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Article

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The dynamic effect of macroprudential policies on income inequality: Some evidence

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Abstract

We study the dynamic effects of the adoption of macroprudential policies on income inequality over the period 1990 - 2015. We utilize local projections for horizons up to 5 years, and we document that the implementation of borrower-targeted MAPs increases income inequality since they pose obstacles to the access to credit based on household-specific characteristics; however, some financial institutions-targeted instruments (i.e., capital and reserve requirements) lead to a more equal income distribution.

Keywords: macroprudential policies, income inequality
JEL Classification Codes: D31, D63, G28

1. Introduction

The main purpose of monetary policy until the outbreak of the financial crisis was to achieve price stability and contain inflationary pressures. However, central banks have recently undertaken the catalytic role of safeguarding financial stability, now understood as one of their main responsibilities[1]. Achieving financial stability and reducing the risk and potential damage caused by systemic crises in the banking sector, usually takes place through traditional micro-prudential; but central banks have employed macroprudential policies (MAPs) as a means of complementing and supporting the existing traditional measures of monetary policy[2]. The main

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[1] The definition of financial stability includes two pillars. First, it is defined in terms of system resistance to extrinsic disturbances (Allen and Wood, 2006; Padoa-Schioppa, 2003). The second pillar highlights the intrinsic factors of the financial system and examines its resilience to disturbances originating from the system (Schinasi, 2004)

[2] Apart from the macroprudential toolkit implemented by central banks in the aftermath of the financial crisis, the Securities and Exchange Commission (SEC) adopted new liquidity regulations to safeguard the stability of the money market funds (MMFs) (see Taghizadeh-Hesary et al., 2022, for a discussion of these reforms adopted by the SEC). MMFs play an important role as a funding source for governments, financial institutions and businesses (Hanson et al., 2015) and, thus, their resilience against financial crises enhances financial stability (see, e.g., McCabe, 2010, which discusses the run of MMFs in the 2008 financial crisis and Chernenko and Sunderam, 2014,

purpose of these policies is to eliminate systemic risk[3].

However, these policy interventions by monetary authorities have raised concerns about their distributional effects. The importance of income inequality for policymakers is documented by its effects on economic growth, as countries characterized by higher inequality tend to exhibit lower growth rates, mainly through adverse effects on consumption (Bambinas et al., 2017) as well as by its impact on poverty and well-being and, consequently, on social unrest or conflicts. Although addressing income inequality is not one of the main goals of central banks, recent work has studied the distributional implications of the conventional monetary policy as well as the impact of unconventional monetary policy on income inequality.

Conventional monetary policy affects several macroeconomic variables, including interest rates, employment, and prices, which, in turn, may influence income inequality through several channels, leading to an ambiguous overall effect[4]. The main channels through which monetary policy affects income inequality are the income composition and income heterogeneity channels (Amaral, 2017; Monnin, 2017; Colciago et al., 2019). The former comes from the relatively different composition of the sources of income among households; lower income households, which receive a larger proportion of their income from labor could benefit more from an expansionary monetary policy that strengthens employment. This effect is also evident in the work of Kaplan et al., (2018) who suggest that the presence of household heterogeneity – due to the fact that a large portion of households has almost zero liquid wealth – implies that some households are more sensitive to changes in their income compared to changes in interest rates; thus, the general equilibrium effects to private consumption and savings, prevail over the effects of interest rates. Also, countries characterized by larger labor shares tend to exhibit higher income inequality, following a monetary policy tightening (Furceri et al., 2018). The second channel is driven by the fact that changes in interest rates imply different effects on capital and labor earnings among low- and high-income households (Coibion et al., 2017). A contractionary monetary policy that increases interest rates benefits primarily high-income households, as it increases the returns of their assets, and they are less likely to face employment losses. On the contrary, higher interest rates make low-income households that depend mostly on labor income poorer, due to the adverse effects of rising interest rates on employment and economic activity; thus, a tightening of the monetary policy increases income inequality (Coibion et al., 2017; Mumtaz and Theophilopoulou, 2017; Furceri et al., 2018).

The empirical literature on the effects of unconventional monetary policy on income inequality provides mixed results, depending to a large extent on the transmission channel of the policy shock. Some studies, finding evidence in favour of the income composition channel, claim that quantitative easing increased asset prices and, consequently, the capital income of the rich households, leading to rising income inequality (Montecino and Epstein, 2015; Mumtaz and Theophilopoulou, 2017; Dossche et al., 2021; Taghizadeh-Hesary et al., 2022) as well as increasing wealth inequality across households (Evgenidis and Fasianos, 2021). On the other hand, unconventional monetary policy enhances economic activity and creates employment gains through the income heterogeneity channel; rising employment benefits mainly the lower-

for the impact of the run in MMFs in the 2011 Eurozone sovereign debt crisis). The importance of regulating MMFs and safeguarding the stabilization of funding markets has been documented by Taghizadeh-Hesary et al., (2022), who find that the Federal Reserve actions of preventing outflows from MMFs during the recent pandemic crisis mitigated the run risk and the destabilization of the financial system.

[3] Systemic is defined as the risk of interruption of the provision of financial services caused by the impairment of all or part of the value of the assets of credit institutions weighing on the real economy and depriving the funds needed to finance investment. See also Perotti and Suarez, 2009; Borio and Drehmann, 2009; and Hanson et al., 2011, for a more detailed discussion on the purpose of macroprudential policies.

[4] For instance, several studies indicate that a more accommodative monetary policy leads to higher income and wealth inequality (Coibion et al., 2017). On the contrary, accommodative monetary policy could lead to lower inequality through economic growth, employment gains and wage increases (Bivens, 2015; Cloyne et al., 2020).

income households, narrowing the income gap among the different segments of the population (Bivens, 2015; Lenza and Slacalek, 2018). This effect is also in line with the results from the general equilibrium model of Kaplan et al., (2018).

Although the effects of both conventional and unconventional monetary policy on income inequality have been studied extensively, research of the distributional implications of macroprudential policies is still at early stages[5]. The main reasons behind this are that MAPs have been used only for a relatively short period, are heterogeneous, in that alternative measures are used for different purposes, and datasets about MAPs have only recently been assembled (Alam et al., 2019, Cerutti et al., 2017).

The existing empirical literature provides evidence of a positive relationship between macroprudential measures and income/wealth inequality. For instance, Frost and van Stralen (2018) examining the relationship between different types of macroprudential measures and market and net income inequality, as measured by the Gini coefficient, find that the use of the majority of MAPs increases inequality. However, they also show that specific instruments, including the leverage ratio and limits on foreign currency loans, can provide redistribution gains, especially in emerging and developing economies. Konstantinou et al. (2022) study the effects of MAPs on income inequality for the former transition European economies, finding that their adoption leads to rising income inequality; interestingly though, this effect depends on the degrees of domestic financial development and globalization, with higher levels of them leading to lower income inequality for some MAPs. Carpantier et al. (2017) estimate that concentration limits confine some of the assets held by a limited number of borrowers, increasing wealth inequality among mortgaged households when loan-to-value ceilings are tightened, and falling when house prices rise.

In our work we control for many key drivers of income inequality (see, indicatively, Beck et al., 2007; Roine et al., 2009; Delis et al., 2014; Brei et al., 2018) and we investigate the dynamic responses of income inequality to the implementation of MAPs – which to the best of our knowledge has not been explored. Effectively we assume that the effects of MAPs are not materialized immediately, but rather it takes some time to be fully realized. To this end, we use a panel dataset consisting of macroprudential measures for 57 economies, covering the period 1990 – 2015. We adopt changes in four widely known inequality measures, namely the Gini coefficient, Theil's T, the Palma ratio, and the Atkinson index[6], as the dependent variable and we use local projections (Jorda, 2005) to estimate the dynamic effect of macroprudential policy instruments on income inequality over a five-year horizon.

Our main findings can be summarized as follows. First, borrower-targeted MAPs increase income inequality mainly due to the fact that they primarily restrict credit access for households belonging to the lower end of the income distribution, since they focus on household-specific characteristics; and they also place restrictions on the availability of consumer loans, affecting lower income households through their ability to smooth consumption. Thus, a policy trade-off between achieving financial stability and reducing income inequality comes at the forefront. Second, the implementation of some specific financial-targeted MAPs (i.e., capital and reserve requirements) reduce income inequality; this result is driven by the fact that these MAPs restrict access to credit for all households, hurting mainly the richer ones, who, in general, have easier access to credit, thereby facing larger income losses.

[5] The theoretical literature on the distributional effects of macroprudential policy is scant. The main policy instruments examined by the theoretical literature are divided into two categories, i.e., asset-based, in the form of loan to value ratio and collateral requirements (see e.g., Carpantier et al., 2017; Rabitsch and Punzi, 2017; and Rubio and Unsal, 2017); or capital-based, in the form of bank capital requirements (see, e.g., Mendicino et al., 2018). See also Colciago et al. (2019) for a brief literature review.

[6] We use the four aforementioned inequality measures, provided by the comprehensive dataset by Lahoti et al. (2016), so as to account for different parts of income distribution. See McGregor et al. (2019) for a detailed description of these measures of income inequality.

The rest of this paper is structured as follows. Section 2 summarizes our data and methods. In section 3 we discuss our estimation results. The last section concludes.

2. Methods and data

The dataset used for this study is a balanced panel covering 57 countries (listed in Table A.1) over the period 1990 to 2015. We code macroprudential measures as categorical variables taking the value of 1 if a country implemented a measure tightening during that year, –1 if loosening was implemented during that year, and 0 either the macroprudential measures was not implemented or there was no change. Our data sources include the IMF World Economic Outlook, the World Bank's World Development Indicators (WDI), Penn World Tables, the iMaPP database by Alam et al. (2019) on macroprudential policies[7], and the systemic banking crisis database by Laeven and Valencia (2018).

We assess the dynamic effect of macroprudential policy (MAPs) changes on income inequality using local projections (Jorda, 2005)[8]. Our empirical specification takes the form:

$$IE_{i,t+h} - IE_{i,t-1} = c_i^h + \tau_t^h + \beta^h MP_{i,t} + \sum_{n=1}^{4} \boldsymbol{\varphi}_n^h \boldsymbol{X}_{i,t-n} + \varepsilon_{i,t}^h \quad [1]$$

where $MP_{i,t}$ includes implementation events of MAPs enforced by country i in period t, $h = 0,1,\dots,5$ denotes the projection horizon for income inequality measure IE (proxied by the Gini coefficient, Theil's T index, the Atkinson index, and the Palma ratio), $\boldsymbol{X}$ is a vector of lagged dependent and control variables, and ε is an *IID* error term. Our controls include (the logarithm of) GDP per capita and its square, CPI inflation, the KOF globalization and Financial Development indices, the unemployment rate, a measure of human capital, government expenditure (% GDP), (the logarithm of) total population, bank credit to bank deposits ratio, the bank z-score, a banking crisis dummy, and some indicators on the quality of governance[9]. All regressions include country fixed effects as well as time effects. According to Alam et al. (2019), the iMaPP database includes dummy-type indices of tightening and loosening episodes over 17 instruments and their subcategories (see Table A.2 for a detailed description).

3. Results

In this section, we discuss our findings[10], examining the dynamic effects of the implementation of MAPs on income inequality over the next five years.

As discussed above, we use four different income inequality measures (namely, the Gini coefficient, the Atkinson index, the Palma ratio, and Theil's T). As our findings for all these inequality measures are similar, we focus our discussion around the findings for the Gini coefficient (Figure 1) and just report the results for the other three inequality measures (Figure 2 – Figure 4). Using the Gini coefficient, we find that both borrower and financial institutions targeted instruments lead to an increase of income inequality, with only few exceptions (the same holds for the Atkinson measure).

[7] The integrated databases are Lim et al. (2011, 2013), the Global Macroprudential Policy Instrument (GMPI) survey conducted by the IMF in 2013, Shim et al. (2013), the IMF's Annual Macroprudential Policy Survey, and the database by the European Systemic Risk Board. The iMaPP database is also sourced from national sources, the IMF official documents, and the websites of the Bank for International Settlements (BIS) and the Financial Stability Board (FSB).

[8] Jorda et al. (2013) also employ local projections to study how past credit accumulation affects key macroeconomic variables.

[9] See also Table A.3.

[10] In what follows, we exclude results concerning CCB, LCG, Corp, and SIFI. We choose not to present results based on these instruments, as they contain very few observations. So, we exclude them either because they do not exhibit any change (i.e., their value equals zero) or since by using four lags we lose effective observations (see Table A.4).

Figure 1. Local projection: Responses of income inequality (Gini) to the implementation of Macroprudential Policy Measures.

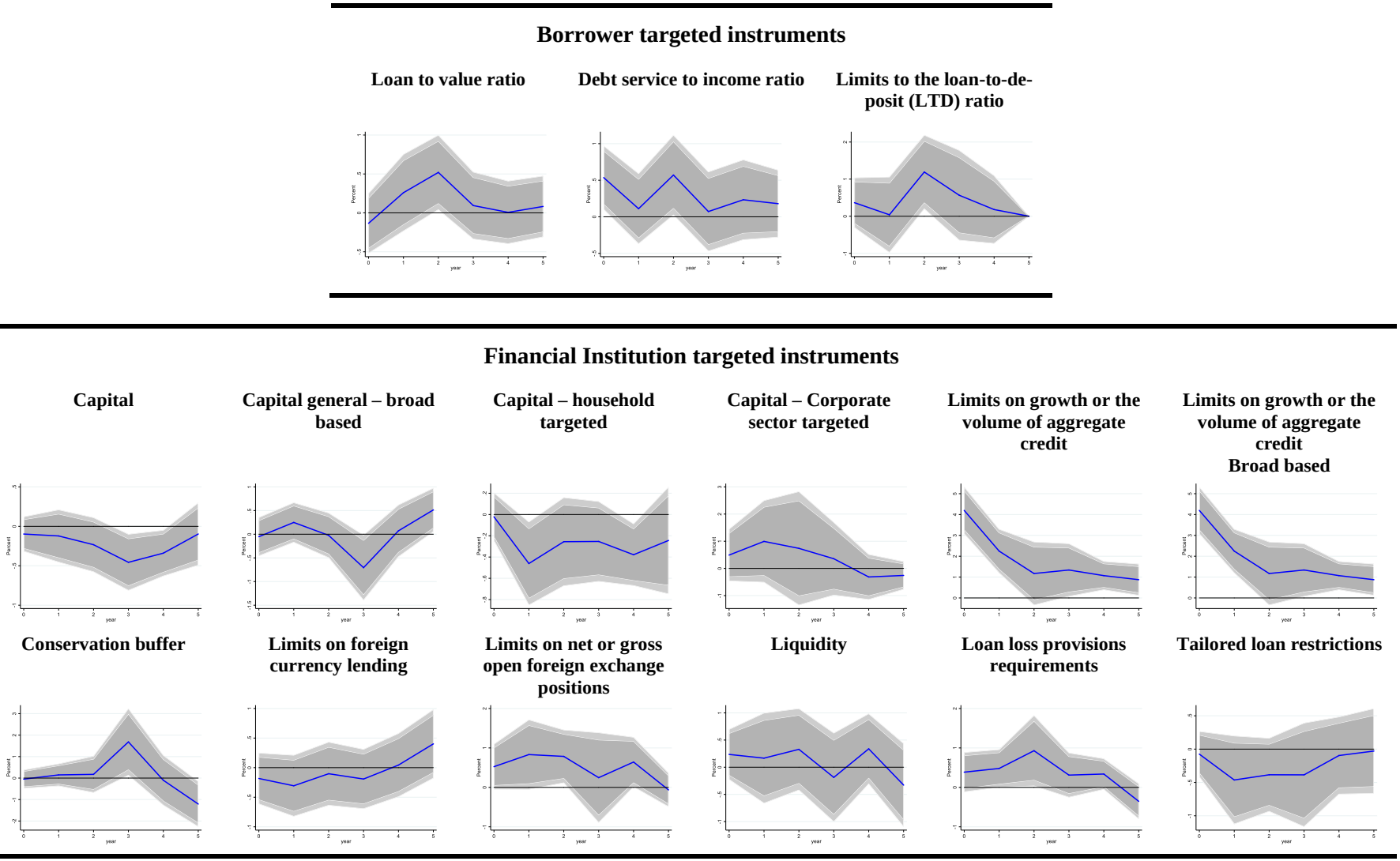
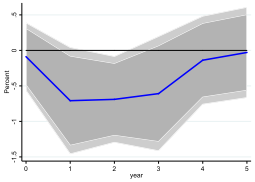


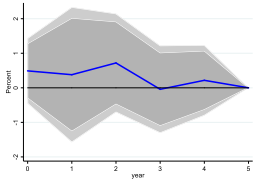
Figure 1 (cont.). Local projection: Responses of income inequality (Gini) to the implementation of Macroprudential Policy Measures.

Financial Institution targeted instruments

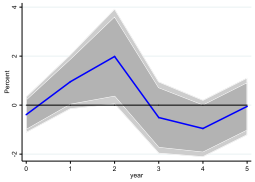
Tailored loan restrictions, household targeted



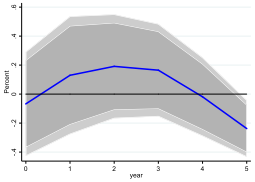
Tailored loan restrictions, corporate targeted



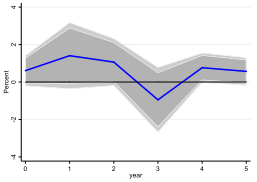
Leverage limits



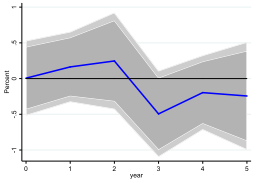
Reserve requirements



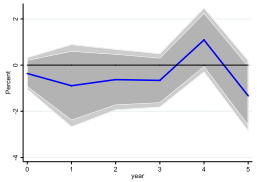
Capital – FX targeted



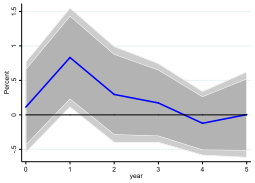
Reserve requirements is provided for those differentiated by currency (FCD)



Tax



Other



Notes. The blue lines display the coefficients of cumulative responses of income inequality (as measured by the Gini coefficient) over the next five years following the implementation of MAPs. Shaded areas refer to 90% (dark grey) and 95% confidence intervals (light grey). Baseline specification as in Equation 1, including additional control variables described in the text.

Figure 2. Local projection: Responses of income inequality (Atkinson index) to the implementation of Macroprudential Policy Measures.

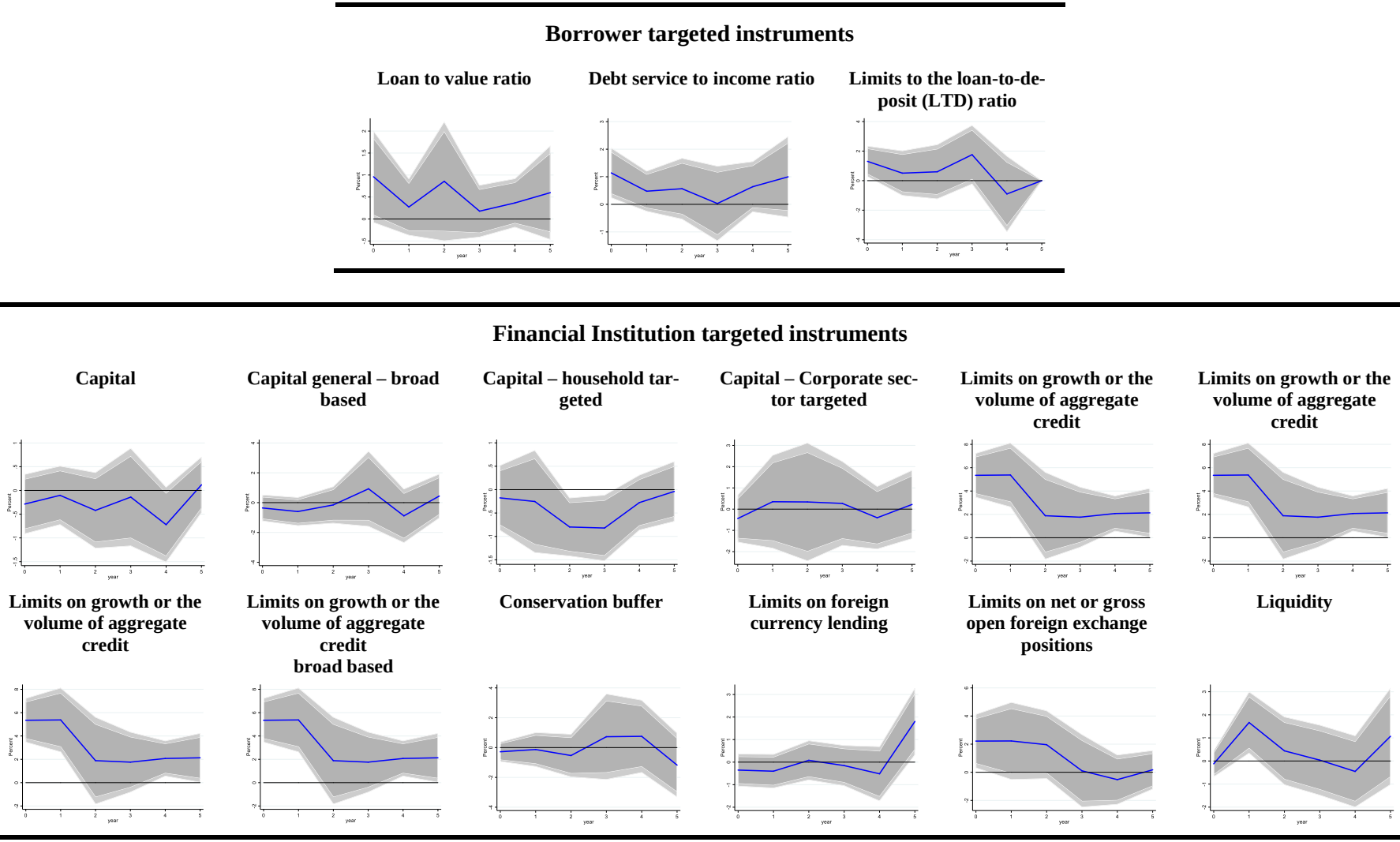
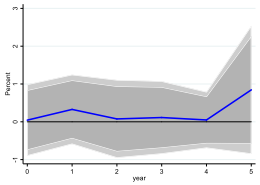


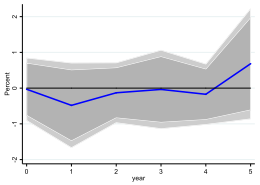
Figure 2 (cont). Local projection: Responses of income inequality (Atkinson index) to the implementation of Macroprudential Policy Measures.

Financial Institution targeted instruments

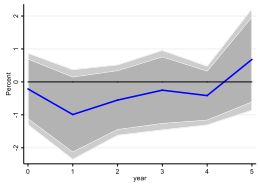
Loan loss provisions requirements



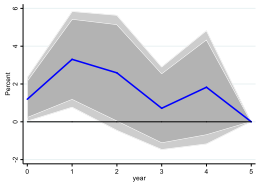
Tailored loan Restrictions



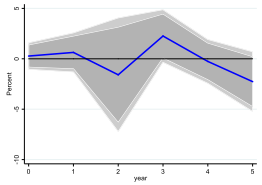
Tailored loan restrictions, household targeted



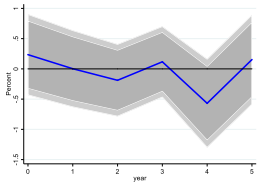
Tailored loan Restrictions, corporate targeted



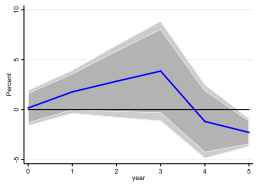
Leverage limits



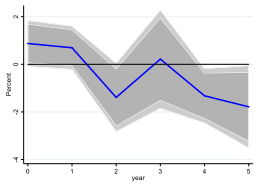
Reserve requirements



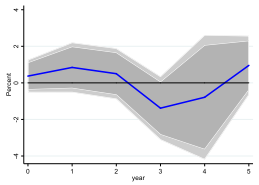
Capital – FX targeted



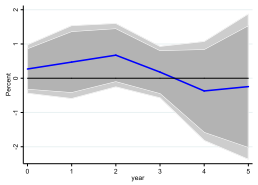
Reserve requirements is provided for those differentiated by currency (FCD)



Tax



Other



Notes. The blue lines display the coefficients of cumulative responses of income inequality (as measured by the Atkinson index of inequality) over the next five years following the implementation of MAPs. Shaded areas refer to 90% (dark grey) and 95% confidence intervals (light grey). Baseline specification as in Equation 1, including additional control variables described in the text

Figure 3. Local projection: Responses of income inequality (Palma ratio) to the implementation of Macroprudential Policy Measures.

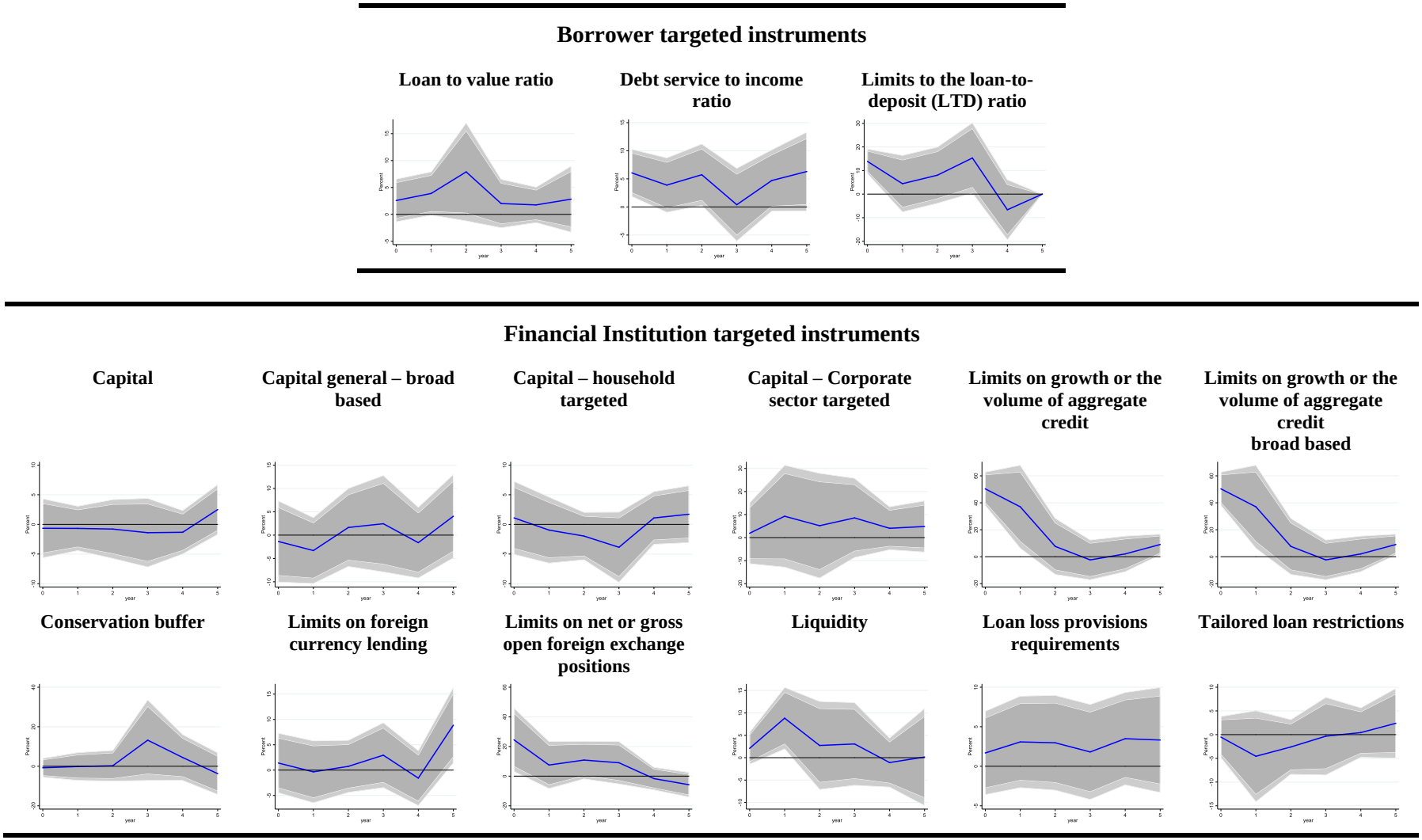
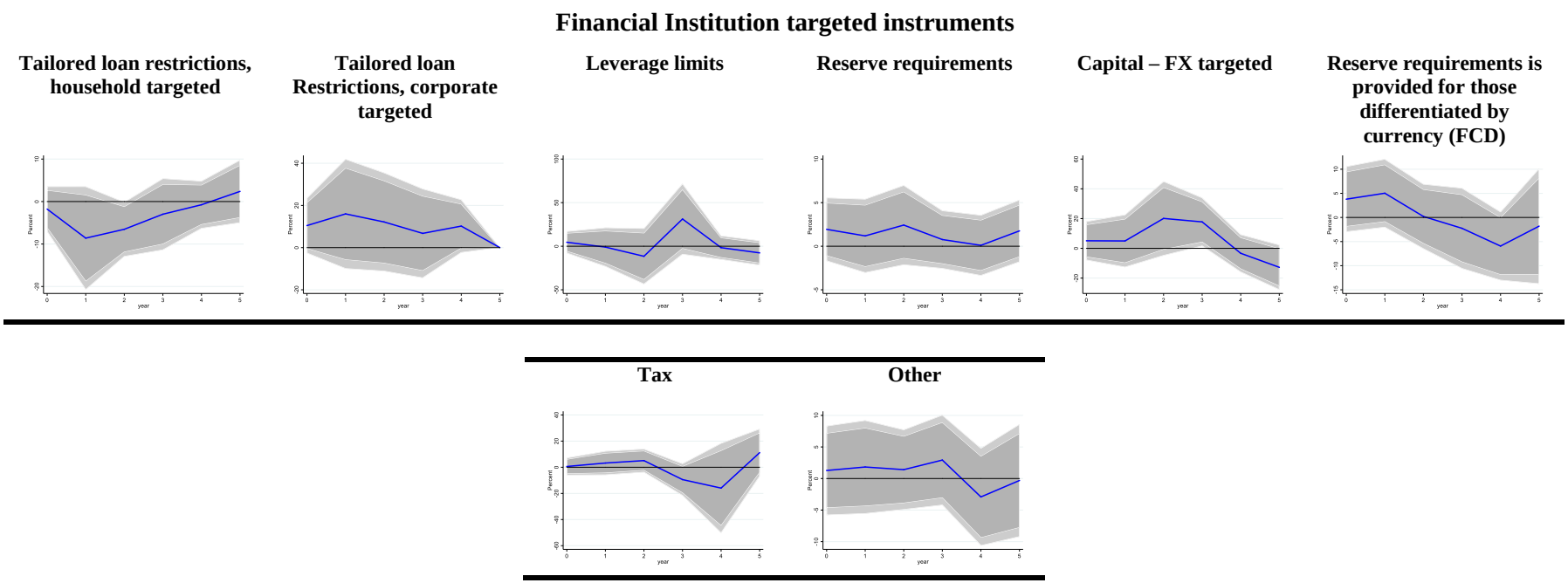


Figure 3 (cont.). Local projection: Responses of income inequality (Palma ratio) to the implementation of Macroprudential Policy Measures.



*Notes.*The blue lines display the coefficients of cumulative responses of income inequality (as measured by the Palma ratio) over the next five years following the implementation of MAPs. Shaded areas refer to 90% (dark grey) and 95% confidence intervals (light grey). Baseline specification as in Equation 1, including additional control variables described in the text.

Figure 4. Local projection: Responses of income inequality (Theil's *T* index) to the implementation of Macroprudential Policy Measures.

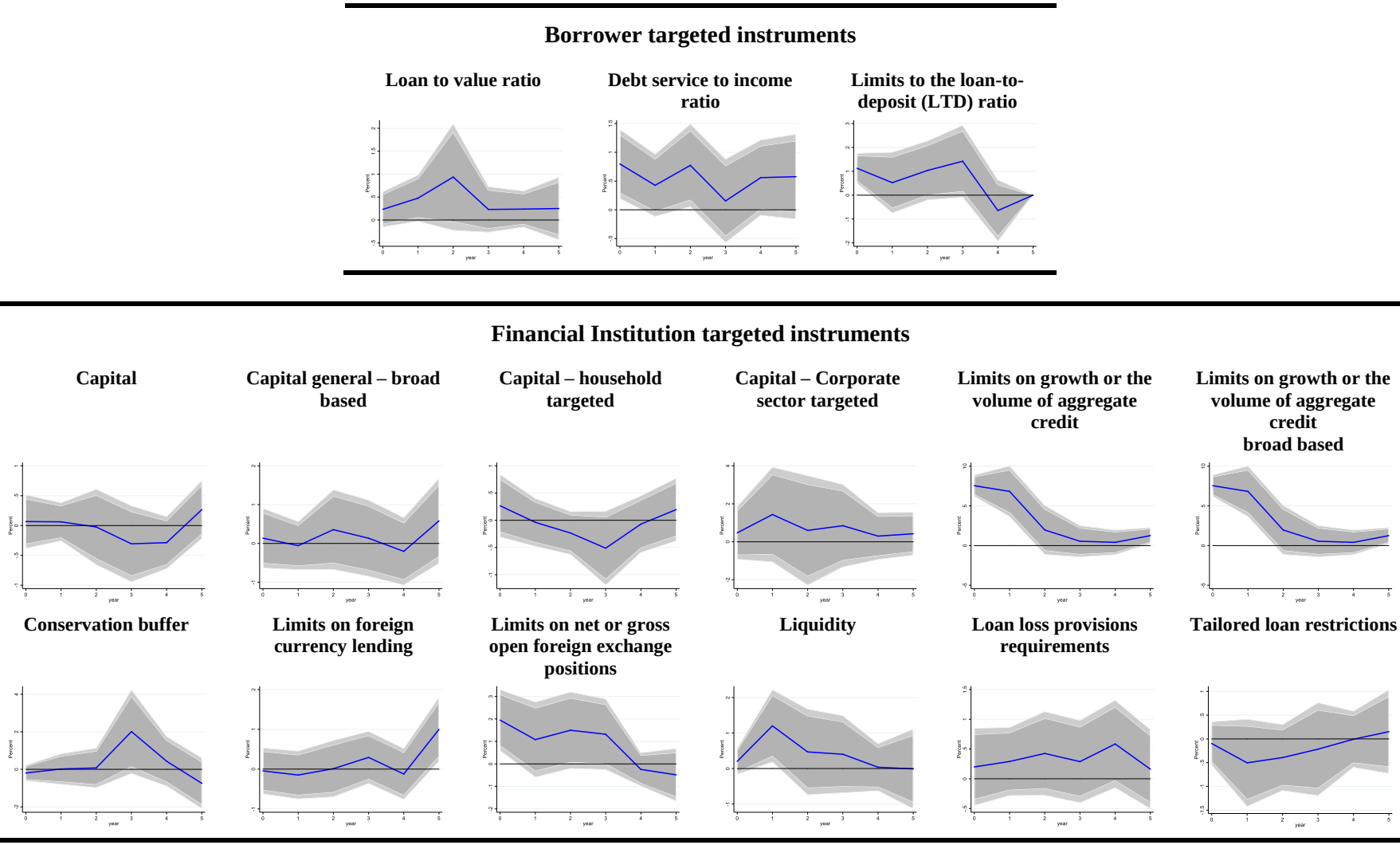
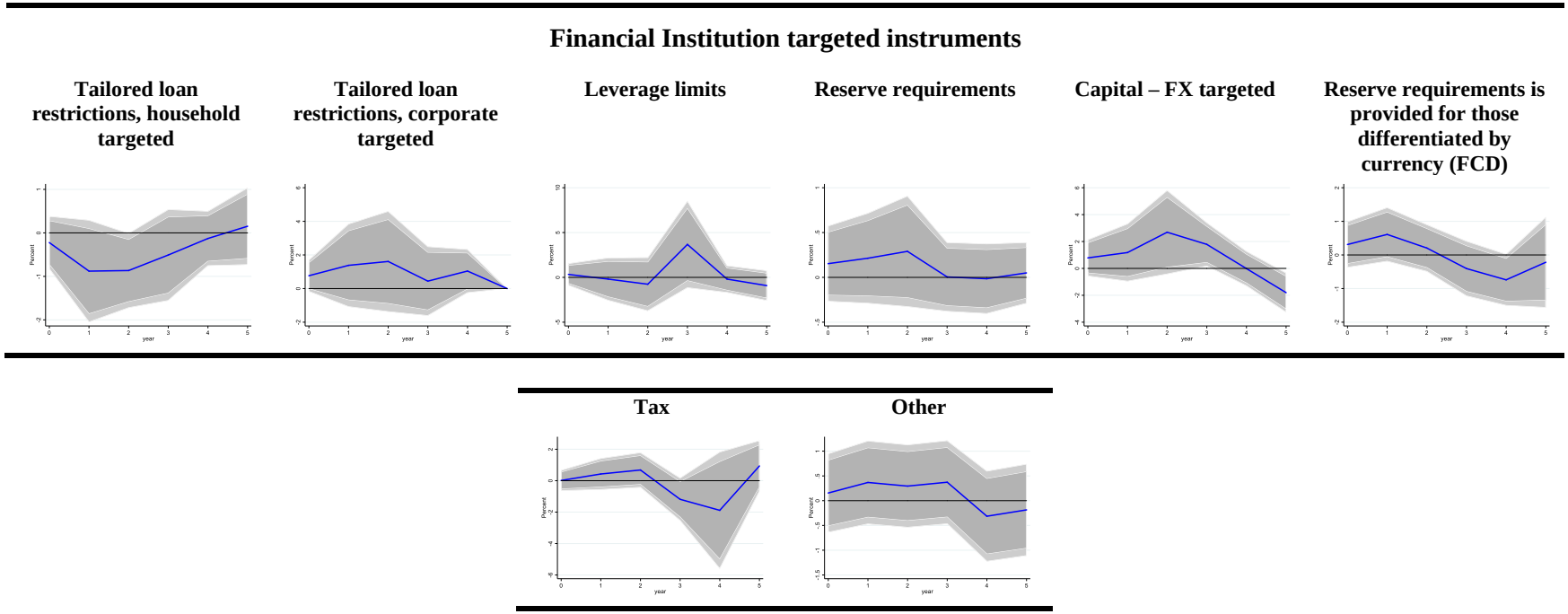


Figure 4 (cont.). Local projection: Responses of income inequality (Theil's *T* index) to the implementation of Macroprudential Policy Measures.



Notes. The blue lines display the coefficients of cumulative responses of income inequality (as measured by the Theil index) over the next five years following the implementation of MAPs. Shaded areas refer to 90% (dark grey) and 95% confidence intervals (light grey). Baseline specification as in Equation 1, including additional control variables described in the text

More precisely, borrower-targeted MAPs (i.e., Loan-to-Value (LTV), Debt Service-to-Income (DSTI), and Loan-to-Deposits (LTD) ratios) lead to increases in inequality in the second year (0.52%, 0.57% and 1.19% respectively), mainly through the credit supply channel.

This finding is in line with the recent literature, which provides evidence that a tightening of macroprudential policy hurts mainly household credit growth (Cerutti et al., 2017; Carreras et al, 2018; De Schryder and Opitz, 2021). Rising income inequality after the implementation of a borrower-targeted MAP may be attributed to the fact that these measures restrict primarily credit supply for households which belong to the lower end of the income distribution, since they focus on household-specific characteristics (e.g., income, value of assets and deposits). For instance, caps on LTV, LTD or DSTI, restrict the access to credit for those households that possess less valuable assets (like housing) or have less deposits and lower earnings. Moreover, it is plausible to assume that the poorer individuals are characterized by higher levels of debt. Furthermore, borrower-targeted MAPs place restrictions not only on housing loans, but also on the availability of consumer loans, which have adverse effects mainly on lower income households, limiting their ability to smooth consumption[11]. Therefore, tightening of borrower-targeted MAPs increases income inequality, hurting mainly poorer households as they pose obstacles to their access to funds, while households at the upper tail of the income distribution are not affected significantly.

Turning to financial institutions-targeted macroprudential policies, we find that limits on growth or the volume of aggregate credit (LCG) result in higher income inequality, reaching a maximum of 4.2% right after their implementation. The same applies for Conservation Buffer (Cons), Limits on Net or Gross Open Foreign Exchange Positions (LFX), Loan Loss Provision Requirements (LLP), and other macroprudential instruments (Other), which means that these instruments lead to an unequal distribution of income as well. Conservation Buffer leads to 1.68% increase three years after their implementation, Limits on Foreign Exchange Positions reaches a maximum increase of 0.83% at the one-year horizon, and Loan Loss Provisions Requirements result in 0.93% increase of inequality two years ahead. Finally, other measures indicate an increase of 0.83% one year after the shock. For the other three measures of inequality (Atkinson, Theil's T index and Palma ratio), we also get significant positive coefficients for Liquidity restrictions (Liq) and Limits of Foreign Currency lending (LFC).

On the other hand, we find that the use of capital requirements (Cap) and household-targeted capital requirements (Caph) results in lower income inequality. The same holds for tailored loan restrictions that are household targeted (LoanRh) and reserve requirements (RR). Implementation of capital requirements results in a reduction of inequality at horizons of 3 and 4 years ahead (0.46% and 0.34% respectively) and similar findings hold for household targeted capital requirements (0.46% one year out, and 0.38% at a 4-year horizon). Loan restrictions targeted to households reduce income inequality in years 1 (0.7%) and 2 (0.69%), while reserve requirements reduce inequality five years ahead by -0.24%. Moreover, regarding the Atkinson index, we also find a reduction of income inequality with FX loan targeted capital measures (CapFX) and reserve requirements differentiated by currency (RR_FCD). These effects are explained via the channel of credit supply. In general, with more capital and reserve requirements, banks are obliged to set harsher restrictions on the availability of credit in general, without imposing restrictions using household-specific characteristics. Thus, caps on capital and reserve requirements compress credit supply affecting both poor and more privileged individuals. The above financial institutions related restrictions reduce credit supply to richer individuals – who have easier access to credit – restricting their investment opportunities set and shrinking the income gap.

[11] We would like to thank an anonymous referee for highlighting this point.

To sum up, we may draw some useful policy conclusions. First, our results suggest that the implementation of the majority of MAPs increases income inequality, leading to a potential policy trade-off between achieving financial stability and containing income inequality. Thus, policymakers should weigh the potential gains arising from preventing a financial system destabilization against the costs from rising inequality as a result of the implementation of MAPs. Second, although most of the MAPs increase inequality, the adoption of specific financial institutions-targeted instruments (e.g., capital and reserve requirements) may lower income inequality; these could allow central banks to enhance financial stability using the specific MAPs, without jeopardizing social cohesion.

5. Concluding remarks

Rising income inequality has recently attracted considerable attention among policy circles, practitioners, and academics. However, little attention has been paid in identifying the effects of the use of macroprudential policies on the distribution of income, and especially their dynamic effects. We extend previous work by investigating the dynamic relationship between income inequality and macroprudential policies. To this end, we use a panel dataset on macroprudential measures for 57 countries covering the period 1990 – 2015 and estimate the dynamic effects of MAPs on different inequality measures, namely the Atkinson index, the Gini coefficient, Theil's T, and the Palma ratio, using the method of local projections (Jorda, 2005).

Our findings indicate that the use of the majority of MAPs increases income inequality. More precisely, borrower-targeted MAPs increase income inequality since they introduce obstacles to the access to credit, based on household-specific characteristics. On the contrary, the imposition of some financial institutions-targeted MAPs (i.e., capital and reserve requirements) reduce income inequality, as they restrict access to credit across all types of households. Thus, richer households – who, in general, have easier access to credit – face larger losses in their income due to credit constraints.

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Appendix

Table A.1. List of countries.

Albania	Greece	Paraguay
Algeria	Hungary	Peru
Armenia	Iceland	Philippines
Austria	Indonesia	Poland
Belgium	Ireland	Portugal
Brazil	Israel	Romania
Bulgaria	Italy	Russia
Chile	Jamaica	Slovak Republic
Colombia	Japan	Slovenia
Costa Rica	Jordan	Spain
Croatia	Latvia	Sri Lanka
Czech Republic	Lithuania	Sweden
Dominican Republic	Luxembourg	Switzerland
Ecuador	Malaysia	Thailand
El Salvador	Mexico	Tunisia
Estonia	Mongolia	Turkey
Finland	Morocco	Ukraine
France	Netherlands	United States
Germany	Norway	Uruguay

Table A.2. List of macroprudential policy measures.

Macroprudential Policy Instrument	Description
CCB	A requirement for banks to maintain a countercyclical capital buffer. Implementations at 0% are not considered as a tightening in dummy-type indicators.
Conservation	Requirements for banks to maintain a capital conservation buffer, including the one established under Basel III.
Capital	Capital requirements for banks, which include risk weights, systemic risk buffers, and minimum capital requirements. Countercyclical capital buffers and capital conservation buffers are captured in their sheets respectively and thus not included here. Subcategories of capital measures are also provided, classifying them into household sector targeted (HH), corporate sector targeted (Corp), broad-based (Gen), and FX-loan targeted (FX) measures.
LVR	A limit on leverage of banks, calculated by dividing a measure of capital by the bank's non-risk-weighted exposures (e.g., Basel III leverage ratio).
LLP	Loan loss provision requirements for macroprudential purposes, which include dynamic provisioning and sectoral provisions (e.g., housing loans).
LCG	Limits on growth or the volume of aggregate credit, the household-sector credit, or the corporate-sector credit by banks, and penalties for high credit growth. Subcategories of limits to credit growth are also provided, classifying them into household sector targeted (HH), corporate sector targeted (Corp), and broad-based (Gen) measures.
LoanR	Loan restrictions, that are more tailored than those captured in "LCG". They include loan limits and prohibitions, which may be conditioned on loan characteristics (e.g., the maturity, the size, the LTV ratio, and the type of interest rate of loans), bank characteristics (e.g., mortgage banks), and other factors. Subcategories of loan restrictions are also provided, classifying them into household sector targeted (HH), and corporate sector targeted (Corp) measures. Restrictions on foreign currency lending are captured in "LFC".
LFC	Limits on foreign currency (FC) lending, and rules or recommendations on FC loans.
LTV	Limits to the loan-to-value ratios, including those mostly targeted at housing loans, but also includes those targeted at automobile loans, and commercial real estate loans.
DSTI	Limits to the debt-service-to-income ratio and the loan-to-income ratio, which restrict the size of debt services or debt relative to income. They include those targeted at housing loans, consumer loans, and commercial real estate loans.
TAX	Taxes and levies applied to specified transactions, assets, or liabilities, which include stamp duties, and capital gain taxes.
Liquidity	Measures taken to mitigate systemic liquidity and funding risks, including minimum requirements for liquidity coverage ratios, liquid asset ratios, net stable funding ratios, core funding ratios and external debt restrictions that do not distinguish currencies.
LTD	Limits to the loan-to-deposit (LTD) ratio and penalties for high LTD ratios.
LFX	Limits on net or gross open foreign exchange (FX) positions, limits on FX exposures and FX funding, and currency mismatch regulations.
RR	Reserve requirements (domestic or foreign currency) for macroprudential purposes. Please note that this category may currently include those for monetary policy as distinguishing those for macroprudential or monetary policy purposes is often not clear-cut. A subcategory of reserve requirements is provided for those differentiated by currency (FCD), as they are typically used for macroprudential purposes.
SIFI	Measures taken to mitigate risks from global and domestic systemically important financial institutions (SIFIs), which includes capital and liquidity surcharges.
Other	Macroprudential measures not captured in the above categories - e.g., stress testing, restrictions on profit distribution, and structural measures (e.g., limits on exposures between financial institutions).

Source. Alam et al. (2019).

Table A.3. List of Variables and Sources

Income inequality	Global Consumption and Income Project (GCIP)
Macroprudential policies	Alam *et al*. (2019)
KOF Globalization index	Gygli, Haelg, and Sturm (2019)
Financial Development index	Svirydzenka, K. (2016)
Human capital	Penn World Table
Government expenditure (% GDP)	World Development Indicators (WDI)
GDP per capita	World Development Indicators (WDI)
Bank z-score	World Development Indicators (WDI)
Bank credit to bank deposits (% GDP)	World Development Indicators (WDI)
Inflation rate	World Development Indicators (WDI)
Total population	World Development Indicators (WDI)
Unemployment rate	World Development Indicators (WDI), IMF's World Economic Outlook (WEO)
Banking crisis dummy	Laeven and Valencia (2018)
Political and institutional variables: (*i*) Rule of Law; (*ii*) Control of Corruption; (*iii*) Government Effectiveness; (*iv*) Political Stability; and (*v*) Absence of Violence/Terrorism	Worldwide Governance Indicators (WGI)

Table A.4. List of Specific Macroprudential Instruments

Frequency	**CCB**	**LCG_CORP**	**SIFI**
Loosening (-1)	2	1	0
No change / No implementation (0)	3,448	3,455	
Tightening (1)	8	2	3