



Rising income inequality: do not draw the obvious conclusions

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Inequality is dominating the political debate in various countries still characterised by sluggish economic recovery and high unemployment even several years after the financial crisis. In this note we look at trends, drivers and solutions.

Four points stand out from the trends. First, global income inequality has increased over the last three decades. Emerging Markets (EM) dominated the increase and today the levels of income inequality are broadly the same between the Advanced Economies (AE) and EM. Second, the integration of the EM into the global economy has allowed aggregate income levels to converge towards AE levels, lifting millions out of poverty. However, income redistribution has not been sufficient to prevent an increase in EM income inequality. Third, the AE have been better able to control income inequality via redistribution. Nevertheless, the majority in AE perceives income and wealth as being unfairly distributed and social fairness as diminished. Fourth, aggregates can be deceptive. The AE with the highest income inequality are the US and UK. Among the more populous EMU countries it is Portugal, Greece, Italy and Spain.

We show that the drivers of higher income inequality from 1995-2013 were globalisation, technological change and migration. A higher minimum wage reduces income inequality. However, this result should be treated with caution, as a high minimum wage pushes up the unemployment rate in the medium/long-term, which increases income inequality and has potentially long-lasting negative effects on workers who lose their jobs. The effect of the recent expansionary central bank policy on income inequality is unclear. Finally, we show that GDP growth and changes in income inequality are negatively correlated.

Rising income inequality is associated with globalisation, technological change and migration. At the same time they have had an undeniably positive impact on aggregate income. The policy dilemma is in resolving the tension between the increase in income and its unfair distribution. The appropriate response would be to alleviate the social costs of the globalisation etc rather than lean against the aggregate economic benefit. The strong response would be to push forward with globalisation while at the same time underwriting the prospects of the most vulnerable sections of society to benefit with improved education and labour market policies.

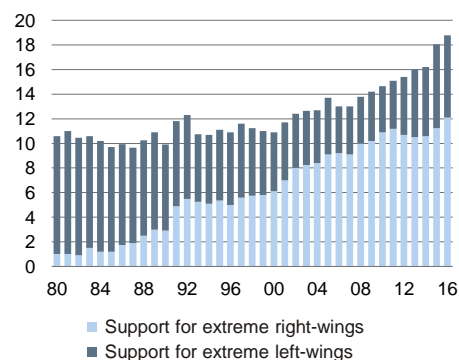


Rising income inequality

Support for populist parties on a notable uptrend since 2000 in Europe

1

% of total votes



Sources: TIMBRO (<http://timbro.se/en>), Deutsche Bank Research

Global income inequality data

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The Standardized World Income Inequality Database (SWIID)* provides cross-national income inequality estimates from 1960 to date with maximum comparability across 176 countries. The SWIID incorporates data from several income inequality and socio-economic databases, which are standardized to the Luxembourg Income Survey database (LIS)**. For our analysis we use the gross and net Gini index ranging from 0 (perfect equality) to 1 (maximum inequality: all income is held by one household). The gross index is the sum of the net household income and taxes and transfers. In the LIS, to which the source data is standardized, household income comprises labour and monetary capital income while transfers can be from public (social security, assistance and contributions) or private sources. It does however exclude non-monetary income from capital and non-monetary universal transfers from government. Although the SWIID partly overcomes the problem of cross-national incomparability, several limitations – especially of estimates for developing countries – remain. This is due to the lack of data for these countries, resulting in Gini estimates partly being based on regional averages.

* See for details Solt, F. (2016). *The Standardized World Income Inequality Database, Social Science Quarterly* 97, SWIID Version 5.1, July 2016.

** Luxembourg Income Study Database, Cross-National Data Center in Luxembourg.

Populist parties drawing their strength by taking advantage from fear of social decline blaming globalisation and migration

Inequality is currently a hot topic dominating the political agenda in various countries many of which are still characterized by a sluggish recovery and continuing high unemployment rates, especially for the youth. According to the ILO the global youth unemployment rate is expected to increase to over 13% this year, which is only slightly below the historic peak of 13.2% in 2013. A vast majority of the population in Germany, the EU and the US believes that income and wealth are unfairly distributed and that social fairness diminished in the past years.¹ In the EU more than four out of five people express the desire for governments to make sure that the wealth of the country is more fairly distributed and for people who are well-off to pay higher taxes in order for their government to have more means to fight poverty.² Two third of the US population think the government should work to substantially reduce the income gap between the rich and the poor.³

Primarily globalisation and migration are blamed by the public and populist politicians alike as decisive factors explaining the rise in inequality. It often leads to the mainstream conclusion that turning back globalisation and giving labour mobility a push back would be the appropriate political response. Also the extreme expansionary stance of central banks in recent years is blamed for increasing inequality by benefiting foremost the wealthy. Populist parties are taking advantage of the fear of social decline and the influx of foreigners, blaming globalisation and migration as scapegoats for various problems. These factors possibly played a larger role in recent political events explaining the outcome of the UK referendum in favour of Brexit and the US presidential election victory of Donald J. Trump.

Populist parties typically support wishful thinking that a more nationalistic-oriented economy could increase living standards turning their country in a land of milk and honey. We are clearly opposing this simplifying of arguments that are neglecting the huge benefits of a broader globalisation including freer movement of goods and workers across borders.

Wealth of evidence supporting positive impact of globalisation, technical change and labour migration in aggregate

There is a wealth of evidence showing that on the whole consumers and corporations of countries opening up to trade largely benefit via an increase of their living standards. Purchasing power of consumers shoots up due to lower prices and they enjoy a broader range of quality goods and services. For corporations trade diversifies risks as they are less dependent on the development of the domestic market and as, via trade, resources are channelled to where returns are highest. Furthermore, corporations typically profit from lower prices as a consequence of available imports of intermediates. Higher trade openness also facilitates competition, investment and increases productivity.⁴ According to OECD calculations, a reduction of trade barriers by

¹ The Institut für Demoskopie Allensbach (2013) Was ist gerecht? Gerechtigkeitsbegriff und -wahrnehmung der Bürger; Gallup (2014), In U.S., 67% Dissatisfied With Income, Wealth Distribution, 20 January 2014.

² Special Eurobarometer 370 (2011) Social Climate; Special Eurobarometer 355 (2010) Poverty and Social Exclusion.

³ CNN | ORC Poll, 31 January - 2 February 2014.

⁴ Corporations can additionally boost their competitiveness by dividing up value chains and outsourcing parts of the value chain to other countries (global value chains), either by establishing subsidiaries, acquiring stakes in foreign companies or contracting third parties. See Peters, H.



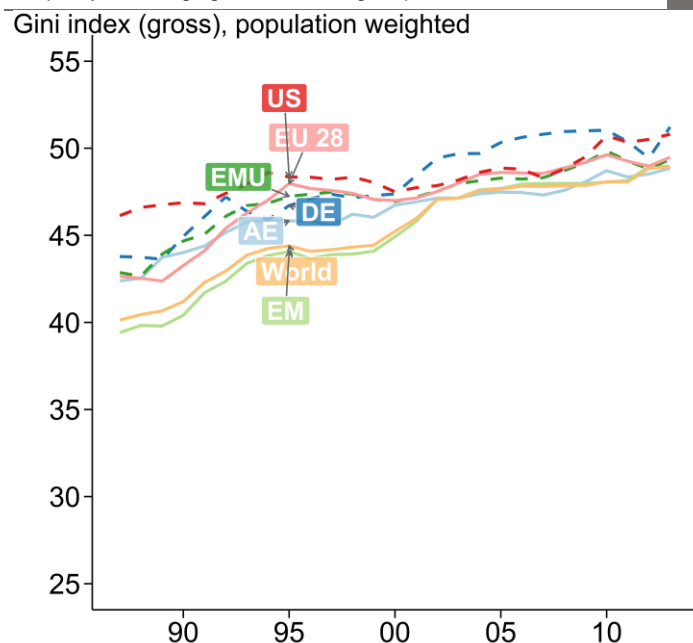
Rising income inequality

50% in the G20 economies would create additional jobs (0.3 to 3.3% for lower-skilled workers; 0.9 to 3.9% for higher-skilled workers), increase wages (1.8% to 8%) and boost exports (up to 20%).⁵

On balance, labour migration has a positive effect on the labour market, the fiscal position and on economic growth of the host country. Regarding the labour market situation migrants are typically filling niches of the economy and contribute significantly to labour market flexibility especially in host countries with relative inflexible labour market regulations such as in Europe. Migrants' contribution to the social security systems is generally positive, which is higher if more migrants are employed. Migration further boosts economic growth as the share of the working-age population usually increases since migrants are typically relatively young. They contribute to human capital formation with their skills and thereby to technological progress.⁶ Given the strong ageing dynamics that we expect to see in many countries - especially in Advanced Economies – over the next decades, migration has the potential to significantly reduce the demographical challenges foremost in countries with a pay-as-you go pension system.

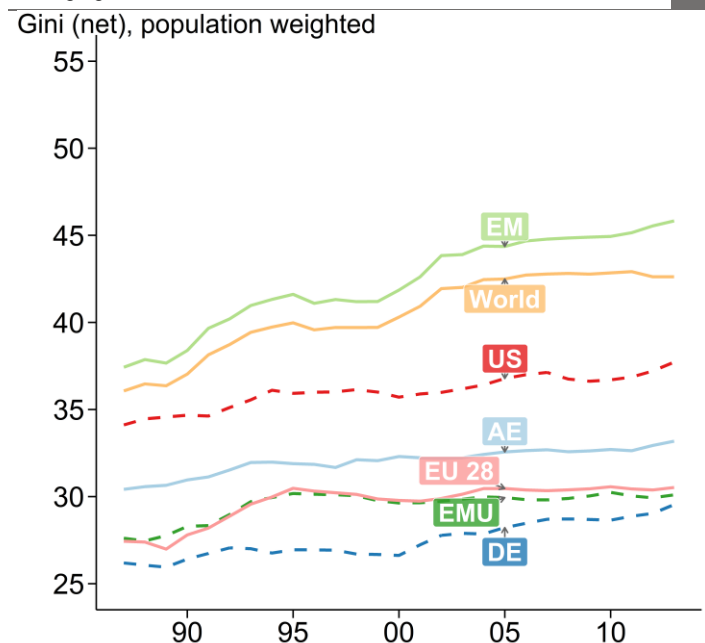
Despite all these benefits at the country level, specific sectors, regions or group of workers may be negatively affected by the increased competition from trade and migrants. It could raise the inequality of household income by exerting a negative effect on the weakest group of the population, leaving them behind. Additionally, although not often mentioned in the public debate, technological process could increase income inequality if it would cause a preference for skilled over unskilled labour. However, as clearly highlighted in the literature, technical progress is also one of the major determinants of economic growth by increasing productivity and competition.⁷

Global gross income inequality shoot up over the past 30 years:
Inequality in Emerging Markets stronger up vs. Advanced Economies **3**



Sources: SWIID Version 5.1, IMF, Deutsche Bank Research

Net income inequality in Advanced Economies far lower compared to
Emerging Markets **4**



Sources: SWIID Version 5.1, IMF, Deutsche Bank Research

(2013) Global value chains secure competitive advantages for German companies, Focus Germany, 1 July 2013, Deutsche Bank Research.

⁵ See OECD (2011) Trade Liberalisation: boosting employment and growth; OECD (2011) The Impact of Trade Liberalisation on Jobs and Growth: Technical Note, OECD Trade Policy Papers No. 107; OECD (2009) International Trade: Free, Fair and Open?; IMF (2008) Globalization: A Brief Overview, IMF Issues Brief.

⁶ OECD (2014) Migration Policy Debates, May 2014.

⁷ See for example OECD (2007) Innovation and growth: rationale for an innovation strategy.



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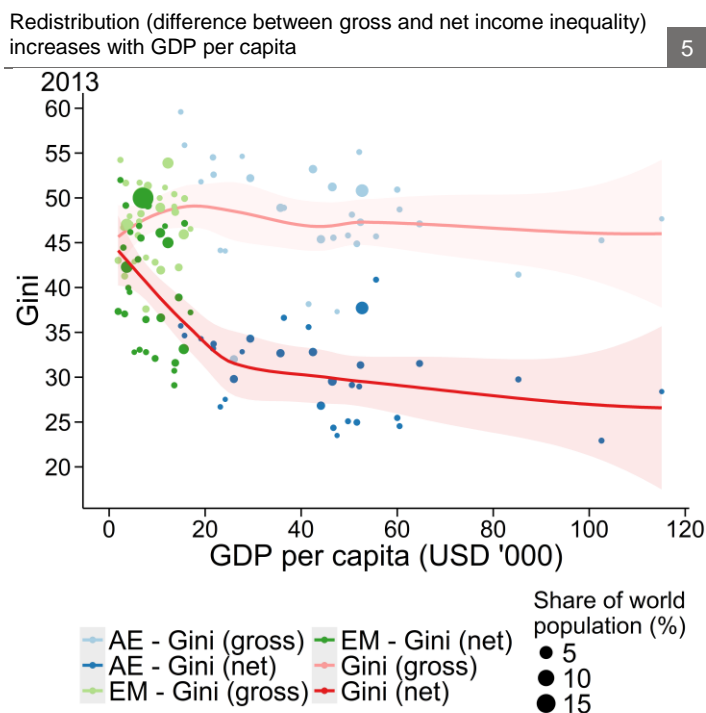
Since globalization, technological change and migration have strong positive effects on the economy, economic policy measures have to make sure that the potential losers are getting their share of the additionally created wealth so that the whole population benefits. In the past, policymakers did however not give enough attention to this issue.

In the following, we are analysing in depth the development of global income inequality of gross and net incomes (= gross incomes less taxes and transfers) of households using the Standardized World Income Inequality Database (see side note on page 2 for more details) covering 176 countries. We will also study the drivers of inequality, its effect on economic growth and ways to make sure that the weakest of the population are taken along. We use the Gini coefficient as inequality measure, which ranges from 0 (perfect equality) to 1 (maximum inequality: all income is held by one household) and is commonly used to pin down the inequality of a distribution into one number.⁸

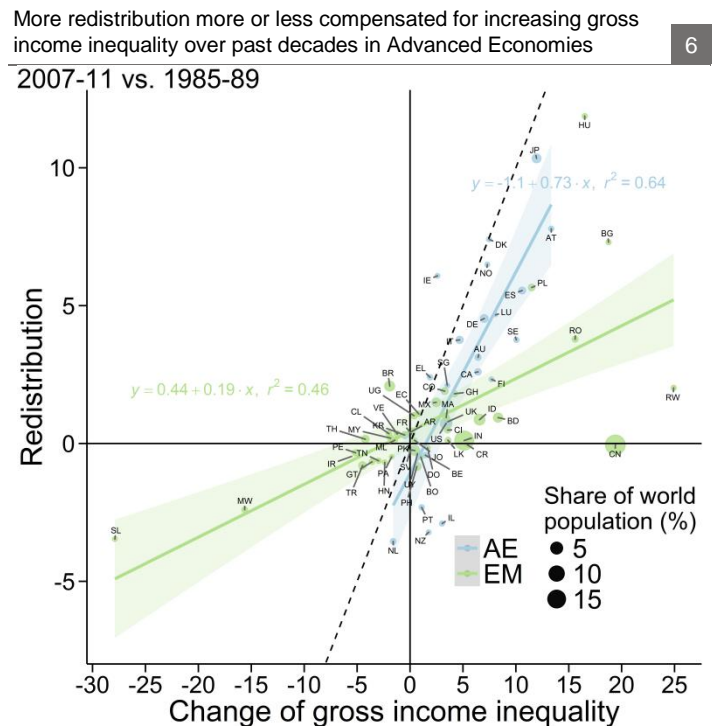
Global gross income inequality jumped over past 30 years with Emerging Markets closing the gap to Advanced Economies

Global inequality of gross incomes increased strongly over the past three decades for both Advanced Economies and Emerging Markets. While inequality in Emerging Markets was lower compared to Advanced Economies at the end-of-the 1980s (39% vs. 42%), it ever since increased stronger in Emerging Markets. Today gross income inequality in Emerging Markets and Advanced Economies are more or less the same with a Gini coefficient of slightly less than 50%.

Between countries, however, gross income inequality differs widely: in 2013 the Top-5 countries with the highest inequality were Latvia (60%), Lithuania, Ireland, Cyprus and Portugal (55%) and the five countries with the lowest inequality were South Korea (32%), Iceland, Venezuela, New Zealand and Sri Lanka (41%).



Sources: SWIID Version 5.1, IMF, Deutsche Bank Research



Sources: SWIID Version 5.1, IMF, Deutsche Bank Research

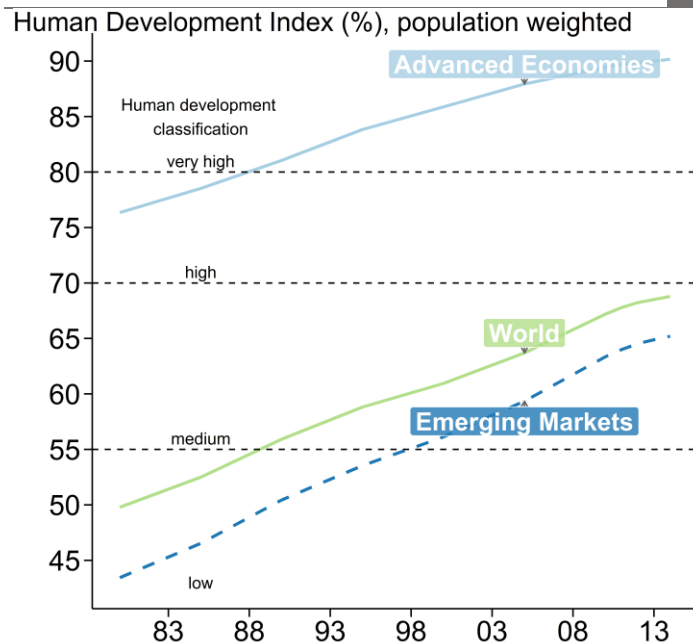
⁸ Lorenz, M. O. (1905) Methods of Measuring the Concentration of Wealth, Publications of the American Statistical Association, 70 (9), p. 209-219.



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Constantly increasing Human Development Index

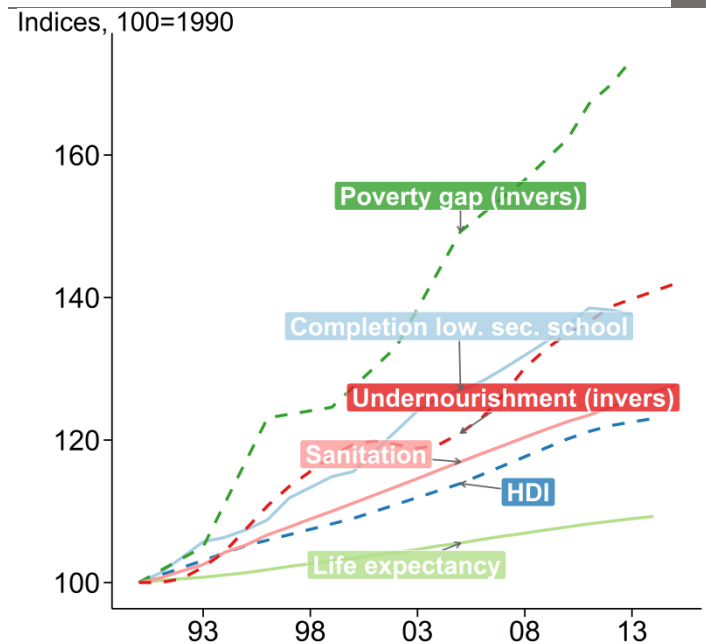
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Sources: UNDP, IMF, Deutsche Bank Research

Reduced poverty and better living conditions in the World

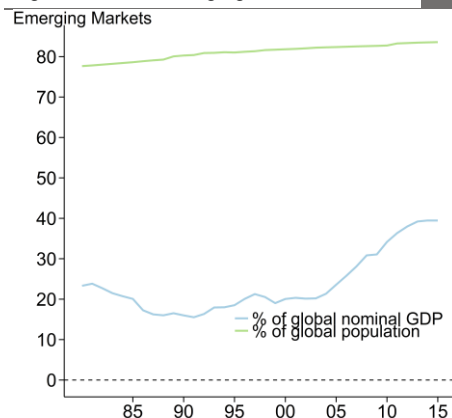
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Sources: UNDP, IMF, World Bank, Deutsche Bank Research

Significance of Emerging Markets

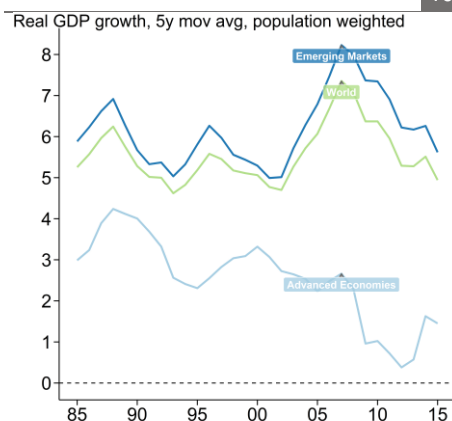
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Sources: IMF, Deutsche Bank Research

Emerging Market's growth rates higher than in Advanced Economies

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Sources: IMF, Deutsche Bank Research

As countries are moving up the income ladder, redistribution measures to finance, for example, a social system or public transfers protecting the weaker members of society are usually expanded. As a consequence inequality of net incomes is significantly lower in wealthier countries. This can be seen in figure 5: the gap between gross and net income inequality is widening with a higher level of GDP per capita. In 2013 the gap between gross and net income inequality was on average 16pp for Advanced Economies – highlighting their well developed social security systems – and only 3pp for Emerging Markets. Contrary to the development of gross income inequality, the dispersion of net income inequality between Emerging Markets and Advanced Economies increased further over the past decades (figures 4 and 6).

In Advanced Economies higher redistribution – the difference between gross and net income inequality used as proxy – compensated to a large extent for the increase of gross income inequality between the periods 1985-89 and 2007-11 as can be seen by the higher slope of the simple linear regression line for Advanced Economies (figure 6). This simple correlation for the sample of Advanced Economies indicates that an increase of the gross income inequality by 10pp only increases net income inequality by about 2½pp. For Emerging Markets, instead, an increase of the gross income inequality by 10pp pushes up net income inequality by about 8pp. Consequently, the rise of net income inequality was far lower than the rise of gross income inequality. In contrast, redistribution in Emerging Markets was increased by far less than gross income inequality went up. Here China seems to be an extreme case as gross income inequality increased by 20pp to over 50% while redistribution remained unchanged implying an equally large jump in net income inequality.

Higher inequality in Emerging Markets, but more than 1 billion persons lifted out of extreme poverty over past decades

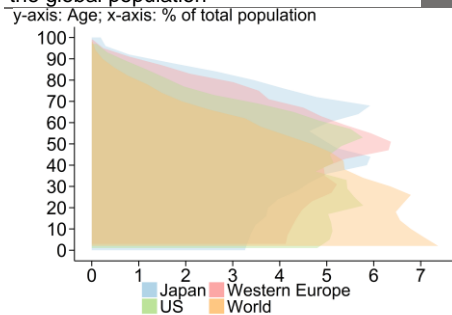
As highlighted before, in Emerging Markets, which account for 83% of the world population and almost 40% of global nominal GDP, income inequality increased strongly over past decades. However, thanks to the catching up of several Emerging Markets and their integration into the global economy, especially of



Rising income inequality

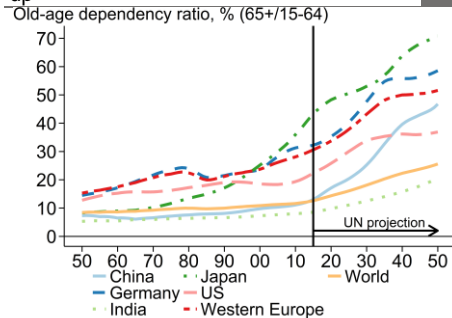
China, millions have been lifted out of poverty. Despite continuing high poverty rates in Sub-Saharan Africa (41%) and South Asia (15%), global poverty has been declining for almost three decades. According to the World Bank, by 2013 an estimated 1.1 billion people had been lifted out of extreme poverty since 1990.⁹ During that period the global poverty rate at USD 1.90/day declined from 35 to 11% (or 766 million) of the world population. The remarkable rise of China reduced the poverty rate in East Asia and Pacific from 60% in 1990 to 4% in 2013 (China: 67% in 1990; 2% in 2013). Equally significant was the drop of the poverty gap, which measures the extent to which individuals fall below the poverty line. It indicates that also the size of income shortfall of the extremely poor was decreasing.¹⁰ Alternative measures as for example the Human development Index¹¹ – which summarises key dimensions of human development: a long and healthy life, being knowledgeable and a good standard of living – improved significantly over past decades (figures 7 and 8). Nonetheless, the further reduction of poverty remains a major objective for many Emerging Markets.

Japan's population is very old compared to the global population



Sources: UN, Deutsche Bank Research

Old age dependency ratio to shoot further up



Sources: UN, Deutsche Bank Research

Redistribution mostly in Advanced Economies

In contrast to Emerging Markets, in Advanced Economies essential goods for basic needs – as for example housing and food – are broadly available for every citizen, which is why there is a greater focus on the social participation/ recognition – for example that with the help of transfers the most vulnerable in society are able to participate in leisure activities and are able to pay for all school related payments for their children – and on social issues such as inequality of incomes and wealth. To put it pointedly: While the primary focus in most poor Emerging Markets is for the weaker part of the population to find a job generating enough income to avoid malnutrition, the focus in Advanced Economies is to find a job of prestige and “good quality”. In the latter social security systems often provide housing, food, social participation and health protection for the weakest groups of the society.

As we already showed above, redistribution reduced income inequality to a large extent in Advanced Economies, but only slightly in Emerging Markets. The ILO Social Security Inquiry (SSI)¹² shows that the level and growth of public social spending varies greatly between the two. While Advanced Economies increased their total public social expenditures on average from 16 to 23% of GDP between 1990 and 2010-13¹³, Emerging Markets only spend a significantly smaller share, up from 5 to 6% of GDP. Global estimates indicate an increase from 7 to 9% of GDP. The share of Advanced Economies in total global social expenditures was around 82% in 2010-13 (EU28: 38%, Germany: 8%).

However, also among Advanced Economies inequality and redistribution differ significantly. Among the 15 most populous Advanced Economies the EU countries have a far higher degree of redistribution compared to the non-EU countries with Sweden, Germany and France being the Top-3 countries (figures 13 and 14). The countries with the highest net income inequality in the period 2007-11 were the US and the UK, but the degree of redistribution was higher in the UK. Among the more populous EU countries, the countries with the highest level of net inequality following the UK were Portugal, Greece, Italy and Spain.

⁹ PovcalNet, Regional aggregation using 2011 PPP and \$1.9/day poverty line, The World Bank; The World Bank (2016) Taking on Inequality: Poverty and Shared Prosperity 2016.
¹⁰ The World Bank (2015) Ending Extreme Poverty and Sharing Prosperity: Progress and Policies.
¹¹ UNDP (2015) Human Development Report.
¹² ILO Database, The ILO Social Security Inquiry (E-1c – Total public social expenditure as % of GDP). The variable public social expenditure includes employment-related social security schemes, public health, welfare and anti-poverty programmes and non-public schemes of different types of transferring goods, services or cash to poor and vulnerable households.
¹³ We use the latest available data between 2010 and 2013. Averages are population weighted.



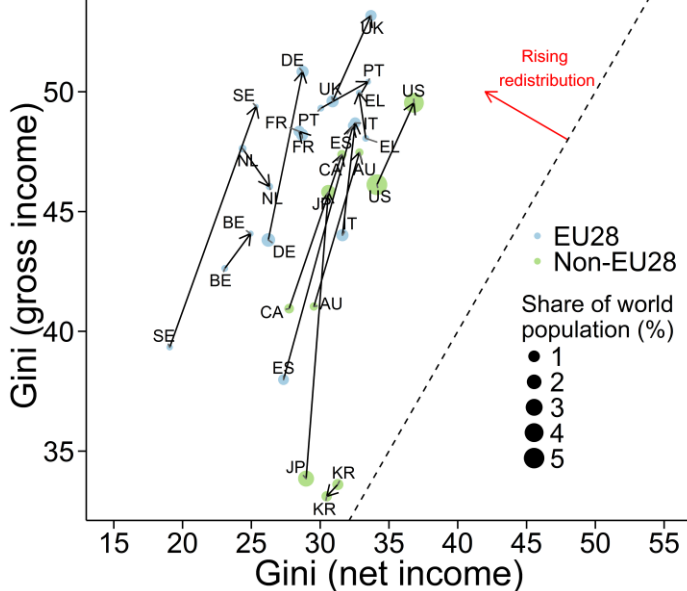
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In Advanced Economies net income inequality significantly below gross income inequality

13

World's 15 most populous Advanced Economies

Arrows pointing from 1985-89 avg. to 2007-11 avg.

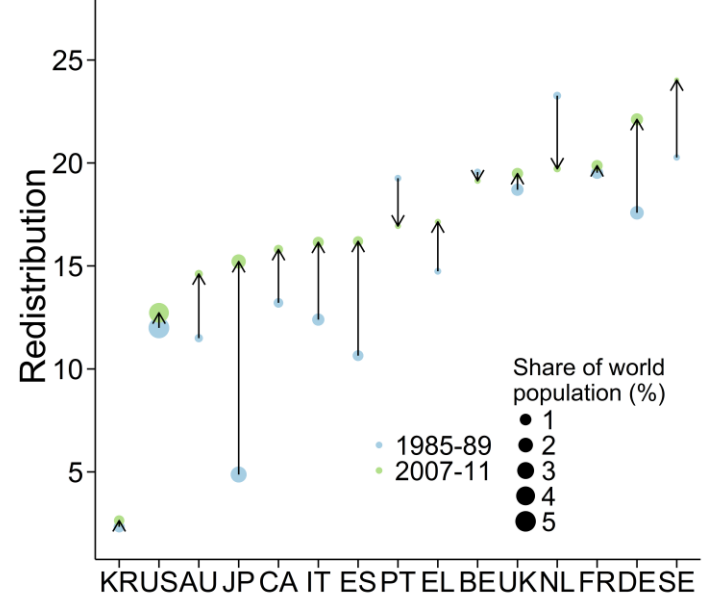


Sources: SWIID Version 5.1, IMF, Deutsche Bank Research

Redistribution via the tax system and transfers especially pronounced in European countries

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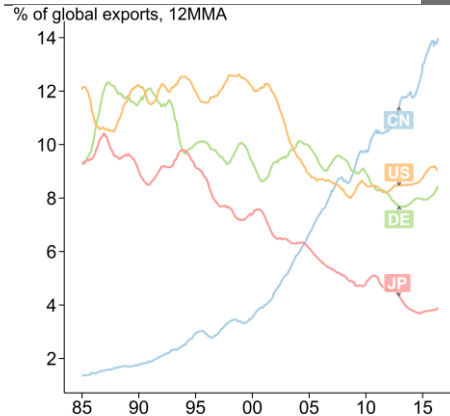
World's 15 most populous Advanced Economies



Sources: SWIID Version 5.1, IMF, Deutsche Bank Research

China's remarkable rise to world's largest exporter

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Sources: IMF, Deutsche Bank Research

Especially strong was the increase of redistribution in Japan reflecting the jump in social spending as a response to the stronger ageing of the population compared to other countries.¹⁴ A strong increase of old-age related transfer payments will be a major theme also for other Advanced Economies going forward (figures 11 and 12).

Major drivers of income inequality in Advanced Economies

In the following we are focusing on factors determining the changes of net income inequality in Advanced Economies focusing on their transmission channel on inequality and not on the overall effect. Note that globalisation, migration and technological change are clearly boosting the living standard overall as highlighted before.

We are estimating a panel model to gain insight into the driving forces of inequality.¹⁵ The findings indicate that most of the factors below have an impact on the distribution of incomes (see figure 17 and table in the appendix, inequality regressions (d), for details):¹⁶

- **Globalisation:** The integration of larger Emerging Markets over past decades increased the supply of labour to the global economy. This generates a negative effect on wages in most Advanced Economies as they tend to import labour-intensive products.¹⁷ We are using the share of Chinese imports in total import as a proxy for the increased competition from

¹⁴ OECD (2015) OECD Economic Survey: Japan, April 2015.

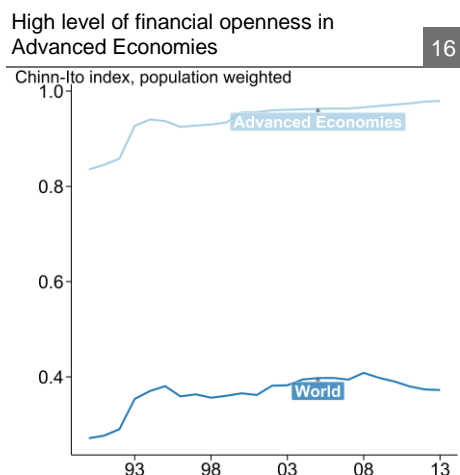
¹⁵ See also Jaumotte, F. et al. (2013) Rising Income Inequality: Technology, or Trade and Financial Globalization?, IMF Economic Review, 61 (2), p. 271-309; Dabla-Norris, E. et al. (2015) Causes and Consequences of Income Inequality: A Global Perspective, IMF Staff Discussion Note, SDN/15/13; Asteriou, D.; Dimelis, S.; Moudatsou, A. (2013) Globalization and income inequality: A panel data econometric approach for the EU27 countries, Economic Modelling, 36, p. 592-599.

¹⁶ Note that a multi-country panel data model has the advantage of fully using information from across countries. There are, however, also some limitations due to the possible presence of structural breaks, nonlinearities and issues with the interpretation of the residual, which could be due to policy distortions, uncaptured fundamentals or limitations of the empirical model (as measurement or sampling errors or possible misspecification). We are aware of these possible shortcomings and are interpreting the regression models as correlations and not causation.

¹⁷ Krugman, P. (2008) Trade and Wages, Reconsidered, Brookings Papers on Economic Activity, 1, p. 103-154.



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Sources: Chinn, M. and Hiro, I. (2006), Deutsche Bank Research

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Emerging Markets. The panel regression shows that an increase of Chinese imports by 10pp pushes up net income inequality in Advanced Economies by 1.6pp.

- **Technological Change:** A shift in the production technology that benefits skilled labour by enhancing their relative productivity (skill-biased technical change) increases income inequality.¹⁸ To substantiate the assumption, we look at the following: The share of the population with a tertiary degree picked up on average from 27% to 35% between 2005 and 2015 in OECD countries. This should have had a dampening effect on their incomes. However, the earnings gap between people holding a tertiary education and those with an upper secondary education widened from 52% (2007 or earlier) to 55% (2014) pointing to a far stronger demand for skilled workers and the presence of skill-biased technological change.¹⁹ As a proxy for the level of technology we are using information and communication technology (ICT) investments, which we find to increase income inequality (10pp rise in the ICT investment share pushes up income inequality by 2.3pp).
- **Financial openness:** Higher financial openness is expected to increase income inequality since, for example, higher FDI flows – just like the technological change – push up the skill premium. We are using the Chinn-Ito Index measuring the degree of capital account openness, which was however not significant in our regressions.²⁰ This could be due to the continuing high level of openness in Advanced Economies over the whole observation period. The factor might play a larger role in Emerging Markets.
- **Migration:** International migration augments the labour supply especially in high-income countries which, in 2015, were hosting 71% of all global migrants (173 million people). Most migrants originated from middle-income countries (65% of all global migrants). Because they often arrive in host countries without sufficient language skills and little knowledge of the domestic labour market, migrants tend to take jobs at the lower end of the income scale, significantly increasing the labour supply in the low- to medium-skill segment.²¹ Consequently wages in these segments are dampened, which should increase inequality.²² According to our panel regression an increase of the migrant stock by 10pp goes along with an income inequality increase of 2.4pp.

Labour market regulation / institutions: The regulation of the labour market heavily influences the wage distribution. In most Advanced Economies collective bargaining parties are setting the wage distribution for a large share of the workforce and minimum wages directly determine the lower bound of the wage distribution. Also labour protection measures or social protection / taxes have a strong effect on the wage structure. Given the measurement problems and the lack of long-time series that could potentially take into account institutional changes, we are using the intensity of intervention of the minimum wage (Kaitz index) and the unemployment rate as crude proxies. It is no surprise that according to our regression results a higher intensity of intervention of the minimum wage indeed reduces inequality (coefficient: -0.18). However, high binding minimum wage is usually a drag on employment in the medium/long-term and therefore pushes up the unemployment rate especially for the problematic

¹⁸ Acemoglu, D. (2002) Technical Change, Inequality, and the Labor Market, *Journal of Economic Literature*, 40 (1), p. 7-72.

¹⁹ OECD (2009, 2016) Education at a Glance 2016, Education at a Glance 2009.

²⁰ Chinn, M. D. and Hiro I. (2006) What Matters for Financial Development? Capital Controls, Institutions, and Interactions, *Journal of Development Economics*, 81 (1), p. 163-192.

²¹ See Bräuninger, D. and Peters, H. (2014) Temporary immigration boom: A wake-up call for politicians?, *Standpunkt Deutschland*, 28 July 2014, Deutsche Bank Research.

²² UN (2015) International Migration Report 2015.



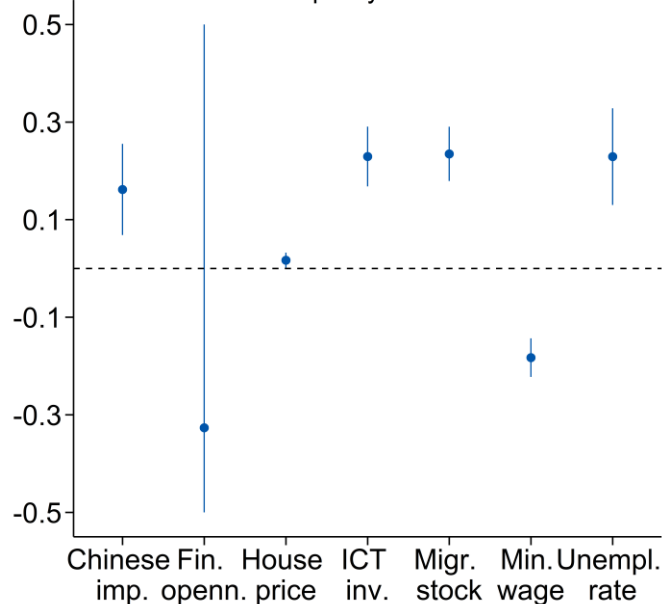
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groups of the labour market.²³ According to our estimations a higher unemployment rate increases net income inequality (coefficient: +0.23).

Globalisation, technological change, migration and unemployment increase inequality – rising minimum wages lowers inequality

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Coefficients of drivers of inequality

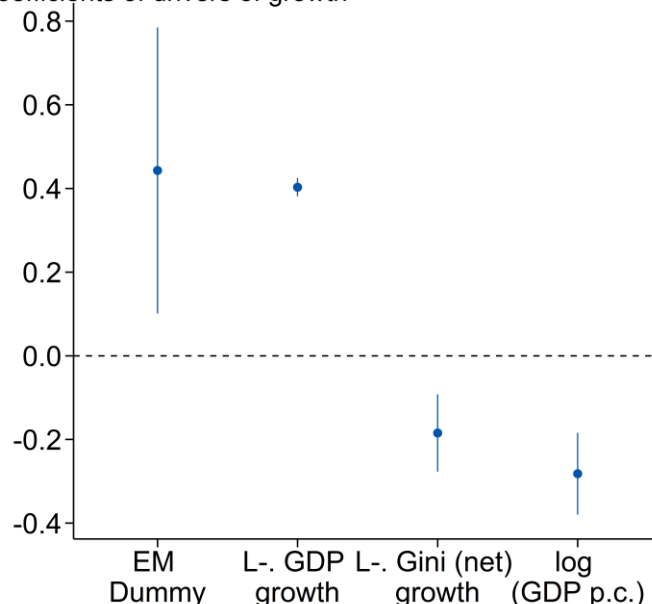


Vertical lines represent the 90% confidence interval; regression (d) in table in the appendix; note that confidence intervals for financial openness were cut-off at +/- 0.5. Source: Deutsche Bank Research

Higher income inequality dampens GDP growth

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Coefficients of drivers of growth



Vertical lines represent the 90% confidence interval; regression (a) in the table in the appendix Source: Deutsche Bank Research

- **Housing:** Depending on the structure of homeownership, changes in the valuation of house prices could be inequality reducing or enhancing. The house price-to-income ratio was not significant in our regression.
- **Business cycle effects** are captured by time fixed effects.

Summing up, we find a strong positive correlation between the increase in net income inequality and a more intense trade competition from Emerging Markets, the technological change and migration. The inference that a higher minimum wage reduces income inequality could be questioned in the medium-term as a high binding minimum wage pushes up the unemployment rate, which – as we have seen – increases net income inequality and has a long lasting negative effect on workers losing their job.

Higher income inequality dampens GDP growth

After the detailed look at the main drivers of income inequality, we are now focussing on the effects of income inequality on GDP growth. The possible channels through which inequality might negatively affect economic growth are the following:

- First, poor people often lack access to appropriate health care, through which they could accumulate human capital, which in turn would enhance growth. So if the society is rather unequal, a larger share of the population cannot contribute to economic growth, leaving the country behind a similar

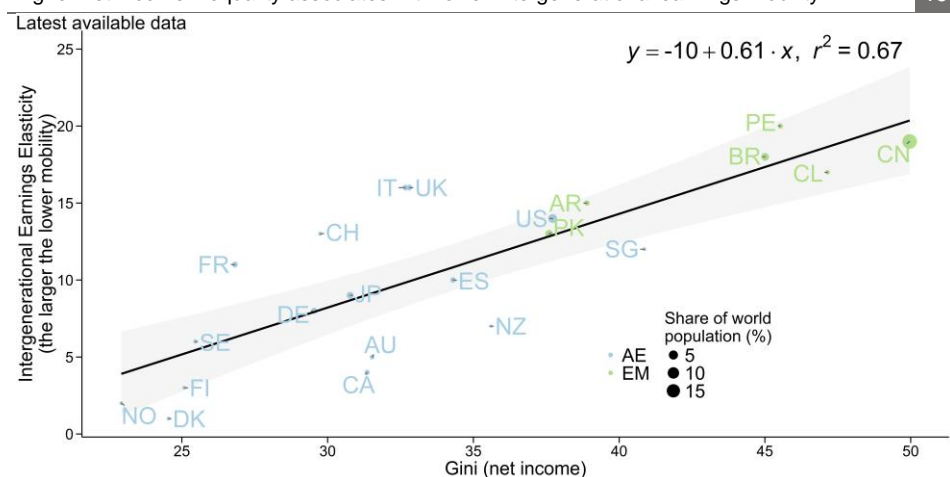
²³ See Neumark, D. and Wascher, W. L. (2007) Minimum Wages and Employment. Foundations and Trends in Microeconomics, 3 (1-2), 1-182 and the cited literature in Peters, H. (2014) Minimum wage of EUR 8.50 per hour: Grand Coalition on the wrong track, Focus Germany, 4 June 2014, Deutsche Bank Research.



but more equal country.²⁴ This factor seems to be more relevant for Emerging Markets than for Advanced Economies, as people in the latter have in general a sufficient fitness and growth depends less on physical work.

- Second, higher inequality might prevent children of poorer households from receiving sufficient education (in quality and quantity), lowering labour productivity compared to more equal countries.²⁵ As can be seen in the figure below: higher income inequality is associated with less inter-generational income mobility. Note, however, that the relationship differs significantly between countries. The high correlation could be caused by diverging early childhood developments, limited access to higher education, children's early entry into the labour market to ensure household income or barriers to enter high paid jobs on grounds of discrimination.²⁶ A detailed analysis of these factors across countries is beyond the scope of this article.

Higher net income inequality associates with lower intergenerational earnings mobility



Sources: Corak (2016), SWIID Version 5.1, Deutsche Bank Research

- Third, in a more equal society there is less incentive or perceived need for the citizen to stand up against the political or economic order, because most people feel “fairly” treated. The resulting stability attracts investment which boosts growth.²⁷
- Fourth, countries with a higher domestic social stability are more capable to counterbalance economic shocks than are dysfunctional ones, which again enhances the economic performance.²⁸

However, several channels are also pointing in the opposite direction that higher inequality can also have positive effects on economic growth. An unequal concentration of income might, for example, provide higher incentives for people to innovate or to accumulate capital than a more equal society, driving growth up.²⁹ Furthermore, the richer save relatively more of their income than people

²⁴ Perotti, R. (1996) Growth, Income Distribution, and Democracy: What the Data Say, Journal of Economic Growth, Vol. 1(2)

²⁵ Stiglitz, J. (2012) The Price of Inequality: How Today's Divided Society Endangers Our Future. New York, W.W. Norton.

²⁶ Corak, M. (2016) Inequality from Generation to Generation: The United States in Comparison, IZA DP No. 9929.

²⁷ Alesina, A. and Perotti, R. (1996) Income Distribution, Political Instability and Investment, European Economic Review, Vol. 40(6)

²⁸ Rodrik, D. (1999) Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses, Journal of Economic Growth, Vol. 4(4)

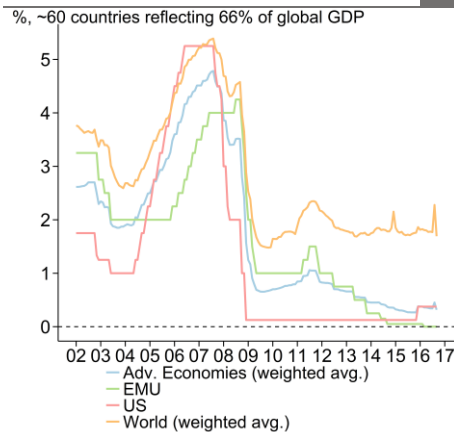
²⁹ Galor, O. (2009) Inequality and Economic Development: The Modern Perspective. Edward Elgar Publishing Ltd.; Mirrlees, J. (1971) An exploration in the theory of optimum income taxation, Review of Economic Studies, Vol. 38(2)



Rising income inequality

Central banks key rates remain on a low level

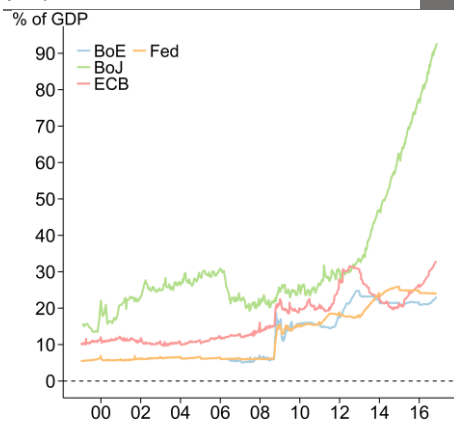
20



Sources: IMF, Deutsche Bank Research

Major central bank's balance sheets jumped since the crisis

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Sources: IMF, Deutsche Bank Research

from middle- or low-income classes do. This leads to higher aggregate savings and possibly larger investments again benefiting the economy.³⁰

To gain insights if the total effect of higher income inequality on growth is positive or negative, we are estimating a simple growth regression using our full global panel data set. We are correlating GDP growth with lagged changes of income inequality as our main variable of interest, lagged GDP growth to capture path dependencies, GDP per capita as a proxy for the catching up effect and an indicator variable for Emerging Markets accounting for the different economic structures between Emerging Markets and Advanced Economies.

The panel regressions show that GDP growth and changes in net- and gross income inequality are negatively correlated (see figure 18 and the growth regression in the appendix table). The other variables have the expected sign signalling the presence of a catching up effect of poorer countries, that there are path dependencies of GDP growth and that Emerging Markets are growing faster than Advanced Economies.

Central bank policy has boosted wealth inequality but the effect on income inequality is unclear

An additional driver of inequality was possibly the extreme expansionary monetary policy of the major central banks since the start of the financial crisis. As already eight years passed since the major central banks started to massively expand their monetary policy stance, the risk increases that a too expansionary monetary policy for too long could lay the cornerstone for a renewed unsustainable credit boom in the medium/long-term. In the past the combination of low interest rates and economic expansions were robust determinants of credit booms.³¹ As a consequence, a monetary policy boost to asset price inflation directly increases inequality, especially via boosting the valuation of equities. However, reverse causality could also have played a role as rising inequality could have led to the credit boom and subsequent financial crisis.³²

While it is relatively clear that the expansionary central bank policy increases wealth inequality by pushing up asset prices, the effect on income inequality is unclear. The central bank's quantitative easing programmes (QE) have the objective to boost consumption and investment via the interest rate channel and the portfolio rebalancing channel (as well as the exchange rate channel). This pushes up wealth inequality twofold: 1.) Lower interest rates also lower interest income thereby especially hitting small-scale savers and those saving for retirement. 2.) As richer households typically invest a larger share of their wealth in riskier assets they are benefitting more from the portfolio rebalance channel of QE. Additionally, they are less affected by the inflation enhancing effect of monetary policy as they are holding a lower fraction of their wealth in cash or near-cash holdings.

Simulations by the BIS suggest that monetary policy increased wealth inequality in Advanced Economies since the great financial crisis mainly by boosting equity prices.³³ However, due to a lack of comparable data of global private wealth

³⁰ Kaldor, N. (1957) A Model of Economic Growth, The Economic Journal, Vol. 67(268) ; Ostry, J. et al (2014) Redistribution, Inequality, and Growth, IMF Staff Discussion Note, SDN/14/02.

³¹ Bordo, M. D. and Meissner C. M. (2012) Does Inequality Lead to a Financial Crisis?, Journal of International Money and Finance, 31, p. 2147-62.

³² Rajan, R. (2010) Fault Lines, Princeton University Press; Kumhof, M.; Rancière, R. (2011) Inequality, Leverage and Crises, IMF Working Paper 10/268; Gu, X.; Bihong, H. (2014) Does Inequality Lead to a Financial Crisis? Revisited, Review of Development Economics, 18 (3), p. 502-516.

³³ Domanski et al. (2016) Wealth inequality and monetary policy, BIS Quarterly Review, March 2016.



distributions over time, it is difficult to assess recent developments in actual wealth inequality. Looking at data from a few selected countries, the dynamics of wealth inequality do not look uniform. For example, in Italy, France and the US wealth seems to be less equally distributed in 2014 than it was at the beginning of the 2000s. In Germany and the UK the level of wealth inequality stayed approximately the same, while it decreased in Sweden.³⁴

Going one step further, higher wealth inequality can cause income inequality to rise as the wealthy – typically located at the upper end of the income scale – can increase their income disproportionately more through higher capital gains (income composition channel). However, monetary policy expansion has benefitting direct effects towards a more even income distribution by boosting GDP growth and thereby lowering unemployment i.e. increasing earnings especially at the lower end of the income scale (earnings heterogeneity channel) and lowering interest payments of borrowers, who are generally poorer people.³⁵

Alleviating the cost of globalization rather than cutting off the benefits

Our analysis shows that net inequality in Advanced Economies is negatively correlated with globalization, technical change and migration. Given the highlighted strong positive effects of all three factors on overall living standards above, it would be extremely negative to push back globalisation or to close the borders to labour migration as populist parties heavily advocate for. On the contrary, a strong response would be a combination of pushing forward globalisation with comprehensive trade agreements, setting a more business-friendly environment which fosters technological change and opening the borders to qualified labour migrants while taking actions to make sure that the weakest group of the population is getting its piece of the cake of additionally created wealth. This would not only boost overall living standards, but also increase the support of the population for open borders and technological progress. All would lose in a more closed, less dynamic economy.

How to generate socially fairer economic growth

Given the complex interactions in the economy, it is extremely difficult to clearly identify the strongest hit groups. Thus, a policy mix of enhancing the skill of natives via investments into the education system making them more competitive and shielding them from a more intense competition, increasing the flexibility of the labour market and controlling migration via a point system would be suitable to reduce inequality while still benefiting from the welfare enhancing effects:

- More ambitious and forward-looking education and labour market policies are probably one of the most powerful tools. To counteract the direct negative effects on the less qualified workers, the whole set of active labour market policy measures should be used to soften the negative effects of a job loss and to support a sectoral change via for example training measures or temporary wage subsidies. Here a generally higher flexibility on the

³⁴ Deutsche Bundesbank (2016) Distributional effects of monetary policy, Monthly Report, September 2016.

³⁵ Deutsche Bundesbank (2016) Distributional effects of monetary policy, Monthly Report, September 2016; Saiki, A. and Frost, J. (2014) How does Unconventional Monetary Policy Affect Inequality? Evidence from Japan, DNB Working Paper No. 423; Coibion, O. et al. (2012) Innocent Bystanders? Monetary Policy and Inequality in the U.S., NBER Working Paper No. 1817.



labour market and atypical employment forms also help. Measures in the education system are more suitable in the medium/longer term as skill upgrading needs time. For example, the implementation of post-secondary vocational education and training should become a priority, as they provide better transition into the labour market. Likewise, lifelong learning initiatives such as continued or adult education need to be implemented more broadly as people not only acquire additional skills – better matching the demand – but also become more competitive. Furthermore, subsequent training allows for an increased mobility between professions which – given a flexible labour market – eases potential transitions from one sector to the other.³⁶

- Additionally, an increase of the intergenerational mobility through higher investments into the early childhood education would clearly pay off. Empirical educational research shows that higher investments in young children push up returns in education, health and productivity (Nobel Laureate James J. Heckman “The highest rate of return in early childhood development comes from investing as early as possible, from birth through age five, in disadvantaged families.”).³⁷
- As highlighted before, the inference that a higher minimum wage reduces income inequality could be questioned in the medium-term as a high binding minimum wage pushes up the unemployment rate, which increases net income inequality and has long lasting negative effects on workers losing their job.
- To avoid a too harsh direct competition in labour market segments with already very high unemployment rates, labour migration could be controlled, for example, via a point system. This would make sure that migrants have the opportunity to integrate quickly into the labour market and that the support for migration does not deteriorate. Additionally, labour shortages due to the coming demographical challenges could be reduced.

Reducing net inequality by more ambitious and forward-looking education and labour market policies would probably also have a positive effect on economic growth as we have shown that higher inequality goes along with lower economic growth. As these policies are also positive for potential growth, the ongoing pressure on the central banks to keep up monetary stimulus would probably ease.

³⁶ OECD (2001) OECD Observer 225; OECD (2014), Skills Beyond School: Synthesis Report, OECD Reviews of Vocational Education and Training; OECD (2015), Education Policy Outlook 2015: Making Reforms Happen.

³⁷ Heckman, J. J. (2008) Schools, Skills, Synapses, *Economic Inquiry*, 46 (3), p. 289–324; Heckman, J. J., (2012) Invest in early childhood development: Reduce deficits, strengthen the economy.



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Appendix

Panel data regressions overview

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Variables	(a)	(b)	(c)	(d)
	Growth regressions		Inequality regressions	
	GDP growth	GDP growth	L+. Gini (net)	L+. Gini (net)
L-. GDP growth	0.403 ***	0.403 ***		
log(GDP per capita)	-0.282 ***	-0.28 ***		
L-. Gini (net) change	-0.185 **			
L-. Gini (gross) change		-0.14 **		
Share of Chinese imports (% of total imports)			0.247 ***	0.162 **
ICT investment (% total capital formation)				0.229 ***
Financial Openness (Chinn-Ito index)			1.278	-0.327
Unemployment Rate (%)				0.229 ***
Minimum wage relative to mean				-0.183 ***
Migrant stock (% of population)				0.235 ***
House price-to-income ratio			-0.004	0.017
EM dummy	0.443 *	0.436		
Time	1995-2013	1995-2013	1995-2013	1995-2013
Time fixed effects	yes	yes	yes	yes
Observations	2324	2324	396	156
Sample	full	full	only AE	only AE
Countries	150	150	22	11
Root MSE	3.696	3.697	4.038	2.296
R2	0.233	0.233	0.049	0.505

* significant at 10%; ** significant at 5%; *** significant at 1%; L-: Lag by one year; L+: Lead by one year; EM: Emerging Markets; AE: Advanced Economies

Sources: SWIID Version 5.1, IMF, OECD, World Bank, Chinn and Hiro (2006), Deutsche Bank Research

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