

De Nederlandsche Bank

# **The Distributional Consequences of Monetary Policy**

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## 1. INTRODUCTION<sup>1</sup>

Inequality in income and wealth has been trending upward in most of the developed countries in recent decades (Figure 1). The magnitude and timing of the increase have varied considerably from country to country; the rise in inequality has been particularly pronounced in the United States and the United Kingdom, possibly because of the predominant role of capital markets in those economies (Figure 2). Although the trends most likely depend on a number of familiar drivers that are well identified in the literature – such as globalisation, skill-biased technological change, the rapid growth of the financial sector<sup>2</sup> – the global financial crisis has brought monetary policy (MP) itself into the picture as a possible additional factor.

The argument for this hypothesis runs as follows. Over the past seven years central banks have adopted unprecedented expansionary measures, exploiting both conventional and unconventional policy instruments. If monetary policy has systematic distributional effects, and if monetary expansions redistribute resources “from the poor to the rich”, then MP may indeed now be contributing to or accelerating the long-run trends that we can observe in the data.

Before going into this issue, it is important to recognise that if one examines inequality from the global perspective, the picture is very different. As Figure 3 shows, in contrast to the trend in within-country inequality, since the 1980s international inequality has diminished rather than intensified.<sup>3</sup> What is more, the very factors that increase inequality within countries can reduce inequality between them. This certainly holds for the structural drivers of inequality, such as globalisation. Intriguingly, it may be true of monetary policy as well. Research has found that a fall in interest rates in the United States stimulates cross-border credit flows and investment in the rest of the world, because it allows the large global banks to raise funds cheaply in the “core” of the financial system and invest them profitably in the “periphery.”<sup>4</sup> Leaving aside the implications for financial stability, this means that the recent monetary expansions in the US and in Europe may have boosted income in relatively poorer parts of the world, thereby reducing between-country inequality. As ever, when we deal with inequality we must be careful to define the phenomenon and the constituency we have in mind.

Nevertheless, many central banks are now under scrutiny, with questioning of the distributional implications of their policies “at home,” which makes the topic of this conference an important and timely one. Avoiding the discussion may do more harm to central bankers’ reputation than engaging expressly with distributional issues. In my remarks today I will examine two questions. The first one is positive, or descriptive: How should we think about the distributional

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<sup>1</sup> I wish to thank Piergiorgio Alessandri, Andrea Brandolini, Francesca Carta, Giuseppe Ferrero and Roberto Piazza for their help in preparing this text.

<sup>2</sup> Trade linkages with countries that have large endowments of unskilled labour can increase the relative wages of skilled workers in the “home country” through a Stolper-Samuelson terms-of-trade effect, thereby accentuating inequality. Changes in production technology can have analogous effects if they result in a more than proportional rise in the productivity of (and demand for) such workers. The growth of finance may play a role if the financial sector generates abnormally high salaries.

<sup>3</sup> Lakner and Milanovic (2015).

<sup>4</sup> Rey (2013); Bruno and Shin (2015).

implications of monetary policy, both in general (Section 2) and within a monetary union (Section 3)? The second is normative, or prescriptive: How, if at all, should central banks take inequality into account when setting the course of monetary policy (Section 4)?

## 2. THE COMPLEX DISTRIBUTIONAL IMPLICATIONS OF MONETARY POLICY

Quantitative easing (QE) and low interest rates have highly vocal critics on both sides of the Atlantic. These critics have pointed out that a policy aimed explicitly at lowering the yields on safe assets is a policy that necessarily hurts – even “expropriates” – ordinary savers. Ford and Vlasenko (2011) contended that “*By lowering interest rates to historically unprecedented levels, the Fed’s policy has deprived savers of interest income they normally would have earned on savings accounts [...]*.”<sup>5</sup> They have been echoed in Europe by the president of the German Savings Association, Georg Fahrenschon, who accused the ECB of, “*stand[ing] for an unprecedented phase of low interest rates that expropriates the saver, damaging the savings culture and putting more and more pressure on the self-provisioning of people.*”<sup>6</sup>

This criticism emphasises the immediate effects of monetary policy on households’ interest income. If these effects were to dominate, then a monetary expansion would indeed hurt savers who derive a significant fraction of their income from deposit-like assets.<sup>7</sup> We probably all agree that, *ceteris paribus*, low interest rates and high inflation tend to help borrowers at the expense of lenders/savers. But that “*ceteris paribus*” clause, always debatable, is particularly troublesome in this context. Indeed, what makes the foregoing criticism fragile, in my view, is that it relies on a short-term, partial equilibrium view of monetary policy transmission.

Focusing exclusively on the interests associated with deposits is mistaken: monetary policy can generate distributional effects through a number of other income- and wealth-related channels,<sup>8</sup> and if we are to determine how well grounded the criticisms are, we clearly need to develop a holistic view of how these channels work.

First of all, monetary expansions normally raise the prices of some financial assets;<sup>9</sup> there is ample evidence, in fact, that while QE has indeed compressed the yields on a range of long-term bonds, it has raised the prices of shares.<sup>10</sup> Second, looking beyond finance, real assets like housing are likely to play a key role. Research has demonstrated that monetary policy also works through real estate markets:<sup>11</sup> by compressing both the short and long end of the yield curve, monetary

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<sup>5</sup> William Ford was the eleventh president of the Federal Reserve Bank of Atlanta.

<sup>6</sup> “A common Europe has to be built on trust”, *Börsen-zeitung*, 22 March 2014.

<sup>7</sup> The problem could be compounded by “segmentation” (à la Williamson, 2008): if economic agents differ in their ability to trade in financial markets, the benefits of an increase in liquidity will be reaped exclusively or primarily by those who have better access to the markets and can exploit more direct relations with the monetary authority – which is to say, “banks”.

<sup>8</sup> See e.g. Coibion et al. (2012)

<sup>9</sup> Rigobon and Sack (2014).

<sup>10</sup> Clayes et al. (2015).

<sup>11</sup> Indeed, some studies have concluded that housing debt and real estate wealth play a crucial role in the transmission mechanism – see e.g. Cloyne et al. (2015).

easing typically stimulates mortgage lending and, as a consequence, boosts house prices.<sup>12</sup> This channel might be particularly important for QE, whose express objective is to lower long-term interest rates.

This means that even if we consider only direct portfolio effects, we should conclude that *savers do not necessarily stand to lose* from a monetary expansion: those who own real estate and/or a sufficiently diversified portfolio of financial assets – in practice, a good proportion of all savers – may actually benefit in relative terms. As I will show presently, in the euro area housing is likely to be a particularly important factor.

The picture is complicated still further if one takes a general equilibrium perspective. Expansionary monetary policies designed to fend off deflation and stimulate economic growth also generate higher real interest rates over the medium term.<sup>13</sup> In other words, from a longer-term perspective the interest income channel would appear to work in the opposite direction to that posited by the critics. Since what really matters for savers is the real return on their savings in the longer run, this reading may well be more persuasive than an exclusively short-term focus.

Furthermore, if monetary expansions succeed in stimulating economic activity significantly, they will increase both labour income and corporate profits, which are ultimately distributed as dividends to “savers” too. What matters for inequality, then, is the combination of two factors. The first is the sensitivity of labour and capital income to a monetary intervention: wages may rise relatively more or less than corporate profits. This is likely to depend on a number of structural features of the economy, including the share of labour and capital in production and the structure of the labour market. The second factor is the distribution of labour and capital income across households.

In this respect it is important to bear in mind that labour is the main source of income for the middle classes. Figure 4 gives the breakdown of income sources across quintiles of the distribution in the United States, showing that even there, where households are more active in financial markets than in Europe, labour accounts for over half of total income in up to 80 per cent of all households<sup>14</sup> and that its share of total household income is highest for the third and fourth quintiles. Capital and business incomes generally account for a much smaller share; they are quantitatively significant only for the top income quintile. Thus if a monetary stimulus sustains employment and wages, its effects will benefit a very large part of the population and go relatively less to the top income groups. Furthermore, labour earnings at the bottom of the income distribution may be relatively more sensitive to the business cycle;<sup>15</sup> if this is the case, successful countercyclical MP might help low-income households above all, attenuating inequality. This suggests that monetary expansions could well decrease – not increase – inequality.

This brief discussion suggests the considerable difficulty of determining the net distributional effect of a monetary policy intervention a priori. To me, this is primarily an empirical issue, in

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<sup>12</sup> Jordà et al. (2014) reach these conclusions with a dataset that spans 140 years and 17 countries.

<sup>13</sup> Bindseil et al. (2015).

<sup>14</sup> The exception is households in the lowest quintile, for which transfers are more important.

<sup>15</sup> Heathcote et al. (2010)

which the conclusion depends on a series of economic and institutional characteristics. And I think the difficulty stems mainly from the fact that it involves many dimensions that need to be considered jointly.

Since monetary policy works through both income and wealth channels, at the very least one should examine their distribution in the population jointly and not singly. Figure 5 reports data on the ratio of debt service to income (DS-I) in the euro area from the Household Finance and Consumption Survey (HFCS), plotting on the vertical axis the fraction of households whose DS-I ratio exceeds the level shown on the horizontal axis. To distinguish the relatively poor from the rich, there is a separate curve for each gross income quintile. Low-income households clearly bear a much heavier burden of debt than their high-income counterparts. In the bottom quintile (yellow line), roughly four tenths face monthly debt payments of 40 per cent or more of gross income. This fraction drops to less than two tenths in the second income quintile (solid blue line), and is practically nil for the top quintile (dashed blue line). This ordering basically holds for pretty much all DS-I values. Furthermore, the curve for the bottom quintile is set sharply apart from the others: *servicing debt, that is, is only a problem, practically, for the poorest group of households.*

This empirical regularity suggests that the anti-QE camp has put forward arguments that are not fully consistent with one another. Criticising QE at the same time for “hurting savers” (like the first set of quotations above) and for “helping the rich”<sup>16</sup> becomes problematic if in reality these turn out to be two largely overlapping categories.

In conclusion, it seems fair to say that our understanding of the relationship of monetary policy to inequality has lagged behind the mounting political debate on the issue. Bernanke (2015) proposed a simple “litmus test” to cut through our difficulties in forming a complete picture of the effects of QE: *“If the average working person were given the choice of the status quo (current Fed policies) and a situation with both a weaker labour market and lower stock prices (tighter Fed policies), which would he or she choose?”* This question would appear to offer a fitting background to our discussion here today.

### 3. INEQUALITY IN A MONETARY UNION

In the euro area, the debate has stressed another potential distributional spillover of monetary policy: redistribution of resources not only within countries but also between the member states of the monetary union. Naturally, the effects of monetary policy on the member states may well be asymmetric, and very strong views on the way the asymmetry works in this particular case have been expressed. To cite one: *“While households in countries strongly affected by the crisis are relieved, others, namely German households, are suffering from the very same measures.”*<sup>17</sup>

To the extent that within the cross section of households an expansion produces winners and losers and that these are unevenly distributed across countries, monetary policy may of course also reallocate resources across national borders. To be sure, in a fully integrated economic union this

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<sup>16</sup> “Britain's richest 5% gained most from quantitative easing,” *The Guardian*, 23 August 2012.

<sup>17</sup> Holzhausen and Sikova (2014).

would not be an issue. In the euro area it might be, though, because the lack of a common fiscal policy framework means there are no tools to neutralise the potential distributional effects of MP.

However, the concerns about the redistributive effects of monetary expansions across euro-area countries reflect an oversimplified representation of the monetary policy transmission mechanism. In fact, understanding these cross-country effects is, if anything, even harder than grasping within-country effects. One difficulty is simply measurement. The data are not comparable across countries because of differences in the definitions of income and wealth, the way taxes are treated, the primary sources used, and often the processing of the data. Measuring income and wealth consistently in a large economic area is not easy.<sup>18</sup> And where the status quo itself is measured inaccurately, gauging the impact of a shock (monetary or otherwise) becomes problematic at best.<sup>19</sup>

The most serious difficulties, however, are conceptual. There are many forms of cross-country heterogeneity that have to be taken into account in assessing the distribution of gains and losses, and these are hard to bring together to form a unified picture. Clearly, as my earlier observations indicate, two important aspects of this problem are the balance between net borrowers and net savers and the rate of home ownership (see Section 2). The interaction between these two factors is also relevant: a monetary expansion is doubly beneficial for people who purchased their homes with a mortgage, because it brings an appreciation of the value of the house and a decrease in the real cost of debt servicing. An equally important role, lastly, is played by the transmission of monetary policy through housing markets and the associated dynamics of house prices. In short, we would expect the recent expansionary monetary policies to have produced the greatest benefits for the households who (i) are highly indebted, (ii) own a house, (iii) have a mortgage, and (iv) are in countries where real estate prices have risen significantly.

All four of these characteristics are quite heterogeneous across countries within the euro area either structurally or conjuncturally (in the recent past). Figures 6 and 7 portray the composition of households' portfolios in the area according to the HFCS released in 2013. Figure 8 shows real house price indices in the same countries over the last decade. Debt levels vary significantly. They are extremely low, for instance, in Italy and in Austria, where households accordingly obtain only moderate benefits from a monetary expansion; they exceed 50 per cent of total net worth in the Netherlands, where by this metric household leverage is far higher than in the US (Figure 6). On the asset side, on average non-financial assets account for a significantly greater share than in the US (Figure 6). They consist mainly of primary residences (Figure 7), although additional properties are also quantitatively significant in Finland, Germany, Portugal and Spain, where they account for

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<sup>18</sup> The statistical traditions of European countries can differ significantly: some rely mostly on administrative archives, others on sample surveys, still others on a combination of the two. There are pros and cons to each, of course, but clearly these methodological differences can influence income comparisons. Furthermore, the experience of statistical agencies (including our central bank departments) has shown that input data harmonisation is far more demanding than output data harmonisation.

<sup>19</sup> Going forward, however, there is no reason to be pessimistic. We have made notable progress in the past two decades in measuring income, which should serve as an encouragement to improve our measurement of wealth as well. Accordingly, from the beginning we have supported the Eurosystem's collection of better data through the Household Finance and Consumption Survey.

roughly 20 per cent of households' total assets.<sup>20</sup> Finally, in some countries, such as the Netherlands, a fairly large fraction of the real estate portfolio is funded by mortgage loans (Figure 7). If you were to use these data to form a rough view of who might have been a relative winner (“plus”) or a loser (“minus”) from expansionary MP, you would obtain the following picture:

- Italian households have low debt (minus); they hold a relatively large share of non-financial assets, including housing (plus), but they experienced a decline in house prices from 2010 onwards (minus).
- German and Austrian households, who have comparably low debt levels (minus), hold a relatively smaller housing stock (minus) but make relatively more use of debt to fund their real estate purchases (plus), and enjoyed a significant rise in house prices (plus), possibly because of more powerful transmission of the monetary stimulus in the euro-area “core” than in the “periphery.”<sup>21</sup>
- In the Netherlands, debt levels are extremely high (plus), housing ownership is significant (plus), and mortgages play an even more important role than in Austria or in Germany (plus). House prices dropped, but the fall – which began in 2009, well before the start of the ECB’s aggressive policies – was arguably due to the bursting of a bubble. Insofar as it was successful in smoothing this downward adjustment, QE may have generated larger gains here than elsewhere (though of course they cannot be measured without formulating a “no-QE” counterfactual hypothesis).

The signs are conflicting, and conclusions accordingly hard to draw. Clearly if we move further towards the “general equilibrium” view that I advocated earlier, the complexity only increases. As Figure 9 shows, European equity markets too have displayed widely divergent patterns over the last few years. In Italy and Austria prices are hovering around their levels of five years ago, while the German and Dutch markets have rebounded and are now 25 to 50 per cent higher than in 2010. As we know, national labour market dynamics have also differed greatly. This heterogeneity reflects a number of structural and cyclical factors, but it probably also depends on asymmetries in the transmission of monetary policy.

In conclusion, as soon as we move beyond the initial, naïve borrowers-versus-savers dichotomy we find that identifying the “winners” in the euro area becomes an extremely difficult task.

#### **4. TWO GOOD REASONS FOR CENTRAL BANKS TO CARE ABOUT INEQUALITY, AND AN EXCELLENT ONE TO STUDY IT: IT SHAPES THE TRANSMISSION MECHANISM**

Given how little we know about the distributional implications of monetary policy, central banks should certainly not think of attenuating inequality as an additional implicit policy objective. But this does not mean that they can – or should – simply ignore the issue. There are at least three reasons why, on the contrary, we must take it seriously.

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<sup>20</sup> The difference matters, because the appreciation of a second home, or a property that has been purchased specifically for investment purposes, can be more readily turned into cash.

<sup>21</sup> In the “core” of the area MP had a direct impact on the borrowing costs ultimately faced by households; in the “periphery”, by contrast, costs were heavily affected by country-, bank- and borrower-specific risk premia.

First of all, a central bank that fails to take the redistributive effects of its decisions into account will also be missing some aspects of the transmission mechanism, and may be less effective in pursuing its macroeconomic and financial stability objectives.

We ordinarily assume that the transmission of monetary policy to the real economy relies on two mechanisms: *nominal rigidities* (by changing nominal interest rates the central bank is able to affect real interest rates and real wages) and *intertemporal substitution* (a fall in real rates increases aggregate demand by stimulating consumption and investment). These may indeed play a central role in a representative-agent world, but thinking in terms of representative agents is not sufficient.

In reality, there are many forms of heterogeneity among households that can have a strong influence on the transmission mechanism. One is the *distribution of housing and mortgage debt in the population*. Households with mortgages to pay appear to adjust their consumption significantly after an unexpected change in interest rates, whereas renters and outright home-owners are far less sensitive.<sup>22</sup> Another one is *demographics*. By increasing inflation, an expansionary monetary shock reduces the real value of retirement accounts. This generates a negative wealth effect for the “old” while at the same time creating an incentive for the “young” to work harder and save more.<sup>23</sup> These mechanisms may operate even in the absence of nominal rigidities. Although their quantitative impact is still being studied, it should be clear by now that it is not wise to ignore them altogether.

From this perspective, the structure of household incomes and asset portfolios (and hence the inequality of wealth and income) is only one of the multiple forms of heterogeneity that central banks should and normally do monitor in order to understand how their policy tools work and to carry out their policy mandate more effectively.

The second reason is that complacency might take central banks down a path leading ultimately to the loss of independence. If a side-effect of monetary policy decisions is increasing inequality to a socially unsustainable level, the government may decide to act to rein this trend in; such action could include pressuring the central bank to behave differently, or even curtailing its independence.

A third, admittedly more speculative reason has to do with hysteresis. Imagine a world in which monetary policy increases inequality, leading to an excess of savings (“saving glut”) that drives the natural real interest rate steadily down. With a lower natural rate, all else equal, the probability of hitting the zero lower bound is greater. This may heighten the danger of slipping into a period of persistent low interest rates, low inflation, low growth, and greater inequality. In this way the original policy action can have a permanent impact on future policy choices and on the CB’s ability to discharge its mandate. This example is speculative, of course, but it illustrates a problem that may deserve more attention: insofar as monetary policy affects inequality and, additionally, shocks to inequality do not revert quickly, today’s monetary policy actions can have feedback effects over periods stretching well beyond the “medium term” as central banks generally define this concept.

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<sup>22</sup> Cloyne et al. (2015).

<sup>23</sup> Sterk and Tenreyro (2015).



## 5. CONCLUSIONS

Inequality is unquestionably a crucial dimension of public policy. Every society has views on how resources should be distributed among citizens, and democratic governments have the duty to give substance to those views. And even if the crucial ethical aspects of this problem could be neglected (but they should not), the implications of mounting inequality for economic stability and prosperity would be a compelling reason to take the phenomenon very seriously. High inequality can hinder growth, sow the seeds of financial crisis or prompt social unrest.<sup>24</sup>

As a consequence, how monetary policy affects the distribution of income and wealth within the economy is an important question. Unfortunately, we know very little about it. Given the state of the art, it would appear inappropriate – or at best premature – to treat distributional outcomes as an additional objective for central banks (prioritising interventions that supposedly reduce inequality), or even as a constraint on the pursuit of their primary objectives (say, by precluding interventions that strengthen macro-financial stability but may have unwanted distributional effects). In this sense inequality is, and should remain, the domain of fiscal measures designed and implemented by democratically elected governments. This is especially true in a monetary union where fighting inequality may imply redistribution across countries. Monetary authorities lack the knowledge, the tools and most importantly the political legitimacy to act directly on the distribution of income and wealth.

This is not to deny that the actions of central banks can carry distributional implications, or that these may be inconsistent with the preferences of the public. In thinking about this issue, it may be helpful to draw an analogy with other realms in which public policy makers systematically take decisions that are welfare-improving but have undesirable distributional implications. A prime example is environmental policy. Any measure that encourages the exploitation of renewable energy sources (as by subsidising wind and solar power) will generate an international redistribution of income away from oil and coal producers; given that some of these are not “rich” in relative terms, such a reallocation may well increase international or inter-regional inequality. Yet no one would criticise a “green” policy agenda on these grounds. If anything, the issue is how to control this redistribution and build international consensus for a reform that aims to improve welfare on a global, world-wide basis. Another example is major infrastructural projects that benefit the broader community but are detrimental to local residents (the costs being measured in terms of well-being, not money: no one wants to live next to an airport or a highway). Once again, these tensions are ordinarily resolved by compensating the people who must bear the costs of the project with additional distributional interventions (for instance, by building schools and amenities to accompany roads or airports). Why should the distributional spillovers of monetary policy be treated differently?

For researchers, the task today is to provide policy makers with more information and more tools to deal with the interplay between monetary policy and the distribution of income and wealth.

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<sup>24</sup> Acemoglu and Robinson (2000), Rajan (2010), Ostry et al. (2014).

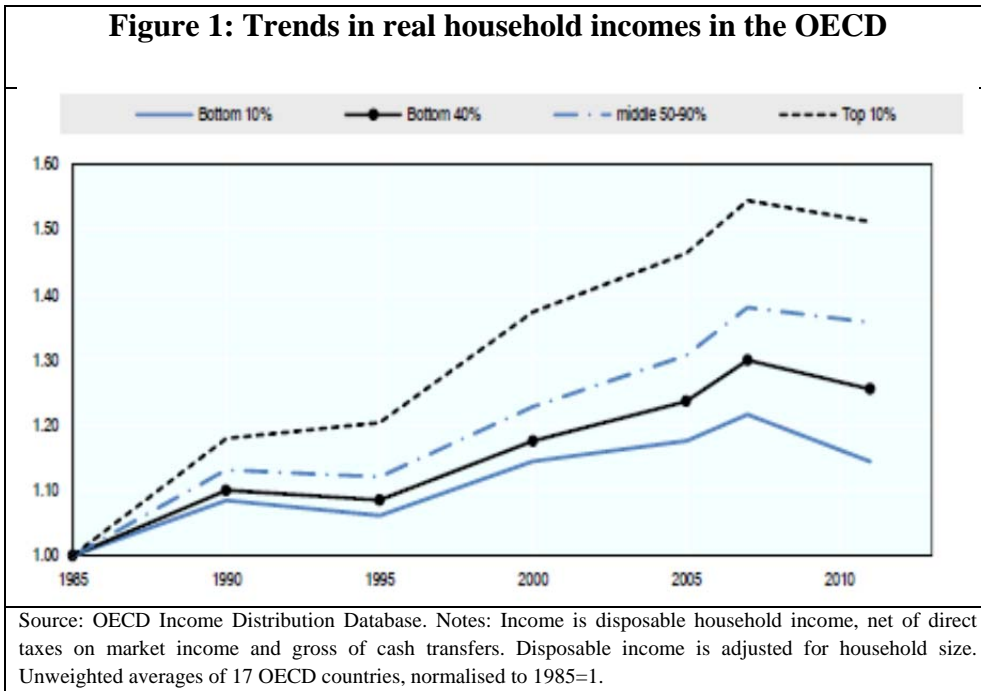
In this regard, the renewed interest in the transmission of monetary policy in economic models with heterogeneous agents is particularly welcome. To further this effort, the Bank of Italy, together with the CEPR, is organising a conference on “Monetary policy after the crisis” next June in Rome. The conference is intended to stimulate discussion on how our conventional wisdom on the transmission mechanism should be revised, in order, for one thing, to take heterogeneity into account.

For monetary policy makers, on the other hand, the main task is to keep from getting carried away by superficial debates before that information becomes available. It is hard to deny that right now, ideology counts for more than objective science in the debate. We of the central banking community should do everything we can to ensure that this trend is inverted as quickly as possible.

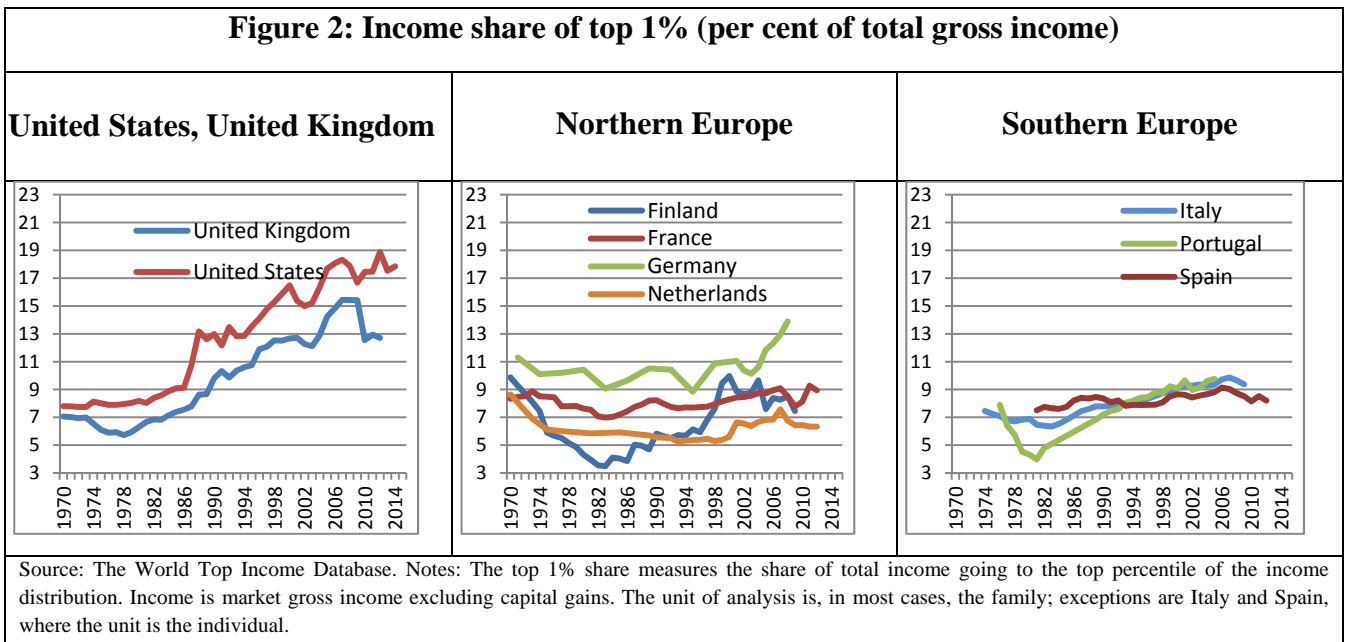
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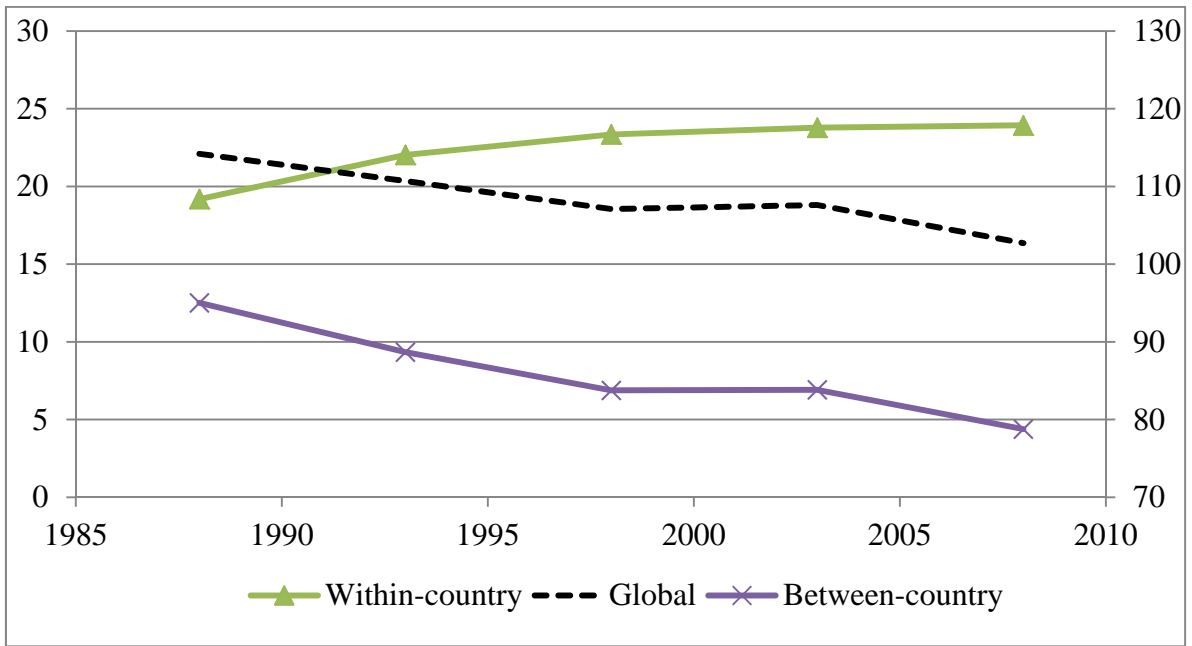
**Figure 1: Trends in real household incomes in the OECD**



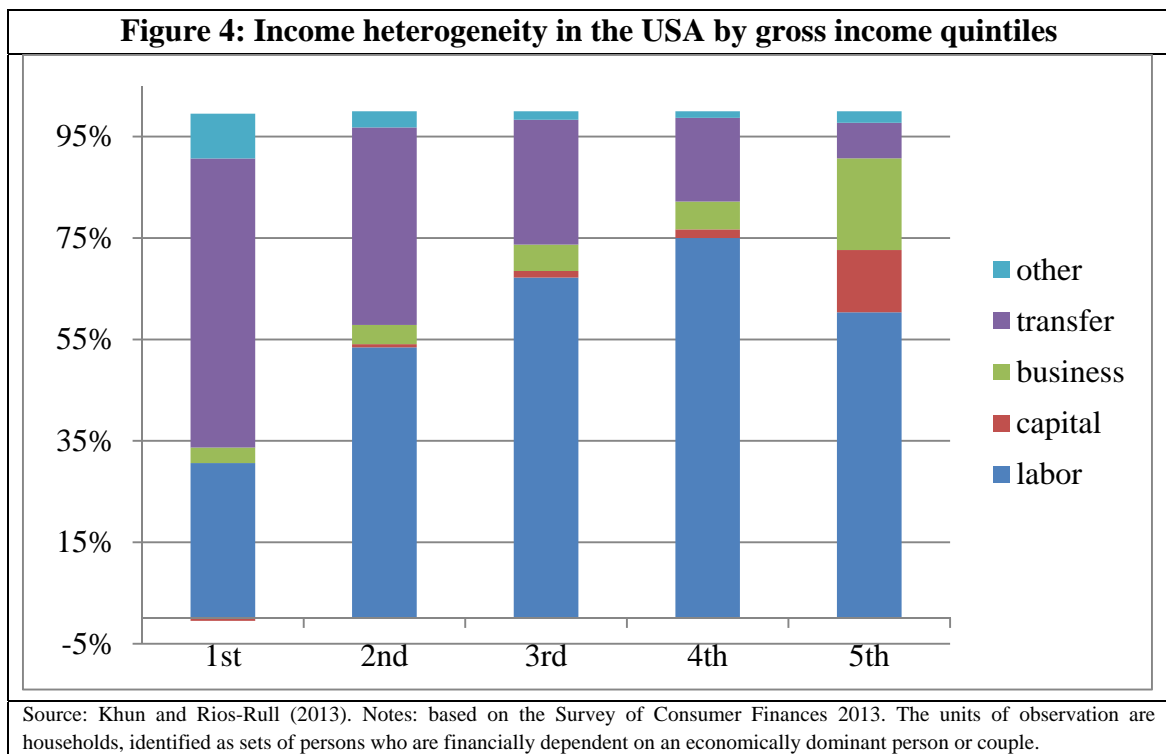
**Figure 2: Income share of top 1% (per cent of total gross income)**



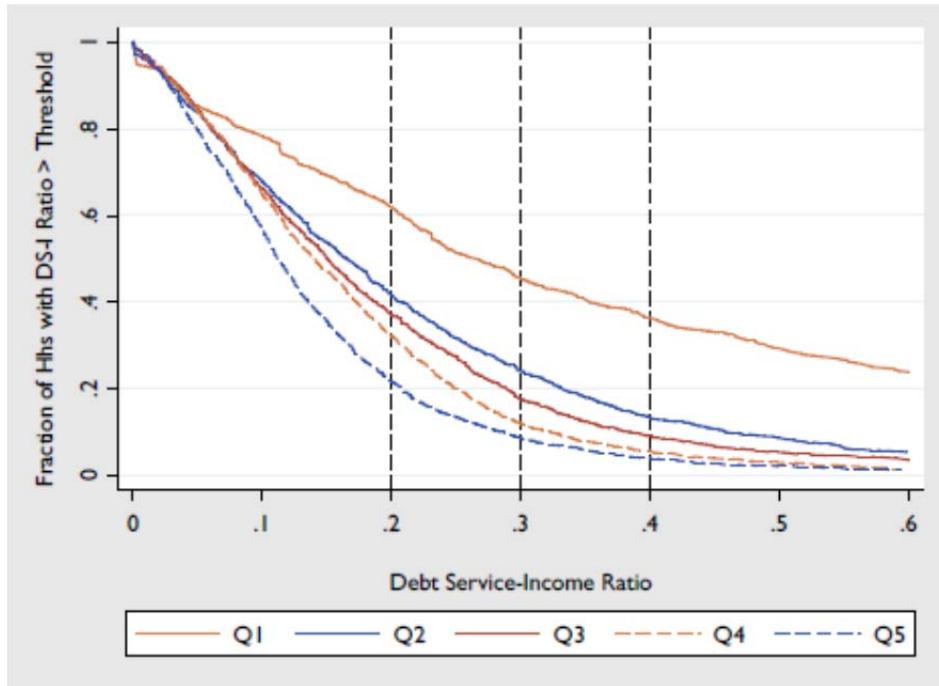
**Figure 3: Trends in overall income inequality, “within” and “between” countries**



Source: Lakner and Milanovic (2015). Notes: inequality is measured by the mean log deviation index. Overall income inequality (right axis) is obtained as the sum of within-country inequality (left axis) and between-country inequality (right axis).

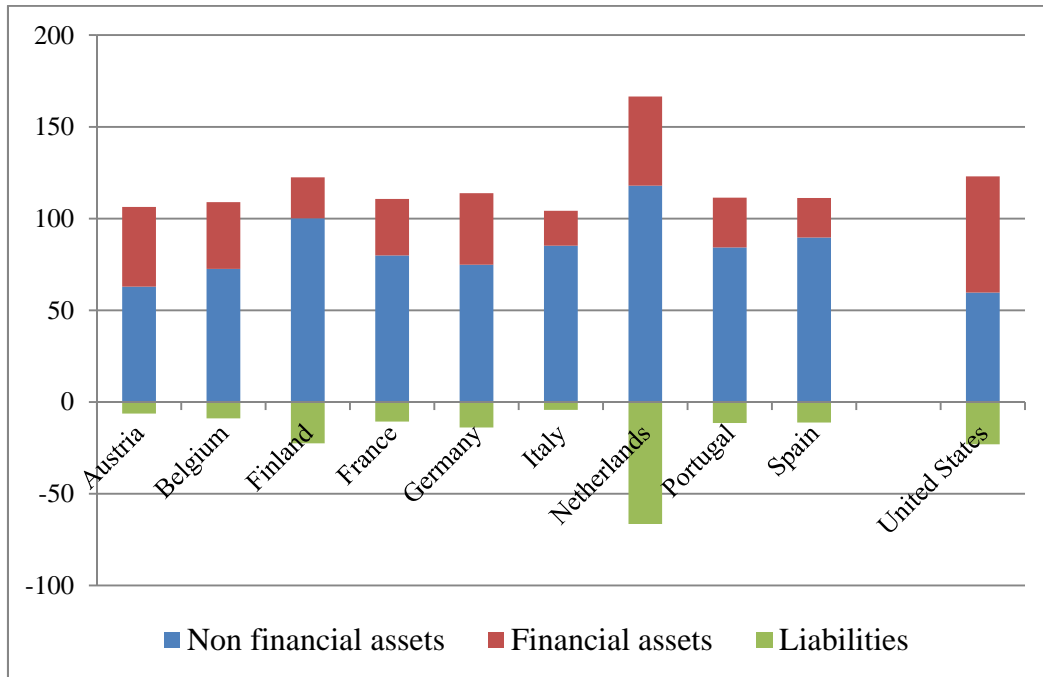


**Figure 5: Distribution of debt service-to-income ratio in the euro area by gross income quintiles**



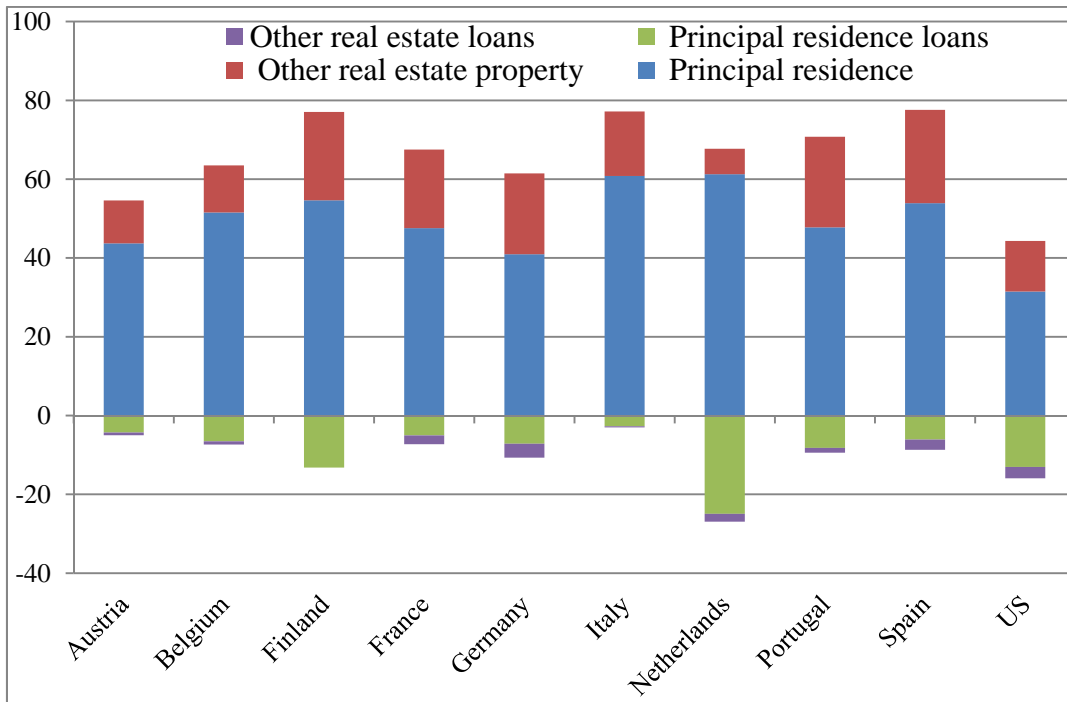
Source: Household Finance and Consumption Survey. Notes: The debt service-to-income (DS-I) ratio is the ratio of total monthly debt payments to gross monthly household income for indebted households. For each income quintile, Q1 to Q5, the vertical axis reports the fraction of households within the quintile whose DS-I ratio exceeds the value reported on the horizontal axis.

**Figure 6: Household portfolio composition (per cent of net worth)**



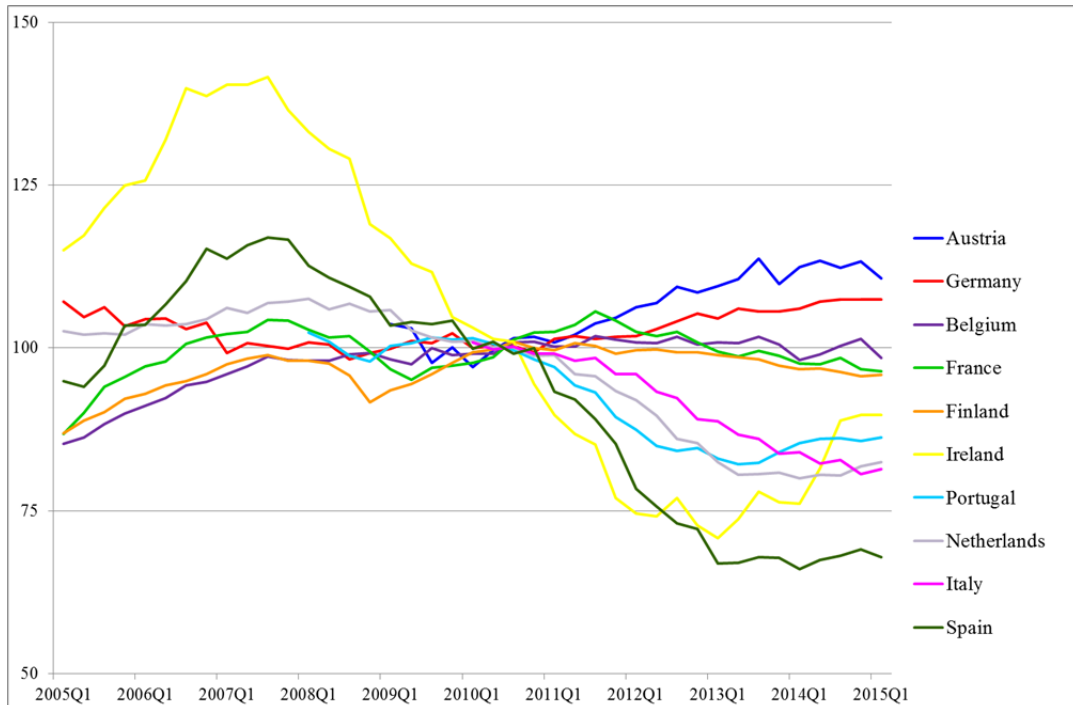
Source: OECD Wealth Distribution Database.

**Figure 7: Real estate assets and liabilities as share of total assets (%)**



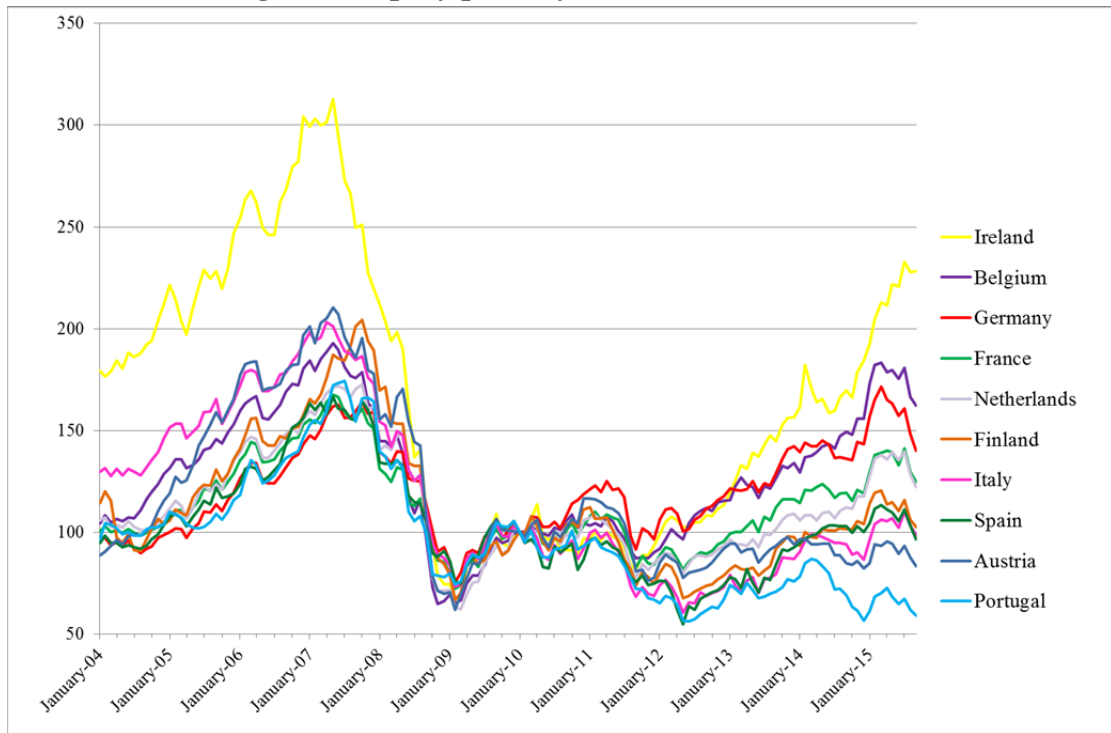
Source: OECD Wealth Distribution Database.

**Figure 8: House price dynamics in the euro area**



Source: Eurostat. Note: House price indices for new and existing dwellings, deflated by the private consumption deflator and normalised to 100 in 2010.

**Figure 9: Equity price dynamics in the euro area**



Source: Datastream. Note: equity price indices deflated by national consumer price indices and normalised to 100 in January 2010.