

The Inequitable Growth Story

Do Labor Markets and Monetary Policy Have a Part?

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Abstract:

The topics of inequality in growth and unfair labor markets have been a part of the public chatter on both sides of the aisle. There is little doubt that the rich have become richer at the expense of the poor. Fiscal and public policy have played a part and that has been much discussed, including by the authors of this piece with the conclusion that there is room on the fiscal side of policy to close that gap, especially among the richer countries with vast resources.

As a sort of closing loop in all things policy, we believe it is important to study the effect of monetary policy and the state of the labor markets in defining inequality. In order to gain universal credibility, it is important to focus on both America and across the Atlantic. It is also important to view all sides of the story to get to a more objective conclusion.

Some indications point to an unhealthy presence of monopsony on a universal basis. There are also studies that clearly show the lack of labor market violations being tried as anti-trust cases. Some of the minorities are at a disadvantage both in terms of wages and job stability. On monetary policy, there is a distinct effect on the income and wealth of the different deciles under study. What is revealing is that these policies notwithstanding, the effect is disproportionately more intense on the lower income and wealth deciles relative to the upper echelon, leading to an even wider gap in terms of inequality.

What remains unanswered is whether poverty elimination and increasing inequality can coexist. Or, actually, should they?

Introduction:

Much has been said about the role of fiscal policy and inclusive growth. The role of central banks has been traditionally defined to be a dual function: stable prices and healthy employment. So, the role of monetary policy has been rather vague in promoting economic growth on an equitable basis. There are political ramifications, indeed, when an independent agency, such as a central bank, delves into policymaking when there is a perceived absence of a mandate to do so. Lately, though, especially since the Biden administration, there have been calls for the Federal Reserve Bank to be more engaged in mitigating inequality and be more broad-based in its approach and policymaking. The Fed Chair, J Powell, himself, has asserted the need for inclusivity in growth.

After all, the actions of central banks across the globe - whether expansionary or contractionary - do have an impact on the different income and wealth groups, and races, to varying degrees. They may be short-term, as the central bankers claim, but we believe it's worth a deeper and more incisive look, not just in the US but across the world.

The world has changed in other respects as well, with increasing inequality (and inequity) and threatening climate prospects. Along with the world, so have politics. There is a clear distinction between the continents across the Atlantic as far as climate and labor policies are concerned which brings some element of urgency on the part of the monetary policymakers in the United States to oblige. Ironically, this has its own challenges with ill-defined direction by Congress.

Labor markets across the globe have also played a pivotal role in bringing a fair sense of equity to economic growth, albeit in varying degrees. Ever since the pandemic and the consequent policies, a more liberal bent in policy has been seen to have set in. The US administration since 2021 has had a more stringent outlook on antitrust enforcement on labor matters, such as mergers and noncompete clauses, among others. Other labor market aspects that are believed to be critical in its orientation are minimum wage, collective bargaining, benefits, and monopsony to name a few.

The matter at hand is not just whether, and to what extent, labor market and monetary policy affect the qualitative facet of economic growth but what policies are viable for such achievement. We attempt to answer these two questions in this paper.

We start with methodology and then move on to results/discussion, which entails findings as well as some of the prevalent emergent trends, before offering our conclusions and venturing out to some soft, macro recommendations. Of course, we will also outline some of the limitations of our research and any possible potential topics to study in the future that might not have been addressed here.

Methodology:

This is a desk-research study, based on secondary data. The first step was to read up in detail on the subject, from early sources to ensure a complete context and avoid recency bias. We based our search on Google using keywords and terms generically related to equitable growth and monetary policy and labor markets, specifically monopsony. We, unsurprisingly, received many sources from articles published by the Equitable Growth Organization and found useful several articles from other reputable organizations and publications, as listed.

After pruning the initial pool of sources for relevance, we were left with a total of 43 sources.

Total sources by type

<i>Source Type</i>	Number of Sources
<i>Academic Institution</i>	3
<i>Book</i>	2
<i>Central Bank</i>	3

<i>Federal Agency / Bureau</i>	4
<i>Journal/Newspaper/Publication</i>	20
<i>Organization</i>	8
<i>Other</i>	2
<i>Private Bank</i>	1
<i>Grand Total</i>	43

Table 1: Sources types

We then concentrated geographically on America and Europe, and the FRB and the ECB. We also delved in ethnic disparity, in addition to income and wealth deciles. In addition, we also wanted to study not just the absolute effect of a group of people but also the relative impact given the specific group's income and wealth levels.

We were interested specifically in labor market concentration and the effects on income and wealth matters, and as such, the resources were researched accordingly.

Results and Discussion:

In the United States, we have seen a concentration of wealth among the upper stratum of society increasing since the middle of the 20th century. This has further aggravated the *income inequality* factor. The figure below (**Figure 1**) shows that the top 10% of society in around 2015 earned 52% of the national income as opposed to 33% in the 1950s.

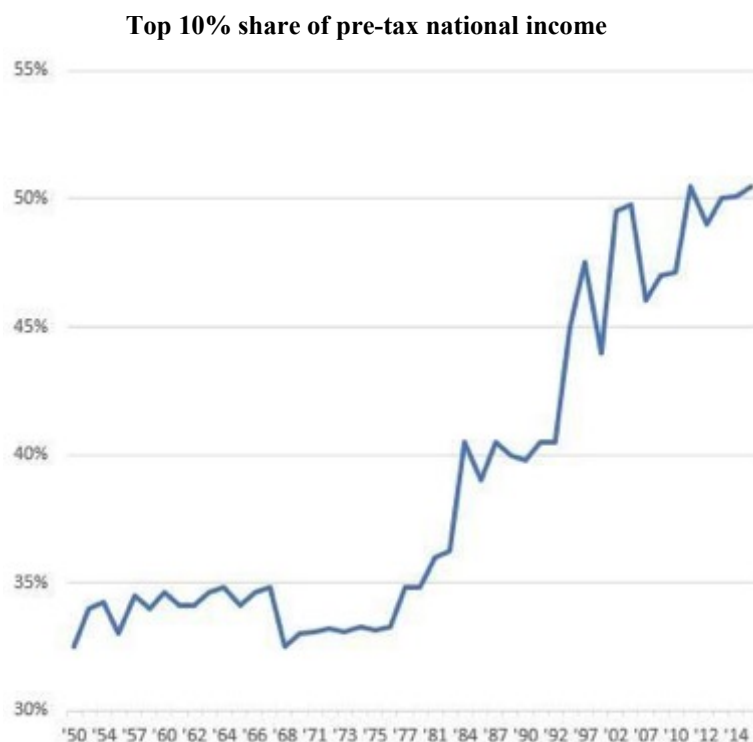


Figure 1: Top 10% of individuals' wealth as a share of pre-tax national income (J.P. Morgan Asset Management, 2021)

The fact that we have the lower stratum getting poorer carries not only a moral hazard but also has an adverse impact on the economy. As we show below, in **Figure 2**, the ‘marginal propensity to consume’ of the bottom 90% of the earners is over 50% higher than those in the top 10%. With our economy in the US and mostly those in the developed world hovering around the 65-70% domain on consumption/consumer spending, we can see the drag it can create if the incomes are not equitably distributed.

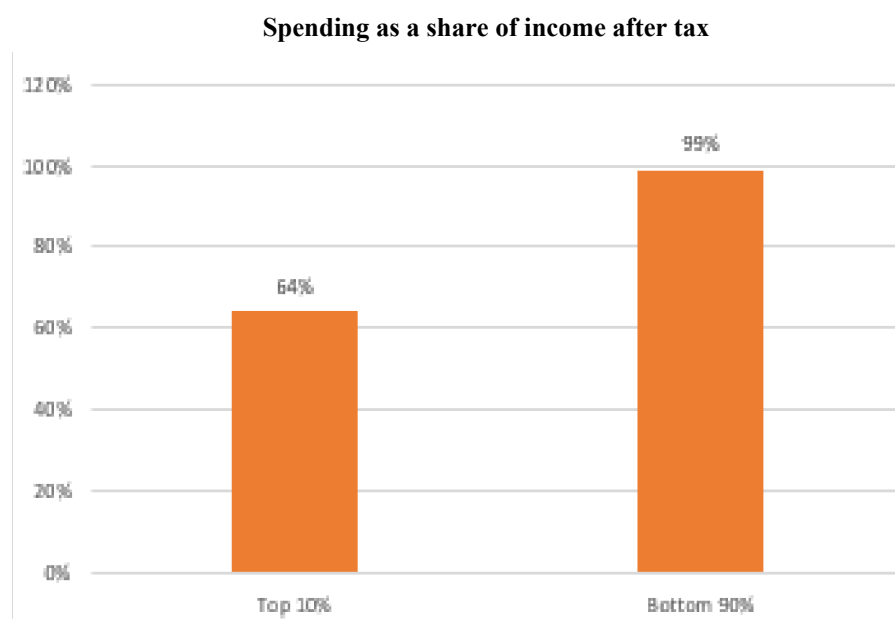


Figure 2: Spending as a share of income after tax by wealth percentile

(J.P. Morgan Asset

Management, 2021)

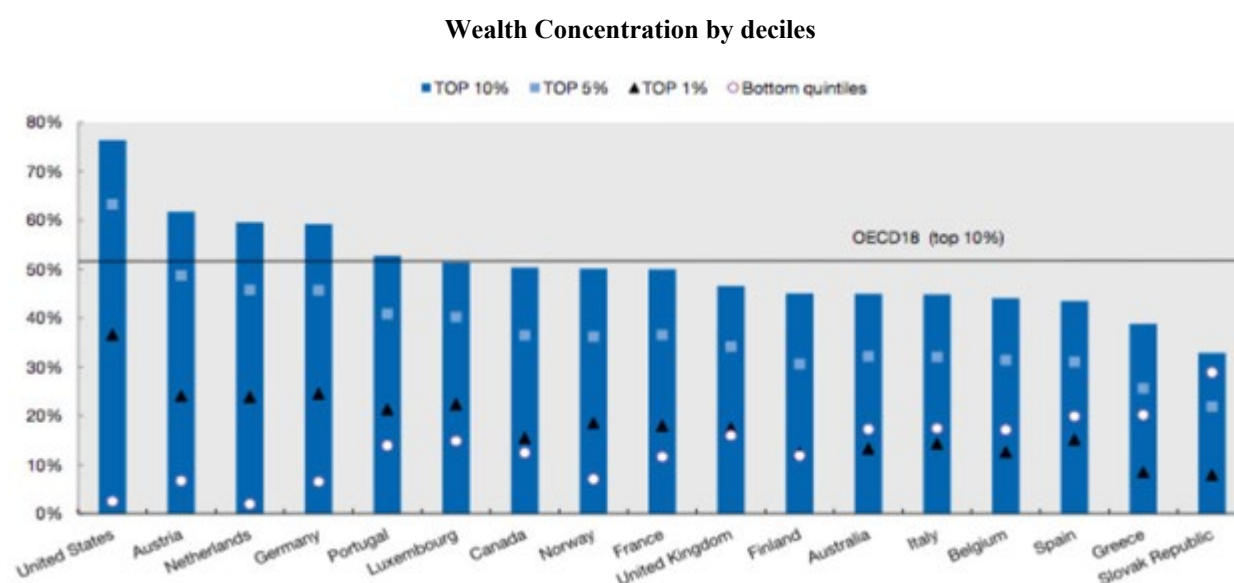


Figure 3: Central Bank Policies and Income and Wealth Inequality, Colciago, Samarina, de Hann, Journal of Economic Surveys (2019) Vol. 33, No. 4, pp. 1199–1231 (2019) The Authors. Journal of Economic Surveys published by John Wiley & Sons Ltd.;Murtin, dErcole(2015)

Figure 3 shows us the average OECD wealth level of 51% (solid straight line across); the US is at 77%, which means that the top 10% holds that much of the wealth while the top 1% has a 38% distribution of the net wealth. The chart demonstrates the oft-repeated phrase that the developed economies have not done well in mitigating inequality. That said, it is also true that there has been relative eradication of poverty on a global basis, the increasing inequality notwithstanding.

Similarly, there is racial inequality, both in terms of income and wealth. There has been a decrease in collective bargaining in the US, but it is important to know that CBAs play a vital role in protecting the rights of workers.

Figure 4 below shows that the unionized workers suffered fewer job losses than the non-unionized ones. Here, we're going to focus on a particular minority, the disadvantaged Latinos.

Figure 5 below delineates the workers' participation in the public sector which is considered stable with livable wages and good benefits. As we can see, the Latino participation is around 40% whereas the other ethnicities are higher, even though as opposed to the non-unionized Latino, the relative participation of the unionized Latino workers is much higher.

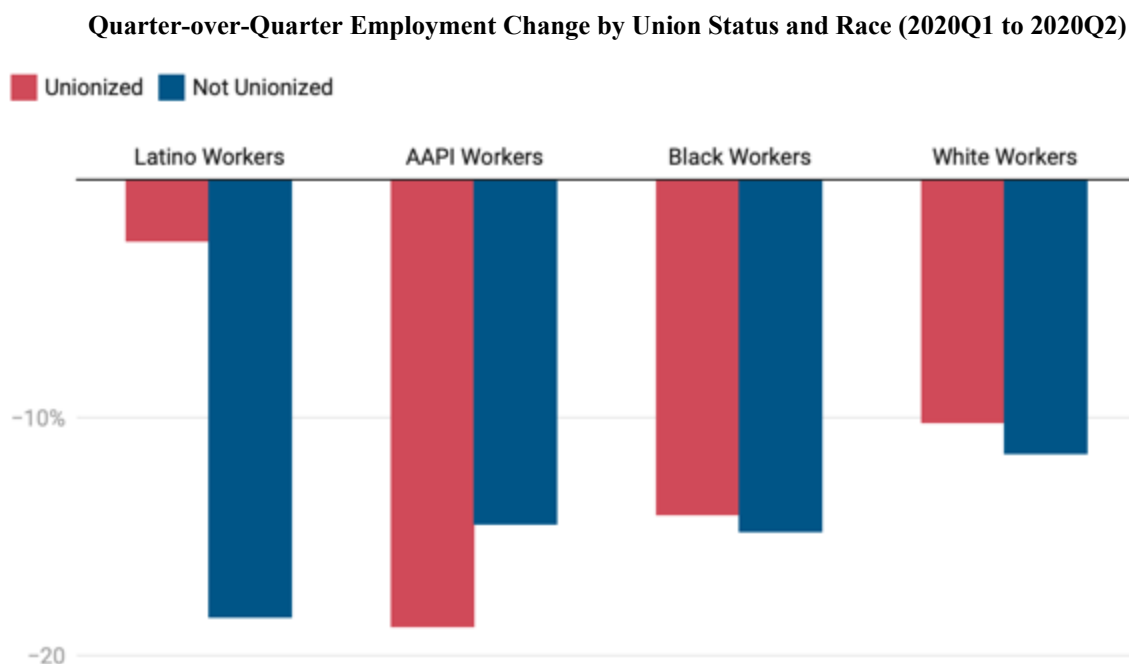


Figure 4: LPPI analysis of Current Population Survey Outgoing Rotation Group (2020-2021)

Workers by Unionization, Sector, and Race (2020Q1)

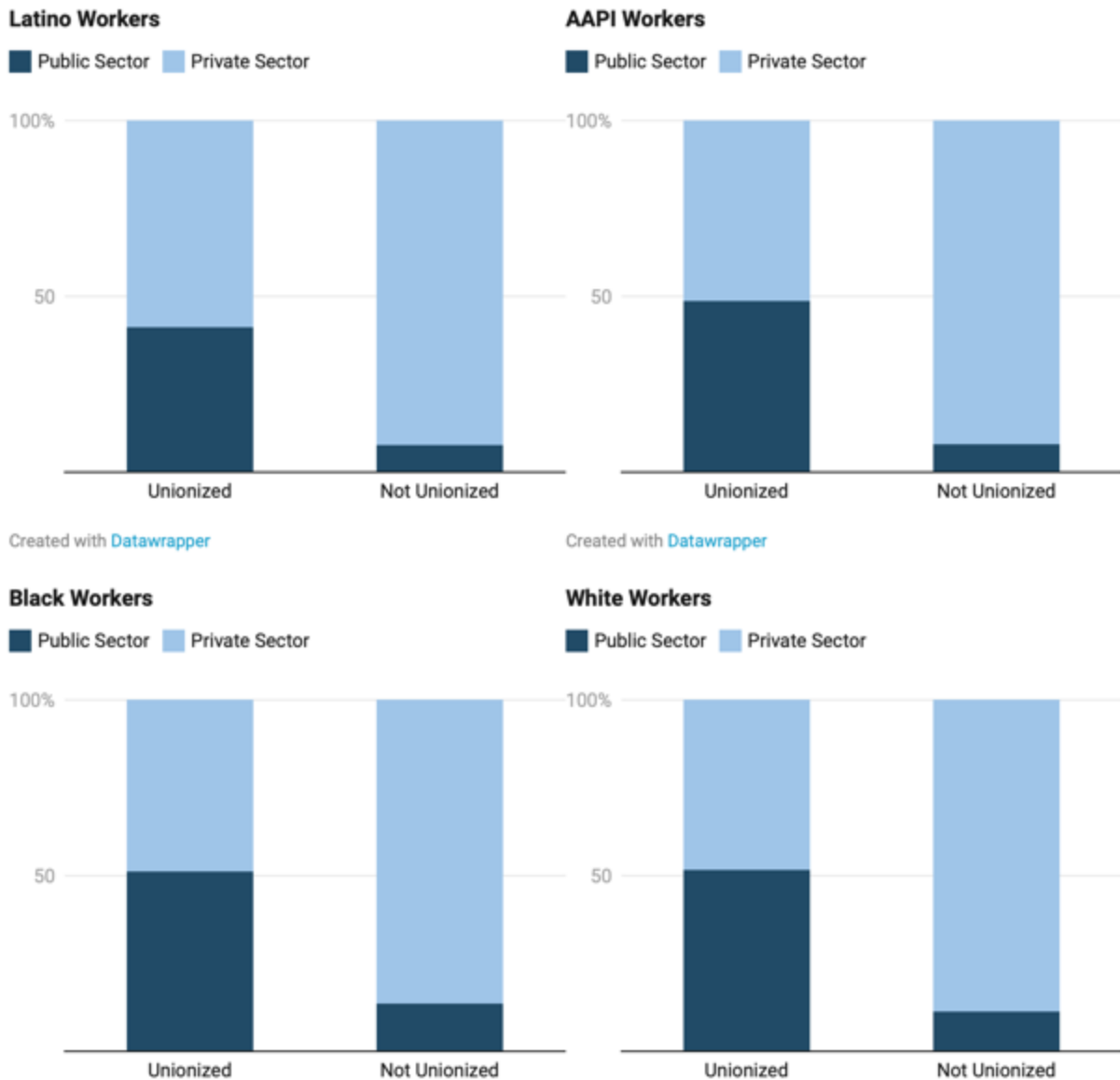


Figure 5: LPPI analysis of Current Population Survey Outgoing Rotation Group (2020-2021)

We can see from the chart below (**Figure 6**) that unionized workers tend to have higher earnings than their non-unionized counterparts.

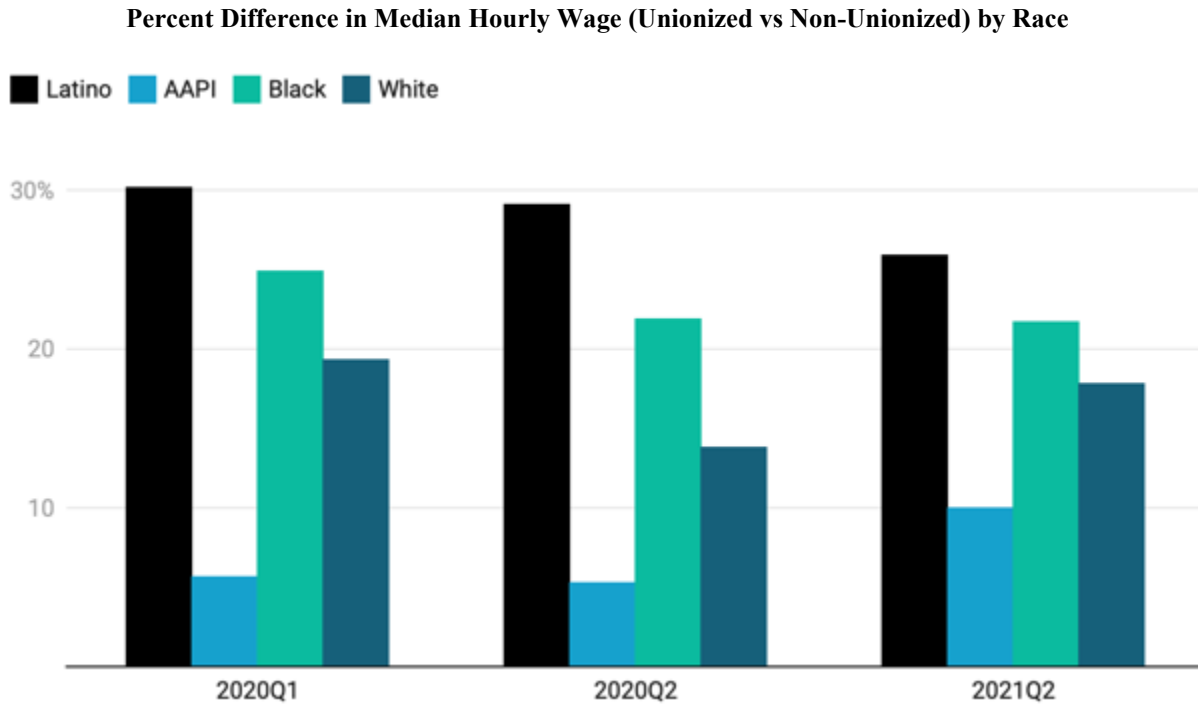


Figure 6: LPPI analysis of Current Population Survey Outgoing Rotation Group (2020-2021)

Yet another set of statistics, contained in **Table 2**, demonstrates the disparity between the wages earned by minorities relative to white workers. Both during the pandemic and the recovery period, we can see the differential wages around the median figure. As can be observed, while the unionized Latino and Black workers have a significantly lower earnings level than their white counterparts, the difference becomes especially skewed in the absence of union protection; for example, in 2021Q2, unionized Latino workers were at a 14.1% disadvantage Vs. the non-unionized lagged 22.5% behind their white counterparts, a considerable difference around the median wages.

Median Hourly Wages by Quarter and Year (2021 Dollars) and Difference vs White Workers						
	2020Q1	2020Q2	2021Q2	2020Q1	2020Q2	2021Q2
Unionized						
Latino	\$23.20	\$25.40	\$23.20	-15.3%	-8.0%	-14.1%
AAPI	\$27.90	\$32.10	\$29.10	1.8%	16.3%	7.8%
Black	\$22.50	\$23.30	\$21.70	-17.9%	-15.6%	-19.6%
White	\$27.40	\$27.60	\$27.00	—	—	—
Not Unionized						
Latino	\$16.20	\$18.00	\$17.20	-26.7%	-24.4%	-22.5%
AAPI	\$26.30	\$30.40	\$26.20	19.0%	27.7%	18.0%
Black	\$16.90	\$18.20	\$17.00	-23.5%	-23.5%	-23.4%
White	\$22.10	\$23.80	\$22.20	—	—	—

Table 2: LPPI analysis of Current Population Survey Outgoing Rotation Group (2020-2021)

Continuing with Latinos, a disadvantaged community in the US, **Figure 7** shows them to be exposed to occupations with the highest rate of fatalities. This has a cascading effect on inequality with the survivors left further behind. In turn, it has a rolling social impact on the family which then tends to become a vicious cycle.

Fatal Workplace Injuries per 100,000 Full-Time Equivalent Workers by Race and Ethnicity

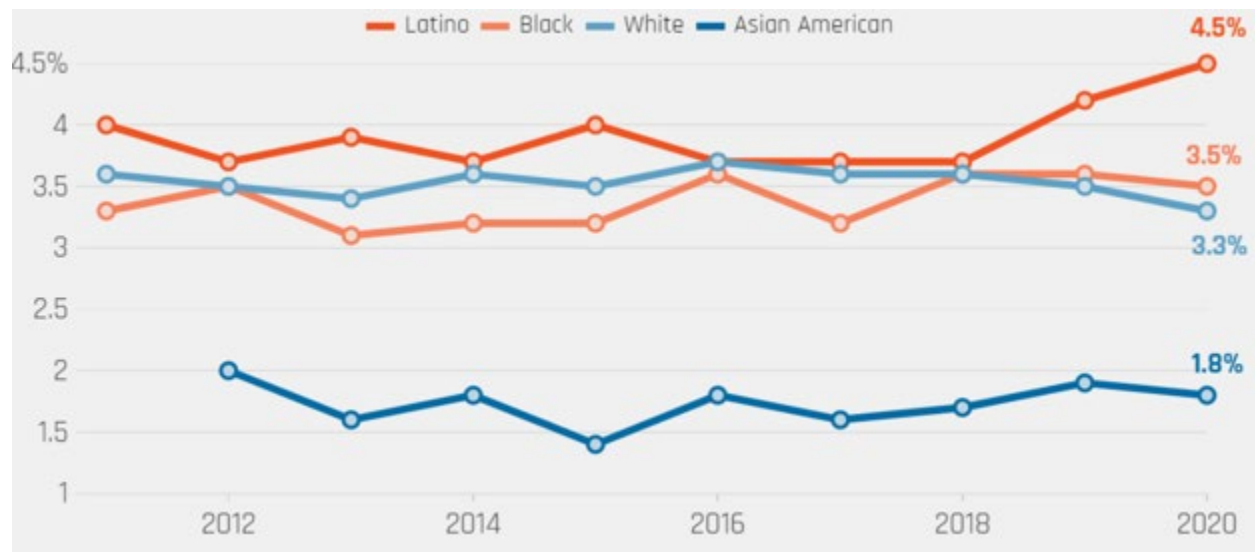


Figure 7: National Safety Council; Equitable Growth, Carmen Sanchez Cumming, October 13, 2022

Furthermore, Latinos are also overrepresented in occupations that have experienced the highest proportion of minimum wage violations, which implies that in more cases than not, they are not being paid a living wage. **Figure 8** below shows the types of occupations with the minimum wage violation rates and then the share of workers who happen to be Latinos, clearly demonstrating the relative disadvantage they are put to in yet another way. We can see why it may be difficult to enforce the minimum wage regulation in some of these occupations, and it reflects the lack of agency that the disadvantaged ethnicity carries.

Minimum Wage Violations (2008-2010) and Share of US Workers Who Are Latino by Industry (2009)

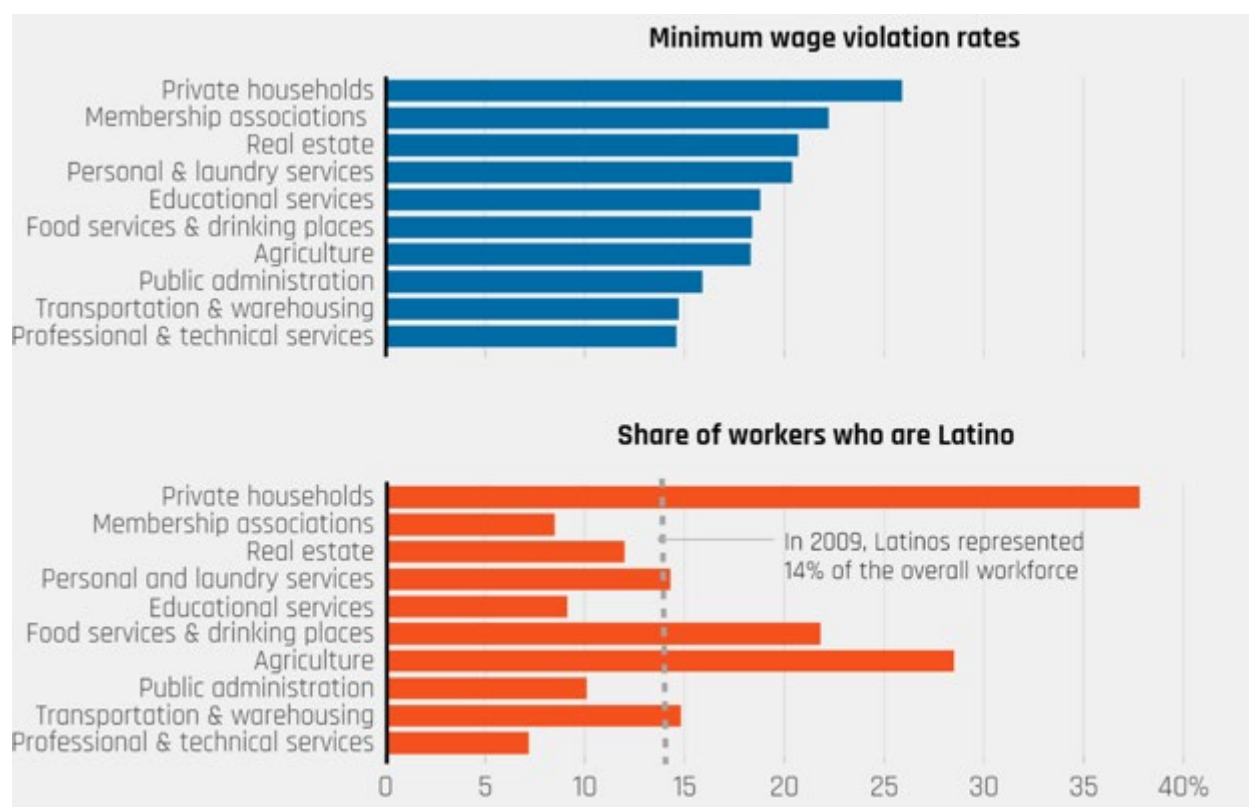


Figure 8: Janice Fine and others, "Wage theft in a recession: Unemployment, labour violations, and enforcement strategies for difficult times," *International Journal of Labor Law and Industrial Relations* 37; U.S. Bureau of Labor Statistics, "Current Population Survey: Employed persons by detailed industry by sex, race, and Hispanic or Latino ethnicity"

Moving on to the other disadvantaged minority in the US, Black people, **Figure 9** shows a snapshot of the state of their respective portfolio shares in the different recognized asset classes. We can see the housing component being the heaviest in each case, with white households holding 44% of their assets in housing while Black people at 33%. Similarly, the equity share of white people is 16% while Black households have half as much as their share in the subject category. Given the price movements in equities, white people are more exposed to volatility in values as opposed to Black people, but it also allows them to accumulate more on a long-term basis, thereby exacerbating inequality.

Portfolio shares of different asset classes of Black and White Households

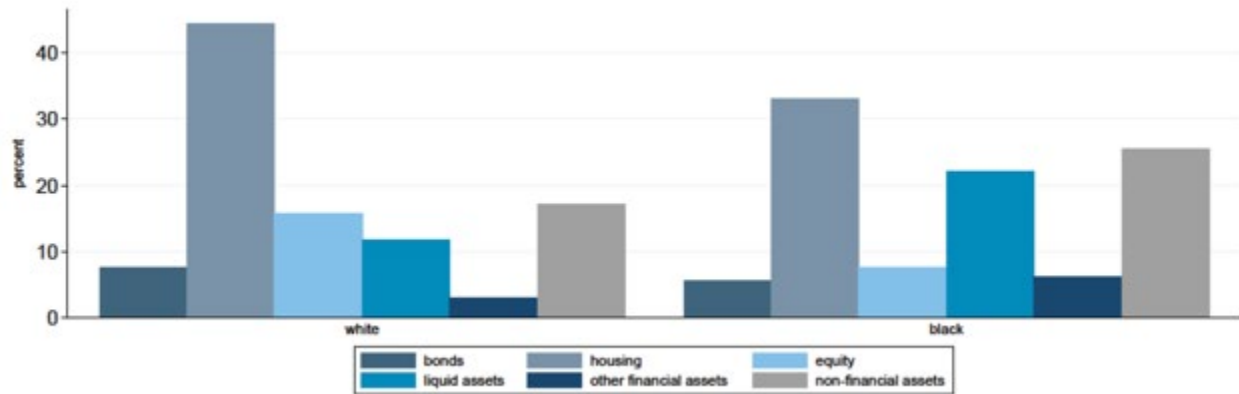


Figure 9: SCF+ (Kuhn, Schularick, and Steins, 2020)

In **Figure 10** we see the change in wealth and wealth-to-income ratios, showing the disparity both in the wealth figure per household on an average and the change in the wealth-to-income ratios over a period of about 50 years from 1971.

Continuing in the same vein, we can also see the disparity in the employment levels, gauged as unemployment rates, as well as the wages per hour. **Figure 11** demonstrates the persistent gap in the unemployment levels, which peaked during the 1980s recession; as can be seen, the gap has rarely been less than 4% which it currently holds. On wages per hour, we can see **Figure 11 (b)** showing a persistent and secular gap, currently at 12.5%. As shown in the foregoing part of the piece, the occupations that the minorities are engaged in, tend to pay less and also have a lower potential to rise. It is clear from the subject figure below how that has panned out both in terms of unemployment and hourly wage gaps.

Change in wealth and wealth-to-income ratios relative to 1971

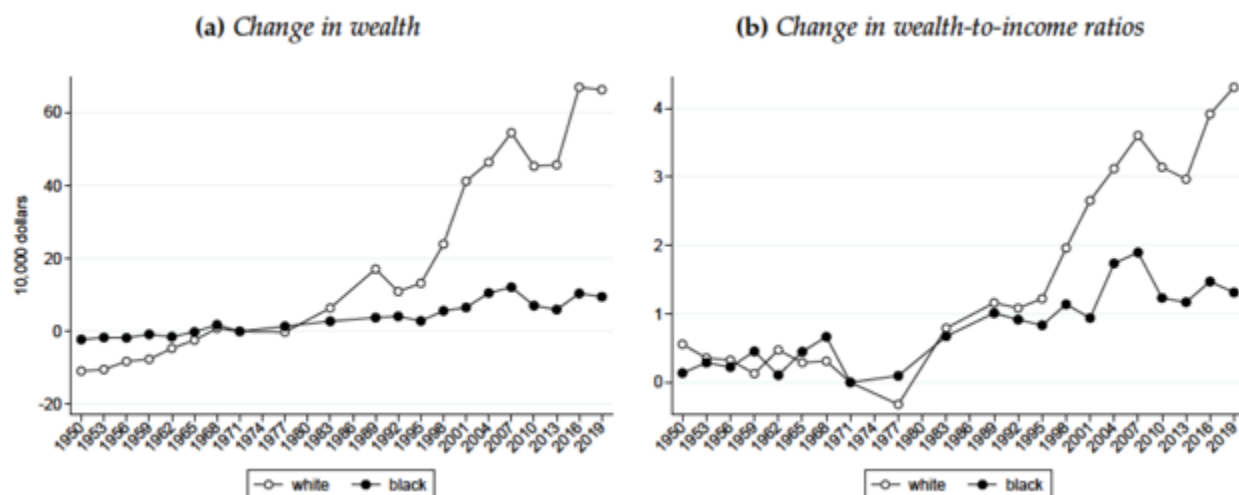


Figure 10: SCF+ (Kuhn, Schularick, and Steins, 2020)

Racial unemployment and wage gaps

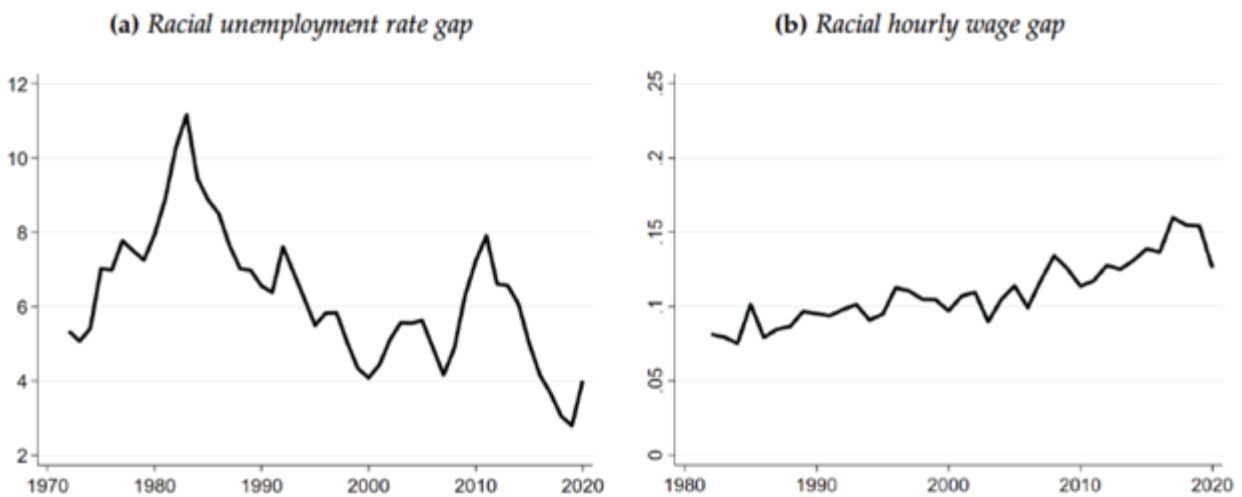


Figure 11: FRED (LNU04000003 and LNU04000006); BLS; Current Population Survey; Flood et al., 2021

Thus far, we have been able to evidence that there is inequality, as gauged by the Gini coefficient in the US as well as internationally which shows no signs of abating; in addition, we do believe, having sufficiently demonstrated the disparity levels between the white households and the minority ethnicities - Latino and Black households - with the disadvantage both in terms of wages and the employment levels, not to mention the other qualitative factors that could potentially generate a vicious cycle for them.

We would now like to delve into the labor markets in the US concerning employer concentration, to determine its role in our investigation of the reasons for the inequitable growth globally.

First, we would like to see the concentration and the extent thereof. We will start with the US and look at the data county-wise. **Table 3** numbers are based on a total of around 8,000 units, both single and multi, and excludes government employers. The table shows the employment size category, the proportion of total establishments, and the percentage of total employment it represents. As can be observed very clearly, there is labor concentration, or monopsony, at play here. The establishments employing up to nine (9) workers constitute almost 75% of total establishments but employ less than 15% of total employment. Employers in the employment size category in the range of 10 up to 249, represent 25% of total establishments and employ over 55% of total employees. Similarly, as we move up in the employment size category, we see that establishments of 1,000 or more employees account for less than 0.1% of total establishments, a minuscule proportion, yet contain slightly over 13 percent of total employment. This gives us a flavor of how concentrated the US business structure is. We will explore how that affects labor options and choices in the face of a single buyer, or a handful of powerful buyers able to exercise price (wage and benefits) control.

Establishment size distribution, county-wise; USA

Employment Size Category	Percent of Total Establishments	Percent of Total Employment
1 – 4	54.85	6.21
5 – 9	19.29	8.34
10 – 19	12.43	10.92
20 – 49	8.33	16.39
50 – 99	2.84	12.69
100 – 249	1.59	15.53
250 – 499	0.41	9.21
500 – 999	0.16	7.02
1,000 – 1,499	0.04	3.38
1,500 – 2,499	0.03	3.54
2,500 – 4,999	0.015	3.37
5,000+	0.006	3.39

Table 3: County Business Pattern data, 1976 – 2016

Effects of Employment Concentration on Population and Age Distribution of Counties

	Log(Pop)		% Age 26-35		% Age 36-45		% Age 46-55		% Age 56-65	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
10-year lag log(HHI) (1-sd change)	-0.88 (0.01)		-0.56 (0.03) [-4.42]		-0.10 (0.02) [-0.72]		0.26 (0.02) [2.03]		0.52 (0.03) [4.53]	
10-year lag Top 10 Share (1-sd change)		-0.87 (0.01)		-0.51 (0.003) [-3.98]		-0.08 (0.02) [-0.64]		0.27 (0.02) [2.16]		0.53 (0.03) [4.54]
R-square	0.81	0.81	0.59	0.58	0.68	0.68	0.75	0.75	0.74	0.74

Table 4: “A HUMAN CAPITAL THEORY OF WHO ESCAPES THE GRASP OF THE LOCAL MONOPSONIST,”
Kahn, Tracy, July 2023

In terms of the effects of monopsony on population growth and age distribution, we present **Table 4**. We see that over the next ten years, there is a slower population growth in counties with higher employer concentration, specifically at the rate of 88 basis points relative to the other counties. There is also evidence that such counties suffer house pricing declines as people, especially in their formative years, leave leading to the subject slump in home prices. The table then contains four age ranges, as shown, to determine the effect of monopsony on each in terms of population growth or the lack thereof. We can see how the younger adults decline in numbers and then the trend reverses as the range age moves up; For example, with a 1 SD change, while the youngest in the table declines by almost 4%, the oldest (56-65) increases by around 4.5%. This does compute as the young adults have a lower level of specific investment commitment with a much longer horizon to amortize the cost (both quantitative and qualitative) of moving where they believe they would have better opportunities.

Along the same lines, we can see below in **Table 5** the effects of monopsony on the overall education level in the counties. As expected, we can see how employer concentration impacts the < HS (High School) and the HS categories positively (9.74% and 5.79%, respectively) while adversely affecting those who are considered better skilled (-3.63% and -16.68%, respectively), implying a reduction in population in that educational category. This also is consistent with the rationale that monopsonists tend to exercise price controls which leads to deskilling in the counties as those with better skills move out to explore opportunities elsewhere. It has also been observed, but still needs a stronger bearing out, that as employer concentrations change, so do labor movements over time.

Effects of employment concentration on education make up of counties

	% < HS		%HS		% Some College		% College+	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
10-year lag log(HHI)	1.89		2.25		-0.87		-3.27	
(1-sd change)	(0.10)		(0.09)		(0.06)		(0.14)	
	[9.23]		[6.52]		[-3.00]		[-18.19]	
10-year lag Top 10 Share		1.99		2.00		-0.98		-3.00
(1-sd change)		(0.11)		(0.09)		(0.06)		(0.13)
		[9.74]		[5.79]		[-3.63]		[-16.68]
R-square	0.80	0.80	0.57	0.56	0.74	0.74	0.62	0.61

Table 5: "A HUMAN CAPITAL THEORY OF WHO ESCAPES THE GRASP OF THE LOCAL MONOPSONIST," Kahn, Tracy, July 2023

Average HHI (Herfindhal-Hirschman Index) by commuting zone

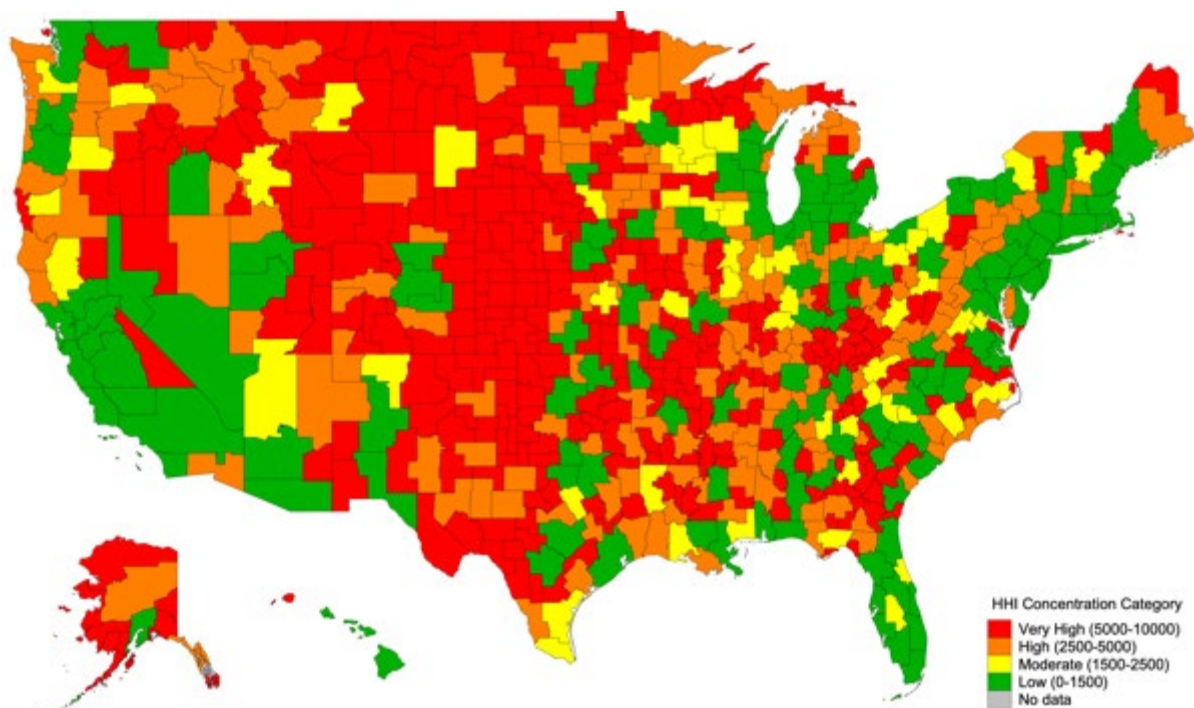


Figure 12: Azar, José; Marinescu, Ioana E.; Steinbaum, Marshall; Taska, Bledi (2018): Concentration in US Labor Markets: Evidence from Online Vacancy Data, IZA Discussion Papers, No. 11379, Institute of Labor Economics (IZA), Bonn

Figure 12 above shows us the geographic concentration, as measured by HHI (Hefindhal-Hirschman Index), which the US government uses for analysis. We can also see that neither of the two coasts is affected by it and given the finance (East Coast) and the tech hubs (West Coast) at either end, this does make sense.

In response to labor monopsony, it warrants a question on the role of anti-trust as a tool to mitigate the threat. Has it been effective? Has it taken up sufficient cases and done a good job of enforcing? The answer is painfully obvious as one looks at **Figure 13**. Compared to the Product market, the anti-trust cases against Labor markets are virtually non-existent. There are three sources of information, with Sec 7 signifying zero cases (details below). While it is not entirely clear why this is the case, a couple of explanations do come to the fore: the perception that companies can incur more damage with monopoly rather than monopsony and that there is a relatively widespread prevalence of monopolized businesses that need tackling more urgently. We do believe that a single buyer of labor will garner attention in a greater way than today as there is an increasing number of calls to do so from various quarters.

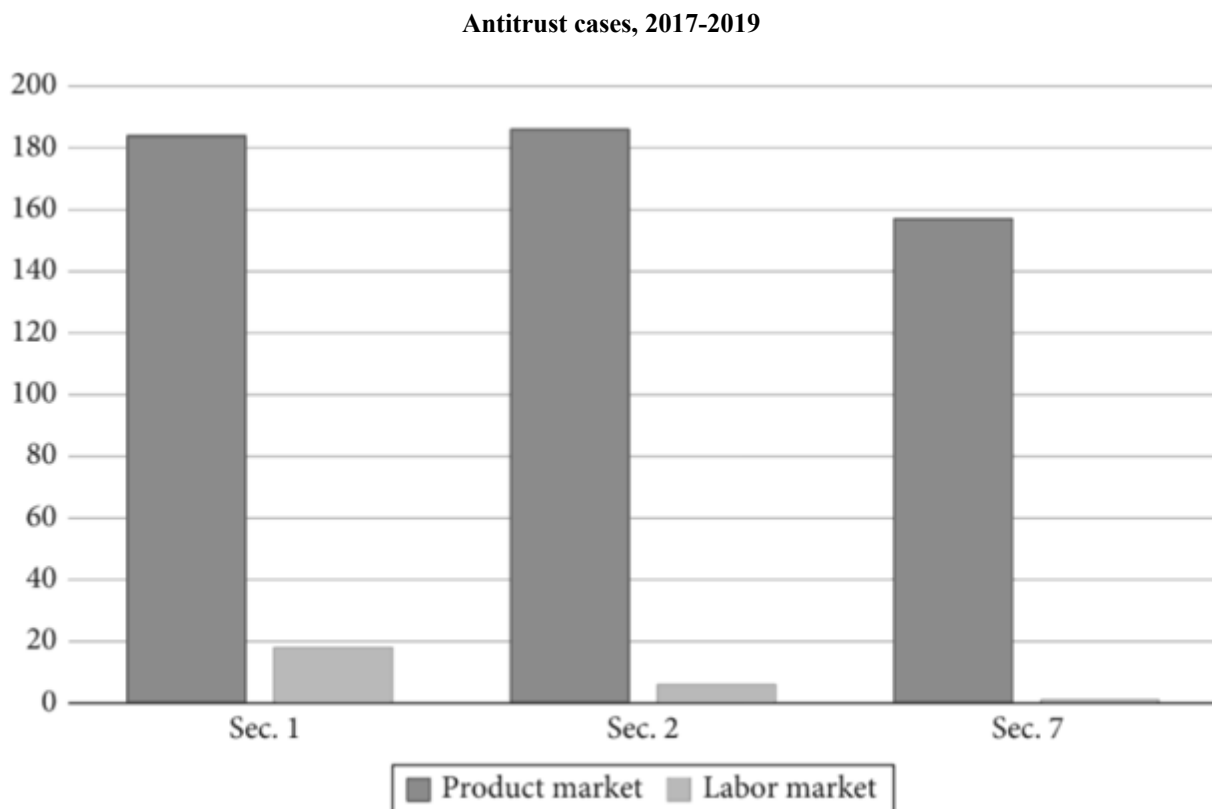


Figure 13: Note: Section 1 and 2 counts are based on searches of the antitrust database in Westlaw (based on Westlaw searches for “section /3 1 /3 sherman +1 act & product +1 market”; “section /3 1 /3 sherman +1 act & labor +1 market”; “section /3 2 /3 sherman +1 act & product +1 market”; “section /3 2 /3 sherman +1 act & labor +1 market” [January 15, 2020]). Section 7 counts (for labor markets, the number is zero) are taken from the DOJ and FTC (U.S. Dep’t of Justice Antitrust Division and ET.C., Hart-Scott- Rodino Annual Report, Fiscal Year 2019, available at https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-bureau-competition-department-justice-antitrust-division-hart-scott-rodino/pr1oor4hsrannualreportfy2019_0.pdf).

Now that we are familiar with the labor concentration extent and issues in the United States, we would like to move across the Atlantic to determine the state of labor and market concentration.

In **Figure 14** below, we see that a good proportion of the population in the OECD world lives under labor and market concentration, the average being around 17%; countries such as the US are a shade above the average while Belgium turns out to be the least concentrated around 7.5%.

The share of business sector employment in moderately to highly concentrated labor markets, 2019

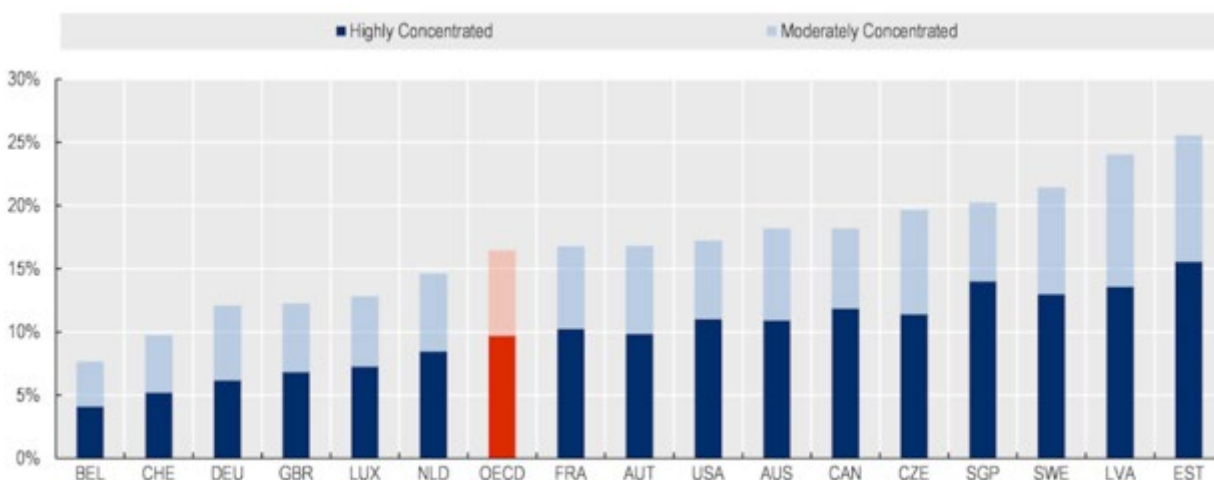


Figure 14: OECD analysis of Emsi Burning Glass data, European Union Labour Force Survey (European Union countries, Switzerland and the United Kingdom), Current Population Survey (United States), Canadian Labor Force Survey (Canada), Australian Labour Force Survey (Australia), The Ministry of Manpower (Singapore); Monopsony and concentration in labor markets, OECDiLibrary; Araki, Bassanini, Green, Marcolin

Figure 15 shows us that the labor concentration incidence is higher in the rural areas than in the urban neighborhoods. As can be observed, the rural concentration among the OECD countries is on average about 18% higher. This is understandable as most of the deskilling happens in the rural areas with the younger population moving out to explore better opportunities. This is not conducive to any new employer entering. Also, the current big employers tend to be moats, making the barriers to entry that much more challenging.

The share of employment in moderately to highly concentrated labor markets in the business sector by urban geography, 2019

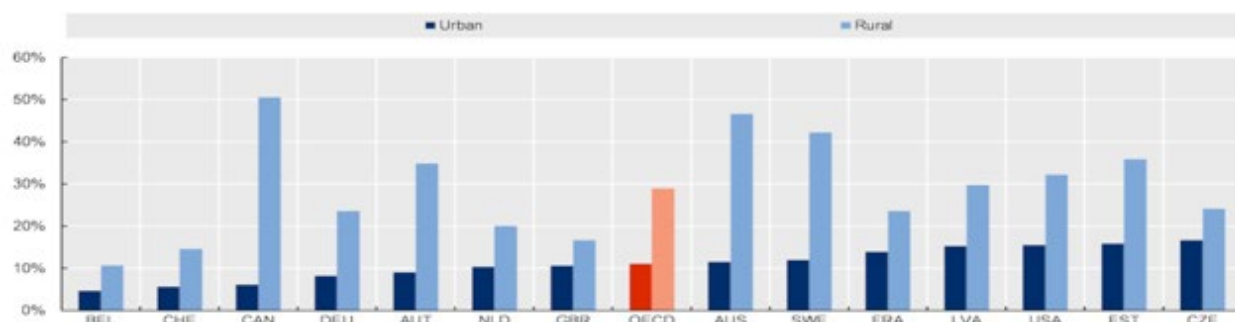


Figure 15: OECD analysis of Emsi Burning Glass data, European Union Labour Force Survey (European Union countries, Switzerland and the United Kingdom), Current Population Survey (United States), Canadian Labor Force Survey (Canada), Australian Labour Force Survey (Australia), The Ministry of Manpower (Singapore); Monopsony and concentration in labor markets, OECDiLibrary; Araki, Bassanini, Green, Marcolin

Continuing with how monopsony affects wages, we see in **Figure 16** that there is a range of impact on wages in the different selected countries in Europe between the lower bound 90% confidence interval and the upper bound 90% confidence interval. We see that a 10% increase in concentration causes a change of -0.2% to -0.3% at the midpoint in Germany and Denmark, respectively. While this decline seems negligible, it must be interpreted keeping in mind that the dispersions are significant in terms of distribution. At face value, then, in 10% of the cases, those with average to high concentration subjection, can be penalized at least 5% in wages and some others can suffer even more heavily.

Can reskilling the population help reduce concentration, or the effect thereof? If we look at **Figure 17**, we see that labor and market concentration is reduced by an average of around 15% with retraining. While this is encouraging, we must caution, however, that the extent of success depends really on the employees and how prepared they are in pursuing to be reskilled which they have to stack up against the potential wage rise.

Percentage wage effect of a 10% increase in labour market concentration from average level, selected countries, 2010-19

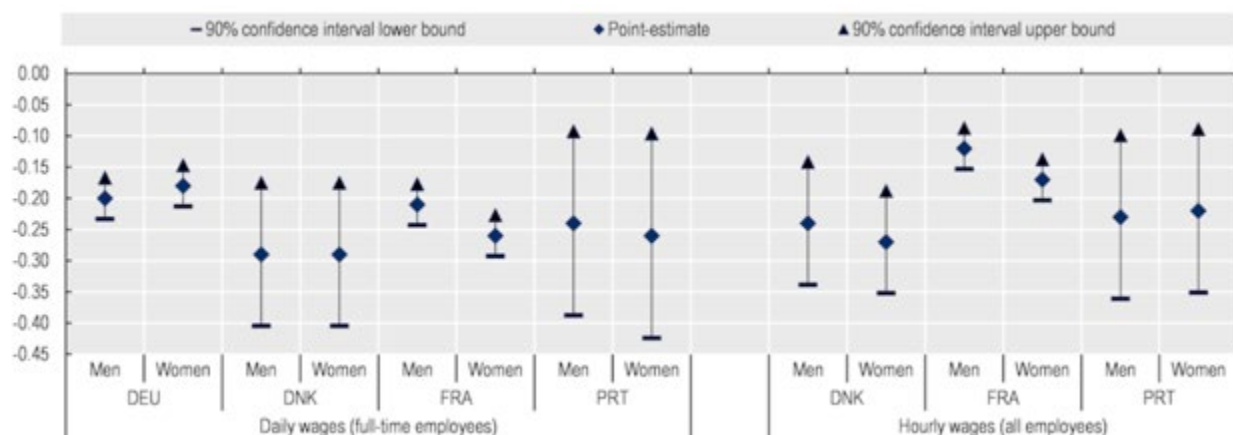
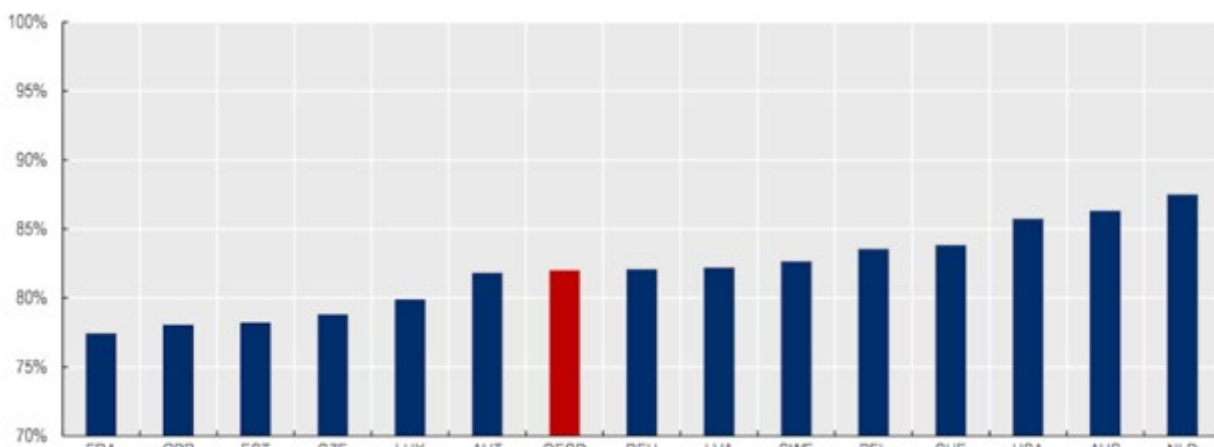


Figure 16: Bassanini et al. (2022[37]), “Labour Market Concentration, Wages and Job Security in Europe”, <https://docs.iza.org/dp15231.pdf>; Monopsony and concentration in labor markets, OECDiLibrary; Araki, Bassanini, Green, Marcolin

**Ratio of Herfindahl-Hirschman Index (HHI) and simulated HHI when it is possible to refrain and also seek employment in the occupation with the most similar skill bundle (Within the limit of 6 months of retraining).
100% = Standard HH**



*Figure 17: OECD analysis of Emsi Burning Glass data, European Union Labour Force Survey (European Union countries, Switzerland and the United Kingdom), Current Population Survey (United States), Australian Labour Force Survey (Australia), US Occupational Employment Survey, US Occupational Information Network (O*NET); Monopsony and concentration in labor markets, OECDiLibrary; Araki, Bassanini, Green, Marcolin*

Moving on from monopsony, we now focus on monetary policy and its role in the macroeconomy. In the United States, the Federal Reserve Bank was established in 1913. It was not until the 1970s that it was mandated to carry the dual function of stable prices and maximum employment. Lately, there have been appeals to and demands of the central bank by the progressives in the country to include in its mandate to eliminate racial disparity. The momentum seems to have picked up as now even the Fed Chair and other policy officials have been repeating the chatter of low to moderate-income communities, climate change, etc. **Figure 18** below demonstrates the pivot described in the aforementioned lines.

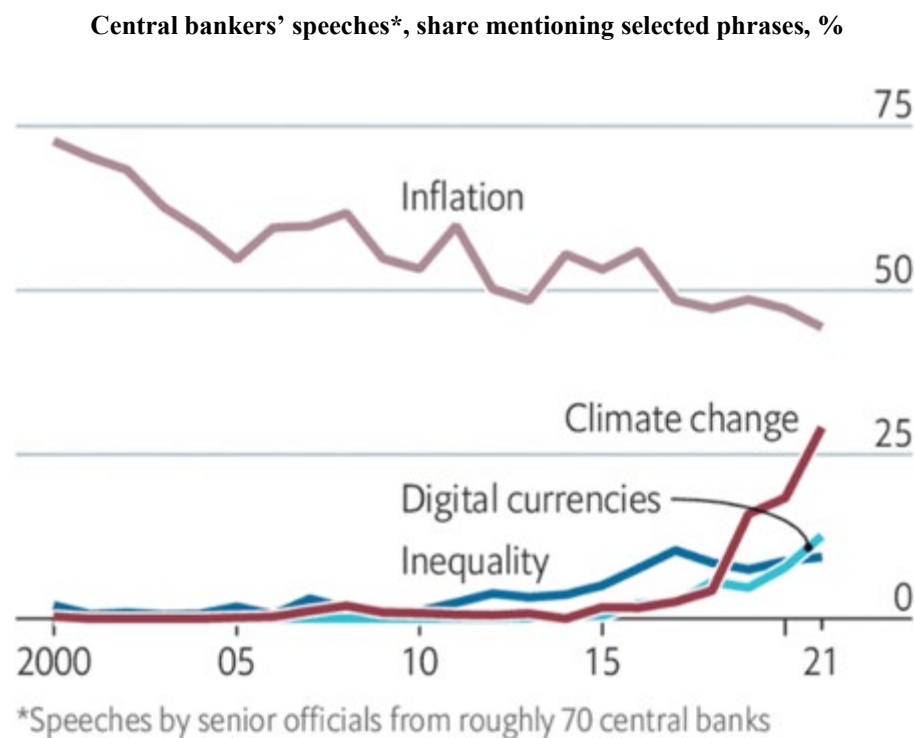


Figure 18: BIS, *The Economist*

There are various views on whether central banks around the world have a role in mitigating inequality or contributing to equitable growth. Being a cyclical tool, with policies lacking secularity in effect, there are reasons to believe that a central bank policy can only enjoy a fleeting moment and just hope it will have the desired effect. Depending on the state of the economy, and sometimes the market, central banks can twist around and walk back on their earlier conviction. There are different pieces of research globally, especially in the developed world, on the impact of central bank policies on racial disparity, generic inequality and inequity, and the benefits accrued to leaders at the expense of the followers. The nuances in each of these pieces of research are striking for objective observers and can be negligible for those not open to new findings and interpretations.

Now that we have the monetary policy general narrative, it is time for us to review the specifics of the effect of monetary policy on the general well-being of the disadvantaged. Before a review of that, however, it may be a good idea to see what the OECD block looks like in terms of inequality and inequitable growth, both in terms of income and wealth. **Figure 19** below shows the disparity in almost all countries, with some skewed more than others. The graph tells us about the flavor among the OECD countries. What is interesting to note is that there is a difference in the top 10% share in terms of wealth and income. The US top 10% accounts for almost 80% of wealth while the top 10% shares almost 30% of income. In other countries, that difference may not be that stark. What is striking is that in most countries, the rate at which wealth has grown is way faster than income production. This is consistent with the Piketty equation of $r > g$ where the theory postulates that the rate at which capital (read wealth) grows is higher than economic potential output (read income).

Shares of household income and wealth held by units in the top 10 of the distribution

2015 or latest available year

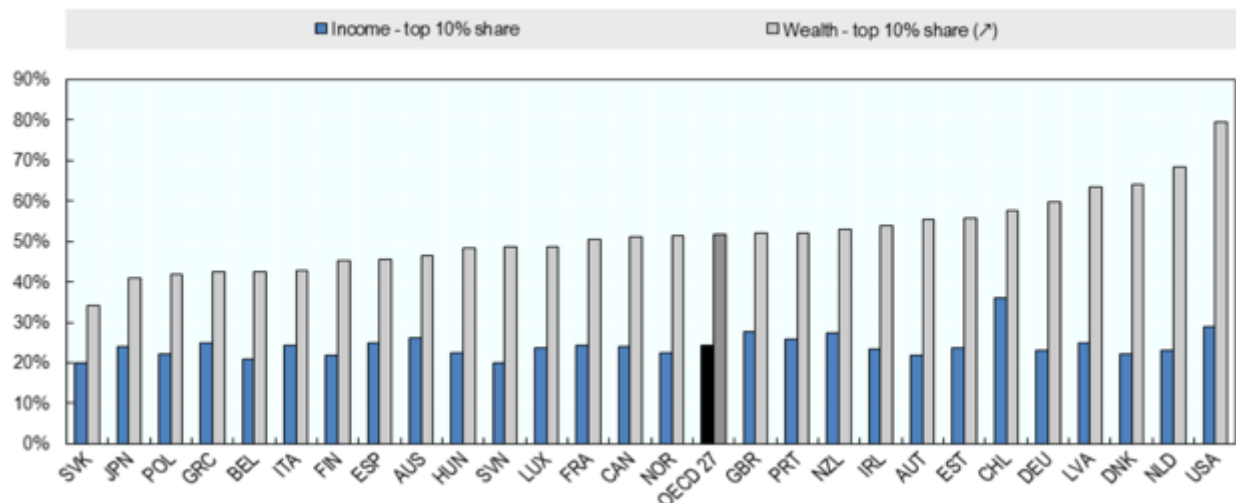
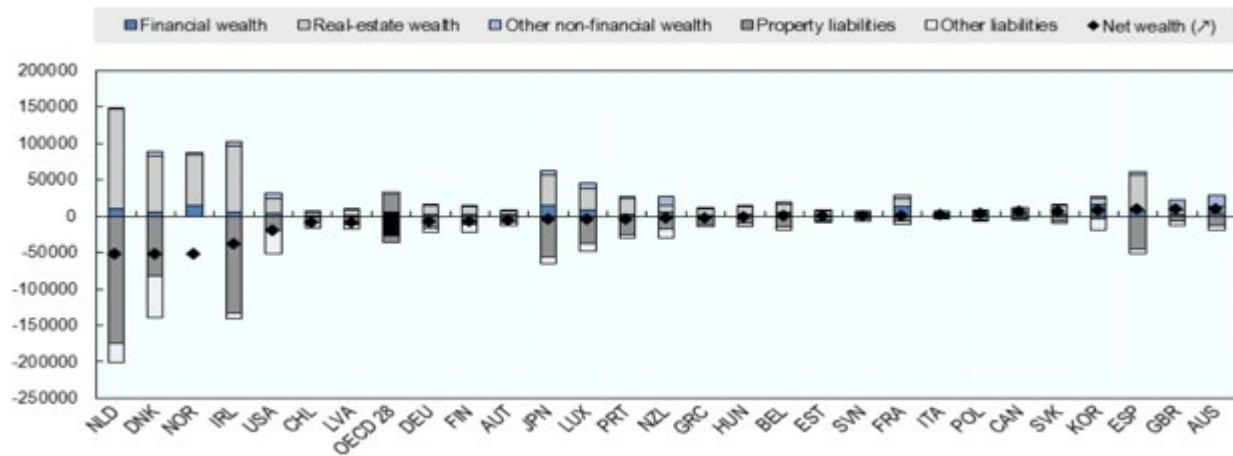


Figure 19: Inequalities in household wealth across OECD countries: Evidence from the OECD Wealth Distribution Database; Belastra, Tonkin; OECD Wealth Distribution Database, [oe.cd/wealth](http://stats.oecd.org/Index.aspx?DataSetCode=IDD), and OECD Income Distribution Database, <http://stats.oecd.org/Index.aspx?DataSetCode=IDD>.

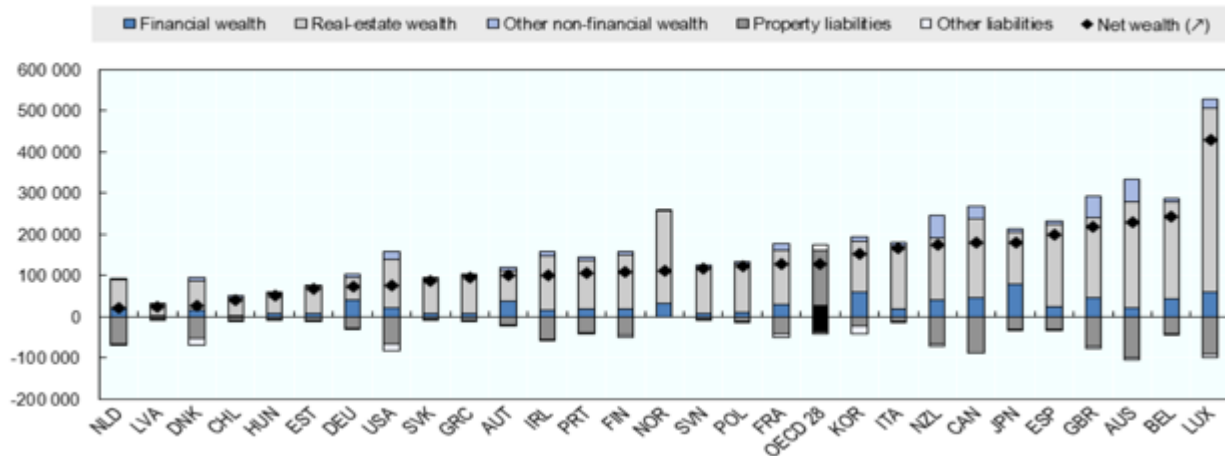
Delving a bit deeper, we can see from **Figure 20 Panel A** that the bottom 20% of the households are the most disadvantaged with a good 50% of countries showing negative wealth, or net worth. The top 20% shows a different story in **Figure 20 Panel C**. This shows the disparity in the different countries between the two wealth groups.

Now, moving on to the effects of monetary policy on inequality using the different distributional channels, such as Inflation, Portfolio, Income composition, and Earnings heterogeneity, we see in **Appendix Tables 1 and 2** the various studies that have been conducted on the impact of either a contractionary or expansionary monetary policy using the different channels in the preceding lines. While **Appendix Table 1** looks at the conventional policy aspect, **Appendix Table 2** focuses on the unconventional, like QE.

Inequalities in household wealth across OECD countries
Panel A: Wealth composition of poorest 20% of households, 2015 or latest available year



Panel B: Wealth composition of middle 20% of households, 2015 or latest available year



Panel C: Wealth composition of richest 20% of households, 2015 or latest available year

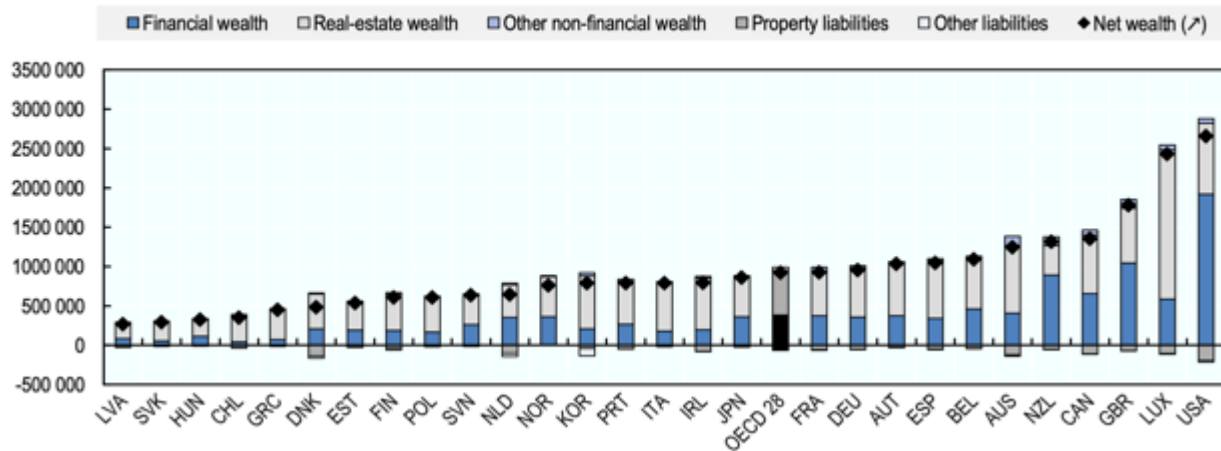


Figure 20: Inequalities in household wealth across OECD countries: Evidence from the OECD Wealth Distribution Database; Belastra, Tonkin; OECD Wealth Distribution Database, oe.cd/wealth

We see that the studies sort of present a mixed picture; using the Inflation channel, the consensus seems to be that higher inflation tends to disadvantage the poor disproportionately since they are on fixed income and may also be reliant on state aid which is not always indexed to the authentic rate of inflation, hence the monetary policy, contractionary or expansionary, as the case may be, can have its impact. Galli and von der Hoeven (2001) opine that the effect of inflation on inequality is more nuanced: nonlinear, as it depends on the initial rate of inflation. In a study of about 15 OECD countries, the finding is expansionary monetary policy reduces income inequality when initial inflation is low but increases it when inflation is above a certain threshold (estimated around 8% for the USA and just above 12% for OECD countries). The question that merits a response here is why a central bank would indulge in an expansionary policy with inflation that high. Perhaps we're looking at a possible stagflation scenario?

Via the Income and Earnings heterogeneity, there are mixed studies on whether it's contractionary, or expansionary, policy that exacerbates inequality. We can view **Appendix Table 1** for details but it is clear that either policy carries its effect. In a contractionary mode, there is an increasing incidence of higher inequality as the economy is stilted, jobs become less available, if not eradicated, and an expansionary policy creates asset bubbles that only increase the wealth of the rich. At best, we would say that the results of the studies conducted are non-definitive. Perhaps, it lends credence to the long-held stand by central bankers that monetary policy is cyclical and tends to smooth out effects over time.

More specific studies of interest rate shocks are demonstrated below, less generically and more in terms of the leaders (industry stalwarts) Vs. the followers (workers). **Figure 21** provides a general movement in the cost of borrowing over a period. We can see how the cost goes up gradually and then lingers on long after the shock, signifying its stubbornness.

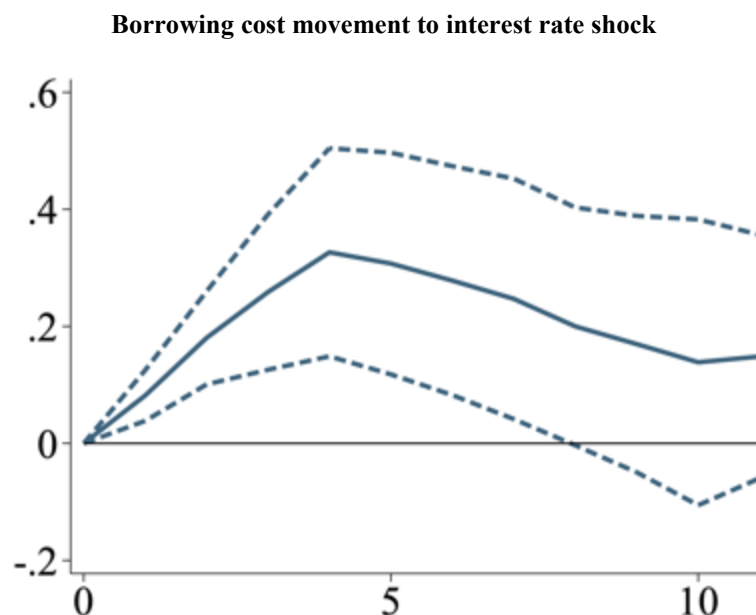
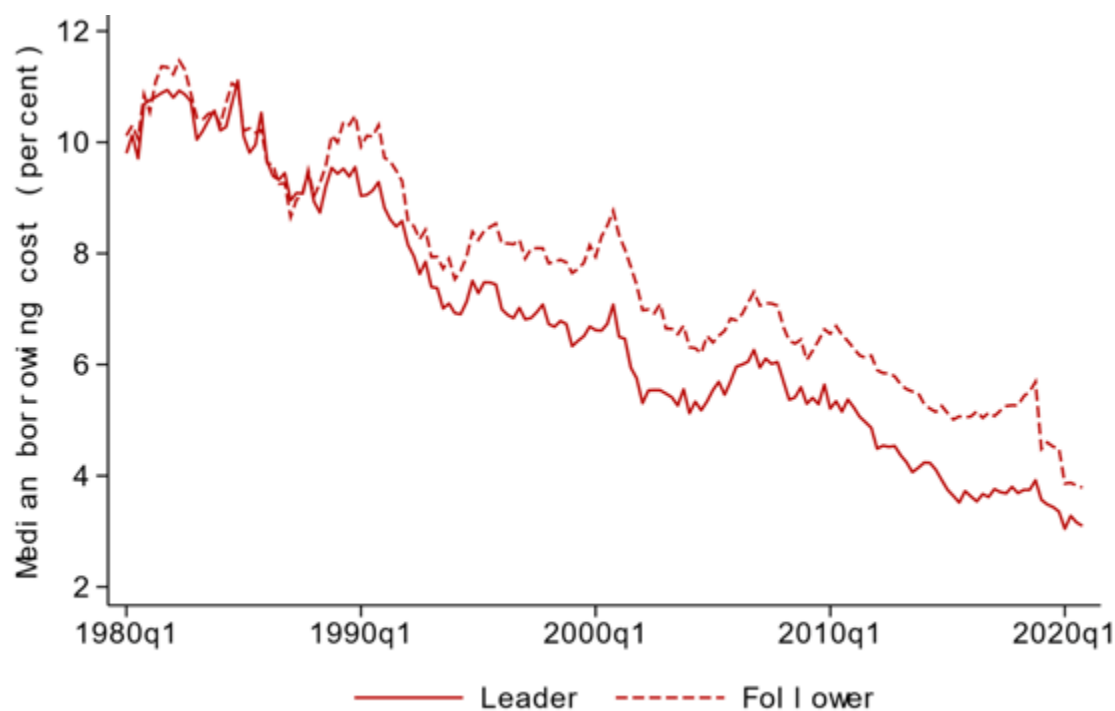


Figure 21: Falling Rates and Rising Superstars, Kroen, Liu, Mian, Sufi, Washington Center for Equitable Growth, January 2022; Dotted lines represent 95% confidence interval

Over time, specifically since the 1980s, the borrowing costs have moved in favor of the leaders relative to the followers, as depicted in **Figure 22**.

Borrowing costs for leaders and followers since 1980



Borrowing cost computed as interest expenses over total debt in quarterly excluding financial and public sector

Figure 22: Falling Rates and Rising Superstars, Kroen, Liu, Mian, Sufi, Washington Center for Equitable Growth, January 2022.

Figure 23 below shows the divergence in borrowing costs to leaders Vs. followers and at different levels of rates. The panel on the left shows a positive depiction with ZLB (zero lower bound) which implies that when rates are closer to zero, an interest rate shock gives us a differential benefit to the leaders Vs. followers, which advantage fades as we see rates at a higher level at the time of the rate shock (right panel, via the negative depiction at a higher starting rate). We see this trend of the starting rate being a determinant of the level of differential advantage with the expansionary policy adopted by central banks, be it firm growth and its elements, firm investment and acquisitions, or firm financing (**Appendix Figures 1, 2, and 3**).

Response of Borrowing Cost to interest rate shocks

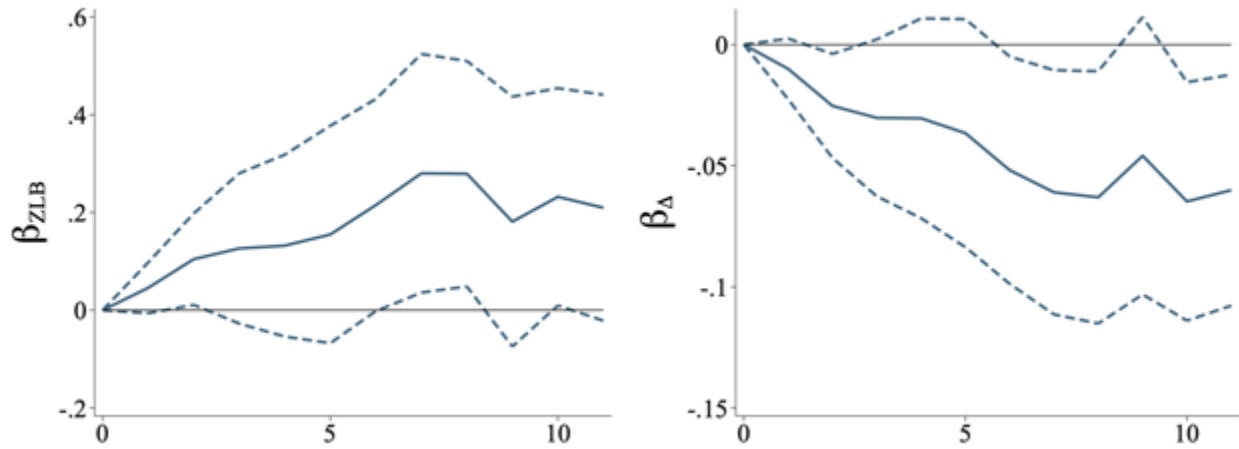


Figure 23: *Falling Rates and Rising Superstars*, Kroen, Liu, Mian, Sufi, Washington Center for Equitable Growth, January 2022; Dotted lines represent 95% confidence interval

In terms of racial inequality, we show in **Figure 24(a)** both the unemployment and the normalized unemployment rates through 2020 since the early 1970s, and their movements in tandem with recessions and expansions. We observe that while the unemployment rates of all groups move in parallel, some groups see their unemployment rates experience more volatility. A deeper review also tells us, however, that the volatility is consistent with the SD of each group. If we were to normalize the unemployment rate (dividing the unemployment rate by the average group unemployment for perspective and proportion), as shown in **Figure 24(b)**, we see that there is little change in the pace with which unemployment moves up or down.

Unemployment and Normalized unemployment rates since the early 1970s

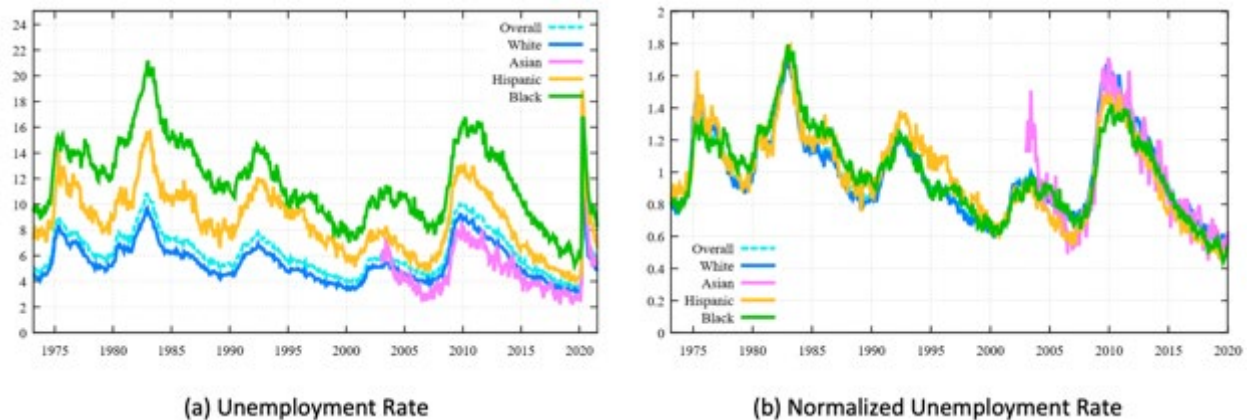


Figure 24: *Monetary Policy with Racial Inequality*, Opportunity and Inclusive Growth Institute, Federal Reserve Bank of Minneapolis, Institute Working Paper No. 70, Makota Nakajimi, Federal Reserve Bank of Philadelphia, April 2023

Output and unemployment rate with -0.25 BPS monetary policy shock

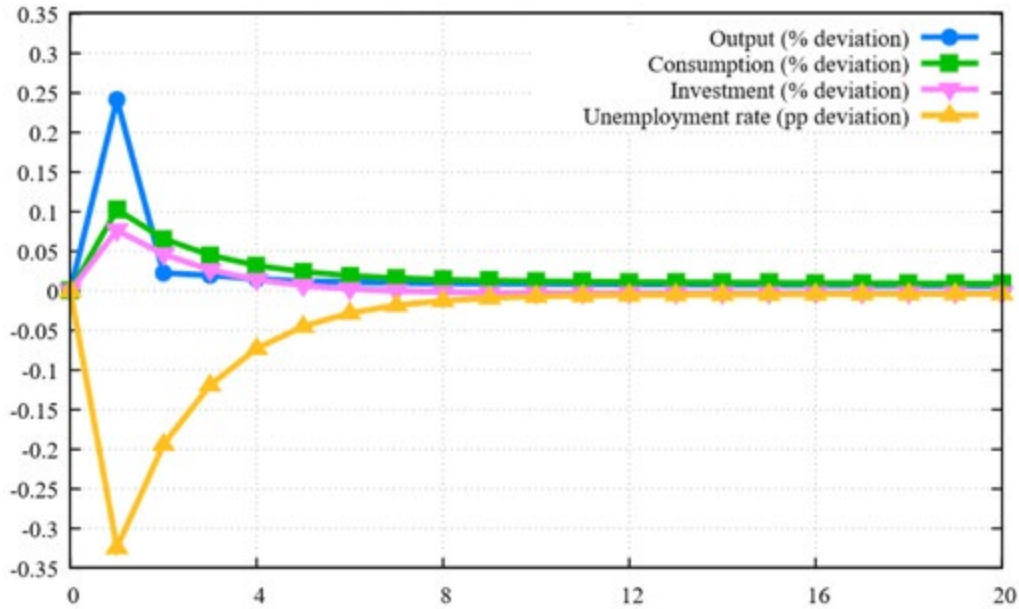


Figure 25: Monetary Policy with Racial Inequality, Opportunity and Inclusive Growth Institute, Federal Reserve Bank of Minneapolis, Institute Working Paper No. 70, Makota Nakajimi, Federal Reserve Bank of Philadelphia, April 2023

Figure 25, above, shows us the effect of a cut in rates by 25 bps on output and its components, and the unemployment rate. We see that effect over a period of 20 quarters. The figure is self-explanatory in that all the output components and the unemployment rate experience a positive result with the unemployment rate positivity staying longer than the output and/or its components, implying that it takes longer for it to normalize from its gestation following the policy shock.

Unemployment rate change with 0.25 BPS monetary policy shock

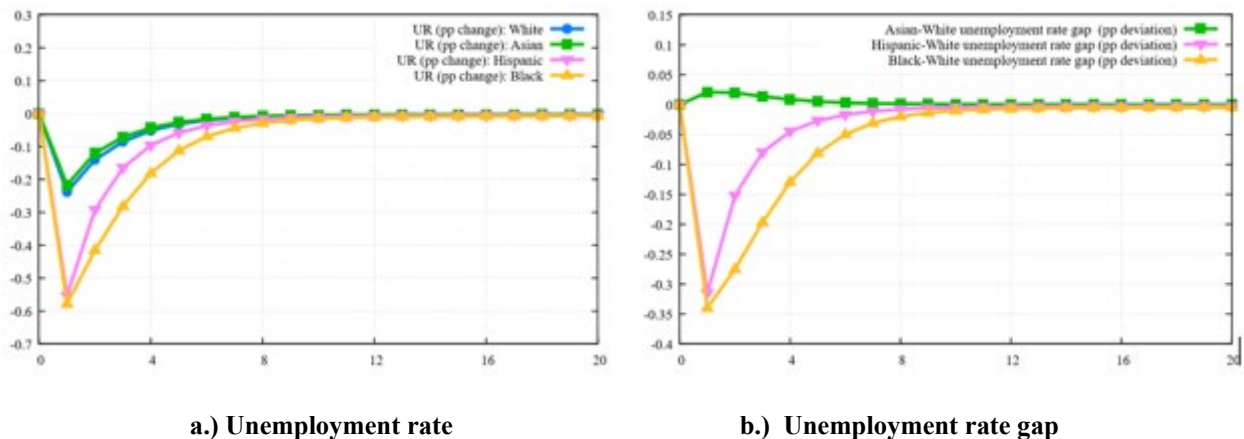


Figure 26: Monetary Policy with Racial Inequality, Opportunity and Inclusive Growth Institute, Federal Reserve Bank of Minneapolis, Institute Working Paper No. 70, Makota Nakajimi, Federal Reserve Bank of Philadelphia, April 2023

Figure 26 gives us a more nuanced look at the effect of an expansionary monetary policy shock. We see that while the unemployment rate of each group declines following the shock, those of Hispanic and Black groups decline much more (**Figure 26 a**), implying a definitive benefit to the minorities. On the right side of the panel (**Figure 26 b**), consistent with the result in the other panel, we see the gap also showing a negative effect given the net benefit to the Black and Hispanic population. That is, the gap closes.

In another study conducted in Denmark, in terms of disposable income, we show a differential effect of a 100 BPS reduction in policy rate over a two-year period in **Figure 27**, the effect being relative to the median group (p45-50).

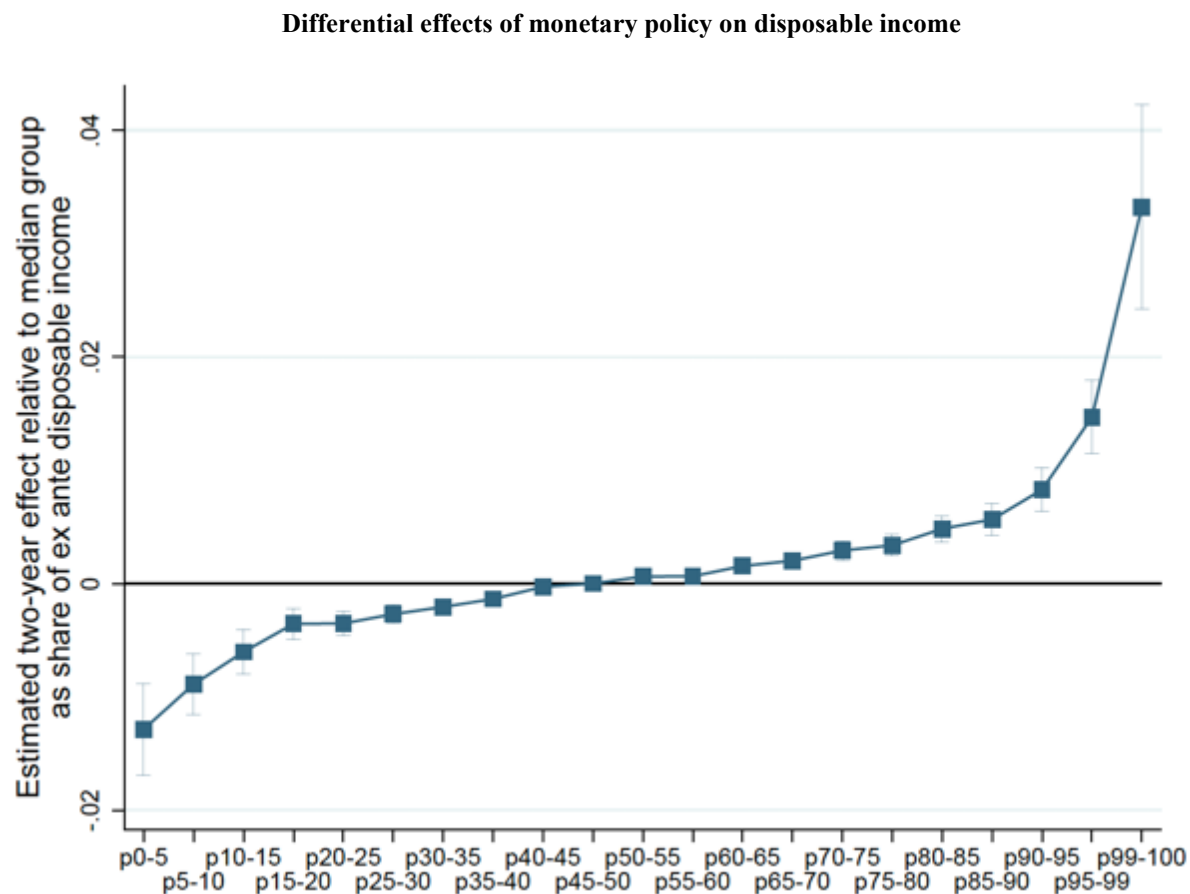


Figure 27: Monetary Policy and Inequality, Andersen, Johanansen, Jørgensen, Luis-Peydró CEBI Dept of Economics, University of Copenhagen, September 15, 2022

Similarly, over a period of four years, we see in **Figure 28** the movement of disposable income for the different income groups to give us an idea of the longevity of the benefits or the disadvantages. In keeping with the previous depiction, this also shows the same trend along with the time horizon of up to four years, showing an entrenched benefit for the horizon in the study.

Differential effects on disposable income by time horizon

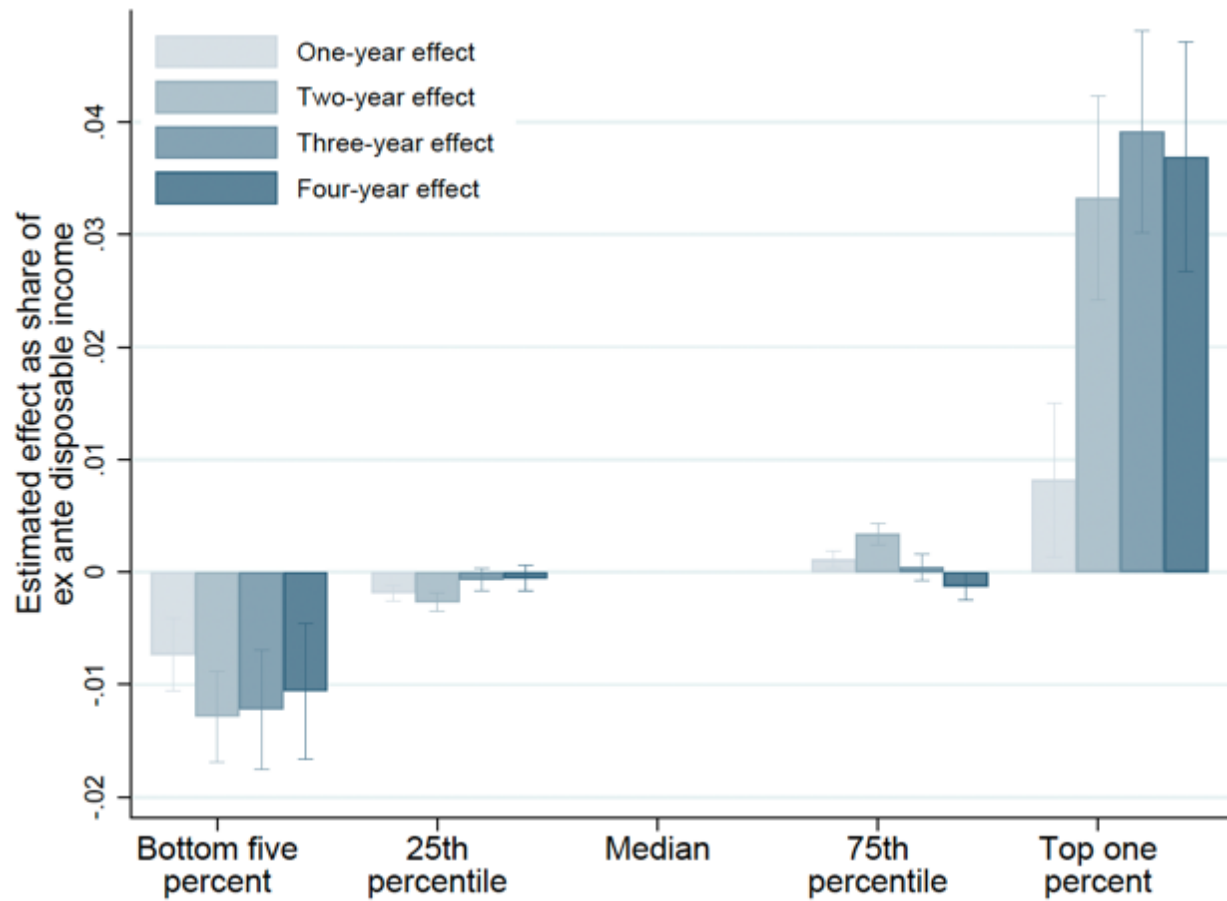


Figure 28: Monetary Policy and Inequality, Andersen, Johanansen, Jørgensen, Luis-Peydró CEBI Dept of Economics, University of Copenhagen, September 15, 2022

Moving away from income, we now focus on asset values and the differential effects of a 100 BPS expansionary policy rate shock over a period of four years. **Figure 29** clearly demonstrates a benefit to the top 1% sustainably over the time horizon.

Differential effects on asset values by time horizon

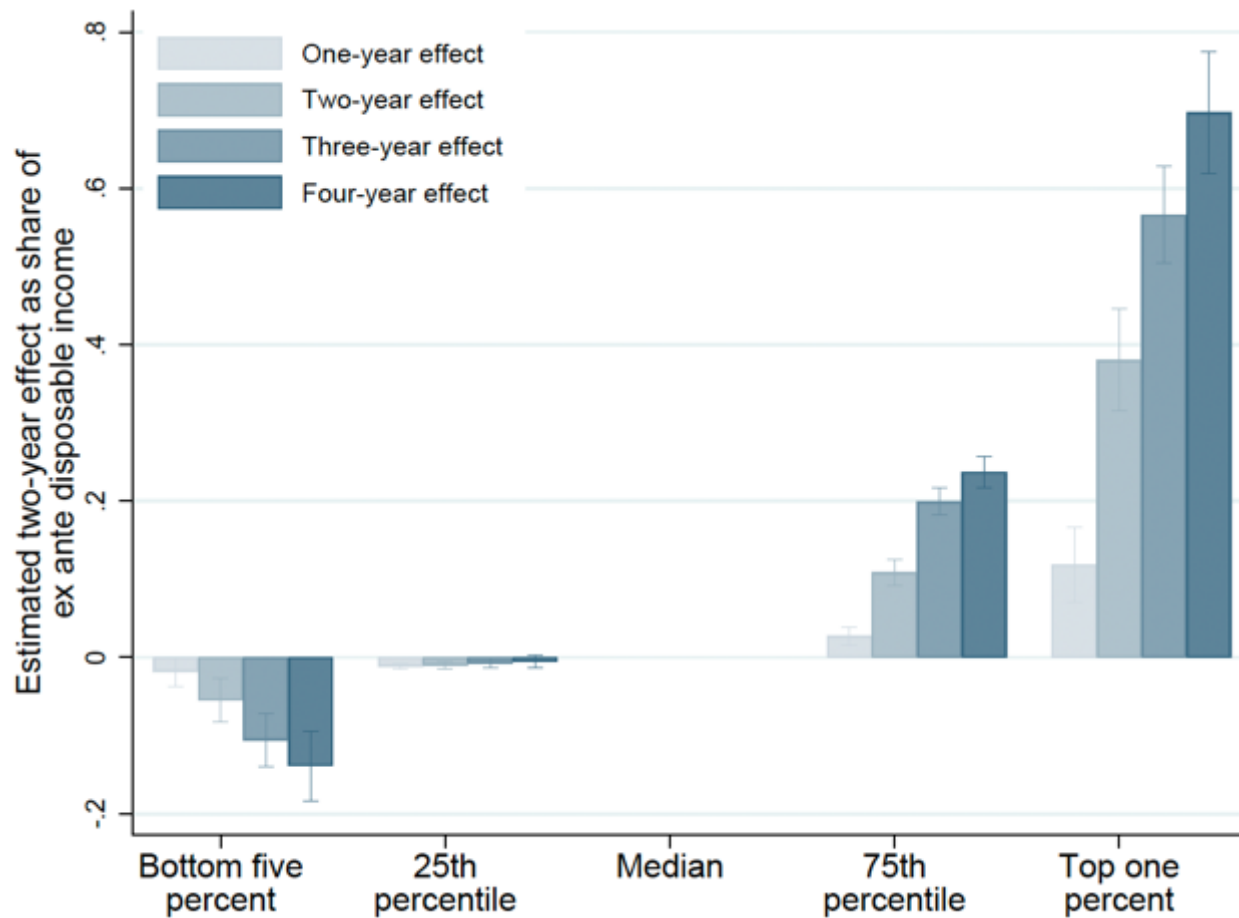


Figure 29: Figure 35: Monetary Policy and Inequality, Andersen, Johanansen, Jørgensen, Luis-Peydró CEBI Dept of Economics, University of Copenhagen, September 15, 2022

In terms of racial disparity, as asset prices increase by a certain proportion, we have below in **Figure 30** the relative benefit, expressed as capital gains, to white and Black households with a 10% increase in asset prices. On a per household basis (**Figure 30 a**), we see a clear advantage to white individuals which continues to be so in the other (right; **Figure 30 b**) panel which projects the benefit relative to the subject group's income.

Capital gains with a 10% increase in asset prices

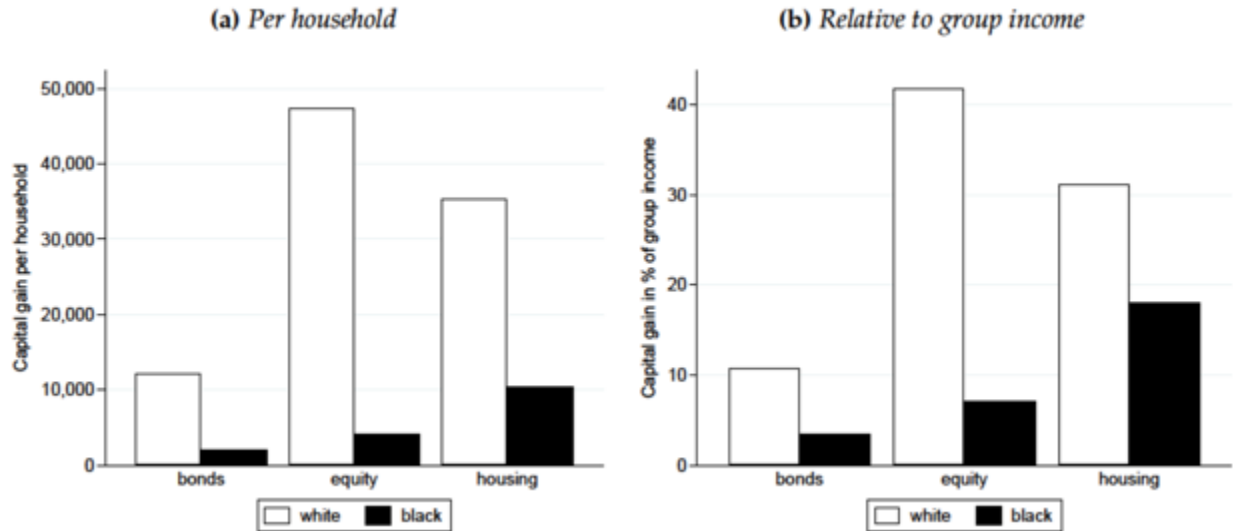


Figure 30: *Monetary Policy and Racial Inequality*, Alina K. Bartscher, Moritz Kuhn, Moritz Schularick, and Paul Wachtel, *Federal Reserve Bank of New York Staff Reports*, no. 959 January 2021; revised March 2022

In addition to capital gains, we also see the disparity in the capital income equation between the two ethnicities in question. **Figure 31** shows us, both per household (**Figure 31 a**) as well as relative to income group (**Figure 31 b**), when interest rates decline by 1%, dividends increase by 1%, and savings and bond interest rates decline by 1%. The graph represents a higher effect overall on an absolute basis per household than on a relative basis, which means that the comparison mode, considering the group income bracket, tends to mitigate the divergence in terms of gain from mortgage interest change and increase in dividends (both showing equal benefit), and also demonstrates a smaller difference in loss from savings and interest income.

Figure 32 below shows the effect of a 1% decline in the Fed Funds Rate on labor and wage gaps, and the asset prices, such as housing, dividends, stocks, and treasury. We can see that the effect on the unemployment gap is discernible around the 18-month point, and it continues its trend (mildly significant at the 90% confidence interval during the 30 to 45-month period) before it normalizes at four years through the 60-month end point. The effect on the wage gap is even less significant. What we do see is the relatively disproportionate increase in asset prices, with housing starting its tick-up later and leaking at five years. Treasury rates and stocks have a more consistent impact from the start of the expansionary policy shock and so do dividends.

Capital income effects of decline in interest rates after one year (1% reduction in mortgage rates and 1% increase in dividends; 1% decrease in savings and bond rates)

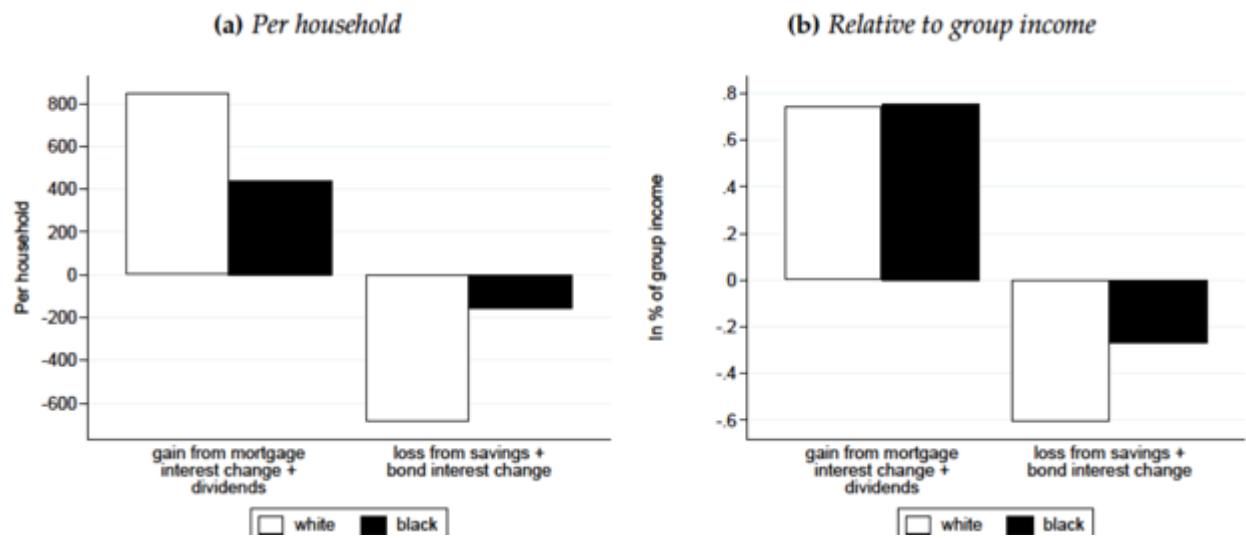


Figure 31: Monetary Policy and Racial Inequality, Alina K. Bartscher, Moritz Kuhn, Moritz Schularick, and Paul Wachtel , Federal Reserve Bank of New York Staff Reports, no. 959 January 2021; revised March 2022

Effects of a 100 BPs expansionary monetary policy shock

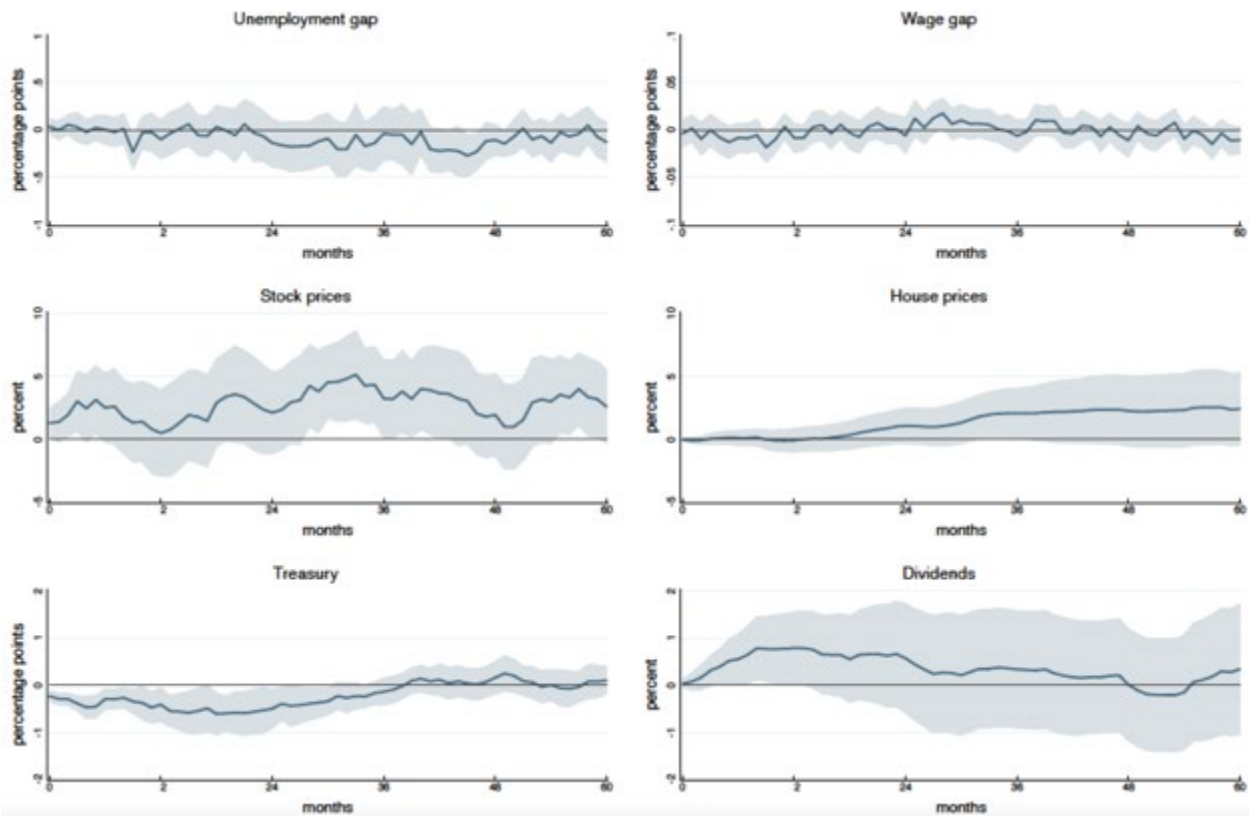


Figure 32: *Monetary Policy and Racial Inequality*, Alina K. Bartscher, Moritz Kuhn, Moritz Schularick, and Paul Wachtel, *Federal Reserve Bank of New York Staff Reports*, no. 959 January 2021; revised March 2022

Moving from here in an attempt to synthesize overall impressions, we have **Figure 33** below yielding the resultant comparisons of relative earnings and portfolios with a 100 BPS expansionary policy shock over a period of five years. The relative advantage is denoted by a positive number. What comes out clearly here is that while the Black community has an earnings advantage based on their group income as the base, the white population benefits by orders of magnitude on the portfolio, consisting of stocks, bonds, and housing.

Comparison of relative earnings and portfolio effects with a 1% expansionary policy shock

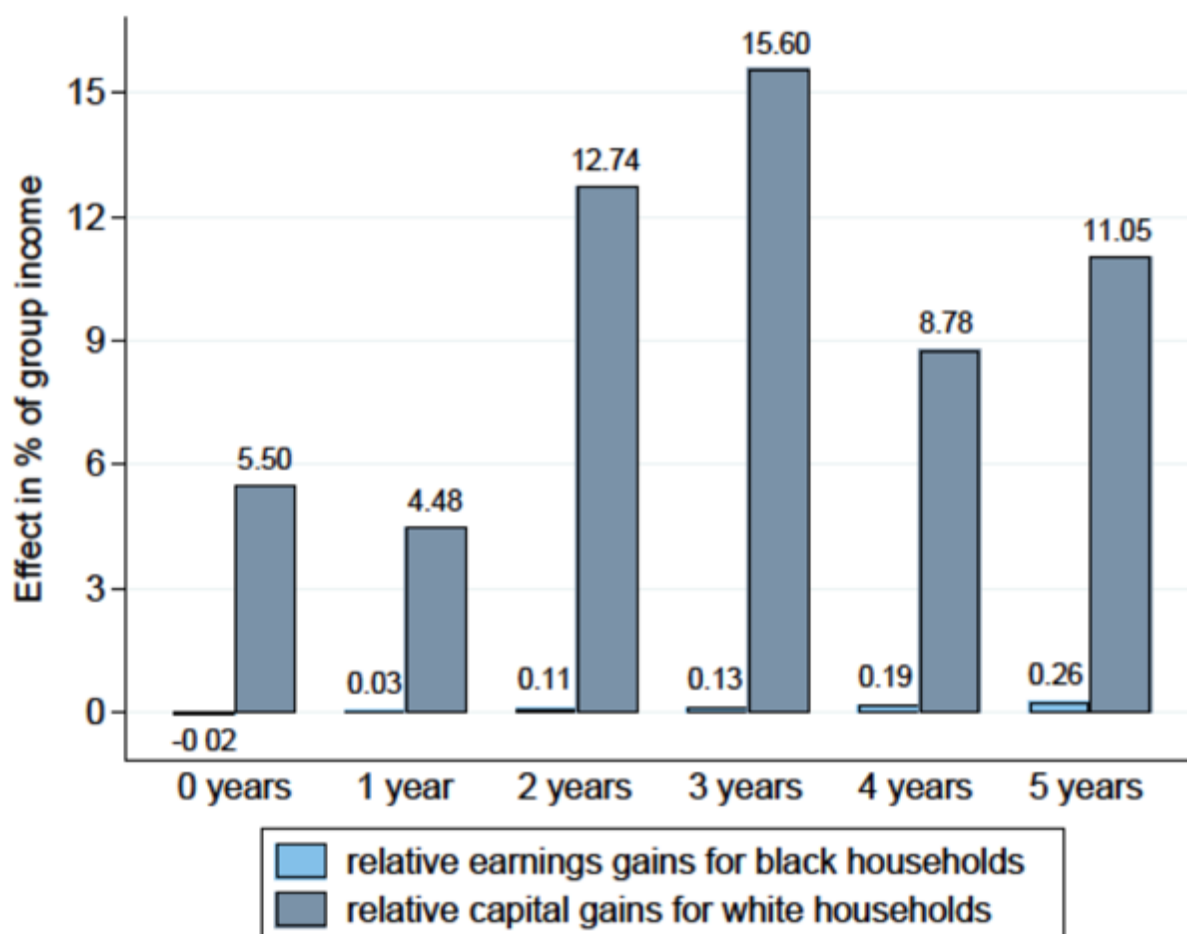


Figure 33: Monetary Policy and Racial Inequality, Alina K. Bartscher, Moritz Kuhn, Moritz Schularick, and Paul Wachtel, Federal Reserve Bank of New York Staff Reports, no. 959 January 2021; revised March 2022

Limitations and Future Research:

It would be fitting to mention here that the work on this project is not without its limitations and omissions. The paper does not account for an escalation of any geopolitical tension that would likely alter the extrapolation of our analysis, as it may exacerbate inequality. We have also not considered the labor participation rates of the different ethnicities studied here. At the same time, we have not considered access to credit even though we did review the research that pointed to the disproportionate benefit accrued to the leaders versus the followers with lower rates. In assessing the extent of inequality between and among the various groups, we did not come across any study that considered the consumption baskets of these groups as that could have an exogenous effect on the result.

It would be interesting and revealing to take this project further by looking at the difference in the social programs offered by the US relative to the European countries. There are differences even in the intra-Europe group of countries.

Conclusion:

Our concluding remarks focus on the establishment of inequality first before determining the extent of monopsony and the effects thereof. Then, we get to the monetary policy's role in inequality and whether it is just a cyclical tool to smooth out the economy or a more secular mode.

If we go back to the preceding lines under Results and Discussion, we can see from **Figure 1** how income has come to be concentrated among increasingly fewer people. On a more global basis, we see how wealth has become more concentrated as well with the United States accounting for almost 80% among the top 10%, as per **Figure 3**.

In a more nuanced sense, we can see the cascading effect of income inequality on the total wealth picture. Looking at **Figure 10**, we see the wealth-to-income ratios for white and Black individuals as a telling fact. With relatively high average income and the capacity to invest in more productive assets, white households tend to accumulate more wealth over time. We see that while white households accumulated \$4.3 for every dollar they earned, their Black peers were only able to gather \$1.1 for every incremental dollar earned. From the previous graph in the piece, one of the reasons that comes to mind is the asset-class allocation where equities with a higher appreciation potential bodes well for the white households in addition to the geographic locations of their housing units which tend to carry better appreciation opportunities. In another instance, to further entangle the complex web, we see that not only income is lower for the disadvantaged ethnicities on average, but the same ethnicities also tend to be employed in occupations that are subject to the highest rate of minimum wage violation. **Figure 8** shows how Latinos are affected by it.

The presence of collective bargaining has been on the wane for several years in the US. Technology has played a part and so has globalization. The current administration in the US, however, has played a positive role in strengthening the concept of CBAs and has stood by them over the employers that have found themselves left in the lurch lately. **Figure 4** shows the positive role of the unions (CBAs). Those ununionized find worker rights protection elusive. While on an overall basis, the unionized workers lost 3% fewer jobs than their non-unionized counterparts, the Latinos walked away with the largest advantage, losing merely 2.5% during the period.

Collective bargaining also helps in negotiating better wages. **Figure 6** shows the relative earnings of the unionized workers versus their counterparts who are not unionized. The advantage is evident for the disadvantaged minorities, Latinos and Black individuals, who have a 30% and 25% higher earnings figure, respectively in 2020Q1.

On the presence or otherwise of monopsony, **Figure 12** shows us a fairly concerning picture in the US, in terms of the HHI index that the US government uses for analysis. The government also considers any number over 2,500 alarming and we do see a good 2/3rds of the country in that category. The heart of the country is particularly concentrated, with fewer highly skilled individuals and more blue-collared workers, or, perhaps, an occupation with a specific specialization.

Similarly, **Figure 14** tells us the OECD countries' story with moderate to high concentration measures, validating that employer concentration is present across the Atlantic as well.

One of the perceived effects of monopsony is that the workers are caught in the crosshairs of the employer's power to dictate wages. **Figure 16** validates that. The graph shows a 10% increase in concentration carrying its effect on wages. It is based on information available in European countries: Germany, Denmark, Portugal, and France. Given the distributions are dispersed to a significant extent, the wage impact can be significant, as already described in the preceding lines.

In terms of some form of redemption, what is conceivable is retraining the employees, so they move out of the concentrated industry. **Figure 17** shows a simulation where there is a 15% decrease in monopsony incidence with some sort of reskilling and retraining of the employees.

On the monetary policy side, we see that the stalwarts involved in it have pivoted to using more progressive language. The use of 'inclusive growth' has been ubiquitous. Our piece delves into whether monetary policy affects inequality and inequitable growth. It further analyzes the implications of it, both from cyclical and secular standpoints.

Appendix Tables 1 and 2, based on conventional and unconventional monetary policies respectively, show a mixed picture. We can see in **Appendix Table 1** that both expansionary and contractionary policies have effects on the well-being or otherwise of the constituents. Whereas an expansionary policy tends to create disproportionate wealth for the rich, a contractionary policy would also affect the lower-income population as growth tends to get stifled. On the unconventional side of monetary policy, as reflected in **Appendix Table 2**, it is not very clear what the specific impact is, given its recency in practice; however, there is reason to believe that it does tend to follow the same course as under conventional policymaking.

In terms of the overall effect of monetary policy on income and wealth levels among the various income/wealth deciles, which is the real purpose of the study before we go into the nuances of such occurrences, it is clear from the many studies conducted that while the income differential may lend a slight benefit to the disadvantaged ethnicity, the wealth creation among the advantaged class far outweighs the equation. **Figure 33** shows that in terms of the slight positivity in the income for Black people (benefit) and compares it to the disproportionate positive impact in wealth for white people. Given the income and wealth distribution between the two ethnicities, we would consider white people to have higher income and wealth than Black people.

It is quite clear that the labor market and employer concentration exist in the US and other OECD countries. We have also seen that collective bargaining tends to help those who are disadvantaged both in terms of job retention and wage reasonability. We have further shown that an increase in employer concentration is accompanied by lower wages and that investment in retraining is critical in containing the incidence of monopsony.

On monetary policy, we see that it does carry its effect on both income and wealth, defined by asset ownership. While the effect can be pronounced initially, it does fade over time; however, in some cases, with persistent contractionary or expansionary modes, the central banks can create a lingering effect, if not perpetuate the impact. The crux is that central banks have a dual mandate of maximum employment and price stability, and it has available at its disposal specific tools, such as interest rates and QE, in addition to certain regulatory dispositions that could either encourage or discourage growth, as the case may be. The central banks around the developed world, considered as independent agencies, will continue to use these with prudence - it is hoped - as

macro data unfolds. We have demonstrated that political pressure on central banks to keep a loose monetary policy as an apparent help to the poor is counterproductive as it also goes to increasing wealth inequality. It is, at best, a catch-22. So, is monetary policy a tool to mitigate inequality, or is that the jurisdiction of the fiscal experts?

While one ponders on inequality and the inequitable growth of economies, one must not ignore the fact while inequality has been shown to have increased among the developed countries we have considered, poverty itself has decreased, making the two undesirable social and economic trends mutually exclusive. The graph below goes to demonstrate that.

Twelve-month percent change, constant dollar, private industry workers

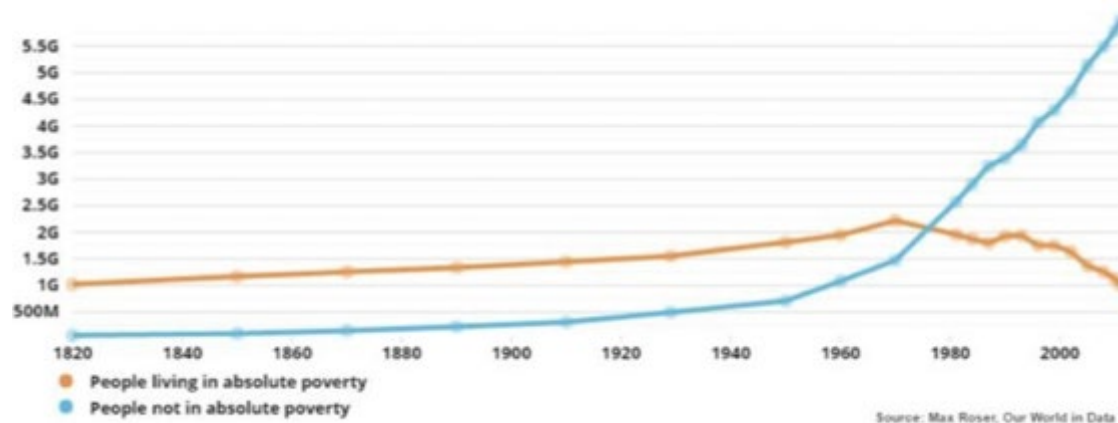


Figure 34: Fee.org; Max Roser, Our world in data

We will close with this question: *can poverty eradication and increasing inequality really converge? And if it does, does it constitute sufficient reasons for complacency, or are we better than that? And if we are, then should we not just be pursuing subsistence and go beyond to create a more equal world, doing which is not only moral but also good economic policy?*

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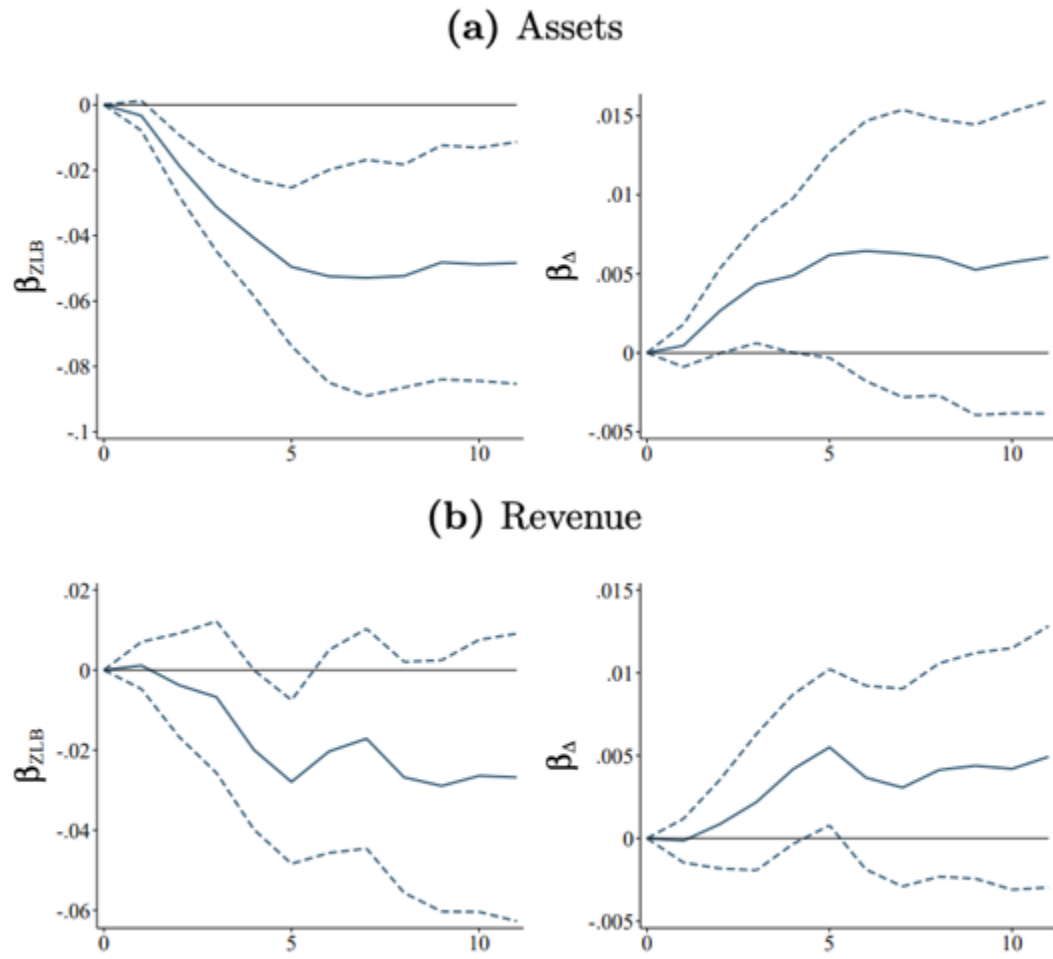
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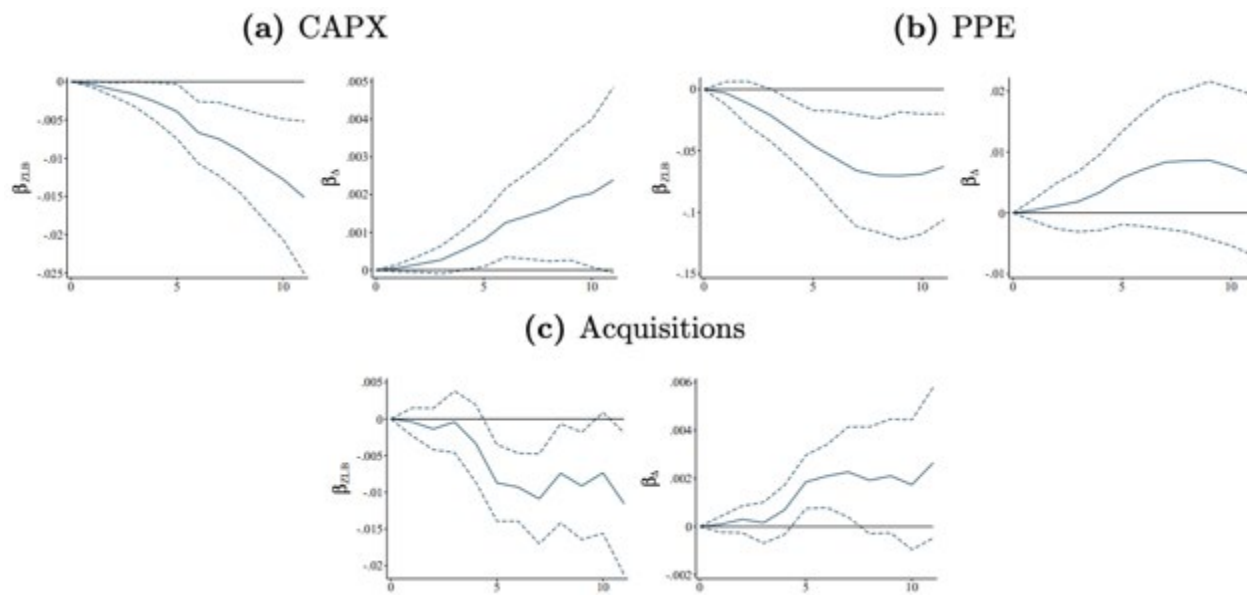
Appendices:

Response to firm growth to interest rate shock



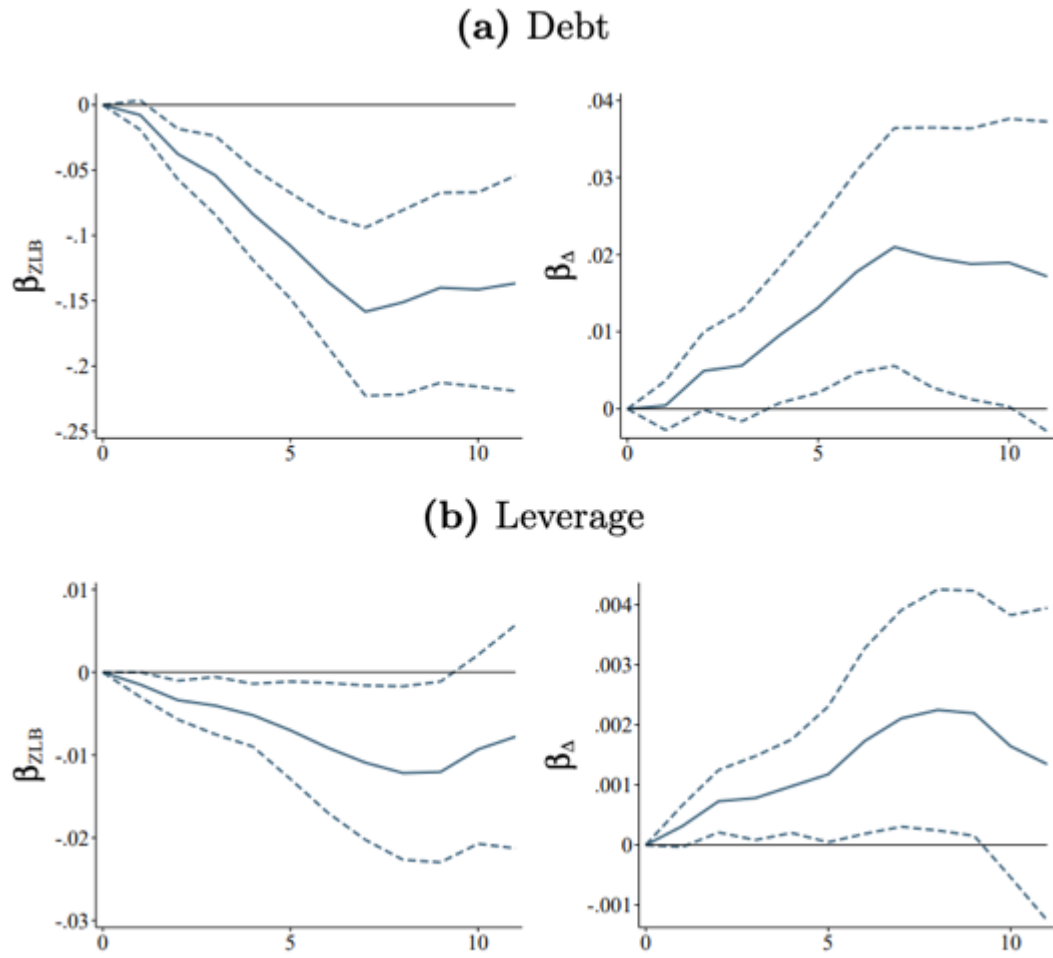
Appendix Figure 1: Falling Rates and Rising Superstars, Kroen, Liu, Mian, Sufi, Washington Center for Equitable Growth, January 2022; Dotted lines represent 95% confidence interval

Firm investments response to interest rate shock



Appendix Figure 2: Falling Rates and Rising Superstars, Kroen, Liu, Mian, Sufi, Washington Center for Equitable Growth, January 2022; Dotted lines represent 95% confidence interval

Firm financing response to interest rate shock



Appendix Figure 3 : Falling Rates and Rising Superstars, Kroen, Liu, Mian, Sufi, Washington Center for Equitable Growth, January 2022; Dotted lines represent 95% confidence interval

Table 1. Summary of Empirical Studies: Distributional Effects of Conventional Monetary Policy.

Study	Country sample	Period	Method	Monetary policy change/shock	Impact on inequality	Distributional channel
<i>Income inequality</i> Bulř and Gulde (1995)	18 countries	1960–1992	Pooled and single-country regressions	Expansionary (+ inflation)	Increase income inequality	Inflation
Bulř (2001)	75 countries	1970–1991	Cross-sectional regressions	Expansionary (+ inflation)	Increase income inequality	Inflation
Romer and Romer (1999)	76 countries	1970–1990	Cross-sectional regressions	Expansionary (+ inflation)	Increase income inequality	Inflation
Easterly and Fischer (2001)	38 countries	1995 poll	Cross-sectional regressions	Expansionary (+ inflation)	Increase income inequality	Inflation
Galli and von der Hoeven (2001)	15 OECD countries USA	1973–1996 1966–1999	Panel and time-series regressions	Expansionary (+ inflation)	Decrease inequality if inflation low; increase if inflation high	Inflation
Villarreal (2014)	Mexico	2003–2012	Local projections	Restrictive (+1 st. dev. monetary policy shock)	Decrease income inequality	Earnings heterogeneity
Mumtaz and Theophilopoulou (2015)	UK	1968–2008	MF-SVAR	Restrictive (+1 st. dev. monetary policy shock)	Increase income and labor earnings inequality	Income composition Earnings heterogeneity
Cloyne <i>et al.</i> (2016)	UK USA	1975–2007 1981–2007	Romer and Romer (2004) procedure	Expansionary (+25 bps monetary policy shock)	Increase income inequality	Income composition

(Continues)

Table 1. *Continued.*

Study	Country sample	Period	Method	Monetary policy change/shock	Impact on inequality	Distributional channel
O'Farrell <i>et al.</i> (2016)	8 OECD countries	2007–2012 surveys	Microsimulations	Expansionary (–100 bps monetary policy shock)	Reduce income inequality in Canada, the Netherlands, and the U.S.; increase in most European countries; effects negligible	Income composition Earnings heterogeneity
Cotbion <i>et al.</i> (2017)	USA	1980–2008	Local projections	Restrictive (+100 bps monetary policy shock)	Increase income and labor earnings inequality	Income composition Earnings heterogeneity
Inui <i>et al.</i> (2017)	Japan	1981–1998	Local projections	Expansionary (–100 bps monetary policy shock)	Increase income and labor earnings inequality	Earnings heterogeneity
Mumtaz and Theophilopoulou (2017)	UK	1969–2012	SVAR	Restrictive (+1 st. dev. monetary policy shock)	Increase income and labor earnings inequality	Income composition Earnings heterogeneity
Furceri <i>et al.</i> (2018)	32 advanced and emerging countries	1990–2013	Local projections	Restrictive (+100 bps monetary policy shock)	Increase income inequality	Earnings heterogeneity
Guerello (2018)	Euro area	2001–2015	Panel VAR; country VAR	Expansionary (–100 bps monetary policy shock)	Reduce income inequality in the euro area; no effect in individual country analysis	Income composition Earnings heterogeneity

(Continues)

Table 1. Continued.

Study	Country sample	Period	Method	Monetary policy change/shock	Impact on inequality	Distributional channel
Aye <i>et al.</i> (2019)	USA	1980–2008	Local projections	Restrictive (+100 bps monetary policy shock)	Increase income inequality	Income composition Earnings heterogeneity
Samanina and Nguyen (2018)	Euro area	1999–2014	Panel VAR, local projections	Expansionary (–1 st. dev. monetary policy shock)	Decrease income inequality	Earnings heterogeneity
Hohberger <i>et al.</i> (2019)	Euro area	1999–2017	Estimated open-economy DSGE model	Expansionary (–1 st. dev. monetary policy shock)	Decrease income inequality	Earnings heterogeneity Income composition
<i>Wealth inequality</i> Doepke and Schneider (2006)	USA	1952–2004	Microsimulation	Expansionary (+10% price level)	Reduce wealth inequality	Inflation
Meh <i>et al.</i> (2010)	Canada	2005 survey	Macro model, scenario analysis	Expansionary (+1% price level)	Reduce wealth inequality	Inflation
Adam and Zhu (2016)	Euro area	2010 survey	Microsimulation	Restrictive (–10% price level)	Increase wealth inequality in the euro area; reduce inequality in Germany, Austria, Malta	Inflation

(Continues)

Table 1. Continued.

Study	Country sample	Period	Method	Monetary policy change/shock	Impact on inequality	Distributional channel
O'Farrell <i>et al.</i> (2016)	8 OECD countries	2007–2012 surveys	Microsimulation	Expansionary (+ 10% asset prices)		Portfolio composition
Inui <i>et al.</i> (2017)	Japan	1981–1998	Local projections	Expansionary (– 100 bps monetary policy shock)	Insignificant	Savings redistribution Portfolio composition
Hohberger <i>et al.</i> (2019)	Euro area	1999–2017	Estimated open-economy DSGE model	Expansionary (– 1 st. dev. monetary policy shock)	Decrease wealth inequality	Savings redistribution Portfolio composition

Note: (–) (+) means increase (decrease).

Table 2. Summary of Empirical Studies: Distributional Effects of Unconventional Monetary Policy.

Study	Country sample	Period	Method	Monetary policy change/shock	Impact on inequality	Channels
<i>Income inequality</i> Saiki and Frost (2014)	Japan	2008–2014	VAR	Expansionary (+1 st. dev. Bank of Japan assets)	Increase income inequality	Income composition
Bivens (2015)	USA	2008–2014	Counterfactual analysis	QE (–100 bps long-term Treasury yields)	Reduce income inequality	Earnings heterogeneity
Montecino and Epstein (2015)	USA	2010–2013	RIF regressions	QE introduction	Increase income inequality	Earnings heterogeneity
Muntaz and Theophilopoulou (2017)	UK	2009–2010	SVAR, counterfactual analysis	QE (–100 bps long-term government bond yields)	Increase income inequality	Income composition
Inui <i>et al.</i> (2017)	Japan	1981–2008	Local projections	Expansionary (–100 bps monetary policy shock)	Insignificant	Earnings heterogeneity
Bunn <i>et al.</i> (2018)	UK	2008–2014	Large-scale econometric model	Expansionary (Bank Rate cut to 0.5%; first £375 bln of QE)	Negligible	Earnings heterogeneity
Casiraghi <i>et al.</i> (2018)	Italy	2011–2013	Large-scale econometric model	Asset purchases, liquidity injections	Reduce labor income inequality	Income composition
Guerello (2018)	Euro area	2001–2015	Panel VAR; country VAR	Expansionary (+1% ECB's assets)	Reduce income inequality in the euro area	Earnings heterogeneity

(Continues)

Table 2. Continued.

Study	Country sample	Period	Method	Monetary policy change/shock	Impact on inequality	Channels
Juan Francisco <i>et al.</i> (2018)	USA Euro area	2008–2013 2009–2016	SVAR	Expansionary (+1 st. dev. monetary base)	Increase income inequality in the USA; insignificant in the euro area	Income composition
Lenza and Slacálek (2018)	Germany, France, Italy, Spain	1999–2016	BSVAR, microsimulation	ECB asset purchases (– term spread)	Reduce income inequality	Earnings heterogeneity
Taghizadeh-Hesary <i>et al.</i> (2018)	Japan	2002–2017	VECM	Expansionary (+M1; – short-term interest rate)	Increase income inequality	Income composition
Hobberger <i>et al.</i> (2019)	Euro area	1999–2017	Estimated open-economy DSGE model	QE (long-term bond purchases of 1% of steady-state EA GDP)	Decrease income inequality	Earnings heterogeneity Income composition
<i>Wealth inequality</i> Bank of England (2012)	UK	2009–2011	Survey data analysis	Asset purchases	Benefit top 5% of households holding 40% of financial assets	Portfolio composition
Bivens (2015)	USA	2008–2014	Counterfactual analysis	QE (– 100 bps long-term Treasury yields)	Negligible	Portfolio composition
Adam and Tzamourani (2016)	Euro area	2010 survey	Microsimulation	Asset purchases (+ asset prices)	Negligible	Portfolio composition

(Continues)

Table 2. *Continued.*

Study	Country sample	Period	Method	Monetary policy change/shock	Impact on inequality	Channels
Domanski <i>et al.</i> (2016)	France, Germany, Italy, Spain, USA, UK	2000–2012 surveys	Microsimulation	Expansionary (– interest rates, + asset prices)	Increase wealth inequality	Portfolio composition
Inui <i>et al.</i> (2017)	Japan	1981–2008	Local projections	Expansionary (– 100 bps monetary policy shock)	Insignificant	Savings redistribution Portfolio composition Inflation Portfolio composition
Bunn <i>et al.</i> (2018)	UK	2008–2014	Large-scale econometric model	Expansionary (Bank Rate cut to 0.5%; first £375 bln of QE)	Negligible	Inflation Portfolio composition
Casiraghi <i>et al.</i> (2018)	Italy	2011–2013	Macro model, scenario analysis	Asset purchases, liquidity injections	Negligible	Savings redistribution Portfolio composition
Lenza and Slacalek (2018)	France, Germany, Italy, Spain	1999–2016	BSVAR, microsimulation	ECB asset purchases (– term spread)	Negligible	Portfolio composition
Juan Francisco <i>et al.</i> (2018)	U. S. Euro area	2008–2013 2009–2016	SVAR	Expansionary (+ 1 st. dev. monetary base)	Increase wealth inequality in the USA; insignificant in the euro area	Portfolio composition
Hohberger <i>et al.</i> (2019)	Euro area	1999–2017	Estimated open-economy DSGE model	QE (long-term bond purchases of 1% of steady-state EA GDP)	Decrease wealth inequality	Savings redistribution Portfolio composition

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