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ESSAYS ON ECONOMIC INEQUALITY IN JAPAN

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ABSTRACT

In this dissertation, I focus on a less-studied aspect of inequality, the distributional impact of quantitative easing policies in Japan. The Bank of Japan has first implemented quantitative easing between 2001 and 2006, but the size of asset purchases was small. The Bank of Japan has increased the size and scope of quantitative easing after the 2008 financial crisis. The focus of central banks across developed countries was to prevent a bigger crisis, so the distributional impact of the monetary policies implemented were mostly ignored, although this has been changing as of late. In the first part of this dissertation, I examine whether the quantitative easing policies implemented by the Bank of Japan has caused income and consumption inequalities to worsen. In the second part, I examine the preferences for redistribution in Japan, which is an important part of the inequality discussion. Knowing who wants more redistribution and why might help policymakers better design redistribution policies, and this, in turn, might help reduce social unrest caused by rising inequality.

Chapter 1 offers an introduction and explains the research plan. It also gives an overview of inequality in Japan and defines the terms "quantitative easing" and "redistribution preferences". Chapter 2 examines the impact of quantitative easing on income inequality in Japan. It finds that quantitative easing has increased income inequality in Japan. The estimated magnitude of this effect is small, and the magnitude of the effect changes dramatically based on the measure for income inequality. I find that "savings redistribution channel" (inflation) was not instrumental in how quantitative easing affected income inequality in Japan. "Earnings heterogeneity channel" (unemployment and labor income), although important for the EU, does not seem to be important for Japan, because of the labor market differences between Japan and the EU. Lastly, even though I find that quantitative easing has increased stock prices, I do not find evidence that "portfolio channel" (financial assets) has affected income inequality. This might be because the Nikkei 225 index used in the literature (and in this study) for this channel might not represent it well. Chapter 3 examines the same topic but considers consumption inequality, because income inequality alone likely does not reflect the full effects of quantitative easing on economic inequalities. It finds that quantitative easing has again increased consumption inequality in Japan, but the estimated magnitude of this

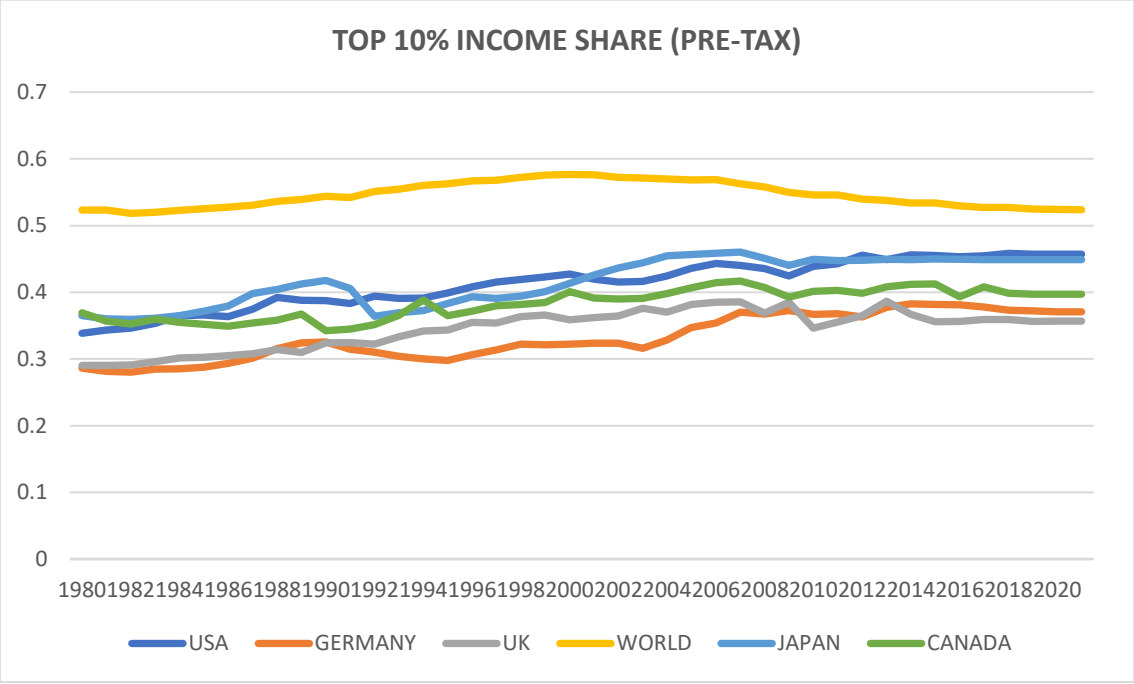
effect is much smaller than the effect on income inequality. One reason why consumption inequality did not change as much as income inequality could be that the effect of quantitative easing on incomes were temporary; so, these effects on incomes did not translate much into consumption changes. Another reason could be that, because the propensity to consume is higher for the low-income households, they likely spent a higher share of their income gains compared to high-income households, and this is why consumption inequality did not rise as much as income inequality. Chapter 4 examines the preferences for redistribution in Japan. It argues that in a climate of rising inequality, people would likely become more sensitive to issues of inequality and redistribution. Therefore, it becomes important for policymakers to know how people form their redistribution preferences. It finds that, although characteristics such as income, education, and political preferences that affect redistribution preferences have a similar effect in Japan compared with western countries, Japan is also different. Being female decreases the demand for redistribution in Japan instead of increasing it. And being affiliated with a religion increases the demand for redistribution instead of decreasing it. It also tests the effect of happiness and finds that happy people have a lower preference for government redistribution. A few points are especially relevant for Japan. This chapter shows that as people get older, their preference for government redistribution becomes stronger. This is important for Japan, because Japan's ratio of elderly population is one of the largest in the world. This, combined with the fact that (mostly) it is the elderly who vote —not the young— suggest that government needs to address the concerns of the elderly about inequality or risk losing votes. This chapter also shows that people who identify themselves as "happy" and people who have upward mobility expectations about the future are less likely to demand government redistribution. Therefore, it is important that people do not feel trapped in their current socio-economic conditions. In the context of shrinking middle-class in Japan and people getting trapped in temporary employment, even the slight rises in economic inequalities might amplify the social unrest.

CHAPTER 1

INTRODUCTION

Japan is not the most unequal country among OECD counties. It lies approximately in the middle across many measures of economic inequality such as income and wealth inequalities. However, Japan faces many challenges that might cause its economic inequalities to grow. Aging population, shrinking middle-class, and the rise in temporary employment —which are some of these challenges— have garnered much academic interest over the years. And recently, the effects of the COVID-19 pandemic on inequality are being discussed.

Figure 1. 1. Top 10% Income Share (Pre-Tax)

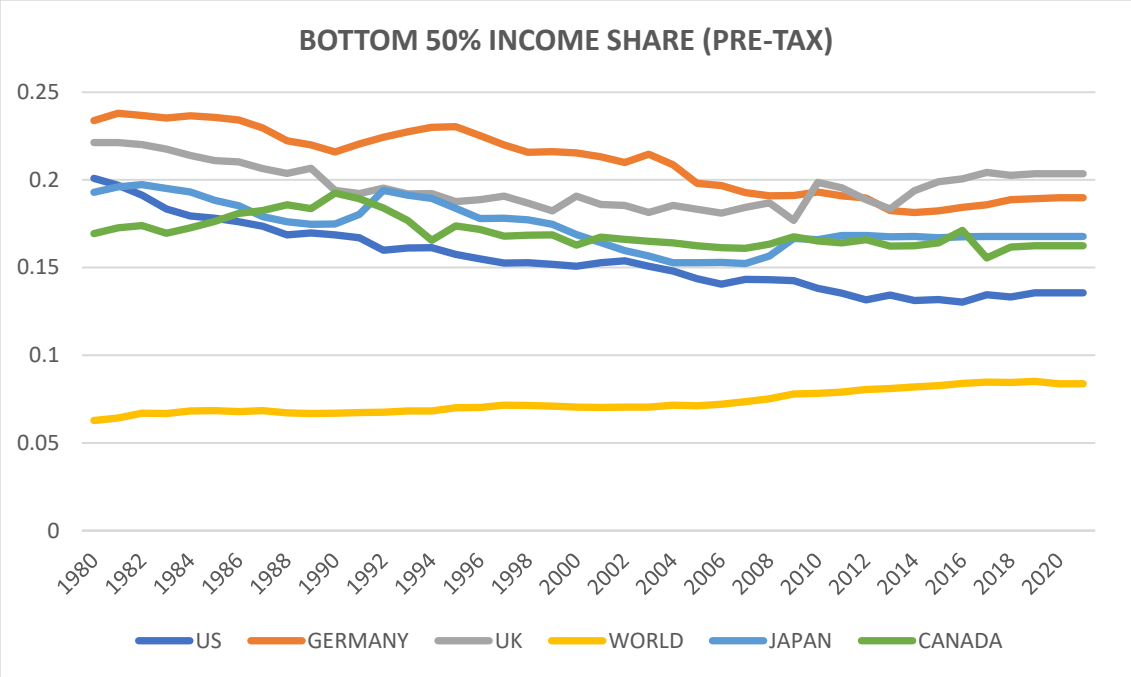


Source: World Inequality Database[1]

[1] Data obtained from https://wid.world/data/ on 7 May 2022.

Figure 1.1 shows that top 10% pre-tax income share in Japan has risen from about 0.35 to about 0.45 over the last 40 years. We observe a similar trend in other developed countries around the world, although the world average has not changed much.

Figure 1. 2. Bottom 50% Income Share (Pre-Tax)

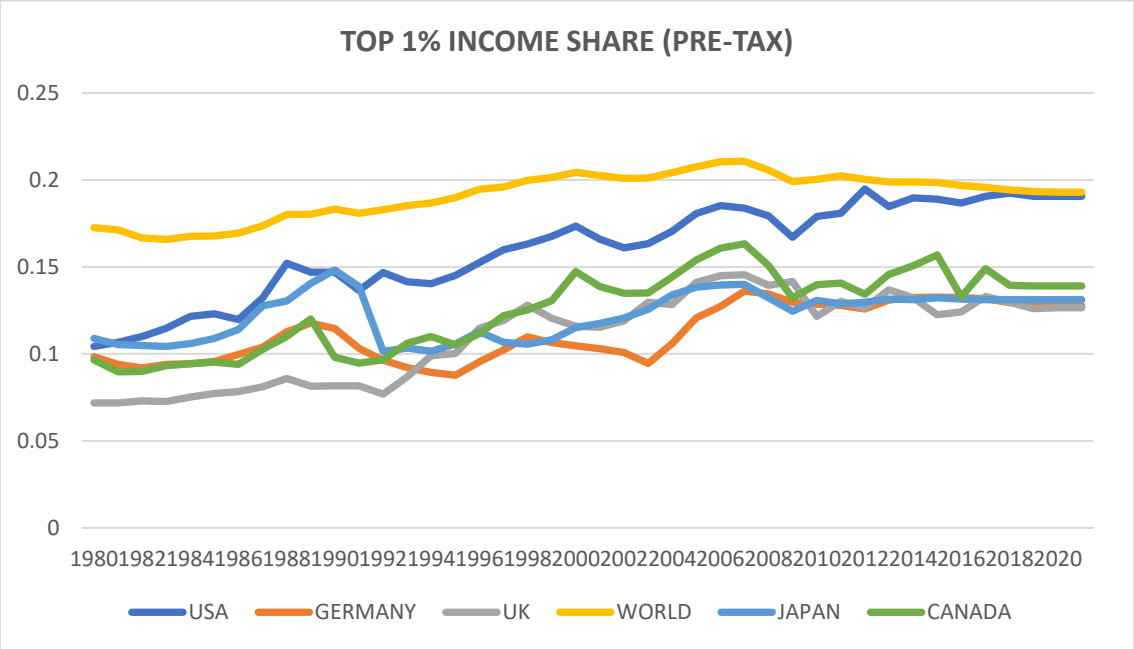


Source: World Inequality Database

Figure 1.2 shows that bottom 50% pre-tax income share in Japan has fallen from about 0.2 to about 0.17 over the last 40 years. We observe a steeper decline in the US and Germany compared to Japan, but the UK and Canada have observed smaller declines. The world average has risen over this period. These two figures suggest that income inequality has been rising in Japan. Even though taxes and redistribution remove some of

the discrepancies in incomes between the rich and the poor[2], this trend of worsening inequality might have negative social and economic consequences.

Figure 1. 3. Top 1% Income Share (Pre-Tax)



Source: World Inequality Database

Lastly, Figure 1.3 gives us an important insight into the nature of inequality in Japan. Top 1% income share is lower in Japan compared to the US, suggesting that the financial income of the richest part of the population is rather low in Japan (because financial income generally become more pronounced compared to labor income as income rises). In contrast, Figure 1.1 shows that top 10% income share is high in Japan, almost at the same level as the US. This suggests that labor income is important in Japan. And it reflects a duality in labor market, at the top there are high wage earners, and at the bottom there are irregular and temporary workers. This also suggests that any effect of

[2] Lise et al. (2014) find using four different datasets that after-tax income inequality has also risen in Japan after 1980s, albeit to a lesser extent compared to before-tax income inequality.

quantitative easing on economic inequalities through asset prices might be weaker in Japan.

This dissertation focuses on a less-studied aspect of inequality, the distributional effects of quantitative easing policies implemented (in earnest) after the 2008 financial crisis. This dissertation also examines the preferences for redistribution in Japan, which is an important part of the inequality discussion. Knowing who wants more redistribution and why might help policymakers better design redistribution policies. The following part briefly explains the terms "quantitative easing" and "preferences for redistribution".

Quantitative Easing

After the 2008 financial crisis, the focus of central banks across developed countries was to prevent a bigger crisis, so the central banks mostly ignored the distributional effects of the monetary policies that they implemented. The central banks have tried to stimulate the economy by buying long-term assets and by providing forward guidance that quantitative easing will continue. This new demand on long-term assets increases their prices and lowers their yields, therefore reduces long-term interest rates. So, it becomes more profitable for investors to move from these assets to other investment options, most prominently to the stock market. Another way that quantitative easing tries to stimulate the economy is by making money more abundant, therefore encouraging lending by banks, and encouraging borrowing by investors and consumers. The central banks argue that even though quantitative easing benefits the rich disproportionally at first glance — because the rich own most of the financial assets that gain value due to quantitative easing— quantitative easing also helps prevent a stock market crash; and by keeping the companies producing it prevents mass-unemployment, even boosts wages, and thus helps the poor also. This is a newer version of the trickle-down economics which argued that lowering the tax burden on the rich would make them wealthier, and because the rich have lower propensity to consume than the poor, they would invest more and this would increase the growth of the economy, which would benefit everyone, so the benefits to the rich trickles down to the rest of the population. However, critics argue that trickle-down economics does not work. Watkins (2014) argues that data does not support that the

benefits to the rich trickles down to the rest of the population enough. Stiglitz (2016) similarly argues that trickle-up economics, which is enriching the poor and the middle-class, benefits everyone, not trickle-down economics. Lastly, an IMF (2015) report finds that increasing the income share of the top 20% is associated with lower GDP growth, while increasing the income share of the bottom 20% is associated with higher GDP growth, suggesting that trickle-down economics does not work. In this dissertation, I will study the effects of quantitative easing on income and consumption inequalities in Japan —a forerunner in implementing quantitative easing— and check if benefits to the rich has trickled down to the rest of the population.

Preferences for Redistribution

The study of preference for redistribution relates to how much inequality are people comfortable with, how much government redistribution do they want, and what are the personal characteristics that affect these decisions. At first glance, it might seem like income would be the deciding factor in how much redistribution that people prefer. However, there are factors that affect people's redistribution preferences even more than income does, such as age, political views, and mobility expectations. For example, as people get older, they want government to provide more redistribution, most likely because their chances of earning income diminish due to retirement and illness. And because the population of Japan is getting older, people are likely getting more sensitive about inequality. And if monetary policy increases inequality, this will have a different effect on public opinion about government in Japan than it would have in another country because of different population characteristics. Therefore, in the second part of my dissertation, I study preferences for redistribution in Japan to provide the policymakers with a better understanding of the public's preferences about government's redistribution policies and help them better design targeted policies to alleviate negative effects of inequality.

Plan of Research

The contribution of the first half of this dissertation to the literature is twofold. In Chapter 2, I study the effects of quantitative easing on income inequality using a structural VAR model utilizing more recent data. The samples of existing studies for Japan end before capturing the full effects of quantitative easing, around 2014. However, the amount of purchases made under quantitative easing rises dramatically just after 2013 as part of Abenomics. Therefore, it is crucial to use data covering the period after 2013 to capture the full effects of quantitative easing. In Chapter 3[3], we study the effects of quantitative easing on consumption inequality, because income inequality alone might not reflect the entire distributional effects of quantitative easing. There are two possible explanations for this: First, income data alone might exaggerate the distributional effects of quantitative easing. For example, to the degree that asset holders have sold their assets at increased prices caused by quantitative easing, their incomes would have increased for a few periods. And because income data offers a snapshot of current incomes, we observe relatively large increases in income inequality. Consumption inequality, on the other hand, would likely not change as much, because people would probably base their consumption decisions on their 'permanent incomes', not on temporary rises in their incomes.[4] Second, income inequality might understate the distributional effects of quantitative easing. An individual whose assets have gained tremendous value, might increase his consumption without selling any of his assets, knowing that he can afford it, in that his 'permanent income' is much higher than before.[5] Income inequality would not capture this, while consumption inequality would. To the best of my knowledge, this is the first paper to consider consumption inequality in quantitative easing context in Japan. These two

[3] This is a joint paper written with Prof. Kang-Kook LEE.

[4] See Friedman (1957).

[5] Horioka (2021) concludes that the life-cycle model of saving and consumption is more applicable to Japan compared to Ricardian bequest model. This implies that people are more likely to increase their consumption after a rise in their wealth or incomes rather than saving to leave a bequest. Therefore, we should see a rise in consumption after a rise in wealth or incomes due to asset valuation, especially of the richer older people who are more likely to hold more assets and who have less years to spend their wealth. See also Flath (forthcoming, Ch. 5) for a discussion of saving and consumption in Japan.

chapters show that quantitative easing has increased both income and consumption inequalities in Japan, however, the rise is consumption inequality is lower. In the second half of this dissertation, Chapter 4, I study the preferences for redistribution in Japan using probit and ordered probit models and show that Japan has different characteristics compared to western countries —which the literature mostly focuses on. Moreover, in an environment of rising inequality people are likely to become more sensitive to the subjects of inequality and redistribution. Therefore, Chapter 4 provides the policymakers with valuable insights as to which parts of the population are likely to experience more dissatisfaction and help them better design tax and redistribution policies to alleviate public unrest. Chapter 5 concludes this dissertation.

CHAPTER 2

THE IMPACT OF QUANTITATIVE EASING ON INCOME INEQUALITY IN JAPAN

2.1. Introduction

After the 2008 financial crisis, central banks of the developed countries found themselves facing near-zero interest rates. They were unable to lower the interest rates further to stimulate the economy and hopefully end the crisis. Therefore, they resorted to unconventional monetary policies to achieve this. The most prominent of these were large-scale asset purchase programs, also known as quantitative easing. Quantitative easing differs from open market operations by its scope and scale. Instead of just buying short-term government bonds, central banks also buy long-term and riskier assets and even shares of private companies to increase economic activity. We do not know how effective the quantitative easing has been, but there seems to be a consensus that the economies would have been in a worse state without it. However, quantitative easing might have come with a heavy price in the form of worsening inequality. The distributional impact of these policies is mostly ignored by central banks because their focus has been on stabilizing the economy.

Channels: How Might Quantitative Easing Affect Inequality

There is not yet an agreed upon naming scheme for channels through which quantitative easing might affect economic inequalities and even the number of channels differs across the literature. However, these differences are mostly trivial and arise from personal preference —for example, some researchers think certain channels are not important and do not mention them. Despite this, we understand how quantitative easing might affect

economic inequalities fairly well. In this dissertation, I will use the classification proposed by Coibion et al. (2017) because it is widely accepted.[6] These five channels are:

1) Income Composition Channel

Income composition refers to people's various sources of income, such as labor, financial, and transfer incomes. Because the shares of these sources in one's total income vary across the income distribution, changes in these incomes would naturally affect people differently based on their income compositions. For example, rising financial incomes would benefit the rich more, because they hold most of the financial assets; while rising labor incomes would benefit the poor more, because labor incomes constitute a higher share of their incomes compared to the rich.

2) Financial Segmentation Channel

This channel refers to being connected to financial markets. It suggests that people who are more connected to financial markets and trade frequently will be better able to take advantage of the initial effects of monetary policy. Whereas unconnected people who trade infrequently are only indirectly affected by monetary policy (Williamson, 2009).

3) Portfolio Channel

This channel refers to the heterogeneity in asset holdings of people. The poor hold a higher share of their assets in cash, while the rich hold a higher share of their assets in other type of financial assets such as stocks and bonds. An expansionary monetary policy that increases inflation would hurt the poor by diminishing the value of their cash holdings.

[6] However, their preferred naming for (and classification of) channels is not always intuitive, and sometimes certain channels overlap. Therefore, when interpreting my empirical results, I will prefer saying, "Quantitative easing has increased income inequality through increased asset prices", instead of "…through portfolio channel."

Similarly, an expansionary monetary policy that increases asset prices would benefit the rich by making their asset holding more valuable.[7]

4) Savings Redistribution Channel

This channel refers to income transfer between lenders and borrowers caused by changes in inflation and interest rates after a monetary policy action. To the extent that quantitative easing has increased inflation and decreased interest rates, it benefitted the borrowers.

5) Earnings Heterogeneity Channel

This channel refers to labor income and unemployment. To the extent that monetary policy affects labor incomes of various income groups differently, it affects inequality. For example, changes in the unemployment rate and the minimum wage are likely to affect the poor more, because labor income is the biggest share of their incomes. Differences in unionization and stickiness of nominal wages in different sectors of the economy are also likely to affect inequality by benefiting certain groups more. One of the main aims of the central banks of the developed countries was to prevent mass-unemployment after the 2008 financial crises. And they hoped quantitative easing would stimulate the demand and keep the companies producing and prevent them from laying off workers.

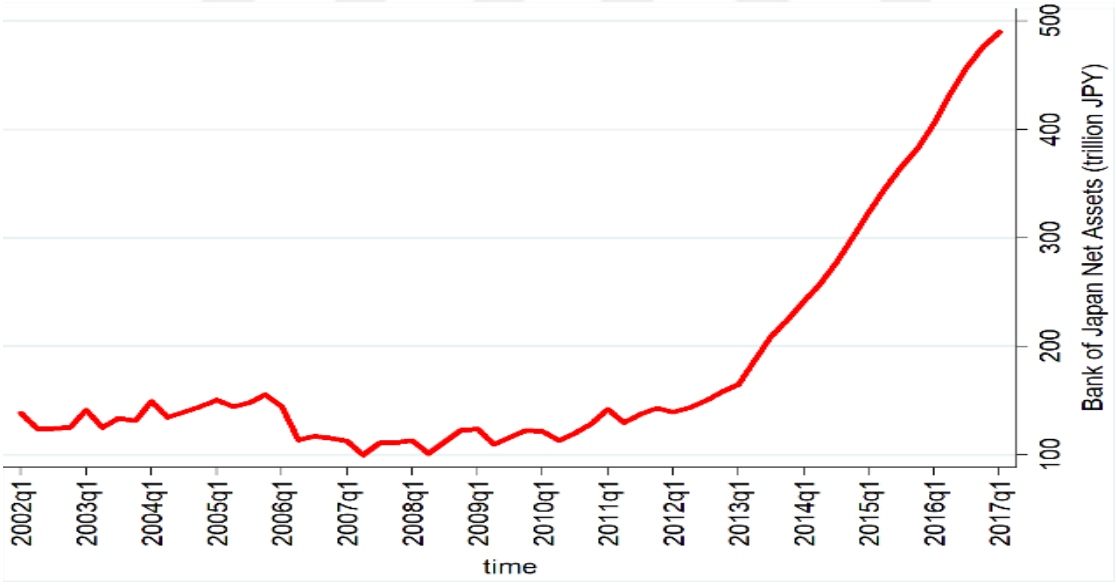
The lack of income and wealth micro-data prevents me from uncovering exactly how each of these channels have been at play in Japan. However, the semi-aggregate data that I use can still provide useful information about how quantitative easing has affected economic inequalities, provided I make some sensible assumptions in my empirical models. For example, average annual wages[8] have barely changed in Japan since 2008. Furthermore, labor income differences between the top and bottom earners are lower in

[7] In a 2012 report, the Bank of England revealed that 40% of the gains of its asset purchases went to the top 5% of the population.

[8] https://stats.oecd.org/Index.aspx?DataSetCode=AV_AN_WAGE#

Japan compared to most other Asian countries[9] (also compared to western developed countries) to begin with. These two facts suggest that earnings heterogeneity channel is likely not the main channel through which quantitative easing affects inequality in Japan. Similarly, unemployment has been a non-issue in Japan for a long time, proven by the fact that Japan has been importing workers from neighboring countries. And the slight fall in unemployment rate in recent years is likely caused by shrinking labor force due to aging population, not because quantitative easing has been creating new jobs. Inflation also has not changed much in Japan. This leaves us with the changes in asset prices, which quantitative easing has affected greatly (portfolio channel). The stock market more than doubled after 2008 and I argue that this is the main channel through which quantitative easing has affected inequality in Japan, by unproportionally benefiting the rich who own most of the financial assets.

Figure 2. 1. The Net Assets of Bank of Japan



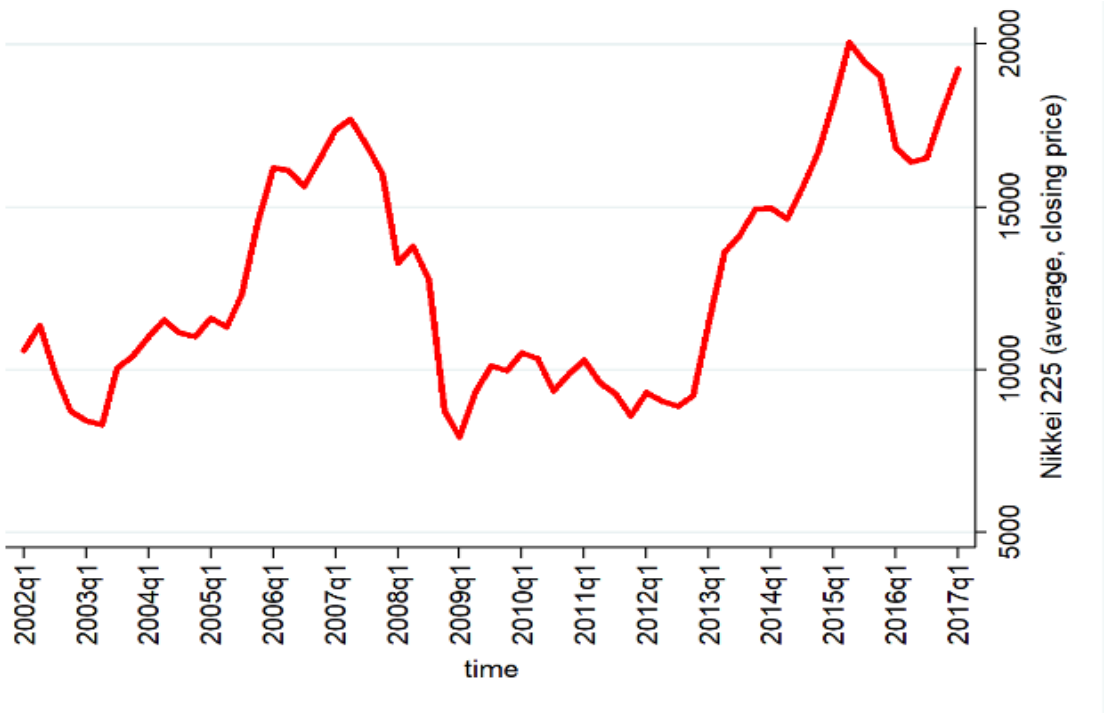
Source: Bank of Japan[10]

[9] https://www.hays.co.jp/en/salary-guide

[10]Data obtained from https://www.stat-search.boj.or.jp/ssi/cgi-bin/famecgi2?cgi=$nme_s060_en in December 2019.

Figure 2.1 shows the unprecedented asset purchases made by Bank of Japan, especially after 2013. Figure 2.2 shows that stock prices have followed the upward movement in Bank of Japan assets, although it is not certain that there is a causal relationship between the two at first glance.[11]

Figure 2. 2. Timeline of the Nikkei 225 Index



Source: Yahoo Finance

This chapter is organized as follows: Section 2.2 reviews the literature. Section 2.3 explains the data. Section 2.4 explains the model and shows the results of the estimations. Lastly, Section 2.5 concludes the chapter.

[11] Figure 3.10 (4th row, middle graph) shows that quantitative easing has indeed increased stock prices in Japan. Although it is small, this effect remains statistically significant for the first three quarters after the initial shock.

2.2. Literature Review

There are not many studies that focus on the distributional effects of monetary policy before the 2008 financial crisis. Romer and Romer (1999) find that expansionary monetary policy creates improved conditions for the poor in the short run, but they argue that low inflation and stable aggregate demand is better for the poor in the long run. Similarly, Albanesi (2007) find that inflation created by expansionary monetary policy increases income inequality.

After the 2008 financial crisis, the quantitative easing policies implemented by the central banks of the developed countries caused much academic interest and resulted in many studies relating to distributional effects of monetary policy. Notably, Coibion et al. (2017) find for the US that contractionary monetary policy increases income inequality. They use the 'Consumer Expenditure Survey' to calculate Gini coefficients and note that the survey has a limitation on including the top 1% of the income earners in the sample. Davtyan (2017), argues that the top 1% makes all the difference and find that contractionary monetary policy decreases income inequality instead of increasing it. However, she uses OECD data for Gini coefficients, which is constructed by using the 'Current Population Survey' for the US., and it likely suffers from the same issues that other surveys suffer such as under-representation of top income earners and under-reporting of incomes and spending. Therefore, the difference between the two studies might not be due to the inclusion of top 1%, but due to their sample periods, Coibion et al. (2017) end their sample in 2008, while Davtyan (2017) ends her sample in 2012 and was able to capture some of the effects of quantitative easing. Besides these, there are numerous academic papers that focus on a single or a panel of countries using variety of empirical methods such as VAR, SVAR, VECM, local projections, large-scale econometric models, DSGE models, and data and counterfactual analyses. The decision of which model to use depends on several factors such as, data availability and data characteristics, as well as country characteristics; and each model has its own advantages and disadvantages. That said, structural VAR models have been one of the workhorse models used by central bankers and academics alike (after Sim's critique in Sims (1980)) for policy evaluation and forecasting.

Overall, the literature[12] finds mixed results and the distributional effects of monetary policy are mostly modest in both directions. That said, two channels seem to have the driving effect of quantitative easing on economic inequalities, *earnings heterogeneity* (unemployment and labor income) and *portfolio* (financial assets) channels. In countries where quantitative easing was able to lower the unemployment rate and drive-up labor incomes of the poor, it had a negligible or even a positive effect on inequality. Lenza and Slacalek (2021) find for the Euro area (France, Germany, Italy, and Spain) that quantitative easing has reduced income inequality mostly by reducing the unemployment (they find quantitative easing has not affected wages much). However, in countries where quantitative easing has not had a meaningful effect on these aspects of the economy, it had a worsening effect on inequality, because the rich received most of the benefits through the rise in asset prices that they hold while the poor have not benefited much.

For Japan, there is more of a consensus that quantitative easing has slightly increased income inequality. This is likely because the poor have not received the offsetting benefits through a rise in their labor incomes or through a fall in unemployment, while the rich have benefited through the rise in asset prices.

Saiki and Frost (2014) use data from Family Income and Expenditure survey and study the distributional effects of quantitative easing on income inequality. Theirs is the first paper that empirically studies this topic in Japan. They find that quantitative easing has increased inequality in Japan by benefiting the rich through financial gains (portfolio channel). However, their study ends before capturing the effects of the asset purchases that started at 2013Q3 as part of Abenomics. This is important because the scale of these purchases was unprecedentedly high. Also, they do not provide robust evidence that quantitative easing has affected inequality through portfolio channel in Japan, because the effect of Nikkei 225 index (their measure for stock prices) on their inequality measures are mostly insignificant. They update their previous study (Saiki and Frost,

[12] See Colciago et al. (2019) for a literature survey. They conclude that the distributional effects of both conventional and unconventional monetary policies are mixed.

2020) to include wages and unemployment in their estimations (thus focusing on earnings heterogeneity channel). They find that quantitative easing did not have any significant effect on reducing unemployment and find only weak evidence that it had a small effect on increasing wages. They argue that this small rise in wages (because the real wages have not changed much in Japan) mostly benefited the high wage earners, while temporary employment has risen at the bottom. Therefore, this might be one of the reasons why quantitative easing has increased income inequality in Japan.

Inui et al. (2017) use the same dataset as Saiki and Frost (2014) with one difference; they have access to the micro dataset, while Saiki and Frost (2014) use semi-aggregate data. They use local linear projections to estimate the distributional effects of both conventional and unconventional monetary policies. They find that conventional expansionary monetary policy up to 1998 increases inequality. However, when they extend the sample period to 2008 to include at least the initial effects of unconventional monetary policy, this effect becomes insignificant. Overall, they conclude that quantitative easing has had negligible effect on income inequality in Japan.

Israel and Latsos (2020) use Household Survey data from Keio University covering 2003-2014. They use linear panel regressions and find that quantitative easing is associated with higher inequality in Japan. Specifically, they argue that quantitative easing might increase the pay gap between the skilled and unskilled workers.

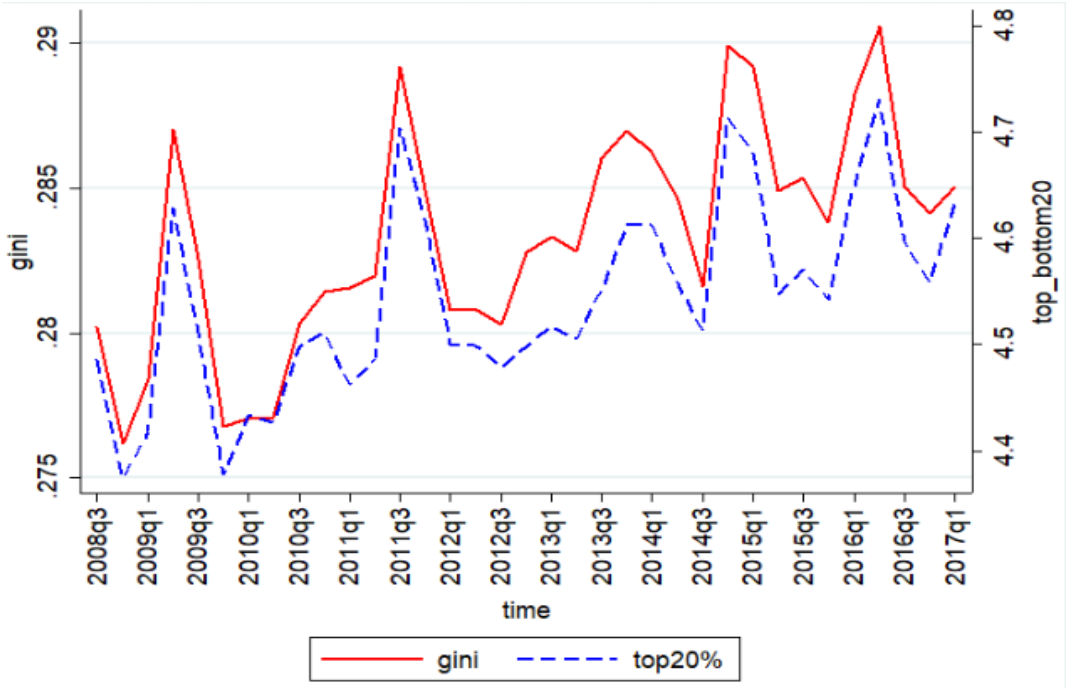
Following Saiki and Frost (2014), I use a structural VAR model to estimate the effects of quantitative easing on income inequality. I use more recent data compared to the studies mentioned above, which should help by capturing the effects of quantitative easing better.

2.3. Data

I use data from the 'Savings and Liabilities' subset of the Family Income and Expenditure Survey of the Japanese Cabinet Office to calculate income inequality in Japan. Around 7,000 households covering all of Japan are surveyed monthly, but the results are reported quarterly. Therefore, I use quarterly data. Each household is surveyed for six months and

then replaced. This diminishes the benefits of micro-data for this survey —which is not available for public use. Therefore, I use the aggregated data. Following Saiki and Frost (2014), I start my sample period from 2008Q3. This is roughly the beginning of the second phase of quantitative easing in Japan. The first phase was between 2001 and 2006, but the purchases in this phase have mostly been reversed. And I include the data up to 2017Q1, while Saiki and Frost (2014) use data up to 2014Q1.

Figure 2. 3. Timeline of Inequality Measures, 2008q3 – 2017q1 (Gini Coefficient and the Ratio of the Top 20% to the Bottom 20%)



Source: Author's calculation using 'Savings and Liabilities Survey

Figure 2.3 shows that *Gini coefficient* has risen from 0.280 to 0.285, and *the ratio of top 20% to bottom 20%* has risen from around 4.5 to 4.7 during my sample period. These numbers translate to 1.7% increase for *Gini coefficient* and 4.4% increase for *the ratio of top 20% to bottom 20%*. Because the gap between the top and the bottom of the income distribution is reflected more strongly in *the ratio of top 20% to*

bottom 20% compared to *Gini coefficient*, this gives us an insight as to how inequality has changed in recent years in Japan.

Table 2. 1. Descriptive Statistics of the Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Real GDP (in trillions of Yen)	35	501.75	15.82	463.74	525.93
Inflation (YoY CPI Headline)	35	0.25	1.31	-2.2	3.56
BoJ Assets (divided by nominal GDP)	35	0.43	0.22	0.21	0.9
Monetary Base (divided by nominal GDP)	35	0.37	0.2	0.17	0.8
Stock Prices	35	12935.01	3898.61	7924.66	20058.13
Gini	35	0.28	0.003	0.27	0.29
Top_Bottom20%	35	4.54	0.09	4.37	4.73

Note: As a proxy for quantitative easing, I use Bank of Japan Assets and Monetary Base (both divided by nominal GDP). My inequality variables are Gini coefficient and the ratio of the top 20% to the bottom 20%.

2.4. Empirical Analysis

I use the following structural VAR model originally proposed by Sims (1980) to see the impact of quantitative easing on income inequality:

$$Y_t = [GDP_t, inf_t, M_t, S_t, ineq_t]$$

where

GDP_t = Real GDP in yen, seasonally adjusted (source: Japanese Cabinet Office)

Inf_t = Year-over-year CPI headline inflation (source: Statistics Bureau of Japan)

M_t = Net assets held by Bank of Japan, seasonally adjusted and divided by nominal GDP (source: Bank of Japan)

S_t = Nikkei 225 Index (source: Yahoo Finance)

$Ineq_t$ = The ratio of the top 20% of the population to the bottom 20% (source: Author's calculation using 'Savings and Liabilities' survey)

I take the first difference of natural logs of GDP, monetary policy (M) and stock prices (S). I also take the first difference of YOY inflation. After these transformations, all variables are stationary at the 5% level of significance. The sample period is from 2008Q3 to 2017Q1. I use 4 lags based on the Akaike and Hannan-Quinn information criterions.

Lastly, following Saiki and Frost (2014), I use two exogenous dummy variables to capture the effects of 'the Great Earthquake' of 2011 and the following income transfer responses, because these had an important impact on inequality. 'eq' takes the value of 1 in 2011Q2 and 2011Q3 to capture the impact of the earthquake and 'eqres' takes the value of 1 in 2011Q4 and 2012Q1 to capture the responses. Both take the value of 0 otherwise.

To obtain the pure monetary policy shock, I need to place some identifying restrictions.[13] To do this, I make use of a recursive short-run matrix to place restrictions on the contemporaneous effects among variables. This causes each variable to not be contemporaneously affected by the variables that come after them in the VAR framework. For example, monetary policy (M) contemporaneously affects stock prices (S) and inequality, but it does not have any contemporaneous effect on GDP and inflation.

In more detail, suppose we have the following structural VAR model:

$$AX_t = \beta_0 + \beta_1 X_{t-1} + u_t \qquad (1)$$

Where *A* defines the contemporaneous relations between the variables, *X* is the vector of endogenous variables, and *u* is the structural shocks. Let us assume that we only

[13] For more details, please refer to Christiano et al. (1999)

have two variables, *y* and *z*, for ease of demonstration. Then, we can write Equation (1) as follows:

$$y_t + a_{12}z_t = \beta_{10} + \beta_{11}y_{t-1} + \beta_{12}z_{t-1} + u_{yt} \qquad (2)$$

$$a_{21}y_t + z_t = \beta_{20} + \beta_{21}y_{t-1} + \beta_{22}z_{t-1} + u_{zt} \qquad (3)$$

We can also write Equations (2) and (3) in a matrix form:

$$\underbrace{\begin{bmatrix} 1 & a_{12} \\ a_{21} & 1 \end{bmatrix}}_{A}\begin{bmatrix} y_t \\ z_t \end{bmatrix} = \begin{bmatrix} \beta_{10} \\ \beta_{20} \end{bmatrix} + \begin{bmatrix} \beta_{11} & \beta_{12} \\ \beta_{21} & \beta_{22} \end{bmatrix}\begin{bmatrix} y_{t-1} \\ z_{t-1} \end{bmatrix} + \begin{bmatrix} u_{yt} \\ u_{zt} \end{bmatrix} \qquad (4)$$

Each equation in the VAR framework is solved using OLS to obtain the unknown parameters. Unfortunately, we cannot solve Equation (4) directly, because there are too many unknown parameters. However, we can multiply each side of Equation (1) by the inverse of Matrix A to get:

$$A^{-1}AX_t = A^{-1}\beta_0 + A^{-1}\beta_1 X_{t-1} + A^{-1}u_t \qquad (5)$$

Rearranging Equation (5) gives us:

$$X_t = G_0 + G_1 X_{t-1} + e_t \qquad (6)$$

Equation (6) is called reduced-form VAR, because we do not have any contemporaneous effects between the variables, there are only lagged effects. Each variable is affected only by the lagged values of its own and the lagged values of other variables in the system. We can also write Equation (6) in a matrix form:

$$\begin{bmatrix} y_t \\ z_t \end{bmatrix} = \begin{bmatrix} g_{10} \\ g_{20} \end{bmatrix} + \begin{bmatrix} g_{11} & g_{12} \\ g_{21} & g_{22} \end{bmatrix}\begin{bmatrix} y_{t-1} \\ z_{t-1} \end{bmatrix} + \begin{bmatrix} e_{yt} \\ e_{zt} \end{bmatrix} \qquad (7)$$

We can now solve Equation (6) to obtain the parameters, because we will use them in the structural VAR model. Now, if we multiply both sides of Equation (6) by Matrix A, we will reverse what we did earlier (multiplying both sides of Equation (1) with the inverse of Matrix A) and get back to Equation (1). However, this time we know most of the parameters. Note that:

$$G_0 = A^{-1}\beta_0 \qquad (8)$$

And when we multiply it by Matrix A, we get back to β_0, because AA^{-1} is identity matrix:

$$AG_0 = AA^{-1}\beta_0 \qquad (9)$$

When we solved Equation (6), we obtained the following 9 parameters (easier to understand if we look at the Equation (7)): 6 coefficients g_{10}, g_{20}, g_{11}, g_{12}, g_{21}, g_{22}, and 2 variances and 1 covariance from the variance-covariance matrix of the errors e_t. However, Equation (1) (again, easier to understand if we look at the Equation (4)) has 10 parameters: 8 coefficients a_{12}, a_{21}, β_{10}, β_{20}, β_{11}, β_{12}, β_{21}, β_{22}, and 2 variances from u_t.[14] So, we have 10 unknows in the SVAR, but we only have 9 knowns from our reduced-form VAR estimations. We need to eliminate 1 more unknown[15] to be able to estimate the SVAR. This is where imposing restrictions comes to play, also known as identification.

There are several ways to impose restrictions in a SVAR. We can impose short-run and long-run restrictions, we can also impose sign restrictions. Long-run restrictions are usually imposed when we think a variable will have no effect in the long-run, such as money supply (neutrality of money). In the current context, short-run restrictions are more suitable. Recall that Matrix A defined the contemporaneous relations between variables:

$$\text{Matrix A} = \begin{bmatrix} 1 & a_{12} \\ a_{21} & 1 \end{bmatrix} \qquad (10)$$

We can use recursive factorization to equate the elements above the diagonal in Matrix A to 0. Note that there is only a single element above the diagonal, a_{12}, therefore we impose only 1 restriction which is what we needed:

$$\text{Matrix A with restrictions} = \begin{bmatrix} 1 & 0 \\ a_{21} & 1 \end{bmatrix} \qquad (11)$$

After this transformation Equations (2) and (3) become:

---

[14] Note that we do not have any covariances in a SVAR, because structural shocks in u_t are independent of each other. This allows us to make causal inferences using SVAR.

[15] The formula for the minimum number of restrictions is $(n^2 - n)/2$, where n = number of variables.

$$y_t = \beta_{10} + \beta_{11} y_{t-1} + \beta_{12} z_{t-1} + u_{yt} \qquad (12)$$

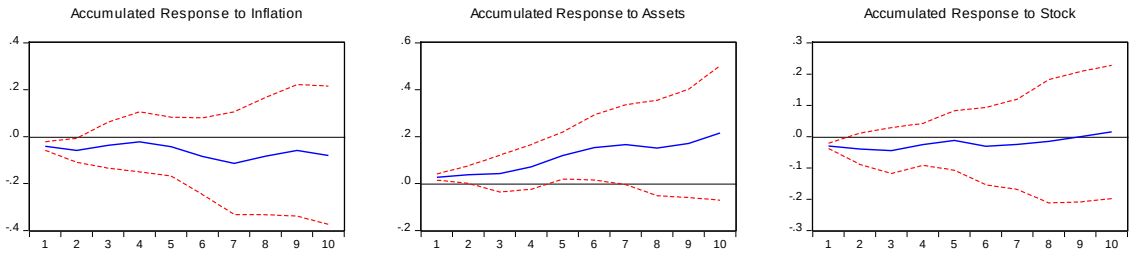
$$a_{21} y_t + z_t = \beta_{20} + \beta_{21} y_{t-1} + \beta_{22} z_{t-1} + u_{zt} \qquad (13)$$

The implication of this restriction on Matrix A is that y_t is only affected by the lagged values of itself and the lagged values of z_t, which means z_t does not contemporaneously affect y_t anymore. Note that recursive factorization is just a mathematical tool to impose the required minimum number of restrictions. If we put z_t before y_t in our model, then recursive factorization would make it so that y_t does not contemporaneously affect z_t, rather than the opposite. This is why ordering of variables is crucial in structural VAR models and we need to use economic theory to help us make that decision.

Estimation Results

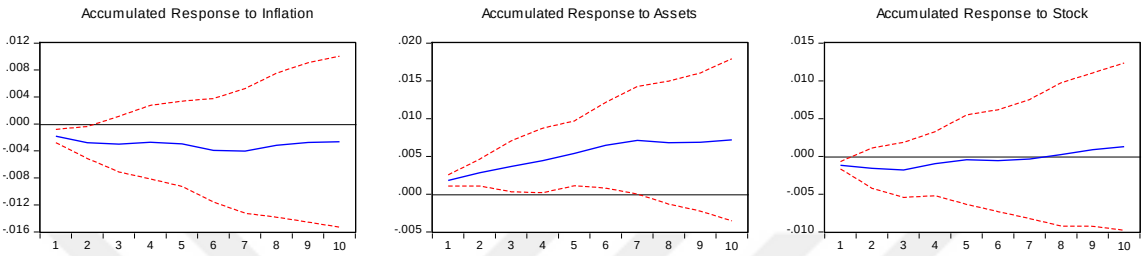
The coefficients in a SVAR model obtained by the OLS estimations are not directly used for interpretation, instead we use "impulse response functions" or "variance decomposition" to interpret the results. Figure 2.4 shows the impulse response functions for the main model. A positive one-standard-deviation shock to assets held by the Bank of Japan increases income inequality by 0.2 percentage points, which is twice the effect found by Saiki and Frost (2014). This is not surprising, because their study ends just two quarters after quantitative easing had started in an unprecedented scale at 2013Q3, before capturing its full effect.

Figure 2. 4. Impulse responses of inequality (the top 20% to the bottom 20%), structural decomposition, two standard deviation confidence intervals



However, when I change the inequality measure from *the ratio of the top 20% to the bottom 20%* to *the Gini coefficient,* the impact of quantitative easing on inequality

Figure 2. 5. Impulse responses of inequality (Gini coefficient), structural decomposition, two standard deviation confidence intervals



becomes extremely small (Figure 2.5). The magnitude of this effect is similar to what Saiki and Frost (2014) find when using Gini coefficient, however, their result becomes statically insignificant. The reason my result is statistically significant is, again, probably due to using more recent data and being able to capture the effects of quantitative easing better. The reason the magnitude of the effect of quantitative easing becomes smaller when using Gini might be because these two measures of inequality reflect different aspects of inequality. The gap between the bottom and the top of income distribution is more pronounced when using *the ratio of the top 20% to the bottom 20%*. Therefore, my results suggest that quantitative easing has affected this gap more, either by benefiting the top of the income distribution or hurting the bottom.

Changing the decomposition method from structural decomposition to generalized impulse responses gives very similar results for the impact of quantitative easing on inequality (Figure 2.6).

Figure 2. 6. Generalized impulse responses of inequality (the top 20% to the bottom 20%), two standard deviation confidence intervals

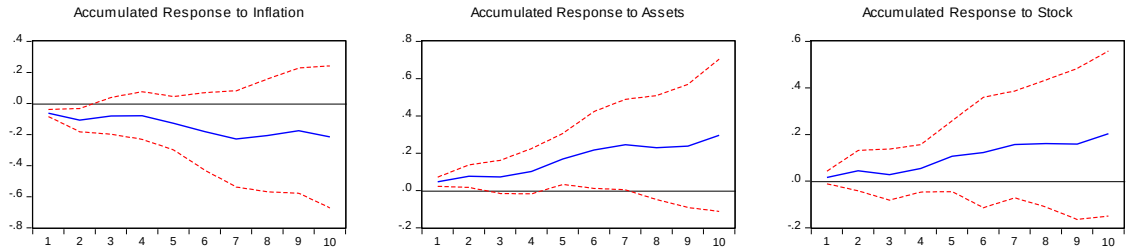
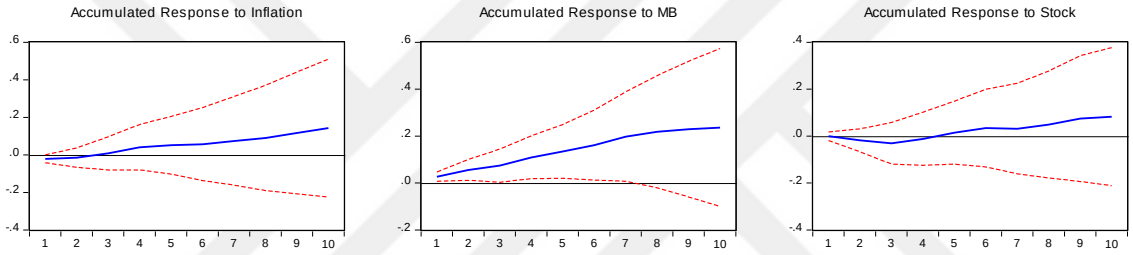


Figure 2. 7. Impulse responses of inequality (the top 20% to bottom 20%), structural decomposition, two standard deviation confidence intervals, different variable for quantitative easing (monetary base)



Lastly, changing the measure for quantitative easing from *Bank of Japan assets* to the *monetary base* (divided by nominal GDP) does not affect the impact of quantitative easing on inequality. This suggests that my results do not depend on the choice of variable for quantitative easing (Figure 2.7).

The impact of inflation and stock prices on inequality stays mostly insignificant in all the estimations. The inflation has a statistically significant negative effect for the first two periods in Figure 2.4 and Figure 2.5. And the stock prices have a statistically significant negative effect for the first period only in Figure 2.4 and Figure 2.5. However, even when they are significant, all these effects are negligibly small. Overall, my results do not support the *savings redistribution channel*[16]. The *earnings heterogeneity channel*

[16] This channel suggests that quantitative easing would hurt the savers by increasing the inflation. And the poor hold a greater share of their income as currency, making them more vulnerable to inflation.

also seems to be much less important for Japan, especially compared to the EU. Quantitative easing has reduced income inequality in the EU via this channel by lowering the unemployment rate (wages has not changed much). Japan has not experienced many changes in the unemployment rate, it was 4% in 2008 and 3% in 2020. This fall is probably due to structural reasons (e.g., aging population), not due to the benefits of quantitative easing. Also, labor market is less sensitive to business cycle in Japan, compared to the EU. Furthermore, the fall in unemployment rate should reduce income inequality, not increase it. Therefore, the *earnings heterogeneity channel* likely was not effective in Japan. Saiki and Frost (2020) provide some evidence that quantitative easing did not affect employment, but increased wages in some sectors. Even though this effect was small, they argue that this increase in wages affected already high wage sectors such as IT and real estate, and this was one of the reasons why quantitative easing increased income inequality in Japan. Lastly, even though my results show that quantitative easing has increased stock prices, the effect of stock prices on my inequality measures are mostly insignificant. One likely reason for this might be that the Nikkei 225 index does not fully represent the *portfolio channel*. Because it does not capture the gains obtained from stocks others than the stocks of Nikkei 225 companies, gains from foreign stocks, and gains from other financial assets. A further study that utilizes micro-data might help answer these questions.

2.5. Conclusion

I use a structural VAR model to estimate the impact of quantitative easing policies on income inequality in Japan. My results suggest that quantitative easing has increased income inequality. One standard deviation upward innovation in monetary policy increases inequality by 0.2 percentage points. This effect is robust to the monetary policy variable and to the decomposition method used. However, changing the inequality variable from the ratio of *the top 20% to the bottom 20%* to *the Gini coefficient* dramatically reduces the estimated magnitude of this effect, although the effect stays statistically significant. The channels through which quantitative easing has affected income inequality is less obvious. The effect of savings redistribution channel was

insignificant. The effects of earnings heterogeneity channel were also much less important in Japan compared to the EU, although wage increases that mostly benefited the already high wage sectors might have played a role in increasing the income inequality. Lastly, although quantitative easing has increased the stock prices, stock prices does not seem to have a significant effect on income inequality. However, this should not be interpreted as the unimportance of the portfolio channel. Because the Nikkei 225 index used in the literature and in this study might not represent the portfolio channel fully. Gains from rises in foreign stock prices, from stocks other than Nikkei 225 company stocks, and from other financial assets might have played a role in increasing the income inequality. A further study is needed to investigate these effects.

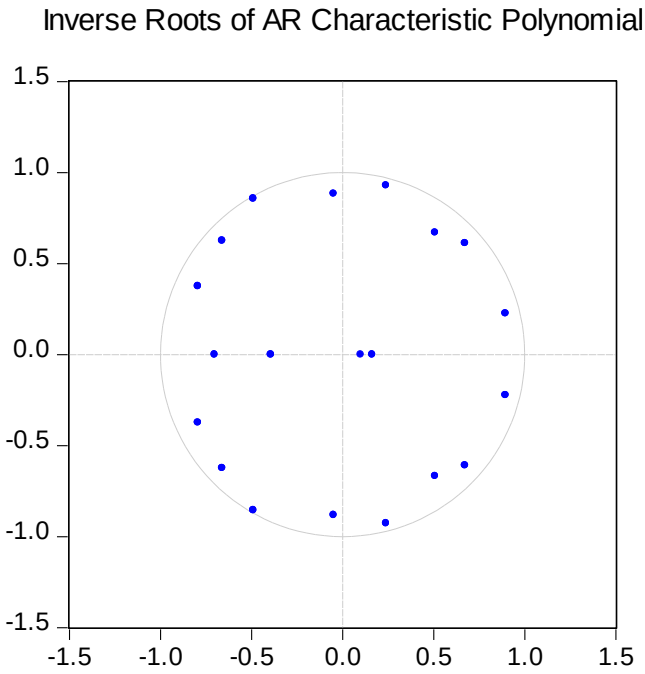
APPENDIX

Table 2. 2. VAR Residual Serial Correlation LM Tests

Null hypothesis: No serial correlation at lag h						
Lag	**LRE* stat**	**Df**	**Prob.**	**Rao F-stat**	**df**	**Prob.**
1	41.053	25	0.0227	2.22353	(25, 5.2)	0.1837
2	42.5488	25	0.0157	2.4512	(25, 5.2)	0.1546
3	33.3127	25	0.1234	1.3221	(25, 5.2)	0.4056
4	27.374	25	0.3375	0.8644	(25, 5.2)	0.6418
**Edgeworth expansion corrected likelihood ratio statistic.*						

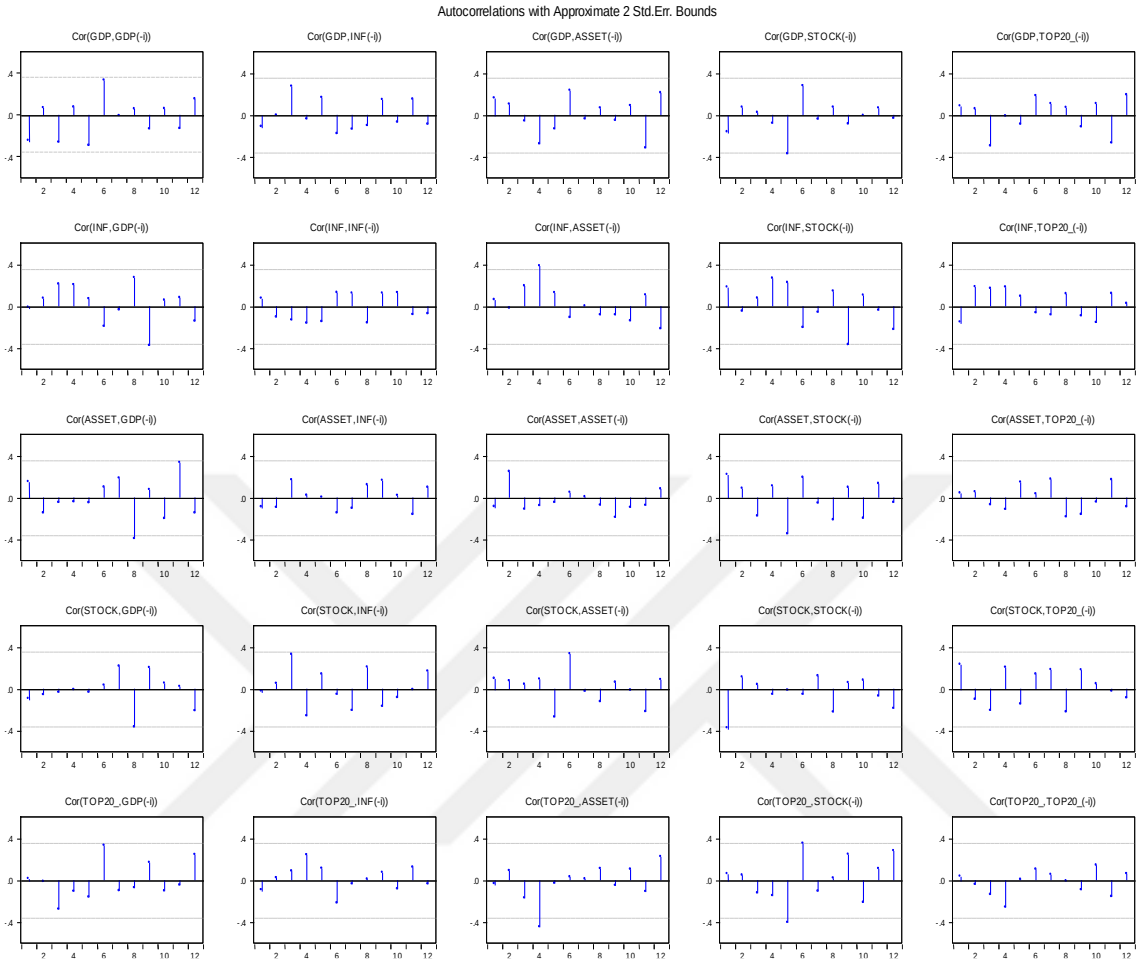
Note: We cannot reject the hypothesis that 'there is no serial correlation at lag 4, so we can say that there is no autocorrelation when using 4 lags.

Figure 2. 8. AR Roots Graph (4 Lags)



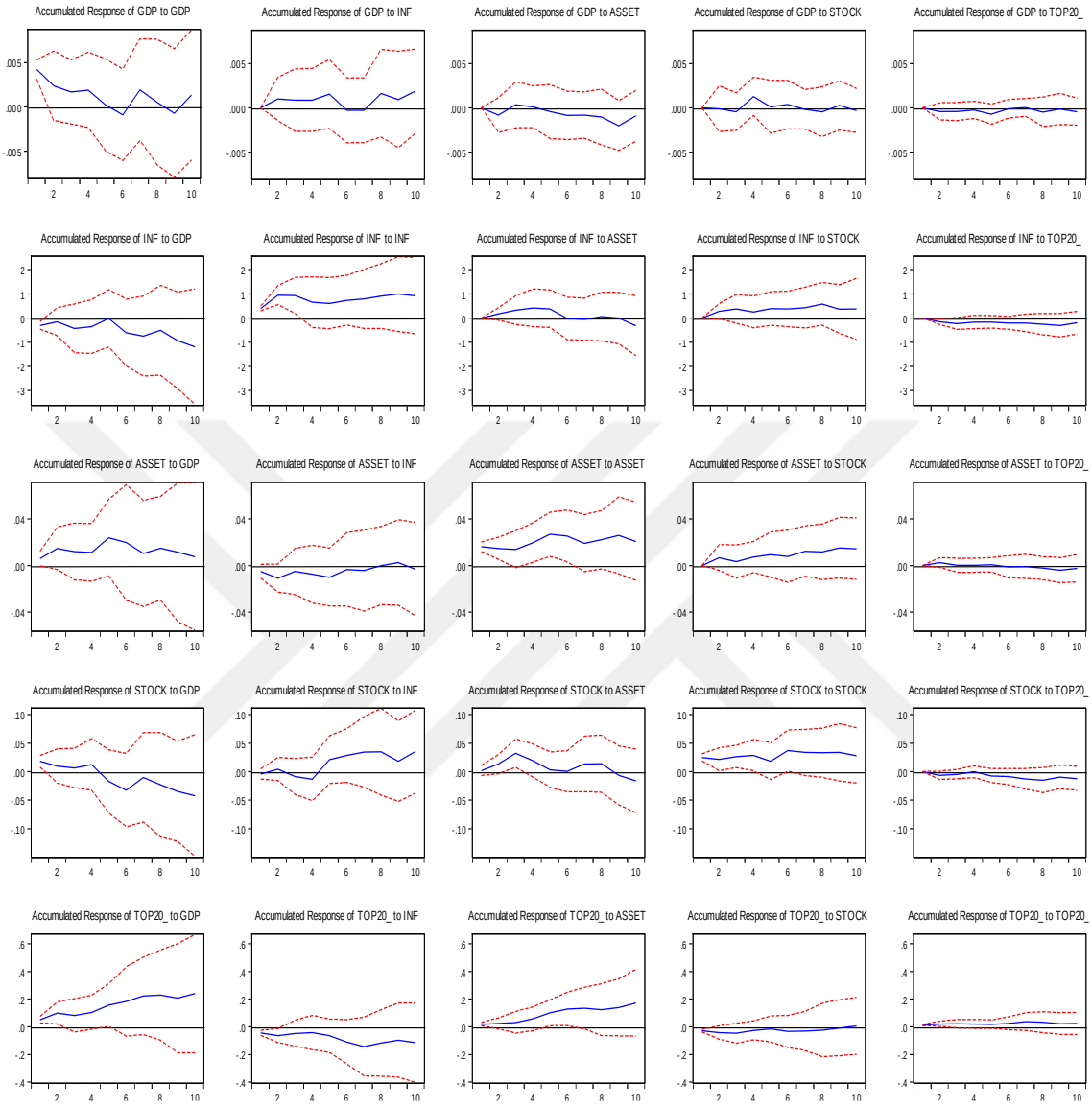
Note: All values are within the circle -which shows that the VAR system is stable.

Figure 2. 9. Correlograms



Note: All values (with a very few exceptions -which is not a problem) are within 2 standard error bounds. Furthermore, correlation coefficients are mostly very small and there is no apparent trend. Therefore, we can more confidently say that there is no autocorrelation in the VAR system.

Figure 2. 10. Impulse Responses (Baseline), Cholesky d.o.f. adjusted, two standard deviation confidence intervals



CHAPTER 3

THE IMPACT OF QUANTITATIVE EASING ON CONSUMPTION INEQUALITY IN JAPAN[17]

3.1. Introduction

After the 2008 financial crisis, the central banks of the developed countries extensively used unconventional monetary policy tools such as quantitative easing. They did this because they faced near-zero interest rates and so were unable to further lower the interest rates to stimulate their economies. The large-scale asset purchase programs under quantitative easing policies have increased asset prices substantially. And because these assets are mostly held by the wealthy, these policies have led to an extensive discussion on the distributional effects of quantitative easing policies. Normally, the central banks are mostly concerned about keeping the prices stable and unemployment low. However, the effects of the recent unconventional monetary policies implemented by central banks gave rise to the argument that central banks should also consider the distributional effects of their policies.

Chapter 2 studied the effects of quantitative easing on income inequality in Japan after the 2008 financial crises. This chapter studies the effects of quantitative easing on consumption inequality. Why should we focus on consumption inequality? The related literature mostly focuses on the effects of quantitative easing on income inequality. This is mainly because data for income inequality is widely available. However, income data might paint a distorted picture about the distributional effects of quantitative easing for the following reasons: First, income data alone might exaggerate the distributional effects of quantitative easing. For example, to the degree that asset holders have sold their assets at increased prices caused by quantitative easing, their incomes would have increased for a few periods. And because income data offers a snapshot of current incomes, we observe

[17] The article that makes up this chapter is written together with one of my PhD supervisors, Prof. Kang-Kook Lee, Graduate School of Economics, Ritsumeikan University, Japan.

relatively large increases in income inequality. Consumption inequality, on the other hand, would likely not change as much, because people would probably base their consumption decisions on their 'permanent incomes', not on temporary rises in their incomes.[18] Second, income inequality might understate the distributional effects of quantitative easing. An individual whose assets have gained tremendous value, might increase his consumption without selling any of his assets, knowing that he can afford it, in that his 'permanent income' is much higher than before.[19] Income inequality would not capture this, while consumption inequality would. Here, we should note that wealth inequality would also capture this effect, but the availability of high-frequency wealth data is limited. For these reasons, focusing on consumption inequality would give us another perspective and might help us in better understanding the distributional effects of quantitative easing.[20]

We investigate the effects of quantitative easing on consumption inequality in Japan to see whether focusing on consumption inequality rather than income inequality gives us additional insights on the distributional effects of quantitative easing. This chapter is organized as follows: Section 3.2 gives a brief literature review, Section 3.3 explains the data and discusses potential issues, and Section 3.4 explains the empirical

[18] See Friedman (1957).

[19] Horioka (2021) concludes that the life-cycle model of saving and consumption is more applicable to Japan compared to Ricardian bequest model. This implies that people are more likely to increase their consumption after a rise in their wealth or incomes rather than saving to leave a bequest. Therefore, we should see a rise in consumption after a rise in wealth or incomes due to asset valuation, especially of the richer older people who are more likely to hold more assets and who have less years to spend their wealth. See also Flath (forthcoming, Ch. 5) for a discussion of saving and consumption in Japan.

[20] Lise et al. (2014, pp. 587) find that both income and expenditure data in the Family Income and Expenditure survey "…appear to suffer from under reporting or possibly an under sampling of high-income households." However, they argue that this issue is not much worse for Japan compared with other countries. This means that using consumption data does not give an advantage over income data on this issue.

model and discusses the results of the estimations. Lastly, Section 3.5 concludes this chapter.

3.2. Literature Survey

Chapter 2 discussed the literature on the effects of quantitative easing on "income inequality". Here, we will only focus on the literature that considers the effects of quantitative easing on "consumption inequality". However, there are only a small number of articles on this. Coibion et al. (2017) find that contractionary monetary policy has increased consumption inequality in the US. They find that this is because the rich have increased their consumption more than the poor have done. They argue that this rise in the consumption of the rich is due to wealth transfers that they received because of unexpected changes in inflation and interest rates. Mumtaz and Theophilopoulou (2017), and Georgarakos and Tatsiramos (2019) find the same results for the UK, although Mumtaz and Theophilopoulou (2017) argue that the negative effects of contractionary monetary policy are worse for the poor. Similarly, Ampudia et al. (2018), find that contractionary monetary policy increased consumption inequality in Europe. This is because, after a rise in interest rates caused by contractionary monetary policy, low-income households who do not have access to liquidity reduce their consumption while other households do not change their consumption. Lastly, Inui et al. (2017) find for Japan that expansionary monetary policy has slightly increased income inequality, but this increase has not translated into consumption inequality. However, they find this for their sample that ends in 2008. Considering the amount of asset purchases after 2008 (second phase of quantitative easing) is dramatically higher compared to the first phase of quantitative easing (2001-2006) in Japan, this result might change with the addition of newer data.

3.3. Data

We use data from the Family Income and Expenditure Survey of the Statistics Bureau of Japan, which is a nationally representative dataset collected by a three-stage stratified sampling method. This is a micro dataset, but only aggregated data is available publicly.

However, because the surveyed households are replaced regularly, the advantages of using micro data are limited in this case. We use the 'Income and Expenditure' subset of the Family Income and Expenditure Survey to calculate consumption inequalities

Family Income and Expenditure Survey covers all of Japan. Data for around 8,000 households (of two or more persons) are collected monthly for six consecutive months, and then these households are replaced. Survey participants are requested to record their expenditures daily.

Although we have access to monthly data, we decided to use quarterly data because of two reasons. First, it is not plausible to expect that monthly changes in macroeconomic variables would affect household consumption dramatically. Second, consumption data shows large variances from month to month, making it difficult to measure the effects on consumption of other variables in the model. Using quarterly data somewhat smooths out this variance.

We created three consumption variables: durable consumption, non-durable consumption, and total consumption. Although there are different views on how to separate 'durable' and 'non-durable' consumption[21], We followed the categorization[22] preferred by Lise et al. (2014), which is also followed by Inui et al. (2017), to make it easier to compare results. However, there are some differences in samples between this study and Inui et al. (2017). First, they use micro data, while we use semi-aggregate data, but as discussed earlier, because the households are replaced every 6 months, the benefits of using micro data are not fully realized. Second, they use consumption data up to 2008 (after which micro-data is not available), while we use data up to 2019, and because the second phase of quantitative easing starts after 2008 in Japan (and the scale dramatically increases after 2013), this study should better capture the impact of quantitative easing on consumption inequality. Third, they limit their sample to people aged between 25-59, while semi-aggregate data we use do not have that restriction. Lastly, they limit their sample to worker households only, while our sample covers both working and non-

[21] See Hayashi (1985).

[22] See Table 3.2 in the Appendix for details about consumption variables construction.

working households. Considering the unemployed households are a big part of the discussion concerning inequality, including them in the sample should help us see the bigger picture.

There are other surveys that contain consumption information in Japan. Namely, National Survey of Family Income and Expenditure (NSFIE – every 5 years), Survey of Household Economy (SHE – monthly), Comprehensive Survey of Living Conditions (CSLC – every 3 years), and Japan (and Keio) Household Panel Survey (JHPS and KHPS – yearly). Unayama (2015) shows that consumption data collected by the Family Income and Expenditure Survey (FIES) is lower compared to SHE (approximately 80% of the consumption level in SHE). Unayama suggests that there might be two reasons for this. First, the households in the FIES are asked to record their expenditures daily -which is difficult, compared to a single time in the SHE. This probably results in people forgetting to record some expenditures in the FIES. Second, the households in the FIES might under-report because of survey fatigue. Stephens and Unayama (2011, 2012) indeed find that average reported consumption in FIES decreases towards the end of the six-month survey period for each household (Higa, 2019). This under-reporting will not create an issue for our purposes if it occurs at the same rate for all income deciles, because we are not interested in levels, but in ratios. Aguiar and Bils (2015) find for the US, that the rich are more likely to under-report their consumption. To the degree that this is true for Japan[23], our consumption inequality variables would under-measure the inequality. Lastly, Unayama (2015), again, shows that the consumption data collected by the FIES is similar to those collected by the NSFIE and CLSC. Unfortunately, none of these surveys have publicly accessible data at quarterly frequency for comparison.

[23] Lise et al. (2014) find that consumption data in FIES suffers from under-reporting or under-sampling of rich households compared to national accounts data. However, they argue that this is not much worse for Japan compared to other countries. In contrast, the trend of consumption in FIES follows national accounts, which is more important for this study as explained before.

3.4. Empirical Analysis

We use the following VAR model [24] to see the effects of quantitative easing on consumption inequality:

$$Y_t = [GDP_t, Inf_t, MB_t, S_t, Ineq_t]$$

where

GDP_t = Real GDP in yen, seasonally adjusted (source: Japanese Cabinet Office)

Inf_t = Year-over-year CPI headline inflation (source: Statistics Bureau of Japan)

MB_t = Monetary Base, seasonally adjusted and divided by nominal GDP (source: Bank of Japan)

S_t = Nikkei 225 Index, close prices (source: Yahoo Finance)

$Ineq_t$ = The ratio of the consumption of the top 10% of the population to the bottom 10% (source: Author's calculation using 'Income and Expenditure' survey)

We take the first differences of all the variables just listed: natural logs of GDP, quantitative easing proxy (MB), and stock prices (S). We also take the first difference of YOY inflation. After these transformations, all variables are stationary at the 5% level of significance. The sample period is from 2007Q4 to 2018Q4. We end our sample period just before 2019 so as not to capture the effects of the coronavirus on consumption. The Akaike information criterion suggests 4 lags, while the Hannan-Quinn and Schwarz information criteria suggest 0 lag –which does not seem right. We at first decided to use 4 lags following Akaike because this is quarterly data. However, we need to check the

[24] This type of VAR framework is widely used to assess the effects of monetary policy. See Bernanke and Blinder (1992) and Christiano et al. (1999) for more discussion. Saiki and Frost (2014, 2018) also use this model to estimate the impact of quantitative easing on income inequality in Japan. This is also the same model used in Chapter 2 of this dissertation apart from the inequality variables used. For details about the model, please refer to Chapter 2.

stability of the VAR system before proceeding with further analysis. We also need to confirm that there is no autocorrelation at our selected lag length. The AR roots table shows that the VAR system is not stable at 4 lags, which means that the impulse response standard errors would not be valid. Using 5 lags creates the same issue. When we use 3 lags, the VAR system becomes stable. We then confirm that there is no autocorrelation.[25] Therefore, we use 3 lags in the estimations. Lastly, following Saiki and Frost (2018), we use three exogenous dummy variables to capture (1) the effects of 'the Great Earthquake' of 2011 and (2) the following income transfer responses, because these had an important impact on inequality, as well as (3) the effects of the consumption tax increase. 'eq' takes the value of 1 in 2011Q2 and 2011Q3 to capture the impact of the earthquake, 'eqres' takes the value of 1 in 2011Q4 and 2012Q1 to capture the income transfer responses, and 'tax' takes the value of 1 between 2014Q2 to 2015Q2, all three variables are 0 otherwise. We also impose the recursiveness assumption so that the variables we use are not contemporaneously affected by the variables that come after them in the VAR framework.

There are various proxies used in the literature to capture the distributional effects of unconventional monetary policy. Mumtaz and Theophilopoulou (2017) use the 10-year government bond spread; Inui et al. (2017) use a shadow rate and central bank assets; Saiki and Frost (2014) and Guerello (2018) use central bank assets; while Saiki and Frost (2014, 2020) use the monetary base. It is worth noting that Saiki and Frost (2014) find that monetary base and central bank assets yield very similar results as proxies for unconventional monetary policy, while Inui et al. (2017) find that a shadow rate and central bank assets also yield very similar results. Therefore, all these measures seem to capture the same effects and be equally good proxies for unconventional monetary policy.

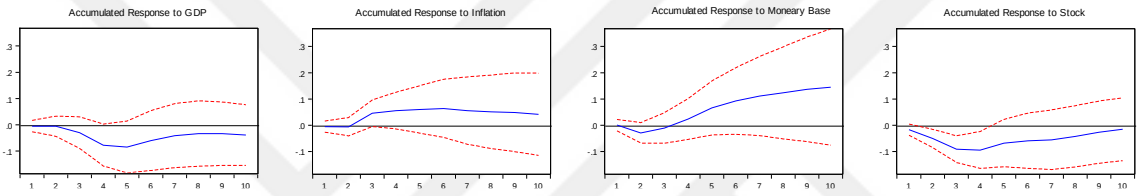
Lastly, adding inflation to our model allows us to test for the impact of quantitative easing on inequality through the 'savings redistribution channel' discussed in Coibion et al. (2017), while adding stock prices allows us to test the impact of quantitative easing through the 'portfolio channel'.

[25] See Table 3.1, and Figures 3.8 and 3.9 in the Appendix for related test results.

Estimation Results

Figure 3.1 shows that quantitative easing has increased total consumption inequality by 0.1 percentage points, but this effect lies on the border of statistical significance. The effects of GDP, inflation, and stock prices have a higher significance. A one-standard-deviation upward shock to GDP reduces total consumption inequality by around 0.05 percentage points, while a one-standard-deviation upward shock to inflation increases total consumption inequality by the same amount. Lastly, a one-standard-deviation

Figure 3. 1. Impulse Responses of Total Consumption Inequality (ratio of top10% to bottom 10%), Cholesky d.o.f. adjusted, two standard deviation confidence intervals



upward shock to stock prices reduces total consumption inequality by around 0.1 percentage points. These results do not support the argument that quantitative easing would overall reduce inequality by stimulating economic activity. Even though a rise in GDP helps reduce consumption inequality and quantitative easing has a positive effect on GDP through the stock market[26] (it does not have a direct effect on GDP), the overall effect of quantitative easing on consumption inequality is to increase it.

Our results have other implications. Figure 3.10 in the appendix shows that one of the ways that quantitative easing has increased consumption inequality is through inflation. Quantitative easing had a positive effect on inflation and inflation in turn had a positive effect on consumption inequality. Higher inflation unproportionally hurts the poor who hold a higher share of their wealth as cash (Erosa and Ventura 2002, Albanesi 2007) which increases inequality (portfolio channel); but it transfers wealth from savers (usually the rich) to borrowers (usually the poor) which decreases inequality (savings

[26] See Figure 3.10 in the Appendix for all the impulse response graphs.

redistribution channel). Our results suggest that the portfolio channel dominates the savings redistribution channel and the overall effect of inflation on consumption inequality is positive in Japan.

Overall, our results suggest that quantitative easing has increased consumption inequality through inflation but reduced it through GDP and stock market. However, the effect through inflation dominates and the sum of these effects are small but positive; taken overall, they increase consumption inequality slightly. This supports the finding of Inui et al. (2017) that quantitative easing did not have a large effect on consumption inequality in Japan up to 2008, and this relation holds when we extend the sample period up to 2019.

Figure 3.2 shows the impulse responses of non-durable consumption inequality. The results are almost identical to total consumption inequality in Figure 3.1, although the effect of quantitative easing loses some of its significance.

Figure 3. 2. Impulse Responses of Non-Durable Consumption Inequality (ratio of top10% to bottom10%), Cholesky d.o.f. adjusted, two standard deviation confidence intervals

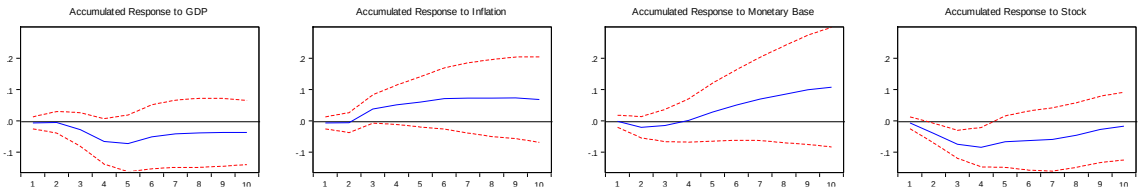
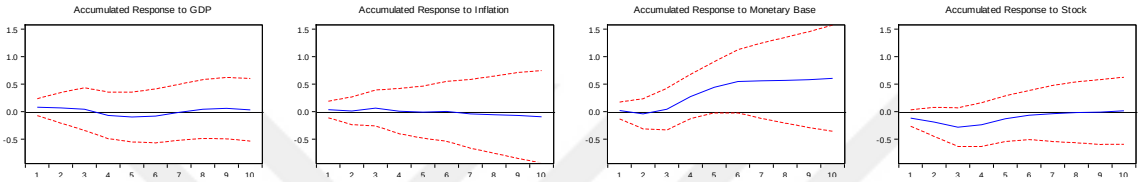


Figure 3.3 shows the impulse responses of durable consumption inequality. GDP and inflation do not have a statistically significant effect on durable consumption inequality in Japan. A one-standard-deviation upward shock to the monetary base increases durable consumption inequality by around 0.5 percentage points, while a one-standard-deviation upward shock to stock prices reduces it by around 0.3 percentage points. Overall, it seems that quantitative easing has increased durable consumption inequality by more than it has increased non-durable consumption inequality (0.5 percentage points as opposed to 0.1 percentage points). This is not surprising, because

non-durable consumption is generally less elastic to income changes, while durable consumption is more elastic. People might delay purchase of a durable good (such as a car) in the case of a negative income shock, while they are less likely to reduce their non-durable consumption (such as food).

Figure 3. 3. Impulse Responses of Durable Consumption Inequality (ratio of top10% to bottom10%), Cholesky d.o.f. adjusted, two standard deviation confidence intervals



Robustness Checks

Different inequality measure

The inequality measure used could affect our results. To investigate this possibility, we change the consumption inequality measures from 'the ratio of top 10% to bottom 10%' to 'Gini coefficient'. Figures 3.4, 3.5, and 3.6 show the impulse response functions for total consumption, non-durable consumption, and durable consumption inequalities using Gini coefficients. The results show that even though the directions of the effects are the same, the estimated magnitudes of the effects are much smaller when using Gini coefficients. This suggests, as argued by Saiki and Frost (2014), that quantitative easing has affected the gap between the top and the bottom of the population more than it has affected the whole distribution (which Gini measures).

Saiki and Frost (2018) find that a one-standard-deviation upward shock to the monetary base has increased income inequality (measured by Gini coefficient) by around 1.1 percentage points in Japan. We find that the same shock to monetary base has increased the total consumption inequality by 0.1 percentage points (ratio of top 10% to bottom 10%) and by 0.005 percentage points (Gini coefficient). This comparison shows

Figure 3. 4. Impulse Responses of Total Consumption Inequality (Gini coefficient), Cholesky d.o.f. adjusted, two standard deviation confidence intervals

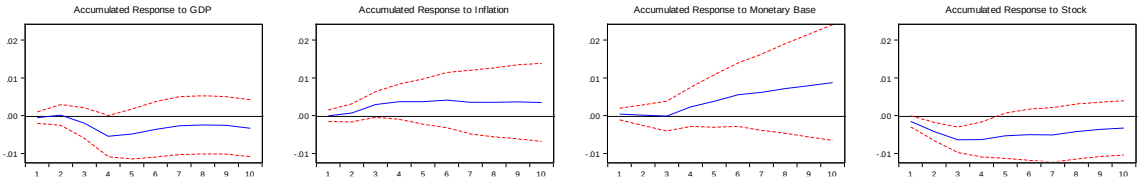
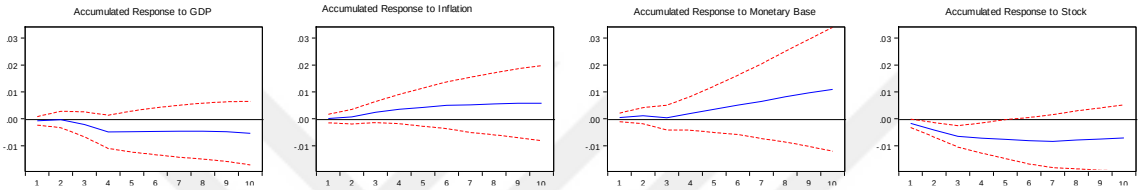


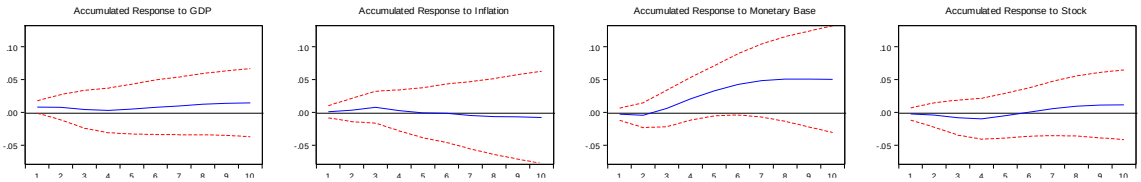
Figure 3. 5. Impulse Responses of Non-Durable Consumption Inequality (Gini coefficient), Cholesky d.o.f. adjusted, two standard deviation confidence intervals



that quantitative easing has affected income inequality much more than consumption inequality in Japan. One potential explanation for this is the effects of quantitative easing on income inequality were temporary and people did not change their consumption decisions much because their 'permanent incomes' did not change much. Mumtaz and Theophilopoulou (2017) compare the effects of quantitative easing to a counterfactual of 'no policy' in the UK and find that quantitative easing had a larger impact on income inequality compared to consumption inequality in the UK too. However, Coibion et al. (2017) find for the US that contractionary standard monetary policy had a larger impact on consumption inequality (0.02 percentage point rise) compared to income inequality (0.01 percentage point rise). They find that this is mostly driven by the disproportional rise in the consumption of the top 90th percentile compared to the rise in their incomes (their consumption rose by around 10% compared to 2-3% rise in their incomes, while the consumption and incomes of the bottom 10th percentile dropped by around 2%). Lastly, Inui et al. (2017) offer another explanation and find for Japan that marginal propensity to consume is higher for the households at the bottom of the income distribution compared to the households at the top. They argue that the rich spent relatively lower share of the income they gained through quantitative easing, but the poor spent a higher share of their

income gains. Therefore, this is likely one of the reasons why consumption inequality did not rise as much as income inequality in Japan.

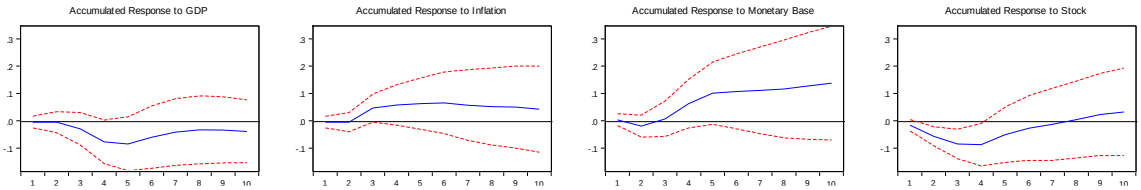
Figure 3. 6. Impulse Responses of Durable Consumption Inequality (Gini coefficient), Cholesky d.o.f. adjusted, two standard deviation confidence intervals



Different estimation method

The method of calculating the impulse response functions could also affect our results. For this reason, we change the estimation method from Cholesky decomposition to generalized impulse responses. The ordering of the variables is important when using the Cholesky decomposition method because of the recursiveness assumption that we impose, but the ordering does not matter when using the generalized impulse responses method.[27] Figure 3.7 shows that the results are almost identical to the results obtained by the Cholesky decomposition (Figure 3.1). This provides evidence that our results are robust to estimation method.

Figure 3. 7. Impulse Responses of Total Consumption Inequality (ratio of top10% to bottom10%), generalized impulse responses, two standard deviation confidence intervals



[27] See Pesaran and Shin (1998)

3.5. Conclusion

We measured the impact of quantitative easing on consumption inequality in Japan using a structural VAR framework. Our results suggest that quantitative easing has slightly increased consumption inequality in Japan. Quantitative easing has affected inequality through GDP (negative), inflation (positive), and stock prices (negative). The inflation channel dominates the other channels and the overall effects of quantitative easing on consumption inequality, non-durable consumption inequality, and durable consumption inequality are all positive. Quantitative easing increased consumption inequality. However, these effects of quantitative easing on consumption inequality are quite small compared to the effects on income inequality found by other researchers for Japan. This suggests that the effect of quantitative easing on income inequality was temporary (permanent incomes did not change) and it did not translate into a similar change in consumption inequality. However, higher marginal propensity to consume of the households at the bottom of the income distribution compared to the households at the top likely contributed to this as well. Because the households at the bottom spent a higher share of their income gains compared to the households at the top, consumption inequality did not rise as much as income inequality.

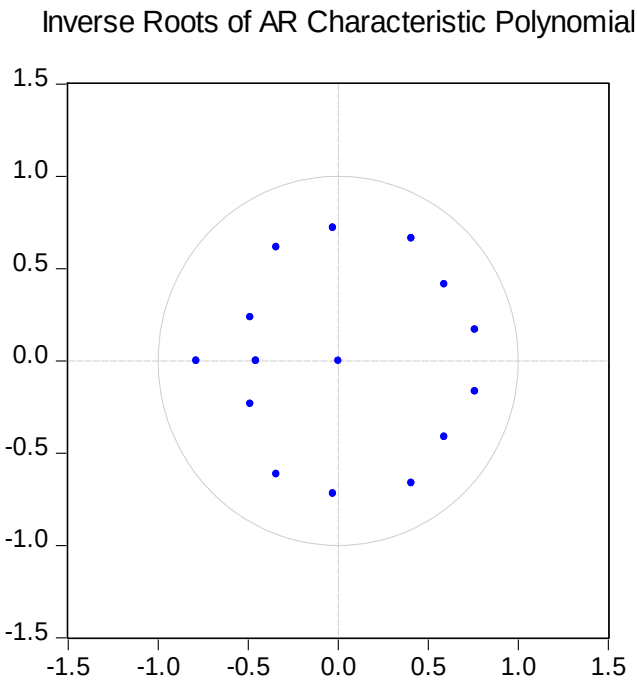
APPENDIX

Table 3. 1. VAR Residual Serial Correlation LM Tests

Null hypothesis: No serial correlation at lag h						
Lag	**LRE* stat**	**Df**	**Prob.**	**Rao F-stat**	**df**	**Prob.**
1	30.96916	25	0.19	1.306131	(25, 53.5)	0.204
2	23.16425	25	0.568	0.916223	(25, 53.5)	0.5834
3	21.05999	25	0.6893	0.81887	(25, 53.5)	0.7021
4	34.85098	25	0.0909	1.518196	(25, 53.5)	0.1004
**Edgeworth expansion corrected likelihood ratio statistic.*						

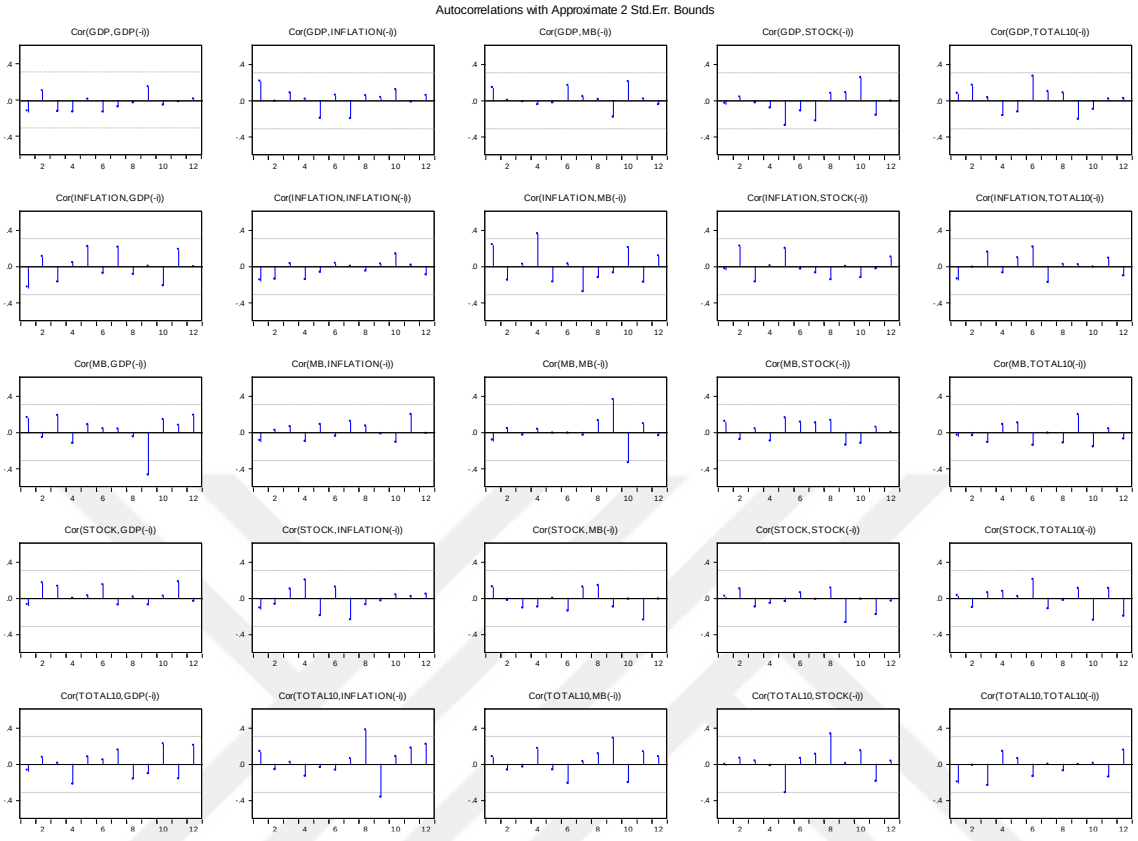
Note: We cannot reject the hypothesis that 'there is no serial correlation at lag 3, so we can say that there is no autocorrelation when using 3 lags.

Figure 3. 8. AR Roots Graph (3 lags)



Note: All values are within the circle -which shows that the VAR system is stable.

Figure 3. 9. Correlograms



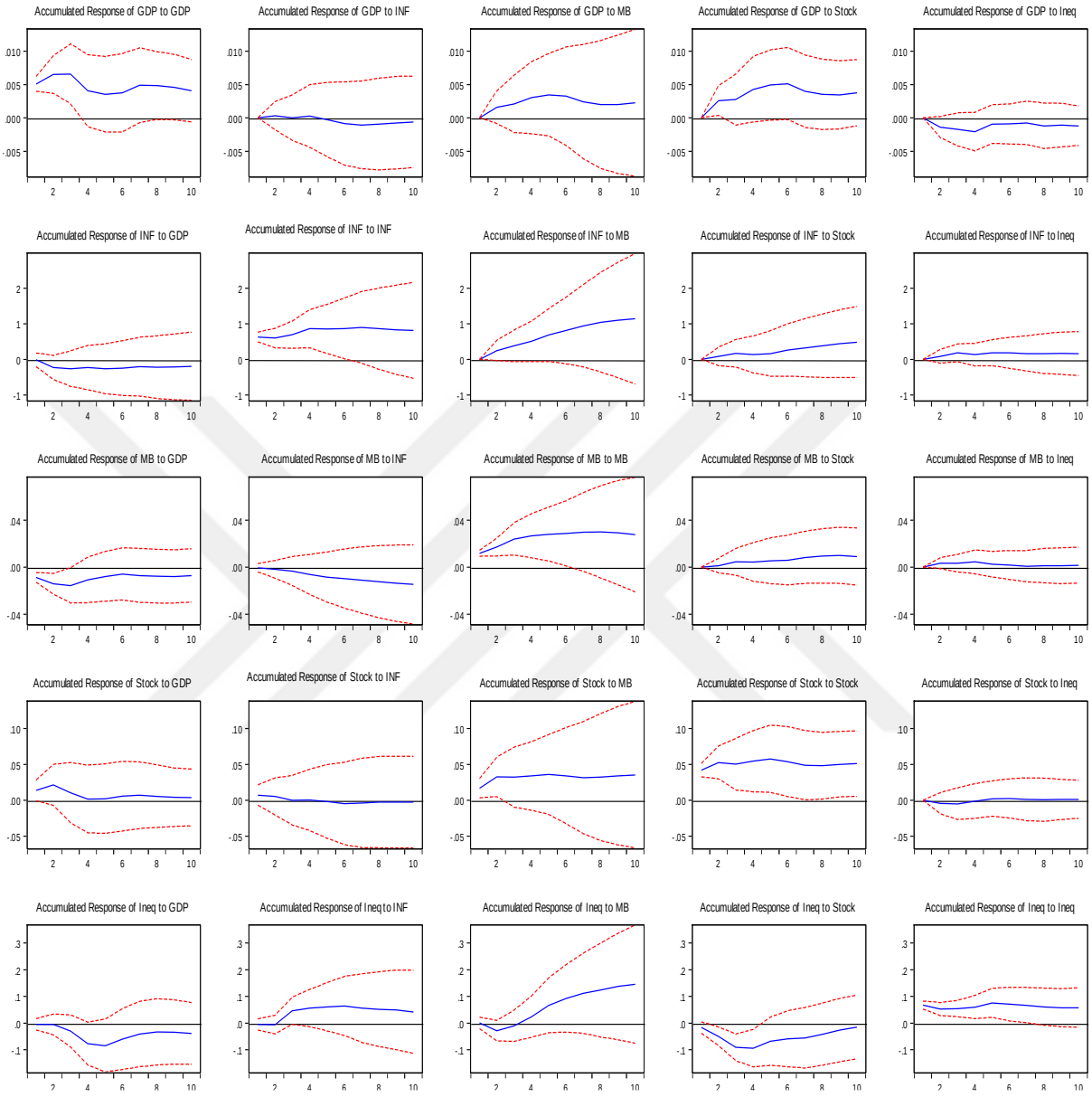
Note: All values (with a very few exceptions -which is not a problem) are within 2 standard error bounds. Furthermore, correlation coefficients are mostly very small and there is no apparent trend. Therefore, we can more confidently say that there is no autocorrelation in the VAR system.

Table 3. 2. Consumption Variables Construction

Durable Consumption		Non-Durable Consumption	
Category	FIES Code	Category	FIES Code
Rents for dwelling & land	2.1	Food	1
Household durable goods	4.1	Repairs & maintenance	2.2
Interior furnishing & decorations	4.2	Fuel, light & water charges	3
Bedding	4.3	Domestic utensils	4.4
Purchase of vehicles	7.2.1	Domestic non-durable goods	4.5
Purchase of bicycles	7.2.2	Domestic services	4.6
Recreational durable goods	9.1	Clothing & footwear	5
		Medical care	6
		Transportation & communication	7
		Education	8
		Recreational goods	9.2
		Books & other reading materials	9.3
		Recreational services	9.4
		Miscellaneous	10.1
		Pocket money (of which, detailed uses unknown)	10.2
		Social expenses	10.3

Note: Total Consumption is the sum of durable and non-durable consumption. We excluded 'remittance' (10.4). 'FIES' is the Family Income and Expenditure Survey.

Figure 3. 10. Impulse Responses (Baseline), Cholesky d.o.f. adjusted, two standard deviation confidence intervals



CHAPTER 4

PREFERENCES FOR REDISTRIBUTION IN JAPAN[28]

4.1. Introduction

Redistribution is one of the most important roles of modern governments. Although redistribution can be from the poor to the middle-class or the rich, it is usually from the rich to the poor through taxes and social policies such as unemployment and education aids. This is done because, although some of the inequality in a society is due to wealth accumulated through effort and hard-work (therefore well deserved) by certain people, other parts of the inequality are because of factors outside individual control —not because of laziness or choice. Besides moral reasons to redistribute wealth, there are also selfish ones. A study by Ostry et al. (2014) suggests that inequality may harm economic growth. For these reasons, governments around the globe redistribute wealth, but the degree to which they redistribute differs. One of the most important explanations for this difference, besides historical reasons, is the preference for redistribution of the public of each country. Therefore, it is important for governments to be aware of how much redistribution that the public prefers and what are the characteristics that affect these preferences. Moreover, Chapters 2 and 3 of this dissertation have suggested that quantitative easing has increased income and (to a lesser extent) consumption inequalities in Japan. It is likely that this rise in inequalities will cause people to be more sensitive to issues of inequality and redistribution. Knowing who prefers more (or less) redistribution will help policy-makers better design redistribution policies and this in turn might help alleviate social unrest that might arise due to this rise in inequalities. This chapter attempts

[28] This is an Accepted Manuscript (slightly modified version) of an article published by Taylor & Francis in Japanese Political Economy in October 2021, available online: http://wwww.tandfonline.com/10.1080/2329194X.2021.1981139

to provide a more complete picture of redistribution preferences in Japan compared with the existing literature to achieve this goal.

The literature on redistribution preferences focuses mainly on the United States and European countries. However, a recent study by Falk et al. (2018) using a new dataset (Global Preference Survey) shows that economic preferences vary substantially across countries. For this reason, I focus on Japan, a country with a non-western culture[29] that is also mostly neglected in the study of redistribution preferences. I study the determinants of redistribution preferences in Japan and compare my findings with the previous literature that focuses on western countries.

There are a few studies on redistribution preferences in Japan. Ohtake and Tomioka (2004) study the determinants of redistribution preferences in Japan. They find that risk-aversion, altruism, and inequality, among other things, create more demand for redistribution. They also find that younger people who expect to be unemployed are more likely to support redistribution. They argue that the reason unemployment risk does not have a strong effect on redistribution preferences of the elderly is possibly because they are going to retire anyway. Using a larger, more representative dataset, I find evidence supporting many of the findings of Ohtake and Tomioka (2004); however, I also find conflicting results. Specifically, being married increases the demand for redistribution, while education (college or more) decreases it instead of not having significant effects. Moreover, I test the effects of additional variables that were not included in their estimations, such as political preferences, religion, and happiness. Overall, this study should give a more comprehensive view on redistribution preferences in Japan. Yamamura (2012, 2014, 2015, 2016) also studies redistribution preferences in Japan using the same dataset that I use. However, he focuses on specific issues in each paper, such as the effects of social capital, trust in government, siblings, and birth order on redistribution preferences; and only includes basic controls for individual characteristics.

[29] See Alesina and Giuliano (2015) for a discussion of how culture and institutions affect each other and how both affect economic outcomes and preferences.

Therefore, he does not provide a comprehensive view on the subject for Japan. This study attempts to fill that gap.

This chapter is organized as follows: Section 4.2 offers a literature review. Section 4.3 explains the determinants of redistribution preferences, in other words, it explains the independent variables used in the estimations. Section 4.4 explains the data. Section 4.5 explains the empirical models and the results of the estimations. Lastly, section 4.6 concludes the chapter.

4.2. Literature Review

There is a rich literature on the determinants of redistribution preferences. Earlier works in the literature by Romer (1975), Roberts (1977) and Meltzer and Richard (1981) which are collectively known as Romer-Roberts-Meltzer-Richard or the RRMR model, focus on economic determinants of redistribution preferences. The RRMR model assumes selfish, utility-maximizing agents. People with above median income prefer less redistribution, while people with below median income prefer more. The decision of the actual level of government redistribution lies with the median income earner. If the median income is lower than the average income, the median income earner prefers more redistribution. Therefore, the RRMR model suggests that as the gap between the average and median incomes (inequality) rises, so will the level of government redistribution in democratic societies. However, the RRMR model has not received much empirical support. Even though there is ample evidence that income reduces the demand for redistribution, rising inequality does not necessarily increase the demand for redistribution.[30]

[30] Alesina and Rodrik (1994), Persson and Tabellini (1994), Milanovic (2000), and Finseraas (2009) find supporting evidence, while Alesina and Glaeser (2004), Perotti (1996), Rodriguez (1999), Lübker (2006), Kenworthy and McCall (2008), Neustadt and Zweifel (2010), Karabarbounis (2011), and Alesina and Giuliano (2011) find results contradicting the RRMR model.

So, why does rising inequality not necessarily result in more redistribution? Why do not the poor tax the rich even in democratic societies until the incomes are equalized? There are several explanations. Meltzer and Richard (1981) argue that taxation causes a deadweight loss. A higher tax rate reduces the total taxable income because it reduces the incentive to work and increases tax evasion. Therefore, the poor might receive less in return if they demand higher taxes and more government redistribution. Karabarbounis (2011)[31] argues that the rich have more political power than the poor, that the "one-dollar-one-vote" rule applies instead of the "one-person-one-vote" rule suggested by Meltzer and Richard (1981). Indeed, the rich might have better means to affect the actions of the government according to their preferences. Furthermore, in line with Becker (1983), they might also be able to overcome the free-riding problem more easily among themselves and apply a stronger political pressure on the government. Another reason there might not be an increase in the level of government redistribution even when the inequality is rising might be related to the mobility expectations of people. The "Prospect of Upward Mobility" hypothesis formulated by Benabou and Ok (2001) suggests that the reason why the poor might not demand higher levels of redistribution even if they would gain from it, is because they might expect to get richer in the future and be net losers from redistribution.[32] This relation holds if people are not too risk-averse and the taxation policies do not change too often.[33] Lastly, there is a rich literature[34] that focuses on the role of individual beliefs regarding the fairness of income distribution as a determinant of redistribution preferences. If one believes that the society is fair, that everyone has a chance to move up the income ladder, and that effort rather than luck or knowing the right people or family background determines welfare, he demands less redistribution. On the other hand, if one believes that the poor are trapped in poverty or that the rich have an

[31] See also Peltzman (1980), Benabou (2002), Rodriguez (2004) and Campante (2007).

[32] See Hirschman and Rothschild (1973) and Piketty (1995) on how people form their mobility expectations.

[33] See Ohtake and Tomioka (2004), Checchi and Filippin (2004), Alesina and La Ferrara (2005), Rainer and Siedler (2008), Cojocaru (2014) for supporting evidence.

[34] Piketty (1995), Corneo and Gruner (2002), Galasso (2003), Alesina and Angelotos (2005), Alesina and La Ferrara (2005), Fong (2001, 2006), Benabou and Tirole (2006), Fong and Poutvaara (2019).

unfair advantage over the rest of the population, he might demand that the government make up for these inequalities even if he would lose from a higher level of redistribution.

As an example, a person with below-average income in Japan is likely to demand higher redistribution. And a person who expects to get rich soon is likely to oppose redistribution so as not to pay high taxes out of the newfound fortune. There are still other considerations. Despite any prospect of upward mobility, if one is risk-averse and nearing old age (so having less time to earn more), they might want more security and demand more redistribution as insurance. If a person interprets redistribution to mean increasing his or her own tax burden to fund welfare benefits for immigrants with different races, languages, and cultures, that person might oppose redistribution. However, altruism and sense of justice (if a person believes that distribution of income is unfair) might override all sense of self-interest and prejudice and lead the person to demand more redistribution. So, redistribution preferences of a person is difficult to predict even if all relevant characteristics of that person are known—for example redistribution preferences of a poor Japanese man who expects to get rich very soon, who is old, married without children, who lives in Tokyo, who is non-religious and who has low trust in government, who is not risk-averse at all, and finally who is happy and altruistic, but who believes that the rich deserve their fortune and that the poor are lazy. Will that person oppose redistribution?

In short, all the theories mentioned above explain only a part of the picture. Redistribution preferences of individuals are affected by often conflicting forces of self-interest on the one hand, and social affinity, altruism, and justice beliefs on the other - which make them difficult to be explained by a single over-arching theory. Therefore, I try to include all the relevant variables together in my models and discuss the effects of each variable instead of trying to attribute the changes in redistribution preferences to the changes in a few variables.

4.3. Determinants of Redistribution Preferences

I include the discussion relating to the individual-level determinants[35] of redistribution preferences below.

Household Income

Meltzer and Richard (1981) suggest that the higher the income of someone compared to the median income, the lower his support for redistribution. Similarly, the lower the income of someone compared to the median income, the higher his support for redistribution. Empirical evidence supports this claim (Ravallion and Lokshin, 2000; Ohtake and Tomioka, 2004; Alesina and La Ferrara, 2005; Rainer and Siedler, 2008; Alesina and Giuliano, 2011).

In the Japanese General Social Survey, respondents could choose among 19 categories to describe their annual household income. Following Yamamura (2012), I assumed that respondents in each category earned the midpoint income. For the top income category, "23 million yen or over", I assumed that respondents earned 23 million yen. Only 0.65 percent of the respondents stated that they earned "23 million yen or over". Therefore, limiting the top-income to 23 million yen should not be too disruptive. However, around 10 percent of the respondents chose the response, "don't want to state income". If a high portion of these people belong to the top-income category, limiting the top income to 23 million yen might create a top-coding issue.

[35] These are household income, inequality, age, gender, altruism, marital status, risk aversion, unemployment, risk of unemployment, education, political preferences, religion, past and future mobility (and mobility expectations), children, urban vs. rural, happiness, trust, justice beliefs, race and country of origin.

Table 4. 1. Household Income and Demand for Redistribution (%)

demand for redistribution	poor	rich	total
1	2.83	3.24	3.08
2	6.37	7.81	7.22
3	31.98	34.27	33.34
4	27.87	27.81	27.82
5 (highest)	30.97	26.88	28.54
total	100	100	100

Note: Author's calculations for the baseline sample. "poor" consists of people with below average income, while "rich" consists of people with above average income.

Table 4.1 suggests that income decreases the demand for government redistribution.

Inequality

A recent OECD paper (2018) shows that level of redistribution across most OECD countries is falling despite the rising inequality.[36] As discussed in the introduction, there is mixed evidence in the literature on the effects of inequality on preference for redistribution. To complement that discussion, we need to differentiate between actual and perceived inequalities. Earlier works in the literature implicitly or explicitly assume that individuals have perfect knowledge about the state of the economy. However, more recent studies[37] show that the knowledge of people about actual levels of inequality is

[36] Reasons for inequality and the relationship between preference for redistribution and actual levels of redistribution are beyond the scope of this chapter. For an insight into why demand for redistribution might not translate into actual redistribution, see Foster and Warren (2021). For the evolution of welfare state in Japan, see Walker and Wong (2005).

[37] Cancho et al. (2015), Gimpelson and Treisman (2018), Choi (2019).

often wrong; so much so that Gimpelson and Treisman (2018, p.27) suggest "most theories about political effects of inequality need to be reframed as theories about effects of *perceived* inequality." They also show that ordinary people vastly mis-perceive the actual levels of inequality. Choi (2019) finds that perceived inequality, not actual inequality, increases the demand for redistribution across OECD countries. Lastly, Bussolo et al. (2021) find that changes in actual inequalities only weakly affect the changes in perceived inequalities, and that there are generally large gaps between actual and perceived inequalities.

In the case of Japan, Ohtake and Tomioka (2004) find that perceived inequality increases the demand for redistribution, while Yamamura (2014) finds that actual inequality (GINI) does not have a significant effect on preference for redistribution, supporting the argument above. Yanai (2017) finds a long lag before the changes in actual inequalities are reflected in perceived inequalities in Japan; the rise of inequality in the 1980s starts to be perceived only after the 2000s. All this evidence suggests that perceived inequality is more important in determining preferences for redistribution. Unfortunately, the Japanese General Social Survey does not have data on this, therefore I cannot include a measure for perceived inequality in my models. To the extent that perceived inequality is correlated with my independent variables, this might create omitted-variable bias. I also do not include an actual inequality measure because of the evidence provided in the literature about its insignificance. Bussolo et al. (2021) show that women, older people, and people with low income and low education tend to perceive their society as more unequal. So, for example, the coefficient of income in my models would show the direct effect of income on redistribution preferences and the indirect effect income would have through perceived inequality. However, it should be noted that perceived inequality is affected by many factors, so income alone is unlikely to have a large effect on it. Secondly, perceived inequality itself has only a small effect on redistribution preferences (like all the other determinants of preference for redistribution) as shown by the studies mentioned above. Therefore, this bias would not be large enough to change the size or sign of the coefficients in this context.

Age

As people get older, their prospect of upward mobility is likely to decrease and social spending such as government spending on health services will gain more importance to them. Due to these reasons the demand for government redistribution is expected to rise with age. However, empirical evidence on this is mixed. Alesina and La Ferrara (2005) and Rainer and Siedler (2008) find the effect of age on the preferences for redistribution to be insignificant. Alesina and Giuliano (2011) find that people are first more favourable to redistribution, and then less favourable as they get older. Ohtake and Tomioka (2004) and Scheve and Stasavage (2006) find that age increases the demand for redistribution.

The respondents of the Japanese General Social Survey consist of people between 20-89 years old. I created 7 dummy variables **age20s, age30s, age40s, age50s, age60s, age70s** and **age80s** to test the effect of age on the preference of redistribution. **age20s** is the reference group.

Gender

The literature shows that women have higher demand for government redistribution compared to men. It is well documented in the literature that men and women have different preferences for risk aversion and altruism.[38] Therefore, gender might be affecting preference for redistribution through gender-associated risk-aversion or altruism. In other words, the reason women have higher demand for redistribution compared to men might be due to women being more risk averse, so they might see government redistribution as insurance against potential future unfortunate events, and because they tend to be more altruistic than men. However, gender affects preference for redistribution even after controlling for risk aversion and altruism. Women still show a higher support for government redistribution as found by Alesina and La Ferrara (2005) for the United States, Ravallion and Lokshin (2000) for Russia, and Alesina and Giuliano (2011) and VanHeuvelen (2017) for cross country. However, Japan seems to be the exception.

[38] See Croson and Gneezy (2009) for a detailed review of the literature on this.

Japanese women show a lower support for government redistribution compared to Japanese men as found by Ohtake and Tomioka (2004) and Yamamura (2012). I created a binary variable, **female**, which is equal to 1 if the respondent is a woman, and 0 otherwise to test this.

Table 4. 2. Gender and Demand for Redistribution (%)

demand for redistribution	male	female	total
1	3.73	2.43	3.08
2	8.65	5.82	7.22
3	28.91	37.71	33.34
4	27.78	27.87	27.82
5 (highest)	30.93	26.18	28.54
total	100	100	100

Note: Author's calculations for the baseline sample.

Table 4.2 suggests that Japanese women show a lower demand for government redistribution compared to Japanese men.

Altruism

Ohtake and Tomioka (2004) use the survey question "less fortunate people should be helped by society" to create a proxy for altruism. However, they note that this might not be a good proxy, because people who are not altruistic themselves could still agree with this. For example, the rich who are not altruistic might still agree that society should help the less fortunate, because they might fear the effects of social unrest that would occur otherwise. They might also agree with this to reduce the disutility of observing poverty.

Alesina and La Ferrara (2005) use the survey question "should children be taught that helping others is the most important moral value?" to create a proxy for altruism.

This too might not be a good proxy for altruism, because people might be altruistic, but think that there are more important moral values than helping others.

Both Ohtake and Tomioka (2004) and Alesina and La Ferrara (2005) find a significant positive effect of altruism on redistribution preferences.

The Japanese General Social Survey asks, "How important are the job-related items shown below" and one of the items is "A job that allows me to help other people". The respondents could choose on a 1-5 scale with "1=very important" and "5=not important at all". I created a binary variable, **altruism**, which is equal to 1 if the respondent chose "1=very important" or "2=important", and 0 otherwise. I think this is a better proxy for altruism because it doesn't suffer from the problems that other proxies mentioned above suffer, so it is more likely to capture the true altruism characteristics of individuals. The survey question was asked as a hypothetical question to the respondents who are not employed to not exclude them.

However, this variable is only available for the years 2000, 2001 and 2002. I run a probit model for only these years to see the effect of altruism and the pure effect of gender on redistribution preferences while controlling for risk-aversion and altruism. I dropped the altruism variable for other estimations.

Marital Status

Alesina and La Ferrara (2005) find that being married does not affect the preference for redistribution in the United States, while Alesina and Giuliano (2011) find it to have a negative effect, but their result is not robust to the different model specifications that they use. They also find being married to have a negative effect on preference for redistribution in their cross-country estimations, but this result is also not robust to different model specifications. Ohtake and Tomioka (2004) find that being married does not affect the preferences for redistribution in Japan, while Yamamura (2012) finds mixed results. Lastly, VanHeuvelen (2017) differentiates between being married, divorced, widowed and never married and finds being widowed and never married to have a positive effect on the preferences for redistribution across countries. For simplicity, I only consider being

married or being single. I created a binary variable, **married**, which is equal to 1 if the respondent is currently married, and 0 otherwise.

Risk Aversion

Risk averse individuals show a higher support for government redistribution because redistribution acts as an insurance against potential future misfortunes. Alesina and La Ferrara (2005) use self-employment and being unemployed in the last 5 years as proxies for risk aversion. They argue that self-employed people have more tolerance for risk and find this inverse proxy of risk aversion to have a negative effect on the demand for redistribution. They also argue that having experienced unemployment in the last 5 years make people more risk averse and find this proxy to have a positive effect on the demand for redistribution. However, Gärtner et al. (2017) argue that these proxies capture effects other than risk aversion. They determine the risk preferences of people using a lottery game and find that their risk aversion measure and the proxies for risk aversion used in the literature such as being self-employed or being unemployed in the last 5 years, although correlated, capture separate variations in the demand for redistribution.

Ohtake and Tomioka (2004) use data from their own survey and they create an original measure of risk aversion: "the lowest probability forecast of rainfall that makes the respondent bring an umbrella with him or her when going out".

Unfortunately, the Japanese General Social Survey does not have a direct measure for risk aversion. Therefore, I rely on two proxies following Alesina and La Ferrara (2005): self-employment and the experience of traumatic events (such as unemployment, divorce, death in the family etc.) in the last 5 years. **self_emp** is equal to 1 if the respondent is currently self-employed, and 0 otherwise; while **trauma** is equal to 1 if the respondent has experienced at least one traumatic event in the last 5 years, and 0 otherwise.

Unemployment

The effect of unemployment on preference for redistribution is ambiguous in the literature. Alesina and Giuliano (2011) find that unemployment increases the demand for

redistribution in the United States, but this effect is small and not robust to different model specifications. In their cross-country analysis unemployment increases the demand for redistribution. They suggest that the effect of unemployment on the demand for redistribution in the United States is weak because Americans do not feel trapped in unemployment. Ohtake and Tomioka (2004) use the interaction of unemployment and age and find that younger unemployed people demand more redistribution in Japan compared to older unemployed people. Yamamura (2012) finds partial evidence that unemployment increases the demand for redistribution, but his results are not robust to different model specifications.

Unemployment has been low in Japan for the last decades, but the ratio of temporary workers has been rising. So, the effect of being a temporary worker on redistribution preferences is more interesting and it might also be more meaningful for Japan. To test this, I created four binary variables: **regular**, **temporary**, **unemp** and **notlabour**. **temporary** is equal to 1 if the respondent is a temporary worker, a part-time worker, a daily worker or a dispatched worker from a temporary personnel agency, and 0 otherwise. Being a regular worker is the reference group.

Risk of Unemployment

The likelihood of losing one's job might increase the demand for redistribution, as shown by Ohtake and Tomioka (2004). This effect is likely to be stronger for people whose main income is their salaries. It should be noted that perceived risk of unemployment and perceived future mobility do not necessarily measure the same effect. One might rationally expect to be better off in the future, and at the same time, fear losing his job. Therefore, while upward mobility expectations cause one to decrease his support for redistribution, risk of unemployment might increase it. Similarly, Gingrich and Ansell (2012) find that risk of unemployment influences policy preferences of individuals only when "employment protection is low and welfare benefits are dependent on employment."

The Japanese General Social Survey asks the question "Thinking about the next 12 months, how likely do you think it is that you will lose your job or be laid off?". The respondents could choose on a 1-4 scale, with "1=very likely" and "4=not at all likely",

and “5=don’t know”. I created a binary variable, **risk_unemp**, which is equal to 1 if the respondent chose “1=very likely” or “2=fairly likely”, and 0 otherwise.

However, this question was only asked to people who are employed, so including this measure requires me to drop observations for people who are unemployed and people who are not in the labour force. Therefore, I run a separate probit model to see the effect of the perceived risk of unemployment on redistribution preferences. I dropped this variable for other estimations.

Education

Education reduces the demand for redistribution, as found by Ravallion and Lokshin (2000), Alesina and La Ferrara (2005) and Alesina and Giuliano (2011). This is probably because higher education increases one’s expected future earnings. Contrary to these findings, Ohtake and Tomioka (2004) find that education does not have a significant effect on preference for redistribution in Japan, but Yamamura (2012) finds that education reduces the demand for redistribution.

Following Ohtake and Tomioka (2004), I created two binary variables, **college** is equal to 1 if the respondent is a college graduate (16 years of education) and 0 otherwise; while **graduate** is equal to 1 if the respondent has a master’s or PhD degree (18 years of education or more) and 0 otherwise. I assume that the students and drop-outs have graduated from the highest education level that they attended.

Political Preferences

Progressives show higher support for government redistribution, possibly because they are more sensitive to inequality issues; while conservatives show lower support for government redistribution, possibly because they have negative views of the government (Alesina and Giuliano, 2011; Yamamura, 2012, 2013; Alesina et al., 2018). I should note that these findings do not necessarily mean that only progressives care about inequality. Conservatives might also prefer a more equal society but may not trust the government to accomplish it. Looking at the preferences for government redistribution together with

private donations of individuals might give a clearer picture on this issue. Unfortunately, the Japanese General Social Survey does not have information on private donations.

I created two binary variables, **conserv** and **progre** to measure the effects of political views on the preferences for redistribution. The Japanese General Social Survey asks the respondents to place their political views on a 1-5 scale, with 1=conservative and 5=progressive. **conserv** is equal to 1 if the respondent chose the options 1 or 2, and 0 otherwise; while **progre** is equal to 1 if the respondent chose the options 4 or 5 and 0 otherwise.

Religion

The literature on the effect of religion on preference for redistribution mostly agrees that religion lowers the demand for redistribution.[39] There are several reasons proposed for this.[40] First of all, it seems like government redistribution and redistribution within a religious community are substitutes. Second, being part of a religious community acts as insurance against possible unfortunate events, lowering the demand for government redistribution (Scheve and Stasavage, 2006).

Affiliation with different religions and religious denominations has different effects, of which being protestant is the most prominent and agreed upon. Protestants prefer less government redistribution and tend to work harder (protestant work ethic), while evidence on the effect of affiliation with other religions and denominations is mixed (Benabou and Tirole, 2006; Alesina and La Ferrara, 2005; Alesina and Giuliano, 2011; Stegmueller et al., 2011; Basten and Betz, 2013).

Most of the literature on this issue focuses on western cultures, but Chang (2010) focuses on Taiwan and finds that being protestant increases the demand for redistribution

[39] except for Tan (2006) who argues that different effects of religion on preference for redistribution cancel each other out.

[40] Also see Stegmueller et al. (2011) on this.

in Taiwan instead of decreasing it, drawing attention to the cultural differences between western and eastern countries.

In considering the effect of religion on preference for redistribution, I focus on the effects of being religious versus being secular, rather than on being affiliated with any specific religion or religious denomination. The first reason for this is that two thirds of the respondents in the Japanese General Social Survey did not say the name of their religion. Therefore, estimating the effects of different religions on redistribution preferences would result in numerous missing observations. Secondly, Stegmueller et al. (2011) show that, regarding the preference for redistribution, the difference between the effects of being secular or religious is greater than the difference between the effects of affiliation with different religions and religious denominations.

Table 4.3 suggests that religious people show a higher demand for government redistribution in Japan.

Table 4. 3. Religion and Demand for Redistribution

demand for redistribution	no religion	religion	total
1	3.08	3.03	3.08
2	7.40	5.79	7.22
3	33.87	29.07	33.34
4	27.83	27.79	27.82
5 (highest)	27.82	34.32	28.54
total	100	100	100

Note: Author's calculations for the baseline sample.

To estimate the effect of religion on preference for redistribution, I created two binary variables, **religion**, which is equal to 1 if the respondent follows a religion, and 0 otherwise; while **religionx**, is equal to 1 if the respondent "although not practiced, have a family religion" and 0 otherwise. The reference group is not having any religion.

Past and Future Mobility

Benabou and Ok (2001) formalize the idea that today's poor might not demand higher levels of redistribution if they expect to have above average income in the near future (the Prospect of Upward Mobility, or POUM, Hypothesis). Similarly, today's rich might demand more redistribution if they fear that their income will fall soon. Empirical evidence supports this hypothesis (Checchi and Filippin, 2004; Alesina and La Ferrara, 2005; Rainer and Siedler, 2008; Cojocaru, 2014).

The Japanese General Social Survey asks the question, "In your opinion, how much opportunity would you say there is in the Japanese society to improve the standard of living for you and/or for your family?" The respondents could choose on a 1-5 scale, with "1=sufficient" and "5=not sufficient at all". I created a binary variable, **mobility**, which takes the value 1 if the respondent chose "1=sufficient" or "2=somewhat sufficient", and 0 if the respondent chose "3=neither sufficient nor insufficient", "4=not very sufficient" or "5=not sufficient at all". Including option 3 together with options 1 and 2 or omitting it does not change the effect of this variable on the preferences for redistribution.

Concerning past mobility, Piketty (1995) argues that it might be too difficult or costly to predict the chances of upward mobility in a society. In these cases, people form their ideas about their chances of upward mobility (and form their preferences for redistribution) based on their own past mobility experiences (Alesina and La Ferrara, 2000; Ravallion and Lokshin, 2000). The Japanese General Social Survey asks the question "Compared with Japanese families in general, what would you say about your family income?" and it also asks the same question for when the respondent was 15 years old. The respondents could choose on a 1-5 scale, with "1=far below average" and "5=far above average". I created a binary variable, **gotricher**, which takes the value 1 if the respondent placed himself in a higher relative place compared to when he was 15 years old, and 0 otherwise. Similarly, **gotpoorer** is equal to 1 if the respondent placed himself in a lower relative place compared to when he was 15 years old, and 0 otherwise. The reference group is the "no change" group.

As people get older, the comparison between their current relative family income and their relative family income when they were 15 years old might lose its importance. The Japanese General Social Survey asks another question: "During the last few years, has your financial situation been getting better, worse, or has it stayed the same?" I used this question to see the effects of the more recent mobility experiences on preferences for redistribution. I created two binary variables, **gotbetter** is equal to 1 if the respondent chose "1=getting better", and 0 otherwise; while **gotworse** is equal to 1 if the respondent chose "2=getting worse", and 0 otherwise. The reference group is the "3=stayed the same" group.

Lastly, Alesina and Giuliano (2011) show that having a higher family income during youth (16 years old in their case) reduces the demand for redistribution. To test this, I created a binary variable, **rich15**, which takes the value 1 if the respondent chose "4=above average" or "5=far above average" for his family income when he was 15 years old, and 0 otherwise. Similarly, **poor15** takes the value 1 if the respondent chose "1=far below average" or "2=below average" for his family income when he was 15 years old, and 0 otherwise. The reference group is people who chose the "3=average" option.

Children

Jæger (2006a) suggests that having children might increase the support for redistribution and Stegmueller et al. (2011) provide empirical support. This is probably because people who have children are more sensitive to the risk of possible unfortunate events and these people might demand the government to provide a certain level of insurance for them and their children. To test this, I created a binary variable, **children**, which is equal to 1 if the respondent has one or more children, and 0 otherwise.

The reason I use a binary variable here is because I am interested in the effect of having a child on preference for redistribution compared to not having a child, rather than the effects of having each additional child. The same rationale applies to the decision to create binary variables in use of some of the other independent variables.

Urban vs. Rural

Haggard et al. (2013) argue that the support for government redistribution among the poor varies depending on whether they live in rural or urban areas. They show that the poor who mostly work in agriculture and who live in rural areas show lower support for government redistribution. This is probably because these people think that the benefactors from higher levels of government redistribution will be people who live in big cities, not themselves. Therefore, even if they want more public services and more redistribution, they might not support a higher level of government redistribution. On the other hand, the poor who live in big cities (especially the unskilled and semi-skilled manual workers) show a higher support for government redistribution, probably because they expect that the extra redistribution would benefit them via more abundant and accessible public goods. Empirical evidence by Rueda (2018) and Binelli and Loveless (2016) also support this argument. However, Ravallion and Lokshin (2000) find in contrast that living in a rural area increases the demand for redistribution.

I created two binary variables, **metropolis** and **village**, to test this. People who live in small cities are the reference group.

Happiness

The literature on determinants of preference for redistribution does not focus on happiness. While there are some studies that study the determinants of happiness (e.g., Alesina et al., 2004; Benabou and Tirole, 2006; Alesina and Giuliano, 2007), these studies do not study the effect that happiness might have on preference for redistribution. Rueda (2018) includes general happiness in one of his model specifications, but he does not report the individual effect of happiness on preference for redistribution.

The Japanese General Social Survey asks the question “Are you happy?” and the respondents could answer on a 1-5 scale, with “1=happy” and “5=unhappy”. I created a binary variable, **happy**, which takes the value 1 if the respondent chose options 1 or 2, and 0 otherwise.

Table 4.4 suggests that people who are happy have a lower demand for government redistribution in Japan.

Table 4. 4. Happiness and Demand for Redistribution

demand for redistribution	not happy	happy	total
1	2.42	3.43	3.08
2	5.54	8.13	7.22
3	30.81	34.70	33.34
4	27.90	27.78	27.82
5 (highest)	33.32	25.96	28.54
total	100	100	100

Note: Author's calculations for the baseline sample.

Trust

Algan et al. (2016) relate the size of the welfare state to the level of trust that people have for each other, and they provide empirical evidence for this relationship in OECD countries. Yamamura (2014) finds, for Japan, that an individual is more likely to support redistribution if the "trust in government" in his/her residential area is high.

I created two individual-level variables as proxies for trust, one for "trust in government" using the question "How well do you trust ministries and government agencies?", and another for "general trust" using the question "Generally speaking, would you say that people can be trusted or that you can't be too careful in dealing with people?"

I find that "trust in government" has no significant effect on redistribution preferences, while "general trust" has a very small positive effect. I consider the possibility that political views might already reflect "trust in government". However,

running the model without my measures for political views does not change the effect of "trust in government" variable.[41]

Unfortunately, the questions about trust have a low response rate, 35% did not respond to the "trust in government" variable and 17% chose the option "don't know". Therefore, I do not include them in the main models.

Justice Beliefs

Justice beliefs refer to beliefs about whether the society is fair or not. Wilensky (1975) argues

that "success ideology" which can be defined as the belief that upward mobility is due to hard work, not luck or knowing the right person, lowers the demand for welfare state.

Esping-Andersen (1990) divides the welfare states into three categories: liberal (US), conservative (Germany), and social-democratic (Scandinavian countries). He argues that these different types of welfare states affect the beliefs and opinions of people regarding the justness of the distribution, and in turn, their preferences for redistribution.[42]

Kluegel and Miyano (1995, p. 87) argue: "Esping-Andersen's classification underscores the importance of two characteristics of different welfare state programs: (1) the degree to which the poor are visible and stigmatized recipients of government aid, and (2) the degree to which the welfare state provides equal benefits to all, i.e., its inclusiveness or universality." They continue to argue that these two characteristics of welfare states affect redistribution preferences through justice beliefs, such as "success ideology". For example, if the aid to the poor is visible or that they are the only recipients

[41] These results are not reported.

[42] Svallfors (1997), using the international social survey, finds that preferences for redistribution are not affected by welfare state types. However, Linos and West (2003) criticize Svallfors (1997) on the grounds of "…questionable treatment of missing data and on poor operationalization of the theoretical determinants of public opinion" and find results supporting the claim of Esping-Andersen (1990).

of such transfers, discontent will rise and the "success ideology" will gain more traction and it will have a stronger effect on redistribution preferences. People will start to think that the poor are lazy, and the rich deserve their fortune because of their hard work. This, in turn, will lower the support for redistribution.

Esping-Andersen (1990) finds that ratio of poor-relief to total social expenditures is lower in Japan compared to the US. Kluegel and Miyano (1995) take this as a sign of the visibility of aid to the poor and argue that justice beliefs will have stronger effects on redistribution preferences in the US compared to Japan and they provide empirical evidence on this. They also find that "success ideology" does not have a statistically significant effect on redistribution preferences in Japan.

Alesina and La Ferrara (2004) also provide evidence that the belief that upward mobility is caused by hard work lowers the support for redistribution, while the belief that upward mobility is caused by luck increases it in the US.

Unfortunately, the Japanese General Social Survey does not have data on justice beliefs. Although they have been shown to have no effect on redistribution preferences in Japan by Kluegel and Miyano (1995), this might have changed over the years.

Race and Country of Origin

Race has been found to be a strong determinant of preference for redistribution in the literature (Luttmer, 2001; Alesina and Glaeser, 2004; Fong and Luttmer, 2009; Fong and Luttmer, 2011). These studies show that people are more willing to redistribute income to those from their own race and less willing to those that belong to other races or racial minorities.

Another branch of literature (Guiso, Sapionza, and Zingales, 2006; Alesina and Fuchs-Schündeln, 2007; Alesina and Guiliano, 2011; Luttmer and Singhal, 2011) finds culture or preference for redistribution in the countries of origin of the immigrants to be important determinants of preference for redistribution that persist through generations.

The Japanese General Social Survey does not have data on these characteristics. However, Japan is mostly a racially homogenous country with relatively small intake of

immigration. Therefore, not including these measures should not create any issues. Although, the recent labour shortages have forced Japan to accept more foreign workers and the increased rate of foreigners in Japanese population might affect redistribution preferences of the Japanese negatively in the future.

4.4. Data

I use data from the Japanese General Social Survey[43] to estimate the determinants of redistribution preferences in Japan. The Japanese General Social Survey is a repeated cross-section survey, and it uses a two-stage stratified sampling method. Respondents are changed every year that the survey is conducted. There were some pilot years before 2000, but the survey started in earnest in 2000. This chapter uses all the publicly available data, and it covers the years 2000, 2001, 2002, 2003, 2005, 2006, 2008, 2010 and 2012. The latest year available (as of August 2021) is 2012, and the years missing before this are either not available for public use or the survey was not conducted in those years. The respondents were given forms to fill out by themselves and they were also interviewed. The total sample size is around 32 thousand with the sample sizes growing in the later years of the survey.

The Japanese General Social Survey dataset has weight values to make the dataset nationally representative across several categories, such as age group and gender. However, due to missing data, the survey weights lose their meaning for my sample. Table 4.5 compares my baseline sample with Japanese population.

[43] The Japanese General Social Surveys (JGSS) are designed and carried out by the JGSS Research Center at Osaka University of Commerce (Joint Usage / Research Center for Japanese General Social Surveys accredited by Minister of Education, Culture, Sports, Science and Technology), in collaboration with the Institute of Social Science at the University of Tokyo. The project is financially assisted by the Japanese Ministry of Education, Culture, Sports, Science and Technology and Osaka University of Commerce.

Table 4. 5. Sample and Population Comparison

	Female Ratio				Age Groups	
	sample	population			sample	population
2000	0.50	0.51		20s	0.08	0.16
2001	0.50	0.51		30s	0.16	0.18
2002	0.49	0.51		40s	0.18	0.16
2003	0.52	0.51		50s	0.22	0.18
2005	0.52	0.51		60s	0.21	0.16
2006	0.49	0.51		70s	0.13	0.12
2008	0.48	0.51		80s	0.03	0.04
2010	0.52	0.51		avg. age	52.55	50.08
2012	0.51	0.51				
average	0.50	0.51				

Note: Sample values are for the baseline sample. Population values (for people between the ages 20-89) are calculated using data from Statistics Bureau of Japan. "Female Ratio" is the ratio of females to total population.

Overall, my baseline sample has good representation of Japanese population in terms of both gender ratio and age groups despite having small variations.

As discussed earlier, there are only a few papers that study the determinants of redistribution preferences in Japan. Yamamura (2012, 2013, 2014, 2016) uses the Japanese General Social Survey, while Ohtake and Tomioka (2004) conducted their own survey in Japan called "Survey on Life and Society". The advantage of the Ohtake and Tomioka survey is that it was designed specifically for analysis of the determinants of redistribution preferences. Therefore, they were able to obtain direct measures of variables that the Japanese General Social Survey does not have, such as risk aversion. However, their sample size is quite small, around a thousand. The Japanese General Social Survey, on the other hand, has a much larger sample size.[44] Another advantage that the Japanese General Social Survey has over the Survey on Life and Society is that it

[44] The total number of observations is around 32 thousand. However, due to missing responses, the actual number of observations that I could use was around 13 thousand.

covers a wider age range (20-89 compared to 20-65). Considering that Japan has one of the highest rates of elderly population in the world, the Japanese General Social Survey better represents the Japanese population. For these reasons, it should give more accurate results.

Dependent Variables

The dependent variables I used in my estimations come from the Japanese General Social Survey question "It is the responsibility of the government to reduce the differences in income between families with high incomes and those with low incomes". The respondents could choose on a 1-5 scale, with "1=agree" and "5=disagree".

Most studies derive the variable describing redistribution preferences from a similar question with a different phrasing (Alesina and La Ferrara, 2005; and Alesina and Giuliano, 2011). Ravallion and Lokshin (2000) argue that the question should make it clear that the redistribution will be from the rich to the poor, that more redistribution means more taxes for the rich (see also Ohtake and Tomioka, 2004). In this regard, Pontusson et al. (2020) ask the following two questions in their new "Inequality and Politics" survey: The first asks whether the respondent agrees that "[t]he government should take measures to reduce differences in income levels" and the second question asks the position of the respondents on redistribution of wealth from the rich to the poor on a scale from 0 to 10. They find that, although the ranking of countries in terms of their support for redistribution does not change depending on the question, the second question yields lower support for redistribution.

In an effort to reconcile the conflicting predictions of two separate lines of research, namely, self-interest literature[45] which argues that rising inequality and higher job insecurity would result in higher support for redistribution among the more

[45] Cusack, Iversen and Rehm (2006), McCarty, Poole, and Rosenthal (2006), Rehm, Hacker, and Schlesinger (2012).

disadvantaged segments of the population, and social affinity literature[46] which argues that rising inequality is related to reduced support for redistribution caused by dis-affinity of social groups with each other; Cavaillé and Trump (2015) differentiate between "redistribution to" the poor and "redistribution from" the rich. They argue that "redistribution to" the poor is characterized by altruism and affinity with the poor, and "redistribution from" the rich is characterized by self-interest. Although important, this distinction might not be as clear-cut as they argue. For example, the rich might support "redistribution to" the poor purely out of selfish reasons, i.e., to avoid negative externalities such as social unrest or the disutility of observing poverty (Ohtake and Tomioka, 2004). Similarly, using survey data for 17 advanced countries, Barnes (2015) differentiates between size and shape of redistribution and finds higher preference for progressivity of tax rates, but lower preference for overall tax levels. Using a more recent version of the same survey, Kambayashi, Lechevalier, and Jenmana (2020) find lower support for progressivity of tax rates in Japan.

Lastly, Rainer and Siedler (2008) use the preferred tax rates of people for the rich and the poor as a measure for redistribution preferences.

Table 4.6 shows that the demand for government redistribution is relatively high in Japan compared to what was found for other countries in the literature.

Table 4. 6. Demand for Government Redistribution

demand for redistribution	frequency	percent	cumulative
1	413	3.08	3.08
2	970	7.22	10.30
3	4,476	33.34	43.64

[46] Kristov, Lindert, and McClelland (1992), Gilens (2000), Luttmer (2001), Alesina and Glaeser (2004), Roemer, Lee, and Straeten (2007), Shayo (2009), Eger (2010), Lupu and Pontusson (2011).

4	3,736	27.82	71.46
5 (highest)	3,832	28.54	100
total	13,427	100	

Note: Author's calculations for the baseline sample.

The reason for this might be that redistribution preference question in the survey was likely to be understood as "redistribution to" the poor by most people and not "redistribution from" the rich. The fact that Japan is mostly a homogenous country in terms of race and culture, and that income differences are less obvious compared to other countries (Japan is famous for the non-flashy lifestyle of its rich, for example), probably helped with the affinity between different social groups, which in turn resulted in higher support for redistribution. Another reason might be due to the argument made by Alesina, Cozzi and Mantovan (2012) relating redistribution preferences to history and initial level (and reasons) for inequality. They argue that redistribution preferences are higher in Europe because the "initial inequalities" before capitalism were due to "birth", "social class", and "luck"; while they are lower in the US because "initial inequalities" were due to "entrepreneurship" and "effort". Therefore, the history of Japan, namely the strict class system of Edo period -which more closely resembles the historical conditions in Europe than that of the US, provides another explanation for the higher support for redistribution in today's Japan.

For the ordered-probit estimation, following Alesina and La Ferrara (2005), I created the variable **redist** which takes values between 1 and 5. However, in the Japanese General Social Survey, higher numbers for this question means lower support for redistribution. To change this, I subtracted my dependent variable, **redist**, from 6 so that higher numbers mean more support for redistribution.

For the probit estimation, I created a binary variable, **redist01**, which takes the value 1 if the respondent chose the options "agree" or "somewhat agree" for the question mentioned above, and 0 if the respondent chose "neither agree nor disagree", "somewhat disagree", or "disagree". There are a couple of reasons for my decision to include the middle option, "neither agree nor disagree", in the 'against redistribution' group and not

in the 'for redistribution' group. Firstly, 33% of the respondents chose the middle option. Therefore, excluding them would result in a large observation loss. Secondly, most Japanese people have a strong tendency to avoid conflict and act according to what is socially acceptable; and it is clear from the data that many Japanese people support redistribution, around 56% choosing options "agree" and "somewhat agree", against only around 10% choosing options "disagree" and "somewhat disagree". Therefore, it seems more likely that the people who chose the option "neither agree nor disagree" are against redistribution rather than being in favour of it. Lastly, including the middle option in the "for redistribution" group would dramatically reduce the variation and result in an unbalanced sample.

4.5. Empirical Analysis

I assume that the redistribution preference of individual i can be described with the following latent variable model[47] :

$$Y_i^* = X_i\beta + M_i\gamma + H_i\delta + \varepsilon_i \qquad (1)$$

where Y_i^* is an unobserved variable which takes higher values if the respondents favour more redistribution. X_i is a vector of individual characteristics such as income, age, gender, marital status, political views, religious affiliation, and risk aversion. M_i is a vector of variables related to mobility such as past mobility and future mobility expectations. H_i is a binary variable that is equal to 1 if the respondent is happy, and ε_i is an error term.

I do not observe Y_i^* . Instead, I observe Y_i which takes values from 1 to 5, with 5 being the highest demand for redistribution. Y_i satisfies the following condition:

[47] Following Ohtake and Tomioka (2004) and Alesina and La Ferrara (2005).

$$Y_i = \text{j if } \mu_{j-1} < Y_i \leq \mu_j \text{ for j} = 1, \ldots, 5 \quad (2)$$

where μ_j's are unknown cut points to be estimated with the ordered-probit analysis.

The sign and the significance of the coefficients in the ordered-probit model can be interpreted, but the coefficients are not equal to the marginal effects of the independent variables. To see the marginal effects, I use a probit model.[48] For this model I created a binary variable **redist01**[49] Y_i which is equal to 1 if the respondent is in favour of redistribution, and 0 otherwise. Y_i satisfies the following conditions:

$$Y_i = 1 if Y_i > 0 \quad (3)$$

$$Y_i = 0 if Y_i \leq 0 \quad (4)$$

Estimation Results

I run two main models, probit and ordered probit. Table 4.7 shows the results of the

ordered-probit model. The first column in Table 4.7 shows the results for the whole sample in terms of household income. The second column shows the results for people with below-average household income and the third column shows the results for people with above average household income. Table 4.8 shows the marginal effects derived from

[48] This is because calculating marginal effects for the ordered probit model gives multiple marginal effects of the independent variables, one for each category of the dependent variable. This is not only unnecessary for the purpose of this study, but it also makes interpreting the marginal effects difficult. For this reason, I use a probit model, which enables calculating a single marginal effect for each independent variable.

[49] See section 4.4 for a detailed explanation for this variable.

the probit model. Columns 1, 2 and 3 in Table 4.8 show the results for the whole sample, for the poor, and for the rich.

Table 4. 7. Ordered Probit Estimation Results (Baseline)

Dep. Var.	ALL		POOR		RICH	
redist	Coefficient	Robust SE	Coefficient	Robust SE	Coefficient	Robust SE
Income	-0.120***	0.017	-0.018	0.032	-0.231***	0.037
female	-0.077***	0.022	-0.098***	0.033	-0.043	0.029
married	0.076***	0.029	0.058	0.039	0.054	0.045
age30s	-0.066	0.042	-0.042	0.066	-0.043	0.058
age40s	0.007	0.043	0.072	0.07	0.061	0.058
age50s	0.072*	0.043	0.054	0.069	0.162***	0.059
age60s	0.124***	0.045	0.122*	0.064	0.190***	0.065
age70s	0.156***	0.05	0.153**	0.069	0.261***	0.079
age80s	0.161**	0.073	0.177*	0.092	0.273**	0.132
college	-0.146***	0.028	-0.081	0.057	-0.150***	0.033
graduate	-0.171***	0.035	-0.140**	0.066	-0.152***	0.042
self_emp	0.032	0.037	-0.05	0.065	0.062	0.047
trauma	0.079***	0.019	0.039	0.032	0.099***	0.025
mobility	-0.157***	0.027	-0.170***	0.047	-0.151***	0.033
gotpoorer	-0.131***	0.026	-0.109**	0.045	-0.121***	0.033
gotricher	0.209***	0.026	0.189***	0.04	0.200***	0.036
poor15	0.211***	0.025	0.191***	0.039	0.210***	0.033
rich15	-0.196***	0.029	-0.150***	0.048	-0.202***	0.037
conserv	-0.087***	0.022	-0.122***	0.035	-0.059**	0.029
progre	0.067***	0.025	0.079*	0.041	0.067**	0.031
religion	0.095***	0.032	0.026	0.046	0.154***	0.045
religionx	-0.052**	0.022	-0.072**	0.036	-0.041	0.028
children	0.080***	0.031	0.158***	0.044	0.021	0.043
metropolis	-0.032	0.023	-0.026	0.038	-0.041	0.029
village	-0.023	0.046	-0.107	0.071	0.033	0.06
temporary	0.060**	0.03	0.057	0.053	0.045	0.037
unemp	0.099	0.083	0.088	0.105	0.141	0.136
notlabour	-0.025	0.027	-0.075*	0.045	-0.011	0.035

happy	-0.091***	0.021	-0.086***	0.032	-0.094***	0.027
No. of Obs.	13,427		5,452		7,975	
Wald Test	992.48		245.11		571.5	
Pseudo R2	0.0275		0.0174		0.0258	

Note: *, **, *** show significance at 10%, 5% and 1% levels. “All” is the full sample, while “poor” consists of people with below average income and “rich” consist of people with above average income. Year dummies were included, but not reported due to space limitations.

Table 4. 8. Probit Estimation Results (Baseline)

Dep. Var.	ALL		POOR		RICH	
redist01	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.
income	-0.035***	0.02	-0.001	0.036	-0.094***	0.043
female	-0.046***	0.025	-0.047***	0.039	-0.037***	0.034
married	0.031**	0.034	0.027	0.046	0.019	0.053
age30s	-0.021	0.05	-0.023	0.079	-0.013	0.068
age40s	-0.004	0.05	0.033	0.084	0.007	0.068
age50s	0.027	0.05	0.036	0.08	0.052**	0.069
age60s	0.045**	0.052	0.043	0.075	0.071**	0.075
age70s	0.054**	0.059	0.051*	0.081	0.092***	0.09
age80s	0.087***	0.084	0.089**	0.108	0.132**	0.154
college	-0.049***	0.034	-0.021	0.068	-0.053***	0.04
graduate	-0.022	0.041	-0.002	0.079	-0.019	0.049
self_emp	0.011	0.043	-0.017	0.076	0.021	0.054
trauma	0.045***	0.023	0.029**	0.037	0.053***	0.03
mobility	-0.046***	0.031	-0.051**	0.054	-0.043***	0.038
gotpoorer	-0.056***	0.031	-0.067***	0.054	-0.040***	0.039
gotricher	0.091***	0.03	0.084***	0.046	0.084***	0.042
poor15	0.093***	0.029	0.094***	0.046	0.084***	0.039
rich15	-0.073***	0.034	-0.058***	0.055	-0.071***	0.044
conserv	-0.018*	0.027	-0.027*	0.042	-0.011	0.035
progre	0.053***	0.029	0.061***	0.047	0.051***	0.036
religion	0.045***	0.037	0.009	0.054	0.076***	0.052

religionx	-0.013	0.027	-0.009	0.043	-0.016	0.034
children	0.016	0.036	0.047**	0.053	-0.007	0.051
metropolis	-0.017*	0.028	-0.01	0.045	-0.023*	0.035
village	0.001	0.054	-0.042	0.082	0.029	0.071
temporary	0.017	0.036	0.018	0.064	0.012	0.045
unemp	0.021	0.092	0.033	0.118	0.015	0.155
notlabour	-0.02	0.033	-0.025	0.054	-0.021	0.043
happy	-0.033***	0.025	-0.032**	0.038	-0.031**	0.032
No. of Obs.	13,427		5,452		7,975	
Wald Test	665.02		203.32		405.42	
Pseudo R2	0.0377		0.0291		0.0377	

Note: *, **, *** show significance at 10%, 5% and 1% levels. “All” is the full sample, while “poor” consists of people with below average income and “rich” consist of people with above average income. Year dummies were included, but not reported due to space limitations.

I start by looking at the effect of income on redistribution preferences. The estimation results show that household income reduces the demand for redistribution. The results are significant in both models. However, when the sample is divided by income, this effect remains significant only for the rich. Overall, these results are in line with Meltzer and Richard (1981) who suggest that people are selfish and utility maximizing.

Japanese women are less likely than Japanese men to support government redistribution. The results are significant in both models, except for the rich in the ordered-probit model for whom being female does not have a significant effect on redistribution preferences. The Japanese women are 4.6 percentage points less likely to support redistribution. The negative impact of being female on redistribution preferences is in direct contrast with the literature which focuses mostly on western countries. There seems to be a unique characteristic of Japanese women that affects their redistribution preferences which differentiates them from western women. This result confirms the findings of Ohtake and Tomioka (2004) and Yamamura (2012) on the effects of gender redistribution preferences in Japan. Pinpointing the reasons for this result is difficult, and the Japanese scholars mentioned above do not comment on this. Religion, culture, history,

and women's place in society could all play a role. A future study which compares the characteristics of Japanese women with that of western women might shed more light on this subject.

To see the effect of altruism on redistribution preferences, I estimated separate models, because my altruism measure is only available for the first three years of the survey. As expected, altruistic people are more likely to support redistribution, with a marginal effect of 5.9 percentage point.[50] Notably, even after controlling for altruism and risk–aversion, Japanese women are still less likely to support redistribution than Japanese men.

Being married increases the demand for redistribution in Japan. The results are significant in both models. The married people are 3.1 percentage points more likely to support redistribution. As discussed in section 4.3, the literature finds mixed results on the impact of marital status on preference for redistribution and this study provides additional evidence on the discussion.

Age also increases the demand for redistribution. The dummy variables **age30s** and **age40s** are insignificant, **age50s** is partly significant, and **age60s**, **age70s** and a**ge80s** are significant and have a positive sign. The marginal effects also increase with age. People in their 60s, 70s and 80s are 4.5, 5.4, and 8.7 percentage points more likely to support redistribution. These results suggest that redistribution becomes more relevant and important as people get older. Ohtake and Tomioka (2004) find that older age increases the demand for redistribution only for the poor. My results show that old age increases the demand for redistribution for both the poor and the rich. In fact, the coefficients of the age dummy variables have higher significance in the sample consisting of the rich.

Education decreases the demand for redistribution. Having a college degree decreases the demand for redistribution for the rich in both models. For the poor, having a college degree does not have a significant effect on redistribution preferences. For the

[50] Please check Table 4.12 in the Appendix for the results.

whole sample, people who have a college degree are 4.9 percentage points less likely to support redistribution. On the other hand, having a graduate degree only has a significant effect on redistribution preferences in the ordered-probit model. I also look at the effect of having 12 years education or less (high school or less) and the effect of having 16 years of education or more (college or more).[51] Having 12 years of education or less increases the demand for redistribution, while having 16 years of education or more decreases it. Overall, these results support the findings in the literature.

I included two proxies for risk-aversion together in the models, self-employment and having experienced a traumatic event in the last 5 years. The rationale behind the use of self-employment as a (reverse) proxy for risk aversion is that self-employed people are more likely to have lower levels of risk aversion. In other words, it is not likely for people with high levels of risk aversion to prefer being self-employed where they do not know when or how much they would be paid. Risk aversion is expected to increase the demand for redistribution. However, the dummy variable **self_emp** is not significant in either model. There are convincing theoretical arguments as well as ample empirical evidence that shows that risk aversion has a significant impact on redistribution preferences. This suggests that being self-employed is not a good proxy for risk aversion. To further test this, I estimated both models again (results not reported) without the other proxy I use for risk aversion, which is **trauma** (whether the respondent has experienced a traumatic event such as divorce, unemployment, death in the family etc. or not). Being self-employed remains insignificant. These results show that self-employment does not capture the effects of risk aversion on redistribution preferences, and thus support the argument made by Gärtner et al. (2017). Furthermore, the results also suggest that being self-employed does not influence redistribution preferences even through ways other than risk aversion.

The second proxy I use for risk aversion, **trauma,** is highly significant in both models and it has a positive sign as expected. This variable also has the same effect on redistribution preferences of the poor and the rich, but the results are not robust for the poor. People who have experienced a traumatic event in the last 5 years are 4.5 percentage

[51] These results are not reported.

points more likely to support redistribution. The rationale behind the use of this variable as a proxy for risk aversion is that past experiences of unfortunate events are likely to make people more risk averse. People might better realize the seriousness and the consequences of bad things that could happen to them if they have experienced such a thing in the past. Because of this, they might demand the government to provide insurance against these unfortunate events.

Now, I look at the effects of different mobility measures on redistribution preferences. Firstly, perceived future mobility decreases the demand for redistribution. The results are significant in both models. Furthermore, the perceived future mobility has the same effect on redistribution preferences for both the poor and the rich. People who expect upward future mobility are 4.6 percentage points less likely to support redistribution. One of the implications of these results is that the poor might not demand higher levels of redistribution if they expect to have a higher income in the future. Therefore, these results support the "Prospect of Upward Mobility Hypothesis".

Next, I look at the effect of family income when growing up using the variables **poor15** and **rich15**. Having below-average family income when the respondent was 15 years old increases the demand for redistribution. The results are significant in both models. Interestingly, the results are the same for both the poor and the rich. This means that having a below-average family income when the respondent was 15 years old has a long-lasting effect on redistribution preferences which persists even if the respondent no longer has below-average income. People who had below-average family income when they were 15 years old are 9.3 percentage points more likely to support redistribution. On the other hand, having above average family income when the respondent was 15 years old reduces the demand for redistribution. People who had above average family income when they were 15 years old are 7.3 percentage points less likely to support redistribution. The results are significant in both models, and the results are the same for both the poor and the rich. This again suggests that the level of family income when growing up has a long-lasting effect on redistribution preferences that persists even if the level of income of the respondent changes later in life.

As my last measure of mobility, I look at the effects of past mobility using the variables **gotpoorer** and **gotricher**. Having a lower family income today compared to the family income the respondent had when he was 15 years old decreases the demand for redistribution, with a marginal effect of -5.6 percentage points; while having a higher family income compared to the family income the respondent had when he was 15 years old increases it, with a marginal effect of 9.1 percentage points. These results are highly significant in both models and the results are the same for both the poor and the rich. The signs of these effects are unexpected and contrary to what Meltzer and Richard (1981) suggest, which is the lower one's income, the higher his demand for redistribution. One explanation could be that these variables might not measure the same thing for all, because for a 20-year-old respondent they measure a 5-year mobility, but for a 70-year-old respondent they measure a 55-year mobility. Therefore, they might reflect different things as the age of the respondent increases.

As an alternative measure of past mobility, I look at the effect of a more recent mobility experience using the variables **gotbetter** and **gotworse**.[52] These variables do not suffer from the problem above and should measure the same thing for all. Having a worsening financial situation in the last few years increases the demand for redistribution, with a marginal effect of 7.7 percentage points. The results are significant at the 1% level, and they are the same for both the poor and the rich. Meanwhile, having an improving financial situation in the last few years reduces the demand for redistribution, but this effect is significant only at 10% level.

Next, I look at the effects of employment. Being a temporary worker increases the demand for redistribution. However, this variable loses its significance in the probit model. These results provide weak evidence that people who are temporary workers are more likely to support redistribution compared to people who are regular workers.

Being unemployed and being out of the labor force do not have a significant effect on redistribution preferences. One could argue that unemployment might increase the

[52] Please check Table 4.11 in the Appendix for the results.

demand for more redistribution, especially if the unemployment rates are high and people feel trapped in unemployment. However, Japan has one of the lowest unemployment rates among developed countries. Therefore, Japanese people probably see unemployment as a temporary situation and do not feel the need for the government to intervene when they are unemployed.

Overall, it is not surprising for employment variables to not have a strong effect on redistribution preferences. They are more likely to affect redistribution preferences through their effects on personal mobility expectations. For example, unemployment is likely to cause higher support for redistribution only when it has a strong negative effect on future mobility prospects. So, once one controls for mobility, these employment variables lose their significance. To see if employment variables become more significant if I do not control for mobility, I dropped my mobility measures from the models and run them again. Employment variables indeed become slightly more significant, but they mostly remain the same as before.

Perceived risk of unemployment increases the demand for redistribution.[53] People who think that they might lose their jobs in the future are 2.7 percentage points more likely to support redistribution. However, this effect is significant only at the 10% level and it loses its significance in the ordered-probit model. Perceived risk of unemployment does not affect redistribution preferences of the poor, while the rich who expect to lose their jobs are 3.5 percentage points more likely to support redistribution. One explanation for this might be that losing a high-paying job is probably more traumatic, while low-paying jobs could more easily be replaced.

Political views have a significant effect on redistribution preferences. Both models suggest that being conservative reduces the demand for redistribution. This effect is the same for both the poor and the rich. Conservatives are 1.8 percentage points less

[53] The question about risk of unemployment was only asked to people who are employed. Therefore, including this variable in the main models would require me to omit people who are unemployed and people who are not in the labour force. So, I run a separate model for this. Please check Table 4.13 in the Appendix for the results.

likely to support redistribution. On the other hand, being progressive increases the demand for redistribution. This effect is also the same for both the poor and the rich. Progressives are 5.3 percentage points more likely to support redistribution. The reason I created separate binary variables (**conserv** and **progre**) for being conservative or progressive is to see the impact of both political views on redistribution preferences. Using a single scale variable for political views (1-5 scale, with 1 being conservative and 5 being progressive) results in a significant positive effect (not reported). This tells us that being progressive increases the demand for redistribution, but it does not tell us anything about the effect of being conservative. Therefore, I preferred using separate variables.

Having at least one child (**children**) increases the demand for redistribution for the poor, with a marginal effect of 4.7 percentage points, while having children does not have a significant effect on redistribution preferences of the rich in either of the models.

Being affiliated with a religion (**religion**) increases the demand for redistribution, with a marginal effect of 4.5 percentage points. The results are significant in both models. Having a not-practiced family religion (**religionx**), on the other hand, does not have a robust effect. It has a negative effect that is significant at the 5% level in the ordered-probit model, but it does not have a significant effect in the probit model. Following a religion has a significant effect on redistribution preferences of the rich only. For the reasons explained before, this study does not look at the effects of being affiliated with different religions or religious denominations. However, Chang (2010) focuses on this point and finds that, indeed, being protestant has the opposite effect on redistribution preferences in Taiwan compared to western countries. Overall, these results are in direct contrast to the findings in the literature that focuses on western cultures. There might be two reasons for this difference. The first is, as found by Chang (2010), the cultural difference. That is, there are some characteristics of the eastern cultures that are different from the western cultures that affect the impact of religion on redistribution preferences. The second is the difference between religions. We mostly see the effect of Christianity in the literature that focuses on western countries. In this study, we mostly see the effects of Shintoism and Buddhism.

Next, I look at the effect of happiness on redistribution preferences, one of the contributions of this chapter. I find that happiness decreases the demand for redistribution. The results are highly significant in both models, and happiness decreases the demand for redistribution of both the poor and the rich. Happy people are 3.3 percentage points less likely to support redistribution. One interpretation of these results might be that happy people might feel more content with their lives, so they might have lower expectations from the government in terms of redistribution.

Lastly, living in a rural or urban area does not have a significant effect on redistribution preferences. The only exception is that, living in a metropolis decreases the demand for redistribution in the probit model. However, this effect loses its significance in the ordered-probit model.

Robustness Check

When I created the dependent variable for the probit model, I included respondents to the redistribution question who chose the middle option "neither agree nor disagree" in the "against redistribution" group. Although, as explained before, this seems to be the best course, it might have affected the results. To check if this was so, I created two more dummy variables: **redist01alt** by including the respondents who chose the middle option in the "for redistribution" group; and **redist01alt2** by excluding the respondents who chose the middle option. In the baseline **redist01**, 56.36% of the people support redistribution and 43.64% are against it. **redist01alt** transforms the sample into 89.7% for and 10.3% against redistribution; while **redist01alt2** transforms the sample into 84.55% for and 15.45% against redistribution, and results in a 33% observation loss. Comparing the results of the probit estimations using these three dependent variables to the results of the ordered probit estimation -which does not have this issue, should tell us which dependent variable is better to use. Table 4.10 in the Appendix shows the results of the probit estimations using **redist01alt** and **redist01alt2**. As expected, the probit estimation results using **redist01** are closest to the results of the ordered probit estimation in terms of significance and the direction of the effects of the independent variables. Adding the respondents who chose the middle option in the "for redistribution" group

distorts the results too much; some of the characteristics that are shown to have a significant effect on redistribution preferences in the literature become insignificant and some of them change signs. Therefore, too much weight should not be placed on these results.

4.6. Conclusion

In this chapter, I examined the individual determinants of preference for government redistribution in Japan using the Japanese General Social Survey. The literature on the determinants of redistribution preferences mostly focuses on western countries. This chapter focused on Japan to compare the different impacts western and eastern cultures might have on redistribution preferences. This chapter also contributes to the literature by using a larger and more representative dataset or being more comprehensive compared with the existing few studies related to Japan.

I found that being female and having a religious affiliation have opposite effects on redistribution preferences in Japan compared with the effects these variables have in western countries. Japanese women have lower demand for redistribution compared with Japanese men, and this is true even after controlling for personal characteristics such as risk-aversion and altruism which might have caused this. Pinpointing the reasons for this result is difficult. Religion, culture, history, and women's place in society could all play a role. A future study which compares the characteristics of Japanese women with that of western women might shed more light on this subject. Similarly, having a religious affiliation increases the demand for redistribution of Japanese people instead of decreasing it. This is probably caused by the differences in religions. The literature that focuses on the US and Europe mostly measures the effects of Christianity, and this study mostly measures the effects of Buddhism and Shintoism. A future study that considers the theology of these religions together with the different denominations in each religion, might give us a better understanding of this difference. However, the same religion can have the opposite effects in the western and eastern cultures. So, how these religions are understood also matters.

Another contribution of this chapter is the inclusion of happiness as a determinant of redistribution preferences. Happiness has a highly significant effect on redistribution preferences, and people who classify themselves as happy have lower preference for government redistribution in Japan. One interpretation of this might be that happy people might feel more content with their lives, so they might have lower expectations from the government in terms of redistribution.

The other determinants of redistribution preferences in Japan have similar effects compared with western countries. Income, education, perceived future mobility (expecting a better future), improving financial situation in the last few years and being conservative decreases the demand for redistribution. Meanwhile, age, altruism, being married, risk-aversion, having children, perceived risk of losing one's job, worsening financial situation in the last few years and being progressive increases the demand for redistribution.

Overall, this study provides evidence that Japan has some unique characteristics compared with the western countries that affect the redistribution preferences of its people. A future comparative study might give us a better understanding relating to the nature of this difference. This study also points to some results that might of interest to policymakers. One such result is age is more important than current income in forming people's preference for redistribution. Moreover, as people get older, the effect of age on redistribution preferences increases. This is especially important for Japan which has an aging population. Another result is, feeling trapped or having negative mobility expectations are also more important than current income in forming people's redistribution preferences. Because the number of temporary or irregular workers have been increasing in recent years, this is relevant for Japan. To the degree that these temporary workers feel trapped in their current temporary employment and feel like they do not have any upward mobility prospects, they will demand higher redistribution from the government.

APPENDIX

Table 4. 9. Descriptive Statistics for the Baseline Sample

Variable	Obs.	Mean	Std. Dev.	Min	Max
redist	13427	3.715	1.051	1	5
income	13427	15.407	0.741	12.766	16.951
female	13427	0.503	0.500	0	1
married	13427	0.786	0.410	0	1
age20s	13427	0.077	0.267	0	1
age30s	13427	0.160	0.367	0	1
age40s	13427	0.183	0.387	0	1
age50s	13427	0.218	0.413	0	1
age60s	13427	0.208	0.406	0	1
age70s	13427	0.125	0.330	0	1
age80s	13427	0.028	0.166	0	1
college	13427	0.137	0.344	0	1
graduate	13427	0.104	0.305	0	1
self_emp	13427	0.084	0.278	0	1
trauma	13427	0.628	0.483	0	1
mobility	13427	0.160	0.367	0	1
gotpoorer	13427	0.268	0.443	0	1
gotricher	13427	0.324	0.468	0	1
poor15	13427	0.382	0.486	0	1
rich15	13427	0.180	0.384	0	1
conserv	13427	0.276	0.447	0	1
progre	13427	0.226	0.418	0	1
religion	13427	0.111	0.314	0	1
religionx	13427	0.252	0.434	0	1
children	13427	0.822	0.382	0	1
metropolis	13427	0.206	0.404	0	1
village	13427	0.049	0.216	0	1
temporary	13427	0.136	0.343	0	1
unemp	13427	0.016	0.126	0	1
notlabour	13427	0.337	0.473	0	1
happy	13427	0.649	0.477	0	1

Table 4. 10. Probit Estimation Results (Alternative Dependent Variables)

Dep. Var.	redist01alt		redist01alt2	
	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.
income	-0.022***	0.005	-0.035***	0.007
female	0.023***	0.006	0.017**	0.008
married	0.016**	0.008	0.024**	0.011
age30s	-0.009	0.011	-0.016	0.015
age40s	0.01	0.011	0.012	0.016
age50s	0.012	0.011	0.025	0.016
age60s	0.015	0.012	0.032*	0.017
age70s	0.018	0.013	0.039**	0.019
age80s	0.014	0.02	0.036	0.028
college	-0.028***	0.007	-0.047***	0.01
graduate	-0.047***	0.009	-0.061***	0.012
self_emp	0.009	0.01	0.014	0.014
trauma	0.006	0.005	0.019**	0.008
mobility	-0.046***	0.006	-0.065***	0.009
gotpoorer	-0.022***	0.007	-0.036***	0.01
gotricher	0.023***	0.007	0.047***	0.01
poor15	0.034***	0.007	0.061***	0.01
rich15	-0.035***	0.007	-0.059***	0.011
conserv	-0.043***	0.006	-0.055***	0.009
progre	-0.039***	0.006	-0.038***	0.009
religion	0.006	0.009	0.017	0.013
religionx	-0.007	0.006	-0.011	0.009
children	0.021***	0.008	0.028**	0.012
metropolis	0.002	0.006	-0.002	0.009
village	-0.013	0.013	-0.017	0.018
temporary	0.019**	0.009	0.029**	0.012
unemp	0.003	0.022	0	0.031
notlabour	0.005	0.008	0	0.011
happy	-0.017***	0.006	-0.028***	0.008
No. of Obs.	13,427		8,951	
Wald Test	564.29		616.38	
Pseudo R2	0.0701		0.0916	

Note: *, **, *** show significance at 10%, 5% and 1% levels. Year dummies were included, but not reported due to space limitations. I created the dummy variable "redist01alt" as follows: Respondents who chose the middle option "neither agree nor disagree" for the redistribution question were included in the "for redistribution" group; instead of the "against redistribution" group as in the baseline sample. In the "redist01alt2" variable, respondents who chose the middle option were excluded.

Table 4. 11. Probit Estimation Results (with Alternative Mobility Measures)

Dep. Var.	ALL		POOR		RICH	
redist01	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.
income	-0.054***	0.019	-0.011	0.036	-0.114***	0.041
female	-0.044***	0.025	-0.044***	0.039	-0.037***	0.034
married	0.024*	0.034	0.019	0.046	0.011	0.053
age30s	-0.024	0.05	-0.026	0.079	-0.018	0.068
age40s	-0.016	0.051	0.029	0.085	-0.007	0.068
age50s	0.013	0.051	0.025	0.081	0.039	0.069
age60s	0.035*	0.053	0.037	0.076	0.058**	0.075
age70s	0.048**	0.059	0.050*	0.082	0.084**	0.09
age80s	0.076**	0.085	0.086**	0.109	0.121**	0.153
college	-0.051***	0.034	-0.026	0.068	-0.054***	0.04
graduate	-0.025	0.04	-0.001	0.079	-0.022	0.048
self_emp	0.008	0.043	-0.018	0.076	0.017	0.054
trauma	0.043***	0.023	0.027**	0.037	0.052***	0.03
mobility	-0.041***	0.031	-0.042**	0.054	-0.039***	0.038
gotworse	0.077***	0.024	0.085***	0.038	0.066***	0.031
gotbetter	-0.032*	0.047	-0.035	0.092	-0.029	0.055
poor15	0.036***	0.025	0.030**	0.039	0.041***	0.033
rich15	-0.026**	0.031	-0.027	0.052	-0.022	0.039
conserv	-0.018*	0.027	-0.028*	0.042	-0.01	0.035
progre	0.050***	0.028	0.057***	0.047	0.049***	0.036
religion	0.043***	0.037	0.007	0.054	0.075***	0.051
religionx	-0.015	0.027	-0.014	0.043	-0.017	0.034
children	0.011	0.036	0.043**	0.053	-0.012	0.051
metropolis	-0.019*	0.028	-0.01	0.045	-0.026*	0.035
village	0.003	0.054	-0.035	0.082	0.029	0.071
temporary	0.016	0.036	0.015	0.064	0.012	0.046
unemp	0.021	0.092	0.037	0.117	0.006	0.156
notlabour	-0.023*	0.033	-0.029	0.054	-0.024	0.043
happy	-0.032***	0.025	-0.031**	0.038	-0.030**	0.033
No. of Obs.	13,434		5,454		7,980	
Wald Test	659.67		207.88		399.37	
Pseudo R2	0.0369		0.0288		0.0373	

Note: *, **, *** show significance at 10%, 5% and 1% levels. “All” is the full sample, while “poor” consists of people with below average income and “rich” consist of people with above average income. Year dummies were included, but not reported due to space limitations.

Table 4. 12. Altruism

	Ordered Probit Estimation		Probit Estimation			
Dep. Var	redist		redist01		redist01	
	Coefficient	Robust SE	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.
income	-0.147***	0.027	-0.043***	0.03	-0.040***	0.03
female	-0.110***	0.035	-0.067***	0.042	-0.066***	0.042
married	0.049	0.047	0.017	0.055	0.018	0.055
age30s	-0.073	0.063	-0.017	0.077	-0.019	0.077
age40s	0.014	0.062	0.012	0.077	0.012	0.077
age50s	0.08	0.063	0.042	0.077	0.041	0.076
age60s	0.133*	0.069	0.069**	0.082	0.072**	0.082
age70s	0.169**	0.077	0.076**	0.092	0.078**	0.092
age80s	0.220*	0.126	0.089	0.145	0.091*	0.144
college	-0.225***	0.041	-0.079***	0.05	-0.075***	0.05
graduate	-0.410***	0.138	-0.148**	0.153	-0.140**	0.154
self_emp	0.052	0.06	0.021	0.069	0.022	0.069
trauma	0.070**	0.031	0.039***	0.037	0.041***	0.037
mobility	-0.149***	0.042	-0.036**	0.049	-0.034*	0.049
gotpoorer	-0.063	0.041	-0.02	0.049	-0.018	0.049
gotricher	0.209***	0.042	0.092***	0.049	0.091***	0.049
poor15	0.155***	0.039	0.068***	0.047	0.067***	0.047
rich15	-0.183***	0.047	-0.052**	0.055	-0.052**	0.055
conserv	-0.081**	0.035	-0.011	0.043	-0.012	0.043
progre	0.057	0.04	0.061***	0.046	0.063***	0.046
religion	0.064	0.054	0.049**	0.062	0.051**	0.062
religionx	-0.064*	0.036	-0.012	0.043	-0.011	0.043
children	0.095*	0.05	0.017	0.06	0.016	0.06
metropolis	-0.028	0.038	-0.019	0.046	-0.018	0.046
village	0.948	0.743	-0.351	0.605	-0.361	0.63
temporary	0.094*	0.049	0.035	0.059	0.033	0.059
unemp	0.188	0.121	0.081	0.138	0.082	0.138
notlabour	-0.016	0.044	-0.016	0.053	-0.018	0.053
happy	-0.113***	0.033	-0.052***	0.039	-0.050***	0.039
altruism	0.143***	0.032	0.059***	0.038		
No. of Obs.	5,258		5,258		5,258	
Wald Test	412.1		288.62		274.2	

Pseudo R2	0.0291	0.0419	0.0396

Note: *, **, *** show significance at 10%, 5% and 1% levels. Year dummies were included, but not reported due to space limitations.

Table 4. 13. Probit Estimation Results (Risk of Unemployment)

Dep. Var.	ALL		POOR		RICH	
redist01	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.	Marginal Effect	Std. Err.
income	-0.032***	0.019	0.001	0.035	-0.087***	0.043
female	-0.050***	0.024	-0.055***	0.038	-0.042***	0.031
married	0.027**	0.034	0.022	0.045	0.016	0.053
age30s	-0.02	0.05	-0.024	0.079	-0.008	0.068
age40s	-0.005	0.05	0.031	0.084	0.009	0.068
age50s	0.027	0.05	0.035	0.08	0.053**	0.069
age60s	0.039**	0.051	0.03	0.072	0.068**	0.075
age70s	0.044**	0.056	0.033	0.076	0.087***	0.087
age80s	0.084***	0.081	0.077**	0.102	0.133**	0.15
college	-0.050***	0.034	-0.021	0.068	-0.054***	0.04
graduate	-0.023	0.04	-0.003	0.079	-0.02	0.048
self_emp	0.017	0.041	-0.005	0.068	0.025	0.053
trauma	0.046***	0.023	0.032**	0.037	0.052***	0.03
mobility	-0.044***	0.031	-0.049**	0.054	-0.042***	0.038
gotpoorer	-0.056***	0.031	-0.070***	0.054	-0.040***	0.039
gotricher	0.089***	0.03	0.084***	0.046	0.081***	0.042
poor15	0.093***	0.029	0.095***	0.046	0.084***	0.039
rich15	-0.073***	0.034	-0.059***	0.054	-0.070***	0.044
conserv	-0.018*	0.027	-0.026*	0.041	-0.012	0.035
progre	0.053***	0.028	0.060***	0.047	0.051***	0.036
religion	0.044***	0.037	0.01	0.054	0.074***	0.051
religionx	-0.011	0.027	-0.008	0.043	-0.014	0.034
children	0.016	0.036	0.046**	0.052	-0.007	0.051
metropolis	-0.016	0.028	-0.008	0.045	-0.023*	0.035
village	-0.005	0.053	-0.049*	0.081	0.025	0.07
temporary	0.022*	0.034	0.028	0.057	0.017	0.043
risk_unemp	0.027*	0.038	0.009	0.063	0.035*	0.048
happy	-0.033***	0.024	-0.033**	0.038	-0.030**	0.033
No. of Obs.	13,495		5,511		7,984	
Wald Test	664.96		205.43		399.96	
Pseudo R2	0.0373		0.0289		0.037	

Note: *, **, *** show significance at 10%, 5% and 1% levels. “All” is the full sample, while “poor” consists of people with below average income and “rich” consist of people with above average income. Year dummies were included, but not reported due to space limitations.

CHAPTER 5

CONCLUSION

This dissertation studied various aspects of economic inequalities in Japan. Chapter 2 focused on the effect of quantitative easing on income inequality after the 2008 financial crisis. This chapter contributed to the existing literature by using a more recent dataset. For measuring the effects of quantitative easing, this was crucial, because the scale of quantitative easing, especially after 2013, has been unprecedented and the samples of existing studies ended before capturing the full effects of quantitative easing. Some of the results are:

-Quantitative easing has increased income inequality in Japan.

-One standard deviation upward shock to monetary policy increases income inequality by around 0.2 percentage points.

-The magnitude of this effect drops dramatically when I change the income inequality measure from the "ratio of top 20% to bottom 20%" to the "Gini coefficient", although the effect stays statistically significant.

-This shows the importance of using different measures for economic inequality.

Just as it is important not to rely on a single measure for income inequality, it is also important not to rely on a single measure for economic inequality. This is because income inequality might paint a distorted picture about the distributional effects of quantitative easing as discussed in Chapter 3. For this reason, Chapter 3 focused on the effect of quantitative easing on consumption (instead of income) inequality. To the best of my knowledge, this is the first article to empirically study the effect on consumption inequality of quantitative easing in Japan. Some of the results are:

-Quantitative easing has increased consumption inequality in Japan.

-The estimated magnitude of this effect is much smaller compared with the effect on income inequality.

-This suggests that the effect of quantitative easing on incomes was temporary (permanent incomes did not change), so it did not translate into a similar change in consumption inequality.

-Another reason consumption inequality did not change as much as income inequality might be because of the higher marginal propensity to consume of the households at the bottom of the income distribution compared to the households at the top. Because the households at the bottom spent a higher share of their income gains compared to the households at the top, consumption inequality did not rise as much as income inequality.

Lastly, Chapter 4 focused on the preferences for government redistribution in Japan, which is an important part of the discussion of economic inequality, because it gives us some insight into how much inequality people want and why. This chapter contributes to the existing literature by using a more representative dataset and by being more comprehensive. I confirm some of the findings in the literature and I also find unique results. Some of the results are:

-Japan is different from western countries.

-Being female decreases the demand for redistribution in Japan instead of increasing it.

-Similarly, being affiliated with a religion increases the demand for redistribution in Japan instead of decreasing it.

-Other determinants of redistribution preferences such as income, education, and political preferences have a similar effect in Japan compared with western countries.

-I also tested the effect of happiness on redistribution preferences and found that happy people are less likely to support government redistribution.

Limitations and Policy Recommendations

Chapters 2 and 3 have shown that quantitative easing has increased income and (to a lesser extent) consumption inequalities in Japan. However, these chapters have certain limitations. First, due to lack of micro-data, I was not able to account for heterogeneity among households. This and the lack of wealth data also prevented me from studying all five of the transmission channels discussed in Chapter 2. Second, although this thesis argues that quantitative easing has increased economic inequalities in Japan, this result needs to be discussed together with the counterfactual scenario of "no quantitative easing". It is likely that quantitative easing has prevented a worse outcome in the aftermath of the 2008 crises.

The rise in economic inequality is likely to make people more sensitive to government redistribution. Chapter 4, therefore, studied redistribution preferences in Japan. It shows that as people get older, their preference for government redistribution becomes stronger. This is especially important for Japan, because Japan's ratio of elderly population is one of the largest in the world. This, combined with the fact that (mostly) it is the elderly who vote —not the young— suggest that government needs to address the concerns of the elderly about inequality or risk losing votes. Chapter 4 has also shown that people who identify themselves as "happy" and people who have upward mobility expectations about the future are less likely to demand government redistribution. Therefore, it is important that people do not feel trapped in their current socio-economic conditions. In the context of shrinking middle-class in Japan and people getting trapped in temporary employment, even the slight rises in economic inequalities might amplify the social unrest. Lastly, the conflicting results found by this study about the effects of "gender" and "being affiliated with a religion" on redistribution preferences in Japan compared to western countries require further study. Knowledge of Japanese history, sociology, and theology is required, as well as a comparative study with western countries to shed more light on these results, which are the remaining issues for further study.

REFERENCES

Aguiar, M., & Bils, M. (2015). Has Consumption Inequality Mirrored Income Inequality? American Economic Review, 105(9), 2725–2756. https://doi.org/10.1257/aer.20120599

Alesina, A., & Angeletos, G. (2005). Fairness and Redistribution. *The American Economic Review, 95*(4), 960-980. Retrieved from http://www.jstor.org/stable/4132701

Alesina, A., Cozzi, G., & Mantovan, N. (2012). The Evolution of Ideology, Fairness and Redistribution. *The Economic Journal*, *122*(565), 1244–1261. https://doi.org/10.1111/j.1468-0297.2012.02541.x

Alesina, A., & Fuchs-Schündeln, N. (2007). Good-Bye Lenin (or Not?): The Effect of Communism on People's Preferences. *American Economic Review*, *97*(4), 1507–1528. https://doi.org/10.1257/aer.97.4.1507

Alesina, A., & Giuliano, P. (2011). Preferences for Redistribution. *Handbook of Social Economics*, edited by Jess Benhabib, Alberto Bisin, and Matthew O. Jackson, 93–132. North Holland: Elsevier

Alesina, A., & Giuliano, P. (2015). Culture and Institutions. *Journal of Economic Literature*, *53*(4), 898–944. https://doi.org/10.1257/jel.53.4.898

Alesina, A. & Glaeser, E. (2004). Fighting Poverty in the US and Europe: A World of Difference, *Oxford University Press*, Oxford UK.

Alesina, A., & La Ferrara, E. (2005). Preferences for Redistribution in the Land of Opportunities. *Journal of Public Economics*, *89*(5-6), 897-931. doi: 10.1016/j.jpubeco.2004.05.009

Alesina, A., & Rodrik, D. (1994). Distributive Politics and Economic Growth. *The Quarterly Journal of Economics*, *109*(2), 465-490. doi: 10.2307/2118470

Alesina, A., Stantcheva, S., & Teso, E. (2018). Intergenerational Mobility and Preferences for Redistribution. *American Economic Review*, *108*(2), 521-554. doi: 10.1257/aer.20162015

Albanesi, S. (2007). Inflation and inequality. Journal of Monetary Economics, 54(4), 1088–1114. https://doi.org/10.1016/j.jmoneco.2006.02.009

Algan, Y., Cahuc, P., & Sangnier, M. (2016). Trust and the Welfare State: The Twin Peaks Curve. *The Economic Journal*, *126*(593), 861–883. https://doi.org/10.1111/ecoj.12278

Ampudia, M., Georgarakos, D., Slacalek, J., Tristiani, O., Vermeulen, P., & Violante, G. L. (2018). Monetary policy and household inequality. ECB Working Paper, No: 2170. Published. http://hdl.handle.net/10419/183352

Atkinson, A., Leigh, A. (2013) The distribution of top incomes in five Anglo-Saxon countries over the long run. Econ. Rec. 89, 31–47.

Bank of England (2012) The Distributional Effects of Asset Purchases. Quarterly Bulletin, 1-22.

Barnes, L. (2015). The Size and Shape of Government: Preferences over Redistributive Tax Policy. *Socio-Economic Review*, 13(1), 55–78.

Basten, C., & Betz, F. (2013). Beyond Work Ethic: Religion, Individual, and Political Preferences. *American Economic Journal: Economic Policy*, *5*(3), 67-91. doi: 10.1257/pol.5.3.67

Becker, G. (1983). A Theory of Competition Among Pressure Groups for Political Influence. *The Quarterly Journal of Economics*, *98*(3), 371. doi: 10.2307/1886017

Benabou, R. (2002). Tax and Education Policy in a Heterogeneous-Agent Economy: What Levels of Redistribution Maximize Growth and Efficiency? *Econometrica*, *70*(2), 481-517. doi: 10.1111/1468-0262.00293

Benabou, R., & Ok, E. (2001). Social Mobility and the Demand for Redistribution: The Poum Hypothesis. *The Quarterly Journal of Economics*, *116*(2), 447-487. doi: 10.1162/00335530151144078

Benabou, R., & Tirole, J. (2006). Belief in a Just World and Redistributive Politics. *The Quarterly Journal of Economics*, *121*(2), 699-746. doi: 10.1162/qjec.2006.121.2.699

Bernanke, B., & Blinder, A. (1992). The Federal Funds Rate and the Channels of Monetary Transmission. American Economic Review, 82(4), 901–921.

Binelli, C., & Loveless, M. (2016). The Urban-Rural Divide. *Economics of Transition*, *24*(2), 211-231. doi: 10.1111/ecot.12087

Bussolo, M., Ferrer-i-Carbonell, A., Giolbas, A., & Torre, I. (2021). I Perceive Therefore I Demand: The Formation of Inequality Perceptions and Demand for Redistribution. *Review of Income and Wealth*. Published. https://doi.org/10.1111/roiw.12497

Campante, Filipe R. (2007). Redistribution in a Model of Voting and Campaign Contributions. *KSG Working Paper No. RWP07-045,* Available at SSRN: https://ssrn.com/abstract=1019020 or http://dx.doi.org/10.2139/ssrn.1019020

Cancho, C., Davalos, M. E., Demarchi, G., Meyer, M., & Sanchez-Paramo, C. (2015) Why So Gloomy? Perceptions of Economic Mobility in Europe and Central Asia, *Policy Research Working Paper 7519,* World Bank, Washington, DC

Casiraghi, M., Gaiotti, E., Rodano, L., Secchi, A. (2017) A "reverse Robin Hood"? The distributional implications of non-standard monetary policy for Italian households. Bank of Italy Working Paper, 1077.

Causa, O., Browne, J., & Vindics, A. (2018) Income Redistribution Across OECD Countries: Main Findings and Policy Implications. *OECD Economic Policy Papers*, *No. 23,* OECD Publishing

Cavaillé, C., & Trump, K. S. (2015). The Two Facets of Social Policy Preferences. *The Journal of Politics*, *77*(1), 146–160. https://doi.org/10.1086/678312

Chang, W. (2010). Religion and Preferences for Redistributive Policies in an East Asian Country. *Poverty & Public Policy*, *2*(4), 743-771. doi: 10.2202/1944-2858.1067

Checchi, D., & Filippin, A. (2004). An Experimental Study of The Poum Hypothesis. *Research on Economic Inequality*, 115-136. doi: 10.1016/s1049-2585(04)11006-5

Christiano, L. J., Eichenbaum, M., & Evans, C. L. (1999). Monetary policy shocks: What have we learned and to what end? Handbook of Macroeconomics, 65–148. https://doi.org/10.1016/s1574-0048(99)01005-8

Choi, G. (2019). Revisiting the Redistribution Hypothesis with Perceived Inequality and Redistributive Preferences. *European Journal of Political Economy*, *58*, 220–244. https://doi.org/10.1016/j.ejpoleco.2018.12.004

Coibion, O., Gorodnichenko, Y., Kueng, L., & Silvia, J. (2017). Innocent Bystanders? Monetary policy and inequality. Journal of Monetary Economics, 88, 70–89. https://doi.org/10.1016/j.jmoneco.2017.05.005

Cojocaru, A. (2014). Prospects of Upward Mobility and Preferences for Redistribution: Evidence from the Life in Transition Survey. *European Journal of Political Economy*, *34*, 300-314. doi: 10.1016/j.ejpoleco.2014.03.003

Colciago, A., Samarina, A., & Haan, J. (2019). Central Bank Policies and Income and Wealth Inequality: A Survey. Journal of Economic Surveys, 33(4), 1199–1231. https://doi.org/10.1111/joes.12314

Corneo, G., & Grüner, H. (2002). Individual Preferences for Political Redistribution. *Journal of Public Economics*, *83*(1), 83-107. doi: 10.1016/s0047-2727(00)00172-9

Croson, R., & Gneezy, U. (2009). Gender Differences in Preferences. *Journal of Economic Literature*, *47*(2), 448-474. doi: 10.1257/jel.47.2.448

Cusack, T., Iversen, T., & Rehm, P. (2006). Risks at Work: The Demand and Supply Sides of Government Redistribution. *Oxford Review of Economic Policy*, *22*(3), 365–389. https://doi.org/10.1093/oxrep/grj022

Dabla-Norris, E., Kochhar, K., Suphaphiphat, N., Ricka, F., & Tsounta, E. (2015). Causes and Consequences of Income Inequality: A Global Perspective. *Staff Discussion Notes*, *15*(13), 1. https://doi.org/10.5089/9781513555188.006

Davtyan, K. (2016) The Distributive Effects of Conventional and Unconventional Monetary Policies. Research Institute of Applied Economics, Working Paper, 2016 (6).

Davtyan, K. (2017). The distributive effect of monetary policy: The top one percent makes the difference. Economic Modelling, 65, 106–118. https://doi.org/10.1016/j.econmod.2017.05.011

Doepke, M., Schneider, M., Selezneva, V. (2015) Distributional Effects of Monetary Policy. Hutchins Center on Fiscal & Monetary policy at BROOKINGS, Working Paper, 14.

Eger, M. A. (2010). Even in Sweden: The Effect of Immigration on Support for Welfare State Spending. *European Sociological Review*, *26*(2), 203–217. https://doi.org/10.1093/esr/jcp017

Erosa, A., & Ventura, G. (2002). On inflation as a regressive consumption tax. Journal of Monetary Economics, 49(4), 761–795.

Esping-Andersen, G. (1990). The Three Worlds of Welfare Capitalism. *Princeton University Press.*

Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., & Sunde, U. (2018). Global Evidence on Economic Preferences. The Quarterly Journal of Economics, Volume 133, Issue 4, Pages 1645–1692, https://doi.org/10.1093/qje/qjy013

Feldkircher, M., & Kakamu, K. (2021). How does monetary policy affect income inequality in Japan? Evidence from grouped data. Empirical Economics. Published. https://doi.org/10.1007/s00181-021-02102-7

Finseraas, H. (2009). Income Inequality and Demand for Redistribution: A Multilevel Analysis of European Public Opinion. *Scandinavian Political Studies*, *32*(1), 94–119. https://doi.org/10.1111/j.1467-9477.2008.00211.x

Flath, D. (forthcoming). The Japanese Economy (4th ed.). Oxford University Press.

Fong, C. M. (2001). Social Preferences, Self-Interest, and the Demand for Redistribution. *Journal of Public Economics*, *82*(2), 225-246. doi: 10.1016/s0047-2727(00)00141-9

Fong, C. M. (2006). Prospective Mobility, Fairness, and the Demand for Redistribution. Available at SSRN: https://ssrn.com/abstract=638302 or http://dx.doi.org/10.2139/ssrn.638302

Fong, C. M., & Luttmer, E. F. P. (2009). What Determines Giving to Hurricane Katrina Victims? Experimental Evidence on Racial Group Loyalty. *American Economic Journal: Applied Economics*, *1*(2), 64–87. https://doi.org/10.1257/app.1.2.64

Fong, C. M., & Luttmer, E. F. P. (2011). Do Fairness and Race Matter in Generosity? Evidence from a Nationally Representative Charity Experiment. *Journal of Public Economics*, *95*(5–6), 372–394. https://doi.org/10.1016/j.jpubeco.2010.07.010

Fong, C. M., & Poutvaara, P. (2019). Redistributive Politics with Target-Specific Beliefs. *ifo Working Paper Series*, *297*, ifo Institute - Leibniz Institute for Economic Research at the University of Munich

Foster, D., & Warren, J. (2021). From Classical to Progressive Liberalism: Ideological Development and the Origins of the Administrative State. *SSRN Electronic Journal*. Published. https://doi.org/10.2139/ssrn.3864614

Friedman, M. (1957). A Theory of the Consumption Function. Princeton University Press.

Galasso, V. (2003). Redistribution and Fairness: A Note. *European Journal of Political Economy*, *19*(4), 885-892. doi: 10.1016/s0176-2680(03)00042-9

Gärtner, M., Mollerstrom, J., & Seim, D. (2017). Individual Risk Preferences and the demand for redistribution. *Journal of Public Economics*, *153*, 49-55. doi: 10.1016/j.jpubeco.2017.06.009

Georgarakos, D., & Tatsiramos, K. (2019). Monetary Policy Transmission to Consumer Financial Stress and Durable Consumption. IZA Discussion Papers, No: 12359. Published.

Gilens, M. (2000). Why Americans Hate Welfare: Race, Media, and the Politics of Antipoverty Policy (Studies in Communication, Media, and Public Opinion) (1st ed.). *University of Chicago Press.*

Gimpelson, V., & Treisman, D. (2018). Misperceiving Inequality. *Economics & Politics*, *30*(1), 27–54. https://doi.org/10.1111/ecpo.12103

Gingrich, J., & Ansell, B. (2012). Preferences in Context. *Comparative Political Studies*, *45*(12), 1624–1654. https://doi.org/10.1177/0010414012463904

Guerello, C. (2018). Conventional and unconventional monetary policy vs. household's income distribution: An empirical analysis for the Euro Area. Journal of International Money and Finance, 85, 187–214. https://doi.org/10.1016/j.jimonfin.2017.11.005

Guiso, L., Sapienza, P., & Zingales, L. (2006). Does Culture Affect Economic Outcomes? *Journal of Economic Perspectives*, *20*(2), 23–48. https://doi.org/10.1257/jep.20.2.23

Haggard, S., Kaufman, R., & Long, J. (2013). Income, Occupation, and Preferences for Redistribution in the Developing World. *Studies in Comparative International Development*, *48*(2), 113-140. doi: 10.1007/s12116-013-9129-8

Hayashi, F. (1985). The Permanent Income Hypothesis and Consumption Durability: Analysis Based on Japanese Panel Data. The Quarterly Journal of Economics, 100(4), 1083. https://doi.org/10.2307/1885676

Higa, K. (2019). Estimating Consumption Inequality in Japan over the Last Three Decades. ESRI Discussion Paper Series, No: 350. Published.

Hirschman, A., & Rothschild, M. (1973). The Changing Tolerance for Income Inequality in the Course of Economic Development. *The Quarterly Journal of Economics*, *87*(4), 544. doi: 10.2307/1882024

Horioka, C. Y. (2020). Is the selfish life-cycle model more applicable in Japan and, if so, why? A literature survey. Review of Economics of the Household, 19, 157–187. https://doi.org/10.1007/s11150-020-09511-0

Inui, M., Sudo, N., & Yamada, T. (2017). Effects of Monetary Policy Shocks on Inequality in Japan. BIS Working Papers, No 642. Published.

Israel, K. F., & Latsos, S. (2020). The impact of (un)conventional expansionary monetary policy on income inequality – lessons from Japan. Applied Economics, 52(40), 4403–4420. https://doi.org/10.1080/00036846.2020.1735620

Jæger, M. (2006). What Makes People Support Public Responsibility for Welfare Provision: Self-interest or Political Ideology? *Acta Sociologica*, *49*(3), 321-338. doi: 10.1177/0001699306067718

Kambayashi R., Lechevalier, S., & Jenmana, T. (2020). Decomposing Preference for Redistribution Beyond the Trans-Atlantic Perspective, *Discussion Paper Series from Institute of Economic Research*, Hitotsubashi University, No 707

Karabarbounis, L. (2011). One Dollar, One Vote. *The Economic Journal*, *121*(553), 621-651. doi: 10.1111/j.1468-0297.2010.02406.x

Kenworthy, L., & McCall, L. (2008). Inequality, Public Opinion, and Redistribution. *Socio-Economic Review*, *6*(1), 35–68. https://doi.org/10.1093/ser/mwm006

Kluegel, J. R., & Miyano, M. (1995). Justice Beliefs and Support for the Welfare State in Advanced Capitalism. In J. R. Kluegel, D. S. Mason, & B. Wegener (Eds.), *Social Justice and Political Change: Public Opinion in Capitalist and Post-Communist States* (pp. 81-106). De Gruyter. https://doi.org/10.1515/9783110868944.81

Kristov, L., Lindert, P., & McClelland, R. (1992). Pressure Groups and Redistribution. *Journal of Public Economics*, *48*(2), 135–163. https://doi.org/10.1016/0047-2727(92)90024-a

Lenza, M., & Slacalek, J. (2021). How Does Monetary Policy Affect Income and Wealth Inequality? Evidence from Quantitative Easing in the Euro Area. CEPR Discussion Paper No. DP16079.

Linos, K., & West, M. (2003). Self-interest, Social Beliefs, and Attitudes to Redistribution. Re-addressing the Issue of Cross-national Variation. *European Sociological Review*, *19*(4), 393–409. https://doi.org/10.1093/esr/19.4.393

Lupu, N., & Pontusson, J. (2011). The Structure of Inequality and the Politics of Redistribution. *American Political Science Review*, *105*(2), 316–336. https://doi.org/10.1017/s0003055411000128

Luttmer, E. F. P. (2001). Group Loyalty and the Taste for Redistribution. *Journal of Political Economy*, *109*(3), 500–528. https://doi.org/10.1086/321019

Luttmer, E. F. P., & Singhal, M. (2011). Culture, Context, and the Taste for Redistribution. *American Economic Journal: Economic Policy*, *3*(1), 157–179. https://doi.org/10.1257/pol.3.1.157

Lübker, M. (2006). Inequality and the Demand for Redistribution: Are the Assumptions of the New Growth Theory Valid? *Socio-Economic Review*, *5*(1), 117–148. https://doi.org/10.1093/ser/mwl002

Lütkepohl, H. (2005) New Introduction to Multiple Time Series Analysis. Springer.

McCarty, N., Poole, K. T., & Rosenthal, H. (2006). Polarized America: The Dance of Ideology and Unequal Riches (first edition). *MIT Press.*

Meltzer, A., & Richard, S. (1981). A Rational Theory of the Size of Government. *Journal of Political Economy*, *89*(5), 914-927. doi: 10.1086/261013

Milanovic, B. (2000). The Median-Voter Hypothesis, Income Inequality, and Income Redistribution: An Empirical Test with the Required Data. *European Journal of Political Economy*, *16*(3), 367-410. doi: 10.1016/s0176-2680(00)00014-8

Mumtaz, H., & Theophilopoulou, A. (2017). The impact of monetary policy on inequality in the UK. An empirical analysis. European Economic Review, 98, 410–423. https://doi.org/10.1016/j.euroecorev.2017.07.008

Neustadt, I., & Zweifel, P. (2010). Economic Well-Being, Social Mobility and Preferences for Income Redistribution: Evidence from a Discrete Choice Experiment. *SSRN Electronic Journal*. doi: 10.2139/ssrn.1445432

Ohtake, F., & Tomioka, J. (2004). Who Supports Redistribution? *The Japanese Economic Review*, 55: 333-354. doi:10.1111/j.1468-5876.2004.00318.x

Ohtake, F. (2008) Inequality in Japan. Asian Economic Policy Review 2008(3), 87–109

Peltzman, S. (1980). The Growth of Government. *The Journal of Law & Economics*, *23*(2), 209-287. Retrieved from http://www.jstor.org/stable/725128

Perotti, R. (1996). Growth, Income Distribution, and Democracy: What the Data Say. *Journal of Economic Growth*, *1*(2), 149-187. doi: 10.1007/bf00138861

Persson, T., & Tabellini, G. (1994). Is Inequality Harmful for Growth. *The American Economic Review*, *84*(3), 600-621. Retrieved from https://www.jstor.org/stable/2118070

Pesaran, H., & Shin, Y. (1998). Generalized impulse response analysis in linear multivariate models. Economics Letters, 58(1), 17–29. https://doi.org/10.1016/s0165-1765(97)00214-0

Piketty, T. (1995). Social Mobility and Redistributive Politics. *The Quarterly Journal of Economics, 110*(3), 551-584. doi: 10.2307/2946692

Pontusson, H. J., Giger, N., Rosset, J., & Lascombes, D. K. (2020). Introducing the Inequality and Politics Survey: Preliminary Findings (https://archive-ouverte.unige.ch/unige:135683).

Rainer, H., & Siedler, T. (2008). Subjective Income and Employment Expectations and Preferences for Redistribution. *Economics Letters*, *99*(3), 449-453. doi: 10.1016/j.econlet.2007.09.011

Ravallion, M., & Lokshin, M. (2000). Who Wants to Redistribute? The Tunnel Effect in 1990s Russia. *Journal of Public Economics*, *76*(1), 87-104. doi: 10.1016/s0047-2727(99)00064-x

Rehm, P., Hacker, J. S., & Schlesinger, M. (2012). Insecure Alliances: Risk, Inequality, and Support for the Welfare State. *American Political Science Review*, *106*(2), 386–406. https://doi.org/10.1017/s0003055412000147

Roberts, K. (1977). Voting Over Income Tax Schedules. *Journal of Public Economics*, *8*(3), 329-340. doi: 10.1016/0047-2727(77)90005-6

Rodrigiuez, F. (1999). Does Distributional Skewness Lead to Redistribution? Evidence from the United States. *Economics and Politics*, *11*(2), 171-199. doi: 10.1111/1468-0343.00057

Rodriguez, F. (2004). Inequality, Redistribution, and Rent-Seeking. *Economics and Politics*, *16*(3), 287-320. doi: 10.1111/j.1468-0343.2004.00141.x

Roemer, J. E., Lee, W., & Straeten, V. K. (2007). Racism, Xenophobia, and Distribution: Multi-Issue Politics in Advanced Democracies (Russell Sage Foundation Books) (Illustrated ed.). *Harvard University Press.*

Romer, T. (1975). Individual Welfare, Majority Voting, and the Properties of a Linear Income Tax. *Journal of Public Economics, 4*(2), 163-185. doi: 10.1016/0047-2727(75)90016-x

Romer, C., & Romer, D. (1999). Monetary Policy and the Well-Being of the Poor. Economic Review, 84(Q I)

Rueda, D. (2018). Food Comes First, Then Morals: Redistribution Preferences, Parochial Altruism, and Immigration in Western Europe. *The Journal of Politics*, *80*(1), 225-239. doi: 10.1086/694201

Saiki, A., & Frost, J. (2014). Does unconventional monetary policy affect inequality? Evidence from Japan. Applied Economics, 46(36), 4445–4454. https://doi.org/10.1080/00036846.2014.962229

Saiki, A., & Frost, J. (2020). Unconventional monetary policy and inequality: is Japan unique? *Applied Economics*, *52*(44), 4809–4821. https://doi.org/10.1080/00036846.2020.1745748

Scheve, K., & Stasavage, D. (2006). Religion and Preferences for Social Insurance. *Quarterly Journal of Political Science*, *1*(3), 255-286. doi: 10.1561/100.00005052

Shayo, M. (2009). A Model of Social Identity with an Application to Political Economy: Nation, Class, and Redistribution. *American Political Science Review*, *103*(2), 147–174. https://doi.org/10.1017/s0003055409090194

Sims, C. A. (1980). Macroeconomics and Reality. *Econometrica*, *48*(1), 1–48. https://doi.org/10.2307/1912017

Stegmueller, D., Scheepers, P., Rossteutscher, S., & de Jong, E. (2011). Support for Redistribution in Western Europe: Assessing the Role of Religion. *European Sociological Review*, *28*(4), 482-497. doi: 10.1093/esr/jcr011

Stephens, M. J., & Unayama, T. (2011). The consumption response to seasonal income: Evidence from Japanese public pension benefits. American Economic Journal: Applied Economics, 3(4), 86–118.

Stephens, M. J., & Unayama, T. (2012). The impact of retirement on household consumption in Japan. Journal of the Japanese and International Economies, 26(1), 62–83.

Stiglitz, J. (2016) Inequality and Economic Growth. *Rethinking Capitalism: Economics and Policy for Sustainable and Inclusive Growth*, edited by Jacobs, M., & Mazzucato, M. (1st ed.). Wiley-Blackwell. https://doi.org/10.7916/d8-gjpw-1v31

Svallfors, S. (1997). Worlds of Welfare and Attitudes to Redistribution: A Comparison of Eight Western Nations. *European Sociological Review*, *13*(3), 283–304. https://doi.org/10.1093/oxfordjournals.esr.a018219

VanHeuvelen, T. (2017). Unequal Views of Inequality: Cross-National Support for Redistribution 1985–2011. *Social Science Research*, *64*, 43-66. doi: 10.1016/j.ssresearch.2016.10.010

Tan, J. (2006). Religion and Social Preferences: An Experimental Study. *Economics Letters*, *90*(1), 60-67. doi: 10.1016/j.econlet.2005.07.006

Unayama, T. (2015). Comparison of Consumption-Related Statistics. Public Policy Review, Policy Research Institute, Ministry of Finance Japan, 11(4), 573–598.

Walker, A., & Wong, C. (2005). East Asian Welfare Regimes in Transition (1st ed.). *Policy Press*. https://doi.org/10.2307/j.ctt9qgm39

Watkins, J. P. (2014). Quantitative Easing as a Means of Reducing Unemployment: A New Version of Trickle-Down Economics. *Journal of Economic Issues*, *48*(2), 431–440. https://doi.org/10.2753/jei0021-3624480217

Wilensky, H. L. (1975). The Welfare State and Equality: Structural and Ideological Roots of Public Expenditures. *University of California Press*

Williamson, S. D. (2009). Monetary policy and distribution. *Journal of Monetary Economics*, *55*(6), 1038–1053. https://doi.org/10.1016/j.jmoneco.2008.07.001

Yamamura, E. (2012). Social Capital, Household Income, and Preferences for Income Redistribution. *European Journal of Political Economy*, *28*(4), 498-511. doi: 10.1016/j.ejpoleco.2012.05.010

Yamamura, E. (2014). Trust in Government and Its Effect on Preferences for Income Redistribution and Perceived Tax Burden. *Economics of Governance*, *15*(1), 71-100. doi: 10.1007/s10101-013-0134-1

Yamamura, E. (2015). Effects of Siblings and Birth Order on Income Redistribution Preferences: Evidence Based on Japanese General Social Survey. *Social Indicators Research*, *121*(2), 589-606. doi: 10.1007/s11205-014-0649-z

Yamamura, E. (2016). Social Conflict and Redistributive Preferences Among Rich and Poor: Testing the Hypothesis of Acemoglu and Robinson. *Journal of Applied Economics*, *19*(1), 41-63. doi: 10.1016/s1514-0326(16)30002-2

Yanai, Y. (2017) Misperceived Inequality, Mismatched Attitudes, and Missing Support for Redistribution. UCLA. Retrieved from https://escholarship.org/uc/item/8v52z7qn

Yuksel, U. F. (2021). The Impact of Quantitative Easing on Inequality in Japan. The Ritsumeikan Economic Review, 70(1).