

The Microfoundation of Macroeconomic Populism:

The effects of economic inequality on the public inflation aversion

Abstract

Previous work on the politics of monetary policy has focused on the role of distributive motives stemming from individual characteristics such as income levels or factoral/sectoral interests in formation of monetary policy preferences of citizens. This work pays little attention to how a country's overall distributive context, namely its economic inequality level, affects their preferences vis-a-vis price stability and employment. My research argues that as inequality pushes more citizens below the average income of a society, they are more likely to demand redistribution through higher employment (and thus more competitive wages) and more fiscal spending, each of which can be better supported by expansionary monetary policy. In terms of inflation aversion, this means that inequality renders citizens more tolerant of inflation. Tests on 483,557 respondents from 33 countries (1976-2016) using the International Social Survey Program and the Eurobarometer demonstrates that inequality significantly moderates citizens' inflation aversion.

1. Introduction

With economic inequality on the rise, policymakers responsible for managing the national economy are increasingly held to account for such growing disparities.¹ Unelected central bankers in charge of running monetary policy are no exception; since the Great Recession that brought the increasing inequality to the fore, the heads of major central banks including the Federal Reserve and the European Central Bank have also been publicly questioned about their responsibility for the widening economic gap at hearings and press conferences.² Further, popular discontent with monetary authorities caused by the intensifying inequality was sometimes directly channeled into political discourse. In the United States, for instance, during the 2015 primary season, several Republican candidates, particularly Senator Rand Paul, blamed the Fed's expansive monetary policy for raising inequality.³ In the same year, Senator

¹ Income inequality, especially in industrial countries, has been growing since the 1980s. For instance, countries in the Organization for Economic Cooperation and Development (OECD) saw about a 10% increase (from 0.29 to 0.316) in the average Gini coefficient from the mid-1980s to the late 2000s (OECD, 2011).

² For instance, in her first hearing at Financial Service committee alone, Janet Yellen was asked about her perspective on the rising inequality six times by different committee members (*House hearing on Monetary policy and the state of the economy*, February 2014). Also, when she announced the Federal Open Market Committee (FOMC)'s decision to remain at the current interest rate at the press conference, she was asked whether the Fed's low interest rate policy was exacerbating the wealth gap (*Transcript of Chair Yellen's press conference*, September 2015).

³ Ylan Mui. "This is one issue that the Republican presidential candidates agree on," *The Washington Post*, November 11 2015.

Bernie Sanders, on the other side of the aisle, condemned the Fed when the bank raised the still low interest rate by 0.25%.⁴ He criticized that the tighter monetary policy would only help big bankers at the expense of average workers who want more employment and wage increases.

At first glance, the popular pressure on central bankers to prevent economic distribution from deteriorating seems misplaced since their monetary policy mandates are generally limited to maintaining a stable macro-economy by manipulating the balance between inflation and unemployment, rather than directly implementing redistributive policies. However, given that the impacts of monetary policy are, at least indirectly, distributive in nature by virtue of their effects on various prices (e.g. wages and asset prices) and job opportunities in the economy, holding those in charge accountable for the state of the economic distribution does not seem unreasonable. In particular, after the public witnessed the dramatically increased economic clout of central banks through the large-scale operation of the unconventional monetary policy during the recent crisis, it became apparent that they could no longer remain as innocent bystanders in the public's eye.

Yet, despite the rising social demand to take the distributive context into account, the precise alternative monetary policy that citizens would most prefer in order to achieve more equality is not yet clear. For example, under the conditions of high inequality, do citizens prefer more expansionary policy that fights unemployment even at the expense of extra inflation or contractionary policy that has the opposite effect?⁵ At a time when price stability is generally

⁴ Bernie Sanders, "Bernie Sanders: To rein in Wall Street, fix the Fed," *The New York Times*, December 23 2015.

⁵ Ben Bernanke (2015), the former Chair of Federal Reserve once posed a similar question when he defended a quantitative easing (QE) in terms of its implications on inequality during the Great Recession. Although my puzzle focuses on a tradeoff between inflation and

accepted as the top priority of monetary policy over full employment, how does inequality affect citizens' views regarding this trade-off? Can people's support for anti-inflation policy remain strong even when inequality leads them to push for greater redistribution through higher employment and more fiscal spending? This study examines these puzzles using the concept of the public inflation aversion. Public inflation aversion, according to Scheve, is defined as the "public's assessment on the relative costs and benefits of inflation" against unemployment, given a short-term tradeoff between these two macroeconomic outcomes.⁶ This 'relative' dislike of inflation, compared to that of unemployment, has been considered as the standard measure of a society's overall macroeconomic policy preference and thus the most important parameter in a social welfare function that determines the direction of optimal monetary policy.⁷

In the previous literature, there has been much discussion regarding how economic inequality affects the popular attitudes toward governments' fiscal policy, including tax and transfers following the Meltzer-Richard model.⁸ Yet, little, if any, attention has been paid to

unemployment in determining monetary policy, his question highlights a tradeoff between inflated asset prices and low unemployment. Specifically, against the notion that the current QE was worsening inequality by boosting asset prices (e.g. stock prices), he asked "if the average working person were given the choice of the status quo (current Fed policies) and a situation with both a weaker labor market and lower stock prices (tighter Fed policies), which would he or she choose?".

⁶ Scheve 2004.

⁷ Barro and Gordon 1983.

⁸ See Alt and Iversen 2017; Ballard-Rosa, Martin, and Scheve 2017; Boudreau and MacKenzie 2018; Franko 2016 for the latest discussion.

the effects of inequality on the public opinion regarding monetary policy that determines price and employment levels in the economy. Moreover, though a number of studies have explained the relationship between inequality and inflation at the aggregate level with citizens' macroeconomic policy preferences as an important causal mechanism, no study has actually examined those preferences at the individual level. That is, the microfoundations of inflation's link to inequality are simply not substantiated in past work. This study attempts to fill this gap; it explains that with high economic inequality, citizens' support for anti-inflation policy diminishes while expansionary policy that often causes higher inflation is viewed more favorably. I expect that as inequality pushes more citizens below the average income of a country, they are more likely to demand redistribution through higher employment (and thus more competitive wages) and more fiscal spending, each of which can be better supported by expansive monetary policy. In terms of inflation aversion, this means that inequality renders citizens more tolerant of inflation as the potential outcome of looser monetary policy.

Empirical findings from the main analyses of 30,181 respondents from 20 OECD countries (from 1976 to 1997) based on the two cross-national surveys - the International Social Survey Program (ISSP) and the Eurobarometer - show that citizens' aversion to inflation is negatively associated with inequality. Furthermore, an additional test on 453,376 respondents in 27 European countries (from 2007 to 2016) using an alternative measure of inflation aversion offers the interesting finding that inequality significantly weakens inflation aversion only in non-Eurozone countries where national governments still retain monetary policy autonomy. Finally, in order to check the validity of the causal mechanism in the hypothesis, I take advantage of questions from the same surveys that measure citizens' attitudes toward government redistribution. I find that citizens' preference for more redistribution substantially moderates their aversion to inflation, as the theoretical discussion presumes.

This research offers several contributions. First, I depart from extant studies' exclusive focus on inequality's implications for citizens' attitudes regarding taxes and transfers and instead analyze citizens' inequality-contingent preferences toward price stability and employment. In doing so, I show that inequality not only affects popular preferences over fiscal policy, but also over monetary policy. In particular, by directly testing the effects of inequality on inflation aversion, I clarify that the political dynamics that incorporates the popular demand for redistribution lies behind high inflation in unequal countries. Second, my work also diverges from research traditions that rely on distributive motives stemming from individual characteristics such as income levels, partisanship, or factoral/sectoral interests in order to account for the macroeconomic policy preferences.⁹ I show that in addition to those 'individual-level' traits, the 'country-level' distributive context also shapes the micro-foundation of macroeconomic policy. Lastly, this research speaks to the burgeoning literature in macroeconomics that examines the implications of inequality in formulating optimal monetary policy, in terms of aggregate social welfare.¹⁰ Considering that a society's inflation aversion is an essential parameter in the determination of optimal levels of inflation, my research on inflation aversion as a function of inequality can add to the ongoing debate, particularly by offering a political dimension of the topic.

This research is organized as follows. The next section reviews the previous literature on the relationship between inequality and inflation and discusses their limitations in examining citizens' preferences of macroeconomic policy at the individual level. I then develop

⁹ Bearce and Tuxhorn 2017; Broz, Frieden, Weymouth 2008; Hibbs 1979.

¹⁰ Dressler 2016; Areosa and Areosa 2016; Kaplan, Moll, and Violante 2018; Kaplan and Violante 2018.

a theoretical framework on the effects of inequality on inflation aversion in the third section. Finally, I present the empirical outcomes and conclude.

2. Literature Review

An important body of research has attempted to explain the relationship between economic inequality and inflation at the aggregate-level, with the macroeconomic policy preference of citizens as an important causal link. For example, Simmons argues that the inflationary pressure that weakened democratic countries' commitment to the gold standard during the interwar period came from newly enfranchised labor demanding more income shares against capital through full employment and a strong welfare state.¹¹ She writes that (the combination of) "democracy and inequality signaled markets that the gold standard was no longer inviolable", which suggests that the price stability achieved by suppressing the popular demand for redistribution can hardly be sustained in unequal democracies. Desai, Olofsgard, and Yousef also suggest that the interaction between "the institutional features of democracy", such as electoral competition as well as political participation, and inequality opens a door to governments' frequent use of an inflation tax for redistributive purposes.¹² Moreover, Sachs and Dornbusch and Edwards focus on "macroeconomic populism" in the extremely unequal Latin American countries.¹³ They explain that several episodes of high inflation in those countries were attributable to governments attempting to increase the real wages of poor urban classes and the profits of the relatively backward non-tradable sectors, through increased

¹¹ Simmons 1997.

¹² Desai, Olofsgard, and Yousef 2003.

¹³ Sachs 1989; Dornbusch and Edwards 1989.

market demand artificially created by monetary and fiscal expansion, in response to the populist demand for redistribution.

On the contrary, other studies posit the exact opposite causal mechanism underlying the relationship between inequality and inflation.¹⁴ In contrast to the populist explanation, such work argues that the politics of exclusion created under the conditions of high inequality marginalizes the preferences of citizens who are generally averse to inflation, thus generating unpopular high inflation. The assumption is that, as the number of citizens whose incomes are less than the social average increases with rising inequality, more citizens oppose a flat inflation tax and prefer a progressive income tax as the main source of government revenues. Therefore, inequality renders society as a whole more inflation-averse. In addition, these studies suggest that vulnerability to an inflation tax is negatively related to income levels primarily due to "financial market imperfections", whereby access to inflation-proof financial assets is limited to the rich segments of a society. As a result, while rich elites can readily avoid an inflation tax by hedging their wealth with these assets, the rest of the citizenry must face the direct risk of inflationary erosion of their cash portfolios. The implication is that, as inequality concentrates more of such assets to a few while creating more asset-less citizens, a society in general would be more averse to inflationary policy that shifts disproportionate fiscal burdens to the latter.

The existing aggregate-level studies have thus implicitly assumed contradictory expectations regarding citizens' preferences vis-a-vis macroeconomic policy in order to account for the observed positive correlation between inequality and inflation. Even though those assumptions respectively imply the exactly opposed theories about the political foundation of inflation - the populist politics on the one hand and the politics of exclusion on

¹⁴ Crowe 2006; Albanesi 2007.

the other - no research has actually examined the validity of the assumptions, based on concrete empirical evidence. Even theoretically, little systematic framework exists regarding the effects of inequality on citizens' monetary policy preference. This research fills these gaps in the extant literature by offering a comprehensive theoretical framework, and a strict empirical test, of the macroeconomic policy preferences of citizens, manifested as inflation aversion, under the conditions of inequality.

3. Theory

Many studies suggest that the public inflation aversion matters, since it represents "an essential political input" in macroeconomic policymaking in democracies.¹⁵ The loss function from the widely-used Barro-Gordon model explains the underlying intuition¹⁶:

$$L = a(U_t - kU_t^n)^2 + b(\pi_t)^2$$

In this model U_t represents the unemployment rate; U_t^n the natural unemployment rate; k represents distortions in the economy that increase U_t^n ; and π_t is the rate of inflation. While a expresses society's cost as unemployment increases beyond its targeted rate, kU_t^n , b is the social cost of an inflation rate that departs from zero. In the loss function, both high inflation and unemployment decrease the utility of policymakers. What is critical here, in terms of the tradeoff implied by the Phillips curve, is the relative cost of a unit increase in inflation, compared to that of a unit increase in unemployment in the function, especially in terms of the ratio of a and b , which reflects society's inflation aversion. The structure of the loss function implies that as a society's average inflation aversion attenuates, for instance, the optimal policy

¹⁵ See Di Tella, MacCulloch and Oswald 2001, Ehrmann and Tzamourani 2012, Lelyveld 1999, Scheve 2004.

¹⁶ Barro and Gordon 1983.

will be to give more weight to reducing unemployment than to keeping down inflation, which will ultimately result in relatively lower unemployment but higher inflation in the economy. Hayo and Neuenkirch show that the level of inflation and interest rates set by central banks systematically vary according to the inflation aversion in a country.¹⁷ Other studies further suggest that in addition to its effect on macroeconomic outcomes, inflation aversion can even affect a country's "choice of monetary institutions" and "the extent of international monetary cooperation".¹⁸ Given this pivotal importance, numerous studies have explored the underlying determinants of a society's relative inflation aversion.¹⁹ Missing from those studies, however, is an explanation of how a country's level of inequality can shape its degree of inflation aversion.²⁰

My research links economic inequality to inflation aversion by combining the implication of the well-known Meltzer-Richard model with the extant research on the distributive effects of monetary policy. The crucial expectation of the Meltzer-Richard model

¹⁷ Hayo 1998; Neuenkirch 2014.

¹⁸ Scheve 2004. The success of the EMU (Collins and Giavazzi 1992) and the global spread of low inflation regimes (Hancke and Vlandas 2017).

¹⁹ See Di Tella, MacCulloch and Oswald 2001. Ehrmann and Tzamourani 2012. Howarth and Rommerskirchen 2016. Lelyveld 1999. Scheve 2004.

²⁰ Lelyveld 1999 includes an individual's redistributive preference in his regression model as a control variable and shows its relationship to inflation aversion. Yet, his study only focuses on the individual trait and does not explain how 'the distributive context of the economy' affects an individual's preference toward inflation. Thus, the role of a country's inequality level is missing in his study.

is that rising inequality makes 'public opinion' more supportive of redistribution.²¹ While the existing studies derived from the model typically explore the implications of citizens' redistributive demands for taxation and transfers, I focus on the influence of those demands on citizens' preferences over price stability vis-a-vis employment. Relying on the empirical findings regarding the progressive effect of expansionary monetary policy, I theorize that citizens under conditions of high inequality become more tolerant of inflation as the potential outcome of redistributive monetary policy and, thus, less inflation-averse. In particular, I expect that citizens recognize the redistributive benefits of expansive monetary policy through its anti-unemployment property and its role in supporting governments' expanded fiscal

²¹ Meltzer and Richard (1981). It is well known that as theoretically compelling and elegant as it may be, the Meltzer-Richard model's empirical bases have been argued to be weak. A group of studies even suggests the exact opposite that economic inequality tends to discourage public demand for redistribution and thus, actual redistributive policies by governments, which is called Robin Hood paradox (e.g., de Mello and Tiongson 2006; Georgiadis and Manning 2012; Iversen and Soskice 2009; Lindert 2004). Yet, more recent studies have increasingly found that the Meltzer-Richard model holds empirically, revealing methodological problems involved with the prior studies that argue otherwise (see Aleman and Woods 2018; Dion and Birchfield 2010; Franko, Tolbert and Witko 2013; Houle 2017; Jaeger 2013; Kerr 2014; Moldogaziev, Monogan, and Witko 2018; Schmidt-Catran 2014; Tor 2018). Further, despite the ongoing debate on its empirical grounds, the invaluable role of the Meltzer-Richard model as a theoretical springboard for studies on redistributive policies or income inequality has rarely been doubted (see many studies that use the Meltzer-Richard model as a main premise, e.g., Bradley et al 2003; Iversen and Soskice 2001, 2006; Moene and Wallerstein 2001, 2003; Iversen 2005; Kenworthy and Pontusson 2005; Cusack, Iversen, and Rehm 2006).

activities. Moreover, inflation's progressive impact on financial assets and liabilities is also expected to positively affect citizens' tolerance of inflation when inequality is high. The following subsections explain the equalizing nature of expansionary monetary policy and inflation more specifically.

3.1 Low unemployment

Economic inequality implies a significant gap between the median and the average income of a society.²² Thus, as inequality increases, more citizens earn less than the average income and thus would demand redistribution to compensate for the income difference. I argue that because expansionary monetary policy - which has full employment as an objective - can play a significant role in redistribution, inflation as a result of the anti-unemployment policy becomes more tolerable to citizens under inequality.

First, expansive monetary policy can generate general wage increases in the economy by lowering unemployment, which is what the Phillips curve basically suggests.²³ As inequality produces more citizens whose incomes are below the average and thus who desire

²² Meltzer and Richard 1981.

²³ Phillips 1958; Krugman and Wells 2015. The validity of the Phillips curve has been recently questioned, especially after the global financial crisis in 2008. For example, in the U.S., it has been observed that during the crisis, the inflation level did not seem to decrease as much as the substantial increase in the unemployment rate. Moreover, during the recovery periods, inflation did not seem to increase as much as the significant decrease in unemployment rate. Despite the doubts on the usefulness of Phillips curve following the recent anecdotal evidence, the several economists empirically confirmed that the Phillips curve and its policy implications still hold (Blanchard 2016; Blanchard, Cerutti, and Summers 2015; Hindrayanto, Samarina, and Stanga 2019; Laseen and Sanjani 2015).

higher wages, I expect that a society as a whole will be more likely to demand monetary policy that targets full employment and thus that can ultimately achieve more competitive wages through a tighter labor market. For example, Katz and Krueger estimate that a median wage earner should see the unemployment rate at lower than 5.4% just to avoid a real wage decrease.²⁴ It can thus be expected that, to the extent that inequality makes a median wage earner to desire higher wages, the unemployment rate preferred by a majority in a society will be lower than 5.4%, which requires much looser monetary policy.

Moreover, considering the regressive nature of unemployment,²⁵ monetary policy that addresses unemployment will appear desirable to more citizens as rising inequality deteriorates their relative income positions. The extant research on the distributive effects of monetary policy suggests that unemployment first hits those positioned at the lowest end of the income spectrum, who often have relatively low skills. The negative effects then begin to reverberate along the income scale as the level of unemployment rises. For instance, Blanchard suggests that the incidence of unemployment starts among the population "on lower rungs of the occupational ladder" and then spreads to higher rungs, which he terms "ladder effects".²⁶ More recently, Bredemeier and Winkler also show that average unemployment rates were inversely associated with wage levels during the Great Recession.²⁷ Furthermore, Sum, Khatiwada, and Palma similarly characterize the heterogeneous labor market condition under the Great Recession as "a truly Great Depression among the nation's low-income workers amidst full

²⁴ Katz and Krueger 1999. Bivens (2015) suggests that this rate fell below 5.4% in the 2000s.

²⁵ Blinder and Esaki (1978) suggest that "Of all our findings, the one unequivocal message seems to be that the incidence of unemployment is quite regressive"

²⁶ Blanchard 1995. See also Blanchard and Katz (1997).

²⁷ Bredemeier and Winkler 2017.

employment among the most affluent".²⁸ Thus, from the ample evidence on the regressive effects of unemployment, it can be inferred that in an unequal economy where more citizens are concentrated in the bottom-half of the income spectrum and thus vulnerable to unemployment, expansive monetary policy will be socially preferred.

Additionally, it should be emphasized that the damage caused by unemployment is often more substantial among wage earners without any financial assets for capital income or those with net liabilities. Since the greatest portion of such individuals' incomes comes from wages, when they lose jobs, they lose most of their income, which puts them directly in poverty. Even if they retain their jobs during economic slowdowns, as I suggested above, labor market slack caused by increasing unemployment can suppress meaningful wage increases. This dampening effect on wages can disproportionately hurt those whose sole income source is wages. As Beetsma and Ploeg put it, if inequality implies "heterogeneity in nominal debt holding" in which most citizens are asset-less or in a net liability position (while only a few of people own most debt assets in the economy), as inequality rises, there will be more asset-poor citizens who will be deeply distressed by the harm of unemployment.²⁹ Therefore, I argue that inequality creates more citizens who are averse to increases in unemployment, and, conversely, more tolerant of inflation that can be caused by the anti-unemployment policies.

3.2 Fiscal expansion and accommodative monetary policy

Inflation is often attributed to governments' fiscal expansion which raises budget deficits and the accommodative monetary policy that helps sustain them. I expect that since government spending generally plays a pivotal role in compensating for market inequality, citizens who

²⁸ Sum, Khatiwada, and Palma 2010.

²⁹ Beetsma and Ploeg 1996.

experience high levels of inequality become more tolerant of inflation, particularly as a consequence of the accommodative policy that supports the increasing fiscal redistribution. Many empirical studies offer evidence that greater fiscal expenditures generally lead to reduced inequality.³⁰ Salotti and Trecroci, for instance, show that governments' indebtedness and their fiscal size are negatively related to inequality.³¹ A 1% increase in government debt, according to them, is associated with up to a 0.13% decrease in the Gini index, whereas a 1% increase in government spending reduces the Gini index by up to 0.55%. They explain that fiscal transfers cause such redistributive impacts by raising incomes, developing human capital, and improving health conditions of the lower- and middle-income classes.

Despite its redistributive benefits, excessive or persistent fiscal expansion can hardly be justified, given the risks of chronic budget deficits and consequently high inflation. In particular, expansionary fiscal policy can create inflationary pressure when it interacts with accommodative monetary policy.³² Broadly, monetary authorities can accommodate fiscal expansion in two ways: central banks can either purchase governments' securities directly or allow private investors to buy those securities but keep interest rates low through their open market operations, so that governments can continue to finance their spending at low rates. Either way, monetary accommodation of fiscal policy tends to result in increasing quantities of money in circulation and ultimately higher inflation. To the extent that this accommodation

³⁰ See Afonso, Schuknecht, and Tanzi 2010. Atkinson, Rainwater, Smeeding 1995. Goni, Lopez, and Serven 2008. Kenworthy 2004. Salotti and Trecroci 2018. Wolff and Zacharias 2007.

³¹ Salotti and Trecroci 2018.

³² See Neyapti 2003; Sargent and Wallace 1981; Treisman 2000.

generates added inflation, citizens will be taxed through the decreased real value of the money that they hold.

For citizens, this inflation tax should be as unpleasant as any other non-monetary taxes, because inflation decreases the purchasing power of their cash assets. However, I posit that as inequality leads more citizens to prefer fiscal redistribution and thus more revenues, their aversion to an inflation tax becomes relatively weaker. I suggest that this is particularly likely as they find that the political polarization and instability that usually accompany economic inequality often frustrate any practical political compromises to raise revenues, such as legislating higher income taxes, as those efforts become time-consuming and contentious.³³ Rather, citizens will more willingly accept an inflation tax as a politically viable solution, as the desperate need to deal with rising inequality pushes them to embrace such measures.

3.3 Savings redistribution

Finally, I suggest that when inequality is high, citizens find inflation more tolerable due its own progressive influence. Most importantly, inflation redistributes wealth from creditors who own nominal assets to debtors who have nominal liabilities. Since nominal assets (liabilities) are denominated by fixed currency values, their real values are discounted by an increase in general price level. That is, as inflation increases, the amount of goods and services that can be purchased by the nominal assets (liabilities) decreases. Thus, inflation decreases the real values of the nominal assets and liabilities, thereby reducing both the real capital gains of asset owners from sales of these assets and the real debt burdens of debtors.

Moreover, capital incomes (e.g., interest and dividends) coming from nominal assets are susceptible to inflationary erosion just as interest payments for nominal liabilities are discounted by inflation. Again, inflation reduces incomes of asset owners while also decreasing

³³ Desai, Olofsgard, and Yousef 2003.

the financial costs of debtors, creating sizable redistribution among them. Inflation can therefore be expected to cost the small number of asset-rich wealthy citizens but to benefit a majority of asset-less or debt-ridden citizens in the unequal economy.³⁴ Therefore, I expect that this redistributive aspect of inflation serves as an additional reason why citizens would be less inflation-averse under conditions of inequality.

Thus far, I have relied only on the 'direct' impact from the redistributive benefits of expansionary monetary policy and inflation on an individual's pocket economy to theorize the effects of inequality on inflation aversion. Yet, it is also plausible that inequality can induce an individual to prefer the progressive monetary policy due to negative social externalities that the deepening economic gap generates, regardless of their individual conditions. Dimick, Rueda, and Stegmüller suggest that individuals in an unequal society may demand redistributive policy because of the side effects of inequality that reduce social welfare, such as "an increase in crime, political dysfunction, macroeconomic instability, worsening public health, and lower social mobility".³⁵ Since the costs of these by-products are often quite substantial even for those who do not directly suffer from inequality, I emphasize that the social demand for the expansionary monetary policy, which can help prevent rising inequality can also be caused by this more indirect motive.

To summarize, I argue that as economic inequality impoverishes more citizens below the society's average, they become more tolerant of inflation as the outcome of expansionary monetary policy that brings significant redistributive benefits through low unemployment,

³⁴ Beetsma and Ploeg point out that economic inequality implies "heterogeneity in nominal debt holding", which means that in unequal economy, more citizens owe debts owned by fewer.

³⁵ Dimick, Rueda, and Stegmüller 2018.

fiscal expansion, and savings redistribution. Based upon this theoretical expectation, I posit the following hypothesis.

Hypothesis 1: *Increasing economic inequality makes more citizens in a country more tolerant of inflation, or, in other words, reduces society's inflation aversion.*

I also posit a second hypothesis to test the causal mechanism of the theory that 'redistributive preferences' caused by inequality lower the inflation aversion.

Hypothesis 2: *The higher the citizens' demand for redistribution, the less likely they are to be inflation-averse.*

4. Empirical analysis

4.1 Data and econometric models

4.1.1 Dependent variable

The objective of this research is to explain inflation aversion as a preference of macroeconomic policy. In order to maximize the validity of the measurement, two points must be considered. First, a direct measurement of it should be more preferred to an indirect one. The past literature has often suggested the use of indirect measurements. For example, Di Tella, MacCulloch, and Oswald measure the public inflation aversion by observing how citizens' opinion on happiness respond to fluctuations in inflation while Hibbs, Rivers, and Vasilatos do so by considering how the popularity of governments is associated with changes in inflation.³⁶ Yet, given the purpose of this research, the more appropriate approach is to directly measure how respondents

³⁶ Di Tella, MacCulloch, and Oswald 2001; Hibbs, Rivers, and Vasilatos 1982.

express their opinions about 'macroeconomic policy priority' between anti-inflation and anti-unemployment. Thus, rather than using the measurements that require an extra step of inference to link respondents' happiness or support for a government to their preference toward alternative macroeconomic policy, using a survey question that directly asks respondents' opinions on the policy would be preferable in order to minimize a potential measurement error.

Secondly, the measurement must explicitly specify the tradeoff between the two macroeconomic policies of reducing inflation and reducing unemployment, as suggested by the Phillips curve, clearly pitting one against the other. Such a measure informs respondents, at least implicitly, that fighting inflation is costly in terms of unemployment and vice versa. Further, it reflects respondents' conflicting preferences that revolve around the distributive implications of the two policies. Otherwise, an anti-inflation policy can be viewed as 'a free lunch' by respondents. As Keech points out that no one will oppose to keeping inflation down, *ceteris paribus*.³⁷ Thus, the measure should clearly indicate to respondents that, in fact, "other things are not equal" and that price stability comes at the cost of increasing unemployment.³⁸ Despite the importance of the trade-off, several previous studies have employed cross-national surveys that are not properly designed to make the policy of price stability and that of unemployment stabilization compete directly with one another. For instance, Howarth and Rommerskirchen use a survey question from the Eurobarometer (2002-2010) that asks, "What do you think are the two most important issues facing (our country) at the moment?".³⁹ Among a variety of potential responses, both "rising prices" and "unemployment", are included as

³⁷ Keech 2013.

³⁸ Keech 2013.

³⁹ Howarth and Rommerskirchen 2016.

options,⁴⁰ which suggests that respondents are allowed to choose both at the same time. Furthermore, the survey design allows preferences regarding macroeconomic policy to compete with other economic and non-economic policy preferences⁴¹, which renders interpretation of responses quite complex. Since the objective of their study is to explain inflation aversion as a matter of economic culture rather than as a policy preference, the use of the measurement can be justified in that particular context.⁴² Yet it would not be very optimal for the purposes of this research.

In view of the above conditions, I choose to utilize questions from a particular set of cross-national surveys that includes the ISSP (1985, 1990, and 1996) and the Eurobarometer (1976 and 1997). I argue that the questions in these surveys offer a unique opportunity to correctly measure inflation aversion and thus provide the most appropriate setup for testing how it is affected by inequality. In a general form, those surveys ask the following question:

If the government had to choose between keeping down inflation or keeping down unemployment to which do you think it should give highest priority?

⁴⁰ If a respondent chooses "rising prices" as one of two issues, he or she would be assumed to be inflation-averse.

⁴¹ Those answers include crime, economic situation, taxation, terrorism, foreign affairs, housing, immigration, health care, education, pensions, environment, and energy.

⁴² Also, they point out a problem of data availability. They suggest that "Contemporary data that pits inflation explicitly against unemployment, similar to Scheve (2004) is unfortunately not available for our purposes given that we are interested, first, in the post-2001 period and, secondly, in tracking inflation aversion across all EU members over time."

This survey question satisfies the two aforementioned essential conditions of a valid measurement. It directly asks respondents' preferences regarding macroeconomic policy, and it requires respondents to choose either of two mutually exclusive macroeconomic policies. I assume a respondent to be inflation averse if he or she chooses the option of "Keeping down inflation" and thus code the dependent variable as 1 in those cases. On the contrary, if a respondent's answer is "Keeping down unemployment", the dependent variable is coded as 0.⁴³ Using this first dataset, I conduct the key test on 20 OECD countries (30,181 respondents), a sample group that shares broad similarities in political regime type and levels of economic development among the countries in the surveys.⁴⁴ Table A.1 in appendix lists the countries in the sample. The time period of the test ranges from 1976 to 1997, since the above question that satisfies the two important criteria was asked only on five particular surveys that were administered during this time period.

Despite the fact that using these surveys can maximize the validity of the measurement, a critical limitation is that they do not offer the most recent data on inflation aversion. In order to explore up-to-date inflation aversion data, I relax the above two criteria and use the survey questions from the Eurobarometer (which follows the model of Howarth and Rommerskirchen 2016) as an additional test. In the survey, respondents are asked the following questions:

⁴³ Respondents who answer "Do not know (DK)" are excluded from observations. This is different from how Scheve codes his dependent variable. He deals with DK observations by using multiple imputations. I replicated the main regression model by using his dataset with DK observations and found that the result still holds. The replicated regression outcome is in an appendix (Table A.5).

⁴⁴ The sample countries are consistent with those in Scheve 2004.

What do you think are the two most important issues facing (our country) at the moment?

Following Howarth and Rommerskirchen, I assume a respondent to be inflation averse if he or she mentions "rising prices" as one of the two most important issues in his or her country.⁴⁵ Otherwise, the observation is coded as zero. Respondents who answer both "rising prices" and "unemployment" are removed from the sample. This additional test covers 27 European countries (453,376 respondents) over the decade from 2007 to 2016.⁴⁶ As I emphasized before, this test is less than ideal since the survey question is not designed to pit one macroeconomic policy against the other. Other potential responses can also complicate the interpretation of responses in critical ways. Furthermore, questions that would provide measures for necessary control variables that I include in the main test are missing from the Eurobarometer during this period. For example, control variables for income levels and political ideology are dropped in the additional test. Despite these limitations, I include the additional test as a means of tracking the effects of inequality on inflation aversion in the most recent decade.

4.1.2 Independent variable

Inequality

As a measure of economic inequality, I use the Gini index for household income inequality before taxes and transfers (market Gini), from the Standardized World Income Inequality

⁴⁵ Howarth and Rommerskirchen 2016.

⁴⁶ Due to data availability of an independent variable (Economic inequality) which is limited to 2016, the most recent survey data that can be used is 2016.

Database (SWIID).⁴⁷ The range of the market Gini index is from 0 to 100, with higher values indicating greater income inequality before taxes and transfers in a country. The use of the 'market Gini index' rather than the 'net Gini index', which measures income inequality after taxes and transfers, is appropriate, given the Meltzer-Richard model's stress on the role of 'market inequality' in generating the public demand for government redistribution.⁴⁸ Solt constructed his data by combining data from the Luxembourg Income Study (LIS) and those from the United Nations University (UNU-WIDER). Compared to other past Gini measures, Solt's data are considered to offer the highest comparability and the widest coverage.⁴⁹

In order to test the robustness of the empirical results, I also use the Gini index from the Estimated Household Income Inequality (EHII).⁵⁰ Galbraith and Kum created the measure by combining industrial pay inequality data from the University of Texas Inequality Project and income inequality data from Deininger and Squire.⁵¹ Along with Solt's SWIID data, EHII data are often described as "the most precise and extensive source of information on international income distribution to this date".⁵² Lastly, income shares of the top 1% and 5% from the World Top Income Database (WTID) are used as additional measures of economic inequality in the analysis.⁵³

⁴⁷ Solt 2016.

⁴⁸ Meltzer and Richard 1981.

⁴⁹ See Acemoglu et al 2015, Jenkins 2015.

⁵⁰ Galbraith and Kum 2005.

⁵¹ Deininger and Squire 1996.

⁵² Gimet and Lagoarde-Segot 2011.

⁵³ Atkinson, Piketty, and Saez 2013.

The public demand for redistribution

I create variables for the public demand for redistribution by using four questions in the surveys. The first question asks whether respondents agree with the statement that "it is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes". Answers to this question range from "Agree strongly" to "Disagree strongly." I assume that the more a respondent agrees with the statement, the higher his or her demand for redistribution is, and I code the variable accordingly (*Redistribution 1*). The second question asks respondents the following: "On the whole, do you think it should be or should not be the government's responsibility to reduce income differences between the rich and poor?" I assume that the more a respondent agrees that it should be the government's responsibility, the higher his or her demand for redistribution (*Redistribution 2*). The third question asks respondents whether "those with high incomes should" pay a larger or smaller proportion of their earnings in taxes. I assume that the larger proportion a respondent wants high income earners to pay as taxes, the higher his or her demand for redistribution (*Redistribution 3*). The last question asks whether current levels of taxes for high income earners are too high or too low. A respondent is assumed to have higher demand for redistribution if he or she thinks the status quo levels of taxes on the rich are too low (*Redistribution 4*). Please see the appendix for more specific operationalization of these variables.

4.1.3 Control variables

A series of national-level and individual-level control variables are used to isolate the effects of economic inequality on the public inflation aversion. Most importantly, I include both contemporary inflation and unemployment rates in the analysis. It must be emphasized that, as the Barro-Gordon model suggests, inflation aversion reflects the relative costs of

inflation against unemployment, 'given levels of present inflation and unemployment'. That is, since inflation and unemployment rates are explicitly included as arguments in the loss function, they should be controlled for to measure inflation aversion.⁵⁴ This implies that determinants of inflation aversion must be explored, controlling for current inflation and unemployment levels. To do so, I use the log of annual growth of the harmonized consumer price index (CPI) from OECD's "Key short-term indicators" as a measure of inflation (*Log Inflation*). I also use the annual unemployment rate from the annual macro-economic database (AMECO) (as a measure for the unemployment rate (*Unemployment*)).

Other national-level control variables such as levels of government expenditure and government debt, trade openness, and the size of the financial sector are included in the empirical analysis.⁵⁵ The extant literature suggests that if the public's preference for government spending, which is mainly derived from given "tastes for public service and current or past military needs", is high, its toleration level of an inflation tax will also be high, especially when the availability of a non-distortionary tax is limited. Therefore, it is argued that the two indicators reasonably representing the public's preference for fiscal spending - total government expenditures and total government debt - must be associated with lower public inflation aversion. Given this relationship, I include final government consumption expenditures as a percentage of GDP from the World Bank's World Development Indicators and gross general government debt as a percentage of GDP from OECD Economic Outlook No.96 (*Government expenditure and Government debt*).

⁵⁴ Scheve 2004.

⁵⁵ I follow the model specifications of Scheve (2004) whose study offers the most comprehensive empirical analysis of the public inflation aversion as a macroeconomic policy preference to date.

Moreover, the public tends to be more averse to inflation when the national economy's dependence on the global market is high since inflation hikes might cause large volatilities in exchange rates, which can, in turn, disrupt international transactions. Thus, in order to control for the influence of openness to the global economy, a total of imports and exports as a percentage of GDP, from the Penn World Table, is included in the analysis (*Openness*). Similarly, given that inflation tends to decrease the profitability of financial assets, it seems plausible that as financialization of the national economy increases, the public may give more weight to low inflation as the objective of macroeconomic policy. I thus control for the size of the financial sector in a country by including in the analysis the amount of domestic credits as a percentage of the GDP (*Domestic credit to GDP*).

Individual-level control variables include gender, political ideology, age, income, employment status, and education. These factors are closely related to individuals' positions in the labor market, ownership of nominal assets and liabilities, and political orientation, all of which can meaningfully affect the relative costs of inflation against unemployment.⁵⁶ Gender is equal to 1 (0) if a respondent is a male (female) (*Gender*). I constructed a *Political ideology* variable ranging from 1 (far left) to 5 (far right), based on a respondent's left-right ideological self-placement. The value of Age is equal to a respondent's exact age (*Age*). An income quartile variable records a respondent's position in the income distribution of his or her country; its value ranges from 1 (first quartile) to 4 (fourth quartile) (*Income quartile*). *Unemployed* is a dummy variable coded 1 for respondents not currently unemployed. *Education* measures the years that a respondent spent in formal education.

⁵⁶ Scheve 2004.

4.1.4 Econometric models

Given the binary nature of dependent variable, I employ logistic regression to estimate the effects of economic inequality on a respondent's inflation aversion. Given the hierarchical structure of the data in which individual-level observations interact with national-level variables, the assumption of independent disturbances can hardly hold. As Moulton suggests, the correlation of disturbances within a country can cause standard errors from maximum likelihood estimation to be significantly underestimated.⁵⁷ To correct for this, I cluster standard errors by country. I also include country-fixed effects to control for unobserved country heterogeneity and to observe the within-country effects. In addition, I include year-fixed effects to account for year-specific shocks. Finally, I estimate a multilevel logistic regression as another means of preventing potential underestimation of standard errors derived from the intra-country dependence of the observations in the hierarchical data structure, and to allow random intercepts at both the individual- and country-levels.

4.2 Results and discussions

4.2.1 The effects of economic inequality on the public inflation aversion

Table 1 presents outcomes estimated using the main logistic regression models. The results are consistent with my hypothesis throughout all models. In Model 1, I employ the clustered standard errors, and I add country- and year-fixed effects in Model 2. In both models, the coefficient on the market Gini variable has a statistically significant negative sign, suggesting that high economic inequality causes citizens to be less likely to prioritize a policy of lowering inflation. In short, inequality renders them less inflation-averse. On the other side of the same coin, the outcomes also show that citizens become more likely to demand a policy of combating unemployment as inequality increases (more unemployment-averse).

⁵⁷ Moulton 1990.

Using the Clarify program⁵⁸, I calculate the predicted probability of a respondent being inflation-averse, holding all other variables at their means. The cross-country analysis (Model 1) suggests that a change in the market Gini index from one standard deviation below its average to one standard deviation above its average decreases the probability of a respondent being averse to inflation by 7% (See Figure 1). According to the within-country analysis (Model 2), the same shift in the market Gini index lowers the probability of having inflation aversion by a substantial amount of 24% (See Figure 2).

The multilevel analysis of Model 3 shows that the impact of economic inequality is still statistically significant even after controlling for potential underestimation in the standard errors caused by the hierarchical data structure. In Model 4, where I replace the market Gini with the net Gini, the influence of economic inequality is, again significant and its magnitude is even larger. That is, in contrast to the Meltzer-Richard model, citizens seem to respond to income distribution after taxes and transfers more sensitively than before any such redistribution. Specifically, a change in the net Gini from one standard deviation below its average to one standard deviation above its average decreases a respondent's probability of preferring curbing inflation over lowering unemployment by about 17% (See Figure 3).

Additional analyses indicate that the main finding is found to be robust to the exclusion of influential observations and outliers.⁵⁹ For example, the exclusion of observations whose market Gini index is below the 5th percentile or above the 95th percentile does not change the outcomes. Furthermore, I exclude observations whose Pregibon's *dbeta* values are above the 90th percentile. The significance of the effect of economic inequality remains.

⁵⁸ Tomz, Wittenberg, and King 2001.

⁵⁹ I include these outcomes in the appendix. See Table A.4 in the appendix.

Table 1. The Effect of Economic Inequality on Inflation Aversion (1976-1997)

Models	1	2	3	4	5	6	7
		Fixed Effects	Multilevel	Net Gini	EHII	Top1%	Top5%
Market Gini	-0.0504* (0.0271)	-0.163*** (0.0516)	-0.147*** (0.0156)				
Net Gini				- 0.0943*** (0.0366)			
EHII					-0.167*** (0.0472)		
Top 1%						-0.146*** (0.0413)	
Top 5%							-0.140*** (0.0301)
Gender	0.248*** (0.0382)	0.242*** (0.0344)	0.236*** (0.0256)	0.242*** (0.0394)	0.263*** (0.0514)	0.318*** (0.0631)	0.322*** (0.0684)
Political ideology	0.138** (0.0618)	0.197*** (0.0512)	0.171*** (0.0125)	0.140** (0.0606)	0.142** (0.0674)	0.112 (0.0804)	0.157* (0.0836)
Age	0.00249 (0.00207)	0.00326 (0.00232)	0.00321*** (0.000800)	0.00251 (0.00204)	-0.000461 (0.00211)	0.000204 (0.00314)	0.000337 (0.00345)
Income quartile	0.0701*** (0.0235)	0.0492** (0.0196)	0.0646*** (0.0114)	0.0669*** (0.0233)	0.0575** (0.0233)	0.0621** (0.0277)	0.0526* (0.0319)
Unemployed	-0.250*** (0.0603)	-0.174** (0.0753)	-0.205*** (0.0679)	-0.235*** (0.0686)	-0.324*** (0.0660)	-0.350*** (0.0927)	-0.331*** (0.123)
Education	-0.0124** (0.00486)	0.000436 (0.00262)	- 0.00487*** (0.00135)	-0.0121** (0.00480)	-0.0128*** (0.00375)	-0.000291 (0.00331)	0.000724 (0.00330)
Log Inflation	0.449*** (0.153)	-0.217 (0.214)	0.279*** (0.0562)	0.558*** (0.158)	0.409*** (0.128)	0.403* (0.223)	0.543*** (0.188)
Unemployment	0.00505 (0.0410)	0.0415 (0.0630)	0.0442*** (0.0142)	0.00680 (0.0310)	-0.0192 (0.0371)	-0.0884 (0.0643)	-0.108*** (0.0401)
Government expenditure	-0.0767* (0.0420)	-0.273*** (0.0643)	-0.255*** (0.0242)	-0.157** (0.0615)	-0.189*** (0.0352)	-0.170*** (0.0449)	-0.107 (0.0665)
Openness	-0.00187 (0.00334)	-0.0279* (0.0146)	-0.0273*** (0.00403)	-0.00551 (0.00405)	-0.00366 (0.00230)	- 0.00858** (0.00410)	- 0.0172*** (0.00490)
Financial sector	0.00946** (0.00385)	0.0225*** (0.00617)	0.0164*** (0.00131)	0.00916** (0.00380)	0.00990*** (0.00330)	0.00323 (0.00760)	0.00520 (0.00714)
Government debt	-0.00973* (0.00548)	-0.00143 (0.00712)	-0.0114*** (0.00220)	-0.00821 (0.00572)	-0.00593 (0.00406)	0.00500 (0.00906)	0.0122 (0.0105)
Constant	1.847 (1.680)	8.960*** (2.681)	10.28*** (1.291)	3.857* (2.290)	7.932*** (2.192)	3.287* (1.713)	3.417** (1.450)
Observations	30,181	30,181	30,181	30,181	25,663	16,264	13,880
Pseudo-R2	0.0746	0.117	.	0.0778	0.0955	0.0999	0.128

Note: Logit regression. Robust standard errors clustered by country in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure 1. The effect of Economic Inequality on Inflation aversion
(Market Gini: Cross-national)

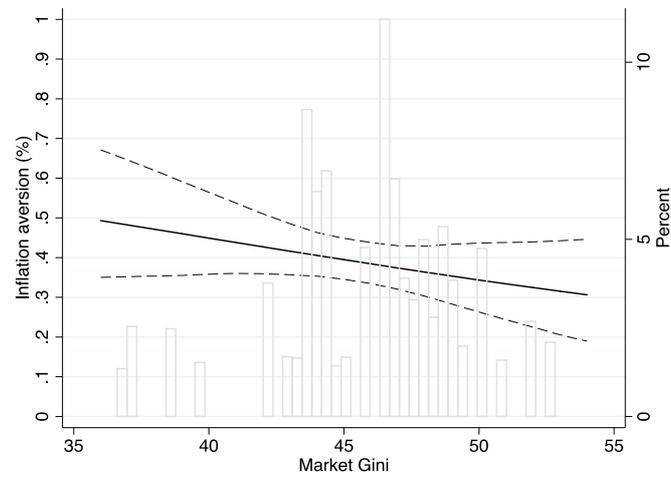


Figure 2. The Effect of Economic Inequality on Inflation Aversion
(Market Gini: Within-country)

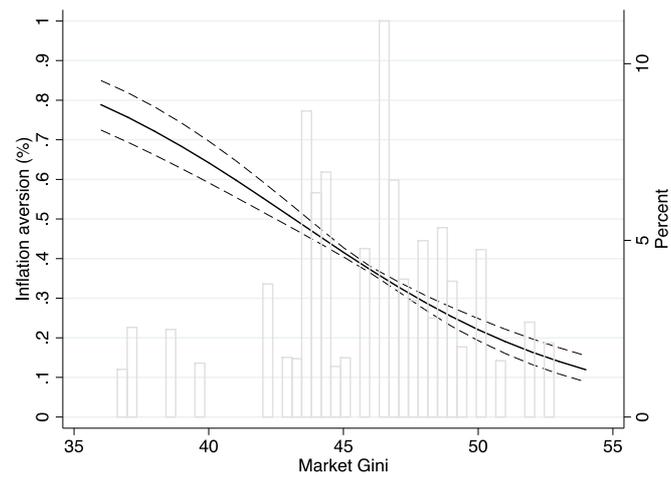


Figure 3. The Effect of Economic Inequality on Inflation Aversion
(Net Gini: Cross-national)

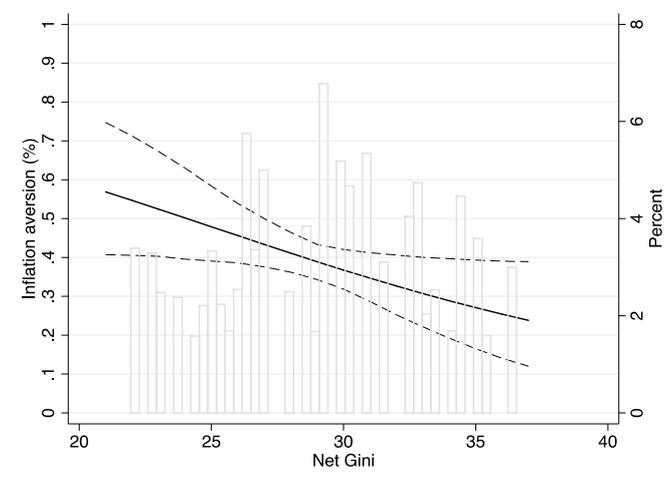


Table 2 (Model 8 - Model 11) shows how citizens' preference for redistribution influence their inflation aversion. As I hypothesized, all four indicators of the redistributive preference are found to have statistically significant negative signs, which suggests that the more citizens desire governments to become involved in redistribution to decrease inequality, the lower their inflation aversion. Again, using the Clarify program here, I estimate the substantive effect of each variable from *Redistribution1* to *Redistribution4*. First, it is found that as a respondent's opinion moves from "strongly disagree" with redistribution as governments' responsibility to "strongly agree" with such responsibility, the probability of the respondent being inflation-averse decreases by 19% (*Redistribution1*). Second, compared to a respondent who agrees that it should definitely not be the governments' duty to narrow the gap between the rich and the poor, a respondent who strongly disagrees with that view is 20% less likely to prioritize a policy of anti-inflation over that of anti-unemployment (*Redistribution 2*). Third, a respondent who answers that high-income earners should pay a much larger share of their incomes in taxes is 27% less likely to have inflation aversion than the one who answers with a much smaller share. Fourth, when a respondent considers current levels of taxes on the wealthy as being much too low, he or she is 7% less likely to prefer fighting inflation than the one who thinks that they are much too high. (See Appendix A.2 - A.5 in the appendix for more information) The above evidence supports the argument that economic inequality attenuates public inflation aversion, with demand for redistribution as the causal mechanism.

Finally, the results from the additional test on 27 European countries from 2007 to 2016 are presented in Table 3. Unlike the main test, after conducting a regression on the whole sample of countries, I separate those countries into two groups by their use of a common currency, the Euro, and conduct additional regressions. This disaggregation serves two purposes. First, since countries that adopted the common currency completely lost their

Table 2. The Effect of Demand for Redistribution on Inflation Aversion

Models	8	9	10	11
Redistribution1	-0.194*** (0.0244)			
Redistribution2		-0.276*** (0.0337)		
Redistribution3			-0.278*** (0.0735)	
Redistribution4				-0.0824** (0.0347)
Gender	0.258*** (0.0233)	0.259*** (0.0245)	0.188*** (0.0536)	0.344*** (0.0629)
Political Ideology	0.253*** (0.0348)	0.241*** (0.0335)	0.356*** (0.0489)	0.250*** (0.0777)
Age	0.000433 (0.00340)	0.000674 (0.00351)	0.00164 (0.00231)	0.000609 (0.00441)
Income quartile	0.0410** (0.0179)	0.0362** (0.0170)	0.0639*** (0.0198)	0.0662* (0.0339)
Unemployed	-0.213** (0.103)	-0.177* (0.0953)	-0.230* (0.139)	-0.170 (0.139)
Education	-0.00630 (0.00416)	-0.00725* (0.00416)	-0.00994*** (0.00248)	0.00685 (0.00793)
Log Inflation	0.137 (0.126)	0.161 (0.124)	-0.230*** (0.0670)	0.211 (0.323)
Unemployment	-0.0151 (0.0747)	-0.00842 (0.0750)	0.0560*** (0.0155)	-0.0372 (0.0518)
Government expenditure	-0.0443 (0.0480)	-0.0388 (0.0484)	-0.355*** (0.00993)	0.0616 (0.153)
Openness	0.00508 (0.00342)	0.00640* (0.00345)	0.00883*** (0.000611)	0.0142 (0.0134)
Financial sector	0.00795 (0.00503)	0.00884* (0.00508)	0.00895*** (0.000778)	0.0157 (0.0154)
Government debt	-0.0135 (0.00929)	-0.0144 (0.00937)	-0.0427*** (0.00226)	-0.0246 (0.0239)
Constant	-1.139 (1.342)	-1.482 (1.360)	5.510*** (0.330)	-3.171 (4.137)
Observations	14,391	14,391	8,179	6,212
Pseudo-R2	0.0536	0.0558	0.0703	0.0434

Note: Logit regression. Robust standard errors clustered by country in parentheses
*** p<0.01, ** p<0.05, * p<0.1

monetary policy autonomy and thus their ability to microtarget inflation levels, citizens in those countries may not consider the problem of price stability as an issue that 'national' governments must (and can) address.⁶⁰ Thus, inflation aversion that is measured by citizens' perception of rising prices as the most important 'national' issue may differ systematically between the group of Eurozone countries and the other group of non-Eurozone countries. I, thus, test how the effects of inequality on inflation aversion vary according to the use of the common currency with the separate regressions for these groups. Second, the inflation aversion of citizens in some countries that decided to delegate monetary authority to the ECB, which is known for its strong preference for low inflation, may plausibly differ from those in countries that chose not to do so. For example, Hayo and De Haan and Van'thag explain that the decision to adopt an independent central bank that serves as an inflation hawk is closely associated with a society's "inflation culture" and historical experiences with hyperinflation that ultimately leads to its "anti-inflation preference".⁶¹ Thus, important group heterogeneity that can complicate the impact of inequality on inflation aversion may exist between the two groups, which again requires the separate tests.

In Table 3, Models 12, 13, and 14 employ clustered standard errors, while Models 15 and 16 add a country-fix effects to it. The outcome of Model 12 shows that market inequality does not significantly affect citizens' preferences regarding inflation when the sample includes all 27 countries. It has a positive effect and is also insignificant in Model 13, which uses only the sample of the Eurozone countries. On the other hand, in Model 14, which uses only the non-Eurozone sample, the coefficient on the independent variable has a negative sign as

⁶⁰ The survey question asks respondents to name the two most important issues their country faces.

⁶¹ Hayo 1998; De Haan and Van'thag 1995.

Table 3. The Effect of Economic Inequality on Inflation Aversion (2007-2016)

Models	12	13	14	15	16
	All	Euro	Non-Euro	Non-Euro (Country fix)	Non-Euro (Country fix)
Market Gini	0.00228 (0.0244)	0.0559 (0.0347)	-0.0275 (0.0408)	-0.212** (0.0851)	
Non-Euro	-0.376** (0.159)				
Net Gini					-0.374*** (0.106)
Unemployed	-0.260*** (0.0389)	-0.250*** (0.0431)	-0.325*** (0.0742)	-0.332*** (0.0724)	-0.335*** (0.0740)
Education	-0.00506*** (0.000669)	-0.00456*** (0.000927)	-0.00435*** (0.000595)	-0.00366*** (0.000606)	-0.00367*** (0.000594)
Gender	-0.116*** (0.0152)	-0.117*** (0.0195)	-0.105*** (0.0204)	-0.0819*** (0.0226)	-0.0799*** (0.0234)
Age	-0.00469*** (0.00132)	-0.00341** (0.00170)	-0.00508*** (0.00178)	-0.00433** (0.00169)	-0.00434*** (0.00167)
Log inflation'	-6.120*** (0.890)	-6.739*** (1.031)	-6.477*** (1.115)	-4.111*** (1.165)	-3.075*** (0.794)
Unemployment	-0.0612*** (0.0155)	-0.0652*** (0.0175)	-0.0850** (0.0373)	-0.0962*** (0.0315)	-0.0957*** (0.0260)
Government debt	0.00151 (0.00304)	-0.00184 (0.00274)	0.0224*** (0.00812)	0.0153*** (0.00516)	0.0169*** (0.00508)
Financial sector	-0.0124** (0.00538)	-0.00756 (0.00476)	-0.0198** (0.00825)	-0.0165* (0.00937)	-0.0110 (0.00794)
Government expenditure	-0.0465*** (0.0157)	-0.0217 (0.0146)	-0.102*** (0.0159)	-0.00664 (0.0302)	-0.00165 (0.0164)
Openness	-3.39e-07 (2.08e-07)	-3.82e-07** (1.89e-07)	-1.30e-06*** (2.87e-07)	-4.08e-06*** (1.31e-06)	-5.09e-06*** (1.91e-06)
Constant	29.56*** (4.400)	28.85*** (4.894)	34.08*** (6.429)	31.70*** (5.566)	28.82*** (3.663)
Observations	453,376	310,239	143,137	143,137	143,137
Pseudo-R2	0.0521	0.0554	0.0742	0.0888	0.0901

Note: Logit regression. Robust standard errors clustered by country in parentheses
*** p<0.01, ** p<0.05, * p<0.1

hypothesized but is again statistically insignificant.⁶² Because in the non-Eurozone countries, the expected sign is observed, I continue to test inequality's within-country effect by adding country-fixed effects in Model 15. In this model, market inequality significantly decreases public inflation aversion. Moreover, the significance of the impact remains when I replace the market Gini with the net Gini in Model 16. I suggest that the results from these models indicate that the within-country effect of economic inequality on inflation aversion exists in those countries whose governments still retain monetary authority to manipulate monetary policy and thus the level of inflation. A different interpretation may be that citizens still consider expansionary policy to be a viable means of redistribution only in those countries whose anti-inflation culture is so weak that they chose not to delegate their monetary authority to the supranational central bank whose strictest mandate is to keep inflation low.

⁶² Since these three models only use the cluster standard errors, their regression outcomes indicate no significant cross-country effects of economic inequality.

5. Conclusion

The previous literature has attributed macroeconomic volatility which is often characterized by high inflation to economic inequality and the populist politics that follows. In particular, the past studies have relied on the assumption that the growing popular preference for inflationary policy has deep roots in rising inequality. Yet, this key assumption has so far not been substantiated empirically. Given the intense research focus on the effect of inequality on citizens' preferences over fiscal policy, an examination of their inequality-contingent preferences vis-a-vis inflation and employment has been long overdue.

This research demonstrates that inequality significantly moderates citizens' aversion to inflation and thus their preference for anti-inflation policy. By doing so, it illuminates the micro foundation of the political dynamics that links inflation to inequality. With rising economic disparities and the recent global resurgence of the populist politics, I suggest that this research can stimulate more academic discussions on the implications of those trends. Future research, for instance, can explore how weakened inflation aversion in a country under the conditions of inequality affects the independence of its central bank. Given that more than a few economists have already raised serious concerns that the recent advent of populism may have negative impacts on "the consensus in favor of central bank independence," the question seems timely. Future work can also investigate the influence of anemic public preference for low inflation caused by an intensifying economic gap on political parties' monetary policy stances, which have converged around the neoliberalist emphasis on price stability across a number of countries over the past decade.

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The Microfoundation of Macroeconomic Populism:

The effects of inequality on the public inflation aversion

Appendix

Table A.1 Sample countries

	ISSP and Eurobarometer (1976-1997)	Eurobarometer (2007-2016)
1	Australia	Austria
2	Austria	Belgium
3	Belgium	Bulgaria
4	Canada	Croatia
5	Denmark	Cyprus
6	Finland	Denmark
7	France	Estonia
8	Germany	Finland
9	Greece	France
10	Ireland	Germany
11	Italy	Greece
12	Japan	Hungary
13	Netherlands	Ireland
14	New Zealand	Italy
15	Norway	Latvia
16	Portugal	Lithuania
17	Spain	Luxembourg
18	Sweden	Malta
19	United Kingdom	Netherlands
20	United States	Poland
21		Portugal
22		Romania
23		Slovak Republic
24		Slovenia
25		Spain
26		Sweden
27		United Kingdom

Table A.2 and A.3. Summary statistics

ISSP and Eurobarometer (1976-1997)

VARIABLES	Mean	SD
Inflation aversion	0.386	0.487
Gender	0.499	0.500
Political ideology	3.072	1.065
Age	45.34	17.05
Income quartile	2.529	1.148
Unemployed	0.0428	0.202
Education	13.54	14.86
Net Gini	29.15	4.009
Market Gini	45.92	3.172
Government expenditure	19.54	2.707
Financial sector	79.09	33.04
Openness	59.41	28.80
Inflation	5.071	4.575
Government debt	58.39	23.69
Deficit (overall balance) as % GDP	-2.726	2.348
Unemployment	7.518	2.986
EHI	35.48	2.706
Top 1%	7.938	2.526
Top 5%	20.66	4.198
Financial sector	89.58	41.83

Eurobarometer (2007-2016)

VARIABLES	Mean	SD
Inflation aversion	0.189	0.416
Unemployed	0.0806	0.272
Education	25.85	22.45
Gender	0.463	0.499
Age	49.33	18.20
Inflation	96.04	5.309
Unemployment	9.615	4.708
Government debt	65.80	35.85
Financial sector	5.213	9.745
Government expenditure	46.18	6.526
Openness	334,882	435,583
Net Gini	29.72	3.442
Market Gini	47.99	3.801

Table A.4 Outcomes excluding outliers and influential observations

VARIABLES	Without Outliers	Without Influential Obs
Market Gini	-0.369*** (0.102)	-0.624*** (0.151)
Gender	0.249*** (0.0336)	0.332*** (0.0323)
Political ideology	0.201*** (0.0563)	0.247*** (0.0412)
Age	0.00363 (0.00238)	0.00488* (0.00271)
Income quartile	0.0341* (0.0201)	0.0653*** (0.0222)
Unemployed	-0.214*** (0.0625)	-0.281*** (0.0971)
Education	0.000778 (0.00212)	0.00370* (0.00204)
Log Inflation	-0.511 (0.645)	-0.116 (0.297)
Unemployment	0.195** (0.0846)	0.683*** (0.191)
Government expenditure	-0.512*** (0.150)	-0.928*** (0.199)
Openness	-0.0399* (0.0230)	-0.111*** (0.0380)
Financial sector	0.0291*** (0.00480)	-0.00534 (0.0196)
Debt	0.0165 (0.0151)	-0.113*** (0.0406)
Constant	21.01*** (6.154)	47.49*** (14.11)
Observations	26,567	26,347
r ² _p	0.106	0.194

Note: Logit regression.

"Without Outliers" model excluded observations whose market Gini value are either below the 5th percentile or above 95th percentile.

"Without Influential Obs" model exclude observations whose are above 90th percentile. Robust standard errors clustered by country in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.5 Replication results with Scheve (2004)'s original dataset

VARIABLES	Market Gini	Net Gini
	-	
Market Gini	0.0691*** (0.00972)	
Net Gini		-0.105*** (0.0149)
Gender	-0.231*** (0.0226)	-0.231*** (0.0226)
Political Ideology	0.0800*** (0.00566)	0.0802*** (0.00570)
Age	0.00296** (0.00139)	0.00294** (0.00142)
Income quartile	0.0668*** (0.0170)	0.0663*** (0.0169)
Unemployed	-0.251*** (0.0319)	-0.252*** (0.0318)
Education	0.000813 (0.00673)	0.00135 (0.00666)
Inflation	0.0479* (0.0261)	0.0456* (0.0255)
Unemployment	-0.0439 (0.0293)	-0.0678** (0.0291)
Government spending	-0.101*** (0.0148)	-0.119*** (0.0176)
Openness	-0.00669 (0.00794)	-0.00251 (0.00723)
Financial sector	0.249*** (0.0675)	0.288*** (0.0738)
Government debt	-0.00315 (0.00511)	-0.00479 (0.00461)
Constant	4.659*** (1.314)	5.231*** (1.236)
Observations	55,194	55,194
Pseudo-R2	0.0542	0.0542

Note: Logit regression

Robust standard errors clustered by country in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure A.1 Mean inflation aversion and market inequality

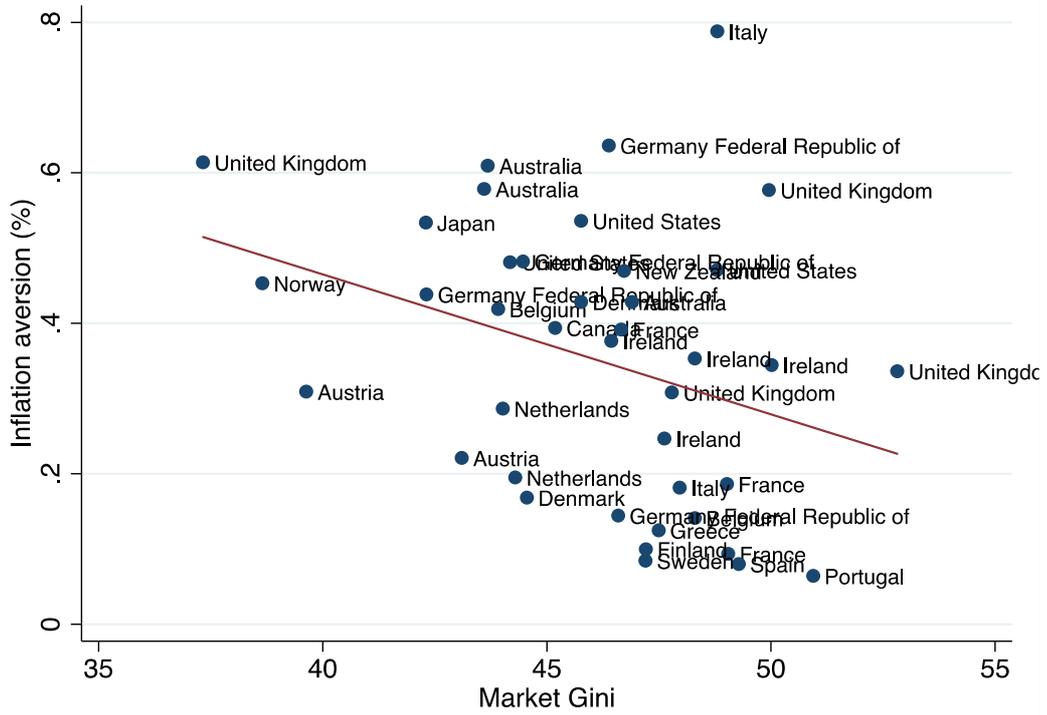
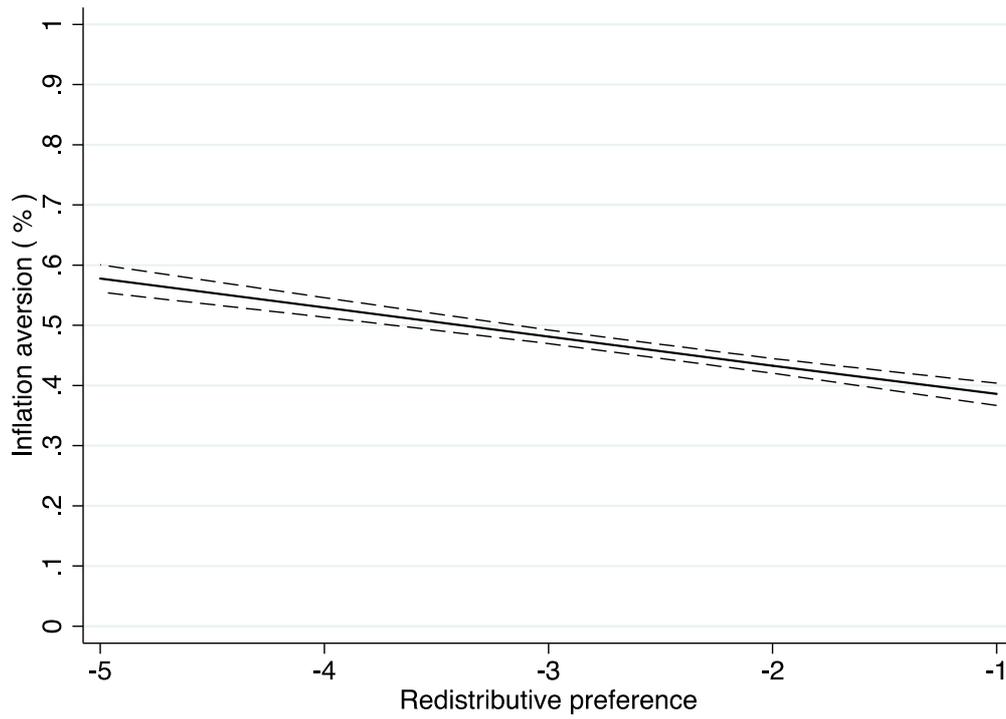
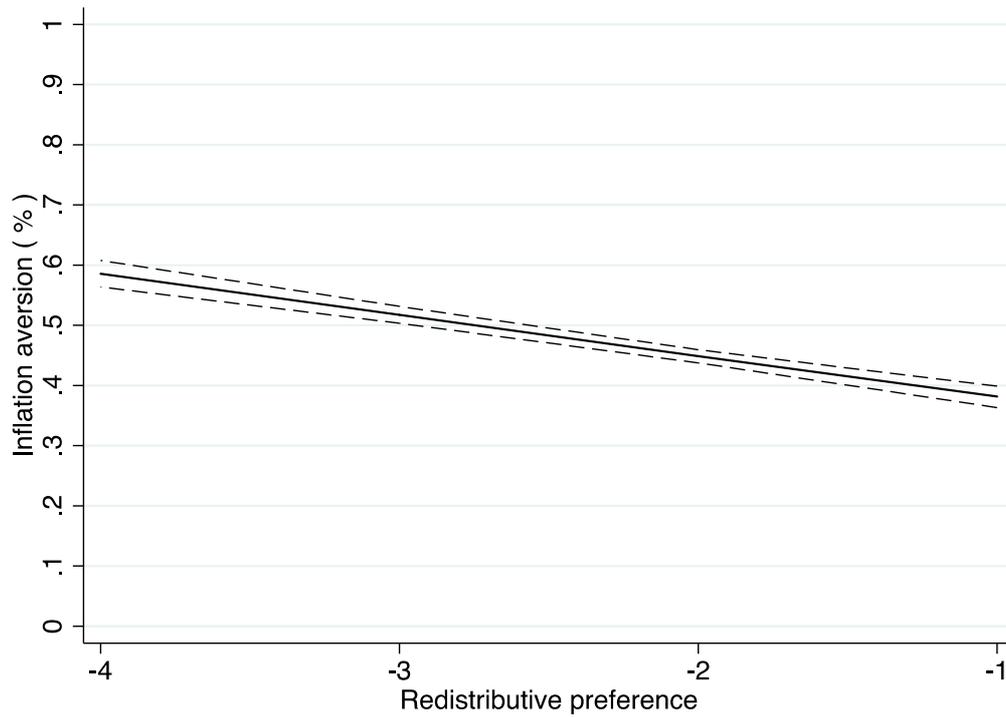


Figure A.2 Redistribution 1



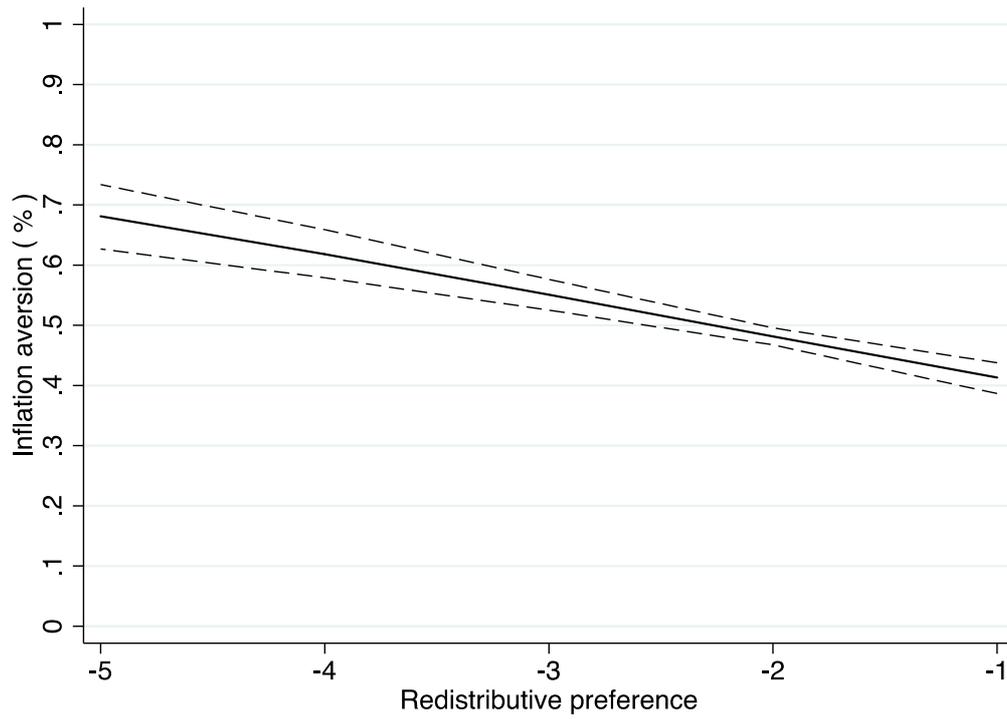
Note: A respondent was asked whether he/she agrees with the statement that "it is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes." The higher the value, the more the respondent agrees with the statement.

Figure A.3 Redistribution 2



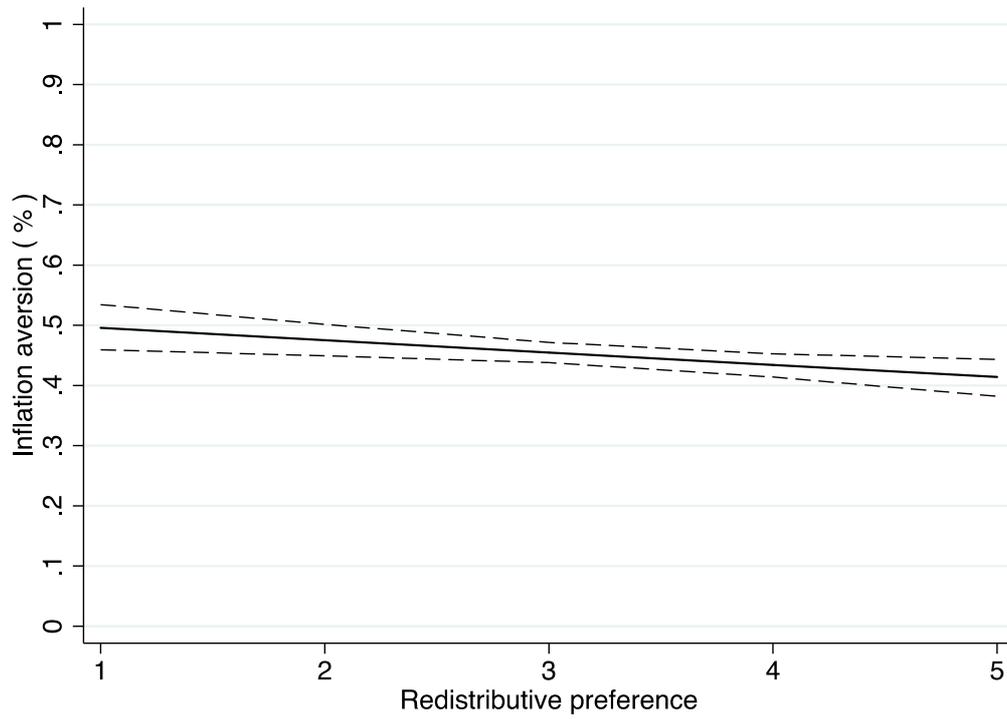
Note: A respondent was asked whether he/she agrees with the statement that " on the whole, do you think it should be or should not be the government's responsibility to reduce income differences between the rich and poor." The higher the value, the more a respondent agrees that it is the government's responsibility.

Figure A.4 Redistribution 3



Note: A respondent was asked whether he/she agrees with the statement that "those with high income should" pay a larger proportion of their earnings as taxes. The higher the value, the more a respondent agrees with the statement.

Figure A.5 Redistribution 4



Note: A respondent was asked whether he/she agrees with the statement that the current levels of taxes on the rich are too low. The higher the value, the more a respondent agrees with the statement.