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# Mismatches between actual and preferred work time: empirical evidence of hours constraints in 21 countries

FZID Discussion Paper, No. 07-2009

**Provided in Cooperation with:**
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*Suggested Citation:* Otterbach, Steffen (2009) : Mismatches between actual and preferred work time: empirical evidence of hours constraints in 21 countries, FZID Discussion Paper, No. 07-2009, Universität Hohenheim, Forschungszentrum Innovation und Dienstleistung (FZID), Stuttgart, https://nbn-resolving.de/urn:nbn:de:bsz:100-opus-3919

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Steffen Otterbach

Universität Hohenheim | Forschungszentrum Innovation und Dienstleistung

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ISSN 1867-934X (Printausgabe)
ISSN 1868-0720 (Internetausgabe)

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# Mismatches between Actual and Preferred Work Time:

# Empirical Evidence of Hours Constraints in 21 Countries

STEFFEN OTTERBACH*

**Abstract:** This paper analyzes the discrepancy between actual and desired working hours in a multinational setting. Using the latest data of the International Social Survey Program (ISSP) with a focus on work orientations hours constraints in 21 heterogeneous countries are analyzed. One major finding is that hours constraints are interrelated with macroeconomic variables such as (i) unemployment rates, (ii) GDP per capita as a measure of welfare, (iii) average weekly work hours, and (iv) income inequality. A subsequent multivariate analysis reveals that, on both macro- and microlevels, sociodemographic variables like prosperity and income, high risk of unemployment, and working conditions play an important role in determining working hours constraints. The results further suggest that, with respect to working conditions, such constraints are also affected by gender issues.

JEL Classification: J21, J22

Keywords: Hours constraints, preferred working hours, work time

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The data used in this publication were made available by the GESIS data archive. The author would also like to thank Alfonso Sousa-Poza, and Valerie Møller for valuable comments and discussion.

# Mismatches between Actual and Preferred Work Time:

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## 1 Introduction

In terms of the economics of labor supply, neoclassical theory proposes that individuals can freely choose how many hours they work in the labor market. Specifically, individuals assign the extent of their work hours by maximizing a utility function subject to a budget constraint. Thus, under the central neoclassical assumptions of rational individual behavior and perfect markets, actual hours worked should be consistent with individual preferences. However, both empirical evidence and theoretical insights suggest that individuals are restricted in their choice of work hours and work either more or less than they would like.

As with other restrictions, work hours constraints are the result of long-term contracts, job insecurity, insufficient matching between search and mobility costs, work hour regulations, and the tax system [see Kahn and Lang (2001) and Sousa-Poza and Henneberger (2002)]. Moreover, because of asymmetric information on worker productivity, employers use long work hours as a screening instrument to distinguish productive workers from unproductive workers [see Sousa-Poza and Ziegler (2003) and Landers, Rebitzer, and Taylor (1996)].

Understanding work hours constraints is particularly important for policy makers, employers, and trade unions because these restrictions serve as a measure of well-

being in the workplace and overall life satisfaction. Taking into account work hours restrictions is also essential when policy directly affects such time allocation measures as work week changes and flexible work schedules. Indeed, work time issues frequently arise in response to persistent unemployment, poverty, discussion on minimum wage, the postulation of greater compatibility between work and family life, work–life balance, and job satisfaction. Thus, a meaningful discussion of work time policies necessarily requires an analysis of individually preferred work hours and the discrepancy between these and actual work hours.

Drawing on International Social Survey Program (ISSP) data on work hours constraints and their trends in 21 countries, this empirical study sheds light on the extent and determinants of work hours constraints in an international setting. The paper is structured as follows: section 2 gives an overview of previous research, section 3 describes the ISSP dataset and the analytical methodology, section 4 presents the results of the study, and section 5 outlines the conclusions and policy implications.

## 2 Previous Research and Empirical Evidence of Hours Constraints

Several studies focus on hours constraints in a cross-national setting. For example, using the 1998 Employment Options of the Future Survey, Holst (2007), in a comparison of actual versus desired work hours in 15 EU countries and Norway, shows that the desired work hours of men and women are closer than their actual work hours. In addition, in all countries studied, respondents see very long weekly work hours as undesirable. Based on a further analysis for Germany using data from the German Socio-Economic Panel (GSOEP), Holst (2007) also argues that

compliance with stipulated work hours would lead to a convergence of actual and desired work hours. She also suggests that the existence and age of children are important determinants of the difference in desired work hours between men and women.

Bosch and Wagner (2002), again drawing on Employment Options of the Future Survey data, report similar results. They therefore suggest not only a general reduction in work time but setting an upper bound for work hours and enhancing substantial part-time jobs rather than marginal employment. Since labor supply decisions are primarily made in the household context, work time and its division on a household level are important variables. As yet, however, they have received insufficient policy maker attention [see Bosch and Wagner (2002) p. 9]. Indeed, based on their findings, Bosch and Wagner (2002) argue that high employment rates among women and an equal distribution of work hours between spouses are sound prerequisites for short individual work hours and a general reduction of the work week. In this context, the company and collective labor agreement frameworks, the supply of child care facilities, and the position of spouses in the tax and social system all play important roles [see Bosch and Wagner (2002) p. 9].

In another cross-national study based on 1989 and 1997 ISSP data, Sousa-Poza and Henneberger (2002) analyze work hours constraints in 21 countries to assess the extent to which macrovariables like unemployment rates, GDP per capita, and average weekly work hours influence hours constraints. Because these macrovariables are correlated with country-specific hours constraints, they attribute the desire to work more or less to macroeconomic welfare measures. They also estimate ordered probit models at the microlevel to identify how socioeconomic

variables, actual work time, and such working conditions as job security, self-assesed income levels, flexible work schedules, and relations with colleagues influence hours constraints. They then compare their results for the U.S. with two other U.S. studies by Jacobs and Gerson (1998) and Bond et al. (1997), which are based on data from the National Survey of Changing Work Force (NSCW) in 1992 and 1997. Whereas the latter two analyses indicate that a majority of American employees want to work less, Sousa-Poza and Henneberger´s results imply that employees in the U.S. are underemployed and desire to work more. They attribute these different results primarily to the different wording used in each survey. Whereas the ISSP question on preferred work hours explicitly refers to a change in income if individuals wish to decrease or increase their workload, the NSCW does not instruct respondents to take a change of income into account.

The use of different data sources also produces a wide range of estimates for the share of U.S. workers wanting to decrease their workload, from 6 up to 50 percent [see Golden and Altman (2008)]. This wide deviation is again strongly related to the question format, as well as to the representation of different occupational groups and the stage of the business cycle [see Golden and Gebreselassi (2007)]. In fact, based on a comparison of the 1985 and 2001 Current Population Survey (CPS) data, Golden and Gebreselassi (2007) show that the share of underemployed and overemployed U.S. workers remained almost unchanged over this long period. This finding is remarkable given that such working conditions as job structure, work flexibility, and workplace technology, as well as the work force itself, were subject to substantial changes within this time frame [see Golden and Gebreselassi (2007) p.31].

Likewise, Bell and Freeman (2001) investigate the differences in actual and desired work hours between the U.S. and Germany using longitudinal and cross-sectional data; specifically, National Longitudinal Survey of Youth (NLSY) data for 1989 through 1996, 11 waves of the GSOEP (1985–1995), and ISSP data from 1989 and 1997. The authors attribute the substantially lower work hours in Germany to lower earnings inequalities in that country than in the U.S, which, together with differences in job opportunities to increase earnings, give higher incentives for U.S. workers to work longer hours[1]. Earnings inequalities, opportunities for advancement, and occupational prospects are also mentioned as explanatory factors for these longer work hours by Michelacci and Pijoan-Mas (2007).

Additionally, Bowles and Park (2005) point out that decisions about time allocation between work and leisure are motivated by Veblen effects, i.e. individuals desire to emulate the rich with respect to their consumption patterns and choose "their work and spending activities in order to be more like a higher income group, rather than seeking distance from lower income groups" [Bowles and Park (2005) p. 399]. The authors analyze data on average annual work hours and income inequality in 10 countries over the period 1963-1998 and find that work hours increase with increasing income inequality [see Bowles and Park (2005) p. 398]. Schor (2001) argues that the aspiration toward continuous consumption growth not only leads to unsustainable consumption patterns and therewith ecological degradation but also to a socially undesirable time allocation between work and leisure. The author points out that 'rising hours of work and declining leisure time are part of a larger nexus of eroding social capital, associated with high levels of stress and inadequate time for family and community' [Schor (2001) p. 3]. Therefore, trading income for time is a

[1] For a more critical view on the incentive models discussed by Bell and Freeman (2001 and 1995), see Osberg (2003).

necessary requirement towards sustainability and improvement of individuals´ well-being [see Schor (2001) and Schor (2005)].

In a more recent study that uses GSOEP 2004 data and focuses particularly on Germany, Grözinger et al. (2008) argue that taking into account desired work hours would lead to a substantial increase in employment. More specifically, after calculating an overall redistribution of 83.4 million work hours [see Grözinger et al. (2008) p. 11], the authors suggest that adjusting actual time worked to preferred work hours could result in an overall increase in employment of 2.4 million new jobs at 34.5 weekly work hours. They also analyze the impact of over- and underemployment on job satisfaction, life satisfaction, and health satisfaction by estimating ordered probit models. Since hours constraints have a significantly negative impact on all these variables, constrained workers suffer a considerable loss in quality of life [see Grözinger et al. (2008) p. 6]. This result is not surprising given that unpaid overtime is increasing in Germany as workers faced with high unemployment rates and a high risk of unemployment become more willing to provide it [Anger (2006)]. This willingness to work additional unpaid hours is also related to expectations of better job opportunities and higher earnings in the future [see Anger (2006) p. 195].

A recent analysis of panel data by Wooden, Warren, and Drago (2009) also relates measures of subjective well-being such as job satisfaction and overall life satisfaction to work hours mismatches. Using the first five waves of the Household, Income and Labour Dynamics in Australia (HILDA) survey the authors find out that the extent of overemployment is larger than that of underemployment. Working time mismatches significantly decrease job and life satisfaction whereas the number of work hours

affects subjective well-being only marginally if workers are unconstrained [see Wooden et al. (2009) p. 171]. Thus, the authors conclude that work time policies (as currently practiced  for example in France) that aim at a general limitation of work hours could impose further mismatches among workers who prefer long hours and therefore result in reduced job and life satisfaction [ see Wooden et al. (2009) p. 172].

One earlier but detailed econometric panel analysis by Merz (2002), which uses 10 waves of the GSOEP (1985–1994), assumes that time and income are decisive determinants of individual welfare and time sovereignty a significant determinant of hours constraints, especially among different occupational groups. That is, such different groups as freelancers, the self-employed, or dependent employees not only show different patterns in preferred work hours but also in realization of their desired work time [see Merz (2002) p. 333]. This study investigates not only age, human capital, and wages but also the impact of time use on a household level. Drawing on Becker`s (1965) household production model, time for housework, child rearing, and do-it-yourself activities are assumed to be exogenous; therefore household characteristic variables (household size, number of children, household net income) are incorporated into the analysis. The author finds significant gender differences with respect to these household characteristics: whereas child care hours, the number of children, and the remaining household net income are significant factors in explaining hours constraints in the female sample, these variables are insignificant for men [see Merz (2002) p. 339]. Interestingly, education and work experience seemingly have no significant influence on hours constraints, a remarkable result in the context of the labor supply literature [see Merz (2002) p. 339].

Another panel study of hours constraints by Böheim and Taylor (2004) uses 9 waves (1991–1999) of the British Household Panel Survey (BHPS) and focuses on the impact of actual and desired work hours on individual job mobility and changing work hours behavior. Specifically, the authors suggest that underemployed workers (both men and women) are more likely to change jobs within or between employers than unconstrained and overemployed workers [see Böheim and Taylor (2004) p. 154]. The least likely to leave the labor market completely are the underemployed, although men employed part time are also more likely to drop out of the labor force than men employed full time regardless of whether they are constrained in work time or not [see Böheim and Taylor (2004) p. 157]. The authors state that overemployed women are more likely to stop working than the unconstrained. While upward adjustment among underemployed women is facilitated by changing jobs within the employer, the authors conclude that work hours adjustments among the under- and overemployed (both men and women) are facilitated by changing the employer [see Böheim and Taylor (2004) p. 161].

These results are confirmed by Euwals (2001) who analyzes female labor supply and the flexibility of work hours using three waves (1987 -1989) of the Dutch Socio-Economic Panel (DSEP). Women who desire fewer work hours are more likely to leave the labor market while an adjustment of work hours is less likely for women who stay in the same job and with the same employer. Movers adjust their work hours according to the preferred direction to a larger extent than people who stay in their job and with the same employer [see Euwals (2001) p.132)]. The author also confirms that wage-considerations play a major role with respect to job mobility [see Euwals (2001) p.132)].

## 3 Data and Methodology

The International Social Survey Program (ISSP),[2] an international collaboration of (at present) over 40 countries, aims to add a cross-country and cross-cultural perspective by providing national data and projects in a multinational setting. Since 1985, the ISSP has been carried out annually with a recurrently changing focus on issues relevant to the member countries and the goal of expressibility in all languages.

This present analysis of work hours constraints drew on the ISSP datasets for 1989, 1997, and 2005, which all focus on work orientations. Besides numerous economic and sociodemographic variables, these datasets also include different variables of job characteristics and working conditions measured primarily on a Likert-type scale. The two more recent datasets enable the study of hours constraints and their trends over time for the following 21 heterogeneous countries: Bulgaria, Canada, Cyprus, the Czech Republic, Denmark, France, Germany, Great Britain, Hungary, Israel, Japan, New Zealand, Norway, the Philippines, Portugal, Russia, Slovenia, Spain, Sweden, Switzerland, and the United States.

It should be emphasized that in this survey, the item asking respondents about their preferred work hours, reproduced below in its exact format, explicitly refers to an adjustment in earnings. Moreover, only those respondents who are currently working for pay answer this question:

[2] The ISSP datasets are kept in the GESIS Data Archive, which is responsible for archiving, data integration, and documentation, as well as for data distribution. Documentation of the respective modules is available from the GESIS Data Archive web page and from the GESIS Data Archive Online Study Catalogue (ZACAT).

Think of the number of hours you work and money you earn in your main job, including regular overtime. If you only had one of these three choices, which of the following would you prefer:

- o Work longer hours and earn more money
- o Work the same number of hours and earn the same money
- o Work fewer hours and earn less money

As pointed out by Sousa-Poza and Henneberger (2002, p. 218), the ISSP question format is comparable to other surveys (e.g., the 1985 and 2001 CPS) but the questions' exact wording may be strongly related to contradictory research findings and the hypothetical questions they raise [see also Lang and Kahn (2001)]. Thus, different results from different data sources should be interpreted carefully.

This study of work hours constraints begins with a descriptive analysis of the extent of hours constraints and their trends over time. The two most recent ISSP data sets (1997 and 2005) enable a comparison of 21 countries, 6 of which are also included in the ISSP 1989 dataset. These latter are therefore incorporated into the subsequent analysis of whether country differences in hours constraints are related to macroeconomic variables like unemployment rates, GDP per capita, average weekly work hours, and income inequality. In order to test the sensitivity of these relationships, observations with high influence are detected using the DFBETA influence measure. DFBETAs measure the difference of a coefficient (in terms of the estimated standard error of this coefficient) if a specific observation is included or excluded. According to Belseley, Kuh, and Welsh (1980, p. 28) the influence of an observation is assessed as being high if the absolute value of DFBETA exceeds the size-adjusted cutoff of $2/\sqrt{n}$.

A microlevel multivariate analysis then estimates ordered probit models using the pooled data for 1997 and 2005[3] to assess the impact of sociodemographic variables and working conditions on hours constraints. This multivariate methodology is determined by a dependent variable (hours constraints) with three possible outcomes: 0 for respondents who want to work less and earn less, 1 for respondents who are satisfied with their number of work hours and their earnings, and 2 for respondents who want to work more and earn more. The variables describing working conditions and actual workload categories are coded as dummy variables. Moreover, dummy variables for each country, with Germany as the reference category, are incorporated into the model to account for cultural and institutional differences and other unobserved country effects. The model also includes a dummy variable indicating the year of the survey to capture time specific differences such as state of the economy in these particular years.

Besides the coefficients of the ordered probit estimation, run for both the full sample and females and males separately, the marginal effects are reported to explain changes in the predicted probability of falling into one of the three ordered categories of the dependent variable when the related independent variable changes by one unit [see Greene (2003) p. 875 ff.]. Thus, the marginal effects give valuable information about the magnitude of the impact of the respective explanatory variables. For the dummy variables, the marginal effects are calculated for a discrete change from 0 to 1.

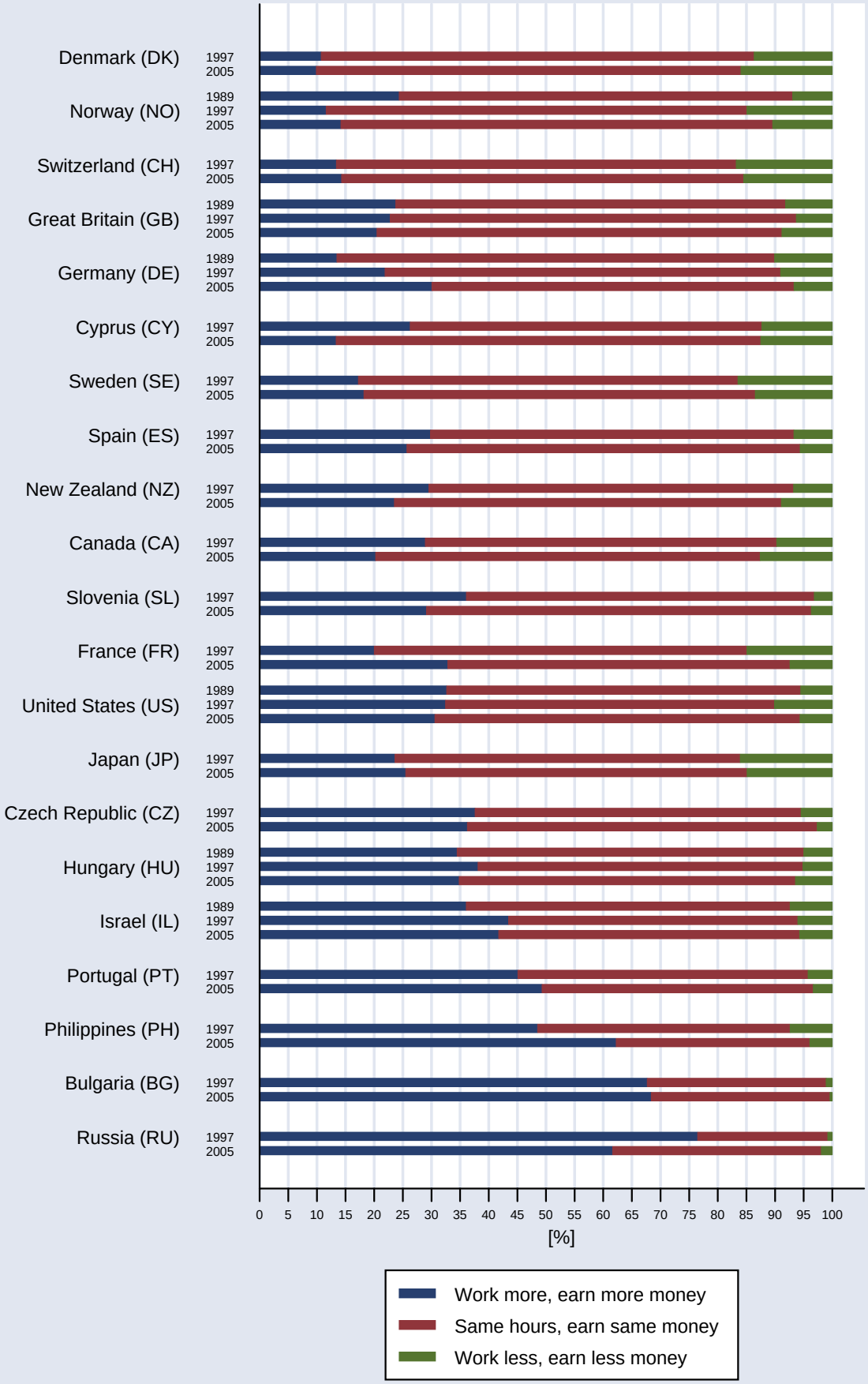
[3] The ISSP 1989 data are inappropriate for the pooled analysis because of decisive differences in the variables that describe working conditions.

## 4 Results

Graph 1, which summarizes the descriptive analysis, gives the percentage of constrained and unconstrained workers at the country level ordered according to the proportion of unconstrained workers. The upper third, which contains the highest percentages of unconstrained workers, includes all Scandinavian countries in the dataset (i.e., Denmark, Norway, and Sweden), as well as Switzerland, Great Britain, Germany, and Cyprus. The centre span includes Spain, New Zealand, Canada, Slovenia, France, the United States, and Japan, with 68 to 59 percent of workers being satisfied with their current work time/earnings situation. The countries with the largest share of constrained workers are Russia, Bulgaria, and the Philippines, with less than 45 percent of the workforce satisfied and up to 75 percent wanting additional hours and additional earnings. These countries are followed by Portugal, Israel, Hungary, and the Czech Republic, also in the category of most constrained workers.

In almost all countries (except Denmark, Switzerland, and Norway in 1997), the fraction of workers who prefer longer hours and earn more money exceeds the fraction that wants to work less and earn less. Moreover, in countries where large shares of workers want to work and earn more only small fractions of the workforce state the desire to work less and earn less (e.g. in Russia, Bulgaria, the Philippines, Portugal and Israel with more than 40% being underemployed). On the other hand, in countries where the fraction of workers who desire shorter work hours and less money is high (e.g. Denmark, Switzerland and Norway in 1997) the fraction that wants to work more and earn more is relatively small compared to other countries. However, no clear pattern of changes is observable over time and over all countries.

Graph 1: Hours Constraints in 21 Countries




Note: The countries are ordered according to the share of unconstrained workers

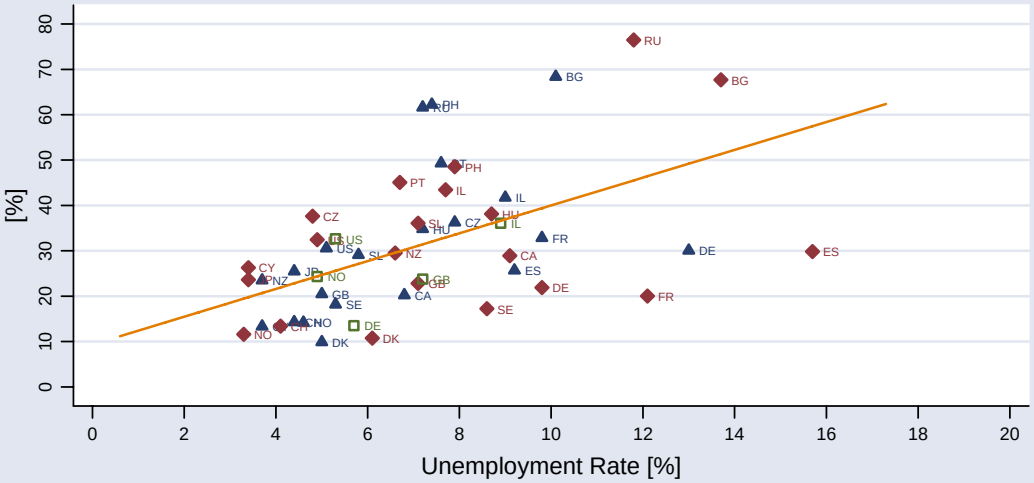
Nonetheless, whereas some countries (e.g., Germany, France, Portugal, and the Philippines) show a steady increase in the fraction of workers wanting longer work hours and higher earnings over the observed time period; in Spain, Canada, New Zealand, and the U.S., this group decreased steadily. Moreover, the fractions of workers preferring longer hours change to a greater extent than the fractions of those wanting to work less and earn less.

These findings raise the question of why there are considerable and significant country differences in hours constraints. One possible interrelation is suggested by the correlation between hours constraints and unemployment rates, which is illustrated in graph 2. In this graph, observations with a high influence are identified and observations with an absolute value of DFBETA > $2/\sqrt{n}$ are not represented in the regression line. The $R^2$ values show that in the three cases (underemployment, no constraints, overemployment) depicted in the subgraphs, (i) 0.205, (ii) 0.140, and (iii) 0.334 of the variation of hours constraints among these countries can be explained by unemployment rates.

The relationship revealed in graph 2 is clear: on average, in countries with high unemployment rates, the fraction of workers who prefer to work longer hours and earn more money is higher than in countries with lower unemployment rates (see subgraph (i)). On the other hand, the country-specific percentages of satisfied workers and those who prefer shorter work hours and less money decline with rising unemployment rates (see subgraph (ii) and (iii)). One possible explanation for this relationship could be that, as Bell and Freeman (2001) propose, labor supply decisions are forward looking: people work longer hours to avoid being laid off during recessions. In the face of high unemployment rates especially, workers prefer

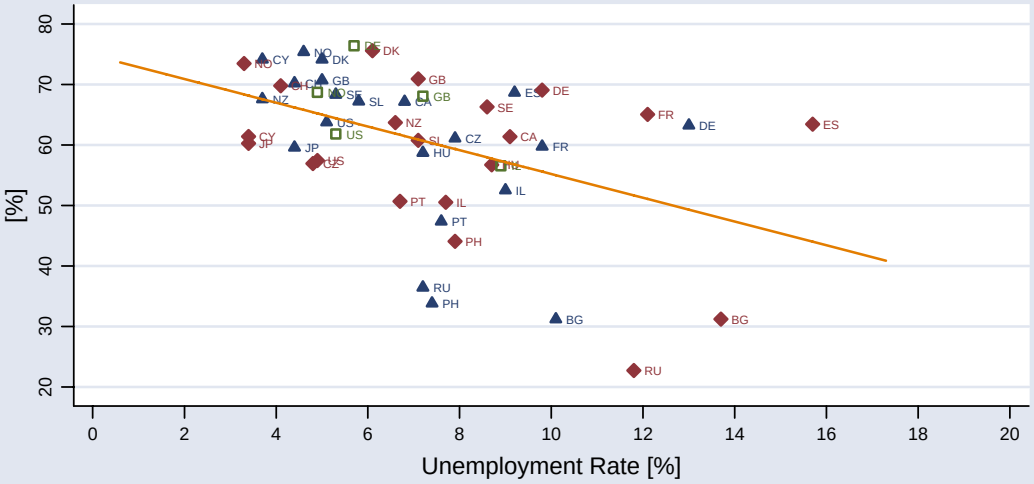
## Graph 2: Hours Constraints and Unemployment

(i) Work more, earn more money



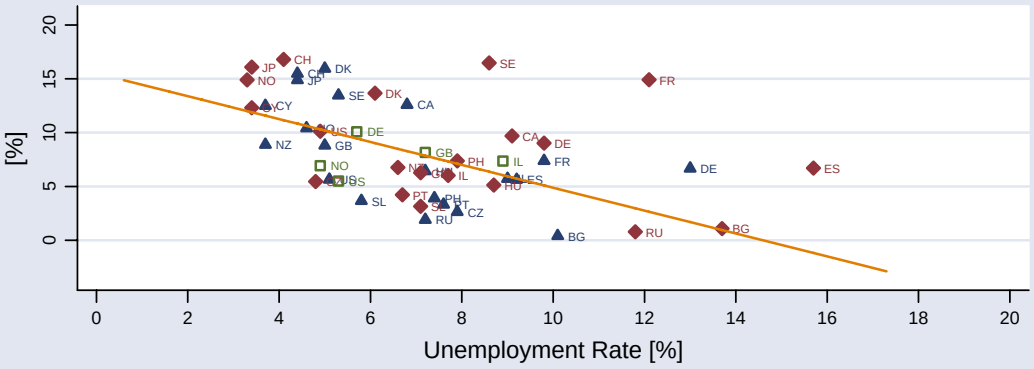

Note: The following observations are treated as outliers and are therefore not represented in the regression line: BG (2005), DE (2005), BG (1997), ES (1997), FR (1997), RU (1997)

(ii) Work same Hours, earn same money




Note: The following observations are treated as outliers and are therefore not represented in the regression line: BG (2005), DE (2005), BG (1997),ES (1997), FR (1997), RU (1997)

(iii) Work less, earn less money

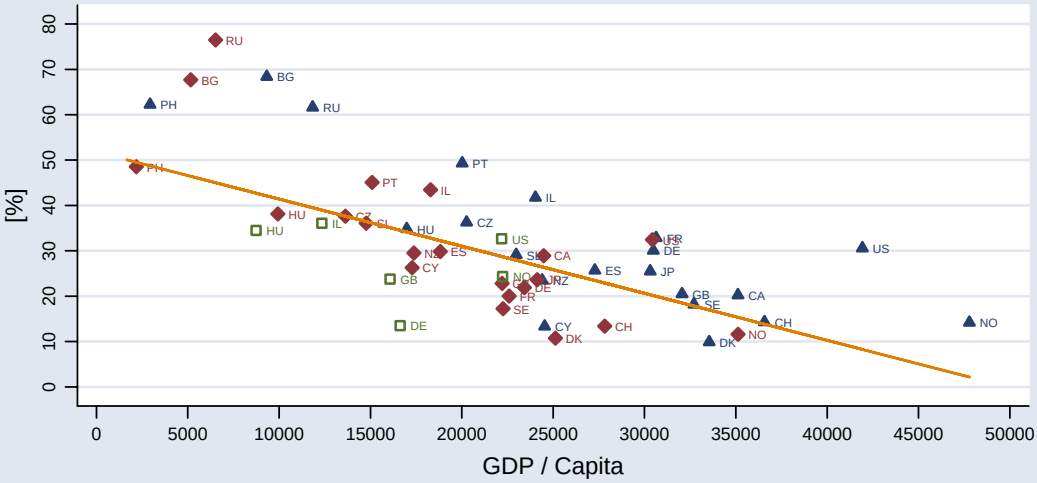



Note: The following observations are treated as outliers and are therefore not represented in the regression line: FR (1997), ES (1997)

| | | | |
|---|---|---|---|
| ▲ | 2005 | ◆ | 1997 |
| □ | 1989 | — | Linear prediction without outliers |

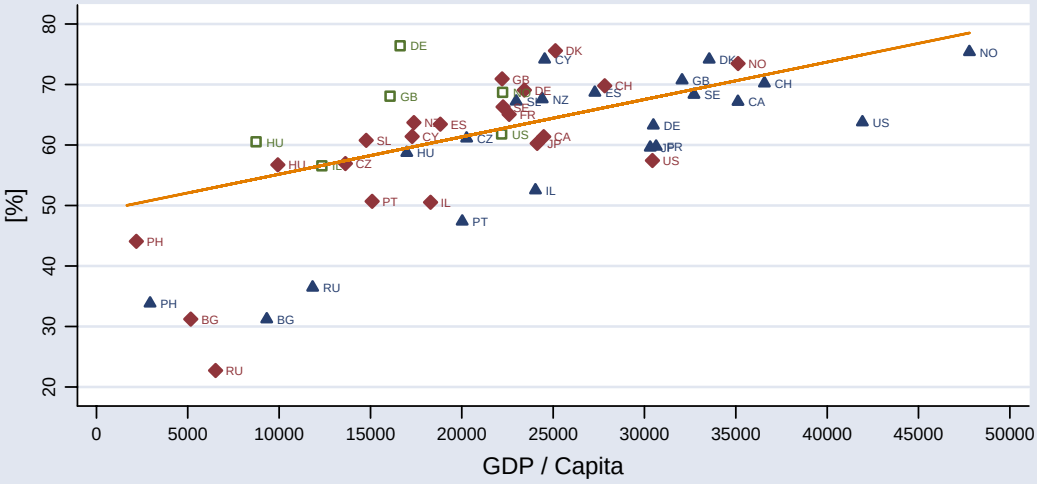
## Graph 3: Hours Constraints and GDP per Capita

(i) Work more, earn more money



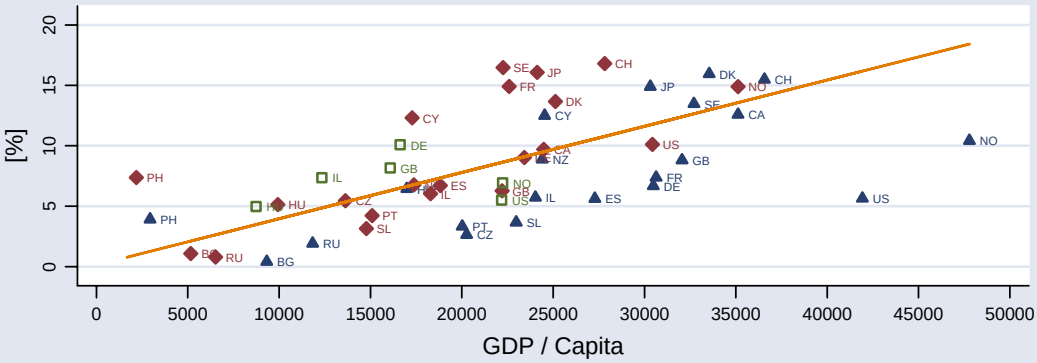

Note: The following observations were treated as outliers and are therefore not represented in the regression line: US (2005), NO (2005), BG (2005), BG (1997), RU (1997)

(ii) Work same hours, earn same money




Note: The following observations were treated as outliers and are therefore not represented in the regression line: US (2005), NO (2005), BG (2005), BG (1997), RU (1997)

(iii) Work less, earn less money




Note: The following observations were treated as outliers and are therefore not represented in the regression line: US (2005), NO (2005), PH (1997)

| | | | |
|---|---|---|---|
| ▲ | 2005 | ◆ | 1997 |
| □ | 1989 | — | Linear prediction without outliers |

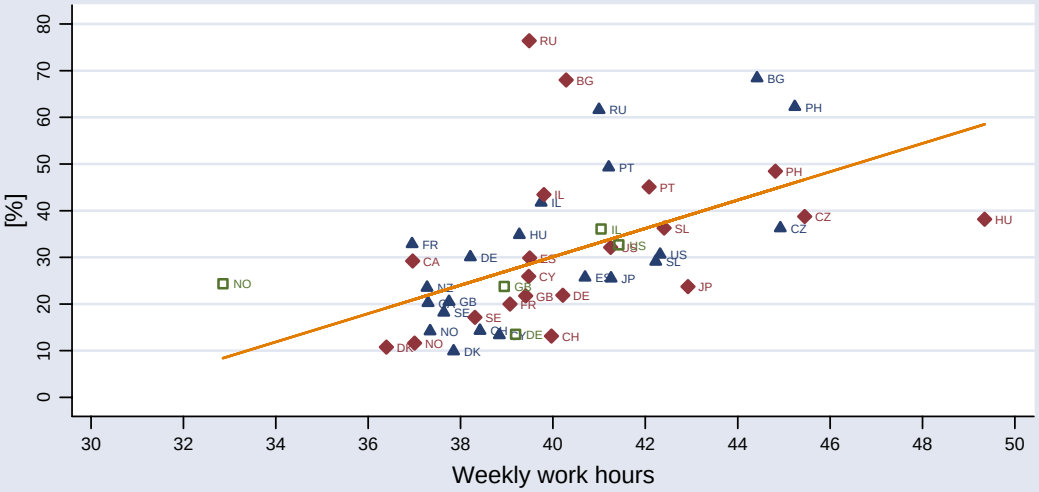
additional work hours to layoffs and when future layoffs are anticipated, they seek additional earnings for income smoothing [see Bluestone and Rose (1998)]. Indeed, as Anger (2006) points out, when high unemployment rates impose a risk of future layoffs, even the willingness to work unpaid overtime is greater, and if workers expect to be underemployed or unemployed in the future, they are less likely to state a preference for fewer hours [see Golden and Gebreselassi (2007) p. 19].

Graph 3 depicts the interrelationship between GDP per capita (based on purchasing power parities) as a measure of welfare and hours constraints. Again, using the absolute values of DFBETA, observations with a high influence are not represented in the regression line. In countries with a higher GDP per capita, the percentages of workers who prefer longer work hours are substantially lower than in countries with low GDP per capita ($R^2$ = 0.469). On the other hand, the portion of workers who are satisfied and wish to work less increases with rising GDP per capita (with a $R^2$ of (ii) 0.314 and (iii) 0.471, respectively). Thus, high portions of workers who prefer long work hours are, on average, predominantly located in less wealthy countries (in terms of GDP per capita), whereas considerably higher percentages of unconstrained workers and those who wish to work less and earn less are found in richer countries (e.g., Norway, Denmark, Switzerland).

As pointed out in section 2 and as the analysis of the previous graphs shows, income considerations play a key role in determining the willingness to work more or less. Besides inequality of wages, differences in average weekly work hours across countries is another component that determines earnings inequality. Average weekly work hours vary from about 33 hours in Norway (1989) to nearly 50 hours in Hungary (1997). How does the average length of the work week affect the desire to work more

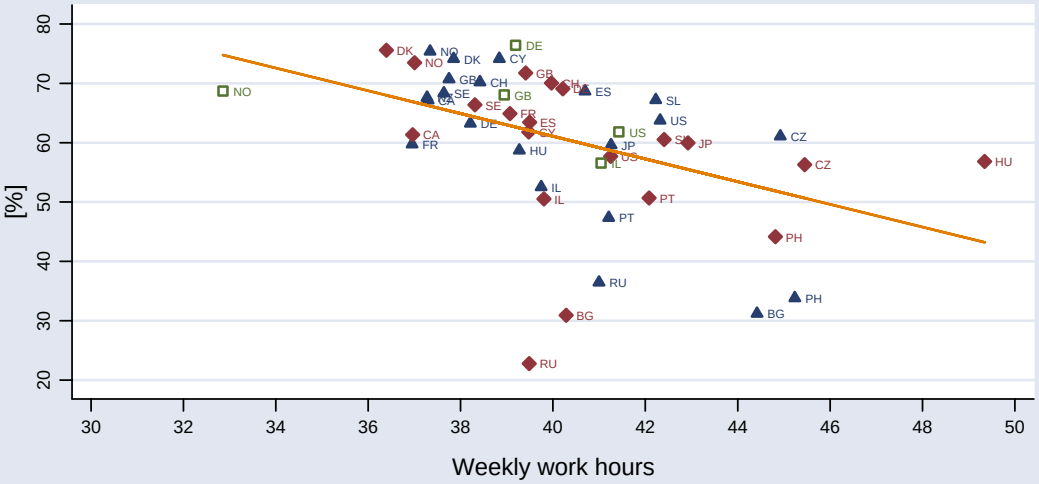
## Graph 4: Hours constraints and average weekly work hours

(i) Work more, earn more money



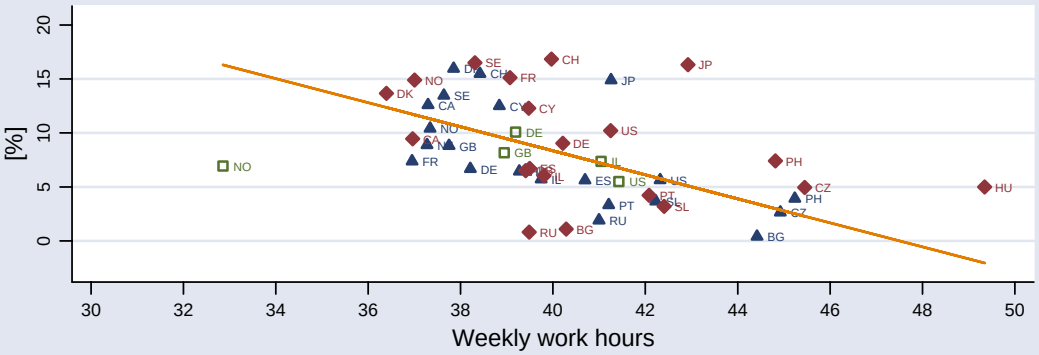

The following observations were treated as outliers and are therefore not represented in the regression line: BG (2005), PH (2005), HU (1997), NO (1989)

(ii) Work same hours, earn same money




The following observations were treated as outliers and are therefore not represented in the regression line: BG (2005), PH (2005), HU (1997)

(iii) Work less, earn less money




The following observations were treated as outliers and are therefore not represented in the regression line: HU (1997), JP (1997), NO (1989)

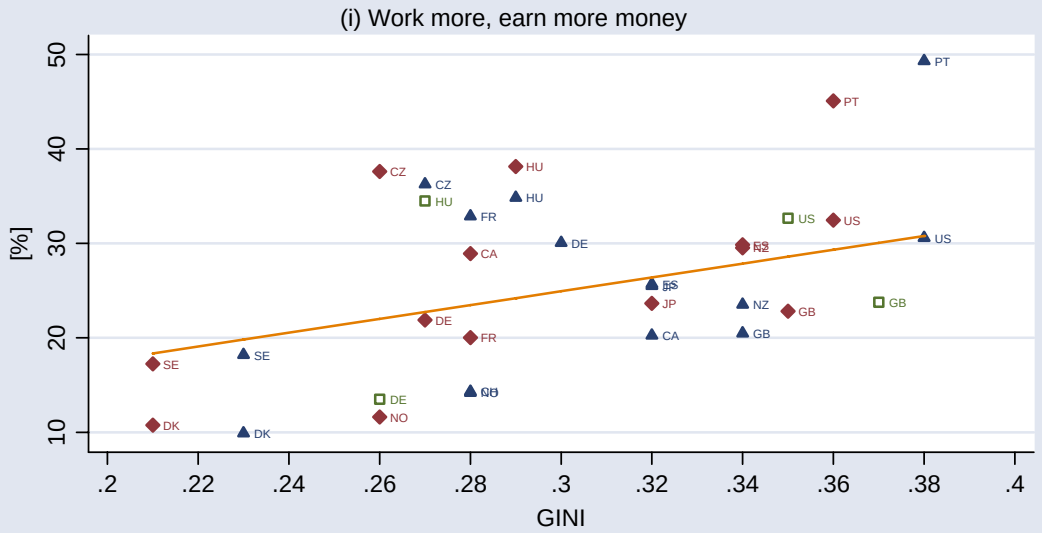
| | | | |
|---|---|---|---|
| ▲ | 2005 | ◆ | 1997 |
| □ | 1989 | — | Linear prediction without outliers |

or less? Interestingly, as Graph 4 illustrates, the fraction of workers who want to work more (less) and earn more (less) money increases (decreases) with increasing work hours whereas the portion of satisfied workers decreases. This relationship is statistically significant at the 99% level with $R^2$- values of 0.20 (i), 0.16 (ii) and 0.33 (iii) for the three subgraphs, respectively. Again, observations with high influence are not represented in the regression line.

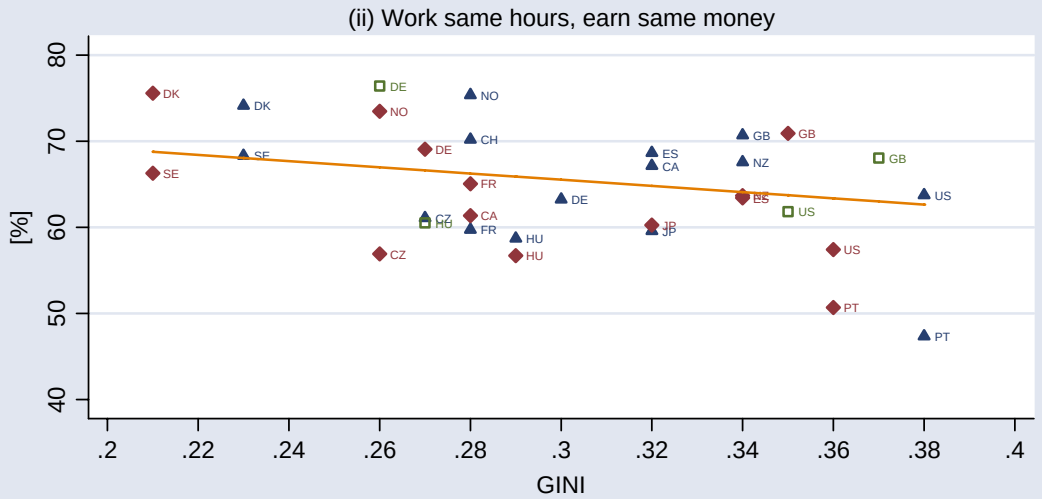
Since labor income is determined by hourly wages multiplied by the number of work hours, again, workers' income considerations could account for the positive slope of subgraph (i) and the negative slopes of subgraphs (ii) and (iii), respectively. As Sousa-Poza and Henneberger (2002) show, less wealthy countries (in terms GDP per capita) tend to have relatively long work weeks and relatively low unit labor costs (in terms of wages) compared to countries with high GDP per capita. The authors detect a negative correlation between average weekly work hours and GDP per capita, which also proves statistically significant using the pooled ISSP data set.

A further possible explanation for country differences, the relationship between different hours constraints and country-specific income distributions in terms of Gini coefficients, is illustrated in graph 5. However, because of data unavailability, this figure does not include Bulgaria, Cyprus, Israel, the Philippines, Russia, and Slovenia. Again, using the same outlier diagnostics as in the previous illustrations, observations with a high influence (the DFBETA statistic) are not represented in the regression line. The correlations in subgraphs (i) and (iii), however, are significant at the 95 percent and 99 percent level and explain 16 percent and 24 percent of the inter-country variation in terms of $R^2$, respectively.

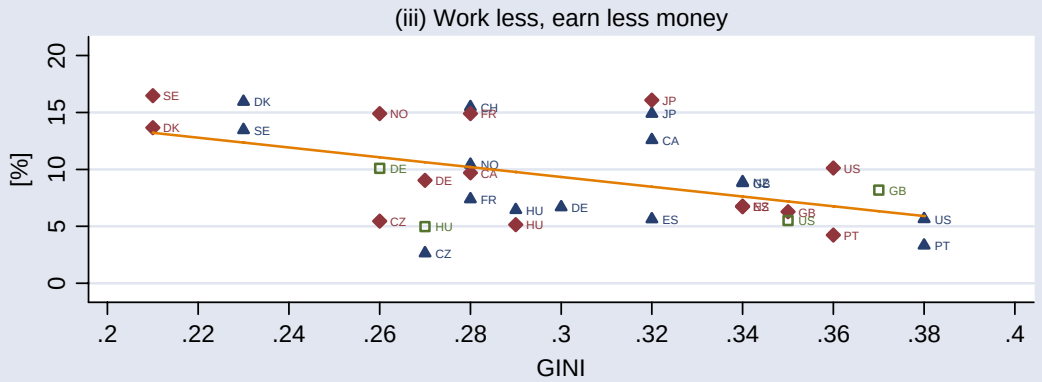
## Graph 5: Hours Constraints and Income Inequality




Note: The following observations were treated as outliers and are therefore not represented in the regression line: PT (2005), PT (1997)




Note: The following observations were treated as outliers and are therefore not represented in the regression line: PT (2005), PT (1997)




Note: No outliers

| | | | |
|---|---|---|---|
| ▲ | 2005 | ◆ | 1997 |
| □ | 1989 | — | Linear prediction without outliers |

On the other hand, the different income inequalities seemingly have no statistically significant impact on the portion of unconstrained workers (*p*-value of the slope coefficient = 0.12). Subgraph (i), particularly, illustrates a clear relationship: the Scandinavian countries have relatively equal income distributions and low percentages of workers who desire additional hours and earnings, whereas countries like the U.S., Great Britain, and New Zealand exhibit high income inequalities and a large portion of workers who aspire to work additional hours. As pointed out in section 2, greater earnings inequalities provoke employee willingness to work additional hours, since they expect better advancement opportunities and an increase in wages.

Table 1 presents the results of the ordered probit estimation in the multivariate analysis. Here, the majority of coefficients is highly significant, and reveals a number of determinants that affect hours constraints. First, in terms of the sociodemographic variables in the full sample, women are less likely to desire additional hours and earnings than men. Whereas marital status has no significance in the male sample, in the female sample, married women are rather more underemployed than unmarried women, which contrasts to the study by Sousa-Poza and Henneberger (2002, p.229). This could possibly be explained by changing gender roles related to paid and unpaid work or perhaps changing economic conditions in certain countries in the sample.

Age, on the other hand, seems to have a linear effect on hours constraints: increasing age reduces the predicted probability of wanting additional hours and earnings, and older respondents tend to show more satisfaction with their work/pay combination or reduced hours. Likewise, respondents with high degrees tend to fall

Table 1: Hours constraints and working conditions
(pooled sample 1997 and 2005)

| | Full sample | | | | Females | | | | Males | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coef. | ME (y=0) | ME (y=1) | ME (y=2) | Coef. | ME (y=0) | ME (y=1) | ME (y=2) | Coef. | ME (y=0) | ME (y=1) | ME (y=2) |
| year2005 | 0,059*** | -0,008 | -0,012 | 0,020 | 0,086*** | -0,012 | -0,016 | 0,028 | 0,034 | -0,004 | -0,008 | 0,012 |
| female | -0,193*** | 0,025 | 0,040 | -0,065 | -- | -- | -- | -- | -- | -- | -- | -- |
| age | -0,018*** | 0,002 | 0,004 | -0,006 | -0,017*** | 0,002 | 0,003 | -0,006 | -0,022*** | 0,003 | 0,005 | -0,008 |
| $age^2$ | 0,000** | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000* | 0,000 | 0,000 | 0,000 |
| married | 0,112*** | -0,014 | -0,024 | 0,038 | 0,247*** | -0,033 | -0,047 | 0,080 | -0,025 | 0,003 | 0,006 | -0,009 |
| high degree | -0,111*** | 0,015 | 0,022 | -0,037 | -0,132*** | 0,019 | 0,023 | -0,042 | -0,093*** | 0,012 | 0,021 | -0,032 |
| 11-20 work hours | 0,255*** | -0,028 | -0,064 | 0,092 | 0,328*** | -0,036 | -0,078 | 0,114 | 0,055 | -0,006 | -0,013 | 0,020 |
| 21-30 work hours | 0,196*** | -0,022 | -0,047 | 0,069 | 0,225*** | -0,027 | -0,049 | 0,076 | 0,116 | -0,013 | -0,029 | 0,042 |
| 31-40 work hours | 0,096** | -0,012 | -0,021 | 0,033 | 0,102* | -0,013 | -0,020 | 0,033 | 0,092 | -0,010 | -0,023 | 0,033 |
| 41-50 work hours | -0,124*** | 0,016 | 0,025 | -0,042 | -0,162*** | 0,023 | 0,029 | -0,052 | -0,087** | 0,011 | 0,020 | -0,030 |
| 51-60 work hours | -0,148*** | 0,020 | 0,028 | -0,049 | -0,183*** | 0,028 | 0,028 | -0,056 | -0,130*** | 0,016 | 0,029 | -0,045 |
| > 60 work hours | -0,100** | 0,014 | 0,019 | -0,033 | -0,063 | 0,009 | 0,011 | -0,020 | -0,120** | 0,016 | 0,025 | -0,041 |
| ***working conditions*** | | | | | | | | | | | | |
| job is secure | -0,038* | 0,005 | 0,008 | -0,013 | -0,032 | 0,004 | 0,006 | -0,010 | -0,043* | 0,005 | 0,010 | -0,015 |
| income is high | -0,217*** | 0,031 | 0,040 | -0,071 | -0,221*** | 0,034 | 0,034 | -0,068 | -0,216*** | 0,028 | 0,046 | -0,074 |
| good job opportunities | 0,100*** | -0,013 | -0,022 | 0,034 | 0,074*** | -0,010 | -0,014 | 0,024 | 0,114*** | -0,013 | -0,027 | 0,041 |
| job ist interesting | 0,064*** | -0,009 | -0,013 | 0,022 | 0,026 | -0,004 | -0,005 | 0,008 | 0,101*** | -0,013 | -0,022 | 0,035 |
| can work independently | 0,034 | -0,004 | -0,007 | 0,011 | 0,085*** | -0,012 | -0,015 | 0,027 | -0,018 | 0,002 | 0,004 | -0,006 |
| can help other people | -0,001 | 0,000 | 0,000 | 0,000 | 0,002 | 0,000 | 0,000 | 0,001 | -0,001 | 0,000 | 0,000 | 0,000 |
| job is usefull to society | 0,027 | -0,003 | -0,005 | 0,009 | 0,064* | -0,009 | -0,011 | 0,020 | -0,008 | 0,001 | 0,002 | -0,003 |
| work is exhausting | -0,064*** | 0,008 | 0,013 | -0,022 | -0,107*** | 0,015 | 0,019 | -0,034 | -0,030 | 0,004 | 0,007 | -0,011 |
| job is physically demanding | 0,134*** | -0,017 | -0,030 | 0,046 | 0,128*** | -0,017 | -0,025 | 0,042 | 0,140*** | -0,016 | -0,034 | 0,050 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| job is stressfull | -0,103*** | 0,014 | 0,021 | -0,035 | -0,127*** | 0,018 | 0,022 | -0,040 | -0,083*** | 0,010 | 0,019 | -0,029 |
| job is dangerous | 0,040 | -0,005 | -0,009 | 0,014 | 0,054 | -0,007 | -0,010 | 0,018 | 0,031 | -0,004 | -0,007 | 0,011 |
| unflexible working schedules | 0,065*** | -0,009 | -0,014 | 0,022 | 0,081*** | -0,011 | -0,015 | 0,026 | 0,053* | -0,006 | -0,012 | 0,019 |
| good relations with management | 0,068*** | -0,009 | -0,014 | 0,023 | 0,061* | -0,009 | -0,011 | 0,019 | 0,071** | -0,009 | -0,016 | 0,025 |
| good relations with colleagues | -0,053** | 0,007 | 0,011 | -0,018 | -0,077** | 0,010 | 0,015 | -0,025 | -0,032 | 0,004 | 0,007 | -0,011 |
| worries about loosing the job | 0,171*** | -0,021 | -0,038 | 0,059 | 0,203*** | -0,026 | -0,041 | 0,067 | 0,137*** | -0,016 | -0,033 | 0,049 |
| GB | -0,041 | 0,006 | 0,008 | -0,014 | -0,123 | 0,018 | 0,019 | -0,038 | 0,059 | -0,007 | -0,014 | 0,021 |
| US | 0,175*** | -0,020 | -0,041 | 0,062 | 0,165** | -0,021 | -0,035 | 0,055 | 0,202*** | -0,021 | -0,053 | 0,074 |
| HU | 0,303*** | -0,032 | -0,078 | 0,110 | 0,329*** | -0,036 | -0,079 | 0,115 | 0,287*** | -0,028 | -0,078 | 0,107 |
| NO | -0,333*** | 0,053 | 0,050 | -0,103 | -0,294*** | 0,048 | 0,038 | -0,086 | -0,356*** | 0,054 | 0,060 | -0,114 |
| SE | -0,237*** | 0,036 | 0,039 | -0,075 | -0,095 | 0,014 | 0,016 | -0,030 | -0,352*** | 0,054 | 0,058 | -0,112 |
| CZ | 0,345*** | -0,035 | -0,090 | 0,125 | 0,306*** | -0,034 | -0,072 | 0,106 | 0,407*** | -0,037 | -0,117 | 0,153 |
| SI | 0,293*** | -0,031 | -0,075 | 0,106 | 0,434*** | -0,044 | -0,111 | 0,155 | 0,207** | -0,022 | -0,054 | 0,076 |
| BG | 1,121*** | -0,067 | -0,357 | 0,424 | 1,229*** | -0,074 | -0,385 | 0,460 | 1,037*** | -0,059 | -0,336 | 0,396 |
| RU | 1,146*** | -0,070 | -0,362 | 0,433 | 1,238*** | -0,078 | -0,384 | 0,462 | 1,064*** | -0,063 | -0,342 | 0,405 |
| NZ | 0,049 | -0,006 | -0,011 | 0,017 | 0,081 | -0,011 | -0,016 | 0,027 | 0,024 | -0,003 | -0,006 | 0,009 |
| CA | 0,010 | -0,001 | -0,002 | 0,003 | -0,011 | 0,002 | 0,002 | -0,004 | 0,046 | -0,005 | -0,011 | 0,016 |
| PH | 0,612*** | -0,052 | -0,179 | 0,231 | 0,564*** | -0,052 | -0,153 | 0,206 | 0,632*** | -0,049 | -0,193 | 0,242 |
| IL | 0,393*** | -0,039 | -0,105 | 0,144 | 0,364*** | -0,039 | -0,089 | 0,128 | 0,421*** | -0,038 | -0,121 | 0,159 |
| JP | -0,057 | 0,008 | 0,011 | -0,019 | -0,101 | 0,015 | 0,016 | -0,031 | -0,015 | 0,002 | 0,003 | -0,005 |
| ES | 0,031 | -0,004 | -0,007 | 0,011 | 0,054 | -0,007 | -0,010 | 0,017 | 0,003 | 0,000 | -0,001 | 0,001 |
| FR | 0,070 | -0,009 | -0,015 | 0,024 | 0,062 | -0,008 | -0,012 | 0,020 | 0,093 | -0,010 | -0,023 | 0,033 |
| CY | -0,129** | 0,018 | 0,024 | -0,042 | -0,080 | 0,012 | 0,013 | -0,025 | -0,171** | 0,023 | 0,034 | -0,057 |
| PT | 0,551*** | -0,050 | -0,156 | 0,205 | 0,637*** | -0,059 | -0,174 | 0,232 | 0,480*** | -0,042 | -0,140 | 0,182 |
| DK | -0,367*** | 0,060 | 0,051 | -0,111 | -0,350*** | 0,060 | 0,040 | -0,100 | -0,371*** | 0,057 | 0,061 | -0,118 |
| CH | -0,423*** | 0,071 | 0,055 | -0,126 | -0,347*** | 0,059 | 0,040 | -0,099 | -0,498*** | 0,082 | 0,071 | -0,153 |
| No. of observations | 30829 | | | | 14648 | | | | 16181 | | | |

| | | | |
|---|---|---|---|
| Log likelihood | -24478 | -11500 | -12872 |
| Prob > $chi^2$ | 0,000 | 0,000 | 0,000 |
| Pseudo-$R^2$ | 0,100 | 0,106 | 0,100 |

Legend: * p < 0,05; ** p < 0,01; *** p < 0,001

into the unconstrained worker category or want to work less and earn less (full sample and both subsamples). In the full sample, the coefficients of all work hours categories are significant, and in both this sample and the female and male subsamples, their signs change from positive to negative if respondents work more than 40 hours. For both men and women, the probability of wanting additional hours significantly decreases if their actual work time is above 40 hours per week, whereas part-time workers are more likely to increase their work hours.

Various coefficients describing working conditions are also significant. If respondents perceive their income as high, the predicted probability that they fall into the category of workers who want additional hours and earnings is 7.1 percent lower (6.8 percent for females and 7.4 percent for males) than that for the reference category. Good job opportunities also increase the probability of wanting additional hours and earnings among both men and women. Interestingly, job security is only significant at the 95 percent level for the full sample and for men: it is insignificant for women. However, respondents who are worried about losing their jobs are 5.9 percent more likely (6.7 percent for women and 4.9 percent for men) to want an increase in hours and earnings.

An analysis of working conditions reveals additional gender differences; specifically, the dummy variables for whether working independently is possible, whether the job is socially useful, whether relations with colleagues are good, and whether work is exhausting are only significant for women, not for men. In contrast, if men have an interesting job, they tend to want additional hours, but this variable is insignificant for women.

If workers perceive the job as stressful, it reduces the probability of either men or women preferring longer work hours. Physically demanding jobs, however, increase the willingness for additional hours. Likewise, respondents with inflexible work schedules are more likely to want additional hours than respondents with flexible work schedules. However, flexible work time and schedules can result in long hours and induce people to work at times usually reserved for recreation, leisure, and family life [see Lee, McCann, Messenger (2007) p. 152].

The country dummy variables reflect the country-specific differences that are explained by neither the sociodemographic variables nor the working conditions incorporated in the model, all interpreted with respect to the reference category, Germany. The results indicate that workers in the U.S. are 4.1 percent less likely to be satisfied and 6.2 percent more (2 percent less) likely to want longer (shorter) work hours than German workers.

As pointed out by Sousa-Poza and Henneberger (2002, p. 233), explaining country differences is difficult because such analysis would require further variables that describe the institutional settings, traditions, and cultural background. Yet, even though the U.S. and Japan, for example, have very different cultures, cultural aspects could lead workers in these countries, who already have long work weeks, to desire additional hours. For example, according to Reynolds (2004), overwork and resulting health problems are serious issues in Japan, but U.S. workers consider “hard work [to be] the key to economic success” [Reynolds (2004) p. 98].

Workers in all Scandinavian countries are more likely to be satisfied with their work hours than workers in Germany. One intuitive explanation could be that these

countries have implemented effective strategies to reduce mismatched hours and improve the compatibility between work and family life. However, workers in Scandinavian countries face wide-ranging redistribution policies and a high burden of taxation which reduce the incentive to work longer hours. Consequently, it is not astonishing that at the same time, workers in these countries are more likely than those in Germany to reduce hours and give up income, even though they face fewer work hours than German workers. Scandinavian countries also have the lowest percentages of workers with very long work weeks (more than 50 hours) compared to other European countries [see Lyonette and Clark (2009)]. On the other hand, intended redistribution policies pursued by German trade unions´ strategy for reducing work hours have widely failed to decrease unemployment and poverty. In addition, wage inequality in Germany has increased over the past three decades. In a detailed analysis of micro-data Dustmann, Ludsteck, and Schönberg (2007) show that the fanning out of the German wage structure in the 1980s (primarily increasing wage inequality at the top of the distribution) and in the 1990s (increasing wage inequality at the bottom of the distribution) appears to be very comparable to the experiences in the U.S. and the UK. Thus, increasing wage inequality in Germany and the unions' effort to reduce work hours can explain the rise in the share of German workers who want to work more and earn more.

## 5 Conclusions and Policy Implications

A first and important insight from this study is that hours constraints are not only omnipresent (in most countries, more than a third of the workforce face constraints), in a number of countries, they have increased over the past decades. Why is this the case, and what policy measures can address and remedy this phenomenon? As this

paper shows, country differences are clearly interrelated with key macrolevel economic variables like unemployment rates, GDP per capita, average weekly work hours, and income inequality. That is, in countries where people face high unemployment rates, high percentages of workers desire additional work hours and earnings. Moreover, relatively fewer wealthy countries (in terms of GDP per capita) are characterized by large shares of workers who desire to work more and earn more.

Likewise, as the multivariate analysis illustrates, sociodemographic variables and working conditions are important determinants of hours constraints. Self-perceived income, job advancement opportunities, and worries about losing a job especially are central to explaining the existence of microlevel mismatches between actual and desired work hours. Nonetheless, on both a macro- and a microlevel, prosperity in terms of GDP per capita and income are important driving forces of the desire to work longer hours and earn more money. Imminent unemployment in the face of high unemployment rates in a certain country and worry about losing a job on an individual level have a strong impact on the desire for additional work hours and earnings. Thus, the desire to work more or less seems strongly related to income considerations and the expected employment situation.

Country differences with respect to the ratio between underemployment and overemployment, and differences in terms of whether both mismatches occur simultaneously or with different magnitude also affect policy implications. As the analyzes shows, especially in poor countries (in terms of GDP per capita and high unemployment rates), the desire for additional hours and earnings, most probably motivated by poverty and income considerations, widely dominates the small fraction

of workers that want to work less and earn less. Thus, policy measures that combat poverty can also effectively combat underemployment, because the two go hand in hand.

In the debate on work hours, the most discussed issues are unemployment and the resulting poverty. Therefore, in terms of policy that considers work hours constraints, the study findings imply a reallocation of the existing labor demand to take into account individual preferences for shorter or longer work weeks. Given the prerequisite that underemployment and overemployment occur to about the same extent, these redistribution potentials are immense but the conclusions drawn and their implications also depend on the data sources used. Moreover, work hours mismatches are caused by both sides of the labour market. Missing or inappropriate qualifications for part-time jobs, for example, could prevent employers from offering more substantive part-time jobs.

The study of hours constraints reveals important information about job mobility, as well as present and future labor market behavior. Such study not only improves explanation of labor supply decisions but shows “how people adapt their labor supply when these constraints were relaxed” [Wolf (1998), p. 23] or aggravate. Hence, individual preferences for work hours and their impact on labor market participation decisions can provide valuable insights for successful policy implementation if policy makers take into account the length of the work week, the need for more substantive part-time jobs, and/or a better balance between work and family life. Yet, as already pointed out, actual and preferred work time and its division on a household level have not received adequate attention in the widespread discussion of work time and labor market policies [see Bosch and Wagner (2002)].

Successful strategies for reducing work hours mismatches depend on the underlying reasons between both labour supply and demand and therefore also require employees´ effort to reduce such mismatches. However, considering workers´ preferences is an important step to reduce job mobility (by means of changing the employer) and therewith turnover costs for employers and unemployment costs. In addition, because hours constraints are related to quality of life and job satisfaction, work time policies meant to improve these two aspects should address individual preferences and be designed to reduce mismatches in work hours. Employer efforts to reduce such mismatches, particularly, could improve employee motivation and productivity.

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