

# Wage Flexibility and Unemployment: A Panel Data Analysis of OECD Countries

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*Abstract: This short paper revisits the relationship between wage flexibility and unemployment. The conventional view of a trade-off between equality and employment suggests that the relationship should be negative. Using a panel of data from ten OECD countries across a twenty-two year period, we find a positive relationship between unemployment, when the latter is measured both nationally and OECD-wide -- and wage flexibility, measured directly as the coefficient of variation of inter-industrial wage change. We suggest that the evidence available through the early 1990s never supported the conventional view.*

The more flexibility in a country's labour market, the more these changes in demand and supply show up in relative wages rather than unemployment.<sup>1</sup>

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<sup>1</sup> "Rich Man, Poor Man," *The Economist*, July 24, 1993.

## Introduction

Policy-makers and the popular economic press have long held that Europe's high unemployment results from inflexibility of real and relative wages. This view gained popularity in the early 1990's as the United States, with higher inequality than most European countries, emerged from the 1991 recession and U.S. unemployment fell, while in Europe unemployment rose. In 1993, reports from the G7 (see Barber and Gardner 1993), OECD (1993), and the European Commission (see Leadbeater 1993) all urged wage flexibility as the cure for unemployment. Although academics are increasingly skeptical,<sup>2</sup> this prescription has been a staple of European labor policy discussion ever since<sup>3</sup>.

The simplest theory relates aggregate employment to the average real wage. In this model, the mechanics of the relationship between *real wage* inflexibility and unemployment are fairly elementary. In an efficient labor market, supply increases or demand decreases necessitate falling real wages, other things equal. Should real wages fail to fall, unemployment rises.

Yet basic as this supposed relationship is, most studies have failed to find consistent or significant evidence of its existence; the stylized fact that average real wages are not counter-cyclical has been known since the late 1930s. The notion that there exists a single national labor market with a single equilibrium real wage is obviously too simple. Where labor markets are even slightly segmented, changes in the average national real wage of the employed population quickly lose theoretical relevance to the unemployment problem.

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<sup>2</sup> For example, Nickell and Bell (1996), Freeman (1995), Bell (1986), Howell and Heubler (2000); also Gordon (1982).

<sup>3</sup> See selected press items in reference list.

A more sophisticated version of the theory holds that the problem lies in a failure to adjust relative wages across labor market segments inside national economies to changing technological conditions. If the labor market is stratified according to levels of skill, and if technological change is “skill-biased” – as often asserted – then a country with a falling relative wage for the unskilled should experience less unemployment than a country that holds low-skilled pay high, even if the average real wage is unchanged. In this theory, under the stipulated conditions countries with high and rising inequality should have better unemployment performance than those with low and steady inequality.

Yet, again the evidence is adverse. As Galbraith, Conceição and Ferreira (1999) have shown, European countries with lower inequality generally have lower, not higher, rates of unemployment. Countries with higher incomes, which might be supposed to be early absorbers of technological change, also tend to have lower unemployment. Also, increases in inequality through time are generally associated with rising, not falling unemployment.<sup>4</sup> In a new paper, Howell and Huebler (2001) underscore this finding: “the cross-national data provide no support for the conventional wisdom that the employment problems of central and northern Europe are systematically linked to their relatively egalitarian wage-setting mechanisms.”

This paper makes a modest contribution to the developing counter-consensus in the empirical research community. Other studies measure internal relative wage flexibility as a simple

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<sup>4</sup> Galbraith et al. also show that even the vaunted characterization of “Europe” as a low-inequality, high unemployment region relative to the United States becomes questionable once one factors in the between-countries differences in average wages in Europe. If one makes such a continental calculation, Europe as a whole has *both* higher pay inequality *and* higher unemployment than the United States. Thus the positive relationship between inequality and unemployment appears to be independent of the scale over which it is measured.

change in differentials from the start to the end of the study period. We provide a direct measurement of inter-industrial wage flexibility on a year-to-year basis, in the form of the coefficient of variation (across industries) of the *change* of inter-industry average wages. Our panel data analysis finds a *positive* -- but doubtfully significant -- relationship between unemployment and wage flexibility so measured. This contradicts the conventional view, which predicts that increases in wage flexibility should be associated with lower unemployment

The anomaly raises a theoretical question. Why should more flexible wages result in higher unemployment? Since there is no very compelling reason, we suggest that the causation runs the other way: higher unemployment drives down the relative wages of the low-paid. We will argue that this is the plausible way to tell the story, and also consistent with the data. Moreover, it suggests a simple test: in an open economy, the unemployment that hurts low-wage workers can be either inside the country, or outside it. When we include both OECD and national unemployment rates as determinants of national wage flexibility, both show positive and significant effects, independently of each other and of country and time effects.

### **Data and Method:**

For a measure of wage flexibility, we turn to a common source of information: national industrial statistics. Our data are drawn from the Structural Analysis (STAN) data set of the OECD, a highly useful compilation, albeit not updated as completely or frequently as we might wish, and available at time of writing only through the early 1990s. We use annual OECD industrial labor compensation and employment data from 1972 to 1994 for Australia, Canada,

Germany, Greece, Italy, Japan, New Zealand, Norway, Spain, the UK and the US. Labor compensation is defined as the current (national accounts compatible) labor cost by industry, which include employer compulsory costs such as pension and medical payments as well as wages. Employment is the number of full and part-time employees, as well as self-employed, owner-proprietors and unpaid family members. Industries were selected from a set of 49 two, three, and four level ISIC Revision 2 industry codes. Industry selection was based on data availability and deference to the lowest level of aggregation (i.e. four-digit), while avoiding hierarchical overlap. The average industrial wage is defined as total compensation in an industrial category divided by the total number of employees in that country. Change in this variable is the percentage change from year to year. The coefficient of variation for a given year is the standard deviation of these changes across industries, divided by the mean change. As data availability and industrial structure differ for each of the study countries, the number of industries and hierarchy of industries do vary slightly across countries; however these measures are consistent within each country across the period of study.

As a measure of wage flexibility, the coefficient of variation of wage change across industries has a number of attractive properties. First, and foremost, it permits us to compute an annual measure for most countries and years, and to do this from a relatively modest set of underlying observations. Second, it standardizes the dispersion measure for differences in nominal rates of change owing to changing inflation rates. (Thus changing values reflect the changing variability of real, rather than purely nominal, relative wages.) Third, the overlying industrial classification scheme tends to stratify the underlying observations in ways that reflect

*grosso modo* differences of technological process: mass production, assembly, continuous process and so forth. For this reason, technological forces -- such as those that might tend to increase demand for skilled over unskilled labor -- should show up in the cross-industry data, increasing average wages for certain industries (intensive in the demanded factors) compared to others. So, we may plausibly expect the cross-industries measure of wage change to be a sensitive indicator of the major types of wage flexibility that the standard policy prescriptions would like to promote. Fourth, in a panel analysis, country dummy variables will reflect any systematic differences in variability due to differences in the classification scheme, as well as differences that may be due to national institutional structures.

As a first cut, we present in Table One the year-to-year correlation ratios between wage flexibility and unemployment for the countries under study. A striking finding emerges. In only one such country is the correlation negative: the United States. In all the other cases, the year-to-year correlation between wage flexibility and unemployment is positive: greater flexibility is associated with higher unemployment. Clearly something is not quite according to script.

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Table One  
Time-Series Correlation of Unemployment and Wage Flexibility, 1972-1994

Australia	.53
Canada	.50
Germany	.61
Greece	.44
Japan	.50
Italy	.70
New Zealand	.56
Norway	.35
Spain	.62
United Kingdom	.27
United States	-.32

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## **Models and Results**

The standard hypothesis relates the measured rate of unemployment to the coefficient of variation of annual changes in average industrial wage rates, and predicts a negative coefficient: more flexibility should be associated with less unemployment. To capture country fixed effects (and data set idiosyncrasies) and any general time trend in the relationship, we estimate such a model with and without a full panel of country and year dummy variables.

The results are shown in Table Two. Two models are presented; in both, the national unemployment rate is the dependent variable. In Model One, the determinants of national unemployment are national wage flexibility and a country dummy, to take account of other institutional variations and any systematic country-specific measurement biases. In this model, the coefficient of variation in wage change is a strongly significant determinant of national unemployment rate – but the sign is opposite to the conventional prediction. Countries with high wage flexibility have high rates of unemployment, other things equal. Model Two allows for a second set of time dummies, and so permits independent effects for each calendar year. Again the coefficient on flexibility has the wrong sign, but now it is reduced to statistical insignificance. Apparently some common determinant, across countries, of national unemployment dominates changes in national wage flexibility.

Table Two  
 Conventional Models of Wage Flexibility and Unemployment  
 Dependent Variable: Unemployment

Variable	Model I	Model II
Wage Flexibility	.637 (.0786)***	.0185 (.0258)
Country Effects	Yes	Yes
Time Effects	No	Yes
R2	.69	.89
Pr > F	0.0000	0.0000
N	242	242
Excluded Observations	5	6

Specification of Dependent Variable: Square Root (Unemployment Rate)

We next reverse the causal hypothesis, and re-estimate the model with wage flexibility as the dependent variable. Since national wage flexibility in an open economy can be affected by both internal and external shocks, we incorporate both the national and the OECD-wide unemployment rates on the right-hand side. Table Three presents three models. The first allows for country dummies and the national unemployment rate only: here the coefficient on unemployment is positive and strongly significant. In the second model, we add the time dummies. Now the national unemployment variable again has a positive coefficient, but is not significant. As in the previous tests, some common factor tends to dominate the power of national unemployment to determine national wage flexibility.



Table Three  
 Revised Models of Unemployment and Wage Flexibility  
 Dependent Variable: Wage Flexibility

Variable	Model I	Model II	Model III
National Unemployment	.0612 (.0060)***	.0178 (.0079)	.0203 (.0081)*
OECD Unemployment	No	No	1.379 (.303)**
Country Effects	Yes	Yes	Yes
Time Effects	No	Yes	Yes
R2	.52	.68	.68
Pr > F	.0000	.0000	.0000
N	242	242	232
Excluded	3	3	1

Specification of Dependent Variable:  $\text{Log}_{10}$  (Wage Flexibility)

Adding in the OECD-wide unemployment rate, in the preferred Model Three, restores the independent significance of both internal and external unemployment rates. Both variables now have positive signs; note that the coefficient on the OECD-wide unemployment rate is much larger than on the national unemployment rate. Again, this suggests the important effect of regional as opposed to merely national employment conditions – as one would expect, after all, in open economies.<sup>5</sup>

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<sup>5</sup> Note that this is a relationship that cannot run the other way: increasing national wage flexibility in a small economy will not have significant effect on OECD-wide unemployment.

## Conclusion

Much has been written and even more said about the great disease of labor market inflexibility in Europe. Yet as an increasing number of scholars have come to see, the evidence for any causal link between wage rigidity and unemployment is thin. This paper contributes a new, direct measure of flexibility in OECD pay structures, and finds the association posited by the conventional view to fail simple tests of sign and significance in a panel regression. An alternative hypothesis, which specifies that high internal and external unemployment increase the variability of wages, fits the evidence more satisfactorily.

We will not jump to policy conclusions in a paper that does not address policy design. In other work, one of us has written at length about the need for a more expansionary European growth and employment policy and about the types of monetary policy, public expenditure and transfer policy that should be considered. Here, we merely note that those seeking the solution to Europe's unemployment in greater labor market flexibility (and inequality) can expect little success. Moreover they could and should have known this, had they looked at the evidence, nearly a decade ago.

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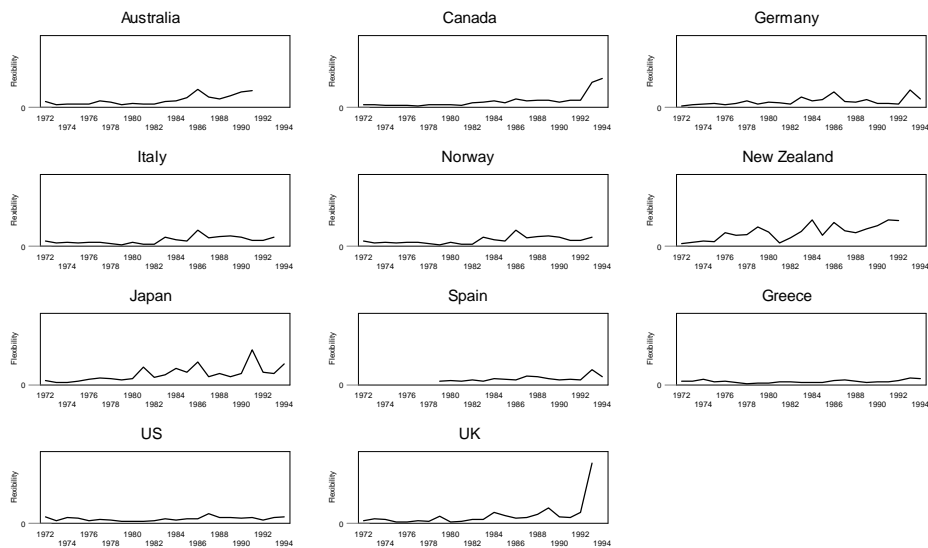
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## Appendix.

Coefficient of variation of interindustry earnings, selected OECD countries, 1972 to 1994.

Final years for New Zealand, Australia and the UK show sharp increases omitted here, possible errors in the data set. They are treated as outliers and removed from the panel estimates pending further verification of the data.

### Wage Flexibility Across Industries Selected OECD Countries



## References.

Domestic and International Developments: Employment and Unemployment.” *OECD Economic Outlook* 37 (1985): 26-34.

“Labour Market Regulation in Europe and Implications for Unemployment.” *Liverpool Quarterly Economic Bulletin* (2000): 30.

Barber, Lionel, and David Gardner. “Delors Sets Agenda for Reducing Jobless.” *Financial Times*, October 27 1993, 1.

Bell, Linda A. “Wage Rigidity in West Germany: A Comparison with the U.S. Experience.” *Federal Reserve Bank of New York Quarterly Review* 11 (1986): 11-21.

Bickerman, Wilfred, ed. *Wage Rigidities and Unemployment*. Baltimore: Johns Hopkins University Press, 1986.

Elmeskov, Jorgen. “The Unemployment Problem: Lessons from Implementing the OECD Jobs Strategy.” *EIB Papers* 3, no. 1 (1998): 29-54.

Freeman, Richard. “The Limits of Wage Flexibility to Curing Unemployment.” *Oxford Review of Economic Policy* 11, no. 1 (1995): 63-72.

Galbraith, James K., Pedro Conceição and Pedro Ferreira: “Inequality and Unemployment in Europe: The American Cure,” *New Left Review*, No. 237, September-October 1999, 28-51.

Gordon, Robert J. “Why U.S. Wage and Unemployment Behavior Differs from that in Britain and Japan.” *The Economic Journal* 92 (1982): 13-44.

Goubert, L., and E. Omey. “An Alternative Measure of Wage Flexibility.” *International Advances in Economic Research* 2, no. 3 (1996): 199-221.

Howell, David R. and Friedrich Huebler, "Trends in Earnings Inequality and Unemployment Across the OECD: Labor Market Institutions and Simple Supply-Demand Stories," Manuscript: February 7, 2001.

Johansen, Kare. "Wage Flexibility for Skilled and Unskilled Workers: New Evidence on the Norwegian Wage Curve." *Labour* 13, no. 2 (1999): 413-432.

Leadbeater, Charles. "Financial Ministers Warn of Crisis in Jobs and Growth." *Financial Times*, July 8, 1993, 1.

Nickell, Stephen, and Brian Bell. "Changes in the Distribution of Wages and Unemployment in OECD Countries." *American Economic Review Papers and Proceedings* 86, 2 (1996): 302-308. OECD, *1993 Employment Outlook*. Paris: OECD, 1993.

Siebert, Horst. "Labor Market Rigidities: At the Root of Unemployment in Europe." *Journal of Economic Perspectives* 11, no. 3 (1997): 37-54.

### **Selected Press Items**

"Rich Man, Poor Man." *The Economist*, July 24, 1993, 71.

"Jobs and Wages Revisited." *The Economist*, August 17 1996, 62.

"Learning a Lesson from America." *The Guardian*, October 4 1999, 23.

"The US Example." *The Financial Times*, January 4 2000, 14.

Groom, Brian. "Europe Trends an Uneasy Middle Way". *Financial Times*, July 3 1985, 19.

Prowse, Michael. "No Easy Answers to Jobless Question: Rising Employment and Wage Flexibility Have Gone Hand in Hand in America's Market Economy." *Financial Times*, July 21 1993, 17.