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Differences in female labor force participation in East and West Germany: Socialist legacy and pre-socialist tradition

Michael Wyrwich

Abstract

This paper investigates the sources of the significantly higher labor force participation of East German women as compared to their peers in West Germany. The previous literature attributes this to a legacy of socialist labor market policies. This study challenges this hypothesis and demonstrates that the share of women in the labor market across regions that were exposed to the socialist regime was already higher before German division and the introduction of socialist labor market policies. Furthermore, pre-socialist differences and regional conditions play a more important role than socialist legacy in explaining current regional differences in labor force participation of women and in shaping social acceptance of working women. The results suggest that labor market conditions and employment opportunities for women have been more or less not similar before German division. Furthermore, regional differences in current female labor force participation rates seem to be not predominantly shaped by socialist legacy.

JEL classifications: J16; J22; J23; N34; N64; P25; P30; R23

Keywords: Female labor force participation; Gender; East and West Germany

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Introduction

There is a growing body of empirical literature exploiting the "natural experiment" of German division and re-unification to identify the effect of political regimes on attitudes and economic behavior (e.g., Alesina and Fuchs-Schuendeln, 2007; Bauernschuster and Rainer, 2011; Brosig-Koch et al., 2011; Beblo and Goerges, 2014). In a nutshell, the eastern part of Germany came under socialist rule after 1945, whereas, West Germany developed toward an established market economy. Over the course of German re-unification the institutional framework of West Germany was introduced in East Germany. Despite the radical exogenous shift in the formal institutional framework, there are persistent differences in attitudes and economic behavior in East and West Germany that seem to be due to the socialist legacy of East Germany.

One of the essential assumptions for credibly exploiting the German division and re-unification as a truly "natural experiment" is that West Germany, who did not come under socialist rule, and East Germany, who was exposed to the socialist treatment have been "more or less" similar in terms of economic structures before German division in 1945. Pre-socialist differences between the two areas could be detrimental to the experimental character of the setting. However, were the two parts of Germany indeed more or less similar before German division? The current study examines pre-socialist structural differences in East and West Germany in order to assess the role of socialist legacy and pre-socialist differences in women's labor force participation for current East-West differences in the share of working women. This field of study and level of analysis was chosen since the higher participation rates of women in East Germany are some of the most "visible" differences across the labor markets in East and West Germany of those that are regarded to be due to the socialist past of East Germany (e.g., Rosenfeld et al., 2004). In addition, this was chosen since the issue of female labor force participation is discussed intensively in the public debates in Germany on socialist legacy and in the debates on gender parity in the labor market in general.

This study challenges the hypothesis that the significantly higher share of working women in East Germany, relative to West Germany, is *predominantly* a legacy of labor market policies in the socialist German Democratic Republic (GDR). By making use of detailed county-level census data, I show that the share of women in the labor market in the early 20th century was already significantly higher in the regions of Germany that came under socialist rule after the year 1945. The differences are statistically significant for an array of participation rates as well as for the share of women within the total regional workforce ("gender parity" in the following) before 1945. These statistics cast doubt on the assumption that eastern and western Germany have been "more or less similar" in terms of labor market opportunities for women before its division. Rather socialism seems to have been falling on fruitful ground by being introduced in regions with an above average share of working women. Accounting for socialist legacy *and* pre-socialist differences in the gender parity of local labor

markets, a regression analysis of today's regional differences reveals that the coefficient estimate for the historical gender parity of the labor market is twice as large as an East German dummy variable to capture the socialist treatment effect. This suggests that socialist policies are not the dominant mechanism explaining current differences in the share of women in the labor market in East and West Germany. Regressing growth of female labor force participation rates on historical participation rates reveals a significant positive coefficient estimate for the East German dummy, but also that East German regions with a historically high FLFP grew less in terms of participation rates as compared to West German regions with high rates before 1945.

Long-term persistence in spatial differences of the share of women in the labor market may capture (1) persistence in industry structures that have persistently different demands for female labor and/or (2) persistence of a positive attitude toward working women that was already in place before the socialist "treatment." Against this background, it is noteworthy that the difference in the size of the coefficient estimates for gender parity is even three times higher for pre-socialist differences in gender parity when accounting for pre-socialist regional differences in economic structure. The findings on the relative importance of historical differences in the share of working women are corroborated by individual level evidence from the ALLBUS survey. Here the coefficient estimate for the historical measures of female labor market participation rates are larger than the East German dummy in explaining differences in statements regarding the social acceptance of female labor force participation and maternal employment. These results suggests a non-negligible role of the existence of persisting positive attitudes toward working women that were in place before the socialist regime was installed in East Germany.

Exploring how the introduction of the socialist regime interacted with spatial differences in the share of working women in East Germany reveals that the interaction of the East German region marker and the historical gender parity is insignificant much like the East German main effect, whereas, the estimate for historical differences in the gender parity of the labor market remains significant. Repeating this exercise with East German state dummies, instead of a general East dummy, reveals that there is a positive main effect as well as a positive interaction effect for the states of Brandenburg, Saxony-Anhalt, and Mecklenburg Western Pomerania, where the share of working women was relatively low in pre-socialist times. In East German strongholds of pre-socialist labor force participation of women (namely Saxony and Thuringia), there is neither a significant main nor interaction effect. The significant interaction found for some East German states becomes insignificant after controlling for some rough pre-socialist regional conditions.

Altogether, the results suggest that accounting for pre-socialist differences in the share of working women and in economic structures tremendously reduces the explanatory power of socialist

legacy regarding the share of women in the labor market today. The main conclusions are, firstly, that East and West Germany have not been similar in terms of labor force participation of women before German division. Secondly, studies that exploit German division and re-unification should take much more care for assessing regional differences pre-dating German division. East and West Germany had not been necessarily homogeneous before 1945 with respect to economic conditions and were marked by distinct pre-socialist economic and institutional developments that should be accounted for in future research.

Historical Background: Labor force participation of women in East and West Germany

One of the most visible differences in the East and West German labor market is the significantly higher labor force participation of women. These differences are unanimously attributed to the legacy of the socialist regime in East Germany (e.g., Maier, 1993; Rosenfeld et al., 2004; Bauernschuster and Rainer, 2011; Beblo and Goerges, 2014). In a nutshell, the socialist GDR promoted the employment of women; the share of working women in the GDR was around 85% of those aged between 15 and 65 years old in the late 1980s. The share of women in the entire labor market was around 49% even though the population share of working-age adults was only about 48%. In contrast, only 55% of West German women of working-age were participating in the labor market in the late 1980s (for further details, see Maier, 1993). The motives of the socialist government to promote the employment of women were twofold. On the one hand, labor market participation was a constitutional right, and several policies were designed in a way that promoted the participation of women in the labor market (e.g., Duggan, 1995; Cooke, 2006). On the other hand, the GDR suffered from capital shortages that had to be compensated by labor-intensive production techniques which required a heavy exploitation of the labor force participation of the population regardless of gender. According to the latter explanation, the increase of working women was a consequence of economic necessities, while the former explanation reflects a political willingness to promote gender equality.

In the course of German re-unification the formal institutional framework of West Germany was introduced in the eastern part of the country. The labor market institutions that have been tuned to the male bread winner model led to an increase of unemployment among women but not to a general withdrawal from the labor force (e.g. Rosenfeld et al., 2004). Even two decades after re-unification, labor force participation and the attitude toward working women was found to be significantly higher in East Germany (e.g., Adler and Brayfield, 1997; Bauernschuster and Rainer, 2011; Beblo and Goerges, 2014).

The persisting divergence in FLFP since German division looks like an intriguing “natural experiment” where a political regime that pursues policies that push and pull women into the labor

market is introduced in one area of Germany but not in the other one. Then these policies are abandoned by an exogenous introduction of the political regime and formal institutions of the "non-treated" region, but still significantly more women are participating in the labor market, and still the population is revealing a much higher social acceptance of working women in the "treated" regions. This indicates persistence of informal institutions.

One of the essential conditions for exploiting this setting as a natural experiment is that East and West Germany did not systematically differ in terms of labor market conditions for women before 1945. But is that indeed the case? If the participation rates of women and social acceptance of working women was already higher before German division, this would cast doubt that current differences measure only a legacy of the socialist political regime. There is some evidence showing that economic conditions and behavior in general have been quite heterogeneous across German regions before 1945. Assessments of trade patterns and patent citations, for example, show that German regions at the beginning of the 20th century have been quite distinct (Wolf; 2009; Burhop and Wolf, 2013). The results by Wolf especially raise the question whether Germany was ever united even though the analysis does not specifically focus on a comparison between regions that should become "East and West Germany" after 1945.[1] Another recent paper by Klüsener and Goldstein (2014) demonstrates that the significant higher prevalence of non-marital fertility in East Germany, which in the public debate is often attributed to the legacy of liberal social policies in communism, pre-dates German division and was also visible in the late 19th century. Another example is child care coverage which is much higher in East Germany which, in turn, is often attributed to the legacy of socialist family policies. An empirical assessment of differences in child care coverage reveals that it is rather cultural proximity to the birthplace of Friedrich Froebel, the leader of the kindergarten movement in the 19th century, than socialist legacy that explains differences in current spatial differences in coverage (Bauernschuster and Falck, 2014). Froebel, by chance, established the first child care center in Thuringia in 1839 which became part of socialist East Germany after 1945.

The papers suggest that pre-socialist history matters. However, there is no rigorous assessment of differences in labor force participation of women before 1945. The following analysis suggests that there have been indeed some differences pre-dating socialism as well.

[1] The current "East Germany" was called "Middle Germany" in the general linguistic usage before 1945. The historical East Germany comprised the areas which are nowadays located in Poland, Russia, and Lithuania.

Data

The analysis of the share of working women across German regions relies on detailed German census data pre-dating German division which comprises rich information on the regional level. The most detailed and comprehensive overview of regional differences regarding the population and industry structure is provided by the census conducted on 16th of June, 1925 (Statistik des Deutschen Reichs, 1927). The entire German population was surveyed and the census wave includes an industry-occupation stratification that has information on the number of employees by gender, 26 industries, and "social status" on the level of counties (*kleinere Verwaltungsbezirke*). The social status allows for distinguishing whether individuals are either working in the domestic sphere (home workers and helping family members) or outside of their home.

The data allows for calculating an array of female labor force participation rates (FLFP). The main variable of interest exploited in the empirical analysis is the share of women in the total labor force ("gender parity" in the following). This variable allows for assessing how socialism may have changed the labor force participation of women beyond a general change in labor force participation of the population. Further measures are the share of women working as dependent employees within the entire regional population of women as well as in the population of women above the age of 14 years. It is important to include unemployed women as well to capture "revealed preferences" for taking up employment and to rule out that any potential spatial differences in labor market prospects in 1925 bias the measure on the local share of women that are willing to participate in the labor market.[2]

For the assessment of current female labor force participation, I make use of current employment data which is based on the German Social Insurance Statistics and various statistics from the German Federal Statistical Office. The current gender parity of the labor market is calculated as the number of women working as dependent employees or being registered as unemployed among all employed and unemployed people in the year 2010.

There have been administrative regional changes between 1925 and 2010. In order to work with consistent spatial units, it was necessary to overlay a digitized map of the counties in 1925 with one including the boundaries of the current counties using Geographical Information Systems software (ArcGIS). The historical counties are split in parts along the border lines of the current counties. The raw data of 1925 are then multiplied with the resulting share of the split areas (in terms of the historical county size) and assigned to the current regions. In total, there is information on 1,053 historical counties (incl. areas which are not part of Germany today) that are collapsed to 406 current

[2] There is no information for the share of women aged between 15 and 64 years old. If workers are without a job on 16th of June, 1925 they are assigned to the industry where they worked before losing their job. Thus, the data allow capturing "willingness" to participate in the labor market but not to disentangle unemployed individuals mainly because registered unemployment and state-provided unemployment aid did not yet exist.

counties. Since the data for the city of Berlin cannot reasonably be assigned to East or West, the analysis does not include Berlin.[3]

The mean comparison tests for the different participation rates reveal that the participation of women in the labor market in East Germany is significantly higher in 1925 and 2010 (see Table 1). The growth of the share of working women is not significantly different across East and West German regions despite four decades of socialist labor market policies in the eastern part of the country. Altogether, there have been significant differences in the labor force participation of women that obviously pre-dates socialism. Furthermore, the divergence in gender parity over the last eight decades does not seem to be overly strong.

Table 1: Mean comparison test

	West	East	Diff
(1) Female labor force participation (FLFP) 1925 (inc. self-employment) (age>14)	0.3380	0.3767	***
(2) FLFP 1925 (excl. self-employment) (age>14)	0.2953	0.3458	***
(3) FLFP 1925 (inc. self-employment + homeworker) (age>14)	0.3410	0.3863	***
(4) Gender parity 1925 (inc. self-employment)	0.2887	0.3050	***
(5) Gender parity 1925 (excl. self-employment)	0.3288	0.3329	n.s.
(6) Gender parity 1925 (inc. self-employment + homeworker)	0.2897	0.3088	***
(7) FLFP 2010 (excl. unemployed) (age>14 & age<65)	0.4681	0.5432	***
(8) FLFP 2010 (incl. unemployed) (age>14 & age<65)	0.5126	0.6296	***
(9) Gender parity 2010 (excl. self-employment)	0.4523	0.4805	***
(10) Change in labor force participation rates 1925-2010 (incl. unemployed)	1.5892	1.7127	***
(11) Change in gender parity 1925-2010 (excl. self-employment)	1.4317	1.4630	n.s.

Notes: The 1925 data includes individuals who participate in the labor market but were not engaged in a job on census day. 319 West German regions; 86 East German regions; Berlin is excluded since only parts of the city came under socialist rule; There is no information on the population aged between 15 and 64 in 1925; There is also no gender-specific information on self-employment for the year 2010.

Regression analysis

Potential differences in the share of working women in 1925, as reflected by the mean comparisons shown in Table 1, may reflect differences in labor market conditions and accordingly differences with respect to the demand for and supply of female workers but also potential differences in the social acceptance of working women that may have a persistent influence on the current share of working women. While it is difficult to find a measure for attitudes toward working women in 1925, the census data allows controlling for general regional and labor market conditions which are considered in

[3] Current Germany (in 2010) consists of 412 counties. However, it was not possible to utilize the data for the six counties of the state of Saarland since there is no information for the year 1925. The area was administered by the League of Nations around this time and was not part of the German Empire. Therefore, the population census was not conducted there. The area that comprises Germany today was divided into 861 counties in 1925. The remaining 192 historical counties are nowadays located in Poland and Russia. For assigning historical counties to current counties, I made use of the shape files as provided by the Max-Planck-Institute for Demographic Research. I am highly indebted to Sebastian Rauch for preparing the data. The procedure for adjusting the census data to spatially consistent areas can be illustrated by an example. If 35% of the historical county H is today partially located in the current counties C1, whereas, the remaining 65% are part of the current county C2, the raw census numbers of H are multiplied by the respective numbers and assigned to either C1 or C2. Results on the 1,053 original counties can be obtained upon request.

the analysis. This is the regional specialization in non-agricultural private sector industries. The emergence of these industries should be positively associated with employment opportunities for women (e.g., Costa, 2000; Goldin, 2006). Especially regions in the southern part of the current East Germany (the current states of Thuringia and Saxony) have been heavily industrialized (e.g., Tipton, 1976) and may have pushed and pulled relatively more women into the labor market on average than in West German regions. Another variable that may affect the labor force participation of women is the organization of farm labor in the early 20th century. Within Germany there have been enormous regional differences in regard to the average farm sizes. This has to do with natural conditions (quality of soil) and differences in institutional development (e.g., Tipton, 1974). In areas where smaller independent farmers dominated, women worked (and were registered) as helping family members, whereas, in areas where large farms dominated, men along with women were likely to work for large landowners (*Gutsherren*). Therefore, average farm sizes should indicate the prevalence of paid-labor of women. The census data provides information on the number of farms in different size classes. In the analysis the regional share of farms larger than 100 hectares is considered.[4] Farms of such size were common in the middle and eastern part of Germany, especially east of the river Elbe (*ostelbisch*) which comprises a large share of what is East Germany today. Finally, the population density in 1925 is used as a "catch-all" variable for further regional differences (see Table A1 and A2 for summary statistics and correlations).

The models of Table 2 show different models where the gender parity of local labor markets in 2010 (proxy (11) of Table 1) is regressed on historical measures (proxy (4) of Table 1). In column I only the gender parity of 1925 and an East German dummy capturing the "socialist legacy" effect are introduced into the model. The results show that the coefficient estimate for the pre-socialist prevalence of women in the labor market is twice as large as the estimate for the dummy marker for East German regions. Model II considers regional conditions in 1925. They should partially reduce the coefficient for the gender parity since they potentially make up for regional differences in the prevalence of working women. Indeed the coefficient for gender parity increases slightly. The share of large farms and the regional specialization in non-agricultural private sector employment in 1925 are positively and significantly related to the gender parity more than eight decades later. Interestingly, the East German dummy decreases, as well as when controlling for regional conditions in 1925. In relative terms, the coefficient for gender parity is three times larger than the one for the East German dummy. Thus, accounting for pre-socialist differences in regional economic structures reduces the "east effect" tremendously.[5]

[4] This information is based on census data from 1907, the last census before 1925.

[5] Using the alternative gender parity measures (5) and (6) of Table 1 yields similar results. I also controlled for industry structure as well as for unemployment rates and population density in 2010. The relative importance of the historical gen-

In a next step, the gender parity is interacted with the East German dummy to test whether the introduction of socialism and the effect on the share of working women today depends on the pre-socialist tradition of working women (see Table 2, column III and IV). The results of column III show that both the interaction term as well as the East German dummy are insignificant, while the gender parity remains significant. Thus, the effect of the historical gender parity of the labor market on the current gender parity is not systematically different between East and West Germany, while the insignificance of the East German dummy casts further doubts on the *dominant* role of the legacy of socialist policies for explaining current differences in the share of women in the labor force. The results are broadly in line with the "exploitation hypothesis", according to which socialist policies pursued the exploitation of the total labor force out of economic necessity, rather than promoting women in the labor market in particular.

Table 2: Determinants of the share of working women in East and West Germany today: Pre-socialist differences vs. socialist legacy

	I	II	III	IV
East	0.0544***	0.0308***	0.0482	0.000863
	(0.00568)	(0.00857)	(0.0389)	(0.0370)
Gender parity 1925	0.110***	0.0948***	0.111***	0.0978***
	(0.0144)	(0.0140)	(0.0161)	(0.0150)
Gender parity 1925 X East			-0.00520	-0.0252
			(0.0300)	(0.0297)
Share of non-agricultural employment 1925		0.0601***		0.0598***
		(0.0154)		(0.0155)
Share of large farms (>100ha) 1907		0.114***		0.113***
		(0.0368)		(0.0367)
Population density 1925		-0.00528		-0.00495
		(0.00417)		(0.00422)
Observations	405	405	405	405
R-squared	0.373	0.477	0.373	0.477

Notes: Robust standard errors in parentheses/ *** p<0.01, ** p<0.05, * p<0.1. Constant is not shown for brevity. Variables are in log-form (except for share of large farms which is including zeros).

In the models of Table 3, dummies for the East German Federal States instead of an East German dummy are introduced in order to test whether socialism affected the share of working women in the labor force differently across East German States. The State dummies account for distinct pre-socialist economic and institutional development in the areas that came under socialist

der parity can be also detected in these specifications. Regional conditions in 2010 are presumably endogenous and partially determined by historical labor market conditions.

rule.[6] The regressions on the level of East German states reveal that the coefficient estimates are relatively similar. They are smaller than the coefficient estimates of the gender parity as can be seen in columns I and II. The state marker and the interaction of the state dummies with the traditional gender parity is significant for Brandenburg, Mecklenburg Western Pomerania and Saxony Anhalt, while both state marker and interaction effect are insignificant for Thuringia and Saxony. The (not interacted) historical gender parity remains significant. Any significant positive interaction terms mean that the effect of historical tradition is particularly strong when the regions had undergone a "socialist treatment." However, if only socialism treatment and legacy make the difference in current participation rates, than there should be no significant interaction with historical tradition. Controlling for regional conditions in 1925 that may capture the "fruitful ground" makes two of the three interaction terms insignificant.

Table 3: Determinants of the share of working women in East German States and West Germany today: Pre-socialist differences vs. socialist legacy

	I	II	III	IV
Brandenburg	0.0634***	0.0451***	0.167***	0.115***
	(0.00709)	(0.0134)	(0.0314)	(0.0228)
Mecklenburg-Western Pomerania	0.0749***	0.0492**	0.192***	0.0458
	(0.00570)	(0.0226)	(0.0349)	(0.0634)
Saxony	0.0428***	0.0253**	0.0367	-0.00214
	(0.00850)	(0.00996)	(0.0464)	(0.0621)
Saxony-Anhalt	0.0491***	0.0288**	0.131***	0.0433
	(0.00559)	(0.0144)	(0.0266)	(0.0560)
Thuringia	0.0408***	0.0296***	-0.0279	-0.0572
	(0.00713)	(0.00805)	(0.0799)	(0.0676)
Gender parity 1925	0.112***	0.0967***	0.111***	0.0988***
	(0.0151)	(0.0142)	(0.0162)	(0.0151)
Brandenburg X Gender parity 1925			0.0871***	0.0593***
			(0.0227)	(0.0177)
Mecklenburg-Western Pommerania X Gender parity 1925			0.0951***	-0.00287
			(0.0287)	(0.0357)
Saxony X Gender parity 1925			-0.00592	-0.0254
			(0.0421)	(0.0600)
Saxony-Anhalt X Gender parity 1925			0.0654***	0.0116
			(0.0208)	(0.0371)
Thuringia X Gender parity 1925			-0.0566	-0.0714
			(0.0624)	(0.0519)
Share of non-agricultural employment 1925		0.0579***		0.0572***
		(0.0158)		(0.0163)
Share of large farms (>100ha) 1907		0.0762		0.0765

[6] The East German States are Brandenburg, Mecklenburg-Western Pomerania, Saxony-Anhalt, Saxony, and Thuringia. Until the dissolution of the German Empire in 1918 the area of what is known as „East Germany" today consisted of a variety of little kingdoms and dukedoms. The current State of Brandenburg was a province of the Kingdom of Prussia. Mecklenburg was divided into two Dukedoms, whereas, Western Pomerania was a Prussian province. The current State of Saxony-Anhalt consisted of a Prussian Province too and the Dukedom of Anhalt. The state of Saxony covers more or less the former Kingdom of Saxony. The current state of Thuringia consisted of 8 smaller dukedoms and some Prussian exclaves.

		(0.0703)		(0.0744)
Population density 1925		-0.00412		-0.00380
		(0.00443)		(0.00461)
Observations	405	405	405	405
R-squared	0.388	0.482	0.393	0.485

Notes: Robust standard errors in parentheses/ *** p<0.01, ** p<0.05, * p<0.1. Constants are not shown for brevity. Variables are in log-form (except for share of large farms which is including zeros).

The analysis of the regional level suggests that pre-socialist differences in the prevalence of working women explain more of the current differences in the share of women in the total labor force today than do socialist legacy. The relative importance of pre-socialist differences is even stronger when assessing pre-socialist structural differences in the labor market. This suggests the presence of a social acceptance of working women that is not captured by structural differences in the labor market. In order to assess how pre-socialist differences in the prevalence of working women and the socialist legacy relate to the social acceptance of working women individual level survey data is exploited in the following.

Social acceptance of working women: Pre-socialist tradition and socialist legacy

Information on the social acceptance of working women is assessed by exploiting survey evidence from the German General Social Survey (ALLBUS). The data set is based on representative surveys of the German population conducted through personal interviews. ALLBUS covers a wide range of important topics in the social sciences. A core set of questions is asked in every wave of the survey, with various sets of additional questions complementing the survey in different years (for details, see Terwey and Baltzer, 2011). The survey is conducted biennially since 1980. Regional codes, indicating the place of residence of the respondents on the county level, are available for waves after 1994. I make use of the 1996, 2000, 2004, 2008, and 2012 waves. In these years, respondents were asked to state their agreement with different patterns regarding the role of women in families and in the workplace:

I. *A working mother can just as well have a hearty and trustful relationship with her children as a non-working mother*
II. *It is even good for a child if his or her mother is employed instead of merely focusing on household work*
III. *Certainly, a baby suffers if his or her mother is employed.*
IV. *It is more important for a woman to support her husband's career instead of making her own career*
V. *It is better for all if the husband works and the wife stays at home taking care of the household and the children*
VI. VI. *A married woman should turn a job down if only a limited number of jobs are available and her husband is able to make a living for the family*.

I relate the answers given to these questions to the historical FLFP and control for an array of individual characteristics. Additionally, I introduce an East German region marker to capture socialist legacy effects. The results of an ordered logit regression show that the historical level of FLFP and the East German dummy are significantly and positively related to disagreeing with the statements I to VI. Interestingly, the coefficient estimate for the historical FLFP measures is always larger than the estimate for the dummy variable. This indicates that the social acceptance of women is especially driven by pre-socialist differences in the prevalence of working women. The potential mechanisms behind the relationship of a historical tradition of working women rates and higher acceptance rates of working women are discussed in the literature. Working women can be regarded as a role model for future generations of women who update their prior beliefs based on observing other working women and the awareness of the prevalence of working women in past generations. Thus, the prime mechanism inducing cultural change is intergenerational transmission and learning which works especially on the local level (e.g., Fogli and Veldkamp, 2011; Fernandez, 2013; Farre and Vella, 2013).

<<Table 4: ALLBUS (OUTPUT-CONTROL)>>

Extensions: Participation rates

The focus of the previous analysis was on the share of women in the labor force. This section devotes attention to the persistence of actual participation rates of men and women. Table 5 and 6 comprise the same dependent variables like the models shown in Table 2 and 3 but use the growth in the participation rates of women in the labor market as a dependent variable. This is the share of women registered as employed and unemployed in 2010 among the total female population aged between 15 and 64 years (proxy (10) of Table 1) in relation to the share of women that were participating in the labor market among all women aged older than 14 years in 1925 (proxy (1) of Table 1). The results show that the East German Dummy has a significant and positive influence on the growth of FLFP in all specifications. The initial level of FLFP in 1925 has a significant negative effect which suggests convergence in the levels of FLFP over time. Interestingly, the interaction between the East German dummy and the initial level is negative and significant as well. Thus, a high level of historical FLFP is more negatively related to the growth of FLFP in East Germany as compared to West Germany. Models accounting for differences across East German States yield similar results (see Table 6). For the state of Brandenburg the dummy and the historical FLFP affect growth in FLFP while there is no significant interaction between both variables. There is no level effect for the other East German States. Rather the size of the coefficient for the interaction term of the State Dummies with historical FLFP suggests that a historically high FLFP is negatively related to growth FLFP across three out of five regions that came under socialist rule.

The results of Table 5 and 6 suggest that the effect of socialist policies on the labor force participation of women interacted strongly with the pre-socialist level of employment. They show that the catch-up of FLFP was particularly strong in socialist regions where the share of working women was relatively low in pre-socialist times. This finding is in favor of the exploitation hypothesis. Participation of women is enhanced where it was low. One would expect an insignificant or even a positive interaction between historical FLFP if socialist policy fostered labor force participation of women primarily by achieving gender equality and emancipation as an end in itself.

Table 5: Determinants of growth of female labor force participation in East and West Germany today: Pre-socialist differences vs. socialist legacy

	I	II	III	IV
East	0.200***	0.201***	0.0985**	0.120***
	(0.00735)	(0.00982)	(0.0399)	(0.0402)
FLFP 1925 (age>14)	-0.943***	-0.932***	-0.932***	-0.923***
	(0.0177)	(0.0180)	(0.0188)	(0.0193)
Share of non-agricultural employment 1925		0.0120		0.00909
		(0.0197)		(0.0194)
Share of large farms (>100ha) 1907		-0.0487		-0.0516
		(0.0365)		(0.0352)
Population density 1925		-0.0121**		-0.0106**
		(0.00522)		(0.00515)
FLFP 1925 (age>14) X East			-0.101***	-0.0825**
			(0.0367)	(0.0360)
Observations	405	405	405	405
R-squared	0.929	0.931	0.930	0.932

Notes: Robust standard errors in parentheses/ *** p<0.01, ** p<0.05, * p<0.1. Constant not shown for brevity. Variables are in log-form (except for share of large farms which is including zeros).

Table 6: Determinants of growth of female labor force participation in East German States and West Germany today: Pre-socialist differences vs. socialist legacy

	I	II	III	IV
Brandenburg	0.198***	0.200***	0.160***	0.178***
	(0.00624)	(0.00975)	(0.0325)	(0.0388)
Mecklenburg-Western Pomerania	0.198***	0.213***	0.0424	0.0868*
	(0.0110)	(0.0216)	(0.0481)	(0.0482)
Saxony	0.213***	0.220***	-0.109	-0.0342
	(0.00838)	(0.00939)	(0.0663)	(0.0739)
Saxony-Anhalt	0.211***	0.224***	0.0518	0.140*
	(0.00814)	(0.0106)	(0.0731)	(0.0775)
Thuringia	0.188***	0.189***	-0.0369	-0.0181
	(0.0138)	(0.0131)	(0.0755)	(0.0729)
FLFP 1925 (age>14)	-0.945***	-0.934***	-0.932***	-0.923***
	(0.0186)	(0.0190)	(0.0190)	(0.0197)
FLFP 1925 (age>14) X Brandenburg			-0.0378	-0.0223
			(0.0310)	(0.0372)

FLFP 1925 (age>14) X Mecklenburg-Western Pomerania			-0.150***	-0.121***
			(0.0463)	(0.0406)
FLFP 1925 (age>14) X Saxony			-0.396***	-0.312***
			(0.0746)	(0.0881)
FLFP 1925 (age>14) X Saxony-Anhalt			-0.153**	-0.0795
			(0.0671)	(0.0713)
FLFP 1925 (age>14) X Thuringia			-0.213***	-0.196***
			(0.0653)	(0.0633)
Share of non-agricultural employment 1925		0.0150		0.00941
		(0.0205)		(0.0204)
Share of large farms (>100ha) 1907		-0.0909		-0.0820
		(0.0588)		(0.0577)
Population density 1925		-0.0131**		-0.0105*
		(0.00555)		(0.00554)
Observations	405	405	405	405
R-squared	0.929	0.932	0.932	0.934

Notes: Robust standard errors in parentheses/ *** p<0.01, ** p<0.05, * p<0.1/ Constant not shown for brevity. Variables are in log-form (except for share of large farms which is including zeros).

Conclusions

This paper challenges the hypothesis that differences in the prevalence of women in the labor market in East and West Germany are only and primarily related to socialist legacy. The assessment shows that post-socialist East Germany already had a higher share of working women in pre-socialist times. This casts doubt on the assumption that East and West Germany have been "more or less" similar in terms of labor market conditions for women. Furthermore, differences pre-dating socialism are also an important factor determining current differences in the labor force participation of women along with socialist legacy. With respect to the share of women in the total regional labor force, pre-socialist differences seem to play a dominant role. The assessment of the gender parity of local labor markets suggests that any legacy effects of socialist policies on labor market participation are not particularly strong among women. Taking into account the interaction between socialism and pre-socialist differences in the share of working women corroborates the dominating role of the former. Furthermore, assessing the growth in actual participation rates of women reveals that regions with historically high female labor force participation had even a lower growth in participation rates when they came under socialist rule as compared to regions that were not exposed to socialism. Analyses on the individual level reveal that pre-socialist differences play a more important role for social acceptance of working women than socialist legacy suggesting that socialism fell on a fruitful ground rather than initially created an environment of accepting women in the labor market.

The moderate effect of socialist legacy in the assessment of social acceptance of working women and in the analysis of regional differences in the share of women in the labor market might be explained by the ambivalent intentions of socialist labor market policies with respect to increasing the share of women in the labor market. The socialist GDR economy was in short supply of capital

that forced the companies to labor-intensive production techniques and required a massive exploitation of the labor force participation among men and women. It might have been the case that this economic necessity played a more important role in the growth of FLFP than achieving gender equality as an end in itself. At least the traditional gender division and role models in the GDR more or less remained unchanged beyond the expectation that women in the working age work should work full time (for an overview of this debate, see Rudd 2000). In this respect, Braun et al. (1994) finds with the same survey data employed in this study that the higher social acceptance of working women was rather determined by economic hardships over the course of transition than by changing traditional gender roles. The authors confirm this finding with data on other post-socialist Eastern European transition countries.

Altogether, the findings of this study are broadly in line with the "exploitation hypothesis", according to which socialist policies were intended to increase labor force participation of the population in general but not participation of women in particular. First, the share of women in the labor market did not increase particularly in East German regions relative to men. Second, in regions where a lot of women were already working, socialist legacy has even an adverse effect on growth in actual participation. Third, historical differences in FLFP play a more important role in the statements regarding the social acceptance of working women than socialist legacy.

The lessons of the paper are threefold. First, economic conditions and labor force participation across regions in East and West Germany had already been different before German division. Second, structural differences pre-dating socialism affect differences in labor force participation today. Third, the role of pre-socialist factors is relatively powerful. A lesson not learnt from the paper is that socialism did *not* shape economic behavior. In this respect, the dataset at hand also has shortcomings. The historical data structure does not allow for identifying regional differences in the prevalence of part-time work and labor force participation of mothers and married women in the past. Both are much more widespread in East Germany today as compared to the western part of the country and might be primarily explained by a legacy of socialist labor market policies. Another issue is that current data on self-employed that distinguish between men and women are not available. Be as it may, the empirical exercise carried out in this paper calls for a careful assessment of pre-socialist economic and institutional development in order to appropriately determine the effects of socialist legacy on labor force participation of women and economic behavior in general.

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Appendix

Table A1: Summary Statistics

	Mean	S.D.	Min	Max
Female labor force participation (FLFP) 1925 (inc. self-employment) (age>14)	0.35	0.07	0.17	0.56
FLFP 1925 (excl. self-employment) (age>14)	0.31	0.08	0.1	0.52
FLFP 1925 (inc. self-employment + homeworker) (age>14)	0.35	0.08	0.17	0.56
Gender parity 1925 (inc. self-employment)	0.29	0.05	0.15	0.49
Gender parity 1925 (excl. self-employment)	0.33	0.06	0.14	0.67
Gender parity 1925 (inc. self-employment + homeworker)	0.29	0.05	0.15	0.49
FLFP 2010 (excl. unemployed) (age>14 & age<65)	0.48	0.05	0.36	0.63
FLFP 2010 (incl. unemployed) (age>14 & age<65)	0.54	0.06	0.4	0.68
Gender parity 2010 (excl. self-employment)	0.46	0.02	0.39	0.51
Change in labor force participation rates 1925-2010 (incl. unemployed)	1.62	0.35	0.92	3.13
Change in Gender parity 1925-2010 (excl. self-employment)	1.43	0.29	0.65	3.07
Share of non-agricultural employment 1925	0.67	0.2	0.27	0.99
Share of large farms (>100ha) 1907	0.04	0.07	0	0.55
Population density 1925	5.08	1.08	3	8.4

Table A2: Correlation matrix

		1	2	3	4	5	6	7
1	FLFP 1925 (inc. self-employment) (age>14)	1						
2	Gender parity 1925 (incl. self-employment)	0.928***	1					
3	Gender parity 2010 (excl. self-employment)	0.513***	0.430***	1				
4	Change in FLFP rates 1925-2010 (incl. unemployed)	-0.889***	-0.840***	-0.282***	1			
5	Share of non-agricultural employment 1925	0.427***	0.177***	0.430***	-0.369***	1		
6	Share of large farms [>100ha] 1907	0.216***	0.128***	0.429***	0.039	0.130***	1	
7	Population density 1925	0.271***	0.101***	0.227***	-0.316***	0.812***	-0.057**	1

Notes: *** p<0.01, ** p<0.05, * p<0.1. For brevity only variables used in the regression analysis are shown.