Middle Eastern Finance and Economics
ISSN: 1450-2889 Issue 17 (2012)

http://www.middleeasterneconomicsandfinance.com

Can Worksharing Decrease Unemployment while Maintaining Economy Growth? A Case Study for Six World Leading Economies

Konstantinos P. Vergos
Corresponding Author, University of Portsmouth, United Kingdom
E-mail: konstantinos.vergos@gmail.com

Apostolos G. Christopoulos
University of Athens, Faculty of Economics, Greece
E-mail: axristop@econ.uoa.gr

Lina Kosteletou
University of Athens, Faculty of Economics, Greece
E-mail: lkost@econ.uoa.gr

Abstract

In this paper we investigate the effects of decreasing weekly working time, known as "worksharing", on growth and unemployment in the world largest countries. We find that the decrease of standard time of work is associated with a reduction in unemployment in the long run. For every 10% decrease of working time, unemployment decreased by 3,37%. We also find that time-sharing is not associated with decreasing economy growth. Our results provide an indication that countries that promote worksharing policies are associated with decreasing unemployment while being also competitive in the long run.

These findings are interesting for policy makers. If the decrease of standard working time leads to a decrease of long-run unempoloyment, then worksharing should be a key to policymaking to promote social prosperity whilst keeping competition at high level. Given the small, if any, cost of worksharing to government budget and the lack of governments to achieve a constistently costly expansionary investment policy, the contribution of worksharing to achieve high employment, while keeping economy growth and government budget at sustainable level may be the main policy tool of economic prosperity in times of crises, given the lack of investment resources during recession. Our findings question the policy rationale behind working time increasing policies promoted by the European Commission and the EU including steps towards amending Working Time Directive 2003/88.

Keywords: Unemployment, worksharing, growth, economics, macroeconomics

1. Introduction

The rapid increase of unemployment as a result of the deep economic crisis in global economy that started in 2007 made the need to decrease unemployment in the long run, more necessary than ever. The purpose of the paper is to investigate whether the worksharing, as defined by decreasing weekly

working time, lead to decreasing unemployment and economy growth. We also investigate whether other macroeconomic factors can be used to affect positively GDP growth and negatively unemployment. If worksharing is useful, then countries should closely follow working time reducing policies to foster growth and diminish unemployment. On the contrary, if the role of worksharing on unemployment is negative or insignificant, the countries should pursue the use of other policies to reduce unemployment and strengthen the economy.

2. History of Working Hour Reduction

Industrial and terchnology revolution made possible the repid increase of production that gave the ability to employees to decrease their working time, while increasing their salary. In Europe, working time reduction has taken place during the last 30 years in most countries. Regarding the most developed countries, German employment working time was a result of bargaining between unions and companies. In 1978, the IG Metal initiated a campaign for a reduction in the work week to below 40 hours and, after a lengthy strike, succeeded in this campaign in 1984. The weekly working time in the metal manufacturing and electrical engineering industries was cut to 38.5 hours in 1985. to 37 hours in 1988, to 36 hours in 1993 and to 35 in 1995. In 1979, workers in the British succeed a reduction for manual workers from 40 to 39 hours of work per week, and an increase in basic holiday entitlement to 5 weeks, while shipbuilding and engineering unions secured in 1989-90 a reduction in the standard working week to 37 hours. On the contrary, in France, the standard workweek was reduced from 39 to 35 hours, as a result of government initiative. A first act to reduce working-time was passed in June 1996 lowering the legally standard work-week to 35 hours and gradually became fully effective till 2001.

2.1. Discussion

It is argued by Bauer and Zimmerman (1999) that an increase in the overtime premium or a legislative reduction in the maximum overtime hours raises the average cost of labour, since firms have to bear the quasi-fixed costs of employment when they increase the number of their workers. This increase in costs may induce firms to switch to more-capital-intensive production and therefore may have overall negative effects on employment. Kapteyn A., Kalwij A., Zaidi A.(2000) examined worksharing in 13 OECD countries and their empirical analysis does not provide any ground for the proposition that worksharing would reduce unemployment. examine the effects of a revenue-neutral employment subsidy financed by a tax on overtime hours. On the contrary, Moutos T. and Scarth W. (2000) indicate that worksharing policy is effective and a rather modest initiative (involving a revenue-neutral tax and subsidy equal to about one-third of one percent of GDP) can lead to a drop in the unemployment rate that is between one-half and one full percentage point. Bockerman and Kiander (2002) who examined workiing time reduction in Finland from 1960 to 1996, concluded that a reduction in actual average leads to an increase in employment. Logeay C. Schreiber S. (2006) who analyzed the macroeconomic impact of the French work-sharing reform of 2000 using a vector error correction model (VECM) for several labor market variables found that the reduction of working time suggests significant beneficial employment effects. Kramarz et.al. (2008) who eaxamined worksharing in Netherlands during the period 1970 and 2000, concluded that working hours have gradually decreased in the Netherlands resulting in increased hourly wage and mild positive employment effect. Arguments for worksharing benefits have been presented interalia in Messenger (2009) Work sharing policies and programmes are more likely to result in a “win-win-win” solution benefitting workers, employers and governments. Fgurthermore, according to Coote et. Al. (2010), the reduction of working week to 21 hours could help to address a range of urgent, interlinked problems: overwork, unemployment, over-consumption, high carbon emissions, low well-being, entrenched inequalities. If the latter is correct, then the reduction of working time is justified.

3. Methodology

3a. Data

We examine annual data during the 1972-2005 period for United States of America, United Kingdom, France, Italy, Germany and Japan, using the official data as released by IMF and World Bank.

3b. Hypothesis Testing and Regression Analysis

We use regression analysis to investigate the association between GDP growth and the investigated macroeconomic factors.

In particular, we proceed to regressions so as to define the coefficients of the following equations

$$\text{Unemployment} = \alpha + \beta 1 * \text{Timepercentreduction} + \varepsilon \quad (1)$$

$$\text{Unemployment} = \alpha + \beta 1 * \text{Timepercentreduction} + \beta 2 * \text{GDPgrowth} + \beta 3 * \text{Dinvestments} + \varepsilon \quad (2)$$

$$\text{GDPGrowth} = \alpha + \beta 1 * \text{Timepercentreduction} + \varepsilon \quad (3)$$

$$\text{GDPGrowth} = \alpha + \beta 1 * \text{Timepercentreduction} + \beta 3 * \text{Dinvestments} + \varepsilon \quad (4)$$

$$\text{GDPGrowth} = \alpha + \beta 1 * \text{Timepercentreduction} + \beta 3 * \text{Dinvestments} + \beta 6 * \text{Dgovernment} + \varepsilon \quad (5)$$

Given that

Unemployment is the percentage change of Unemployment Rate on year x+3 minus Unemployment Rate on year x ,

GDPgrowth is the average growth rate of the country during year x+1, x+2 and x+3

TimepercentReduction is the **percentage** weekly time **reduction** during year X+1, if any

Dinvestments is the growth rate of the fixed capital investments over GDP during year x+1

Dgovernment is the growth rate of the government expenditure over GDP during year x+1 $\boldsymbol{\varepsilon}$ is the error term.

4. Results

In our model, we estimate annual values and then we run regressions (1) to (5) to investigate the association of working time reduction, in terms of percentage change to employment and GDP growth. Table 1 describes regressions that use the percentage Time reduction, GDP growth and Change in percentage of investments over GDP as explanatory factors for the change of unemployment rate in the long run (3-yr period).

Table 2 describes regressions that use the percentage Time reduction, Change in percentage of fixed capital investments over GDP, Change in percentage of consumption over GDP, and Change in government consumption over GDP, as explanatory factors for the change of a country GDP growth in the long run (3-yr period), given that t() is a regression coefficient (or, for the market slope b, the coefficient minus 1.0) divided by its standard error. The regression R-square adjusted and residual standard errors s(e) are adjusted for degrees of freedom. F-statistic is also reported.

4.1. Working Time and Change of Unemployment

Our results provide an indication that countries that proceed to reduction of working time are associated with a reduction in unemployment in the long run.

Initially we examine whether countries that proceed to reduction of working time have an advantage after accounting for the country GDP growth in the respective period. We find that although the most significant factor that leads to the reduction of unemployment is a country's GDP growth, the inclusion of working time reduction, as an additional explanatory variable, adds predictivive power to the model and as a predictive factor is significant at 5% level, even after accounting for the change of investments.

In particular, a time reduction leads to a decrease of unemployment even after accounting for GDP Growth and Investment change for the examined three-year period. For every **10% decrease of**

working time, unemployment decreased by 3,37%, significant at 10% level. The predictive power of our model is high (R-sq-adj=38.1%), and it is evident that, decreasing working time led to decreasing unemployment.

Table 1: Working Time percentage reduction and change of Unemployment in the long run

Predictor:	Intercept	Timepercentreduction	GDPgrowth	Dinvestments	Regression Fit	
Unemployment= 1.55-33.73*TimeReduction-18.36*IGDPGrowth-8.37*Dinvestmensts +ε						
Coefficient	1.552***	-33.733*	-18.368***	-8.327**	R-sq-adj	38.1%
t-statistic	8.544	-2.068	-7.527	-4.164	F	40.13
Unemployment= 0.14-12.09*TimeReduction +ε						
Coefficient	0.140**	-12.093			R-sq-adj	0.3%
t-statistic	2.433	-1.262			F	1.59

An asterisk, two asterisks and three asterisks indicate 10%, 5% and 1% statistical significance, respectively

Now it is interesting to examine whether Working time reduction is a factor that leads to lower GDP growth, as well.

4.2. Working Time and the Growth of Gross Domestic Product

Our results provide an indication that worksharing is not associated with statistically significant change of GDP growth in the long run.

Initially we examine whether countries durin periods that established worksharing policies have an advantage after accounting for the World GDP growth in the respective period. We find that the inclusion of working time reduction criteria, as an additional explanatory variable, does not add predictivive power to the model and as a predictive factor is insignificant. On the contrary, the increase of investment level and the decrease of government consumption resulted in GDP Growth during the examined period for the examined countries.

Table 2: Working Time percentage reduction and GDP Growth in the long run

Predictor:	Intercept	Timepercentreduction	Dinvestments	Dgovernment	Regression Fit	
GDPGrowth= 0.063-0.248*TimepercentReduction+0.327*DInvestment+ε						
Coefficient	0.063***	-0.248	0.327***		R-sq-adj	15.2%
t-statistic	21.401	-0.510	5.979		F	18.07
GDPGrowth= 0.062-0.413*TimeReduction+0.173*DInvestment-0.446*DGovernment+ε						
Coefficient	0.062***	-0.413	0.173**	-0.446**	R-sq-adj	19.5%
t-statistic	21.761	-0.867	2.452	-3.340	F	16.41
GDPGrowth= 0.063-0.307*TimeReduction+ε						
Coefficient	0.063***	-0.307			R-sq-adj	-0.3%
t-statistic	19.683	-0.580			F	0.34

5. Conclusion

The main scope of this paper is to contribute to the debate on the effectiveness of worksharing, as defined by the decrease of working time, on the economic performance and unemployment among the largest countries. In first place, we analysed the statistical data related to working time, the growth of real output, investments and the change of unemployment for the period 1972-2005. The empirical analysis based on data attempted to explain these tendencies formally by estimating the direct effects of working time reduction on growth and unemployment. We found that the performance of working time reduction on and unemployment was statistically significant; however the effect of worksharing on the growth of output is found to insignificant. In particular we the inclusion of working time reduction, as an additional explanatory variable, adds predictivive power to the model and as a predictive factor is significant, even after accounting for the change of investments.

In particular, we found that for every 10% decrease of working time, unemployment decreased by 3,37%, significant at 10% level. If we account for GDP growth and change in investments, countries that proceeded to working time reduction by one hour, have decreased unemployment even after accounting for GDP Growth and Investment change for the examined three-year period.

Our findings contradict to arguments by Bauer and Zimmerman (1999) and Kapteyn A., Kalwij A., Zaidi A.(2000) that an increase in the overtime premium or a legislative reduction in the maximum overtime hours may have overall negative effects on employment, while being in line with Moutos T. and Scarth W. (2000), Bockerman and Kiander (2002) , **Logeay C. Schreiber S. (2006) and Kramarz** et.al. (2008) who eaxamined worksharing and found positive employment effect.

Overall, our findings indicate that the objectives of regulators, including these in the European Union, should be reformulated in a way to encourage countries to activate plans to reduce standard working time, to favour full employment and higher economic activity. More importantly, this policy comes at no cost for government budget so it can be applied without the need to deteriorate fiscal problems.

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