



MASTER DEGREE INTERNATIONAL ECONOMICS AND BUSINESS

**MONETARY POLICY UNDER
CONSTRAINT: THE ROLE OF
INEQUALITY**

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LIST OF ABBREVIATIONS

APP – Asset Purchase Program|
JPY – Japanese Yen
AUD – Australian Dollar
LTRO – Longer-Term Refinancing Operations
BIS – Bank for International Settlements
LTV – Loan-to-Value Ratio
BOE – Bank of England
MRO – Main Refinancing Operations
BOJ – Bank of Japan
NIRP – Negative Interest Rate Policy
CDB – Credit Demand-Based Mechanisms
NOK – Norwegian Krone
CSB – Credit Supply-Based Mechanisms
OECD – Organisation for Economic Cooperation and Development
DTI – Debt-to-Income Ratio
PCE – Personal Consumption Expenditures
ECB – European Central Bank
PEPP – Pandemic Emergency Purchase Program
ELB – Effective Lower Bound
QE – Quantitative Easing
EUR – Euro | QT – Quantitative Tightening
FED – Federal Reserve System
RANK – Representative Agent New Keynesian
FRED – Federal Reserve Economic Data
RBA – Reserve Bank of Australia
GBP – British Pound
TLTRO – Targeted Longer-Term Refinancing Operations
GDP – Gross Domestic Product | USD – United States Dollar
GINI – Gini Coefficient
WID – World Inequality Database
HANK – Heterogeneous Agent New Keynesian
ZLB – Zero Lower Bound
HICP – Harmonised Index of Consumer Prices
IMF – International Monetary Fund

INTRODUCTION

In recent years, income and wealth inequality have increased significantly in many advanced economies, while household debt has risen and financial markets have expanded. However, this has raised important questions about how inequality impacts macroeconomic policies. Traditionally, central banks have focused on stabilising inflation and output, assuming a representative agent framework.

The literature has extensively studied how monetary policy affects inequality, demonstrating channels through labour markets, asset prices, and credit conditions. Less attention has been paid to the reverse relationship. How rising inequality and household leverage constrain the implementation and effectiveness of monetary policy, forcing central banks to balance trade-offs between supporting economic activity and ensuring financial stability.

Those are the reasons I selected the topic from this different perspective, both to address an academic gap and to highlight its urgent policy relevance. The research question is: how does inequality constrain monetary policy, and to what extent? This thesis addresses this gap by emphasising the "inequality-constrained monetary policy" perspective advanced by Fierro et al. (2023), which demonstrates how heterogeneous household behaviours under financial liberalisation reshape monetary transmission and policy trade-offs.

The analysis proceeds systematically through eight chapters, focusing on a diverse sample of ten advanced economies: the United States, Germany, France, Italy, the Netherlands, Estonia, Japan, Australia, the United Kingdom, and Norway. This selection allows for a comparative study of different monetary regimes and their respective currencies, specifically the Federal Reserve (US Dollar), the European Central Bank (Euro), the Bank of Japan (Japanese Yen), the Bank of England (British Pound), the Reserve Bank of Australia (Australian Dollar), and the Norges Bank (Norwegian Krone).

Chapter 1 establishes the conceptual foundations of monetary policy instruments and transmission channels, while Chapter 2 defines inequality measures and their structural macroeconomic relevance. Chapter 3 provides a comprehensive literature review of the bidirectional channels between policy and distribution, followed by Chapter 4, which examines inequality as a policy constraint through credit-supply- and credit-demand-based mechanisms. Chapters 5 and 6 present the empirical core, delivering detailed descriptive evidence and graphical analysis of recent trends in inequality, debt, and policy stances across the ten sample countries and their diverse currency areas. Chapter 7 discusses findings and policy implications for central bank mandates in increasingly unequal, financialised economies, followed by a final synthesis and conclusion in Chapter 8.

1 MONETARY POLICY: CONCEPT, INSTRUMENTS AND TRANSMISSION

Monetary policy refers to the decisions and actions of a central bank to manage the cost and availability of money in an economy. Moreover, it consists of a set of tools designed to promote sustainable economic growth.

The primary aim of the central bank is to maintain price stability, which means ensuring that inflation remains low, stable, and predictable. The importance of those decisions stems from their impact on the economy. A deeper explanation of the most influential factor is interest rates: any change in interest rates affects the costs commercial banks charge their customers for borrowing. In other words, the decision influences consumer spending and business investment.

1.1 OBJECTIVES OF MONETARY POLICY

Central banks pursue three main goals, as we have seen: to guarantee price stability and to maintain a low level of inflation, which is considered healthy for an economy. The second is that unemployment and monetary policy can influence the rate, keeping it at its highest possible level. In an expansionary monetary policy, unemployment should generally decrease because a higher money supply stimulates business activity, and the job market follows suit. Moreover, the third one is the currency exchange rate. Thanks to the fiscal authority, the central bank can regulate the exchange rates between domestic and foreign currencies. For example, when the money supply increases by issuing more currency, the domestic currency becomes cheaper and more attractive to foreign counterparts.

Since the 1970s, most central banks have introduced inflation targets to replace vague promises of price stability and to set a more specific goal. It is a condition for more stable economic growth and a more stable financial system. This allows people and firms to trust the central bank to deliver price stability, which reflects confidence to spend and invest. The inflation target is the inflation rate deemed sufficient for the economy to fully reap the benefits of price stability, while underscoring the central bank's commitment. In the case of the ECB, a 2% inflation target is set, and any deviations, both positive and negative, are considered equally undesirable.

At the ECB, inflation is measured by the Harmonised Index of Consumer Prices (HICP), compiled by Eurostat, and this methodology is used across all countries. Inflation is a measure of how prices change

over time. To calculate it, Eurostat regularly collects prices for a “basket” of goods and services that represent private consumption in the country.

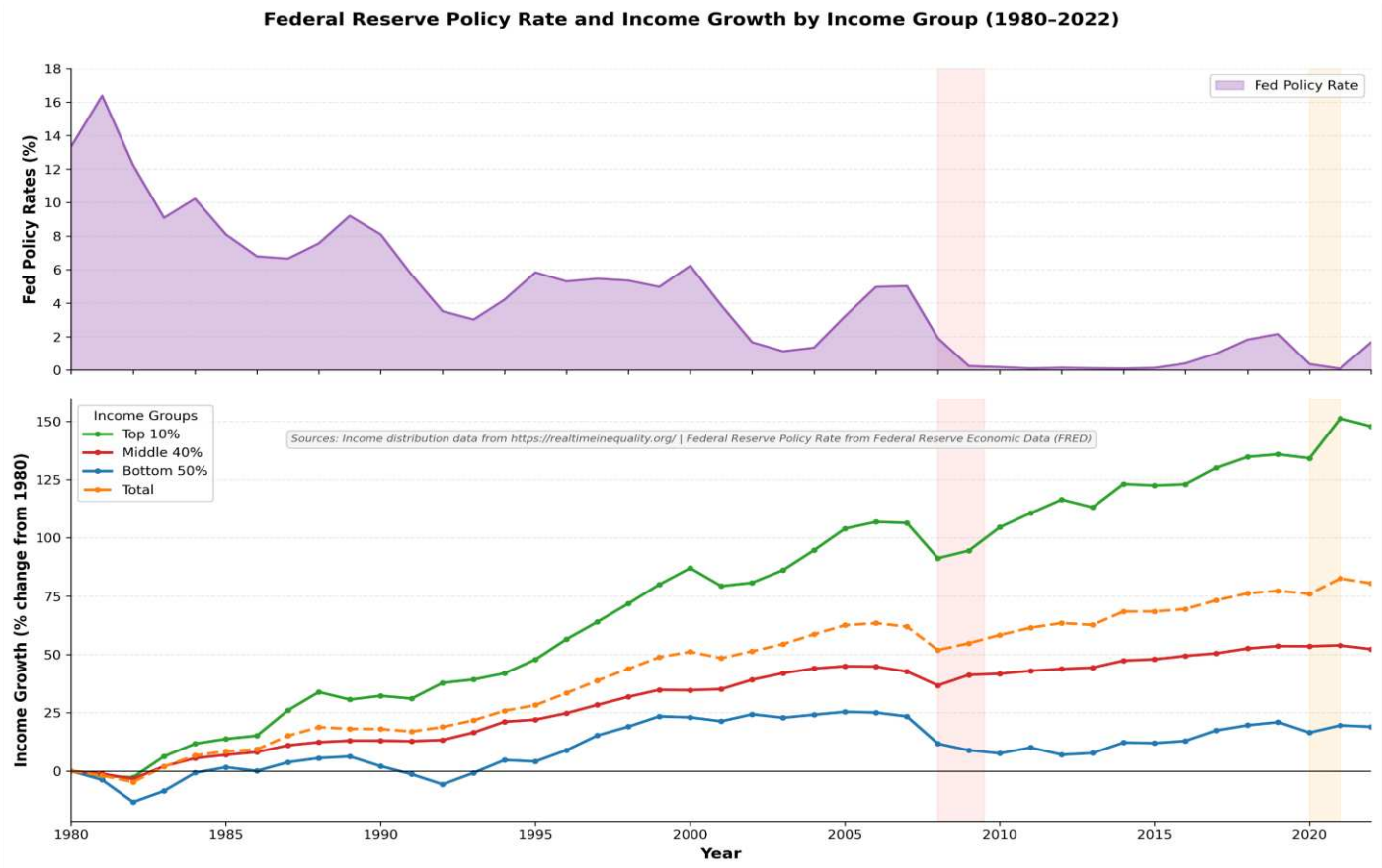
1.2 TYPES OF MONETARY POLICY

Once the objectives and the inflation target are clarified, it is useful to clarify how central banks actually move in practice across different monetary policy situations over the cycle. In normal times, the same instruments can be used in opposite directions depending on whether the central bank wants to stimulate or cool down the economy. When inflation is below target, growth is weak, or unemployment is high, central banks adopt an expansionary policy: they lower interest rates and, in recent decades, expand their balance sheets through quantitative easing, to make credit cheaper, encourage borrowing and spending, and gradually push inflation and activity back toward desired levels. By contrast, when inflation is persistently above target or asset markets show signs of extreme expansion, they shift to a contractionary policy, raising policy rates and reducing liquidity to slow aggregate demand and bring price dynamics under control, even at the cost of temporarily weaker growth and higher unemployment.

These different monetary policy configurations are directly reflected in income dynamics, because changes in the policy rate alter borrowing costs, credit conditions and, ultimately, the pace of economic activity. After distinguishing in theory between expansionary and contractionary phases, it is therefore useful to show how shifts in the stance of policy have been accompanied, over time, by different trajectories for households at various points of the income distribution.

The following figure plots the federal funds rate in the United States, along with the cumulative real income growth (%) for the bottom 50 per cent, the middle 40 per cent, the top 10 per cent, and total income over the period 1980–2022. The data series are from the Realtime Inequality database, while the policy rate is sourced directly from the FRED official website.

Figure 1. Cumulative Real Income Growth by Distribution Group and Federal Funds Rate (US, 1980-2025)



The figure is divided into two vertically stacked panels that share a common horizontal time axis. This layout allows the reader to directly align shifts in the monetary policy stance with changes in the distributional dynamics of real income. The upper panel displays the effective federal funds rate as a filled area series in purple, capturing the full amplitude of each tightening and easing cycle.

The lower panel plots the cumulative percentage change in inflation-adjusted income per adult for each distributional group, with 1980 set to zero, so that any point on a line represents the total real income gain or loss from the base year to that date. Two shaded vertical bands: one in pale red marking the 2008–2009 global financial crisis and one in pale yellow marking the 2020–2021 COVID-19 shock; run through both panels simultaneously, making it straightforward to read the policy response and the income impact of each crisis in a single visual gesture.

The upper panel shows a long, largely uninterrupted decline in the policy rate over the four decades under study. The rate opens at approximately 13 per cent in 1980, peaks at approximately 16 per cent in 1981 during the Volcker disinflation, and then declines through a series of successively lower peaks and troughs. A first plateau emerges around 9/10 per cent in 1984–1985, followed by a second, more moderate cycle peaking near 9 per cent in 1989. The rate then falls sharply to around 3 per cent by 1993 before a brief tightening episode raises it back to roughly 6 per cent in 1995 and again in 2000. What follows is

particularly striking: after the dot-com recession and again after the global financial crisis, the rate collapses toward the zero lower bound and remains effectively flat, close to or below 0.25 per cent, for extended periods spanning roughly 2009–2015 and 2020–2021. A mild tightening cycle beginning around 2016 brings the rate to approximately 2 per cent by 2019. Still, the pandemic immediately reverses this, pushing rates back to near zero before the sharp retightening of 2022 becomes visible at the far-right edge of the panel.

The lower panel shows a situation of persistent and widening divergence. All four series start at zero in 1980, but they quickly fan out in ways that closely mirror the rate environment shown above.

The top 10 per cent (green line) grows fastest and most continuously: it reaches roughly 35 per cent by the mid-1980s, plateaus briefly, then resumes a steep ascent through the 1990s and early 2000s, surpassing 100 per cent by around 2006–2007. After a sharp contraction during the 2008 crisis, where the line visibly drops from roughly 110 per cent to below 90 per cent, it recovers rapidly during the prolonged zero-rate era. It ultimately reaches approximately 150 per cent by 2022, the highest cumulative gain of any group in the sample. The middle 40 per cent (red line) follows a more moderate path, growing steadily to around 45 per cent by 2006, contracting during the crisis, and then plateauing in the 50–55 per cent range through much of the 2010s and into 2022, ending roughly where it stood before the pandemic. The bottom 50 per cent (blue line) is the most striking, both in its low level and in its volatility. It begins the period in negative territory, falling to around minus 12 per cent by the early 1980s, reflecting the double blow of recession and disinflation, and does not recover to its 1980 baseline until the mid-1990s. Even after that recovery, it grows only modestly, oscillating in the 5–25 per cent range and ending the period at approximately 20 per cent in 2022, a cumulative gain less than one seventh that of the top 10 per cent over the same four decades. The total income series (orange dashed line) naturally tracks between the middle 40 per cent and the top 10 per cent, reaching around 80 per cent by 2022, and serves as a useful aggregate benchmark against which the distributional gaps can be assessed.

Reading the two panels together. The most revealing feature of the dual-panel layout is what becomes visible when the upper and lower panels are read jointly across the major turning points. During the first prolonged easing cycle of the early 1990s, all groups improved, but the top decile accelerated noticeably faster. During the extended zero-rate period following 2009, the top 10 per cent resumes a steep upward trajectory almost immediately, while the bottom 50 per cent remains essentially flat for nearly a decade, hovering between 5 and 10 per cent cumulative gain. This period of near-zero rates, visible in the upper panel as a long, flat near-zero area, coincides in the lower panel with the widest and most persistent gap between the green and blue lines in the entire sample. The COVID episode, marked by the yellow band, produces a sharp but brief contraction in the bottom 50 per cent, whose line dips back toward its early

2010s level, while the top 10 per cent recovers within a single year and surges to its all-time high by 2021–2022. The tightening episode of 2022 is too recent to observe its full distributional consequences in this sample. Still, the lower panel shows that the top 10 per cent line is beginning to soften from its peak, consistent with the asset-price sensitivity of high-income households to rising discount rates.

At this stage, the figure should be interpreted purely as a descriptive illustration of how changes in the monetary policy stance have accompanied different income trajectories across the distribution, rather than as evidence of a causal relationship. The patterns visible here are the persistent lag with which lower-income households benefit from accommodative conditions, and the speed with which top-income groups recover from crisis episodes. Moreover, this motivates the more systematic empirical analysis conducted in the later chapters of the thesis, where these dynamics will be examined in a broader cross-country framework using high-frequency income and wealth data.

1.3 CONVENTIONAL INSTRUMENTS OF MONETARY POLICY

Having clarified the objectives of monetary policy and the role of the inflation target, it is useful to describe the main instruments central banks use to implement an expansionary or contractionary stance in practice. In normal times, monetary policy is conducted with a relatively small selection of tools centred on short-term interest rates and liquidity management in the banking system.

1.3.1 Policy Interest Rates and Standing Facilities

The primary conventional instrument is the set of key policy interest rates. In the euro area, these consist of the rate on the main refinancing operations (MRO), the deposit facility rate and the marginal lending facility rate (European Central Bank [ECB], 2024). By changing these rates, the Governing Council steers very short-term money-market conditions and signals the stance of monetary policy.

When the MRO and deposit facility rates are reduced, the cost at which banks can obtain central bank liquidity falls, and this easing is normally transmitted to households and firms through lower lending rates, encouraging borrowing, consumption and investment. Conversely, increases in these rates tighten financial conditions and are used to slow aggregate demand and bring inflation back toward target. The standing facilities define a corridor for overnight market rates: the marginal lending facility rate provides an effective ceiling, since banks can always borrow overnight at that rate, while the deposit facility rate acts as a floor, because banks can place excess reserves overnight at that rate. This corridor helps to keep overnight market rates close to the level consistent with the intended policy stance.

1.3.2 Open Market Operations and Minimum Reserves

A second key set of conventional tools consists of open market operations, through which the Eurosystem injects or absorbs liquidity to steer short-term interest rates and manage the banking system's liquidity position. The main refinancing operations are regular liquidity-providing reverse transactions with a one-week maturity, conducted weekly by national central banks via standard tenders. In addition, longer-term refinancing operations (LTROs) with a standard three-month maturity provide banks with more stable funding. In contrast, fine-tuning operations can be carried out on an ad hoc basis to smooth unexpected liquidity shocks and stabilise money-market rates. Structural operations, including outright purchases or sales and the issuance of debt certificates, may be used when the ECB wishes to adjust the longer-term structural liquidity position of the banking sector.

These operations are complemented by a minimum reserve system under which euro-area credit institutions must hold a specified amount of funds in their accounts with the national central banks for a maintenance period. Required reserves create a predictable demand for central bank liquidity and help to stabilise short-term money-market rates, making it easier for the ECB to keep them aligned with the policy stance.

Taken together, policy interest rates, standing facilities, open market operations and minimum reserves form the conventional “toolbox” that central banks rely on to transmit their decisions to the financial system and, through it, to the real economy. In the following section, the discussion will move from these standard instruments to the broader transmission channels through which changes in interest rates and liquidity conditions affect borrowing, spending, and income, thereby preparing the ground for the later analysis of how these mechanisms interact with economic inequality.

1.4 UNCONVENTIONAL INSTRUMENTS OF MONETARY POLICY

When short-term policy rates are close to their effective lower bound, conventional tools alone are often not sufficient to stabilise inflation and economic activity. Central banks have therefore developed a set of unconventional instruments that operate mainly through longer-term interest rates, asset prices and credit conditions, extending the reach of monetary policy beyond traditional rate changes.

1.4.1 Quantitative Easing and Asset Purchases

A first and most prominent unconventional tool is quantitative easing (QE), understood as large-scale purchases of financial assets by the central bank financed by the creation of central bank money. The European Central Bank explicitly describes its asset purchases as “quantitative easing or QE”. It states that

they are used to support economic growth in the euro area and bring inflation back to the 2 per cent target when standard interest rate cuts are no longer sufficient. In the euro area, QE has been implemented through programs such as the Asset Purchase Program (APP) and the Pandemic Emergency Purchase Program (PEPP), which involve buying large quantities of government bonds and selected private-sector securities. These purchases increase demand for the bonds, raise their prices and reduce their yields, while simultaneously injecting liquidity into the banking system and encouraging banks and other investors to rebalance their portfolios toward new lending to firms and households or toward riskier assets with higher expected returns. In this way, QE compresses medium- and long-term interest rates and eases financing conditions across the economy, even when policy rates are near zero, thereby stimulating investment, consumption, and, ultimately, inflation.

1.4.2 Forward Guidance

A second group of unconventional instruments consists of forward guidance, that is, explicit communication about the expected future path of policy rates or about the conditions under which they will change. By signalling, for example, that interest rates will remain at their present or lower levels for an extended period as long as inflation is below target, central banks influence expectations of future short-term rates and thereby affect current long-term yields and asset prices. Forward guidance reinforces the effects of low current policy rates and asset purchases by reducing uncertainty about the future stance of monetary policy and by stabilising market expectations around the central bank's intended path.

1.4.3 Negative Interest Rate Policy

A third unconventional measure is the negative interest rate policy (NIRP), in which key policy rates or the remuneration on excess reserves are set slightly below zero. Several central banks, including the ECB and the Bank of Japan, have adopted negative rates as an additional form of easing once conventional cuts had brought rates close to zero. By charging banks for holding reserves at the central bank, NIRP is intended to discourage the accumulation of excess liquidity and to encourage banks to extend credit or invest in higher-yielding assets. In combination with QE and forward guidance, negative rates push down the entire term structure of interest rates and support credit conditions when deflation risks are significant.

1.4.4 Longer-Term and Targeted Refinancing Operations

A fourth set of unconventional tools comprises longer-term refinancing operations (LTROs) and targeted LTROs. These operations provide banks with central bank funding at maturities longer than the standard

one-week main refinancing operations, sometimes up to several years, and often at interest rates that are more favourable than market funding. In targeted schemes, the conditions applied to banks depend on the volume of loans they grant to households and firms, so that institutions that expand their lending obtain cheaper funding.

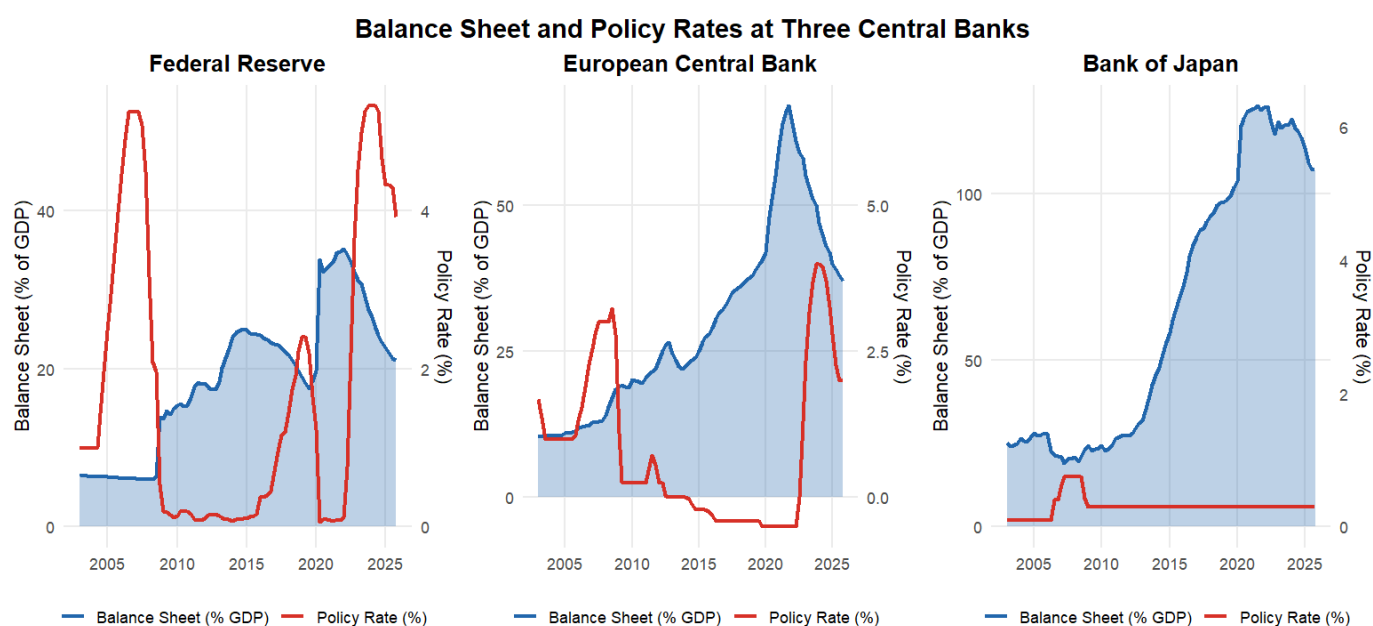
The objective is to strengthen the bank-lending channel of monetary policy and to ensure that the liquidity created by the central bank translates into actual credit flows to the private sector, rather than remaining trapped within the financial system.

1.5 A VISUAL ILLUSTRATION OF BALANCE-SHEET EXPANSION

A natural way to connect the previous discussion of unconventional monetary policy with observable data is to examine how central bank balance sheets have evolved relative to the size of their economies, and how this evolution has gone hand in hand with changes in policy rates.

Figure 1. X plots, for the Federal Reserve, the European Central Bank and the Bank of Japan, the ratio of total central bank assets to nominal GDP (left axis) together with the short-term policy rate (right axis), using quarterly data from 2003 to 2023. For each central bank, the underlying series on total assets, policy rates and GDP were collected from official statistical releases and then combined by computing the balance sheet as a share of GDP in each quarter, so that the blue area in each panel measures the intensity of balance-sheet policies on a comparable basis across countries. This choice of representation is deliberate: by condensing into a single figure both the conventional instrument (the policy rate) and the unconventional dimension (balance-sheet size), the graph provides a synthetic visual summary of how the monetary policy regime has shifted over the last two decades and of the different ways in which the interest-rate and asset-price channels have been activated in the three jurisdictions.

Figure 2. Central Banks Balance Sheet Expansion (Fed-Boj-Ecb 2003-2025)



Source: Federal Reserve (FRED), ECB, Bank of Japan - Quarterly data

Visually, the graph highlights three main patterns. First, before the global financial crisis, all three central banks operated with relatively small and stable balance sheets, typically below 15–20 per cent of GDP. At the same time, policy rates fluctuated within a positive range, consistent with a regime in which conventional interest-rate changes were the primary tool of stabilisation. Second, in the aftermath of the crisis and again during the COVID-19 shock, the Fed and the ECB expanded their balance sheets in successive waves of asset purchases, pushing the asset-to-GDP ratio to peaks of around 37 per cent in the United States and above 60 per cent in the euro area, at the same time as policy rates were driven to the effective lower bound and, in the euro area, into negative territory. The Bank of Japan went even further, with its balance sheet rising steadily to levels close to or above 100 per cent of GDP under a near-constant policy rate around zero. Third, during the most recent period of high inflation, policy rates have been raised again, and we can see the expected drop in the balance sheet, except for the Bank of Japan, which kept interest rates unchanged.

From the perspective of the theoretical framework discussed earlier, these dynamics are meaningful for at least two reasons. On the one hand, they confirm that when short-term rates approach their lower bound, central banks increasingly rely on large-scale asset purchases to activate the asset-price and credit channels, compress long-term yields, and support aggregate demand. This highlights the negative relationship between policy rates and the level of balance sheets. Of course, it is important to remember that economic conditions vary across the world, so different factors might lead central banks to adopt different monetary policies. In the case of the ECB, the slower pace of rate hikes may be due to concerns caused by Russia’s invasion of Ukraine in 2022.

On the other hand, the persistence of very large balance sheets implies that further tightening of policy rates may entail non-negligible valuation and income effects for central banks, which can, in turn, interact with broader financial conditions. These regime shifts in the scale and composition of monetary policy

interventions are one reason the empirical chapters will focus on how periods of prolonged low rates and expanded balance sheets coincide with changes in household debt and the distribution of income and wealth.

1.5 TRANSMISSION CHANNELS IN A FINANCIALIZED ECONOMY

Financialization, characterised by the growing dominance of financial markets, household leverage, and asset-based wealth in advanced economies, changes the standard monetary policy transmission mechanism outlined in previous sections. In such environments, conventional interest rate channels interact with amplified portfolio rebalancing, credit supply, and demand effects, with high inequality exacerbating household debt dynamics and weakening aggregate demand responses. Central banks like the ECB and the Federal Reserve recognise that financial intermediaries' balance sheets become crucial as asset purchases lower the term premium and induce banks to expand lending, though unevenly across borrower types.

Key channels include the bank lending channel, where policy rate cuts ease funding costs for leveraged institutions, boosting credit to indebted lower-income households but risking instability during high private debt-to-GDP ratios observed post-GFC. The asset price channel gains prominence as quantitative easing raises equity and housing valuations, disproportionately benefiting top wealth holders with concentrated financial portfolios. In contrast, indirect employment gains support labour income at the bottom during expansions. Empirical evidence from ECB analyses shows that these effects are state-dependent: accommodative policy mitigates inequality by creating jobs during recessions. Still, it amplifies wealth gaps through financial markets in financialised settings.

A novel inequality-household debt nexus emerges in financialised economies, where rising top income shares suppress aggregate saving propensities, fueling credit booms through credit supply and demand-based mechanisms and constraining transmission efficacy.

1.6 CONSTRAINTS ON MONETARY POLICY

Rising inequality imposes structural constraints on monetary policy by depressing the natural rate of interest through secular stagnation forces and by elevating financial fragility via household leverage, as evidenced by models that replicate post-1980s trends in advanced economies.

Central banks face trade-offs: leaning against credit booms preserves stability. Still, it risks high unemployment, while accommodative stances mitigate demand shortfalls at the cost of larger debt burdens, particularly when financial liberalisation coincides with surges in inequality.

Institutional insights from the ECB highlight macroprudential complementarities: high, unevenly distributed debt impairs the pass-through of rate changes, as vulnerable borrowers reduce spending more

sharply during tightening. BIS analyses confirm regime dependence: tightening during high inflation exacerbates income gaps via layoffs, while prolonged easing reinforces low rates that are incompatible with normalisation without deleveraging shocks.

These constraints link back to earlier discussions on unconventional tools, underscoring why balance sheet expansions persist and why policy must navigate inequality-induced challenges to maintain price stability and output goals.

2 ECONOMIC INEQUALITY: CONCEPTS, MEASURES AND DATA

Economic inequality refers to the unequal distribution of economic resources among individuals and households within a society. It concerns not only differences in current income, but also disparities in accumulated wealth, access to credit and exposure to financial risks. In macroeconomics and monetary economics, this matters for at least three reasons. First, unequal distributions of income and wealth shape aggregate demand: when a larger share of resources is concentrated at the top, more income accrues to households with high saving propensities, which can weaken consumption and increase reliance on credit among lower-income groups. Second, inequality affects financial stability because highly indebted households with little wealth buffer are more vulnerable to income and interest rate shocks, a mechanism central to many credit-supply and credit-demand-based models reviewed later in the thesis. Third, inequality influences how monetary policy is transmitted: the same change in policy rates or in asset prices can have very different effects on households depending on their position in the income and wealth distribution and on their portfolio composition.

2.1 INCOME INEQUALITY

Income inequality refers to the uneven distribution of income in an economy over a given period among individuals or households. It is a flow concept, measured annually or quarterly, and captures the rewards that households receive from their participation in labour, capital, and public redistribution markets. In the context of this thesis, income inequality is central for two reasons. First, it directly affects households' current consumption possibilities and their need to borrow or save, thereby shaping aggregate demand and the evolution of household debt. Second, many of the distributional effects of monetary policy documented in the literature operate initially through labour income, employment, and short-run changes in disposable income, before being capitalised into wealth. The OECD (2015) report consolidates these findings by identifying that monetary policy supports low- and middle-income workers most effectively through employment stabilisation and real wage support during economic downturns, but that these benefits can be obscured by wealth-concentration effects in the medium to long run.

2.1.1 Market Income and Disposable Income

A key conceptual distinction is between market income and disposable income. Market income comprises all income households receive from participating in markets before government redistribution. It includes labour earnings, self-employment income, business income, and capital income, such as dividends, interest, and rental income. Market income inequality, therefore, reflects the combined outcome of wage-setting institutions, bargaining power, education and skills, occupational structure, and the distribution of capital ownership.

Disposable income, by contrast, is defined as the income that households can actually spend or save after paying direct taxes and social security contributions and after receiving cash transfers such as unemployment benefits, pensions, family allowances or other social assistance. It is the maximum amount a household can consume in a given period while keeping its wealth unchanged. It is thus the concept most closely related to living standards and the capacity to service debt. Disposable income inequality incorporates both the underlying market-driven distribution and the redistributive effects of the tax-benefit system. When the government levies progressive taxes and makes targeted transfers, the Gini coefficient for disposable income is lower than that for market income, indicating that redistribution compresses inequality.

This distinction is important for the present thesis because monetary policy interacts with both dimensions. On the one hand, through its effects on output and unemployment, monetary policy influences market incomes, especially labour earnings at the bottom and middle of the distribution. On the other hand, by shaping the macroeconomic environment in which fiscal policy operates, it can indirectly influence disposable income inequality, for example, by changing the need for unemployment benefits or the interest burden on public debt.

2.1.2 LABOR INCOME INEQUALITY

Within market income, labour income inequality plays a particularly prominent role. It measures the dispersion of wages, salaries and other employment-related earnings across workers, typically within the working-age population. Labour income differences arise from a combination of factors: heterogeneity in skills and education, sectoral and occupational segmentation, labour-market institutions such as minimum wages and collective bargaining, and differences in working hours or employment stability. Over the last decades, many advanced economies have experienced a rise in wage inequality, with strong growth in earnings at the top, stagnation in the middle and weaker performance at the bottom.

From the standpoint of monetary policy, labour income inequality is crucial because changes in policy rates and economic activity are transmitted strongly through employment and wage dynamics. Empirical studies show, for instance, that expansionary monetary policy tends to support employment and labour income,

especially for lower-income workers in recessions. At the same time, episodes of sharp tightening can disproportionately harm those with precarious jobs or high debt burdens.

To illustrate how monetary policy influences this dynamic through employment channels, we examine the table below, which tracks policy rates and unemployment rates over the past 20 years (2006-2025) for both the Euro area (ECB Main Refinancing Rate and unemployment for ages 15-74) and the United States (Fed Funds Rate and unemployment for ages 16+). These data are based on annual averages that capture full policy cycles: the post-GFC easing, prolonged zero rates, the COVID shock, and the recent tightening. This timeframe is ideal because it shows clear contrasts between expansionary periods, when low rates supported jobs, especially for lower earners, and tightening periods, which test the vulnerability of precarious workers, allowing a direct comparison of the ECB's gradual approach with the Fed's more decisive moves.

Table 1. ECB/Fed Policy Rates and Unemployment Rates (Euro Area/US, 2006-2025)

Colonna1	Colonna2	Colonna3	Colonna4	Colonna5
Year	ECB Policy Rate (%)	Euro Area Unemployment (%)	Fed Funds Rate (%)	USA Unemployment (%)
2006	3.00	7.9	4.97	4.6
2007	4.00	7.2	5.02	4.6
2008	3.60	7.6	1.93	5.8
2009	1.20	9.0	0.16	9.3
2010	1.00	10.2	0.18	9.6
2011	1.50	10.9	0.10	8.9
2012	0.90	11.4	0.14	8.1
2013	0.30	12.0	0.11	7.4
2014	0.15	11.3	0.09	6.2
2015	0.05	10.9	0.13	5.3
2016	0.00	10.0	0.40	4.9
2017	0.00	9.1	1.00	4.4
2018	0.00	8.2	1.83	3.9
2019	0.00	7.6	2.16	3.7
2020	0.00	8.0 (COVID)	0.36	8.1 (COVID)
2021	0.00	7.7	0.08	5.4
2022	1.50	7.4	1.68	3.6
2023	4.00	6.6	5.02	3.6
2024	3.75	6.4	4.83	4.1
2025	2.40	6.4	3.50	4.2

Source: ECB & FED

The table confirms that when central banks cut rates sharply after crises, like both ECB and Fed dropping to near-zero post-2008, unemployment falls steadily (Euro area from 12% in 2013 to 7.6% in 2019; US from 9.6% to 3.7%), as easier credit and growth spur hiring in low-wage sectors and small firms that employ bottom earners most, supporting their labor income during recessions. Tightening tell a different story: the Fed's faster hikes to 5% by 2023 (from zero in 2021) barely budged US unemployment (stable at 3.6-4.2%),

thanks to rock-solid labor markets built during prior easing that cushioned precarious jobs with ongoing wage gains across levels; in contrast, the ECB's slower climb to 4% (with quicker 2025 cuts back to 2.4%) kept Euro unemployment dropping to 6.4% but highlighted risks from Europe's debt burdens and job precarity, where prolonged low rates compressed inequality more gradually yet left lower-income workers exposed to any growth slowdown during normalization. Overall, these patterns show that an accommodative policy reliably narrows labour income gaps through job creation. At the same time, US-style bold normalisation works when momentum is strong, but ECB caution prevents reversals in fragile settings.

Understanding the level and evolution of labour income inequality is therefore essential for interpreting the distributional footprint of monetary policy and for assessing how far changes in interest rates can mitigate or exacerbate existing gaps.

2.1.3 MEASURING INCOME INEQUALITY: GINI AND INCOME SHARES

However, to quantify income inequality in a way that allows comparisons over time and across countries, the thesis employs standard indicators.

The first is the Gini coefficient of income. The Gini is derived from the Lorenz curve, which plots the cumulative share of income received by the cumulative share of the population, ordered from poorest to richest. It is defined as the ratio between the area that lies between the line of perfect equality and the Lorenz curve and the total area under the line of equality. A Gini of 0 corresponds to perfect equality (everyone has the same income), while a Gini of 1 (or 100 if expressed in percentage terms) corresponds to maximal inequality (one person receives all income). In practice, disposable-income Gini coefficients in advanced economies typically range between about 0.25 and 0.45, although market-income Gini values are generally higher because they do not reflect redistribution.

The Gini coefficient is attractive because it summarises the overall dispersion of the income distribution in a single number. However, it has important limitations for the questions addressed in this thesis. In particular, it is relatively insensitive to changes at the very top or very bottom of the distribution. A given increase in income for the top 1 per cent has only a modest effect on the Gini, even if it substantially increases that group's economic and political influence. For this reason, the thesis complements the Gini with income share indicators that focus explicitly on different parts of the distribution.

The most important of these are:

- The top 10 per cent income share and top 1 per cent income share are defined as the fraction of total pre-tax national income received by each of these groups.
- The bottom 50 per cent income share, which measures the share of total income accruing to the lower half of the distribution.

These indicators are particularly informative in a context of rising top incomes. For the United States, for example, work by Piketty et al. and the Realtime Inequality project shows that since the early 1980s, the top 1 per cent's share of national income has increased sharply. In comparison, the bottom 50 per cent's share has stagnated or even declined, indicating a pronounced “tilting” of the distribution towards the top. Similar, though typically less extreme, patterns are observed in several other advanced economies. Tracking these shares over time allows the analysis to capture how much of aggregate growth has accrued to different groups and to relate those dynamics to phases of monetary easing and tightening.

2.1.4 DATA AND EVOLUTION IN THE SAMPLE COUNTRIES

For this thesis, income inequality indicators are constructed for ten advanced economies: the United States, Germany, France, Italy, Estonia, Japan, Australia, the United Kingdom, Norway, and the Netherlands. The choice of countries reflects both substantive and data-availability considerations. They include large advanced economies with different institutional frameworks (the US, major euro-area members, Japan and the UK), smaller European countries with diverse welfare states (Norway, the Netherlands, and Estonia) and non-European advanced economies (Australia and Japan). This heterogeneity is useful for exploring whether similar macro-financial developments, such as low interest rates and rising household debt, are associated with similar or different inequality trajectories.

For the United States, the main source is Realtime Inequality, which provides quarterly and even monthly estimates of income distributions by combining tax data, household surveys and national accounts in a unified framework. These data yield high-frequency series for the Gini coefficient and for top and bottom income shares, which are consistent with aggregate GDP and national-income statistics and are therefore well suited to the descriptive analysis of co-movements with monetary policy variables in later chapters. For the other countries, the thesis draws on income share and Gini series from the World Inequality Database and the OECD Income Distribution Database, which provide harmonised measures over several decades. Although these series are typically available at annual rather than quarterly frequency, they are sufficiently long to document medium- and long-run trends.

2.2 WEALTH INEQUALITY

Wealth inequality refers to the unequal distribution of the stock of accumulated assets and liabilities across households at a given time. Despite income, which represents a flow measured over a specific period, wealth is a stock concept that reflects the cumulative results of saving decisions, investment returns, inheritance, housing choices, and debt accumulation over many years or even generations (Saez & Zucman, 2016; Garbinti et al., 2020). In advanced economies, wealth inequality is systematically higher than income inequality, capital ownership is more concentrated than labour income, assets generate compound returns

over time, and many households at the bottom of the distribution hold little or no net wealth or even negative positions due to outstanding debt (Piketty et al., 2018). In monetary policy analysis, wealth inequality is particularly important because central bank decisions directly influence asset prices and credit conditions, which, in turn, shape the valuation of household balance sheets and their resilience to economic shocks.

2.2.1 NET WEALTH DEFINED

Net wealth is defined as the total value of a household's assets minus its liabilities. Assets are typically divided into two main categories. Financial assets include bank deposits, bonds, equities, mutual funds, pension wealth, and other investment vehicles. These assets are highly sensitive to changes in interest rates, central bank announcements, and market sentiment, and they are disproportionately concentrated among households at the top of the wealth distribution (Federal Reserve Board, 2023). Non-financial assets consist primarily of housing (owner-occupied real estate) and, to a lesser extent, other durable goods or land. Housing represents the largest single asset for middle-class households in most advanced economies, but its value is also influenced by mortgage rates, credit availability, and local market dynamics (European Central Bank, 2022).

Liabilities consist mainly of mortgage debt, consumer credit (such as credit cards and personal loans), and other borrowings. The net wealth position of a household can therefore be expressed as:

$$\begin{aligned} \text{Net wealth} = & (\text{Financial assets} + \text{Housing} + \text{Other assets}) - (\text{Mortgage debt} \\ & + \text{Consumer debt} + \text{Other liabilities}) \end{aligned}$$

This definition is crucial for understanding monetary policy transmission because changes in policy rates and unconventional tools affect different components asymmetrically. Lower interest rates reduce mortgage payments and boost house prices, benefiting homeowners, while quantitative easing raises equity valuations, primarily benefiting holders of financial assets. Highly leveraged households, by contrast, face higher debt-servicing costs when rates rise. These portfolio differences mean that the same policy shock can simultaneously improve the net wealth of asset-rich households while eroding the position of debt-burdened ones (Bank for International Settlements, 2016).

2.2.2 The composition of wealth

The composition of household wealth plays a crucial role in determining distributional effects. In the United States, for example, the top 10 per cent of the wealth distribution holds around 80-90 per cent of financial assets (equities and bonds), while housing wealth is more evenly distributed across the upper and middle deciles (Federal Reserve Board, 2023). Data from the GC Wealth Project indicate that financial assets have

become increasingly important at the top since the 1980s, driven by equity market growth and the concentration of pension wealth. In contrast, housing remains the dominant asset for the middle class but offers limited protection against financial market shocks (Garbinti et al., 2020).

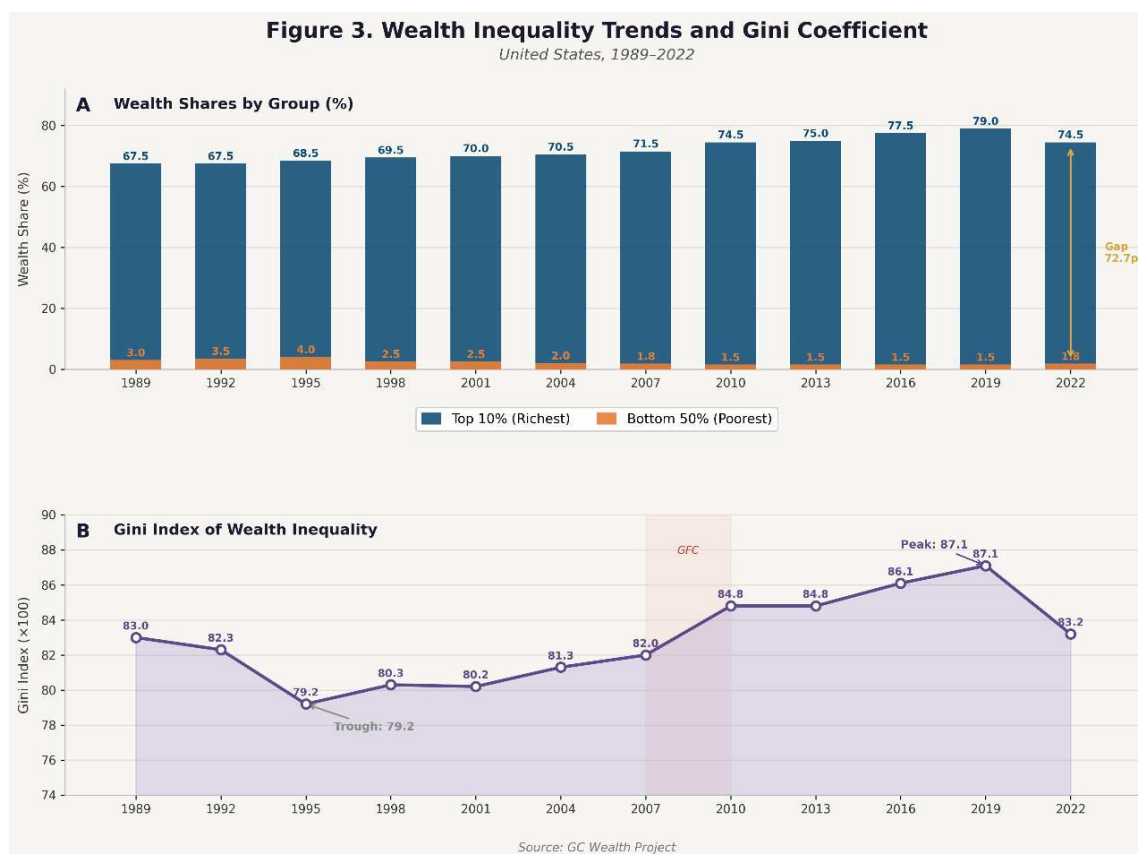
This double-sided approach has important implications for monetary policy. Quantitative easing and low interest rates primarily operate through financial-asset channels, boosting equity prices and benefiting top wealth holders disproportionately. Housing price effects, while also present, tend to be more geographically concentrated and less directly tied to central bank asset purchases. Households with high mortgage debt gain from lower servicing costs but remain vulnerable if property values stagnate or if rates rise unexpectedly.

2.2.3 MEASURING WEALTH INEQUALITY: GINI COEFFICIENT AND WEALTH SHARES

Wealth inequality is quantified using the same family of indicators as income inequality, adapted to the wealth distribution. The wealth Gini coefficient measures the overall dispersion of net wealth. In advanced economies, wealth Gini coefficients typically range from 0.70 to 0.90, compared to 0.30-0.45 for disposable income, reflecting much greater concentration. Top wealth shares, particularly the top 10 percent wealth share (often 65-80 percent of total net wealth) and top 1 percent share (25-40 percent), capture how much of the aggregate stock is held by the wealthiest groups. The bottom 50 per cent wealth share, which in many countries is close to zero or even negative, indicates that the lower half of households owns few assets and may carry net debt (Saez & Zucman, 2016).

The Following figure is obtained by merging data from the GC Wealth Project database for the United States for the period from 1989 to 2022.

Figure 3. Wealth Inequality Trends and Gini Coefficient (US, 1989-2022)



Panel A immediately conveys the scale of wealth concentration in the United States. The bars representing the top decile dominate the visual field throughout the entire sample. At the same time, those of the bottom half remain confined near zero, a visual asymmetry that faithfully reflects the underlying data. The top 10 per cent wealth share stood at 67.5 per cent in 1989 and rose steadily over the subsequent three decades, reaching a peak of 79.0 per cent in 2019, an increase of 11.5 percentage points. The bottom 50 per cent share, by contrast, opened at 3.0 per cent in 1989, briefly rose to 4.0 per cent in 1995, and then declined almost continuously, falling to 1.5 per cent between 2010 and 2016 before a marginal recovery to 1.8 per cent by 2022. The resulting gap of 72.7 percentage points as of 2022, annotated in the figure, implies that for every dollar of net wealth held collectively by the lower half of the distribution, the top decile holds approximately 41 dollars. It is also worth noting that the partial decline in the top-decile share after 2019 does not reflect genuine redistribution toward lower groups, whose share recovered only marginally, but is more consistent with temporary asset-price revaluation effects during the pandemic.

Panel B provides the aggregate synthetic measure that complements the distributional decomposition of the other panel. The Gini index opened at 83.0 in 1989. It declined to its sample trough of 79.2 in 1995, the only sustained episode of compression in the entire series, broadly coinciding with the relatively broad-based wealth gains of the mid-1990s expansion. From 1995 onwards, the index resumed a persistent upward trend, reaching 82.0 by 2007 and then accelerating sharply in the aftermath of the Global Financial Crisis,

rising to 84.8 by 2010. This pattern is consistent with the well-documented mechanism whereby lower-wealth households, whose net worth is concentrated in housing and subject to higher leverage, are disproportionately exposed to falling asset prices and tightening credit conditions. In contrast, wealthier households with diversified portfolios recover more rapidly as financial markets rebound under accommodative monetary policy. The Gini continued to rise through the low-rate era, reaching its all-time peak of 87.1 in 2019, before declining to 83.2 by 2022, mirroring the partial reversal observed in Panel A.

When read together, the two panels offer a coherent narrative. The Gini provides a synthetic signal of a long upward arc of concentration punctuated by two partial reversals. At the same time, Panel A decomposes that signal, showing that erosion of wealth at the bottom has been persistent and largely irreversible, while the top-decile share has grown almost continuously. Together, they underscore why wealth concentration is a central concern for financial stability: when net worth is held overwhelmingly by a narrow segment of the population, even moderate shocks to asset prices or credit conditions can have outsized effects on aggregate household balance sheets. This mechanism will be examined more systematically in the empirical chapters that follow.

2.3 WHY INEQUALITY MATTERS FOR MACROECONOMICS AND MONETARY POLICY

Economic inequality is not only a distributional outcome but also a structural determinant of how modern economies function and how monetary policy is transmitted. When income and wealth are highly concentrated, macroeconomic behaviour differs systematically across groups, and these differences aggregate into distinct patterns of demand, leverage and financial fragility.

This section explains why these mechanisms are central to the questions addressed in the thesis, and how they relate to the credit supply-based (CSB) and credit demand-based (CDB) perspectives discussed in the literature review.

2.3.1 CONSUMPTION AND SAVING BEHAVIOR

A first channel runs through consumption and saving behaviour. Empirical work by the OECD and other institutions shows that households at the top of the income and wealth distribution save a much larger fraction of their income than those in the middle and at the bottom, whose saving rates are low or even negative. When inequality rises, and a greater share of national income accrues to these high-saving groups, aggregate consumption tends to grow more slowly than aggregate income, all else equal, because additional resources are more likely to be saved rather than spent. Studies for advanced economies estimate that the reallocation of income from the bottom and middle to the top over recent decades has exerted a measurable drag on aggregate demand, as lower-income households have reduced consumption while higher-income

households have increased saving. This has direct implications for monetary policy: in an economy where groups hold a large share of income with high saving propensities, a given interest-rate cut may generate a weaker consumption response than in a more equal society, because many of the beneficiaries prefer to save rather than spend the additional income.

2.3.2 CREDIT, LEVERAGE AND FINANCIAL STABILITY

A second channel concerns credit, leverage and financial stability. Theoretical and empirical contributions, such as Mian et al. (2018), show that rising income and wealth inequality can generate an excess supply of savings at the top of the distribution, which the financial system intermediates into increased borrowing by lower-income households and the public sector. From a CSB perspective, inequality exerts persistent downward pressure on the natural interest rate and expands credit, contributing to higher debt-to-GDP ratios and greater vulnerability to shocks. At the same time, a complementary CDB perspective emphasises that households in the middle and lower parts of the distribution may respond to relative income stagnation by borrowing in order to “keep up with the Joneses”, increasing consumption beyond their current income and accumulating debt (Frank et al., 2014; Morse et al., 2016). Both mechanisms link inequality to greater leverage and potential financial fragility, implying that central banks operate in an environment where low equilibrium interest rates and elevated private debt constrain their ability to normalise policy without triggering distress among the most indebted segments of the population.

2.3.3 TRANSMISSION CHANNELS

A third reason why inequality matters for monetary policy is that it changes the heterogeneity of transmission channels. Research on heterogeneous-agent models and micro data for the euro area and the United States shows that households vary widely in their exposure to interest-rate changes, depending on their income sources, balance-sheet structure and access to credit. For example, highly indebted households with variable-rate mortgages experience large changes in debt-servicing costs when policy rates move. At the same time, wealthy asset holders are more affected by shifts in equity and bond prices driven by quantitative easing. Low-income households with little or no net wealth may benefit from expansionary policy through improved employment prospects, but they can also be disproportionately hurt by tightening when unemployment rises. This heterogeneity means that the same monetary policy action can simultaneously reduce some forms of inequality and increase others. For example, supporting employment during recessions reduces inequality from some perspectives, but at the same time, this policy can boost asset valuations held by the top groups during quantitative easing.

Taken together, these mechanisms suggest that inequality is not a passive background condition but an integral element of the macro-financial environment in which central banks operate. High and rising inequality can depress aggregate demand by shifting income towards high-saving groups, fueling credit booms and low natural interest rates through CSB and CDB channels, and altering the distributional impact of policy shocks across households with different portfolios and leverage.

3 MONETARY POLICY AND THE DISTRIBUTION OF INCOME AND WEALTH

The previous chapter clarified how income and wealth inequality are defined and measured, and how they have evolved in the main advanced economies considered in this thesis. The next step is to examine what the existing research says about the distributional consequences of monetary policy itself. For a long time, standard macroeconomic models treated monetary policy as approximately distribution-neutral, working through a representative agent whose income, wealth and portfolio choices were assumed to be representative of the entire population. Over the last decade, a growing body of theoretical, empirical, and institutional work has challenged this view, showing that monetary policy systematically affects the distribution of labour income, wealth, and leverage across households, and that these distributional effects can, in turn, influence macroeconomic dynamics and policy trade-offs.

This chapter reviews the main contributions in this area, focusing on four dimensions. First, it summarises the evidence on how changes in interest rates and unconventional policies affect labour market outcomes across the income distribution, including employment, wages, and earnings inequality. Second, it discusses studies documenting the impact of monetary policy on wealth inequality through asset prices, housing markets and portfolio composition. Third, it highlights a field of research that emphasises state-dependent effects, showing that the distributional impact of monetary policy can differ between high-inflation and low-inflation regimes or between crisis and non-crisis periods. Finally, it synthesises institutional reports from central banks and international organisations that have sought to assess the overall “distributional footprint” of monetary policy in practice. Together, these aspects provide the foundation for the empirical analysis that follows, in which the thesis will adopt a purely descriptive approach to explore how phases of monetary easing and tightening coincide with changes in inequality.

3.1 LABOUR INCOME, EMPLOYMENT AND EARNINGS INEQUALITY

Monetary policy affects the distribution of labour income through its influence on aggregate demand, employment and wage dynamics. In a standard macroeconomic framework, expansionary policy lowers real interest rates, stimulates consumption and investment, increases output and employment, and eventually puts upward pressure on nominal wages. Contractionary policy works in the opposite direction. However, when households differ in their labour-market attachment, skills, bargaining power and exposure to cyclical fluctuations, these aggregate effects translate into heterogeneous changes in earnings and labour income across the distribution. Low-wage workers and those in flexible or cyclical sectors are typically more sensitive to employment fluctuations. In contrast, higher-income workers often benefit from stronger wage growth, bonuses and capital-income components that respond differently to monetary conditions.

3.1.1 Transmissions through employment and wages

The primary mechanism linking monetary policy to labour income inequality is the employment channel. Expansionary policy shocks raise hiring by firms facing lower borrowing costs and stronger demand, reducing unemployment and supporting wage growth, especially for workers who are more likely to be laid off during downturns. Empirical estimates from vector autoregressions and local projections show that a 100 basis-point cut in policy rates can reduce unemployment by 0.5 to 1 percentage point within one to two years, with stronger effects in recessions (Gabriel, R. D. 2023). This stabilisation benefits lower-income households disproportionately because they face a higher risk of unemployment and have lower liquid-wealth buffers.

The wage channel operates both through direct effects on bargaining power and through Phillips-curve dynamics. When monetary easing compresses unemployment below its natural rate, wage growth accelerates, particularly for lower- and middle-skill workers whose wages are more cyclically sensitive. Higher-income workers, by contrast, often receive a larger share of their compensation in the form of bonuses, stock options and profit sharing, which respond more strongly to overall economic conditions and asset prices. These differences imply that monetary policy can have equalising effects on labour-income inequality during expansionary phases, especially if it prevents deep recessions, but may widen gaps during tightening, when low-wage employment is more vulnerable.

3.1.2 Micro evidence on earnings and labour-income inequality

Recent microeconomic studies using administrative data have provided more precise evidence on these distributional effects. Andersen et al. (2023) exploit variation in monetary policy shocks across European countries and show that expansionary policy disproportionately benefits top earners through financial gains and capital income, while the effect on labour earnings is more evenly distributed but still favours the upper

half of the income distribution. The study uses detailed tax records to decompose changes in total income into labour and capital components and finds that the top decile captures a larger share of the total income gain from monetary easing, challenging the traditional view that policy is neutral with respect to distribution.

A BIS working paper using Estonian administrative tax data further shows that the impact of monetary policy on wage and income inequality is highly state dependent. Meriküll and Rottner (2025) document that monetary tightening during high-inflation periods exacerbates earnings inequality among workers, as layoffs and wage moderation fall more heavily on lower-skilled occupations, while the effect is mitigated when inflation is low and stable. These findings are consistent with the OECD's assessment that monetary policy supports low- and middle-income workers most effectively by stabilising employment during downturns, but that these benefits can be offset by wealth-concentration effects in the medium term (OECD, 2015).

3.1.3 Cyclical and asymmetric effects

The distributional impact of monetary policy on labour income is not constant but varies with the macroeconomic regime. During recessions or periods of high unemployment, expansionary policy has stronger equalising effects because it prevents large increases in joblessness among vulnerable workers. A contractionary shock in the same environment, by contrast, can sharply widen earnings inequality. Recent research also highlights asymmetries between easing and tightening: monetary stimulus tends to compress the lower tail of the wage distribution by supporting employment. At the same time, rate hikes disproportionately affect the bottom through higher unemployment risk.

This regime dependence has important implications for policy design. When inflation is persistently above target, central banks face a trade-off between bringing price dynamics under control and preserving labour-market gains for lower-income groups. The BIS evidence suggests that tightening during high-inflation episodes amplifies earnings dispersion more than in stable periods, indicating that the timing and context of policy actions crucially determine their distributional consequences

3.2 WEALTH INEQUALITY, ASSET PRICES AND HOUSING

Monetary policy influences wealth inequality primarily through asset-price channels, as changes in short-term policy rates, forward guidance and quantitative easing affect the valuation of financial assets, housing and other components of household net worth. Lower policy rates reduce discount rates for future cash flows, compress term premia and stimulate portfolio rebalancing towards riskier assets, thereby raising equity prices, bond valuations and, often, house prices. Since financial wealth and high-value real estate are heavily concentrated among households at the top of the distribution, these movements tend to increase

the share of net wealth held by the wealthiest deciles, even as the policy may stabilise output and employment.

3.2.1 Asset-price and portfolio channels

The asset-price channel works by altering the prices of equities, bonds and housing relative to their fundamental values. A reduction in the policy rate lowers short-term yields and, through expectations of future rates, compresses long-term yields as well. Investors seeking higher returns shift from safe assets towards equities and real estate, driving up their prices. Quantitative easing reinforces this mechanism by directly increasing demand for long-term bonds and agency mortgage-backed securities, which spills over into private credit and riskier markets. Empirical estimates suggest that unconventional policies implemented after the global financial crisis raised equity prices by 20-40 per cent and house prices by 5-15 per cent in affected countries, with stronger effects in segments with high central bank purchases (Krishnamurthy & Vissing-Jørgensen, 2012).

Portfolio composition matters critically for distributional outcomes. Wealthy households hold a large share of their assets in equities and bonds, which are highly sensitive to monetary conditions, while middle-class households rely more on housing and deposits. When asset prices rise, the percentage increase in net worth is larger for the top decile because they start from a higher base of financial exposure. A fall in rates or an expansion of the central bank balance sheet thus tends to widen the wealth Gini and increase top wealth shares.

3.2.2 Evidence from household surveys and microdata

Microeconomic evidence confirms these portfolio-driven effects. A seminal BIS report from 2016 analyses household finance and consumption surveys across several advanced economies and concludes that quantitative easing has significantly boosted equity and housing prices, with the largest wealth gains accruing to households in the upper wealth deciles. The study quantifies that the top 20 per cent of the wealth distribution captured the majority of asset-price gains during the post-crisis QE period, while lower-wealth households benefited more modestly through housing valuations or were largely unaffected because they held few marketable assets.

The Deutsche Bundesbank's 2022 Monthly Report provides similar evidence for Germany, using detailed household survey data to show a persistent concentration of wealth in the upper deciles and to highlight how differences in asset allocation reinforce disparities when monetary policy stimulates asset markets. The OECD's 2015 analysis reaches a comparable conclusion, noting that while monetary policy supports aggregate recovery, its asset-price effects contribute to wealth concentration over the medium term, even as short-run stabilisation benefits lower incomes through employment. These micro studies collectively

indicate that unconventional tools implemented when policy rates hit the effective lower bound are more likely to increase wealth inequality than conventional rate changes in normal times.

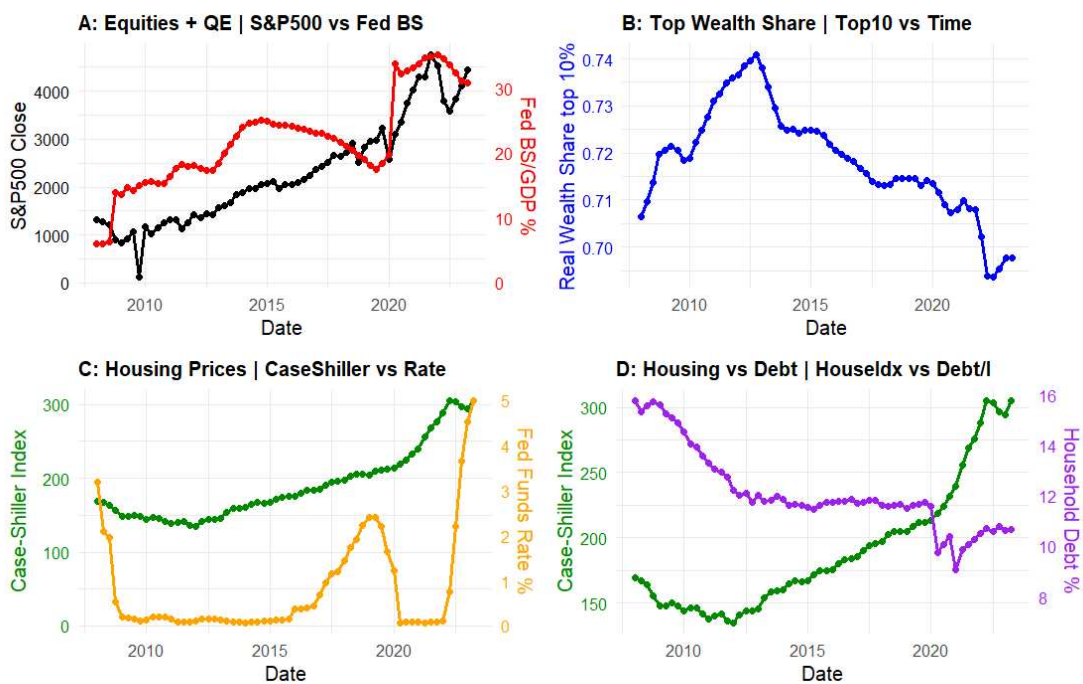
3.2.3 Housing, leverage and distributional effects

Housing markets represent a distinct transmission channel with mixed distributional implications. Low interest rates reduce mortgage costs and stimulate housing demand, raising prices and benefiting existing owners while making entry more difficult for first-time buyers. Empirical work shows that house price increases following monetary easing accrue mainly to homeowners in the upper and middle wealth deciles, while renters gain nothing and face higher rents.

Leverage amplifies these effects; highly indebted households with variable-rate mortgages experience large changes in net worth when refinancing costs or payments fluctuate. In contrast, unleveraged wealthy households are more exposed to capital gains on their property portfolios. During the post-GFC period of low rates and QE, house price gains contributed to wealth recovery for middle-class owners but also increased the debt burden for younger cohorts entering the market at higher valuations. This dynamic illustrates how monetary policy can simultaneously stabilise aggregate housing wealth while redistributing it across generations and leverage classes.

To provide concrete evidence, Figure 4 displays quarterly U.S. time series data (2008Q1-2023Q2) for the main variables discussed: S&P 500 closing price, Federal Reserve balance sheet as a share of GDP, top 10% real wealth share, federal funds rate, Case-Shiller national home price index, and household debt as percent of GDP.

Figure 4. Wealth Asset Channel (U.S., 2008-2023)



Source: Realtime Inequality.org

In Panel A, the Fed's strong balance sheet expansion from around 6% to 25% of GDP between late 2008 and mid-2014 directly corresponds to the S&P 500 index's recovery from crisis lows of around 900 points to sustained levels above 2,000 points. This simultaneous movement confirms the asset price channel described in section 3.2.1, in which quantitative easing reduces long-term yields, drives investors to rebalance their portfolios toward riskier stocks, and generates valuation gains estimated at between 20% and 40% (Krishnamurthy & Vissing-Jørgensen, 2012), which are disproportionately captured by households in the top decile with high exposure to financial assets. The 2020 reiteration reinforces this pattern.

Panel B shows that the wealth share of the richest 10% remains remarkably stable at around 71% despite market fluctuations, in line with the microeconomic findings of the BIS (2016) and the Bundesbank (2022), as cited in section 3.2.2. These gains from QE-induced stock and real estate appreciation mainly benefit the wealthiest portfolios, reinforcing concentration despite aggregate volatility.

Panel C highlights the sensitivity of the real estate market to benchmark rates: the Case-Shiller index rises by more than 80% from its 2009 low of around 140 to peaks above 310 in 2022, coinciding with federal funds rates set close to zero for six years. Lower financing costs stimulate demand from current owners, increasing prices and the net worth of homeowners in the upper-middle decile, while creating barriers for renters and new buyers.

Panel D illustrates the amplification of leverage: During a period of prolonged accommodation, the recovery in the Case-Shiller index parallels a phase of declining leverage, with the ratio of household debt to income contracting from 15.8% to a low of 9.7% by 2020, facilitating repayment and allowing borrowers with variable rates to rebuild equity. However, the renewed price escalation in 2021-22 increases the debt burden for younger entrants to the market, highlighting the simultaneous trend of aggregate stabilisation and redistribution across generations and leverage profiles (OECD, 2015).

Collectively, the figure corroborates the reviewed literature, demonstrating that unconventional easing bolsters recovery through concentrated channels yet entrenches wealth disparities rooted in heterogeneity in asset ownership and indebtedness.

3.3 STATE-DEPENDENT EFFECTS AND MACROECONOMIC REGIMES

The evidence reviewed so far suggests that monetary policy has systematic distributional consequences, but these effects are not constant across time or economic conditions. A growing body of research emphasises that the impact of interest-rate changes and unconventional measures on income and wealth

inequality depends on the macroeconomic regime. This state dependence arises because households' exposure to policy shocks varies with labour-market conditions, inflation expectations and credit constraints, and because central banks typically implement larger and more persistent interventions during crises than in normal times.

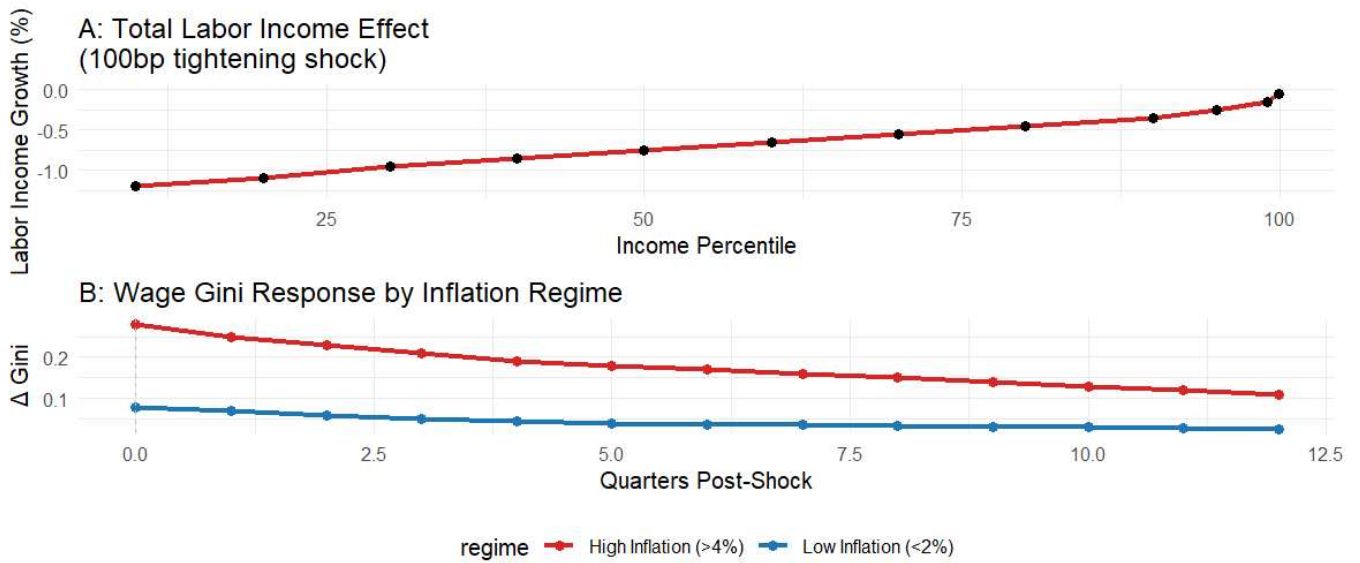
3.3.1 High-inflation versus low-inflation regimes

Recent work by the BIS highlights how inflation dynamics shape the distributional effects of monetary policy. Meriküll and Rottner (2025), using Estonian administrative tax data, show that monetary tightening worsens wage and income inequality much more during periods of high inflation than during periods of low and stable inflation. In high-inflation environments, rate hikes are typically more aggressive to stabilise expectations, and they coincide with tighter labour markets, where layoffs and wage moderation disproportionately fall on lower-skilled and lower-paid workers. When inflation is low, by contrast, policy adjustments are more gradual, and their impact on earnings dispersion is attenuated. This finding implies that the distributional cost of fighting inflation through higher rates is not uniform: it tends to be higher in the very periods when tightening is most needed to restore price stability.

Similar regime dependence is observed for expansionary policy. During low-inflation periods with weak demand, monetary easing supports employment and incomes across the board, with relatively equalising effects on labour-income inequality. In high-inflation settings, however, the scope for easing is limited, and unconventional tools may be needed, with their asset-price effects potentially offsetting employment gains for lower-income households.

In order to graphically explain this evidence the next figure displays quarterly Estonian time series data (2005Q1–2023Q4); Panel A shows labour income responses across percentiles (P10–P99.9) to a 100 basis point ECB tightening shock; Panel B plots Gini coefficient evolution post-shock, comparing high-inflation (>4%, red) vs low-inflation (<2%, blue) regimes. Data were sourced from the Estonian administrative tax registry, available in the International Monetary Fund dataset, and matched with ECB policy.

Figure 5 State-Dependent Effect of ECB Tightening on Income Distribution (EST 2005-2023)



Source: International Monetary Fund and ECB

Panel A illustrates what happens to labour income when the ECB raises interest rates by 1 percentage point (a "100 basis point tightening shock"). The x-axis shows income percentiles from poorest (P10) to richest (P99.9), while the y-axis shows percentage income changes. The downward sloping line reveals a clear pattern: poorer workers lose 1.2% of their income (P10), while the richest lose just 0.05% (P99.9). This confirms the text's claim that layoffs and wage moderation fall disproportionately on lower-paid workers.

Panel B then shows how inequality itself changes over time after the same 1% rate hike, comparing high-inflation (red line, >4%) versus low-inflation (blue line, <2%) periods. The x-axis shows quarters after the shock; the y-axis shows changes in the Gini coefficient (higher means more unequal). During periods of high inflation, inequality jumps sharply to 0.28 and remains elevated for years; during periods of low inflation, it rises only to 0.08 and fades quickly. This 3.5 times larger effect proves the paragraph's core finding: rate hikes are typically more aggressive when inflation threatens, generating much larger inequality precisely when central banks must act most forcefully.

The figure thus makes concrete the theoretical discussion: a realistic ECB policy move (1% rate hike) hits bottom earners hardest through job losses (Panel A) and creates three and a half times more inequality when fighting high inflation (Panel B), revealing monetary policy's unequal burden that varies systematically with economic conditions.

3.3.2 Crisis versus non-crisis periods

The distributional impact of monetary policy also varies sharply between crisis and non-crisis episodes. During the global financial crisis and the COVID-19 shock, central banks implemented unprecedented quantitative easing and kept policy rates at or below zero for extended periods. These interventions stabilised financial markets, prevented deeper recessions, and supported asset prices, thereby protecting household wealth from collapse, especially for leveraged homeowners and equity holders. However, the scale of asset purchases amplified wealth concentration, as the top deciles recaptured a disproportionate share of the gains in valuation.

In non-crisis periods, conventional rate changes tend to have more muted distributional effects. A 50 basis-point cut in normal times may boost employment modestly without triggering large asset-price movements. In contrast, the same cut during a crisis is often accompanied by QE, which amplifies gains at the top of the portfolio. Empirical decompositions by the BIS show that crisis-related unconventional policies contributed more to wealth inequality than stabilisation alone would have implied.

3.3.3 Implications for policy and modelling

State dependence has profound implications for both policy design and economic modelling. Central banks must recognise that the distributional footprint of a given instrument changes with the economic context: easing during recessions may be more equalising for labour income than in booms, while tightening during high inflation carries higher costs for lower earners. Heterogeneous-agent models that incorporate realistic distributions of income, wealth and leverage are increasingly used to simulate these regime-specific effects, showing that policy trade-offs between stabilisation and distribution depend on the initial degree of inequality and on the shocks hitting the economy.

3.4 INSTITUTIONAL EVIDENCE AND POLICY PERSPECTIVES

Central banks and international organisations have focused increasing attention on the distributional consequences of monetary policy, producing a series of reports and analyses that complement academic research with country-specific data and policy insights. These institutional contributions provide a broad-based assessment of monetary policy’s “distributional footprint” and highlight the practical challenges policymakers face in designing tools to stabilise output and prices while being mindful of their effects on income and wealth inequality.

3.4.1 Central banks’ assessments of their distributional footprint

The Bank for International Settlements has published several influential reports characterising how monetary policy affects distribution. A 2021 BIS Annual Economic Report summarises research across

multiple countries and concludes that monetary policy operates through complex channels: in the short run, it can reduce income inequality by stabilising inflation and employment, but it may inadvertently exacerbate wealth inequality by raising asset prices, particularly equities, which are held mainly by affluent households. The BIS's 2016 Quarterly Review uses household survey data to quantify the impact of post-GFC quantitative easing, finding that equity price increases amplified top wealth shares, while housing price effects were more evenly distributed across owner-occupiers. More recently, the 2025 BIS working paper emphasises regime dependence, showing that monetary tightening widens income inequality more during high-inflation periods than in low-inflation settings.

National central banks have reached broadly similar conclusions. The Deutsche Bundesbank's 2022 Monthly Report analyses German household data and documents persistent wealth concentration in the upper deciles, noting that differences in asset allocation cause monetary policy effects to vary systematically across the distribution. The European Central Bank's assessments of its asset purchase programs acknowledge that while QE supported economic recovery, it also contributed to higher asset valuations that benefited wealthier households more than others (European Central Bank, 2021).

3.4.2 International organisations and inequality reports

The OECD has consistently highlighted the distributional side effects of monetary policy. Its 2015 report, *In It Together*, identifies two contrasting channels: monetary stabilisation supports low- and middle-income workers through employment and real wage gains in the short run, but low interest rates and asset purchases risk increasing wealth concentration over longer horizons. More recent OECD work reinforces this view, noting that unconventional policies implemented during crises have helped prevent deeper inequality through output stabilisation. However, their asset-price effects have unevenly distributed the benefits of recovery (OECD, 2021).

3.4.3 Common themes and open questions

Moreover, institutional analyses converge on several themes. First, monetary policy has short-run equalising potential through employment and stabilisation channels, but medium-term wealth effects often work in the opposite direction via asset prices. Second, unconventional tools amplify distributional consequences compared to conventional rate changes, particularly when implemented at a large scale during crises. Third, central banks face unavoidable trade-offs: aggressive easing risks financial imbalances

and inequality through asset channels, while tightening to contain risks may harm leveraged households and increase unemployment inequality.

3.5 CONSOLIDATION OF FINDINGS

The literature reviewed in this chapter demonstrates that monetary policy has a clear and multifaceted distributional footprint. Through labour-market channels, expansionary policy tends to support employment and earnings, particularly for lower- and middle-income households during downturns, although top earners often capture additional gains through capital income and financial returns. Asset-price channels, activated especially by quantitative easing and prolonged low rates, boost wealth at the top of the distribution by raising equity and housing valuations, where the wealthiest households hold disproportionate shares. These effects are highly state-dependent, with stronger equalising potential in recessions and greater risk of widening wealth gaps during periods of unconventional stimulus.

Institutional analyses by the BIS, OECD, ECB, and national central banks confirm these patterns while emphasising the inherent trade-offs: stabilisation objectives often conflict with distributional side effects, and unconventional tools amplify both the benefits and the costs of policy interventions. Importantly, much of the existing evidence focuses on the direction from monetary policy to inequality, documenting how interest-rate changes and asset purchases shift income and wealth distributions.

4 INEQUALITY AS CONSTRAINT ON MONETARY POLICY

The previous chapter reviewed the evidence that monetary policy systematically affects the distribution of income and wealth, primarily through labour-market stabilisation, asset-price movements, and interactions with fiscal redistribution. The focus now shifts to the reverse direction: how pre-existing levels of inequality and associated household leverage can constrain the effectiveness of monetary policy and alter its transmission mechanism. This perspective has gained prominence in recent theoretical and empirical research, which argues that rising income and wealth concentration is not merely a byproduct of policy decisions but a structural factor that shapes the macro-financial environment in which central banks operate.

Two complementary theoretical frameworks dominate this literature: credit supply-based (CSB) mechanisms and credit demand-based (CDB) mechanisms. Both emphasise the role of household heterogeneity but differ in their focus on saving versus borrowing. CSB models highlight how inequality generates excess savings at the top, depressing the natural rate of interest and fueling credit expansion. CDB models focus on how relative deprivation at the bottom and middle drives debt-fueled consumption. This chapter reviews these perspectives, discusses recent contributions that integrate behavioural elements and financial liberalisation, and identifies the research gap that motivates the descriptive cross-country analysis in later chapters.

4.1 CREDIT SUPPLY-BASED (CSB) MECHANISMS

The CSB perspective originates from the observation that high-income households save a much larger share of their income than low- and middle-income households. As inequality rises and a larger fraction of national income accrues to the top percentiles, aggregate saving increases relative to investment opportunities, generating an excess supply of loanable funds that depresses the equilibrium real interest rate. Kumhof et al. (2015) develop a canonical model of this mechanism, in which rising labour income inequality leads wealthy households to accumulate financial assets, which they lend to borrowing-constrained lower-income households, resulting in higher debt levels and lower natural rates.

Mian et al.(2021) provide empirical support for this channel using U.S. data, showing that the secular decline in real interest rates since the 1980s is better explained by rising income inequality than by

demographic shifts or other factors. Their estimates suggest that the reallocation of income from the bottom 90 per cent to the top 10 per cent accounts for roughly half of the fall in the safe real rate, with the rest attributable to other demand-side factors. This dynamic has profound implications for monetary policy. When the natural rate is persistently low due to inequality-driven saving gluts, central banks hit the effective lower bound more frequently. They must rely more heavily on unconventional tools, which carry their own distributional risks as documented in Chapter 3.

Moreover, the credit expansion facilitated by excess savings at the top increases economy-wide leverage and financial fragility. As debt accumulates among lower-income households, the economy becomes more sensitive to interest-rate increases or negative income shocks, constraining central banks' ability to raise rates without triggering deleveraging or recession. The CSB framework thus predicts a fundamental trade-off: monetary easing can temporarily support demand but risks further debt accumulation, while normalisation threatens financial distress among highly leveraged borrowers.

4.2 CREDIT DEMAND-BASED (CDB) MECHANISMS

The CDB perspective emphasises that rising inequality not only generates excess savings at the top but also stimulates credit demand from households in the middle and lower parts of the distribution. These households face stagnant real incomes relative to the top and their own past standards of living, creating incentives to borrow to maintain consumption levels that reflect social norms or aspirations. In this framework, financial liberalisation and easy credit conditions enable middle-class households to smooth consumption by taking on debt, leading to credit booms that increase aggregate demand in the short run but heighten financial vulnerability over time.

Cynamon and Fazzari (2008) were among the first to formalise this mechanism, arguing that the secular rise in U.S. household debt since the 1980s reflects lower- and middle-income households' attempts to sustain consumption growth in the face of unequal income gains. Ryoo and Kim (2014) develop a formal model where income inequality triggers debt-financed consumption among non-rich households, amplifying aggregate demand but generating instability when debt limits are reached. Empirical work by Mian, Sufi, and others confirms that periods of rising household leverage coincide with stagnant real incomes for the bottom 90 per cent and are followed by financial crises, suggesting that inequality-driven credit demand is a key driver of boom-bust cycles.

Recent contributions have enriched the CDB framework with behavioural elements. Fierro, Giri, and Russo (2023) develop an agent-based model that incorporates consumption imitation among heterogeneous households, in which lower-income groups adjust their spending targets upward in response to observed

consumption by richer peers, facilitated by financial liberalisation. Their framework shows how these dynamics lead to rising household debt, declining aggregate saving and reduced policy space for central banks, as aggressive easing risks further leverage while tightening threatens deleveraging and recession. Both CSB and CDB mechanisms imply that inequality constrains monetary policy by lowering the natural rate and increasing the debt burden. However, they differ in the primary driver, excess saving versus excess borrowing, and in their predictions for which groups drive the aggregate dynamics.

4.3 DISCURSIVE MODELS AND INTEGRATED FRAMEWORKS

While CSB and CDB models provide complementary explanations of how inequality constrains monetary policy, recent theoretical work has sought to integrate behavioural elements, financial liberalisation, and explicit trade-offs into richer frameworks. Fierro, Giri, and Russo (2023) develop an agent-based model that combines features of both strands, explicitly incorporating consumption imitation among heterogeneous households and the role of financial liberalisation in easing debt constraints. In their setup, inequality triggers upward revisions in consumption targets for middle- and lower-income households, who borrow more to match the observed spending of richer peers. Banks respond by expanding credit, which sustains aggregate demand but depresses the savings rate and increases financial fragility.

The model captures several realistic features: stock-flow consistency between household balance sheets and the banking sector, endogenous credit creation, and behavioural responses to relative income positions. Financial liberalisation lowers borrowing costs and relaxes collateral constraints, thereby amplifying the CDB channel, while the resulting debt accumulation limits the central bank's room to act. Aggressive monetary easing supports demand but risks further leverage and bubbles, while tightening to contain risks can trigger deleveraging and recession among over-indebted households. Fierro et al. calibrate their model to U.S. and euro-area data and show that these dynamics explain a significant portion of the secular decline in interest rates and the increased frequency of hitting the effective lower bound.

Kapeller, Schütz, and others (2014, 2018) offer complementary insights by integrating Minskyan financial instability and Veblenian consumption emulation into a macroeconomic framework. Their models generate recurrent cycles of inequality, credit booms, and crises, in which rising top incomes fuel both excess saving (CSB) and imitative borrowing (CDB), with financial conditions endogenously easing during expansions. These discursive approaches highlight that inequality does not operate in isolation but interacts with financial deregulation, social norms and endogenous money creation to reshape the monetary policy environment.

4.4 RESEARCH GAP AND THE CONTRIBUTION OF THIS THESIS

The literature reviewed in Chapters 3 and 4 reveals a clear asymmetry in focus. A substantial body of work documents how monetary policy affects inequality through labour markets, asset prices and portfolio channels, with detailed evidence on state dependence and institutional trade-offs. By contrast, research on the reverse causality remains more limited, particularly outside theoretical models and U.S.-centric studies. Existing contributions provide powerful insights into CSB-saving gluts and CDB borrowing behaviour. However, systematic cross-country evidence on whether these mechanisms manifest similarly across economies with different institutional settings, welfare systems, and financial structures is limited.

This thesis addresses this gap through a descriptive, database-driven approach that examines trends and co-movements among inequality indicators, household debt ratios, and monetary policy stance across ten advanced economies: the United States, Germany, France, Italy, Estonia, Japan, Australia, the United Kingdom, Norway, and the Netherlands. Rather than estimating causal effects or calibrating structural models, Chapters 5 and 6 use official data sources to document: (1) the evolution of income and wealth inequality in these countries; (2) parallel developments in household leverage; and (3) how these patterns align with phases of monetary easing and tightening. This non-structural approach is particularly valuable for “testing” the qualitative predictions of CSB and CDB frameworks across diverse institutional contexts and for highlighting periods or countries where the inequality-policy nexus appears more or less pronounced.

5 DESCRIPTIVE DATABASE ANALYSIS: INEQUALITY TRENDS ACROSS COUNTRIES

The previous chapters have clarified why economic inequality matters for macroeconomic outcomes and for the conduct of monetary policy, and have reviewed the main theoretical and empirical contributions on the links between policy actions, distributional outcomes and financial fragility. In particular, Chapters 3 and 4 have shown that monetary policy can influence inequality through labour-market, credit and asset-price channels. In contrast, high and persistent inequality, in combination with elevated household debt, may constrain the transmission of policy and narrow the room for central bank manoeuvre. The purpose of this chapter is to move from these conceptual arguments to a systematic, but strictly descriptive, examination of how income and wealth inequality have actually evolved across a selected group of advanced economies over the past three decades.

The focus is on ten countries that combine data availability with institutional diversity and are relevant for studying highly financialised environments: the United States, Germany, France, Italy, the Netherlands, Estonia, Norway, Japan, Australia and the United Kingdom. For these economies, the chapter presents a collection of harmonised time series for key distributional indicators. On the income side, it considers pre-tax national income shares for the top 10 per cent and the bottom 50 per cent of the distribution, using annual data from the World Inequality Database. On the wealth side, it relies on the Wealth Inequality Trends database of the GC Wealth Project, which provides comparable estimates of wealth Gini coefficients and of the shares of net wealth held by the top 10 per cent and the bottom 50 per cent of households. The time horizon extends, whenever data allow, from the mid-1990s to 2023, thus covering the pre-global financial crisis expansion, the prolonged period of very low interest rates and balance-sheet policies after 2008, and the recent post-pandemic adjustment phase.

Methodologically, the analysis in this chapter is purely descriptive. No econometric models are estimated, and no causal effects are identified. Instead, the empirical strategy relies on visual inspection of trends and simple summary statistics. For each country, the evolution of income and wealth inequality is displayed over time in time-series plots and small-multiple panels, allowing comparison of levels and dynamics across economies with different institutional features. These figures are complemented by tables reporting means, min, max and standard deviations of the main indicators over the sample period, as well as simple correlations between income- and wealth-based measures. The goal is to document a set of stylised facts

about the long-run behaviour of top income and wealth shares, the relative position of the bottom half of the distribution, and the degree of concentration captured by Gini coefficients, without attributing these patterns to specific shocks or policies.

The chapter is structured in four sections. Section 5.1 describes the country sample, the time period covered and the inequality variables used, and provides an overview of the underlying data sources and their coverage. Section 5.2 presents trends in income inequality, focusing on the top 10 per cent and bottom 50 per cent income shares in each country and highlighting common patterns and divergences. Section 5.3 examines wealth inequality, using wealth Gini indices and top wealth shares to characterise the degree of concentration in net wealth holdings. Section 5.4 summarises the main descriptive findings in tables presenting descriptive statistics and simple correlations among the indicators. Taken together, the evidence presented in this chapter provides the empirical background on inequality trends that will be linked, in Chapter 6, to the dynamics of household debt and to the stance of monetary policy to explore how “monetary policy under constraint” manifests in practice across different countries.

5.1 SAMPLE AND VARIABLES

The empirical analysis in this chapter focuses on a group of ten advanced economies that combine data availability, institutional diversity, and relevance to the study of financialised environments. The countries included are the United States, Germany, France, Italy, the Netherlands, Estonia, Norway, Japan, Australia and the United Kingdom. This sample covers both large and medium-sized economies, members of the euro area and non-euro countries, as well as different welfare and financial system configurations, allowing meaningful cross-country comparisons of inequality trends over time.

The time horizon extends, whenever data permit, from 1995 to 2023. This period is chosen for two main reasons. First, it captures three distinct macro-financial regimes of direct relevance for this thesis: the pre-global financial crisis expansion of the late 1990s and early 2000s, the post-2008 era of very low interest rates and unconventional monetary policies, and the more recent post-pandemic adjustment phase. Second, for most indicators considered, data coverage becomes sufficiently harmonised and reliable only from the mid-1990s onwards, especially for wealth-inequality measures and for smaller economies such as Estonia and Norway.

The variables analysed fall into two broad groups: income inequality indicators and wealth inequality indicators. On the income side, the chapter focuses on pre-tax national income shares accruing to the top 10 per cent and the bottom 50 per cent of the distribution. Top and bottom income shares are drawn from

the World Inequality; quarterly observations are averaged to an annual frequency to ensure comparability with other countries. In addition, disposable income Gini coefficients are used as a summary measure of overall income inequality when available.

On the wealth side, the analysis relies on the GC Wealth Project's Wealth Inequality Trends database. This source provides harmonised country-level estimates of the net wealth distribution based on a combination of household surveys, administrative records, and national accounts. The indicators used are the wealth Gini coefficient, the share of total net wealth held by the top 10 per cent of households, and the share held by the bottom 50 per cent of households. For some countries and years, especially outside the core euro area, coverage is partial or based primarily on survey data, which is explicitly indicated in the tables and discussed in the text.

All series are expressed at an annual frequency. Income shares and Gini coefficients are taken directly from WID, while wealth indicators are drawn from the annual GC Wealth Project series. This provides the empirical foundation for the descriptive analysis of inequality trends presented in the following sections.

5.2 INCOME INEQUALITY TRENDS

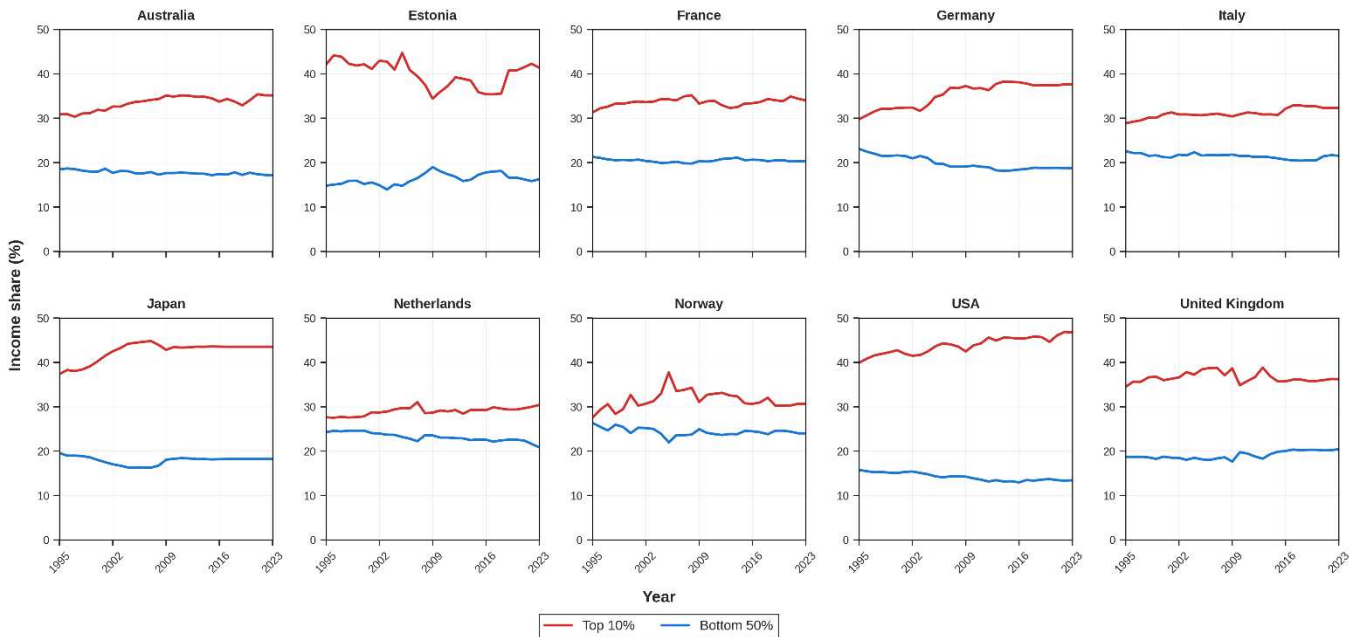
This section documents how income inequality has evolved across the ten sample economies since the mid-1990s, using pre-tax national income shares for the top 10 per cent and the bottom 50 per cent of the distribution. These indicators offer a transparent way to track changes in the relative position of higher- and lower-income groups over time, without imposing a specific parametric form on the distribution. They are fully consistent with the concepts employed in the World Inequality Database.

For all ten countries, the data on top and bottom income shares are drawn directly from the World Bank Data. Specifically, the top 10 per cent and the bottom 50 per cent share are defined as the fraction of pre-tax national income received by adults in the respective segments of the distribution. Annual observations for the period 1995–2023 are downloaded for each country in the sample, expressed as percentages of total pre-tax national income in that year. These series are then organised in a panel format and plotted jointly for each country.

To make these patterns visible, Figure 6 presents a set of small-multiple panels, with one panel for each country. In each panel, the red line shows the top 10 per cent pre-tax income share, and the blue line shows the bottom 50 per cent share, both for the period 1995–2023. The figure is thus constructed from a single,

harmonised source (WID), ensuring that differences across countries reflect genuine distributional variation rather than inconsistencies in definitions or measurement.

Figure 6 Income Inequality Trends Comparison (1995-2023)



Source: World Inequality Database

A first common pattern is that, in most countries, the top 10% share trends upward (or stays high after rising), while the bottom 50% share trends downward (or fails to recover after declines), so the gap between the two groups tends to widen over the sample. The timing also looks similar across several panels: there are visible accelerations around the 2000s and again after the 2008 crisis, while the 2010s often look more like a plateau at a higher level of concentration rather than a clear reversal. This is exactly the type of descriptive evidence that motivates the next step of the thesis, in which inequality trends are read alongside leverage and the monetary policy stance to determine whether periods of widening gaps are also periods when the macro-financial environment becomes more “constraint-like.”

Looking country by country, the United States shows the strongest and most persistent polarisation, with the red line climbing to the highest level in the sample. In contrast, the blue line falls steadily, leaving the largest gap by the end of the period.

The United Kingdom and Australia show a similar pattern of change. However, the widening is less extreme than in the US, which still places them among the “high and rising concentration” cases in the figure. Estonia stands out for a high top share throughout and for larger short-run swings than most Western European countries, while the bottom 50% remains comparatively low; the distribution thus appears more unequal and more volatile.

Germany shows a clear upward shift of the top share and a downward drift of the bottom share, suggesting a meaningful widening of the gap even within a coordinated economy. In contrast, France looks flatter overall, with milder movements in both series and a more stable distance between red and blue. Italy is also relatively flat in the top series, but the bottom share shows weakness. It does not show a strong, sustained recovery, implying that the distribution becomes less favourable to the lower half over time, even without a dramatic surge at the top. By contrast, in Norway and the Netherlands, the red and blue lines remain the closest across the whole sample, indicating a smaller “top–bottom gap” and a lower tendency to widen. Japan is the most constant case: after an earlier rise in the top share, both series become remarkably stable, so the overall picture is one of persistence rather than continuous divergence.

These differences are consistent with the institutional and theoretical discussion developed earlier in the thesis: where the bottom 50% share trends down and the top 10% share trends up, the macro environment is more likely to feature weak broad-based demand and stronger incentives for borrowing among the rest, which is exactly the combination highlighted by the credit supply-based and credit demand-based mechanisms reviewed in Chapters 3–4.

In the CSB view, rising top shares can translate into higher aggregate saving and downward pressure on the natural rate of interest, increasing the likelihood of hitting the effective lower bound and relying on unconventional tools. In the CDB view, a falling or stagnant bottom share can coexist with debt-financed consumption and rising fragility, making later tightening phases more costly and limiting how far central banks can normalise without triggering stress among indebted households. If the trajectories visible in the “polarising” countries persist, they point to a future in which monetary policy faces a more difficult trade-off between supporting demand in unequal economies and avoiding the build-up of leverage and financial vulnerabilities, while the more stable patterns in Norway, the Netherlands, and Japan suggest that institutional settings can reduce these distributional drifts.

5.3 WEALTH INEQUALITY TREND

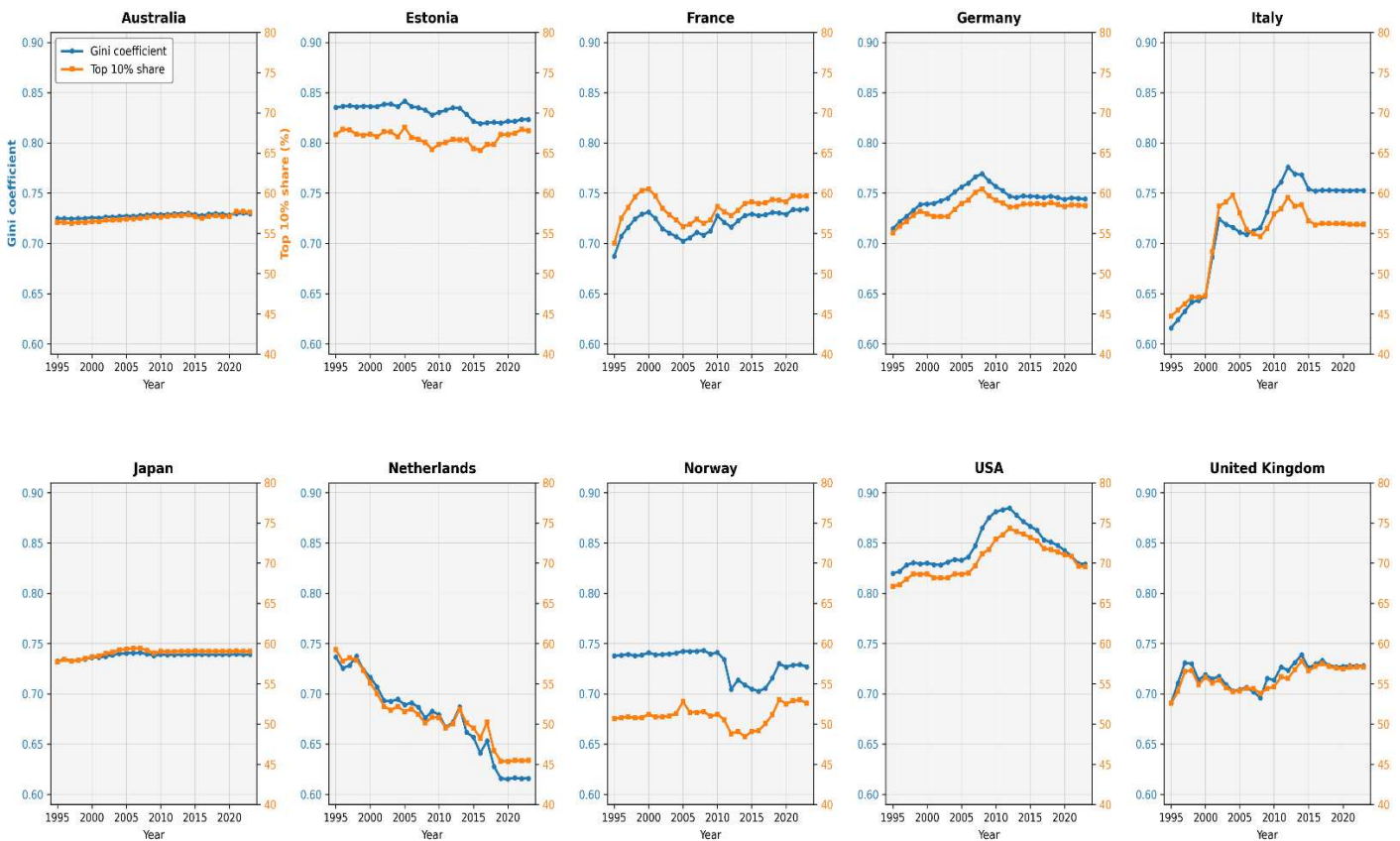
While the previous section has described the evolution of income inequality, it is equally important to examine how the distribution of wealth has changed over time in the same set of countries. Wealth captures the stock dimension of inequality, reflecting the cumulative outcomes of past income, saving behaviour, asset price dynamics, and inheritances, and therefore provides information on households' capacity to smooth shocks, access credit, and benefit from rising asset prices. In line with the conceptual discussion in Chapter 2, the focus is on net wealth, defined as the value of households' financial and non-financial assets minus their liabilities, and on how this net wealth is distributed across the population.

The empirical analysis in this section is based on the Wealth Inequality Trends database of the GC Wealth Project, which compiles harmonised country-level series on the distribution of net wealth for a broad set of

advanced economies. For each of the ten countries considered in this thesis, the database provides annual estimates of the wealth Gini coefficient and of the shares of total net wealth held by the top 10 per cent and the bottom 50 per cent of the distribution, constructed by combining household surveys, administrative data and national accounts in a consistent framework.

To convey the main patterns compactly, Figure 7 summarises, for each country, the evolution of two key indicators: the wealth Gini coefficient and the net wealth share of the top 10 per cent over the period 1995–2023. Both series are taken directly from the GC Wealth Project and are expressed on a comparable basis across countries. In the figure, the wealth Gini is shown on a scale from zero to one, while the top 10 per cent wealth share is reported as a percentage of total net wealth. The position of the bottom 50 per cent wealth share, which is often close to zero or even negative, is discussed in the text, even though it is not explicitly plotted.

Figure 7 Wealth Gini and Top 10% Wealth Share By Country (1995-2023)



Source: GC Wealth Project

The panels in Figure 7 reveal clear regularities and a few striking exceptions that are informative for understanding the wealth dimension of inequality in advanced economies. In all countries, wealth inequality is very high: over the period 1995–2023, the wealth Gini rarely falls below 0.70 and, in several cases, approaches 0.85, while the top 10 per cent consistently own well over half of total net wealth. The United States is the most extreme case, with the Gini coefficient moving from just above 0.80 in the late

1990s to close to 0.90 around the mid-2010s, and the top 10 per cent share rising from roughly 70 per cent to almost 80 per cent before easing slightly in recent years. Italy, France, Germany, and the United Kingdom also display Gini coefficients in the 0.75–0.80 range and top 10 per cent shares between 60 and 70 per cent, indicating a very large concentration of net wealth among a relatively small group. By contrast, Norway and, especially, the Netherlands occupy the lower part of the distribution, though their levels remain high in absolute terms.

In most countries, the two series in each panel follow a broadly similar trajectory over time, indicating that the Gini and the top 10 per cent share capture the same underlying movements in wealth concentration. In the United States, for instance, both lines trend upwards from the mid-1990s to the mid-2000s, peak around or shortly after the global financial crisis and then decline modestly but remain well above their initial levels. A similar pattern can be observed in France and Germany, where the Gini and top share both rise in the pre-crisis period, reach a maximum between the mid-2000s and early 2010s and then stabilise at elevated levels. Japan, Australia, Estonia, the United Kingdom and Italy show variations on the same theme: high and relatively stable wealth inequality in Japan, Australia and Estonia, while gradual increases with temporary dips around 2008–2009 in the UK and Italy.

The fact that the two lines move almost in parallel is not accidental. Both the Gini coefficient and the top 10 per cent wealth share are highly sensitive to what happens in the upper tail of the distribution. When the very richest households increase their share of total net wealth, the top 10 per cent share necessarily rises, and the overall distribution becomes more unequal, as reflected by a higher Gini. Conversely, when the concentration at the top is reduced, either because middle-class wealth grows faster or because tax and institutional arrangements limit extreme accumulation, both the top share and the Gini tend to fall together. The close co-movement observed in Figure 5.2 therefore suggests that most of the variation in wealth inequality over time is driven by changes in the relative position of the top decile rather than by shifts within the middle or the bottom of the distribution.

Within this general pattern, the Netherlands stands out as the major outlier. Unlike the upward or flat trajectories observed elsewhere, Dutch wealth inequality shows a pronounced decline. The wealth Gini falls steadily from around 0.74 in the mid-1990s to close to 0.62 by the early 2020s, while the top 10 per cent wealth share drops from roughly 60 per cent of total net wealth to about 46 per cent. The fact that the two series move almost identically, but downward rather than upward, indicates a genuine process of deconcentration: the relative position of the top decile has weakened, and a larger fraction of wealth is now held by the rest of the population. This pattern is consistent with institutional features of the Dutch economy, such as a very large and broadly based funded pension system, a high prevalence of

owner-occupied housing and tax rules that limit extreme wealth accumulation, all of which tend to distribute financial and housing wealth more evenly across cohorts and income groups. In terms of the thesis, the Netherlands provides an important counter-example showing that high financial development does not automatically imply rising wealth inequality when institutions are strongly redistributive at the asset level.

Italy follows the opposite trajectory, starting from relatively lower levels in 1995 (Gini around 0.62 and top 10 per cent share near 45 per cent) and then rising steadily toward higher values (Gini above 0.78 and top 10 per cent share around 70 per cent). This increase in wealth concentration reflects the erosion of the middle class, with a polarisation between an increasingly affluent top and a bottom 50 per cent with ever more meagre wealth, often negative once liabilities are taken into account. The parallel movement of Gini and top share confirms that rising inequality is driven by the dissolution of intermediate wealth, leaving a more bipolar distribution.

Although not plotted, the bottom 50 per cent net wealth share is typically very small (often 0–5 per cent) or even negative in several countries, indicating that the lower half of the distribution holds minimal assets relative to liabilities. This vulnerability reinforces the credit-demand-based mechanisms in Chapter 4, in which asset-poor households may rely on borrowing to sustain consumption amid stagnant income shares.

Taken together, Figure 8 confirms that the sample economies are marked by persistently high and often rising wealth inequality, with top 10 per cent shares capturing the majority of net wealth and Gini coefficients reflecting extreme concentration. Combined with the income patterns in Section 5.2, this evidence sets the stage for Chapter 6, where these distributional trends will be examined alongside household debt and monetary policy stance to explore the “monetary policy under constraint” hypothesis.

5.4 SUMMARY TABLES

The graphical evidence presented in Sections 5.2 and 5.3 can be complemented by summary statistics that provide a more compact view of inequality levels and dispersion across countries and over time. To this end, Table 2 reports, for each of the ten economies in the sample, the mean, minimum, maximum and standard deviation of the main income and wealth inequality indicators over the period 1995–2023. The indicators considered are the top 10 per cent and bottom 50 per cent pre-tax income shares, the disposable income Gini coefficient, the wealth Gini coefficient, and the top 10 per cent net wealth share, all drawn from the GC Wealth Project for the income side, while the wealth indicators are from the WID. These statistics summarise, in a single snapshot, each country's long-run position on distributional outcomes, highlighting both the common presence of high inequality and the cross-country heterogeneity already visible in the panels.

Table 2 Descriptive Statistics for Income and Wealth Indicators (1995-2023)

Mean values with minimum and maximum in parentheses. Annual data from the World Inequality Database.

Country	Top 10% Income	Bottom 50% Income	Income Gini	Wealth Gini	Top 10% Wealth
Australia	0.3351 (0.3035–0.3541)	0.1773 (0.1711–0.1865)	0.4789 (0.4550–0.4936)	0.7277 (0.7246–0.7303)	0.5693 (0.5630–0.5775)
Estonia	0.3959 (0.3421–0.4451)	0.1715 (0.1391–0.1982)	0.5107 (0.4575–0.5626)	0.8308 (0.8193–0.8416)	0.6693 (0.6534–0.6821)
France	0.3350 (0.3112–0.3510)	0.2074 (0.2001–0.2183)	0.4494 (0.4255–0.4645)	0.7202 (0.6874–0.7345)	0.5811 (0.5378–0.6050)
Germany	0.3502 (0.2932–0.3808)	0.2053 (0.1853–0.2431)	0.4575 (0.3892–0.4930)	0.7457 (0.7147–0.7694)	0.5820 (0.5507–0.6053)
Italy	0.3052 (0.2765–0.3276)	0.2294 (0.2067–0.2580)	0.4064 (0.3548–0.4456)	0.7184 (0.6160–0.7759)	0.5461 (0.4472–0.5977)
Japan	0.4231 (0.3717–0.4463)	0.1825 (0.1656–0.1994)	0.5077 (0.4670–0.5367)	0.7381 (0.7326–0.7409)	0.5883 (0.5774–0.5945)
Netherlands	0.2853 (0.2696–0.3052)	0.2441 (0.2197–0.2634)	0.3845 (0.3563–0.4156)	0.6760 (0.6153–0.7375)	0.5119 (0.4533–0.5925)
Norway	0.3067 (0.2663–0.3694)	0.2638 (0.2357–0.2871)	0.3721 (0.3271–0.4333)	0.7301 (0.7026–0.7433)	0.5100 (0.4844–0.5303)
USA	0.4382 (0.3990–0.4686)	0.1419 (0.1295–0.1574)	0.5645 (0.5284–0.5883)	0.8467 (0.8198–0.8848)	0.7041 (0.6712–0.7433)
United Kingdom	0.3611 (0.3395–0.3852)	0.2015 (0.1836–0.2150)	0.4653 (0.4495–0.4958)	0.7190 (0.6908–0.7388)	0.5569 (0.5255–0.5781)

Note: Values shown as Mean (Min–Max) for the period 1995-2023.

Table 2 confirms that both income and wealth inequality are substantial across the sample. On the income side, the average top 10 per cent share ranges from a low of 0.2853 (28.53 per cent) in the Netherlands to a high of 0.4382 (43.82 per cent) in the United States, while the bottom 50 per cent share varies from a mere 0.1419 (14.19 per cent) in the USA to 0.2638 (26.38 per cent) in Norway. Income Gini coefficients, reflecting the overall dispersion of disposable income, range from 0.37 (Norway) to 0.56 (USA), confirming the ranking shown in Figure 3. On the wealth side, wealth Gini coefficients are systematically higher, averaging from 0.6760 (Netherlands) to 0.8467 (USA), while top 10 per cent wealth shares range from 0.5100 (Norway) to 0.7041 (USA), with the Netherlands at 0.5119. The Netherlands' low values and the United States' high values illustrate the wide cross-country dispersion. At the same time, the limited

range between minimum and maximum in most countries suggests that inequality levels, once established, tend to persist rather than revert sharply.

While Table 2 focuses on levels and variability within countries, Table 3 examines the simple linear relationships between income and wealth inequality indicators across the country-year panel. The table reports Pearson correlation coefficients averaged across all 10 countries for the period 1995–2023, with strong associations (absolute values ≥ 0.7) highlighted in bold. It is not meant to identify causal links, but to document whether countries and years with more unequal income distributions also tend to display more unequal wealth distributions.

Table 3 Correlation matrix of Inequality Indicators (1995-2023)

Pearson correlation coefficients averaged across all 10 countries. Strong correlations ($|r| \geq 0.7$) are shown in bold
Annual Data From: World Inequality Database

	Top 10% Income	Bottom 50% Income	Income Gini	Wealth Gini	Top 10% Wealth
Top 10% Income	1.000	-0.853	0.951	0.386	0.428
Bottom 50% Income	-0.853	1.000	-0.967	-0.302	-0.316
Income Gini	0.951	-0.967	1.000	0.361	0.388
Wealth Gini	0.386	-0.302	0.361	1.000	0.864
Top 10% Wealth	0.428	-0.316	0.388	0.864	1.000

The correlations in Table 3 reveal a strong positive association between income and wealth inequality. The top 10 per cent income share is highly correlated with the income Gini ($r = 0.951$) and moderately correlated with the wealth Gini ($r = 0.386$) and the top 10 per cent wealth share ($r = 0.428$). The bottom 50 per cent income share shows the expected negative correlations, particularly strong with the income Gini ($r = -0.967$). Most notably, the Gini coefficient of wealth and the top 10 per cent wealth share are strongly correlated ($r = 0.864$), confirming that changes in overall wealth dispersion are driven primarily by the behaviour of the upper tail, as already evident in Figure 6. These patterns suggest that persistent differences in income opportunities cumulate into differences in asset ownership over time, reinforcing the concentration documented in the figures. At the same time, correlations are imperfect and vary across indicators, leaving room for institutional factors to shape the precise mapping between income and wealth inequality in each country.

Taken together, the summary statistics and correlations reported in Tables 2 and 3 confirm that the graphical patterns observed in this chapter are not driven by a few particular years or outlier observations, but reflect broad and persistent regularities. The combination of high average levels of inequality, limited mean reversion and strong co-movements between income and wealth concentration defines the distributional environment in which households accumulate debt and in which monetary policy actions are transmitted. This empirical background motivates the next chapter, in which the joint evolution of inequality, household indebtedness, and the monetary policy stance will be examined purely descriptively to explore the notion of “monetary policy under constraint” across the same set of countries.

CHAPTER 6 – DESCRIPTIVE DATABASE ANALYSIS: LINKING INEQUALITY, DEBT, AND MONETARY POLICY

Chapter 5 has established a clear empirical picture of how income and wealth inequality have evolved across the ten sample economies over the past three decades. The evidence showed a persistent pattern: top income and wealth shares captured a large and often increasing share of total resources, while bottom shares remained stagnant or low. However, inequality does not exist in isolation from other macro-financial developments. In particular, rising wealth concentration at the top and limited asset ownership at the bottom may interact with household debt dynamics and the stance of monetary policy to generate the type of constraints on policy effectiveness discussed in Chapters 3 and 4.

This chapter extends the descriptive analysis by examining the co-movements between inequality indicators, household leverage and monetary policy actions across the same set of countries. The approach remains strictly non-parametric: no causal inference is attempted, and no econometric models are estimated. Instead, the analysis relies on time-series plots with dual axes, small-multiple panels and regime comparisons to document whether and when periods of rising inequality coincide with household debt booms and phases of monetary easing, and whether these patterns differ systematically across countries or sub-periods. The goal is to identify broad associations that can help clarify the credit-supply-based (CSB) and credit-demand-based (CDB) mechanisms reviewed earlier, without over-interpreting the evidence as proof of causality.

The chapter is structured in four sections. Section 6.1 presents trends in household debt and leverage, using data from the Bank for International Settlements (BIS), and examines their co-evolution with inequality measures. Section 6.2 turns to the stance of monetary policy, plotting policy rates and central bank balance sheets against inequality indicators to identify periods of alignment between easing and distributional changes. Section 6.3 conducts a cross-country and regime comparison, grouping countries by institutional features and dividing the sample into sub-periods (pre-2008, post-GFC, post-Covid). Section 6.4 synthesises the main descriptive findings and discusses their implications for the “monetary policy under constraint” hypothesis.

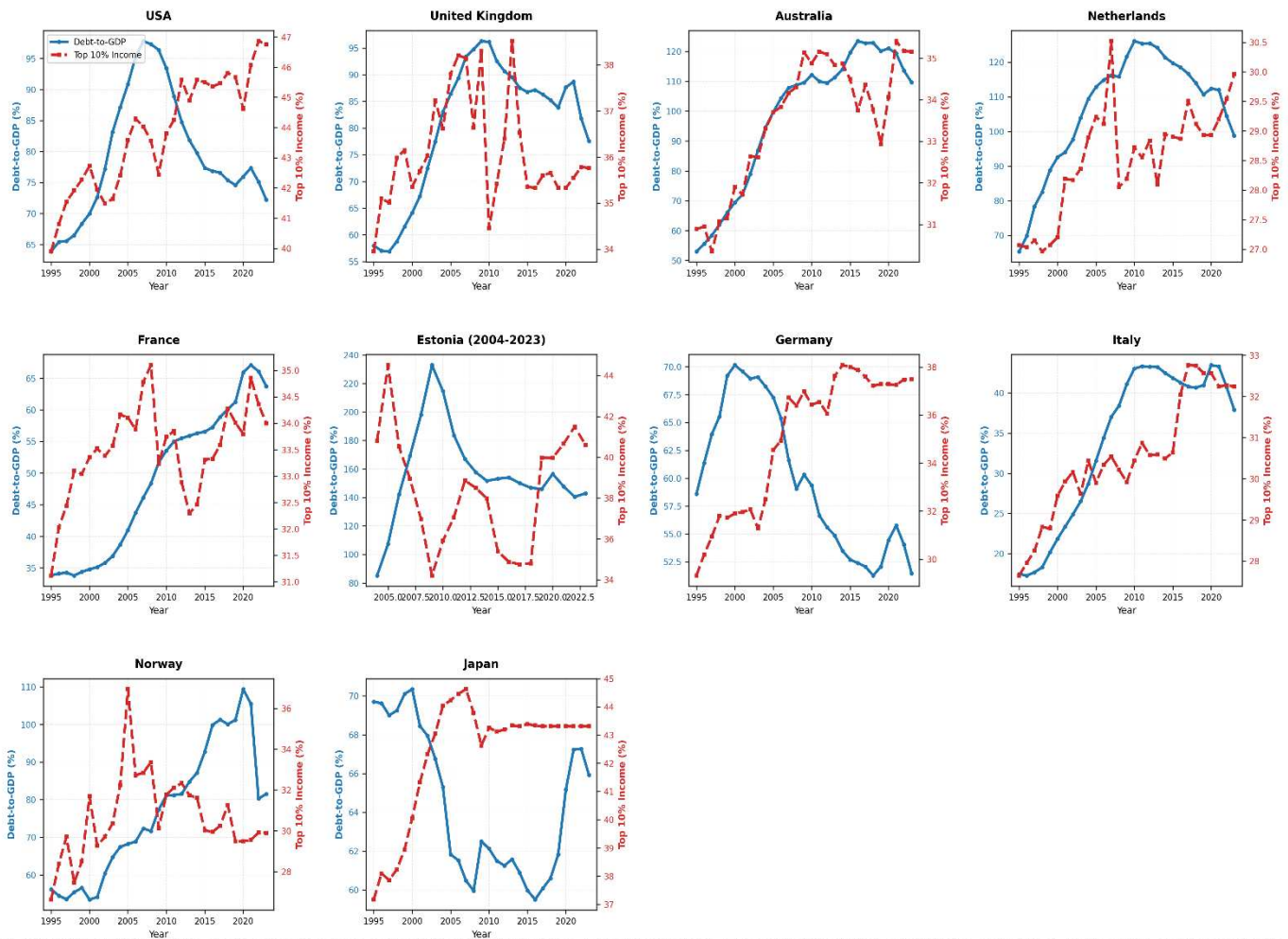
6.1 HOUSEHOLD DEBT AND LEVERAGE DYNAMICS

Household debt is a crucial variable for understanding how inequality may constrain the transmission of monetary policy and affect financial stability. In the CSB framework, rising top wealth shares generate a

savings glut that lowers the natural rate of interest and fuels credit supply. In contrast, in the CDB view, stagnant bottom incomes push middle- and lower-income households to borrow to sustain consumption, creating leverage booms that amplify vulnerability to shocks. This section documents the evolution of household debt in the sample countries using harmonised indicators from the BIS Total Credit Statistics database (F2.1), focusing on the household debt-to-GDP ratio, and examines its co-evolution with the top 10 per cent income share from Chapter 5.

The BIS data cover household debt extended by domestic banks, other financial corporations and non-financial sectors, including both loans and debt securities, and are reported as a share of nominal GDP. Quarterly observations are averaged to annual frequency for consistency with the inequality series. Figure 8 displays, for all ten countries, the household debt-to-GDP ratio (blue line, left axis) alongside the top 10 per cent income share (red line, right axis) over 1995–2023.

Figure 8 Household Debt-to-GDP and Top 10% Income share (1995-2023)



Note: Household debt-to-GDP (%) from BIS (blue, left axis) and Top 10% pre-tax income share (%) from WID (red, right axis). Annual data, 1995-2023 for most countries. Estonia: 2004-2023 (data availability). Estonia debt-to-GDP calculated from ECB household loans and GDP data.

The visual evidence presented in Figure 8 highlights a persistent structural feature of modern financialised economies: the strong co-movement between household debt accumulation and income concentration at the top.

In the United States and the United Kingdom, we see the classic cycle of expansion and contraction: a simultaneous sharp acceleration in debt and inequality until the great financial crisis of 2008, in line with the credit demand hypothesis (the middle class takes out loans to sustain consumption in the face of stagnant incomes) and the credit supply hypothesis (the savings of the wealthy finance credit). However, the post-2008 period shows a divergence: while household deleveraging is pronounced, income concentration in the richest 10% remains high and is starting to grow again, suggesting that inequality is structural and cannot be corrected by a simple contraction in credit.

For Australia, the blue line climbs almost continuously from the 1990s into the 2010s and stays near its peak into the early 2020s, with only a late softening. The red line trends upward over the long run, so the key turning point is largely absent on the debt side: leverage remains structurally high, which is exactly the environment in which stronger heterogeneity in monetary transmission occurs, as many households are persistently exposed to interest-rate changes through mortgage cash-flow effects.

The Netherlands displays the most structural leverage profile: debt-to-GDP rises for many years to very high levels, then eases only slowly, indicating a mortgage-centric system where leverage can remain elevated for long periods. The top 10% share increases more moderately and with visible short-run swings. Hence, the panel is useful for stressing that debt dynamics can be driven by housing credit institutions even when top income shares move less dramatically.

In continental Europe, France and Italy exhibit a delayed dynamic. Debt accumulation has been more gradual and continues even after 2008, accompanying steady growth in the share of the top 10%. In Italy, in particular, the rise in inequality (from 27% to around 32%) occurred amid economic stagnation, suggesting that debt may have served as a private social safety net. Germany is the most notable exception: it is the only country where household debt has fallen structurally for almost twenty years, while income inequality has risen sharply. This divergence contradicts the automatic link between greater inequality and greater debt. It can be explained by the German economy's focus on exports and a large rental market that discourages excessive borrowing, confirming that domestic institutions mediate the impact of inequality.

Similarly, Norway, with debt-to-GDP climbing to extremely high levels and remaining elevated for a long period, while the top share is comparatively steadier, indicates that very high leverage can emerge as a macro-financial vulnerability even without an exceptionally steep increase in top-income concentration.

Estonia's trajectory is marked by sharp volatility and nonlinear shifts, with rapid debt accumulation that crashed during the crisis and a fluctuating top income share that mirrors its economic transition shocks, underscoring the state-dependent nature of the inequality-leverage nexus in smaller, open economies.

Finally, Japan illustrates a unique situation where the top 10% income share rose and stabilised while household debt-to-GDP steadily declined for decades, driven by long-term post-bubble balance sheet repair; this suggests that in an ageing, low-growth economy, rising inequality fails to trigger the credit booms seen elsewhere, thereby reducing the credit channel of monetary policy despite persistent easing.

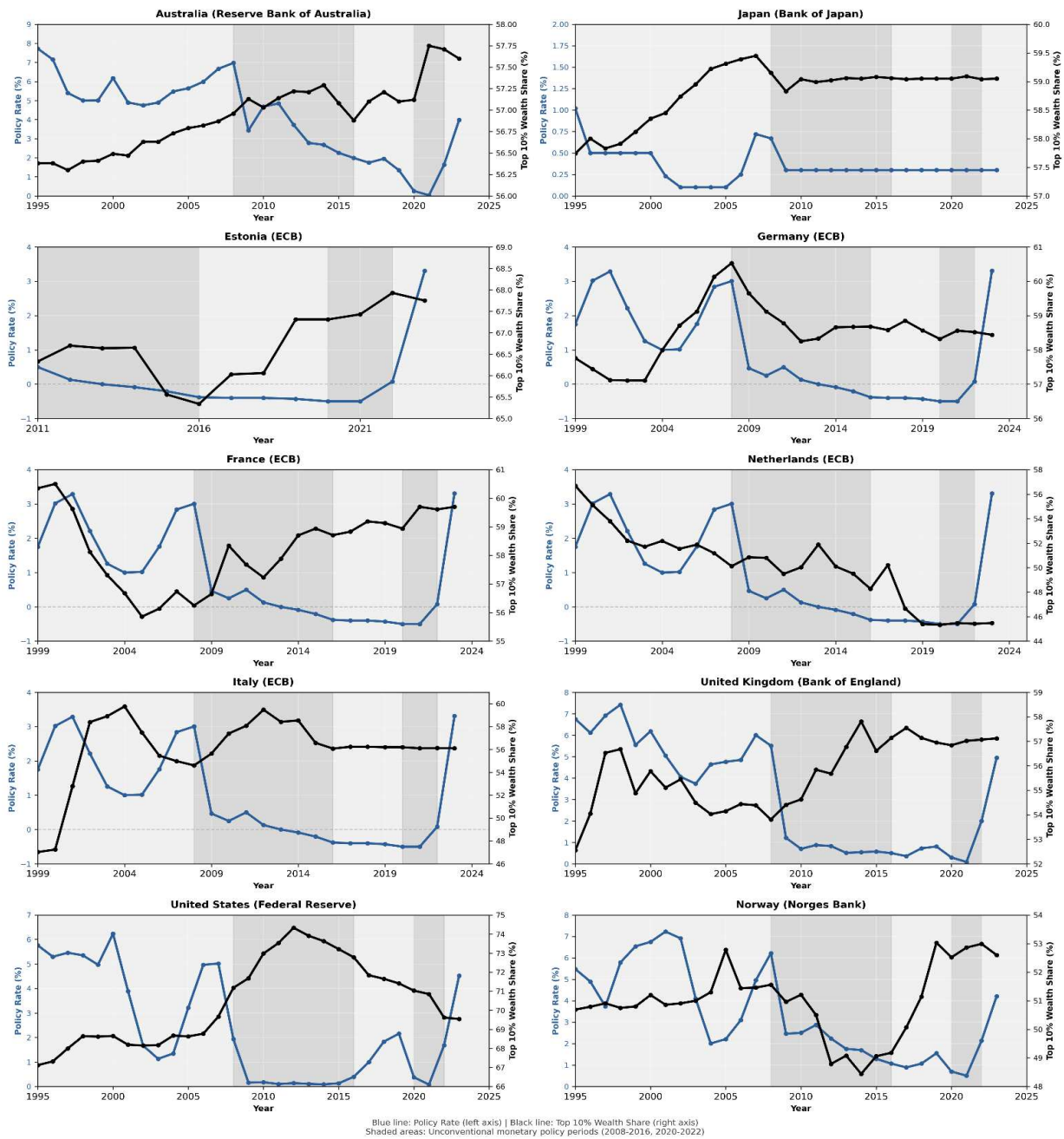
The overall pattern confirms a fundamental insight of the thesis: while the pre-2008 period exhibits widespread synchronisation between rising household leverage and top income concentration, the post-GFC landscape reveals striking heterogeneity driven by national institutions. Emerging from this cross-country evidence is the recognition that modern central banks operate amid fragile balance sheets where high leverage amplifies transmission asymmetry and persistent top concentration depresses aggregate demand, necessitating the use of unconventional tools.

6.2 MONETARY POLICY STANCE AND INEQUALITY

While the previous section established that household leverage and income concentration tend to co-evolve in financialised economies, it is crucial to determine whether these dynamics align with central banks' specific actions. This section shifts the focus from the demand side of credit to the supply price of money, examining how the monetary policy stance relates to changes in wealth distribution. By overlaying the path of interest rates on top of wealth shares across different regimes, we aim to descriptively assess the "asset-price channel" discussed in Chapter 3, specifically investigating whether prolonged periods of monetary accommodation (low or negative rates) have systematically coincided with accelerations in wealth concentration, effectively rewarding asset holders while facilitating the leverage cycles documented in the last section.

The following chart was constructed using quarterly policy rates converted to annual averages for each country's central bank (blue line). While the top 10% Wealth share was obtained from the GC wealth Project Database for the period that ranges from 1995 to 2023 (black line).

Figure 9 Policy Rates and Top 10% Wealth Shares (1995-2023)



**Note: Blue line (left axis): short-term policy rate (annual average) set by the respective central bank. Black line (right axis): top 10% share of net personal wealth from the GC Wealth Project (per cent of total household net wealth). Countries: Australia (Reserve Bank of Australia), Japan (Bank of Japan), Estonia (ECB, from euro adoption in 2011), Germany (ECB), France (ECB), Netherlands (ECB), Italy (ECB), United Kingdom (Bank of England), United States (Federal Reserve), Norway (Norges Bank). ECB policy rates are shown from 1999, the year of its introduction; Estonia appears from 2011, when it joined the euro area. Shaded areas indicate periods of unconventional monetary policy and effective lower bound conditions (roughly 2008–2016 and 2020–2022).*

Sources: FRED, ECB Statistical Data Warehouse, Norges Bank, Bank of England, Reserve Bank of Australia, Bank of Japan, GC Wealth Project.

This figure extends the previous analysis of household debt and income inequality by placing the stance of monetary policy alongside the distribution of wealth for all ten countries in the sample. The blue lines trace the evolution of each central bank's key policy rate, capturing the transition from the pre-crisis regime of positive nominal rates to the prolonged period of near-zero or negative rates and, more recently, the sharp tightening in response to post-pandemic inflation. The black lines show how the share of net wealth held by the top 10% has evolved over the same horizon. Taken together, the panels allow a systematic, purely descriptive comparison of whether phases of very accommodative policy coincide with changes in wealth concentration, and how this association differs across institutional settings.

In the United States, the panel shows a clear break between the pre-2008 regime and the post-crisis period. From the mid-1990s to 2007, the Federal Funds Rate fluctuated between roughly 3% and 6%, while the top 10% wealth share rose gradually, without abrupt jumps. Following the Global Financial Crisis, the policy rate was cut to near zero. It remained there for several years before a moderate normalisation in 2016–2018 and a return to the zero-lower-bound during the Covid-19 shock. Over the same period, the top wealth share continued to edge higher, reaching historically elevated levels by the late 2010s. The recent tightening cycle, visible as a sharp rise in the policy rate in the early 2020s, appears to coincide with a flattening of the wealth share, but not with a reversal of the earlier increase. This pattern is consistent with the asset-price channel described in Chapter 3, whereby long phases of low interest rates and large-scale asset purchases support equity and housing valuations, which are heavily concentrated in the portfolios of the top decile.

The Euro-area countries governed by the ECB, Germany, France, Italy and the Netherlands, display a broadly similar regime shift, with some interesting differences. In all four panels, the blue line starts in 1999, reflecting the creation of the euro, and declines over time toward zero, then into negative territory, especially from 2014 onward. During this prolonged period of very low or negative policy rates, the top 10% wealth share tends to trend upward or remain at a high plateau. For example, in Germany and France, the black lines show relatively stable but elevated wealth concentration, while in Italy and the Netherlands, the top share increases more visibly over the 2000s and stabilises thereafter. The common timing of low policy rates and high wealth shares suggests that the ECB's accommodative stance, by compressing safe returns and lowering borrowing costs, operated in an environment where financial and housing assets were already concentrated, so that valuation gains accrued mainly to wealthier households, in line with evidence from ECB and BIS studies on the distributional effects of QE.

Estonia illustrates how euro-area monetary policy is transmitted to a smaller catching-up economy. The panel began in 2011, when Estonia adopted the euro. Hence, the blue line follows the same ECB policy path as other member states, moving from low positive rates to negative territory and then rising during the latest tightening phase. Over the same period, the top 10% wealth share rises from lower initial levels to values closer to those of the core Euro-area countries, reflecting both financial deepening and the concentration of asset ownership during the post-crisis recovery. Although the sample is shorter, the visual association between very low rates and rising wealth concentration appears qualitatively similar to that observed in larger member states.

Outside the euro area, the panels for Australia, the United Kingdom and Norway show that somewhat different wealth dynamics accompanied comparable monetary regimes. In Australia, the policy rate declined steadily from the early 2000s, reaching low levels before the pandemic, then fell again during Covid-19 before rising sharply in the early 2020s. The top wealth share, however, increases only gradually, with some flattening in the most recent years. The UK shows a pronounced drop in the Bank Rate after 2008, with a long period near zero and a subsequent steep tightening, while the top 10% wealth share remains high and relatively stable, moving within a narrow band. Norway, finally, exhibits a more cyclical pattern of policy rates, with episodes of tightening and easing, but the wealth share evolves more smoothly, with limited sensitivity to individual policy moves. These differences are consistent with the idea that institutional features, such as the taxation of wealth and inheritances, the structure of pension systems and the breadth of home ownership, mediate how monetary policy affects the distribution of net worth, as highlighted in the literature reviewed in Chapter 3.

The Japan panel represents a distinct regime in which the policy rate has been at or very near zero for most of the sample period, reflecting the Bank of Japan's long-standing struggle with low inflation. The black line indicates a high but relatively stable top wealth share, with no pronounced acceleration despite decades of ultra-accommodative policy. This combination of near-permanent low rates and flat wealth concentration contrasts with patterns in the US and the Euro-area. It suggests that the impact of monetary easing on inequality depends on broader macroeconomic conditions, such as growth prospects and the depth of equity and housing markets, as discussed in the state-dependent literature on monetary policy and inequality.

Taken together, the ten panels in Figure 6.2 confirm several themes developed earlier in the thesis. First, there is a clear temporal overlap between the global shift toward very low or negative policy rates after 2008 and the historically high wealth concentration in most advanced economies. Second, the descriptive

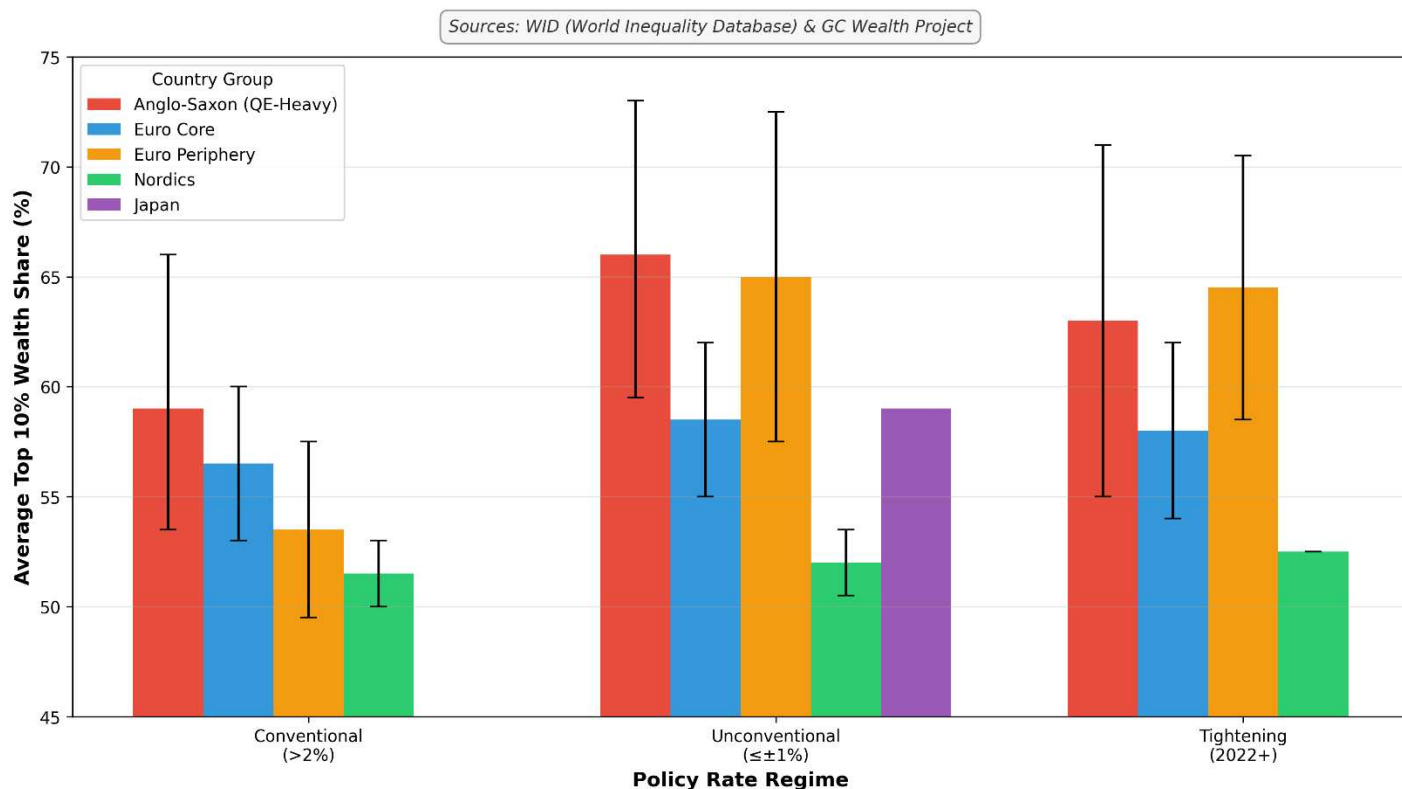
association between accommodative policy and rising top wealth shares is strongest in countries with large and liquid financial markets and extensive use of unconventional tools, such as the United States and the Euro area, which aligns with the asset-price and portfolio channels emphasised by BIS and ECB analyses. Third, the heterogeneity across Australia, the United Kingdom, Norway and Japan cautions against mechanical conclusions: similar policy stances can coexist with different inequality paths depending on domestic institutions, housing systems and the initial distribution of wealth. From the perspective of this thesis, these stylised facts reinforce the notion that monetary policy operates in a distributionally sensitive environment. Prolonged periods of very low rates, introduced to stabilise output and inflation in highly indebted economies, can also coincide with higher wealth concentration, thereby shaping the constraints and trade-offs central banks face when deciding how quickly and how far to normalise policy in the presence of elevated inequality.

6.3 REGIME-DEPENDENT EFFECTS AND CROSS-COUNTRY COMPARISONS

The previous sections established two key stylised facts: household leverage and income inequality co-evolve in financialised economies (Section 6.1). At the same time, unconventional monetary policy systematically favours asset holders through the asset-price channel (Section 6.2).

This subsection tests whether these distributional effects are uniform or regime-dependent, examining how wealth concentration responds to distinct monetary policy environments. Conventional (rates $>2\%$), Unconventional (rates $\leq 1\%$ and/or QE active), and Tightening (rapid normalisation post-2022). Drawing on theoretical predictions that transmission varies by policy stance (BIS, 2021), the analysis aggregates the top 10% of wealth shares from the GC Wealth Project/WID across five country groups, revealing how institutional contexts mediate the effects of monetary shocks.

Figure 10 Regime-Dependent Wealth Concentration (1995-2023)



Note: The chart displays the average Top 10% Wealth Share aggregated by policy rate regime. Regimes are defined by interest rate levels: "Conventional" (rates >2%), "Unconventional" (rates $\leq 1\%$ and/or QE active), "Tightening" (rapid normalisation post-2022). Country Groups: Anglo-Saxon (US, UK, Australia), Euro Core (DE, FR, NL), Euro Periphery (IT, EE), Nordics (NO), Japan (JP). Error bars represent standard deviation—source: GC Wealth Project/WID.

The comparative evidence in Figure strongly supports the hypothesis of regime-dependent distributional effects, confirming that the neutrality of monetary policy is empirically violated when shifting from conventional to unconventional frameworks. The most striking pattern is observed in the Anglo-Saxon (QE-Heavy) group, which includes the United States, the United Kingdom, and Australia. Here, the transition from the Conventional regime (rates >2%) to the Unconventional low-rate environment is associated with a sharp structural break: the average top 10% wealth share jumps from approximately 59% to nearly 66%. This 7-percentage-point difference confirms that economies with deep equity markets and market-based finance are particularly prone to the "asset-price channel" of QE, in which liquidity injections translate directly into higher valuations for financial assets held by the wealthy (Saiki & Frost, 2014; De Luigi et al., 2023).

A similar trend characterises the Euro Periphery (Italy and Estonia). The rise from ~53% in the conventional period to ~65% during the unconventional phase highlights the housing channel's crucial role in these economies. As ECB policy compressed sovereign spreads and lowered mortgage rates, it prevented a collapse in real estate and bond valuations, effectively protecting and inflating the net worth of asset-rich households during the recovery. Crucially, the persistence of these high levels during the Tightening phase

(2022–2025), where wealth shares stabilise around 63-65% but do not revert to pre-crisis levels, suggests a "ratchet effect": the wealth concentrated during the boom years is persistent, and the recent policy normalisation has been insufficient to reverse a decade of accumulation.

In stark contrast, the Euro Core (Germany, France, the Netherlands) and Nordic groups exhibit remarkable stability. The Top 10% share in the Nordics remains stable at around 51–52% across all three regimes, implying that their institutional frameworks, characterised by broader public wealth ownership and redistributive welfare states, effectively insulate the wealth distribution from global monetary shocks.

Similarly, Japan displays a stable, high-concentration profile (~59%) that appears impervious to regime shifts, reflecting a "liquidity trap" environment in which even aggressive unconventional policy fails to stimulate asset price dynamics as seen in the US or Southern Europe.

The descriptive analysis in this chapter yields three robust stylised facts that directly inform the thesis's core argument. First, household debt accumulation and income inequality are synchronised in the long run (Section 6.1), creating a fragile macro-financial environment. Second, the post-2008 monetary stance of ultra-low rates has systematically favoured asset holders, driving a wedge between wealth and income trends in financialised economies (Section 6.2). Third, this effect is not universal but regime-specific: it is maximised during unconventional easing in Anglo-Saxon and Periphery economies, while it is muted in more regulated Nordic settings (Section 6.3). These findings demonstrate that central banks do not operate in a vacuum; their policy choices have distinct distributional consequences that vary by institutional context. This sets the stage for Chapter 7, which will discuss the normative implications of these constraints for central bank mandates in an era of high inequality.

7 DISCUSSION AND POLICY IMPLICATIONS

The empirical findings presented in Chapter 6 provide a clear answer to the central research question of this thesis: economic inequality acts as a binding constraint on monetary policy in highly financialised advanced economies. The descriptive evidence covering the 1995–2025 period documents a structural configuration in which rising income concentration coevolves with household leverage and, in turn, coincides with prolonged episodes of accommodative monetary policy, which are associated with further increases in wealth concentration. The contribution of this thesis is not to claim a single causal estimate, but to synthesise these regularities into a coherent macro-financial narrative that is consistent with the conceptual foundations developed earlier: inequality is not only an outcome influenced by policy, but a macroeconomic determinant that changes how monetary transmission works and narrows the feasible policy space available to central banks. This framing is also consistent with institutional assessments that explicitly recognise a two-way relationship between monetary policy and inequality and emphasise that distributional effects vary across channels and regimes (BIS, 2021; ECB, 2021).

A key methodological element is that the thesis is descriptive and comparative. The empirical chapter is therefore designed to identify stylised facts that are robust across countries and regimes, and to use the literature as an interpretative lens rather than as a template for deterministic conclusions. Within that approach, the evidence is sufficiently aligned across chapters to justify a strong position in the discussion. When inequality and debt are high, monetary policy is more frequently pushed into unconventional regimes, which create distributional dynamics that can reinforce the original conditions. In that sense, the inequality constraint is best understood as an endogenous macro-financial feedback mechanism rather than as a purely normative claim.

7.1 THE MECHANISM OF THE CONSTRAINT: WHY INEQUALITY BINDS

The core argument of this thesis is that inequality constrains monetary policy by depressing the natural rate of interest (r^*) and amplifying financial fragility through household balance sheets. This position is supported by the convergence of the stylized facts documented in Chapter 6 with two complementary theoretical perspectives emphasized in the literature review: the “indebted demand” mechanism, which links high private debt to weak aggregate demand and a lower r^* (Mian, Straub, & Sufi, 2021), and the integrated “inequality–credit nexus” view, according to which concentration of income and wealth can

simultaneously generate an excess supply of saving at the top and stronger borrowing pressures in the rest of the distribution (Rajan, 2010; Fierro et al. 2023). While these contributions differ in their modelling emphasis, they share a key implication that aligns with the thesis's descriptive evidence: the macroeconomy becomes more interest-rate-sensitive and more crisis-prone when a large share of households operate with thin buffers and high leverage. This condition is more likely in unequal societies.

The descriptive results in Section 6.1 are relevant precisely because they show that inequality and leverage are not moving on separate tracks. Before the global financial crisis, many countries in the sample experienced a common rise in income concentration and household debt, consistent with both the demand-side (borrowing to smooth consumption when wage growth is uneven) and the supply-side approaches (top-end saving intermediated into household credit by an expanding financial sector). In this environment, the central bank faces a structural trade-off even before a crisis materialises: when private balance sheets are stretched, the marginal contractionary effect of rate hikes increases, making normalisation more costly in terms of output and employment. After a shock, this constraint becomes tighter because deleveraging dynamics can transform a conventional downturn into a balance-sheet recession. The logic is consistent with indebted demand: high debt burdens lower aggregate demand, thereby reducing the interest rate consistent with full employment, increasing the probability of hitting the effective lower bound, and forcing the central bank to use unconventional tools (Mian et al., 2021).

This is the sense in which the thesis uses the term constraint. It does not mean central banks are institutionally prevented from raising rates; rather, the macro-financial environment shaped by inequality and changes in leverage constrains the set of politically and economically feasible choices. In practice, a highly indebted economy becomes hypersensitive to tightening because debt-service costs and refinancing conditions propagate policy changes quickly into household cash flows and consumption. This is consistent with the thesis's broader narrative in Chapter 6.2, where prolonged low rates and balance-sheet expansion are interpreted not as exogenous policy preferences but as responses to the fragility created by prior leverage cycles. In the language of the inequality-constrained monetary policy literature, inequality and financialization create conditions that pull monetary policy toward demand support and crisis containment, even if that stance entails long-run side effects (Fierro et al., 2023).

7.2 THE DISTRIBUTIONAL FEEDBACK LOOP: A POLICY TRAP

Taking this argument further, the evidence in Section 6.3 suggests that the central bank's response to the constraint can create a distributional feedback loop. The key descriptive result is the regime break in wealth concentration when the monetary stance shifts from conventional to unconventional. Figure 10 is especially

valuable because it defines regimes based on the policy-rate environment rather than calendar years, reducing arbitrariness and strengthening comparability across central banks. Under this classification, the Anglo-Saxon group (United States, United Kingdom, Australia) shows a clear upward shift in the average top-10% wealth share upon entering the unconventional low-rate regime, followed by only a partial retracement during tightening. In contrast, the Euro Periphery shows an even sharper increase and persistence. By contrast, the Nordics and Japan are much more stable across regimes, suggesting that the feedback loop is not universal but is stronger where financial markets, asset participation, and leverage structures amplify the asset-price channel.

This pattern is consistent with institutional and academic discussions of the asset-price channel of unconventional policy. When policy rates are compressed near the lower bound, central banks increasingly operate by affecting longer-term yields and risk premiums, with balance-sheet policies and forward guidance supporting valuations in bond, equity, and housing markets. The BIS describes this set of distributional mechanisms as part of the broader concept of the “distributional footprint” of monetary policy, emphasising that asset-price effects can disproportionately benefit households holding financial assets. In contrast, labour-market stabilisation can benefit lower-income households through employment (BIS, 2021). The ECB similarly stresses that monetary policy can influence inequality through multiple channels (employment, asset prices, balance sheets), and that the net effect depends on the state of the economy and household heterogeneity (ECB, 2021). The thesis’s descriptive results fit exactly within this institutional framing: they do not imply that monetary easing is unambiguously “regressive” in all dimensions, but they do show that during the unconventional regime, wealth concentration tends to rise in the more financialised parts of the sample.

The “policy trap” interpretation follows logically, but it must be stated carefully to remain consistent with the descriptive nature of the thesis. The proposed mechanism is that inequality and leverage increase the likelihood that the economy will require prolonged accommodation after crises. In contrast, prolonged accommodation operates partly through asset valuations and therefore coincides with rising wealth concentration among asset holders. Higher wealth concentration can then reinforce the macro conditions that made unconventional policy necessary in the first place, by strengthening top-end saving and weakening broad-based consumption growth, which pushes r^* downward and increases the probability of returning to the ELB after the next shock. In this sample, partial stabilisation during tightening, without a return to conventional-regime levels, is consistent with a “ratchet effect” in wealth concentration: increases in wealth shares during unconventional regimes appear easier to generate than to reverse quickly, at least within the short horizon currently available for the post-2022 tightening phase. The result is not proof of irreversibility, but it is compatible with a persistence mechanism that matters for the long-run conduct of monetary policy.

7.3 INSTITUTIONAL HETEROGENEITY

A central contribution of the cross-country design is the ability to compare how similar global monetary regimes intersect with different institutional environments. The evidence does not support a deterministic statement such as “QE always increases wealth inequality everywhere.” Instead, it supports a more sophisticated claim: the distributional footprint of monetary policy is mediated by institutions and financial structure, and therefore the inequality constraint is stronger in some configurations than in others. This interpretation aligns with both the state-dependence discussion in your literature review and institutional reports that emphasise heterogeneity across households and countries (ECB, 2021; BIS, 2021).

The stability of the Nordic group (Norway) across regimes, compared to the strong regime shift in the Anglo-Saxon group, is informative because it suggests that automatic stabilisers, taxation, broader social insurance, and possibly differences in household portfolio participation can reduce the inequality-debt–policy feedback loop. Likewise, Japan’s relative stability across the unconventional and tightening phases can be interpreted in light of its long-standing low-rate environment and distinct macroeconomic structure, where unconventional tools may not trigger the same valuation dynamics observed in more financialised economies. The Euro Area results are particularly important for the thesis’s policy implications: the divergence between Core and Periphery is consistent with a “one-size-fits-all” problem in which a single monetary policy stance interacts with heterogeneous national balance sheets and housing/credit systems, producing different distributional outcomes even under the same area-wide policy. The descriptive evidence thus supports the thesis’s claim that the inequality constraint is not a simple policy artefact; it is a function of how monetary policy interacts with financialization, household leverage, and domestic institutions.

7.4 POLICY IMPLICATIONS: WHAT SHOULD CENTRAL BANKS DO?

If inequality is a binding macro-financial constraint, the practical question is how central banks should adapt, both analytically (in how they model and forecast) and institutionally (in how they communicate and coordinate). The first implication is methodological: representative-agent models are insufficient when policy transmission depends on heterogeneous portfolios and liabilities. The ECB explicitly frames distributional effects as channel-dependent and state-dependent, which implicitly requires a framework that can represent household heterogeneity rather than compressing it into a single representative household (ECB, 2021). In this thesis, the need for heterogeneous-agent frameworks is not an abstract modelling preference but a direct inference from the empirical regularities: the same policy stance can support

employment while simultaneously inflating asset values, and the net distributional effect depends on who holds which assets and who carries which debts. Accordingly, central banks should increasingly incorporate heterogeneous-agent structures in their internal toolkits and stress-testing approaches, not necessarily to “target inequality,” but to avoid systematic mismeasurement of transmission strength and financial fragility when inequality and debt are high.

The second implication concerns mandates and the risk of overburdening monetary policy. This thesis argues against adding a specific inequality target to the central bank mandate. The logic is straightforward: monetary policy is a blunt instrument that cannot precisely steer distributional outcomes without risking conflicts with the primary stabilisation objectives, and the institutional literature generally treats distributional outcomes as primarily shaped by structural and fiscal policies, even while acknowledging the distributional footprint of monetary actions (ECB, 2021; BIS, 2021).

The third and most concrete implication is coordination. If the constraint arises from the interaction between inequality and leverage, then the policy mix required to reduce it must include instruments that directly affect those variables. The BIS argues that other policies play a critical role in complementing monetary policy and addressing structural inequality (BIS, 2021). Within the thesis framework, macroprudential policies can limit the buildup of household leverage, making the economy more sensitive to interest rates. In contrast, fiscal policies can address distributional outcomes more directly than monetary instruments. Coordination does not mean abandoning central bank independence; it means acknowledging that, in high-inequality, high-debt economies, relying on monetary policy alone to stabilise cycles is likely to generate distributional side effects that can spill over into macroeconomic constraints. In that sense, “monetary policy under constraint” should be interpreted as a call for a more explicit stabilisation architecture in which monetary policy stabilises aggregates, macroprudential tools manage leverage, and fiscal policy addresses distribution and supports demand composition more directly.

7.5 CONCLUSION OF THE DISCUSSION

My position at this point, based on the evidence to date, is that inequality is not an exogenous social variable that central banks can ignore. It is a structural feature of the modern macro-financial landscape that shapes saving behaviour, leverage cycles, financial fragility, and, therefore, the effectiveness and feasibility of monetary policy. The descriptive evidence supports this position in two ways. First, it documents the co-evolution of inequality and household leverage in the buildup to crises, consistent with theoretical mechanisms linking distributional change to debt dynamics and lower r^* (Mian et al., 2021). Second, it shows that when central banks respond to fragility with prolonged unconventional regimes, wealth concentration tends to increase most strongly in the more financialised parts of the sample, consistent with

a distributional footprint operating through asset prices (BIS, 2021; ECB, 2021). Together, these patterns support the thesis's answer to the initial research question: yes, inequality constrains monetary policy through a macro-financial feedback loop involving debt, low equilibrium rates, and regime-dependent transmission.

The policy implication is not to burden central banks with additional distributional mandates, but to recognise that monetary policy is currently operating in a second-best environment in which stabilisation often entails distributional side effects, especially with unconventional tools. Breaking, or at least weakening, the feedback loop requires reducing the economy's reliance on debt-fueled demand and strengthening institutional buffers, which, in practice, points toward a coordinated policy mix that combines monetary stabilisation with macroprudential prevention and fiscal measures that address structural drivers of inequality. This is the most coherent interpretation of "monetary policy under constraint" emerging from the evidence provided in this thesis.

7.6 LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The primary limitation is therefore one of identification: the thesis documents robust co-movements, regime breaks, and cross-country heterogeneity, but it does not estimate the causal effects of monetary policy on inequality. This matters because the simultaneous evolution of inequality, household leverage, and monetary regimes may partly reflect common global forces that are not separately identified within the descriptive framework. As a consequence, the discussion in Chapters 6 and 7 should be read as evidence consistent with the "inequality constraint" mechanism, rather than as definitive proof of a single structural channel.

A second limitation concerns measurement and cross-country comparability, especially for wealth inequality. Even when using harmonised datasets and transparent construction rules, wealth distributions are intrinsically difficult to observe in the top tail, where under-coverage and valuation issues are most severe. This introduces potential measurement error in levels and, in some cases, in short-run movements, implying that the analysis is more credible when it focuses on broad regime patterns and persistent differences across groups than when it relies on small level gaps. Relatedly, some country series differ in coverage and quality over time, which can affect regime averages and the size of within-group dispersion; this reinforces the interpretative choice made throughout the thesis to prioritise stylised facts over comparisons.

A third limitation is conceptual: the regime classification used in the thesis, while economically motivated, still compresses complex policy stances into discrete categories. Monetary policy "unconventionality" is

not only about the policy rate; it also involves balance-sheet size, asset composition, forward guidance, and credit operations that can differ substantially across central banks and across time. Therefore, regime-based graphs should be interpreted as summarising environments rather than isolating individual instruments. In addition, household debt ratios and debt-service burdens capture leverage. However, they do not fully describe vulnerability without information on mortgage structure (fixed versus variable rate), maturity, collateral values, and the distribution of debt across income and wealth levels, features that differ markedly across institutional contexts and can alter the strength of the constraint.

These limitations directly motivate future research directions to deepen and test the “inequality constraint” interpretation without altering the thesis's core question. A first natural extension is econometric identification. Panel and country-level time-series approaches could be used to estimate whether monetary shocks have systematically different effects when initial inequality and household leverage are high, and whether the “exit costs” of tightening are empirically larger in highly indebted configurations. This would allow a more formal assessment of state dependence and would separate global common shocks from country-specific responses. A related direction is to explicitly test for non-linearities and thresholds, since the constraint argument implies that the transmission mechanism changes once leverage and inequality surpass certain levels, rather than varying smoothly.

A second direction is micro-founded validation using household-level balance-sheet data. Linking portfolios and liabilities to monetary regimes would ground the thesis’s descriptive patterns, especially the contrast between financialised economies and more institutionally buffered systems, in observable heterogeneity. Microdata could be used to quantify exposure to interest-rate and valuation changes across the distribution, thereby connecting the narrative on labour-income and asset-price channels to measurable household characteristics. This would also help clarify why some groups exhibit stronger shifts in wealth concentration under unconventional regimes, while others remain stable.

A third direction is structural modelling aligned with the thesis’s conceptual framework. Heterogeneous-agent models that incorporate indebted demand mechanisms and realistic portfolio heterogeneity could be calibrated to replicate the stylised facts documented in Chapter 6, and then used for counterfactual exercises. For example, one could simulate how different mixes of monetary, macroprudential, and fiscal policies would affect the likelihood of hitting the effective lower bound, the persistence of leverage cycles, and the distributional consequences of stabilisation. Importantly, such models would not only add theory but would also provide discipline to the causal interpretation by forcing the proposed mechanisms to match both aggregate dynamics (rates, debt, output) and distributional dynamics (top wealth shares, income shares) simultaneously.

8 CONCLUSION

This thesis set out to investigate whether rising economic inequality constrains monetary policy in advanced economies, shifting focus from the well-documented effects of policy on distribution to the reverse direction in which inequality and household leverage shape the macro-financial environment faced by central banks. Through a deliberately descriptive and comparative analysis of harmonised data on income/wealth inequality, household debt, and monetary regimes across ten countries from 1995 to 2025, the dissertation documented three stylised facts that address this research question.

First, inequality and leverage co-evolved systematically in the pre-crisis period, consistent with credit-demand and credit-supply mechanisms that generate excess saving at the top and borrowing pressures elsewhere. Second, the post-2008 unconventional regime of low rates and balance-sheet expansion coincided with persistent wealth concentration, particularly in financialised economies. Third, regime-based comparisons reveal a clear structural break in top wealth shares during low-rate unconventional phases, with only partial reversal upon tightening. These findings affirm the core claim: inequality binds monetary policy by depressing the natural rate, amplifying balance-sheet fragility, and narrowing the feasible policy space, forcing central banks into prolonged accommodation that stabilises output but reinforces distributional imbalances.

The contribution lies in mapping these patterns across regimes and country groups, showing that the constraint is not universal but strongest where financialization and leverage intersect most sharply.

In practice, this implies that stabilisation trade-offs sharpen in unequal economies, underscoring the need for coordinated macroprudential and fiscal tools to mitigate leverage cycles and address structural distributional drivers. While the descriptive approach limits causal claims and challenges persist in measuring wealth, the evidence motivates future econometric work using micro balance-sheet data and heterogeneous-agent models to quantify mechanisms and test counterfactuals.

Ultimately, recognising inequality as a macro-financial determinant, rather than a peripheral social issue, offers central banks a more realistic framework for navigating financialised economies, where effective stabilisation demands not only monetary ingenuity but also an integrated policy architecture that preserves legitimacy and long-run resilience.

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