RELIGIOUS NORMS AND LABOUR SUPPLY OF MARRIED WOMEN IN SWEDEN

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Based on economic and behavioural theory, this paper analyses whether religious norms about female labour participation influence married women in Sweden in their decision to participate in the labour market. Using data from the LNU and a multinomial logit framework, the results show that married women who attach importance to a faith that is strict towards female labour participation tend to participate less in the labour market compared to married women without a strong conviction. Furthermore taking into account the family and individual specific background of the married woman, there is evidence that education, the age of the children, health, main responsibility for the household and the size of the city where the woman is living affect participation in the labour market. (JEL: J22, Z12)

1. Introduction

The role of norms and attitudes in economic theories, such as religious norms or ethical values, has not been researched to the same degree as demographic and sociological behaviour.[1] Different types of norms and attitudes might

[1] *Research has focused on effects of religious affiliation on the stability of marriage, on the process of marital search and choice of spouse, on the role of marriage-specific capital as a determinant of remarriage and on the number and timing of children. For a further discussion, see Becker et al. (1977), Heckert and Teachman (1985), Chiswick and Lehrer (1990), Heaton and Pratt (1990), Williams and Zimmer (1990), Mosher et al. (1992), Grossbard – Schechtman (1993) and Lehrer and Chiswick (1993).*

significantly affect an individual's preference set and thereby the individual's set of constraints. By not considering ethical norms and attitudes, we might compress the information set and expand the set of theoretical constraints. This expanded set of constraints will then significantly affect the theoretical choice set available to the individual and furthermore neglect significant information upon analysing an individual's choice of her optimising consumption bundle.

The seminal contribution concerning the relationship between religious norms and economic theories was made by Azzi and Ehrenberg (1975). They analysed church attendance in the USA using a demand-side and Becker-style allocation-of-time framework[2] concluding that there is a correlation between the degree of religious diversity and religious participation.[3] Barro and McCleary (2002) analysed how economic and political developments affected religiosity and how the extent of religious participation and beliefs influenced economic performance and political institutions in a broad cross-country panel. They found that church attendance and religious beliefs are positively related to education and negatively related to urbanisation. Furthermore, they found that economic growth responds positively to the extent of some religious beliefs but negatively to church attendance, i.e. growth depends on the extent of believing, notably belief in heaven, relative to belonging.[4]

Very little is, however, known about the impact of religious norms related to female labour participation and the married woman's decision regarding the allocation of time between household work and the labour market. Lehrer (1995)

and Heineck (2004) analyse labour supply of married women using data for the USA and Germany, respectively. Their main findings are that the married woman's decision to participate in the labour force is affected by the strictness of her religious faith towards female labour participation and her degree of conviction to this particular religious faith.

The analysis in this paper follows a similar approach as Lehrer (1995) and Heineck (2004) using data for Sweden and thus adds to the analysis and understanding of the main conclusions found previously for the USA and Germany. This study is somewhat different in the sense that we do not analyse the effect on female labour participation originating from different religions commencing different ethical norms towards female labour participation. This is due to the fact that there is one dominating church, which is contrary to the situations in the USA and Germany. Instead this paper tests whether the degree of faith in this dominating religion affects the married woman's decision about time allocation between household work and the labour market related to the ethics towards female labour participation in this dominating religion. Furthermore, it is argued that other major global religions represented in Sweden are either stricter or equally strict towards female labour participation relative to this dominating religion. Thus, it is argued that the empirical results and conclusions are not biased in a negative direction.

The paper is organised as follows. A brief review of previous research is outlined in section 2 and section 3 describes the economic theory as well as the econometric methodology used in the paper. Section 4 describes the data, section 5 analyses the empirical results and section 6 concludes with a brief summary of the main findings.

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[2] *Other papers that have followed Azzi and Ehrenberg (1975) with a focus on church attendance are Sawkins et al. (1997) and Cameron (1999) for the U.K., Heineck (2001) for Germany and Smith et al. (1998) who carry out a cross-national comparison.*

[3] *Even within Sweden, a country known for its lack of religious activity, Hamberg and Petterson (1994) finds that local religious diversity correlates with local rates of religious participation.*

[4] *In the paper by Barro and McCleary (2002), the most valid and significant variable for representing the strictness and devotion in religious beliefs was belief in hell only by lesser amount the variable belief in heaven.*

2. Brief review of previous research

There is a growing interest in the relationship between different aspects of religious norms and economic theories related to economic behaviour. This relationship is surveyed extensively by Iannaccone (1998). The most basic

application of economic theory in this field is the use of microeconomic theory and the demand and supply analysis in the form of demand for religious products, such as services, reading and television shows, as well as supply of time for religious activities, such as volunteer work.

The relationship between religious norms and labour economics has been addressed in several papers. Earnings and wage premiums were found by Chiswick (1993) for American Jews and by Ewing (2000) for Catholics. Steen (1996) found that both Jewish and Catholic men have significantly higher wages than men raised in other religious traditions. Heineck (2002) analyses whether religion influences male earnings in Germany by analysing East and West Germany separately due to significantly different religious traditions. Results suggest that denominational affiliation is negatively correlated with earnings in West Germany. Using strength of belief to measure religious effects suggest earnings losses for both West and East German men using simple OLS estimation and earnings losses for East German men but not for West German men using panel-estimation.

Lehrer (1995) and Heineck (2004) analyse married women's decision between non-market activities and their supply of labour to the market. Their main result is that the married woman's decision is affected by the combination of the strictness of her religion towards female labour participation and the woman's conviction to this particular faith. Furthermore explained by bargaining models with regard to joint household decisions, the labour participation is also affected by husbands' religious conviction and the strictness of his religion towards female labour participation. If the spouse belongs to the same religious faith as her husband, then the supply of labour depends only on the strictness of that particular religious faith. However, if the husband belongs to a different religious faith concerning its strictness, then the supply of labour also depends on whether the husband belongs to a more strict religion or not. If the husband belongs to a more strict faith than his wife, then the woman tends to supply less labour compared to the case where the husband to a larger degree shares his wife's liberal attitudes toward female labour participation.[5] Analogously, a higher labour supply should be expected among women who belong to a stricter religious group relative to her husband. Such an outer-faith marital union might then be interpreted as an indicator that the wife has overcome less tolerant attitudes and doctrines by her religion such as disaffirmation of women who work.[6]

Economic literature also suggests that religious outer-faith marriages will affect the females incentives to invest in various forms of human capital that is in a relative high demand in the labour market. Outer-faith marriages are associated with smaller family sizes as a consequence of higher alternative costs and therefore associated with lower incentives to invest in spouse-specific capital such as children as discussed in Becker et al. (1977) and Lehrer (1996). Thus, women who recognize a seemingly less stable marital union have an incentive to invest in labour related human capital. This will have a higher marginal utility and expected return over the life-cycle for the woman in the case of a divorce compared to spouse-specific capital that will incline higher opportunity costs.[7] A higher level of female labour participation will then be expected for a woman with a husband that does not belong to the same religious faith relative to a woman in inner-faith marriages. This is due to the marital-stability effect discussed in Lehrer (1996) and Heineck (2004).

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5   As discussed in Lehrer (1995), this bargaining-effect or marital conflict/-stability and its effect on female labour participation is supposed to become more significant the more diversified the spouses' religious groups are concerning strictness towards gender roles.

6   This indication is due to that marriages are dominated by inner-marriages, i.e. spouses belonging to the same religious group, and it is especially valid for strict religious groups with clear membership criteria and sometimes even proscriptions against outer-marriages. As discussed in Lehrer and Chiswick (1993) and Heineck (2004), an outer-marriage is then an indication that the spouses have overcome less tolerant attitudes and doctrines by their religion, e.g. for female labour participation.

7   Countries with a significant proportion of outer-faith marriages can be expected to experience a significantly more rapid growth in the stock of human capital. By endogenousation of growth through labour related human capital accumulation, a positive effect on growth can be expected. This expectation is especially valid if the woman in the outer-faith marriage belongs to a relatively more strict religion than her husband.

3. Economic theory and econometric methodology

An individual's decision to participate in the labour market is related to the maximisation of her utility, subject to her budget constraint equal to total intertemporal disposable income. The utility function in this respect is a function of consumption of goods and services including religious goods and services[8] as well as leisure[9] including time spent on religious activities. In line with standard theory, the non-satiation assumption as well as the diminishing marginal utility are imposed. Furthermore, it is assumed that the individual does not plan to leave any estate after death and that during her lifetime she has both labour and non-labour income.

By assuming that the individual maximises utility, subject to the income constraint in the conventional way, the first-order condition with respect to religious services bundles is outlined in Heineck (2004). As discussed in Sullivan (1985) and Sawkins et al. (1997), the first-order condition implies that time spent engaged in religious activities may fall and then rise with age, with a conventional age-wage profile. The initial fall is attributed to a rising opportunity cost, as individuals' earnings generally rise sharply in the beginning of their careers. This is then generally followed by a diminishing effect on income-growth, allowing time spent on religious activities, which flattens the age-wage profile. To allow the joint occurrence of a forward sloping as well as a backward bending labour supply curve, a flexible form of the labour supply function is estimated as suggested by Blundell et al. (1987) including demographic characteristics[10] and observable individual characteristics.[11] Furthermore, the labour supply curve is assumed a linear function in the variables. [12]

Religion might affect the married woman's decision on whether to supply labour or not in different ways. Sociological theories suggest that attitudes towards gender roles and the appropriate allocation of time between the labour and the non-labour market differ across religious groups. The range covers the strictest and the most liberal religious groups concerning ethical norms for gender roles in the family.[13] Thus, the woman's choice to supply labour is influenced by the strictness of her religious faith towards female labour participation. It can furthermore be argued that it is not the affiliation itself that influences various aspects of individual behaviour but rather the importance that the person attaches to her faith. Even if a person is a member of a faith but otherwise does not attach a personal conviction to this particular faith, then it is assumed that this individual will not show a labour participation behaviour that is significantly different from an individual with a membership and strong personal conviction to a faith that is liberal towards female labour participation.

Assume a choice-model motivated by an individual's utility function subject to her budget constraint, where the utility subject to the constraint is maximised by the *j*th choice for the *i*th individual faced with *J* choices in the specific

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[8] *Examples of a religious service good are services provided by the church for baptisms, weddings and funerals.*

[9] *It is important to explicitly recognise the physiological constraints facing the individual supplying labour to the market where a certain amount of rest is required. Thus, only the residual time is potentially available for market activities, i.e. leisure time cannot be reduced to zero due to physiological factors as outlined in Berg (1961) and Barzel and McDonald (1973).*

[10] *Including e.g. if the individual lives in a small or large city.*

[11] *Including e.g. the number of children, the religious faith variable, time spent on religious activities.*

[12] *This is to allow for the joint occurrence of a forward sloping as well as a backward bending labour supply curve. That is, to allow for an income effect with an increase in the wage rate, especially at lower wages or observed hours near zero, or a substitution effect, especially in the upper-income classes, in accordance with economic theory as outlined in Blundell et al. (1987).*

[13] *The strictness is related to a comparison between religious groups rather than within a specific religious group or faith. In Lehrer (1995) it is found that only about eight percent of the individuals belonging to the group "without a specific religious faith" strongly agrees upon that it falls into the man's responsibility to provide financially for the family while the woman takes care of the home and family. For the individuals that belong to the group "exclusivist Protestants", i.e. a strict religious group, about 25 percent strongly agrees with the same statement. Exclusivist Protestants also strongly tend to disapprove that mothers are working full-time when their youngest child is under the age of five as discussed in Heineck (2004).*

time period t. The choice-set J, on whether or not to supply labour, is assumed to include a part-time employment as well as a full-time and non-employment choice.[14] The multinomial logit model is applied, as the decision to supply labour either as full-time, part-time or not employed can appropriately be estimated by this model.[15] This is done as religious attitudes, given a pro-labour participation decision, may furthermore influence the choice of how many hours should be supplied, for example, when children are to be cared for. To test the predictability of a model when new variables are included, the log likelihood ratio test (LR-test) will be used. The LR-test is distributed as chi-square with degrees of freedom equal to the number of restrictions.

It is well known that coefficients from the logit estimation are difficult to interpret as the impact of a variable is not constant but depends on the magnitude of the variable itself. A popular reformulation is the so-called marginal effect. In principle, this is an evaluation of the effect of a one-unit increase in the explanatory variable on the probability that the dependent variable takes one of the possible values under the assumption that all other variables are held constant. In the case of an exogenous dummy variable, this seems to be inappropriate as the probability of the dependent variable is estimated by the dummy variable restricted to a value of 0 or 1. However as pointed out in Greene (2000), a surprisingly accurate approximation is often provided by simply taking the derivative with respect to the binary variable as if it were continuous.

Let Y_i be the ith individual's employment status, which then can be observed as

$$Y_i = \begin{cases} 1 = \text{if the married woman is employed full-time} \\ 2 = \text{if the married woman is employed part-time} \\ 3 = \text{if the married woman is not employed} \end{cases}$$

The probability model can then be stated as

$$(1) \quad \Pr\left(Y_i = m \middle| C_i, S_i, t\right) = \frac{\exp\left(\alpha'_m \mathbf{C}_i + \beta'_m \mathbf{S}_i\right)}{\sum_{j=1}^{3} \exp\left(\alpha'_j \mathbf{C}_i + \beta'_j \mathbf{S}_i\right)}$$

with $m = 1$, 2 or 3 and $j = 1, …, m$ and α and β is a vector of coefficients and where $\mathbf{C}$ and $\mathbf{S}$ are vectors of covariates.

4. Data

The data are collected from the Swedish Level-of-Living Survey (LNU)[16], which is a rigorously conducted survey with its basis in a random sample of 1/1000 of the Swedish population between 15 to 75 years of age. LNU uses a multi-dimensional approach covering the individuals' command over resources in terms of e.g. family and social relations, material living conditions such as income and wealth, health, education, working conditions, political life, leisure time activities and housing conditions. In the cross-sectional analysis, data from the 1991 survey of 6710 adults between the ages 18 to 75 is used.[17] In order to study the effect of religion on married women's labour participation decision, we excluded men, women that were not married or in a marriage-equivalent relationship,[18] married women that did report

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[14] *Full-time status is defined as 35 hours per week (h) or more, part-time status as 35 > h ≥ 13 and non-employment as h < 13.*

[15] *Comparisons of different versions of the estimated model will be based on their ability to fit the data. Furthermore, the Hausman test of independence of irrelevant alternative (IIA) for the selected model, as outlined in section five below, estimated by the multinomial logit model could not be carried out as the difference matrix is not positive definite. The paper only includes socio-economic variables which are not specific to a certain outcome of the exogenous variable. Thus omitting a subset of the choice-set, the multinomial logit model will not lead to inconsistency, as the model will not change its parameter estimates systematically due to independence between the exogenous alternatives.*

[16] *Data was provided by the Swedish Social Science Data Service, SSD. It was first conducted in 1968 and replicated in 1974, 1981 and 1991. The survey was also replicated in 2000 but without a complete set of questions for this particular study rendering comparisons over time not possible.*

[17] *2623 women and 2683 men answered the questionnaire corresponding to a response rate of 79.1 percent.*

[18] *A relationship that corresponds to a marriage in Sweden is a couple that lives together under a contract that is legally equivalent to a marriage-contract. An example is a couple in a registered partnership that shares the same household both in residential and economic terms but still is not legally married to each other.*

abnormal high income levels[19] and women not included in the labour force, i.e. women younger than 18 or older than 65. This reduced the sample to 1418 observations.

Both denominational affiliation or membership and the strength of faith are assumed to affect the labour participation decision of married women as outlined in section three. The denominational affiliation can therefore be used as an indicator for religious affinity, with either a stricter or a more liberal group regarding attitudes towards female labour participation. Furthermore in a secularised country like Sweden, it is assumed that it is the degree of conviction to a certain religion and not the affiliation itself that is important concerning a possible relationship between religion and the decision on whether or not to participate in the labour market. Thus, the labour participation decision of the married woman is assumed to be affected by membership in combination with the strength of her belief and affinity in a particular religion's ethical norms. That is, religion will influence an individual's behaviour only when the mainstream religious dogma that is taught in a particular religion is also considered part of her information-set upon maximising utility.[20]

As strength of belief is assumed to be a more accurate indicator of labour supply behaviour than mere denominational affiliation or church service attendance, we will use a faith-based variable assumed to capture belief. It is based on the question whether the person wants a society where religion has a more influential role. The degree of faith will be categorised from the highest to the lowest degree of faith using the faith-groups which are very strict about religion, strict about religion, neutral about religion, liberal about religion and very liberal about religion, respectively. However, the survey does not provide any information on religious affiliation. Thus as a proxy, we use religious affiliation of the Swedish population indicated by church membership, assuming that the sample in the survey mimics the religious affiliation indicated by the population. As outlined in table 1, more than 94 percent are members in a religious faith-community. Almost 85 percent belong to the former State Church and approximately 90 percent are Protestants, overwhelmingly dominated by the members in the former State Church. Thus, the benchmark religion in the sample is the mainstream ethical norms and attitudes in the former State Church.[21]

Married women's employment status and strength of belief is outlined in table 2 where women who attach importance to religion in their life tend to work full time to a lower degree compared to women who regard religion as less important.[22] Furthermore, Berggren (1997) argues that people active in the former State Church have a liberal attitude towards gender roles in relation to the majority of other religious groups represented in Sweden but still stricter relative to people who are not affiliated to a specific religion. This distinction is also apparent in other related areas as discussed in Berggren (1997). As the attitude towards gender roles in the benchmark religion is stricter relative to people not affiliated a specific religion and women who attach importance to religion tend to work full time to a lower degree compared to women who regard religion as less important, the ethical norms and attitudes in the benchmark religion are argued as relatively strict towards female labour participation. Furthermore in line with the discussion in Lehrer

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[19] *An abnormal high income level is denoted as an hourly gross wage rate from 500 SEK in 1991 prices.*

[20] *During the period when the LNU was conducted, it has not been common among the broader spectrum of the population in Sweden to attend services on a regular basis. Therefore, using church service attendance to measure religious aspects on economic behaviour is argued as a second best solution in line with Cameron (1999) and Heineck (2004). This is especially so in a highly secularised country like Sweden keeping in mind the formation of religious human capital. A more efficient variable to capture effects of religious attitudes is to use a faith-based variable assumed to measure whether a person is a true believer or not in a particular set of ethical norms.*

[21] *The earliest available summary of denominational affiliation in Sweden is from 1999. The concentration of membership to the former State Church and the Protestants has declined slightly but steadily from 1991 to 1999 towards the other religions outlined in table 1 mostly due to immigration.*

[22] *This relationship has been noted in earlier studies as outlined in Cameron (1999), Heineck (2004) and Smith et al. (1998). Employment status and attendance is outlined in table 2 in order to benchmark the behaviour related to belief.*

Table 1. Denominational affiliation in Sweden November 1999.

Faith-community	Members	Members (Percent of population)
Church of Sweden.[a]	7 400 000	83.5 %
Domestic Free churches.	475 000	5.4 %
Christian faith-communities dominated by immigrants.[b]	290 000	3.3 %
Other faith-communities based on the Bible.[c]	50 000	0.6 %
Non-Christian world religions.[d]	125 000	1.4 %
New religious movements.[e]	10 000	0.1 %
Total sum in faith-communities.	8 350 000	94.3 %

Source: Skog (2000)
[a] The protestant Church of Sweden.
[b] The Roman Catholic Church, the Orthodox Church and other churches from the Far East, protestant immigrant churches and other foreign churches.
[c] The Church of Jesus Christ of Latter-Day Saints and Jehovah witnesses.
[d] Mainly Judaism, Islam, Hinduism and Buddhism.
[e] Mainly modern religious organisations, such as New-age inspired movements.

Table 2. Employment status in 1991 with percentage shares in row percentages by church service attendance and strength of belief for married women in Sweden.

Importance of religion/belief	Full-time employed		Part-time employed		Not employed	
Very strict	34	46 %	26	35 %	14	19 %
Strict	72	49 %	57	39 %	18	12 %
Neutral	187	53 %	121	34 %	47	13 %
Liberal	200	53 %	137	36 %	43	11 %
Very liberal	237	59 %	123	30 %	44	11 %
Attendance	Full-time employed		Part-time employed		Not employed	
Regular	57	53 %	31	29 %	19	18 %
Annual	340	51 %	245	36 %	88	13 %
Never	350	55 %	205	32 %	83	13 %

Source: Weighted calculations from the Swedish Level-of-Living Survey 1991.

(1995) and Heineck (2004), ethical norms in the domestic Free churches and as well as other religions such as the Catholics and the Muslims are thought to be equally strict or significantly stricter towards female labour participation relative to mainstream Protestants (the former State Church).[23] Thus, the majority of the remaining religions are argued as equally strict or stricter towards female labour participation compared to the benchmark religion.

The common labour participation related variables are used as control variables, as is done in Killingsworth (1983). In particular, we include age and age squared,[24] expecting them

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[23] *Analysing data for the USA, Lehrer (1995) argues that ecumenical Protestants and Catholics are approximately equally strict towards female labour participation. Furthermore, exclusivist Protestants seem stricter in inner-faith marriages in the sense that the probability for full-time employment is less than the corresponding probability for ecumenical Protestants and Catholics. Heineck (2004) argues that the probability for full-time employment is less for the Catholics compared to the Protestants and that the probability of not being employed is higher for Catholics than for Protestants in Germany. The same applies to the*

Muslims compared to the Protestants in Germany as outlined in Heineck (2004). For Sweden, the mainstream ethical norms in the former State Church, are said to be more in line with the US ecumenical Protestants than exclusivist Protestants and also in line with the German Protestants. The difference in ethical norms of the Swedish and the German Catholics and the Muslims in relation to the Protestants is also argued as insignificant. Furthermore, the exclusivist Protestants in the USA are more in line with the domestic Free churches in Sweden.

[24] *The age square variable is divided by 100.*

to capture the common u-shaped effect often found in empirical research concerning age structure and level of female labour supply. Years of education are used as a proxy for accumulated human capital. Furthermore, existence of children is assumed to influence married women's labour participation in a negative way. It is assumed that this influence will decrease as the children get older. Younger children, especially if they are in the pre-school age, will have a stronger influence compared to older children. To control this possible effect, a variable indicating whether the respondent has a child in the four age-categories 0–5, 6–8, 9–12 and 13–17 will be included. A family restriction variable, other than children, is included to control, if main responsibility for household work during the last 12 months did restrict the married woman from participating in the labour market against her wishes. Bad health might influence labour participation in a negative direction, therefore self-reported health is included to control this effect. A dummy-variable for municipal size of the wife's residence is included, as is done in Lehrer (1995) and Heineck (2004). The purpose is to control for possible social ties, including religious attitudes towards female labour participation. This effect is assumed to be stronger in smaller villages or rural areas than in larger cities.[25] The municipal size will be categorised in the four groups Big city area, City area, Urban area and Rural area, respectively. In order to control for a possible correlation between education and faith, dummy-variables are included for years of education times if the respondent regards religion as very liberal, liberal, strict or very strict, respectively.

Table 3 reports means and standard deviations for the variables in the study. The age variable indicates a mean of 40.3 years with a standard deviation of 11.1 years. That is, 67 percent of the observations are in the age interval with the highest probability of having a child in the different age-categories included in this study. Years of education indicates a relatively low level of education on average with a mean of 11.4 years with 67 percent of the observations within the approximate range of eight to 14 years of education.[26] The self-reported health condition is on average good and the responsibility for the household on average is not regarded as a restriction upon supplying labour. The majority of the women live in a Big city or City area. This can partly explain why the majority of the women regard religion in the range neutral to very liberal, while keeping in mind that secularisation is relatively more widespread in Big city and City areas in Sweden. Furthermore, social ties including religious attitudes are assumed to be stronger in smaller villages and rural areas.[27]

5. Empirical results

This section presents the empirical results of the married women's decision to participate in the labour market. First, we discuss the results from the estimated model related to demographic and observable individual variables. Second, we present the results related to the faith-based variable and the hypothesis that a married woman who does not have a strong conviction to a strict faith tends to work full-time rather than not at all. Last we present the LR-tests for the parsimoniously selected model.

The empirical results of the multinomial logit model and the marginal effects as outlined in section three and four are presented in table A

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[25] *An indication of this possible relationship is the evidence that church attendance tends to decrease with increasing population as reported in Haraldsson (2002).*

[26] *The mandatory pre-university school in Sweden is 9 years. The political declaration is a 12-year pre-university education after the 1997 reform and at least 11 years before that, but after the 1967 reform.*

[27] *As there might be a significant difference between different generations concerning accumulation of human capital, represented by years of education, and degree of religious belief, an interesting issue would have been to test whether younger women have a different labour supply pattern relative to women from other generations. Furthermore, as Sweden has become a more integrated society over the past decades, outer-faith marriages have become relatively more common for younger generations. Thus, implying the possibility that younger women invest in labour specific human capital instead of spouse-specific capital expected in an inner-faith marriage. However, the lack of data observations restricted the study to only analyse the full sample alternative.*

Table 3. Descriptive statistics.

Variable	Description	Mean	Std.dev.
Age	Age of the respondent in years	40.2578	11.0750
Age squared/100	Age squared divided by 100	17.4328	8.9376
Ln Income	Log of gross hourly wage	3.4625	1.6710
Years of education	Respondents years of education	11.3625	2.9769
Family as a restriction	1 if the responsibility for the household is not regarded as a restriction when choosing to supply labour	0.6977	0.4594
If children aged 0–5	1 if the respondent has any children aged 0–5 years	0.1925	0.3943
If children aged 6–8	1 if the respondent has any children aged 6–8 years	0.1009	0.3013
If children aged 9–12	1 if the respondent has any children aged 9–12 years	0.1308	0.3372
If children aged 13–17	1 if the respondent has any children aged 13–17 years	0.1663	0.3725
In good health	1 if the self-rated health is either satisfactory, good or very good	0.6187	0.4858
Very strict about religion	1 if the respondent think that a society more influence by religion is a very good suggestion	0.0387	0.1929
Strict about religion	1 if the respondent think that a society more influenced by religion is a rather good suggestion	0.0769	0.2665
Neutral about religion	1 if the respondent is neutral about the suggestion that a society more influenced by religion would be preferable	0.1857	0.3889
Liberal about religion	1 if the respondent think that a society more influenced by religion is a bad suggestion	0.1987	0.3992
Very liberal about religion	1 if the respondent think that a society more influenced by religion is a very bad suggestion	0.2113	0.4083
Years of education if very strict about religion	Interaction between years of education and if the respondent think that a society more influenced by religion is a very good suggestion	0.6072	2.6935
Years of education if strict about religion	Interaction between years of education and if the respondent think that a society more influenced by religion is a good suggestion	1.1855	3.6415
Years of education if neutral about religion	Interaction between years of education and if the respondent is neutral about the suggestion that a society more influenced by religion would be preferable	2.8716	5.1844
Years of education if liberal about religion	Interaction between years of education and if the respondent think that a society more influenced by religion is a bad suggestion	3.0465	5.2416
Years of education if very liberal about religion	Interaction between years of education and if the respondent think that a society more influenced by religion is a very bad suggestion	3.2553	5.3679
Big City area	If the respondent lives in a city with more than 250 000 inhabitants	0.2976	0.4573
City area	If the respondent lives in a city with more than 30 000 inhabitants	0.2228	0.4162
Urban area	If the respondent lives in an urban area	0.1872	0.3902
Rural area	If the respondent lives in a rural area	0.2924	0.4550

Source: The Swedish Level-of-Living Survey 1991 and calculations by the authors.

in the appendix and in table 4, respectively.[28] The empirical results support the hypothesised effects for the demographic and observable individual variables in relation to the discussion in section four. The age relationship hypothe-

sised that an individual can be expected to be either employed full-time or part-time with increasing age but might probably not be employed full-time the closer she gets to retirement age due to early retirement. The result implies that female attachment to the labour force increases with age and the effects follows the non-linear u-shaped pattern commonly found in empirical papers such as Lehrer (1995) and Heineck (2004). Furthermore, there is no

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[28] *To be able to evaluate the effects of education and religious faith isolated from their interaction effects, table B in the appendix present the model without the interaction terms between individuals' education and their religious faith.*

Table 4. Marginal effects of the multinomial logit model by employment status for married women in Sweden 1991.[f]

Variable	Job Status	Full-time employment	Part-time employment	Not employed
Age		0.0374***	–0.0160	–0.0214***
		(0.0116)	(0.0112)	(0.0063)
Age squared/100		–0.0505***	0.0262*	0.0263***
		(0.0146)	(0.0139)	(0.0081)
Years of education		0.0339***	–0.0161*	–0.0178***
		(0.0091)	(0.0084)	(0.0050)
Family as a restriction		0.1989***	–0.1161**	–0.0828***
		(0.0650)	(0.0587)	(0.0278)
If children aged 0-5		–0.1882***	0.0996***	0.0886***
		(0.0379)	(0.0360)	(0.0200)
If children aged 6-8		–0.1772***	0.1879***	–0.0107
		(0.0445)	(0.0400)	(0.0248)
If children aged 9-12		–0.1371***	0.0707*	0.0663***
		(0.0406)	(0.0374)	(0.0231)
If children aged 13-17		–0.0472	0.0756**	–0.0284
		(0.0381)	(0.0353)	(0.0246)
In good health		0.0256	0.0967**	–0.1223***
		(0.0407)	(0.0396)	(0.0192)
Very strict about religion		0.4245	–0.3072	–0.1173
		(0.3032)	(0.2421)	(0.1210)
Strict about religion		–0.0886	0.2318	–0.1432
		(0.1972)	(0.1808)	(0.1087)
Liberal about religion		0.3074**	–0.0516	–0.2558***
		(0.1525)	(0.1419)	(0.0882)
Very liberal about religion		0.3818**	–0.0491	–0.3327***
		(0.1524)	(0.1430)	(0.0888)
Years of education if very strict about religion		–0.0387*	0.0268	0.0119
		(0.0209)	(0.0198)	(0.0108)
Years of education if strict about religion		0.0058	–0.0174	0.0116
		(0.0168)	(0.0157)	(0.0096)
Years of education if liberal about religion		–0.0262**	0.0069	0.0193**
		(0.0131)	(0.0123)	(0.0078)
Years of education if very liberal about religion		–0.0268**	0.0024	0.0244***
		(0.0131)	(0.0123)	(0.0077)
Big City area		0.1176***	–0.1147***	–0.0029
		(0.0376)	(0.0357)	(0.0217)
City area		0.1019***	–0.0997***	–0.0022
		(0.0388)	(0.0369)	(0.0224)
Urban area		–0.0309	0.0196	0.0113
		(0.0408)	(0.0375)	(0.0235)
Constant		–1.0043***	0.3230	0.6813***
		(0.2464)	(0.2339)	(0.1262)

[f] The result of the full model are included in table A in the appendix.
Note: (a) The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent level, respectively. (b) Standard errors in parenthesis with N = 1418.
Source: The Swedish Level-of-living survey 1991 and calculations by the authors.

early retirement effect in favour of part-time or being out of the labour force as the age-variable increases the probability of being employed full-time and decreases the probability of being unemployed. Accumulation of human capital, i.e. length of education, supports the hypothesis that higher education increases the probability that the woman is in full-time occupation rather

than employed part-time or out of the labour force.[29]

The presence of children significantly affects employment status. This is especially so for the early age-categories up to the years including the first years in primary school. The probability is in favour of being employed part-time rather than being employed full-time or being out of the labour force. Furthermore, the probability of not being employed full-time decreases with the age of the child.[30] The negative effect on the probability of being employed full-time related to children in the pre-school age is neutralised by less than 10 years of education. With an average education of 11.4 years and 67 percent within the range 8–14 years of education as outlined in table 3, on average the majority of the married women have enough education to neutralise the negative effect of children on the probability for full-time employment.[31] Human capital, represented by years of education, proves to be an important factor for the married woman's employment status and on average it neutralises the negative effect on the probability of full-time employment related to spouse-specific capital represented by children. Furthermore, the family restriction variable other than children concerning main responsibility for household work during the last 12 months, did not decrease the probability and restrict the women from being employed full-time. Good health increased the probability of being employed part-time relative to being out of the labour force, with an insignificant marginal effect for full-time employment. The empirical results of the family restriction- and health variables are in line with the discussion in section four.

The municipal size of the married woman's residence affected the choice of her employment status. The results show that the probability of being employed full-time increases with the size of the city. It was hypothesised in section four that the size of the city and social ties related to religious attitudes toward female labour participation were negatively correlated and stronger in smaller villages and rural areas than in larger cities. However, this empirical result can be related to pure labour demand factors where employment possibilities are significantly higher in bigger cities relative to smaller villages. Furthermore, the labour market is generally more diversified in larger cities, increasing the probability of finding a job related to the woman's specific education and skill. This increases the probability of finding employment. Furthermore, the interactions between education and faith show that the effects of education on occupational choice are significantly smaller for liberals.[32]

As outlined in table 4, the faith-based variable is one of the most important variables for the employment status of the married woman. Given a low degree of belief, the evidence is in favour of full-time employment where the probability of a full-time employment increases with a decreasing degree of belief. For full-time employment, a liberal or very liberal attitude towards religion has approximately the same marginal effect as years of education given an average educational level of 11.4 years. Furthermore, evidence related to belief indicates that liberal or very liberal attitude towards religion

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[29] *Estimating a reduced form participation equation, endogeneity is generated including a wage variable in the regression. However, running a regression with a wage variable did not change either the significance of the variables or their sign and amplitude such that the conclusions are affected. The estimated income variable is 0.0448 for full-time employment and –0.0458 for not employed both significant at the 1 percent level. The estimate for part-time is insignificant. Thus, a higher income implies an increased probability that the woman has a full-time employment and a lower probability that she is out of the labour force. This result indicates a forward sloping labour supply curve where the income effect dominates the substitution effect.*

[30] *Due to shortage in the data set, it is not possible to test whether it is due to religious norms on female care-taking of household and family, especially when there are small children in the household, or whether it is due to that sufficient childcare is not provided.*

[31] *As the overwhelming majority do have an education of at least 11 years, this is especially expected for women in the age-category with the highest probability of having a child between 0–8 years. This as the probability of not working full-time is the highest with a child in this age-category. As outlined in table 3, 67 percent of the women in the sample are in the age-category where education normally is acquired as well as having a child in the range 9–17 years.*

[32] *As outlined in table B in the appendix, the marginal effects and their interpretation for the demographic and observable individual variables without the interaction terms included are in line with the results including the interaction terms.*

Table 5. The LR-test by restricting the stated variable to equalise zero.

Likelihood Ratio-test	Log likelihood restricted model	Numbers of restrictions	LR-test statistics
No model	−1380.702	40	255.775***
Age	−1270.148	2	34.667***
Years of education	−1337.196	2	168.763***
Family restriction	−1268.350	2	31.071***
Children	−1303.780	8	101.931***
Health	−1282.701	2	59.773***
Religion	−1269.179	8	32.729***
Size of the city	−1272.089	6	38.549***

Note: (a) The notation *** 1 percent. (b) The log likelihood for the unrestricted model is -1252.814.

has a significantly larger effect on employment status compared to e.g. the health-variable. The evidence shows the importance of ethical norms and attitudes, as an integrated part of economic theories, affecting an individual's preference set and, hence, her choice of the optimising consumption bundle.[33]

As outlined in section three, LR-tests are used in model selection. The test-statistics for each are shown in table 5. The test statistics support the inclusion of age, years of education, the family restriction variable, children grouped together by the different age categories, health, religion grouped together by the different degrees of believes and the size of the city grouped together by the different size categories.

In summary, the results provide evidence on several hypothesised relationships. The results support the negative relationship between a strong belief in ethical norms and values strict towards female labour participation and the degree of labour participation by married women. They also highlight the importance of inclusion of belief, ethical norms and values in theoretical and empirical research. Furthermore, there is evidence that education, health, main responsibility for the household and the size of the city

do not restrict the womans labour participation. Evidence from the age-variables supports the common u-shaped effect. Furthermore, the age of the children is in lien with the hypothesised negative effect on labour participation for married women.

6. Conclusions

This paper highlights the importance of ethical norms in women's occupational choice. Using data from a household survey conducted in Sweden in 1991, this paper examines religious aspects of married women's labour participation decision. To capture the degree of belief, a faith-based variable was used, based on the question whether the person wants a society where religion has a more influential role. It was also noted that approximately 90 percent of the population are Protestants, overwhelmingly dominated by the former State Church. The set of ethical norms and attitudes in this dominating religion is used as the benchmark religion. The majority of the other major global religions represented in Sweden in 1991 are argued as equally strict or stricter towards female labour participation. The strength of religious beliefs has a significant negative effect on the probability that the married woman is employed full-time.

The results also show that the age of the children, especially having children below school-going age, influences the labour participation decision negatively. Education, a good health status, size of the city where the woman is liv-

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[33] *The faith-based variable is a more important factor explaining employment status for married women relative to married men as outlined in table 4 and table C in the appendix, respectively. For the estimates significant for both women and men, the estimate is at a significantly lower level for men. In line with the results for women, age, age square, years of education and health are significant for men. In contrast to the women, the family-, age of the children- and size of the city variables are insignificant.*

ing and not regarding responsibility for the household as a restriction, affect the probability of labour force participation positively.

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Appendix

Table A. Results of the multinomial logit model. The base category is a married woman that is not employed and neutral about religion.*

Variable	Job Status	Full-time employment	Part-time employment
Age		0.2646***	0.1498**
		(0.0689)	(0.0726)
Age squared/100		−0.3148***	−0.1463
		(0.0876)	(0.0916)
Years of education		0.2249***	0.1163**
		(0.0555)	(0.0558)
Family as a restriction		1.1232***	0.4223
		(0.3232)	(0.3048)
If children aged 0–5		−1.1568***	−0.5236**
		(0.2207)	(0.2304)
If children aged 6–8		−0.2269	0.6413**
		(0.2745)	(0.2673)
If children aged 9–12		−0.8589***	−0.4029
		(0.2544)	(0.2554)
If children aged 13–17		0.1730	0.4782*
		(0.2647)	(0.2693)
In good health		1.1665***	1.3991***
		(0.2134)	(0.2290)
Very strict about religion		1.8534	0.1862
		(1.3347)	(1.4038)
Strict about religion		1.1479	1.9804*
		(1.1941)	(1.1883)
Liberal about religion		2.9061***	2.1927**
		(0.9606)	(0.9758)
Very liberal about religion		3.7466***	2.9037***
		(0.9715)	(0.9958)
Years of education if very strict about religion		−0.1803	−0.0319
		(0.1186)	(0.1230)
Years of education if strict about religion		−0.0955	−0.1565
		(0.1046)	(0.1067)
Years of education if liberal about religion		−0.2244***	−0.1563*
		(0.0840)	(0.0863)
Years of education if very liberal about religion		−0.2726***	−0.2166**
		(0.0836)	(0.0864)
Big City area		0.2429	0.3044
		(0.2335)	(0.2431)
City area		0.2069	−0.2684
		(0.2411)	(0.2510)
Urban area		−0.1600	−0.0468
		(0.2562)	(0.2567)
Constant		−8.0802***	−5.3033***
		(1.3912)	(1.4428)

* Defined as not employed at all or employed with a total amount of work-hours below 13 hours per week.
Note: (a) The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent level, respectively. (b) Standard errors in parenthesis with N = 1418. (c) LR chi^2(2) = 255.776, Prob>chi^2 = 0.00, Log likelihood = −1252.814.
Source: The Swedish Level-of-Living Survey 1991 and calculations by the authors.

Table B. Marginal effects of the multinomial logit model by employment status for the married women in Sweden 1991 without interaction-effect between faith and education.

Variable	Job Status	Full-time employment	Part-time employment	Not employed
Age		0.0385***	–0.0165	–0.0220***
		(0.0116)	(0.0111)	(0.0064)
Age squared/100		–0.0521***	0.0269*	0.0252***
		(0.0145)	(0.0139)	(0.0081)
Years of education		0.0193***	–0.0132***	–0.0060*
		(0.0052)	(0.0049)	(0.0032)
Family as a restriction		0.1960***	–0.1113*	–0.0847***
		(0.0648)	(0.0584)	(0.0278)
If children aged 0–5		–0.1928***	0.1000***	0.0928***
		(0.0378)	(0.0359)	(0.0202)
If children aged 6–8		–0.1785***	0.1887***	–0.0102
		(0.0444)	(0.0398)	(0.0251)
If children aged 9–12		–0.1390***	0.0718*	0.0672***
		(0.0406)	(0.0372)	(0.0234)
If children aged 13–17		–0.0501	0.0757**	–0.0256
		(0.0380)	(0.0352)	(0.0249)
In good health		0.0245	0.1020***	–0.1265***
		(0.0404)	(0.0394)	(0.0192)
Very strict about religion		–0.0224	0.0142	0.0082
		(0.0670)	(0.0628)	(0.0348)
Strict about religion		–0.0188	0.0435	–0.0247
		(0.0504)	(0.0470)	(0.0299)
Liberal about religion		0.0142	0.0332	–0.0474**
		(0.0374)	(0.0353)	(0.0216)
Very liberal about religion		0.0800**	–0.0154	–0.0645***
		(0.0374)	(0.0357)	(0.0217)
Big City area		0.1133***	–0.1135***	0.0002
		(0.0374)	(0.0355)	(0.0218)
City area		0.1042***	–0.1060***	–0.0036
		(0.0386)	(0.0367)	(0.0227)
Urban area		–0.0297	0.0199	0.0098
		(0.0407)	(0.0373)	(0.0238)
Constant		–0.8502***	0.2844	0.5658***
		(0.2312)	(0.2212)	(0.1196)

Note: (a) The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent level, respectively. (b) Standard errors in parenthesis with N = 1418.
Source: The Swedish Level-of-living survey 1991 and calculations by the authors.

Table C. Marginal effects of the multinomial logit model by employment status for married men in Sweden 1991.

Variable	Job Status	Full-time employment	Part-time employment	Not employed
Age		0.0297***	–0.0157***	–0.0141***
		(0.0050)	(0.0038)	(0.0031)
Age squared/100		–0.0332***	0.0174***	0.0158***
		(0.0062)	(0.0047)	(0.0039)
Years of education		0.0067*	0.0023	–0.0091***
		(0.0038)	(0.0025)	(0.0030)
Family as a restriction		–0.0064	0.0557	–0.0493***
		(0.0388)	(0.0375)	(0.0121)
If children aged 0–5		0.0074	–0.0034	–0.0040
		(0.0153)	(0.0116)	(0.0097)
If children aged 6–8		–0.0115	0.0107	0.0008
		(0.0192)	(0.0148)	(0.0125)
If children aged 9–12		0.0146	–0.0172	0.0027
		(0.0207)	(0.0168)	(0.0125)
If children aged 13–17		–0.0041	–0.0027	0.0069
		(0.0191)	(0.0141)	(0.0120)
In good health		0.0628***	–0.0346***	–0.0283***
		(0.0149)	(0.0116)	(0.0092)
Very strict about religion		–0.0544	0.0823	–0.0279
		(0.1389)	(0.1316)	(0.0460)
Strict about religion		0.0053	0.0277	–0.0330
		(0.0838)	(0.0638)	(0.0540)
Liberal about religion		0.1063	–0.0298	–0.0765*
		(0.0650)	(0.0518)	(0.0395)
Very liberal about religion		0.1760***	–0.0397	–0.1363***
		(0.0530)	(0.0401)	(0.0344)
Years of education if very strict about religion		0.0054	–0.0125	0.0071*
		(0.0139)	(0.0134)	(0.0042)
Years of education if strict about religion		–0.0003	–0.0037	0.0040
		(0.0072)	(0.0052)	(0.0051)
Years of education if liberal about religion		–0.0078	0.0001	0.0077**
		(0.0056)	(0.0042)	(0.0038)
Years of education if very liberal about religion		–0.0138***	0.0014	0.0124***
		(0.0046)	(0.0032)	(0.0033)
Big City area		–0.0188	–0.0030	0.0219**
		(0.0157)	(0.0125)	(0.0094)
City area		–0.0087	–0.0022	0.0109
		(0.0168)	(0.0129)	(0.0105)
Urban area		0.0094	0.0055	–0.0149
		(0.0185)	(0.0130)	(0.0132)
Constant		–0.5491***	0.1904**	0.3588***
		(0.1048)	(0.0825)	(0.0624)

Note: (a) The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent level, respectively. (b) Standard errors in parenthesis with N = 1390.
Source: The Swedish Level-of-living survey 1991 and calculations by the authors.