Adjustable-Rate Credit and Monetary Policy Transmission: A Cross-Country Analysis

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Abstract

How does the prevalence of adjustable rate credit (ARC) affect monetary policy transmission and central bank responses? To answer this question, I first develop a novel methodology to measure the prevalence of ARC in OECD countries using bank-level financial data. By capturing the sensitivity of banks' interest income to policy rate changes, this approach provides a robust measure of the cash flow channel's operation across diverse economies. The analysis reveals that countries with higher ARC prevalence exhibit significantly stronger and faster responses to monetary policy shocks in consumption, GDP, and Inflation. Central banks appear to adapt to these structural differences. Taylor-rule estimates indicate systematically more measured policy responses in high-ARC countries, with significantly lower coefficients on both inflation and output gaps. These findings suggest that the structure of the credit market plays an important role in shaping both the transmission of monetary policy and the decision making of central banks, pointing to the importance of considering the prevalence of ARC in policy design.

JEL Classification: E52, E43, G21, F42

Keywords: Monetary policy transmission, Adjustable-rate credit, Cross-country analysis.

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1 Introduction

The structure of a country's credit market profoundly influences how monetary policy impacts the real economy. Adjustable-rate credit (ARC) plays a pivotal role by amplifying the cash flow channel: when policy rates change, borrowers with adjustable-rate loans experience immediate adjustments in debt service costs, unlike those with fixed-rate contracts, whose obligations remain stable until new borrowing occurs.

The relationship between the structure of the credit market and the transmission of monetary policy has long been a subject of interest in the economic literature [Bernanke and Gertler, 1995b]. Theoretical models suggest that the prevalence of ARC could potentially influence the transmission of monetary policy to the real economy [Calza et al., 2013, Garriga et al., 2017]. Testing these theoretical predictions requires consistent measurement of the prevalence of ARC in all economies, a challenge that has constrained previous empirical work.

This study advances our understanding through three interconnected contributions. First, I develop a novel methodology to measure the prevalence of ARC in OECD countries using bank-level financial data. By examining how changes in policy rates translate into actual interest payments reflected in bank income statements, this approach captures the effective operation of the cash flow channel. This method overcomes limitations in existing measurement techniques, such as the conflation of loans with different adjustment frequencies and the inability to account for institutional features such as securitization and loan refinancing that can obscure the true sensitivity of debt service costs to policy rates. Unlike previous studies limited to specific regions or market segments, this methodology enables systematic comparison across a broad set of economies, providing a more accurate and comprehensive picture of the prevalence of ARC.

Second, I employ this refined measure to study the differential impact of monetary policy across economies with varying prevalence of ARC. Using panel local projections, the analysis highlights how high-ARC economies exhibit stronger and faster macroeconomic responses to interest rate changes, particularly in private consumption, GDP, and inflation.

The cash flow channel emerges as a dominant mechanism in high-ARC countries, where households and firms experience immediate adjustments to debt servicing costs following policy rate changes. In contrast, low-ARC economies show more muted and delayed responses, reflecting the slower transmission of monetary policy in these contexts.

Third, I demonstrate that central banks adapt their policy frameworks to account for these structural differences in credit markets. Using Taylor's rule estimates for three decades (1990–2023), central banks in high-ARC economies systematically adopt more measured policy responses, with lower coefficients of inflation and output gaps. This reflects an internalization of the amplified transmission mechanisms present in these economies, where even small policy rate adjustments can lead to significant real effects. By tailoring their responses, central banks in high-ARC economies effectively moderate the risks of oversteering, while in low-ARC economies, stronger policy adjustments are necessary to achieve comparable outcomes.

These findings have important implications for the design and implementation of monetary policies. The substantial heterogeneity in policy transmission across credit market structures suggests that uniform approaches to monetary policy can yield varying effects across economies. Moreover, evidence that central banks already adapt their responses to the structure of the credit market provides insight into optimal policy calibration.

As with any cross-country analysis of financial structures, this study faces certain methodological challenges. Measurement of ARC prevalence through bank-level sensitivities, while supported by multiple validation exercises, carries inherent limitations. Additionally, the potential endogeneity between credit market structures and broader macroeconomic conditions warrants careful consideration. However, the consistency of results across multiple specifications, combined with the granular nature of bank-level data and high-frequency identification strategy, provides confidence in the main findings of the paper while acknowledging these constraints. These methodological challenges and their implications are discussed in detail in the methodology section.

The paper proceeds as follows. Section 2 reviews the literature on the prevalence

of ARC, transmission of monetary policy, and responses of central banks to credit market structures. Section 3 details the data sources and the construction of key variables. Section 4 outlines the methodology, emphasizing the innovative approach to measuring ARC prevalence and its integration into the empirical framework. Section 5 presents the core results, supplemented by extensive robustness checks. Section 6 discusses the broader implications for the design of monetary policies, and Section 7 concludes with key takeaways and future research directions.

2 Literature Review

This study contributes to three interconnected strands of literature: the measurement of the prevalence of adjustable-rate credit (ARC) in countries, the impact of credit structure on the transmission of monetary policy, and the influence of the prevalence of ARC on optimal monetary policy decisions.

2.1 Measurement of ARC Prevalence

Measurement of ARC prevalence has been a persistent challenge due to data limitations and methodological inconsistencies. Although official sources such as the European Central Bank provide data on variable-rate credit, these measures often conflate loans with distinct adjustment frequencies, obscuring their true implications for the cash flow channel. Studies such as Campbell [2013] and Badarinza et al. [2018] have made significant contributions by comparing mortgage rate fixation conventions between countries. However, these studies are limited in scope and often fail to capture institutional features, such as securitization and refinancing practices, that sever the link between formal loan classifications and effective cash flow sensitivity to policy rates.

Recent methodological innovations provide valuable information on how to overcome these challenges. Drechsler et al. [2017a] use bank-level data to analyze the transmission of interest rates, demonstrating the potential of granular financial data to assess the transmission of monetary policy. Similarly, Cerutti et al. [2017] introduce macroprudential datasets that facilitate cross-country comparisons of financial

structures. Building on these advancements, my study employs bank-level data to construct a robust, cross-country measure of ARC prevalence, capturing both immediate rate passthrough and institutional factors influencing credit markets.

2.2 Credit Structure and Monetary Policy Transmission

The link between the structure of the credit market and the transmission of monetary policy has long been recognized in the literature. Seminal studies such as Bernanke and Gertler [1995a] and Mishkin [1996] highlight the critical role of the credit channel, where variations in household debt structures amplify or dampen the effects of monetary policy shocks. More recently, Flodén et al. [2021] and Cloyne et al. [2020] provided empirical evidence of the heterogeneous impacts of monetary policy in economies with different structures of the credit market. These studies underscore the increased sensitivity of consumption in economies with high ARC prevalence, aligning with Kaplan et al. [2014]'s "wealthy hand-to-mouth" framework, which explains how household liquidity constraints amplify the effects of monetary policy.

Furthermore, Andersen et al. [2021] examine the behavioral responses of borrowers under adjustable-rate contracts, shedding light on refinancing dynamics and interest rate pass-through. These behavioral insights complement macroeconomic analyses, demonstrating how ARC amplifies the cash flow channel, leading to more rapid and pronounced adjustments in household spending.

2.3 Optimal Monetary Policy in the Presence of Financial Frictions

The literature on optimal monetary policy recognizes the importance of financial frictions in shaping central bank responses. Svensson [2003] and Woodford [2010] argue that deviations from standard Taylor rules may be necessary to account for structural differences in financial markets. Recent studies, such as Huber and Pfarrhofer [2022], emphasize the need for flexible policy responses in economies with a high prevalence of ARC, particularly during periods of economic uncertainty.

Empirical work by Orphanides [2003] and Kuttner and Posen [2001] provides further evidence of nonstandard monetary policy adaptations in economies with heterogeneous credit markets. These findings align with my analysis, which re-

veals systematic differences in Taylor rule coefficients between high- and low-ARC economies. By adopting less aggressive policy stances, central banks in high-ARC economies account for the increased sensitivity of their credit markets, demonstrating the practical implications of financial frictions on monetary policy design.

2.4 Contributions of This Study

Despite progress in these strands of literature, significant gaps remain. Existing studies often rely on limited datasets, focus on single regions, or overlook the role of institutional characteristics in shaping the prevalence of ARC. Furthermore, while theoretical models have explored the implications of ARC for the transmission of monetary policy, few empirical studies provide systematic cross-country analyses of these effects. This study bridges these gaps by developing a novel methodology to measure the prevalence of ARC, analyzing its implications for the transmission of monetary policy, and demonstrating how central banks adapt their responses to differences in credit market structures.

3 Data

This study employs three distinct datasets to examine how adjustable rate credit affects the transmission of monetary policy. The first data set contains bank-level financial statements from Fitch Connect, covering 10,958 banks in OECD countries, which I use to estimate the prevalence of ARC. The second data set combines monetary policy surprises with quarterly macroeconomic indicators to analyze transmission mechanisms. The third data set consists of central bank policy rates and inflation measures to study policy responses.

3.1 Data for ARC Prevalence Estimation

The bank-level data used to estimate the prevalence of ARC come from Fitch Connect, which compiles financial statements from commercial banks around the world. The sample spans 2002-2023 and includes 694,262 bank quarter observations from 10,958

banks across OECD countries. All data are based on audited financial statements, ensuring reliability and comparability across institutions and jurisdictions.

Table 1: Descriptive Statistics of Key Variables and Dataset Composition for ARC Prevalence Estimation

Panel A: Key Variables	
Variable	Mean (Std. Dev.)
Total Assets (Billions)	259.1 (22.1)
Gross Interest and Dividend Income (Billions)	953.7 (581.9)
Interest Income/ Average Earning Assets	0.08 (0.2)
Panel B: Dataset Composition	
Category	Value
Total Observations (Bank-Quarter)	694,262
Number of Countries	38
Number of Banks	10958
Time Range	2002 - 2023
Average Banks per Country	313.1
Average Total Assets per Country (Billions)	1.7
Average Gross Interest and Dividend Income per Country	5.4

The explanatory variable for the estimation of the prevalence of ARC, as will be detailed in the Methodological Section, is the central bank interest rate for each of the OECD countries. These interest rate data were sourced directly from the official websites of the respective central banks, supplemented by data from the OECD's official website where necessary.

3.2 Data for Monetary Policy Transmission Analysis

The analysis of monetary policy transmission uses quarterly data from 1999 to 2023 for OECD countries. The data set combines two components. First, I construct a series of monetary policy shocks for each country. Second, I collect key macroeconomic variables including GDP, private consumption, and inflation from national statistical offices and the OECD database.

For monetary policy shocks from 1999-2019, I use the high-frequency identification approach of Choi et al. (2023), who measure changes in policy-sensitive interest rates within narrow windows around central bank announcements. For 2019-2023, I

extend their series following the same methodology, measuring changes in one-year government bond yields around policy announcements using data from Bloomberg.

3.2.1 Monetary Policy Shocks

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The analysis requires a consistent measurement of monetary policy shocks between countries and time periods. For 1999-2019, I use the dataset from Choi et al. [2023], who measure policy surprises using changes in government bond yields in narrow windows around monetary policy announcements. For 2019-2023, I extend their series using data from Bloomberg. Specifically, for each central bank announcement, the change in the yield of a one-year government bond is calculated from the close of the market the day before to the close of the market the day of the announcement. When markets are closed on announcement days, I use the next trading day.

The choice of one-year government bonds follows the literature on high-frequency identification of monetary policy shocks (e.g., Gertler and Karadi [2015]). These instruments are liquid enough to reflect policy news quickly while short-term enough to primarily capture monetary policy news rather than other macroeconomic shocks. The announcement dates come from central bank websites.

Importantly, to validate my methodology, I applied it to the period 2018-2019, for which Choi et al. [2023] also provides data. The results of my calculations for this period closely align with their findings, demonstrating the consistency and reliability of my approach.

This approach has two key advantages. First, by using market prices in narrow windows around announcements, it isolates the unexpected component of monetary policy actions from other economic news. Second, measuring shocks from government bond yields allows for a consistent methodology across conventional and unconventional policy periods. This is particularly important given that several central banks reached the effective lower bound during the sample period.

3.2.2 Macroeconomic Variables

3.2.2 Macroeconomic Variables

The macroeconomic data come from three sources: national statistical offices, the OECD database, and Bloomberg. The sample covers 1999:Q1 to 2023:Q2 for the OECD countries. For each country, I collect quarterly series of the following:

Real GDP (seasonally adjusted, constant 2015 prices); Real private consumption (seasonally adjusted, constant 2015 prices); Consumer Price Index; Short-term interest rates.

When different sources report the same series, I prioritize national statistical offices, followed by the OECD, and then Bloomberg.

3.3 Data for Central Bank Response Analysis

The analysis of monetary policy employs a comprehensive dataset for estimating Taylor rules. The dataset includes quarterly data spanning 1990-2023, comprising GDP, inflation rates, and policy rates. These data are sourced from the OECD database, national statistical offices, and central bank records.

The dataset covers OECD countries, excluding those in the Eurozone, to maintain comparability of independent monetary policies.

4 Methodology

The study employs a three-part approach to investigate the relationship between adjustable rate credit prevalence, monetary policy transmission, and central bank responses across OECD countries.

4.1 Estimating ARC Prevalence

This paper develops and implements a three-stage empirical framework to examine how the prevalence of adjustable-rate credit influences the transmission of monetary policy and central bank behavior. The framework combines (1) a novel approach

to measuring ARC prevalence using bank-level data, (2) panel local projections to estimate heterogeneous policy transmission, and (3) Taylor rule estimations to assess systematic differences in central bank responses

I first develop a methodology to measure ARC prevalence that overcomes key limitations of existing approaches. Rather than relying on reported loan classifications, which may obscure effective interest rate sensitivity,I exploit the granular nature of bank-level financial statements to capture the actual pass-through of policy rates to interest income.

Specifically, for each country j, the following panel specification is estimated:

$$\Delta Y_{i,t} = \alpha_i + \tau_t + \beta_j \Delta r_{j,t} + \gamma X_{i,t} + \varepsilon_{i,t} \tag{1}$$

Where: $\Delta Y_{i,t}$ is the quarterly change in Interest Income/Average Earning Assets for bank i in quarter t $\Delta r_{j,t}$ is the quarterly change in the short-term interest rate in country j in quarter t α_i are bank fixed effects τ_t are time fixed effects $X_{i,t}$ is a vector of control variables for bank i in quarter t $\varepsilon_{i,t}$ is the error term.

The vector $X_{i,t}$ comprises time-varying bank characteristics that could independently affect the dynamics of interest income. I include the natural logarithm of total assets to control for bank size, the ratio of total credit to assets to account for differences in business models, and the equity ratio to capture variation in bank capital structure. These controls help isolate the interest rate pass-through channel from confounding factors such as changes in credit demand or bank-specific growth patterns.

The coefficient of interest, β_j, measures the contemporaneous pass-through of policy rate changes to bank interest income in country j. This sensitivity coefficient provides a theoretically-grounded measure of ARC prevalence: in banking systems where adjustable-rate lending predominates, changes in policy rates should immediately affect interest income through the restricting of outstanding loans. Conversely, in systems dominated by fixed-rate lending, the income effect should manifest more gradually as new loans replace maturing ones. The contemporaneous nature of my specification thus helps distinguish between these credit market structures.

This approach is based on the methodology used by Drechsler et al. [2017b], who examines the sensitivity of bank deposit rates to changes in the Fed funds

rate to study the deposit channel of monetary policy. Although their focus is on deposits in the US, my application extends this concept to estimate ARC prevalence across countries. By applying this methodology to a large sample of banks in OECD countries, I can construct a comprehensive measure of the prevalence of ARC that captures cross-country differences in credit market structures. This measure forms the foundation for the subsequent analysis of monetary policy transmission and central bank behavior.

4.2 Analyzing Monetary Policy Transmission

The second part of this study implements panel local projections to estimate how monetary policy shocks affect key macroeconomic variables, private consumption, price level (CPI), and gross domestic product, across countries with varying prevalence of ARC. Following Jordà [2005], and extending his approach to a panel setting, I estimate impulse responses that allow for a direct comparison of monetary transmission mechanisms across different credit market structures.

I employ two distinct panel local projection specifications. The first specification estimates responses separately for high-ARC and low-ARC country groups, illuminating broad differences in monetary policy transmission. The second specification introduces an interaction term between monetary policy shocks and country-specific ARC levels, facilitating a more granular analysis of how the intensity of adjustable-rate credit shapes policy effectiveness.

These complementary approaches balance the clarity of discrete group comparison with the statistical power gained from exploiting continuous variation in ARC prevalence."

4.2.1 High vs. Low ARC Groups

For the baseline specification, I partition the sample according to the estimated interest rate sensitivity coefficients (β_j) of the first stage. The high-ARC group comprises countries in the upper third of the sensitivity distribution, while the low-ARC group includes countries in the lower third. The robustness of this classification is verified by examining alternative sample splits, including median splits and quartile-based

groupings. As documented in the appendix, the results remain qualitatively unchanged across these alternative specifications, suggesting that the findings are not driven by the specific choice of threshold.

For each forecast horizon $h = 0, 1, ..., H$, the local projection regression of the following panel is estimated separately for each group:

$$\log(Y_{i,t+h}) = \alpha_i + \delta_t + \beta_h MPS_{i,t} + \sum_{j=1}^{20} \gamma_j MPS_{i,t-j} + \sum_{k=1}^{20} \phi_k \log(Y_{i,t-k}) + \theta X_{i,t} + \varepsilon_{i,t+h} \quad (2)$$

where $Y_{i,t+h}$ denotes the macroeconomic outcome of interest for country i at horizon h, $MPS_{i,t}$ represents the identified monetary policy shock, and β_h captures its effect at horizon h. The specification includes country fixed effects (α_i) to absorb time-invariant cross-country heterogeneity and time fixed effects (δ_t) to control for common shocks. I include twenty lags of both the dependent variable and monetary policy shocks to account for dynamics and ensure proper identification of the policy shock. The vector $X_{i,t}$ contains time-varying country-specific controls including the lagged policy rate level and output gap. The coefficient of interest is β_h, representing the effect of the shock h periods ahead

4.2.2 Interaction between ARC Prevalence and Monetary Policy Shocks

To complement the group-based analysis, I estimate an interaction specification that takes advantage of the continuous variation in the prevalence of ARC. This approach yields direct estimates of how the transmission of monetary policy varies with the structure of the credit market. The specification takes the form:

For each horizon $h = 0, 1, ..., H$, the following panel local projection regression is estimated:

$$\begin{aligned}\log(Y_{i,t+h}) =& \alpha_i + \delta_t + \beta_h MPS_{i,t} + \gamma_h (MPS_{i,t} \times ARC_i) \\ &+ \sum_{j=1}^{20} \lambda_j MPS_{i,t-j} + \sum_{j=1}^{20} \psi_j (MPS_{i,t-j} \times ARC_i) + \sum_{k=1}^{20} \phi_k \log(Y_{i,t-k}) + \theta X_{i,t} + \varepsilon_{i,t+h}\end{aligned} \quad (3)$$

In this extended model, $Y_{i,t+h}$, α_i, δ_t, $MPS_{i,t}$, $X_{i,t}$, and $\varepsilon_{i,t+h}$ are defined as in the baseline model; ARC_i is the measure of ARC prevalence for country i, estimated in the first stage of the analysis. $MPS_{i,t}$ appears both as a standalone term and in the interaction with ARC_i, allowing the model to capture both the general effect of monetary policy shocks and how this effect varies with ARC prevalence. The ARC_i measure itself does not appear as a separate regressor because it is constant over time for each country and is therefore absorbed by the country fixed effects (α_i).

The coefficient of primary interest is γ_h, which captures how the effect of monetary policy shocks on the outcome variable varies with different levels of ARC prevalence. A significant γ_h would indicate that the transmission of monetary policy differs in fact based on the prevalence of adjustable-rate credit in an economy. Meanwhile, β_h captures the average effect of monetary policy shocks across all countries.

For both models, the h-period-update change in the outcome variable captures the effect of a monetary policy shock over different horizons. The models are estimated using Panel OLS with entity and time fixed effects. Newey-West standard errors are employed to account for potential serial correlation and heteroskedasticity in the error terms. The baseline results are presented using a 5-year lag, with robustness checks examining results across a range of different lag lengths.

The local projections method offers several advantages over traditional vector autoregression (VAR) approaches, as highlighted by Ramey [2016]. It does not impose dynamic restrictions inherent in VARs, allowing for more flexible estimation of impulse responses; it is more robust to misspecification, as each horizon is estimated separately; and it easily accommodates non-linearities and state-dependencies in the dynamic relationships.

The panel structure increases statistical power and allows for the inclusion of country fixed effects, capturing time-invariant country-specific factors [Jord'a et al., 2020]. The extended model with interaction terms further allows for a more nuanced analysis of the relationship between ARC prevalence and monetary policy effectiveness, utilizing the full variation in ARC levels across countries and potentially revealing more detailed patterns in how credit market structures influence policy transmission.

4.3 Monetary Policy Response Functions in High and Low ARC Economies

This section examines how central banks adapt their policy responses given the higher transmission in high-ARC economies through estimation of Taylor rules. These rules provide a systematic approach to understanding how policy rates respond to inflation and output gaps. Following the literature, I estimate standard Taylor rules to examine systematic differences in monetary responses:

$$r_{i,t} = \rho r_{i,t-1} + (1-\rho)[\alpha(\pi_{i,t} - \bar{\pi}) + \beta(y_{i,t} - \bar{y}_t)] \tag{4}$$

where $r_{i,t}$ is the policy rate, $\pi_{i,t}$ is inflation, π is the inflation target, $(y_{i,t} - y^{i,t)}$ is the output gap, and ρ captures interest rate smoothing. The key coefficients of interest are α and β, which measure the long-run response to inflation and output gaps respectively. The estimation covers quarterly data from 1990-2023 for non-Eurozone OECD countries. Inflation targets are taken from central bank official statements where available, otherwise using the common 2% target.

4.4 Limitations

This study is subject to several methodological and data-related limitations: This study is subject to several methodological and data-related limitations that warrant discussion:

Interest Rate Sensitivity Measurement

The approach of using banks' interest income sensitivity to policy rate changes as a proxy for ARC prevalence carries inherent limitations. While the regression framework controls for bank-specific characteristics through fixed effects and time-varying controls, other factors beyond ARC prevalence could influence this sensitivity. For instance, variations in market competition or bank business models might affect interest rate pass-through independently of credit market structure. However, several factors support the validity of this measurement approach. First, the inclusion of bank-level controls - including size, capital structure, and business model indicators - helps isolate the ARC channel from confounding factors. Second, the estimated

cross-country patterns align remarkably well with previous studies that directly measure mortgage rate fixation conventions in smaller samples (e.g., Campbell [2013], Badarinza et al. [2018]). Third, this methodology follows the established approach of Drechsler et al. [2017b], who successfully employ similar bank-level sensitivity measures to study monetary policy transmission through the deposits channel.

Endogeneity Consideration

A potential concern relates to the endogenous determination of credit market structures. Countries with greater macroeconomic volatility might naturally develop financial systems with higher ARC prevalence, while simultaneously exhibiting different monetary policy transmission patterns for reasons unrelated to credit market structure. This creates a challenge in establishing a purely causal relationship between ARC prevalence and monetary policy effectiveness. While acknowledging this limitation, several aspects of the analysis mitigate these concerns. The panel structure of the estimation allows for country fixed effects that absorb time-invariant differences in economic volatility. The results remain robust when controlling for time-varying measures of macroeconomic uncertainty and when examining subsamples of countries with similar levels of economic development. Moreover, the granular bank-level data and high-frequency identification of monetary policy shocks help isolate the credit market channel from broader macroeconomic conditions.

Despite these limitations, the consistency of the findings in multiple specifications and their alignment with theoretical predictions suggest that the documented relationships reflect meaningful structural features of monetary policy transmission rather than spurious correlations. As with any cross-country analysis, perfect identification remains challenging, but the weight of evidence supports the paper's main conclusions while acknowledging these methodological constraints.

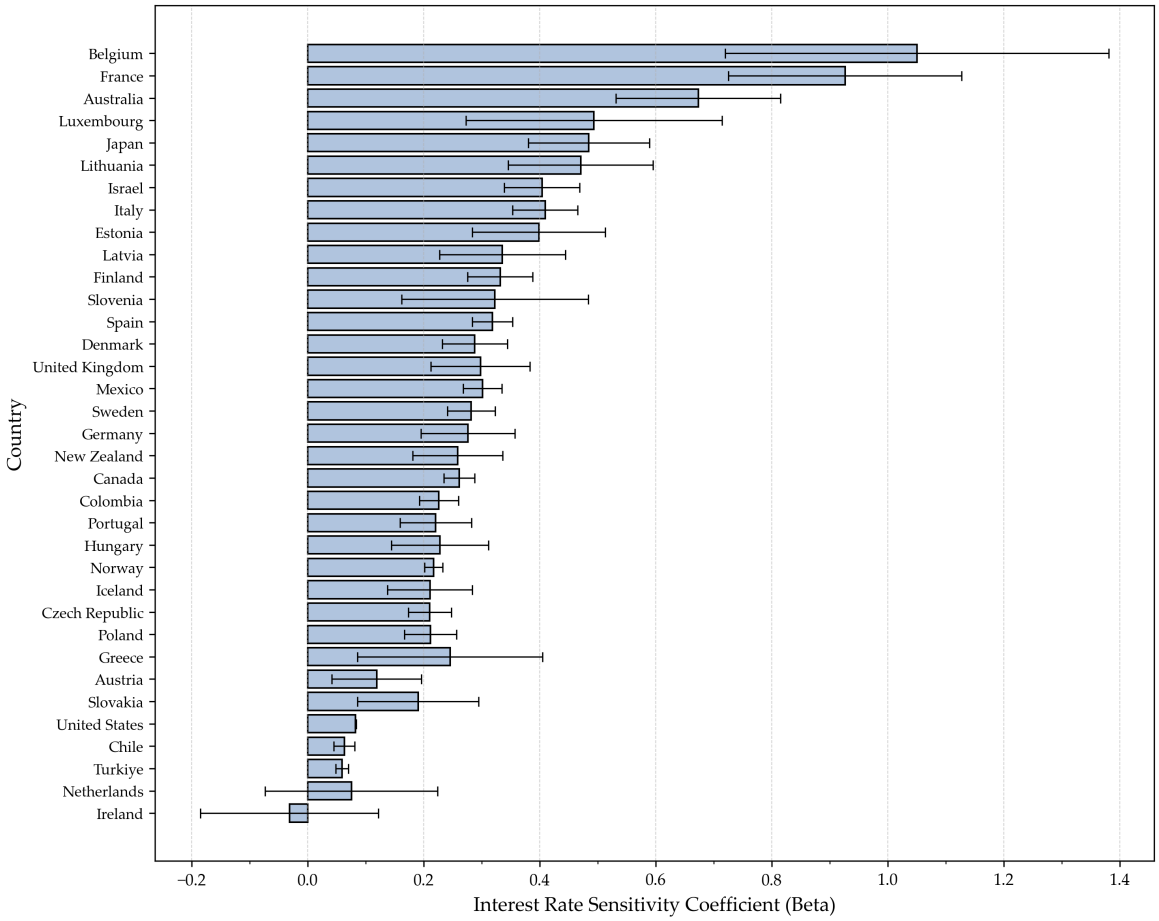
5 Results

This section presents the key findings of each stage of the analysis. Interpretation of these results and their implications will be provided in the subsequent discussion section.

5.1 ARC Prevalence Estimation

The first stage of the analysis reveals significant heterogeneity in the sensitivity of banks' interest income to changes in short-term interest rates across different countries.

Figure 1: **Interest Rate Sensitivity to Interest Rate by Country**



Notes: Figure 1 illustrates the country-specific interest rate sensitivity coefficients (β_j) estimated from Equation (1). These coefficients represent the sensitivity of banks' interest income to changes in short-term interest rates, serving as a proxy for the prevalence of adjustable-rate credit in each country's banking system. Countries are ordered from highest to lowest estimated β_j. Error bars represent 95% confidence intervals.

Figure 1 presents the country-specific interest rate sensitivity coefficients (β_j) estimated using the panel regression model described in Equation (1). These coefficients capture the contemporaneous effect of changes in short-term interest rates on banks' interest income relative to their earning assets, serving as a proxy for the prevalence of adjustable-rate credit in each country. Table 4 in the appendix provides detailed results.

5.2 Monetary Policy Transmission Analysis

This section presents the key findings from my analysis, examining how the prevalence of adjustable-rate credit influences the transmission of monetary policy to three main macroeconomic variables: Gross Domestic Product (GDP), private consumption, and Price level (CPI). For each variable, I present two types of analysis: a comparison between high-ARC and low-ARC country groups, and an interaction effect between monetary policy shocks and ARC levels.

5.3 Gross Domestic Product (GDP)

The analysis of Gross Domestic Product (GDP) responses to monetary policy shocks reveals significant heterogeneity between countries with high and low prevalence of adjustable-rate credit Figure 2 illustrates the impulse response functions (IRFs) for the natural logarithm of real GDP following a 100 basis point monetary policy shock, comparing countries with high and low ARC prevalence.

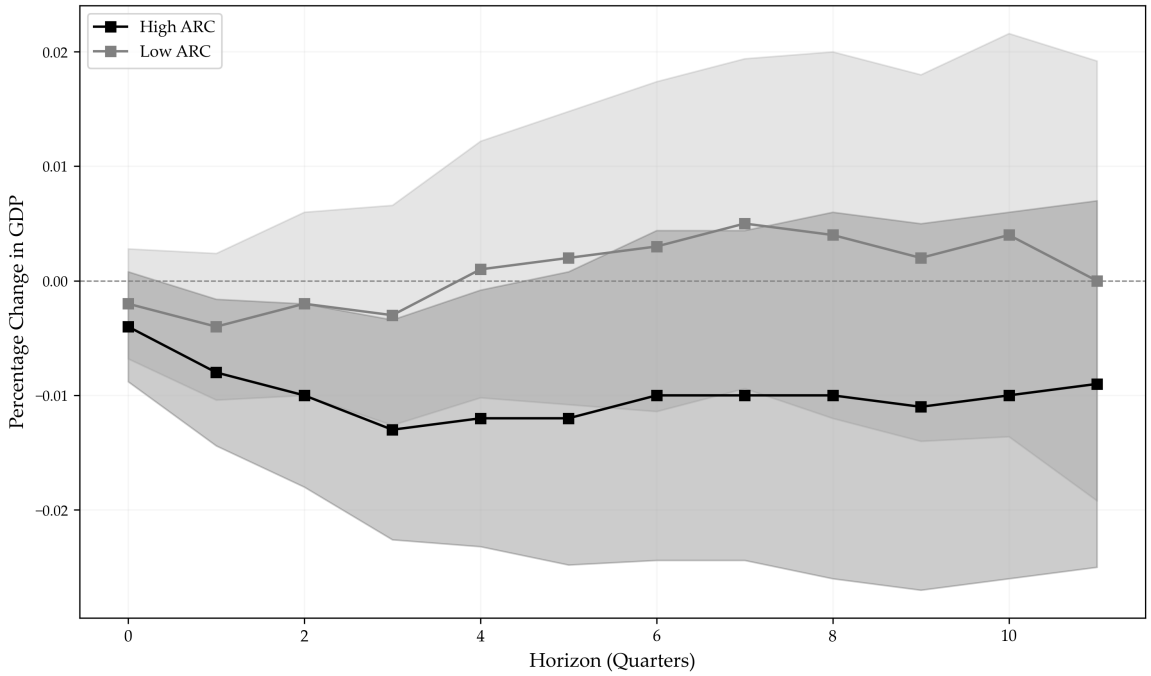
In high-ARC countries, a 100 basis point increase in interest rates leads to a substantial and statistically significant decrease in GDP levels, with the maximum effect reaching approximately one percent (0.01 log points) below the pre-shock level. This effect is most pronounced and statistically significant in the first four quarters following the shock, after which the level of significance moderately diminishes. In contrast, low-ARC countries exhibit a more muted response, with a negative but statistically indistinct effect observed only in the initial three quarters post-shock.

To further elucidate the role of ARC in monetary policy transmission, Figure 3 presents the interaction effect between ARC levels and monetary policy shocks on GDP, derived from Equation 3.

The interaction coefficient, which captures the additional effect of ARC on the monetary policy shock (MPS), averages approximately 0.05 across the projection horizon. This interaction effect is statistically significant for the first 8 quarters, after which the significance marginally declines. It is crucial to note that this coefficient represents the incremental impact of ARC on monetary policy transmission, as the regression model also includes the MPS as an independent variable.

These findings collectively suggest that the prevalence of adjustable-rate credit

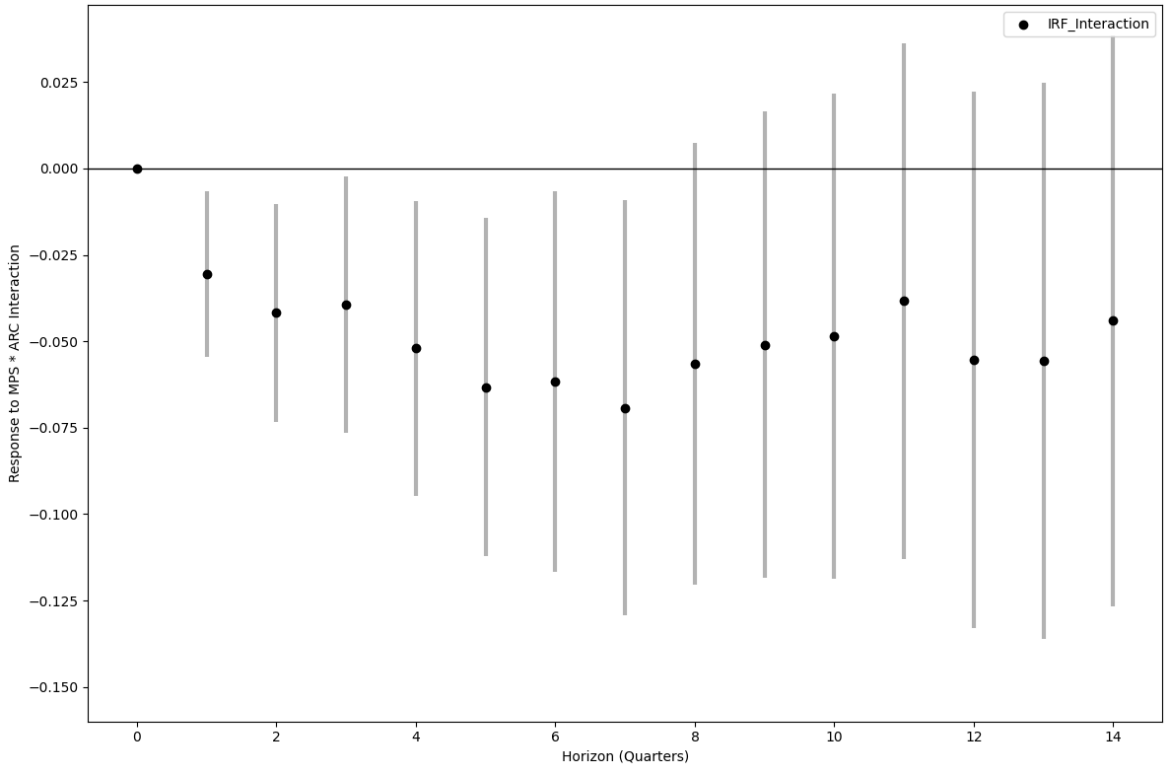
Figure 2: **Effect of 100 Basis Points Interest Rate Shock on (log) Real Gross Domestic Product (GDP)**



*_Notes_: This figure shows Impulse Response Functions (IRFs) for log real GDP to a 100 basis point monetary policy shock, estimated using local projections (Equation 2), using a 5-year lag. The control variables include CPI, and interest rate level. Countries are grouped based on their interest rate sensitivity (β_j) from Equation (1).Vertical axis: percentage change in GDP from pre-shock level. Dashed line at zero indicates no change in GDP. Turkey and Chile were excluded from the sample due to their significantly higher inflation rates and interest rate volatility during the sample period, which could potentially distort the results.

significantly influences the transmission of monetary policy to economic output. Countries with higher ARC levels exhibit a more pronounced and immediate GDP response to interest rate shocks, indicating a potentially higher sensitivity of their economies to monetary policy changes. This heightened sensitivity underscores the importance of considering the structure of credit markets in the formulation and implementation of monetary policy across different economies.

Figure 3: **Interaction Effect: ARC Levels and Monetary Policy Shocks on log GDP**

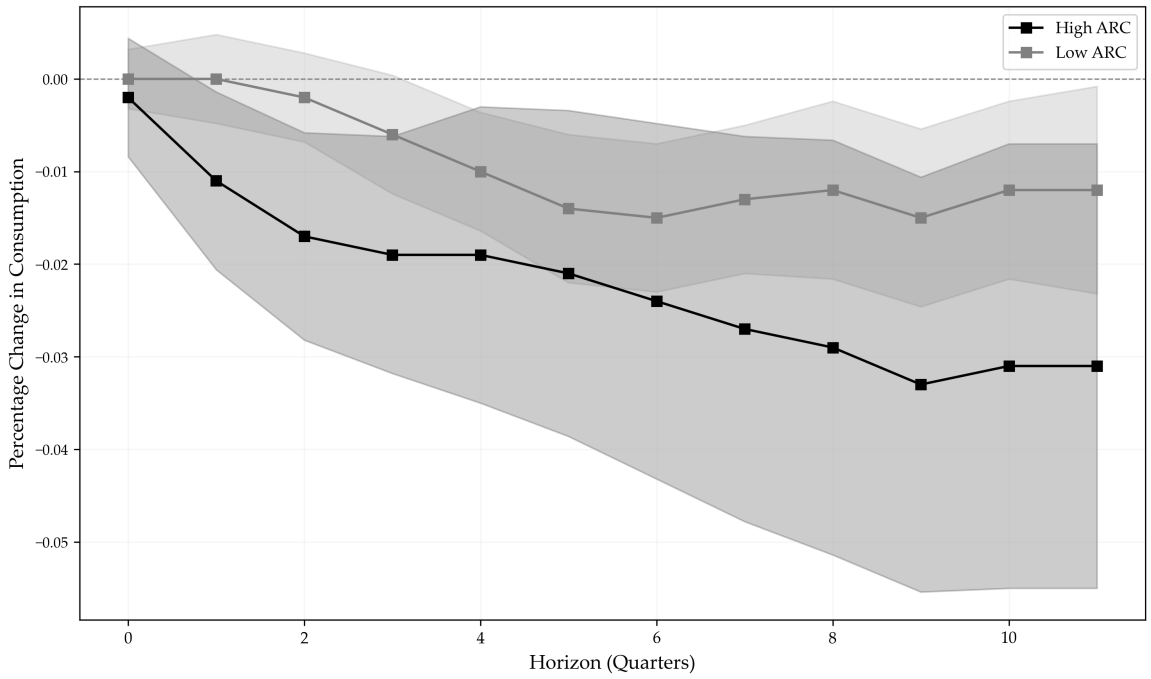


Notes: This figure shows the interaction effect between ARC levels and monetary policy shocks on the natural logarithm of real GDP, estimated using local projections (Equation 3), with a 5-year lag. The control variables include CPI and interest rate level. Each point represents the estimated interaction coefficient at that horizon, while the vertical lines depict the 90% confidence intervals. A negative interaction effect indicates that higher ARC levels amplify the impact of contractionary monetary policy on GDP. The horizontal axis shows quarters after the shock; the vertical axis shows the magnitude of the interaction effect. The sample includes all OECD countries, except Turkey and Chile, which were excluded due to their significantly higher inflation rates and interest rate volatility during the sample period, which could potentially distort the results.

5.4 Private Consumption

The analysis of private consumption responses to monetary policy shocks reveals substantial differences between countries with high and low prevalence of adjustable-rate credit Figure 4 illustrates the effect of a 100 basis point interest rate shock on the natural logarithm of private consumption for high-ARC and low-ARC countries.

Figure 4: **Effect of 100 Basis Points Interest Rate Shock on (log) Private Consumption**

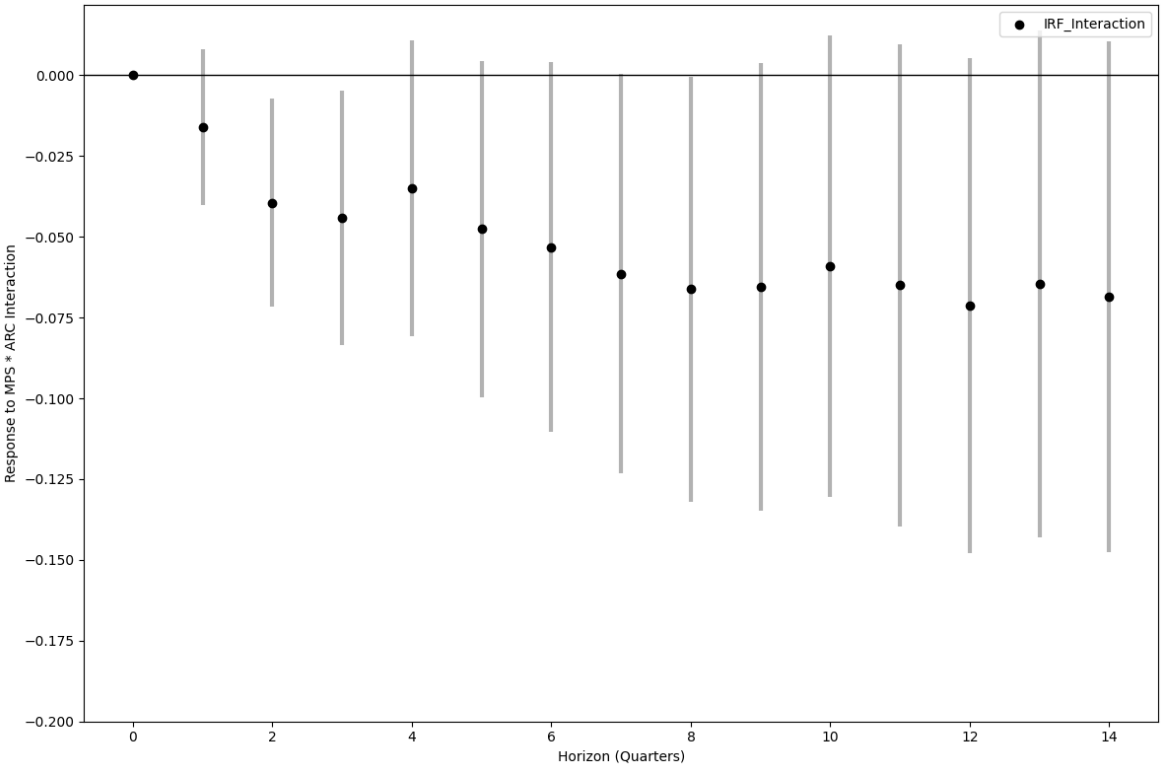


Notes: This figure shows Impulse Response Functions (IRFs) for log private consumption to a 100 basis point monetary policy shock, estimated using local projections (Equation 2), using a 5-year lag. The control variables include CPI, and interest rate level. Countries are grouped based on their interest rate sensitivity (β_j) from Equation (1).Vertical axis: percentage change in consumption from pre-shock level. Turkey and Chile were excluded from the sample due to their significantly higher inflation rates and interest rate volatility during the sample period, which could potentially distort the results.

The results demonstrate a marked heterogeneity in the consumption response between high-ARC and low-ARC countries. In high-ARC economies, the average effect of a monetary policy shock on consumption throughout the observed period is -2.7%, with statistical significance emerging from the second quarter onwards. This indicates a rapid and substantial contraction in consumer spending following an interest rate increase. Conversely, in low-ARC countries, the average effect is considerably more muted at -1.1%, with statistical significance only manifesting from the third quarter. This contrast underscores the heightened sensitivity of

consumption to monetary policy changes in economies with a higher prevalence of adjustable-rate credit. Figure 5 presents the interaction effect between ARC levels and monetary policy shocks on private consumption.

Figure 5: **Interaction Effect: ARC Levels and Monetary Policy Shocks on Private Consumption**



Notes: This figure shows the interaction effect between ARC levels and monetary policy shocks on the natural logarithm of private consumption, estimated using local projections (Equation 2), with a 5-year lag. The control variables include GDP and CPI. The solid line represents the estimated interaction coefficient at each horizon, while the shaded area depicts the 90% confidence interval. A negative interaction effect indicates that higher ARC levels amplify the impact of contractionary monetary policy on private consumption. Each point represents the estimated interaction coefficient at that horizon, while the vertical lines depict the 90% confidence intervals. A negative interaction effect indicates that higher ARC levels amplify the impact of contractionary monetary policy on private consumption. The sample includes all OECD countries, except Turkey and Chile that were excluded from the sample due to their significantly higher inflation rates and interest rate volatility during the sample period, which could potentially distort the results. The horizontal axis shows quarters after the shock.

The interaction analysis yields a coefficient of -3.2%, indicating a substantial amplification effect of ARC on the transmission of monetary policy to private consumption. This interaction effect exhibits statistical significance from the second quarter through the ninth quarter post-shock, with a slight attenuation of significance in the fourth quarter.

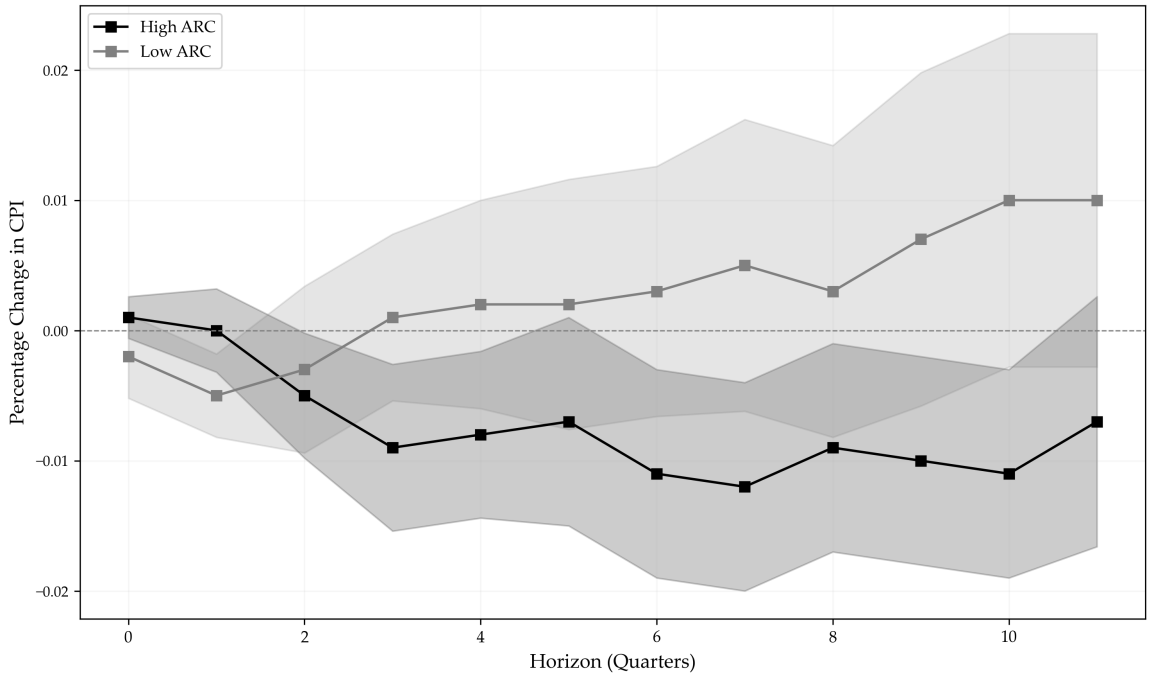
These findings collectively suggest that economies with higher ARC levels demonstrate a more pronounced and immediate consumption response to interest rate shocks, implying a potentially higher sensitivity of household spending to mone-

tary policy changes.

5.5 Price level

Figure 6 illustrates the impulse response functions for the natural logarithm of the Consumer Price Index (CPI) following a 100 basis point monetary policy shock, comparing high-ARC and low-ARC countries.

Figure 6: **Effect of 100 Basis Points Interest Rate Shock on (log) CPI**



Notes: This figure shows Impulse Response Functions (IRFs) for log CPI to a 100 basis point monetary policy shock, estimated using local projections (Equation 2), using a 5-year lag. The control variables include energy inflation, and GDP. Countries are grouped based on their interest rate sensitivity (β_j) from Equation (1). Horizontal axis: quarters post-shock; vertical axis: percentage change in CPI from pre-shock level. Dashed line at zero indicates no change in CPI. Turkey and Chile were excluded from the sample due to their significantly higher inflation rates and interest rate volatility during the sample period, which could potentially distort the results.

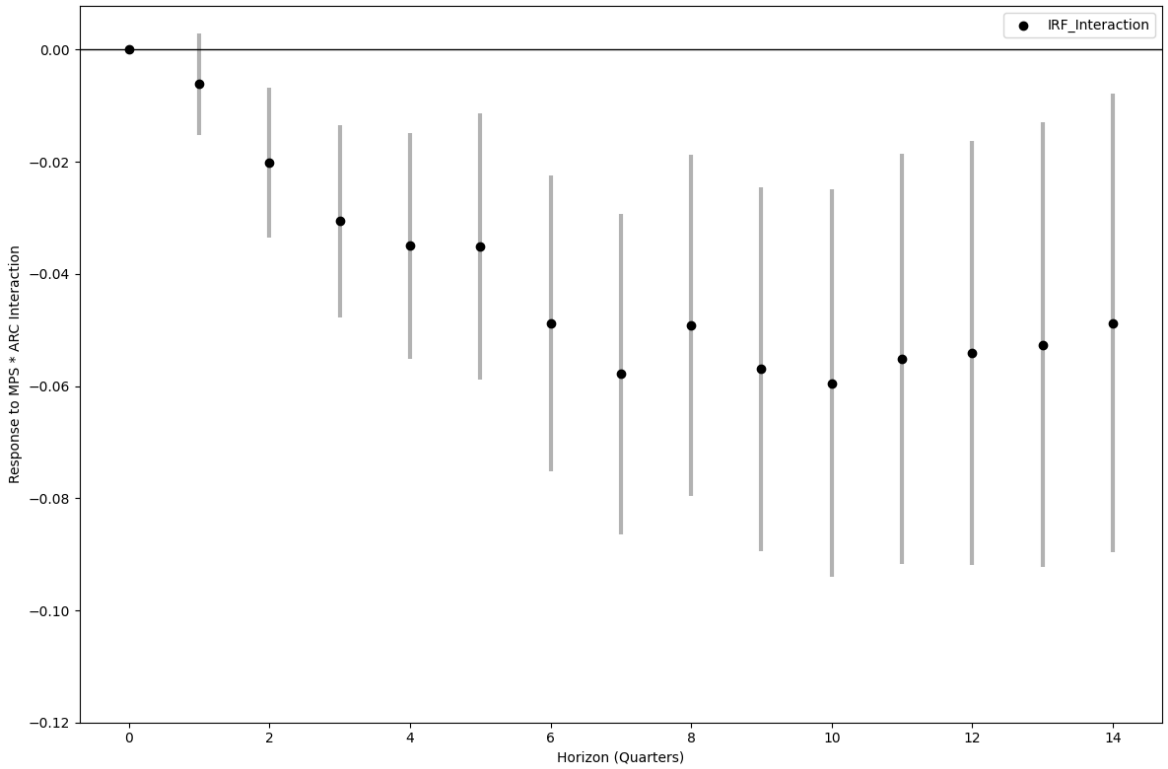
The analysis reveals a marked difference in the inflationary response between high-ARC and low-ARC countries. In economies with high ARC prevalence, a 100 basis point increase in interest rates leads to a substantial and statistically significant decrease of 1.1% in the log of the Consumer Price Index (CPI). This effect is persistent, maintaining statistical significance from the second quarter onwards throughout the entire observed period.

Conversely, low-ARC countries exhibit a more nuanced response. The absence

of a trong and statistically effect in low-ARC countries does not necessarily indicate ineffective monetary policy transmission to inflation. The subsequent discussion explores potential explanations for these finding.

The interaction effect is illustrated in Figure 7.

Figure 7: **Interaction Effect: ARC Levels and Monetary Policy Shocks on log CPI**



Notes: This figure shows the interaction effect between ARC levels and monetary policy shocks on the natural logarithm of the Consumer Price Index (CPI), estimated using local projections (Equation 2), with a 5-year lag. The control variables include GDP and interest rate level. Each point represents the estimated interaction coefficient at that horizon, while the vertical lines depict the 90% confidence intervals. A negative interaction effect indicates that higher ARC levels amplify the impact of contractionary monetary policy on log CPI. A negative interaction effect indicates that higher ARC levels amplify the disinflationary impact of contractionary monetary policy on the log CPI. The horizontal axis shows quarters after the shock; the vertical axis shows the magnitude of the interaction effect on log CPI. The sample includes all OECD countries, except Turkey and Chile that were excluded from the sample due to their significantly higher inflation rates and interest rate volatility during the sample period, which could potentially distort the results.

The interaction effect is negative, indicating that higher levels of ARC are associated with a stronger disinflationary impact of monetary policy tightening. The effect becomes statistically significant after about 4-6 quarters and remains so for most of the projection horizon. The peak of the interaction effect occurs around 8-10 quarters after the shock.

These results collectively demonstrate that the prevalence of ARC plays a crucial role in shaping the transmission of monetary policy to key macroeconomic variables. Economies with higher ARC levels generally exhibit stronger, faster, and more persis-

tent responses to monetary policy shocks across GDP, consumption, and price levels. The interaction effects further support this conclusion, showing that the impact of monetary policy becomes more pronounced as the level of ARC increases.

The results presented in a more detailed form in Tables 2 and 3.

Table 2: Impact of Monetary Policy Shocks on Macroeconomic Variables

	Consumption				CPI				GDP			
Horizon	High ARC		Low ARC		High ARC		Low ARC		High ARC		Low ARC	
(Quarters)	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
0	-0.002	0.004	0.000	0.002	0.001	0.001	-0.002	0.002	-0.004	0.003	-0.002	0.003
1	-0.011*	0.006	0.000	0.003	0.000	0.002	-0.005**	0.002	-0.008**	0.004	-0.004	0.004
2	-0.017**	0.007	-0.002	0.003	-0.005*	0.003	-0.003	0.004	-0.010**	0.005	-0.002	0.005
3	-0.019**	0.008	-0.006	0.004	-0.009**	0.004	0.001	0.004	-0.013**	0.006	-0.003	0.006
4	-0.019*	0.010	-0.010**	0.004	-0.008**	0.004	0.002	0.005	-0.012*	0.007	0.001	0.007
5	-0.021*	0.011	-0.014***	0.005	-0.007	0.005	0.002	0.006	-0.012	0.008	0.002	0.008
6	-0.024**	0.012	-0.015***	0.005	-0.011**	0.005	0.003	0.006	-0.010	0.009	0.003	0.009
7	-0.027**	0.013	-0.013***	0.005	-0.012**	0.005	0.005	0.007	-0.010	0.009	0.005	0.010
8	-0.029**	0.014	-0.012**	0.006	-0.009*	0.005	0.003	0.007	-0.010	0.010	0.004	0.011
9	-0.033**	0.014	-0.015**	0.006	-0.010**	0.005	0.007	0.008	-0.011	0.010	0.002	0.012
10	-0.031**	0.015	-0.012**	0.006	-0.011**	0.005	0.010	0.008	-0.010	0.010	0.004	0.012
11	-0.031**	0.015	-0.012*	0.007	-0.007	0.006	0.010	0.008	-0.009	0.010	-0.000	0.013

*_Notes_: This table presents the effects of a 100 basis point monetary policy shock on consumption, CPI, and GDP for high-ARC and low-ARC country groups. Coefficients represent the percentage change in the respective variable from its pre-shock level. Standard errors (SE) are reported alongside each coefficient. The horizon is measured in quarters after the shock. Asterisks denote statistical significance: * p < 0.1, p < 0.05, * p < 0.01.

Table 3: Interaction Effects of ARC and Monetary Policy Shocks

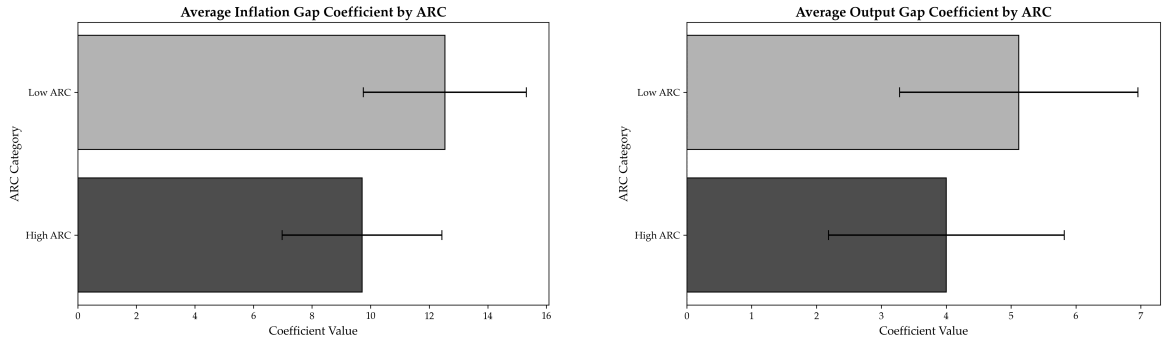
	Consumption				GDP				CPI			
Horizon	Interaction		MPS		Interaction		MPS		Interaction		MPS	
(Quarters)	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
1	-0.016	0.015	0.003	0.004	-0.031**	0.015	0.009**	0.004	-0.006	0.006	0.002	0.002
2	-0.039*	0.020	0.009	0.006	-0.042**	0.020	0.009	0.006	-0.020**	0.008	0.005**	0.002
3	-0.044*	0.025	0.013*	0.007	-0.039*	0.023	0.007	0.007	-0.031***	0.011	0.009***	0.003
4	-0.035	0.029	0.010	0.009	-0.052*	0.027	0.009	0.008	-0.035***	0.013	0.010**	0.004
5	-0.048	0.032	0.012	0.010	-0.063**	0.031	0.011	0.009	-0.035**	0.015	0.011***	0.004
6	-0.053	0.036	0.012	0.011	-0.062*	0.034	0.012	0.010	-0.049***	0.017	0.016***	0.005
7	-0.061	0.039	0.013	0.012	-0.069*	0.038	0.015	0.011	-0.058***	0.018	0.020***	0.005
8	-0.066	0.041	0.016	0.012	-0.056	0.040	0.011	0.012	-0.049**	0.019	0.018***	0.006
9	-0.066	0.043	0.014	0.013	-0.051	0.042	0.009	0.013	-0.057***	0.020	0.020***	0.006
10	-0.059	0.045	0.012	0.013	-0.049	0.044	0.007	0.013	-0.059***	0.022	0.020***	0.006
11	-0.065	0.047	0.015	0.014	-0.038	0.047	0.005	0.014	-0.055**	0.023	0.021***	0.007
12	-0.071	0.048	0.016	0.014	-0.055	0.048	0.012	0.015	-0.054**	0.024	0.021***	0.007
13	-0.065	0.049	0.015	0.015	-0.056	0.050	0.014	0.015	-0.053**	0.025	0.020***	0.007
14	-0.069	0.049	0.016	0.015	-0.044	0.052	0.010	0.016	-0.049*	0.026	0.019**	0.008

*_Notes_: This table presents the interaction effects between ARC (Adjustable-Rate Credit) prevalence and monetary policy shocks on consumption, GDP, and CPI. The 'Interaction' columns show the coefficient and standard error for the interaction term (ARC * MPS), while the 'MPS' columns show the coefficient and standard error for the monetary policy shock alone. Coefficients represent the percentage change in the respective variable from its pre-shock level. The horizon is measured in quarters after the shock. Asterisks denote statistical significance: * p < 0.1, ** p < 0.05, *** p < 0.01.

5.6 Monetary Policy Response: High vs. Low ARC Countries

These coefficients reflect systematic differences in central bank reactions to inflation deviations and output gaps across high-ARC and low-ARC countries.

Figure 8: **Taylor Rule Coefficients: Inflation and Output Gap**



(a) Inflation Coefficient (α) (b) Output Gap Coefficient (β)

Notes: These figures show the estimated Taylor rule coefficients for high-ARC and low-ARC countries, reflecting differences in central bank responses to inflation deviations (left) and output gaps (right). High-ARC countries consistently exhibit lower coefficients, suggesting more measured monetary policy adjustments. The classification into high-ARC and low-ARC groups is based on the estimated interest rate sensitivity coefficients (β_j) from Equation (1). The sample excludes Eurozone countries which are part of the ECB.

As Figure 8 shows, high-ARC countries consistently exhibit lower Taylor rule coefficients for both inflation and output gaps, reinforcing the conclusion that central banks in these economies adopt more measured monetary adjustments.

5.7 Robustness Tests

To ensure the reliability and stability my findings, I conducted several robustness tests for both stages of the analysis.

5.7.1 ARC Prevalence Estimation

For the first stage of my analysis, estimating ARC prevalence, I performed the following additional specifications: Inclusion of lagged interest rate changes as a control variable; Variation in the trimming of extreme values and Alternative sample period.

Across all these specifications, I find that the ordinal ranking of countries based on their estimated ARC prevalence remains largely consistent. This stability lends

credence the baseline results and suggests that the measure of ARC prevalence is robust to various methodological choices.

5.7.2 Local Projections Analysis

For the second stage, involving local projections, I conducted two main sets of robustness checks: Variation in lag structure: I re-estimated the regression using different lag specifications (16,18,22 and 24 lags) to assess the sensitivity of my results to the choice of lag length; Alternative ARC prevalence groupings: I tested the sensitivity of the results to different classifications of ARC levels, including: Upper quartile versus lower quartile; Upper third versus lower third; Upper fifth versus lower fifth.

5.7.3 Taylor Rule Analysis

For the Taylor rule analysis, I included an additional robustness check by restricting the sample to periods where the interest rate exceeded 0.25. This adjustment was made to avoid distortions associated with the zero lower bound (ZLB). The results remain consistent with the main findings, further supporting the validity of the estimated coefficients for inflation and output gaps.

All results of the robustness tests are presented in the Appendix.

Overall, these robustness checks reinforce the validity of the main results and provide confidence in the stability of my findings.

6 Discussion and Implications

The results of this study provide compelling evidence for the significant impact of adjustable-rate credit (ARC) prevalence on monetary policy transmission across OECD countries. The novel methodology employed to estimate ARC prevalence reveals substantial heterogeneity in credit market structures, with implications that resonate throughout the monetary policy transmission mechanism and central bank behavior.

The monetary policy transmission analysis substantiates the importance of credit market structures across key macroeconomic variables: consumption, CPI, and GDP. High-ARC countries consistently demonstrate a stronger, more rapid, and more persistent response to interest rate shocks compared to their low-ARC counterparts. This pattern is evident in both the group comparison and the interaction analysis. High-ARC economies exhibit larger and more statistically significant decreases in consumption and GDP following a contractionary monetary policy shock, with effects emerging more quickly and lasting longer than in low-ARC countries. The inflation response, while more nuanced, still shows a more pronounced disinflationary effect in high-ARC economies.

The Taylor rule analysis further supports these findings by revealing systematic differences in central bank responses across high-ARC and low-ARC countries. The estimated coefficients for inflation and output gaps are consistently lower in high-ARC economies, suggesting more measured policy adjustments in response to economic shocks. These results imply that central banks in high-ARC countries account for the heightened sensitivity of their economies to interest rate changes by adopting less aggressive policy stances.

Overall, the findings emphasize that the structure of credit markets must be carefully integrated into monetary policy design. Policymakers in high-ARC economies may achieve their objectives with smaller adjustments to policy rates, reflecting the stronger transmission mechanism in these contexts. This underscores the importance of aligning policy responses with the underlying financial architecture to optimize economic outcomes.

7 Summary

In conclusion, this study demonstrates that the structure of credit markets, particularly the prevalence of adjustable-rate credit, plays a crucial role in shaping the transmission of monetary policy to key macroeconomic variables. The stronger, faster, and more persistent responses to monetary policy shocks in high-ARC economies underscore the importance of considering credit market structures when designing and implementing monetary policy. These findings offer valuable guidance for

policymakers navigating diverse economic environments, suggesting that monetary strategies should be tailored to the specific characteristics of national credit markets to optimize policy effectiveness.

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A Appendix

A.1 Results - Interest Rate Sensitivity

Table 4: Country-specific Interest Rate Sensitivity Coefficients

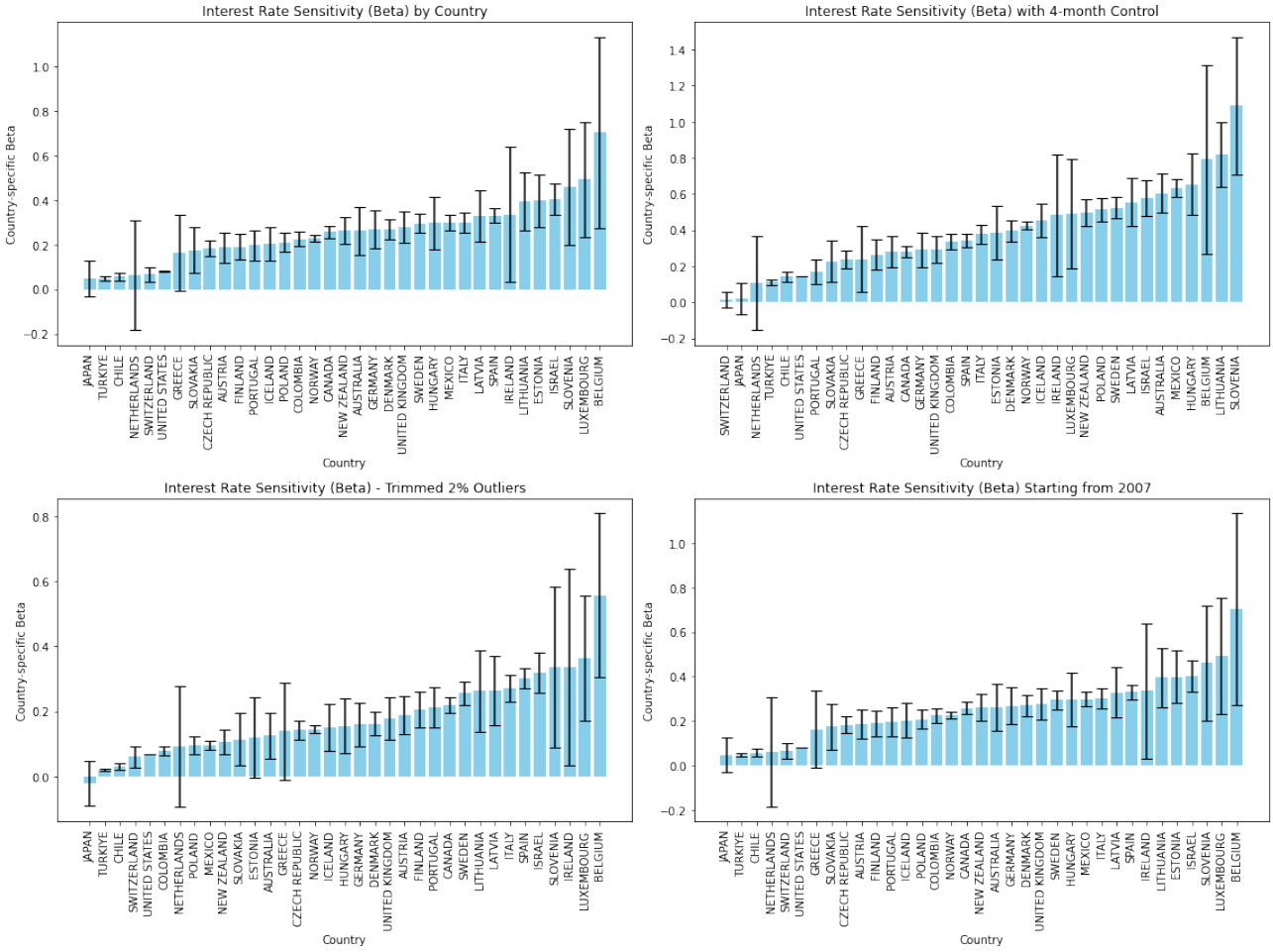
Country	Beta	Std Err	P-Value
BELGIUM	1.0506***	0.2066	0.0000
FRANCE	0.9264***	0.1257	0.0000
AUSTRALIA	0.6734***	0.0887	0.0000
LUXEMBOURG	0.4934***	0.1380	0.0004
JAPAN	0.4847***	0.0651	0.0000
LITHUANIA	0.4705***	0.0782	0.0000
ISRAEL	0.4038***	0.0408	0.0000
ITALY	0.4094***	0.0351	0.0000
ESTONIA	0.3984***	0.0717	0.0000
LATVIA	0.3355***	0.0678	0.0000
FINLAND	0.3317***	0.0350	0.0000
SLOVENIA	0.3228*	0.1706	0.0608
SPAIN	0.3183***	0.0216	0.0000
DENMARK	0.2880***	0.0352	0.0000
UNITED KINGDOM	0.2979***	0.0534	0.0000
MEXICO	0.3013***	0.0207	0.0000
SWEDEN	0.2819***	0.0257	0.0000
GERMANY	0.2762***	0.0505	0.0000
NEW ZEALAND	0.2585***	0.0483	0.0000
CANADA	0.2614***	0.0167	0.0000
COLOMBIA	0.2262***	0.0212	0.0000
PORTUGAL	0.2206***	0.0385	0.0000
HUNGARY	0.2279***	0.0523	0.0000
NORWAY	0.2171***	0.0098	0.0000
ICELAND	0.2106***	0.0458	0.0000
CZECH REPUBLIC	0.2105***	0.0233	0.0000
POLAND	0.2116***	0.0282	0.0000
GREECE	0.2453**	0.0997	0.0145
AUSTRIA	0.1189**	0.0482	0.0139
SLOVAKIA	0.1902***	0.0654	0.0039
UNITED STATES	0.0825***	0.0007	0.0000
CHILE	0.0630***	0.0111	0.0000
TURKIYE	0.0592***	0.0066	0.0000
NETHERLANDS	0.0754	0.1298	0.5618
IRELAND	-0.0315	0.1582	0.8423

Notes: This table presents country-specific interest rate sensitivity coefficients (β_j) estimated from Equation (1). These coefficients represent the sensitivity of banks' interest income to changes in short-term interest rates. Asterisks denote statistical significance: * p < 0.1, ** p < 0.05, *** p < 0.01.

A.2 Robustness tests

A.2.1 Robustness tests - First stage: OLS - Various specifications

Figure 9: Description of the third illustration



A.2.2 Robustness tests - Local projections - Different Lags

Figure 10: Private consumption with different lags

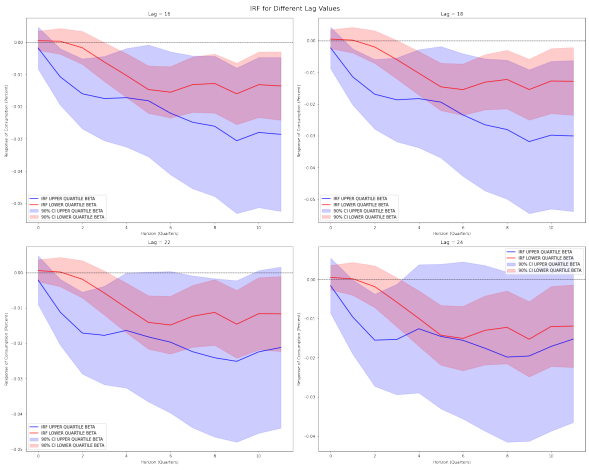
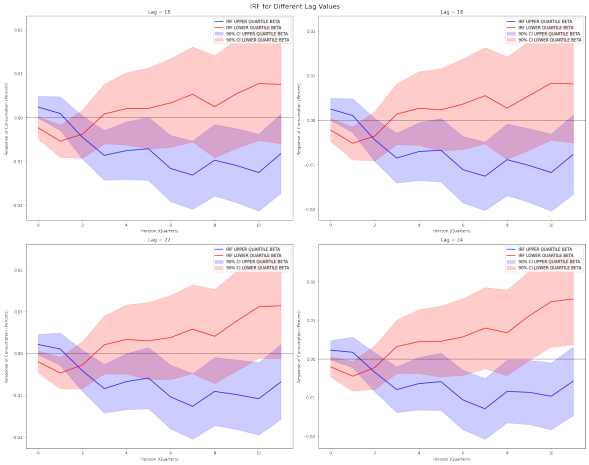


Figure 11: Inflation with different lags



A.2.3 Robustness tests - Local projections - Different percentiles

Figure 12: GDP with different lags

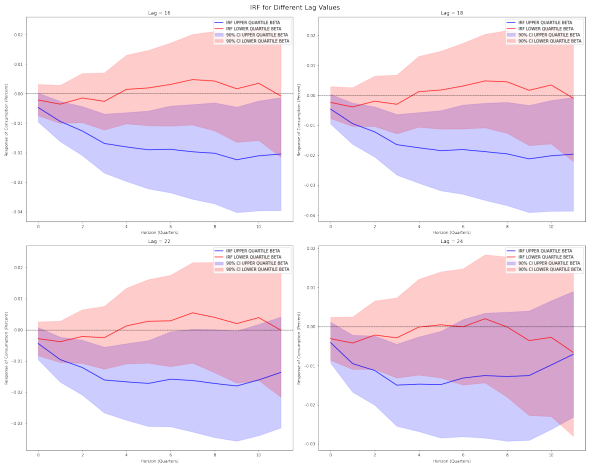


Figure 13: Private consumption with different percentiles

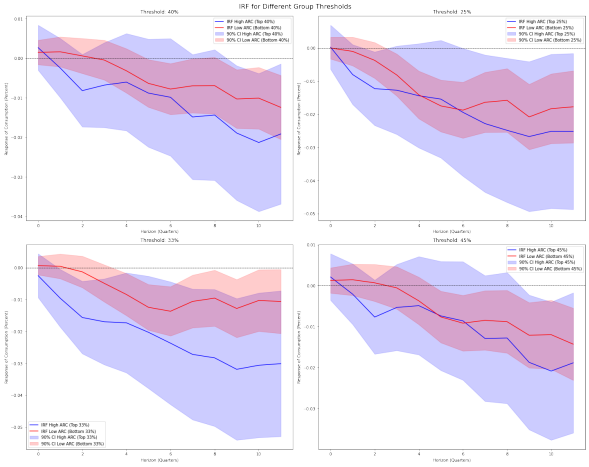


Figure 14: Inflation with different percentiles

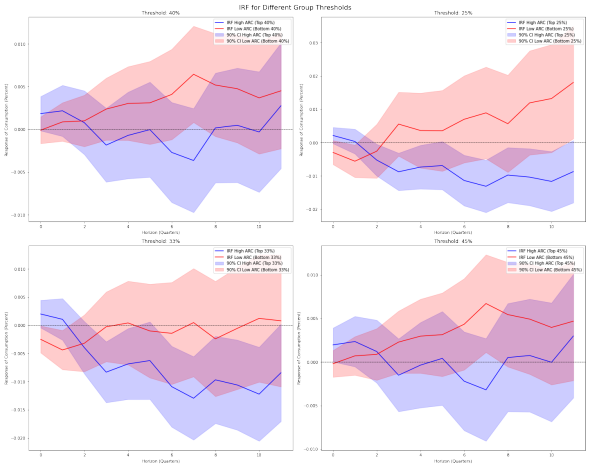
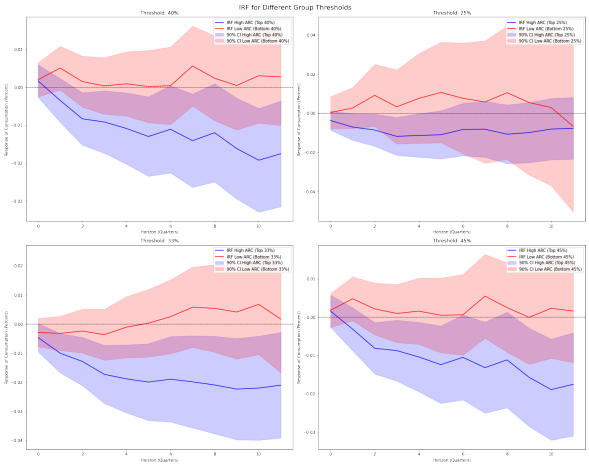


Figure 15: GDP with different percentiles



A.2.4 Robustness tests - Interaction at different lags

Figure 16: Private consumption with different lags

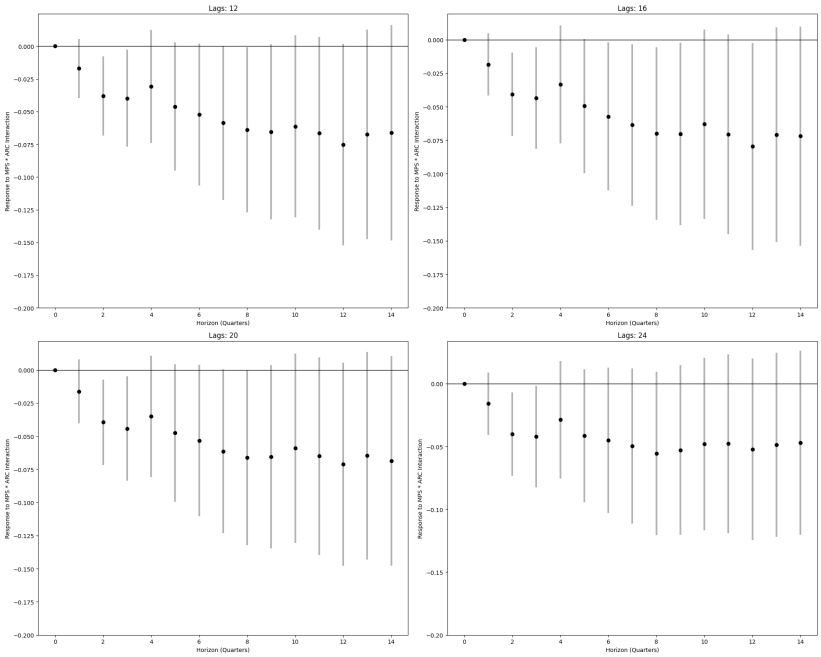


Figure 17: CPI with different lags

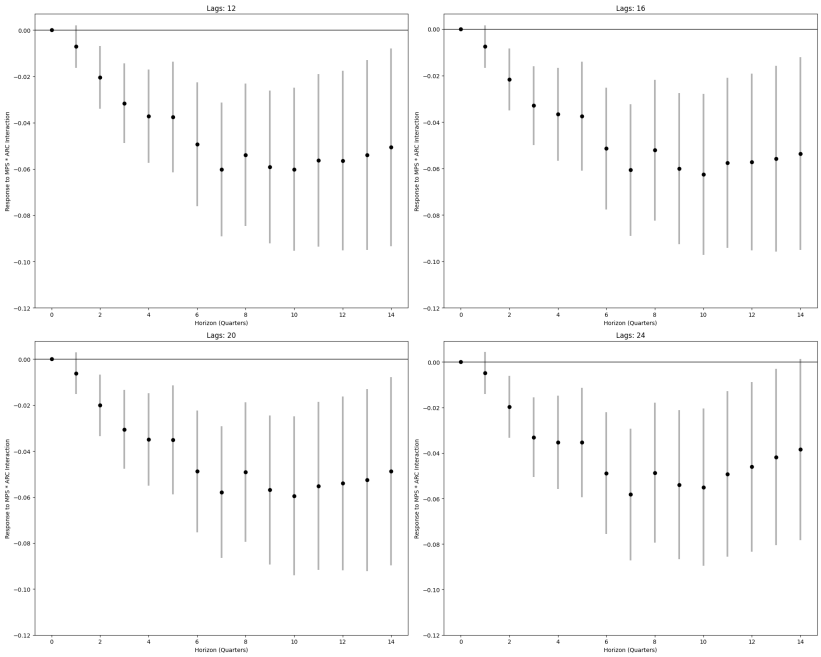


Figure 18: GDP with different lags

