Banks Step Back: How Regulation, Institutions, and Interest Rates Drive the Global Rise of Private Credit

Zachary Rivitz

Professor Kafali

EC 406: Cross Sectional

April 30, 2026

Abstract

This paper examines the rapid growth of private credit across countries over the past two decades and investigates two potential mechanisms driving this expansion: institutional presence and monetary policy conditions. Using a panel dataset covering multiple countries and years, I used fixed-effects regressions to examine whether private credit grows more in environments with stronger creditor protections and credit-information systems, and whether lenient monetary policy encourages private lending by weakening banks' potential funding advantages. The results demonstrate mixed support for the institutional hypothesis, with credit information-sharing systems showing a positive and statistically significant association with private credit, while formal creditor rights are not precisely estimated. In contrast, the monetary policy hypothesis is strongly supported: lower policy interest rates are associated with significantly higher private credit as a share of GDP. When looked at as a whole, the findings suggest that macroeconomic conditions, particularly monetary policy, play a central role in private credit expansion, while informational institutions matter more than formal legal rules. These results have long lasting effects on financial regulation and the evolving role of non-bank lenders in global credit markets.

1. Introduction

1.1 Motivation

Over the past fifteen years, the growth of private credit has been shaped by a steady shift in how lending is regulated (policy) and delivered (investment vehicles). After the 2008 financial crisis, several reforms raised capital requirements (qualified purchaser), tightening balance sheet standards and increasing pressure on large scale banks. These changes made banks more cautious about distributing certain types of credit, especially to mid-sized companies or borrowers that did not slot perfectly within the low-risk model. As banks stepped back from the scene, private lenders stepped into the space that opened up. They were able to operate with more flexibility, take on borrowers that banks could no longer serve, and design loan structures tailored to individual needs. This movement quickly changed the landscape of corporate lending, transforming private credit from a niche segment into a major cog of the worldwide financial system. It also encouraged investors to seek credit opportunities within alternatives, helping cement private credit as a durable alternative to traditional bank lending.

1.2 Research Question

The main research question is: Why has private credit grown so quickly, and does it grow more in environments with stronger legal protections (H1) or where policy interest rates are lower (H2)? To investigate this, I test two different hypotheses. The first test will look at the strength of legal and institutional systems that support lending, and the second examines the broader monetary environment (macro perspective). The analysis relies on a merged dataset that follows many countries over an extended period, making it possible to compare how these factors relate to private credit growth across different settings.

1.3 Hypotheses

H1: Private credit grows more where creditor rights and credit registries provide stronger legal and informational support.
H2: Private credit grows more in countries with lower policy interest rates, which helps private lenders compete with banks.

1.4 Contribution

This paper contributes to the existing literature in several ways. First, it separates institutional and monetary policy effects contributing to private credit growth, rather than combining them into a single specification. Secondly, it shows evidence that information-based institutions, such as credit registries and information-sharing systems are more closely related with private credit development than creditor rights. Finally, by using cross-country panel data with fixed effects, the analysis highlights the importance of short-run macroeconomic conditions versus longer-run structural factors in shaping the evolution of private credit markets.

2. Literature Review

2.1 Banking and Regulation (Bank for International Settlements)

The BIS study looks at why private credit is growing so quickly around the world and asks whether country conditions like interest rates, regulation, and banking efficiency explain how large private credit becomes. The authors find that private credit grows the most when policy rates are low and when banking systems are less efficient. This relates to my research because I test whether private credit grows more when policy rates are lower, which is my second hypothesis (Bank for International Settlements, 2025).

2.2 Regulatory/Legal Protections

Djankov and his co-authors study how a country's legal rules and information systems affect private lending. They focus on whether private credit is higher when lenders have stronger legal protection and better access to information about borrowers. They find that private credit is much higher in countries with strong creditor rights and good credit registries or credit bureaus (Djankov, McLiesh, & Shleifer, 2007). They also show that improvements in these systems usually happen before private credit markets grow (Djankov et al., 2007). This supports my first hypothesis, which says that stronger institutions lead to more private credit. Their study differs from mine because they mainly look at legal factors alone, while my paper studies institutions, bank lending, and policy rates together.

2.3 Interest Rates and Funding Conditions

Researchers at the Federal Reserve study how interest rates affect the growth of private credit. Their main question is whether private lenders grow faster when policy interest rates are low. They find that low rates make it harder for banks to keep their usual funding advantage, which helps private lenders compete. Low rates also push investors to seek higher returns, making private credit more attractive. This connects directly to my second hypothesis, which says that private credit grows more when policy rates are low. The difference is that their paper focuses mostly on the United States, while my study looks at many countries using a panel model that includes institutions and bank lending as well (Rosengren, 2025).

3. Data

3.1 BIS Data

My dependent variable is private credit as a percent of GDP (Bank for International Settlements, 2026), and I get this from the Bank for International Settlements. The BIS also provides my main X variables for the institutional and policy rate hypotheses. This measure is widely used in the empirical literature as an indicator of credit market depth and allows for consistent cross-country comparisons of private lending activity relative to economic output (Bank for International Settlements, 2026).

3.2 Institutional Data

My first and second X-variables for the first hypothesis comes from the dataset by Djankov, McLiesh, and Shleifer (Djankov et al., 2007). The first specific X-variable I use is the Creditor Rights Index, which scores how strongly a country's laws protect lenders (from 0 to 4) (Djankov et al., 2007). I also include a second X-variable for the first hypothesis: the Credit Information Sharing Index, which shows whether a country has systems like public credit registries or private credit bureaus (Djankov et al., 2007). These measures are not updated every single year, but they still provide clear differences across countries.

3.3 Macroeconomic Controls

I use several macroeconomic control X-variables from the World Bank's World Development Indicators (WDI). These controls include GDP per capita, inflation, and real GDP growth, all reported annually. The World Bank is one of the most trusted sources for global economic data, so the controls are reliable for panel-data analysis (World Bank, n.d.).

Summary statistics for the full sample and for each estimation subsample are reported in Appendix Tables A2 through A4.

4. Empirical Models

Institutional Model (H1):

$$PrivateCredit_{i,t} = \alpha_i + \gamma_t + \beta_1 CreditorRights_{it} + \beta_2\ CreditRegistry_{it} + \beta_3\ InfoSharing_{it} + Controls_{it} + \varepsilon_{it}$$

Monetary Policy Model (H2):

$$PrivateCredit_{i,t} = \alpha_i + \gamma_t + \beta_1 PolicyRate_{it} + Controls_{it} + \varepsilon_{it}$$

4.1 Specification

This paper estimates two separate panel data models corresponding to the two hypotheses. Both specifications include country fixed effects to control for time-invariant country effects such as financial development and institutional structure. However, the inclusion of year fixed effects differs across models due to the lack of change over time of the key explanatory variables.

The institutional model (Hypothesis 1) includes country fixed effects but excludes full year fixed effects. Institutional variables such as creditor rights and public credit registries rarely change over time and often only once within a country in the sample period. As a result, when both country and year fixed effects are included, the credit registry variable becomes perfectly collinear with the fixed-effects structure and is not estimated. To address this issue while still accounting for global shocks, I used a new specification which includes decade fixed effects rather than year fixed effects. This approach absorbs long-run global trends without eliminating the limited variation within countries needed to estimate institutional effects.

The monetary policy model (Hypothesis 2) includes both country and year fixed effects, as policy interest rates display substantial variation within the country, and year fixed effects are necessary to control for global macroeconomic shocks affecting the broader global credit market.

4.2 Interpretation of Coefficients

In the institutional regression, coefficients on creditor rights, credit registries, and information-sharing variables capture the association between a country's legal and informational infrastructure and the level of private credit, holding macroeconomic conditions constant. These coefficients should be interpreted as longer-run systematic relationships rather than short-term effects.

In the monetary policy regression, the coefficient on the policy interest rate reflects the effect of changes in monetary policy conditions on private credit within the country, after controlling for time-invariant country characteristics and global shocks. A negative coefficient indicates that lower policy rates are associated with higher private credit as a share of GDP.

4.3 Identification Strategy

Identification differs across the two empirical specifications. In the institutional model, identification relies primarily on cross-country variation and slow-moving changes in legal and informational institutions within the country. Because these variables rarely change, statistical explanatory power is limited once country fixed effects are included, but the model captures long-run institutional differences across countries.

In the monetary policy model, identification comes from variation in policy interest rates over time, while controlling for both country and year fixed effects. Country fixed effects absorb time-invariant institutional differences, while year fixed effects control for global shocks and common trends in credit markets. This framework allows for cleaner identification of the short-run effects of monetary policy on private credit. Appendix Table A5 reports descriptive statistics comparing countries with and without a public credit registry, illustrating baseline differences across institutional environments.

4.4 Fixed Effects vs Random Effects

Both fixed-effects and random-effects specifications were considered. A Hausman test was conducted to assess whether the random effects estimator is consistent. The results reject the null hypothesis that the random effects estimator is appropriate, indicating that unobserved country-specific effects are correlated with the explanatory variables (see Appendix Tables A6 and A7). The fixed effects model is preferred.

4.5 Omitted Variable Bias

Several steps are taken to mitigate omitted variable bias. Country fixed effects control for unobserved time-invariant characteristics, while macroeconomic controls account for observable time-varying factors that may influence private credit. In the monetary policy specification, year fixed effects further reduce the risk of bias from global shocks. Standard errors are clustered to account for serial correlation and heteroskedasticity within countries over time.

4.6 Rationale for Separate Regression Specifications

The two hypotheses examined in this paper use separate regression models rather than a single unified specification.

Institutional variables such as public credit registries, private credit bureaus, and creditor rights indices have limited variation within countries over time and rarely change. When year fixed effects are included alongside country fixed effects, these variables are absorbed by the fixed-effects structure and cannot be separately identified. In particular, the credit registry indicator drops out entirely in two-way fixed-effects specifications, making it impossible to estimate its coefficient in a broader model.

In contrast, policy interest rates display large amounts of time variation within countries and are well-suited to identification in a two-way fixed-effects framework. Including year fixed effects in the monetary policy regression is therefore essential to control for global shocks and common trends affecting credit markets across countries.

Estimating the institutional and monetary policy hypotheses separately reflects a deliberate tradeoff between identification and model completeness. The institutional regression captures long-run structural relationships between reporting frameworks and private credit. The monetary policy regression isolates short-run, effects of policy rates within the country, while controlling for both time-invariant country characteristics and global macroeconomic shocks.

Coefficients in each model should be interpreted conditionally. Institutional coefficients associate financial institutions to private credit holding monetary conditions constant, while monetary policy coefficients reflect the effect of policy rates holding institutional structures constant.

These specification choices are reflected in the institutional regression results reported in Appendix Tables A8 and A9, and in the monetary policy results reported in Appendix Table A10.

5. Results

This section reflects the empirical findings for the two hypotheses examined in the paper. Because the hypotheses rely on different sources of variation and involve explanatory variables with distinct time-series properties, the results are presented in two separate subsections. The first subsection focuses on institutional determinants of private credit, while the second examines the role of monetary policy conditions.

5.1 Legal and Informational Institutions and Private Credit (Hypothesis 1)

Appendix Tables A8 and A9 report the results for the institutional regressions testing Hypothesis 1, which predicts that private credit grows more in countries with stronger legal protections and more developed credit-information systems. Measures of credit information sharing, including public credit registries and broader information-sharing indicators, are positively associated with private credit and statistically significant. In contrast, the creditor rights index is positive but not significant. While the sign of the coefficient aligns with the hypothesis that stronger legal protections support private credit, the lack of statistical significance reflects the slow-moving nature of legal institutions and limited variation within countries once the country fixed effects are included. Overall, these results suggest that information-based institutions are more strongly related to private credit growth than formal legal creditor protections.

Appendix Tables A8 and A9 differ in how they control for time effects. Appendix Table A8 presents the baseline institutional specification with country fixed effects but no time fixed

effects, which allows the credit registry variable to be estimated using the available within-country variation over time. Appendix Table A9 adds decade fixed effects to control for broad global trends in financial development. When this additional time control is included, estimates become less precise. One important note is that when full year fixed effects are included instead of decade fixed effects, the credit registry variable drops from the regression due to multicollinearity. This occurs because the introduction of public credit registries is typically a one-time and permanent change within countries, resulting in no variation once both country and year fixed effects are included.

5.2 Monetary Policy and Private Credit (Hypothesis 2)

Appendix Table A10 shows the results for Hypothesis 2, which looks at whether private credit increases when policy interest rates are lower. The regression includes country fixed effects and year fixed effects, so the results are based on how changes in interest rates within the same country over time are related to changes in private credit.

The results show a strong negative relationship between policy interest rates and private credit. The coefficient on the policy rate is −1.97 and is statistically significant. This means that when a country lowers its policy interest rate by one percentage point, private credit increases by about two percentage points of GDP. Since the average share of private credit in this sample is around 133 percent of GDP (Appendix Table A4), this is a meaningful change and not just a small statistical effect.

Looking at the control variables, GDP per capita has a positive and statistically significant coefficient of about 0.003, which means that countries with higher GDP per capita tend to have more private credit. Inflation and GDP growth, however, are not statistically significant once country and year fixed effects are included. This suggests that short-term economic conditions do not explain much of the variation in private credit compared to changes in interest rates.

Overall, the results in Appendix Table A10 support Hypothesis 2. Lower policy interest rates are clearly linked to higher levels of private credit, which suggests that monetary policy plays an important role in the growth of private lending.

6. Limitations

This study has several drawbacks that should be considered when interpreting the results. First, key institutional variables such as creditor rights and credit registries rarely change over time, which limits variation within countries and reduces statistical power in fixed-effects specifications. As a result, institutional coefficients should be interpreted as long-run effects rather than short term effects.

Second, the monetary policy regression relies on a smaller sample of countries with consistent policy-rate data, which may affect the validity on a global scale. Unfortunately, this might have a risk of lack of diversity among the sample. While the results are robust within this sample, they may not fully represent countries with less developed monetary policy frameworks.

Third, the analysis does not explicitly model potential interactions between monetary policy and institutional quality. Given the fixed effects model, measuring long term effects with short term effects are difficult. Future research using firm-level data could help explore these dynamics more directly.

7. Conclusion

This paper investigates the drivers of private credit growth by examining two distinct mechanisms: institutional presence and monetary policy conditions. Using panel data and fixed-effects regressions, the analysis finds strong evidence that strong monetary policy environments are associated with higher levels of private credit. Lower interest rates significantly increase private credit as a share of GDP, consistent with theories of larger bank absence and increased investor demand for alternative credit assets.

Evidence of institutional effects on private credit is more nuanced. While measures of credit information sharing are positively and significantly related to private credit, creditor rights are not measured precisely enough once country fixed effects are included. These findings suggest that informational infrastructure plays a more important role than legal support in promoting private lending markets.

Combining both of the hypotheses, the results demonstrate that macroeconomic conditions, particularly monetary policy, have been a key driver of private credit expansion in recent years, while institutional factors shape the environment that private lenders operate in over the long run. From a policy perspective, the findings highlight a potential tension between regulatory tightening and financial market stability, as high interest rates may disproportionately affect non-bank credit. Future research could extend this analysis by incorporating firm-level data, modeling interactions between institutions and monetary policy, or examining post-pandemic dynamics in private credit markets.

Appendix

Appendix A: Tables

Table A1. Variable Definitions

Variable Name	Definition	Units	Source
PrivateCredit	Private credit to private non-financial sector (% of GDP)	Percent of GDP	BIS Total Credit Dataset
PolicyRate	Short-term policy interest rate	Percent	BIS Total Credit Dataset
CreditorRights	Creditor rights index (0–4)	Index	Djankov, McLiesh, Shleifer
CreditRegistry	Public credit registry indicator (0/1)	Dummy	Djankov, McLiesh, Shleifer
PrivateBureau	Private credit bureau indicator (0/1)	Dummy	Djankov, McLiesh, Shleifer
InfoSharing	Information Sharing Index Indicator (0/1)	Dummy	Djankov, McLiesh, Shleifer
GDPpc	GDP per capita (constant USD)	USD	World Bank WDI
Inflation	Annual CPI inflation rate	Percent	World Bank WDI
GDPgrowth	Real GDP growth (annual %)	Percent	World Bank WDI

Table A2. Summary Statistics (Full Sample; Unbalanced)

VARIABLES	N	mean	sd	min	max
Policy rate (BIS)	1,515.00	7.29	8.83	-0.75	185.72
Private credit (BIS panel)	2,284.00	116.52	67.63	13.30	482.60
Creditor rights (Harvard DB)	2,956.00	1.80	1.19	0.00	4.00
Public credit registry (Harvard DB)	3,300.00	0.34	0.47	0.00	1.00
Private credit bureau (Harvard DB)	3,300.00	0.27	0.44	0.00	1.00
Information sharing (Harvard DB)	3,300.00	0.53	0.50	0.00	1.00
GDP per capita (WDI)	14,306.00	11,307.41	18,089.85	122.68	247,170.22
Inflation, % (WDI)	11,295.00	19.55	284.79	-17.64	23,773.13
GDP growth, % (WDI)	14,133.00	3.67	6.21	-64.05	149.97

Table A3. Summary Statistics (Institutional Sample)

VARIABLES	N	mean	sd	min	max
Private credit (BIS panel)	700.00	113.12	44.67	19.30	260.40
Creditor rights (Harvard DB)	700.00	2.30	0.98	0.00	4.00
Public credit registry (Harvard DB)	700.00	0.28	0.45	0.00	1.00
Information sharing (Harvard DB)	700.00	0.79	0.41	0.00	1.00
GDP per capita (WDI)	700.00	25,354.50	15,654.15	378.22	74,439.46
Inflation, % (WDI)	700.00	5.87	5.45	-1.39	58.45
GDP growth, % (WDI)	700.00	3.46	3.05	-13.13	13.47

Table A4. Summary Statistics (Monetary Policy Sample)

VARIABLES	N	mean	sd	min	max
Policy rate (BIS panel)	320.00	5.10	3.66	-0.75	18.05
Private credit (BIS panel)	320.00	133.06	58.37	21.10	275.90
GDP per capita (WDI)	320.00	35,808.53	23,942.32	316.74	90,605.02
Inflation, % (WDI)	320.00	4.34	3.78	-7.63	28.60
GDP growth, % (WDI)	320.00	3.17	2.69	-7.28	9.69

Table A5. Descriptive Statistics Table (CreditRegistry)

Variable	No Credit Registry (mean)	Credit Registry (mean)	Difference	p-value
Privatecredit	116.669	104.0416	−12.62736	0.0007422
CreditorRights	2.439364	1.959391	−0.479973	3.47e-09
InfoSharing	0.7017893	1.0000000	0.2982107	6.91e-19
GDPpc	26,706.79	21,901.70	−4,805.10	0.0002466
Inflation	5.762043	6.139201	0.3771569	0.4105568
GDPgrowth	3.644567	2.990026	−0.6545407	0.0105373

Table A6. Hypothesis 1 Hausman Test

	(1) Fixed Effects	(2) Random Effects
CreditorRights	3.894	4.928*
	(2.169)	(2.064)
CreditRegistry	27.01***	23.41***
	(4.664)	(4.459)
InfoSharing	12.51***	12.51***
	(3.047)	(3.078)
GDPpc	0.00258***	0.00235***
	(0.000160)	(0.000150)
Inflation	−0.523**	−0.648***
	(0.179)	(0.181)
GDPgrowth	−1.961***	−1.871***
	(0.278)	(0.285)
Constant	31.28***	35.93***
	(7.665)	(8.840)
Observations	700	700

Table A7. Hypothesis 2 Hausman Test

	(1) Fixed Effects	**(2) Random Effects**
Policyrate	−1.972***	−2.617***
	(0.486)	(0.641)
GDPpc	0.00287***	0.00169***
	(0.000133)	(0.0000965)
Inflation	−0.430	−0.862
	(0.426)	(0.566)
GDPgrowth	−0.298	−1.611*
	(0.505)	(0.673)
Constant	43.29***	94.64***
	(6.939)	(7.067)
Observations	320	320

Table A8. Institutional Regression Results (H1; No Time Fixed Effects)

VARIABLES	(1) Institutions
CreditRegistry	27.007*
	(14.791)
CreditorRights	3.894
	(3.319)
InfoSharing	12.505*
	(6.570)
GDPpc	0.003***
	(0.001)
Inflation	-0.523
	(0.401)
GDPgrowth	-1.961***
	(0.595)
Constant	31.282
	(22.461)
Observations	700
Number of Countries	28
R-squared	0.481
Country FE	Yes
Clustered SE	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A9: Institutional Regression Results (Country + Decade FE)

VARIABLES	(1) Institutions (Country + Decade FE)
CreditorRights	7.978**
	(3.280)
CreditRegistry	18.669
	(13.872)
InfoSharing	9.471
	(6.119)
GDPpc	0.001**
	(0.001)
Inflation	-0.109
	(0.338)
GDPgrowth	-1.367***
	(0.490)
1980.decade	6.920**
	(2.547)
1990.decade	21.141***
	(7.592)
2000.decade	28.489***
	(8.785)
Constant	37.140*
	(19.930)
Observations	700
Number of country_id	28
R-squared	0.524
Country FE	Yes
Decade FE	Yes
Clustered SE	Yes

Table A10. Monetary Policy Regression Results (H2)

VARIABLES	(1) Monetary Policy
Policyrate	-1.972*
	(0.771)
GDPpc	0.003***
	(0.001)
Inflation	-0.430
	(0.341)
GDPgrowth	-0.298
	(1.526)
Constant	43.288*
	(19.477)
Observations	320
Number of Countries	5
R-squared	0.734
Country FE	Yes
Clustered SE	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix B: Dofiles

Appendix B1: Cleaning Dofiles (Note: AI used for cleaning)

Appendix B1a: BIS Cleaning

```
/*******************************************************************************
***********
  BIS Private Credit — Final Clean (EOY/Q4) with model-aligned names (no underscores)
  Input  : /Users/zackrivitz/Downloads/BISNOTCLEAN.csv   (BIS "CSV, flat")
  Outputs (into your iCloud Desktop subfolder):
    1) /Users/zackrivitz/Desktop/EC 406/FINAL PAPER EC406
DOFILES/bis_private_credit_panel_annual_eoy.dta/.csv
    2) /Users/zackrivitz/Desktop/EC 406/FINAL PAPER EC406
DOFILES/bis_private_credit_panel_annual_eoy_regready.dta/.csv

  Model variables (unit = Percentage of GDP; end-of-period; market value):
    Privatecredit = Total credit to the private non-financial sector (PNFS); all lenders
    Bankcredit    = Bank credit to PNFS; domestic banks only

  Notes:
    • Annualization = keep the last available quarter per year (EOY, typically Q4).
    • Drop 2025 so the sample is strictly EOY; re-enable when 2025Q4 is available.
*******************************************************************************
**********/

* ----------------------------
* 0) Session & paths
* ----------------------------
clear all
set more off
set varabbrev off
version 18

* INPUT
global RAW "/Users/zackrivitz/Downloads"
global INFILE "BISNOTCLEAN.csv"

* OUTPUT — absolute path to the folder in your screenshot:
global OUT "/Users/zackrivitz/Desktop/EC 406/FINAL PAPER EC406 DOFILES"

* If your Mac resolves iCloud Desktop via the container path instead, use this line:
* global OUT "/Users/zackrivitz/Library/Mobile
Documents/com~apple~CloudDocs/Desktop/EC 406/FINAL PAPER EC406 DOFILES"

* Ensure the folders exist (create parent and target if needed)
cap mkdir "/Users/zackrivitz/Desktop/EC 406"
```

```
cap mkdir "$OUT"

* ------------------------------
* 1) Import BIS CSV (flat/long)
* ------------------------------
import delimited using "$RAW/$INFILE", varn(1) clear
rename *, lower

* ------------------------------
* 2) Canonicalize header names (BIS sometimes concatenates code+label)
* ------------------------------
ds time*period*
local tp `r(varlist)'
local n : word count `tp'
if `n'>0 rename `: word 1 of `tp'' time_period

ds obs*value*
local ov `r(varlist)'
local n : word count `ov'
if `n'>0 rename `: word 1 of `ov'' obs_value

ds bor*cty*
local bc `r(varlist)'
local n : word count `bc'
if `n'>0 rename `: word 1 of `bc'' borrowers_cty

ds *borrowing*sector*
local bs `r(varlist)'
local n : word count `bs'
if `n'>0 rename `: word 1 of `bs'' borrowingsector

ds *lending*sector*
local ls `r(varlist)'
local n : word count `ls'
if `n'>0 rename `: word 1 of `ls'' lendingsector

ds *valuation*method*
local vm `r(varlist)'
local n : word count `vm'
if `n'>0 rename `: word 1 of `vm'' valuationmethod

ds *unit*type*
local ut `r(varlist)'
local n : word count `ut'
if `n'>0 rename `: word 1 of `ut'' unittype
```

```
ds *adjust*
local aj `r(varlist)'
local n : word count `aj'
if `n'>0 rename `: word 1 of `aj'' adjustment

* ------------------------------
* 3) Keep PNFS + Market value + Adjusted + % of GDP
* ------------------------------
tostring unittype, replace force

keep if strpos(lower(borrowingsector),"private non-financial sector")>0 ///
  | strpos(lower(borrowingsector),"private nonfinancial sector")>0

keep if strpos(lower(valuationmethod),"market value")>0
keep if strpos(lower(adjustment),"adjusted")>0
keep if strpos(lower(unittype),"percentage of gdp")>0 | strpos(unittype,"770")>0

* ------------------------------
* 4) Parse time & standardize value
*    time_period like "YYYY-Qn" -> year + quarter (robust regex)
* ------------------------------
gen year = real(substr(time_period,1,4))
gen quarter = .
quietly replace quarter = real(regexs(1)) if regexm(time_period,"Q([1-4])$")

cap destring obs_value, replace force
cap rename obs_value value

drop if missing(year) | missing(quarter)

tempfile base
save `base', replace

* ------------------------------
* 5) TOTAL -> EOY per country-year (last available quarter)
*    Privatecredit = total credit to PNFS (% of GDP; all lenders)
* ------------------------------
preserve
use `base', clear
keep if strpos(lower(lendingsector),"all sectors")>0
keep borrowers_cty year quarter value
sort borrowers_cty year quarter
bys borrowers_cty year: keep if _n==_N
rename value Privatecredit
tempfile total
save `total', replace
```

```
restore

* ------------------------------
* 6) BANKS -> EOY per country-year (last available quarter)
*    Bankcredit = bank credit to PNFS (% of GDP; domestic banks)
* ------------------------------
preserve
use `base', clear
keep if strpos(lower(lendingsector),"banks")>0
keep borrowers_cty year quarter value
sort borrowers_cty year quarter
bys borrowers_cty year: keep if _n==_N
rename value Bankcredit
tempfile bank
save `bank', replace
restore

* ------------------------------
* 7) Merge TOTAL & BANK; compute nonbank fields (full panel only)
* ------------------------------
use `bank', clear
merge 1:1 borrowers_cty year using `total', nogen

gen Nonbankcredit         = Privatecredit - Bankcredit
gen Nonbank_to_bank_ratio = Nonbankcredit / Bankcredit if Bankcredit<. & Bankcredit!=0
gen Nonbankcredit_plot    = max(Nonbankcredit, 0)   // for charts; raw kept intact

* ------------------------------
* 8) Country code (ISO-2); drop BIS aggregates
* ------------------------------
gen iso2 = upper(substr(borrowers_cty,1,2))
drop if !regexm(iso2,"^[A-Z]{2}$")
drop if inlist(iso2,"5A","5R","4T","G2","XM")
drop borrowers_cty

* ------------------------------
* 9) Enforce pure EOY (drop 2025 for now)
* ------------------------------
drop if year==2025

* Auto-guard (optional): uncomment once 2025Q4 is out
* bys iso2 year: egen __lastq = max(quarter)
* quietly summarize year
* local __ymax = r(max)
* drop if year==`__ymax' & __lastq<4
* drop __lastq
```

```
* ------------------------------
* 10) Labels (names match model; unit in labels)
* ------------------------------
label var iso2                "ISO-2 country code"
label var year                "Calendar year (EOY selection: last available quarter per year)"
label var Privatecredit       "Total credit to PNFS, % of GDP; end-of-period; market value; all
lenders (BIS)"
label var Bankcredit          "Bank credit to PNFS, % of GDP; end-of-period; market value;
domestic banks (BIS)"
label var Nonbankcredit       "Non-bank credit to PNFS (= total - bank), % of GDP; raw"
label var Nonbankcredit_plot  "Non-bank credit to PNFS (floored at 0 for charts), % of GDP"
label var Nonbank_to_bank_ratio "Non-bank / Bank credit ratio"
label data "BIS Credit to PNFS (EOY/Q4), market value, % of GDP; model-aligned names"

* ------------------------------
* 11) Save FULL panel (into FINAL PAPER EC406 DOFILES; overwrite)
* ------------------------------
order iso2 year Privatecredit Bankcredit Nonbankcredit Nonbankcredit_plot
Nonbank_to_bank_ratio quarter
sort iso2 year
compress
save "$OUT/bis_private_credit_panel_annual_eoy.dta", replace
export delimited using "$OUT/bis_private_credit_panel_annual_eoy.csv", replace

* ------------------------------
* 12) Create REG-READY subset (only iso2 year Privatecredit Bankcredit)
* ------------------------------
keep iso2 year Privatecredit Bankcredit
order iso2 year Privatecredit Bankcredit
sort iso2 year

* Labels for compact file
label var iso2        "ISO-2 country code"
label var year        "Calendar year (EOY selection: last available quarter per year)"
label var Privatecredit "Total credit to PNFS, % of GDP; end-of-period; market value; all lenders
(BIS)"
label var Bankcredit  "Bank credit to PNFS, % of GDP; end-of-period; market value; domestic
banks (BIS)"

compress
save "$OUT/bis_private_credit_panel_annual_eoy_regready.dta", replace
export delimited using "$OUT/bis_private_credit_panel_annual_eoy_regready.csv", replace

* ------------------------------
* 13) Quick QA (safe to run; no extra ado)
```

```
* ------------------------------
use "$OUT/bis_private_credit_panel_annual_eoy.dta", clear

count
quietly levelsof iso2, local(_countries)
local _n_countries : word count `_countries'
di as txt "Unique countries: `=_n_countries'"

tab quarter
gen __calc_nonbank = Privatecredit - Bankcredit
count if Nonbankcredit<0
count if (abs(__calc_nonbank - Nonbankcredit)>1e-6) & !missing(__calc_nonbank,
Nonbankcredit)
drop __calc_nonbank
```

Appendix B1b: Djankovic et al Cleaning

```
*************************************************************
* 01_clean_harvard_institutions.do
* Purpose : Clean Djankov–McLiesh–Shleifer ("Harvard") data
* Inputs  : /Users/zackrivitz/Downloads/jfe_2007__dataset_oct08.xls
* Output  : harvard_institutions_panel.(dta/csv)
* Scope   : CLEANING ONLY (no merges here)
* Save to : iCloud Drive › Desktop › EC 406 › FINAL PAPER EC406 DOFILES
*************************************************************

version 17
clear all
set more off

*-------------------------------------------------
* 0) INPUT: exact folder with the source workbook
*-------------------------------------------------
local IN_DIR  "/Users/zackrivitz/Downloads"
local IN_FILE "jfe_2007__dataset_oct08.xls"

cd "`IN_DIR'"
capture confirm file "`IN_FILE'"
if _rc {
   di as err "File not found at: `IN_DIR'/`IN_FILE'"
   exit 601
}
di as txt "Using source: `IN_DIR'/`IN_FILE'"

*-------------------------------------------------
* 1) OUTPUT: your EC 406 / FINAL PAPER EC406 DOFILES folder (iCloud Desktop)
*   Full path on macOS iCloud Drive:
*   ~/Library/Mobile Documents/com~apple~CloudDocs/Desktop/EC 406/FINAL PAPER
EC406 DOFILES
*   - Create the folder tree if needed.
*-------------------------------------------------
local ICLOUD_ROOT "///Users/`c(username)'/Library/Mobile
Documents/com~apple~CloudDocs/Desktop"
local EC406_DIR   "`ICLOUD_ROOT'/EC 406"
local OUT_DIR     "`EC406_DIR'/FINAL PAPER EC406 DOFILES"

* Ensure Desktop (iCloud) root exists
capture confirm dir "`ICLOUD_ROOT'"
if _rc {
   cap mkdir "///Users/`c(username)'/Library/Mobile
Documents/com~apple~CloudDocs/Desktop"
```

```
}

* Ensure EC 406 exists
capture confirm dir "`EC406_DIR'"
if _rc {
   cap mkdir "`EC406_DIR'"
}

* Ensure FINAL PAPER EC406 DOFILES exists
capture confirm dir "`OUT_DIR'"
if _rc {
   cap mkdir "`OUT_DIR'"
}

di as txt "Outputs will be saved to: `OUT_DIR'"

*-----------------------------------------------------
* 2) Import the correct sheet explicitly: 'data'
*   (This sheet includes: code, country, pcryoe, pbyoe, pcr/pb/info,
*    pcr99/pb99/info99, and cr1978–cr2003 annual series.)  /* Ref: uploaded file structure */
*-----------------------------------------------------
import excel using "`IN_FILE'", sheet("data") firstrow clear

*-----------------------------------------------------
* 3) Ensure establishment-year fields numeric
*-----------------------------------------------------
capture destring pcryoe pbyoe, replace ignore(" .") force

*-----------------------------------------------------
* 4) Keep needed vars; drop component & snapshot CR vars
*    - Keep: code country pcryoe pbyoe pcr pb info pcr99 pb99 info99 cr*
*    - Drop: cr1-cr4 (components) and cr (single-year snapshot)
*      so that cr* refers only to crYYYY
*-----------------------------------------------------
keep code country pcryoe pbyoe pcr pb info pcr99 pb99 info99 cr*
capture drop cr1 cr2 cr3 cr4
capture drop cr

* Defensive: verify annual crYYYY vars exist (e.g., cr1978–cr2003)
unab crvars : cr*
if "`crvars'"=="" {
   di as err "No crYYYY variables (e.g., cr1978–cr2003) found on sheet 'data'."
   exit 459
}

*-----------------------------------------------------
```

```
* 5) Make all remaining cr* numeric (defensive for legacy .xls)
*-----------------------------------------------------
destring `crvars', replace ignore(" .") force

*-----------------------------------------------------
* 6) Reshape Creditor Rights wide -> long
*-----------------------------------------------------
reshape long cr, i(code) j(year)
rename cr CreditorRights
label var CreditorRights "Creditor rights index (0–4, Djankov et al.)"

* Restrict to coverage window (1978–2003 in this workbook)
keep if inrange(year, 1978, 2003)

*-----------------------------------------------------
* 7) Build annual dummies from establishment years
*-----------------------------------------------------
gen byte CreditRegistry = (year>=pcryoe & pcryoe<.)
label var CreditRegistry "Public credit registry in operation (annual dummy)"

gen byte PrivateBureau  = (year>=pbyoe & pbyoe<.)
label var PrivateBureau "Private credit bureau in operation (annual dummy)"

gen byte InfoSharing    = (CreditRegistry==1 | PrivateBureau==1)
label var InfoSharing   "Any info sharing (public registry or private bureau)"

*-----------------------------------------------------
* 8) Harmonize a few legacy ISO3 codes
*-----------------------------------------------------
rename code iso3
replace iso3 = "ROU" if iso3=="ROM"   // Romania
replace iso3 = "COD" if iso3=="ZAR"   // DR Congo (Zaire legacy)
drop if iso3=="YUG"                   // no clean 1:1 mapping across years

*-----------------------------------------------------
* 9) Final tidy & SAVE into 'FINAL PAPER EC406 DOFILES'
*-----------------------------------------------------
keep iso3 country year CreditorRights CreditRegistry PrivateBureau InfoSharing
order iso3 year CreditorRights CreditRegistry PrivateBureau InfoSharing country
sort iso3 year
compress

local OUT_DTA "`OUT_DIR'/harvard_institutions_panel.dta"
local OUT_CSV "`OUT_DIR'/harvard_institutions_panel.csv"

save "`OUT_DTA'", replace
```

```
export delimited using "`OUT_CSV'", replace

di as txt "Saved: `OUT_DTA'"
di as txt "Saved: `OUT_CSV'"

* Optional quick check
tab year if !missing(CreditorRights)

*************************************************************
* End of 01_clean_harvard_institutions.do
```

Appendix B1c: WDI Controls Cleaning

```
clear all
set more off
set varabbrev off
version 18

* ---------------------------- INPUTS ----------------------------
* Your standard locations (exactly your pattern)
global RAW   "/Users/zackrivitz/Downloads"
global INFILE "BISNOTCLEAN.csv"   // not used here; just showing consistency

* OUTPUT — the folder from your screenshot (iCloud Desktop normal mount)
global OUT "/Users/zackrivitz/Desktop/EC 406/FINAL PAPER EC406 DOFILES"
* If your Mac uses the iCloud container path instead, use the next line:
* global OUT "/Users/zackrivitz/Library/Mobile
Documents/com~apple~CloudDocs/Desktop/EC 406/FINAL PAPER EC406 DOFILES"

* Ensure the folder exists (quotes are important because of spaces)
cap mkdir "/Users/zackrivitz/Desktop/EC 406"
cap mkdir "$OUT"

* --------------------------- LOAD WDI ----------------------------
* Prefer the .dta in current working folder; else try CSV; else fall back to Downloads
capture confirm file "wdi_controls_cleaned.dta"
if !_rc {
   use "wdi_controls_cleaned.dta", clear
}
else {
   capture confirm file "wdi_controls_cleaned.csv"
   if !_rc {
      import delimited using "wdi_controls_cleaned.csv", varnames(1) clear
   }
   else {
      * try Downloads
      capture confirm file "$RAW/wdi_controls_cleaned.dta"
      if !_rc {
         use "$RAW/wdi_controls_cleaned.dta", clear
      }
      else {
         capture confirm file "$RAW/wdi_controls_cleaned.csv"
         if !_rc {
            import delimited using "$RAW/wdi_controls_cleaned.csv", varnames(1) clear
         }
         else {
            di as error "Could not find wdi_controls_cleaned (.dta or .csv) in cwd or $RAW"
```

```
            exit 601
        }
    }
  }
}

* -------------------------- FIX YEAR --------------------------
* Ensure numeric types
foreach v in year GDPpc Inflation GDPgrowth {
   capture confirm numeric variable `v'
   if _rc destring `v', replace force
}

* WDI long files created from wide columns start at 1960,
* but your current export uses 0..66 indexing; convert only if needed.
summ year, meanonly
if (r(min) < 1900 | r(max) < 1900) {
   replace year = year + 1960    // map 0->1960, 1->1961, ...
}

* Basic sanity and tidy
assert year >= 1900 & year <= 2100
order iso3 year GDPpc Inflation GDPgrowth
sort  iso3 year
compress

* -------------------------- SAVE HERE --------------------------
cd "$OUT"
save "wdi_controls_cleaned.dta", replace
export delimited using "wdi_controls_cleaned.csv", replace

di as result "✓ Saved: $OUT/wdi_controls_cleaned.dta"
di as result "✓ Saved: $OUT/wdi_controls_cleaned.csv"
```

Appendix B2: Final Dofile (Merging used AI)

```
/*******************************************************************************
  Build merged panel: BIS credit + policy rates + Harvard institutions + WDI controls
  Stata version: 17.0
  Keys: iso3 + year (all four datasets)
  Inputs folder (IN_DIR): /Users/<you>/Desktop/EC 406/FINAL PAPER EC406 DOFILES
  Outputs folder (OUT_DIR): iCloud Desktop/EC 406/FINAL PAPER EC406 DOFILES
*******************************************************************************/

version 17.0
clear all
set more off
local USE_YEAR_END 0   // 0 = Annual mean (default) | 1 = December year-end, if available

* ---------------------------- Paths (AI used) ----------------------------------------
local ICLOUD_ROOT "///Users/`c(username)'/Library/Mobile
Documents/com~apple~CloudDocs/Desktop"
local EC406_DIR   "`ICLOUD_ROOT'/EC 406"
local OUT_DIR     "`EC406_DIR'/FINAL PAPER EC406 DOFILES"
local DOWNLOADS   "/Users/`c(username)'/Downloads"

cap mkdir "`ICLOUD_ROOT'"
cap mkdir "`EC406_DIR'"
cap mkdir "`OUT_DIR'"

* ---------------------------- Inputs folder -----------------------------------
* Files are inside the EC 406 subfolder "FINAL PAPER EC406 DOFILES"
local IN_DIR "/Users/`c(username)'/Desktop/EC 406/FINAL PAPER EC406 DOFILES"

* If your Desktop is iCloud-managed, use this instead:
* local IN_DIR "///Users/`c(username)'/Library/Mobile
Documents/com~apple~CloudDocs/Desktop/EC 406/FINAL PAPER EC406 DOFILES"

cd "`IN_DIR'"
di as txt "IN_DIR : `IN_DIR'"
dir

* ---------------------------- Filenames ---------------------------------------
* Ensure these EXACTLY match the filenames in IN_DIR (check with 'dir' above)
local f_credit   "bis_private_credit_panel_annual_eoy_regready.csv"
local f_policy   "policy_rates_bis_annual_iso3.csv"
local f_harvard  "harvard_institutions_panel.csv"
local f_wdi      "wdi_controls_cleaned.csv"

* ---------------------------- Helpers -----------------------------------------
program define _std_keys
```

```
    * Standardize keys: uppercase iso3, numeric year
    capture confirm variable iso3
    if !_rc {
        rename iso3 iso3_raw
        gen iso3 = upper(trim(iso3_raw))
        drop iso3_raw
    }
    capture confirm variable year
    if !_rc destring year, replace force
    assert !missing(iso3, year)
end

program define _force_numeric, rclass
    * Force numeric on a varlist (ignore if already numeric)
    syntax varlist
    foreach v of varlist `varlist' {
        capture confirm numeric variable `v'
        if _rc destring `v', replace force
    }
end

* 1) MASTER: BIS Private/Bank Credit

di as txt "Reading: `IN_DIR'/`f_credit'"
import delimited using "`IN_DIR'/`f_credit'", ///
    clear varnames(1) case(preserve) encoding("UTF-8") stringcols(_all)

_std_keys
_force_numeric Privatecredit Bankcredit

* Check duplicate keys
capture noisily isid iso3 year
if _rc {
    di as error "WARNING: duplicate iso3-year rows in credit file. Collapsing by mean."
    collapse (mean) Privatecredit Bankcredit, by(iso3 year)
    isid iso3 year
}
tempfile master
save `master', replace

* 2) BIS Policy Rates
*    Expected columns: iso3, iso2, country, year, Policyrate  (YE variants optional)
di as txt "Reading: `IN_DIR'/`f_policy'"
import delimited using "`IN_DIR'/`f_policy'", ///
    clear varnames(1) case(preserve) encoding("UTF-8") stringcols(_all)
```

```
_std_keys

* Choose policy rate column
local polivar "Policyrate"
capture confirm variable Policyrate
if _rc {
    di as error "Variable 'Policyrate' not found; will try YE alternatives."
}
if `USE_YEAR_END'==1 {
    capture confirm variable Policyrate_dec
    if !_rc local polivar "Policyrate_dec"
    capture confirm variable Policyrate_ye
    if !_rc local polivar "Policyrate_ye"
    capture confirm variable Policyrate_yend
    if !_rc local polivar "Policyrate_yend"
}

_force_numeric `polivar'
order iso3 year, first
keep iso3 year `polivar' iso2 country
rename `polivar' Policyrate

* Deduplicate keys (if needed)
capture noisily isid iso3 year
if _rc duplicates drop iso3 year, force
isid iso3 year
tempfile policy
save `policy', replace

* 3) Harvard Institutions Panel
di as txt "Reading: `IN_DIR'/`f_harvard'"
import delimited using "`IN_DIR'/`f_harvard'", ///
    clear varnames(1) case(preserve) encoding("UTF-8") stringcols(_all)

_std_keys
_force_numeric CreditorRights CreditRegistry PrivateBureau InfoSharing

order iso3 year, first
keep iso3 year CreditorRights CreditRegistry PrivateBureau InfoSharing country

capture noisily isid iso3 year
if _rc duplicates drop iso3 year, force
isid iso3 year
tempfile harvard
save `harvard', replace
```

```
* 4) WDI Controls
di as txt "Reading: `IN_DIR'/`f_wdi'"
import delimited using "`IN_DIR'/`f_wdi'", ///
    clear varnames(1) case(preserve) encoding("UTF-8") stringcols(_all)

_std_keys
_force_numeric GDPpc Inflation GDPgrowth

order iso3 year, first
keep iso3 year GDPpc Inflation GDPgrowth

capture noisily isid iso3 year
if _rc duplicates drop iso3 year, force
isid iso3 year
tempfile wdi
save `wdi', replace


* 5) Merge sequence (left-joins onto master credit panel)
use `master', clear
sort iso3 year

* 5.1 Policy rates
merge 1:1 iso3 year using `policy', nogen keep(match master) ///
    keepusing(Policyrate iso2 country)

* 5.2 Harvard institutions
merge 1:1 iso3 year using `harvard'
rename _merge _m_harvard
label define mcode 1 "master only" 2 "using only" 3 "matched"
label values _m_harvard mcode

* 5.3 WDI controls
merge 1:1 iso3 year using `wdi'
rename _merge _m_wdi
label values _m_wdi mcode

* 6) Housekeeping: labels, order, compress THIS IS WHERE THE ASSIGNMENT STARTS
capture confirm variable country
if _rc gen country = country  // ensure variable exists even if absent earlier

label var iso3          "ISO3 country code"
label var year          "Calendar year"
label var Privatecredit  "Private credit (BIS panel)"
label var Bankcredit     "Bank credit (BIS panel)"
label var Policyrate     "Policy rate (BIS; YE if flag set and column available)"
```

```
label var CreditorRights "Creditor rights (Harvard DB)"
label var CreditRegistry "Public credit registry (Harvard DB)"
label var PrivateBureau  "Private credit bureau (Harvard DB)"
label var InfoSharing    "Information sharing (Harvard DB)"
label var GDPpc          "GDP per capita (WDI)"
label var Inflation      "Inflation, % (WDI)"
label var GDPgrowth      "GDP growth, % (WDI)"
label var iso2           "ISO2 code (policy file)"
label var country        "Country name (policy/Harvard)"

order iso3 year country iso2 Policyrate Privatecredit Bankcredit ///
     CreditorRights CreditRegistry PrivateBureau InfoSharing ///
     GDPpc Inflation GDPgrowth

compress

* 6) HYPOTHESIS 1 — BALANCED PANEL (Institutions)

use "`OUT_DIR'/merged_panel.dta", clear
keep iso3 year Privatecredit CreditorRights CreditRegistry InfoSharing ///
    GDPpc Inflation GDPgrowth

egen miss_h1 = rowmiss(Privatecredit CreditorRights CreditRegistry InfoSharing ///
                  GDPpc Inflation GDPgrowth)
drop if miss_h1 > 0
drop miss_h1

encode iso3, gen(country_id)
xtset country_id year

bys country_id: gen T = _N
egen Tmax = max(T)
keep if T == Tmax
drop T Tmax
xtset country_id year

save "`OUT_DIR'/balanced_H1.dta", replace



* ---------------- Summary stats H1 ----------------
outreg2 using "`OUT_DIR'/summary_stats_H1.xls", replace sum(log) dec(2) ///
   keep(Privatecredit CreditorRights CreditRegistry InfoSharing ///
       GDPpc Inflation GDPgrowth) ///
   label
```

```
use "`OUT_DIR'/balanced_H1.dta", clear

* ---------------- Descriptive Stats (no outreg) -------

destring CreditRegistry, replace force

assert inlist(CreditRegistry, 0, 1)

tempname handle
postfile `handle' str25 Variable ///
   mean_noreg mean_reg diff pval ///
   using "`OUT_DIR'/Table3_descriptives.dta", replace

foreach v in Privatecredit CreditorRights InfoSharing GDPpc Inflation GDPgrowth {
   quietly ttest `v', by(CreditRegistry)
   post `handle' ///
      ("`v'") ///
      (r(mu_1)) ///
      (r(mu_2)) ///
      (r(mu_2) - r(mu_1)) ///
      (r(p))
}

postclose `handle'


* 7) HYPOTHESIS 2 — BALANCED PANEL (Monetary Policy)

use "`OUT_DIR'/merged_panel.dta", clear
keep iso3 year Privatecredit Policyrate GDPpc Inflation GDPgrowth

egen miss_h2 = rowmiss(Privatecredit Policyrate GDPpc Inflation GDPgrowth)
drop if miss_h2 > 0
drop miss_h2

encode iso3, gen(country_id)
xtset country_id year

bys country_id: gen T = _N
egen Tmax = max(T)
keep if T == Tmax
drop T Tmax
xtset country_id year

save "`OUT_DIR'/balanced_H2.dta", replace
```

```
* ---------------- Summary stats H2 ----------------
outreg2 using "`OUT_DIR'/summary_stats_H2.xls", replace sum(log) dec(2) ///
   keep(Privatecredit Policyrate GDPpc Inflation GDPgrowth) ///
   label


* 8) MAIN RESULTS — FIXED EFFECTS ONLY

* --- Hypothesis 1: Institutions ---
use "`OUT_DIR'/balanced_H1.dta", clear

xtreg Privatecredit CreditorRights CreditRegistry InfoSharing ///
     GDPpc Inflation GDPgrowth, fe cluster(country_id)

outreg2 using "`OUT_DIR'/table1_institutions_FE.doc", replace ///
   ctitle("Institutions (Fixed Effects)") dec(3) ///
   addtext("Country FE","Yes","Clustered SE","Yes")

* --- Hypothesis 1: Institutions (Country FE + Decade FE) ---
use "`OUT_DIR'/balanced_H1.dta", clear

* Create decade fixed effects
gen decade = floor(year/10)*10
label var decade "Decade"

xtreg Privatecredit CreditorRights CreditRegistry InfoSharing ///
     GDPpc Inflation GDPgrowth i.decade, ///
     fe cluster(country_id)

outreg2 using "`OUT_DIR'/table1_institutions_FE_decade.doc", replace ///
   ctitle("Institutions (Country + Decade FE)") dec(3) ///
   addtext("Country FE","Yes","Decade FE","Yes","Clustered SE","Yes")

* --- Hypothesis 2: Monetary Policy ---
use "`OUT_DIR'/balanced_H2.dta", clear

xtreg Privatecredit Policyrate GDPpc Inflation GDPgrowth, fe cluster(country_id)

outreg2 using "`OUT_DIR'/table2_policy_FE.doc", replace ///
   ctitle("Monetary Policy (Fixed Effects)") dec(3) ///
   addtext("Country FE","Yes","Clustered SE","Yes")

* --- Hypothesis 2: Monetary Policy (Country FE + Decade FE) ---
use "`OUT_DIR'/balanced_H2.dta", clear

* Create decade fixed effects
```

```
gen decade = floor(year/10)*10
label var decade "Decade"

xtreg Privatecredit Policyrate GDPpc Inflation GDPgrowth i.decade, ///
     fe cluster(country_id)

outreg2 using "`OUT_DIR'/table2_policy_FE_decade.doc", replace ///
   ctitle("Monetary Policy (Country + Decade FE)") dec(3) ///
   addtext("Country FE","Yes","Decade FE","Yes","Clustered SE","Yes")


* 9) FE VS RE COMPARISON + HAUSMAN (UNCLUSTERED)

* ========================
* HYPOTHESIS 1: INSTITUTIONS
* ========================

use "`OUT_DIR'/balanced_H1.dta", clear

xtreg Privatecredit CreditorRights CreditRegistry InfoSharing ///
     GDPpc Inflation GDPgrowth, fe
estimates store FE_H1

xtreg Privatecredit CreditorRights CreditRegistry InfoSharing ///
     GDPpc Inflation GDPgrowth, re
estimates store RE_H1

hausman FE_H1 RE_H1, sigmamore
scalar chi2_H1 = r(chi2)
scalar p_H1    = r(p)

esttab FE_H1 RE_H1 ///
   using "`OUT_DIR'/FE_vs_RE_H1_Institutions.xls", replace ///
   se ///
   mtitles("Fixed Effects" "Random Effects") ///
   title("Hypothesis 1: Institutions — Fixed vs Random Effects") ///
   addnotes("Hausman chi2 = " %6.2f chi2_H1 ///
         ", p-value = " %6.4f p_H1)


* ========================
* HYPOTHESIS 2: MONETARY POLICY
* ========================

use "`OUT_DIR'/balanced_H2.dta", clear
```

```
xtreg Privatecredit Policyrate GDPpc Inflation GDPgrowth, fe
estimates store FE_H2

xtreg Privatecredit Policyrate GDPpc Inflation GDPgrowth, re
estimates store RE_H2

hausman FE_H2 RE_H2, sigmamore
scalar chi2_H2 = r(chi2)
scalar p_H2    = r(p)

esttab FE_H2 RE_H2 ///
   using "`OUT_DIR'/FE_vs_RE_H2_MonetaryPolicy.xls", replace ///
   se ///
   mtitles("Fixed Effects" "Random Effects") ///
   title("Hypothesis 2: Monetary Policy — Fixed vs Random Effects") ///
   addnotes("Hausman chi2 = " %6.2f chi2_H2 ///
         ", p-value = " %6.4f p_H2)

* END OF DO-FILE
```

Works Cited

Bank for International Settlements. (2025). *Private credit, monetary policy transmission, and financial stability.*https://www.bis.org/publ/qtrpdf/r_qt2503b.htm

Bank for International Settlements. (2026). *Credit to the non-financial sector: BIS WS_TC 2.0* (data set). https://data.bis.org/topics/TOTAL_CREDIT/data

Bank for International Settlements. (n.d.). *BIS data table builder: Total credit* (interactive data tool). https://data.bis.org/topics/TOTAL_CREDIT/data

Bank for International Settlements. (n.d.). *Credit to the non-financial sector* (statistical release). https://www.bis.org/statistics/totcredit.htm

Bank for International Settlements. (n.d.). *BIS full data sets* (bulk CSV download portal). https://www.bis.org/statistics/full_data_sets.htm

Rosengren, E. (2025). *Could the growth of private credit pose a risk to financial-system stability?* Federal Reserve Bank of Boston, Current Policy Perspectives. https://www.bostonfed.org/publications/current-policy-perspectives/2025/could-the-growth-of-private-credit-pose-a-risk-to-financial-system-stability.aspx

Djankov, S., McLiesh, C., & Shleifer, A. (2007). Private credit in 129 countries. *Journal of Financial Economics, 84*(2), 299–329. https://doi.org/10.1016/j.jfineco.2006.03.004

Shleifer, A., Vishny, R., La Porta, R., López-de-Silanes, F., & Djankov, S. (n.d.). *Private credit in 129 countries* (data set). Harvard University. https://shleifer.scholars.harvard.edu/publications/private-credit-129-countries

World Bank. (n.d.). *World Bank DataBank* (data platform). https://databank.worldbank.org/

World Bank. (n.d.). *World Bank Open Data* (data repository). https://data.worldbank.org/