“Inequality and macroeconomic policies”

Intervention by Vítor Constâncio, Vice President of the ECB at the Annual Congress of the European Economic Association, Lisbon, 22 August 2017.

Ladies and gentlemen,

It is indeed a pleasure to participate in this timely discussion on the distributional impact of macroeconomic policies. For too long, the distribution of income and wealth was almost ignored by macroeconomics, perhaps — as Per Krusell recalled recently⁠¹ — because of the “presumption in the literature that the distribution does not matter in the determination of aggregates”. In the 90s there were some analyses underlying that the Kuznets phase of declining inequality had ended and also that it was no longer possible empirically to demonstrate that inequality favours growth ² However, the inclusion of distribution in macro theory was not pursued. A possible second reason for the neglect, could have been that income distribution was not a macroeconomic concern, as it was mostly explained by micro factor price theory with the consequence that at the macro level, “trickle-down economics” would be the right approach to economic policy.

These views were wrong and, naturally, the crisis shattered both presumptions.

First, the contributions of Mian and Sufi, Carroll or Muellbauer³ showed how relevant heterogeneities related to indebtedness, credit restrictions or

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²That literature is very well summed up in the book by Aghion, Philippe and Jeffrey Williamson (1998) » Growth, Inequality and Globalization: theory, history and policy “ Cambridge U.P.
marginal propensities to consume out of different sources of income or wealth, were important to explain aggregate consumption behaviour before and after the crisis. Since then, the Heterogenous Agents New Keynesian – HANK – class of models became an active area of research on the monetary policy transmission mechanism. The recent contribution of Ahn, Kaplan, Moll, Winberry and Wolf (2017) at the NBER Macroeconomics Annual Conference titled “When inequality matters for Macro and Macro matters for inequality” demonstrates how significant the feedback loop is and how models with realistic household heterogeneity better fit empirical consumption dynamics.

Second, the social and political aftermath of the crisis have shown how important distribution of income and wealth as an economic policy issue is. In this respect, the seminal empirical and policy contributions of Atkinson, Piketty, Saez, Milanovic and others, were very relevant to make the point as they analysed the dynamics of the distributions of household income and wealth, across many countries and over many decades. The shocking increase of inequality since the late seventies and the hollowing out of the middle class in many advanced economies, as showed in the famous “elephant graph” of Milanovic, have focused minds on developments in inequality. The striking developments can be seen in Table 1 from Alvaredo, Chancel, Piketty, Saez and Zucman (2017).
The data for the US from 1978 to 2015 show a cumulated decrease of 1% in the income of the bottom 50% of the population whereas the top 10% saw their income increase by 115% and the top 1% by 198%, a segment of the population that by 2015 owned 20% of income and 40% of total US wealth.

The numbers for France are significantly less unbalanced. In general, developments of inequality within European countries have been more subdued in recent decades than in other parts of the world. Chart 1 shows this by depicting the evolution of income inequality, measured by the Gini coefficient on household disposable income.\(^8\)

\(^8\) The Gini coefficient is a commonly used measure of inequality: a value of 0 reflects a completely even distribution, while a value of 1 represents a complete inequality. Disposable income is after taxes and public transfers. Equivalised disposable income means disposable income corrected by household size. For the correction, net household income is divided by the number of “equivalent adults” with a weight of 1 for the first adult, 0.5 to any other member over 14 and 0.3 for other household members under 14.
The first key fact shown in the chart is that, while income inequality has been steadily rising since the 1970s in the US and the UK, it has been quite stable in continental Europe or even declining as in France and Italy. In particular, since the 1990s the Gini coefficient has been relatively stable in the European countries.

Equally important, the chart documents that the bulk of the dynamics in inequality is driven by low-frequency developments driven by structural and institutional factors, rather than by shocks at the business-cycle frequency.

Chart 1 uses disposable income which hides the much higher inequality associated with the distribution of income before taxes and transfers. To illustrate this point, Chart 2 from Wang and Caminada (2014)\(^9\) shows that difference and the fact that the fiscal systems of European countries dampen income inequality substantially more than those in other countries: in Europe, the difference between the Gini coefficient on market (gross) and disposable (net) income is almost 20 percentage points, more than twice the difference in other countries.

Chart 2: Fiscal redistribution of income in the EU and other countries


Note: The chart shows the extent of the fiscal redistribution as given by the difference between the Gini coefficients on market (gross) income and disposable (net) income.

The slow-moving nature of inequality is also confirmed with the more recent survey data from the Eurosystem Household Finance and Consumption Survey (HFCS). Chart 3 summarises the euro area distributions of household income and net wealth since 2010.

Chart 3: Income and net wealth inequality in the euro area

Source: Eurosystem Household Finance and Consumption Survey, waves 1 and 2.

Note: The chart shows gross household income and net wealth per household, defined as the sum of total assets net of total liabilities.

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10 Net wealth is the sum of financial and real assets, net of total liabilities.
Both the distribution of income and the distribution of household net wealth remained stable. For example, the Gini coefficient on net wealth increased only modestly, from 68.0% in 2010 to 68.5% in 2013. Similarly, the share of the top 5% of households on total net wealth remained between 37% and 38%.

Based on the evidence mentioned above, one could already draw some tentative implications for monetary policy. First, given the slow-moving nature of inequality, one could argue that the prevailing monetary policy regime, defining long term goals, is likely to be the most important factor through which central banks may influence the distribution of income and wealth. For example, the conquest of inflation in countries going through prolonged experiences of high inflation is arguably an important factor contributing to the reduction in inequality.

The second tentative implication is that, for a given monetary policy framework committed to a low inflation regime, the specific measures adopted to respond to cyclical developments are unlikely to significantly alter inequality.

It is useful to bear in mind these considerations when discussing a topic that has recently received much attention in the public debate, i.e. how non-standard monetary policies, such as those undertaken in the recent years by the European Central Bank, affect the welfare of individual households. More specifically, to what extent non-standard monetary policies affect wealth inequality and income inequality in the short- and medium run? Which households benefit from those policies and how much?

Despite the two tentative conclusions above, I do not intend to simply brush aside this debate. Indeed, while measures such as the top shares and Gini coefficients are important to consider when thinking about inequality, they can sometimes mask specific dimensions of household heterogeneity, such as those along demographic or socioeconomic characteristics, which can be investigated in data from household surveys (containing additional information beyond the data on income). For example, it is possible to analyse to what extent not only the Gini coefficients, but also income and
wealth of individual households react to changes in the unemployment rate or to increased growth of wages and asset prices.\textsuperscript{11}

Let me provide some new empirical evidence on this topic based on ongoing work at the ECB by Lenza and Slacalek\textsuperscript{12}. More specifically, they quantified how the ECB’s recent Asset Purchase Programmes (APP) affected the income and wealth of individual households in the four largest euro area countries, combining aggregate and household-level data.

First, they estimate the effects of the ECB’s unconventional monetary policy on components of household income and wealth using a Bayesian vector autoregression (VAR) which includes variables that affect wealth – house and stock prices – and variables that affect income – the unemployment rate and wages.\textsuperscript{13}

The APP shock is identified by assuming (i) that it affects the term-spread on impact, without leading to a change in standard monetary policy over the full sample\textsuperscript{14} under analysis (which spans three years) and (ii) that it has a positive effect on the real economy, on impact.\textsuperscript{15} The shock is scaled


\textsuperscript{13} The VAR is estimated by means of Bayesian techniques over the sample 1999Q1 – 2016Q4, and it includes 25 variables (GDP, GDP deflator, the unemployment rate, wages and house prices for Germany, France, Italy and Spain, the short-term interest rate, long-term interest rate and stock prices for the euro area and GDP and the short-term interest rate for the US). The model estimation follows the approach described in Giannone, D., M. Lenza, and G. Primiceri (2015): “Prior Selection for Vector Autoregressions.” Review of Economics and Statistics 97 (2): 436–51.

\textsuperscript{14} The endogenous reaction of standard monetary policy that is hardwired in the euro area data is switched off by means of a sequence of standard monetary policy shocks that is calibrated to zero out the reaction of the short-term interest rate to the improvement of the economic conditions in the euro area implied by the unconventional monetary policy shock.

to reduce the term-spread by 34 basis points, which is the estimated level of the impact of the announcement of the December 2016 APP package on the euro area 10-year bond rates.

The VAR estimated for the four largest euro area countries shows a degree of heterogeneity across the countries that can be taken as representative of the dispersion that would be found in all other euro area countries (see Chart 4).

Chart 4: Effects of ECB’s Asset Purchase Programme on household income and wealth components

Chart 5 below shows the four countries’ average reaction of the relevant variables (house and stock prices, unemployment and wages), four quarters after the impact of the APP shock.\(^\text{16}\)

\(^{16}\) Chart 5 shows impulse responses averaged across the four countries (Germany, Spain, France, Italy). The point estimates shown in the chart are subject to estimation uncertainty; standard errors are not shown.
Chart 5: Effects of ECB’s Asset Purchase Programmes on asset prices and macroeconomic variables

The APP purchases are estimated to increase house prices by more than 1% and stock prices by 0.8%. As for the variables, which affect household income (in the bottom two panels): the unemployment rate declines by roughly 0.7 percentage points, while wages rise somewhat.\(^{17}\)

In the second step, these aggregate results are combined with household-level data to estimate the effects of monetary policy on individual households. The HFCS provides detailed household-level data on income and wealth, but so far only for two waves. However, since the bulk of the effect on wealth occurs via asset prices, we can assume that the response of individual wealth components to the APP after four quarters mirrors the response of asset prices at that horizon.\(^{18}\) The assumption seems acceptable given the short horizon we are considering and given the

\(^{17}\) The effects of the APP turn out to differ somewhat across the four countries. For example, house prices increase substantially more in Spain than in Germany, while the unemployment rate declines strongly in Spain.

\(^{18}\) We assume house prices affect the value of the household main residence and other real estate; stock prices affect the value of shares and self-employment business wealth.
empirical evidence on the sluggishness of adjustment of holdings of real and also financial assets in household portfolios.\textsuperscript{19}

As for \textbf{net wealth}, Chart 6 shows that the effects of the APP on household wealth are very modest across its distribution:

\textbf{Chart 6: Effects of Asset Purchase Programs on the wealth distribution}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Growth_of_Median_Net_Wealth_by_Wealth_Quintile}
\caption{Growth of Median Net Wealth by Wealth Quintile}
\end{figure}

Source: ECB calculations, Eurosystem Household Finance and Consumption Survey.
Note: The numbers in brackets show initial median net wealth levels. Euro area aggregates are calculated as the total for the four large countries: Germany, Spain, France and Italy.

Most quintiles increase by around 1%. The median net wealth in the lowest quintile increases by 2.5% from a rather low level, from EUR 1120 to EUR 1150 and can in part be driven by the leverage of the households. Similarly, the Gini coefficient on net wealth barely changes – it ticks down from 68.09 to 68.07.\textsuperscript{20}

These results appear to be fully in line with my previous considerations based on the long-run evolution of inequality measures.

Another way of illustrating why the effect of APP on wealth distribution does not seem to have been significant, is provided by the analysis in Adam and

\begin{itemize}
\item \textsuperscript{20} If we turn off the effect of monetary policy on house prices, the median net wealth in the top quintile increases most and the Gini coefficient rises to 68.14.
\end{itemize}
Tzamourani (2015)\textsuperscript{21}. They use the euro area average wealth composition by asset classes taken from the HFCS, and simulate the effects on the wealth distribution of an arbitrary increase of 10% in the prices of each asset class: housing, equities and bonds. The results are shown on Chart 7, taken from their paper.

**Chart 7: Capital gains across Euro Area net wealth groups**

The chart shows that the effect of housing prices on wealth dominates the impact both of equities or bonds. It also illustrates that changes in housing prices reduce inequality in wealth distribution. Bond price increases are fairly neutral and equity price variations aggravate inequality but their effect is smaller than the one from housing prices, at the euro area level.

The overall effect of APP on wealth distribution in the four countries analysed for the recent period in Chart 6 should therefore not come as a surprise.

Let me now discuss how the effects of APP on income of individual households are estimated. The impulse responses give information about the aggregate response of the intensive (wages) and the extensive (unemployment) margin.

To distribute the decline in the unemployment rate across households depending on their demographics (such as age, education, marital status and the number of children), a probit model is estimated at the country level with the employment status as the dependent variable. Such a model captures some heterogeneity in the probability of employment across households. The fitted values from the probit model, are then used to run a simulation that distributes the aggregate decline in unemployment across households. Chart 8 compares the changes in the unemployment rates across income quintiles.

Chart 8: Effects of Asset Purchase Programs on employment

Source: ECB calculations, Eurosystem Household Finance and Consumption Survey.
Note: The numbers in brackets show initial unemployment levels in percent. Euro area aggregates are calculated as the total for the four large countries: Germany, Spain, France and Italy.

The key point to note is that households with lower income are at any point in time substantially more likely to be unemployed and that their employment status also tends to react more significantly to monetary policy impulses. The aggregate decline in unemployment following the APP disproportionately impacts groups with a higher share of the unemployed, such as those in the lowest income quintile. The effect is economically

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23 For each unemployed individual a uniformly distributed random number is drawn. If that number lies sufficiently below his/her fitted value, then the individual becomes employed. The simulation is undertaken in such a way that the aggregate number of newly employed people is equal to that implied by the aggregate decline in unemployment (estimated using the VAR for each country).
24 The probit model also implies a second, dampening effect, whereby the probability of employment for the households in the lowest income quintile is lower than for others. However, this effect is relatively small compared to how disproportionately the unemployed are represented in the lowest quintile.
important as in that quintile unemployment rates drop by more than 2 percentage points. For the remaining income quintiles the drop in the unemployment rates does not exceed 0.5 percentage points.

These changes in the employment status affect the distribution of income and, overall, tend to compress income inequality. This result confirms that from the distributional perspective, the main impact of expansionary monetary policies is on the reduction of unemployment with positive effects on the reduction of inequality.

The positive overall effect of unemployment reductions and wage increases on the income distribution is shown on Chart 9. The mean income in the lowest quintile increases by almost 3.5%, which is substantially higher than the impact in the rest of the distribution. These changes have effects on the income distribution with the Gini coefficient on income declining from 43.1 to 42.8.

Chart 9: Effects of Asset Purchase Programs on the income distribution

In conclusion, let me summarise these findings in two main points.

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25 We account for two channels of the effect of the APP on income. First, the newly employed households receive a wage determined by estimates from a Heckman selection model. Second, all employed households receive an increase in their labour income proportional to the change in wages shown in Chart 5.
First, the effects of monetary policy on aggregate measures of inequality, such as the Gini coefficient are rather modest, compared to the low-frequency dynamics of these indicators over the past several decades. This is more the case for household wealth than for income. In particular, non-standard monetary policy measures can have substantial income (and employment) effects for subgroups of households such as the unemployed. Those measures can improve their welfare and contribute toward reducing income disparities, at least in the short-term.

Second, the low-frequency dynamics in inequality is more likely affected by structural and institutional factors, such as skill-biased technological progress, economic globalisation and changes in the progressivity of fiscal systems. In this context, those drivers may very well aggravate the situation as a result of further technological developments in Artificial Intelligence and robotisation. The hollowing out of the middle class and the increasing polarisation of incomes in the labour market will presumably continue unabated. Education promotion or the introduction of a Universal Basic Income will not change that trend.

The Kuznets' hypothesis, stating that as development progresses inequality first increases and then starts decreasing as income grows, was confirmed until the 1970s with inequality decreasing since 1918. The increase of inequality since the seventies however, has disproved the hypothesis. A subsequent Kuznets' inequality decline phase, with the same causes of the first (higher taxes and transfers, wars, revolutions, hyperinflation and nationalizations) seems quite unlikely at present. On the other hand, according to Atkinson, Piketty or Milanovic, effective changes would require interventions at the level of market results by operating changes in endowments, which seem unlikely to happen. Indeed, the type of measures they refer to could include wealth taxes, meaningful inheritance taxes, Employee Share Ownership Plans (ESOPs) and share distributions, birth endowments in the form of financial assets, for

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26 As it’s well known hypothesised that at begining of significant economic development, inequality favours growth, but as income grows to higher levels inequality starts to decline. It correspond to the famous Kuznets inverted U with two legs, one from mid XIX century to 1914 and the second one showing decline until the 70s. See Kuznets, S. (1955) „Economic growth and income inequality“ American Economic Review 45, 1-28
27 ESOPs or Employee Share Ownership Plans, involved in 2014 already 14 million American workers (see the National Center for Employee Ownership www.nceo.org)
example. Most of these are seen by many economists as distortions detrimental to economic efficiency. Usually, this concept refers to potential Pareto improvements occurring when the income winners could compensate the losers, even if they do not do it. These are usually referred to as “welfare enhancing” consequences which, obviously, do not include any considerations about distribution while pretend to be the basis of “scientific” economic advice.

Maybe the normative word “welfare” in this narrow sense is an ambiguous misnomer that we should no longer use. This does not imply that economists should stop giving advice on economic efficiency and growth which are of course essential to reduce poverty and inequality. At the same time, we should always be aware that all policies involve trade-offs and have distributional consequences, which is many times forgotten or concealed. On this point, addressing in 1973 the American Economic Association Annual Meeting, in a lecture about Thorstein Veblen, Kenneth Arrow reminded us that: “The world is indeed full of injustices and the writings of economists full of attempts to disguise them". Unfortunately, this has continued to hold true for a long time but, hopefully, much has started to change over the last few years, in the aftermath of the crisis.

Thank you for your attention.

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28 A more pessimistic view is expressed by the historian Walter Scheidel in his recent book « The great Leveler: violence and the history of inequality from the Stone Age to the Twenty-first century»., The Princeton Economic History of the World, Princeton UP, 2017. He thoroughly documents the view that in history only catastrophes, wars, revolutions, nationalisations and other similar ways of destroying the wealth originated reductions of inequality. The Kuznets’ phase of declined inequality, from 1914 to 1970, included in fact two worlds wars, the cold war and a period of highly progressive taxation.

References


