COLLECTIVE FEMALE LABOR SUPPLY: EVIDENCE FROM GERMANY

Monika Merz[1]

Department of Economics

University of Bonn and IZA

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Abstract

The nature of married or cohabiting women's labor supply in Germany has undergone drastic changes over the past two decades. Their employment ratio has steadily risen while their average weekly market hours have declined. This paper uses micro data from the German Socio-Economic Panel (SOEP) in order to illustrate time-trends and cross-sectional changes in married women's labor supply since the mid 1980s. It links these changes to women's own characteristics such as education, to characteristics of their male partner, and to small children in the family. The evidence points to much heterogeneity. While the employment rate universally rose across all wives considered, the change in market hours systematically varied with women's own education, their spouse's wage rate and small children in the family. The evidence also points to a wage distribution for married women which has become increasingly compressed.

JEL Classification: J13, J22

Key Words: Female Labor Supply, Collective Approach

1. INTRODUCTION

The literature on female labor supply has pointed to the rise of married women's market hours worked over the past decades as one of the most remarkable changes in labor economics that deserves to be studied in detail. A commonly quoted example is the experience of married women in the United States. As pointed out by McGrattan and Rogerson (1998, 2004), their average hours worked have risen by over sixty percent during the last three decades. For married women with small children this rise has been even more extreme. An often quoted counterexample is the experience of Germany, where average weekly hours worked of married women have been comparably low, and also have not changed much over the past decades.[2] In particular, market hours worked by married women with small children have been remarkably constant, even though this group of women steadily increased its involvement in the labor market.

These aggregate trends hide a vast spectrum of undercurrents, depicting heterogeneous developments for specific subgroups of women. We expect that not only women's own characteristics determine their labor market behavior, but also those of their partners and whether or not small children are present. In other words, the family setting is likely to matter for married women's labor supply and needs to be taken into account when investigating why they work considerably less in Germany than elsewhere, and also less than they used to.[3]

In this paper, we document changes in married or cohabiting women's labor market behavior in former West Germany in a family context in an effort to identify the main determinants of their behavior.[4] We focus on time-trends as well as on distributional changes as they occurred between 1986 and 2000. The German Socio-Economic Panel (SOEP) - a representative sample of private households living in Germany – underlies our analysis of women's employment ratios and their weekly market hours worked. We link these variables to married women's own characteristics such as their education, to characteristics of their partner and to the family setting which includes the presence or absence of small children in the household. Relying on a methodology that was first used by Juhn et al. (1997) in their

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[2] Merz (2005) uses the *Mikrozensus* of the German Statistical Bureau to document the changes in women's market hours worked as they occurred in former West Germany between the late 1950s and 2002. She links changes to hours worked by married women with small children to changes regulating parental leave. However, the *Mikrozensus* has no earnings information.

[3] The idea that a woman's family setting matters for the amount of labor she supplies in the market is formalized the collective household model as introduced into the literature by the work of Chiappori (1988, 1992) and Browning and Chiappori (1998). The model stresses individual household members with their own preferences. Labor supply allocations are viewed as the efficient outcome of a bargaining process between the household members.

[4] For simplicity, we refer to both groups as married. We refer to males in the couple as husband and to females as wife.

study of married women's labor supply in the US, we stratify wives by their husband's wage rate. This procedure enables us to investigate the role that women's own wage plays in their labor supply decision as opposed to that of their partner's wage.

The results show that, like in most industrialized countries, married women in Germany steadily and forcefully increased their employment rate. This holds for women of different educational levels and for those with and without young children. The rise in the employment rate was steepest for women with small children and for those with a high level of education. What distinguishes the German experience from international trends, however, is the fact that those groups of married women who most strongly expanded their labor market participation also were the ones who increasingly worked part-time jobs with relatively few weekly market hours. They also tended to be the ones matched with a high-wage partner. Hence, while the employment rate universally rose across all women considered, the weekly hours worked remained negatively related with the husband's wage rate. Women's real wages increased on average and across all wage categories, but an inverse link between the growth of the wage rate and the level of education contributed to the compression of the wage distribution.

The paper proceeds as follows. Section two presents the data underlying our study together with the main variables and the specific sample used for the analysis. Section three illustrates time trends and cross-sectional changes in married women's employment rate and their market hours worked by paying special attention to women's education and small children. Section four addresses changes in women's real wage rate and in their contribution to household earnings. It investigates how wives' wages are linked to their own level of education and to the wage of their partner. Section five concludes.

2.   DATA AND VARIABLES

The data used in this paper originate from the German Socio-Economic Panel (SOEP), a representative sample of private households and persons living in the Federal Republic of Germany. The panel was started in 1984 (wave A) and has been updated annually through 2004 (wave U). It is maintained by the *Deutsches Institut für Wirtschaftsforschung* (DIW) in Berlin. The panel design closely follows that of the Panel Study of Income Dynamics (PSID) – a representative sample of US households and individuals – but also takes idiosyncracies of

the German legal and socio-economic framework into account.[5] Like the PSID, the SOEP contains information on households as well as on the individuals belonging to those households. A set of core questions is asked every year, including questions on household composition, labor market and occupational dynamics, and earnings.

Our analysis does not exploit the panel nature of the study. We use the SOEP, because it is the only annual cross-sectional dataset currently available that includes information on couples' market hours worked and earnings in Germany.

2.1 SAMPLE

Until 1990, the SOEP was comprised of only two samples. Sample A consists of individuals residing in private households in former West Germany and whose household head does not belong to the main groups of foreign guestworkers. Sample B covers individuals in private households whose household head belongs to the group of foreign guestworkers. In subsequent years, additional samples were added, that cover German residents in the GDR (sample C), immigrants from abroad to West Germany (sample D), two refreshment draws (samples E and F) and high income receipients (sample G).

Because our paper's focus is on recent trends in the labor market involvement of married women in Germany, we use samples A and B to extract a representative cross-section of married or cohabiting couples for the year 1986, and samples A through F to extract one for 2000.[6] Each cross-section includes all couples living in former West Germany if the woman is aged between 25 and 45, and if her partner is at most 60 years old. We exclude women younger than 25, because many of them still undergo education and do not fully participate in the labor market. Including younger women would confound our comparison of women with different levels of completed education. We exclude women older than 45, because women in that age range who have no children are very likely to have had children in the past. Thus, including women older than 45 would confound our comparison of women with small children and women without children. We also exclude all individuals on maternal or parental leave, public servants, self-employed, students and retirees. This leaves us with a total of 1.874 (1.341) matched husband-wife pairs in 2000 (1986). To ensure that the sample

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[5] A detailed description of the panel's design, its coverage, the main questions asked, etc. is contained in the *Desktop Companion* to the SOEP, which is accessible online at www.diw.de.
[6] These two years were chosen in order to facilitate comparison with the micro census of Germany – the country's official statistic of its population and labor force. Individual-level data from the micro census are readily available as scientific use files, but only for selected years such as 2000, or 1989.

is representative of the West German population, all statistics are weighted using the persons' cross-sectional weights

One concern is that by focusing on a sample of married or cohabiting women we are looking at a group that is becoming increasingly selected over time. Indeed, the fraction of all women aged between 25 and 45 who are married significantly declines from 74.2 percent in 1986 to 63.3 percent in 2000.[7] However, this downward trend in the marriage rate is partly counteracted by a strong increase in the cohabitation rate within that age-group of women. Their cohabitation rate rises from 5.1 percent in 1986 to 13.4 percent in 2000. Taken together, these figures indicate a relatively small reduction in the *sum* of the marriage and cohabitation rate: it declines from 79.3 percent in 1986 to 76.7 percent in 2000. [8]

We restrict our attention to couples residing in former West Germany, because we focus on changes in labor market behavior which 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. Also, it is well known that the labor market behavior of women in the former east systematically differs from that of women in the former west. Since we are ultimately interested in a cross-country comparison between Germany and the United States over a rather long time span, we do not explicitly address these internal differences in our analysis.

In order to study the impact of young children on women's labor supply, we further refine our sample. We separately consider married women with children below the age of six, and also married women who never had children. In 2000 (1986), 27.1 (36.2) percent of all couples in our sample had children below the age of six, and 36.8 (31.4) percent of them had no children below age 16 living in the household.

2.2 VARIABLES AND METHODOLOGY

Our key variables of interest are employment rates and actual hours worked by married women and their husbands, the respective hourly wage rates, levels of education, and whether or not small children live in the household. Regarding the hours variable, we take actual hours worked per week and multiply them by 4.348 to get monthly hours worked. Actual work hours are composed of contractual work hours plus overtime minus absenteism due to sickness or vacation. Following convention, we define three different categories: full-time

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[7] These figures are consistent with evidence from the German micro census on trends in marital status among the female population aged between 25 and 45 years. Figure 1 in the appendix depicts the evidence.
[8] In 1986, 94.3 percent of all couples in our sample are married and only 5.7 percent cohabiting. In 2000, 83.8 percent of all couples are married.

employment covers at least 35 hours of work per week; part-time employment covers employment with at least one hour and at most 34 hours per week; non-employment covers zero hours per week. We label as employed anyone who works either full-time or part-time. Those who are unemployed or out of the work force are labeled non-employed.

We compute an individual's real hourly wage rate as the ratio of his or her gross monthly labor income and the hours worked in that month. We use contractual hours worked when computing this ratio, unless actual hours worked exceeded contractual hours and an overtime premium was paid. In the latter case, we use actual hours worked.[9] Labor income is measured in € We express the resulting wage rate in real terms (2000=100) using the price index provided by SOEP for deflation.[10]

A considerable fraction of the individuals in our sample who report being employed fail to report their monthly earnings. In 1986, ca. 8 percent of all gross earnings observations are missing from our sample. In 2000, the non-reporting rate has risen to a little over 10 percent. Interestingly, non-reporting of earnings occured at all levels of income. The DIW imputed gross monthly earnings using a two-stage procedure.[11] This procedure accounts for individual-specific time trends – if available – and cross-sectional components. Gross earnings are imputed from regressions of the log of deflated gross earnings on individual characteristics such as sex, age, years of education, marital status, nationality, on a dummy variable for full-time employment, and one dummy each for occupation and industry. These regressions are run separately for West and East Germany. Unlike Juhn and Murphy (1997), the DIW abstains from imputing wages for non-working individuals.

In order to investigate the link between a married woman's work hours and her level of education, we form three educational categories based on the SOEP variable "years of education completed".[12] According to the variable's definition, education comprises formal schooling as well as occupational training, e.g., in form of an apprenticeship. The dual structure which combines schooling and vocational training is the German educational system's main trade mark and requires some explanation. The school system provides education on a basic level (*Hauptschule,* 9 years), an intermediate level (*Realschule*, 10 years), and a high-school level (*Gymnasium,* 12-13 years). After obtaining any of these degrees, an individual can join the labor force or pursue an apprenticeship which typically

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[9] This method follows Haisken-DeNew and Schmidt (1999) who use it to correct for individuals who work less than normal hours during the interview week.

[10] The SOEP price index is based on the official German consumer price index (*Verbraucherpreisindex*) and the retail price index (*Index der Einzelhandelspreise*).

[11] Details of the imputation procedure are available at www.diw.de/deutsch/sop/service/doku/docs/pgen2004.pdf

[12] The Desktop Companion to the SOEP contains details on how this variable is generated.

takes between two and three years. Attending a polytechnic or a university requires a high-school degree. This structure leads us to distinguish between three different variables – low, medium and high education. *Low* indicates basic schooling with an apprenticeship, covering strictly less than 11.5 years of total education; *middle* indicates intermediate schooling or high-school education with an apprenticeship, covering at least 11.5 years but less than 15 years of total education; *high* indicates a degree from a university or a polytechnic, and also high-school education followed by a technical school (*Fachschule*, 2 years), covering at least 15 years of education.

Whether or not a couple has a small child is based on information on children who live in the household at the time of the interview. We define a small child as a biological, adopted or foster child of the household head or his/her spouse or partner if that child is less than six years old.

3.   CHANGES IN EMPLOYMENT AND HOURS

An individual's involvement in the labor market is typically expressed by the number of actual hours worked. When looking at the labor market involvement of a group of individuals, economists distinguish two types of margins of adjustment: the employment rate, which expresses whether or not individuals work in the market, captures the extensive margin; the actual hours of market work capture the intensive margin. Even though economists are ultimately interested in the actual hours of market work which serve as input into the production of goods and services, distinguishing between these two margins is useful, since it helps shed light on the variables that determine hours worked.

Like in many other industrialized countries, married women living in Germany have steadily increased their extensive engagement in the labor market over the past decades. Figure 2 illustrates the development of the employment rate of married women between 25 and 44 years of age since 1970. This rate rose from a little over forty percent in 1970 to almost seventy percent in 2000; in 1986, the rate was still well below fifty percent, which indicates that the increase has accelerated since the mid-1980s. Table 1a affirms this upward trend by showing a rise in this ratio of almost 25 percentage points between 1986 and 2000 for all married women considered.

A closer look at the cross-sections of the two years considered yields an additional insight into the distributional consequences of the observed changes. Towards this end, we order all wives in our sample by the level of their husband's hourly wage and investigate, how

their labor market behavior changed depending on their husband's wage.[13] Figure 3 clearly shows that the employment rate increased among all married women, but increased the most strongly among wives of men in the upper half of the wage distribution. This non-neutral increase has led to a fundamental change in the distribution of wife's employment by husband's wage decile. In 1986 (lightly shaded bars) there was a clearly negative link between the husband's wage and the wife's likelihood of being employed. That is, the higher the husband's wage rate, the less likely the wife was to be employed. By 2000 (darkly shaded bars) this link had changed with wives of men in all wage categories being similarly likely to be employed. Hence, by the year 2000, there was hardly any connection between wives' employment rate and the husbands' wage level left.

Changes in average weekly market hours tell a different story. According to table 3a, the rise in wives' employment rate was accompanied by a strong increase in part-time employment and only a weak increase in full-time employment. This shift into part-time work was even more prominent among wives with young children. As becomes evident from table 3b, part-time work within this group of women rose by over 20 percentage points. This change was due to a strong decline in both non-employment and full-time employment. Again, the observed changes did not equally affect all wives in our sample. As figure 4 illustrates, between 1986 and 2000 the probability of part-time employment rose most strongly for wives of husbands in the upper half of the wage distribution. This change turned the relationship between the incidence of wives' part-time work and the husbands' wage rate from being negative in 1986 to being positive in 2000.

The general decline in weekly market hours by married women is also evident from table 2. Among all *working* wives considered, the average number of weekly hours declined from 32 in 1986 to 28.6 in the year 2000. This decline was even more pronounced among wives with young children; they reduced their weekly hours by a total of eight during the period of observation. A look at the cross-sectional distribution of actual market hours worked by all wives completes the picture (see fig. 5). Except for wives of husbands in the lower wage decile, all employed wives reduced their weekly market hours worked during the time period considered. The reduction in hours was relatively strong in the upper half of husbands' wage distribution which rendered a slightly negative relationship between wives' market hours worked and the husband's wage rate.

Taken together, the findings indicate that by 2000, wives of high-wage husbands were equally likely to work in the market as other wives. If employed, they were more likely to

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[13] It should be emphasized, that since we imputed wages for employed individuals only, the part of the analysis

work part-time and to work fewer hours in the market during a workweek than wives of low-wage husbands.

3.1   THE ROLE OF YOUNG CHILDREN

Small children typically impose extra demands on a couple's time. As a consequence, their parents – and in particular their mothers – tend to reduce the number of hours, that they spend in the labor market. According to table 1b, the employment rate of wives with young children rose from twenty-eight percent in 1986 to forty-five percent in 2000. This amounts to a sixty percent increase, which by far exceeds the increase in the average employment rate of all wives during the same time period. According to table 3b, the increased employment was mostly fueled into part-time work. The incidence of part-time work more than doubled, while that of full-time employment declined by almost 50 percent. Except for wives of husbands with the highest wages, wives with small children were much more likely to work part-time than others (see fig. 8) in the year 2000. This evidence is consistent with the changes in actual market hours worked which are depicted in figure 10. Wives of husbands with wages in the medium range of the wage distribution reduced their weekly market hours to a comparable extent. Interestingly, wives of husbands at the upper end of the distribution worked the largest number of weekly hours in 2000.

In sum, as far as wives with small children are concerned, the strong rise in their employment rate and in part-time employment disproportionately affected those with richer husbands. The link between the husband's wage rate and the wife's employment rate remained slightly negative, whereas the link between that wage rate and the wife's weekly market hours disappeared. The figures in tables 3a through 3c also indicate that married men did not adjust their weekly hours worked during the period of observation. Over 90 percent of them continued to be employed in full-time jobs regardless of whether or not there were young children in their family.

3.2   THE ROLE OF WOMEN'S EDUCATION

So far, we have documented the distributional aspects of changes in the extensive and intensive margin of adjustment by stratifying the sample of married women by their husband's wage rate. Alternatively, we can investigate the link between wives' own education

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which focuses on distributional issues is limited to couples where the husband is employed.

and the observed changes. If a person's wage rate solely reflected her educational level, and if husbands and wives were perfectly sorted by education, then the two approaches would yield the same result. We know that in reality, this is not the case.

Since the mid-1980s, the level of education has risen in West-Germany as well as in many other industrialized countries. This general increase in education also affected couples. It is reflected in the figures of table 4. A few facts stand out. Married women caught up on education more strongly than married men. In 1986, 69 percent of married women exhibited a low level of education, and only 6.1 percent of them counted as highly educated. The respective figures for married men then stood at 67 percent and 12.3 percent.[14] By 2000, a mere 44 percent of wives had a low education, and the fraction with a high education had risen to 13.1 percent. These figures were much more in line with those of husbands in the same year, even though the fraction of highly educated husbands continued to exceed the respective fraction among wives.

The increase in the spouses' level of education was accompanied by an increase in marital sorting by education. The relative importance of couples where both partners have a low education declined in favor of couples where at least one partner exhibits a medium level of education, or couples consisting of two highly educated individuals. The fraction of highly educated couples more than doubled; it rose from 3.6 percent in 1986 to 7.4 percent in 2000. Similarly, the fraction of couples with a medium level of education rose from 7.7 percent to 17.4 percent. A related phenomenon deserves mentioning. It is much more common for a woman to be married to someone with an education exceeding hers than it is for a man. In 2000 like in 1986, the majority of men were married to a woman whose education level did not exceed their own level.

The observed shifts matter for our study of married women's market hours within a family context, if their market hours systematically vary with their own educational achievement and/or with that of their husbands. We will now investigate whether or not this indeed was the case. Tables 5a through 5c summarize the distribution of married women across the three labor market states non-employment, part-time work and full-time work by their own educational achievement. In 1986, about 50 percent of all wives were not employed, and the other half equally spread its labor market engagement across part-time and full-time employment. This pattern prevailed irrespective of their level of education. Things looked different when small children were present. In that case, the extent of non-employment strictly increased in a mother's level of education, while the extent of part-time work decreased. Put

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[14] These figures are very similar to those reported by Gustaffson (1992) for Germany in table 2 of her paper.

differently, within the group of married women, highly educated mothers with small children were the least likely to be employed and to work part-time. Irrespective of their educational achievement, eleven percent of married mothers with young children worked full-time.

Things had changed fifteen years later. By 2000, married women had universally reduced non-employment, but that reduction was most pronounced among the highly educated. Part-time work increased across all three educational levels. Full-time work only increased among wives with a medium level of education. The picture becomes more complete if we also take the presence of small children into account. Table 5b once again shows that married mothers with young children forcefully moved into employment, and in particular into part-time employment. According to table 5c, married women without children were the ones who increasingly moved into full-time jobs, unless they were highly educated. The latter group reduced full-time work and non-employment in favor of part-time employment.

4. CHANGES IN HOURLY WAGES AND EARNINGS

The development in married women's employment ratio and their market hours worked have been accompanied by distinct changes in the real hourly wage rate of *working* women and in their contribution to household earnings. In this chapter we take a closer look at those changes, and how they relate to the educational achievement of married women and their partners.

Figure 6 illustrates the average hourly wage rate of working wives by husband's wage decile. In contrast to the slightly negative relationship between wife's weekly hours worked and the husband's wage rate we observed earlier, we find that wage rates of dual-career spouses have always been positively related. Even in 1986 high-wage men tended to be married to high-wage women. Since then, however, the positive relationship between the husband's and the wife's wage has decreased; the correlation coefficient between the two variables declined from .30 in 1986 to .27 in 2000. This decline is largely due to an inverse link between the average annual growth rate of wives' wages and their husband's wage rate. Put differently, the wages of wives associated with low-wage husbands have grown more strongly than the wages of other wives. A similar picture emerges, if we plot the average growth rate of wives' wage rates against their own educational level (see fig. 7). Apparently, the wage dispersion between different educational groups of women declined. This evidence is in accordance with an explanation provided by Bell and Freeman (2001) for why Germans

work fewer hours in the market than workers in the US: increased wage compression which has occured in Germany since the mid 1980s and which apparently also affected married women.

The evidence provided so far points to various forces which influenced the wage distribution of married women. The general rise in education undoubtedly underlies the steady growth of the average real wage which amounted to 1.7 percent p.a. between 1986 and 2000 (see table 7). While the between-group wage dispersion declined because of the observed inverse skill-premium, the in-group wage dispersion increased during our period of observation. The latter development is consistent with international trends, but the former development starkly differs from what is known from many other industrialized countries, most notably the United States. Much has been written about institutions and how they affect the labor market outcome.[15] As far as Europe and in particular Germany are concerned, trade unions traditionally have played a strong role in the wage determination process. The strong rise of wages in the lower categories among wives in Germany may well be due to their influence. Their activities most likely counteracted the market forces translating skill-biased technical progress into increased overall wage dispersion.

The observed changes in weekly market hours and hourly wage rates subsequently led to changes in the gross monthly earnings of married women. Tables 6 and 7 summarize time trends and distributional changes in these variables. For all women in our sample, gross monthly earnings grew by 1.3 percent p.a. between 1986 and 2000. This growth was driven by a rise in the average hourly wage of 1.7 percent p.a. and counteracted by an average annual decline of .4 percent of market hours worked. When dissecting the sample of wives by their husband's wage rate, a similar picture emerges. Except for wives with low-wage husbands, all wage rates increased, while hours worked declined, leading to an overall rise in wives' earnings. This rise was much stronger between 1985 and 1994 than in the subsequent decade. Also, in the earlier decade, the change in wives earnings was universally positive, whereas in the later decade, it remained positive only for wives with husbands whose wage lied in the middle range of the wage distribution.

While married women's real earnings tended to increase, they increased by less than those of their husbands. This fact is reflected by the declining share of wives in households' total real earnings (see table 8). The share fell for all wives considered. It fell to less than a third for wives with small children and remained unchanged for wives without children.

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[15] See, e.g., Blau and Kahn (1996).

5. CONCLUSIONS

Aggregate market hours worked by married or cohabiting women in Germany have remained remarkably constant over the past two decades. Based on the German Socio-Economic Panel (SOEP), this paper shows that the aggregate trends hide a vast spectrum of undercurrents, relating to two main components of market hours, namely the employment rate and hours worked per employee. The paper documents time-trends and changes in the cross-sectional composition of these two variables for women according to their own characteristics, key characteristics of their male partner, and small children in the family.

Like in most industrialized countries, married women in Germany steadily and forcefully increased their employment rate. This holds for women across all categories considered. Remarkably, the increase in the employment rate was steepest for women with small children and for those with a high level of education. What distinguishes the German experience from international trends, however, is the fact that those groups of married women who most strongly expanded their labor market participation also were the ones who increasingly worked part-time jobs with relatively few weekly market hours. They tended to be the ones who are matched with a high-wage husband.

Since high-wage husbands have slightly increased their work hours during the time period considered, we interpret the findings as indications, that there existed incentives for couples to substitute between the wife's and the husband's hours. We suspect that this substitution was due to (dis-)incentives that originate from the German income tax system. The system of joint income taxation is known to impose an effective tax rate on wives, which rises when both partners have high incomes. That institutional differences such as different income tax schemes are likely to help explain observed differences in market hours across countries has been emphasized in the literature. Prescott (2004) uses the standard neoclassical growth model and aggregate time-series data to argue that income tax differences explain why Europeans decreased their market hours over the past decades, while Americans expanded theirs. Along a similar line of reasoning, Ragan (2005) uses a simple household model and time-use data for selected European countries to show that differences in income and consumption tax schemes explain a significant share of observed cross-country differences in time-use which includes market work. Both studies fail to distinguish between men and women, even though it is well known by now that doing so is important. Cross-country differences in aggregate labor supply are mainly due to differences in female behavior, and in particular that of married females. We leave it for future research to do an in-depth

investigation of the role played by the income tax system in explaining the observed trends in married women's labor supply in Germany in an international context.

REFERENCES

Bell, Linda, Richard Freeman 2001. "The Incentive for Working Hard: Explaining Hours Worked Differences in the US and Germany," in *Labour Economics*, 8:181-202.

Blau, Francine D., Lawrence M. Kahn 1996. « International Differences in Male Wage Inequality : Institutions vs. Market Forces," *Journal of Political Economy* 104:791-837.

Browning, Martin, Pierre-André Chiappori 1998. "Efficient Intra-Household Allocations: A General Characterization and Empirical Tests," *Econometrica* 66:1241-1278.

Chiappori, Pierre-André 1988. "Rational household labour supply," *Econometrica* 56:63-89.

Chiappori, Pierre-André, François Bourguignon 1992. "Collective models of household behaviour: An introduction," *European Economic Review* 36:355-365.

Gustafsson, Siv 1992. "Separate taxation and married women's labor supply: A Comparison of West Germany and Sweden," *Journal of Population Economics* 5:61-85.

Haisken-DeNew, John P., Christoph M. Schmidt 1999. „Industry Wage Differentials Revisited: A Longitudinal Comparison of Germany and USA (1984-1996), IZA Discussion Paper No. 98.

Juhn, Chinhui, Kevin Murphy 1997. "Wage Inequality and Family Labor Supply," *Journal of Labor Economics* 15:72-97.

McGrattan, Ellen, Richard Rogerson 1998. "Changes in Hours Worked since 1950," *Quarterly Review of the Federal Reserve Bank of Minneapolis*, Winter:2-19.

_____ 2004. "Changes in Hours Worked, 1950-2000," *Quarterly Review of the Federal Reserve Bank of Minneapolis*, Summer:14-33.

Merz, Monika 2005. "Women's Hours of Market Work in Germany," in *Labour Supply and Incentive to Work in Europe,"* R. Goméz-Salvador et al. (eds.), Northampton, MA: Edwar Elgar Publishing.

Prescott, Edward 2004. "Why do Americans work so much more than Europeans?" *Federal Reserve Bank of Minneapolis Quarterly Review* 28:2-13.

Ragan, Kelly S. 2005. "Taxes, Transfers and Time Use: Fiscal Policy in a Household Production Model," working paper, University of Chicago.

Rogerson, Richard 2004. "Structural transformation and the deterioration of European labor markets," working paper, Arizona State University.

Table 1: Employment Ratios of Married Couples [%]

a. All Couples

1986

Husband

Wife		E	NE	
	E	42.7 **92.3** *46.1*	3.6 **7.7** *47.0*	**46.2**
	NE	49.8 **92.5** *53.9*	4.0 **7.5** *53.0*	**53.8**
		92.4	*7.6*	100

2000

Husband

Wife		E	NE	
	E	65.7 **94.5** *70.6*	3.9 **5.5** *55.2*	**69.7**
	NE	27.4 **89.8** *29.4*	3.1 **10.1** *44.8*	**30.3**
		93.2	*6.8*	100

b. Couples With Children < Age 6

1986

Husband

Wife		E	NE	
	E	23.5 **85.0** *25.5*	4.1 **15.0** *54.7*	**27.6**
	NE	68.9 **95.3** *74.6*	3.5 **4.7** *45.3*	**72.4**
		92.4	*7.6*	

2000

Husband

Wife		E	NE	
	E	41.1 **92.1** *45.4*	3.5 **7.9** *36.7*	**44.6**
	NE	49.4 **89.1** *54.6*	6.0 **10.9** *63.3*	**55.4**
		90.5	*9.5*	

Notes: All statistics are based on a subsample of SOEP from wave C (1986) and wave Q (2000), respectively. The subsample includes all married or cohabiting couples if the wife is aged between 25 and 45, and if the husband is at most 60 years old. Individuals on maternity or parental leave are excluded. Self-employed, public servants, students and retirees are also excluded.

Table 2: Married Couples' Average Actual Working Hours Per Week

	All		With children < 6 yrs		Without children	
	1986	2000	1986	2000	1986	2000
$h \geq 0$						
Wife	14.9	18.7	8.9	9.4	25.8	31.9
Husband	39.9	40.3	39.3	39.1	39.4	41.3
$h > 0$						
Wife	32.0	28.6	29.7	21.7	35.6	36.6
Husband	43.0	43.6	42.7	43.6	43.0	43.6

Notes: See table 1. *E* denotes employment, and *NE* stands for non-employment. Figures in bold relate to the wife, figures in italics to the husband. All other figures relate to the joint distribution.

Table 3: Distribution of Married Couples Across Hours Categories [%]

a. All Couples

1986
Husband

Wife		FT	PT	NE	
	FT	20.7	1.3	2.8	**24.8**
	PT	20.1	0.6	0.8	**21.4**
	NE	48.8	1.0	4.0	**53.8**
		89.6	*2.8*	*7.6*	100

2000
Husband

Wife		FT	PT	NE	
	FT	29.0	0.6	2.1	**31.6**
	PT	35.3	0.8	1.8	**37.7**
	NE	26.9	0.5	3.1	**30.7**
		91.2	*1.9*	*6.9*	100

b. Couples with Children < Age 6

1986
Husband

Wife		FT	PT	NE	
	FT	7.0	0.5	3.7	**11.2**
	PT	15.2	0.3	0.5	**15.9**
	NE	67.3	2.0	3.5	**73.0**
		89.5	*2.9*	*7.6*	100

2000
Husband

Wife		FT	PT	NE	
	FT	5.0	0	1.2	**6.6**
	PT	34.8	0.8	2.3	**37.7**
	NE	48.0	1.4	6.1	**55.7**
		88.3	*2.1*	*9.6*	100

c. Couples without Children

1986
Husband

Wife		FT	PT	NE	
	FT	43.9	2.8	3.9	**50.4**
	PT	20.8	0	1.3	**22.4**
	NE	22.7	0	4.5	**27.2**
		87.4	*2.8*	*9.7*	100

2000
Husband

Wife		FT	PT	NE	
	FT	61.5	1.3	2.6	**65.5**
	PT	22.3	0.5	0.9	**23.6**
	NE	9.3	0	1.6	**10.9**
		93.1	*1.8*	*5.1*	100

Notes: *NE* denotes non-employment (zero hours worked), *PT* stands for part-time employment (1-34 hours worked), and *FT* represents full-time employment (≥35 hours). Figures in bold relate to the wife's marginal distribution, figures in italics to the husband's marginal distribution. All other figures relate to the joint distribution.

Table 4: Distribution of Couples Across Education Categories [%]

		1986 Husband						2000 Husband			
		Low	Middle	High				Low	Middle	High	
Wife	Low	54.2	11.5	3.0		Wife	Low	32.7	9.5	1.4	
		78.8	**16.8**	**4.4**	**68.8**			**75.1**	**21.6**	**3.3**	**43.6**
		81.4	*54.7*	*24.7*				*63.7*	*31.6*	*7.6*	
	Middle	11.8	7.7	5.7			Middle	15.9	17.4	10.0	
		46.9	**30.7**	**22.4**	**25.1**			**36.7**	**40.2**	**23.0**	**43.3**
		17.7	*36.5*	*45.8*				*31.0*	*58.5*	*53.0*	
	High	0.6	1.9	3.6			High	2.7	2.9	7.4	
		10.2	**30.6**	**59.2**	**6.1**			**20.9**	**22.5**	**56.6**	**13.1**
		0.9	*8.9*	*29.5*				*5.3*	*9.9*	*39.4*	
		66.6	*21.1*	*12.3*	100			*51.4*	*29.8*	*18.8*	100

Notes: See table 1. Figures in bold relate to the wife and those in italics relate to the husband. All other figures relate to the joint distribution. The educational categories are based on the SOEP variable "years of education completed", where education comprises formal schooling and vocational training. *Low* indicates basic schooling with an apprenticeship, covering strictly less than 11.5 years of total education; *middle* indicates intermediate schooling or high-school education with an apprenticeship, covering at least 11.5 years but less than 15 years of total education; *high* indicates a university degree or a polytechnic degree, and also high-school education followed by a technical school, covering at least 15 years of education.

Table 5: Distribution of Wives Across Hours Categories by Level of Education [%]

	1986			2000		
	Low	Middle	High	Low	Middle	High
a. All Wives						
FT	20.9	31.6	33.1	21.9	38.5	27.2
PT	23.9	22.3	9.5	39.9	37.0	38.3
NE	55.2	46.1	57.4	38.2	24.4	24.4
b. Wives with Children < Age 6						
FT	12.2	9.0	10.3	2.7	10.2	9.3
PT	15.9	20.6	8.1	31.4	44.8	42.3
NE	71.9	70.4	81.6	65.9	45.1	48.5
c. Wives without Children						
FT	39.4	61.1	85.0	49.4	75.4	69.3
PT	27.9	21.8	0.8	32.1	17.6	25.1
NE	32.7	17.6	14.2	18.5	7.0	5.5

Notes: See tables 1, 3 and 4.

Table 6: Annual Growth of Wife's Real Monthly Earnings and Components: 1986-2000

Husband's Wage Percentile	Average Annual Growth Rate [%]		
	Gross Monthly Earnings	Hours Worked	Hourly Wage
1-20	2.2	.1	2.6
21-40	1.3	.4	.5
41-60	.7	-.9	1.4
61-80	1.5	-.6	2.3
81-100	.4	-1.0	1.4
1-100	1.3	-.4	1.7

Notes: Earnings are expressed in € Nominal figures are deflated using the SOEP price index. *Gross* denotes gross earnings, i.e., wage or salary income before taxes and social security contributions.

Table 7: Changes in Wife's Employment and Earnings by Husband's Wage Percentile

Husband's Wage Percentile	1985-1994	1994-2003
A. Change in Employment Rate:		
1-20	.22	.05
41-60	.13	-.01
81-100	.14	.10
1-100	.11	.07
B. Average Annual Change in Real Earnings [%]:		
1-20	1.38	-1.13
41-60	1.74	2.25
81-100	1.16	-1.0
1-100	1.57	.30

Notes: See table 6.

Table 8: Wife's Contribution to Real Household Earnings (2000=100) [%]

|	All couples		Couples with kids < 6		Couples without kids	
	1986	2000	1986	2000	1986	2000
Gross	35.2	32.9	32.2	27.0	39.8	40.1
Net	33.3	30.4	30.9	24.6	38.9	38.7

Notes: See table 6. *Net* denotes net earnings, i.e., gross earnings after income taxes and social security contributions.

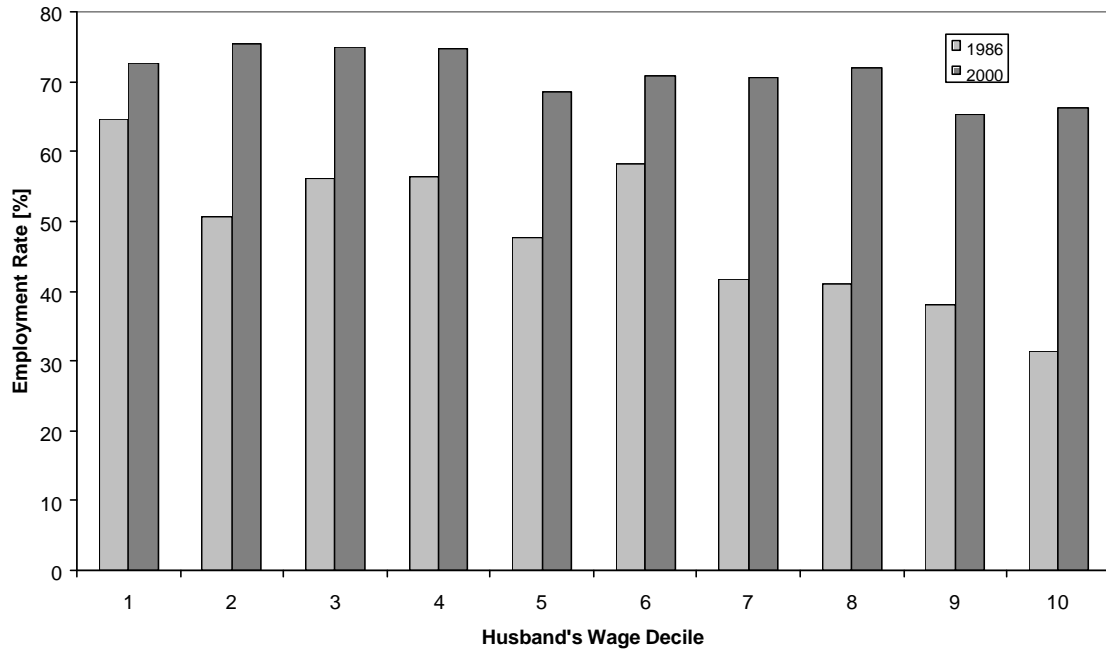**Figure 1: Composition of Female Population (Age 25-44) by Marital Status**
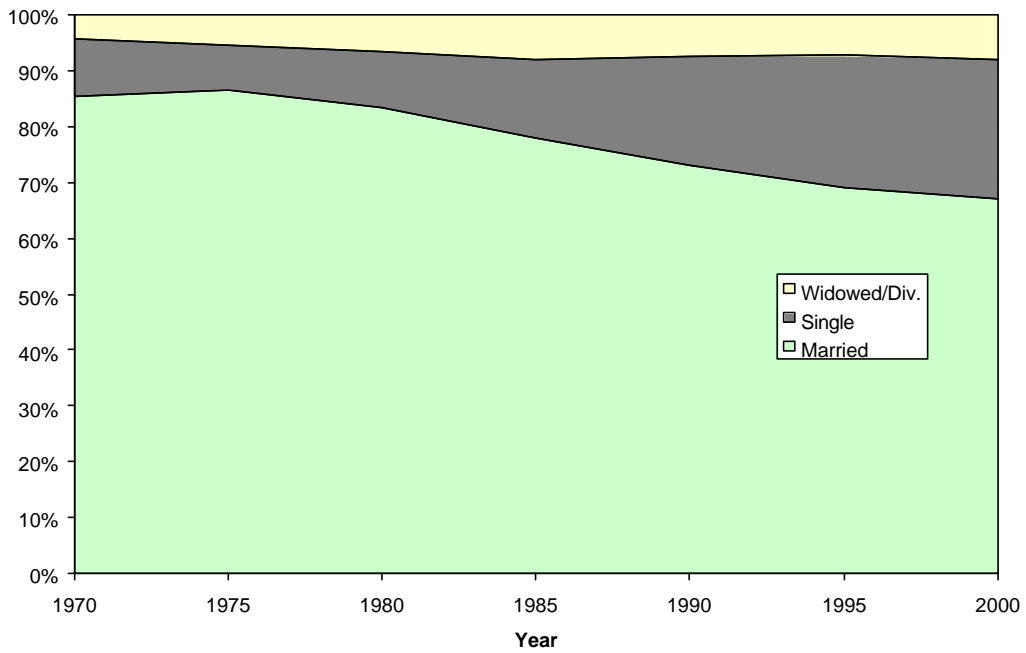
Source: Various publications of the German Federal Statistical Office on the micro census. Various
issues. Own calculations.

Figure 2: Female Employment Ratio (Age 25-44) by Marital Status
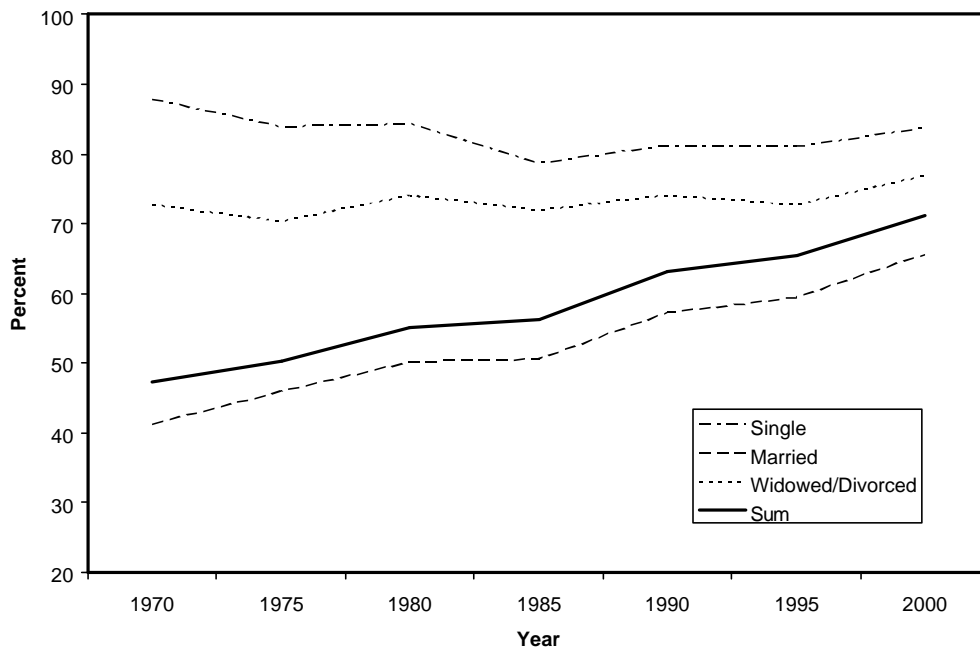
Source: See figure 1.

Figure 3: Wife's Employment Rate by Husband's Wage Decile

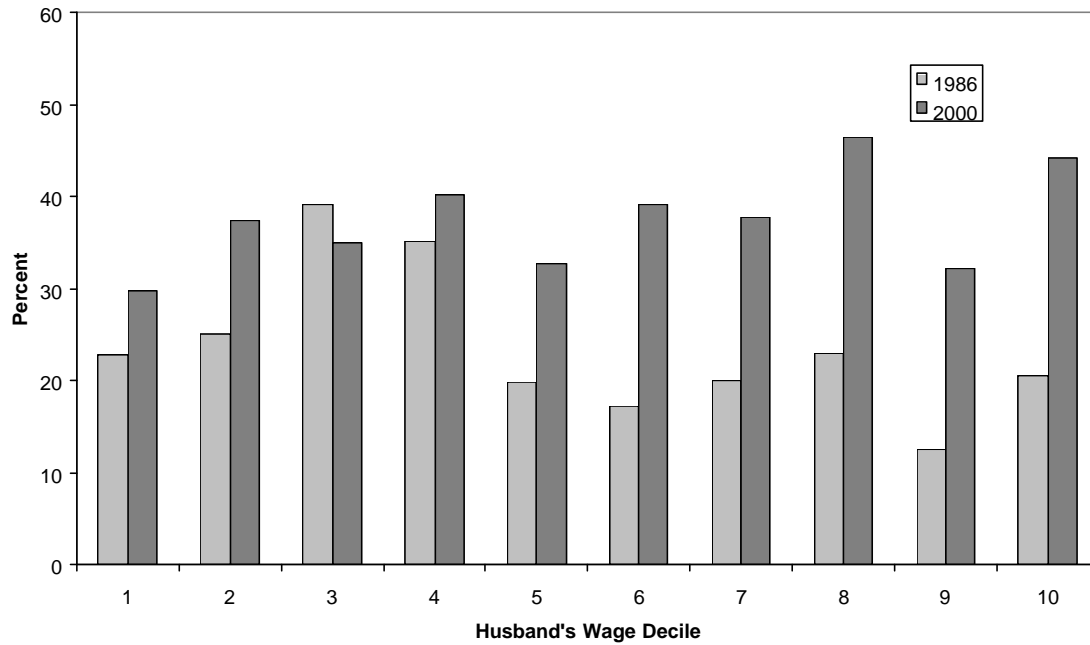**Figure 4: Percent of Wives Working Part-Time by Husband's Wage Decile**
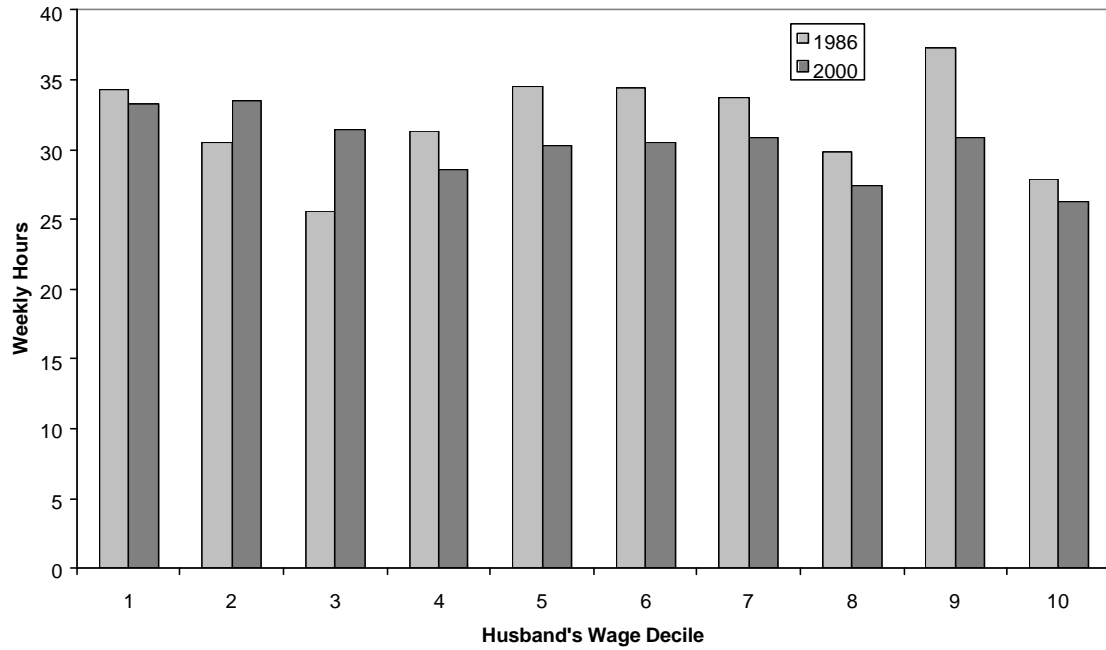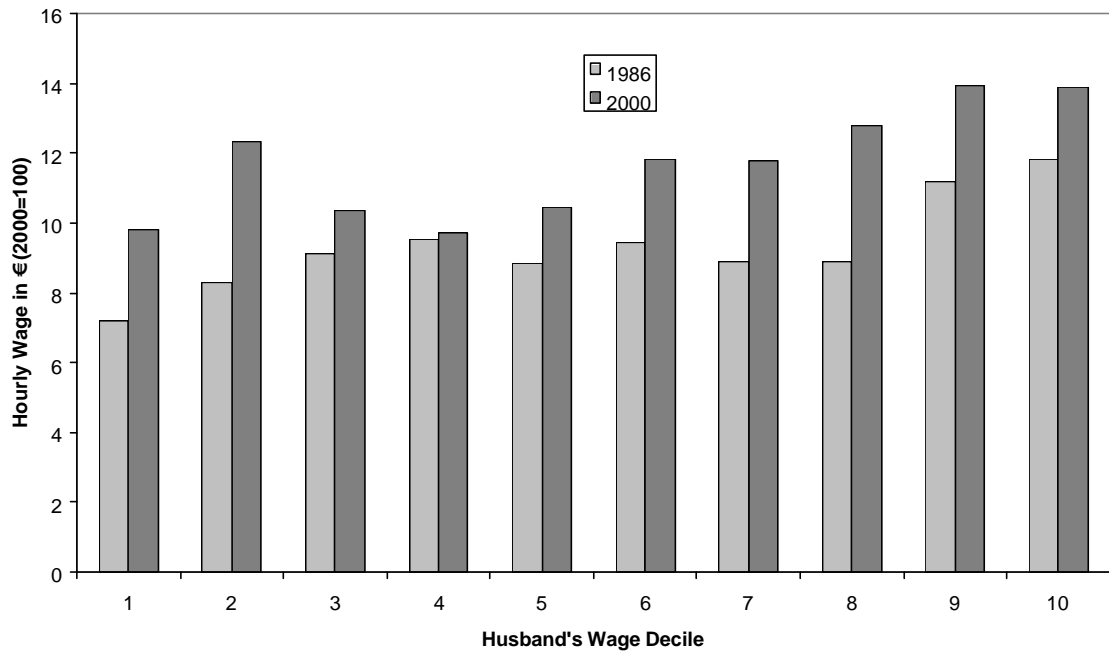
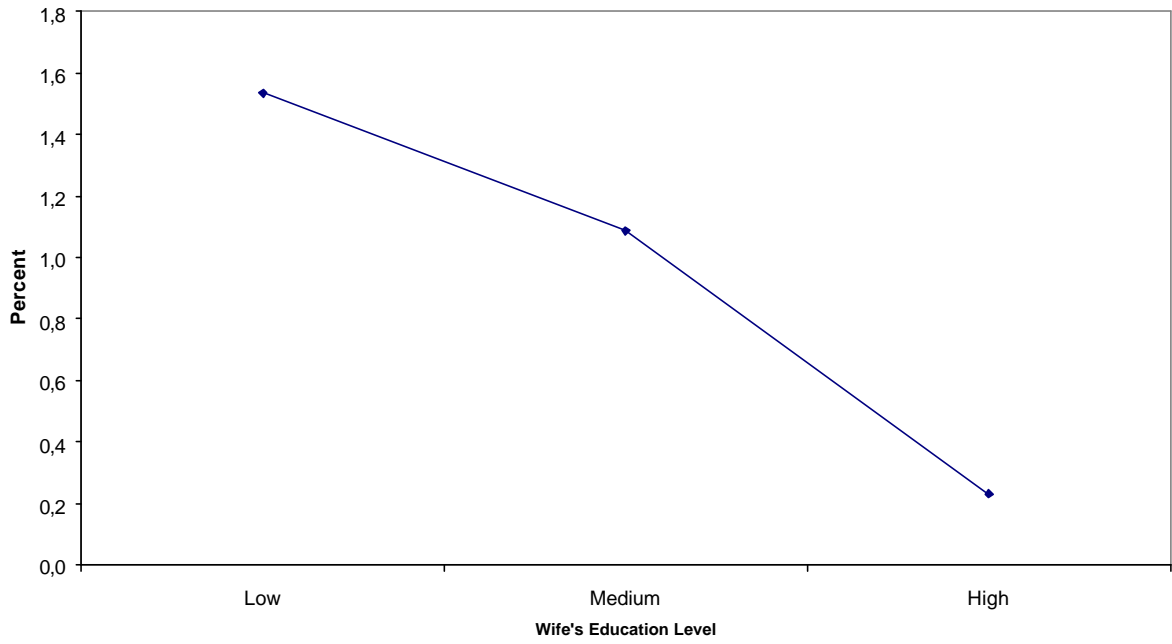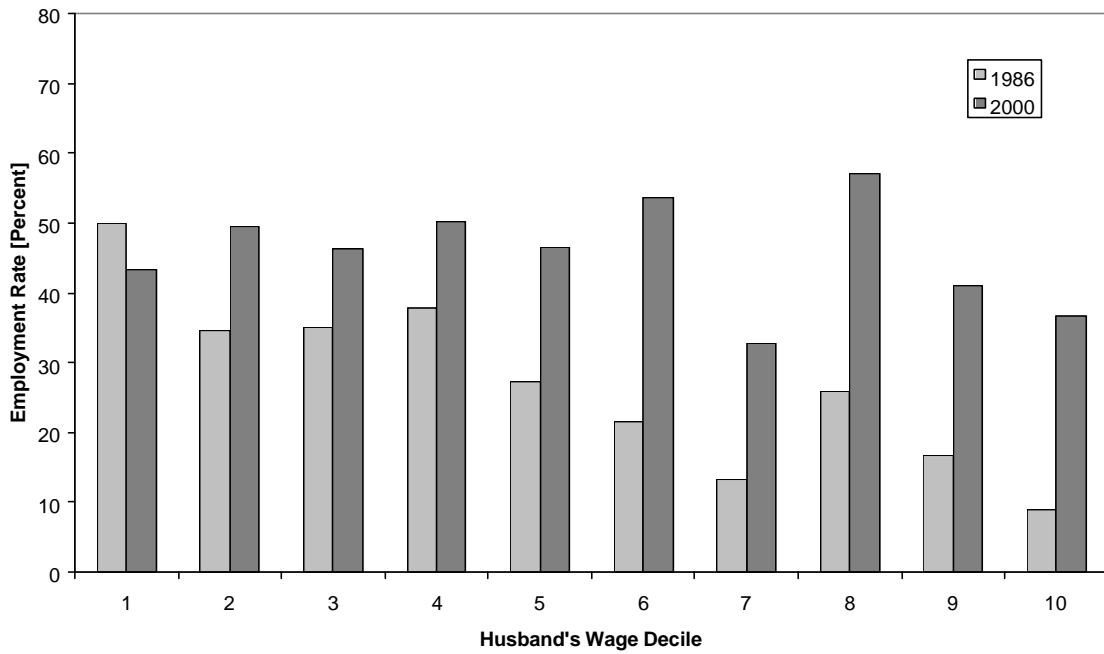**Figure 5: Wife's Average Weekly Market Hours by Husband's Wage Decile**

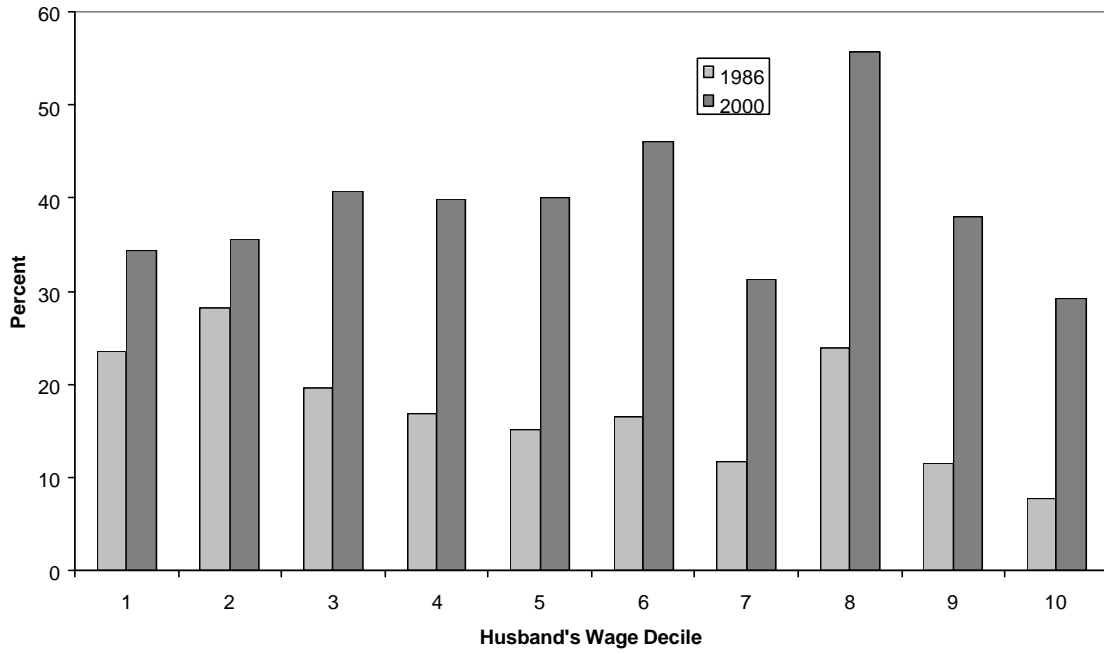**Figure 6: Wife's Hourly Wage Rate by Husband's Wage Decile**

Figure 7: Annual Growth Rate of Wife's Hourly Wage (2000=100), 1986-2000

Figure 8: Wife's Employment Rate (with Children < Age 6)

Figure 9: Percent of Wives working Part-Time (with Children < Age 6)

Figure 10: Wife's Average Weekly Market Hours by Husband's Wage Decile (with Children < Age 6)