conducted, a gap in data between Census 2001 and the next Census, scheduled to be carried out in 2011 was created. The 2007 Community Survey in 2007 was conducted to fill this gap.

[18]We implement the procedure by using the *ipolate* command in Stata.

force participation estimates from Maddala's (1983) model, the bivariate probit model and Heckman and Macurdy's (1985) simultaneous equation model in Table 3. For simplicity, we focus our discusion on the estimates from the representative sample of the 1998 cross-section.

The instrument is well behaved in all the three models. In the bivariate probit model, woman's job is positive and statistically significant at 1 percent level of significance in the participation equation. In the same bivariate model, the effect of woman's job on the likelihood of marriage is not statistically significant at any standard levels of significance. The effect of woman's job on the likelihood of labour force participation continues to be positive, even when Maddala's (1983) approach is used. Likewise, woman's job is positive and statistically significant on latent participation in the Heckman and Macurdy's (1985) model. The magnitude of the F-statistic (which equals t^2) of women's job variable is 10.7584>10 in the OLS regression, indicating that this variable is a strong instrument in the 1998 cross-section.

In the bivariate probit model, rho is found to be significantly different from zero. This shows the importance of jointly modelling marriage and participation decisions and confirms that the estimates obtained from a univariate decision framework would be inefficient. It is also unsurprising to observe that rho has a negative sign, indicating that marriage and labour force participation have a negative correlation, as is expected. In addition, the results from the endogeneity test in Table 4 confirms that labour force participation is endogenous in the marriage model. The two endogeneity tests, Hausman's and Wu's, give identical results. The general Hausman version is in chi-square form, while the Wu version is a t-statistic, which is the square root of Hausman's chi-square. They have the same P-values in each year, which is statistically significant. The P-values indicate rejection of the consistency of OLS, providing support for using 2SLS.

Maximum likelihood estimates of the naïve single-equation marriage probit model are reported in the first column of Table 5. Second-step estimates from Maddala's (1983) model, naïve linear probability model estimates and second-step estimates from Heckman and Macurdy's (1985) model are respectively reported in colums (2), (3) and (4) of the same table. These are respectively titled Maddala, LPM (for linear probability model) and SELPM (for simultaneous equations linear probability model) and are henceforth referred to as such.

The single-equation marriage probit model (Probit 1) and the LPM assume away the endogeneity of women's labour market status on their marriage decision, while the second step estimates from the respective simultaneous-equation models account for the endogeneity problem The naïve LPM assumes that marriage is a continuous variable, rather than a dummy variable. The naïve LPM is estimated in order to enable like with like comparison with the SELPM which controls for the endogeneity problem. While we cannot compare the magnitudes of the coefficients from Probit 1 and Maddala models, we can compare the direction of the effect of the variables from these two models.

For all the models, the χ^2-statistic (and the F-statistic in the OLS regressions) tell us that our model as a whole is statistically significant. This means that all the variables

included in the models are jointly significant. To measure the qualitative importance of all our right-hand-side variables, we report the marginal effect after the probit estimation for Probit 1 and Maddala estimations. The marginal effects are given by the derivative of the probability that a woman marries with respect to a specific variable. The coefficients of the marriage model show expected signs. We next discuss each of the variables in turn, in the context of the predictions of economic theory.

4.1 Labour Force Participation

Female labour force participation has a negative and statistically significant effect on marriage. The negative and significant effect is robust to the type of model estimated. The result means that the probability of marriage for women who are in the labour force is statistically different from that of women who are out of the labour force. The negative effect indicates that economically active women are less likely to marry than their stay-at home counterparts, as is predicted by economic theory.

The magnitude of the negative effect varies across the models. It is important to mention again here that Maddala's approach only allows for a discussion of the direction of the effect of the variable on the probability of marriage. Consistent negative signs of the marginal effect of labour force participation in both Maddala and Probit 1 models shows that labour force participation has a negative influence on the likelihood of marriage, regardless of whether its endogeneity nature in the marriage model is accounted for or not.

Comparing the estimates from LPM and SELPM, we find that the effect of labour force participation on marriage is also negative. However, the effect for the LPM is estimated at -0.02, while that for the SELPM is -0.38. What this means is that being in the labour force lowers the probability of marriage by 2 percentage points in the LPM, and by 38 percentage points in the SELPM. Clearly from these estimates, we see that ignoring the endogeneity problem underestimates the negative effect of labour force participation on marriage.

Also, it is interesting to find same size and sign of the estimate of labour force participation regardless of whether it is either assumed to be continuous (in the LPM) or categorical (in Probit 1). The estimates are -0.02 in both models, indicating that being in the labour force lowers marriage probability by 2 percentage points.

These results suggest that there may be a trade-off between marriage and labour force participation for women, as predicted by the women's economic independence hypothesis. Our finding is in line with Casale's (2003) findings, considering that labour force participation and marriage are endogenous and negatively correlated. She finds that marriage negatively affects the probability of women's labour force participation. In her discussion, Casale (2003) suggests that the negative effect might be picking up that men prefer their wives to stay at home and do household work rather than work in the job market. This also agrees with wider empirical conclusions. For example, Lichter et al. (1992) disaggregated female employment by locality and found that female marriage rates are highest in local areas with fewest economic alternatives available to women. Perhaps, the negative effect of female

labour force participation on the probability of marriage suggests that what Becker earlier proposed in his theory of marriage, that husbands and wives specialize in market work and home work respectively, is still relevant in the South African setting. That is, African couples may still view the family as a source of production efficiencies in the household as they specialize in market and home work.

4.2 Education

Education also emerged as a significant predictor of marital status. Our base education category is no schooling. The direction and magnitude of the effect of education varies with the level of education. Generally, the effect is positive for women with lower levels of schooling, and negative for women with more years of schooling.

In particular, we find that women with at least some secondary education, who have similar characteristics to those women with no schooling, are likely to be unmarried. The estimates from these dummies show a statistically significant negative relationship with marriage. The marginal effect for women with a secondary qualification is relatively high, at -0.18 in Probit 1, indicating that their probability of marriage is lowered by 18 percentage points. The effect on marriage for the same group of women is lowered by 14 percentage points in LPM and 8 percentage points in the SELPM. For women with a diploma or a degree, the sizes of the effect are similar. The probability of marriage is lowered by 7 percentage points, 5 percentage points and 5 or 6 percentage points for the respective models if a woman has a diploma or a degree.

For women with lower levels of education (incomplete primary and primary levels), the estimates suggest that all else held constant, there is no statistical difference in the effect of education on marriage compared to their illiterate counterparts. For Probit 1 model for example, the estimates are zero both for the incomplete primary and primary categories. LPM and SELPM show a positive effect, but the magnitude is estimated at 1 percentage point for the LPM and 4 or 5 percentage points for the SELPM. This is an indication that having at least some education increases the likelihood of marriage compared to no education at all.

In relation to the search aspect of marriage theory, we do not expect women with fewer years of schooling to take too long in the search process as they cannot afford to be too choosy when they are choosing a potential husband. Compared to highly educated women, the pool of potential spouses for women with barely some education is much wider, considering that their set of required minimum characteristics in a potential spouse (their own characteristics taken into account) is limited.

In contrast, the increased employment opportunities available to highly educated women free them from being dependent on men for financial survival. This increases their utility in being single. In addition, they can afford to be choosy in mate selection which narrows their pool of potential spouses. The situation may be worsened for those individuals who are from a *ilobolo* paying culture. The value of the bridewealth is higher for more educated women,

making marriage unlikely for women in communities with high levels of male unemployment.

The empirical fact arising from this analysis is that women with at least some secondary schooling are the least likely to marry. Also, from the magnitudes of the estimates, we conclude that ignoring endogeneity problems leads to an underestimation of the size of the effect of education on marriage.

4.3 Age

Age is represented by age dummies and the reference category is 20-24 year olds. The effect of age on the probability of marriage is statistically different between these younger women and older women. The effect is positive and increases with age, as is expected. An interesting finding regarding age and marriage is that the coefficients on the age dummies are significantly different, economically. We notice that while the coefficient for younger women (aged 25 to 29 years) is generally around 0.20, the coefficient for the oldest women (aged 45-49 years) is at least twice as much at around 0.50. This is an indication that younger women are less likely to be married older women. The coefficient for 25-29 year olds also suggests women might be marrying late.

It is plausible to argue here that with the notable increase in years of schooling for women, and especially for the younger cohorts, it is possible that searching for a potential spouse takes longer. Possibly, this is because the bar for minimum acceptable characteristics is set higher for this type of women, as was argued in the preceding sub-section. Naturally, the pool of young economically attractive men to marry these women will shrink if on average, men's economic characteristics are not up to standard, all other things (such as physical attractiveness, chemistry, and other items women may list in their set of minimum accepted characteristics) considered.

Comparing the LPM and the SELPM, we observe that the magnitude of the effect is higher when we control for the endogeneity problem in the SELPM. This suggests that ignoring the endogeneity problem underestimates the positive effect of age on the likelihood of marriage.

4.4 Location and Language

The province where one stays also shows some importance in predicting marriage. The base category is Western Cape Province. Residing in Eastern Cape, Northern Cape, North West Gauteng, Mpumalanga or Limpopo does not show significant differences on the probability of marriage compared to residing in Western Cape. On the other hand, residing in KwaZulu Natal or Free State shows some strong statistical difference on the probability of marriage, compared to Western Cape. What this means is that for the set of provinces which have statistically insignificant estimates, marriage prospects for women residing in those provinces are likely to not differ from those of women residing in Western Cape.

While residing in Free State Province improves the marriage chances for a woman, staying

in KwaZulu Natal Province decrease the probability of marriage for African women. The coefficient on the KwaZulu Natal Province particularly requires qualification. Consistent with the view that *ilobolo* culture raises the bar on the "marriageability" criteria it is plausible to argue that the effect of residing in KwaZulu Natal Province is strong and negative because it contains the largest Zulu-speaking population in the country. The practice of paying bridewealth is widely practiced by this population group.

The other location variable, the urban dummy, is also strongly statistically significant and has a negative sign. The results indicate that staying in the urban area decreases the probability of marriage, compared to staying in the rural area. In Probit 1, this probability is lowered by 9 percent.

4.5 Sex Ratio

According to the men shortage hypothesis, partner availability indicator, proxied here by sex ratio, is expected to positively predict the likelihood of marriage. Our results show that the sex ratio measure, which takes into account the "quality" aspect of men, captured as availability of employed men, performs well in predicting marriage. With this sex ratio measure, we find strong statistical significance at 1 percent.

The size of the effect is similar across models. For instance, the magnitude of the effect is 0.09 in both LPM and SELPM. This means, a unit increase in availability of economically attractive men increases the gains from marriage and hence the propensity to marry by 9 percentage points regardless of whether or not the endogeneity problem is corrected. Where the endogeneity problem is ignored and marriage is assumed to be a categorical variable, a unit increase in sex ratio increases the likelihood of marriage by 11 percentage points. These findings support the view that local marriage market conditions play a fundamental role in the marital search process.

Since marriage prospects for African South African women are improved by the availability of economically marriageable male partners, then it is plausible to argue that low marriage rates for these women may have more to do with economic circumstances of potential male partners. More particularly, our findings are consistent with the argument that the payment of *ilobolo* by a husband to the prospective wife's family acts as a financial constraint to marriage among African couples.

Casale and Posel (2009) found that a man's payment of *ilobolo* is considerably larger than the mean monthly earnings of African men. Therefore, it is likely that if availability of economically attractive men better predicts marriage for African people, then high *ilobolo* prices worsen the sex ratio imbalance. The implication is that it would be easier for "marriageable" men to marry than it would be for African women and poorer men. Consequently, women would be forced to lower their "reservation value" if they do not want to remain single. Otherwise, if their set of acceptable characteristics is downward sticky, then they will be less likely to marry, resulting in lower marriage rates.

4.6 Sensitivity Check

In this section, we test the robustness of our findings with a range of sensitivity checks. We want to see how the model performs with different samples. All the results are reported in appendix. First, we restrict the sample to younger women in the 20-34 age cohort. Marriage estimates for this sub-sample are presented in Table (13). Second, we include only women from KwaZulu Natal Province aged 20 to 49 years and the marriage estimates from these are presented in Table (15). In this province, the population is largely made up of Zulu-speakers who widely practice the *ilobolo* payment culture. Marriages rates are among the lowest and marriage decline is one of the largest in this province. Ethnographic studies have linked non-marriage behaviour among Zulu-speaking people to specific features of Zulu marriages. Particularly, the high cost of bridewealth has been singled out as exacerbating non-marriage (for example Burman and Preston-Whyte, 1992; Burman and van der Werff, 1993; Goody, 1973) The third set of regressions is for the 20-34 age cohort residing only in KwaZulu natal Province. The associated marriage estimates are presented in Table (17). The respective estimates for the reduced form labour force participation estimates are reported in Tables (12), (14) and (16). The instrument, woman's jobs, positively predicts labour force participation. The predictive power is highly statistically significant, at 1 percent level in the 20-34 age cohort of the entire nation. In the 20-34 age cohort sample exclusively residing in KwaZulu Natal, the predictive power is statistically significant at 10 percent.

The marriage estimates from the 20-34 year old sample are similar to those from the extended sample of 20-49 year olds. Labour force participation continues to negatively predict marriage. However, for the 1998 sample, the effect is statistically insignificant for all the models run. Similarly, the effect of education on marriage remains statistically significant for this younger sample. For the language dummies, we find that Ndebele-speakers are less likely to be married, and the effect is also statistically very strong. On the other hand, English-speakers are more likely to be married, with a strong statistical significance too. The bridewealth payment culture may be driving this result. In other words, since Ndebele-speakers are likely to be required to pay *ilobolo* to the bride's family, their likelihood of marriage may be lower, especially if there is a high African male unemployment rate. On the other hand, non-traditional English-speakers would be likely to marry since they may not be subjected to the financial constraints of a *ilobolo* paying culture. The estimates also indicate that other groups like the Zulu speakers, who also practice bridewealth payment culture are less likely to be married.

Investigating this issue further, we tested the model on only the KwaZulu Natal sample, a province with the highest proportion of the Zulu-speaking population. Particularly, we are interested in the performance of sex ratio. For both the older cohorts and the younger cohorts, sex ratio behaves poorly in predicting marriage, contrary to our expectations. The effect is zero. We suspect this result to be driven by data. In particular, sex ratios are calculated at district council level, and in KwaZulu Natal Province, there are only eleven district councils.

Aside from the data issue, one may also argue that, perhaps, since bridewealth costs are unusually high, potential husbands are allowed to make an initial payment and pay the balance subsequently without a fixed paying period. If that is true, then the effect of availability of quality men on marriages may be eroded by such practice. In addition, couples may prefer less formal cobabiting relationships rather than formal marriages because of the same high bridewealth costs. Also, Zulu childbearing traditions, particularly high acceptance of out-of-wedlock childbearing would predict marriages better. We recommend a detailed analysis of this issue for further research.

4.7 How Do the Determinants of Marriage Perform Across the Years?

We picked the 1998 cross-section as a typical year. The instruments used to analyse the 1998 cross-section perform well and the estimated results are in line with theoretical predictions. In this section, we report the estimates for all other years in the study. This will help us understand how the determinants of marriage perform across the years. The naïve single-equation probit model and single-equation linear probability models for marriage equation for the individual cross-sections are respectively reported in Tables (6) and (7). The reduced form estimates from Maddala's model and from the SELPM are respectively reported in Tables (8) and (10). The second-step estimates from the respective models are presented in Tables (9) and (10). The chi-square and the F-statistic in all the models show joint statistical significance of the variables in the models, for all the years.

Female labour force participation has a negative effect on marriage for all the cross-sections, as shown in Table (6). The effect is also very strong, at 1 percent level of statistical significance, except for the 2005 and 2006 cross-sections. We suspect that the peculiar behaviour of the estimates in these years is probably a data issue. The implication for the negative estimates is that when female labour force participation is treated as exogenous, the likelihood of marriage for women in the labour force is lowered, compared to that of women outside the labour force.

The magnitudes of the effect of labour market status do not vary much across the years. Even though we cannot directly compare these estimates across the years, the picture coming out of the estimates is that labour force participation has a similar effect on marriage for each individual cross-section. These results are similar to what we found for the 1998 cross-section above.

The estimates for education also perform quite consistently across the years, especially with regard to the dummies for incomplete secondary schooling and higher. Like the 1998 cross-section, the estimates for incomplete secondary, secondary, diploma and degree dummies are typically negative and statistically significant. This means that the likelihood of marriage for women with these educational qualifications is lower, compared to that of women with no schooling, *ceteris paribus.*

On the other hand, the estimates for incomplete primary and primary dummies are not

consistent across the years. The numbers jump from positive to negative. For example, from 1996 to 2002 and 2004, the estimate for incomplete primary education is negative. The 1993, 2003, 2005 and 2006 cross-sections show positive numbers. Also, we find that these estimates are significant in some years and insignificant in other years. The level of statistical significance is however, very weak, at 10 percent, compared to strong significance found for the more consistent estimates in the higher-education level dummies.

For age, the estimates are also consistent across time, in size, sign and strength. As with 1998, an increase in age increases the likelihood of marriage. The effects of age on the probability of marriage is statistically different between younger women aged 20-24 years (reference category) and older women. The effect is positive and increases with age for all the years.

Province dummies and urban dummies also produce similar estimates for the rest of the cross-sections. The province where one resides, for example, has some influence on the probability of marriage. As in the 1998 cross-section, residing in either the Eastern Cape, Northern Cape, Gauteng or Mpumalanga Provinces does not result in statistical differences on the probability of marriage compared to residing in the Western Cape Province. On the other hand, residing in either KwaZulu Natal, Free State, North West or Limpopo Provinces leads to strong statistical differences in the probability of marriage, compared to residency in the Western Cape. However, while residing in Free State or Northern Provinces improves the marriage chances of a woman, staying in KwaZulu Natal or North West Provinces decreases the probability of marriage for African women. The positive economic significance (magnitude of the effect) is stronger when one resides in the Free State Province, compared to residing in Limpopo Province. On the other hand, the negative economic significance is quite strong when one resides in KwaZulu Natal, compared to staying in Limpopo Province. Generally, the economic significance of the statistically insignificant province dummies is lower than that of the statistically significant Province dummies. Mostly, the marginal effects are close to zero. The indication is that staying in these provinces contributes very little to the probability of marriage compared to staying in Western Cape Province. This suggests that the marriage market environment in the province dummies with statistically insignificant marginal effects may be similar to that of the Western Cape Province, all other things remaining constant.

The other location variable, the urban dummy, is also strongly statistically significant and has a negative sign. The results indicate that staying in an urban area decreases the probability of marriage, compared to staying in the rural area. In 1997, the probability is lowered by 9 percentage points.

Finally, estimates for sex ratio show strong statistical significance at 1 percent level. The signs are mostly positive, indicating that partner availability increases the probability of marriage. In 1997 for example, a unit increase in partner availability increases a woman's probability of marriage by 4 percentage points.

To summarise, we show that there is evidence of simultaneity bias when female labour

force participation is included in the marriage model. In Table (2), we show that the correlation statistic, rho, is both positive and statistically significant in all the cross-sections, indicating that marriage and labour force participation decisions for women are jointly determined. In addition, Hausman's endogeneity test also provides evidence of simultaneity bias except for 1996, 2004 and 2006 cross-sections.

To account for this problem, we use women's job variable as an instrument in the two-step estimation framework. Out of the twelve cross-sections, women's job is significant in nine of these and the effect of women's job on labour force participation is the expected positive sign in all the years except in 1995 and 1997 cross-sections. However, while the instrument seems to work in most of the cross-sections, the F-statistic of women's job shows that this variable is a weak instrument in five out of the twelve cross-sections, including 1996, 2003 and 2006 cross-sections in which women's job is not significant.

When endogeneity problem is ignored, the impact of labour force participation on marriage is negative, as expected. Both naive probit and linear probabity models show consistent negative effect in all the cross-sections. The expected negative effect is however, not consistent in all cross-sections when the endogeneity of labour force participation is accounted for. Possibly, this is because the first step needs to work in order for the second step to work. For instance, women's job variable is significant, has the correct positive sign and is a strong instrument in 1995, 1998 and 1999 cross-sections. In turn, the impact of labour force participation on marriage is the expected negative in these years. Comparisons between naive linear probability model and simultaneous linear probability model in these cross-sections show that the impact of labour force participation on marriage is underestimated in the former.

Our findings suggest that ignoring the potential endogeneity of labour force participation when modeling marriage decisions underestimates the negative impact of labour force participation on marriage. The other control variables also tend to be underestimated.

5 Conclusion

This paper set out to investigate the factors that influence the probability that an African woman aged between 20 to 49 years marries or does not marry. It is evident that women's education and labour force participation decisions are potentially endogenous in their marriage decision. Although we ignore the potential endogeneity of education, the paper attempts to account for the endogeneity of labour force participation on marriage decisions. This is achieved by use of a two-step estimation procedure. Availability of women's jobs is used as an exogenous shock to the labour force participation decision.

Data used for analyses were from the nationally representative household surveys. Specifically, we used datasets from the October Household Surveys from 1995 to 1999, and the September series of the Labour Force Surveys from 2000 to 2006. The data generally produces theoretically predicted results. As expected, the estimation results confirm that labour

force participation has a negative effect on women's marriage decisions. This suggests that women who are economically active are less likely to choose marriage, compared to those women who are economically inactive.

Other control variables were also considered. For example, age was found to have a positive effect on the likelihood of marriage. The older a woman is, the more likely it is that she would be married. Education, which was captured as a dummy, was also generally found to have a negative effect on the likelihood of marriage. The results indicated that some secondary education generally reduces the likelihood of marriage. Also, availability of economically attractive men, which was proxied by sex ratio using employed men, positively increases the likelihood of marriage, as expected. This finding suggests that it is possible that low marriage rates among African women reflect not so much a shortage of available African men, but a shortage of "marriageable" men.

We argue that a culture of *ilobolo* payment shrinks the pool of available marriageable men. This causes a sex ratio imbalance in the marriage market. The situation is aggravated when male unemployment rate is high which reduces the supply of marriageable men. In this case, if women are willing to reduce their 'reservation value' with regard to characteristics of marriageable men, then the pool of available men will expand, increasing the likelihood of marriage. On the other hand, if the "reservation value" is not reduced, marriage will be less likely, and this would partly explain low marriage rates among African women in South Africa.

In this paper, we have given evidence of simultaneity bias when the endogeneity of female labour force participation is ignored in a marriage model. Although our proposed instrumental variable, women's job, show signs of a weak instrument, we believe that correcting for the endogeneity problem is the right thing to do.

Table 1: Means and Standard Deviations for the 1998 Sample Characteristics

Variable	**Mean**	**Std. Deviation**	**Variable**	**Mean**	**Std. Deviation**
Married	.5008	(.5)	**Area Type**		
Participation	.6451	(.4785)	Urban	.5083	(.4999)
Sex Ratio	.7805	(.2589)	Rural	.4917	(.4999)
Education			**Languages**		
No Schooling	1064	(.3084)	Afrikaans	.0042	(.0648)
Incomplete Primary	.1844	(.3879)	English	.0031	(.0558)
Primary	0856	(.3879)	Isindebele	.0176	(.1317)
Incomplete Secondary	.3972	(.4893)	Isixhosa	.2238	(.4168)
Secondary	.1668	(.3728)	Isizulu	.3178	(.4656)
Diploma	0477	(.2131)	Northern Sotho	.1048	(.3063)
Degree	.0103	(.1011)	Southern Sotho	.1067	(.3087)
Age			Setswana	.1188	(.3235)
20-24 Years	.2586	(.4379)	Siswati	.0289	(.1676)
25-29 Years	.2055	(.4041)	Tshivenda	.027	(.1622)
30-34 Years	.1854	(.3887)	Xitsonga	.0457	(.2087)
35-39 Years	.1495	(.3566)	Other Languages	.0015	(.0393)
40-44 Years	.1152	(.3193)			
45-49 Years	.0857	(.2799)			
Province					
Western Cape	.0329	(.1785)			
Eastern Cape	.1545	(.3614)			
Northern Cape	.0093	(.096)			
Free State	.0743	(.2623)			
KZN	.2221	(.4157)			
North West	.0974	(.2965)			
Gauteng	.1953	(.3964)			
Mpumalanga	.079	(.2698)			
Limpopo	.1352	(.3419)			
Observations	13619			13619	

Table 2: Summary Table

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Is there evidence of simultaneity bias?												
Rho	**Yes**	Yes	Yes	**Yes**	**Yes**	Yes	**Yes**	**Yes**	Yes	Yes	Yes	Yes
Hausman Test	**Yes**	No	Yes	**Yes**	**Yes**	Yes	**Yes**	**Yes**	Yes	No	Yes	No
Does the Instrument Work?												
Significance	**Yes**	No	Yes	**Yes**	**Yes**	Yes	**Yes**	**Yes**	No	Yes	Yes	No
Sign	**-**	+	-	**+**	**+**	+	**+**	**+**	+	+	+	+
Weak	**No**	Yes	No	**No**	**No**	No	**Yes**	**Yes**	Yes	No	No	Yes
What is the Impact of Labour Force Participation?												
Naive LPM	**-**	-	-	**-**	**-**	-	**-**	**-**	-	-	-	-
Naive Probit	**-**	-	-	**-**	**-**	-	**-**	**-**	-	-	-	-
Maddala	**-**	-	-	**-**	**-**	+	**-**	**-**	-	+	+	+
SELPM	**-**	+	+	**-**	**-**	+	**-**	**-**	+	+	+	+
Coefficient Difference	**-0.96**	0.35	0.37	**-0.36**	**-0.44**	0.43	**-1.95**	**-0.46**	0.48	0.74	1.42	4.6
Direction of Bias	↓	↑	↑	↓	↓	↑	↓	↓	↑	↑	↑	↑

Table 3: Reduced Form Labour Force Participation Model Estimates for the 20-49 Years Old Sample: 1998

		Bivariate Probit Model		
Variable	**Maddala**	**Marriage Eqn.**	**Participation Eqn.**	**SELPM**
Incomplete Primary	0.09***	0.01	0.25***	0.09***
	(0.02)	(0.05)	(0.05)	(0.02)
Primary	0.11***	-0.00	0.32***	0.11***
	(0.02)	(0.06)	(0.06)	(0.02)
Incomplete Secondary	0.05***	-0.22***	0.13***	0.04***
	(0.02)	(0.05)	(0.04)	(0.02)
Secondary	0.17***	-0.47***	0.50***	0.17***
	(0.02)	(0.06)	(0.05)	(0.02)
Diploma	0.28***	-0.19***	1.03***	0.29***
	(0.01)	(0.07)	(0.08)	(0.02)
Degree	0.29***	-0.20	1.23***	0.32***
	(0.02)	(0.13)	(0.18)	(0.03)
25-29 Years	0.21***	0.70***	0.63***	0.23***
	(0.01)	(0.04)	(0.04)	(0.01)
30-34 Years	0.25***	1.19***	0.81***	0.29***
	(0.01)	(0.04)	(0.04)	(0.01)
35-39 Years	0.26***	1.50***	0.86***	0.31***
	(0.01)	(0.05)	(0.04)	(0.01)
40-44 Years	0.22***	1.67***	0.72***	0.26***
	(0.01)	(0.05)	(0.05)	(0.02)
45-49 Years	0.20***	1.91***	0.63***	0.23***
	(0.01)	(0.06)	(0.05)	(0.02)
Eastern Cape	-0.06**	-0.11	-0.16**	-0.06**
	(0.03)	(0.08)	(0.08)	(0.03)
Northern Cape	0.03	0.02	0.07	0.03
	(0.04)	(0.13)	(0.12)	(0.04)
Free State	0.05	0.31***	0.15	0.05
	(0.03)	(0.10)	(0.10)	(0.03)
KZN	0.08**	-0.27**	0.22**	0.07**
	(0.04)	(0.11)	(0.10)	(0.03)
North West	0.07**	-0.08	0.20**	0.06*
	(0.03)	(0.11)	(0.10)	(0.03)
Gauteng	0.06*	0.08	0.17*	0.05*
	(0.03)	(0.10)	(0.09)	(0.03)
Mpumalanga	0.11***	0.09	0.32***	0.11***
	(0.03)	(0.11)	(0.10)	(0.03)
Limpopo	0.03	0.07	0.08	0.02
	(0.04)	(0.12)	(0.11)	(0.04)
Urban	0.09***	-0.22***	0.24***	0.08***
	(0.01)	(0.03)	(0.03)	(0.01)
Sex Ratio	0.07*	0.20*	0.18*	0.08**
	(0.04)	(0.11)	(0.10)	(0.03)
Woman's Job	0.28***	-0.34	0.75***	0.27***
	(0.09)	(0.25)	(0.24)	(0.08)
Constant		-0.61**	-0.96***	0.15*
		(0.25)	(0.24)	(0.08)
Rho		-0.03*	-0.03*	
		(0.02)	(0.02)	
Observations	13613	13613	13613	13613
χ^2-statistic	1301.23	4054.21	4054.21	58.73
Prob>χ^2	0.0000	0.0000	0.0000	0.0000

*** p<0.01, ** p<0.05, * p<0.1
Robust standard errors in parentheses

Table 4: Endogeneity Test

	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Hausman Exogeneity Test												
χ^2-statistic	10.65	1.88	6.61	7.49	6.79	10.64	12.72	4.69	12.89	0.00	41.67	1.70
$\Pr ob > \chi^2$	(0.001)	(0.170)	(0.010)	(0.006)	(0.009)	(0.001)	(0.000)	(0.030)	(0.000)	(0.945)	(0.000)	(0.192)
Wu Version of Hausman Test												
t-statistic	-3.26	1.37	-2.5765	-2.74	-2.61	3.26	-3.57	2.17	3.59	0.07	8.05	-0.26
$\Pr ob > \|t\|$	(0.001)	(0.170)	(0.010)	(0.006)	(0.009)	(0.001)	(0.000)	(0.030)	(0.000)	(0.945)	(0.000)	(0.192)

Table 5: Marriage Model Estimates for the 20-49 Year Old Sample: 1998

Variables	**Probit 1**	**Maddala**	**LPM**	**SELPM**
Participation	-0.02*	-0.95***	-0.02**	-0.38
	(0.01)	(0.26)	(0.01)	(0.30)
Incomplete Primary	0.00	0.09***	0.01	0.04
	(0.02)	(0.03)	(0.02)	(0.03)
Primary	0.00	0.10***	0.01	0.05
	(0.03)	(0.04)	(0.02)	(0.04)
Incomplete Secondary	-0.09***	-0.04*	-0.07***	-0.05**
	(0.02)	(0.02)	(0.02)	(0.02)
Secondary	-0.18***	-0.02	-0.14***	-0.08
	(0.02)	(0.05)	(0.02)	(0.06)
Diploma	-0.07**	0.19***	-0.05**	0.05
	(0.03)	(0.07)	(0.02)	(0.09)
Degree	-0.07	0.21**	-0.05	0.06
	(0.05)	(0.08)	(0.04)	(0.10)
25-29 Years	0.27***	0.45***	0.22***	0.31***
	(0.01)	(0.04)	(0.01)	(0.07)
30-34 Years	0.42***	0.58***	0.40***	0.51***
	(0.01)	(0.03)	(0.01)	(0.09)
35-39 Years	0.49***	0.61***	0.52***	0.63***
	(0.01)	(0.02)	(0.01)	(0.09)
40-44 Years	0.51***	0.59***	0.57***	0.67***
	(0.01)	(0.02)	(0.01)	(0.08)
45-49 Years	0.53***	0.58***	0.64***	0.72***
	(0.01)	(0.01)	(0.01)	(0.07)
Eastern Cape	-0.05	-0.09***	-0.03	-0.05*
	(0.03)	(0.03)	(0.03)	(0.03)
Northern Cape	0.01	0.03	0.01	0.02
	(0.05)	(0.05)	(0.04)	(0.04)
Free State	0.12***	0.16***	0.10***	0.11***
	(0.04)	(0.04)	(0.03)	(0.04)
KZN	-0.10**	-0.04	-0.07**	-0.05
	(0.04)	(0.05)	(0.03)	(0.04)
North West	-0.03	0.02	-0.02	0.00
	(0.04)	(0.04)	(0.03)	(0.04)
Gauteng	0.03	0.08**	0.03	0.05
	(0.04)	(0.04)	(0.03)	(0.04)
Mpumalanga	0.05	0.12***	0.04	0.07
	(0.04)	(0.05)	(0.03)	(0.04)
Limpopo	0.04	0.04	0.03	0.03
	(0.05)	(0.05)	(0.04)	(0.04)
Urban	-0.09***	-0.01	-0.07***	-0.04
	(0.01)	(0.02)	(0.01)	(0.03)
English	0.19	0.05	0.16	0.11
	(0.12)	(0.14)	(0.11)	(0.12)
Isindebele	-0.27***	-0.33***	-0.22***	-0.26***
	(0.06)	(0.05)	(0.06)	(0.07)
Isizulu	-0.05	-0.08	-0.04	-0.05
	(0.07)	(0.07)	(0.05)	(0.06)
Sex Ratio	0.11***	0.12***	0.09***	0.09***
	(0.04)	(0.04)	(0.03)	(0.03)
Observations	13613	13613	13613	13613
χ^2- Statistic(or F for LPM)	2903.36	2891.89	189.62	4405.52
$\Pr ob > \chi^2$ ($\Pr ob > F$)	0.0000	0.0000	0.0000	0.0000
Predicted Probability	0.4955	0.4951		

*** p<0.01, ** p<0.05, * p<0.1
Robust standard errors in parentheses

Table 6: Single Equation Marriage Probit Model Estimates for the Other Cross-Sections

Variable	**1995**	**1996**	**1997**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Participation	-0.04***	-0.05***	-0.06***	-0.03**	-0.04***	-0.06***	-0.04***	-0.07***	-0.06***	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Incomplete Primary	0.03*	-0.04*	-0.03**	-0.01	-0.00	-0.03	-0.01	0.01	-0.01	0.03	0.03
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Primary	0.03	0.01	-0.03**	0.02	-0.00	-0.02	-0.04*	0.01	-0.01	0.06**	-0.00
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Incomplete Primary	-0.08***	-0.08***	-0.08***	-0.09***	-0.09***	-0.10***	-0.11***	-0.06***	-0.10***	-0.05**	-0.07**
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Secondary	-0.11***	-0.14***	-0.17***	-0.15***	-0.17***	-0.15***	-0.16***	-0.12***	-0.14***	-0.09***	-0.12***
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Diploma	-0.04*	-0.06*	-0.08***	-0.07***	-0.08***	-0.10***	-0.12***	-0.09***	-0.09***	-0.05	-0.05
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.04)
Degree	-0.09*	0.08	-0.05	-0.03	-0.16***	-0.03	-0.05	-0.02	-0.08	0.08	0.10*
	(0.05)	(0.05)	(0.04)	(0.04)	(0.05)	(0.03)	(0.04)	(0.04)	(0.06)	(0.05)	(0.05)
25-29 Years	0.28***	0.29***	0.29***	0.26***	0.24***	0.24***	0.25***	0.24***	0.24***	0.24***	0.21***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
30-34 Years	0.44***	0.42***	0.46***	0.40***	0.40***	0.39***	0.40***	0.38***	0.38***	0.35***	0.36***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
35-39 Years	0.51***	0.48***	0.52***	0.48***	0.47***	0.49***	0.49***	0.49***	0.46***	0.45***	0.42***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
40-44 Years	0.54***	0.53***	0.54***	0.52***	0.51***	0.53***	0.53***	0.53***	0.51***	0.50***	0.48***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
45-49 Years	0.54***	0.52***	0.55***	0.52***	0.51***	0.55***	0.55***	0.55***	0.52***	0.52***	0.52***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Free State	0.13***	0.09***	0.07***	0.10***	0.08**	0.15***	0.11***	0.13***	0.08**	0.05	0.06*
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)
KZN	-0.13***	-0.15***	-0.19***	-0.16***	-0.16***	-0.13***	-0.14***	-0.13***	-0.15***	-0.18***	-0.16***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)
North West	0.00	-0.03	-0.09***	-0.09***	-0.13***	-0.10***	-0.11***	-0.08***	-0.10**	-0.11***	-0.10***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)
Gauteng	0.09***	0.00	0.02	-0.00	0.00	0.01	0.01	0.02	0.08**	0.05	0.03
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)
Mpumalanga	-0.02	0.02	-0.04*	-0.01	-0.03	0.01	-0.05	0.01	-0.01	-0.04	-0.06*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)
Limpopo	-0.02	0.09***	0.04	0.05*	0.10***	0.08**	0.10***	0.09***	0.05	-0.01	0.00
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)
Urban	-0.08***	-0.05***	-0.09***	-0.06***	-0.07***	-0.09***	-0.08***	-0.06***	-0.03**	-0.02	
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	
Sex Ratio	-0.01	0.07*	0.04*	0.03	0.11***	0.05*	0.07**	0.08**	0.01	0.01	0.02
	(0.03)	(0.04)	(0.02)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)
Observations	19444	12734	23292	18009	18343	18360	17067	16508	18463	18356	18071
χ^2 - Statistic	4227.35	2777.70	5367.93	3231.30	2680.52	3415.72	3291.29	2850.84	2238.38	1880.91	1816.34
$\Pr ob > \chi^2$	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pred. Prob.	0.4965	0.5141	0.4858	0.4701	0.4770	0.4572	0.4748	0.4503	0.476	0.4402	0.437

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in parentheses

Table 7: Single Equation Marriage (LPM) Estimates for the Other Cross-Sections

Variable	**1995**	**1996**	**1997**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Participation	-0.03***	-0.04***	-0.05***	-0.02***	-0.03***	-0.05***	-0.03***	-0.05***	-0.04***	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Incomplete Primary	0.02*	-0.03*	-0.02**	-0.01	-0.00	-0.02	-0.01	0.01	-0.01	0.02	0.02
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Primary	0.02	0.01	-0.02*	0.02	-0.00	-0.01	-0.03	0.01	-0.01	0.05**	-0.00
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Incomplete Secondary	-0.06***	-0.06***	-0.06***	-0.07***	-0.08***	-0.09***	-0.09***	-0.05***	-0.08***	-0.04**	-0.06***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Secondary	-0.09***	-0.11***	-0.14***	-0.12***	-0.14***	-0.13***	-0.13***	-0.10***	-0.12***	-0.07***	-0.11***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Diploma	-0.04**	-0.04	-0.06***	-0.06***	-0.07***	-0.08***	-0.10***	-0.08***	-0.07***	-0.04	-0.04
	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Degree	-0.08*	0.08*	-0.03	-0.02	-0.14***	-0.03	-0.03	-0.02	-0.06	0.07*	0.09**
	(0.04)	(0.04)	(0.04)	(0.03)	(0.05)	(0.03)	(0.03)	(0.03)	(0.05)	(0.04)	(0.04)
25-29 Years	0.22***	0.24***	0.23***	0.21***	0.19***	0.18***	0.19***	0.18***	0.19***	0.18***	0.16***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
30-34 Years	0.43***	0.41***	0.43***	0.37***	0.37***	0.35***	0.36***	0.33***	0.35***	0.30***	0.31***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
35-39 Years	0.55***	0.52***	0.54***	0.49***	0.47***	0.49***	0.49***	0.48***	0.47***	0.44***	0.40***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
40-44 Years	0.64***	0.64***	0.61***	0.56***	0.55***	0.55***	0.57***	0.55***	0.55***	0.51***	0.48***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
45-49 Years	0.66***	0.66***	0.65***	0.59***	0.57***	0.62***	0.62***	0.60***	0.58***	0.54***	0.54***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Free State	0.10***	0.07**	0.06***	0.08***	0.07**	0.12***	0.09***	0.11***	0.07**	0.04	0.05*
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
KZN	-0.10***	-0.11***	-0.15***	-0.14***	-0.14***	-0.10***	-0.11***	-0.11***	-0.12***	-0.15***	-0.14***
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
North West	0.00	-0.02	-0.07***	-0.07***	-0.11***	-0.08***	-0.09***	-0.06**	-0.08**	-0.09***	-0.08***
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Gauteng	0.08***	-0.00	0.02	-0.00	0.00	0.01	0.01	0.02	0.07**	0.04	0.02
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Mpumalanga	-0.02	0.01	-0.03	-0.01	-0.03	0.01	-0.04	0.01	-0.01	-0.03	-0.05*
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Limpopo	-0.02	0.07**	0.03	0.04	0.07**	0.06**	0.07***	0.07***	0.04	-0.01	-0.00
	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Urban	-0.06***	-0.04***	-0.07***	-0.05***	-0.06***	-0.07***	-0.06***	-0.05***	-0.03**	-0.02	
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	
Sex Ratio	-0.01	0.05*	0.03*	0.02	0.08***	0.04*	0.05**	0.06**	0.00	0.01	0.01
	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)
Observations	19444	12734	23292	18009	18343	18360	17067	16508	18463	18356	18071
F - Statistic	407.27	272.01	522.56	276.31	228.48	302.46	300.43	240.63	185.47	143.25	142.16
Pr $ob > F$	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

*** p<0.01, ** p<0.05, * p<0.1
Robust standard errors in parentheses

Table 8: Reduced Form Labour Force Participation Estimates (Maddala Model) for the Other Cross-Sections

Variable	**1995**	**1996**	**1997**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Woman's Job	**-0.26*** **	**0.12**	**-0.36*** **	**0.26*** **	**0.35*** **	**0.12**	**0.16*** **	**0.09**	**0.31*** **	**0.22*** **	**0.02**
	(0.06)	(0.10)	(0.09)	(0.08)	(0.07)	(0.08)	(0.06)	(0.06)	(0.07)	(0.07)	(0.08)
Incomplete Primary	0.07***	0.10***	0.07***	0.08***	0.07***	0.08***	0.05***	0.07***	0.07***	0.05***	0.07***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Primary	0.04**	0.10***	0.08***	0.11***	0.09***	0.09***	0.09***	0.10***	0.10***	0.09***	0.09***
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Incomplete Secondary	0.02	0.05***	0.03**	0.09***	0.05***	0.09***	0.08***	0.12***	0.12***	0.09***	0.11***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Secondary	0.12***	0.13***	0.17***	0.17***	0.12***	0.14***	0.13***	0.15***	0.17***	0.15***	0.16***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Diploma	0.15***	0.25***	0.27***	0.24***	0.18***	0.18***	0.17***	0.17***	0.18***	0.16***	0.17***
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Degree	0.20***	0.27***	0.33***	0.22***	0.18***	0.16***	0.13***	0.16***	0.18***	0.15***	0.16***
	(0.03)	(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
25-29 Years	0.22***	0.21***	0.23***	0.19***	0.14***	0.13***	0.14***	0.12***	0.15***	0.12***	0.13***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
30-34 Years	0.28***	0.28***	0.29***	0.21***	0.18***	0.15***	0.15***	0.13***	0.15***	0.15***	0.14***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
35-39 Years	0.27***	0.28***	0.28***	0.24***	0.18***	0.14***	0.16***	0.13***	0.15***	0.15***	0.14***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
40-44 Years	0.25***	0.26***	0.28***	0.22***	0.18***	0.13***	0.14***	0.12***	0.15***	0.12***	0.13***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
45-49 Years	0.22***	0.19***	0.21***	0.18***	0.17***	0.11***	0.14***	0.11***	0.12***	0.13***	0.12***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Free State	-0.00	-0.02	0.03	0.00	-0.03	0.06***	0.03	0.04**	-0.01	-0.06**	-0.05
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
KZN	-0.07**	-0.01	0.04	0.04*	0.00	0.05**	0.05***	0.04**	-0.03	-0.03	-0.06**
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
North West	-0.14***	-0.00	0.04*	0.02	-0.08**	0.02	0.00	-0.01	-0.02	-0.02	-0.08**
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Gauteng	0.03	0.06**	0.14***	0.03	-0.01	0.06***	0.04**	0.01	0.00	-0.01	-0.00
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Mpumalanga	-0.11***	0.01	-0.05**	0.06**	0.00	0.04**	0.02	0.04**	0.04	0.01	-0.02
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Limpopo	-0.15***	-0.05*	-0.03	0.06**	-0.02	0.08***	0.08***	0.06***	0.05**	-0.00	-0.06**
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Urban	0.09***	0.16***	0.09***	0.06***	0.04***	0.03***	0.05***	0.04***	0.03***	0.03***	
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	
Sex Ratio	0.00	0.11**	-0.08***	0.24***	0.26***	0.15***	0.15***	0.15***	0.13***	0.17***	0.09***
	(0.02)	(0.04)	(0.03)	(0.03)	(0.04)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Observations	19444	12734	23292	18009	18343	18360	17067	16508	18463	18356	18071

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Second-Step Marriage Estimates (Maddala Model) for the Other Cross-Sections

Variable	**1995**	**1996**	**1997**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Participation	-1.11***	-0.56	-0.15	-0.39**	0.21	-0.54**	-0.49**	-0.63***	0.03	0.33	0.49
	(0.24)	(0.44)	(0.20)	(0.19)	(0.22)	(0.24)	(0.23)	(0.24)	(0.22)	(0.24)	(0.33)
Incomplete Primary	0.10***	0.01	-0.03	0.02	-0.02	0.02	0.02	0.07**	-0.02	0.01	-0.02
	(0.02)	(0.05)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.05)
Primary	0.07***	0.06	-0.03	0.06*	-0.03	0.04	0.01	0.10**	-0.03	0.02	-0.07
	(0.02)	(0.05)	(0.02)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.06)
Incomplete Secondary	-0.06***	-0.05*	-0.08***	-0.05**	-0.10***	-0.05	-0.07**	0.03	-0.11***	-0.09**	-0.13**
	(0.02)	(0.03)	(0.01)	(0.02)	(0.02)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)	(0.05)
Secondary	0.00	-0.08	-0.16***	-0.08**	-0.20***	-0.07	-0.10**	-0.00	-0.16***	-0.15***	-0.22***
	(0.03)	(0.06)	(0.03)	(0.04)	(0.03)	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)	(0.07)
Diploma	0.10***	0.07	-0.05	0.03	-0.13**	0.02	-0.03	0.06	-0.11	-0.12**	-0.17**
	(0.04)	(0.11)	(0.06)	(0.06)	(0.05)	(0.06)	(0.06)	(0.07)	(0.07)	(0.06)	(0.09)
Degree	0.10	0.20*	-0.02	0.06	-0.20***	0.07	0.03	0.13*	-0.10	-0.00	-0.02
	(0.06)	(0.11)	(0.08)	(0.06)	(0.06)	(0.06)	(0.06)	(0.08)	(0.08)	(0.07)	(0.10)
25-29 Years	0.47***	0.37***	0.31***	0.33***	0.20***	0.32***	0.32***	0.32***	0.22***	0.18***	0.13**
	(0.04)	(0.07)	(0.04)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.06)
30-34 Years	0.61***	0.51***	0.47***	0.47***	0.35***	0.46***	0.47***	0.45***	0.37***	0.29***	0.27***
	(0.03)	(0.07)	(0.04)	(0.04)	(0.05)	(0.04)	(0.03)	(0.03)	(0.04)	(0.05)	(0.06)
35-39 Years	0.62***	0.55***	0.53***	0.54***	0.43***	0.54***	0.54***	0.55***	0.45***	0.40***	0.34***
	(0.02)	(0.05)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.02)	(0.03)	(0.04)	(0.06)
40-44 Years	0.61***	0.57***	0.55***	0.56***	0.48***	0.57***	0.57***	0.58***	0.50***	0.46***	0.41***
	(0.01)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.05)
45-49 Years	0.59***	0.55***	0.55***	0.55***	0.49***	0.58***	0.57***	0.58***	0.51***	0.48***	0.47***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.03)	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)	(0.04)
Free State	0.14***	0.08**	0.08***	0.10***	0.08**	0.17***	0.12***	0.16***	0.08**	0.07*	0.08**
	(0.03)	(0.04)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
KZN	-0.20***	-0.15***	-0.18***	-0.15***	-0.17***	-0.11***	-0.11***	-0.11***	-0.15***	-0.17***	-0.14***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)
North West	-0.11***	-0.03	-0.09***	-0.08***	-0.11***	-0.10***	-0.11***	-0.08***	-0.09**	-0.10***	-0.07*
	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
Gauteng	0.11***	0.03	0.03	0.01	-0.00	0.03	0.03	0.02	0.07**	0.05	0.03
	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)
Mpumalanga	-0.09***	0.02	-0.05*	0.00	-0.03	0.03	-0.03	0.04	-0.02	-0.04	-0.06*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)
Limpopo	-0.17***	0.06	0.04	0.07**	0.10***	0.12***	0.14***	0.14***	0.04	-0.01	0.03
	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Urban	0.02	0.03	-0.09***	-0.04**	-0.08***	-0.08***	-0.06***	-0.04**	-0.03**	-0.03*	
	(0.02)	(0.07)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	
Sex Ratio	0.01	0.10**	0.04*	0.10**	0.07	0.12***	0.13***	0.17***	-0.00	-0.03	-0.03
	(0.03)	(0.05)	(0.02)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)	(0.04)
Observations	19444	12734	23293	18009	18361	18360	17067	16508	18463	18356	18071

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Reduced Form Labour Force Participation Estimates (SELPM) for the Other Cross-Sections

Variable	1995	1996	1997	1999	2000	2001	2002	2003	2004	2005	2006
Woman's Job	-0.25***	0.11	-0.33***	0.28***	0.41***	0.15*	0.18***	0.11	0.33***	0.27***	0.05
	(0.05)	(0.09)	(0.08)	(0.08)	(0.07)	(0.08)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)
Incomplete Primary	0.07***	0.10***	0.07***	0.08***	0.08***	0.10***	0.07***	0.10***	0.10***	0.07***	0.10***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Primary	0.04**	0.10***	0.08***	0.12***	0.10***	0.12***	0.12***	0.15***	0.15***	0.13***	0.14***
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Incomplete Secondary	0.01	0.05***	0.03**	0.08***	0.04***	0.11***	0.09***	0.15***	0.15***	0.11***	0.13***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Secondary	0.11***	0.13***	0.17***	0.19***	0.13***	0.18***	0.16***	0.21***	0.22***	0.19***	0.21***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Diploma	0.14***	0.25***	0.28***	0.28***	0.21***	0.25***	0.22***	0.28***	0.28***	0.23***	0.26***
	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Degree	0.19***	0.26***	0.31***	0.26***	0.21***	0.22***	0.18***	0.27***	0.28***	0.22***	0.25***
	(0.03)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
25-29 Years	0.24***	0.22***	0.25***	0.23***	0.19***	0.17***	0.19***	0.15***	0.20***	0.16***	0.17***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
30-34 Years	0.31***	0.30***	0.32***	0.26***	0.24***	0.19***	0.21***	0.16***	0.20***	0.21***	0.19***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
35-39 Years	0.30***	0.30***	0.32***	0.31***	0.25***	0.20***	0.23***	0.17***	0.21***	0.22***	0.20***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
40-44 Years	0.28***	0.28***	0.32***	0.29***	0.27***	0.19***	0.22***	0.17***	0.21***	0.19***	0.20***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
45-49 Years	0.25***	0.20***	0.24***	0.24***	0.27***	0.16***	0.21***	0.15***	0.17***	0.21***	0.18***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Free State	-0.00	-0.02	0.02	-0.00	-0.03	0.05**	0.02	0.04**	-0.01	-0.05**	-0.04*
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
KZN	-0.06**	-0.01	0.03*	0.04*	-0.00	0.04**	0.05***	0.04**	-0.03	-0.03	-0.05**
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
North West	-0.13***	-0.00	0.04*	0.01	-0.08***	0.01	-0.01	-0.01	-0.02	-0.02	-0.07***
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Gauteng	0.02	0.05**	0.12***	0.02	-0.03	0.04**	0.03*	0.00	-0.00	-0.02	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Mpumalanga	-0.10***	0.01	-0.05**	0.05**	0.00	0.04*	0.02	0.05**	0.05*	0.01	-0.01
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Limpopo	-0.14***	-0.05*	-0.03	0.05**	-0.02	0.09***	0.10***	0.08***	0.06**	0.00	-0.06**
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Urban	0.09***	0.15***	0.08***	0.06***	0.04***	0.03***	0.05***	0.04***	0.03***	0.03***	
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	
Sex Ratio	0.00	0.10***	-0.06**	0.25***	0.30***	0.18***	0.18***	0.18***	0.15***	0.21***	0.12***
	(0.02)	(0.03)	(0.02)	(0.03)	(0.04)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)
Constant	0.45***	0.13**	0.43***	0.02	0.05	0.24***	0.22***	0.27***	0.19***	0.22***	0.42***
	(0.03)	(0.06)	(0.05)	(0.05)	(0.07)	(0.06)	(0.05)	(0.05)	(0.06)	(0.07)	(0.06)
Observations	19444	12734	23292	18009	18343	18360	17067	16508	18463	18356	18071
R^2	0.116	0.133	0.132	0.119	0.094	0.077	0.080	0.076	0.082	0.078	0.073

*** p<0.01, ** p<0.05, * p<0.1
Robust standard errors in parentheses

Table 11: Second-Step Marriage Estimates (SELPM) for the Other Cross-Sections

Variable	**1995**	**1996**	**1997**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Participation	-0.99***	0.31	0.32	-0.46	0.40*	-2.00	-0.49	0.43	0.70**	1.41***	4.59
	(0.29)	(0.72)	(0.25)	(0.28)	(0.21)	(1.21)	(0.40)	(0.79)	(0.30)	(0.51)	(7.40)
Incomplete Primary	0.09***	-0.06	-0.05**	0.03	-0.03	0.18	0.02	-0.04	-0.09**	-0.07	-0.46
	(0.03)	(0.07)	(0.02)	(0.03)	(0.02)	(0.13)	(0.03)	(0.08)	(0.04)	(0.05)	(0.78)
Primary	0.06**	-0.03	-0.05**	0.07*	-0.04	0.22	0.03	-0.07	-0.12**	-0.12	-0.64
	(0.02)	(0.08)	(0.03)	(0.04)	(0.03)	(0.15)	(0.05)	(0.12)	(0.05)	(0.08)	(1.02)
Incomplete Secondary	-0.05***	-0.08*	-0.07***	-0.03	-0.10***	0.12	-0.05	-0.12	-0.19***	-0.19***	-0.67
	(0.02)	(0.04)	(0.01)	(0.03)	(0.02)	(0.13)	(0.04)	(0.12)	(0.05)	(0.06)	(0.98)
Secondary	0.02	-0.15	-0.20***	-0.04	-0.20***	0.23	-0.06	-0.20	-0.28***	-0.34***	-1.07
	(0.04)	(0.09)	(0.04)	(0.06)	(0.03)	(0.22)	(0.07)	(0.16)	(0.07)	(0.10)	(1.55)
Diploma	0.10**	-0.13	-0.16**	0.06	-0.16***	0.40	0.00	-0.22	-0.29***	-0.37***	-1.26
	(0.05)	(0.18)	(0.07)	(0.08)	(0.05)	(0.30)	(0.09)	(0.22)	(0.09)	(0.13)	(1.97)
Degree	0.10	-0.02	-0.15*	0.09	-0.23***	0.41	0.05	-0.15	-0.27***	-0.25**	-1.06
	(0.08)	(0.19)	(0.09)	(0.08)	(0.07)	(0.27)	(0.08)	(0.21)	(0.10)	(0.12)	(1.83)
25-29 Years	0.45***	0.16	0.14**	0.31***	0.11***	0.52**	0.27***	0.11	0.05	-0.05	-0.61
	(0.07)	(0.16)	(0.06)	(0.07)	(0.04)	(0.21)	(0.08)	(0.12)	(0.06)	(0.08)	(1.25)
30-34 Years	0.72***	0.31	0.32***	0.49***	0.27***	0.72***	0.46***	0.25*	0.21***	0.01	-0.58
	(0.09)	(0.21)	(0.08)	(0.08)	(0.05)	(0.24)	(0.08)	(0.13)	(0.06)	(0.11)	(1.44)
35-39 Years	0.84***	0.42*	0.42***	0.62***	0.37***	0.87***	0.59***	0.40***	0.32***	0.15	-0.52
	(0.09)	(0.22)	(0.08)	(0.09)	(0.05)	(0.24)	(0.09)	(0.13)	(0.06)	(0.11)	(1.48)
40-44 Years	0.90***	0.54***	0.49***	0.68***	0.45***	0.92***	0.67***	0.46***	0.40***	0.27***	-0.43
	(0.08)	(0.20)	(0.08)	(0.08)	(0.06)	(0.23)	(0.09)	(0.14)	(0.06)	(0.09)	(1.46)
45-49 Years	0.90***	0.59***	0.56***	0.69***	0.47***	0.92***	0.72***	0.53***	0.46***	0.28***	-0.27
	(0.07)	(0.14)	(0.06)	(0.07)	(0.05)	(0.19)	(0.08)	(0.12)	(0.05)	(0.10)	(1.30)
Free State	0.11***	0.08**	0.05**	0.07***	0.07**	0.22***	0.10***	0.09**	0.07*	0.11**	0.25
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.08)	(0.03)	(0.04)	(0.04)	(0.05)	(0.32)
KZN	-0.16***	-0.11***	-0.16***	-0.12***	-0.15***	-0.01	-0.08***	-0.13***	-0.11***	-0.12***	0.08
	(0.04)	(0.03)	(0.02)	(0.03)	(0.03)	(0.07)	(0.03)	(0.04)	(0.04)	(0.04)	(0.35)
North West	-0.10**	-0.02	-0.09***	-0.07***	-0.08**	-0.07	-0.09***	-0.06*	-0.06	-0.08*	0.22
	(0.05)	(0.03)	(0.02)	(0.03)	(0.03)	(0.05)	(0.03)	(0.03)	(0.04)	(0.05)	(0.50)
Gauteng	0.09***	-0.02	-0.02	0.01	-0.00	0.10	0.03	0.01	0.06*	0.05	0.07
	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.07)	(0.03)	(0.03)	(0.04)	(0.04)	(0.12)
Mpumalanga	-0.08**	0.01	-0.02	0.00	-0.03	0.08	-0.02	-0.01	-0.04	-0.05	0.01
	(0.04)	(0.03)	(0.02)	(0.03)	(0.03)	(0.06)	(0.03)	(0.05)	(0.04)	(0.05)	(0.15)
Limpopo	-0.15***	0.09*	0.05*	0.06**	0.08**	0.25**	0.12**	0.03	-0.01	-0.02	0.25
	(0.06)	(0.05)	(0.02)	(0.03)	(0.03)	(0.12)	(0.05)	(0.07)	(0.04)	(0.05)	(0.42)
Urban	0.03	-0.09	-0.10***	-0.03	-0.07***	-0.02	-0.04**	-0.07**	-0.05***	-0.06**	
	(0.03)	(0.11)	(0.02)	(0.02)	(0.01)	(0.04)	(0.02)	(0.03)	(0.02)	(0.02)	
Sex Ratio	0.02	0.02	0.04*	0.11*	0.01	0.35*	0.12*	-0.02	-0.07	-0.19**	-0.50
	(0.03)	(0.07)	(0.02)	(0.06)	(0.05)	(0.20)	(0.06)	(0.14)	(0.04)	(0.08)	(0.81)
Constant	0.61***	0.18	0.19**	0.37***	0.11	0.91**	0.42***	0.07	0.04	-0.32	-1.79
	(0.11)	(0.14)	(0.08)	(0.06)	(0.09)	(0.40)	(0.14)	(0.26)	(0.13)	(0.22)	(3.35)
Observations	19444	12734	23292	18009	18343	18360	17067	16508	18463	18356	18071

*** p<0.01, ** p<0.05, * p<0.1
Robust standard errors in parentheses

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(Chapter head:)Appendix

A Additional Estimation results

Table 12: Reduced Form Labour Force Participation Estimates for the 20-34 Year Old Sample: 1998

Variables	**Maddala**	**Marriage Eqn.**	**Participation Eqn.**	**SELPM**
Incomplete Primary	0.09***	-0.10	0.26***	0.09***
	(0.03)	(0.08)	(0.08)	(0.03)
Primary	0.12***	-0.11	0.33***	0.11***
	(0.03)	(0.09)	(0.09)	(0.03)
Incomplete Secondary	-0.01	-0.41***	-0.03	-0.02
	(0.03)	(0.07)	(0.07)	(0.03)
Secondary	0.14***	-0.69***	0.40***	0.14***
	(0.03)	(0.08)	(0.08)	(0.03)
Diploma	0.26***	-0.45***	0.86***	0.24***
	(0.02)	(0.10)	(0.11)	(0.03)
Degree	0.31***	-0.43**	1.16***	0.30***
	(0.04)	(0.19)	(0.26)	(0.05)
25-29 Years	0.22***	0.70***	0.61***	0.23***
	(0.01)	(0.04)	(0.04)	(0.01)
30-34 Years	0.27***	1.17***	0.77***	0.28***
	(0.01)	(0.04)	(0.04)	(0.01)
Free State	0.01	0.30**	0.02	-0.00
	(0.05)	(0.13)	(0.12)	(0.04)
KZN	0.08*	-0.32**	0.21*	0.07
	(0.05)	(0.14)	(0.13)	(0.04)
North West	0.04	-0.18	0.12	0.03
	(0.05)	(0.13)	(0.12)	(0.04)
Gauteng	0.01	0.05	0.03	0.00
	(0.04)	(0.12)	(0.11)	(0.04)
Mpumalanga	0.11**	0.02	0.30**	0.10**
	(0.04)	(0.14)	(0.13)	(0.04)
Limpopo	0.05	0.07	0.13	0.04
	(0.05)	(0.15)	(0.14)	(0.05)
Urban	0.06***	-0.19***	0.16***	0.05***
	(0.02)	(0.04)	(0.04)	(0.01)
English	-0.10	0.89**	-0.25	-0.09
	(0.15)	(0.41)	(0.39)	(0.14)
Isindebele	-0.07	-0.89***	-0.19	-0.06
	(0.09)	(0.27)	(0.24)	(0.08)
Isizulu	0.04	-0.08	0.11	0.04
	(0.08)	(0.23)	(0.22)	(0.07)
Other Languages	-0.04	0.45	-0.12	-0.05
	(0.18)	(0.46)	(0.45)	(0.15)
Sex Ratio	0.14***	0.35**	0.36***	0.14***
	(0.05)	(0.14)	(0.13)	(0.04)
Woman's Job	0.35***	-0.31	0.93***	0.34***
	(0.11)	(0.31)	(0.30)	(0.10)
Rho		0.03	0.03	
		(0.02)	(0.02)	
Observations	8451	8451	8451	8451

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: Marriage Estimates from the 20-34 Year Old Sample: 1998

Variable	Probit 1	Maddala	LPM	SELPM
Participation	0.02	-0.41	0.01	-0.26
	(0.01)	(0.27)	(0.01)	(0.29)
Incomplete Primary	-0.04	-0.00	-0.04	-0.01
	(0.03)	(0.04)	(0.03)	(0.04)
Primary	-0.04	0.01	-0.04	-0.01
	(0.03)	(0.04)	(0.03)	(0.05)
Incomplete Secondary	-0.15***	-0.15***	-0.14***	-0.14***
	(0.02)	(0.03)	(0.02)	(0.03)
Secondary	-0.23***	-0.18***	-0.22***	-0.19***
	(0.02)	(0.04)	(0.03)	(0.05)
Diploma	-0.15***	-0.06	-0.15***	-0.09
	(0.03)	(0.07)	(0.03)	(0.08)
Degree	-0.14***	-0.04	-0.14**	-0.06
	(0.05)	(0.10)	(0.07)	(0.11)
25-29 Years	0.26***	0.36***	0.21***	0.27***
	(0.02)	(0.06)	(0.01)	(0.07)
30-34 Years	0.43***	0.54***	0.39***	0.46***
	(0.02)	(0.07)	(0.01)	(0.08)
Eastern Cape	-0.04	-0.06*	-0.03	-0.04
	(0.03)	(0.04)	(0.03)	(0.03)
Northern Cape	0.03	0.04	0.03	0.04
	(0.06)	(0.06)	(0.05)	(0.06)
Free State	0.12**	0.12**	0.11**	0.11**
	(0.05)	(0.05)	(0.04)	(0.05)
KZN	-0.10**	-0.08*	-0.09*	-0.07
	(0.05)	(0.05)	(0.05)	(0.05)
North West	-0.06	-0.05	-0.04	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)
Gauteng	0.02	0.02	0.02	0.02
	(0.04)	(0.05)	(0.04)	(0.04)
Mpumalanga	0.01	0.04	0.02	0.04
	(0.05)	(0.05)	(0.04)	(0.05)
Limpopo	0.04	0.04	0.04	0.04
	(0.05)	(0.05)	(0.05)	(0.05)
Urban	-0.07***	-0.05**	-0.06***	-0.05**
	(0.02)	(0.02)	(0.01)	(0.02)
English	0.34**	0.31**	0.30**	0.28*
	(0.15)	(0.15)	(0.14)	(0.15)
Isindebele	-0.24***	-0.25***	-0.24***	-0.25***
	(0.05)	(0.04)	(0.08)	(0.09)
Isixhosa	0.01	0.02	0.01	0.02
	(0.08)	(0.09)	(0.08)	(0.08)
Isizulu	-0.03	-0.01	-0.03	-0.02
	(0.08)	(0.08)	(0.08)	(0.08)
Northern Sotho	-0.00	-0.00	-0.00	-0.00
	(0.08)	(0.08)	(0.08)	(0.08)
Southern Sotho	-0.01	-0.00	-0.01	-0.01
	(0.08)	(0.08)	(0.08)	(0.08)
Setswana	-0.08	-0.06	-0.07	-0.06
	(0.07)	(0.07)	(0.07)	(0.08)
Siswati	0.04	0.03	0.03	0.03
	(0.09)	(0.09)	(0.08)	(0.09)
Tshivenda	0.10	0.09	0.09	0.08
	(0.10)	(0.10)	(0.08)	(0.09)
Xitsonga	0.13	0.11	0.12	0.11
	(0.10)	(0.10)	(0.08)	(0.09)
Other Languages	0.17	0.16	0.15	0.14
	(0.18)	(0.19)	(0.14)	(0.15)
Sex Ratio	0.15***	0.17***	0.14***	0.16***
	(0.04)	(0.04)	(0.04)	(0.04)
Observations	8451	8451	8451	8451
χ^2 - Statistic (or F for LPM)	1285.64	1257.93	69.62	1843.46
$\Pr ob > \chi^2$ ($\Pr ob > F$)	0.0000	0.0000	0.0000	0.0000

Table 14: Reduced Form Labour Force Participation Estimates from the KwaZulu Natal Sample: 1998

Variable	**Maddala**	**Marriage Eqn.**	**Participation Eqn.**	**SELPM**
Incomplete Primary	0.08**	0.00	0.24**	0.09**
	(0.03)	(0.11)	(0.10)	(0.04)
Primary	0.09**	0.10	0.28**	0.10**
	(0.04)	(0.14)	(0.13)	(0.05)
Incomplete Secondary	0.03	-0.31***	0.07	0.03
	(0.03)	(0.11)	(0.10)	(0.04)
Secondary	0.14***	-0.58***	0.44***	0.15***
	(0.03)	(0.13)	(0.12)	(0.04)
Diploma	0.29***	-0.22	1.30***	0.29***
	(0.02)	(0.17)	(0.21)	(0.04)
Degree	0.26***	-0.12	1.14**	0.26***
	(0.05)	(0.37)	(0.49)	(0.06)
25-29 Years	0.21***	0.76***	0.66***	0.23***
	(0.02)	(0.10)	(0.08)	(0.03)
30-34 Years	0.20***	1.10***	0.64***	0.23***
	(0.02)	(0.10)	(0.09)	(0.03)
35-39 Years	0.19***	1.47***	0.61***	0.22***
	(0.03)	(0.11)	(0.10)	(0.03)
40-44 Years	0.18***	1.67***	0.58***	0.21***
	(0.03)	(0.12)	(0.11)	(0.04)
age7	0.10***	1.94***	0.31***	0.11***
	(0.03)	(0.13)	(0.11)	(0.04)
Urban	0.13***	0.02	0.37***	0.12***
	(0.02)	(0.07)	(0.07)	(0.02)
Sex Ratio	0.15**	-0.12	0.43**	0.15**
	(0.08)	(0.24)	(0.21)	(0.07)
Woman's Job	0.14	-0.57*	0.40	0.14
	(0.10)	(0.31)	(0.29)	(0.10)
Rho		-0.14***	-0.14***	
		(0.04)	(0.04)	
Observations	2451	2451	2451	2451

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: Marriage Estimates from KwaZulu the Natal Sample: 1998

Variable	**Probit 1**	**Maddala**	**LPM**	**SELPM**
Participation	-0.09***	-0.50	-0.07***	-1.15
	(0.03)	(0.52)	(0.02)	(1.00)
Incomplete Primary	0.01	0.05	0.00	0.10
	(0.04)	(0.06)	(0.04)	(0.10)
Primary	0.05	0.09	0.04	0.15
	(0.06)	(0.08)	(0.05)	(0.12)
Incomplete Secondary	-0.11***	-0.10**	-0.10***	-0.07
	(0.04)	(0.04)	(0.04)	(0.06)
Secondary	-0.19***	-0.13*	-0.16***	0.00
	(0.04)	(0.08)	(0.04)	(0.16)
Diploma	-0.05	0.07	-0.05	0.26
	(0.06)	(0.17)	(0.06)	(0.30)
Degree	-0.02	0.09	-0.02	0.25
	(0.14)	(0.21)	(0.13)	(0.30)
25-29 Years	0.32***	0.41***	0.21***	0.46**
	(0.04)	(0.12)	(0.03)	(0.23)
30-34 Years	0.43***	0.51***	0.34***	0.58**
	(0.03)	(0.10)	(0.03)	(0.23)
35-39 Years	0.54***	0.60***	0.49***	0.72***
	(0.03)	(0.07)	(0.03)	(0.22)
40-44 Years	0.58***	0.63***	0.57***	0.79***
	(0.03)	(0.05)	(0.04)	(0.22)
45-49 Years	0.62***	0.64***	0.64***	0.76***
	(0.02)	(0.03)	(0.03)	(0.12)
Urban	0.01	0.06	0.01	0.14
	(0.03)	(0.07)	(0.02)	(0.13)
Sex Ratio	-0.00	0.04	-0.00	0.14
	(0.09)	(0.11)	(0.07)	(0.17)
Observations	2451	2451	2451	2451
χ^2 - Statistic (or F for LPM)	507.23	509.90	71.70	715.37
$\Pr ob > \chi^2$ ($\Pr ob > F$)	0.0000	0.0000	0.0000	0.0000
Pred. Prob.	0.3774	0.3769		

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16: Reduced Form Labour Force Participation Estimated for the 20-34 Year Old Sample in KwaZulu Natal: 1998

Variable	**Maddala**	**Marriage Eqn.**	**Participation Eqn.**	**SELPM**
Incomplete Primary	0.12**	-0.18	0.36**	0.13**
	(0.05)	(0.15)	(0.16)	(0.06)
Primary	0.13**	-0.11	0.39**	0.14**
	(0.05)	(0.18)	(0.18)	(0.06)
Incomplete Secondary	0.02	-0.63***	0.06	0.02
	(0.05)	(0.14)	(0.14)	(0.05)
Secondary	0.17***	-0.89***	0.51***	0.17***
	(0.05)	(0.16)	(0.15)	(0.05)
Diploma	0.28***	-0.53**	1.14***	0.28***
	(0.03)	(0.23)	(0.25)	(0.06)
Degree	0.26***	-0.82*	1.07**	0.27***
	(0.07)	(0.47)	(0.53)	(0.09)
25-29 Years	0.22***	0.75***	0.66***	0.23***
	(0.03)	(0.10)	(0.08)	(0.03)
30-34 Years	0.21***	1.08***	0.63***	0.22***
	(0.03)	(0.10)	(0.09)	(0.03)
Urban	0.12***	0.07	0.33***	0.11***
	(0.03)	(0.09)	(0.08)	(0.03)
Sex Ratio	0.11	0.26	0.32	0.12
	(0.09)	(0.29)	(0.25)	(0.08)
Woman's Job	0.23*	-0.72*	0.64*	0.23*
	(0.13)	(0.40)	(0.36)	(0.13)
Rho		-0.05	-0.05	
		(0.05)	(0.05)	
Observations	1611	1611	1611	1611

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 17: Marriage Estimates from the 20-34 Year Old Sample in KwaZulu Natal: 1998

Variable	**Probit 1**	**Maddala**	**LPM**	**SELPM**
Participation	-0.03	0.04	-0.03	-0.86
	(0.03)	(0.22)	(0.02)	(0.66)
Incomplete Primary	-0.05	-0.06	-0.06	0.04
	(0.04)	(0.05)	(0.06)	(0.11)
Primary	-0.03	-0.03	-0.04	0.07
	(0.05)	(0.06)	(0.07)	(0.12)
Incomplete Secondary	-0.18***	-0.18***	-0.20***	-0.19***
	(0.04)	(0.04)	(0.05)	(0.06)
Secondary	-0.21***	-0.21***	-0.26***	-0.11
	(0.03)	(0.04)	(0.05)	(0.13)
Diploma	-0.12***	-0.13**	-0.16*	0.07
	(0.05)	(0.06)	(0.08)	(0.20)
Degree	-0.16***	-0.17***	-0.26*	-0.04
	(0.06)	(0.06)	(0.15)	(0.24)
25-29 Years	0.25***	0.24***	0.20***	0.39**
	(0.03)	(0.07)	(0.03)	(0.16)
30-34 Years	0.37***	0.35***	0.32***	0.51***
	(0.04)	(0.07)	(0.03)	(0.15)
Urban	0.02		0.02	0.11
	(0.03)		(0.03)	(0.08)
Sex Ratio	0.12	0.13	0.11	0.17
	(0.09)	(0.09)	(0.07)	(0.11)
Observations	1611	1611	1611	1611
χ^2 - Statistic (or F for LPM)	201.58	200.86	22.93	210.69
$\Pr ob > \chi^2$ ($\Pr ob > F$)	0.0000	0.0000	0.0000	0.0000
Predicted Probabilities	0.2266	0.2266		

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1