

Princeton Webinar



Central Banks & Inequality

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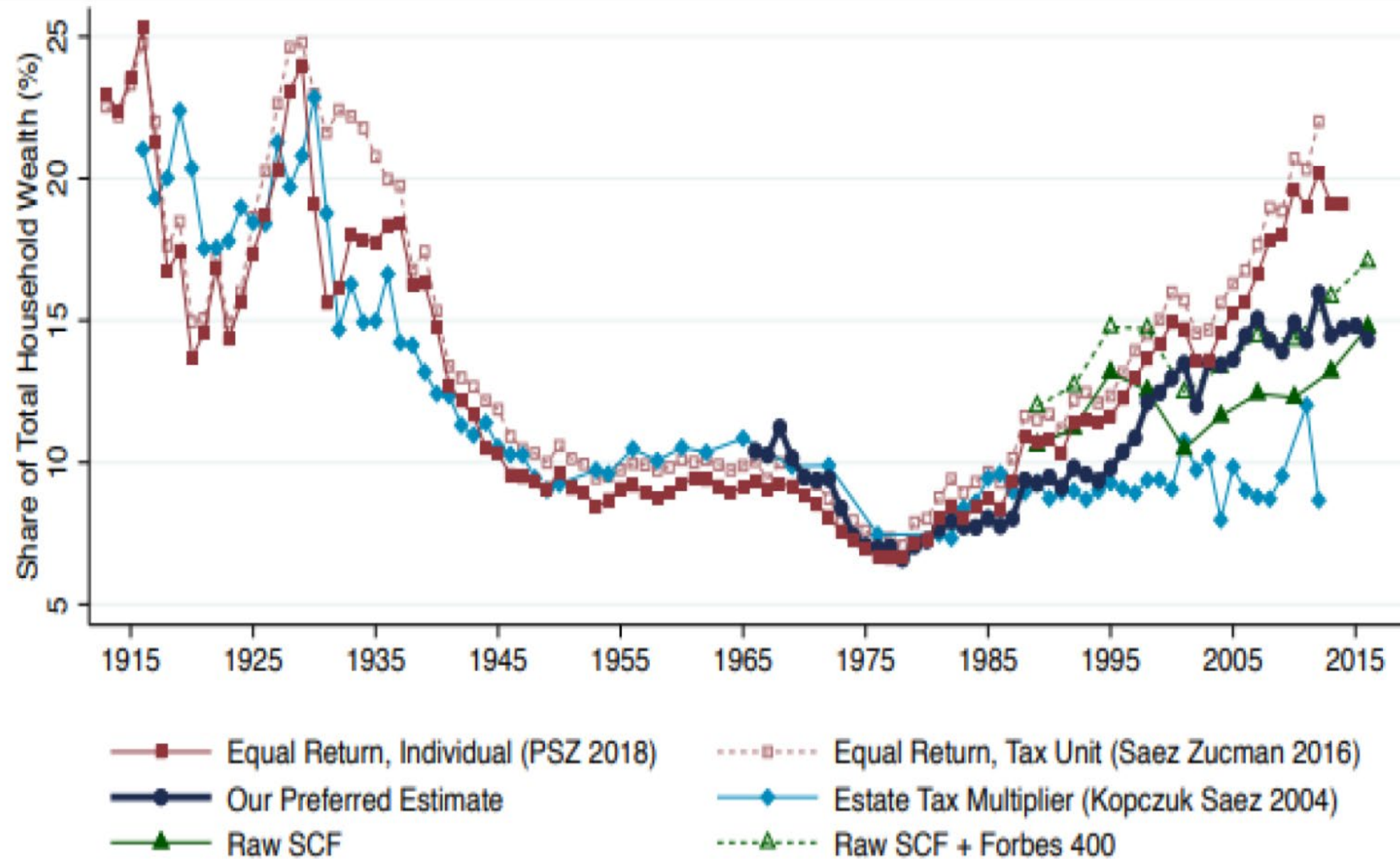
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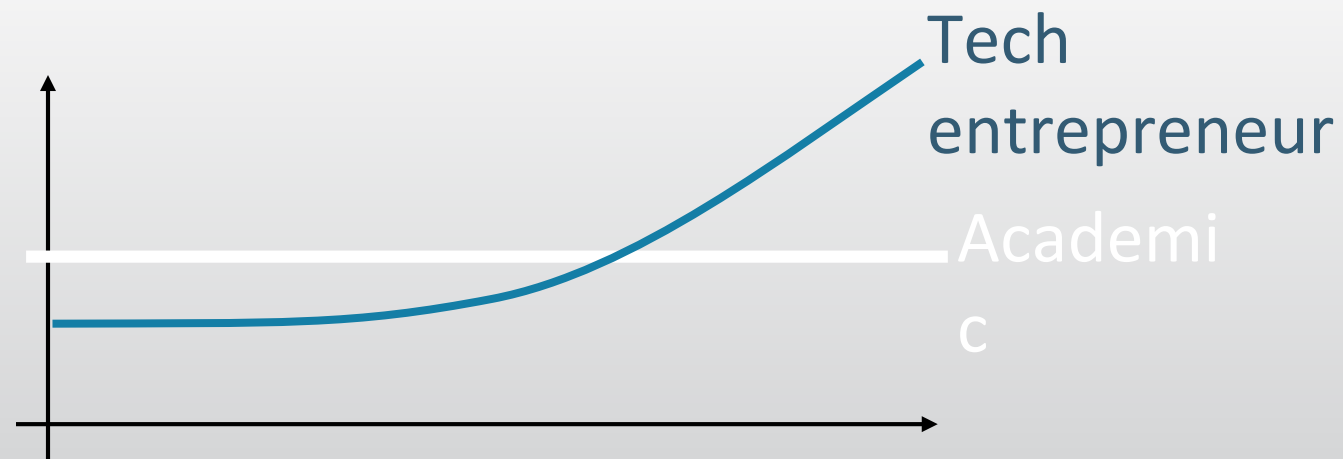
Wealth Share of Top 0.1%



Violante Lecture Notes (2020)

Income and Wealth Inequality

- Income profile over a life-time



- Wealth inequality

- Not “financialized assets” → tech entrepreneur seems poorer initially
- Financialized/traded wealth
 - Change in interest rate r
- To what extent are wealth inequality trends due to
 - “financialization” of CF streams
 - Trend in declining interest rate

Redistributive Monetary Policy

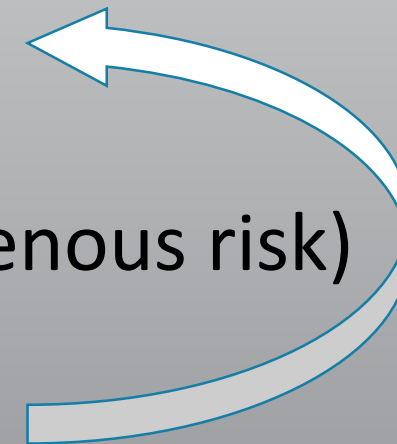
Brunnermeier-Sannikov (2013)
Jackson Hole Paper

- Monetary policy as “stealth recapitalization”
- Via asset price changes

Assets(i)	Liabilities(i)

Who owns
houses/mortgages?
(Germany vs. Italy/Spain)

- Objective:
 - Stimulate consumption
 - Redistribute across **consumers** (to high MPC to low MPC)
[Tobin (1982), Auclert (2019)]
 - Stimulate investment + consumption
 - Redistribute across **investors**
Risk premia = price of risk*(exogenous+endogenous risk)
 - MoPo redistributes risks ex-ante
 - Lower risk premia → wealth effect
[Brunnermeier-Sannikov (I theory)]

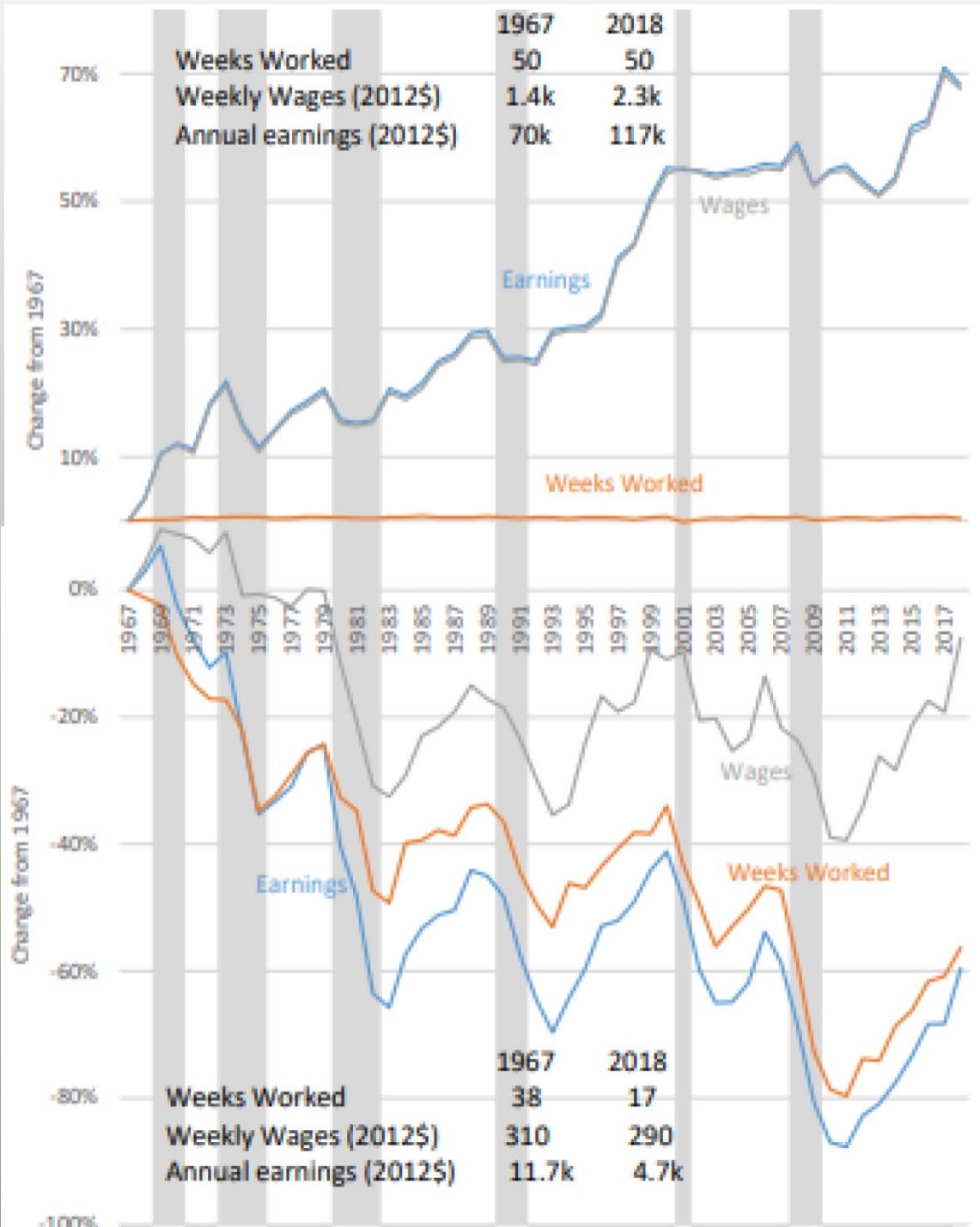


Macro-Finance vs HANK

Agents:	Heterogenous investor focus	Heterogenous consumer focus
Tradition:	Finance (Merton)	NK-DSGE (Woodford)
	Full/global dynamical system <ul style="list-style-type: none"> - focused on non-linearities away from steady state (crisis ...) - Length of recession stochastic 	Transition dynamics back to steady state <ul style="list-style-type: none"> - Zero probability shock - Length of recession is deterministic
Money due to:	Risk & financial frictions	Price stickiness
Risk:	Idiosyncratic & aggregate	
Price of risk: Assets:	Capital, money, bonds with different risk profile <ul style="list-style-type: none"> - Risk-return trade-off - Liquidity-return trade-off - Flight to safety 	All assets are risk-free <ul style="list-style-type: none"> - No risk-return trade-off - Liquidity-return trade-off

Workers: Labor Share & Earnings, Wages, Weeks Worked

- Declining labor share in the US



Top: 85-95%

Bottom:
20%

Workers' Inequality due to Recessions

■ Workers

- **Layoffs** during Covid in US
 - 20% without BA
 - 12% with college degree
- Slower **recovery** for lower paying jobs – resilience still unemployed in Feb 2021
 - 20% lowest 25% percentile (in Feb 2020)
 - 6% highest 25% percentile
- Minority (SMEs) suffer more

Powell
(2021)

■ Implications for MoPo

- Price/economic stability → lowers crises prob. → helps poor/inclusion
- Distribution of income and wealth (asset holdings, housing, maturity) matters for transmission of MoPo

Agustín Carstens' Poll Questions

1. How important are structural factors (e.g. globalization, technology, labor market arrangements) in driving the rising trend in inequality?
 - 0 (low) - 5 (high) scale
2. Which policy best suited to deal with inequality in the long run?
 - a. Fiscal policy
 - b. Monetary policy
 - c. Structural policies
3. How high should addressing inequality be on central bankers list of priorities?
 - 0 (low) - 5 (high) scale

Central banks and inequality

Remarks by Agustín Carstens
General Manager, Bank for International Settlements

Markus' Academy, Princeton University's Bendheim Center for Finance,
Basel, 6 May 2021

Introduction

Thanks very much for inviting me to give this lecture. It is a pleasure to be here virtually today and share with you my thoughts on how central banks can best contribute to a more equal society.

Central banks are concerned about inequality. As public institutions, their end goal is to ensure economic conditions that support the well-being of citizens. I will argue that, over the long run, inequality is not a monetary phenomenon, though central banks' actions can have an impact on the distribution of wealth and income over shorter horizons. Prolonged periods of high inflation and recessions can hurt the economy and disproportionately hit the most disadvantaged. Therefore, the best contribution monetary policy can make to an equitable society is to try to keep the economy on an even keel by fulfilling its mandate. Governments can reduce inequality through more direct fiscal and structural policies.

In this lecture, I will review the recent trends of rising inequality and ask why central banks have engaged in this debate only after the Great Financial Crisis (GFC) – more than two decades after the trend increase in inequality picked up. I will argue that both the actions needed to achieve the mandated objectives, and the interaction between monetary policy and inequality, have become increasingly complex over time. This is due to a change in the nature of the business cycle. Two characterising features of this change – particularly since the GFC – are low and less responsive inflation, and financial factors playing a more prominent role in amplifying economic fluctuations.

The focus of my lecture will be on monetary policy in its macro stabilisation role. The nature and precise interpretation of central banks' mandate in this regard has evolved historically. These days it is primarily interpreted as limiting business cycle fluctuations – measured in terms of output and employment – and delivering low and stable inflation. And low and stable inflation is rightly seen as a necessary condition to maximise output and employment sustainably over time.

But there is another necessary condition for macroeconomic stability: financial stability. While most central banks do not have financial stability as a separate objective in their monetary policy mandates, changes in the business cycle have brought it to the fore. In a narrow sense, creating conditions for financial stability means mitigating the likelihood and severity of events such as banking and financial crises and the large output losses they bring about. But in a broader sense financial stability relates to financial factors as amplifiers of business cycle fluctuations and, as such, forces that can stand in the way of achieving monetary policy objectives. For this reason, I will include financial stability under the broader objective of stabilising economic activity.



Inequality has been on the rise, as recognised by central banks

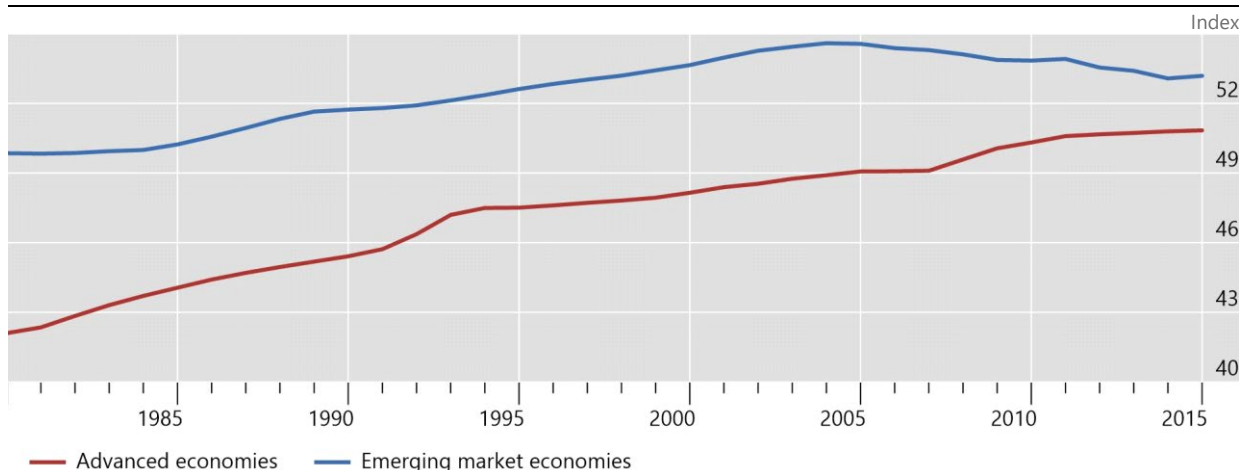
Distributional issues have gained prominence in the public debate over the past decades, as the two main dimensions of economic inequality – income and wealth – have been on an upward trend. Graph 1 displays a popular measure of income dispersion among the population – the pre-tax and transfers Gini coefficient – and shows that it has been rising since the 1980s. A similar – although less steep – trend emerges when looking at measures of wealth inequality.

While income inequality has remained consistently higher in emerging market economies (EMEs) than in advanced economies (AEs) throughout the period, it has seen a much steeper increase in AEs. The increase has not only been more modest in EMEs, it has even partially reversed over the last 10 years. A concrete example to show the recent rise in income inequality is the case of the United States, where the share of income held by the top 1% of the population grew from 11% in 1986 to 19% in 2019.

Importantly, the trend in inequality is largely the outcome of long-run structural forces, widely explored and documented in the literature. Among those, technological change, globalisation and institutional changes have played a major role during the past decades. These forces are largely independent of and insensitive to monetary policy, so the trends to which they contribute are best corrected by public policies, particularly fiscal policies.

Gini index based on pre-tax, pre-transfer income

Graph 1



Defined as the amount of money coming into the household pre-tax, excluding government cash or near-cash benefits. The series are weighted averages of AEs and EMEs calculated based on GDP (PPP) with fixed 1980 weights. AEs = CA, DE, FR, GB, IT, JP and US; EMEs = BR, CN, IN and ZA.

Sources: Standardized World Income Inequality Database (SWIID); national data; BIS calculations.

Central banks are fully aware of the growing prominence of inequality in the public debate. Inequality is part of the environment in which monetary policy is set, and central bankers have to reflect it in their decisions. For instance, rising inequality affects monetary policy decisions to the extent that it weakens the transmission of monetary policy. Households with relatively higher income and wealth typically have a lower tendency, or marginal propensity, to consume and tend to react less to changes in policy rates. Therefore, monetary policy has to act more forcefully to provide the same economic stimulus in a more unequal economy, as supported by recent BIS research.¹

¹ See the forthcoming BIS *Annual Economic Report 2021*.

Central banks' increasing attention to inequality is seen in Graph 2. It shows how the share of a sample of central bankers' speeches mentioning the words "inequality" and "distributional impact of monetary policy" has grown over time. In line with differences across countries in inequality trends, references to inequality are less common in EMEs.

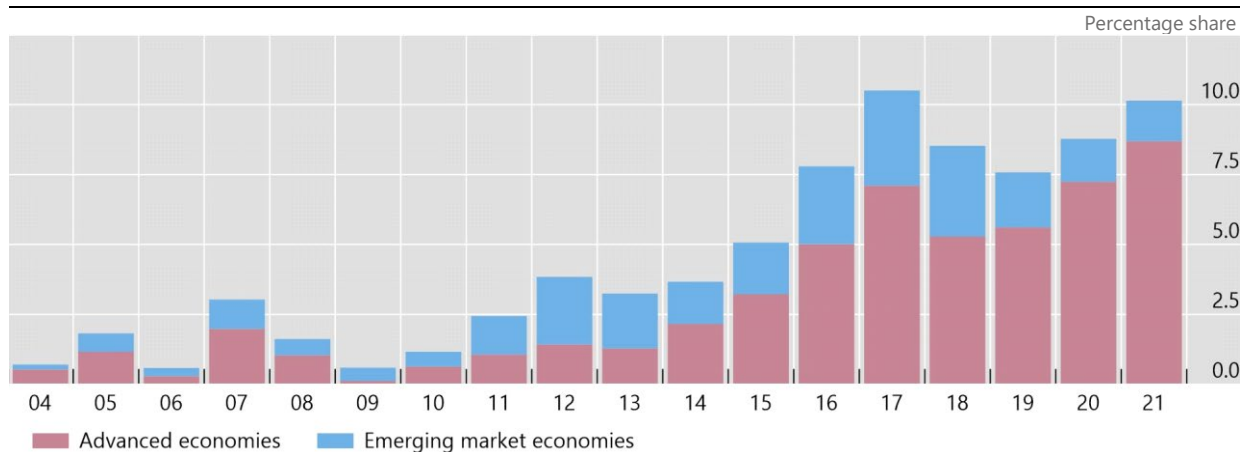
The references to inequality in central bank communications to a large extent mirror concerns by some observers that by keeping interest rates very low and purchasing financial assets, central banks are creating conditions for income gain amongst those who already have a greater portion of wealth. Indeed, house prices and stock market indices has been rising since the GFC. One consequence is that households which hold more equity in their portfolios – typically the very wealthy (top 1% or even top 0.1% of the wealth distribution) have made large capital gains. To be sure, this partly reflects the intended effect of monetary policy, as the higher valuations stem from an effective transmission of monetary policy. Yet the main losers are younger households, which may be increasingly excluded from access to property markets, and pensioners, whose interest income on bond portfolios shrinks.

These criticisms generally fail to cite the reason why accommodative monetary policies were deployed in the first place: to avoid a depression, and then to support the recovery. The alternative scenario would have had markedly worse consequences for employment and inequality. Many more jobs would have been lost. And these jobs benefit all, including the young and low-skilled households which suffer from higher and more cyclical unemployment.

This suggests that discussing monetary policy and inequality calls for a comprehensive approach: we need to consider the link between monetary policy and macroeconomic stability more generally, and do so against the context of policy mandates. Once we do so, it becomes clear that delivering on central banks' mandate of ensuring macroeconomic stability provides the best foundation for an equitable society. Let me now elaborate on why.

References to "inequality" in central bankers' speeches

Graph 2



Speeches of central bankers mentioning the keyword "inequality" and "distributional consequences/impact of monetary policy" expressed as a share of all central bankers' speeches in the BIS database. Data until February 2021.

Sources: BIS; BIS calculations.

Inequality and monetary policy: price and economic stability objectives

In most AEs, and increasingly in EMEs, inflation has been low and stable over the past decades. Yet we should not forget the long-lasting scars of uncontrolled inflation on inequality. History abounds with episodes of high and runaway inflation that increased poverty and inequality via sharp reductions in real wages. The experiences of accelerating inflation, falling real wages and increasing poverty in Latin America in the late 1970s and 1980s, and in eastern Europe in the 1990s, are cases in point.

Inflation is often rightly portrayed as one of the most regressive taxes. The households at the lowest end of the income spectrum are the least able to hedge against it: their income is usually fixed in nominal terms and their savings held in cash or bank accounts. Indexation mechanisms, where present, offer only partial relief, as the frequency of wage adjustment often fails to keep pace, especially when inflation runs very high. Moreover, they tend to entrench inflation – with all its broader economic costs. This makes inflation more likely to increase further and harder to bring down.

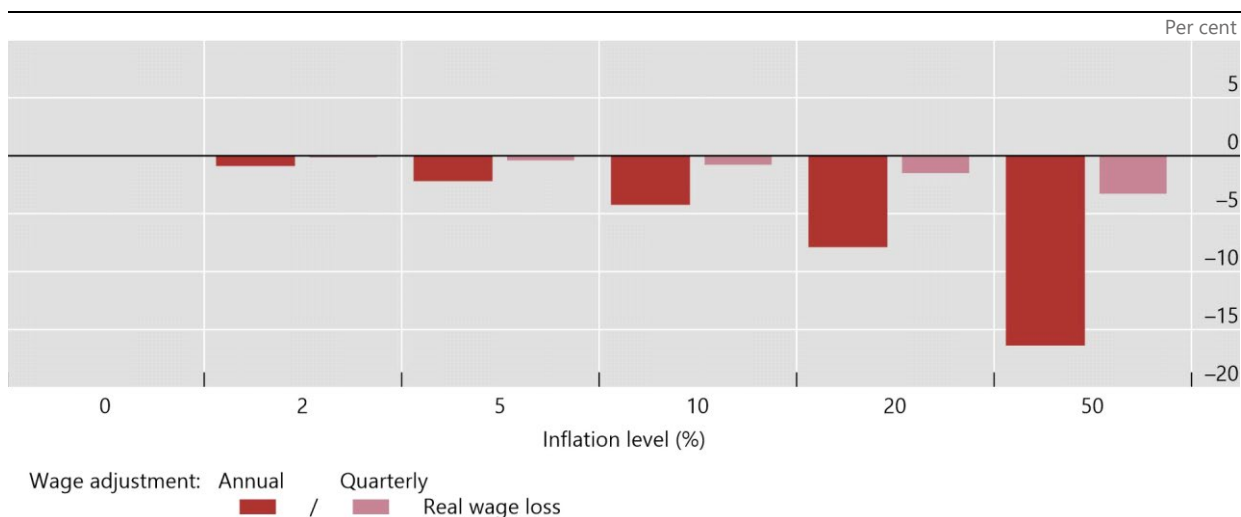
To illustrate how inflation erodes wages, Graph 3 shows simulations of the burden of the “inflation tax” in terms of real wage loss at different levels of inflation. In this experiment, nominal wages are paid monthly and changed either quarterly or annually, depending on the indexation scheme. The figure shows that even when indexation occurs quarterly, the “real wage loss” associated with an inflation rate of 10% eats up about 1% of annual earnings.

Interestingly, the relationship between inflation and real wages is non-linear. There are large benefits for the poor in taming inflation from high levels, but negligible gains from reducing inflation from already low levels – such as those currently experienced in many AEs.

Moreover, once inflation gets out of control, taming it brings additional costs. The necessary tightening of policy/financial conditions brings on recessions and boosts unemployment, which disproportionately hit the most disadvantaged households. And the higher and more entrenched inflation is, the larger the costs – just think of the US experience in the early 1980s.

High inflation erodes wages

Graph 3



This graph shows the effective tax due to inflation when wages are adjusted once a quarter or a year by past inflation.

Source: BIS calculations.

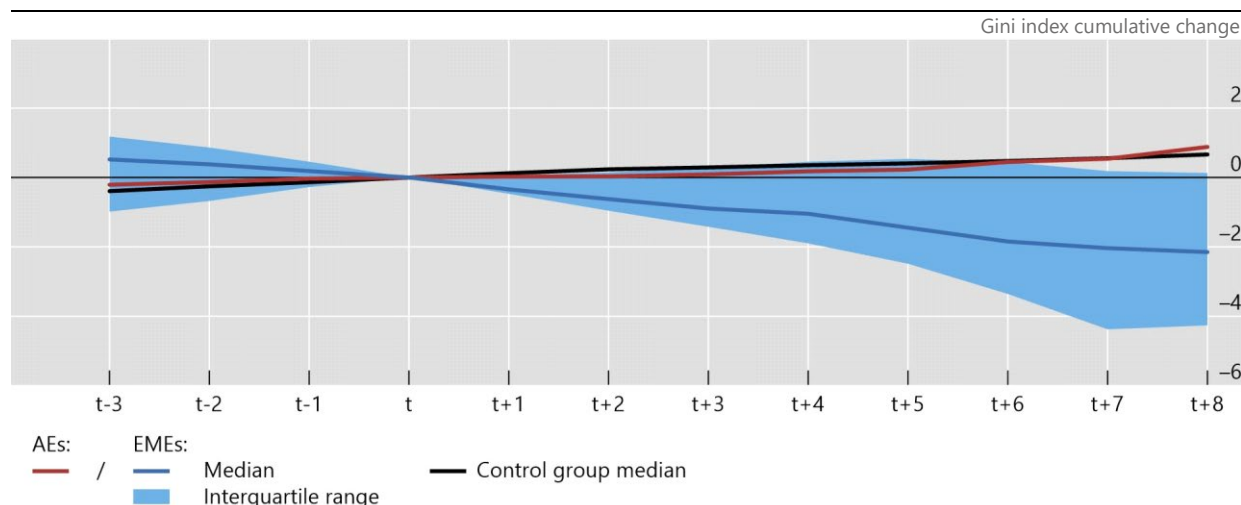
Once inflation is brought under control, the benefits become apparent. In many historical episodes, stabilising inflation from high (and volatile) levels helped stimulate growth by supporting savings

via higher real interest rates, promoting investment and creating more and better paid job opportunities. The resulting economic prosperity meant income was more equitably distributed.

Graph 4 shows a comparison of 34 episodes of disinflation over the past 30 years, which mainly relate to the experience of EMEs. It illustrates that the “conquest of inflation” – here defined as bringing the inflation rate sustainably below 5% – has generally been followed by a decline in income inequality, as measured by the Gini coefficient. This may be one of the factors that helped abate the rising inequality trend over the past decade in EMEs. In AEs, where inflation has been low since the mid-1980s, the graph shows a much less clear pattern. This result suggests that the interaction between inflation and inequality becomes much more complex when inflation is low.

The conquest of inflation and subsequent income Gini variation

Graph 4



Year t is the year in which the 10-year average realised inflation rate fell below 5% for the first time, without subsequent reversal of average to one pp above that. The vertical axis represents variation in each country's net income Gini index relative to year t . The conquest of inflation episodes range from 1992 to 2016.

Sources: IMF, *International Financial Statistics* and *World Economic Outlook*; World Bank; BIS calculations.

The other typical objective of central banks is sustained growth and economic activity – and low inflation is a means to that. Work remains the predominant source of income in society. Stable macroeconomic conditions that keep unemployment low increase opportunities for people to secure an income and sustain their living standards. As Jay Powell said in his webinar here at Princeton in January, “maximum employment is a broad and inclusive goal, which reflects [...] the benefits of a strong labour market for many in low- and moderate-income communities.”²

Indeed, unemployment tends to hit unskilled workers disproportionately and for longer. As recessions hit, the lower-skilled workers are typically the first to be laid off.

The pandemic is a case in point. As shown in Graph 5, for European countries, based on Eurostat estimates, low-income workers are more at risk of losing jobs. For the most disadvantaged, the probability of losing their jobs can be up to 10% higher compared with high-income workers. When those at the

² J Powell, “A conversation with Federal Reserve Chair Jerome Powell”, Princeton University Bendheim Center for Finance, 14 January 2021.

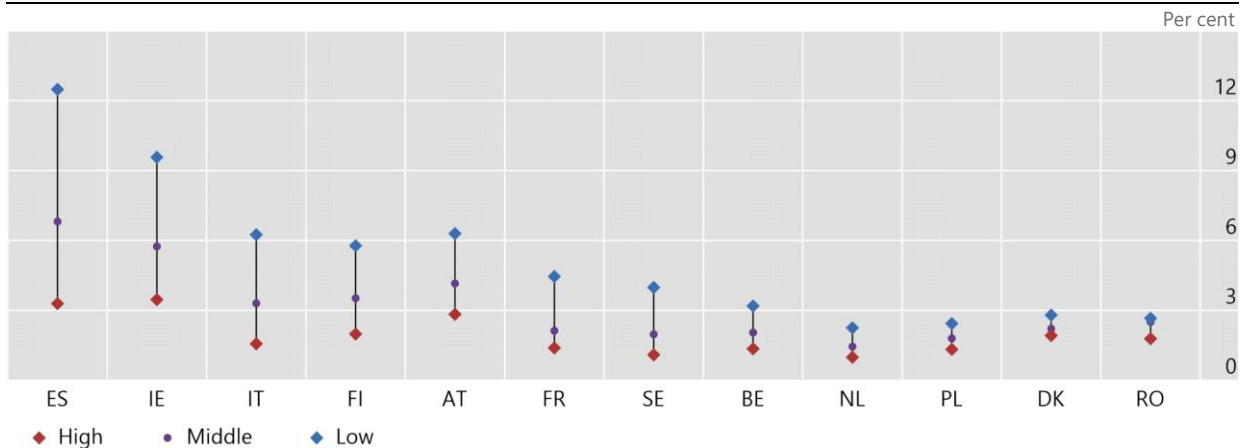


bottom of the income distribution lose their income and those at the top keep it, the wedge between the two widens.

In the same vein, let me quote Jay Powell again in a speech he gave three days ago: “While the recovery is gathering strength, it has been slower for those in lower-paid jobs: Almost 20 percent of workers who were in the lowest earnings quartile in February of 2020 were not employed a year later, compared to 6 percent for workers in the highest quartile.”³

Euro area: risk of job loss by income in Q2 2020

Graph 5



Low income earners comprise individuals in deciles 1, 2 and 3; the middle group comprises deciles 4, 5, 6 and 7; deciles 8, 9 and 10 define the high-income category.

Source: Eurostat.

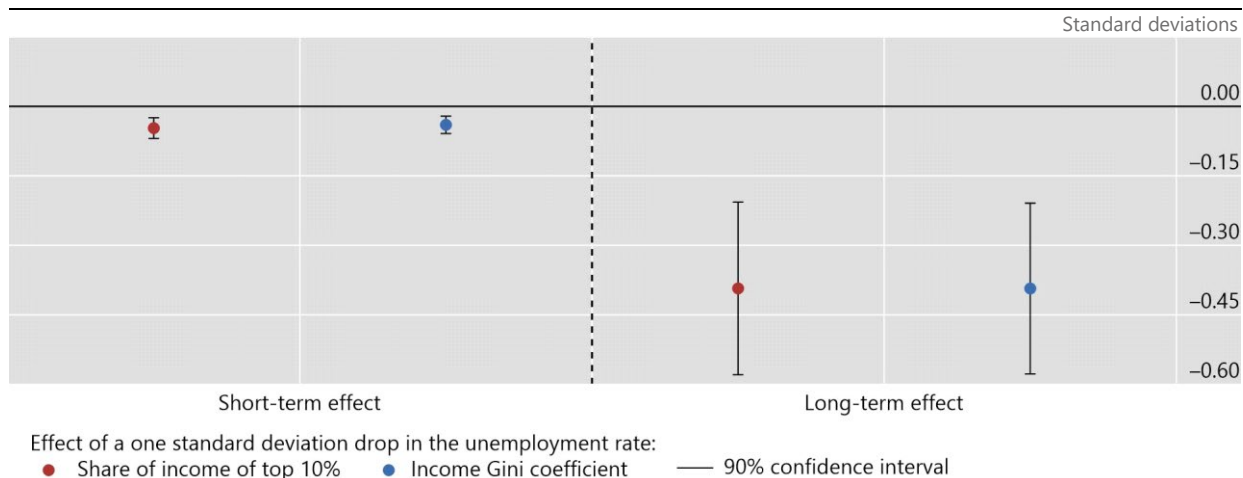
Unfortunately, after a downturn, low-income and low-skilled workers also find increasing difficulties in re-entering the labour market as the economy recovers: their qualifications deplete faster, and they may be forced to accept jobs paying less than they earned before becoming unemployed.

This explains why unemployment has a persistent impact on income inequality (Graph 6). The impact of a typical fall in unemployment during recessions is initially small but tends to build up over time. A one standard deviation decrease in the unemployment rate pushes down measures of inequality like the Gini index or the share of income accruing to the top 10% by about 0.4 of their standard deviation.

³ J Powell, “Community development”, speech at the 2021 Just Economy Conference, sponsored by the National Community Reinvestment Coalition, Washington DC, 3 May 2021.

Lower unemployment rates reduce income concentration

Graph 6



Estimated effects of a one standard deviation rise in the unemployment rate on the inequality measures, also in standard deviations. The black poles represent the 90% confidence interval.

Sources: World Bank; BIS calculations.

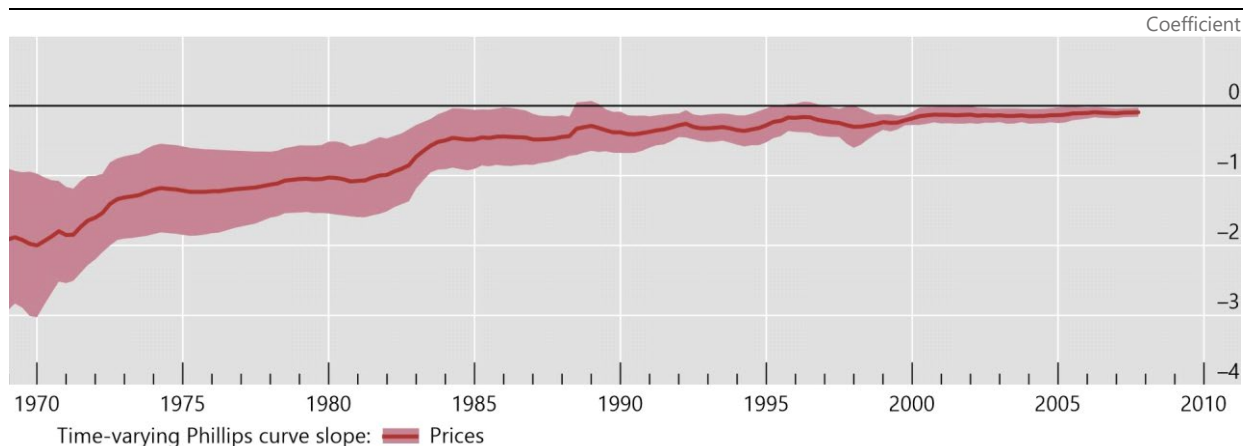
Monetary policy is operating in a more challenging environment

By keeping inflation in check and seeking to keep output stable – that is, recessions are fewer, shorter and milder – monetary policy can play its part in promoting equitable growth. Yet changes in the nature of business cycles over the past decades are complicating its task.

The first noticeable change is that the Phillips curve has become flatter for at least two decades now (Graph 7). Inflation is not just low and stable, particularly in AEs, but also less responsive to changes in the pace of economic activity. The challenge for central banks is that bringing inflation back up to target from below, where it lies in many countries, requires a much larger increase in economic activity and employment than in the last century. As a consequence, monetary policy needs to be more proactive for inflation to hit the target.

Prices are no longer sensitive to unemployment

Graph 7



Rolling 20-year window estimates and confidence bands from a panel of G7 economies.

Source: Adapted from BIS, *87th Annual Report*, 2017.



The second major change is that financial factors have played an increasingly important role and have amplified business cycle fluctuations. This is illustrated in Graph 8, which shows the evolution of one indicator of the financial cycle – the credit-to GDP-gap or the difference between the credit-to-GDP ratio and its long-term trend – around turning points of the business cycle for both AEs and EMEs. Up to the mid-1980s, this indicator moved very little relative to economic activity. But the most recent period featured large increases, which often coincide with turning points of the business cycle.

Credit-to-GDP gaps and the business cycle

Graph 8



The horizontal axis denotes quarters around recessions in the business cycles, with the peak date set at zero (vertical lines). Lines show the median evolution across the advanced economies in our sample and events in the respective time period.

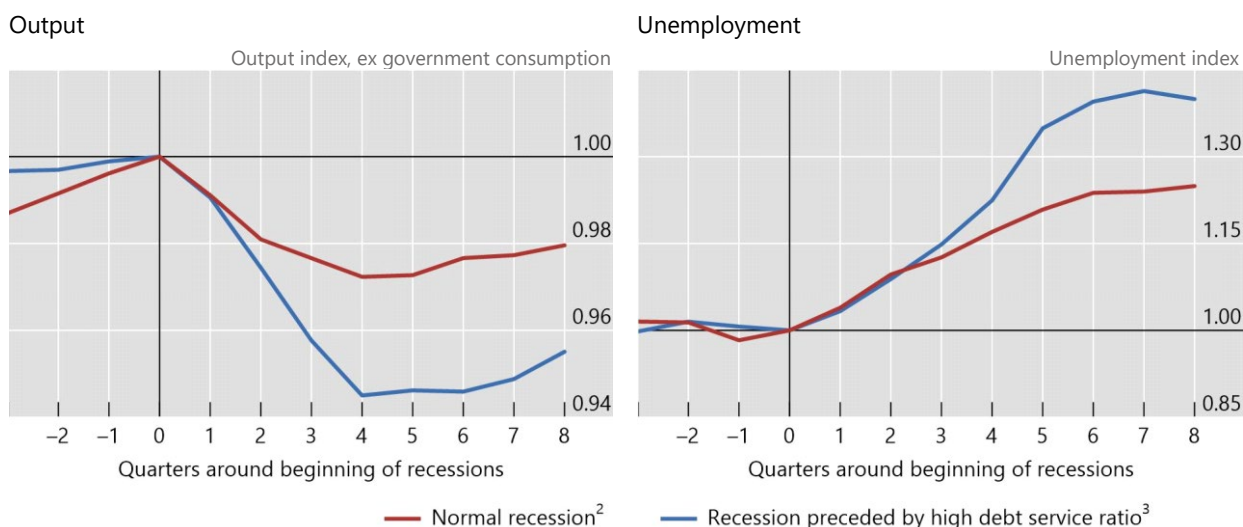
Sources: National data; BIS calculations.

Moreover, recessions in which financial factors play such a key role tend to be more severe, taking a larger toll on inequality. This is shown in Graph 9, which compares normal and financial recessions experienced in 17 countries (including four EMEs) since 1999. Here a recession is defined as “financial” if the debt-to-service ratio is unusually high before the start of each recession, which is normalised to time zero in the figure. Overall, the data panel covers 24 “normal” recessions, and 10 “financial” ones. Interestingly, eight quarters after the start of the recession the average output drop and unemployment increase are found to be, respectively, about 2.5% and 12% higher in financial recessions than in normal ones.

This suggests that by contributing to financial stability broadly defined – ie even when *not* involving a banking crisis – monetary policy can help limit the incidence, depth and duration of financial recessions. This fosters macroeconomic stability and, in turn, sustainable, inclusive and more equitable growth.

The long-term effects of recessions¹

Graph 9



¹ Based on the following countries: AT, AU, BE, CA, CH, CZ, DE, DK, ES, FI, FR, GB, HU, IE, IT, JP, KR, LU, NL, NO, NZ, PT, SE, US. Sample period: 1980–2020. ² Recessions for which the preceding debt service ratio was below the country-specific average plus 2 points. ³ Recessions for which the preceding debt service ratio was at or above the country-specific average plus 2 points.

Sources: National data; BIS; BIS calculations.

Changes in the nature of the business cycle have magnified intertemporal trade-offs and complicated central bankers' job as they seek to deliver on their primary mandate.

On the one hand, inflation's low responsiveness to slack reduces the risk that labour market overheating takes inflation out of control. Hence running a "high-pressure economy" and reaping the inequality benefits of a more inclusive labour market entail lower risks for price stability and greater benefits for income distribution.

On the other hand, protracted periods of easy monetary policy may also fuel financial imbalances. This is challenging because, as it reacts little to the economic expansion, the behaviour of inflation conveys little information on whether the economy is operating above maximum capacity. It is also very difficult to gauge the accumulation of financial imbalances in real time. Such imbalances, in turn, may sow the seeds of a more severe recession, and possibly serious financial stress and even a financial crisis down the road. The resulting downturn with bouts of unemployment can leave long-lasting scars in terms of inequality.

Another relevant trade-off arises after the recession strikes, when monetary policy seeks to stimulate and nurture the recovery. Because of the need to work off the debt overhang, the central bank has to cut interest rates more aggressively and keep them low for longer, possibly alongside large-scale asset purchases. This necessarily eases financial conditions and sustains asset prices, which can disproportionately boost the wealth of the rich, adding to inequality. This is a temporary side effect, necessary to ensure that employment is protected over time and income inequality is mitigated in the longer run. Let's not forget that the distributional outcome would most likely be more dramatic without such action. The temporary effects on wealth inequality have to be compared with the consequences of inaction in terms of employment and income inequality.

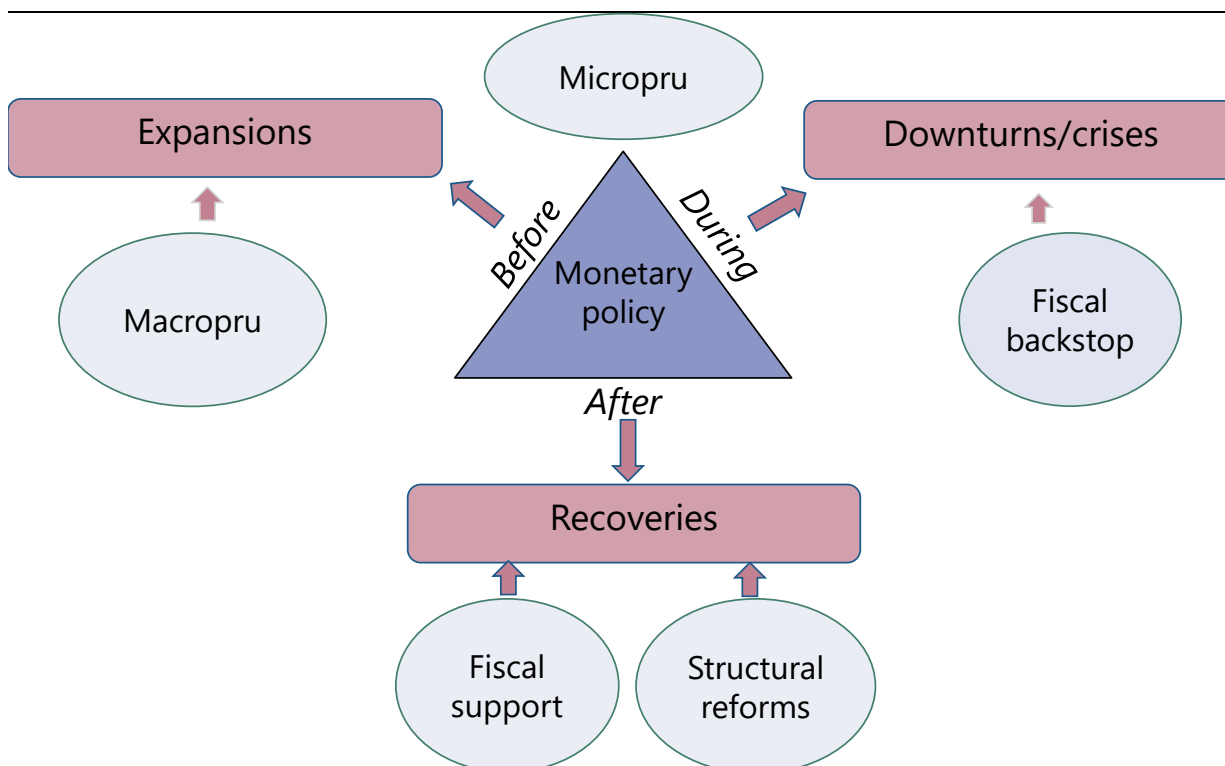
Monetary policy and financial recessions: managing trade-offs

What do these complex trade-offs mean for monetary policy? They mean that other policies need to play a complementary, supporting role to help foster sustainable growth. Monetary policy can do a lot to stabilise the economy, but it cannot do it alone.

Let me illustrate this with a very stylised representation of a business cycle amplified by financial factors, possibly including a financial crisis (Graph 10). During the expansion phase, if inflation remains low – and possibly even below target – a monetary policy focused on near-term price stability would naturally remain accommodative. During this phase, **macroprudential** measures can play a key complementary role: they can seek to slow down the financial expansion, especially in the sectors seen to raise the bigger risks for the financial system – often housing.

Monetary policy and financial recessions: managing trade-offs

Graph 10



Source: BIS elaboration.

Once the downturn sets in, it is essential that banks be well capitalised in order to remain resilient, thereby containing the economic fallout. For that to be the case, **microprudential** policy must have done its job. This is precisely what the post-GFC major international prudential reforms did pre-Covid, not least Basel III. This allowed banks to be part of the solution, rather than of the problem, once the pandemic crisis struck.

Still, banks may not be strong enough. The unwinding of financial imbalances and downturn may be so large that a financial crisis follows – the GFC is just the most recent example. At this point, monetary policy enters crisis management mode, with central banks acting as lenders and, increasingly, as market-makers of last resort. But, here again, central banks cannot succeed on their own: **fiscal backstops** are essential to stabilise banks and the overall financial system, and thereby the economy. In addition, government intervention to help repair balance sheets is critical to resolve the crisis and set the basis for a healthy recovery. However, in the process, central banks may be criticised for supporting Wall Street at

the expense of Main Street. But this is a false dichotomy, as central banks target broader financial conditions as a channel to limit the impact of the crisis for the benefit of the entire economy.

The final phase is nursing the recovery, battling the headwinds of overhanging debt. A more balanced policy mix is called for to avoid some of the side effects of prolonged very low interest rates, through asset prices, on inequality and the economy more generally. This means more supportive **fiscal policy** and **growth-friendly structural reforms** to prevent central banks from becoming “the only game in town”.

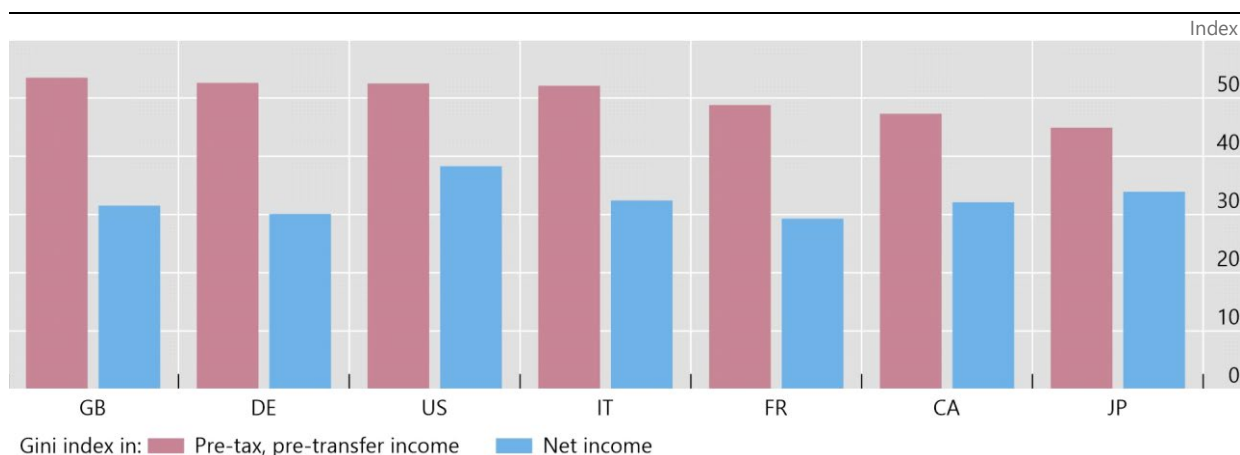
Beyond monetary policy

None of this, of course, addresses the longer-term forces driving trends in inequality. Fiscal and structural policies do. And we should not forget that central banks can also contribute to a more equitable society by performing a range of non-monetary functions attributed to them by law.

Fiscal policy is a good example of how powerful government policies can be, as it has the appropriate tools to mitigate inequality. The substantial impact of fiscal policy on income distribution is evident (Graph 11). For all AEs, inequality measured on post-tax income is lower than that measured on pre-tax income – for some substantially so. In Germany, a country with a relatively strong social safety net, the 2015 post-tax Gini coefficient is almost halved, falling to 30 from above 50.

Pre- and post-tax inequality in advanced economies

Graph 11



Time of data for countries: US (2016), GB (2017), JP (2015), DE (2015), FR (2017), IT (2014), CA (2013). Gross income data are unavailable for JP and FR.

Sources: Standardized World Income Inequality Database (SWIID); UNU-WIDER, World Income Inequality Database (WIID); BIS calculations.

Structural policies are equally important. They set the foundations for a more equitable society by tackling some of the root causes of inequality. Think of all the impediments that set back the most disadvantaged: poor education systems, lack of access to healthcare, lack of competition, inadequate consumer protection and poorly regulated labour markets.

Part of the impediments to opportunities that I have just mentioned pertain to the financial system, and in some countries fall within the realm of non-monetary functions attributed to central banks by law. Many central banks have prudential responsibilities and thus play an essential role in maintaining bank resilience and ensuring financial stability. Others promote financial inclusion that, particularly in poorer countries, can reduce income inequality by boosting self-employment and growth opportunities. Financial services consumer protection also shields the poor and more vulnerable from predatory lending and, together with policies supporting financial literacy, from excessive risk-taking. Efforts to develop



efficient and competitive payment systems help reduce overall costs, not least for cross-border remittances. And finally, fostering financial development increases the menu of options available to households to hedge and diversify risks.

Conclusions

To conclude, inequality is not a monetary phenomenon over the long run. Yet central banks are fully aware of the consequences of their actions on income and wealth distribution over shorter horizons.

While they do not have the necessary tools to achieve targeted distributional outcomes on top of their mandated objectives, they can go a long way in contributing to an equitable society by fulfilling their mandates. This means seeking to keep the economy on an even keel, so that price, financial and macroeconomic stability prevail. High inflation and recessions can be extremely costly for inequality.

But keeping the economy on an even keel is not something monetary policy can do on its own. Moreover, changes in the nature of the business cycle, with financial factors playing a bigger role, have complicated the trade-offs monetary policy faces. In order to address these trade-offs, other policies must play their part, notably prudential, fiscal and structural. A balanced and comprehensive policy mix is needed.