No. 09-2010

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Abstract

Against the background of the current economic research which concentrates particularly on individual and structural factors, this paper examines if and to what extent social norms (in terms of attitudes towards gender roles and work commitment) can make a complementary statement in explaining women's employment status. The impact is presumed to be enhanced through norms shared by people belonging to the same households, peer groups, and by residents of the same region.
The analysis relies on a rich German dataset and employs a zero inflated negative binomial model. The results highlight the importance of 'relevant others' in explaining women's employment status.

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1 Introduction

In many Western industrialised countries, women's participation in paid employment increased significantly over the last decades. This phenomenon has attracted much attention in the social sciences, particularly in economics and sociology. Analyses on both the macro- and micro-level have been conducted, exploring possible factors that caused and enhanced this development (Heineck, 2004).

An important attribute of the research conducted so far is that it concentrates extensively on specific topics, such as the relationship between fertility and women's employment, and on the effect of specific family policies (i.e. child care, parental leave) on women's labour market participation (Schröder and Pforr, 2009; Berninger, 2009; Mühlberger, 2000). Beyond this, most of the economic studies exploring the determinants of women's employment status rest heavily on neo-classical models with their assumption that preferences are given and exogenous to the cultural environment of the decision-maker.

However, this approach and the reduction to specific topics and policy fields narrow the holistic mechanism of labour markets. Moreover, the dominance of neo-classical models has relegated the relationship between culture and individual economic behaviour to the fringe.

Against this background, the aim of the present paper is to examine if and to what extent social norms (in terms of attitudes towards gender roles and work commitment) influence women's employment status in Germany. It is presumed that their impact is enhanced through norms shared by people belonging to the same households (i.e family members), peer groups and by residents of the same region.

The reasons why attitudes towards gender roles and (paid) employment should be important in predicting women's labour force participation are fairly straightforward. According to socioeconomic and institutionalist views, cultural aspects such as language, norms, customs and conventions determine, in large part, the value and significance people attach to labour market behaviour. Particularly social norms are said to shape an individual's objectives and performance in the labour market (Austen, 2000). Their impact is rendered possible through the adherence of individuals to a peer group (defined in terms of social, geographical and/or cultural proximity) (Loury, 1998).

Derived from this idea, the underlying assumption of the present analysis

rests upon the *homophily principle*, i.e. that the contact between similar people occurs at a higher rate than among dissimilar people (*"Birds of a feather flock together"*). According to McPherson et al. (2001) similarity limits peoples social worlds in a way that has powerful implications for the information they receive, the attitudes they form and the interactions they experience. The basic type of relationship which exerts powerful influences on individual labour market outcomes is represented by family and peer group ties. Another source of similarity is space, meaning that individuals are more likely to have contact with, and be influenced by those who are closer to them geographically than those who are distant.

The spatial dimension plays a particularly relevant role in Germany. This is due to the fact that, even two decades after reunification, structural labour market differentials and gaps in attitudes towards gender roles and work commitment between the western and the eastern Bundesländer are substantial. For example, in 2006 in the eastern part of Germany the unemployment rate reached 17.3 percent and the GDP per employable person amounted to €48,553, while in the western part it reached 9.1 percent and €61,828 respectively. (Statistische Ämter der Länder, 2009; Federal Employment Agency, 2006). Moreover, whereas employment is a social imperative for men, it is - especially in the western part of Germany – still seen as a choice for women. Because essentialist views about women's maternal nature and structural barriers to women's employment are widespread but differently weighted in Germany, we expect to find interesting insight regarding the role played by social norms in women's employment status and, thus, to complement the existing body of literature.

This paper is structured as follows: the next chapter reviews previous research and provides a brief discussion on the main determinants of women's labour market participation. Subsequently, the data used for the study is presented. Chapter four highlights a range of empirical findings related to the role played by social norms in Germany. The fifth chapter comprises a synthesis of current results obtained from a zero inflated negative binomial model. Section six comprises the main conclusions of this study.

2 Related literature

Drawing on a large body of economic and sociological literature, several key predictors of women's employment status can be identified on the individual, household and regional level. Among individual and household determinants, the female labour supply literature provides evidence that the presence, number and age of children have a significant negative effect on the female employment probability (Kalwij, 2000). Assuming an efficiency rising, gender-related specialisation in the domestic division of labour, particularly the representatives of the 'New Home Economics' (Becker, 1981) point out that women, mainly after having given birth, are very likely to reduce their work volume.[1] Furthermore, the husband's level of education, work hours, income level and promotion to a higher position are all also considered to restrict the opportunities for a married woman to work outside home (Maume, 2006).

The effect of age on women's employment status follows a course with three phases: while young (and thus at the beginning of the career) there is high labour market participation, then a drop-off follows at middle age (related to birth and child care responsibilities). In the long-run, women re-integrate in the labour market, though with a lower work volume (Vogel, 2007). Education, particularly in the form of professional training, has a positive effect both on the employment status and work volume of women, i.e. a higher level of education considerably reduces the probability of being homemaker.

Though some individual and household predictors might change over time, their influence remains long-lasting and significant. According to the sociological labour-supply literature, a particularly formative and persistent influence emanates from cultural and social determinants. Gender egalitarianism, for example, affects couples' decisions about paid work, resulting in men and women placing higher value on income and less on the position and roles each occupy within the relationship (Kubeka, 2007). These developments transformed women's socioeconomic lives such that their contribution to the household income increased. However, though family patterns have changed on an aggregate level across al-

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[1]However, an issue which remains unsolved in the literature refers to the direction of the causal relationship between women's employment status and fertility. A large numer of empirical studies reveal that it is women's employment status that has a significant negative effect on the presence and number of children in the household (see for a detailed discussion Schröder und Pforr, 2009).

most all European countries, along with the norms and attitudes regarding family life and childbearing (Frejka et al., 2008), gender relations within the family have scarcely changed (Blossfeld and Drobnic, 2001). It means that, though men became more helpful in performing household chores, employed women still have to handle both work and a large part of family responsibilities (Wilcox and Nock, 2006).

Alternative explanations for women's employment status are also taken into consideration. As shown by Guiso et al. (2003) and Algan and Cahuc (2006), religiosity is associated with less favourable institutions and less favourable attitudes towards working women. Heineck (2004) points out that denominational affiliation (particularly Catholicism) as well as religious participation correlate positively with traditional attitudes both across and within countries. The author also reveals that males' attitudes and religious affiliation have a negative effect on wives' full-time employment.

A final set of relevant explanations for women's employment status refer to regional- and national-level predictors. Among these, two determinants seem to play a considerable role, particularly in Germany. Firstly, regional economic conditions such as unemployment rates exert powerful influences on women's employment status. According to Eberharter (2003), labour market adjustments are not gender-neutral, but affect women's employment status to a greater extent than those of men. Secondly, empirical studies point that good quality childcare services (particularly for infants) can act as a key re-integration mechanism, providing parents with the ability to reconcile both work and family, and promote women's employment continuity (Berninger, 2009). Besides availability and quality, other aspects such as affordability and compatibility of facilities with paid working hours determine whether childcare services support women's employment.[2]

Other regional and national factors often depicted in the literature as determining women's employment status refer to the level of economic development (Pampel and Tanaka, 1986), sectoral composition of the workforce (Schulz, 1990), the level of job security and other forms of employment protection (Eberharter,

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[2]However, Fagan and Hebson (2006) emphasise that these services cannot be examined in isolation. Without employment opportunities, childcare alone cannot provide the impetus for high maternal employment rates. Moreover, Vogel (2007) points that external child care affects the employment status, rather than women's work volume.

2003) or, more generally, to policies promoted and implemented by the state with regard to education, taxes or gender equality.

As seen from aforementioned studies, progress is being made in exploring the determinants and consequences of women's employment status. However, though researchers have increasingly become aware that, in addition to individual, structural and institutional determinants, cultural influences also play a role in economic decision-making (Soetevent, 2004), systematic empirical evidence acknowledging the importance of social norms is still scarce. Against this background, our paper purports to complement the existing body of literature by combining elements of previous analyses with cultural influences and by shedding light on the role played by social norms (in terms of attitudes towards gender roles and work commitment) for women's employment status.

3 Data

For analysing the role of gender norms for women's employment status we focus our analysis on the German labour market. The motivation for this choice is twofold: firstly, a rich and up-to-date dataset containing both labour market-related variables and information regarding norms (or attitudes) of individuals is available for Germany. Secondly, differences between the western and the eastern part of Germany in structural conditions and social norms are noticeable even after two decades of reunification. Therefore, a joint examination of both German regions may reveal interesting insights regarding the impact of gender and work norms on women's employment status.

The main data set employed for this analysis is the 'Labour Market and Social Security' (PASS) data set. This is an annual household survey which is conducted by order of the Institute for Employment Research (IAB). For the first wave of the panel study (2006/2007), 16,954 persons in 12,794 households were interviewed.

The applied survey design is a two-stage random sample including 300 postal code areas. The survey units consist of two partial populations: people and households in receipt of Unemployment Benefit II (ALG II) and people and households registered as residents of Germany. Initially, a personal interview was carried out with the heads of all selected households. Subsequently, household members over the age of 15 were interviewed. People older than 65 were presented with an

abridged questionnaire referred to as a pensioners questionnaire.

In Table 1, in order to get a better view on the data set used for the present analysis, some descriptive statistics are presented.

Table 1: Descriptive Statistics

Variable	Obs.	Mean	Std.Dev.	Min.	Max.
Individual characteristics					
Weekely working hours	7155	11.3365	17.2240	0	84
Age	7155	40.8867	11.0822	16	64
Age²	7155	1791.425	905.52	256	4096
Highly qualified	7155	.2113	.4082	0	1
Migration background	7155	.2663	.4420	0	1
Religiosity	7155	.4723	.4992	0	1
Household characteristics					
Child<15	7155	.4247	.4943	0	1
Income partner	7155	434.0976	1012.155	0	20000
Regional variables (Bundesland level)					
Unemployment rate	16	11.6334	4.0401	6.3	19
Firm (saldo)	16	.4663	.0382	.3973	.6080
Childcare infrastructure	16	.5218	.0812	.4385	.7092
Sectoral composition of workforce	16	.3055	.0462	.2485	.4148

Source: PASS, 2006/2007; Federal Statistical Office, 2006; Federal Employment Agency, 2006.
Note: 'Weekely working hours' displays women's weekly effective working hours. 'Age' is women's age (in years). 'Highly qualified' is a dummy variable displaying the educational level (1-highly qualified, 0-otherwise). 'Migration' reveals the migration background of a women (1-with migration background and 0-otherwise). 'Religiosity' is a dummy with the value 1 for women who consider themselves as being religious and 0 otherwise. 'Child⟨15' is a dummy variable with the value 1 if there are children younger than fifteen years in the household and 0 otherwise. 'Income partner' reveals the income of the partner living in the household (continuous variable). 'Unemployment rate' is the regional unemployment rate. 'Firm (saldo)' represents the saldo between the number of firms who opened and firms who closed in the Bundesland per employable person. 'Childcare infrastructure' is the share of children in childcare services reported to the total number of children in the respective age group per Bundesland. Finally, 'Sectoral composition' represents the share of employees in sectors that are traditionally characterised by a high share of female employees.

The data set includes 7,155 women (observations) in the age group 15 to 64, who are either homemakers (1,971 persons), unemployed (2,825 persons) or employed (2,359 persons). Not included in the sample are pensioners, persons who fulfill either their military or alternate civilian service and people who attend vocational training or a school. The group of unemployed covers not only persons who are unemployed, but also those who are in a job creation scheme provided by the Federal Employment Agency.

4 Modelling social norms

The main challenges of the present analysis refer to the difficulty of modelling social norms and estimating their impact on women's employment status.

In line with this idea, the identification of a measurement method for the strength of these norms represents *a sine qua non* prerequisite for the empirical analysis. The measurement should illustrate normative preferences, i.e. the level of belief within households, peer groups and regions that women's paid employment is desirable and represents a positive matter of fact. Our approach is based on proxies capturing attitudes towards gender roles and work commitment. These are constructed on the basis of several items from the PASS dataset (Table 2).

Table 2: Norms referring to gender roles and work commitment: statements and proxies classification

Proxy	PASS Questions
Norms referring to gender roles	1. A woman should be willing to reduce her working hours in order to have more time to take care of her family.
	2. Having a job is quite nice, but the one thing most women really want is a home and children.
	3. A working mother can have an equally warm relationship with her children as a mother who does not work.
	4. It is the responsibility of the husband to earn money, and the responsibility of the wife to keep the house and to take care of the family.
Norms referring to work commitment	1. I would also like to work, if I didn't need the money.
	2. Work is only a means to earn money.
	3. Work is important, because it gives you the feeling to be part of the society (social affiliation).

Source: PASS 2006/2007. The response categories are: 1-"I totally agree", 2-"I somehow agree", 3-"I rather disagree" and 4-"I completely disagree"

The second, and perhaps more nebulous challenge refers to the identification of the channel (or the reference group) through which social norms affect women's decisions and labour market behaviour.

Formally, an individual's reference group can be defined as *"the set of people to which he/she attaches a non-zero weight in making the decision of interest"* (Soetevent, 2004). Due to data constraints, models focusing on the effects of social

norms strongly simplify the specific links between individuals when defining who interacts with whom in the society. Most reference group definitions put forward by researchers are based either on social, geographical or cultural proximity.

Mc. Pherson et al. (2001) combine these three dimensions and introduce in the literature the concept of *homophily* in social networks. This notion implies that similarity breeds connection. The authors argue that people's personal networks are homogeneous with regard to socio-demographic, behavioural and personal characteristics. Geographic proximity, families and organisations are just some of the contexts (dimensions) in which homophilous relations form.

The 'relevant others' of women (i.e the ones who influence their labour market behaviour) are defined in the present analysis by including both elements of social, geographical as well as cultural proximity. The social proximity is modelled particularly at the household level by introducing variables denoting their partners' views regarding gender roles and work commitment. In addition, based on a cluster analysis[3], and relying on the homophily principles, we define a reference group for each woman according to her age (group), migration background, employment status, presence of children younger than six years in the household and residential place. Finally, the geographical and cultural proximity is captured through proxies constructed on the Bundesland level (NUTS 1) denoting the aggregated gender and work attitudes of their inhabitants.

4.1 Social norms – regional specifications

Special attention in this analysis is given to the proxies regarding gender norms and work commitment built on the regional (Bundesland) level. These purport to capture the structural and cultural context in which norms are formed and evolve. According to Inglehart (1990) distinctive historical experiences produce distinctive national cultures. In line with these ideas, the national context and the related state political ideologies have often been used to explain differences between countries in gender-role attitudes and (women's) work commitment.

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[3]The cluster analysis is carried out as a hierarchical procedure using the average linkage method and the Jaccard-coefficient for measuring similarity. All variables have been recoded to nominal variables in order to accommodate them in a single cluster analysis. To identify the optimum number of clusters, we calculated the Duda/Hart-index. The clusters were optimised applying the kmeans-method. Following these procedures, 35 clusters were determined that contained observations that are, to a large extent, similar. Due to the large number of clusters identified, we do not purport to interpret and label them any further.

These attitudes are based, in part, on cognitive assessments of the structural circumstances making it more or less difficult or desirable for women to combine paid work and family responsibilities. In keeping with the political philosophy, states shape the existent perceptions, particularly with interventions that address childcare problems, family financial and residential needs.

Western European countries have often been classified as supporting the male-breadwinner model of the family (Ostner and Lewis, 1994). In contrast, formerly socialist nations in Central and Eastern Europe are considered to have encouraged the two-income model, by supporting women's (full) employment through state propaganda and policies, universal child care and an ethos stressing work as a civic duty and gender equality as a social goal (Drobnic, 1997).

Germany represents through its former division a case in point with regard to this issue. Consistent with the arguments revealed so far regarding ideological and political forces in the development of attitudes, a large number of studies emphasised differences in work norms between eastern and western Germans: East German (women) are said to attach a higher importance to paid work than their counterparts in West Germany (Adler and Brayfield, 1997). Moreover they are less likely to approve of the male-breadwinner model, with the wife staying home and taking care of the children. Previous literature points out, furthermore, that differences in gender role attitudes and women's own work commitment are not only correlated with national and/or regional environments, but also differ by the individual employment status. Beechey and Perkins (1987) and Hakim (1995) reveal gaps in attitude between unemployed, part-time and full-time workers. Other empirical studies point that particularly non-working women and women working part-time hold more conservative views towards women's role at home and on the labour market than women working full-time (Alwin et al., 1992).

Descriptive analyses offer in the following first insights about if and to what extent these differences in gender role attitudes and work commitment are still relevant within the current German context. The results show that twenty years after reunification, implying a common political and institutional framework (though certain structural factors such as childcare infrastructure and labour market settings remained fragmented) we still experience large discrepancies with regard to the examined patterns. The analysis on the differentials in gender norms illustrates that people living in the western part of Germany hold more traditional

views than their eastern counterparts, regardless of their gender or employment status. The share of people with modern views is higher in the East across all groups explored. Particularly striking are the differentials for men, who range from 11.6 (unemployed) to 25.4 (homemakers) percentage points.

Table 3: Differentials in attitudes towards gender roles

	East Germany		West Germany	
	Men	Women	Men	Women
All	55.6	50.7	42.9	37.4
Employed	60.3	57.2	44.4	47.5
Unemployed	52.7	49.9	41.1	36.5
Homemaker	61.9	39.9	36.5	27.8

Source: PASS 2006/2007, own calculations.
Note: The figures represent the shares of inhabitants with modern attitudes towards gender roles. A person is considered to have modern attitudes towards gender roles, if his/her average score resulting from the gender items presented in Table 2 ranks in the upper quartile build over the entire sample population. The figures are calculated by dividing the number of people with modern gender roles in the group by the total number of people in the respective category. Since the items in Table 2 are based on ordinal numbers (1, 2, 3, 4), the average score of these items is not a continuous variable. Building a group based on the upper quartile then results in a group whose share is greater than 25 percent (this applies also to Table 4 and Figure 1).

The descriptive analysis referring to work commitment is refined by taking into account the employment status of the respondents and, if present, their partner's occupational status, which presumably plays an important role in understanding the differentials.

Table 4: Differentials in (women's) work commitment

| Women	East Germany			West Germany		
	with working partner	with non-working partner	single	with working partner	with non-working partner	single
All	49.5	43.9	48.2	38.9	38.9	42.9
Employed	53.0	43.8	48.2	44.1	42.9	46.0
Unemployed	49.4	46.0	48.7	41.5	38.4	44.4
Homemaker	40.0	36.6	41.5	32.6	37.2	36.2

Source: PASS 2006/2007, own calculation.
Note: The figures represent the shares of women (in the age of 15 to 64 who are either homemaker, unemployed or employed) with a high work commitment. A woman is considered to have a high work commitment, if his/her average score resulting from the items referring to work attitudes presented in Table 2 ranks in the upper quartile build over the entire sample population. The shares are calculated by dividing the number of women with modern gender roles in the group by the total number of women in the respective category.

Also in this case, the East-West differentials are still visible. Women living in the eastern part of Germany seem to value work more than their western counterparts across almost all groups. An exception is the category of homemaker women with a non-working partner (though the values are very low in both groups). The highest percentage of women with a strong work commitment in the East is depicted by the group of employed women with a working partner (53 percent), while in the West the highest percentage is reached by the single, employed women (46 percent).

For the multivariate analysis, based on these descriptive analyses, we constructed two regional proxies capturing the regional share of people with traditional (or modern) views on gender roles respectively high work commitment. The regional distribution of these proxies is revealed by the following maps:

Figure 1: Share of people with modern gender roles, respectively high work commitment, by Bundesland
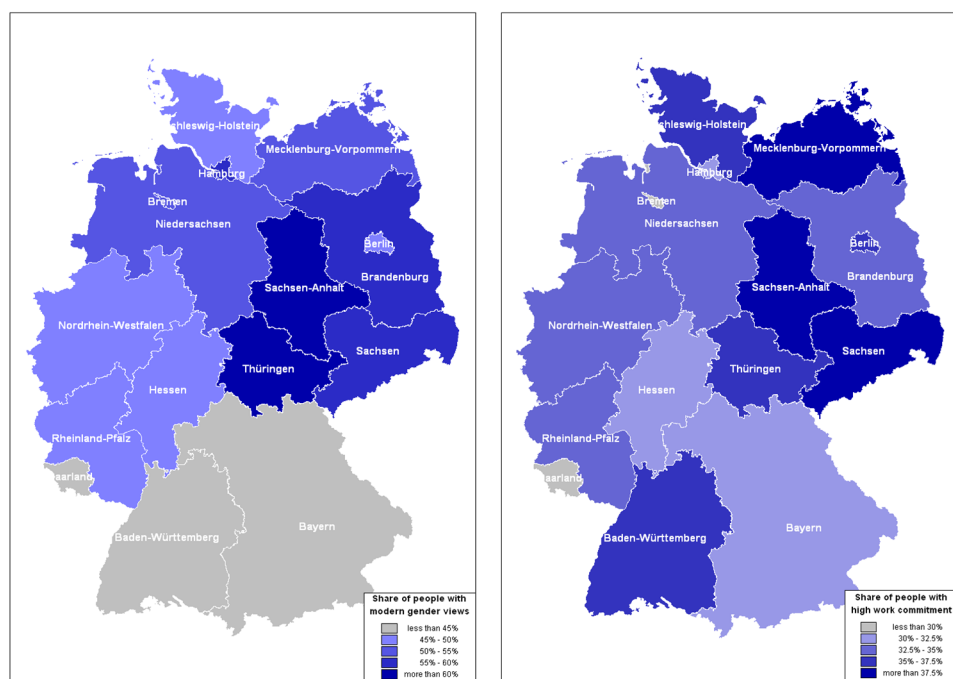
Source: PASS 2006/2007, own calculations.
Note: a darker color of the region points to a higher share of people with modern gender roles, respectively higher work commitment
A person is considered to have modern attitudes towards gender roles (respectively high work commitment) if his/her average score resulting from the items presented in Table 2 ranks in the upper quartile build over the entire sample population. The regional share of people with modern attitudes towards gender roles (respectively high work commitment) on the Bundesland level is calculated by dividing the number of local people with scores in the upper quartile by the sample population living in the respective region (Bundesland).

5 Methodology and results

We define the dependent variable over the effective working hours depicted by women. The effective working hours per week can be interpreted as a count variable, since they are measured as integers (employers and employees do not negotiate for example 36.459 hours per week). To accommodate count response variables into a model, the Poisson regression is frequently applied. However, this approach assumes equidispersion, i.e., equality of conditional variance and mean (Cameron and Trivedi, 1998).

The present dataset comprises an excessive number of zero working hours, since this applies both for women who are unemployed or homemakers. This leads to overdispersion, i.e., conditional variance is greater than mean and thus, standard errors have to be adjusted in order to be valid (Cameron and Trivedi, 1998). In our case, an outcome of zero working hours may be generated by two distinct processes:

- · on the one hand by women who do not have and do not look for paid employment (homemakers),

- · on the other hand by women who want to work in paid employment but currently do not (unemployed women).

To accomodate both processes into a single regression framework, **zero in-flated count models** are applied. In the first stage of such a model a binary logit model is estimated in order to differentiate between those women who look for paid employment or are employed, and those who are homemakers (not employed and not looking for employment). The second stage consists of a count model where, for those women who look for, or are in paid employment, the number of working hours is regressed on a set of explanatory variables, while the number of working hours is allowed to be zero. The model thus accounts for both reasons why women may have zero working hours.

While in a first step we use a logit model for the binary part of the model, in the second stage of the model we compare a basic Poisson and a negative binomial model. The improvement of the negative binomial model over the Poisson model is that it allows for a more flexible structure of the variance (Cameron and Trivedi, 1998).[4]

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[4]While in a Poisson model conditional variance ω_i and mean μ_i are equal, in a negative

By comparing both possibilities through an LR test (see Long and Freese, 2001 for details), one can decide upon the model to be preferred. When the data is characterized by overdispersion (as often observed for count data), the t statistics, derived from a Poisson maximum likelihood model, are likely to be heavily overinflated and inference statistic is too optimistic. In this case the negative binomial model should be applied. The negative binomial model then accounts for the overdispersion through the estimation of a parameter α, which defines the relationship between conditional variance and mean. When α is zero, the negative binomial model reduces to the Poisson model. Therefore, the Poisson model can be viewed as a special case of the negative binomial model (Cameron and Trivedi, 1998).

As noted above, the first stage of our zero inflated count model consists of a logit model for the probability of a woman to have zero working hours (defined as the inflated or binary part). This is depicted as:

$$\psi_i = \Pr(A_i = 1|z_i) = F(z_i\gamma) = \frac{exp(z_i\gamma)}{1 + exp(z_i\gamma)}$$

where $A_i = 1$ denotes that a woman belongs to the 'homemaker group', z_i is a vector of explanatory variables and γ is the vector of parameters that is to be estimated.

The second stage of our model (the count part) is, as aforementioned a negative binomial model[5]:

$$\Pr(y_i|x_iA_i = 0) = \frac{\Gamma(y_i + \alpha^{-1})}{y_i!\Gamma(\alpha^{-1})} \left(\frac{\alpha^{-1}}{\alpha^{-1} + \mu_i}\right)^{\alpha^{-1}} \left(\frac{\mu_i}{\alpha^{-1} + \mu_i}\right)^{y_i}$$

where $A_i = 0$ denotes that a women is in, or is looking for paid employment, while y_i represents the number of working hours. $\mathrm{E}[y_i|x_i] = \mu_i$ is the conditional

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binomial model the conditional variance is a function of the mean, often assumed as $\omega_i = \mu_i + \alpha\mu_i^2$ (Cameron and Trivedi, 1998, p. 63).

[5]The Poisson model which is used for a comparison implies:

$$\Pr(y_i|x_i, A_i = 0) = \frac{e^{-\mu_i}\mu_i^{y_i}}{y_i!}$$

where $A_i = 0$ denotes that a woman is in, or is looking for paid employment while y_i represents the number of working hours. $\mathrm{E}[y_i|x_i] = \mu_i$ is the conditional mean of the Poisson distribution, given by $\mu_i = exp(x_i\beta)$. Furthermore, x_i is a vector of explanatory variables wheras β stands for the vector of parameters that is to be estimated.

mean of the negative binomial distribution, given by $\mu_i = exp(x_i\beta)$. The parameter α_i expresses the relationship between conditional variance and mean, which is being estimated. Finally, x_i is a vector of explanatory variables wheras β stands for the vector of parameters that is to be estimated.

These equations are integrated into a single model by calculating the overall probability of a zero count as well as the probability of positive counts. Applying maximum likelihood, the integrated model is finally estimated.[6]

We estimate a *full model* including all variables, then we reduce the model to those variables that are significant (*reduced model*). Applying an LR test for α as given by Long and Freese (2001, p. 260-261), we conclude that the zero inflated negative binomial model dominates the zero inflated Poisson model in both (full and reduced) cases. Therefore only the results for the zero inflated negative binomial model are reported. For a better interpretation of the coefficients, we additionally calculate the factor changes in expected count as well as the factor changes in odds for the reduced model (Table 7).

Due to the features of our data we apply weights to the regression in order to get accurate results. This makes it impossible to calculate the Vuong test for distinguishing and comparing between the negative binomial and the zero inflated negative binomial model and accordingly, between the Poisson and the zero inflated Poisson model. However, the regression results show that the influence of the explanatory variables differs between the binary and the count part of our model. Those factors that are relevant for a woman's decision to work in paid employment are different from the factors that influence the number of hours a woman works once she decides to take up paid employment. Our distinction between these two processes (i.e. the estimation of a zero inflated negative binomial instead of a negative binomial model) is therefore important and cannot be left aside.

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[6]See Long and Freese (2001, p. 251-252) and Cameron and Trivedi (1998, p. 125-127) for further details. The log likelihood function used for our model by the statistic software stata is given in StataCorp. (2005, p. 523 and 531).

Table 5: Results from the zero inflated negative binomial model

Variable	Inflated (binary) part		Count part	
	Coeff.	Coeff.	Coeff.	Coeff.
	(full model)	(reduced model)	(full model)	(reduced model)
Individual characteristics				
Age	.2800***	.2866***	-.0492***	-.0488***
Age^2	-.0030***	-.0031***	.0005***	.0005***
Highly qualified	-.9550***	-.9643***	.0747***	.0774***
Migration background	.8776***	.8764***	-.0369	-
Religiosity	-.0254	-	-.0601***	-.0617***
Household characteristics				
Child<15	.1379	-	-.1850***	-.1852***
Income partner	-.0004***	-.0004***	-.0003***	-.0004***
Low work commitment-partner	0.0504	-	-.0204	-
Traditional gender views-partner	.8137***	.8476**	-.0136	-
Cluster characteristics				
Low work commitment-cluster	2.7840*	2.8445**	-.7074**	-.6975**
Traditional gender views-cluster	40.3666***	40.5179***	-2.0241***	-2.0189***
Regional variables (Bundeland level)				
Unemployment rate	.1003**	.0961***	.0042	.0061***
Firm (saldo)	-1.8151	-	.1218	-
Childcare infrastructure	1.6036	-	.1274	-
Sectoral composition of workforce	-1.7411	-	.0651	-
Low work commitment-Bundesland	.2304	-	.2796	-
Traditional gender views-Bundesland	2.9727	-	-.1998	-
const	-20.9730***	-20.6538***	5.2110***	5.3678***
lnalpha	-3.1788	-3.1703		

Note: 'Age' is women's age (in years). 'Highly qualified' is a dummy variable displaying the educational level (1-highly qualified, 0-otherwise). 'Migration' reveals the migration background of a women (1-with migration background and 0-otherwise). 'Religiosity' is a dummy with the value 1 for women who consider themselves as being religious and 0 otherwise. 'Child⟨15' is a dummy variable with the value 1 if there are children younger than fifteen years in the household and 0 otherwise. 'Income partner' reveals the income of the partner living in the household (continuous variable). 'Low work commitment-partner' is a dummy variable assessing the partner's own work norms (1-low work commitment, 0-otherwise). 'Traditional gender views-partner' is a dummy with the value 1 if the partner holds traditional gender views and 0 otherwise. 'Low work commitment-cluster' captures the share of people with low work norms in the relevant cluster of a woman. 'Traditional gender views-cluster' captures the share of people with traditional gender views in the relevant cluster of a woman. 'Unemployment rate' is the regional unemployment rate. 'Firm (saldo)' represents the saldo between the number of firms who opened and firms who closed in the Bundesland per employable person. 'Childcare infrastructure' is the share of children in childcare services reported to the total number of children in the respective age group per Bundesland. 'Sectoral composition' represents the share of employees in sectors that are traditionally characterized by a high share of female employees. Finally, 'Low work commitment-Bundesland' and 'Traditional gender views-Bundesland' capture the share of people with low work norms, respectively traditional gender roles per each Bundesland.

*p< .1; **p< .05; ***p< .01

Table 7: Results from the reduced zero inflated negative binomial model

Variable	Inflated (binary) part		Count part	
	Coeff. (factor change in odds for unit increase in Z)	Coeff. (change in odds for SD increase in Z)	Coeff. (factor change in expected count for unit increase in X)	Coeff. (change in expected count for SD increase in X)
Individual characteristics				
Age	1.3319**	25.2461**	.9524***	.5773***
Age²	.9969**	.0564**	1.0005***	1.5914***
Highly qualified	.3813***	.6592***	1.0804***	1.0340***
Migration background	2.4024***	1.4233***		
Religiosity	–	–	.9402**	.9698**
Household characteristics				
Child<15			.8309***	.9137***
Income partner	.9996***	.5961***	1.0000***	.9535***
Traditional gender views-partner	2.3341**	1.3529**		
Cluster characteristics				
Low work commitment-cluster	17.1938*	1.2039*	.4978*	.9555*
Traditional gender views-cluster	3.95e+17***	34.5649***	.1328***	.8382***
Regional variables (Bundeland level)				
Unemployment rate	1.1009**	1.4420**	1.0062**	1.0237**

Note: 'Age' is women's age (in years). 'Highly qualified' is a dummy variable displaying the educational level (1-highly qualified, 0-otherwise). 'Migration' reveals the migration background of a women (1-with migration background and 0-otherwise). 'Religiosity' is a dummy with the value 1 for women who consider themselves as being religious and 0 otherwise. 'Child<15' is a dummy variable with the value 1 if there are children younger than fifteen years in the household and 0 otherwise. 'Income partner' reveals the income of the partner living in the household (continuous variable). 'Traditional gender views-partner' is a dummy with the value 1 if the partner holds traditional gender views and 0 otherwise. 'Low work commitment-cluster' captures the share of people with low work norms in the relevant cluster of a woman. 'Traditional gender views-cluster' captures the share of people with traditional gender views in the relevant cluster of a woman. 'Unemployment rate' is the regional unemployment rate.

*p< .1; **p< .05; ***p< .01

Interpretation of the results

In the following we restrict our interpretation to the *reduced* zero inflated negative binomial model. As illustrated in Table 5, the results for the *full model* differ only slightly. For a facile interpretation, we concentrate on the factor changes presented in Table 7.

Since we used age and squared age in the same estimation, the quantitative influence is hard to interpret, as one has to look at both indicators simultaneously. Instead, the qualitative influence is more demonstrative: with increasing age, the

odds of a woman not having and not looking for employment increase (the factor change in odds for an increase of 'age' is greater than one), but with further increasing age the odds decrease (the factor change in odds for an increase of 'age^2' is smaller than one). Regarding how much a woman works, the influence of age is similar: with increasing age the expected number of working hours decreases, but with further increasing age the expected number of working hours increases. Thus, the probability for a woman to work at all or to have a high number of working hours is higher for younger and older women than it is for women in the middle age.

As expected, highly qualified women are more likely both to have a job and a higher number of working hours. In other words, for highly qualified women the odds not having work at all and not looking for employment are lower by 61.9 percent and the expected number of working hours is higher by 8 percent.

Contrary to the first two factors, the migration background exerts influence only on the decision of a woman not to take up paid employment. The results show that the odds increase by factor 2.4 (i.e. 140 percent) when a woman has a migration background. Thus, women with migration background are more frequently in the homemakers' category. However, if they decide to work, their migration background does not influence their number of working hours.

In contrast, religiosity influences the number of working hours, but does not affect the decision to work: the odds of a woman being a homemaker are not significantly different between religious and non-religious women. Nevertheless, if women take up employment, the expected number of working hours decreases by 6 percent, when they refer to themselves as being religious.

An interesting result depicted by our model is that a woman's decision to be homemaker is not influenced by the presence of children younger than 15 in the household (the coefficient is insignificant). However, the number of working hours is lower by 16.9 percent when this is the case.

The influence of the partner's income on the employment decision appears at unexpected first glace: the odds for homemakers (thus, not to have and not to look for employment) are lower by 40 percent for a standard deviation increase in the partner's income (i.e. an increase of the partner's income by € 1,299). In contrast, the expected number of working hours decreases by 4.6 percent for a standard deviation increase in the partner's income. Thus, while women with

high-salaried partners are more likely to be in paid employment (potentially due to a matching process for people with similar incomes), their weekly working hours are less than those of counterparts with low-salaried partners. [7]

Even though the partner's gender views influence a women's decision to work, once she decided to work, his gender views do not play any further role: The odds of a women not having and not looking for employment are higher by factor 2.33 (133 percent), if the woman's partner has traditional gender views, while the expected number of working hours is not significantly affected. Regarding the influences exerted by the norms shared by the 'relevant others' (apart from their own partner), the estimations point out that, as expected, both a low work commitment and traditional gender roles depicted in the cluster groups increase the chances that a woman is homemaker. Furthermore, a lower work commitment and more traditional gender views of the 'relevant others' of a woman also reduce her number of working hours, once she decides to work.

Regional indicators such as the work and gender norms shared on a Bundesland level or the child-care infrastructure do not appear to play a significant role either in explaining women's employment status or their working hours. However, the regional unemployment rate has a significant effect. The interpretation is straightforward under these conditions, implying that a higher regional unemployment rate increases women's odds of not having and not looking for employment by 44.2 percent for a standard deviation increase in unemployment (i.e. an increase of unemployment by 3.8 percentage points). Additionally, the expected number of working hours increases by 2.4 percent for a standard deviation increase in unemployment. This appears plausible when considering that, in times of high unemployment, people might tend to work more, since they fear the loss of their job. The fact that our dependent variable measures the effective working hours and not the number of work hours stipulated in the contract, sustains this argument.

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[7]Same results are also found by Vogel (2007). The author assumes that, under the premise that partners 'negotiate' their positions in the household (dividing the household duties and paid work hours), women tend to take up paid employment so that they can keep a good bargaining position. However, they work less than if they were single or with a low-salaried partner.

6 Conclusions

Against the background of the current economic research, which concentrates particularly on individual and structural explanatory factors, this paper examines if and to what extent social norms (in terms of attitudes towards gender roles and work commitment) can make a complementary statement in explaining women's employment status. The impact is presumed to be enhanced through norms shared by persons belonging to the same households (i.e family members), peer groups, and by the residents of the same region.

The empirical analysis, based on a recent German data set, challenges the mainstream discourse by implicitly including cultural aspects such as attitude factors in the model. A distinctive feature of this paper is that it concentrates on the German labour market, which offers, with regard to the explored issue, convenient structural and cultural prerequisites: through its former separation into a socialist and a free-market oriented state, it becomes possible to disentangle more specifically the effects of gender and work norms on women's employment status.

The analysis brings to light a number of relevant aspects, which have not yet received much attention in the ongoing academic debate.

The first insight highlights the necessity of considering a broader analytical framework when exploring the causes (and consequences) of women's employment status. The rational approach in economics, though it has demonstrated its power to explain essential features of market processes, can not entirely accommodate the proposed topic. Cultural aspects such as language, norms, customs and conventions determine, in large part, the value and significance individuals attach to labour market behaviour and should, therefore, gain increased attention in empirical research.

The second insight illustrated by the present paper refers to the reference group (or the so called 'relevant others') who influence an individual's labour market status. The present analysis reveals that family and cluster adherence (which are largely deliberately chosen) are highly relevant, while the (probably more or less involuntary) 'affiliation' to a regional community does not exert same influences. This fact is not self-evident, since, particularly in the German case, the spatial dimension did play - and probably still plays in certain environments - a relevant role. The descriptive statistics show, for example, that attitudinal differences in

gender and work norms are still noticeable in Germany. These differentials have their roots, without doubt, in the state organisation and general principles of the two former German states. However, these regional differentials do not seem to influence individuals in the current context. Labour market outcomes are rather determined within the framework of more specific settings, such as families and peer groups.

Finally, the last insight from our analysis shows that women's decision to take up paid employment and the amount of hours they work depend on different factors. While some parameters might help (or hinder) the decision to work or not (e.g the migration background, partner's gender views), others play a role only in determining the working volume (e.g religiosity, the presence of children younger than 15 years in the household). Moreover, our analysis depicts that certain parameters (such as a partner's income) have contrary influences on the decision to work and the work volume of women. Against these arguments, the methodology employed for the study outclasses related models who have not accounted for the distinction between the decision to take up paid employment and the decision of how much to work.

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