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Monetary policy, technology and inequality

Based on remarks by Luiz Awazu Pereira da Silva[1]

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Introduction

Post-Global Financial Crisis, a typical question triggered by the wealth effect of unconventional monetary policies has been whether monetary policy has contributed to rising income and wealth inequality (Domanski et al (2016)). The indications are that it has not been among the main drivers of income inequality[2]. For instance, as to what regards monetary frameworks, income inequality has risen in inflation targeting countries and in non-inflation targeting countries alike, and in countries with or without unconventional monetary policies. Monetary policy stabilises the business cycle and inflation, and thus the more cyclical components of inequality. The conventional view is that monetary policy can limit the volatility of inflation, which penalises first and foremost the poorest households, whose assets, such as cash and bank accounts, are not protected against inflation. More recently, however, inflation has become a lower risk, at least in most OECD countries. Hence the debate on monetary policy and inequality has turned to employment, or rather unemployment risk. Indeed, cyclical increases in unemployment are much more likely to lower the income of workers with fewer marketable skills. When national unemployment rises, the increase is much larger in the poorest neighbourhoods and among ethnic minorities.

Hence the recent debate on monetary policy and inequality, as exemplified by the Federal Reserve's review of its monetary policy strategy in August 2020 emphasised countering inequality by ensuring that recessions remain mild and short-lived. This finds roots in the notion that unemployment and the associated loss in income are the main drivers of income inequality, which in turn cumulates into wealth inequality. Thus, properly run monetary policy works as a safeguard against rising inequality (Romer and Romer (1999)). On top of dampening cyclical fluctuations, price stability will also facilitate longer-run income stability and growth. So, in a world where the "divine coincidence" holds, central banks would only have to focus on their traditional mandates. In particular, inequality would also be addressed by protecting the purchasing power of the poor's main assets, typically deposits and cash. This makes, in theory, central bankers' job quite straightforward, and leaves structural issues that affect inequality to be dealt with in other policy spheres in particular fiscal and structural reform policies.

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[1] Deputy General Manager, Bank for International Settlements (BIS). I would like to thank the contributions of Jon Frost, Leonardo Gambacorta, Emanuel Kohlscheen and Marco Lombardi, respectively Senior Economist, Head of the Innovation and the Digital Economy unit, Senior Economist and Senior Economist, all at the BIS. I thank Giulio Cornelli, Mert Onen, Emese Kuruc and Alberto Americo for excellent research assistance. I also thank Benoît Mojon for useful comments. The views expressed are my own and do not necessarily represent those of the BIS.

[2] Inequality seems to have risen mainly because of secular trends beyond central bankers' reach: technological progress, globalisation and the associated erosion in workers' bargaining power. Technological progress and globalisation have been the most important drivers of income and wealth gaps (eg Jaumotte et al (2013)) and what role these play in growth (Berg et al (2018)).

However, central banks are fully aware that in the real world, things are more intertwined. Income inequality has been rising steadily since the Great Moderation – against the backdrop of lower unemployment and inflation volatility. Irrespective of its causes, inequality has surged to a degree that influences the mechanics of the business cycle, particularly as households' propensity to spend depends crucially on their income. In addition, low-income households save less than wealthier ones. Rising inequality can therefore change the transmission of monetary policy, a hypothesis that central banks are re-assessing carefully. And indeed the issue is rising on central banks' policy agendas.

Inequality raises the issue of policy effectiveness as it may affect, for example, the transmission of central banks' actions to fulfil their mandates of price and financial stability. By taking predominantly a convenient view in which agents are homogeneous, we can neglect other important transmission channels.

During the Covid-19 pandemic and the associated recession, the increase in wealth and income disparities has come further into the limelight (Ahmed et al (2020)). Central banks reacted quickly to support aggregate demand, in an unprecedented coordinated effort with treasuries that in many instances designed new policies to target specific segments that were severely hit by the pandemic (BIS (2020)). However, as we look now early 2021 toward the rollout of a vaccine and the pace of the recovery, what the post-pandemic world will look like in terms of the sectoral composition of output and the level of employment remains highly uncertain. This brings us back to the issue of policy effectiveness, and notably whether the currently elevated rate of savings will persist. We have also learned that financial technology can play an inclusive role, enhance the speed and transmission of payments, and reduce the cost of access to credit. When it comes to inequality, among many questions, will digital technologies be part of the solution, and can central banks use the lever of new technologies in the pursuit of their policy mandates to increase their effectiveness?

These remarks address the role of technology in central banks' thinking on inequality. They start by discussing inequality in light of a core function of central banks: monetary policy. We will show that inequality hinders monetary policy transmission and job creation. We then ask: can technology help? There are a number technology infrastructures that can help to improve inclusion, and we see concrete evidence of this already. But we will also discuss a number of challenges. These include new forms of segmentation in credit markets and new forms of income and wealth concentration around big techs. We conclude with some thoughts on what public policy can do to harness the power of digital technologies to promote efficiency and equity.

Monetary policy and inequality: why bother?

Monetary policy affects household income mostly through employment. Second, it affects spendable income through the interest bill on mortgages and the income accrued from savings. Third, tighter labour markets due to loose monetary policy may also bring higher wages as firms struggle to attract more skilled workers.[3] For households, variation in terms of type of employment and skills and, to a lesser extent, assets and liabilities can lead to very different effects of changes in the monetary policy stance. For example, low rates benefit borrowers (mostly middle class and young or middle-aged) at the expense of savers (mostly elderly middle class or wealthy). Yet some poorer households may be prevented from borrowing due to their lack of collateral, and so will not benefit from lower rates. Low rates are also likely to boost asset prices, which are held only by pensioners and the small fraction of households, typically among the 5% richest in most OECD countries, which hold stocks. Under such circumstances, determining the final effect of monetary policy on inequality is mostly an empirical question whose answer depends on the scale of

[3] The relevance of this effect along the intensive margin depends on the bargaining power of workers, which has been eroding over time; see Lombardi et al (2020).

heterogeneity among households. As one would expect, most empirical studies (eg Kharroubi et al (2021)) actually find that more accommodative monetary policy reduces income inequality. This is because lower unemployment increases income among poorer households. Changes in interest income for savers and payments for borrowers remain small in comparison with the effects of unemployment.

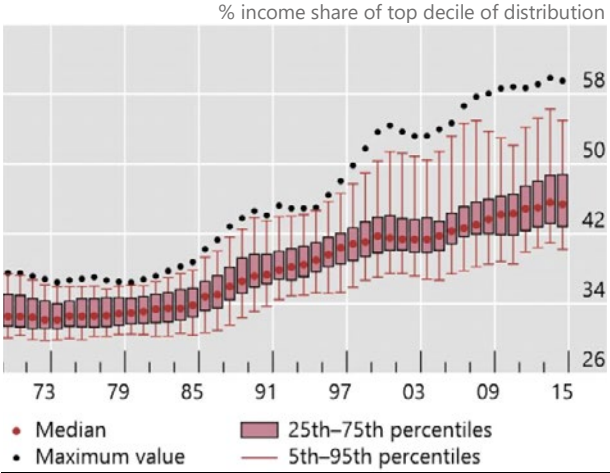
The effects are opposite for wealth inequality: households at the bottom of the distribution are renters, the middle class owns mainly real estate and bank deposits, and those at the top own more sophisticated (and higher-yielding) financial assets, equities in particular.

In light of these developments, the issues of transmission across different groups and, implicitly, inequality have featured more prominently in major central banks' current review of monetary policy (Powell (2020)). In practical terms, some central banks are extending their description of the monetary transmission channel to heterogeneous agents New Keynesian models (see Kaplan et al (2020), and Feiveson et al (2020) for a background paper for the strategy review of the Federal Reserve).

For example, it is clear that income inequality has increased across the US states, as reported for instance by the Sommeiller and Price (2018) data set (Graph 1, left-hand panel). This shows the growing income share of the top decile of the distribution. Why does this matter? For one thing, Kharroubi et al (2021) show that more inequality is associated with steeper declines in private consumption during recessions (right-hand panel), precisely at the time when it matters most. This can also be clearly seen using more granular data from US states. For example, during the 2007–09 GFC, private consumption fell by significantly more in US states that had higher pre-crisis concentrations of incomes. So, despite the role of macro policies to smooth downturn across all states, inequality has a higher contraction cost in more unequal states.

A cost of rising inequality in the US: deeper recessions due to the GFC — Graph 1

Income inequality across US states



GFC: more unequal US states had steeper declines in consumption[1]

[1] Aggregate private consumption growth between 2007 and 2009 as a function of the income share of the top 5% earners in the respective state.

Sources: Kharroubi et al (2021); Sommeiller et al (2018).

That higher levels of income inequality are associated with steeper declines in private consumption during recessions applies more generally across space and time. By analysing data from a large sample of advanced economies, in Kharroubi et al (2021) we further show that more inequality implies steeper recessions (Graph 2, left-hand panel). And the difference is material: during a recession a country at the 90th percentile of income inequality experiences a drop in consumption that is 3 percentage points larger

than that experienced by a country at the 10th percentile of income inequality. Why? A plausible explanation is that higher concentration of income goes hand in hand with more cyclical unemployment rates and more cyclical income of the middle class. As the propensity to consume income is higher for poorer households, a more cyclical income is compounded into a steeper response of consumption.

What is more, inequality reduces the effectiveness of monetary policy transmission (Kharroubi et al (2021)). High income concentration can indeed affect the transmission of monetary policy through the different effects easy monetary conditions have across heterogeneous households. Wealthier households have a much lower propensity to consume; hence their consumption may be less reactive to monetary stimulus. In turn, poorer households may not benefit from easier credit conditions because they lack collateral or adequate credit scores and are hence unable to borrow.

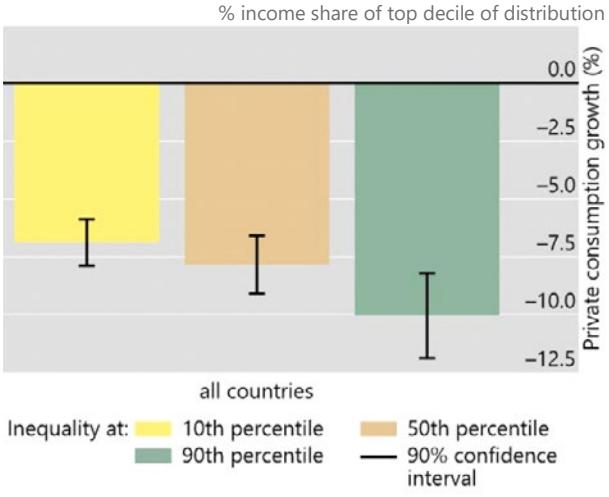
To show this, we report estimates[4] of how income inequality interacts with the transmission of monetary policy to real private consumption growth in advanced economies (Graph 2, right-hand panel). The dots represent the central estimates of cumulative real private consumption growth (in per cent) per 100 basis points of an expansionary monetary policy shock by quantile of income concentration. We can see that in countries with higher inequality (darker dots), the effect of monetary policy easing on growth is limited in year 1 and much lower later than in more equal countries (lighter dots, in each column, at the top). An expansionary monetary policy shock (ie an interest rate surprise), leads to a significant increase in real private consumption growth in the same year and in the following two years. However, more concentrated income (ie a higher share of post-tax income accruing to the top decile) tends to significantly attenuate this expansionary effect.

There is corroborating evidence from other studies. For instance, Doerr et al (2020) find that rising top income shares may be associated with less credit to small businesses and less job creation. This is because high-income households save relatively less in the form of bank deposits, and small firms are bank-dependent. The authors of this study find that a 10 percentage point rise in the income share of the top 10% reduces the net job creation rate of small firms by 2 percentage points relative to large firms. This could choke off the type of lending that central banks have in many cases been trying to encourage, particularly during the Covid-19 pandemic. The bottom line is: concentration of income can affect the transmission of monetary policy.

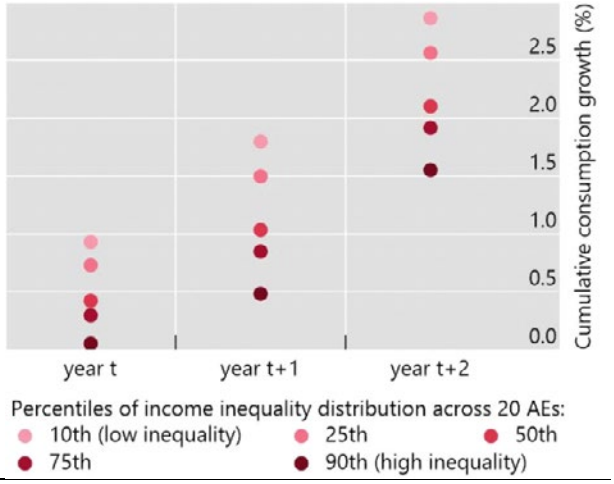
[4] In Kharroubi et al (2021), a two-step empirical exercise is conducted with a standard panel vector autoregression (PVAR) using quarterly data from 1999 to 2019 and 30 advanced economies, with country and time fixed effects.

Inequality reduces the effectiveness of the transmission of monetary policy Graph 2

Recessions in more unequal countries are steeper[1]



Estimates of cumulative consumption growth (in %)[2]



[1] Estimated fall in per capita consumption during recessions at each percentile of inequality in the income distribution. Recessions are defined as a year of negative growth, and the share of income of the top 10% is taken as the indicator of inequality. Based on estimated coefficients of a cross-country panel with fixed effects. The specification regresses consumption growth on its lag, on an indicator of a recession, on the share of income held by the top 10% and on the interaction between the latter two variables. The sample period is 1972 to 2019. The "all countries" sample is based on 129 countries. [2] Results of the central estimates of cumulative consumption growth (in %) per 100 basis points of an expansionary monetary policy shock using a standard panel vector autoregression (PVAR) with quarterly data from 1999 to 2019 for 20 advanced economies.

Source: Kharroubi et al (2021).

Can digital technologies reduce inequality?

Naturally, income and wealth inequality can be mitigated by many other policy instruments that are associated with structural reforms in our economies. But in the realm of the financial sector, central banks and regulators, one question is, can digital technologies help? Can innovations promote greater equity and efficiency, and boost the transmission of monetary stimulus? The good news is that we do have some encouraging evidence from countries around the world.

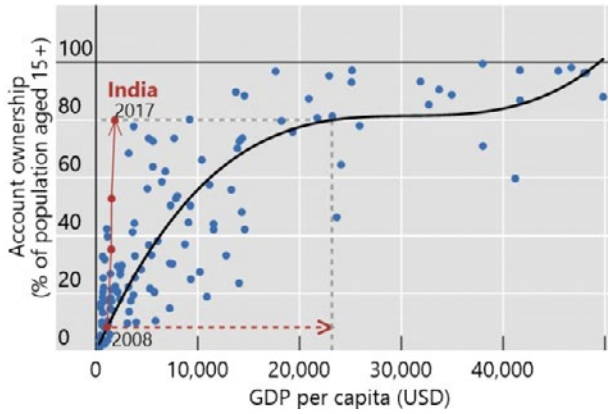
One technology is digital identity (ID) infrastructure, like India's Aadhaar. "Aadhaar" is Hindi for "base" or "foundation". In India, the introduction of government digital ID has drastically reduced the costs of onboarding – by one estimate from 15 US dollars per new account to 7 cents. This has allowed a dramatic increase in the share of adults with a bank account – from 10% in 2008 to over 80% just 10 years later (Graph 3, left-hand panel). This increase would have taken 47 years relying on normal economic growth processes alone (D'Silva et al (2019)).

India is certainly an important case, but it is not entirely unique. Graph 3 (right-hand panel) shows progress in account access across regions, from the World Bank. South Asia, shown in black, sticks out, driven in large part by India. But you can see that in sub-Saharan Africa, there has also been a strong increase – a doubling in account access between 2011 and 2017. This was driven in particular by mobile money innovations. Mobile money is also an important driver of inclusion in the Middle East and North Africa and in Latin America and the Caribbean.

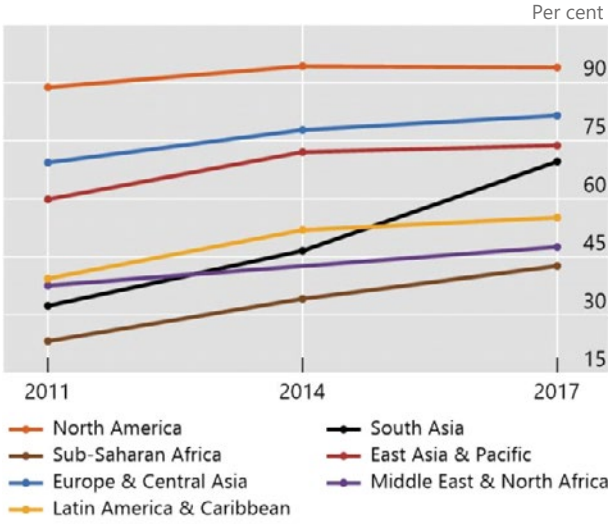
Technology has helped to support dramatic improvements in account access

Graph 3

Progress with account access after India's Aadhaar digital ID[1]



Progress with account access across regions, especially South Asia



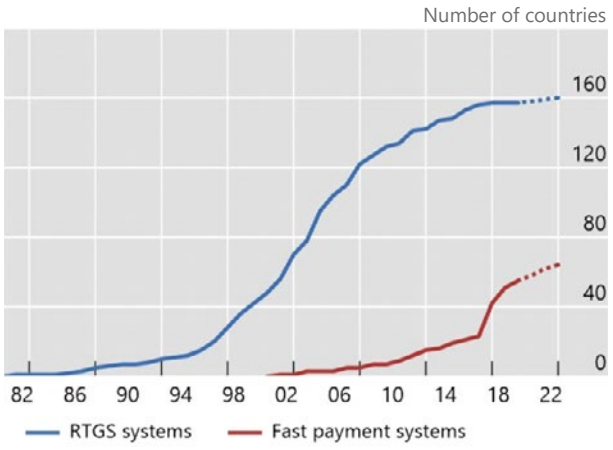
[1] Data for 2011; for India, 2008 (estimate), 2011, 2014 and 2017.

Sources: BIS (2020): D'Silva et al (2019); World Bank.

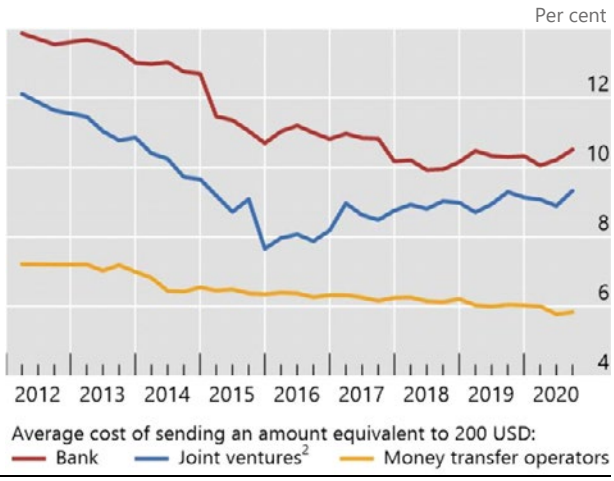
Technology is allowing faster, cheaper payments at home and abroad

Graph 4

Diffusion of fast retail payment systems in the world[1]



Payment innovations are reducing remittance costs



[1] The dotted part of the lines corresponds to projected implementation. [2] Partnerships between non-bank firms and financial institutions.

Sources: World Bank (2020); BIS (2020); authors' calculations.

Technology has also been a key driver of the costs of migrants' remittances. Currently, migrants pay an average of 7% fees to send a remittance of $200 home (World Bank (2020)). These costs have fallen over time, and technology has been an important driver. Indeed, non-bank money transfer operators charge consistently less for remittance services than banks and joint ventures (Graph 4, right-hand panel). Competition from these non-bank providers may also be an important reason for the decline in remittance costs for banks. It is notable that during the Covid-19 pandemic, the costs for banks and joint ventures have actually ticked up slightly, while those for money transfer operators have not.

Fintech allows credit to reach individuals and firms that are typically unbanked. This should increase the effectiveness of monetary policy transmission. For instance, most small and medium-sized enterprises (SMEs) in China, India and Latin America do not meet the minimum requirements for a bank loan application, especially since they cannot provide audited financial statements or other formal documentation (Gambacorta et al (2019, 2020)). This does not allow them to be rated by a credit bureau. Big tech firms are able to overcome these limitations by exploiting the information provided by their core businesses, such as e-commerce or social media, with no need for additional documentation from merchants.

Evidence from BIS researchers (Frost et al (2019)) shows that the internal ratings of big techs, which use big data and machine learning, are better able to predict losses. Graph 5 (left-hand panel) shows the loss rate, ie the volume of loans more than 30 days past due relative to the origination volume for the case of Mercado Libre in Argentina. While both the internal rating and the credit bureau rating are continuous variables (between 0 and 1,000), they can be segmented into five different risk groups (A through E) versus three clusters identified by the credit bureau.

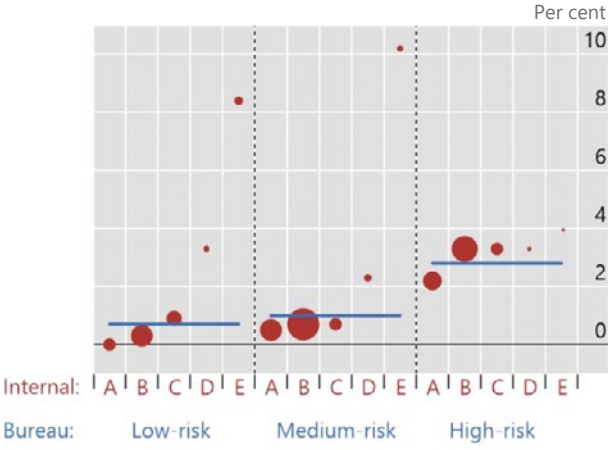
For a given bureau rating (eg low-risk), the expected loss rate is strictly monotonic with the internal rating (ie the patterns of the dots show that the internal rating orders expected loss). Conversely, given an internal rating (eg C, D or E), the loss rate is not strictly monotonic with the bank bureau risk. For example, the dot associated with internal rating D in the low-risk bureau category indicates a higher risk than the internal rating D in the medium-risk bureau category. Moreover, the internal rating has a broader range, covering losses from 0.0 to 10.2%; the bureau rating ranges from 0.7 to 2.8%.

Most importantly, by using its proprietary scoring model, Mercado Libre is able to serve the profiles assessed as high-risk by the bureau. The size of the dots is proportional to the share of the firms in rating distribution. Thirty per cent of the portfolio originated by Mercado Libre would fall into the high-risk cluster. Banks use a mix of credit bureau information and soft information from loan officers, but in general would not lend to these borrowers in Argentina. These simple statistics indicate that the internal rating system of Mercado Libre is more granular than a traditional credit bureau, and allows the firm to serve vendors that would be otherwise be excluded from the provision of credit. It remains to be verified if an internal rating system based on machine learning and big data from the e-commerce platform can outperform (ex post) the more traditional models in predicting defaults over a full business and financial cycle.

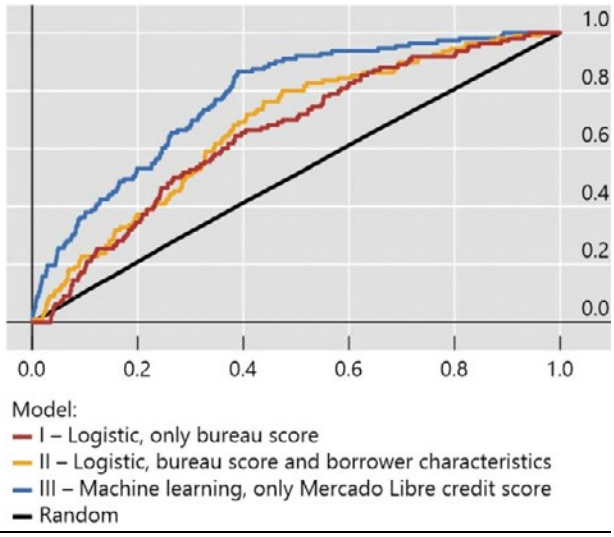
There is also more formal evidence on the predictive power of machine learning-based credit scores. Graph 5 (right-hand panel) reports the area under the receiver operating characteristics (ROC) curve for different models in Argentina. The ROC curve is created by plotting the true positive rate against the false positive rate at various threshold settings. The area under the ROC curve ranges from 50% (purely random prediction) to 100% (perfect prediction). The 45 degree line corresponds to tossing a coin. We consider three models. The red line is a logistic model with only the bureau score. The yellow line is a logistic model with the bureau score and borrower specific characteristics. The blue line is the machine learning and big data model of Mercado Libre. The predictive power rises substantially for the model that use a machine learning technique applied to the data from the e-commerce platform.

Technology and big data can help enhance credit access for small firms Graph 5

Loss rates by big tech internal ratings vs the credit bureau in Argentina[1]



Better prediction of default using ML big data as seen by ROC curves for the different credit score models[2]



[1] The loss rate is the volume of loans more than 30 days past due relative to the origination volume. In its use to date, the internal rating of Mercado Libre is better able to predict such losses. It segments the originations into five different risk groups, versus the three clusters identified by the credit bureau. The size of the dots is proportional to the share of the firms in the rating distribution. The horizontal blue lines indicate the average loss rates for each credit bureau cluster. [2] True positive rates versus false positive rates for borrowers at different thresholds for a logistic model with only the credit bureau score (I), a logistic model with the bureau score and borrowers' characteristics (II), and a machine learning model with the Mercado Libre credit score (III). A random model is included for comparison purposes. The ROC curve shows that the machine learning (ML) model has superior predictive power to both the credit bureau score only and the credit bureau score with borrower characteristics.

Source: Frost et al (2019).

Some important challenges: can digital technology offset exclusion?

Overall, technology holds great promise to enhance inclusion – but there are also important challenges. Could financial technology be sophisticated and significantly improve risk assessment, but not be sufficient to offset discrimination and exclusion?

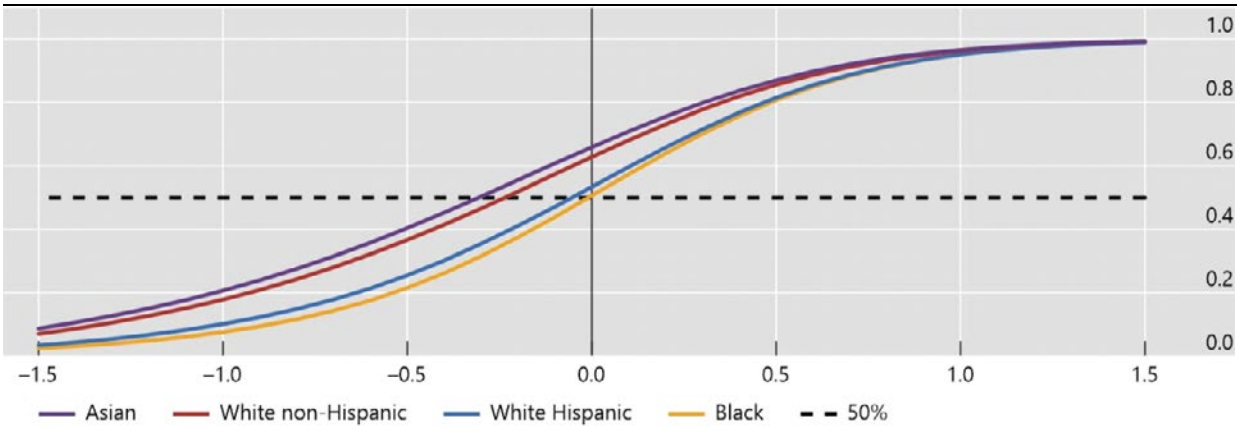
As one example, a study by Fuster et al (2020) looks at machine learning-based credit scoring in US mortgage markets. They find that white and Asian Americans benefit disproportionately from the new machine learning models. Black and Hispanic borrowers benefit less. Graph 6 shows the cumulative share of borrowers for each change in the predicted probability of default. For white and Asian borrowers, about 65% are better off with the machine learning model. This is only 50% for Black and Hispanic borrowers.

Another challenge is to increase the dissemination of technology, since currently it is adopted primarily by the wealthy. Frost et al (2020) have shown evidence of the Matthew Effect – the tendency for the rich to get richer. The name comes from the New Testament Book of Matthew, which states: "For unto every one that hath shall be given". This tendency is explored in many areas in the social sciences. In Italy, the researchers show that higher-wealth households have achieved consistently higher returns than lower-wealth households (Graph7, left-hand panel). They also find that especially higher-wealth households were able to benefit from remote banking access – an early form of fintech (right-hand panel). Another study

finds comparable evidence for the United States, where gains from financial technology have accrued disproportionately to high-wealth investors since the early 2000s (Mihet (2020)).

Credit innovations may benefit different ethnic groups differently

Cumulative share of borrowers — Graph 6



The horizontal axis reports the change in the log predicted default probability as lenders move from traditional predictive technology (a "Logit" classifier) to machine learning technology (a "Random Forest" classifier). The vertical axis reports the cumulative share of borrowers from each racial group that experience a given level of change.

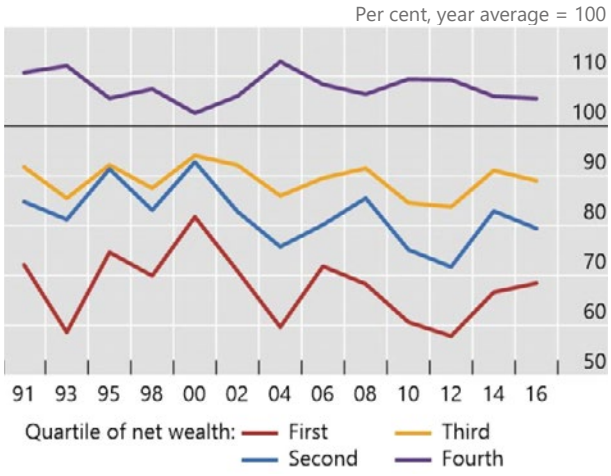
Sources: Fuster et al (2020); Gambacorta et al (2019).

An implication of these findings is that other accompanying policies are needed to address these challenges. Technology may be helpful – in this case to achieve higher returns – but if it is adopted primarily by those who are already well off, it may enhance inequality. We often hear of the "digital divide". The good news is that in Italy, this tendency has declined over time, as remote banking has become more widely diffused (Frost et al (2019)). That is, technology does not produce disparities when it is for everyone.

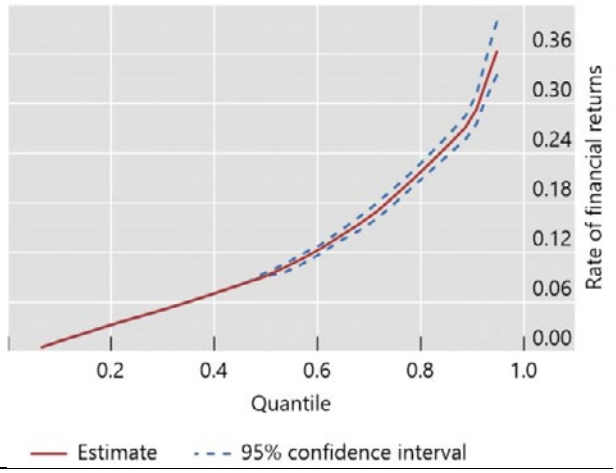
The Matthew Effect: inequality in returns to wealth

Graph 7

Rate of financial returns of Italian households by net wealth quartile[1]



Effect of remote banking access on financial returns[2]



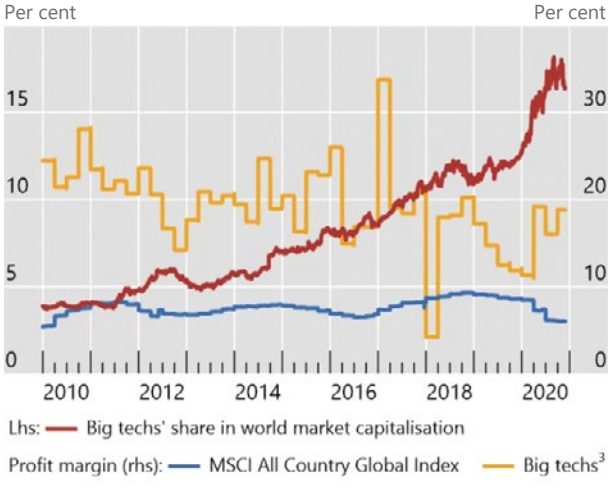
[1] The graph indicates that households with wealth in the top quartiles of the distribution have consistently received higher returns on their investments than other wealth quartiles. [2] The graph indicates that remote banking access has a positive impact on the returns to household financial wealth. This increases starkly moving towards the top of the wealth distribution.

Source: Frost et al (2020).

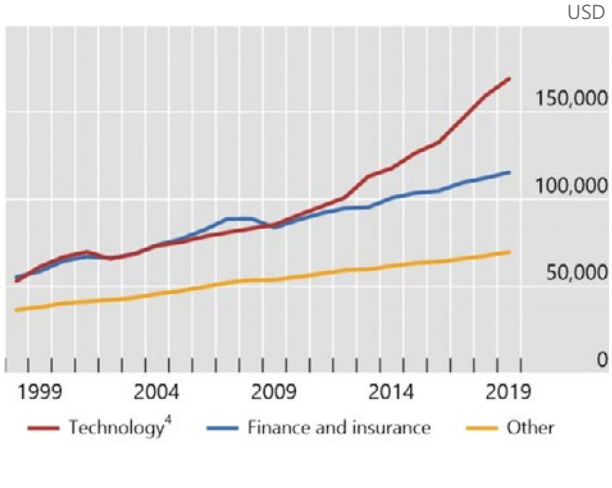
Big techs have a rising share in overall market cap and higher profitability, and the "tech premium" in labour markets is rising

Graph 8

Share of big techs[1] in overall stock index[2] and profit margins



Average salary in the US by industry[3]



[1] The sample includes Alibaba, Amazon, Apple, Baidu, eBay, Facebook, Google, Kakao Corp, Line, Microsoft, NTT Docomo, Rakuten, Samsung and Tencent. [2] MSCI All Country Global Index. [3] Average profit margin. [4] Average of publishing industries (includes software) and information and data processing services. The graph shows that in the last decade the average salary for employees in the technology sector has increased approximately 50% more than the wages in the financial sector.

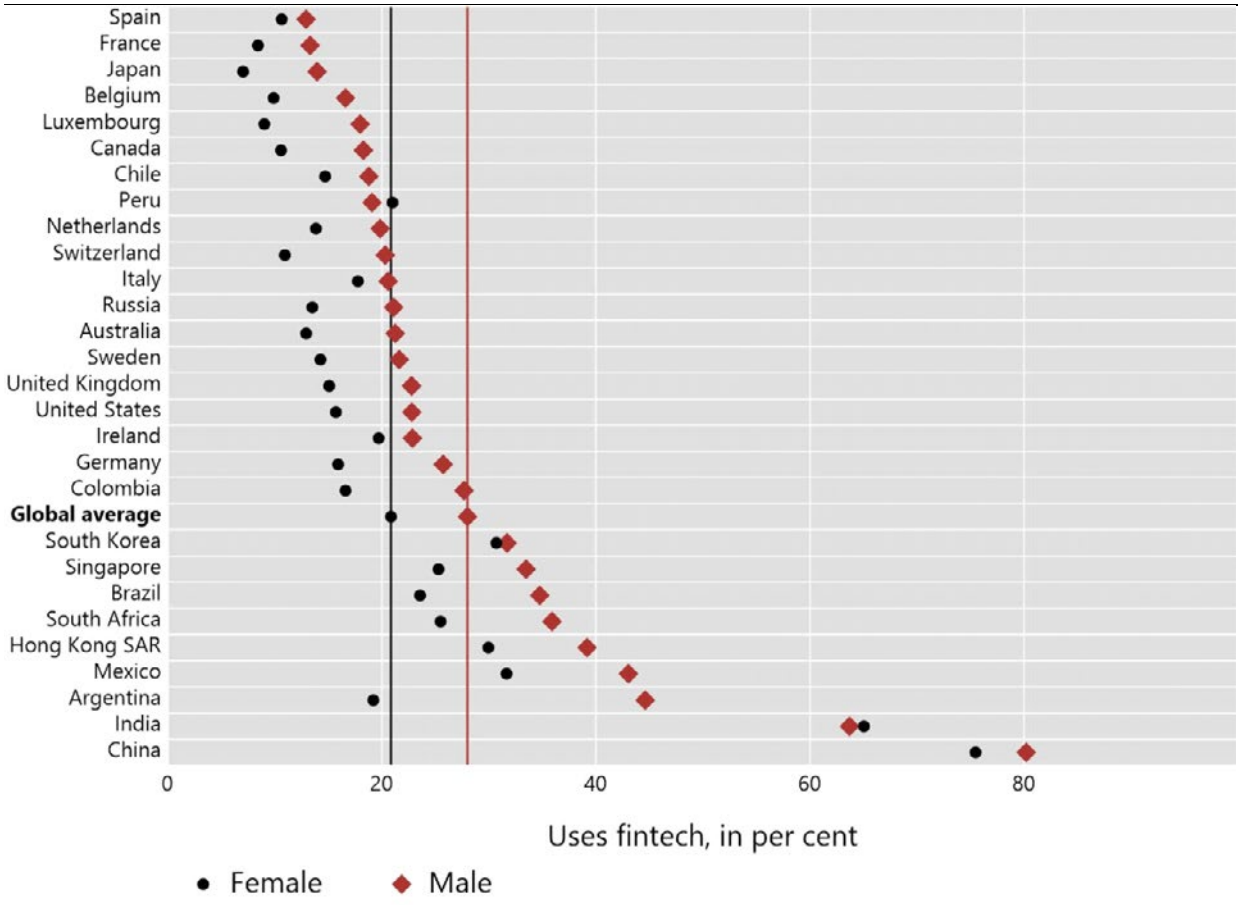
Sources: Bureau of Economic Analysis; Bloomberg; authors' calculations.

In recent quarters – and particularly during the Covid-19 pandemic – we see another striking trend. Big tech companies, which make widespread use of digital technologies, have been highly profitable (Graph 8, left-hand panel). You can see the yellow line is consistently higher than the blue line, which represents profitability for all companies in the MSCI All Country Index. As a result of this, the share of big techs in global market cap has risen, from less than 10% in 2011 to over 30% today. Indeed, e-commerce platforms like Amazon or Mercado Libre have done very well during the pandemic, seeing a big increase in demand for their services. That helps to explain the steepening of the red curve in early 2020.

This divergence between tech firms and the rest is also apparent in labour markets. Before and after the GFC, there was a debate about wages in the financial sector, and how abnormally high wages may pull the best and the brightest away from other sectors in the "real economy" (Philippon and Reshef (2012)). You can see that divergence in Graph 8 (right-hand panel) – finance and insurance do indeed pay higher wages than other sectors, though the gap narrowed a bit after the crisis. What is striking is that the technology industry – software, IT and data processing – is now paying wages that are more than twice as high as those of other sectors, and much higher than in the financial sector (Pereira et al (2019)). This so-called "tech premium" has continued rising, and it is even possible that this, too, has increased in the pandemic.

A final challenge is that technology on its own may not close the gender gap in access to financial services. Indeed, a new study by Chen et al (2020) looks into the fintech gender gap – the difference in the use of fintech products and services by gender. The authors find that in nearly every country surveyed, women are less likely to use fintech than men (Graph 9). India and Peru are the two exceptions. The authors also find that women are less willing to share their data in exchange for better offers on financial services, that they worry more about their security when dealing with companies online, and that they are less willing to use fintechs for innovative services. Overall, for a variety of potential reasons, it seems that fintech providers are not yet adequately catering to women. If fintech is to help make our financial system more inclusive, then additional policy efforts – around digital ID, data protection regulation and digital and financial literacy – may be needed. In these areas, central banks and regulators may have to cooperate with other public authorities.

Use of fintech products and services by country and gender Graph 9



Source: Chen et al (2020).

Conclusion

Monetary policy has become more concerned with inequality, mostly because inequality is likely to impact its transmission and its effectiveness. This has been backed by growing empirical evidence for advanced economies, including some of my current research (Kharroubi et al (2021)). This new body of evidence resonates with ongoing reviews of monetary policy frameworks, most prominently that of the Federal Reserve. While inequality influences monetary policy transmission and job creation, it should be particularly relevant at the current juncture since the Covid-19 pandemic has worsened poverty, especially of workers in the most heavily customer-facing sectors, and inequality has increased even more than in previous recessions.

Can technology help? New financial technology can certainly increase financial inclusion and thus enhance policy effectiveness. Yet by itself, without the support of other policies, it can also be insufficient to fully offset discrimination. Overall, we see that technology holds enormous promise to enhance financial inclusion and thus reduce inequality – and we see concrete evidence of this already. But there are several challenges, and ways in which digital technologies could need to be combined with other policies in order to avoid new forms of exclusion.

For technology to contribute even more to inclusion, we need to promote its quality as a "public good" – its availability to all with a wide diffusion. That could entail looking at fostering public platforms and competition and preventing innovation from being captured and managed by the few.

Hence, public policy interventions have to aim at promoting both efficiency and equity. This can include building public infrastructures like digital ID or fast retail payment systems. It could also include a balanced regulatory approach, incentivising innovation and avoiding rent-seeking. That requires concrete progress on inclusion metrics from both incumbent financial institutions and new fintech and big tech challengers. It also implies adapting regulation and supervision and continuing research on the effects of our digital transformation.

Overall, technology is obviously unlikely to solve the problems of inequality on its own. An array of structural policies is needed, as is well known (eg Milanovic (2019), Atkinson (2015) and Bourguignon (2015)). One promising lead is that new digital technologies may also make other policies more efficient. For instance, fiscal policy may use better digital ID tools to target specific households benefiting from conditional cash transfer (CCT) programmes, or the speed of settlements and transfers might allow poor households to be reached much faster. Moreover, if technology enhances policy coordination, it can increase the overall efficiency of public policies in general. In the domain of the financial sector, if central banks and regulators want technology to be a force for both efficiency and equity, we have to promote wide diffusion and support for important public policy goals. It is up to policymakers in all areas to contribute to these goals and thus to a more equal, more efficient and more inclusive economy.

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