

Why is the share of women willing to work
in East Germany larger than in West Germany?
A logit model of extensive labour supply decision

by

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Abstract

The aim of the paper is to analyse differences in the labour force participation between East and West German women. Using microcensus data in a binary choice model, we distinguish three possible explanations for these differences: the skill composition, the characteristics of the regional labour markets and the availability of childcare. As labour force participation increases in the skill level, the larger share of high-skilled women in East Germany can explain more than 10 percent of the difference in participation rates. East and West German women react differently to poor labour market opportunities. Whereas East German women do not vary their efforts when regional labour market conditions worsen, West German women are discouraged by a poor labour market performance. Female labour force participation in East Germany is positively influenced by the provision of full-time childcare and this effect increases with the skill level while West German women do not show any significant reaction.

JEL Classification: J22, J13, J21, R23, C21.

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1 Introduction

Female labour force participation still strongly differs in East and West Germany. Directly after German reunification it was commonly suggested that the labour force participation of East German women will converge towards the lower West German level [FUCHS and WEBER (2004)]. Indeed, labour force participation decreased significantly in East Germany: men's participation dropped by more than 7 percentage points within two years and women's by 4.4 percentage points. The main reason for this development can be seen in the usage of generous early retirement schemes. But since the early nineties, the development has been quite stable: nearly 80 % of East German men and more than 70 % of East German women are in the labour force, which means that they are either employed or unemployed. In 2004 the overall difference in the participation rates between East and West Germany amounted to more than 8 percentage points for women and only to one percentage point for men (see figure 1).

The aim of this paper is therefore to analyse the reasons for these differences in female labour supply decision in East and West Germany. We are raising two important questions:

1. To which extent are the differences in labour supply caused by group differences (for example differences in skill level between East and West German women)? For this we apply the Blinder-Oaxaca decomposition technique to a logit model of female labour supply.
2. Are there differences in reaction to the regional labour market situation and/or the provision of public childcare? For this reason we add regional indicators into the logit model.

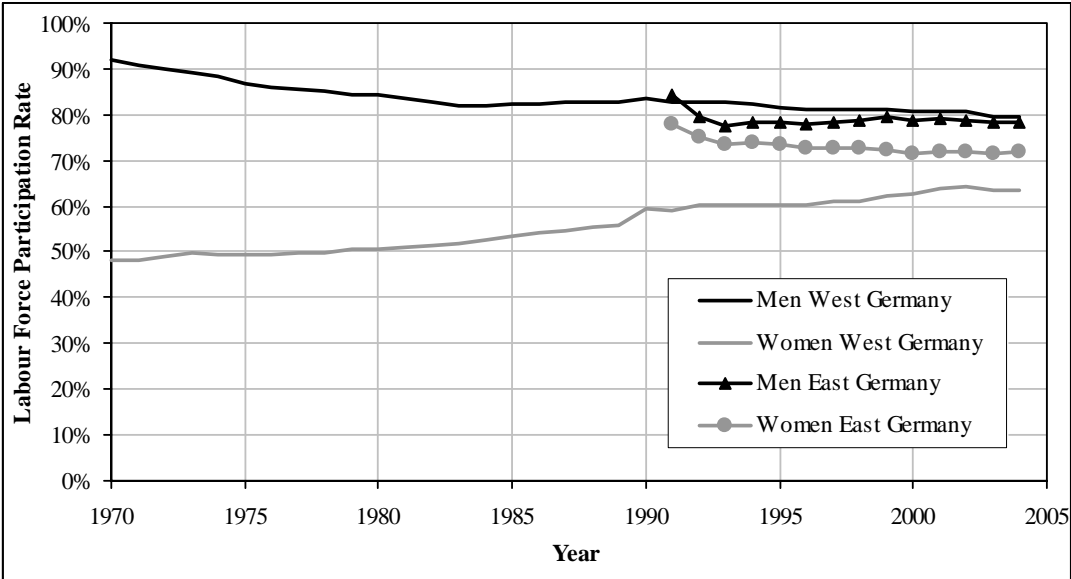
The regional labour market performance can have two different effects on labour supply: the discouraged worker effect and the added worker effect. The discouragement hypothesis claims that a person feels discouraged or demoralised by high regional unemployment. VAN HAM, MULDER and HOOIMEIJER (2001, p.1733) define the discouraged worker effect as "the decision to refrain from job search as a result of poor chances on the labour market", even though the discouraged workers "would have accepted ... [a job] at going wage and employment conditions" [ELMESKOV and PICHELMANN (1993, p.144)]. Instead of a negative impact, also a positive influence is possible. In this case the so called added worker hypothesis applies. This effect mostly appears when a family member becomes unemployed and so another family member increases the labour supply to compensate for the loss of income.¹ Both effects are responses of individuals to a demand-induced fall in employment [LUNDBERG (1985)].

¹ For more details on the added worker effect see e.g. LUNDBERG (1985).

The issues of this paper are not only important for current labour markets but also for the long run development of the economy. Demographic projections predict a strong decline of the working age population in East Germany in the years to come while the working age population in West Germany will remain quite stable until 2020. Based on the premise of declining labour force especially in East Germany, it is essential to know which factors influence the labour supply decision to prevent that labour (especially high skilled labour) runs into shortage and economic growth is hampered. A better understanding of the limiting factors of female labour supply may help to overcome possible barriers for labour force participation.

The paper proceeds as follows: the next section reviews some of the related literature on the determinants of female labour supply. This is followed by a simple stylized model of labour supply. Section four describes the dataset and the variables. The fifth section presents the logistic regression model of labour force participation and the Blinder-Oaxaca decomposition technique. Section 6 contains the results of the econometric analysis and the decomposition. Section 7 concludes the paper.

Figure 1: Labour force participation rates for East and West German men and women (1970–2004)



Source: Federal Statistical Office Germany.

2 Related Literature

Analysing the determinants of labour supply decision has a long tradition in the literature. Seminal work on labour force participation was done by MINCER (1962) and HECKMAN (1980). Female labour supply and its influencing variables produced more and more research questions which is in contrast to male labour supply that is in general high and does not vary much. In 1985 the *Journal of Labor Economics* released a special on female labour force participation both by using cross section or time series analyses.²

Recently, VAN HAM, MULDER and HOOIMEIJER (2001) used a logistic regression model to specify the probability of labour force participation for Dutch men and women. Besides individual characteristics, the main emphasis in their paper is to test for the discouraged worker effect by including the local underemployment rate. They come to the conclusion that women are more easily discouraged by poor labour market conditions than men.

For Germany, VAN HAM and BÜCHEL (2004) analyse the spatial, institutional and socio-economic factors of labour supply decision using the German Socio-Economic Panel (GSOEP). They limit their paper only to West German women and do not explain East-West-differences. According to VAN HAM and BÜCHEL (2004), women feel discouraged by high regional unemployment. The access to public childcare had no significant effect on women's willingness to work.

The main objective of BÜCHEL and SPIESS (2002) is to analyse the impact of public childcare on female labour participation. The pure availability of childcare is important but the effect of full-time care seems to be more important. They have chosen a multinomial logit model using the 1998 GSOEP dataset for West German women with children in preschool age. While a better access to childcare has only small effects in labour supply decision, a higher level of full-time childcare increases both the participation probability and the participation volume (full-time vs. part-time employment).

The only study which takes into account the specific conditions in East Germany is from BONIN and EUWALS (2001). Their attention is less on the determinants of female labour supply decision but rather on the influencing variables of the changes in labour force participation since German reunification.

² See GREGORY, MCMAHON and WHITTINGHAM (1985) for Australia, RIBOUD (1985) for France, JOSHI, LAYARD and OWEN (1985) for Great Britain, COLOMBINO and DE STAVOLA (1985) for Italy, SHIMADA and HIGUCHI (1985) for Japan, OFER and VINOKUR (1985) for the former Soviet Union, HERNANDEZ IGLESIAS and RIBOUD (1985) for Spain, GUSTAFSSON and JACOBSSON (1985) for Sweden and FRANZ (1985) for West Germany.

3 Theoretical aspects of labour supply

In the neoclassical theory of labour supply, individuals are making a choice between the consumption of goods and the consumption of leisure. This consumption choice can be transformed into the choice regarding time, since total available time T has to be split into working time L and leisure time F with $L + F = T$. The wage rate is w for every hour worked in the labour market. In combination with the labour income $w \cdot L$ and non-labour income³ V , the individual can consume goods in the value of $p \cdot X$ with X being a bundle of consumption goods and p the weighted price-index. The budget constraint is then: $p \cdot X = w \cdot L + V$.

The labour supply decision depends on both observable and unobservable characteristics. Observable characteristics such as age and qualification can be summarized in the vector γ . However, the individual preferences η (preferences for working time and leisure time) cannot be observed. The individual utility function can be described by $U = U(X, F, \gamma, \eta)$. The utility function has the usual properties that utility increases with increasing consumption and leisure time but with decreasing marginal utility $\left(\frac{\partial U}{\partial X} > 0, \frac{\partial U}{\partial F} > 0, \frac{\partial^2 U}{\partial X^2} < 0, \frac{\partial^2 U}{\partial F^2} < 0 \right)$.

The individual decision is now maximizing $U = U(X, F, \gamma, \eta)$ subject to the budget constraint $p \cdot X = w \cdot L + V$ (and in addition: $X > 0$ and $L > 0$). The maximisation problem yields to the individual labour supply function $L = L(w, p, V, \gamma, \eta)$ which depends on the exogenous variables wage, price-index, non-labour income and the observable and unobservable characteristics.

4 Data and Variables

Data

We use the German microcensus (scientific use file of the year 2003) since the German microcensus is a representative statistic of the population and the labour market and offers therefore a very large sample. One percent of all households in Germany are involved in the microcensus every year. An obligation to provide the requested information ensures a high number of responses. Roughly 820,000 people in 370,000 households are included. The scientific use file is a 70% subsample of the original microcensus dataset. All in all, our dataset contains about 500,000 individuals living in more than 230,000 households.

Since the labour supply decision of women is the main object of investigation, only women aged 15 to 64 years are included in the analysis. To pay attention to possible differences in labour

³ In the family context, non-labour income can be for example the husbands' income.

supply of women living with and without a partner, we generate a subsample for women living together with a partner and analyse only their labour supply. This is reasonable since a partner can have an effect on a woman's labour supply decision depending on his attitude towards working mothers and wives' full-time employment. In a cross-country comparison, HEINECK (2004) analysed the agreement to the statements if a man's job is to earn money, while a woman's job is to look after the home and family and if all in all, family life suffers when the woman has a full-time job. Using a probit estimation, the results show that East Germans clearly have a more liberal point of view considering gender role and female full-time employment than West Germans.

Variables

Since the objective of the paper is to investigate female extensive labour supply decision, the dependent variable – female labour force participation LFP – is measured by a dummy variable which equals 1 if the woman is in the labour force and equals 0 if she is not. Women in the labour force can either be employed or unemployed. In case of unemployment the woman must be available for a job within two weeks.

The set of independent variables is summarized in table 1 for a composition of all variables including the mean values). For our decomposition of the differences in labour supply we only need individual or household characteristics of the women. We need macro-economic indicators for testing the effect of labour market situation and public childcare.

As the labour supply strongly varies with age, we include the age of the woman in ten age groups. East German women are slightly older than West German women. The qualification level is represented by three categories: low, medium and high. A woman, who either has no qualification or less than vocational qualification, is classified to be low skilled. Women with vocational qualification are medium skilled. And finally, to be high skilled, a university or comparable degree is necessary. Following BECKER's (1964) human capital theory, the likelihood of labour force participation should increase with human capital. The probability of being in the labour force should increase with the skill level. To control for a handicap or severe health problems, we include a dummy covering this item.

Since motherhood may lower the probability of labour force participation, the number of children is included. As in BONIN and EUWALS (2001), it is expected that the age of children is positively related to the participation probability while an increasing number of children should have a negative impact. In addition, also the number of children who attend childcare facilities is taken up in the analysis. This variable should diminish the expected negative impact of children on labour supply. The number of children differs significantly between East and West Germany:

only 8.2% of the East German households are living together with a child younger than 3 years, in West Germany it is 10.5%. The same holds for children aged 3 to 6 years. The largest difference can be noticed for the children aged 7 to 12 years, the reason is the strong drop in fertility rates direct after German reunification.

The additional household income is defined as the net income of all household members minus the woman's own net income. To account for different family sizes, the household income is weighted by the OECD equivalent scale. The head of the household is assigned the weight of 1.0, every additional adult member 0.7 and children 0.5. For example, considering a household with four persons (two adults and two children), this household would get the weight of 2.7, which means that this household needs an income which is 2.7 times higher than a single household to achieve an equivalent household income. The so defined income is then independent of the family size. A high additional household income ought to reduce the probability of female labour force participation.

The nationality of the woman and her partner are included to control for different attitudes to female employment caused by cultural differences. The share of immigrants in East Germany is only a third of the share in West Germany. Besides the nationality, we take some more characteristics of the partner into account. The first characteristic is the employment status of the partner. This is covered by a dummy variable taking the value of 1 if the partner is employed and 0 otherwise. Secondly, the qualification of the partner could have an impact on the labour supply decision of the woman but the direction of the influence is not clearly predictable. The qualification enters as three dummy variables identical to the female skill level: low, medium and high skilled. The unemployment rate in the respective federal state is included to verify the discouragement hypothesis. If the discouraged worker hypothesis can be confirmed, the estimated coefficient of the unemployment rate should be negative.

Finally, for analysing the effect of public childcare availability, we included full-time childcare slots for children younger than 3 years (*Kinderkrippe*) per 100 children aged 1 to 3 years and full-time childcare slots for children aged 3 to 6.5 years (*Kindergarten*) per 100 children. Following several studies, childcare availability should have a positive effect on female labour force participation (see for example BÜCHEL and SPIESS (2002), DOIRON and KALB (2004), FUCHS and WEBER (2004), VAN HAM and BÜCHEL (2004), WROHLICH (2004)). We also include the number of childcare slots interacting with the qualification to test if there are differences in the effect of childcare for low, medium and high skilled women.

Table 1: Variables and descriptive statistics

Variables		Description	East Ger- many	West Germany
Dependent variable				
Labour force participation		being in the labour force (employed or unem- ployed)	76.8%	64.9%
Individual characteristics				
Age	age	age in years	45.2	44.3
Skill level	low	no or less than vocational qualification	8.6%	24.0%
	medium	vocational qualification	78.9%	66.3%
	high	university degree or higher	12.5%	9.7%
Disability		having a disability or severe health problems	3,0%	2.4%
Children	# children	total number of children living in the household	0.57	0.76
	# in childcare	number of children in public childcare	0.15	0.14
	child <3 years	at least one child younger than 3 years	8.2%	10.5%
	child 3-6 years	at least one child 3 to 6 years	9.4%	14.8%
	child 7-12 years	at least one child 7 to 12 years	12.2%	19.8%
	child 13-17 years	at least one child 13 to 17 years	20.4%	17.3%
Additional household income		defined as household net income minus the net income of the woman, weighted by the OECD equivalent scale, in 100 Euro	688€	1,020€
Immigrant		woman is not a German citizen	3,0%	9.0%
Husband is immigrant		husband is not a German citizen	2,6%	8.4%
Husband is employed		husband is employed	66,3%	76.0%
Skill level of husband	low	no or less than vocational qualification	6.0%	12.6%
	medium	vocational qualification	75.4%	70.3%
	high	university degree or higher	18.6%	17.0%
Regional indicators (on federal state level)				
Unemployment rate		unemployment rate	18,5%	8,4%
Childcare slots (1-3 years)		fulltime childcare slots per 100 children	53	3
Childcare slots (3-6,5 years)		fulltime childcare slots per 100 children	97	21

5 Method

The logit model

To analyse the determinants of women's labour supply decision, a logistic regression model is chosen.⁴ The dependent variable labour force participation (LFP) takes the value one if a woman is in the labour force and zero otherwise, so that the logit model is a binary one.

The probability of being in the active labour force is assumed to follow a logistic distribution.

The cumulative logistic distribution function is commonly written in the following way:

$$(1) \quad P(y = 1) = \frac{e^{x_i' \cdot b}}{1 + e^{x_i' \cdot b}}$$

⁴ See Tutz (2000) and Menard (2001) for more information on the logit model.

with x_i being a vector denoting a set of characteristics and b a vector of coefficients. The odds ratio (OR) is defined as the ratio of the probability that a woman is in the labour force $P(y = 1)$ to the probability that a woman is not in the labour force $P(y = 0)$:

$$(2) \quad \text{OR} = \frac{P(y = 1)}{P(y = 0)} = \frac{1 + e^{x_i' \cdot b}}{1 + e^{-x_i' \cdot b}} = e^{x_i' \cdot b}$$

The natural logarithm of the odds ratio leads to the logit of y , which can be estimated easily since this expression is linear in parameters:

$$(3) \quad \text{logit}(y) = \ln\left(\frac{P(y = 1)}{P(y = 0)}\right) = x_i' \cdot b.$$

As in linear regression models, the estimated logistic regression coefficients can be interpreted as the change in the dependent variable [here $\text{logit}(y)$] if an independent variable changes by one unit holding all other independent variables constant. Since the interpretation of natural logarithm of the odd to be in the labour force is not intuitive, the logits can be converted back into the odds ratio by exponentiation.

The estimated odds-ratio then shows how a change of one unit of an independent variable influences the chance of being in the labour force. The odds ratio can only take positive values. Estimated values which lay between 0 and 1 mean a negative influence of the independent variable on the chance of being in the labour force and all values greater than 1 indicate a positive influence. It is important that every change of one unit in an independent variable multiplies the odd of being in the labour force by the estimated value of the odds ratio.

Clustering with regional data

Since the data includes both individual (or family) characteristics and regional indicators (and every region has more than one respondent), the data needs to be clustered by the region (here: federal states). Without clustering, the standard errors would be biased downwards and showing highly significant results which are not necessarily true [MOULTON (1986, 1987, 1990)].

Blinder-Oaxaca decomposition technique applied to logit models

In order to quantify the effect of differences in characteristics, we apply the Blinder-Oaxaca decomposition technique to our logit model. In general, the Blinder-Oaxaca decomposition technique is used to quantify the contributions of group differences on differences in outcomes. The most famous example of the application of the Blinder-Oaxaca decomposition is the gender or race wage gap. In linear estimations, the Blinder-Oaxaca decomposition is quite simple. Con-

sider for example the wage equation $y_{ij} = x'_{ij} \cdot b_j$ with y_{ij} being the wage for individual i belonging to group j ($j=1,2$, for example low and high), x_{ij} being again a vector of independent variables and b_j the coefficient vector. The differential in outcome between the two groups is then defined as

$$(4) \quad \bar{y}_1 - \bar{y}_2 = \bar{x}'_1 \cdot b_1 - \bar{x}'_2 \cdot b_2$$

with \bar{y}_j and \bar{x}_j being the mean values of y_j and x_j for group j . By adding and subtracting the term $x'_{i2} \cdot b_1$, we can decompose the differential into the endowment effect and the coefficient effect:

$$(5) \quad y_{i1} - y_{i2} = [(x'_{i1} - x'_{i2}) \cdot b_1] - [x'_{i2} \cdot (b_1 - b_2)]$$

The term in the first squared bracket in (5) shows the endowment effect, which explains the share of the outcome difference due to differences in characteristics or endowments of the two groups. If there are no differences in characteristics between groups, then this term would be zero. The second squared bracket in (5) can be interpreted as the discrimination share of the gender wage gap since it cannot be explained by differences in endowment between men and women like education or work experience. This unexplained share of the differential occurs when the two groups are treated or react differently. A part of the coefficient effect is the shift effect which shows the difference in the constant of the two groups.

Since we will use a logit model, we cannot simply apply the standard Blinder-Oaxaca decomposition technique for linear models. Instead we use the extension of the Blinder-Oaxaca decomposition to logit and probit models proposed by FAIRLIE (2005).

The decomposition for our logit model can be defined similarly to equation 5:

$$(6) \quad \bar{y}_E - \bar{y}_W = \left[\sum_{i=1}^{N_E} \frac{F(x'_{iE}b_E)}{N_E} - \sum_{i=1}^{N_W} \frac{F(x'_{iW}b_E)}{N_W} \right] + \left[\sum_{i=1}^{N_W} \frac{F(x'_{iW}b_E)}{N_W} - \sum_{i=1}^{N_W} \frac{F(x'_{iW}b_W)}{N_W} \right]$$

$$(7) \quad \bar{y}_E - \bar{y}_W = \left[\sum_{i=1}^{N_E} \frac{F(x'_{iE}b_W)}{N_E} - \sum_{i=1}^{N_W} \frac{F(x'_{iW}b_W)}{N_W} \right] + \left[\sum_{i=1}^{N_E} \frac{F(x'_{iE}b_E)}{N_E} - \sum_{i=1}^{N_E} \frac{F(x'_{iE}b_W)}{N_E} \right]$$

with $F(x'_{ij}b_j)$ being the logistic cumulative density function and N_j being the sample size for group j ($j=E,W$). The equations 6 and 7 are both valid expressions for the decomposition. The only difference is in the weighting: in (6) the East German coefficients are used as weights for the first term and the West German distributions of the independent variables as weights for the second term and in (7) vice versa. The first squared bracket in (6) and (7) shows again the share

of difference due to differences in characteristics and the second squared bracket shows the share of difference due to differences in coefficients.

6 Results

Labour supply in East and West Germany

Table 2 shows the estimation results for East and West German women living together with a partner. Odds ratios are displayed only if the coefficient is significant.

The different variables considering the influence of the age have the expected signs, so that an inverse hump-shaped relationship is adjusted to the data. With increasing age the participation probability increases but decreases again after having reached the maximum value of participation probability at the age of 30 to 34 years.

The first important result is that the higher the skill level of the woman, the higher the probability that this woman is in the labour force. This effect is larger for East German woman. The chance of being in the labour force as a medium-skilled person is about two times higher compared to a low-skilled woman. For high-skilled women, the chance increases even by the factor 3.9 (West Germany) and 4.8 (East Germany).

The influence of children on the labour supply of their mother is measured in different ways. The first result is that women with children show a lower participation probability. The second result is that the negative impact is larger the younger the children are. A third result is that mothers in East Germany are more restricted by the number of children than West German mothers. Finally, every child in a childcare facility increases the chance of labour supply by the factor 2.3 (East Germany) and 1.2 (West Germany) respectively. The number of unattended children constrains particularly the labour force participation of East German mothers.

Table 2: Estimation results for women living together with a partner

	East Germany		West Germany	
	Coefficient	Odds ratio	Coefficient	Odds ratio
Age: 15 to 19 years	-0.88524 *	0.4126	-0.93644 ***	0.3920
20 to 24 years	-0.59323 ***	0.5525	-0.12187 *	0.8853
25 to 29 years	-0.05871		0.26321 ***	1.3011
30 to 34 years	0.35891 ***	1.4318	0.38130 ***	1.4642
35 to 39 years	0.23224 *	1.2614	0.26201 ***	1.2995
40 to 44 years (reference group)		1.0000		1.0000
45 to 49 years	-0.58467 ***	0.5573	-0.39392 ***	0.6744
50 to 54 years	-0.75726 ***	0.4690	-0.86978 ***	0.4190
55 to 59 years	-1.63065 ***	0.1958	-1.52336 ***	0.2180
60 to 64 years	-4.58434 ***	0.0102	-3.11120 ***	0.0445
Skill level: low (reference group)		1.0000		1.0000
medium	0.80958 ***	2.2470	0.69202 ***	1.9977
high	1.57596 ***	4.8354	1.37737 ***	3.9645
Disability	-2.16381 ***	0.1149	-0.74630 ***	0.4741
# children	-0.68445 ***	0.5044	-0.51873 ***	0.5953
# in childcare	0.81972 ***	2.2699	0.22340 ***	1.2503
Child <3 years	-1.62903 ***	0.1961	-1.02383 ***	0.3592
Child 3-6 years	-0.59233 ***	0.5530	-0.67109 ***	0.5111
Child 7-12 years	-0.14105		-0.20889 ***	0.8115
Child 12-17 years	0.64738 ***	1.9105	0.22996 ***	1.2586
Additional household income	-0.04016 ***	0.9606	-0.02211 ***	0.9781
Immigrant	-1.18344 ***	0.3062	-0.66781 ***	0.5128
Husband is immigrant	-0.09345		0.11333 **	1.1200
Husband is employed	0.76339 ***	2.1455	0.66762 ***	1.9496
Skill level of husband: low (reference group)		1.0000		1.0000
medium	0.03837		-0.08484 ***	0.9187
high	0.12452		-0.18972 ***	0.8272
_cons	1.50372 ***		0.62790 ***	
Number of observations	16,799		66,635	
Initial log pseudolikelihood	-9087.2818		-43159.76	
Log pseudolikelihood	-5239.4516		-33707.7220	
Pseudo R2	0.4234		0.2190	

legend: * p<0.1; ** p<0.05; *** p<0.01

Results of Blinder-Oaxaca decomposition

To explain the differences in the labour force participation behaviour of East and West German women, we apply the Blinder-Oaxaca decomposition. Table 3 shows the endowment effect for both decomposition techniques. The differences in characteristics (for example in skill level, number of children ...) explain between 1.34 and 1.65 percentage points to the total difference of 11.9 percentage points. A detailed look at the endowment effect shows the differences in mean values of the characteristics and their effect in labour supply outcome. Reconsidering the differences in characteristics shown in table 1, we will point out the effects of the skill level, the existence of children and the share of immigrants.

Skill Level: The average skill level of East German women is much higher than of West German women. While almost every fourth West German women has no qualification, it is less than 10% in East Germany. The share of high skilled women in East Germany (12.5%) is much higher

than the West German share of 9.7%. These differences in skill level account for 1.51/2.11 percentage points of the total difference; this is more than 10% of the difference.

Children: Considering the existence of children in different age groups, we can summarize that the number of children (especially of small children) living in the household is much smaller in East German households than in West Germany. Since the existence of children lowers the labour force participation, the lower number of children in East Germany has an impact up to 1.3 percentage points on total difference in labour force participation.

Immigrants: Only 3% of women in the East German data set do not have the German citizenship, in West Germany this share amounts 9%. This higher share of immigrants accounts for another 0.74/1.05 percentage points of the difference in labour force participation rate.

Table 3: Endowment effect (in percentage points)

	Using equation (6)	Using equation (7)
Age: 15 to 19 years	0.01	0.01 ***
20 to 24 years	-0.01 **	-0.01 *
25 to 29 years	0.00	0.00
30 to 34 years	-0.02 **	-0.03 ***
35 to 39 years	-0.06 **	-0.09 ***
40 to 44 years (reference group)		
45 to 49 years	0.18 ***	0.16 ***
50 to 54 years	0.12 ***	0.29 ***
55 to 59 years	0.62 ***	0.19 ***
60 to 64 years	-1.81 ***	-1.46 ***
Skill level: low (reference group)		
medium	1.51 ***	1.84 ***
high	0.20 ***	0.27 ***
Disability	-0.14 ***	-0.07 ***
# children	0.19	0.09 *
# in childcare	0.23 *	0.06 ***
Child <3 years	0.38 ***	0.42 ***
Child 3-6 years	0.34 ***	0.58 ***
Child 7-12 years	0.17	0.32 ***
Child 12-17 years	-0.31 ***	-0.02 *
Additional household income	0.08 ***	0.02 ***
Immigrant	1.05 ***	0.74 ***
Husband is immigrant	0.09	-0.12 **
Husband is employed	-1.49 ***	-1.48 ***
Skill level of husband: low (reference group)		
medium	0.03	-0.06 ***
high	0.02	-0.06 ***
Total explained	1.34	1.65
Difference on labour force participation between East and West Germany women	11.90	

Influence of regional unemployment and child care facilities

In addition to the topics above, we want to analyse the influence of the regional unemployment rate and the child care opportunities. Therefore, we added successively the regional unemployment rate (model 1 and 4 in table 4), the number of child care slots for children aged 1 to 3 years and 3 to 6,5 years (model 2 and 5) and both indicators together (model 3 and 6) to our logit models displayed in table 2.

The influence of the unemployment rate differs between East and West German women. While the unemployment rate has no significant impact on labour force participation of East German women, it lowers the female labour force participation in West Germany. The discouraged worker effect can therefore only be confirmed for West Germany as in VAN HAM and BÜCHEL (2004).

The availability of public childcare mainly influences labour supply of East German women but the effect is rather small. One more childcare slot per 100 children aged up to 3 leads only to an increased chance of being in the labour force by the factor 1.015 for East German women. However this effect increases with the skill level of the women. This can be seen in the positive and significant interaction terms of the skill level with the childcare slots.

Table 4: Influence of regional unemployment rate and child care facilities

	East Germany			West Germany		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Control variables (like in table 2)	✓	✓	✓	✓	✓	✓
Unemployment rate	0.0356	-	-0.0154	-0.1104 ***	-	-0.1158 ***
Childcare slots (1 to 3 years)	-	0.0154 ***	0.0157 ***	-	0.0114	0.0223
Childcare slots (1 to 3 years) × medium skilled		0.0071 ***	0.0092 *		-0.0129	0.0171 ***
Childcare slots (1 to 3 years) × high skilled		0.0065 *	0.0087 *		-0.0195 ***	0.0029
Childcare slots (3 to 6,5 years)	-	0.0058	0.0058	-	-0.0016	-0.0012
Childcare slots (3 to 6.5 years) × medium skilled		0.0097 **	0.0096 **		-0.0002	-0.0024
Childcare slots (3 to 6.5 years) × high skilled		0.0107 ***	0.0109 ***		0.0009	-0.0005
Observations	16,799			66,635		
Pseudo R2	0.4236	0.4253	0.4253	0.2229	0.2191	0.2230

7 Summary and Conclusions

The aim of the paper is to analyse the reasons for the still existing differences in labour force participation between East and West German women. We considered two possible reasons for these differences: differences in characteristics (like skill level, number of children...) and the reaction to the regional labour market situation and availability of childcare.

As labour force participation increases in the skill level, the larger share of high-skilled women in East Germany can explain more than 10 percent of the difference in participation rates. The number of children is restraining female labour supply very strongly. This effect is enforced if small children are living in the household. Since the fertility of women in East Germany dropped after German reunification, the East German female labour supply is less restrained by the existence of children.

East and West German women react differently to the labour market situation and the availability of childcare. Whereas East German women do not vary their efforts when regional labour market conditions worsen, West German women feel discouraged by poor labour market conditions. Female labour force participation in East Germany is positively influenced by the provision of full-time childcare and this effect increases with the skill level while West German women do not show any significant reaction.

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