IMF Working Paper

Globalization and Income Inequality:

A European Perspective

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European Department

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Abstract

There is growing concern in Europe over the impact of globalization on high and evenly
shared living standards. These concerns have often surfaced in response to falling labor
income shares in aggregate national income data. However, these data may tell little about
the underlying distribution of incomes based on household disposable incomes. While
summary measures of income distributions also suggest that inequality has increased in most
industrialized countries, this development was very uneven and much less pronounced in
euro-area countries, suggesting that broad phenomena such as trade liberalization and
technological change may not be major drivers of inequality.

Contents   Page

Tables

Figures

Boxes

I. INTRODUCTION

There is growing concern in the industrialized nations over the impact of globalization on their ability to sustain relatively high and evenly shared living standards. Globalization is widely believed to have had a generally positive impact on global economic growth. But the effect of globalization on employment and the distribution of incomes has been intensely debated in recent years and has led some observers in Europe and the United States to call for protectionist measures, including barriers to cross-border trade, labor, and investment flows. This is particularly disconcerting in Europe where, spurred by international competition, the export sector has performed very well over past decades.

Income inequality has increased in many advanced economies over the past two decades. In some continental European countries, however, inequality rose only modestly, or even declined. The inequality upswing was much larger in the United Kingdom and the United States. In the United Kingdom, the Gini coefficient of net disposable household income rose from 27 in the late 1970s to 34 in the late 1990s, showing that inequality increased by almost 30 percent. Trends in income inequality across advanced economies have been quite different. In the United States, which started out with a relatively high degree of income inequality, it has increased even further. However, other countries with initially low levels of income inequality, including Denmark, France and the Netherlands, saw some further decline.
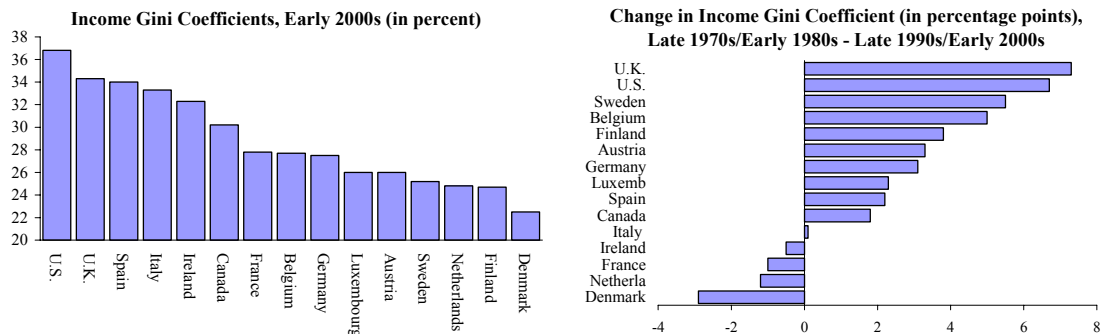
Source: Luxembourg Income Study; net disposable income. Results might not always be fully comparable as for some countries, datasets may be based on different surveys. The Gini coefficient is defined as a ratio (multiplied by 100) of the area between the Lorenz curve of the distribution and the uniform (perfect) distribution line and of the area under the uniform distribution line. 0 corresponds to perfect income equality and 100 corresponds to perfect income inequality.

A wide variety of economic and social trends have been associated with rising income inequality where it occurred (see, Nielson, Alderson and Beckfield (2005)):

- *Changes Affecting Labor Supply* e.g., immigration, trends in education, female labor market participation, rise of part-time labor, government transfers.

- *Changes Affecting Labor Demand* e.g., technological (skill-biased) change, increased international trade, outsourcing.

- *Changes in Labor Market Institutions* e.g., Changes in minimum wages and the degree of unionization, tax law changes, deregulation.

In particular, the effect of globalization on employment and the distribution of incomes has been much discussed in recent years. Political changes and trade liberalization have accelerated the international integration of product, labor, and capital markets. Rapid technological change has contributed to lowering costs of trade in goods and services adding momentum to the process of international integration. Jaumotte and Tytell (2007, Spring WEO) find that globalization has been one of the factors that has negatively affected the share of income accruing to labor in the advanced economies—the labor share.

Change in Income Gini Coefficient and Labor Shares
(Late 1970s/Early 1980s – Late 1990s/Early 2000s)

Source: Luxembourg Income Study and OECD, STAN. Labor share (5 year moving average) is wage compensation plus computed labor compensation for self-employed over national income.
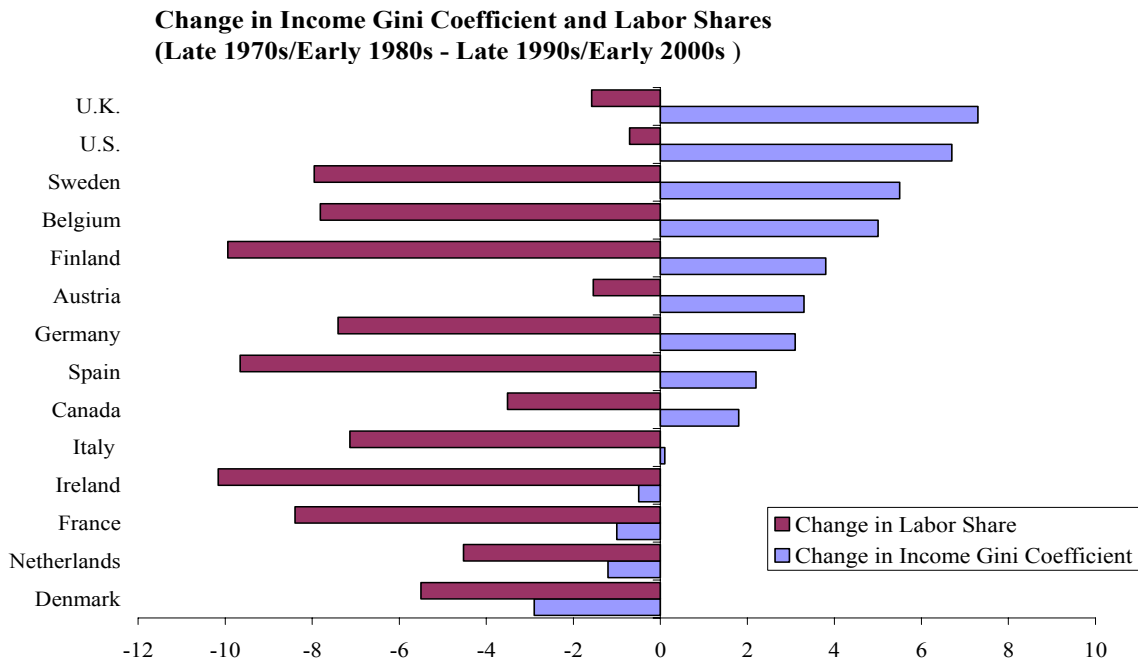
However, plotting changes in labor shares against changes in the Gini coefficient for net disposable income which also includes other income than wages does not suggest any obvious relationship between these two measures.[2] This is somewhat puzzling given the common perception that a fall in the labor share should be associated with an increase in income inequality. On the one hand, poor measurement of income other than wage income, in particular income from capital gains, interest, dividends, or other profits may explain this outcome to some extent. On the other hand, variations in labor shares may only reveal information about changes in overall income inequality if wages and other income (interest

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[2] If a fall in the labor share caused a rise in inequality, the series should be negatively correlated. However, the correlation coefficient is 0.3 for our sample.

and dividend income, profits, government transfers, etc.) are mostly distributed across separate population groups. There are also other measurement issues related to the labor share that may distort the picture. If the labor share is calculated on the basis of value added at market prices (which is the case in the above graph), indirect taxes less subsidies constitute a wedge and a fall in labor's share could be associated with a rise in the share of indirect taxes less subsidies instead of a rise in the share of capital.[3] Furthermore, a decline in the labor share is often erroneously interpreted as a fall in real wages and associated with an increase in inequality. But the labor share also falls if real wages are rising but fail to keep up with changes in average labor productivity. Bentolila and Saint-Paul (2003) show that the correlation between changes in wages and changes in the labor share is relatively weak for a sample of 12 OECD countries.

This paper analyzes the evolution of income distributions based on household data across industrialized countries over the past decades with a view to identifying stylized facts that could help discriminate between competing hypotheses for the evolution of income inequality. Standard summary measures of inequality usually do not provide sufficient information for that effect. An increase in the Gini coefficient, for example, could reflect a fattening of the lower tail of the income distribution due to an inflow of relatively low-skilled, low wage-earning immigrants, or the abolition of minimum wages. Alternatively, a higher Gini coefficient could be caused an increase of inequality at the top of the distribution driven by greater demand for highly skilled workers owing to skill-biased technological change, capital market liberalization, or the "superstar phenomenon."[4] Therefore, the paper also presents more detailed measures of income distributions than Gini coefficients.

II. THE FACTS

Income inequality can be affected by the composition of the workforce which has changed in many countries due to increased labor force participation of women and immigration. Also, changes in taxes and government transfers often have a substantial impact on disposable income and inequality. However, it is unclear to what extent these developments and changes are driven by broader economic pressures related to technology or globalization, the hypotheses that are of greatest interest for this paper. Accordingly, to focus the analysis on these economic drivers of inequality and to ensure a high degree of data comparability, the data are restricted to a sample of hourly wage income of male household heads, aged 18 to 64, who are employed full time and worked at least 48 weeks per year.[5] The data are from the

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[3] Gomme and Rupert (2004) discuss measurement issues with regard to the computation of the labor share in the United States and show that "historic lows" in the early 2000s are observed only in the nonfarm business sector while other measures of labor's share—for example, for the nonfinancial corporate business sector or the macroeconomy more broadly—are currently near their averages over the last several decades.

[4] See, Piketty and Saez (2006).

[5] See appendix for further information.

Luxembourg Income Study (LIS) which provides high quality household income data for a relatively large group of advanced economies. The LIS project is generally thought to be very successful in achieving a high degree of comparability of household income data across countries.[6]

Figure 1. Changes in Real Male Hourly Wages by Percentile
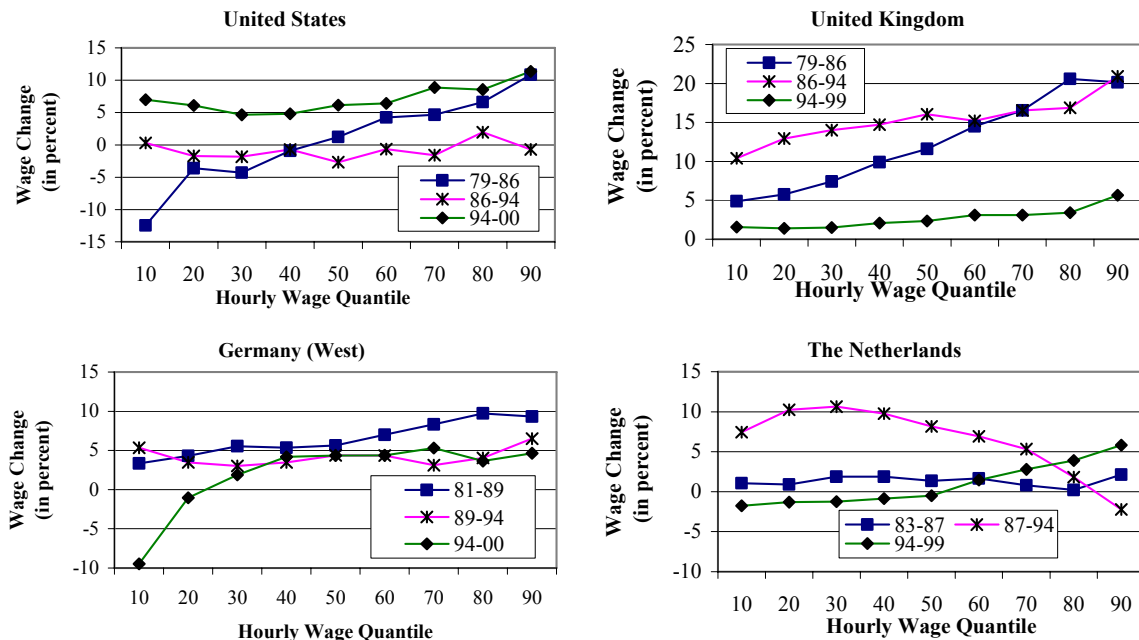
Source: Luxembourg Income Study. Hourly wage figures for the U.K. are computed on the basis of annual wages, assuming 52 weeks worked at 45 hours per week.

Median hourly wages of prime age males rose in many countries in real terms. In the United Kingdom, the median wage increased by an impressive 30 percent from 1979 to 2000, in West Germany (1981-2000) by about 14 percent and in the United States (1979-2000) by about 5 percent.[7] The median hourly wage for prime age males was roughly the same at about 16 U.S. dollars in these countries in 2000 (converted at PPP exchange rates). However, these numbers should be treated with some caution as datasets are not always fully comparable.[8]

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[6] The LIS project began in 1983 and the main objective has been to create a micro-database containing social and economic data collected in household surveys from different countries. The database currently contains information for some 25 advanced countries for one or more years. However, for most countries, data are currently available only up to 2000.

[7] In his speech on "The level and distribution of well-being" on February 6, 2007, Federal Reserve Bank Chairman Bernanke mentions that the median hourly wage of full-time workers rose by about 11.5 percent between 1979 and 2006, indicating a strong pick-up of real wage growth in the United States in the 2000s.

[8] Corresponding figures were not calculated for other countries in the sample, including France and Italy, that only report net income and wage data and which are also influenced by tax and transfer changes over time.

Wage inequality has broadly moved in line with income inequality in many industrialized countries over the past decades. Only in Denmark did wage inequality rise, while total income inequality fell. Table 1 refines these trends by showing the (log) differences of the 90th and 10th, the 50th and 10th and the 90th and 50th percentiles of the hourly wage distributions for male household heads. Developments in the Gini coefficient for wages (prime age males) and in the 90th-10th (log) difference, however, reveal some important differences between wage and income developments:

- Wage inequality increased in virtually all countries (for which data was available).

- Wage inequality increased significantly more in Denmark and the United States than income inequality.

- Income inequality grew much stronger in Belgium than wage inequality.
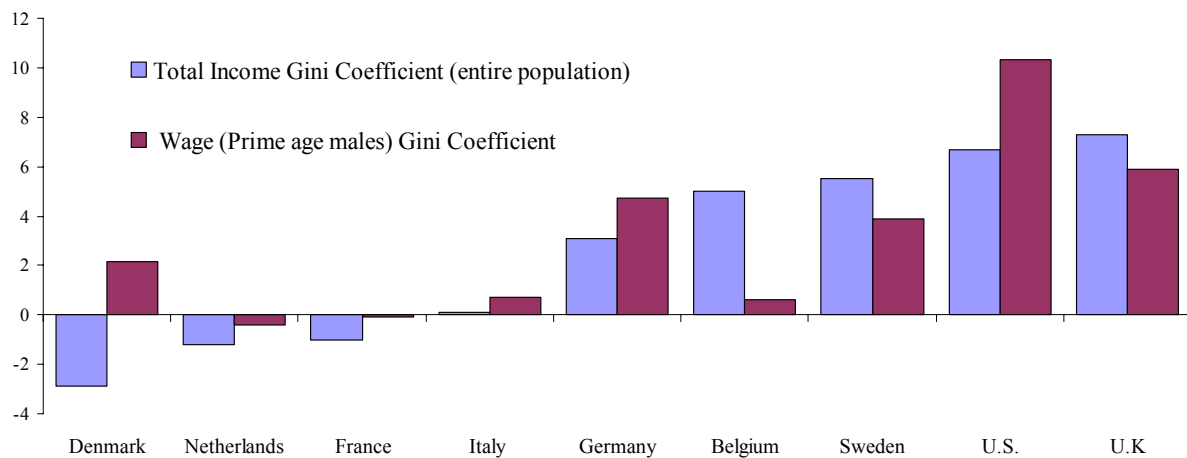
Source: Staff calculations. Data are from LIS.

Crucially, the data on wages suggest that there were very few common developments across advanced countries with respect to inequality. Changes in wage inequality (prime age males) often occurred at different times and in different parts of the wage distribution. In Germany (West), the wage distribution remained relatively stable during the 1980s but inequality grew sharply in the late 1990s in the lower half of the income distribution. Also, in Denmark inequality grew mostly in the lower half of the income distribution during the 1990s. In Belgium, France, Italy, and the Netherlands, wage distributions were relatively stable. The United Kingdom experienced a sharp increase in inequality across all wage groups until the mid 1990s and saw some modest rise at the top since then. The United States experienced its largest increase in wage inequality in the early 1980s. This is also shown by the steep positive slope of the curve in Figure 1 describing changes in real hourly wages for prime age males during 1979-1986. Table 1 shows that by the mid 1980s the median hourly wage was 74 percent higher than the wage at the 10th percentile, compared to 60 percent at the and of

the 1970s. In the 1990s, the United States saw some further increase that was mainly located in the upper half of the distribution.

Table 1. Log Percentile Differentials for Male Hourly Wages

Log 90th-10th Hourly Wage Differential

	Early 1980s	Mid 1980s	Early 1990s	Mid 1990s	Early 2000s
Belgium	-	0.76	0.77	0.68	0.78
Denmark	-	0.86	0.92	0.99	1.03
France	0.97	1.05	1.08	1.02	1.00
Germany (West)	0.80	0.86	0.86	0.87	1.01
Italy	-	0.77	0.84	0.84	0.81
Netherlands	0.88	0.89	0.83	0.80	0.87
Sweden	0.77	0.83	0.86	0.86	0.91
United Kingdom	0.72	1.08	1.10	1.18	1.22
United States	1.16	1.40	1.33	1.39	1.43

Log 90th-50th Hourly Wage Differential

	Early 1980s	Mid 1980s	Early 1990s	Mid 1990s	Early 2000s
Belgium	-	0.45	0.46	0.37	0.45
Denmark	-	0.46	0.48	0.49	0.51
France	0.56	0.63	0.68	0.59	0.57
Germany (West)	0.47	0.49	0.50	0.52	0.53
Italy	-	0.44	0.47	0.46	0.46
Netherlands	0.53	0.54	0.48	0.43	0.50
Sweden	0.45	0.47	0.50	0.50	0.56
United Kingdom	0.30	0.59	0.59	0.64	0.67
United States	0.56	0.66	0.60	0.68	0.73

Log 50th-10th Hourly Wage Differential

	Early 1980s	Mid 1980s	Early 1990s	Mid 1990s	Early 2000s
Belgium	-	0.30	0.30	0.31	0.34
Denmark	-	0.40	0.44	0.50	0.51
France	0.42	0.42	0.40	0.43	0.43
Germany (West)	0.33	0.37	0.36	0.35	0.48
Italy	-	0.33	0.37	0.38	0.35
Netherlands	0.35	0.35	0.35	0.36	0.37
Sweden	0.32	0.36	0.36	0.37	0.36
United Kingdom	0.42	0.49	0.51	0.55	0.55
United States	0.60	0.74	0.73	0.71	0.70

Source: Staff calculations. Data are from Luxembourg Income Study. Data for Denmark and Sweden are based on annual wages and for Belgium, France and Italy on net wages.

Figure 2. Relative Distributions of Hourly Wages for Male Household Heads
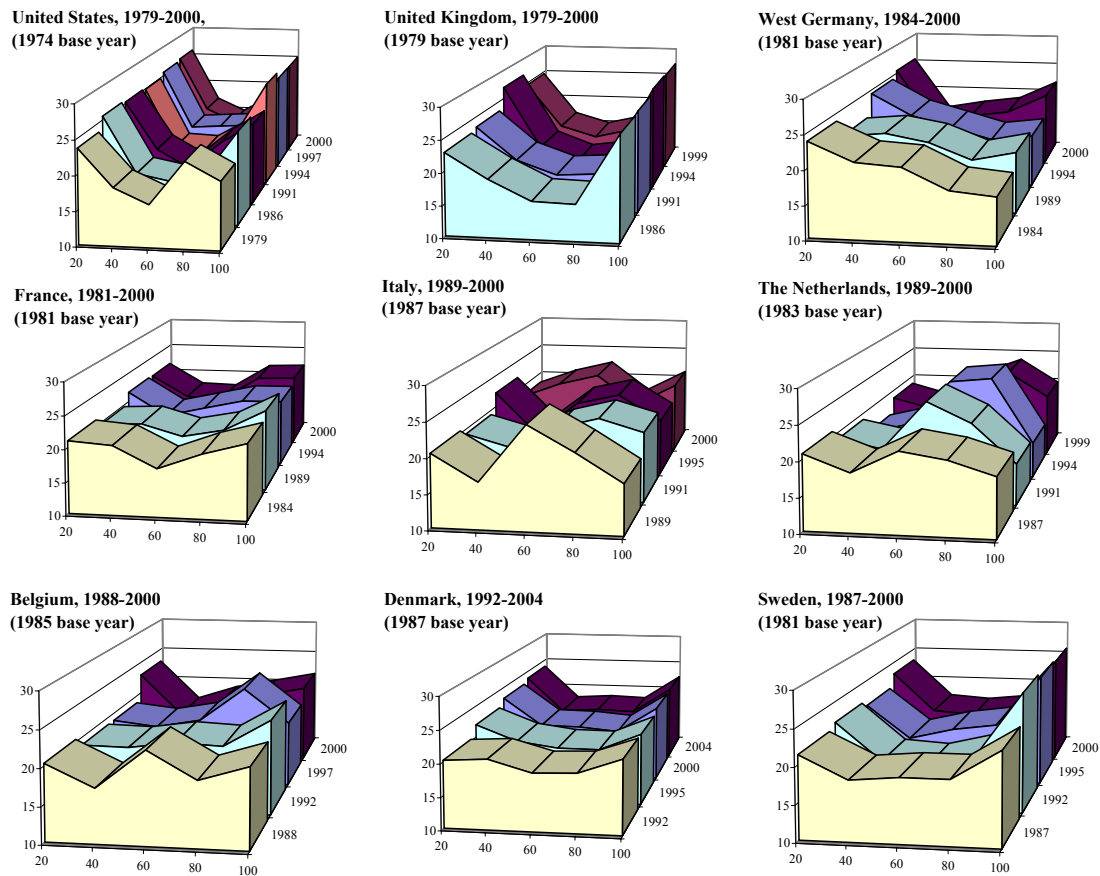
Source: Luxembourg Income Study. Wages are deflated with median wages and the cutoff points for the percentiles are determined by a base year and kept constant. Data for Denmark and Sweden are based on annual wages and for Belgium, France and Italy on net wages.

Labor markets in the United States and the United Kingdom, and to some lesser extent in Sweden, witnessed some polarization, or hollowing out of the middle class as shown in Figure 2. This figure shows the evolution of the relative wage distribution where wages are deflated with median wages and the cutoff points for the percentiles are determined by a base year and kept constant.

III. THE EVOLUTION OF WAGE INEQUALITY ACROSS COUNTRIES—WHAT EXPLAINS THE DIFFERENCES?

The diverse developments in wage distributions across industrial countries could indicate that country-specific events and policies may be more important for the wage inequality than common, global trends. Also, developments over time within countries raise some doubt as to whether globalization has played a major role in changing income distributions. Much of

the literature on wage inequality is focused on the United States (Box 1), where an early consensus emerged in the 1990s. This concluded that economic pressures toward increased inequality and skill wage differentials appeared to have arisen mostly from skill-biased technological change, possibly reinforced by globalization and between-industry shifts in labor demand.

The problem with this approach is that although advances in information and communication technologies and globalization accelerated substantially in the 1990s, change in the income distribution slowed. This has led Card and DiNardo (2002), Lemieux (2006) and others to argue that the rise in inequality during the 1980s is largely explained by factors other than supply and demand of skills, namely, the declining real value of the minimum wage. Moreover, they find that the change in the composition of the United States labor force (rising education and experience) has increased inequality somewhat further during the 1990s.

The lack of common developments in inequality in EU countries also points to the importance of other factors than global trends. Some authors, including Krugman (1994), have argued that European wage-setting institutions have prevented wage inequality from increasing but raised unemployment. But Card, Kramarz and Lemieux (1999) studied changes in the relative structure of wages in the United States, Canada, and France and found little support for the "tradeoff" hypothesis between wage inequality and employment growth. Acemoglu (2003) developed a model where labor market institutions creating wage compression also encourage more investments in capital-intensive technologies. These technologies increase the productivity of less-skilled workers and have prevented a fall in their relative wages. But Acemoglu (2003) employed summary measures of inequality such as the Gini coefficient and the difference between the $90^{th} - 10^{th}$ percentiles of the wage distribution. These measures did not catch the fact that the upper part of the wage distribution was very stable in several European countries during the 1990s. This is somewhat at odds with Acemoglu's (2003) model as wage-setting institutions tend to cause wage compression and, possibly, some stability in the lower part of the distribution.[9] The fact that most changes in inequality, if any, occurred in the lower part of the wage distribution in several European countries since 1990 could indicate that changes in labor market institutions may have played an important role.[10]

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[9] The OECD (2007) shows that, for an average of 10 OECD countries, much of the cumulative increase in earnings dispersion since 1990 has occurred in the top half of the earnings distribution. But it is likely that this finding is strongly driven by developments in the United States, the United Kingdom and Sweden which are all included in this group.

[10] One could argue that these institutional changes were a response to globalization. However, Levy and Temin (2007) strongly dispute this and states that globalization clearly does not determine institutions.

Box 1. Rising Wage Inequality in the United States—A Brief Survey of the Literature

The sharp increase in earnings inequality in the United States during the 1980s triggered a renaissance of research on wage and income inequality. From the 1940s to the 1970s, the distribution of earnings and incomes in the United States had remained remarkably stable and there was little academic interest since Kuznets' (1955) seminal work that predicted a temporary increase in income inequality during the transition from an agriculturally based economy to an industrialized one. This changed with the marked acceleration in the growth of earnings inequality in the United States that started in the late 1970s and was documented by Katz and Murphy (1992) and Levy and Murnane (1992). In particular, the college wage premium expanded dramatically in the 1980s, after having fallen in the 1970s.

Some early consensus emerged concluding that economic pressures toward increased inequality and skill wage differentials appeared to be mostly driven by skill-biased technological change and between-industry shifts in labor demand. Katz and Murphy (1992) also noted, however, that wage inequality within groups defined by education, experience etc. had steadily risen even since the early 1970s. The differences in the time pattern of rising educational differentials and rising within group inequality suggested that there were at least partially distinct economic phenomena at play.

Subsequent studies suggested that growing international trade and economic integration were instrumental in explaining relative shifts in the demand for skills and rising inequality in the United States. Factor content models of trade predicted a small impact of trade on wages in advanced countries because imports of manufactured goods from developed countries amounted to less than 2 percent of the combined GDP of the OECD in the 1980s. Leamer (1996), however, argued that prices rather than quantities mattered, and economic liberalizations in Asia, Eastern Europe, and Latin America affected United States and European labor markets by declines in prices of labor-intensive tradables. Krugman (2000) strongly contested this view and showed that, in a two-country general equilibrium model, prices and wages were predominantly determined by developments in the large country (i.e., the OECD).

While there is still an ongoing debate on the causes of the apparent shifts in the labor demand, two broad conclusions seem to have been reached, according to Autor, Katz and Kearney (2005). First, much of the rise in United States earnings inequality during the 1980s appears explained by shifts in the labor supply of and demands for skills combined with the erosion of labor market institutions—including labor unions and the minimum wage—that protected the earnings of the low and middle wage workers. Second, the surge of inequality evident in the 1980s also reflected a secular rise in the demand for skill, possibly linked to the computer revolution and other technological advances. Autor, Katz and Kearney (2006) conclude that the changing distribution of job task demands, spurred directly by advancing information technology and indirectly by its impact on outsourcing, goes some distance toward interpreting the recent polarization of the wage structure in the US.

However, several studies have recently challenged these conclusions and claim that the rise of U.S. earnings inequality in the 1980s and the late 1990s were episodic events mainly accounted for by non-market factors. Card and DiNardo (2002) argue that the rise in inequality during the 1980s is largely explained by factors other than supply and demand for skills, namely, the declining real value of the minimum wage and conclude that the growth in United States earnings inequality was primarily a one-time event of the early 1980s. Lemieux (2006) also argues that the fall in the minimum wage explains most of the surge in inequality in the 1980s but finds that the changing composition of the U.S. labor force during the 1990s (rising education and experience) has added to some further inequality.

Many European countries substantially reformed their labor markets and institutions over the past decades and this may explain differences in wage inequality trends. Annett (2006) studies Denmark, Ireland, the Netherlands, and the United Kingdom, countries that undertook major reforms and stand out in terms of their success in reducing unemployment. Ireland and the Netherlands centered their reforms on consensus-based agreements between social partners, trading wage moderation for labor tax cuts while the United Kingdom weakened the power of unions. Rather than address union behavior directly, Denmark concentrated on benefits reform, by combining continued generous benefit levels with lower duration, tougher conditionality, and stricter activation requirements. These different reform patterns may help to explain why the United Kingdom experienced such a sharp increase in inequality, while wage inequality remained relatively stable in the Netherlands and increased only slightly in Denmark and income inequality actually fell in both countries.[11]

IV. CONCLUSION

The evolution of income and wage inequality is a complex phenomenon, driven by many factors that must have played different roles in different countries. In fact, developments in income and wage inequality differed appreciably across advanced economies. In particular, changes in wage inequality occurred at different times and in different parts of the wage distribution across countries. Labor markets in the United States and the United Kingdom witnessed some polarization, but the evolution of wage distributions in euro-area countries has not followed any common trend and has remained relatively stable in several countries. There is currently no consensus on why inequality increased in some industrialized countries, but not in others. Some argue that increased inequality, where it occurred, was driven by skill-biased technological change and a changing distribution of job task demands, spurred directly by advancing information technology and indirectly by its impact on outsourcing. This has led some observers to lay the blame squarely on globalization and to call for protectionist measures. But others argue that the rise in inequality is largely explained by factors other than supply and demand for skills, namely, changes in labor market institutions, including minimum wages and the degree of unionization and this fits the stylized facts presented in this paper much better.

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[11] Income inequality has also remained stable in Ireland from 1987 to 2000. Wage data are only available starting in 1994.

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DATA APPENDIX

Data are from the Luxembourg Income Study (LIS). They are based on national household surveys, but the LIS harmonizes and standardizes the micro-data from the different surveys in order to facilitate comparative research. The datasets can be accessed via the internet mailing system by submitting SAS, SPSS or STATA programs. http://www.lisproject.org/

The analysis is restricted to wage income of male household heads, aged 18 to 64, who are worked at least 48 weeks per year and more than 35 hours per week. The sample leaves out those observations with the lowest 1 percent earnings and with an income above ten times the median wage. More detailed information on data sources and definitions can be found on the LIS website.