TOTAL WORK, GENDER AND SOCIAL NORMS

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ABSTRACT

Using time-diary data from 25 countries, we demonstrate that there is a negative relationship between real GDP per capita and the female-male difference in total work time per day -- the sum of work for pay and work at home. In rich northern countries on four continents, including the United States, there is no difference -- men and women do the same amount of total work. This latter fact has been presented before by several sociologists for a few rich countries; but our survey results show that labor economists, macroeconomists, the general public and sociologists are unaware of it and instead believe that women perform more total work. The facts do not arise from gender differences in the price of time (as measured by market wages), as women's total work is further below men's where their relative wages are lower. Additional tests using U.S. and German data show that they do not arise from differences in marital bargaining, as gender equality is not associated with marital status; nor do they stem from family norms, since most of the variance in the gender total work difference is due to within-couple differences. We offer a theory of social norms to explain the facts. The social-norm explanation is better able to account for within-education group and within-region gender differences in total work being smaller than inter-group differences. It is consistent with evidence using the World Values Surveys that female total work is relatively greater than men's where both men and women believe that scarce jobs should be offered to men first.

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1 Introduction

It is well-known that men engage in more market work—have higher participation rates and longer workweeks conditional on participation—than women. What has not been thoroughly examined, and what has been untouched by economists, is the issue of gender differences in the total amount of work—in the market and at home. Despite the obvious importance of looking more closely at how people spend their non-work time, relatively little attention has been paid to describing its patterns and examining its determinants. A few studies have considered how the price of time affects the distribution of non-work time (Kooreman and Kapteyn, 1987; Biddle and Hamermesh, 1990); and Aguiar and Hurst (2007) have charted secular changes in the distribution of non-market time in the United States. Generally, however, this line of inquiry has been limited by the relative paucity of available data sets. Until recently no country provided data on a continuing basis on how its citizens spend their time, and many have never provided such information. This absence of data has begun to change, and that change is what enables us to examine gender differences in the allocation of total work time.

We believe that this issue is important. First, because the amount of work (and its obverse, the utility from leisure) is one of the crucial arguing points in the "gender wars," simply discovering new facts about it is important. Second, discovering the determinants of those facts will allow us to infer how patterns of work by gender change as economies develop. Third, by developing a new theory of gender differences in the amount of total work, we may be able to provide an impetus for using similar theories to examine other differences in the allocation of time. Finally, the facts we adduce and the theory we present to explain them can impose restrictions on a variety of models that economists have developed, including some in macroeconomics/growth, and in household economics.

In the next section we describe what we mean by market and household work, outline data sets for four Western countries and present some facts using those data sets. We then expand the comparisons to a large number of other data sets, so that in the end we are using data on the

gender breakdown of work at home and in the market in 25 countries. Whether the facts that we adduce in Section 2 are novel, and whether they are already widely known, are examined in Section 3. In Section 4 we consider some possible explanations of our findings and indicate which ones do not seem consistent with the results. This leads in Section 5 to the development of a theory based on social norms that is consistent with those results. Section 6 examines some additional evidence that appears consistent with the theory, while Section 7 outlines a number of areas where the facts and theory should be used to inform how we model behavior.

2 Market Work, Home Work and Their Differences by Gender

In order to examine gender differences in work empirically, we need to devise general rules that allow activities to be classified as work. We first define work as the sum of time spent in production in the market and the household. We define market work as time spent for pay (or in unpaid household production for the market). We assume that people would not be working the marginal hour in the market if they were not paid, so that at the margin market work is not enjoyable (or at least is less enjoyable than any non-work activity at the margin). In the economics literature it has generally been treated as the obverse of the aggregate of all activities outside the market—all uses of non-market time are implicitly assumed to be aggregable.

We count as household production those activities that satisfy the third-party rule (Reid, 1934) that substituting market goods and services for one's own time is possible. Such activities may be enjoyable (as may be work in the market), even at the margin; but they still have the common characteristic that we could pay somebody to perform them for us and we are not paid for performing them. We define total work as the sum of time spent in market work and household production. Note that we do not and cannot examine gender differences in the consumption value of the average or marginal minute of market or household production; all we do here is estimate, and then try to explain, differences in the total amount of time spent in productive activities.

One alternative to production is tertiary activities, those things that we cannot pay other people to do for us but that we must do at least some of. Included in this category are sleeping and eating, and other biological needs. It should be *prima facie* clear from this distinction between them and household production why it is important to disaggregate non-market time: A drop in non-market time because people are contracting out more activities has much different implications for their well-being than does a similar decline in tertiary activity. The two types of activities are imperfect substitutes, nor are they likely to be equally substitutable for market work and thus allow the aggregation of these non-market activities.

The fourth and final aggregate is leisure, all activities that we cannot pay somebody else to do for us and that we do not really have to do at all if we do not wish to. We include in this category television-watching, attending religious services, reading a newspaper, chatting with friends, etc. What distinguish leisure from the other types of home activities are that it cannot be outsourced and that one can function perfectly well (albeit not happily) with no leisure whatsoever: None is necessary for survival.

Throughout this initial empirical section we try to define the aggregates of activities as similarly as possible across the countries we study. All of our national aggregates are based either on our own aggregations of micro data collected from time diaries or from published aggregates summarizing such data. An increasing number of national governments have fielded time-diary surveys. Wide-scale surveys have been conducted for nearly 70 years (Sorokin and Berger, 1939). The general idea in a time-diary study is to give each respondent a diary for one or more recent (typically the previous) days, ask him/her to start at the day's beginning with the activity then underway and then indicate the time each new activity was undertaken and what that activity was. The respondent either works from a set of codes indicating specific activities, or the survey team codes the descriptions into a pre-determined set of categories.

No matter how extensive a set of codes is, each survey will have a different way of coding and aggregating what might seem like the same activity to an observer. Time diaries have

the virtue of forcing respondents to provide a time allocation that adds to 24 hours in a day. Also, unlike retrospective data about last week's or even last year's time spent working, while the time-diary information is necessarily based on recall, the recall period is only one day. The shorter recall period and the implicit time-budget constraint suggest that information on market work from time diaries is likely to be more reliable than the recall data on time use from standard household surveys; and, of course, time diaries provide information on non-market activities that is unavailable from labor-force surveys.

We concentrate initially on recent time-diary data for four countries: Germany, Italy, the Netherlands and the U.S. (Details on these four data sets are contained in Statistisches Bundesamt, 1999; ISTAT, 2005; NIWI, 1993; and Hamermesh *et al*, 2005.) The time diaries are collected for a single day in the U.S., two or three days in Germany and Italy, and an entire week in the Netherlands. Table 1 presents the aggregates of time spent in various activities (with basic activities numbering at least 200 in each set of diaries) by gender for each country on a representative day of the week. We concentrate on individuals aged 20-74, the largest possible age range that is included in all four data sets.

The crucial thing to note from this table is the near-equality of total work by gender within Germany, the Netherlands and the U.S. There are substantial differences in total work across these countries, perhaps real, perhaps due to inherently non-comparable classifications of activities among them; but within each country, among people from the same culture and whose activities are classified using the same basic activities and methods of aggregation, there is essentially no difference by gender in total work. Men work more in the market, women engage in more home production, but these balance out.[1] The only exception is Italy, where men work substantially less in total than women, mainly because women engage in much more household

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[1] Aguiar and Hurst (2007) calculate what they call total market work plus non-market work using the same U.S. time-diary survey. When one accounts for childcare, the excess of male total work over female total work reduces to 1.1 hours per week (9 minutes per day) in 2003. Thus even though their combination of the basic categories could not be the same as ours, the inference from their study is essentially identical to what we have found in the various data sets used here.

production than women elsewhere, while men engage in less. Indeed, nearly two-thirds of the excess of women's total work over men's in Italy compared to the other three countries is accounted for by the time they spend cleaning house (Burda *et al*, 2006).[2]

Beyond this striking ***iso-work*** fact, the other consistent difference is the gender difference in non-work activities: Men enjoy more leisure, women spend more time in tertiary activities (and, of course, in the countries other than Italy these sum to the same amount of time). Nearly all of men's excess leisure (again, except for Italy) is accounted for by their additional time in front of television screens.[3]

Given evidence that even sleep responds to monetary incentives, and (Hamermesh, 2007) that time spent eating does too, nothing requires that the total amount of non-work time (and by construction the total amount of work) be nearly identical among men and women, as it is in three of the four countries. Whether this equality is more widespread can be inferred by comparing calculations using published aggregates from recent time-diary studies from seven wealthy EU countries, the results of which are presented in Table 2. With the exception of France, where women's total work exceeds men's by over seven percent, we again find near-equality of total work by gender. Again too, in these countries more of men's non-work time, which roughly equals women's, is spent more in leisure, less in tertiary activities.

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[2] This exceptional Italian behavior appears to be well-recognized in popular literature. "Italian men… are *pueri aeterni*, who expect their wives to replace their mothers, and iron their shirts and fret about their underwear." McEwan (2006, p. 231).

[3] To address one of the many necessary arbitrary aggregations using the different categories, consider our classification of volunteer work as leisure. For the U.S. in 2003 we recalculated the means to include both volunteer work and non-household care activities. Women performed 29 minutes of these activities, men 23, so that the 4-minute excess of men's all work would be changed to a 2-minute excess of women's total work over men's if we had included these two categories as household production. Making the same calculation for the German data for 2001/02, we find that men performed 11 minutes, women 8 minutes of volunteer work. If added to the totals in Table 1, this would have reduced the 8-minute excess of female total work to an excess of only 5 minutes. The same calculation for the Italian data from 2002 shows that women performed 14 minutes, men 9 minutes of volunteer work. Doing the same thing for the Dutch 2000 data shows that men performed 9 minutes, women 12 minutes of volunteer work, which if added to household production would have reduced the 7-minute excess of male total work to only 4 minutes. In all three recent Anglo-Saxon data sets this slight expansion of the definition of total work in fact equalizes still further the gender distributions of total work, while for Italy it exacerbates the excess of female over male work.

To examine gender iso-work further, we obtained raw data sets from Spain and Australia and computed the same aggregates as presented in Table 1. Also, data for three transition countries, Estonia, Hungary and Slovenia, are available from Aliaga and Winqvist (2003), the same source that underlies Table 2, allowing us to make these calculations for them. Finally, using various published summaries describing the results of time-diary studies conducted since 1992, we calculated the same aggregates by gender for a set of wealthy countries, Canada, Israel, Japan, Mexico and New Zealand, and for a set of sub-Saharan countries, Benin, Madagascar, Mauritius and South Africa (from Blackden and Wooden, 2006).

The results of comparing men's and women's total work are summarized for the 25 countries by the scatter diagram in Figure 1. The steepest line shows what men's total work would be if it were identical to women's total work in a country. We then estimated a regression relating the amount of total work among men to that among women. Recognizing that men in the three Mediterranean samples (Spain, France and Italy) appear to work less in total than women, we included an indicator for the three Mediterranean and five middle-income countries. The regression results (coefficient estimates and standard errors) are:

$$Male\ Work\ =\ 70.72 + 0.80 FemaleWork\ \text{-}\ 21.53 Med/Middle,\ \text{N= 25, RBar}^2 = 0.605.$$
$$\qquad\quad (59.39)\ \ (0.13) \qquad\qquad (12.98)$$

(The regression line through the rich non-Mediterranean points is the upper of the two parallel lines in Figure 1; the line fitting the points describing Mediterranean and middle-income countries is the lower parallel line.) We cannot reject the hypothesis that the intercept is 0, nor can we reject the hypothesis that the slope on FemaleWork is 1, although the joint hypothesis that the intercept is 0 and the slope is 1 is rejected.[4] This fact is visible from a comparison of the scatter in Figure 1 to the line of complete equality. Not only is total work time nearly equal by gender in each sample in the rich non-Mediterranean countries; the differences over this large part of the economically developed world are truly tiny. In the three Mediterranean and in four of the

[4]The statistic testing the joint hypothesis is $F_{(2,22)} = 3.87$, p=.03.

five middle-income samples, however, the regression shows that women work significantly more in total than men.

In the simple regression above we included an indicator that in part proxied for income level. To examine the role of economic development as measured by income we obtained real GDP per capita in purchasing-power-parity terms for each of the 25 countries in our sample (from Heston *et al*, 2002). Figure 2 shows a scatter of the difference in average minutes per day of female over male total work time in comparison to this income measure, along with a line describing a fit to these points. The scatter and fit suggest either that economic development does bring equalization of total work time by gender, or that today's rich northern countries have always had a different culture along this dimension from today's poor countries and from Mediterranean countries.

We do not claim that this remarkable gender equality in total work holds at all times and in all economies. It most decidedly does not hold even today in Italy, and it does not seem to characterize other southern European countries very well. Our results also show that it does not hold in middle- or lower-income countries; and Haddad *et al* (1995) suggest similar findings for other developing African economies, as do Goldschmidt-Clermont and Pagnossin-Aligisaks (1995) for Bulgaria in 1988. The evidence here makes it clear, however, that iso-work describes household behavior and labor markets in rich northern countries generally and is associated with higher real incomes.

3 Novelty and Knowledge

The iso-work phenomenon has not been noticed by economists, but it has been shown by several sociologists. Robinson and Godbey (1999) use data from a UN report (Goldschmidt-Clermont and Pagnossin-Aligisakis, 1995) to show that this fact describes the average of (recall and time-diary) data from 14 countries from the 1980s and early 1990s; and Gershuny (2000) shows that it approximates the averages across an even larger sample of data sets covering the 1960s through mid-1990s. No study has demonstrated it using data sets that were as well harmonized as those

that we have assembled here nor has shown how closely it describes outcomes in individual countries.

The fact is thus not new in the sociology literature, although it is new in the economics literature. The difficulty, however, is that it has been swamped by claims in widely circulated sociological studies (Hochschild, 1997, and earlier work) based on ethnographic research on a few non-randomly chosen households that women's total work significantly exceeds men's. Indeed, even sociologists who have demonstrated it (e.g., Mattingly and Bianchi, 2003, for the United States, and Bittman and Wajcman, 2000, for several countries), quickly move beyond it to focus on showing that women's work is more onerous than men's, and why women's leisure provides less pleasure.

With other evidence demonstrating gender iso-work, one wonders whether the fact that we have demonstrated is well known among economists, other social scientists and the general public. To examine this issue we designed a survey that asked only one question:

"We know that American men (ages 20-75) on average work more in the market than do American women. But what is the difference between men's TOTAL WORK (in the market and on anything that you might view as work at home) and that of women? Without consulting any books, articles or raw data, PLEASE PUT AN X NEXT TO THE LINE BELOW THAT YOU BELIEVE TO BE THE CLOSEST APPROXIMATION TO THE CURRENT SITUATION IN THE U.S."

Respondents were allowed nine possible responses, ranging from a 25 percent excess of female total work, to symmetry around equality, to a 25 percent excess of male total work.

Early in August 2006 we emailed this survey to three groups: 1) 663 labor economists affiliated with a worldwide network of such researchers. The web-based survey allowed us to distinguish respondents who had spent at least six months in the U.S. from those who had not; 2) 255 elite macro and public finance economists, members of a mostly American network of such researchers; and 3) 210 faculty members and graduate students in a leading sociology department in the U.S. The first and third groups received follow-up emails three weeks after the initial

survey. Also, early in September 2006 we asked the same question of 533 students in an introductory microeconomics class. Using the information on location in the first group, we thus have five separate sets of responses. The response rates varied, but there is no reason to believe that non-respondents were less well-informed about the facts than respondents.

The results of these surveys are shown in Table 3. The majority of respondents in each of the five groups believe that American women perform at least five percent more total work than men. Assigning half the respondents who state that there is equality to this category, we convincingly reject the null hypothesis that the proportions stating that men work less or women work less are equal. Indeed, even if we assign all those stating that there is equality to the "men work more" group, this null hypothesis is rejected in some of the samples. Finally, for each sample we strongly reject the hypothesis that members of the underlying populations are equally likely to state the men work less, the same or more than women in total.

These surveys show that sociologists, experts in labor economics, leading economists and a non-random sample of the public believe that women work more in total than do men. Indeed, the results from the survey the economists look very similar to those from the sample of intelligent college freshmen. Perhaps the only consolation is that the distance between opinion and fact is less among these groups of economists than it is among sociologists. Despite our demonstration of gender equality of total work in the U.S. and most rich countries using current time-diary data, and despite demonstrations using time-diary and recall data of this general fact by several sociologists, the groups considered here appear ignorant of the reality.

4 What Fails to Explain the Facts?

Economic theory predicts that a rise in men's relative wage (the gender wage gap) will lead to relatively less work in the market by women than by men (assuming substitution dominate income effects). The impact of this increase on the relative amount of home work will be in the opposite direction, so that the effect of a change in the gender gap on the relative amounts of total work should be ambiguous. Unless, however, additional market work is offset one-for-one by

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reduced household production (i.e., unless additional earnings are not used at all to take additional leisure or spend additional tertiary time), a rise in the gender wage gap should reduce women's total work relative to men's.

To examine this possibility we use Polachek and Xiang's (2006) estimates of the gender wage gap. In particular, for 18 of the 25 countries on which we have recent time-diary data they produced estimates of the difference between the logarithms of the medians of the distributions of males' and females' wages. Using these data, in the first two columns in Table 4 we present least-squares estimates of equations describing female-male differences in market and total work as affected by the gender pay gap. The results on market work are consistent with an upward-sloping relative supply curve of labor to the market. The market work effect, however, swamps the household work effect, so that we find that the female-male gap in total work is also negatively related to the male-female wage difference.

These findings are not affected by the inclusion of real GDP per capita, as the estimates in Columns (3) and (4) show, nor are they affected by the additional inclusion of the indicator variable for Mediterranean and middle-income countries. Higher relative wages among men lead them to work relatively more in the market, less at home, and more in total. Despite the quality of the estimates, the equation in Column (6) describes well below half of the variance in the gender difference in total work. The difficulty is that, as implied by Tables 1 and 2, three-fourths of the gender differences in total work are clustered within four percent of equality, while the gender wage gaps range from 0.13 to 0.59. Something, not equality in relative wages or per-capita income, is causing the pervasive absence of gender differences in total work.

Taking a different view of these results, one might follow the literature on household behavior (see, e.g., Lundberg and Pollak, 1996) and view the gender relative wage as measuring gender differences in power in the household. By this criterion we should expect that where the male-female pay gap is higher we would observe men enjoying relatively more leisure. The estimates in Table 4 imply exactly the contrary results. Where one might infer that men have

more power, as measured by relative wages, they also work relatively more in total compared to women.

A second possible explanation for some of these facts is that husbands and wives pay attention to each other's labor and leisure, so that we observe gender equality at the means in rich countries because most adult men and women are married. To examine this possibility in the aggregate, in Table 5 we present means of market work and home work by gender and marital status for the United States in 2003 and Germany in 2001/02. While the female-male gap in total work is higher among unmarried adults, in the United States it varies across marital status within 5 percent of equality. In Germany the gap is larger among unmarried adults, but still not huge.

An explicit test of the notion that gender iso-work is generated by husbands and wives focusing on each other's work effort as part of marriage can be conducted by examining inter-household dispersion in the within-household gender total work gap. For the 2001/02 German data this is easy, as diaries were collected from both spouses. This examination is not possible for the U.S. in 2003, so instead we use the much smaller 1985 U.S. Time Use Survey, which collected data on both spouses. As an additional comparison we examine the 1992 Australian time use data (summaries from which were included in Figure 1), in which time diaries were also obtained from each spouse.

Figures 3a-3c show the frequency distributions of the differences within households between female and male total work in Australia, Germany and the U.S. While the distributions are symmetric around means of 0, the implied dispersion is huge in each case. Indeed, regressions within each country of husband's total work time on his wife's explain only 25 percent of the variation in the former in Australia, 11 percent in Germany and 9 percent in the U.S. While husbands do work more in total when their wives work more, the covariation describes only a small part of the variance in spouses' total work time.[5]

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[5]In these Australian, German and American data sets the coefficients on wife's total work time are 0.65, 0.37 and 0.41, with t-statistics of 37.55, 30.46 and 17.27 respectively. These slopes are far below unity and far below the slope in the cross-country regression on national averages presented in the text.

5 Social Norms in the Theory of Total Work

Our findings suggest that there must be a mechanism that coordinates the total time spent on market work and secondary activities across males and females, whether they are married or unmarried.

The simplest coordination device that equalizes total work across agents is a *social norm for leisure* that serves as focal point for the determination of total work. Peer pressure or a strong desire to conform to a common social norm for time allocation mute market incentives and weaken the impact of individual tastes. As a result, time use becomes more similar across individuals.[6] If the social norm is strong enough to drive the agent to conform fully, we obtain the iso-work result we observe in the data.[7] Alternative explanations of the iso-work fact are, of course, possible; but all must involve, in one way or another, an interplay between social interactions and individual tastes.

5.1 One Norm for All, No Within-Gender Heterogeneity

Imagine that, *in the absence of a social norm*, consumers maximize the linear-quadratic utility function

$$C - (1/2\epsilon)(1 - L)^2 \tag{1}$$

subject to constraints

$$C = \Omega + wH, \tag{2}$$

$$H + L = 1, \tag{3}$$

where C and L denote consumption and leisure, w is the wage rate, Ω represents non-labor income, the parameter $\epsilon > 0$ is an (inverse) index of the disutility of work, and without loss of generality the amount of available time is normalized to 1.[8] Optimal leisure is then

$$L = 1 - \epsilon w.$$

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[6] For a survey of social norms and economic theory, see Elster (1989). Social norms have been studied, among others, by Akerlof (1980), Jones (1984), Cole et al. (1992), Kandori (1992), Young (1996), Lindbeck (1997), and Lindbeck et al (1999).

[7] In this simple story, total conformity only occurs if the desire to conform is infinitely strong. The literature (Bernheim, 1994) has sought ways to obtain full conformity without assuming an infinite cost of deviation.

[8] Here, and in what follows, we ignore non-negativity constraints for simplicity.

We call this the agent's *intrinsic* leisure optimum.[9] It is determined by private incentives, prices and budget constraints.

Now suppose that there is a social norm that influences, but does not mandate, individual leisure. We mean by this that agents can choose the extent to which they stick to the norm, and balance optimally the marginal costs and benefits of deviating from it. The cost of deviating may stem from guilt (an internal psychological process) or shame (an external peer pressure or a reputational mechanism). The benefit of deviating results from the joy of following one's own unbridled inclinations that in general differ from the norm.

Formally, assume that there is a quadratic cost of deviating from the leisure norm L^*, and parameterize the strength of the social norm by the coefficient $\phi \geq 0$,[10] so that the utility function becomes

$$C - (1/2\epsilon)(1 - L)^2 - (\phi/2)(L - L^*)^2.$$

Optimal leisure is

$$L = \alpha(1 - \epsilon w) + (1 - \alpha)L^* \equiv L(w), \tag{4}$$

with the weight α, between 0 and 1, given by

$$\alpha \equiv \frac{1}{1 + \phi\epsilon}.$$

Intuitively, the social norm pulls optimal leisure choice away from the intrinsic optimum $1 - \epsilon w$ and towards L^*. The coefficient α is small, and optimal leisure is close to the norm, if the social norm is strong (ϕ large) or leisure is not too wage inelastic (ϵ large). Higher wages, holding α constant, increase the distance between L and L^* by making it more costly to deviate from the intrinsic optimum.

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[9]By assuming $\epsilon > 0$, we exclude cases in which the labor-supply curve is backward-bending. We assume the wage rate is always below $1/\epsilon$ to avoid corner solutions at $L = 0$.

[10]The strength of the norm for an individual may depend on the number of people who have adopted it. We examine this possibility below.

5.1.1 Wage Gender Gap

Now assume that male (M) and female (F) wages differ, but that the wage sensitivity of leisure (α) is identical by gender.[11] The resulting *leisure gap* between man and women is

$$L^m - L^f = L(w^m) - L(w^f)$$
$$= -\alpha\epsilon(w^m - w^f).$$

Explaining the iso-work fact requires examining under which circumstances the leisure gap $L^m - L^f$ may be close to zero. Since α is decreasing in ϕ, this requires that norm be very strong. In the limit, $\lim_{\phi\to\infty}(L^m - L^f) = 0$. In words, a very strong norm mutes the effect of wages on leisure, and equalizes male and female leisure and thereby leads to iso-work.

While this result may appear trivial, its derivation reveals what is perhaps the most crucial ingredient of a norm-based explanation of the total work fact: the assumption that men and women share a *gender-neutral norm*. It is because the leisure norm of males and females is gender-neutral that a larger ϕ eliminates the differences between male and female leisure. Were the norm dependent on gender, we would, *ceteris paribus*, observe different male and female leisure even when $\phi = +\infty$. Hence the fact that total work is essentially invariant to gender in high-income countries (but less so in poorer economies) suggests, if the social norm story is correct, that a fundamental change of norms takes place in the process of economic development: gender-neutral, or gender-blind norms replace gender-specific references for leisure (and more generally for consumption).[12] We return below to the theme of gender-neutral norms later.

5.2 One Norm for All, Within-Gender Heterogeneity

Although it provides us with an important insight, the small model we have just outlined is not sufficient to rationalize all the facts in our possession. The empirical difficulty we face is that the iso-work fact coexists with significant within-gender (and more generally within-group) heterogeneity of leisure. This is inconsistent with the simple story told above, because as $\phi \to +\infty$ the labor supply of each individual, whether male or female, converges to the common, gender-neutral norm

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[11] This last assumption, which is of course at odds with estimates of labor supply elasticities for males and females, can easily be relaxed.

[12] Note that no causal statement is being made here. One can easily write models in which gender-specific norms cause economic backwardness, and models in which competition and development cause gender equality.

L^* regardless of the wage.[13] As a result, while a strong norm bridges the gap between male and female leisure, it also eliminates any within-gender heterogeneity of leisure.

5.3 Social Clusters

This unpleasant feature of our model can be avoided by introducing non-gender based *social clusters*, or multiple social norms.

Imagine that *each* gender is stratified into social clusters that are defined by the relative position in the wage distribution (e.g., above or below the median female or male wage). We could just as well split agents according to the color of their eyes, the month in which they are born, or the neighborhood in which they live. The crucial ingredient is that these social clusters be based on gender-neutral characteristics: the fractions of men or women above the median wage of their gender is identical, and so are (presumably) the proportions of men and women who have blue eyes, are born in December, or live in Austin, TX.[14]

Call q, $0 < q < 1$, the watershed between what we call high and low wages. An individual of gender i will be in the high-wage category if her/his wage is above some minimum level $\mathbf{w}^i$ defined by

$$1 - F^i(\mathbf{w}^i) = q,$$

where $F^i(\cdot)$, $i = m, f$, is the cumulative distribution of wages for gender i. Let L_j^*, $j = h, l$, be the leisure norm for high (h) and low (l) wage earners. Assume that the strength ϕ of the social norm is the same for all individuals. Leisure of an agent of wage type j is simply

$$L_j(w) = \alpha(1 - \epsilon w) + (1 - \alpha)L_j^*,$$

so that the average leisure of agents of gender i is

$$\bar{L}^i = \int_{w < \mathbf{w}^i} L_l(w)\, dF^i(w) + \int_{w > \mathbf{w}^i} L_h(w)\, dF^i(w)$$

$$= \alpha(1 - \epsilon \bar{w}^i) + (1 - \alpha)[(1 - q)L_l^* + qL_h^*].$$

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[13] This is also true if ϵ, the sensitivity of leisure to the wage, differs across sexes.

[14] A high/low wage social norm defined in terms of position relative to the *mean* wage would, for asymmetric wage distributions, deliver norms whose adoption is correlated with gender as long as the means are different. Any model based on such a specification will not be able to replicate the iso-work fact.

We immediately conclude that the leisure gap between men and women is

$$\bar{L}^m - \bar{L}^f = -\alpha\epsilon(\bar{w}^m - \bar{w}^f).$$

This is the same formula as when there is a single social norm. As before, the leisure gap goes to zero and the iso-work fact holds asymptotically when the social norm becomes more compelling ($\phi \to \infty$, so that $\alpha \to 0$). However, the existence of many social clusters (delineated by categories that are orthogonal to gender) ensures that *within-gender* heterogeneity of leisure is not shrunk to zero as ϕ becomes very large.

5.4   Even More Heterogeneity

Although the previous model of social clusters maintains within-gender heterogeneity across clusters, one might be worried that it does not permit *within-cluster* variance: within each (high, low) wage category, leisure indeed becomes identical for agents of the two sexes as the corresponding leisure norm becomes infinitely compelling ($\phi \to \infty$).

One way to avoid this problem is to define yet more dimensions of clustering based on other characteristics of agents, and to repeat the reasoning of this section for this finer partitioning of the population. By doing so — provided of course the resulting categories are uncorrelated with sex — we could again replicate the iso-work fact yet generate as much within-gender heterogeneity as desired by making each social norm increasingly compelling. Of course, we would still find that within-category heterogeneity would go to zero, but this would not be much of a problem anymore as the categories would be arbitrarily fine.

Another way to maintain within-category heterogeneity as norms become more and more binding would be to introduce a dimension of idiosyncratic heterogeneity in the population. This heterogeneity could stem from different tastes, or from a noisy individual observation of the societal leisure norm.[15] To illustrate how this line of reasoning would play out in our setup, let us go back to the first of our models with one norm L^* for all, identical wages for all members of a given sex, and a different wage for male and female workers. Imagine that individual k observes the norm with some

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[15] As we do not wish to transform the quest for a theoretical explanation of the iso-work fact into a futile data-fitting exercise, we prefer the second interpretation, which is potentially falsifiable, to the first, which multiplies unobservable parameters.

measurement error λ_k, in the sense that he thinks the desirable norm is $L^* + \lambda_k$ instead of L^*.[16] As a result, optimal leisure for that individual becomes

$$L_k = \alpha(1 - \epsilon w) + (1 - \alpha)(L^* + \lambda_k),$$

with α defined exactly as above. Hence $L_k \to L^* + \lambda_k$ as $\phi \to \infty$ (and $\alpha \to 0$) regardless of the wage, i.e. regardless of whether one is male or female. Now suppose measurement errors are idiosyncratic in the sense that the λ' average to zero for each sex.[17] Then it is straightforward to show the leisure gap is zero, and the iso-work fact holds exactly when $\phi \to \infty$—in spite of the fact that each agent ends up taking a different amount of leisure due to an idiosyncratic perception of the norm.

5.5   Accounting for Variations in Total Work

The data presented in Section 2 make it clear that, although total work is strikingly equal across men and women, it does vary, sometimes substantially, across countries, region and over time. Since we have attempted in the previous section to rationalize the iso-work fact by social norms by arguing that they serve as a coordination device between male and female total work, we must also explain how norms can vary.

Let us return yet again to our simplest model of social norms: men and women have the same preferences but face a different, unique, wage, there are no within-gender wage differences, and men and women adopt a common leisure norm L^*. Remember that in that model male and female leisure are given by

$$L^m = \alpha(1 - \epsilon w^m) + (1 - \alpha)L^*,$$

$$L^f = \alpha(1 - \epsilon w^f) + (1 - \alpha)L^*.$$

Now close the model by assuming that that the gender-neutral norm L^* reflects *average leisure* across males and females in society. Since there are equal proportions of men and women, in equilibrium

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[16]For example, an individual of type k has utility function $C - (1/2\epsilon)(1 - L)^2 - (\phi/2)[L - (L^* + \lambda_k)]^2$.

[17]This leaves open the possibility that females and males perceive the social norm with different precision.

we have,

$$\frac{1}{2}(L^m + L^f) = L^*,$$

Combining the last three equations and solving for L^*, we conclude that the *equilibrium social norm for leisure* is simply

$$L^* = 1 - \epsilon \bar{w},$$

where

$$\bar{w} \equiv \frac{w^m + w^f}{2}$$

is the average wage in the whole (male *and* female) population.

The story is very simple: the equilibrium social norm for leisure is independent of the strength of the norm, but it is negatively affected by the average wage rate $\bar{w}$, with a response coefficient that depends on the sensitivity ϵ of individual leisure to the wage. Whenever these magnitudes change, across countries or over time, the social norm for leisure varies. There is no reason to expect it to remain to be constant over space or over time.

5.6 Accounting for the Relationship between GDP Per Capita and the Female-Male Total Work Difference

We have argued above that female-male differences in total work are negatively related to GDP per capita. There are two ways we can account for this fact in a theory of social norms. The first relies on the link between economic development and the increased gender-neutrality of social reference groups. The second, which is slightly more *ad hoc*, assumes that the cost of deviating from a social norm is positively related to the wage.

The model of social clusters we have outlined above is able to account for the reduction in the female-male total work difference as GDP per capita grows provided economic growth is positively correlated with the adoption of gender-neutral reference groups. Suppose for instance that at low income levels there are two leisure reference groups: one for men, and one for women, each with a different (gender-specific) leisure norm. Then, trivially, iso-work does not hold at low income levels. If gender-defined social clusters are replaced by gender-neutral reference groups as income rises (e.g., at quantiles of income distributions), then development will be associated with a convergence of the total work difference across genders to zero.

An alternative, possibly complementary explanation relaxes the assumption that deviating from the norm entails a utility cost that is independent of the level of the individual's wage. Let us consider (in the one-norm model) what happens if people get are harassed when they deviate from the norm. That is, imagine that, instead of suffering a direct utility loss as envisaged above, deviants lose time fending off their critics, mending their reputation, or battling inner guilt feelings at the cost of time available for work or leisure. Namely, they solve:

$$C - (1/2\epsilon)(1 - L)^2 \tag{5}$$

subject to constraints

$$C = \Omega + wH, \tag{6}$$

$$L + H + \frac{\phi}{2}(L - L^*)^2 = 1. \tag{7}$$

It is straightforward to show that the solution to this problem is formally equivalent to that of the utility-loss model provided we replace the parameter ϕ in the latter model by ϕw. In other words, the "harassment" model is just the utility loss model with a cost of deviation proportional to the wage. Therefore, adapting equation (4), we conclude that optimal leisure in this model is

$$L = \alpha(w)(1 - \epsilon w) + [1 - \alpha(w)]L^*, \tag{8}$$

with the weight $\alpha(w)$ now defined as

$$\alpha \equiv \frac{1}{1 + \phi\epsilon w.}$$

At low wage or development levels (w close to zero), the weight $\alpha(w)$ is close to 1 so that the intrinsic optimum $1 - w$ is the main determinant of leisure. At high wage or development levels (w high), and given the parameter ϕ, the weight $\alpha(w)$ approaches zero and the social norm becomes the sole determinant of optimal leisure. As the value of time increases, so does the cost of deviating from the norm, resulting in a smaller deviation from the norm.

6 Some Evidence on the Role of Social Norms in Iso-Work

The theory developed in the last section is not easy to test directly. We can, however, perform several additional examinations that can allow us to infer whether the role of social norms is consistent with observed behavior in our two main data sets. If the notion of social clusters is correct, we should expect that differences in total work across various cuts of the data will be large compared to gender differences within a cluster. Consider first cutting the data by educational category. In the 2003 U.S. data we divide the adult population into those with fewer than 12 years of school, 12 years of school, some college, and college or more. In the German data we create the four categories *volksschule/hauptschule* (basic), *mittlere reife/realschule* (high school), *fachoberschule/fachabitur* (vocationally qualified), and *abitur* (university).

Table 6 shows the average minutes of market and total work by gender for each of the four education categories in the U.S. and Germany. In both countries gender differences in total work within education categories are quite small, with the highest being the 5 percent excess of female over male total work among the most educated Germans and the least educated Americans. Differences across categories in total work independent of gender are, however, huge: In the United States the percentage difference between the highest and lowest education categories in the average amount of total work is 39 percent, while in Germany it is 13 percent.[18] Clearly, gender differences are tiny compared to those resulting from differences in educational attainment.

Similarly, the data could be cut by region. To the extent that there are inter-regional cultural differences ,we might expect different norms about total work across regions, even though gender differences within region are small. Possibilities for examining this notion are limited in both data sets by sample size. Also, confidentiality restrictions on the German data prevent us from obtaining a finer geographic breakdown than West and East. Within these

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[18] That the spread across education categories is so much greater in the U.S. may be due to the fact (Devroye and Freeman, 2001) that differences in educational attainment imply much greater differences in literacy in the U.S. than in Germany.

limitations we divide the U.S. sample into the four main Census regions, and the German data into West and East.

Averages of market and total work by gender within geographic area are shown in Table 7. Notice first that within-region differences in total work by gender are not large. While those in the South and within each German region are statistically significant, none exceeds 3 percent. For the U.S. let us focus on differences between the South and the rest of the country. Among Southern women total work is nearly 6 percent below that in the rest of the nation, while among Southern men it is 3 percent below. The former difference is over three times bigger than the largest within-region gender difference in total work. For Germany we observe a qualitatively similar outcome: West-East differences in total work are 4 percent among women and 3 percent among men. The contrast between inter-regional differences in average total work and within-region differences by gender is consistent with the notion of clustering on norms, although the contrast is not as great as that observed when we cut the data by educational attainment.

A final bit of evidence asks, without any claims of causation, whether attitudes about gender roles are related to gender differences in total work. To examine this relationship we use data collected at various times in the 1990s by the World Values Surveys. Respondents in various countries were asked whether they agreed with the statement, "When jobs are scarce, men should have more right to a job than women." Taking averages of these data (from Fortin, 2005, Appendix Table 1), we graph them in relation to the female-male difference in total work for the 16 countries (of the 25 used in Figure 1) for which they are available.

The scatter diagrams relating the total work difference to the fraction of respondents who agree with the statement that scarce jobs should go to men are presented in Figures 4a for women's attitudes on this issue and in Figure 4b for men's attitudes. The scatters look very similar: In both cases what we might interpret as beliefs in male dominance are positively related

to the female-male gap in total work.[19] Implicitly, in countries where the expressed norm favors men, women perform a greater share of the total amount of market and household work.

7 Conclusion: The Importance of the Iso-Work Phenomenon for Economic Models

In Section 5 we showed that the iso-work fact and the approach to it across phases of economic development place tight constraints on the modeling of labor supply behavior across gender. Any nontrivial gender-neutral model of labor supply must rely on the existence of strong cluster norms to coordinate behavior, or rely on implausible mean-preserving transformations of underlying distributions which are in turn unlikely to be common across gender. Consequently, iso-work gives rise to a number of conundrums for economic models which rely on work-leisure choices to characterize economic behavior in both the short and long run.

Consider first the implications for business-cycle theories and macroeconomics. Although we have not emphasized it, the evidence supports the iso-work phenomenon over the business cycle.[20] Business cycle fluctuations are typically characterized by movements of market employment of 2-3 percent around a secular trend. It is thus unavoidable that the business cycle spills over into the home, shifting gender differences in the mix of household and market activities for the "representative agent." Because it is very unlikely (Greenwood *et al.*, 1995) that there is a stronger than one-for-one substitution of home for market production, a business cycle

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[19]The regression describing the scatter in Figure 4a is:

$$Female\ Work - Male\ Work = -20.11 + 191.9 ScarceF, \text{RBar}^2 = 0.42.$$
$$(11.06)\quad(55.95)$$

where $ScarceF$ is the fraction of women agreeing with the statement.
That describing the scatter in Figure 4b is:

$$Female\ Work - Male\ Work = -17.85 + 168.4 ScarceM, \text{RBar}^2 = 0.35.$$
$$(11.79)\quad(56.08)$$

where $ScarceM$ is the fraction of men agreeing with the statement.
Interestingly the relationship is steeper and tighter to women's attitudes on the allocation of scarce jobs than to men's.
[20]The evidence adduced in Burda *et al* (2006) for Germany, the Netherlands and Italy observed in two different years with few changes in the structure of the time-diary surveys supports the conclusion that iso-work holds at different phases of the business cycle. Across the 16 richer countries for which data are presented in Figure 1 the correlation of the female-male difference in total work with the deviation of the OECD standardized unemployment rate from its country-specific average from 1986-2004 is +0.0004.

downturn will reduce men's total work effort. This is inconsistent with earlier theoretical work on the macroeconomics of total labor supply. Average women's market hours are much more strongly procyclical than men's, so iso-work must tend to render women's home production time countercyclical, relative to men and possibly even absolutely. Iso-work will generally increase the elasticity of labor supply to the market as the marginal product of home production tapers off quickly.

A second implication is linked to long-run economic development. Our evidence documents a convergence of total work across gender with economic development. We show in Section 5 that this convergence can derive either from increasingly gender-blind assignment to reference clusters with strong norms, or from a convergence of gender wage-offer distributions to a common one. The past half century has also seen secular, albeit slow convergence in gender wage differentials. These two phenomena are probably related, but what is their source? Has technical change augmented female market production relative to that of men? Is technical change in home production generally labor-saving? More likely, how have interactions of these two types of innovation combined to generate the convergence in total work and the returns to market work? Examining these interactions without considering gender roles (e.g., Ngai and Pissarides, 2006) is a useful first step; but given the huge differences in gender roles in less developed countries, it is likely that growth and development patterns can be understood better if we take account of the convergence of total work and changes in the relative amounts of market and household work accomplished by men and women. This is especially true if one considers the different roles played by physical and intellectual attributes over the agricultural, industrial and service-sector phases of economic development (Fourastié, 1949; Clark, 1940).

In household models we typically assume that a spouse's bargaining power is a function of her/his market earnings. Yet we have shown here, at least for most rich economies, that gender differences in the amounts of leisure consumed are tiny. How can this be true if, as is still the case, men have substantially higher wage rates and market earnings? Three logical possibilities

present themselves: 1) Men have more power, but are altruistic toward their spouses and toward women generally, and do not take advantage of their relative power;[21] 2) Economists' modeling of the household has been incorrect, and market earnings do not generate power in the household; or 3) Earnings do generate power, men are not altruistic, but the average man's utility from his market and home work exceeds that of the average woman's from the same total amount of work. In other words, iso-work may not imply iso-utility from the same amount of work. This last possibility implies a formal version of what is implicit in the writings of some sociologists who have confronted the iso-work phenomenon (e.g., Mattingly and Bianchi, 2003), but then shifts the discussion to why one type of work is more onerous than another. Why, e.g., is the average minute spent in an office dealing with recalcitrant colleagues and demanding supervisors more pleasurable than the average minute spent shopping, cooking or taking care of children?

A social norm of iso-work imposes restrictions on older household bargaining models (e.g., McElroy and Horney, 1981). With gender equality in total work, the only room for changing prices and threat points to have any effect on choices is through gender differences in the valuation of marginal changes in time spent in market or home work. While these are possible, their implications are much harder to trace than in the absence of an iso-work norm. Consider too the choice of home versus market work, which is generally determined by equating the marginal value product of household time to the real wage measured in terms of comparable market output (e.g., Gronau, 1980). To the extent that social norms constrain agents to a value of labor supply that pays little attention to productivity in household production, one or more efficiency conditions in the standard model of household behavior would need to be modified.

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[21] Doepke and Tertilt (2007) present a model in which self-interest motivated by inter-generational concerns leads men to use their power to grant equal rights to women.

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Table 1. Time Allocations (minutes per representative day), Averages and Their Standard Errors, Women, Men Ages 20-74*

	Germany, 2001/02		Italy, 2002/03		The Netherlands, 2000		U.S., 2003	
	F	M	F	M	F	M	F	M
Individuals in survey	3,862	3,377	19,654	18,228	940	646	9,918	7,750
Market work	**133** (1.9)	**262** (2.8)	**133** (1.6)	**290** (2.2)	**124** (2.7)	**254** (4.4)	**201** (2.6)	**313** (3.4)
Home work	**312** (1.7)	**174** (1.6)	**347** (1.5)	**115** (1.0)	**268** (2.2)	**145** (2.2)	**271** (2.1)	**163** (2.0)
Family care	42 (0.8)	18 (0.4)	39 (0.6)	19 (0.4)	51 (1.2)	17 (0.8)	60 (1.5)	28 (0.8)
Shopping	66 (0.7)	49 (0.8)	53 (0.5)	33 (0.5)	53 (0.9)	36 (0.9)	59 (0.9)	43 (0.9)
Total work	**444**	**436**	**480**	**405**	**392**	**399**	**472**	**476**
Tertiary time	**676** (1.3)	**654** (1.5)	**593** (0.8)	**595** (1.0)	**659** (1.6)	**634** (2.1)	**641** (1.5)	**616** (1.7)
Sleep	509 (1.0)	499 (1.2)	499 (0.7)	497 (0.8)	524 (1.4)	504 (1.7)	511 (1.3)	496 (1.5)
Leisure	**320** (1.6)	**349** (1.9)	**367** (1.3)	**440** (1.6)	**388** (2.4)	**407** (3.4)	**327** (2.1)	**348** (2.7)
Radio/TV	100 (0.9)	135 (1.2)	89 (0.6)	114 (0.8)	99 (1.2)	119 (1.7)	134 (1.5)	160 (1.9)

*Standard errors of means here and in Tables 5, 6 and 7.

Table 2. Time Allocations (minutes per representative day), More Rich Countries*

		Belgium 1998/ 2000	Denmark 2001	France 1998/ 99	Finland 1999/ 2000	Sweden 2000/ 01	U.K. 2000/ 01	Norway 2000/ 01
Market Work**	F	144	243	157	177	200	177	196
	M	232	302	248	252	282	278	283
Home Work	F	267	222	273	235	251	251	216
	M	163	152	149	140	172	140	144
Total Work	F	**411**	**465**	**430**	**413**	**451**	**428**	**412**
	M	**395**	**454**	**397**	**392**	**454**	**418**	**427**
Tertiary Activities	F	683	650	731	648	642	659	621
	M	664	629	718	632	617	641	597
Leisure	F	346	325	279	379	347	353	407
	M	381	357	325	416	369	381	416

SOURCE: Computed from Aliaga and Winqvist (2003).

*The age/demographic categories are: Belgium, 12-95; Denmark, 16-74; France, 15+; Finland, 10+; Sweden, 20-84; U.K., 8+; Norway, 10-79. Total travel time (plus a small amount of unspecified time) is prorated among market work, home work and leisure activities.

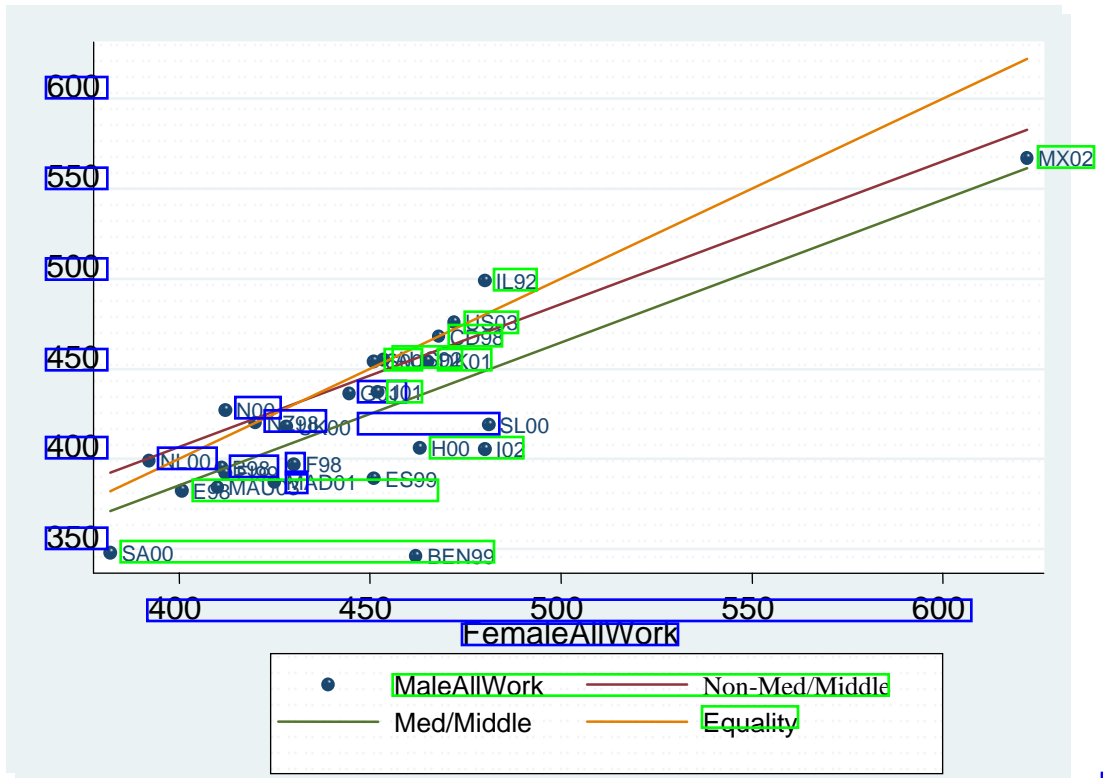**Market work includes time spent in study/education.

Figure 1. Scatter and Linear Regression of Male Total Work Against Female Total Work Non-Mediterranean/Middle (Red Line), Mediterranean/Middle (Green Line), Equality of Total Work (Orange Line) 25 Countries

Table 3. Expert and Other Opinion About Men's and Women's Total Work, Percent Distributions and Statistical Tests

	Labor economists familiar with US	Labor economists unfamiliar with US	Elite macro and public finance economists	Sociology faculty and graduate students	Economics principles students
Men work:					
25% less	5.2	5.6	2.6	20.0	6.1
15% less	18.8	20.4	23.7	26.7	18.9
10% less	17.8	24.6	18.4	13.3	18.7
5% less	11.7	11.3	10.5	11.7	12.8
Differ by less than 2.5%	25.8	25.4	34.2	20.0	23.1
5% more	6.1	4.9	3.9	1.7	9.2
10% more	8.5	4.2	5.3	3.3	7.0
15% more	5.2	2.1	0	3.3	3.4
25% more	0.9	1.4	1.3	0	0.9
N =	213	142	76	60	445
Fraction with men < women	0.535	0.620	0.553	0.717	0.564
t-statistic on binomial if "equal" answers are split evenly	5.47	6.73	4.08	6.08	8.98
t-statistic on binomial if "equal" answers are assumed men > women	1.03	2.93	0.92	3.69	2.72
Trinary t-statistic (equal probability of <, = and >)	6.01	8.25	5.73	7.70	9.48
RESPONSE RATE	0.535		0.298	0.286	0.873

Responses are to the question: "We know that American men (ages 20-75) on average work more in the market than do American women. But what is the difference between men's TOTAL WORK (in the market and on anything that you might view as work at home) and that of women? Without consulting any books, articles or raw data, PLEASE PUT AN X NEXT TO THE LINE BELOW THAT YOU BELIEVE TO BE THE CLOSEST APPROXIMATION TO THE CURRENT SITUATION IN THE US."
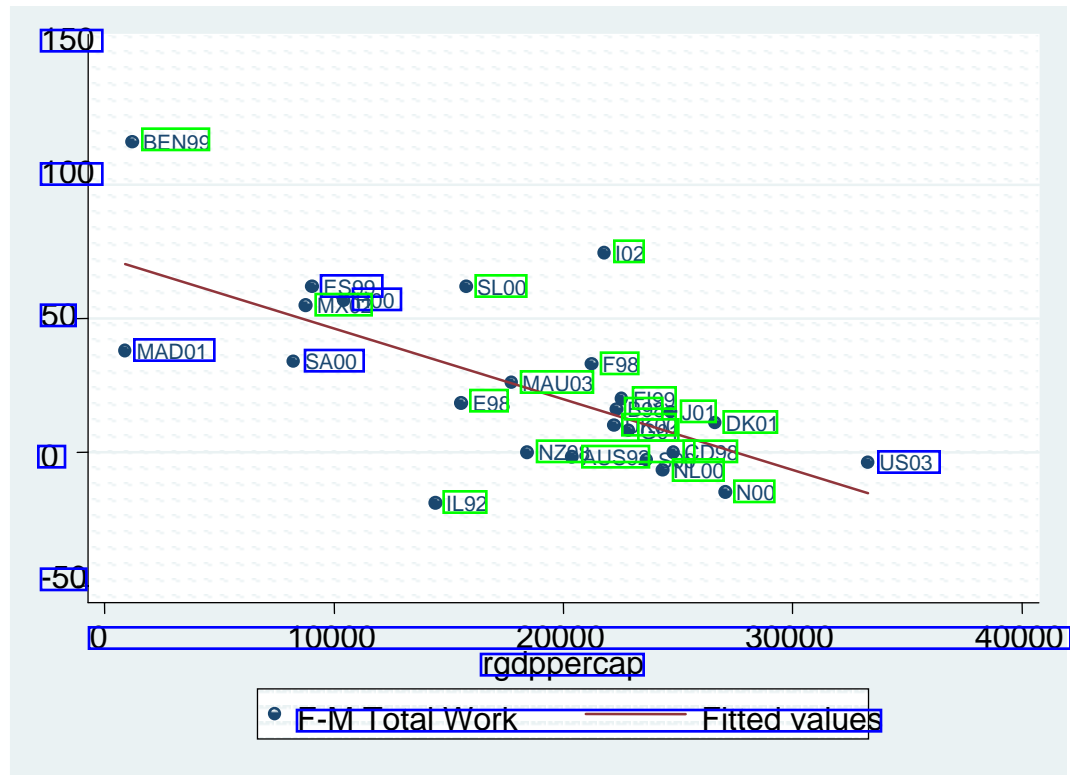
Figure 2. Difference between Female and Male Total Work Compared to Real GDP per Capita, 25 Countries

Table 4. Impact of the Gender Pay Gap and Real GDP on Gender Work Gaps (minutes per day), N = 18*

Dep. Var., Female – Male Total Work:	(1) Market work	(2) Total work	(3) Market work	(4) Total work	(5) Market work	(6) Total work
Log (Male/Female Wage)**	-170.92 (1.84)	-75.66 (1.58)	-198.43 (2.39)	-61.83 (1.43)	-220.91 (2.86)	-73.79 (1.85)
Real GDP per capita ($000)***			4.275 (2.30)	-2.151 (2.23)	6.370 (3.16)	-1.038 (1.00)
Mediterranean/Middle					49.30 (1.95)	26.22 (2.02)
Adj. R-squared	0.124	0.082	0.309	0.265	0.418	0.389

*t-statistics in parentheses.
**From Polachek and Xiang (2006).
***From Heston *et al* (2002).

Table 5. Time Allocations (minutes per representative day), Averages and Their Standard Errors, Women, Married and Unmarried Separately, U.S. 2003, Germany 2001/02

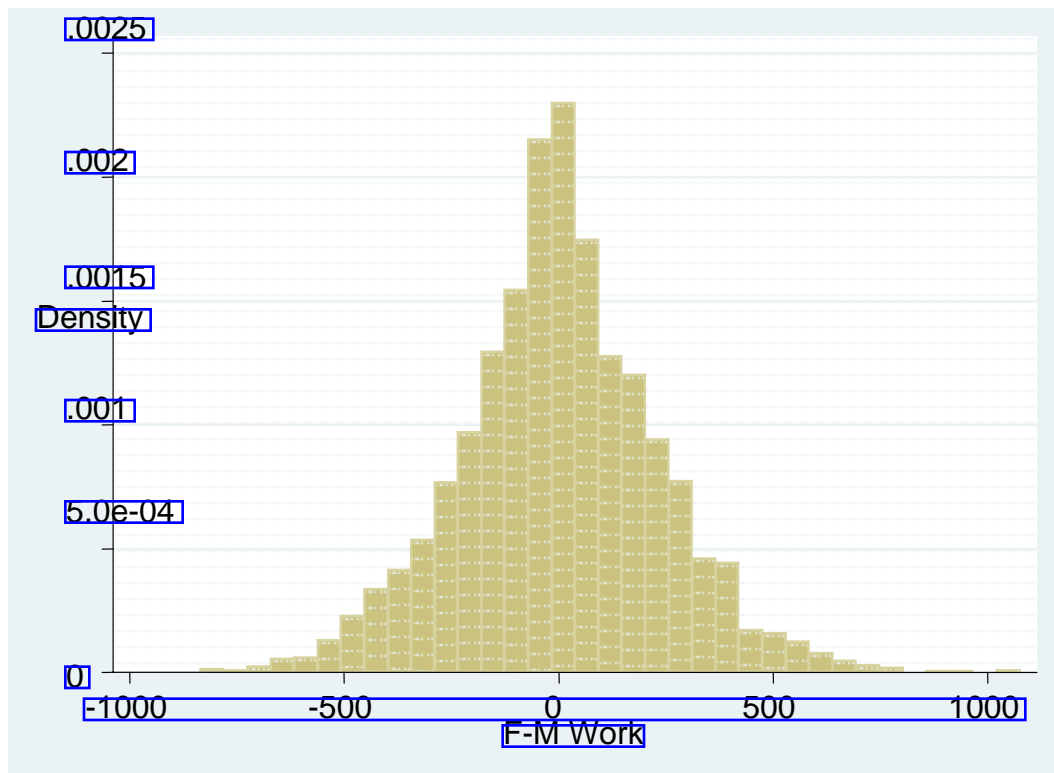|	U.S. 2003, Married		U.S. 2003, Unmarried		Germany, 2001/02, Married		Germany, 2001/02, Unmarried	
	F	M	F	M	F	M	F	M
Market work	182 (3.4)	329 (4.4)	224 (4.1)	284 (5.5)	111 (2.1)	270 (3.3)	175 (3.8)	241 (5.5)
Home work	314 (2.8)	179 (2.6)	218 (2.8)	136 (3.0)	336 (2.0)	175 (1.8)	264 (2.9)	170 (3.5)
Female-Male Total work		-12		22		2		28

Figure 3a. Histogram of Wife-Husband Differences in Total Work, Australia 1992
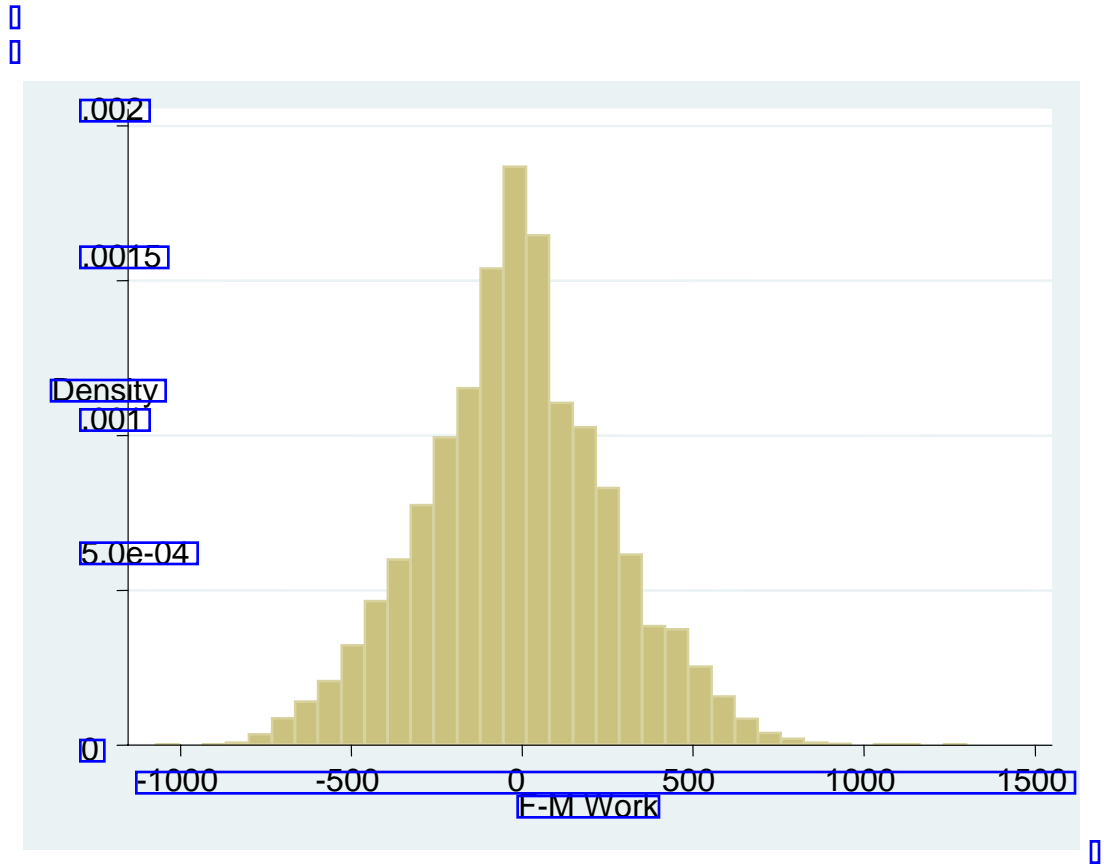
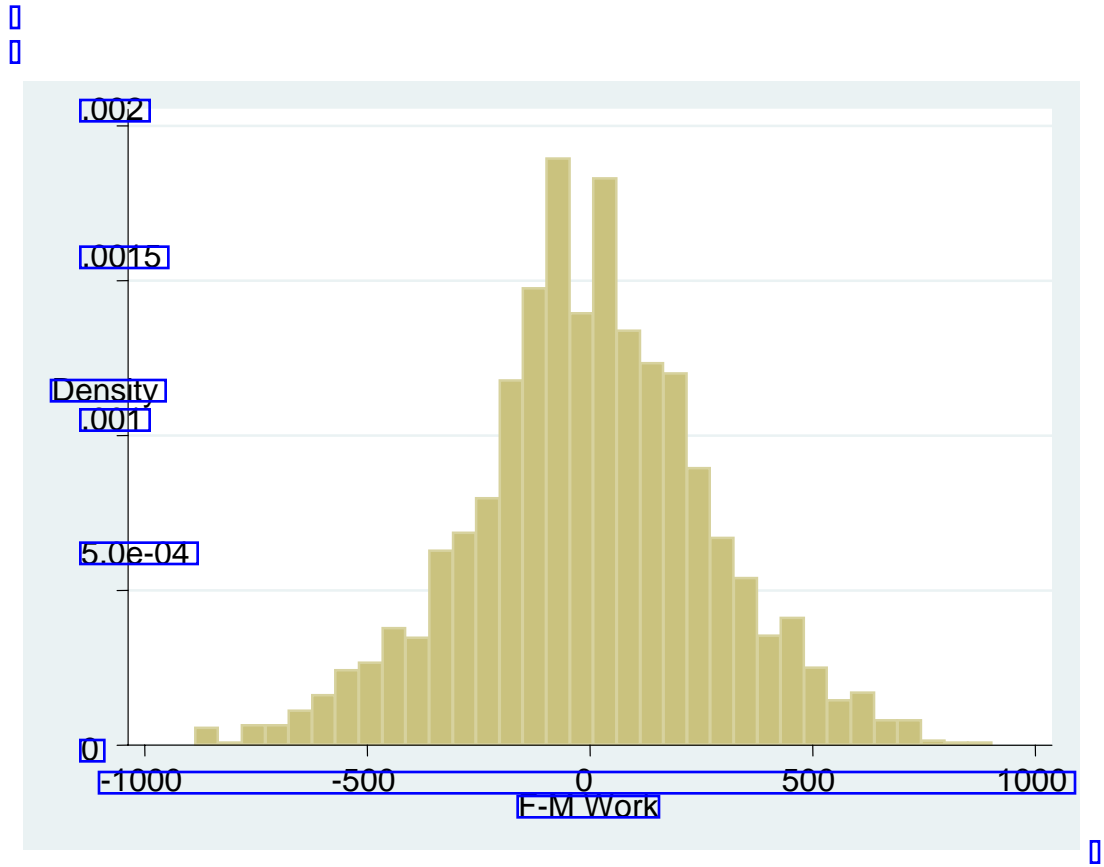**Figure 3b. Histogram of Wife-Husband Differences in Total Work, Germany 2001/02**

Figure 3c. Histogram of Wife-Husband Differences in Total Work, United States 1985

Table 6. Total Work by Education Level, U.S. 2003, Germany 2001/02

		Highest	2nd	3rd	Lowest
United States					
Market Work	F	241 (5.1)	215 (4.8)	180 (4.6)	108 (6.3)
	M	350 (6.0)	306 (6.6)	307 (6.4)	234 (9.4)
Total Work	F	518 (4.33)	474 (4.4)	455 (4.5)	386 (7.6)
	M	524 (5.1)	470 (6.1)	468 (5.9)	366 (9.2)
Germany					
Market Work	F	172 (2.8)	152 (6.5)	147 (2.9)	98 (3.0)
	M	270 (4.8)	290 (8.2)	273 (4.9)	237 (4.4)
Total Work	F	475 (3.6)	465 (6.2)	456 (2.8)	406 (3.3)
	M	455 (4.2)	456 (7.2)	448 (4.2)	416 (4.0)

Table 7. Total Work by Region, Ages 20-74, U.S. 2003, Germany 2001/02

		United States			
		East	Central	South	West
Market Work	F	195 (5.8)	210 (5.3)	199 (4.4)	198 (5.8)
	M	313 (7.7)	317 (6.8)	313 (6.0)	304 (7.4)
Total Work	F	481 (5.5)	481 (4.9)	457 (4.2)	477 (5.2)
	M	483 (7.0)	486 (6.1)	467 (5.5)	470 (6.8)

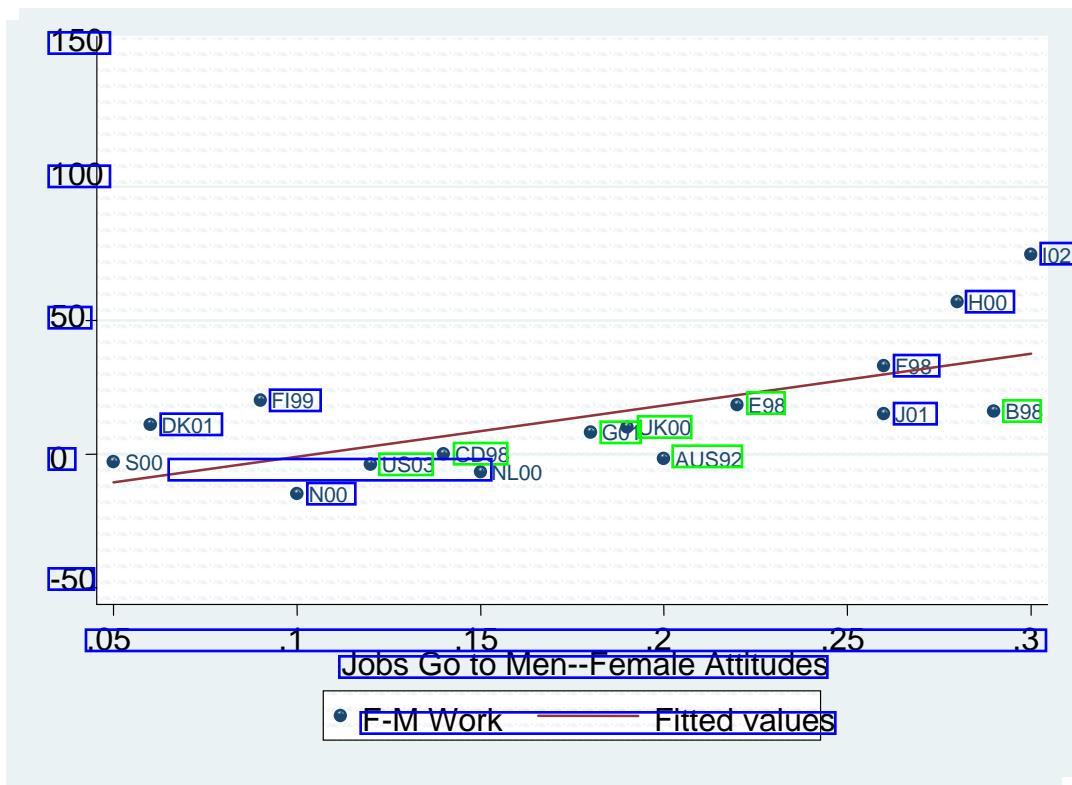|		Germany		
		West	East	
Market Work	F	133 (1.9)	175 (4.5)	
	M	262 (2.8)	254 (6.0)	
Total Work	F	445 (2.0)	465 (4.0)	
	M	436 (2.5)	451 (5.2)	

Figure 4a. Gender Total Work Differences and Female Attitudes to Job Scarcity, 16 Countries

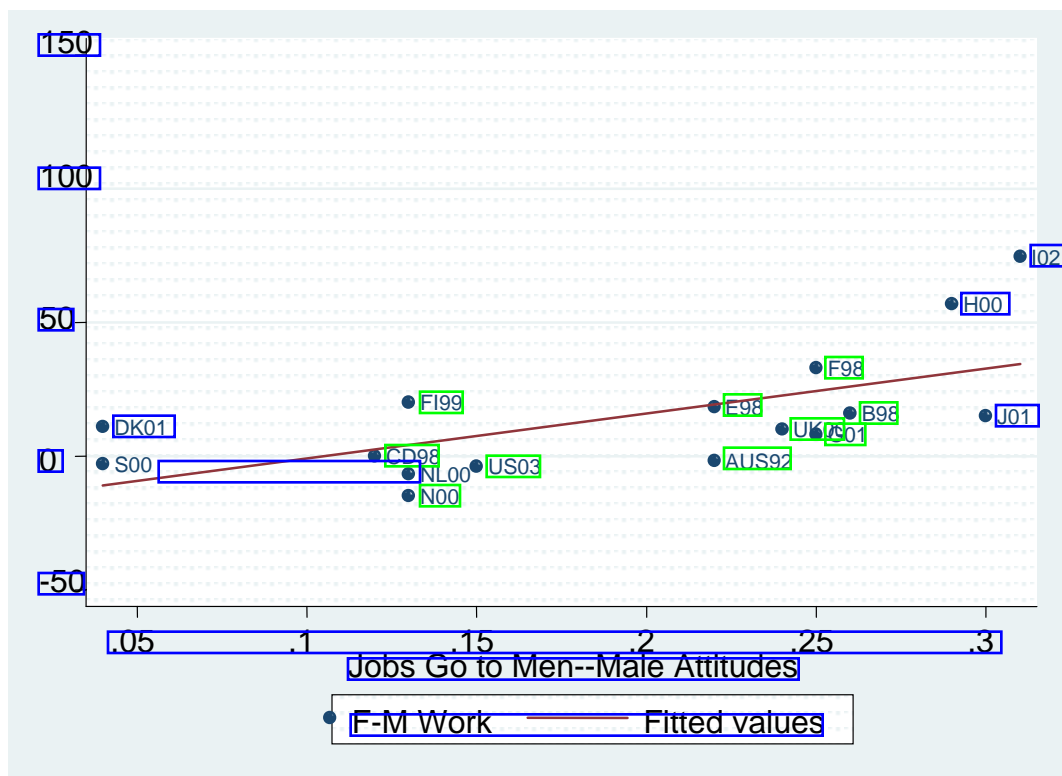**Figure 4b. Gender Total Work Differences and Male Attitudes to Job Scarcity, 16 Countries**

APPENDIX: Definitions of Total Work in 25 Countries

United States: Market work and work-related activities; travel related to work; all household activities; caring for and helping household members; consumer purchases; professional and personal care services; household services; government services; travel related to these.

Australia: Market work; cleaning and cooking; family and child care; shopping; and travel associated with each.

Belgium, Denmark, France, Finland, Sweden, United Kingdom, Estonia, Hungary, Slovenia, Norway:
Gainful work + study + household work + family care; proratio of travel timebased on gainful work time.

Benin, Madagascar, Mauritius, South Africa: Market work + domestic and care activities + commuting.

Canada: "Total work" (paid work and related activities; unpaid work and related activities).

Germany: Market work: employment and job search; home work activities; handicraft/gardening; care and sitting.

Israel: Market work; cooking and cleaning at home; child care.

Italy: market work; professional activities; training; domestic activities; family care; purchasing goods and services.

Japan: Work, school work; house work, caring or nursing, child care, shopping.

Mexico: Domestic work; care of children and other household members; market work.

Netherlands: Occupational work and related travel; household work, do-it yourself, gardening, etc; childcare; shopping.

New Zealand: Paid work; household work, care-giving for household members, purchasing goods or services, unpaid work for people outside the home.

Spain: Market work; house work, child care, adult care.