

# **Reducing or aggravating inequality? Preliminary findings from the 2008 financial crisis**

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*Abstract:* This paper looks at possible transmission channels through which the 2008 crisis might affect the earnings distribution (changes in employment composition, changes in hours of work and changes in pay structure). In addition to the earnings channel, the crisis may also affect the income distribution through changes in income from capital and social transfers. The paper briefly reviews the literature and shows that in most cases income inequality decreases following financial crises, although scant evidence is found concerning earnings inequality. Using earnings data on two countries hit particularly early by the crisis (the United Kingdom and the United States) shows the current crisis had led to a very small increase in earnings inequality in the short term. However, preliminary results support the view that the crisis has also led to an increase in income inequality, both because low wage earners have been more likely to lose their jobs and because social transfers are in general lower than the earnings received earlier.

*JEL Classification:* J31, G01.

*Résumé:* Ce document analyse les mécanismes de transmission de la crise de 2008 aux inégalités de salaires (changement de la composition de l'emploi, modification des heures de travail, et changement de la structure salariale). Au-delà de la transmission par les salaires, la crise peut aussi avoir un effet sur la distribution du revenu via le revenu du capital et les transferts sociaux. Une revue rapide de la littérature montre que dans la plupart des cas, les inégalités de revenu diminuent après une crise financière, alors que l'effet sur les inégalités salariales est plus mitigé. Se basant sur des données salariales provenant des deux pays touchés très tôt par la crise (le Royaume-Uni et les Etats-Unis), l'analyse montre que la crise actuelle a conduit à une très faible augmentation de l'inégalité salariale à court terme. Cependant, des résultats préliminaires montrent que la crise a également aggravé l'inégalité de revenu, à la fois parce que les travailleurs à bas salaires ont une probabilité plus grande de perdre leur emploi et que les revenus de transferts sont en général inférieurs au salaire perçu précédemment.

*Classification JEL:* J31, G01.

*Resumen:* En el presente documento se examinan las vías por las cuales la crisis de 2008 podría afectar al nivel de desigualdad salarial (cambios en la composición del empleo, en las horas de trabajo y en la estructura de pago). Además de la vía salarial, la crisis puede afectar también la distribución de la renta a través de cambios en la renta del capital y las transferencias sociales. Asimismo, se echa un vistazo a la documentación al respecto y se pone de relieve que en la mayoría de los casos la desigualdad de ingresos ha disminuido tras la crisis, aunque existe poca información fidedigna acerca de la desigualdad salarial. Los datos sobre los salarios en los dos países que sufrieron las primeras consecuencias de la crisis (los Estados Unidos y el Reino Unido) indican que la actual crisis ha provocado un aumento muy pequeño en la desigualdad salarial. Resultados preliminares apoyaran el punto de vista que la crisis ha conducido a un aumento de la desigualdad de rentas ya que en primer lugar, han sido los asalariados con bajos ingresos aquellos con mayor probabilidad de perder su empleo y en segundo lugar, a causa de que las transferencias sociales son, en general inferiores al salario percibido previamente.

*Clasificación JEL:* J31, G01.

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# Reducing or aggravating inequality? Preliminary findings from the 2008 financial crisis

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## 1. Introduction

Why would we expect the 2008 financial crisis to change earnings and income distribution? Was this a usual outcome from past financial crises? Is there evidence of a change in earnings inequality in some of the most early affected countries e.g. the United Kingdom and the United States? Have deep changes in pay practice been observed at the company level? Are changes in inequality likely to be permanent or transitory? The main objective of this paper is to provide a tentative answer to these fundamental questions. Indeed, rising inequality raises questions of its own, in particular when it is due to a deterioration of low earnings relative to higher earnings such as potentially severe social consequences (low standard of living, poorer health, increased social tensions and crime...). In addition, a substantial part of the increase in earnings inequality observed over the past 20 years in OECD countries can be traced to an increase of top earnings relative to other earnings and especially in banking, e.g. the sector where the crisis initiated. In some countries, declining earnings for low paid workers would have prompted households to increasingly rely on credit to maintain their living standards.

Major economic shocks (financial crises, hyperinflation) are sometimes associated with changes in the earnings distribution. For example, earnings inequality deteriorated permanently in countries most affected by the Asian financial crisis of 1998 and after the hyperinflation period of the 1990s in some of the CIS countries. In contrast, a common feature of other financial crises in Europe, Northern American, Latin American countries was to exhibit an increase in inequality *before* the crisis. As far as the present 2008 crisis is concerned, transmission mechanisms from crisis to inequality may be informative of the outcome. Besides total or partial closures, bankruptcies and job losses, the crisis is also forcing some firms to introduce work-sharing arrangements or review their pay practice. The combination of these three factors: job losses, reduction in work hours and changes in pay rates affect the distribution of monthly earnings in a fairly direct way. Turning to the income distribution, the crisis has also affected capital income and social protection system. These two other transmission mechanisms from crisis to income inequality are also addressed in this paper.

The empirical evidence of this paper focuses on the United Kingdom and the United States as examples of labour markets most affected by the crisis but they have also been chosen because of earnings data availability. However, the paucity of data precludes from analysing various dimensions of aggregate inequality. The results show that there is very small evidence in favour of rising earnings inequality. Regarding the top of the distribution, there is anecdotal evidence of an equalizing effect through legislative limits and non-regulatory “self-discipline” on the remuneration of highly paid executives, especially in the financial services industry. This equalizing effect is not reflected in our results. Turning to income inequality, preliminary analysis support the view that it has increased during the crisis, largely driven by increases in the incidence of unemployment among low-earnings individuals.

The structure of the paper is the following. This paper starts in Section 2 by reviewing the theoretical and empirical literature on the relationship between financial crises and income inequality before discussing the special case of the impact of inflation. It also discusses the way labour market institutions and social protection policies may mitigate these results. New empirical evidence on earnings and income inequality in the United Kingdom and the United States is then presented in Section 3. Section 4 concludes with a summary of the main findings, outlining the transitory nature of the observed changes in inequality.

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## 2. Literature review

### 2.1 Financial crises and income inequality: transmission mechanisms

Transmission mechanisms from an exogenous shock like a financial crisis onto income inequality can pass through (i) quantity (changes in proportion of low and high paid workers, as well as in hours of work); (ii) prices (changes in wages and interest rates), and (iii) changes in taxes and social protection. For instance, an increase in income inequality can stem from both an increasing gap between high and low-income individuals, or from an increase in the share of low-income people, keeping the gap constant.

Focusing on (i) quantity, one could expect income inequality to increase during recessions because labour is basically the only asset of the poor and the probability of job loss is not uniform among all workers: it is disproportionately high for unskilled, part-time and fixed-term-contract workers who usually are also low-paid. Such patterns of employment losses were observed during 2008-09. For example in Spain, temporary employment fell by 23 per cent between the first quarter of 2007 and the first quarter of 2009 (OECD, 2009). In China, a joint ILO study with the Ministry of Human Resources and Social Security estimated that 4.5 million migrant workers, had lost their jobs in urban areas by mid 2009 (Wang and Mahmood, forthcoming). Moreover, companies are more inclined to regard the most skilled workers as fixed assets, proportionally to the investments they made in these human resources, and they are reluctant to lay them off, even in times of economic hardship (the labour-hoarding hypothesis). The ILO report “World of Work Report 2008, Income Inequalities in the Age of Financial Globalisation” points towards this direction (ILO, 2008a). The 2008 initiated crisis also has a strong sectoral dimension (construction, banking sector, export-dependent industry). In addition, it has a workers groups dimension (youth, older workers, unskilled workers, temporary workers) and a gender dimension (decrease in male labour supply are reported in three Latin American countries, see ILO, 2009a). Turning to the OECD, changes in hours worked have been reported. 20 per cent of the decline in hours during a recession comes from hours reduction for persons remaining employed rather than switching to unemployment or inactivity (OECD, 2009).

Turning to (ii) the effect of the crisis on inequality through price effect, several forces may change the income gap between the poor and the rich. Inequality could be affected through changes in rewards for skilled and unskilled workers, and capital income. This could occur through supply and demand forces. As regards (iii) the impact of the crisis on inequality through changes in taxes and social protection, two facts are emerging: increased social protection in most countries to protect vulnerable workers and their families, and changes in income tax and value added tax (ILO, 2009b).

Starting with changes in rewards and capital income, it could be argued that high income people experience the most severe losses because of the cut of variable components of earnings (e.g. bonus) that are a proportionally larger component of the total. According to a study released by the Getulio Vargas Foundation (FGV, 2009), the current economic crisis has mitigated seven years of growing inequality in Brazil as the rich and the middle classes were being more affected by the depreciation of stock exchanges and financial assets. Therefore, a financial crisis exposes rich people to higher capital losses, since they hold most of the capital, driving inequality down. However, it seems plausible that people at the top decile have more ways to protect their assets than those at the bottom decile. This is the view supported by Halac and Schmukler (2003) who investigate the role of financial transfers, showing that the fiscal cost of crisis generally implies a transfer from non-participants of the financial sector to participants of the financial sector. Furthermore, a financial crisis often generates capital losses for small, and often less informed investors.

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Both are likely to be transfers from poorer to richer households and, thus, may negatively impact the distribution of income. The effect of financial market turmoil on inequality is thus unclear and it needs to be documented by empirical evidence.

Regarding changes in rewards, earnings inequality in particular is a major determinant of income inequality; earnings represent between 45 and 65 per cent of national income in industrialized countries, (ILO, 2008b). Earnings inequality might also be affected by minimum wage and public wage policy which are likely to depend on economic and social conditions. Indeed governments could be cautious about increasing the minimum wage during a recession. However there is increased recognition that a judiciously-set minimum wage can make a modest contribution to meeting social goals, without significantly distorting employment patterns, while it can also serve as an anchor to fix other wages (Eyraud and Saget, 2005). Increasing the minimum wage may also boost spending as low-paid workers tend to spend a higher share of their income rather than saving.

Between mid 2008 and summer 2009, e.g. after the crisis emerged, a couple of countries have cut their minimum wage or not implemented expected increases because of tight fiscal discipline (similar trends were observed for public wages in these countries). However, minimum wage continued to increase in Brazil, France, Jordan, the Netherlands, the Russian Federation, the United Kingdom and the United States (ILO, 2009b).

Turning to the impact of public wages, in the short-term financial crises might be associated with different fiscal disciplines depending on whether counter-cyclical policies to boost demand rather than restrictive policies are implemented. We would expect wages in the public sector to behave differently than those in the private sector. Differences in discipline between the two sectors could explain trends in earnings inequality, depending on difference in wage setting and size and skills composition of the public sector. The effect of public wages is probably stronger in Europe.

Regarding social incomes, the 2008 financial crisis illustrated the capacity of governments to expand social protection and protect incomes of poor households to counter the effect of the crisis. However, policy responses to mitigate the economic and social effects of the crisis have differed dramatically even across European countries that are confronted by this common challenge (Kyloh and Saget, 2009). The information collected by the ILO from official sources from 54 countries shows that governments have provided new income support to workers and families through extension of unemployment benefits, as well as expansion of cash income transfers and social assistance programmes between June 2008 and July 2009 (ILO, 2009b). Regarding the protection of the unemployed, 29 per cent of countries extended the scope of unemployment benefits to new categories including workers with short contributory history and workers with reduced hours. A total of 10 per cent increased the level or the duration of unemployment benefits, sometimes only for some groups of jobseekers such as for example older workers. In addition, 13 per cent of countries whose unemployment benefits systems remained unchanged introduced new support for jobseekers such as transfers for specific categories of unemployed, tax reductions, and maintenance of social security rights. Turning to cash transfers, 55 per cent of countries have increased their support to low-income households. In upper middle income and high income countries, this additional support was targeted at low-income households with children in two thirds of the cases. In low income countries and lower middle income countries, additional transfers to the poor was targeted to the most vulnerable of the poor such as disabled people, destitute women, deprived casts, widows and returning migrants. 4 per cent implemented “Make-Work Pay” measures which increased incentives for low-paid workers to participate in the labour market by providing income tax credits. What could be the effect of increased social protection on inequality? The answer to this question depends on the size of social transfers related to employment losses and the decrease in income from capital.



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Having documented the forces which push inequality in one sense or another, we might turn to forces of resistance to changes in pay gaps between different categories of workers. In most cases, resistance to changes in inequality is brought about by social structures, including the process by which rules, norms and routines become established behaviour. The theory of efficiency wages is one example. Another one is institutional theory which bears particular relevance at times of crises. Institutional theory assumes that workers' motivation and commitment to a firm depend upon the stability of the wage structure. It thus predicts that wage structure remains stable to the extent firms have the capacity to pay current wage rates. Minimizing wage costs to maximize profits therefore becomes the driving force behind earnings determination only in periods of severe pressure on cutting costs. It follows from this explanation that only major economic and social shocks such as a deep recession or hyperinflation, are able to alter the stability of the wage structure. Observing that wage differentiation within local labour markets and within occupations is large, this theory explains how much of the differentiation is due to differences in skills, experiences and capacity and how much it reflects willingness and ability of employers to pay higher wages.

Surveys in Western countries show that the most important factors in the determination of wages are the increase in consumer prices, the level of profits and the capacity of firms to pay, while the necessity of retaining the workforce and the risk of firing if too high wage increases are granted, play a more minor role. Thus preserving the existing structure is seen as a way of maintaining productive efficiency. To give just one example, the Confederation of British Industry, which conducts wage surveys on an annual basis reports that for 2001, increase in the cost of living was the most important factor to put upwards pressure on pay, followed by the need to pay attractive wages to recruit and retain workers, and then labour productivity. On the other hand, the level of profits and business orders play a much more minor role. Institutional economics would thus tend to support the idea that crises would not alter the structure of wages, except in the most severely affected firms.

In conclusion, there are key factors affecting both labour income as well as non-labour income inequality during financial crises. In addition to earnings, social protection transfers such as unemployment benefits, housing allowance, family allowance, etc. as well as income from capital (interest) are the key determinants of income inequality. From a theoretical point of view a financial crisis has unpredictable effects on earnings and income inequality, as opposite forces are potentially at work. In theory, too, a financial crisis may have an impact on the level of inequality in the short, medium and long-term. For instance, the decrease in bonuses and income from capital might be short-term, while inequality generated by employment losses might be reverted only in four to five years, as this is the average gap in recovery between the economy and the labour market (Reinhart and Rogoff, 2009). Regarding the United States and the United Kingdom, opposite factors at work during the current crisis are shown in Table 1.

**Table 1. Drivers of inequality in the United States and the United Kingdom, 2008-09**

	United Kingdom	United States
Factors driving inequality up	Employment losses of low-paid workers (e.g. construction)	Employment losses of low-paid workers (e.g. construction)
Factors driving inequality down	Employment losses of high-paid workers (e.g. finance) Increase in the minimum wage Reduction of bonuses and capital income Additional social assistance	Employment losses of high-paid workers (e.g. finance) Increase in the minimum wage Reduction of bonuses and capital income Extension of unemployment benefits level and duration; and additional social assistance

Source: ILO, 2009b.

## 2.2 Previous financial crises and income inequality

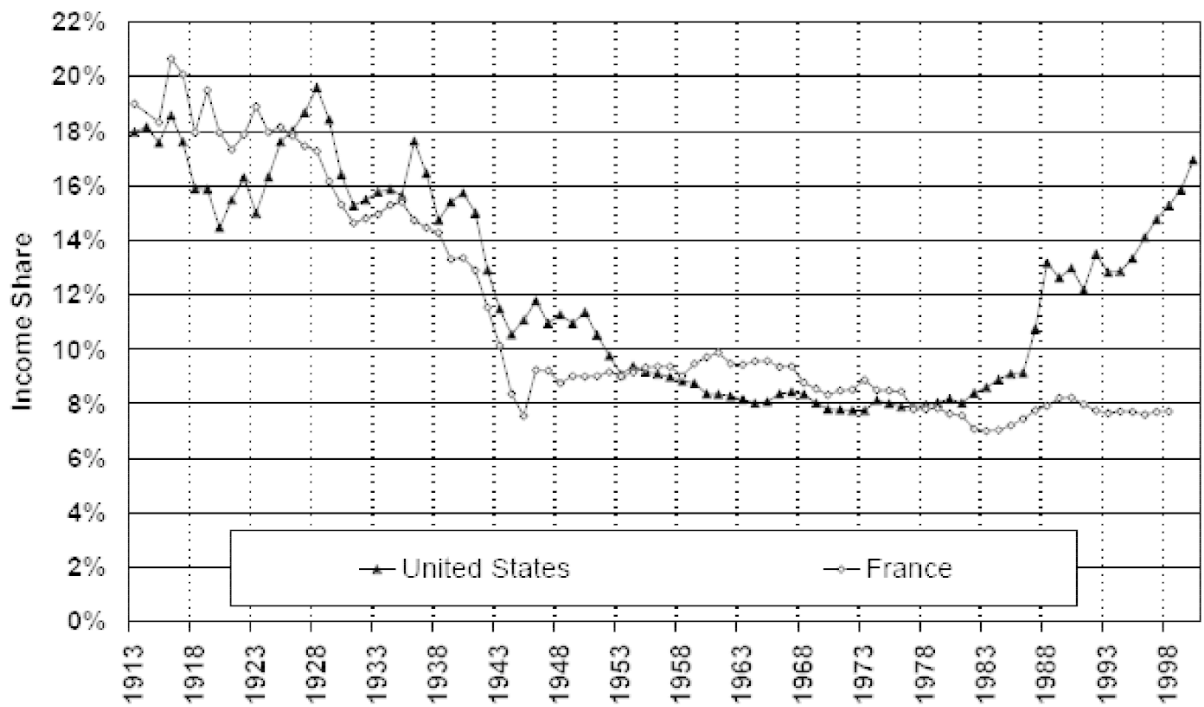
Empirical evidence on an increase in inequality after the financial crisis is mixed and dependent on the institutional settings of the interested economies. This brief review of the literature on past experience starts from the United States, as it originated the current as well as the 1930s global crises and evidence has been recently provided about the whole twentieth century. Then other important crises are also considered. Financial crises usually follow a period of financial deregulation leading to credit booms and subsequent assets bubbles bursting (IMF, 2009, pp. 115-7). We also know from previous financial crises that labour market crisis continues well after the economic bottom has been reached (IMF, 2009; OECD, 2009).

### The United States

The global crisis of 2008 followed a period in which the share of income accruing to the richest grew dramatically in the United States (Figure 1). A similar pattern characterized other Anglo-Saxon countries (United Kingdom, Canada), but was not observed in continental Europe. Such a stylized fact has not been fully explained in the literature, and the link with different tax policies is much less clear than what would appear at first sight. Such an increase in the United States has been mainly driven by top earnings, as displayed by Figure 2. This trend is similar across several OECD countries. From 1985 to 2005, most OECD countries have seen an increase in earnings inequality (Kolev and Saget, 2010). In nearly half of these countries, the widening was driven by an increase in inequality at both the top and the bottom of the distribution. In the other half, rising overall inequality was reflecting a relative increase in high earnings only.

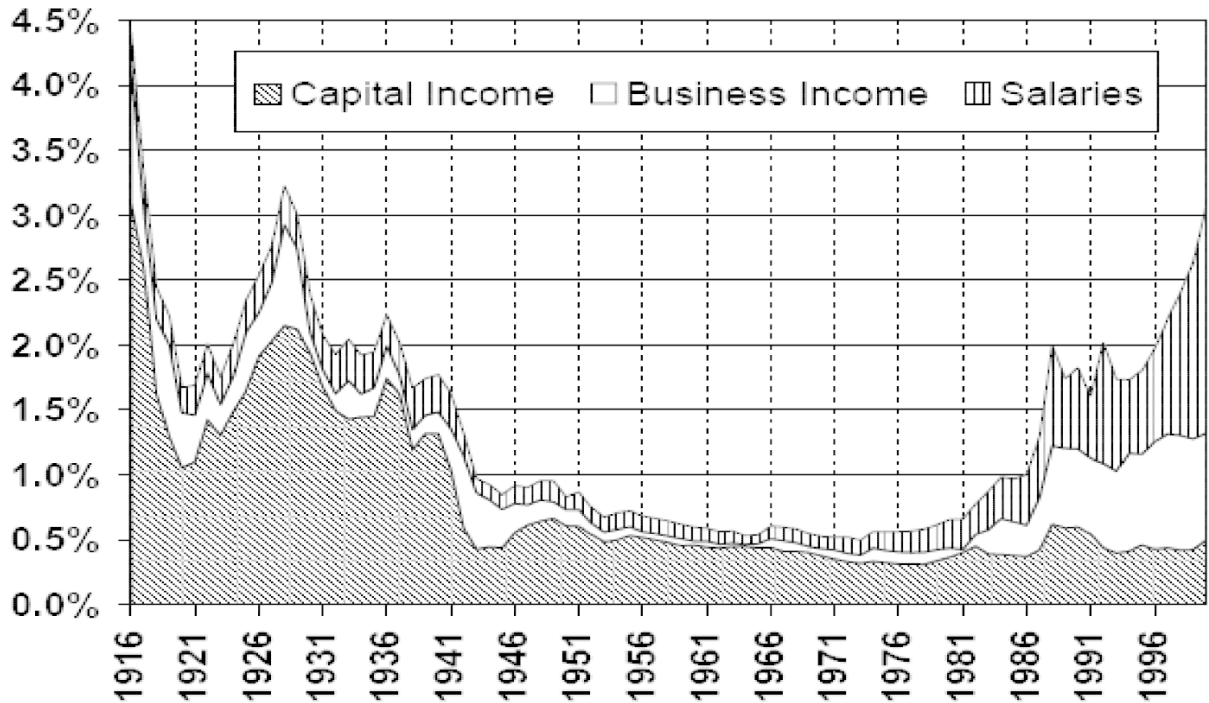
The parallel that can be made with the Great Depression, the last global crisis comparable with the one we are observing now, is interesting. Also at that time inequality reached very high levels immediately before the crisis, while a decreasing trend, in this case common between Anglo-Saxon countries and continental Europe, started after the explosion of the crisis, to last until after the Second World War. Results change slightly if we take a broader definition of top incomes. In fact, top 1-5 per cent and top 5-10 per cent incomes plummeted during the Second World War and not before (Figure 3).

**Figure 1. The trend of top 1 per cent income share across the twentieth century in the United States and in France**



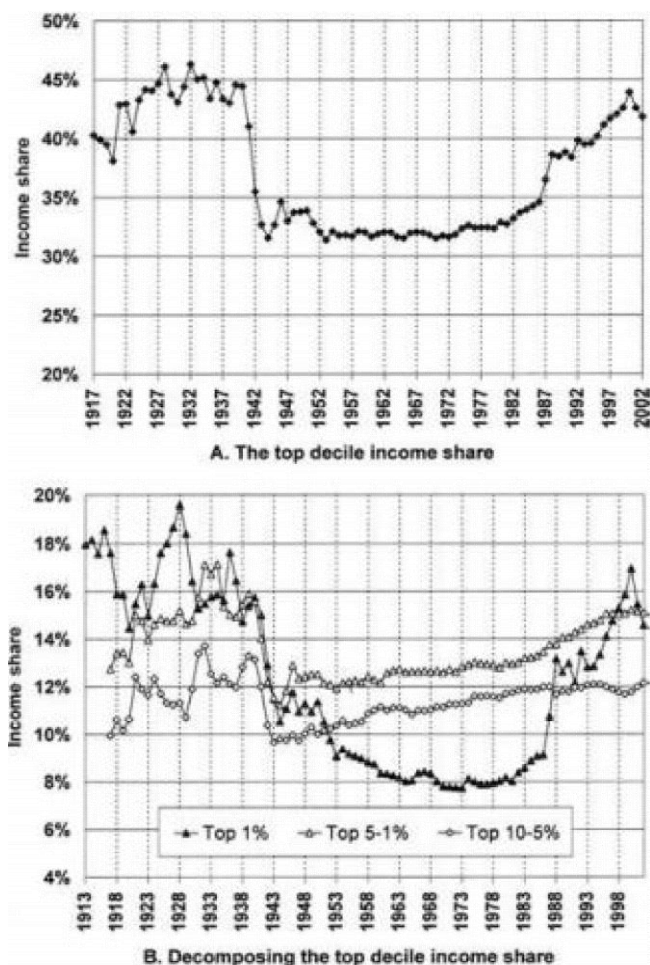
Source: Saez, 2004.

**Figure 2. The top 0.01 per cent income share and composition in the United States, 1916-2000. No capital gains considered**



Source: Saez and Piketty, 2006.

Figure 3. Top 10 per cent income share in the United States



Source: Saez and Piketty, 2006.

### Scandinavia, 1990

Smith et al. (2000) analyse the pattern of disposable incomes in Denmark, Finland, Norway and Sweden during the late 1980s and early 1990s when unemployment rose dramatically in all four countries following the collapse of the former Soviet Union. Quite surprisingly the authors find no effect of the crisis on the pattern of income inequality. Finland, Norway and Sweden at the beginning of the crisis were characterised by the lowest degree of inequality among all the developed countries. Often the low unemployment rate has been mentioned as the primary cause of such an equality of incomes. From both points of view the case of Denmark was instead more similar to continental Europe. The macroeconomic shock that hit the Scandinavian countries caused a significant increase in unemployment (dramatic in Finland, from 3 per cent to 15 per cent in three years), whereas the Gini coefficient was barely affected. The generosity of unemployment insurance benefits, together with training programs and the strength of the welfare policies significantly contributed in mitigating the consequences of more unequally distributed earnings, although they cannot fully account for such a striking stylised fact.

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## **Mexico, 1995**

Lopez-Acevedo and Salinas (2000) find a negative correlation between growth and income inequality in Mexico, following the 1995 peso crisis. Inequality decreased during and shortly after the crisis in 1994-96 (the Gini coefficient came down from 0.534 in 1994 to 0.519 in 1996, whereas the drop in the Theil T index was from 0.558 to 0.524), reversing the trend of increasing inequality that characterised Mexico since 1984. The crisis hurt the income share of the top decile of the population, mainly through a reduction of its share of labour income: high skilled workers in financial services and non-tradables were particularly affected. Also in the Mexican case a correlation between the size of the financial sector and inequality is found. Moreover, after the strong performance of the Mexican economy in 1997, inequality started to increase again in 1998. Similar evidence is also reported in De Hoyos (2007).

## **Asia, 1997-98**

The region has undergone the East Asian financial crisis of 1997-98 but it is not easy to identify a common pattern connecting the crisis and the outcomes in terms of income distribution. With respect to the other regional crises, there is more evidence that the Asian crisis was characterised by an increase of inequality. What seems to emerge towards this outcome is a very important role played by policies and, contrary to the Scandinavian case, by a very weak safety net. During the crisis, Thailand, Indonesia and South Korea were forced to turn to the International Monetary Fund (IMF) for financial assistance, who conditioned their help to the adoption of neo-liberal policies. However, Indonesia and Thailand did not have unemployment insurance systems, while Korea implemented an unemployment benefit scheme in 1995 but with very limited coverage and benefits, regarding about 20 per cent job losers at the time of the crisis. Moreover, in Thailand the government budget was reduced by 32 per cent, 15 per cent, and 11 per cent for social services, public health, and education sectors, respectively, after the crisis (Siamwalla and Sobchokchai, 1998).

Ragayah (2005) report mixed evidence about the inequality trends in the immediate aftermath of the crisis (data do not go beyond 2000 in most of the cases). Among the so-called newly industrialising economies (NIEs: South Korea, Singapore, Hong Kong, and Taiwan) income distribution in Hong Kong and Taiwan has continued to improve despite the crisis. In Korea the crisis sharply widened the disparity, while the evidence for Singapore is mixed. On the other hand, the crisis had the immediate impact of improving income distribution in the four ASEAN countries (Malaysia, Thailand, Philippines and Indonesia) mainly because of reductions in the income shares of the top income groups. However, later data show that inequality also deteriorated in these countries.

Lee (2002) finds an increase in inequality in South Korea shortly after the crisis with the Gini coefficient of household income increasing from 0.363 in 1997 to 0.4 in 1998. Mah (2006) correlates a worsening of indicators of income inequalities with the policies undertaken after the economic crisis. Such policies were quite successful towards economic recovery, strengthening the banking and corporate sectors and attracting FDI inflows. A similar argument is put forward by Crotty and Lee (2005) who strongly criticise the radical neo-liberal policies imposed by the IMF that have turned out well for foreign capital and wealthy Koreans at the cost of increased poverty and inequality.

Leigh and van der Eng (2009), using taxation and household survey data, show the share of top incomes grew in Indonesia during the 1990s, peaking in 2001 and then started declining. This evidence is consistent with the findings of Kaneko et al. (2007) who find increasing trends in the Atkinson and Gini coefficient of inequality and Generalised Entropy indices during the economic recovery and reforms following the financial crisis.

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## **Russia, 1998**

Using two waves (1996 and 1998) of the Russian Longitudinal Monitoring Survey, Lokshin and Ravallion (2000) find evidence of a decrease in income inequality, following the Russian financial crisis which was fuelled by the drop of commodity prices (the bulk of Russian trade balance) and led to the devaluation of the rouble and to default on both domestic and foreign debt. The Gini coefficient plummeted from 0.48 to 0.42 shortly after the crisis, in a framework of growing poverty. In fact, an increase in the average income of the poor was more than counterbalanced by the drop in average income of the rich. This resulted from decreasing average earnings (accounting for 35.6 per cent of income in 1998 vs. 40.1 per cent in 1996) compensated by an increase in home production and government benefits.

Turning to earnings inequality, during the height of hyperinflation in 1992–93, a rapid increase in Russian earnings inequality to Latin American levels was observed (Clarke, 2002).

## **Brazil, 1999 and Argentina, 2001**

Galbraith et al. (2007) compares the evolution of earnings inequality in Argentina and Brazil from the early 1990s through 2005, covering the period of strong neoliberal policies in both countries, the respective crises and their aftermath, which in both countries involved a retreat from neoliberal globalisation. This study analyses inequality from a sectoral perspective that can be particularly useful with regard to the 2008 global crisis. The common characteristic in both countries is that the financial sector is the biggest contributor to economic inequality; the period leading up to the crisis is characterised by an increase in the weight of this sector, and a corresponding decline in that weight as the crisis passes and a more normal situation returns. Such a common pattern is particularly striking if we consider the very different experience of economic inequality in the two countries: Brazil has long been one of the most unequal countries in the world, while Argentina used to be one of the most egalitarian countries in Latin America, although inequality steadily increased since the 1970s (see Altimir et al., 2002). What is different is the timing. In Brazil inequality began to decrease in the late 1990s, after the devaluation, while in Argentina it occurred only after the crisis in December, 2001.

## **2.3 Inflation and inequality**

Different strands in the economic literature imply a link between income inequality and inflation (for a review see Al-Marhubi, 2000). Observations from a large sample of countries for the last half of the last century reveal a positive correlation between average inflation and measures of income inequality. The impact of inflation on inequality is transmitted in particular through tax distortions and arbitrary redistributions of wealth between debtors and creditors. In periods of high inflation, the lag with which earnings are adjusted to the increase in consumer price index can lead to enormous differences in the purchasing power of earnings paid by different employers. Thus earnings inequality can increase dramatically in periods of high earnings growth.

Many of the empirical studies on fiscal drag undertaken in the mid and late 1970s found that tax burdens increased more for low-income families than for high-income families, indicating that fiscal drag had regressive effects in many countries (see Immervoll, 2005) for a thorough review). The inequality-inflation relationship is also critical in deciding the extent to which distributional considerations should be taken into account in the design of stabilisation programs (Fisher 1984, 1996; Fisher and Modigliani, 1978).

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Low income households stand to lose more than high income households for their relative vulnerability to inflation and their limited bargaining power in the political process (Albanesi, 2007).

As discussed in Erosa and Ventura (2000), US low income households use cash for a larger part of their total purchases than high income households. Mulligan and Sala-i-Martin (2000) estimate the probability of adopting financial technologies that hedge against inflation and find that is positively related to the level of household wealth and inversely related to the level of education. By using household polling data for 38 countries, Easterly and Fischer (2000) find that the poor are more likely than the rich to mention inflation as a top national concern. This suggests that low income households perceive inflation as being more costly. Easterly and Fischer also find that the likelihood of citing inflation as a concern is inversely related to educational attainment.

Large empirical evidence show that high inflation rates are negatively correlated with growth (see Fischer, 1993; Barro, 1997) although no evidence was found on the joint relationship between deep recession and inflation rate and increase in inequality.

### **3. Providing new empirical evidence**

#### **3.1 Analysis of UK and US labour market data**

In the last year all economies have been seriously affected by the ongoing financial crisis, which transmitted to the real sector. In the United Kingdom, the Institute of Fiscal Studies reported that income inequality peaked the year before the crisis exploded. In the United States, according to the Economic Policy Institute, CEOs in 2007 made an astonishing 275 times the earnings of average American workers (see EPI, 2008). The United States and the United Kingdom have been among the most early and badly hit, with an increase in the number of unemployed, unemployment rates and the claimant count.

The number of vacancies has fallen. The numbers of inactive people of working age and the inactivity rate have increased.

Another reason to start the empirical investigation with the United States and the United Kingdom is that both countries have available and recent statistics on earnings. Finally, the United States and the United Kingdom have relatively weak labour market institutions and may be seen as an upper benchmark to changes in inequality following a financial crisis.

By June 2009, the impact of the financial crisis was massive in all common employment indicators. Firstly, the British employment rate for people of working age was 73.3 per cent for the three month period to April 2009, down 1.5 over the year. The total number of people in employment for the three month period to April 2009 was 29.11 million, down 271,000 over the quarter and down 399,000 over the year. This is the largest quarterly fall in the number of people in employment since comparable records began in 1971. The sector showing the largest fall over the quarter was manufacturing, which fell by 78,000 to reach 2.94 million, the lowest figure since comparable records began in 1978.

Secondly, the financial crisis also lead to an increase in unemployment. The unemployment rate was 7.2 per cent for the three month period to April 2009, up 0.7 over the previous quarter and up 1.9 over the year (Figure 4). The number of unemployed people increased by 232,000 over the quarter and by 605,000 over the year, to reach 2.26 million. The claimant count was 1.54 million in May 2009. It is up 39,300 over the previous month and up 726,100 over the year. The claimant count has not been higher

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since July 1997. The redundancies level for the three month period to April 2009 was 302,000, up 36,000 over the quarter and up 191,000 over the year. This is the highest figure since comparable records began in 1995. There were 444,000 job vacancies in the three month period to May 2009, down 38,000 over the previous quarter and down 230,000 over the year. This is the lowest figure since comparable records began in 2001. Most sectors have shown falls in vacancies over the quarter with the largest fall occurring in finance and business services (down 18,000).

Thirdly, a slight deterioration in the rate of activity of the working age population was recorded. The inactivity rate for people of working age was 20.8 per cent for the three month period to April 2009, up 0.2 over the previous quarter but unchanged over the year. The number of economically inactive people of working age rose by 92,000 over the quarter and by 32,000 over the year to reach 7.89 million. The category showing the largest quarterly increase was inactive students which increased by 83,000 to reach 2.14 million, the highest figure since comparable records began in 1993. Average earnings including bonuses increased by 0.8 per cent in the three month period to April 2009 compared to the previous year. Average earnings excluding bonuses increased by 2.7 per cent over the same period. This is the lowest annual growth rate for earnings excluding bonuses since comparable records began in 2001.

In the United States the employment indicators published by the Bureau of Labour Statistics are similar. Firstly, nonfarm payroll employment fell by 345,000 in May, about half the average monthly decline for the prior 6 months. The unemployment rate continued to rise, increasing from 8.9 to 9.4 per cent (Figure 5). Steep job losses continued in manufacturing, while declines moderated in construction and several service-providing industries.

Secondly, the number of unemployed persons increased by 787,000 to 14.5 million in May, and the unemployment rate rose to 9.4 per cent. Since the start of the recession in December 2007, the number of unemployed persons has risen by 7.0 million, and the unemployment rate has grown by 4.5 percentage points.

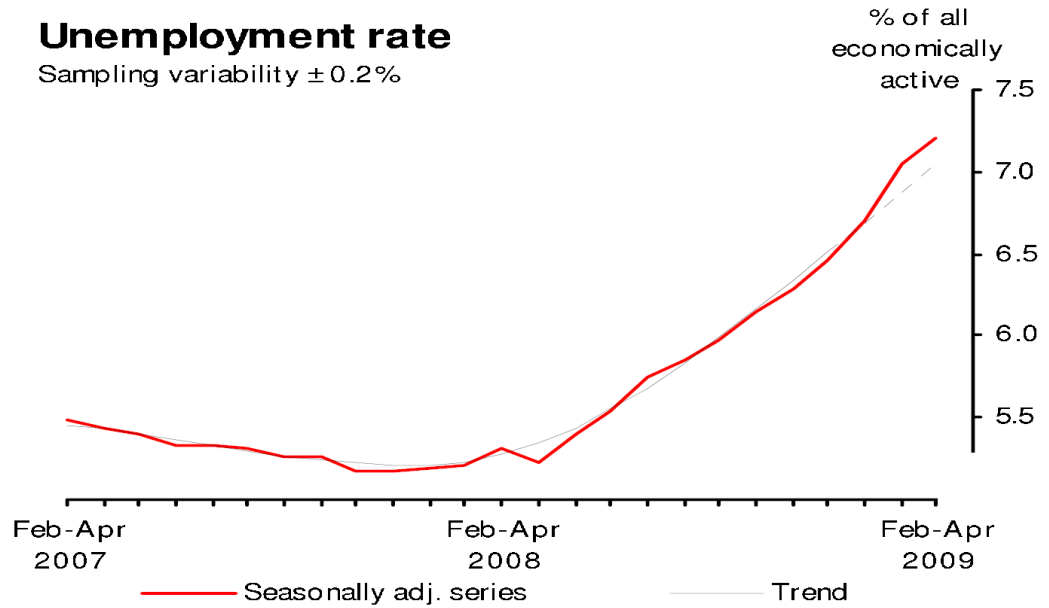
Unemployment rates rose in May for adult men (9.8 per cent), adult women (7.5 per cent), whites (8.6 per cent), and Hispanics (12.7 per cent). The jobless rates for teenagers (22.7 per cent) and blacks (14.9 per cent) were little changed over the month. The unemployment rate for Asians was 6.7 per cent in May, not seasonally adjusted, up from 3.8 per cent a year earlier.

Among the unemployed, the number of job losers and persons who completed temporary jobs rose by 732,000 in May to 9.5 million. This group has increased by 5.8 million since the start of the recession.

The number of long-term unemployed (those jobless for 27 weeks or more) increased by 268,000 over the month to 3.9 million and has tripled since the start of the recession.

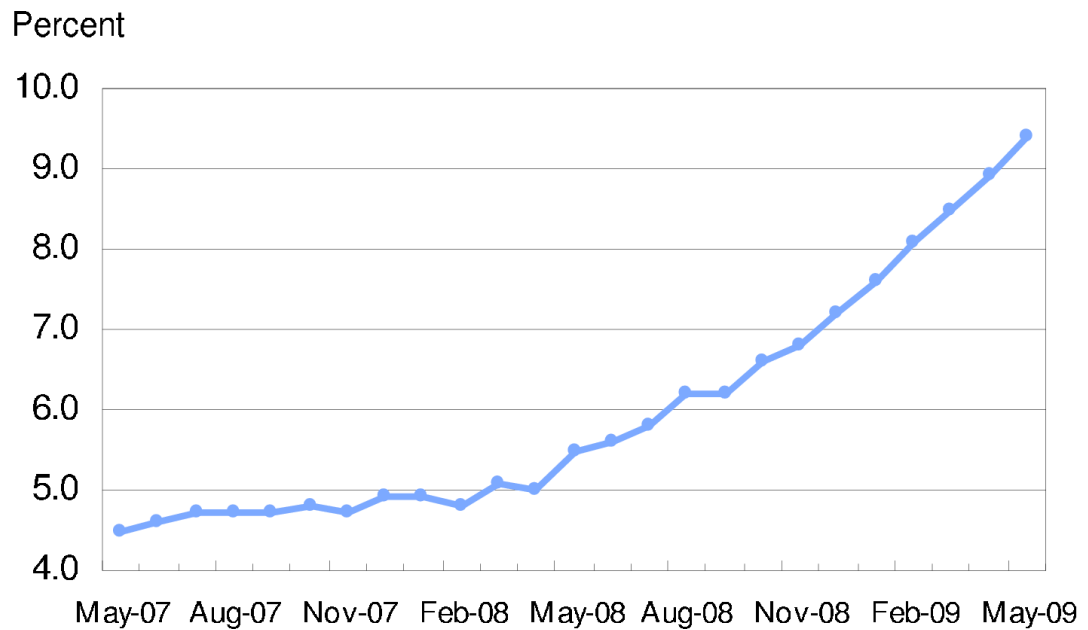


Figure 4. UK unemployment rate, seasonally adjusted, May 2007-May 2009



Source: Statistical Bulletin, ONS, 17 June 2009.

Figure 5. US unemployment rate, seasonally adjusted, May 2007-May 2009



Source: News BLS, 5 June 2009.

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### 3.2 Estimates of post-crisis earnings and income inequality in the United Kingdom and the United States

Here we focus on the analysis of the trend of monthly earnings inequality using recently released US and UK data. Due to lack of data, our measures do not include income from self-employment activities.

The main data source used for analysing US monthly inequality trends in the United States is the Current Population Survey (CPS), which is a sample survey of about 60,000 households conducted by the US Census Bureau for the Bureau of Labor Statistics (BLS). An alternative data set would have been the Current Employment Statistics (CES) survey. However, the CPS was preferred as it presents a more expansive scope than the CES as it includes the self-employed, unpaid family workers, agricultural workers, and private household workers, who are excluded by the CES survey. The measure of income available in the CPS is the weekly earnings for employees. Data are top coded with maximum value equal to US\$ 2,884.61 and bottom coded at zero. The CPS survey also provides estimates of employment for demographic groups.

As for the United Kingdom, the Labour Force Survey (LFS) is used. It is a quarterly sample survey of households living at private addresses in the Kingdom. Over a quarter it interviews roughly 120,000 individuals. Its purpose is to provide information on the UK labour market that can then be used to develop, manage, evaluate and report on labour market policies. The questionnaire design, sample selection, and interviewing are carried out by the Social and Vital Statistics Division of the Office for National Statistics (ONS) on behalf of the Statistical Outputs Group of the ONS.

The survey seeks information on respondents' personal circumstances and their labour market status during a specific reference period, normally a period of one week or four weeks (depending on the topic) immediately prior to the interview. The LFS is carried out under a European Union Directive and uses internationally agreed concepts and definitions. It is the source of the internationally comparable (International Labour Organization) measure known as "ILO unemployment".

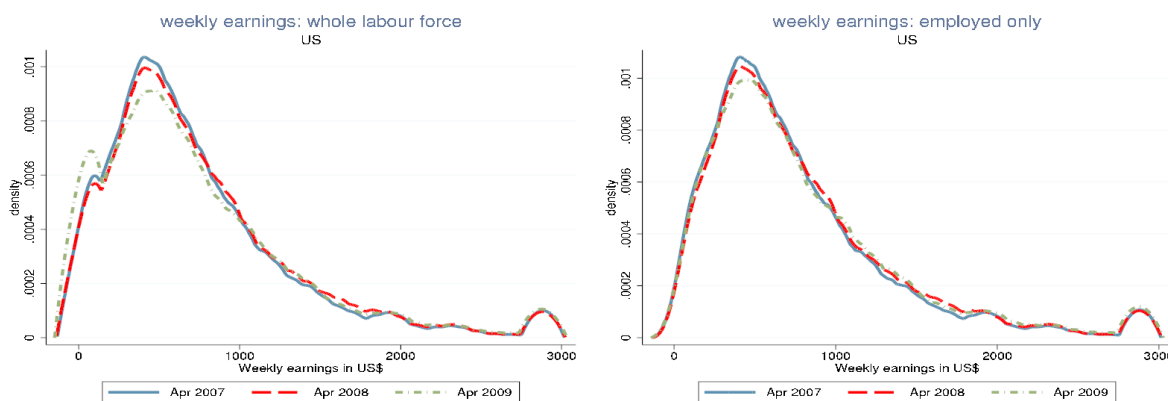
As mentioned before, the recent crisis had a strongly increasing unemployment effect. Hence, an analysis that focused only on earnings of the on-the-job labour force is likely to provide a biased picture of the effects of the recent crisis on inequality. Therefore, trends of some major inequality measures are reported allowing for zero income. In particular the Gini and the half the square of the coefficient of variation (also known as the generalised entropy index with parameter 2, or GE2) and some relevant quintile ratios are computed. The Gini and the GE2 measures share the characteristic of summarising the dispersion of the distribution using all available observations in the sample. However they do differ in terms of the sensitivity of the index to income differences in different parts of the distribution: while the Gini is relatively sensitive to income differences around the mode, the GE2 is more sensitive to income differences at the top of the distribution and is generally used as the top value of the GE parameter in empirical applications (see also Cowell, 2010; Jenkins, 2009). Quintile ratios are robust to outliers and often used in the labour inequality literature also for their simplicity. The ratio of 90/10 or 75/25 quantiles allows one to assess the gap between top and bottom incomes, although the ratio to the median is also informative for understanding where the main changes took place.

In this empirical investigation, we compute these inequality measures over three main measures of weekly earnings:

1. Earnings of all employees;
2. Earnings of all employees excluding those in the public sector, as differences in discipline between the private and public sectors can explain trends in earnings inequality, especially in Europe;
3. Computed weekly “earnings” of the labour force, imputing zero value to unemployed people. This measure is used as an imperfect proxy of incomes, ignoring the impact of unemployment benefits and unemployment assistance. Ideally we would also have a measure of income but income data are usually available with an important lag.

A useful descriptive tool for understanding inequality trends is the estimation of nonparametric densities (for a standard reference, see Silverman, 1986). By letting the data speak by themselves, nonparametric methods allow one to detect the emergence of unusual patterns in the concentration of earnings at different levels of the income range. Figure 6 depicts the nonparametric densities of earnings for our first two measures of earnings at the end of the first quarter in the last three years for the United States and the United Kingdom, respectively. In all cases, the density around the mode reduces, which suggest a lower concentration around the mode and therefore a possibly increasing inequality in earnings distribution. What seems even more striking is that the distribution of the whole labour force earnings is increasing bimodal (especially in the United States), pointing to the fact that the recent crisis seems to have mainly produced an increase of unemployment. This is consistent with evidence quoted before and hints to possible increase of inequality in labour force earnings inequality due to an increase of the number (or “quantity” using the terminology of Section 2.1) of low-earnings workers.

**Figure 6. Nonparametric density estimation of employment labour earnings**



Source: CPS (USA) and LFS (UK).

**Figure 7. Nonparametric density estimation of employment labour earnings**



Source: CPS (USA) and LFS (UK).

Let us now turn to inequality measures. To summarise results, they show that if one looks at earnings inequality, only a weakly increasing trend appears since 2008. However, if one looks at the distribution of a very imperfect proxy of income, e.g. which imputes zero values of earnings for unemployed people, the trend is much more worrisome. As shown by quantile ratios, the strongly increasing trend of inequality measures since mid 2008 is mainly driven by increasing dispersion in the left tail of the income distribution, induced by an increased unemployment rate.

Figure 8 shows the distribution of earnings in the United States. It obviously emerges that inequality is higher if zero income of unemployed workers is considered, however it shows that inequality increased more if unemployment is also taken into account. In fact, while earnings inequality among employed, with or without the public sector, is slightly increasing after the end of 2008, it is clearly increasing using the Gini, the GE2, as well as the quantile ratios. One should also notice that the 90/10 quantile ratio is very rapidly increasing considering the whole labour force (notice that the vertical scales differ for the whole labour force and the employed labour force). Investigating the distribution of income with respect to the median it emerges that while the 75/50 and 90/50 quantile do not present any clear trend, the 25/50 quantile ratio markedly increased since the last 2008 quarter and the 10/90 ratio nearly tripled (Figure 9).

The profile of inequality for the United Kingdom shares some but not all features of the inequality trends in the United States. In particular, there is very small evidence of increase of earnings inequality using the Gini and only in the private sector. The GE2 index, which was discussed previously is particularly sensitive to changes in the top tail. It showed a large decrease of earnings inequality, returning to levels prior to 2008, suggesting that high earnings tended to decrease and/or their share in total employment reduced (Figure 10). Moreover, looking at different quantile ratios, while earnings inequality among employed workers presents little increasing dynamics, the increasing proportion of jobless employees induces a strong increase in all quantile ratios especially in the first quarter of 2009 and for the bottom half of earnings distribution (Figure 11). Our preliminary evidence that the crisis led to an increase in income inequality is in line with recent results from a microsimulation analysis on the impact of the crisis on household income inequality in Italy and the United States (Addabbo et al., 2010).

Similar analysis was performed also by gender, focussing on the earnings distribution in the private sector. Figure 12 refers to the United States, Figure 13 to the United Kingdom. They show that inequality among women is generally larger than among men. In particular, in the United States the trend of inequality seems increasing for women below the median, while above the median the trend is clearly increasing only among men. In the United Kingdom, excluding the half squared coefficient of variation, inequality is always

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larger among women, rather than among men. The increase in inequality in the first 2009 quarter emerges in particular using the Gini index.

### **3.3 Anecdotal evidence about pay practice**

The payment scheme of corporations, particularly as far as CEO and top executives compensations are concerned, gathered a lot of attention, and not only in the media, particularly after some of the companies awarding the most generous compensations have been deeply involved in the global financial crisis. A hearing entitled "Executive Compensation II: CEO Pay and the Mortgage Crisis" was held in front of the US Committee on Oversight and Government Reform in March 2008 on the astonishing level reached by earnings, bonuses, and retirement packages for top executives. Despite the attention received however, there is no evidence of a dramatic change in the compensation scheme of corporations. At least in 2008, what has been observed is, at most, a break in the trend of exponential growth. However, although data are not yet available, some factors suggest that payments of top executives are likely to have peaked in 2008: the pay caps introduced in 2009 by some governments for the companies receiving state funding, some surveys, and the observation that the ratio between CEOs earnings as compared to average workers have tracked the burst of the dot.com bubble in 2001.

#### **United Kingdom**

The Guardian's annual survey of directors' pay in 2008 displays that the crisis ended a long period of rapidly accelerating earnings. Despite a super-wealthy elite whose salary continued to grow (34 directors out of 956 in the FTSE 100 index of companies enjoyed packages of salary, bonuses and shares of more than £5m, up from 20 directors in the previous year) the average chief executive's package slipped slightly to £2.8m in 2007, from £2.9m earned on average in the previous year, but still much more than the average £2.2m earned in 2005. The amount paid to other executive directors fell from an average £1.8m to £1.4m.

<http://www.guardian.co.uk/business/2008/sep/11/executivesalaries.survey1>

#### **France**

Strict limits have been placed on the bonuses of executives of companies as of April 1, 2009 (in particular banks and companies in the automotive industry that have received State aid). This measure was taken after it transpired that a major French bank, Société Générale, which had received state funding as a result of being hard hit by the financial crisis, went on to pay large bonuses to its top executives. <http://www.watsonwyatt.com/us/news/globalnews2.asp?ID=21300&nm=Europe%20-%20France>

#### **United States**

CFO, Vice President of Finance, Treasurer, Controller/Comptroller, and Director of Treasury/Finance continued to earn larger raises than other white-collar workers during 2008 (+3.5 per cent). Assistant Treasurer through Assistant Cash Manager experienced an increase of 3.7 per cent.

[http://www.afponline.org/pub/res/news/ns\\_20090625\\_comp.html](http://www.afponline.org/pub/res/news/ns_20090625_comp.html)

Towers Perrin conducted an online survey targeting US based mid-size and large companies. A total of 513 companies participated in the survey. The survey was also conducted in Asia, Europe and the Americas with a total of over 1,150 responses. Findings point towards lower – or no – 2009 salary increases and bonuses for 2008 performance for many US employees, along with reductions in the value of 2009 equity grants for many executives.

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<http://www.allbusiness.com/labor-employment/compensation-benefits-earnings-salaries/11765637-1.html>

On 4 February, President Barack Obama announced a plan to impose executive pay caps of US\$500,000 annually on any corporation that accepts "exceptional" amounts of bailout money from the federal government.

<http://www.cnn.com/2009/POLITICS/02/04/obama.executive.pay/index.html>

The issue is whether reductions in executive pay will be permanent or temporary. A recent study on earnings in the 30 enterprises most quoted on the stock exchange shows that earnings decreased by 30 per cent in Switzerland since the beginning of the crisis against 17 per cent in Europe, while in the US earnings have already returned to their pre-crisis level (Neue Zürcher Zeitung, 15 June 2009).

In addition to top earnings, it is important to look at collective agreements signed in firms particularly hit by the crisis to see whether a change in the process of wage fixing has taken place. Regarding wages, a review of 65 collective agreements in the world (September 2008-March 2009) and taken from Rychly (2009) shows that:

- 2/3 of collective agreements have wage provisions
- Across the board wage freeze/decrease: 35 per cent
- Wage cuts for CEO, for other executives and no wage cuts for low pay workers: 25 per cent
- Strengthening of performance pay system: 10 per cent
- Elimination or cut in bonuses: 10 per cent
- Wage cuts for new hires: <2 per cent

In conclusion, most of the limits imposed on bonuses and top earnings have taken the form of guidelines rather than legislative changes, or were imposed on a short term basis as a counterpart to government support to firms facing bankruptcy. A review of collective agreements in firms worst affected by the crisis also shows that a minority provided for cuts in top earnings higher than that for other earnings.

#### **4. Concluding reflections about the 2007-08 crisis**

In theory, the 2008 crisis could reduce inequality; or it could aggravate it. For instance, an increase in earnings inequality could stem both from an increasing gap between high and low-earnings workers, or from increased job losses for low-earnings workers, keeping constant the earnings gap. As far as changes in rewards for skills are concerned, they could be demand-driven or institutions-driven (collective agreements, minimum wage, public wage, guidelines and regulations on executives' pay fixing). Turning to total income, the effect of changes in capital income on inequality appears unclear, while income losses of poor workers are significant especially if no safety net is provided by the national welfare system.

It is worth stressing two findings that emerge from contributions to the previous literature:

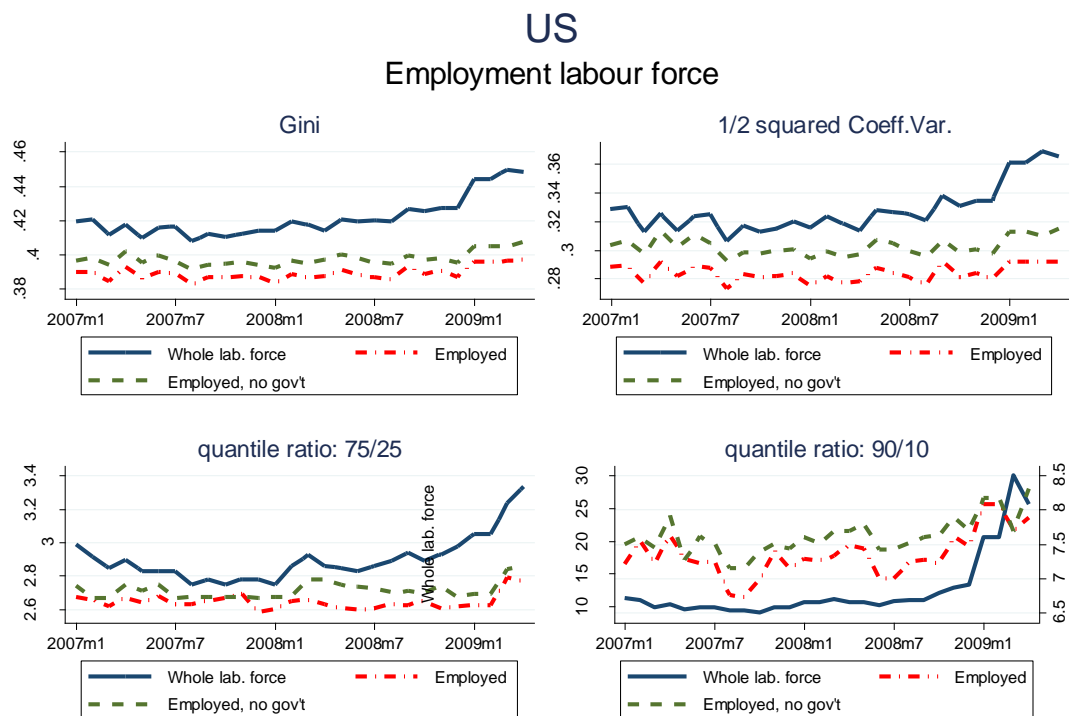
1. In most of the cases *income* inequality decreases following crises, although scant evidence is found concerning *earnings* inequality;
2. Economic and social policies have a crucial role in the transmission mechanism from the shock to the distributional implications. The extreme cases are those of Finland on the one hand, in which income inequality was unaffected by a dramatic increase of the unemployment rate, and that of some Asian countries in which the

crisis led to a sharp and permanent increase of inequality because of lack of social safety nets.

Turning to the experience of the United Kingdom and the United States of America, our empirical analysis of recently released UK and USA data suggests the following results. First, earnings inequality has increased very slightly, especially in the United States of America. Second, assuming there is no such safety net and no income from capital, our analysis shows evidence of an increase in income inequality for the active population. This reflects the non-random selection of closing firms and of laid-off workers. Low-earnings workers are more likely to be expelled from the labour force and changes in inequality are driven mostly by changes of inequality between groups (employed and unemployed workers) rather than within groups. Therefore the current crisis has led to an increase in income inequality, given holes in the coverage of unemployment benefits system and limits on levels of earnings replacement rates.

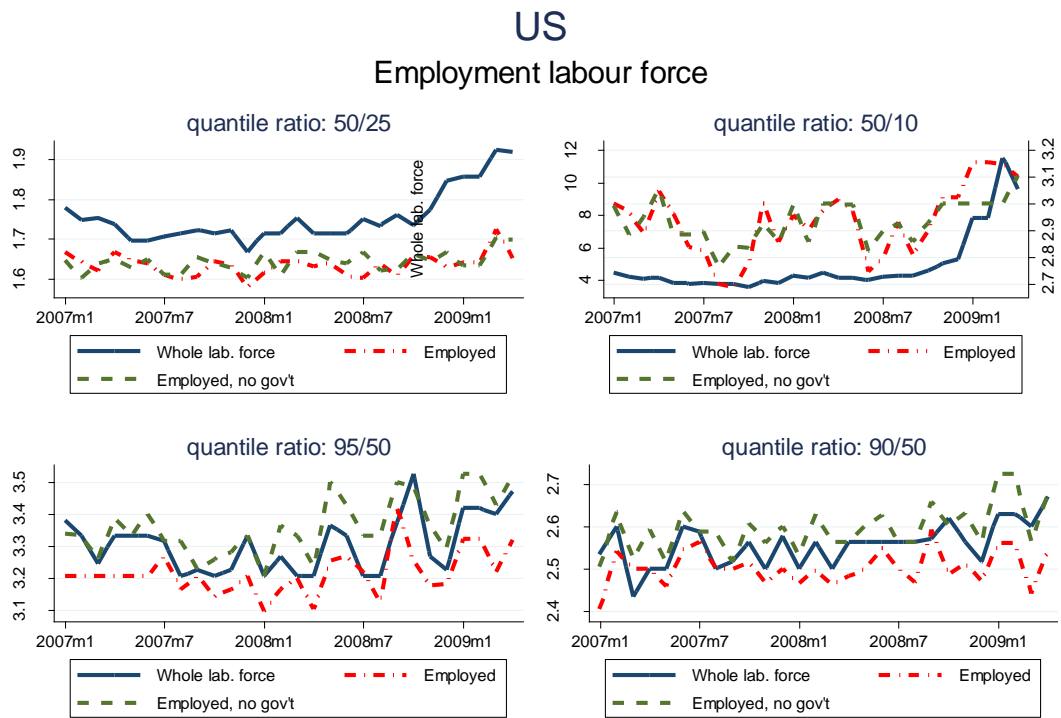
Will the trends in inequality observed for the United Kingdom and the United States, e.g. very small increase in earnings inequality and increase in income inequality, be transitory, or will they be long-lasting? On the one hand, recent surveys in high wage paying sectors suggest that governments' efforts to limit high earnings could have temporary effects. On the other hand, it is expected that labour markets will remain depressed in the medium term, meaning that countries with loose social safety nets could experience a widening increase in inequality.

**Figure 8. The distribution of earnings, with and without considering unemployed**



Note: in some panels left- and right-vertical axes' scale differ.

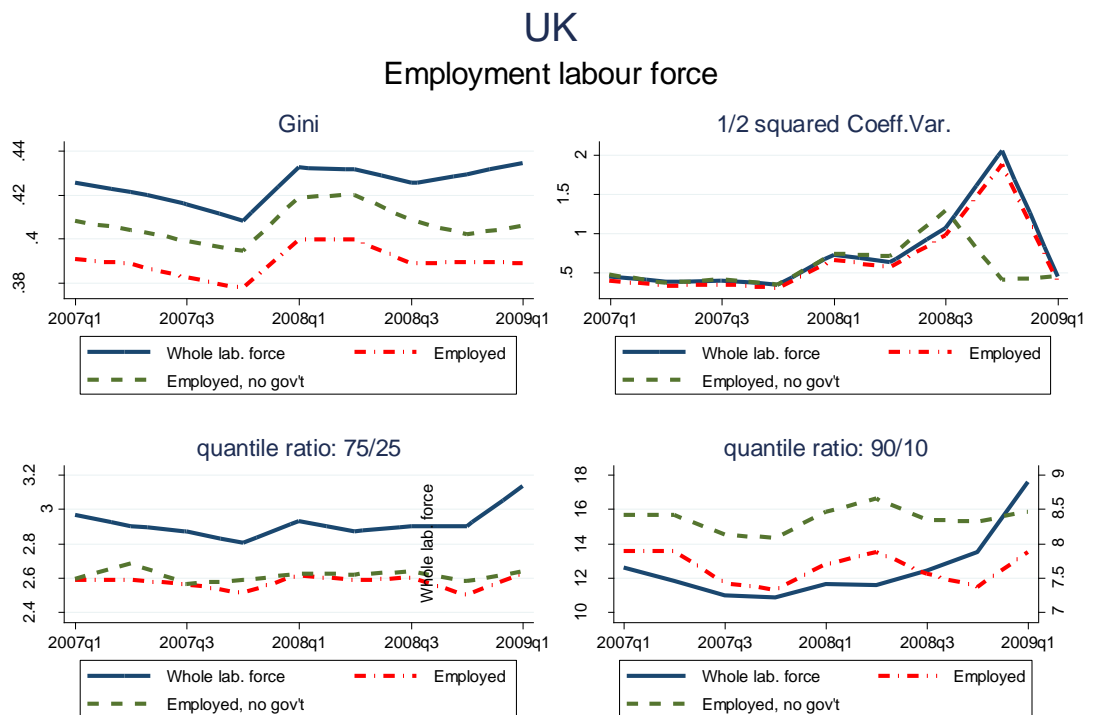
**Figure 9. Quantile ratios with respect to the median, with and without considering unemployed**



Note: in some panels left- and right-vertical axes' scale differ.

Source: CPS (USA) and LFS (UK).

**Figure 10. The distribution of earnings, with and without considering unemployed**

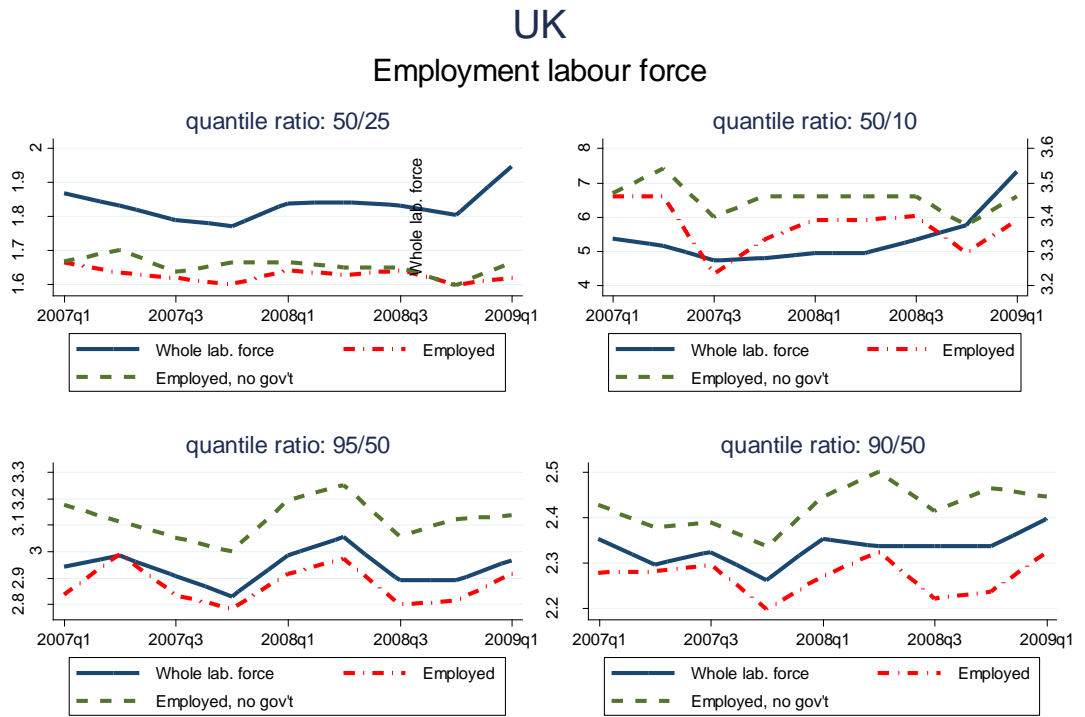


Note: in some panels left- and right-vertical axes' scale differ.

Source: CPS (USA) and LFS (UK).



**Figure 11. Quantile ratios with respect to the median, with and without considering unemployed**



Note: in some panels left- and right-vertical axes' scale differ.

**Figure 12. The distribution of earnings, excluding the government sector, by gender**

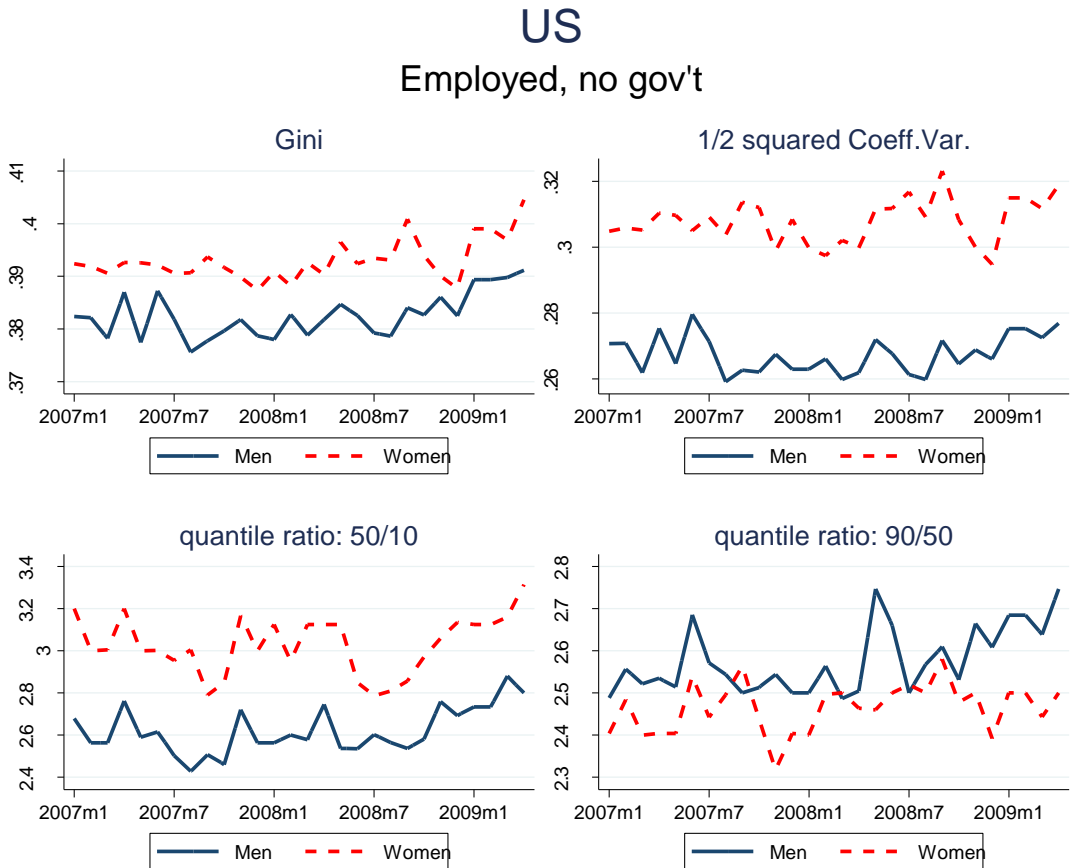
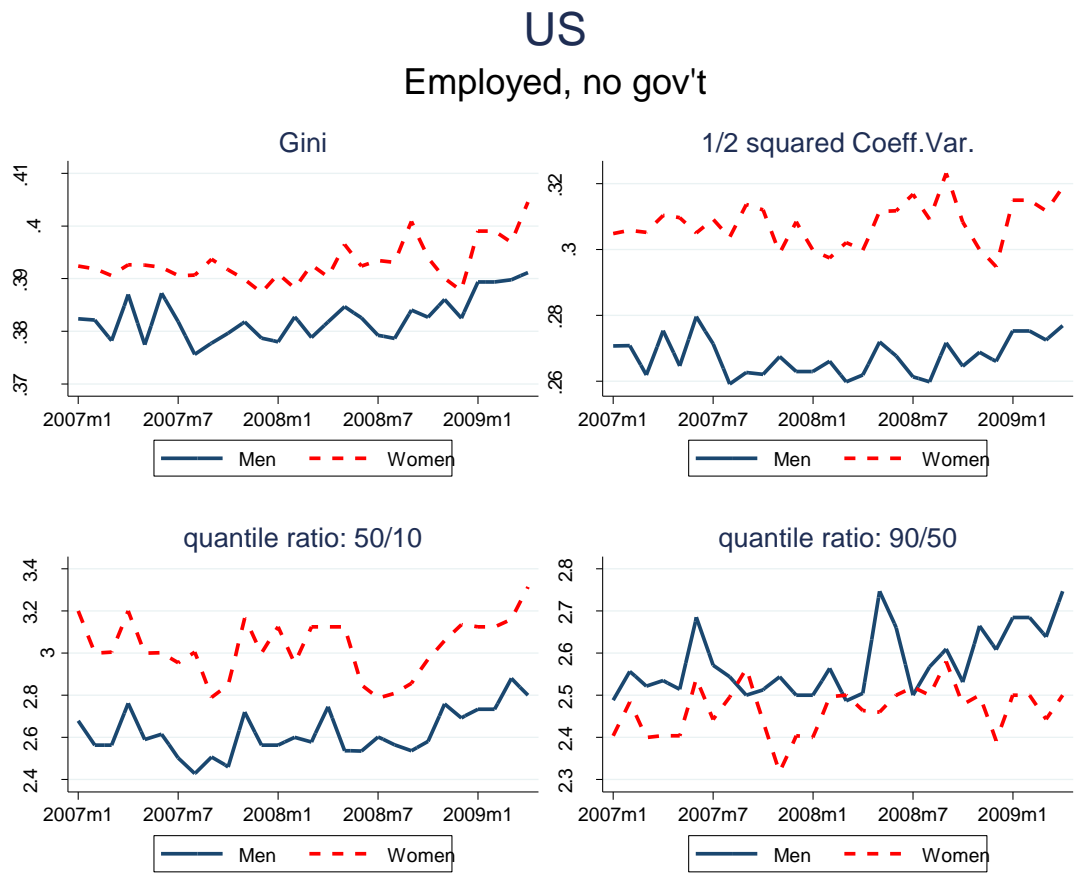


Figure 13. The distribution of earnings, excluding the government sector, by gender



Source: CPS (USA) and LFS (UK).

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