

# WOMEN'S HOURS OF MARKET WORK IN GERMANY

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PRELIMINARY

## Abstract

The total number of hours worked by the working-age population is a common measure of an economy's aggregate labor input into the production process. Aggregate weekly hours worked have undergone a marked decline in former West-Germany since the late 1950s. This paper decomposes the development of aggregate hours worked by gender, and also by labor force participation versus hours worked per employee, thereby rendering a comprehensive picture of changes in the overall composition. Observed differences are linked to individual characteristics such as marital status, age, and whether or not young children are present, or to individuals' sector of employment. Time-series evidence covers the years from 1957 through 2001. The main result is that women's labor market involvement has changed dramatically over the observed period compared to that of men; while women's labor force participation has steadily risen, their weekly hours worked in the market have declined significantly, leaving their aggregate hours worked almost unchanged. This decline has been most distinct for married women with young children and can be partly attributed to the country's generous parental leave policy.

JEL Classification: J13, J22

Key Words: Female Labor Supply, Extensive and Intensive Margin of Adjustment, Parental Leave Policy,

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## 1. INTRODUCTION

The literature on female labor supply often departs from the presumption that in most industrialized countries women's market hours worked have steadily risen since the early 1970s. A commonly quoted example is the experience of married women in the U.S. Their average hours worked have risen by over sixty percent during the last three decades (McGrattan and Rogerson 1998). For married women with children this rise has been even more extreme. The secular increase in women's hours worked has become the subject of a growing body of literature which uses dynamic economic models in an effort to explain the driving forces underlying this trend (see, e.g., Olivetti 2001, or Jones et al. 2001). Often quoted exceptions to the above-mentioned empirical observations are Germany, Italy and Spain where women's total market hours worked have remained constant at best. Given that fertility in these countries has declined over the past thirty years and reached the bottom of the distribution in Europe, the observations on Germany, Italy and Spain are considered a puzzle, because at first glance it is hard to perceive why women who have few children do not participate more actively in the labor market. At second glance, there are likely candidates that may help explain the observed differences, such as child care availability, the income tax system, parental leave policies, the legal length of the workweek, or the availability of part-time jobs.

Before one can start investigating possible explanations for the observed differences in market hours worked, the actual facts need to be laid out in detail. Do the stated differences hold for all women, or are they specific to a woman's age group, her marital status, or whether or not young children are present? The answers to these questions are the key to knowing which aspects to add to existing economic theories in an effort to have them explain the observed patterns. Most of the evidence on Germany, Italy, or Spain is confined to aggregate data, or to changes in women's labor force participation, rather than hours worked per employee.<sup>2</sup> Little is known about group-specific trends in women's market hours worked in these countries.

In this paper we explore the development of female labor supply in Germany since the late 1950s. The goal is to investigate and document the trends of market hours worked of different groups of women. Contrary to most of the existing literature, we not only study

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<sup>2</sup> Del Boca (2002) studies the Italian experience. She uses a panel from the Bank of Italy's Survey of Households Income and Wealth from 1991 until 1995 for testing the hypothesis that the availability of child care services and part-time jobs are key to women's labor force participation decision in Italy. Similarly, Voicu and Buddelmeyer

women's labor force participation, but also their weekly hours worked in the market. Towards this end, we decompose women's market hours worked into hours worked per female employee—the so-called intensive margin—and the product of the employment rate and the labor force participation—the so-called extensive margin. We use micro census data from the German Federal Statistical Office (*Statistisches Bundesamt*). At a highly aggregated level, these data are available from 1957 through 2001 for the former West-Germany. They allow us to study long-term trends of the variables of interest.

Our findings suggest that the constancy in aggregate series of hours worked per working-age woman that has been observed since the late 1950s hides a vast set of different trends in the intensive and extensive margin of women's involvement in the German labor market. Irrespective of their marital status, middle-aged women have significantly increased their labor force participation over the observed forty-five years. However, they have also drastically reduced their weekly hours worked in the market. Women employees have reduced their weekly labor input in all sectors except for the primary sector to a similar extent.

The paper proceeds as follows. Section two presents the data underlying the study. Section three sets the scene for a taking a closer look at women's hours worked in the market by studying long-term trends of the aggregate series that are decomposed by gender, age and marital status. Section four decomposes weekly hours worked by gender and by sector of employment. Section five concludes.

## **2. THE DATA**

All data underlying our study originate from the micro census of the German Federal Statistical Office. The micro census is the official statistic of the population and the labor force in Germany; it has been available since 1957 for the former West-Germany and since 1991 for the former East-Germany.<sup>3</sup> The most recent results currently available are for 2001. Data are collected by annual interviews of one percent of all households that are randomly drawn. In every year, about 370,000 households with 820,000 individuals participate in the interviews. Out of these, about 70,000 households with 160,000 individuals primarily live in the former East-Germany. Interviews take place between April and July. They are typically staged with the head of a chosen household who is asked to respond to questions relating to the various household members. Hence, the data are gathered through a household's self-

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(2003) study married women's intertemporal labor force participation decision in Germany using data from the GSOEP from 1994 through 1998.

reporting. The response rate regularly reaches at least 97 percent. Responses to questions relating to labor market activities relate to an *ex ante* chosen week of the year. That particular week has varied over time – it currently is the last week of April in which there are no public holidays. A quarter of all participating households are rotated each year, so that a chosen household participates in the sample on average for four years.<sup>4</sup> Questions relating to the number of weekly hours worked when employed cover actual as well as normal hours worked during the reference week. In case these two figures deviate from each other, the interviewees give reasons for the deviation such as overtime, vacation, illness, flexible work hours, or other reasons, including parental leave.

The micro census results that have been available since 1957 are based on individual, regional or time aggregation. Individual data are aggregated based on characteristics such as gender, age, marital status, or sector of employment. The time-series have the advantage of consistently reporting the variables of interest over forty-five years for the former West-Germany. They obviously suffer from the fact that they are not available at a degree of disaggregation that currently is of interest to many researchers.

This deficiency has led the German Federal Statistical Office to make excerpts of the original micro-level data – so-called scientific use files – available to academic institutions. A scientific use file contains randomly drawn seventy percent of those households that participate in the micro census of the respective year. In order to render compatibility with the micro census data, the relevant entries in the sub-sample are multiplied by the factor 10/7. Scientific use files are available for 1989, 1991, 1993, 1995, 1996, 1997 and 2000. The micro level data provide detailed information on an individuals' gender, age, marital status, educational attainment, whether or not children in various age categories are present, and also on individuals' labor market status. If applicable, the data also capture the economic situation of a person's partner. For those individuals who are employed, the data contain information on the actual number of weekly hours worked, and whether their job is full-time or part-time.

Our empirical work is based on the aggregate time-series of the micro census covering the period from 1957 through 2001. We use the aggregate time-series in order to illustrate trends in the evolution of gender-specific labor force participation rates, or weekly hours worked per employee. Most importantly, we can divide market hours worked for each of these group-specific characteristics into labor force participation (extensive margin) and hours

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<sup>3</sup> The former West-Germany comprises the states Bremen, Hamburg, Schleswig-Holstein, Northrhine - Westfalia, Hestia, Lower Saxony, Rhineland-Palatine, Baden-Wuerttemberg, Bavaria, the Saarland and West-Berlin.

<sup>4</sup> There may be a source of systematic misreporting, simply because the time of the interview often does not coincide with the point in time for which the interviewee provides the information. However, whether or not the data actually suffer from such a mistake has not yet been analyzed.

worked per employee (intensive margin), thereby searching for empirical regularities. We restrict our analysis to individuals and households who reside in the former West-Germany, primarily because our analysis requires consistent data over a rather long time-period. Naturally, such data are more readily available for former West-Germany than for the former East.

### 3. TRENDS IN HOURS OF MARKET WORK

Macroeconomists commonly use the total number of hours worked in the market as measure of labor input in the production of goods and services. This measure is typically reported in relation to the working age population. In Germany, where retirement at the age of 65 is mandatory in the public sector and common practice in all other sectors, the working age population covers all individuals who are between 15 and 64 years old. Figure 1a depicts the ratio of total weekly hours worked to persons of working age together with the pendant for men and women. All three series declined markedly between 1957 and the mid 1970s. Thereafter, the measure for men continued to decline—albeit at a reduced pace—, whereas the measure for women remained constant.

Although an important measure of the economy’s total labor input, the aggregate series on hours worked hide much of the dynamics associated with their underlying components. To be specific, total hours worked per person ( $H/Pop$ ) can be decomposed into total hours worked per employee ( $H/E$ )—the intensive margin—and the extensive margin, employees as a fraction of the total labor force—the so-called employment ratio ( $E/L$ )—, and labor force participation ( $L/Pop$ ):

$$\left(\frac{H}{Pop}\right)_i = \left(\frac{H}{E}\right)_i \times \left(\frac{E}{L}\right)_i \times \left(\frac{L}{Pop}\right)_i \quad i \in \{w, m, s\} \quad (1)$$

where the index  $i$  represents women  $w$ , men  $m$ , or the sum of the two  $s$ . While the employment ratio has remained roughly constant during the period of observation, the remaining two components have undergone remarkable changes.<sup>5</sup> Weekly hours worked per employee have declined for both men and women. As figure 1b shows, this decline has been much more drastic for women than for men. Between the late 1950s and the mid 1960s—a

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<sup>5</sup> The time-variation of employment rates is driven more by business cycles than by changes in long-term trends. We therefore abstract from employment rates in our effort to link long-term developments in total weekly hours worked to the extensive and intensive margin of adjustment.

time that has become known as post World War II *Wirtschaftswunder* in Germany—, male and female employees each worked well over 45 hours per week. During the following four decades, women on average reduced their weekly hours worked to less than 30, while men reduced theirs to effectively 40. The reduction in weekly hours worked was a continuous process which was accelerated in the 1980s. Two factors mainly contributed to this development. Firstly, starting in the mid 1980s, the length of the workweek was gradually reduced across most sectors. In 1985, for example, the metal industry negotiated an agreement to switch from 40 to 38.5 hours per week. In 1993, the number of weekly hours worked was further reduced to 36. Similar agreements were adopted in other sectors. The reduction in the workweek came along with the possibility for firms to negotiate longer or shorter hours per week with a small fraction of their work force. Secondly, in early 1979, the country's first law on parental leave became effective, enabling employed women who had given birth to take a leave from their job following maternity leave. This leave policy was extended and improved from the employees' perspective through two amendments which became effective in 1986 and in 2001, respectively. The launch of the new policy was accompanied by a steady increase in the number of part-time jobs that have been occupied by women much more than by men. Taken together, these changes accelerated the decline in weekly hours worked per employee.

While both men and women steadily reduced their engagement along the intensive margin, their respective labor force participation has developed in opposite directions. Men's labor force participation has always exceeded that of women. As depicted in figure 1c, men at working age have steadily reduced their participation rate from over 90 percent in 1957 to 80 percent in 2001. During the same period, the participation rate of women rose from 47 percent to 64 percent, thereby approaching the rate of men.

Theoretically at least the decomposition of total hours worked per person as summarized in equation (1) can be arbitrarily refined not just according to gender, but according to any other individual characteristic. In practice, the degree of refinement is limited by data availability. The aggregate series from the micro census allow us to decompose total weekly hours worked by gender and marital status, but not any further. At this level of disaggregation, the data have been available since 1975 for women and since 1990 for men. Decomposing the aggregate hours series by gender and marital status helps shed light on key differences in the labor market behavior of women and men. Data availability lets us consider an individual's marital status to be one of the following three

states: single, married, widowed or divorced. (A distinction between widowed or divorced is not possible at the aggregate data level.)

### **3.1 WOMEN'S HOURS OF MARKET WORK**

Figure 2a suggests that the constancy in all women's weekly hours worked per person is related to the fact that this measure has remained constant for married women, and that the decline in the measure for single women has been offset by the increase in the measure for widowed or divorced women.<sup>6</sup> As far as the intensive margin of adjustment is concerned, single women have always worked more hours per week than widowed or divorced women whose weekly hours, in turn, have typically exceeded those of married women. In spite of these differences in levels, all three groups of female employees have reduced their number of hours worked per week to a comparable extent. These trends are summarized in figure 2b.

Married female employees with children below the age of ten have undergone the most severe reduction in weekly hours worked. As depicted by the solid line in figure 2b, this group of employees cut its weekly hours by close to forty-five percent between 1975 and 2000. The observed reduction gained momentum in the late 1970s and again around 1986—two points in time which coincide with the launch of the first law on parental leave, and a significant modification and extension of this law, respectively.

The picture for changes in the labor force participation significantly differs across the three female groups considered. Single women's participation in the labor force hardly changed between 1975 and 2000; it has remained constant at about 65 percent. The participation rate of married and widowed or divorced women, on the other hand, has undergone a significant increase. For married women, this rate rose from 44 to 60 percent. The increase for widowed or divorced women was even more distinct: their participation rate rose by over twenty percentage points from 45 to 66 percent. As a result, a woman's marital status nowadays is less decisive for her participation in the labor force than for the number of hours she works per week. These trends are summarized in figure 2c.

We further disaggregate the labor force participation rate by age groups and illustrate the results in figures 3a through 3c. These figures emphasize at least two notable changes between 1970 and 2000. Firstly, all women between 15 and 25 years of age and those who are

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<sup>6</sup> Between 1975 and 2000, the share of single women in the female population declined from 36 to 34 percent, while the share of widowed or divorced women rose from 16 to 18 percent. Nothing is known about the composition of the latter group and how it may have changed over time. But it seems sound to assume that the

at least 60 years old have significantly reduced their participation in the labor force over those thirty years. These observations are mainly due to an extended period of education for the younger cohorts and to an effective reduction in the retirement age of older employees. Secondly, except for singles, women between the age of 25 and 60 years have strongly increased their participation in the labor force. For example, labor force participation of married women between 35 and 60 years of age rose from about 45 to slightly over 70 percent, i.e., by well over fifty percent. During the same time period, the participation rate of widowed or divorced women rose from about 65 to over 80 percent. For single women in this medium age range the rise has been much more modest. Taken together, these changes have led to a strong net increase in the participation rate for married women and those who are either widowed or divorced; for single women, the two opposing effects have effectively cancelled, leaving their participation rate unchanged.

Figures 3a through 3c express these trends for each marital status as distributions of the labor force participation across age intervals that have become more hump-shaped over time. This hump-shape results from the reduced participation rates at the lower and upper end of the distribution as well as from the increased participation rates at the middle range of the age distribution. This move towards a hump-shaped distribution that typically characterizes the labor market behavior of men and of single women has been particularly distinct for married and widowed or divorced women between 1990 and 2000. Figure 3b suggests that as late as 1990, the labor force participation rates of married women exhibited the traditional bimodal distribution. This shape is due to the fact that married women who are between 20 and 30 years tended to stay at home with their small children and did not rejoin the labor force until their children went to school. There is some evidence that at least in the very recent past an increasing number of married women with small children has abandoned this tradition.

When interpreting figures 3a through 3c one needs to keep in mind that they depict the behavior of different birth cohorts in particular years. Figure 3d, on the other hand, illustrates the life-cycle profile of women's labor force participation for particular cohorts in different years when women of all marital statuses are grouped together.<sup>7</sup> This figure nicely illustrates how labor force participation has changed from older to younger cohorts of women. Older women cohorts tended to participate less in the labor market at every stage in their life, and they also tended to withdraw more frequently around the age when they had children. On the

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share of divorced women in this group has risen, given that the divorce rate in the population has drastically increased.

<sup>7</sup> The data for 1950 originate from the census which was conducted on September 13, 1950. They do not cover the Saarland and West-Berlin.



other hand, younger cohorts participate less at a younger and an older age, indicating an increased level of education as well as a reduced retirement age.

The *prima facie* evidence suggests that younger cohorts' labor force participation much more closely resembles that of men than did the participation behavior of older cohorts. However, this latter statement is subject to a major caveat. Since 1986, employed women who had a child can take parental leave up to three years after the child's birth (see section 3.3 for details). This generous parental leave policy has become very popular among younger female employees, leading to a steadily growing fraction of them who actually take such a leave if they have a child. The official statistic treats women on parental leave as employed, even though most of them do not work in the market at all during that time. One can argue that employees should be treated as out of the work force while being on parental leave. That, of course, would imply that the life-cycle pattern of different women's cohorts effectively has not changed much over time.

### **3.2 MEN'S HOURS OF MARKET WORK**

The extent of the change in women's labor market involvement that has occurred since the late 1950s becomes all the more evident if it is contrasted to that of men. Towards this end, we briefly summarize the most salient features of men's labor market involvement in Germany. The results are presented in figure 4.

Figure 4a underlines the overall constancy in men's labor force participation over different birth cohorts. Younger cohorts of men have slightly reduced their participation, but their overall involvement remains high. This observation is mirrored in the development of men's labor force participation over time. This series has remained largely unchanged since 1975. Single men have increased their participation while married men have decreased theirs, leaving the average participation rate for men unaffected. A similar picture emerges when looking at weekly hours worked. This measure has only slightly decreased from 42 hours to ca. 40 hours per week since 1975, and the decrease has been born proportionately by men of different marital statuses.

In sum, men's labor market involvement has remained remarkably constant over the past 25 years.

### 3.3 PARENTAL LEAVE: SOME INSTITUTIONAL DETAILS

There are several indications in the data that the introduction of parental leave has contributed to the observed decline in married women's weekly hours worked. In order to be able to fully evaluate the impact that this institutional change has had on women's engagement in the labor market, we will provide a brief overview of the timing and the extent of the institutional changes that occurred.

Parental leave is closely tied to maternity leave. In former West-Germany, female employees who expect a child have been entitled to a total of fourteen weeks of maternity leave, six weeks of which have to be taken prior to delivery. While on maternity leave, women receive their full salary and are protected against dismissal. Starting in January 1979, female employees on maternity leave could opt to take an additional four months of parental leave immediately following their maternity leave. While on parental leave, they received a monthly income of DM 750 from the government and could not be dismissed. They also had the right to return to their employer, albeit not to their previous job.

Starting in January 1986, the first federal law on transfer payments to parents became effective (*Bundeserziehungsgeldgesetz BerzGG*). Regardless of their labor market status, married couples with infants were entitled to receive a transfer payment (*Erziehungsgeld*) from the federal government. The transfer equaled 600 DM for the first six months and became income-dependent thereafter; the transfer was paid for at most one year; it was and still is aimed at providing a financial incentive for parents to raise their children themselves at home.

The same law also regulated parental leave. Married mothers and fathers who were employed and who had an infant were entitled to a total of two years of parental leave following the mother's maternity leave. Until the end of 1991, only those parents could opt to take the leave who were also entitled to receive the transfer payment. Starting in 1992, transfer payments were extended to a maximum of 24 months, and eligible married couples could take parental leave up to three years after the birth of their child. The possibility to take parental leave was disentangled from the eligibility to receive transfer payments for raising the child. Parental leave has been compatible with part-time work. Between 1986 and the end of 1988, a mother or a father on parental leave could work up to fifteen hours per week. Between 1989 and late 2000, they could work up to nineteen hours per week.

Another modification of the BerzGG became effective in January 2001. Employed mothers and their male partners – regardless of whether or not they are married – are entitled to take parental leave up to three years after the birth of their child. In fact, up to a third of this

leave can be taken until the child turns eight years old, if the employer agrees. Part-time work of up to 30 hours per week is compatible with being on parental leave. Married parents who receive an annual income of at least 100,000 DM per year are excluded from receiving transfer payments for raising their child; all other parents can choose between receiving a monthly transfer of 600 DM for at most two years, or 900 DM (=460€) for at most one year.

It is important to note that following ILO convention, individuals on parental leave count as employed in the official statistics for Germany.

#### **4. MARKET HOURS WORKED BY SECTOR**

Given that women's and men's involvement in the labor market have developed in different directions during the time period considered, the question arises whether these developments can be linked to the sectors in which they are predominantly employed. In order to address this issue, we decompose weekly hours worked by gender and by sector of employment. The aggregate data provide information on four different sectors: agriculture, forestry plus fishery; manufacturing plus construction; trade, transportation plus communication; and all other sectors. The last group covers financial services, other services, nonprofit organizations and private households. Expressed in terms of total employment in this group, financial and other services accounted for ca. 66 percent in 1960 and for ca. 77 percent in 2000.

When decomposing the weekly hours worked per female or male employee, it becomes apparent that the steady decline in this measure over time occurred to a similar extent in all sectors except for the primary sector. According to figure 5a, female employees reduced their weekly hours worked from over 45 in 1957 to about 30 in 2000 in almost every sector. Female employees in agriculture, forestry and fishery also reduced their weekly hours, but to a much lesser extent than employees in other sectors. A similar picture emerges for men.

The change in the shape of the distribution of total weekly hours worked in a particular sector across hours categories. The distribution has become less skewed to the left. Across all sectors, the most notable reduction occurred in the range between 40 and 54 hours for men and women alike. Among men, most of the weight shifted to the range between 31 and 40 hours per week. Among women, much of the weight shifted to even fewer hours per week. In 2000, over ten percent of all hours fell in the range between 21 and 30 hours per week, and another ten percent fall in the range between 10 and 20 hours per week.

The observed decline in the intensive margin of female employees is partly due to the structural change that has affected the German economy as well as the economies in other industrialized countries over the past four decades. Figure 5b nicely illustrates how the economic weight shifted from the primary and secondary sector to the tertiary sector. In 1960, 63 percent of total weekly hours worked occurred in the primary and secondary sector, but this share fell to 38 percent in 2000. In 1960, female employees allocated almost a quarter of their weekly hours worked to agriculture. By 2000, this share had fallen to three percent—the value corresponding to the sector’s relative economic importance. Over the same period, female employees increased the share of their weekly hours worked in services and related fields from 25 percent to over 50 percent. In the year 2000, almost 80 percent of all hours worked by female employees are allocated in the tertiary sector. Put differently, during the period of observation, weekly hours worked by women corresponded to roughly 50 percent of all hours worked in services, to 38 percent of all hours in trade, transportation and communication, and to 20 percent of all hours in manufacturing and construction. In the primary sector, women’s hours worked corresponded to almost 50 percent of all hours worked in 1960, but to only 30 percent in 2000.

Figure 6 sheds light on the distribution of women’s weekly hours across different hours categories by sectors; it nicely illustrates how this distribution has changed between 1975 and 2000. In 1975, about 70 percent of all female employees worked at least forty hours per week regardless of their sector of employment; employees in agriculture worked even more than 55 hours per week then. This picture is drastically different a quarter of a century later. In 2000, ten to fifteen percent of all female employees work at most 20 hours per week, and another ten to fifteen percent work between 20 and 30 hours a week in all sectors. The fraction of women who work more than forty hours a week has shrunk to at most 40 percent in all sectors except for the primary sector. However, the fraction of women in the tertiary sector who work more than 55 hours per week has risen from less than ten percent to fifteen percent. The observed change in the distribution of women’s weekly hours worked underlines the increased importance of part-time work for women. In the tertiary sector, over 30 percent of female employees worked at most 30 hours in 2000.

The rise of part-time work among women becomes even more apparent when comparing the relevant figures to that for men (see figure 7). Fewer men worked more than 55 hours per week in 2000 than in 1975. However, the fraction of all male employees who work at most 30 hours per week has remained negligible over those twenty-five years. Part-time jobs are not attractive to most men.

## 5. CONCLUSIONS

Drawing a reliable picture of women's labor market involvement in Germany requires looking not only at their labor force participation, but also at their hours worked if employed. This paper documents empirical facts on total weekly market hours worked in West-Germany. It provides evidence on women's and men's extensive and intensive labor market engagement by using aggregate time-series covering the period from 1957 through 2001. With these data, labor force participation and weekly hours worked in the market are investigated for different age groups and marital statuses. The data are also decomposed by gender and sector of employment.

Our main findings can be summarized as follows. Women have steadily increased their labor force participation since the early 1970s. The increase in the participation rate has been the highest for middle-aged women and for those who are married, or widowed or divorced. As a result, the participation rates of middle-aged women with different marital status have converged over the past 30 years. During the same time women employees have significantly reduced their weekly hours worked in the market; part-time jobs have become increasingly popular among women. This reduction affected women of all marital statuses and age groups, leaving the ranking across different marital statuses unchanged. Single female employees typically work more hours per week than widowed or divorced female employees whose hours, in turn, exceed those of their married colleagues. Married women with children below the age of ten have experienced the most severe reduction in weekly market hours worked. Moreover, the observed trend in the intensive margin has occurred in all sectors of employment except for the primary sector. Female employees have strongly participated in the structural change which has taken place in Germany as well as in other industrialized countries; in 2000, close to 80 percent of their weekly hours worked were allocated to the tertiary sector.

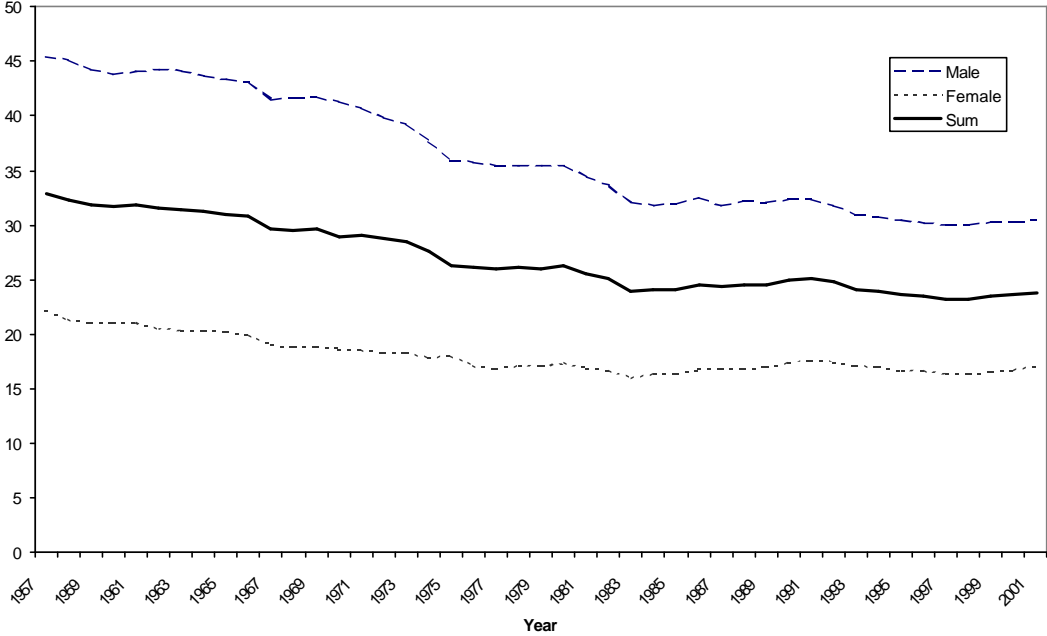
The results presented here are suggestive of possible factors that might explain the observed behavior, thereby providing an important motivation for an in-depth theoretical exploration of the topic. For example, the fact that a woman's labor supply is significantly affected by the presence of children, or that married women systematically show less involvement in the labor market than women of all other marital statuses indicate the need to investigate females' labor supply in conjunction with their fertility behavior, and also with the labor supply behavior of their partners. Doing so requires analyzing individual data. Those data are available from the micro census, or from the German Socio-Economic Panel. This will be the natural next step in our analysis of women's hours of market work in Germany.

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**APPENDIX**

**Figure 1a: Weekly Market Hours Worked per Person (age 15-64)**



**Figure 1b: Weekly Market Hours Worked per Employee (age 15-64)**

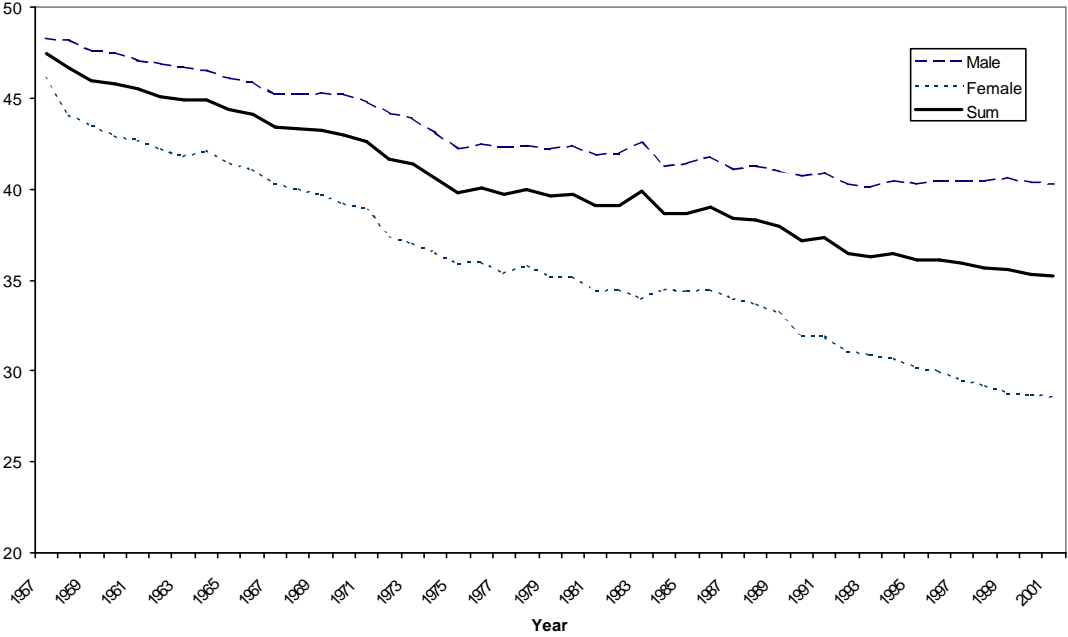
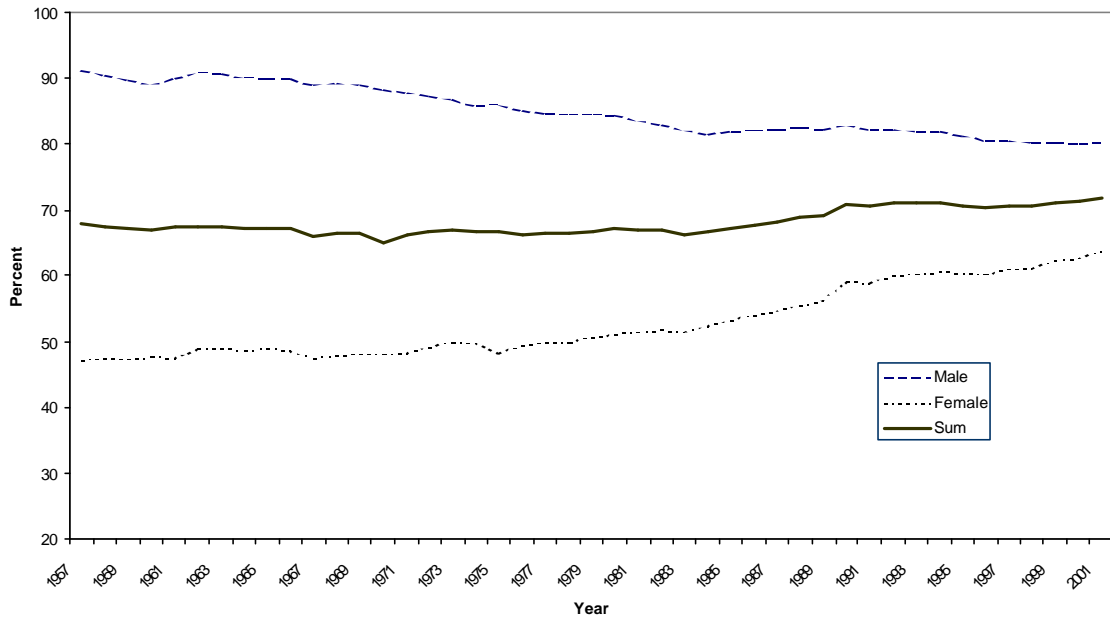


Figure 1c: Labor Force Participation (age 15-64)



Note: Underlying data originate from various publications of the German Federal Statistical Office on the micro census. Various issues. Author's own calculations.

Figure 2a: Weekly Market Hours Worked per Woman (age 15-64)

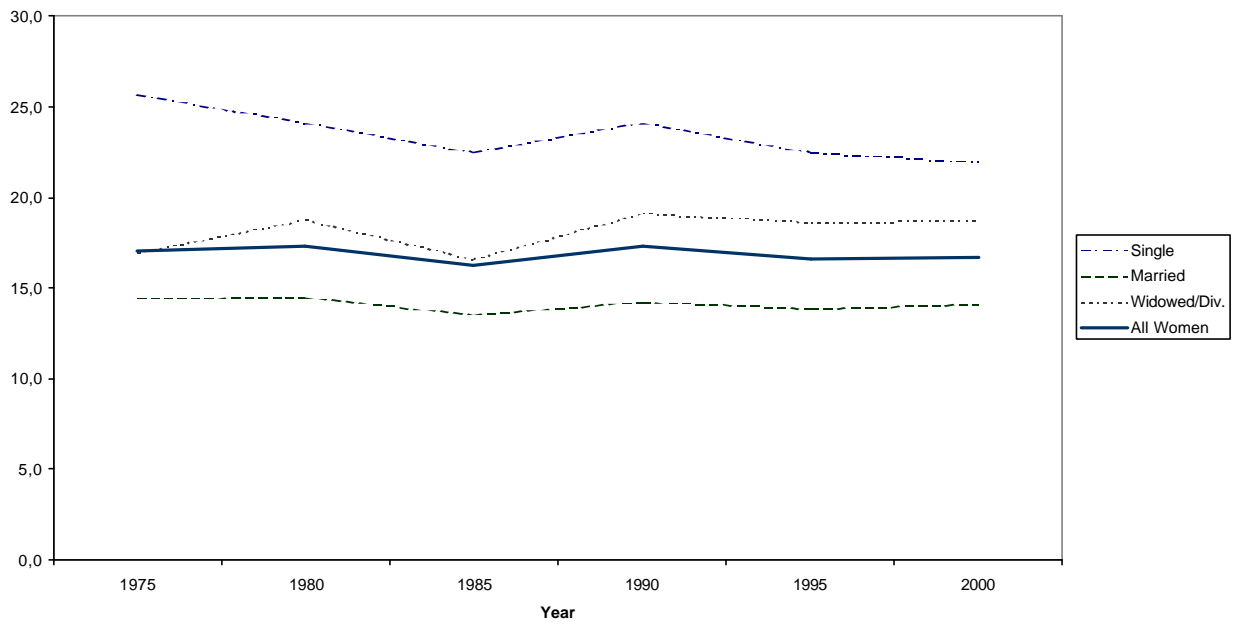




Figure 2b: Weekly Market Hours Worked per Female Employee (age 15-64)

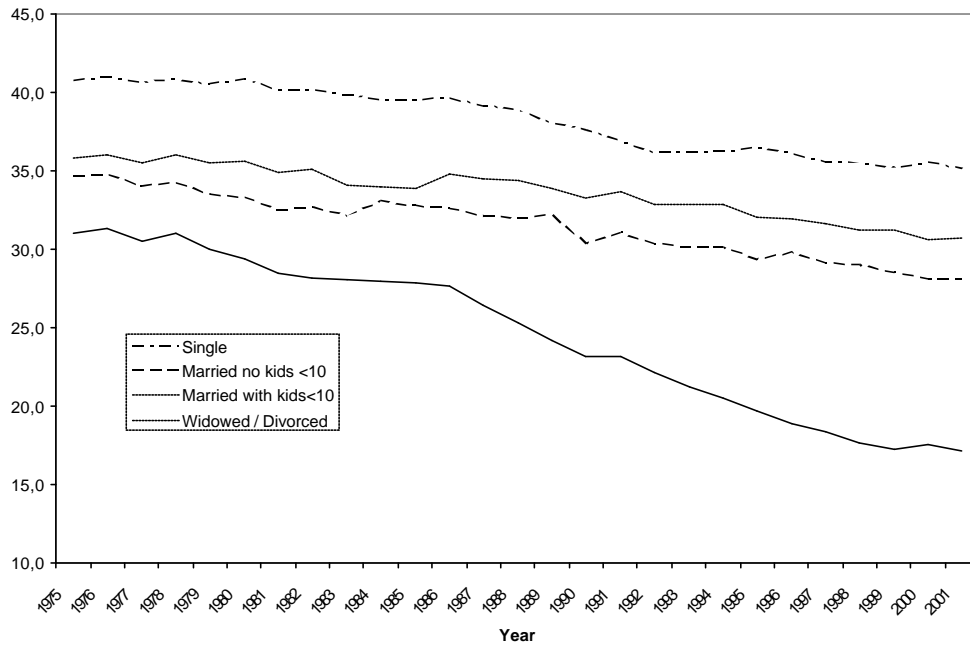
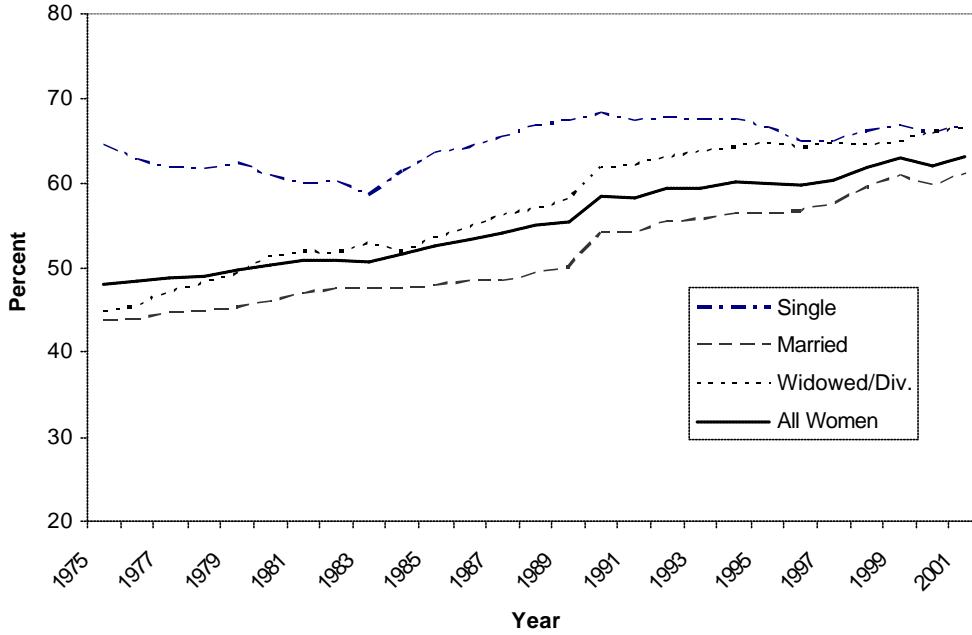


Figure 2c: Female Labor Force Participation (age 15-64)



Note: See figure 1.

Figure 3a: Single Women's Labor Force Participation by Age

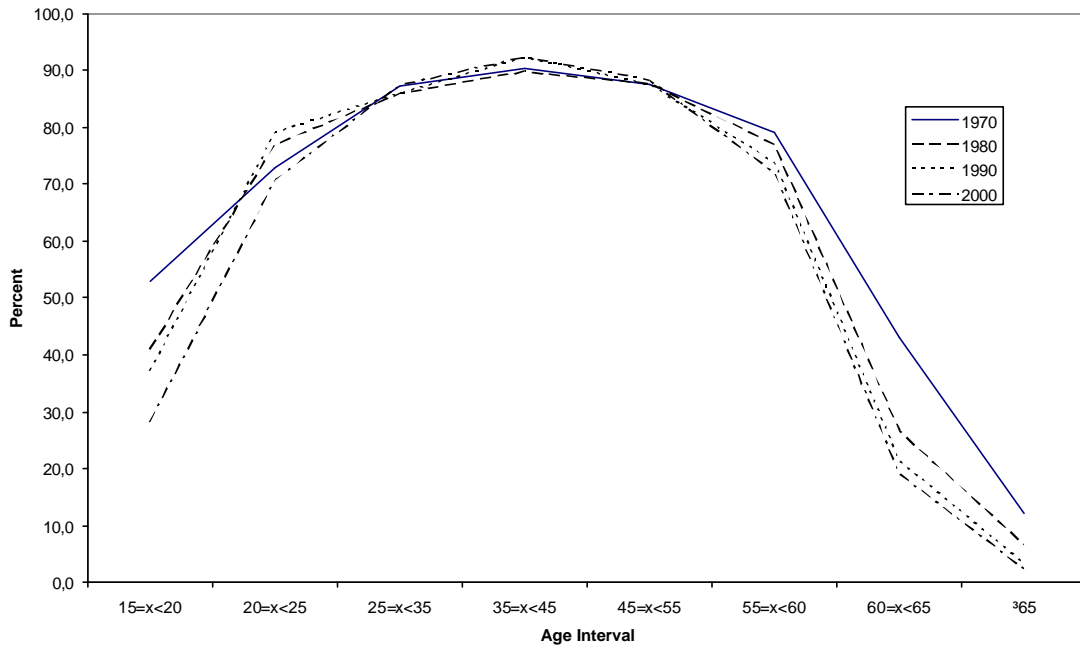
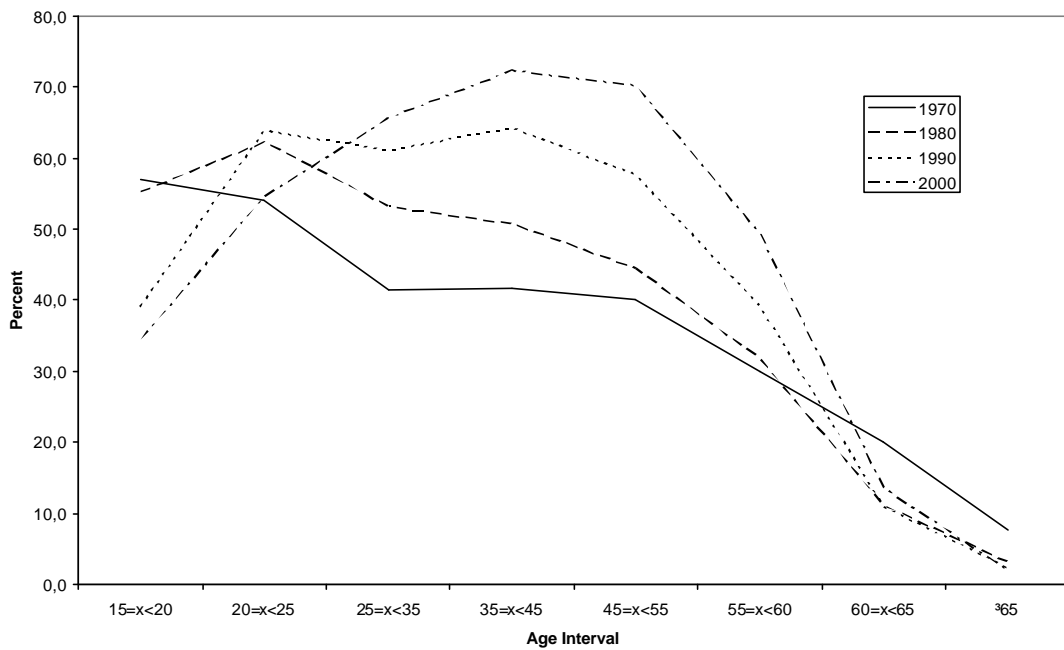
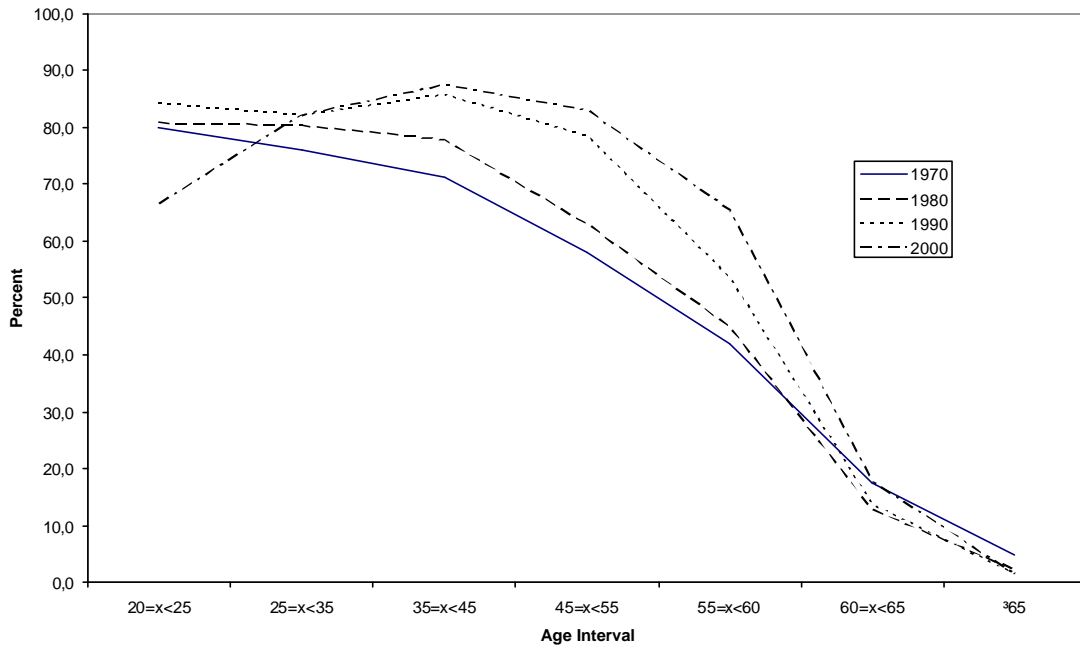


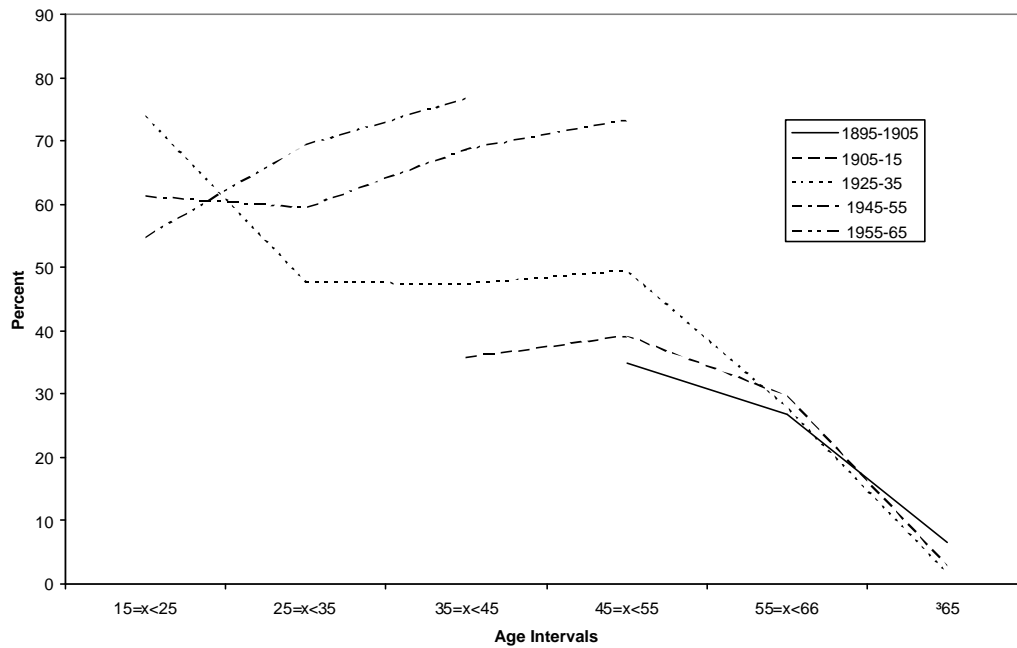
Figure 3b: Married Women's Labor Force Participation by Age



**Figure 3c: Widowed or Divorced Women's Labor Force Participation by Age**



**Figure 3b: Life-Cycle Profiles of Women's Labor Force Participation for Different Birth Cohorts**



Note: See figure 1. The data for 1950 originate from the census which was held on September 13, 1950. They do not cover the states Saarland and West-Berlin.

Figure 4a: Life-Cycle Profile of Men's Labor Force Participation for Different Birth Cohorts

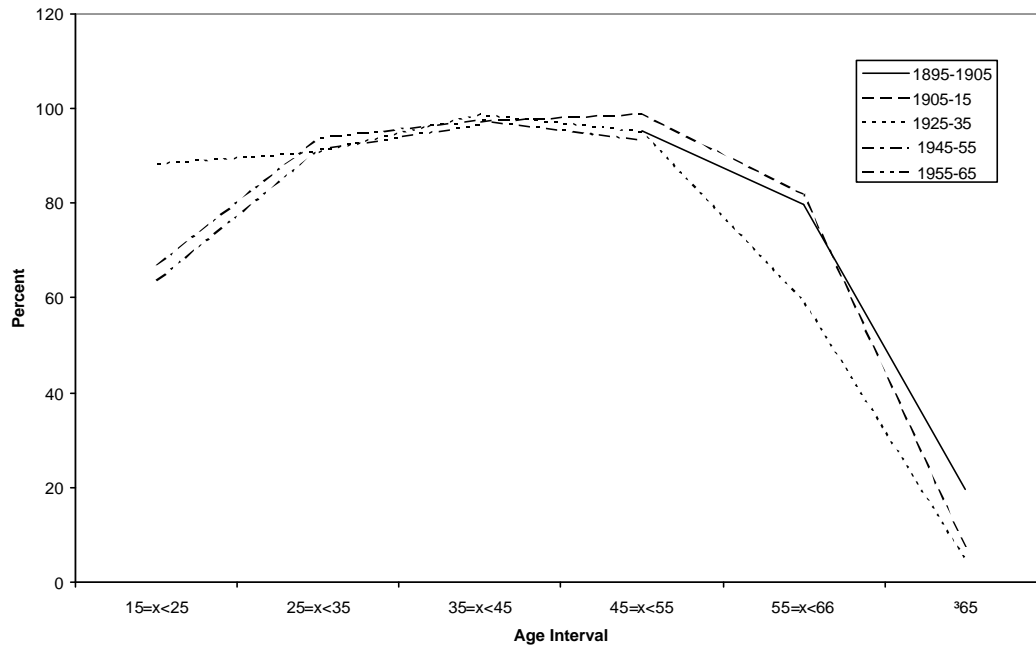


Figure 4b: Male Labor Force Participation (age 15-64)

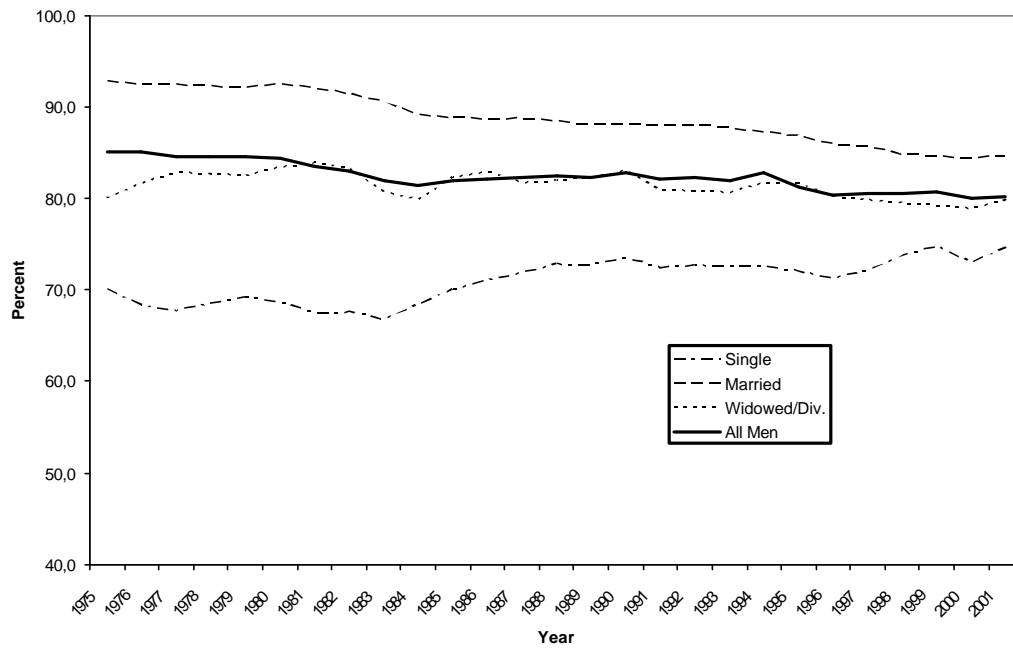
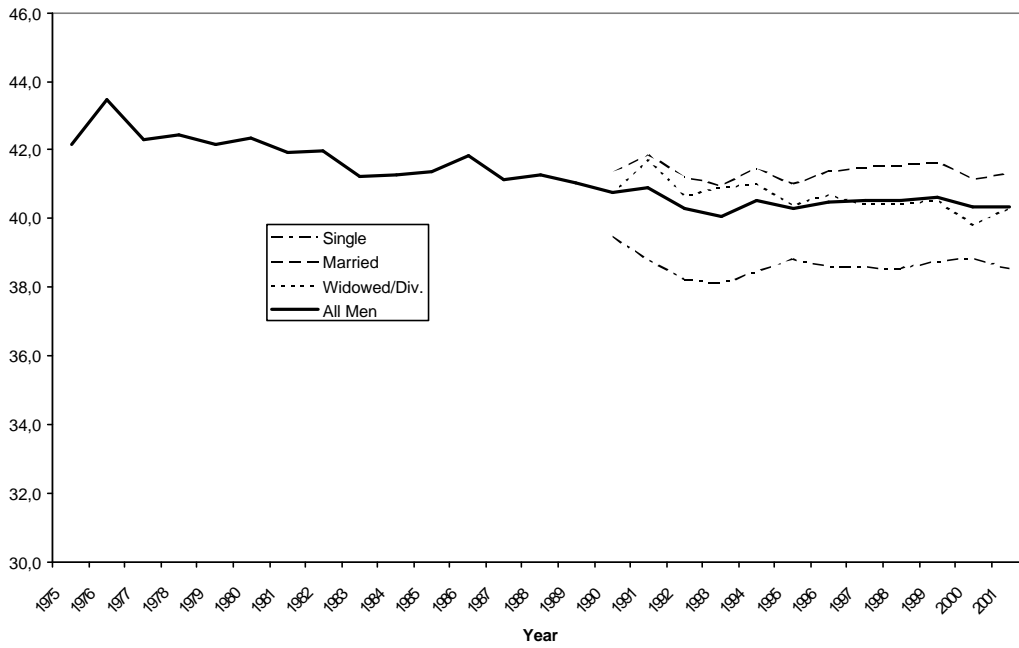


Figure 4c: Weekly Market Hours Worked per Male Employee (age 15-64)



Note: See figure 1.

Figure 5a: Weekly Hours Worked per Female Employee by Sector

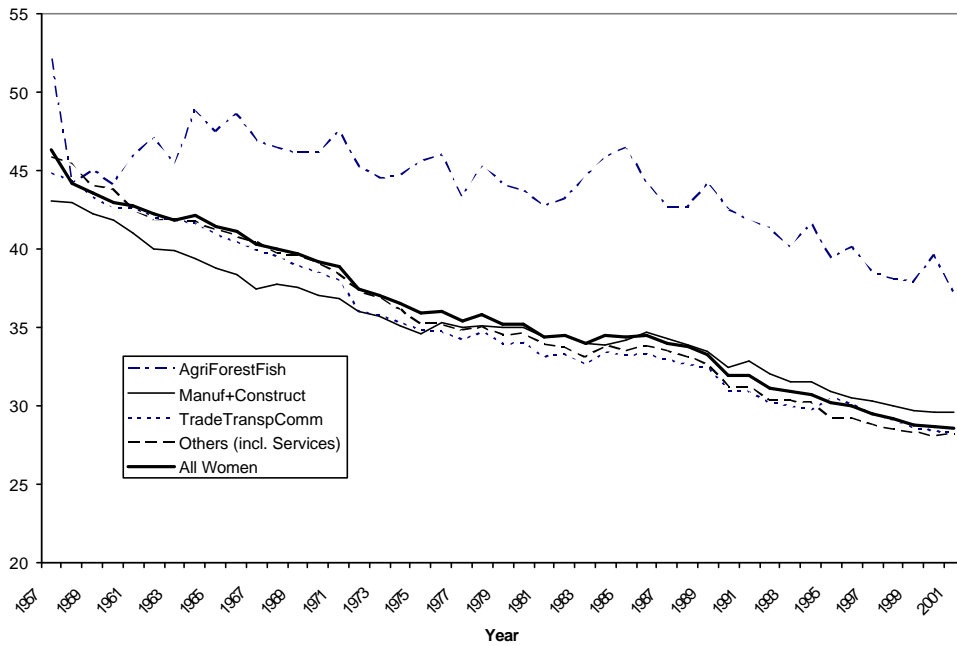
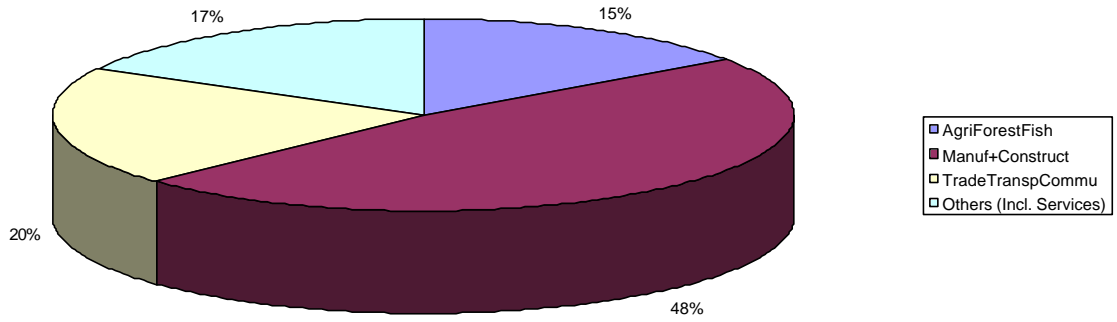
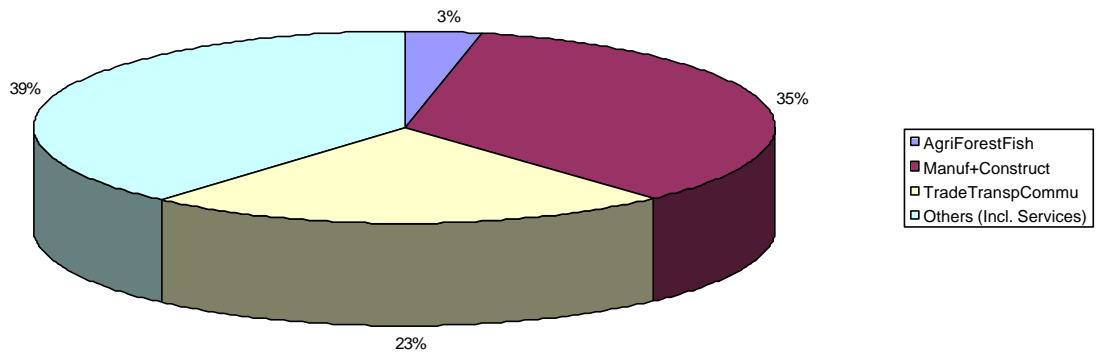


Figure 5b: Distribution of Total Weekly Hours Worked Across Sectors in 1960

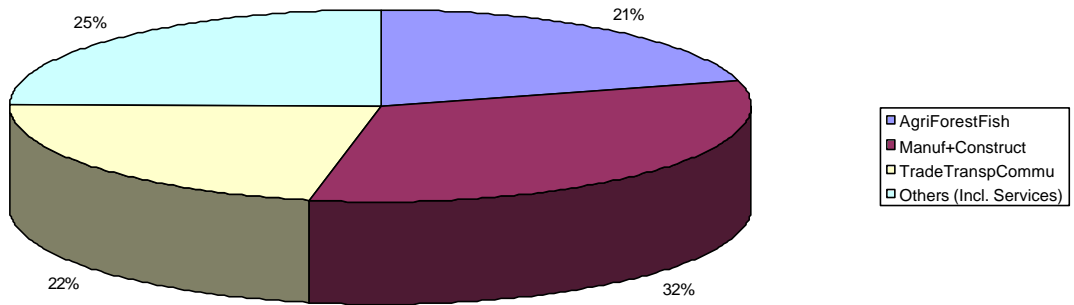


Distribution of Total Weekly Hours Worked Across Sectors in 2000

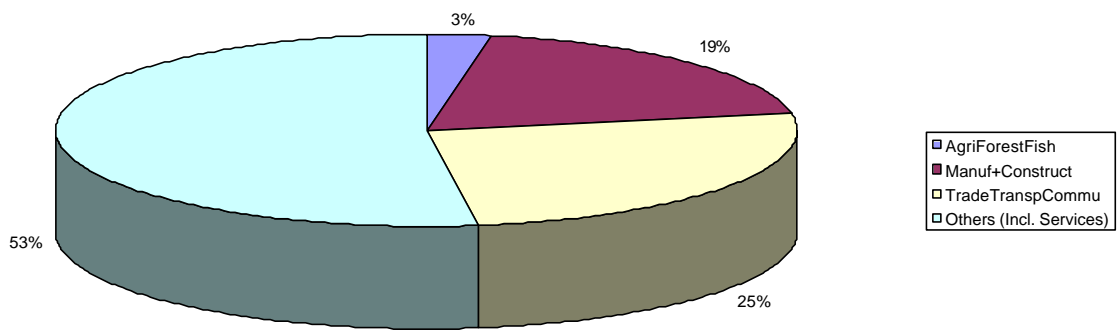


Note: See figure 1.

Figure 5c: Distribution of Total Weekly Hours Worked by Women Across Sectors in 1960

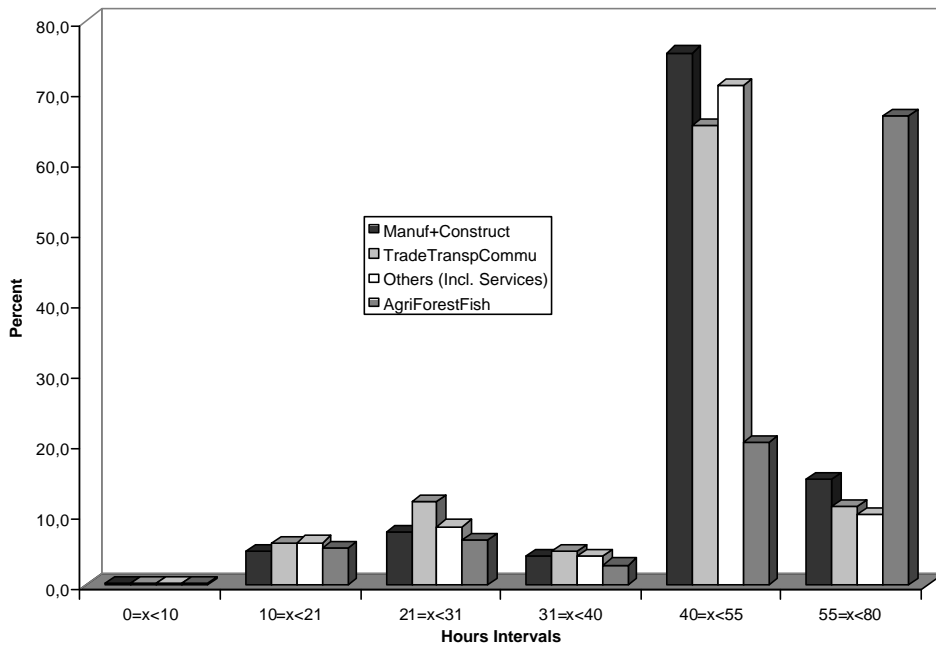


Distribution of Total Weekly Hours Worked by Women Across Sectors in 2000

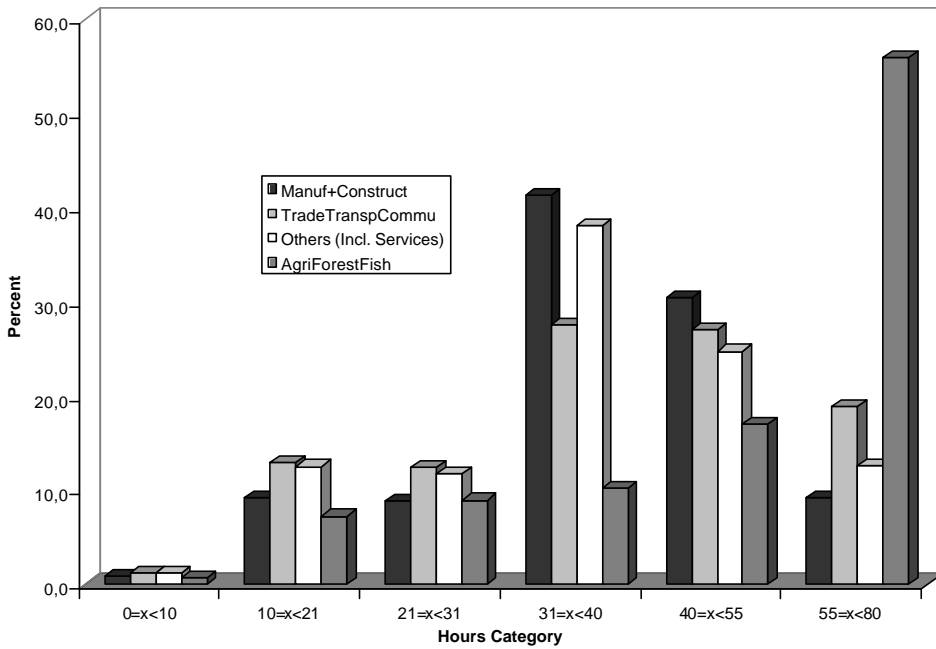


Note: See figure 1.

**Figure 6: Distribution of Women's Weekly Hours Worked Across Hours Categories By Sector, 1975**



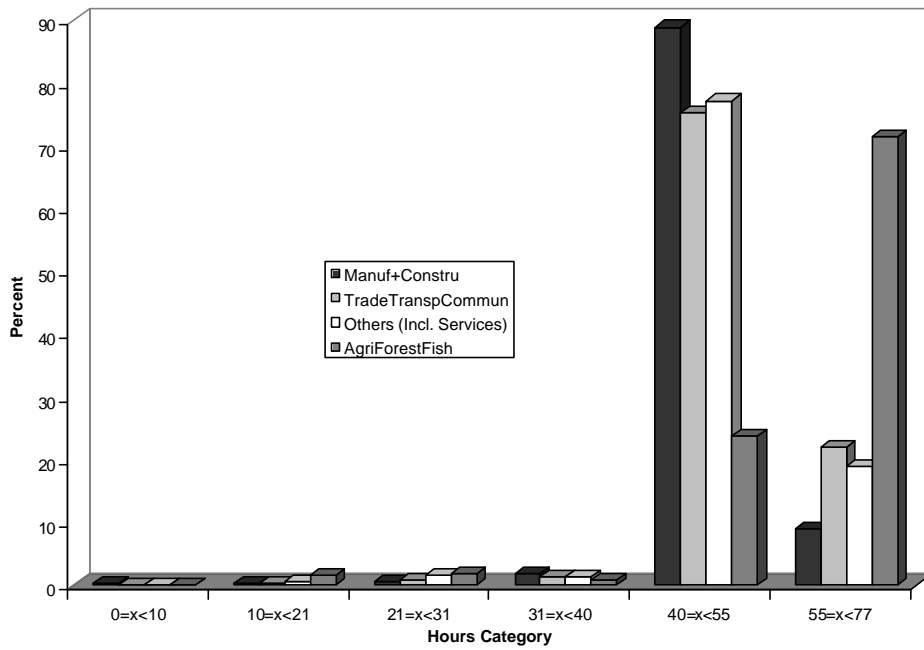
**Distribution of Women's Weekly Hours Worked Across Hours Categories By Sector, 2000**



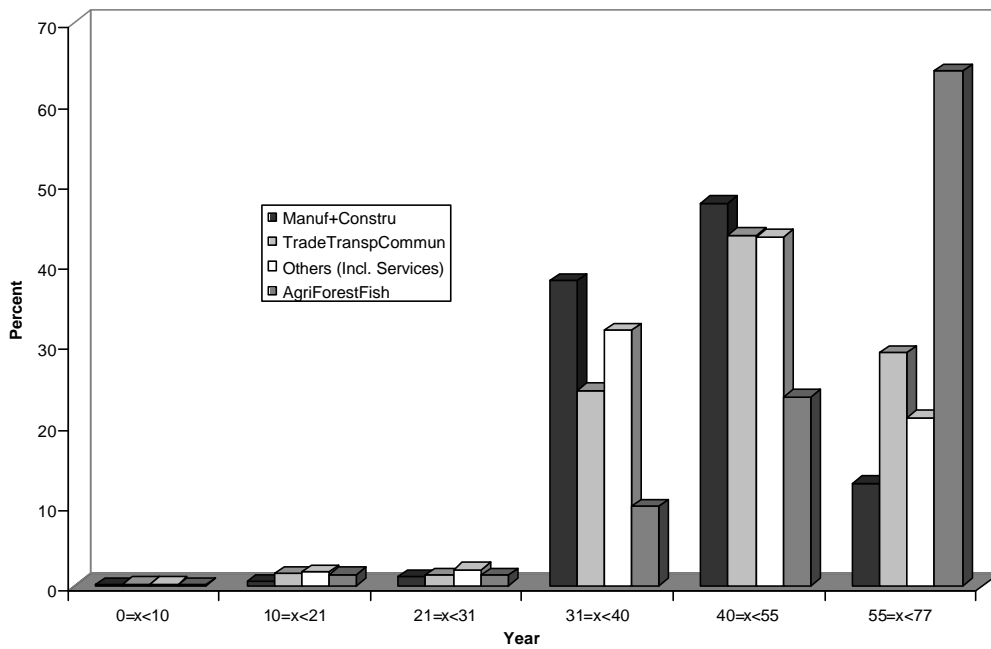
Note: See figure 1.



Figure 7: Distribution of Men's Weekly Hours Across Hours Categories By Sector, 1975



Distribution of Men's Weekly Hours Worked Across Hours Categories By Sector, 2000



Note: See figure 1.