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Growing Importance of Women in the German Labor Market

By Karl Brenke

An increasing share of the working-age population is active in the German labor market. In particular, the number of women participating in the labor force has grown. The more highly qualified people are, the higher their participation rate in the labor market—and the level of qualification among women has increased considerably, approaching that of men. Regardless of their qualifications, women's willingness to participate in the labor market has risen appreciably in all age groups. Among men, this was largely only the case in older age groups.

The number of female employees has increased almost constantly and is hitting record highs. For men, the progression was more variable and the number of individuals employed since the middle of the last decade is only slightly higher than in the early 1990s, despite notable increases. Nevertheless, there are still fewer women overall: in 2013, women made up 46 percent of the whole labor force; their share of total work volume is even smaller at 40 percent. This is mainly due to the fact that almost half of women in Germany work part-time.

This strong increase in female participation in the workforce is largely due to sectoral changes. Employment in Germany has increased considerably, particularly in sectors where comparatively more women work. Conversely, in sectors such as manufacturing, which is generally a predominantly male field, the development of jobs has been less favorable.

The following sections outline the development of labor force participation and employment by gender. The empirical basis for these developments are microcensus data, the German section of the European Labour Force Survey; these data were taken from the Eurostat database.¹ The microcensus is a regular household survey² with a very large sample; it aims to capture one percent of the population. Meaningful data are currently available up to the year 2013.

Sharp Rise in Labor Force Participation—Particularly among Women

The economically active population, i.e., those in or looking for paid work, is constantly increasing in Germany. According to the official national accounts, the seasonally adjusted figure in the third quarter of 2014 was 44.8 million, nearly two millions more than ten years before. According to estimates made at the turn of the millennium, labor force potential should have been shrinking for several years.³ This forecasting error did not originate from inadequate assumptions about immigration but was mainly due to an incorrect assessment of labor force participation. It was not predicted that the activity or participation rate, i.e., the ratio of people in the labor market to working-age population, would increase so markedly. Forecasting errors also occurred in the middle of the last decade, as the period for projections of labor force potential was extended and they were consequently revised.⁴ As is often the case for forecasts, projections are

¹ For information on the microcensus, see, inter alia, Federal Statistical Office, *Qualitätsbericht Mikrozensus* (microcensus quality report) (Wiesbaden: 2014). The available survey data were extrapolated using weighting factors. The findings of the most recent census were not taken into account. This should distort the actual circumstances somewhat; however, this ought to be of little relevance to the issues discussed here.

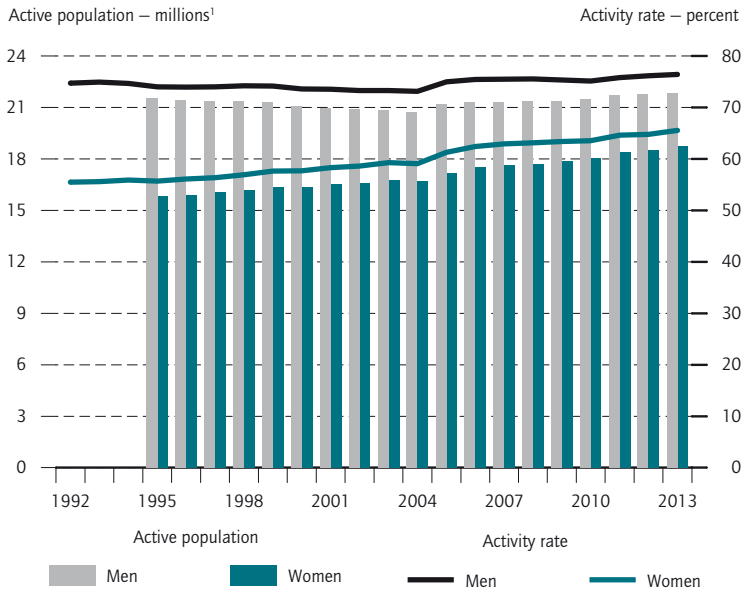
² From 2005, the previous surveys conducted once annually (each in a particular week in spring) were changed to a survey conducted throughout the entire year. This might have compromised the comparison of findings over time.

³ J. Fuchs and M. Thon, "Potentialprojektion bis 2040. Nach 2010 sinkt das Angebot an Arbeitskräften," *IAB-Kurzbericht*, no. 4/1999.

⁴ J. Fuchs and K. Dörfler, "Projektion des Erwerbspersonenpotentials bis 2050. Annahmen und Datengrundlage," *IAB-Forschungsbericht*, no. 25 (2005).

Figure 1

Active population and activity rates by sex



1 Population aged 15 to 74.
Source: Eurostat; calculations by DIW Berlin.

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based on current developments and are continually updated for the future. Thus, the participation rate flatlined for a long period; the ratio of labor force to working-age population (here: 15 to 64 years) fluctuated consistently from 1995 to 2004 within a narrow corridor of 62 percent to 63 percent, in accordance with the microcensus.

Even at the time, there were very different developments between the genders. The activity rate among women rose slowly but steadily and reached almost 56 percent in 2004; among men, however, it fell to slightly more than 69 percent (see Figure 1). As a result, the size of the female labor force also increased during this period (up by 1.3 million), while for men, it fell by 0.3 million.

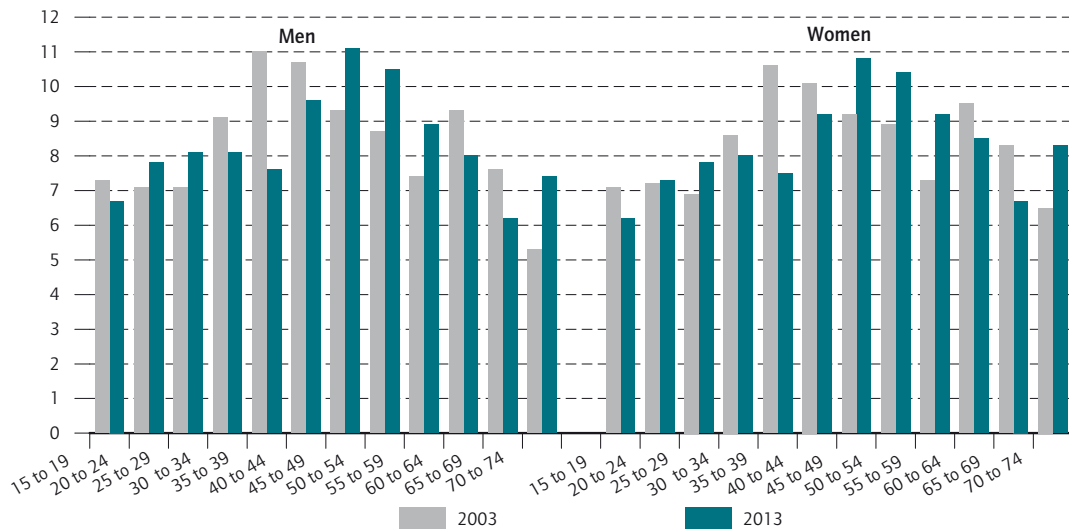
After 2004, the activity rate rose sharply for both women (to almost 63 percent in 2013) and men (to almost 73 percent); the employment rate for both genders together was just under 68 percent in 2013. Accordingly, there has been rapid growth in the size of the labor force, and the increase in the number of women has been twice that of men.⁵ There are still much fewer women participating in the labor market, but they are catching up.

5 From 2004 to 2013, the size of the female labor force grew at an average annual rate of 1.2 percent; the male labor force rose by 0.5 percent over the same period.

Figure 2

Age structure of the population (15 to 74 years)

Share in percent



Source: Eurostat; calculations by DIW Berlin.

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Increase in Labor Force Participation for Women of All Ages but for Men Only in Older Age Groups

Apart from gender, labor force participation also varies considerably according to age. The highest participation rate—for both men and women—is in the middle-aged groups, i.e., 30 to 54 years (see Table 1). For women, the participation rate has increased in all age groups, particularly among those aged 55 or older. Labor force participation among older men has also risen sharply. However, with regard to the other male age groups, the picture is not uniform: labor force participation in the middle-aged groups was previously high but has since fallen in some areas and risen slightly in others; among younger people, it has increased slightly overall. In almost all age groups, the participation rate of women is approaching that of men.

The only exception is individuals of retirement age. Although, for women, the ratio of workers to population has increased significantly, the initial figures were very low and so they are still lagging behind those of men in terms of absolute values.

Change to Age Structure Has Little Impact on Employment Behavior

There have been marked shifts in the age structure of the German population. Thus, in the period from 2003 to 2013, the number of individuals aged 45 or older increased considerably, while the number of people in the 30 to 44 age group declined sharply (see Figure 2). Shifts in the age structure may have impacted on employment behavior because the latter varies with age.

This can be examined using a shift-share analysis. This analyzes how labor force participation would have developed if the age structure had not changed compared to the base year (2003) but, rather, if age-group-specific participation rates had. First, a comparison of the size of the labor force according to this simulation with real development throws light on the effect of the change in age structure. Second, it was assumed that participation rates in the various age groups would remain constant over time but only the age structure changed, i.e., the relative importance of the individual age groups to each other. This allows a behavioral effect to be measured. Third, it has not yet been calculated what would have happened if, *ceteris paribus*, both the age structure and the age-specific participation rates had remained unchanged over time; this effect is solely due to the change in population size. The observation period was from 2003 to 2013 which both began and ended with weak business cycle performance.

Table 1

Activity rates by sex, age and education

In percent

	Women			Men		
	1993	2003	2013	1993	2003	2013
15 to 24 years						
No job training ¹	38.8	32.4	36.5	48.9	40.3	47.1
Apprenticeship, technical college ²	64.9	67.0	56.6	65.7	71.6	57.5
University degree ³	76.5	82.6	68.7	73.0	80.5	64.2
Total	54.0	46.7	48.7	58.4	52.2	52.9
25 to 29 years						
No job training ¹	53.6	50.0	51.8	90.6	86.1	82.8
Apprenticeship, technical college ²	74.0	77.0	80.5	83.6	82.7	86.5
University degree ³	85.4	88.0	88.1	92.2	93.0	90.9
Total	72.8	74.5	79.2	85.8	85.0	87.0
30 to 34 years						
No job training ¹	57.7	56.4	54.2	91.9	90.9	84.1
Apprenticeship, technical college ²	70.8	79.9	82.3	95.0	94.8	94.3
University degree ³	84.1	87.3	87.4	97.1	97.4	96.7
Total	71.4	77.7	80.3	95.2	95.0	93.8
35 to 39 years						
No job training ¹	61.5	64.7	59.6	92.5	89.9	85.7
Apprenticeship, technical college ²	74.0	80.7	83.6	96.6	96.4	95.5
University degree ³	83.6	86.4	85.7	97.3	98.2	98.1
Total	73.9	79.5	80.7	96.4	96.2	95.0
40 to 44 years						
No job training ¹	62.8	68.8	65.4	93.1	88.9	85.7
Apprenticeship, technical college ²	76.9	83.5	87.0	96.6	95.0	95.3
University degree ³	87.0	88.7	90.2	98.0	98.1	98.2
Total	75.7	82.2	84.7	96.7	95.2	95.0
45 to 49 years						
No job training ¹	60.5	68.9	67.8	91.3	88.5	83.0
Apprenticeship, technical college ²	75.2	82.6	87.4	95.4	94.2	93.6
University degree ³	86.8	89.3	91.2	97.9	97.0	97.9
Total	73.1	81.6	85.5	95.7	94.4	93.8
50 to 54 years						
No job training ¹	55.6	60.2	65.7	87.3	83.1	80.1
Apprenticeship, technical college ²	69.4	76.9	83.6	91.7	90.0	90.9
University degree ³	82.9	88.4	90.3	96.7	95.4	96.5
Total	66.4	75.2	82.3	92.5	90.8	91.4
55 to 59 years						
No job training ¹	36.1	46.7	58.0	66.2	68.4	73.3
Apprenticeship, technical college ²	43.6	60.5	75.0	68.2	76.3	84.6
University degree ³	59.7	77.2	87.0	80.0	88.0	92.3
Total	41.5	59.4	74.8	70.8	78.9	85.8
60 bis 64 years						
No job training ¹	8.9	13.9	34.6	26.1	26.6	49.4
Apprenticeship, technical college ²	8.6	17.4	44.4	24.2	30.0	58.2
University degree ³	20.8	29.4	60.4	44.5	49.7	71.9
Total	9.4	17.7	45.4	29.2	35.2	61.7
65 to 74 years						
No job training ¹	2.3	2.4	4.6	6.1	4.0	6.9
Apprenticeship, technical college ²	2.4	2.9	6.5	4.1	3.9	9.4
University degree ³	5.2	5.5	9.2	9.4	9.7	17.1
Total	2.5	2.9	6.3	5.7	5.4	11.6
15 to 74 years						
No job training ¹	34.4	33.7	41.3	61.3	52.5	61.9
Apprenticeship, technical college ²	58.5	62.3	64.8	73.6	71.7	73.0
University degree ³	75.9	76.5	76.6	82.0	78.9	78.7
Total	52.6	55.9	62.5	73.3	69.5	72.8

1 ISCED 0 to 2

2 ISCED 3 to 4

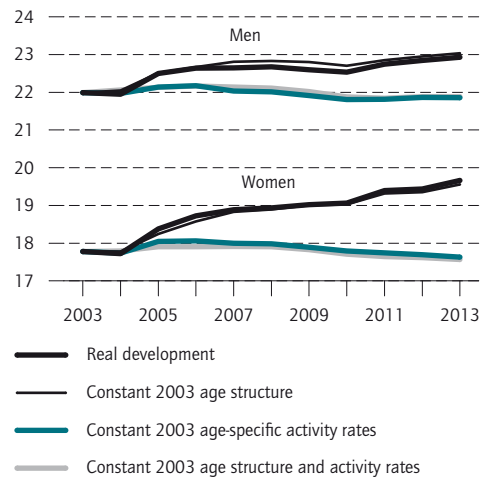
3 ISCED 5 to 6.

Source: Eurostat; calculations by DIW Berlin.

Figure 3

Impact of the change of the age structure and the activity rates

Employed persons – millions



Source: Eurostat; calculations by DIW Berlin.

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If the age structure had remained unchanged, the size of the labor force would have been broadly similar for both men and women, as was indeed the case (see Figure 3). Therefore, no significant effect is assumed from the change in age structure. If, however, throughout the observation period, the participation rate in each age group had been the same as in 2003, the size of the labor force would have developed negatively. It would not have risen markedly but fallen slightly and more or less followed the path indicated by population size. Thus, the significantly increased labor force must be due to factors other than age.

Education Level Affects Employment Behavior

Employment behavior depends heavily on professional qualification: as a rule, the higher the education,⁶ the higher the labor market participation rate. This is more evident among men than among women. However, this pattern has become somewhat blurred in the past ten years. Although the participation rate among individuals with no vocational training has risen sharply, the participation rate among those with an intermediate qualification rose only slightly and for those with

⁶ The study applied three qualification groups based on the International Standard Classification of Education (ISCED).

a college education, labor force participation flatlined from 2003 to 2013, where it had previously been relatively high. There are no marked differences between the genders in relation to this development. In the ten years previously, however, the employment rate had fallen sharply for men in all qualification groups considered here, while for women overall, it only increased among the more qualified.

This showed that the higher the education, the fewer the differences in participation rates between the genders. This applies to almost all age groups. Exceptions were seen among people aged 65 or older, adolescents, and young adults. Labor force participation of young people with a professional qualification—both women and men—has declined noticeably since 2003. It is probable that a few of these remain in the education system after completing their formal training, for instance, after an apprenticeship or bachelor’s degree.

Women Have Rapidly Narrowed the Gap in Educational Level ...

Qualifications among the working-age population have changed significantly: the proportion of people with no vocational training fell sharply and, conversely, the number of residents with a professional qualification, particularly those with a college education, rose starkly (see Table 2). Such developments can be seen in all age groups but are particularly evident among older people. Here, the influence of the education boom is noticeable: age cohorts who qualified in the 1970s—at a time when in Germany overall, and in the West in particular, politicians placed a strong focus on education—are approaching retirement age. Moreover, it is striking that in the course of growing academization among the under-40s, the percentage of the population with intermediate qualifications (apprenticeship, technical college, etc.) has decreased.

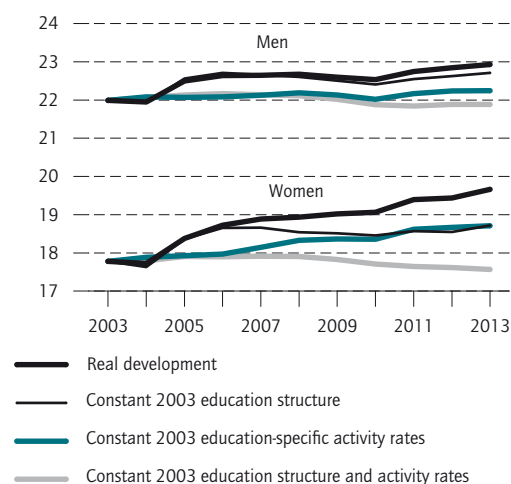
Changes in the qualification structure have been more evident among women than men—and in all age groups. Changes in the older age groups were particularly noticeable. Women were able to considerably reduce the gap in qualification levels with men but not yet catch up fully. This gap is still comparatively large among older individuals. However, younger women (under 30) are, on average, better qualified than men; but it is significant that many people in the lower age groups are still in training or education.⁷

⁷ The fact that men, on average, only complete their studies at a slightly higher age (27.8 years in 2013) than women (26.9 years) might play a role here. See Federal Statistical Office, Education and Culture, *Bildungen und Kultur: Prüfungen an Hochschulen 2013, Fachserie 11 (4.2)*.

Figure 4

Impact of the change of the education structure and the activity rates

Employed persons – millions



Source: Eurostat; calculations by DIW Berlin.

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... And Therefore Also in Labor Force Participation

Since the labor market participation rate depends heavily on professional qualifications, an increase in this may be due to a general rise in level of education. This was also examined using a shift-share analysis. The education effect can be determined on the basis of the assumption that it is not the level of qualifications that has changed over time, but more likely participation rates in the individual qualification groups. However, if the relevant participation rates are assumed to be constant in the calculation, while the qualification structure changed, as was in fact the case, the behavioral effect can—*ceteris paribus*—be determined.

Accordingly, from 2003 to 2013, the change in qualification structure among men did not contribute markedly to the increase in the size of the labor force (see Figure 4). This finding was expected since, on average, the previously comparatively high qualification level among men has barely increased. A greater impact resulted from a rise in relevant labor force participation in the individual qualification groups—particularly among those with no professional training.

The trend among women, however, is very different. Between 2003 and 2013, educational and behavioral ef-

Table 2

Population structure by education

Percent

	Women			Men		
	1993	2003	2013	1993	2003	2013
15 to 24 years						
No job training ¹	43.6	59.9	42.8	44.6	62.5	46.3
Apprenticeship, technical college ²	52.7	37.3	51.1	53.5	36.1	50.6
University degree ³	3.7	2.7	6.0	1.9	1.4	3.1
25 to 29 years						
No job training ¹	15.0	17.0	12.6	10.7	14.6	13.8
Apprenticeship, technical college ²	68.4	64.2	57.2	72.1	68.8	62.6
University degree ³	16.6	18.8	30.2	17.2	16.6	23.6
30 to 34 years						
No job training ¹	16.8	16.3	13.4	11.1	12.5	12.2
Apprenticeship, technical college ²	62.1	61.2	52.6	61.4	60.0	55.6
University degree ³	21.1	22.5	34.0	27.5	27.5	32.2
35 to 39 years						
No job training ¹	18.1	15.4	14.9	10.8	11.7	13.1
Apprenticeship, technical college ²	59.8	62.6	54.5	57.4	57.3	55.5
University degree ³	22.1	22.0	30.6	31.8	30.9	31.4
40 to 44 years						
No job training ¹	22.0	16.6	14.5	10.8	12.2	12.0
Apprenticeship, technical college ²	59.4	60.9	59.2	56.4	58.3	56.8
University degree ³	18.6	22.5	26.3	32.9	29.5	31.3
45 to 49 years						
No job training ¹	26.0	18.0	14.2	13.0	11.4	10.8
Apprenticeship, technical college ²	59.2	60.3	60.6	54.3	57.9	58.0
University degree ³	14.9	21.7	25.2	32.7	30.7	31.2
50 to 54 years						
No job training ¹	32.9	22.6	16.2	16.1	11.8	10.9
Apprenticeship, technical college ²	55.8	58.8	59.9	54.7	57.4	58.3
University degree ³	11.3	18.6	24.0	29.3	30.8	30.7
55 to 59 years						
No job training ¹	44.0	26.5	17.4	19.4	13.3	10.7
Apprenticeship, technical college ²	48.6	58.0	59.5	55.6	55.7	57.8
University degree ³	7.4	15.5	23.1	25.0	31.0	31.5
60 bis 64 years						
No job training ¹	53.6	33.0	22.1	21.2	14.1	10.3
Apprenticeship, technical college ²	41.0	55.3	58.0	56.2	56.9	57.4
University degree ³	5.4	11.7	19.8	22.6	29.0	32.3
65 to 74 years						
No job training ¹	52.0	49.4	29.4	21.0	18.4	11.7
Apprenticeship, technical college ²	43.3	43.1	56.2	57.0	56.4	56.5
University degree ³	4.8	7.4	14.4	22.0	25.2	31.8
15 to 74 years						
No job training ¹	33.1	30.3	20.9	18.8	20.6	15.9
Apprenticeship, technical college ²	54.8	54.5	56.9	58.1	55.2	56.7
University degree ³	12.1	15.3	22.2	23.2	24.2	27.4

¹ ISCED 0 to 2

² ISCED 3 to 4

³ ISCED 5 to 6.

Source: Eurostat; calculations by DIW Berlin.

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fects are equally responsible for the growth of the labor force. The behavioral effect prevailed until 2006, then it lost its significance, and, increasingly, the change in the qualification structure affected the size of the labor force and, therefore, the participation rate.

Figure 5

Development of employment and volume of work



Source: Eurostat; calculations by DIW Berlin.

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Table 3

Activity rates by age, sex and the determinants of their change

Percent

	Activity rate		Activity rate 2013	
	2003	2013	structural effect ¹	behavioral effect ²
Women				
15 to 24 years	46.7	48.7	53.2	44.9
25 to 29 years	74.5	79.2	76.9	77.0
30 to 34 years	77.7	80.3	79.3	78.9
35 to 39 years	79.5	80.7	80.1	80.4
40 to 44 years	82.2	84.7	82.8	84.1
45 to 49 years	81.6	85.5	82.4	84.7
50 to 54 years	75.2	82.3	76.9	80.8
55 to 59 years	59.4	74.8	62.0	72.4
60 to 64 years	17.7	45.4	19.0	43.0
65 to 74 years	2.9	6.3	3.2	5.7
15 to 74 years	55.9	62.5	59.5	59.5
Men				
15 to 24 years	52.2	52.9	57.4	51.1
25 to 29 years	85.0	87.0	85.6	86.7
30 to 34 years	95.0	93.8	95.1	93.7
35 to 39 years	96.2	95.0	96.1	95.1
40 to 44 years	95.2	95.0	95.3	95.0
45 to 49 years	94.4	93.8	94.4	93.7
50 to 54 years	90.8	91.4	90.9	91.3
55 to 59 years	78.9	85.8	79.1	85.5
60 to 64 years	35.2	61.7	36.0	60.9
65 to 74 years	5.4	11.6	5.8	10.9
15 to 74 years	69.5	72.8	70.6	72.1

1 Development scenario: change of the education structure like in reality and unchanged activity rates since 2003 within the education groups.

2 Development scenario: Change of the activity rates like in reality and an unchanged education structure since 2003.

Source: Eurostat; calculations by DIW Berlin.

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Reasons for Change in Labor Force Participation Vary with Age

Further insight into the reasons behind the change in employment behavior can be gained if it is established that the different age groups are affected as a result of the change in qualification structures. First, it can be calculated what the participation rate would have been in 2013 if, compared to 2003, employment behavior had not changed in the individual qualification groups, i.e., if only the education effect had come into play. Second, it was simulated what would have happened if the qualification structure had not changed, and therefore only employment behavior had had an impact on the individual qualification groups. The extent of the relevant impacts can be measured by the difference in participation rates from 2003 and 2013.

The picture is broadly similar for both men and women. Among younger workers, the higher participation is primarily due to the increase in qualification level. For the under-25s in particular, the participation rate would in fact have been even lower if qualification levels had not improved. In the other age groups, however, the development is generally determined by the behavior effect—and the higher the age, the more pronounced its impact.

Participation behavior and qualification structure have barely changed for middle-aged men. However, the

changes were more strong for women; behavioral and structural effects contributed in roughly equal measure among 25- to 39-year-olds. In the age group of 40 or older, however, women’s propensity to work increased largely irrespective of their qualification level. For men, a corresponding development is only evident among individuals aged 55 or older.

More Women in Employment Than Ever Before

Not only have women closed the gap on men in terms of propensity to pursue paid employment, but also in terms of actual gainful occupation. In 2013, 46.3 percent of the labor force was female—ten years previously, this figure was a good one percentage point lower, and in the early ’90s, it was less than 42 percent. It is striking that the number of female workers has developed more consistently than that of men (see Figure 5). Although the employment slump in East Germany just after the fall of the Berlin Wall was noticeable among women, it

was less evident among men. Thereafter, the number of female workers increased almost continuously. Economic factors had virtually no effect. While the number of female workers has increased almost constantly over the past 20 years and is now higher than ever before, the number of male workers in 2013 was only slightly higher than in the early '90s.

A breakdown of the labor force according to occupational status shows that, since 2003, employment growth among women has outperformed that of men, both as employees and as self-employed workers (see Table 4). In general, the number of self-employed individuals with no employees (“solo self-employed”) has risen strongly; here, the growth rate for women was double that for men. The number of self-employed women with employees is three times that of men. Nevertheless, self-employed women are highly underrepresented. One outlier here is the small group of family workers—traditionally a female domain. This group has shrunk considerably.

Unequal Distribution of Part- and Full-Time Jobs Barely Changed

Women have caught up significantly less and at a much slower pace in terms of volume of work;⁸ in 2013, they accounted for just under 40 percent of the total number of hours worked. In 2013, women worked an average of 30.1 hours per week, whereas men only worked an average of 39.5 hours per week. The difference is primarily due to much more women working part-time than men. The proportion of female employees in part-time employment has—after strong increases previously—virtually stagnated since 2006, while the number of men in part-time employment has steadily increased. Nevertheless, differences between the genders in part-time employment are still enormous (see Figure 6). In 2013, almost half of women in employment worked part-time; in contrast, the corresponding figure for men was one in nine. In addition, when the volumes of work are compared, men in full-time employment work considerably longer hours than women on average (see Figure 7). However, we see a different picture for part-time employment, with women working more hours per week (18.7 hours; men: 16.9 hours).

The average per capita hours worked by women has remained stable in recent years, while among men, it has fallen. This is not only due to the increase in men in part-time employment but also because there has been a reduction in hours usually worked by those in full-time employment. This was also the case for women working

⁸ Since there is no information regarding the annual working hours, the volume of work was calculated using data from the microcensus on working weeks; information about hours usually worked per week was used.

Table 4

Change in employment from 2003 to 2013 by professional status Percent

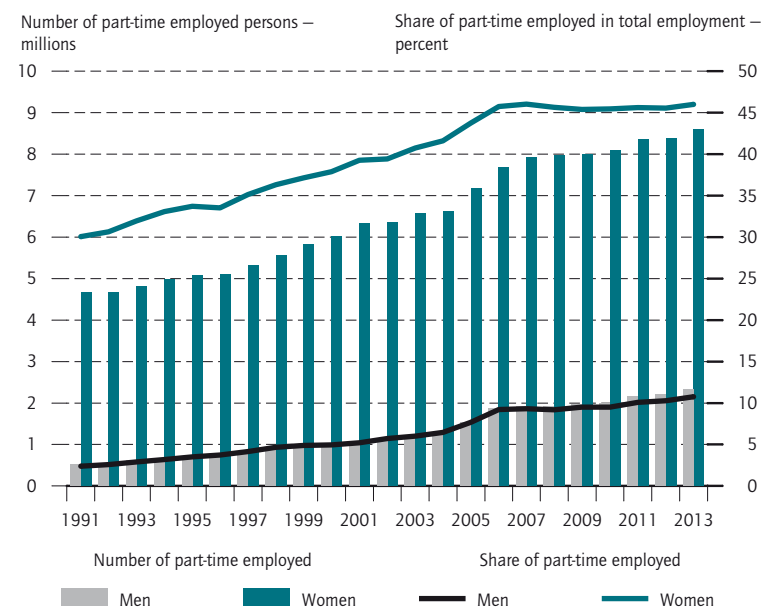
	Annual growth rate		Growth contribution of women	Share of women in total employment	
	Women	Men		2003	2013
Employees	1.5	0.9	58.8	46.5	47.9
Self-employed persons with employees	1.3	0.4	52.2	22.8	24.5
Contributing family workers	-7.0	-3.0	54.0	77.0	68.7
Self-employed persons without employees	3.5	1.7	-86.7	33.5	37.7
All employed persons	1.5	0.9	57.1	44.9	46.3

Source: Eurostat; calculations by DIW Berlin.

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Figure 6

Part-time employment by sex



Source: Eurostat; calculations by DIW Berlin.

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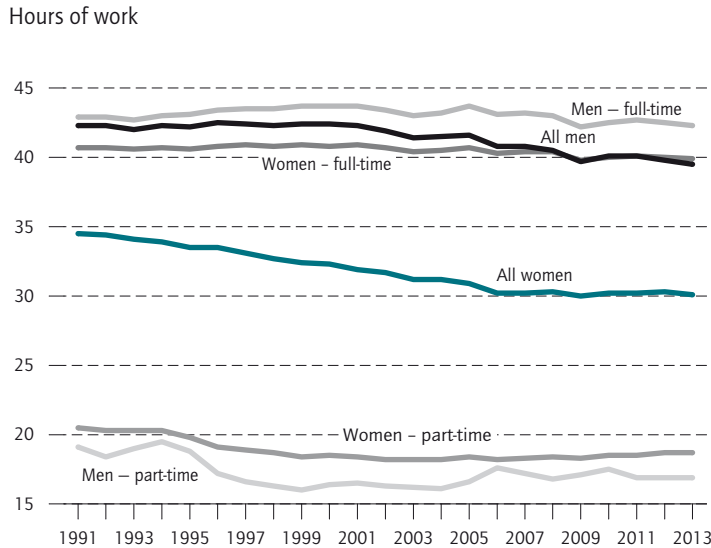
full-time. As a result of the reduction in average working hours, employment growth among men was not sufficient to meet the volume of work achieved in the early '90s. Women, however, have clearly exceeded this level.

Sectoral Change Favors Female Workers

Male and female workers are represented differently in the various sectors of the economy. The sectors in which men are employed predominantly include agriculture

Figure 7

Weekly hours of work by sex



Source: Eurostat.

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and manufacturing (see Table 5). In contrast, women are much more frequently employed in the service sector; in some sectors, such as health and social services, and in education and teaching, the vast majority of the workforce is female.

One consequence of the significant changes in the sectoral structure of the economy may be additional employment opportunities for women. The problem with conducting an analysis of occupations is that, in 2008, the classification of economic activities was changed in the official statistics. As a result, the periods up to 2008 and thereafter may only be considered separately.

In the period from 2000 to 2008, employment growth was largely driven by three sectors: business services, health and social services, and the fields of education and teaching. In the latter sector, employment of women has outpaced that of men; in the health and social services sector, the pace of growth was equally high and in business services, it was lower than for men. In addition, in some other areas of the service sector, such as trade, hospitality, or transport and communications, the number of workers rose faster among men. The opposite was true for other services. There were also sectors in which employment declined—in construction and in manufacturing, the decrease was greater for women than men, while in the public sector only the number of male workers fell.

In the period after 2008, health and social services, and education and teaching were once again the main growth drivers; along with professional, scientific, and technical services, and trade. In the latter two sectors, employment grew more rapidly among men than among women; in the former, the reverse was the case. In the other sectors with employment gains, the picture was mixed for both men and women. Recent developments were virtually unaffected by sectors in which employment decreased—in some industries, there were stronger decreases for men (such as in the so-called "other services"), and for women (such as information and communication).

Further model calculations were required since developments in the individual sectors were diverse and unable to explain the strong growth in employment among women. They are based on the hypothesis that the above-average increase in employment among women has structural causes and is attributable to vigorous employment gains in sectors where relatively many women are employed. Alternatively, employment may have developed comparatively unfavorably in the more male-dominated sectors. This can be checked based on the assumption that women and men were evenly distributed among the individual sectors in each reference year and, from then, employment in the individual sectors had developed in accordance with rates of change, as was in fact the case.

If the sectoral structure of employment among men and women had been the same in 2000, the increase in female employment would have been much slower up until 2008; the growth rate would indeed have been even lower than among men (see Figure 8). Consequently, the structural effect alone was responsible for the relatively strong growth of female employment. A similar picture is evident for the period from 2008 to 2013. The growth rate calculated using the model is, however, well below the actual figure for female employment, but during this period, it is slightly higher than the growth rate of male employment. Accordingly, the structural effect was not the sole contributor to this above-average increase in employment among women but it was the predominant factor.

Conclusions

After the ratio of individuals active on the labor market to total population of working age remained stable for a long time and only fluctuated in a narrow corridor of 62 to 63 percent, the participation rate has risen significantly since the middle of the last decade. Among women, there has long been a tendency toward increased participation in employment, while labor force participation among men has waned. This trend was reversed

Table 5

Development of employment by sex and sectors

Percent

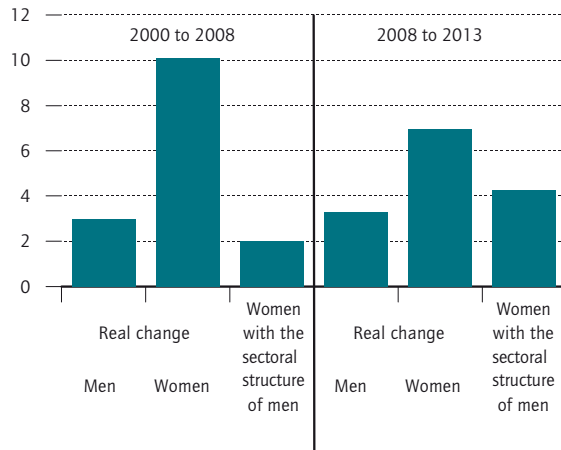
	Change of the number of employed persons			Growth contribution of the sector	Share of women
	Total	Women	Men		
	from 2000 to 2008			from 2000 to 2008	2000
Sector classification Nace Rev. 1.1					
Agriculture; fishing	-9.0	-16.1	-5.2	-3.9	35.1
Mining and quarrying	-25.5	5.4	-28.5	-1.7	8.9
Manufacturing	-1.4	-3.1	-0.7	-5.4	28.4
Electricity, gas and water supply	13.1	43.7	6.4	1.8	18.0
Construction	-18.7	-22.0	-18.2	-26.1	12.6
Trade; repair of motor vehicles	2.1	0.0	4.5	4.9	53.6
Hotels and restaurants	20.4	18.8	22.7	11.1	58.7
Transport, storage and communication	8.4	3.8	10.2	7.5	28.9
Financial intermediation	-2.2	-3.7	-0.7	-1.3	51.4
Business activities; real estate	43.8	40.2	47.2	57.3	47.9
Public administration etc.	-6.8	0.1	-12.0	-9.1	43.4
Education	19.5	23.0	12.9	16.8	65.5
Health and social work	22.1	21.9	22.4	35.9	76.8
Other service activities	9.5	12.5	5.7	8.2	55.5
Activities of households	67.6	63.7	146.7	3.9	95.3
Extra-territorial organizations and bodies	-3.0	4.5	-7.8	-0.0	39.2
Total	6.1	10.1	3.0	100	43.8
from 2008 to 2013			from 2008 to 2013	2008	
Sector classification Nace Rev. 2.0					
Agriculture, forestry and fishing	-15.6	-18.8	-13.9	-5.6	33.7
Mining and quarrying	-21.0	-26.3	-20.2	-1.2	12.7
Manufacturing	-3.3	-2.3	-3.6	-14.0	27.0
Electricity, gas, steam and air conditioning supply	17.5	35.3	12.3	2.8	22.6
Water supply; waste management	-3.6	-9.6	-2.1	-0.4	19.6
Construction	7.4	11.2	6.9	10.0	12.3
Trade; repair of motor vehicles	11.4	6.3	17.1	31.2	52.8
Transportation and storage	6.8	8.5	6.2	6.5	24.7
Accommodation and food service activities	8.1	7.3	9.3	6.2	57.9
Information and communication	-4.1	-10.0	-0.8	-2.6	35.9
Financial and insurance activities	-1.0	0.6	-2.7	-0.7	50.7
Real estate activities	1.2	1.1	1.4	0.1	48.0
Professional, scientific and techn. activities	18.9	16.3	21.4	18.2	49.8
Administrative, support service activities	7.1	8.3	6.0	6.9	50.3
Public administration etc.	2.5	7.1	-1.5	3.7	46.6
Education	10.7	15.3	1.3	13.1	67.0
Human health and social work activities	13.3	13.7	11.8	30.4	76.7
Arts, entertainment and recreation	3.2	-0.4	7.0	0.9	51.5
Other service activities	-8.9	-1.6	-21.5	-6.2	63.4
Activities of households	11.3	14.1	-26.4	1.3	93.2
Extraterritorial organisations and bodies	-37.0	-42.0	-33.3	-0.6	42.2
Total	5.0	7.0	3.3	100	45.4

Source: Eurostat; calculations by DIW Berlin.

Figure 8

Real development of employment and hypothetical development of women employment

Change in percent



Source: Eurostat; calculations by DIW Berlin.

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after 2004 and participation among women increased at a faster pace.

Among women, this development was supported by a higher level of qualifications: less qualified cohorts gradually left the labor market and were replaced by, on average, better qualified younger individuals. The higher the qualification level, the greater the willingness to have a paid job. Among men, however, this did not happen since the average qualification level has not increased noticeably. Nevertheless, the level of qualifications among men is still considerably higher than that of women. In this respect, the development of labor force participation among women is to be understood as a process of catching up with that of men. This process is expected to continue since the new generation of female age cohorts are no less qualified than men; gender-specific differences in qualification levels can currently only be observed in the age group of 40 or older.

Indeed, labor force participation has increased, regardless of qualifications. For women, this applies to all age groups—except teenagers and young adults—and in particular to the older cohorts. As far as men are concerned, the propensity to work has only increased among older individuals—irrespective of the overall higher level of qualifications. Employers may have been forced to realign their personnel policies as a result of greater legal

obstacles to taking early retirement.⁹ However, it may also be the case that employers are more aware of the human capital value of their older employees and therefore hold on to them more frequently. Perhaps intrinsic motives among workers are more commonly providing the impetus. They would rather continue to work longer than abruptly enter retirement.

The number of female workers has also shown an above-average increase. A very large share of women are working fewer hours, however. Although the part-time rate for women has not increased in recent years and that of men has risen somewhat, differences between the genders are still huge in terms of part-time employment levels.

The development of female employment has benefited markedly from the sectoral shift toward services. The number of jobs in industry sectors where relatively many women are employed has increased substantially—such as health and social services, or education and teaching, which also includes child daycare centers. The improved employment opportunities for women have undoubtedly had an impact on labor market participation rates. There has, however, been less favorable employment growth in sectors traditionally more dominated by men. These include, in particular, the manufacturing sector; its substantial economic vulnerability is reflected in the erratic employment levels among men. Employment among women, however, was not significantly subject to business cycle effects.

The present study highlights some important factors that have affected labor force participation among men and women. There are also other differences in employment behavior between the genders. It is particularly striking that despite some convergence, the employment rate for women is much higher in eastern Germany than in western Germany.¹⁰ There are also differences in the degree of female participation between rural and denser population areas.¹¹ Moreover, the employment rate varies between ancestral populations and people with a migrant background—as well as between different groups of migrants.¹² Among some of these groups, the participation of women is extremely low.¹³ Further

⁹ These include the removal of legal regulations on partial retirement or the reduction in the period the older unemployed are allowed to draw insurance benefits; drawing unemployment benefit up to 34 months was frequently used as a means of taking early retirement.

¹⁰ See E. Holst and A. Wieber, "Eastern Germany Ahead in Employment of Women," *DIW Economic Bulletin*, no. 11 (2014).

¹¹ C. Kriehn, "Erwerbstätigkeit in den ländlichen Landkreisen in Deutschland 1995 bis 2008," *Arbeitsberichte aus der vTI-Agrarökonomie*, no. 2 (2011): 21ff.

¹² K. Brenke and N. Neubecker, "Struktur der Zuwanderungen verändert sich deutlich," *DIW Wochenbericht*, no. 49 (2013): 7-8.

¹³ K. Brenke, "Migranten in Berlin: Schlechte Jobchancen, geringe Einkommen, hohe Transferabhängigkeit," *DIW Wochenbericht*, no. 35 (2008): 503-4.

studies are needed to address the question to what extent the labor market will be affected by the changing

composition of the population, both in regional terms and in respect of immigrants.

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