A New Dataset of Banker Surveys: Credit Conditions for 44 Countries over 1993–2021*

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Abstract

This paper presents a new dataset on banker surveys, which includes credit standards, credit demand, and the factors affecting credit standards, for 44 economies over 1993Q3–2021Q3. We offer a full description of the sources and methods of data collection and construction. The literature suggests that banker surveys provide direct measures of credit conditions and the survey information effectively separates credit supply from credit demand. Based on the new dataset, we first analyze the quantity implications of credit standards using PVAR model. We find that credit standards are important in predicting future loan growth for enterprises and real output growth. Consistent with Lown and Morgan (2006), credit standards are far more informative than loan rates about future macroeconomic activities. Furthermore, we also examine and confirm that credit standard shocks significantly affect market-based meansures of credit spreads. The results thus suggest that information on credit standards in banker surveys have tight connection with both quantities and prices in credit markets, and variations in credit supply conditions have extensive macroeconomic implications.

Keywords: banker survey; credit standards; total credit; credit spreads

1 Introduction

The bank lending survey (BLS) provides information about the credit conditions of commercial banks. It is unique in that the banker surveys conducted by central banks of various countries all focus on credit standards, credit demand, and the contributing factors. This information greatly supplements the insufficiency of simple macro-financial aggregate quantity and price information which cannot effectively distinguish between changes in the supply and demand of funds. Since banks specifically report detailed information on credit conditions in BLS, the survey data can clearly identify the drivers of credit developments without making assumptions about demand.

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In this paper we contribute in two ways to this research agenda. The first is to present a complete data set on bank lending suvey covering 44 economies over 1993-2021. 21 developed economied and 23 emerging economies are included in our data sample. Our dataset greatly contributes to the literature that examines the information content of bank lending surveys.

Many scholars have realized the particularity and importance of BLS data. A number of empirical studies use credit standards in BLS to identify credit supply shocks and study the impact on macroeconomic variables, such as loan growth, output and recession (Perri and Quadrini, 2018; Del Giovane et al., 2011; van der Veer and Hoeberichts, 2016). Credit standards in BLS have proved to be good predictors of loan and output growth in the United States (Lown et al., 2000; Lown and Morgan, 2002, 2006; Bassett et al., 2014; Ciccarelli et al., 2015) and the euro area (de Bondt et al., 2010; Hempell and Kok, 2010; Cappiello et al., 2010). It is worth noting that there are some other methods to identify credit supply, among which the most representative is Khwaja and Mian (2008) type estimation strategy. However, the literature using such strategy usually depends on assumption about the homogeneity of credit demand, which is not necessarily reasonable. Altavilla et al. (2021) show the importance of controlling for bank specific demand in identifying credit supply shocks and prove that the information in BLS can better solve such problems. Apart from this, BLS data can also be applied to research on other topics. For example, some studies focus on the relationship between lending standards and consumption, and find that there is a strong link between them (Duca et al., 2010; Aron et al., 2012; Duca and Muellbauer, 2013). Finally, BLS data is used to explore the drivers for changes in credit standards and demand (Chen et al., 2021; Wu and Suardi, 2021). The above literature shows that bank lending survey has a wide range of applications, but the existing studies are mostly based on US or Eurozone data. Actually, many other economies also conduct such survey, but the information has not yet been used for academic research. To the best of our knowledge, we are one of the first to sort out and analyze the survey data in a unified way. As such, the new dataset provided in our paper is a great supplement and promotion to the research field.

The second contribution of this paper is to use PVAR model on the basis of our new data to identify the drivers of loan allocation, output growth and credit price. Credit rationing theory maintains that even if the borrower is willing to pay the price of the loan contract, part of the borrower's credit demand is rejected (Stiglitz and Weiss, 1981). Loan rates do not always balance the supply and demand of loans, and the total amount of loans is restricted by factors such as non-interest rate terms. Thus, banks can allocate commercial loans not only through lending rates, but also likely through changes in credit standards. The observed series of credit standards set by bank lending survey may be the best direct gauge of credit conditions across countries (Perri and Quadrini, 2018). The role of loan rates in credit allocation may be lower than credit standards and other non-price terms (Wu and Suardi, 2021). Lown and Morgan (2006) argue that the frictions central to both literatures are manifest in credit standards reported by Senior Loan Officer Opinion Survey.

Then, to what extent do bankers allocate business loans by changing standards as opposed to changing loan rates? How credit availability affects macroeconomic variables in different economies? We estimate a standard panel vector auto regression (PVAR) to identify the role of credit standards. Our

empirical research builds on the paper of Lown and Morgan (2006), which uses US data to investigate the correlation between these reported changes in standards and the subsequent fluctuations in lending and spending. Importantly, we extend their research in three ways. First, we use 44 economies as our sample instead of using just one country, which improves the generality of our conclusion. Consistent with Lown and Morgan (2006), our findings confirm that changes in credit standards are very important for explaining future loan growth and output growth. Second, we further examine whether credit standards have explanatory power on credit spreads. The empirical results confirm that credit shocks measured by credit standards are reflected in both quantity and price. Finally, based on the important role of credit standards, we further examine the drivers of their changes. The results show that balance sheet factors, risk perception factors, and competitive factors all significantly influence changes in credit standards and bank competition plays a larger role when banks loosen lending standards.

In what follows, we provide a descriptive overview of the new dataset (Section 2), followed by PVAR analysis and discussion in Section 3. In Section 4, we provide further validation. Section 5 explores the drivers of changes in credit standards. Section 6 concludes. We also provide a compilation guide for our new dataset in the Source Appendix. The guide gives detailed sources and construction methods for each country's indicators.

2 The New Dataset

2.1 Overview

The new dataset provides a detailed description of bank credit conditions. We collected data from central bank statistics for 44 economies. Our dataset contains all countries where the bank lending surveys can be found. Specifically, data for some European countries comes from Euro area bank lending survey. The BLS was launched by the Eurosystem in 2003. Its main objective is to enhance the Eurosystem's knowledge of bank lending conditions in the euro area. In addition to Euro area bank lending survey, many other countries conduct similar surveys, such as the Senior Loan Officer Opinion Survey in the United States, the Credit Conditions Survey in Brazil, and the Banker's Survey in China. The time period coverage is conditional on data availability and most countries have the survey data from 2009Q1 to 2021Q2. Besides, the BLS is conducted four times a year. Table 1 and Figure 1 provide an overview of the dataset with countries and time period coverage.¹

The dataset provides 37 variables reflecting credit standards, credit demand and the contributing factors. It covers several types of loans, including enterprises loans, housing mortgage loans and consumer loans. The data in BLS provides information on the lending policies of banks and supplements existing statistics on loans and bank lending rates with information on the supply of and demand for loans to enterprises and households. Table 2 reports descriptive statistics of credit standards and credit demand in the dataset.

Figure 2 plots trends of the credit standards of four representative countries (China, Germany, Japan

¹The Appendix offers details on the data collection choices for each country in our data set.

Country	Period	Country	Period	Country	Period
Albania	2009Q1-2021Q2	Greece	2002Q4-2021Q2	Poland	2003Q4-2021Q2
Argentina	2009Q4-2019Q4	Hungary	2002Q4-2021Q2	Portugal	2002Q4-2021Q3
Australia	1993Q3-2019Q3	Ireland	2002Q4-2021Q3	Romania	2007Q4-2021Q2
Austria	2002Q4-2021Q2	Italy	2002Q4-2021Q3	Russia	2009Q2-2021Q3
Belgium	2002Q4-2021Q2	Japan	2000Q1-2021Q3	Serbia	2014Q1-2021Q2
Brazil	2011Q1-2021Q2	Korea	2002Q1-2021Q3	Slovakia	2005Q1-2021Q2
Canada	1999Q2-2021Q2	Lithuania	2005Q4-2020Q4	Slovenia	2007Q1-2020Q4
China	2004Q1-2021Q3	Luxembourg	2003Q1-2020Q2	Spain	2002Q4-2021Q2
Croatia	2012Q3-2021Q3	Latvia	2007Q1-2021Q2	Sweden	2005Q4-2018Q4
Cyprus	2009Q1-2021Q2	Macedonia	2006Q2-2021Q2	Thailand	2007Q4-2021Q3
Czech	2012Q2-2021Q2	Malta	2006Q2-2021Q1	Turkey	2005Q4-2021Q3
Denmark	2008Q4-2021Q3	Netherlands	2002Q4-2021Q3	Ukraine	2013Q4-2021Q3
Estonia	2011Q1-2021Q2	Norway	2007Q4-2021Q3	United Kingdom	2007Q2-2021Q1
France	2002Q4-2021Q2	New Zealand	2009Q2-2021Q3	United States	1996Q4-2019Q2
Germany	2002Q4-2021Q2	Philippines	2009Q1-2021Q3		

Table 1: Overview of Sample Countries for BLS Data

Notes: This figure summarizes sample coverage, showing the 44 countries (regions) covered by the decade in which coverage starts.



Figure 1: Country Coverage

and United States). A notable feature is that four countries substantially tightened credit standards around the financial crisis in 2008. Moreover, it is worth noting that Japan's credit standards have always been below zero, suggesting that Japan is in a state of credit easing, which is also in line with the facts.

Code	Explanation	Obs	Mean	Std	Min	Max
ECCS	Enterprise-Change-Credit standard	2758	5.12	21.83	-92.4	100
ECCD	Enterprise-Change-Credit demand	2424	6.88	26.35	-100	100
HCCS	Housing-Change-Credit standard	2440	3.32	22.10	-100	100
HCCD	Housing-Change-Credit demand	2366	6.61	34.44	-100	100
CCCS	Consumer-Change-Credit standard	2350	2.92	21.28	-91.3	100
CCCD	Consumer-Change-Credit demand	2258	2.79	28.61	-100	100

Table 2: Descriptive Statistics of Mian Indicators in the Dataset

Notes: All indicators are between -100 and 100 (%). The data set also includes contributing factors of credit standards, details of which are in the Appendix A. Our dataset provides two indexes, namely net percentage index and diffusion index. The above descriptive statistics are based on the net percentage index, and countries without the net percentage index are filled with the diffusion index.



Figure 2: Trends of the Credit Standards: Selected Countries

2.2 Data Organization and Measurement

In this section, we provide a description for the construction of the variables in the dataset so that researchers can replicate or modify our data for macroeconomic analysis. The Source Appendix offers details on the data collection choices for each country.

Participating banks are asked about whether and how they have changed the credit standards, taking loans to enterprises as an example,² the question asked likes: "Over the past three months, how have your bank's credit standards as applied to the approval of loans or credit lines to enterprises changed? Please note that we are asking about changes in credit standards, not their levels." The

²Indicators for housing loans and consumer loans are calculated similarly.

survey sets up 5 answers to this question, namely "tightened considerably (TC)", "tightened somewhat (TS)", "basically unchanged (UC)", "eased somewhat (ES)" and "eased considerably (EC)". Banks are asked question about credit demand as well, with the question being: "Over the past three months, how has the demand for loans or credit lines to enterprises changed at your bank, apart from normal seasonal fluctuations?" The answers are: "increased considerably (IC)", "increased somewhat (IS)", "remained basically unchanged (UC)", "decreased somewhat (DS)" and "decreased considerably (DC)". We consider two ways to measure the variables in our dataset, namely the net percentage index (NP) and the diffusion index (DI). For the net percentage index, we assign points to each answer as follows:

$$P = \begin{cases} 1, & \text{if bank answers TC or TS (IC or IS),} \\ 0, & \text{if bank answers UC,} \\ -1, & \text{if bank answers EC or ES (DC or DS).} \end{cases}$$
(1)

So, the changes in credit standards (CCS) and credit demand (CCD) measured by the net percentage index are as follows:

$$CCS_{NP} = \frac{\#\text{TC} + \#\text{TS} - \#\text{ES} - \#\text{EC}}{\#\text{Banks}} \times 100$$
(2)

$$CCD_{NP} = \frac{\#IC + \#IS - \#IS - \#IC}{\#Banks} \times 100$$
(3)

For the diffusion index, the points of each answer are:

$$P = \begin{cases} 1, & \text{if bank answers TC (IC),} \\ 0.5, & \text{if bank answers TS (IS),} \\ 0, & \text{if bank answers UC,} \\ -0.5, & \text{if bank answers ES (DS),} \\ -1, & \text{if bank answers EC (DC).} \end{cases}$$
(4)

And,

$$CCS_{DI} = \frac{\#\text{TC} + \#\text{TS} \times 0.5 - \#\text{ES} \times 0.5 - \#\text{EC}}{\#\text{Banks}} \times 100$$
(5)

$$CCD_{DI} = \frac{\#\text{IC} + \#\text{IS} \times 0.5 - \#\text{IS} \times 0.5 - \#\text{IC}}{\#\text{Banks}} \times 100$$
(6)

Finally, the question about the contributiong factors of changes in credit standards is "Over the past three months, how have the following factors affected your bank's credit standards as applied to the approval of loans or credit lines?" There are three categories of factors: (A) Cost of funds and balance sheet constraints (including Capital position, Liquidity position and Market finance), (B) Pressure from competition (including Bank competition, Non-bank competition and Market competition) and (C) Risk perception (including Economic outlook, Borrower risk, Collateral risk and Risk tolerance). The answers of this question are: "contributed considerably to tightening (TC)", "contributed somewhat to tightening

(TS)", "contributed to basically unchanged credit standards (UC)", "contributed somewhat to easing (ES)" and "contributed considerably to easing (EC)". Eq. 1,2, 4 and 5 above still apply to the calculation of the score for each factor.

3 PVAR Results

3.1 Empirical Methodology

We investigate the impact of credit standards on economic activities for a sample of 44 economies over a period from 1993 to 2021 with a quarterly frequence. Credit standards and credit demand used here come from the new dataset described above. We collect loans data by referring to Bezemer et al. (2017). Shadow short rates come from Krippner (2020) and CEIC. The GDP deflator, real GDP and bank lending rates are from CEIC. Table 3 presents the summary statistics.

Variable		All countries						
, unuo ic	Obs	Mean	Std	Min	Max			
Real GDP growth	2511	1.88	4.24	-24.43	29.00			
GDP deflator growth	2691	2.93	5.41	-20.17	52.92			
Loans growth	2508	4.18	9.71	-45.09	51.46			
Credit standards	2758	5.12	21.83	-92.4	100			
Credit demand	2424	6.88	26.35	-100	100			
Shadow short rate	2657	1.81	4.95	-5.69	74.01			
Bank lending rate	2251	5.82	6.76	0.25	75.59			

Table 3: Descriptive Statistics of Main Variables

Notes: Loan growth rate, credit standards and credit demand are all based on loans to enterprise.

We use a panel vector autoregression (PVAR) model developed by Love and Zicchino (2006) to identify the transmission of credit standards shock to economic activities. The PVAR methodology combines the traditional VAR approach, which treats all the variables in the system as endogenous, and beyond that, it exploits individual time series and cross-sectional variations in data and avoids biases associated with cross-sectional regressions by taking into account the country-specific fixed effect. Specifically, we focus on the orthogonalized impulse-response functions (IRFs). IRFs show the response of one variable of interest to an orthogonal shock in another variable of interest. By orthogonalizing the response we are able to identify the effect of one shock at a time, while holding other shocks constant. Our model can be written as:

$$Y_{it} = \alpha_i + \Theta(\mathcal{L})Y_{it-1} + \epsilon_{it}, \tag{7}$$

where Y_{it} is a vector of endogenous variables, $\Theta(\mathcal{L})$ is a matrix polynomial in the lag operator, α_i is a vector of country-specific effect, and ϵ_{it} is a vector of idiosyncratic error. The subscripts *i* and *t* denote country and quarter respectively. On the basis of Lown and Morgan (2006), Y_{it} in our basic model is a five-variables vector { $\Delta GDP_{it}, \Delta GDFL_{it}, \Delta Loan_{it}, \Delta SSR_{it}, ECCS_{it}$ }; ΔGDP , the growth rates (log-differences) of real GDP, is our proxy for output growth. Prices are proxied by $\Delta GDFL$, which is the growth rates of the GDP deflator. $\Delta Loan$ is the growth rate of loans to non-financial enterprises, ΔSSR

is the differential shadow short rate (SSR), and *ECCS* is the net percent tighting in credit standards for enterprises.

We use the shadow short rate (SSR) from Krippner (2020) as a proxy for the stance of monetary policy. Actually, the short-term interest rate is often used as a summary of monetary policy in VARs. However, once short-term policy rates effectively hit the zero lower bound (ZLB), central banks began to rely on unconventional monetary policies (UMP), such as asset purchases and forward guidance. Consequently, the short-term interest rate alone is no longer an adequate indicator of the state of monetary policy, which poses a challenge when examining the macroeconomic effects of monetary policy (Ichiue and Ueno, 2018). So, in order to avoid such problem, we use the shadow interest rates of Krippner (2020).³ The shadow rate is essentially equal to the short-term interest rate when the short rate is positive, but it can be negative when the short rate is at the effective lower bound (ELB).⁴

First of all, we test each variable for stationarity using panel unit root tests. The time series are stationary as indicated by both IPS test (Im et al., 2003) and Fisher-type test (Choi, 2001) and thus the PVAR model can be estimated.

Variable		IPS test	ADF-Fisher test	PP-Fisher test
ΔGDP	Statistical value	-11.785***	384.403***	362.930***
	P value	0.000	0.000	0.000
$\Delta GDFL$	Statistical value	-10.981***	717.700***	331.126***
	P value	0.000	0.000	0.000
ΔLoan	Statistical value	-5.903***	254.426***	148.710***
	P value	0.000	0.000	0.000
ΔSSR	Statistical value	-18.233***	648.379***	185.326***
	P value	0.000	0.000	0.000
ECCS	Statistical value	-19.841***	231.160***	649.740***
	P value	0.000	0.000	0.000

Table 4: Panel Unit Root Tests

The fixed effects are correlated with the regressors due to lags of the dependent variables, and as a result we use the mean-differencing procedure (the Helmert procedure) to remove the individual effects, which preserves the orthogonality between transformed variables and lagged regressors. Furthermore, coefficients are estimated by GMM, with lagged regressors being used as instruments. The impulse-response functions are computed from the estimated PVAR given in (7) above. We generate the confidence intervals for impulse responses using Monte Carlo simulations.

We order the credit variables after the macro variables, with standards last, and shadow short rates second-to-last. We also test the results by imposing alternative ordering later to ensure that our results

³Wu and Xia (2016) also estimate shadow interest rates, and many studies use their shadow rates as the monetary policy indicator. However, the shadow interest rates of Wu and Xia (2016) only include the United States shadow fed funds rate, the Euro area shadow rate and the United Kingdom shadow rate, while the shadow interest rates of Krippner (2020) cover more economies, so we use the latter.

⁴For economies whose policy rate does not hit the ZLB (there are data on no shadow short rates), we populate the shadow short rate with short-term policy rates.

are insensitive to the identifying restrictions embedded in our estimation.⁵ We find that the ordering has no substantial effect on the results. Additionally, according to the Bayesian Information Criterion, the basic PVAR include six lags each of every variable.

3.2 Estimation Results

Figure 3 depicts the impulse responses derived from the estimated PVAR in Eq. 7. Impulse responses show the impact on the other four variables for a period of twenty quarters (five years) after a positive shock to one variable. Real GDP, GDP deflator and loans are transformed to growth rates. In particular, we focus on the impact on real GDP growth and loan growth after a shock to credit standards. A positive shock to standards does have a significant negative effect on both loan growth and output growth.⁶ Output growth declines significantly in the quarter immediately after the standards shock and remains significantly below its initial rate for almost two years. The negative impact of credit standards shock on the growth of loans to enterprises is more remarkable and persistent, lasting about four years. Moreover, shadow short rate also falls significantly in the first and second years after the shock.



Notes: The credit standards used here are for enterprises. Errors are 5% on each side generated by Monte-Carlo with 500 reps.

Figure 3: Impulse Response for Basic PVAR Model

To shed more light into our analysis, we also present variance decompositions, which show the percent of the variation in one variable that is explained by the shock in another variable. We report the

⁵The computation of IRFs requires imposing a set of identifying restrictions which makes the order of the variables is a key for the estimation of a PVAR.

⁶A positive credit standards shock means tightening the standards.

effects over 10, 20 and 30 quarters in Table 5. These results provide further evidence for IRFs.

Quarters	ΔGDP	$\Delta GDFL$	ΔLoan	ΔSSR	ECCS				
ΔGDP									
10	0.8817	0.0134	0.0097	0.0105	0.0846				
20	0.8646	0.0168	0.0157	0.0181	0.0848				
30	0.8640	0.0169	0.0157	0.0186	0.0848				
		ΔGD	FL						
10	0.0317	0.9426	0.0101	0.0062	0.0095				
20	0.0326	0.9374	0.0111	0.0093	0.0095				
30	0.0326	0.9369	0.0112	0.0098	0.0095				
		ΔLoa	n						
10	0.0371	0.0424	0.8476	0.0022	0.0707				
20	0.0467	0.0408	0.8268	0.0036	0.0822				
30	0.0469	0.0409	0.8263	0.0037	0.0822				
		ΔSS	R						
10	0.0169	0.0751	0.0178	0.8458	0.0444				
20	0.0173	0.1096	0.0228	0.8062	0.0440				
30	0.0173	0.1130	0.0229	0.8031	0.0437				
		ECC	S						
10	0.0134	0.1120	0.0820	0.0170	0.7756				
20	0.0170	0.1084	0.0972	0.0171	0.7603				
30	0.0172	0.1084	0.0972	0.0172	0.7600				

Table 5: Variance Decomposition

Notes: Percent of variation in the row variable explained by column variable. Credit standards enter last in the PVAR, with shadow short rate second-to-last.

Shocks in standards account for 8.5% of the error variance in output growth, which greatly exceeds loan growth (1.6%), inflation (1.7%) and shadow short rate (1.9%). Standards shocks play an important role in explaining loan growth as well, contributing 8.2% to its variance. Besides, when explaining the error variance of standards, loan growth and inflation are more important than shadow short rate and output growth, with the variance contributions being 9.7%, 10.8%, 1.7% and 1.7% respectively.

In sum, the variance decomposition results strongly confirm the IRF results. Credit standards provide useful information in explaining macroeconomic variables such as aggregate output and loan growth.⁷ Our mian results are consistent with Lown and Morgan (2006), whose study is based on US data.

In order to check whether the above results are driven by our choice of endogenous variables, we consider several extended models in Eq. 7 with the inclusion of additional potentially relevant variables. Here is part of the results.

Figure 4, Figure 5 and Table 6 indicate that there is no significant change in either the direction or the magnitude of our mian results, and credit standards remain strong predictors of output and loan growth: (A) after including credit demand; (B) with the inclusion of loan rates.⁸

Tighter standards could signal some other negative disturbance to economic activities that reduces the demand for loans at the same time banks tighten standards. And loan quantities' reducing might

⁷We estimate Eq. 7 with several different orders and lag orders, and our main results remain the same.

⁸Additional variables are added to the antepenultimate position in the extended PVARs.



Notes: Both the credit standards and credit demand used here are for enterprises.





Notes: The credit standards used here are for enterprises.

Figure 5: Impulse Response for Extended PVAR-(B)

be the reduction in borrower demand rather than any change in credit standards (Lown and Morgan, 2006). Therefore, we add the credit demand variable in Fig. 4. It comes from bank lending survey as

Variables	ΔGDP	$\Delta GDFL$	ΔLoan	ECCD	ΔSSR	ECCS
		I	PVAR-(A)			
ΔGDP	0.8380	0.0079	0.0346	0.0133	0.0075	0.0989
ΔLoan	0.0468	0.0450	0.7425	0.0657	0.0216	0.0783
ECCS	0.0174	0.0135	0.0836	0.0467	0.0036	0.8352
Variables	ΔGDP	$\Delta GDFL$	ΔLoan	ΔLR	ΔSSR	ECCS
]	PVAR-(B)			
ΔGDP	0.8430	0.0069	0.0544	0.0095	0.0257	0.0605
ΔLoan	0.0940	0.0229	0.7385	0.0105	0.0074	0.1267
ECCS	0.0475	0.0677	0.1296	0.0268	0.0055	0.7230

Table 6: Variance Decomposition of Extended PVARs

Notes: In order to save space, only the variance decomposition results of the main variables of interest are reported. And we report the effects over 30 quarters.

well. We also add loan rates in Fig. 5 to see which variable—credit standards or loan rates—seem most important in explaining economic activities. We find that credit standards do provide more information about future loans and output growth than loan rates.

Furthermore, we test whether the above results hold for the sub-samples. The IRFs and variance decompositions of sub-samples are shown in Fig. 6, Fig. 7 and Tab. 7.

Sample	Quarters	ΔGDP	$\Delta GDFL$	ΔLoan	ΔSSR	ECCS
			ΔGDP			
DE	30	0.8383	0.0210	0.0304	0.0012	0.1090
EM	30	0.8482	0.0114	0.0341	0.0134	0.0930
			$\Delta GDFL$			
DE	30	0.0364	0.9447	0.0048	0.0105	0.0036
EM	30	0.0184	0.9257	0.0128	0.0416	0.0015
			$\Delta Loan$			
DE	30	0.0706	0.0683	0.6977	0.0392	0.1242
EM	30	0.0279	0.0374	0.7166	0.0875	0.1306
			ΔSSR			
DE	30	0.0677	0.0183	0.0124	0.7397	0.1619
EM	30	0.0030	0.0341	0.0249	0.9374	0.0005
			ECCS			
DE	30	0.0159	0.0397	0.0710	0.0129	0.8606
EM	30	0.0448	0.0148	0.0900	0.0149	0.8355

Table 7: Variance Decomposition of Sub-samples

Notes: Percent of variation in the row variable explained by column variable. DE and EM stand for developed economies and emerging economies respectively.

Whether considerding developed economies or emerging market economies, a positive shock to credit standards is followed by significant decline in both output and loans growth. And loan growth shocks have the largest contribution to standards' variance decomposition in both PVAR models. Different from emerging economies where standards shocks do almost nothing in explaining the variance decomposition of shadow short rates, standards shocks have the largest contribution to SSRs' variance decomposition in developed countries, up to 16%. Additionally, shocks to real GDP growth accout for



Notes: The credit standards used here are for enterprises.





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Figure 7: Impulse Response for PVAR in Emerging Economics

more share of the variance decomposition of SSRs in developed economies than emerging economies, with the contribution being 7% and 0.3% respectively, which shows that compared with emerging market economies, monetary policy in developed countries are more sensitive to macroeconomic variables.

4 Further Validation

4.1 Further Research: BLS and Credit Spreads

Credit standard is a measure of credit supply shock, which is reflected in both quantity and price. Most of the existing literature considers the influence of credit standards on the quantitative indicators, such as output growth and credit growth. Actually, the above results of this paper mianly show the quantitative reflection of credit supply shocks as well. Then, in this section we further study the credit price response to credit shocks.

Credit spreads, i.e., the spreads between higher and lower grade bonds within a country, is a proxy for the price of credit. López-Salido et al. (2017) show that the pricing of credit risk in the bond market is likely to be closely linked to the pricing of credit risk in the banking system. There is a large literature examining the forecasting power of credit spreads for economic activity (Gertler and Lown, 1999; Gilchrist and Zakrajšek, 2012; Krishnamurthy and Muir, 2020). For example, credit spreads contain information on credit cycles and recessions using U.S. data (Gilchrist and Zakrajšek, 2012; López-Salido et al., 2017). Using a sample of 19 countries, Krishnamurthy and Muir (2020) show that low credit spreads and high credit growth offer the sharpest signal of a coming crisis. Credit spreads help to forecast economic activity because they contain a expected default component, a risk premium component, and an illiquidity component. Each of these components will correlate with the worsening of economic conditions, and a crisis (Krishnamurthy and Muir, 2020). On the other hand, there is also a large body of literature examining the determinants of changes in credit spreads (Collin-Dufresn et al., 2001; Huang and Kong, 2003; Davies, 2008). To our knowledge, there is little literature researching whether credit standards have explanatory power on credit price, which is proxied by the credit spreads.

The credit spread data we use is mainly from Global Financial Data. We collect corporate and government bond yields and form spreads. Table 8 details the data coverage. The spreads are quarterly frequence, and we take the value of the credit spreads on the last day of a quarter. We have data on corporate credit spreads for 22 countries. The spreads are constructed as the difference between the corporate bond yield and the 10-year government bond yield. For 12 countries the corporate bond yield series are from Global Financial Data.⁹ For 9 other countries we obtained series on the corporate lending rate from Global Financial Data.¹⁰ For the United States the corporate credit spread is Moody's Baa-Aaa spread. Finally, refer to Mian et al. (2017) and Krishnamurthy and Muir (2020), for euro countries, we use the 10-year government bond yield of Germany as the benchmark rate.

First of all, we show the correlation coefficient between credit standards and credit spreads of each

⁹The 12 countries are Australia, Austria, Belgium, Canada, Germany, Denmark, Spain, the United Kingdom, Italy, Japan, Korea, Sweden.

¹⁰The 9 countries are Estonia, France, Greece, Ireland, Malta, Netherlands, Poland, Portugal, Slovakia.

Country	Period	Country	Period
Australia	1993Q3-2011Q4	Japan	2000Q1-2021Q3
Austria	2002Q4-2015Q1	Korea	2002Q1-2021Q3
Belgium	2003Q1-2013Q3	Malta	2006Q2-2007Q4
Canada	1999Q2-2006Q2	Netherlands	2003Q1-2013Q3
Denmark	2008Q4-2011Q4	Poland	2003Q4-2014Q4
Estonia	2020Q3-2021Q2	Portugal	2003Q1-2013Q3
France	2002Q4-2013Q3	Slovakia	2005Q1-2021Q2
Germany	2002Q4-2021Q2	Spain	2002Q4-2021Q2
Greece	2003Q1-2013Q3	Śweden	2005Q4-2011Q4
Ireland	2003Q1-2013Q3	United Kingdom	2007Q2-2021Q1
Italy	2002Q4-2020Q2	United States	1996Q4-2021Q2

Table 8: Overview of Sample Countries for Corporate Credit Spreads

country in Table 9. The overall average of the correlation coefficients of sample countries is 0.25, and 19 out of 21 countries have positive values. Intuitively, there is a positive relationship between credit standards and credit spreads.

Country	Correlation	P value	Country	Correlation	P value
Australia	0.78***	0.00	Korea	0.03	0.78
Austria	0.20	0.17	Malta	0.42	0.58
Belgium	0.41***	0.01	Netherlands	0.54***	0.00
Canada	0.19	0.31	Poland	-0.04	0.81
Denmark	0.35	0.25	Portugal	0.20	0.20
France	0.27*	0.07	Slovakia	0.11	0.39
Germany	0.23**	0.04	Spain	-0.11	0.37
Greece	0.06	0.71	Śweden	0.28	0.17
Ireland	0.20	0.20	United Kingdom	0.26*	0.06
Italy	0.07	0.57	United States	0.53***	0.00
Japan	0.25**	0.02			

Table 9: Correlation between Credit Standards and Credit Spreads by Countries

Notes: *, **, and *** indicate that the estimates are significant at 10%, 5%, and 1% confidence levels, respectively.

Which should be noted is that the spreads measure differing amounts of credit risk across countries, and it is necessary to normalize the spreads in some way so that the spreads from each country contain similar information. Referring to Krishnamurthy and Muir (2020), we normalize the corporate credit spreads by dividing by the average spread for that country. See Eq. 8 for details.

$$Spread_{it}^{nm} = Spread_{it} / \overline{Spread_i}$$
(8)

In order to test the explanatory power of credit standards on credit spreads, we provide evidence using the FE models. Table 10 shows that the tightening of credit standards in period *t* will significantly cause the rise of credit spreads in *t*, t + 1, and t + 2.¹¹

Then, we add corporate credit spreads to our benchmark model. So, now Y_{it} is a six-variables vector

¹¹Corp_spr is the normalized difference between the corporate bond yield and the 10-year government bond yield.

	Corp_spr _t	$Corp_spr_{t+1}$	$Corp_spr_{t+2}$	$Corp_spr_{t+3}$	$Corp_spr_{t+4}$
$ECCS_t$	0.009***	0.007**	0.005*	0.003	-0.000
	(3.20)	(2.76)	(1.76)	(1.25)	(-0.02)
ΔGDP_t	-0.031**	-0.016	-0.004	0.004	0.004
	(-2.25)	(-0.91)	(-0.23)	(0.20)	(0.18)
$\Delta Loan_t$	-0.007	-0.006	-0.003	-0.002	-0.003
	(-0.73)	(-0.66)	(-0.36)	(-0.28)	(-0.47)
ΔSSR_t	0.014	0.037	0.039	0.040	0.041
	(0.26)	(0.71)	(0.71)	(0.65)	(0.65)
$\Delta GDFL_t$	0.037**	0.032*	0.010	-0.011	-0.015
	(2.41)	(1.99)	(0.61)	(-0.62)	(-0.90)
С	1.001***	1.008***	1.040***	1.077***	1.108***
	(14.44)	(13.85)	(14.57)	(15.01)	(15.92)
Country fixed effects	Y	Y	Y	Y	Y
R ² (within)	0.0671	0.0380	0.0128	0.0071	0.0061
N	942	924	904	883	863

Table 10: The Impact of Credit Standards on Credit Spreads

Notes: *, **, and *** indicate that the estimates are significant at 10%, 5%, and 1% confidence levels, respectively. The t-statistics are in parentheses.

 $\{\Delta GDP_{it}, \Delta GDFL_{it}, \Delta Loan_{it}, \Delta SSR_{it}, ECCS_{it}, Corp_spr_{it}\}$.¹² We put corporate credit spreads in the last place. The reason we order this way is that credit spreads are the quarter-end value. We use the Bayesian Information Criterion (BIC) to choose the optimal lag order, and the BIC suggests the optimum lag order is two. Definitions of other variables and model settings are consistent with the baseline model.

Figure 8 depicts the impulse-response functions derived from the extended PVAR in this section.¹³ From the first row of Figure 8, even after accounting for credit spreads, a positive credit standard shock can still have a significant negative impact on real output growth and credit growth, which again confirms our benchmark conclusion.

The corporate credit spreads increase significantly after a positive credit standard shock, even though this effect diminishes over time and becomes insignificant after one year. The empirical results confirm our conjecture that credit standards have explanatory power for changes in credit spreads. A positive credit standard shock means a tightening of credit supply, investors are less confident and prefer to invest in high-credit-grade bonds to avoid risks under such circumstances, then the fundamental price of low-credit-grade bonds falls more than that of high-credit-grade bonds. In order to attract investors, issuers of low-credit-grade corporate bonds must offer higher interest rates, thus resulting in higher credit spreads. As stated in López-Salido et al. (2017), when credit risk is aggressively priced, spreads subsequently widen.

Table 11 presents the results of variance decompositions, which provides further evidence. The results show that credit standards are very important in explaining output growth, loan growth and

¹²The main results remain consistent when we use de-mean credit spreads.

¹³Errors are 5% on each side generated by Monte-Carlo with 500 reps; Inflation is included in this model, but the results are not shown due to space constraints.



Notes: The credit standards used here are for enterprises.

Figure 8: Impulse Response for Extended PVAR Model (Credit Spreads)

Quarters	ΔGDP	ΔLoan	ΔSSR	ECCS	Corp_spr				
ΔGDP									
10	0.7891	0.0212	0.0199	0.1608	0.0043				
20	0.7765	0.0226	0.0223	0.1670	0.0066				
30	0.7762	0.0227	0.0223	0.1669	0.0068				
		$\Delta L c$	oan						
10	0.0346	0.6851	0.0154	0.1122	0.0695				
20	0.0420	0.6197	0.0198	0.1558	0.0815				
30	0.0421	0.6182	0.0200	0.1571	0.0815				
		ΔS	SR						
10	0.0381	0.0093	0.7390	0.1714	0.0320				
20	0.0383	0.0110	0.7360	0.1718	0.0325				
30	0.0383	0.0111	0.7357	0.1719	0.0326				
		EC	CS						
10	0.0135	0.0271	0.0227	0.9161	0.0082				
20	0.0178	0.0297	0.0227	0.9032	0.0123				
30	0.0179	0.0297	0.0228	0.9029	0.0125				
		Corp	_spr						
10	0.0018	0.0059	0.0166	0.0366	0.9211				
20	0.0018	0.0059	0.0165	0.0378	0.9198				
30	0.0018	0.0059	0.0165	0.0378	0.9197				

Table 11: Variance Decomposition of Extended PVAR Model (Credit Spreads)

Notes: Percent of variation in the row variable explained by column variable.

shadow rate changes. Additionally, compared with other variables, credit standards is the most important in explaining credit spreads, contributing 3.8% to its variance. In conclusion, our results confirm that credit standard shocks significantly affect both the quantity and the price of credit.

4.2 Credit Standards and High-yield Share of Issuance

There exists one dataset comparable to ours. It is provided by Kirti (2018) for 38 countries over the period 1980-2016. Kirti (2018) constructs panel data on a quantity-based measure of lending standards, i.e. the HY share of issuance. According to this paper, the HY share is the fraction of proceeds from high-yield issues in each country-year, in percentage points. When the HY share rises, lenders are willing to allocate a larger share of credit to less credit-worthy borrowers, suggesting that lending standards have loosened. Based on this lending standards measure, the author finds the combination of deteriorating lending standards and leverage tends to be followed by poor macroeconomic performance, even after accounting for the impact of leverage alone.

There are three differences between our dataset and Kirti (2018). First, sample country coverage (44 countries, compared to 38). Second, our data is more frequent and is quarterly, while HY share is annual. Third, compared to HY share, bank lending survey seems to be a natural source of information on lending standards (Favilukis et al., 2012; Bassett et al., 2014; Kirti, 2018).

Actually, BLS directly reflects changes in credit standards, which are further reflected in HY share. HY share will fall as credit standards tighten reported in BLS. The correlation analysis can simply and intuitively tell us the relationship between credit standards and HY share in each country. The average correlation coefficient of 29 countries in our sample is -0.21, of which 23 countries have negative values (Table 12). Next, we will focus on verifying the above speculation.

Country	Correlation	P value	Country	Correlation	P value
Argentina	-0.28	0.54	Japan	-0.79***	0.00
Australia	-0.12	0.60	Korea	0.03	0.91
Austria	-0.12	0.69	Netherlands	-0.34	0.23
Belgium	-0.06	0.83	Norway	-0.46	0.21
Brazil	0.76*	0.08	New Zealand	-0.43	0.33
Canada	-0.42*	0.10	Poland	-0.54*	0.06
China	0.00	0.99	Portugal	-0.52*	0.05
Czech	0.75	0.25	Russia	0.17	0.71
Denmark	-0.37	0.36	Spain	-0.18	0.54
France	-0.41	0.14	Sweden	-0.09	0.78
Germany	-0.57**	0.03	Thailand	-0.17	0.66
Greece	-0.28	0.33	Turkey	0.15	0.67
Hungary	-0.60**	0.02	United Kingdom	-0.28	0.46
Ireland	-0.40	0.16	United States	-0.10	0.66
Italy	-0.26	0.37			

Table 12: Correlation between Credit Standards and HY Share by Countries

Notes: *, **, and *** indicate that the estimates are significant at 10%, 5%, and 1% confidence levels, respectively.

Prior to our empirical study, we transform HY share from annual data to quarterly data to match

the credit standards in BLS using the cubic spline difference method.¹⁴ We first give evidence of panel fixed effects. Formally, we estimate the following standard regression to study subsequent performance of HY share following tightening lending standards:

$$HY_Share_{i,t+h} = \delta_i + \beta_1 ECCS_{i,t} + \gamma' \mathbf{X}_{i,t} + u_{it}$$
⁽⁹⁾

 $X_{i,t}$ is a vector of controls that includes the growth rate of real GDP, the growth rate of loans to non-financial enterprises, the differential shadow short rate, and the inflation. Table 13 shows that the tightening of credit standards in period *t* is significantly related to the decline in HY share in *t*, *t* + 1, *t* + 2, *t* + 3 and *t* + 4. If the normalized HY share (*HYshare_{it}*/*HYshare_i*) is used, the absolute value of the coefficients of credit standards will decrease, but regardless of period *t*, *t* + 1, *t* + 2, *t* + 3 and *t* + 4, the coefficients are still significantly negative. The above results confirm our conjecture that tightening of credit standards will cause the decline of HY share.

	HY_Share_t	HY_Share_{t+1}	HY_Share_{t+2}	HY_Share_{t+3}	HY_Share_{t+4}
$ECCS_t$	-0.138**	-0.153**	-0.157**	-0.154**	-0.144***
	(-2.29)	(-2.43)	(-2.55)	(-2.69)	(-2.84)
ΔGDP_t	0.203	-0.082	-0.340	-0.492	-0.557
	(0.58)	(-0.23)	(-0.87)	(-1.09)	(-1.01)
$\Delta Loan_t$	-0.239	-0.262	-0.298	-0.331	-0.357
	(-0.80)	(-0.86)	(-0.99)	(-1.14)	(-1.29)
ΔSSR_t	0.224	0.425	0.628	0.699	0.649
	(0.29)	(-0.55)	(0.84)	(0.94)	(0.81)
$\Delta GDFL_t$	-0.329	-0.277	-0.259	-0.258	-0.285
	(-0.88)	(-0.81)	(-0.79)	(-0.75)	(-0.76)
С	18.24***	18.84***	19.44***	19.82***	20.00***
	(11.23)	(11.20)	(10.44)	(9.40)	(8.40)
Country fixed effects	Y	Y	Y	Y	Y
R ² (within)	0.0593	0.0665	0.0745	0.0814	0.0844
Ν	1190	1163	1136	1109	1082

Table 13: The Impact of Credit Standards on HY Share

Notes: *, **, and *** indicate that the estimates are significant at 10%, 5%, and 1% confidence levels, respectively. The t-statistics are in parentheses.

Further, we provide evidence using the PVAR model. Similar to section 4.1, we add HY share to the benchmark model described in section 3.1 to test the explanatory power of credit standards on high-yield share of issuance. Figure 9 and Table 14 show the results of impulse responses and variance decompositions, respectively.¹⁵ According to the impulse responses, HY share declines significantly in the quarter immediately after the standards shock and remains significantly below its initial level for almost three years. At its trough, HY share is about 2.5 lower than before the shock. Variance decompositions show that innovations in credit standards account for nearly a quarter of the error variance in HY share at 10 quarters. In sum, both impulse responses and decompositions largely

¹⁴In Appendix B, we also provide the results of converting credit standards into annual data to match HY share. The results of using the annual sample are consistent with using the quarterly sample.

¹⁵We order HY share before credit standards, with standards last, and HY share second-to-last.



Notes: The credit standards used here are for enterprises.

Figure 9: Impulse Response for Extended PVAR Model (HY Share)

Quartors		ALogu	ΛССР	UV Chara	ECCS		
Quarters	ΔGDF	ΔLOUN	Δ55K	111 <u>_</u> Snure	ECCS		
ΔGDP							
10	0.7014	0.0071	0.0699	0.0819	0.1106		
20	0.6740	0.0164	0.0696	0.0877	0.1217		
30	0.6713	0.0165	0.0694	0.0891	0.1233		
		ΔL	oan				
10	0.0737	0.7092	0.0090	0.0003	0.1367		
20	0.0751	0.6514	0.0115	0.0005	0.1961		
30	0.0749	0.6495	0.0116	0.0005	0.1980		
		ΔS	SSR				
10	0.0403	0.0055	0.8134	0.0184	0.1094		
20	0.0410	0.0097	0.7971	0.0256	0.1128		
30	0.0411	0.0097	0.7957	0.0268	0.1129		
		HY_{-}	Share				
10	0.0195	0.0151	0.0056	0.7119	0.2271		
20	0.0206	0.0229	0.0069	0.6993	0.2320		
30	0.0209	0.0224	0.0071	0.7015	0.2300		
		EC	CCS				
10	0.0173	0.0494	0.0142	0.0199	0.8626		
20	0.0241	0.0569	0.0144	0.0220	0.8454		
30	0.0241	0.0569	0.0145	0.0223	0.8450		

Table 14: Variance Decomposition of Extended PVAR Model (HY Share)

Notes: Percent of variation in the row variable explained by column variable.

confirm the earlier results: credit standards collated from the BLS are important in accounting for high-yield share of issuance.

5 Factors Driving Credit Standards

Given the importance of credit standards in terms of its macroeconomic influence, it is pertinent to study the drivers of their changes. The subjective willingness and objective ability of banks to carry out credit activities are the main components of credit supply. Credit standards is an important manifestation of bank credit supply willingness and an important reflection of credit behavior, while the factors affecting credit standards actually indirectly determine bank credit supply. In this section, we focus on researching the factors influencing changes in credit standards. We mainly consider 9 factors, which can be grouped into three categories, including economic outlook (EO), borrower risk (BR), collateral risk (CR), liquidity position (LP), capital position (CP), market finance (MF), bank competition (BC), non-bank competition (NC) and market competition (MC).¹⁶ These factors are also derived from the BLS data set. For the specific variable construction method, see Section 2.2.

Table 15: Descriptive Statistics of Factors

Code	Explanation	Obs	Mean	Std	Min	Max
EO	Economic outlook	1352	11.44	29.16	-85.6	100
BR	Borrower risk	1432	14.91	26.13	-91.9	100
CR	Collateral risk	1048	9.38	18.21	-72.1	93.4
LP	Liquidity position	1237	-2.06	16.43	-66.2	91
СР	Capital position	1218	4.73	12.06	-34.2	80
MF	Market finance	986	1.98	15.06	-66	88
BC	Bank competition	997	-11.74	19.42	-98	91
NC	Non-bank competition	930	-0.91	7.68	-48	67
MC	Market competition	918	-1.56	9.03	-48	66

Notes: The positive percentage indicates that the factor has contributed to the tightening of credit standards. EO, BR and CR belong to "Risk perception"; LP, CP and MF belong to "Cost of funds and balance sheet constraints"; BC, NC and MC belong to "Pressure from competition".

Table 15 presents the descriptive statistics for these 9 factors. Questionnaires in some sample countries do not include questions about factors, so the sample size of factors is less than that of credit standards and demand. As we can see, the average value of the three risk perception factors (EO, BR and CR) are positive, and a positive value implies a contribution to the tightening of credit standards, suggesting that risk perception factors may be more important when banks consider tightening lending standards. Conversely, the averages of competitive factors are all negative, especially bank competition, whose average is -11.74, so the pressure from competition may be more related to the relaxation of lending standards.

Next, we provide further empirical evidence. We use the panel fixed effects model. Table 16 presents the estimation results for the full sample. The dependent variable is the credit standards for enterprises.

¹⁶We do not consider risk tolerance due to its small sample size.

First we show fixed-effect (FE) estimations in column (1); then we add control variables to the regression in the next columns, including real GDP growth, inflation, shadow short rates and long-term interest rates. Besides, we control for the annual fixed effect as well. In columns (3) and (4), we further add interaction terms, that is, the product of each factor and the dummy variable for whether or not to relax credit standards. We want to see whether the dominant factors are different in different situations.

	(1)	(2)	(3)	(4)
EO	0.186***	0.147**	0.198**	0.175**
	(3.22)	(2.92)	(2.50)	(2.43)
BR	0.249***	0.279***	0.237***	0.253***
	(6.04)	(7.59)	(4.19)	(5.84)
CR	0.211**	0.322***	0.233***	0.282***
	(2.68)	(6.89)	(3.05)	(5.02)
LP	0.268***	0.209**	0.285***	0.229***
	(5.86)	(2.78)	(7.71)	(4.72)
СР	0.0576	0.0735	0.0657	0.0915
	(1.10)	(1.24)	(1.18)	(1.77)
MF	0.0942**	0.0937**	0.163**	0.162***
	(2.26)	(2.23)	(2.57)	(3.49)
BC	0.246***	0.237***	0.0684*	0.0700
	(6.06)	(6.44)	(1.84)	(1.73)
NC	-0.00984	-0.0355	0.00537	-0.0918
	(-0.09)	(-0.32)	(0.04)	(-0.56)
МС	0.0117	0.114	-0.0247	0.128
	(0.13)	(1.20)	(-0.17)	(0.75)
EO × Easing			-0.105	-0.127
			(-0.78)	(-0.88)
$BR \times Easing$			-0.149	-0.130
			(-1.18)	(-1.03)
CR×Easing			-0.285*	0.0871
			(-1.81)	(0.60)
LP × Easing			-0.0660	-0.0353
CD F			(-0.59)	(-0.20)
CP × Easing			-0.124	-0.311
MEXERSING			(-0.81)	(-1.55)
MF×Eusing			-0.0480	-0.228
PCXEquina			(-0.20)	(-1.00)
be x Eusing			(3.75)	(5.408)
NC × Fasina			0.0195	0.0561
INC × Lusing			(0.0195)	(0.32)
MC × Fasino			0 211	0.0538
Me K Eustrig			(1.30)	(0.39)
C	2.391**	-9 248	2 174**	-4 888
C	(2.30)	(-0.76)	(2.61)	(-0.36)
Country fine 1 offers	V	V	V	V
Country fixed effects	Υ Ν	Ү У	Ц NT	Y V
Controls				
$\mathcal{D}^{2}(z_{1};t_{1};t_{2})$	1N 0.709	1	1N 0.7E2	1
$K^{-}(witnin)$	0.708	0.730	0.752	0.764
IN	848	749	848	/49

Table 16: Factors Driving Credit Standards

Notes: *, **, and *** indicate that the estimates are significant at 10%, 5%, and 1% confidence levels, respectively. The dependent variable here is the credit standards for enterprise.

As one can see, the within R^2 of each regression equation is between 0.7 and 0.8, and the estimates of most explanatory variables are statistically significant at the 5% level. So the factors in BLS can better capture most of the credit standards' changes.

The regression coefficients of economic outlook, borrower risk and collateral risk are all significantly positive at the 5% level, indicating that banks' perception of risk is important in explaining changes in credit standards.¹⁷ Banks tend to tighten lending standards and lend less when they feel the economic outlook is pessimistic, or when borrower and collateral risks are rising. Cost of funds and balance sheet constraints are also important. Specifically, the coefficients of liquidity position and market finance on credit standards are significantly positive. There is no doubt that the bank's capital status is an important objective factor restricting its lending behavior. Our results suggest that liquidity positions have a great impact on bank lending standards and market funding has a smaller impact. When considering competitive factors, we distinguish three types of factors: interbank competition, competition from non-bank financial institutions and market competition. The empirical results show that bank competition is the most important competition factor affecting the changes of bank lending standards. When we further add control variables to the benchmark regression (1) and control for the year fixed effect, the above results are still robust.

Columns (3) and (4) are the results of adding the interaction terms, which gives us more information. The effect of interbank competition rises substantially when banks' lending standards are eased than tightened. The results are in line with our intuition. Banks typically relax their credit standards during periods of macroeconomic prosperity, when all sectors of the economy are largely in good shape. For banks, on the one hand, due to the continuous expansion of investment by enterprises, there will be more vigorous demand for funds, so that banks have more room for lending and profit. However, on the other hand, the prosperity of the economy also allows enterprises to have a wider range of choices in financing, making banks face more intense external competition (mainly inter-bank competition). At this time, in order to increase their market share and profit scale, banks will inevitably choose to relax credit standards to increase their attractiveness to borrowing enterprises. Therefore, fierce competition is a strong external motivation for banks to relax credit standards.

In sum, we find that balance sheet factors, risk perception factors, and competitive factors all significantly influence changes in credit standards. But bank competition plays a larger role when banks loosen credit standards.

6 Conclusion

This paper presents a new dataset on Bank Lending Survey. The data in BLS greatly supplements existing statistics with information on the supply of and demand for loans to enterprises and households. We present the data features in detail and provide a full description of sources and methods of data collection and construction. The collection and description of the new dataset is the first contribution to the literature.

¹⁷The positive percentage indicates that the factor has contributed to the tightening of credit standards.

Then, we estimate a PVAR model using the information in our dataset for 44 economies between 1993-2021 in order to identify the dynamic relationship between credit standards and macroeconomic variables. We find that credit standards are far more informative about future loan growth and output growth than both shadow short rates and bank lending rates. Our work confirms the conclusion of Lown and Morgan (2006), whose study uses only U.S. data. We also find macroeconomic variables, especially the shadow short rates, in developed economies react more strongly to standards shocks and GDP shocks. We further examine whether credit standards have explanatory power on credit price. The results show that standards shocks significantly affect credit spreads, and the tightening of credit standards will widen credit spreads. In addition, we offer some comparisons with adjacent data set. We compare the credit standards in BLS with the credit standards index (i.e. high-yield share of issuance) of Kirti (2018), and find that tightening of credit standards in BLS will cause the decline of HY share. Compared with HY Share, the credit standards in BLS can more directly measure the bank's lending standards. In sum, our results confirm the importance of the information contained in credit standards. Finally, based on the importance of credit standards, we also examine the drivers of their changes. The results show that all three categories of factors are important in explaining changes in standards, but bank competition plays the largest role when credit standards are relaxed.

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Appendix

A Dataset Structure

Category	Code	Explanation	Code	Explanation	Code	Explanation
Enterprise	ECCS	Enterprise-Change-Credit standard				
	EFCS	Enterprise-Factor-Credit standard	BSC	Balance sheet cost	OA	Overall
					СР	Capital position
					LP	Liquidity position
					MF	Market finance
			CPT	Competition	OA	Overall
					BC	Bank competition
					NC	Non-bank competition
					MC	Market competition
			RSK	Risk	OA	Overall
					EO	Economic outlook
					BR	Borrower risk
					CR	Collateral risk
					RT	Risk tolerance
	ECCD	Enterprise-Change-Credit demand				
Housing	HCCS	Housing-Change-Credit standard				
	HFCS	Housing-Factor-Credit standard	BSC	Balance sheet cost		
			CPT	Competition	OA	Overall
					BC	Bank competition
					NC	Non-bank competition
			RSK	Risk	OA	Overall
					EO	Economic outlook
					BR	Borrower risk
					CR	Collateral risk
					RT	Risk tolerance
	HCCD	Housing-Change-Credit demand				
Consumer	CCCS	Consumer-Change-Credit standard				
	CFCS	Consumer-Factor-Credit standard	BSC	Balance sheet cost		
			CPT	Competition	OA	Overall
					BC	Bank competition
					NC	Non-bank competition
			RSK	Risk	OA	Overall
					EO	Economic outlook
					BR	Borrower risk
					CR	Collateral risk
					RT	Risk tolerance
	CCCD	Consumer-Change-Credit demand				

B Other Results

Table B.1, figure B.1 and table B.2 are the results of changing the matching method in section 4.2 and using the annual panel by transforming the credit standard into annual variable through four-period accumulation.

	HY_Share_t	HY_Share_{t+1}	HY_Share_{t+2}
$ECCS_t$	-0.0685**	-0.0577***	-0.0448**
	(-2.62)	(-3.06)	(-2.18)
Country fixed effects	Y	Y	Y
Controls	Y	Y	Y
<i>R</i> ² (<i>within</i>)	0.0932	0.1079	0.1025
N	290	263	236

Table B.1: The Impact of Credit Standards on HY Share(Annual Panel)

Notes: *, **, and *** indicate that the estimates are significant at 10%, 5%, and 1% confidence levels, respectively.



Notes: The credit standards used here are for enterprises.

Figure B.1: Impulse Response for Extended PVAR Model (HY Share-Annual Panel)

Quarters	ΔGDP	ΔLoan	ΔSSR	HY_Share	ECCS		
		ΔΟ	GDP				
10	0.6160	0.0101	0.0418	0.2774	0.0122		
		ΔI	oan				
10	0.1190	0.6844	0.0267	0.0395	0.0609		
	ΔSSR						
10	0.1737	0.0181	0.6288	0.0692	0.0731		
		HY_{-}	Share				
10	0.1958	0.0187	0.0024	0.6621	0.0972		
		EC	CCS				
10	0.1056	0.0586	0.0384	0.0705	0.6724		

Table B.2: Variance Decomposition of Extended PVAR Model (HY Share-Annual Panel)

Notes: Percent of variation in the row variable explained by column variable.

C Data Sources and Measurement

For credit standards: a positive value indicates tightening standards, a negative value indicates loosening standards; For factors: a positive value indicates that the factor promotes tightening of standards, while a negative value indicates the factor promotes the relaxation of standards; For credit demand: a positive value indicates a rise and a negative value indicates a fall.

C.1 Albania

Code: ALB AL Keyword: Bank Lending Survey Source link:

https://www.bankofalbania.org/Monetary_Policy/Surveys_11282/Bank_Lending_Survey/
Source steps: Home>Monetary Policy > Surveys > Bank Lending Survey>Time series> Table 1, Table 5
and Table 2(for enterprise); Table 7, Table 11 and Table 8 (for housing and Consumer)
Remarks: Only net percentage index is available.

- Enterprise-Credit standards: Based on Table 1/ OVERALL/ Realised. The raw data*-1.
- Enterprise-Credit demand: Based on Table 5/ OVERALL/ Realised.
- Enterprise-The factors affecting credit standards: Based on Table 2. The raw data*-1.
- Housing-Credit standards: Based on Table 7/ House purchase/ Realised. The raw data*-1.
- Housing-Credit demand: Based on Table 11/ House purchase/ Realised.
- Housing (Consumer)-The factors affecting credit standards: Based on Table 8. The raw data*-1.

There are only data on factors affecting changes of credit standards for household. So, the related variables for both housing and consumer are fill with the same data. Balance Sheet Cost (BSC) is the average of "Costs related to bank's capital position" and "Costs related to bank's liquidity position". Specially, Collateral Risk (CR) for housing loans is "Housing market prospects". CR for consumer loans is "Risk related to required collateral".

- Consumer-Credit standards: Based on Table 7/ Consumer credit/ Realised. The raw data*-1.
- Consumer-Credit demand: Based on Table 11/ Consumer credit/ Realised.

C.2 Argentina

Code: ARG AR **Keyword**: Survey on Credit Conditions

Source link:

http://www.bcra.gov.ar/PublicacionesEstadisticas/Encuesta_de_condiciones_crediticias-i.
asp

Source steps: Statistics>Survey on Credit Conditions>Download historical series> Companies (Excel) and Households (Excel) **Remarks**:

- Enterprise-Credit standards: Based on Companies (Excel)/ Table 1/ Nivel General. Net percentage index = Moderadamente más restrictivos (%) + Más restrictivos (%) - Más flexibles (%) - Moderadamente más flexibles (%).
 Diffusion index = Moderadamente más restrictivos (%) * 0.5 + Más restrictivos (%) - Más flexibles (%) - Moderadamente más flexibles (%) * 0.5.
- Enterprise-Credit demand: Based on Companies (Excel)/ Table 6/ Nivel General. Net percentage index = Aumentó considerablemente (%) + Aumentó moderadamente (%) - Disminuyó moderadamente (%) - Disminuyó considerablemente (%).
 Diffusion index = Aumentó considerablemente (%) + Aumentó moderadamente (%) * 0.5 - Disminuyó moderadamente (%) * 0.5 - Disminuyó considerablemente (%).
- Enterprise-The factors affecting credit standards: Based on Companies (Excel)/ Table 2 and Table 3/ Nivel General. The net percentage index is not available.

Diffusion index = ((Tighting score -1) \div 2 × Percentage of banks tightening - (Easing score -1) \div 2 × Percentage of banks easing) × 100.

"Mejora de la situación económica actual y/o de las perspectivas futuras" is economic outlook (RSK-EO); "Mejora de la situación del sector al que pertenece la empresa ó sus perspectivas futuras" is borrower risk (RSK-BR); "Menores restricciones provenientes de los niveles de liquidez de su banco" is liquidity position (BSC-LP); "Menores restricciones vinculadas a los niveles de capital de su banco" is capital position (BSC-CP); The average of "Incremento de la competencia de otras instituciones" and "Decisión de incrementar la participación de mercado de su banco" is bank competition (CPT-BC).

- Housing-Credit standards: Based on Households (Excel)/ Table 10/ Créditos Hipotecarios and Créditos Prendarios. The average of "Créditos Hipotecarios" and "Créditos Prendario" is credit standards of housing loans (HCCS). The calculation method is the same as credit standards of enterprise loans.
- Housing-Credit demand: Based on Households (Excel)/ Table 15/ Créditos Hipotecarios and Créditos Prendarios. The average of "Créditos Hipotecarios" and "Créditos Prendario" is credit standards of housing loans (HCCD). The calculation method is the same as credit demand of enterprise loans.
- Housing-The factors affecting credit standards: Based on Households (Excel) / Table 11 and Table 12 / Créditos Hipotecarios Promedio simple and Créditos Prendarios Promedio simple. The net percentage index is not available. The calculation method of diffusion index is the same as the factors affecting credit credit standards for enterprise loans. The average of "Menores restricciones provenientes de los niveles de liquidez de su banco" and "Menores restricciones vinculadas a los

niveles de capital de su banco" is balance sheet cost (BSC). The average of "Incremento de la competencia de otras instituciones" and "Decisión de incrementar la participación de mercado de su banco" is bank competition (CPT-BC).

- Consumer-Credit standards: Based on Households (Excel)/ Table 10/ Tarjetas de Crédito and Otros Créditos al Consumo. The average of "Tarjetas de Crédito" and "Otros Créditos al Consumo" is credit standards of consumer loans (CCCS). The calculation method is the same as credit standards of enterprise loans.
- Consumer-Credit demand: Based on Households (Excel)/ Table15/ Tarjetas de Crédito and Otros Créditos al Consumo. The average of "Tarjetas de Crédito" and "Otros Créditos al Consumo" is credit demand of consumer loans (CCCD). The calculation method is the same as credit demand of enterprise loans.
- Consumer-The factors affecting credit standards: Based on Households (Excel) / Table 11 and Table 12 / Tarjetas de Crédito Promedio simple and Otros Créditos al Consumo Promedio simple. The calculation method is the same as which of housing loans.

C.3 Australia

Code: AUS AU Keyword: ACCI-Westpac Survey Source link: https://www.australianchamber.com.au/publication_taxonomies/surveys/

Source steps: Publications > Surveys/ Other results / Availability of labour & finance **Remarks**: Based on the line chart in the report.

C.4 Austria

Code: AUT AT Keyword: Bank Lending Survey Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html

Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country >AT> Downloads>Euro area bank lending survey – Austrian results

Remarks:

• Enterprise-Credit standards:

Net percentage index: Table Net percentage / 01-01 O.E.Z.B3.ST.S; Diffusion index: Table Diffusion index / 01-01 O.E.Z.B3.ST.S; We do the following transformation: The raw data*-100.

• Enterprise-Credit demand:

Net percentage index: Table Net percentage / 06-01 O.E.Z.B3.ZZ.D;

Diffusion index: Table Diffusion index / 06-01 O.E.Z.B3.ZZ.D; We do the following transformation: The raw data*100.

- Enterprise-The factors affecting credit standards: Net percentage index: Table Net percentage / 02-01 ~02-10; Diffusion index: Table Diffusion index / 02-01 ~02-10; We do the following transformation: The raw data*-100.
 02-01 CP.E.Z.B3.ST.S is capital position (BSC-CP); 02-02 MF.E.Z.B3.ST.S is market finance (BSC-MF); 02-03 LP.E.Z.B3.ST.S is liquidity position (BSC-LP); 02-04 BC.E.Z.B3.ST.S is bank competition (CPT-BC); 02-05 NBC.E.Z.B3.ST.S is non-bank competition (CPT-NC); 02-06 MFC.E.Z.B3.ST.S is market competition (CPT-MC); 02-07 GEA.E.Z.B3.ST.S is economic outlook (RSK-EO); 02-08 IFO.E.Z.B3.ST.S is borrower risk (RSK-BR); 02-09 RCD.E.Z.B3.ST.S is collateral risk (RSK-CR); 02-10 RTO.E.Z.B3.ST.S is risk tolerance (RSK-RT).
- Housing-Credit standards:

Net percentage index: Table Net percentage / 10-01 Z.H.H.B3.ST.S; Diffusion index: Table Diffusion index / 10-01 Z.H.H.B3.ST.S; We do the following transformation: The raw data*-100.

• Housing-Credit demand:

Net percentage index: Table Net percentage / 18-01 Z.H.H.B3.ZZ.D; Diffusion index: Table Diffusion index / 18-01 Z.H.H.B3.ZZ.D; We do the following transformation: The raw data*100.

- Housing-The factors affecting credit standards: Net percentage index: Table Net percentage / 11-01 ~11-07; Diffusion index: Table Diffusion index /11-01 ~11-07; We do the following transformation: The raw data*-100. 11-01 BSC.H.H.B3.ST.S is balance sheet cost (BSC); 11-02 BC.H.H.B3.ST.S is bank competition (CPT-BC); 11-03 NBC.H.H.B3.ST.S is non-bank competition (CPT-NC); 11-04 GEA.H.H.B3.ST.S is economic outlook (RSK-EO); 11-05 HMP.H.H.B3.ST.S is collateral risk (RSK-CR); 11-06 CWB.H.H.B3.ST.S is borrower risk (RSK-BR); 11-07 RTO.H.H.B3.ST.S is risk tolerance (RSK-RT).
- Consumer-Credit standards:

Net percentage index: Table Net percentage / 10-02 Z.H.C.B3.ST.S; Diffusion index: Table Diffusion index / 10-02 Z.H.C.B3.ST.S; We do the following transformation: The raw data*-100.

• Consumer-Credit demand:

Net percentage index: Table Net percentage / 18-02 Z.H.C.B3.ZZ.D; Diffusion index: Table Diffusion index / 18-02 Z.H.C.B3.ZZ.D; We do the following transformation: The raw data*100. Consumer-The factors affecting credit standards: Net percentage index: Table Net percentage / 14-01 ~14-07; Diffusion index: Table Diffusion index /14-01 ~14-07; We do the following transformation: The raw data*-100. 14-01 BSC.H.C.B3.ST.S is balance sheet cost (BSC); 14-02 BC.H.C.B3.ST.S is bank competition (CPT-BC); 14-03 NBC.H.C.B3.ST.S is non-bank competition (CPT-NC); 14-04 GEA.H.C.B3.ST.S is economic outlook (RSK-EO); 14-05 CWC.H.C.B3.ST.S is borrower risk (RSK-BR); 14-06 RCD.H.C.B3.ST.S is collateral risk (RSK-CR); 14-07 RTO.H.C.B3.ST.S is risk tolerance (RSK-RT).

C.5 Belgium

Code: BEL BE

Keyword: Bank Lending Survey

Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html

Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country>BE>Time series-NBB.Stat

Remarks: Only the net percentage index is available. We use "Total evolution".

C.6 Brazil

Code: BRA BR Keyword: Credit Conditions Survey

Source link:

https://www3.bcb.gov.br/sgspub/localizarseries/localizarSeries.do?method=prepararTelaLocalizar

Source steps:

(Credit standards): Credit indicators/ Quarterly credit conditions survey/ Credit supply indicators (Credit demand): Credit indicators/ Quarterly credit conditions survey/ Credit demand indicators **Remarks**: Observed data. Only diffusion index is available. For credit standards: the raw data/2*-100. For credit demand: the raw data /2*100.

C.7 Canada

Code: CAN CA **Keyword**: Senior Loan Officer Survey

Source link:

https://www.bankofcanada.ca/publications/slos/

Source steps: Home>Publications>Senior Loan Officer Surveys

Remarks:

SLOS_BUS_LEND (SLOS overall business lending conditions) = the changes of credit standards for enterprise (ECCS);

SLOS_ML_LEND (SLOS mortgage lending conditions) = the changes of credit standards for housing (HCCS);

SLOS_NML_LEND (SLOS non-mortgage lending conditions) = the changes of credit standards for consumer (CCCS).

C.8 China

Code: CHN CN Keyword: Banker's Survey Source link: http://www.pbc.gov.cn/

Source steps: Statistics>Survey> Banking> Banker Survey Report>Annex: Banker Survey Index **Remarks**:

ECCS (Change of credit standard for enterprise) = –(Bank loan approval index*2-1); ECCD (Change of credit demand for enterprise) = Overall loan demand index*2-1;

RSK-EO (Economic outlook) = –(Macroeconomic heat index*2-1);

BSC-LP (Liquidity position) = –(Monetary policy sentiment index*2-1);

CPT-OA (Overall competition) = –(Banking industry climate index*2-1).

C.9 Cyprus

Code: CYP CY **Keyword**: Bank Lending Survey

Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html
Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country/CY
Remarks: Based on the images in the report released each quarter.

C.10 Czech

Code: CZE CZ Keyword: Bank Lending Survey Source link: https://www.cnb.cz/en/statistics/bank-lending-survey/ Source steps: Home>Statistics>Bank lending survey>Bank lending survey – 2021 Remarks: Overall. "Industry or firm-specific outlook" is collateral risk (RSK-CR).

C.11 Germany

Code: DEU DE Keyword: Bank Lending Survey Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html

Source steps:

Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country>DE>Statistic>Time series database>Banks and other financial corporations>Banks>Balance sheet items>Bank Lending Survey (BLS)-Results for Germany

Remarks: Changes over the past three months. Overall.

C.12 Denmark

Code: DNK DK Keyword: Lending Survey Source link: https://nationalbanken.statbank.dk/902 Source steps: Banking and mortgage lending, balances>Lending survey

Remarks:

• Enterprise:

Based on Table DNUDPRIV: Credit condition survey, lending to households (Net figures) by type of institute, question and period. Total. All industries / Not specified - Total. Present quarter. Changs of credit standards and the contributing factors: the raw data*-1.

Changes of credit demand: the average of "4e: Demand for loans - existing customers" and "4n: Demand for loans - new customers".

"Cost of funding" is liquidity position (BSC-LP);

"Competition" is overall competition (CPT-OA);

"Perception of risk" is borrower risk (RSK-BR);

"Appetite for risk" is risk tolerance (RSK-RT).

• Housing and Consumer:

Based on Table "DNUDPRIV: Credit condition survey, lending to households (Net figures) by type of institute, question and period". Total. Present quarter. There are only data for household. So, the related indicators for both housing and consumer are fill with the same data.

Changes of credit standards and the contributing factors: the raw data*-1.

Changes of credit demand: the average of "4e: Demand for loans - existing customers" and "4n: Demand for loans - new customers".

C.13 Spain

Code: ESP ES

Keyword: Bank Lending Survey

Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html
Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country/ES

Remarks:

Net percentage index: based on Table 1.1, 1.2, 1.9, 1.11, 1.12a, 1.12b, 1.16; Diffusion index: based on Table 2.1, 2.2, 2.9, 2.11, 2.12a, 2.12b, 2.16.

C.14 Estonia

Code: EST EE Keyword: Bank Lending Survey Source link: http://statistika.eestipank.ee/#/en/p/889/r/2250 Remarks: Only the diffusion index is available. There is no factors data.

C.15 France

Code: FRA FR Keyword: Bank Lending Survey Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html
Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country>FR
Remarks: Only the net percentage index is available.

C.16 United Kingdom

Code: GBR GB Keyword: Credit Conditions Survey Source link: https://www.bankofengland.co.uk/ Source steps: Home>Credit Conditions Survey - 2021 O1>Related d

Source steps: Home>Credit Conditions Survey - 2021 Q1>Related documents>Credit Conditions Survey results for annex 1, 2 and 3 - 2021 Q1 (XLSX)

Remarks:

- Enterprise: Based on Annex 3 Corporate lending questionnaire results; Housing: Based on Annex 1 Secured lending to households questionnaire results; Consumer: Based on Annex 2 Unsecured lending to households questionnaire results.
- For credit standards and the contributing factors: the raw data*-1.

ECCD (change of credit demand for enterprises) = The average of "small businesses changed", "medium PNFCs" and "large PNFCs".

HCCD (change of credit demand for housing) = demand for secured lending for house purchase from households.

CCCD (change of credit demand for consumer) = demand for total unsecured lending from households.

Enterprise: Changing sector-specific risks is borrower risk (RSK-BR); Market pressures from capital markets is market competition (CPT-MC); Tight wholesale funding conditions is market finance (BSC-MF); Changing appetite for risk is risk tolerance (RSK-RT).
Housing: Tight wholesale funding conditions is balance sheet cost (BSC); Expectations for house prices is collateral risk (RSK-CR).
Consumer: Changing cost/availability of funds is balance sheet cost (BSC).

C.17 Greece

Code: GRC GR

Keyword: Bank Lending Survey

Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html

Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country /GR/Bank Lending Survey / Results

Remarks: Only diffusion index is available. The raw*100. Based on Table "2002Q4 – 2014Q4: Net Percentage" and Table "2015Q1 – today: Net Percentage".

C.18 Croatia

Code: HRV HR

Keyword: Bank Lending Survey

Source link:

https://www.hnb.hr/statistics/statistical-data/financial-sector/other-monetary-financial-institution
credit-institutions/the-results-of-the-bank-lending-survey

Source steps: Statistics > Statistical data > Fnancial sector > Other monetary financial institutions > Credit institutions > The results of the Bank lending survey

Remarks:

• Enterprise: Total loans to enterprises.

C.19 Hungary

Code: HUN HU

Keyword: Senior Loan Officer Opinion Survey

Source link:

https://www.mnb.hu/en/financial-stability/publications/lending-survey

Source steps: Financial Stability > Publications > Lending Survey >Senior loan officer survey on bank lending practices (September 2021)> Downloadable annexes

Remarks: The raw data*100. Since 2002-2008 are semi-annual data, data for the first and second quarters is half of the value of which in the first half year, and data for the third and fourth quarters is half of the value of which in the second half year.

HFCS-BSC (Housing-Balance sheet cost): Based on Annex 4_Household > 4/A. The average of "Changes in bank's current or expected capital position" and "Changes in bank's current or expected liquidity". CCCS (Change of credit standards for consumer): Based on Annex 4_Household>3/A. The average of data for "Consumer loans total" and "Vehicle loans".

CFCS (Consumer-Factor-Credit standard): Based on Annex 4_Household>4/A. The average of data for "Consumer loans total" and "Vehicle loans".

CCCD (Change of credit demand for consumer): Based on Annex 4_Household>5/A. The average of data for "Consumer loans total" and "Vehicle loans".

C.20 Ireland

Code: IRL IE Keyword: Bank Lending Survey Source link: https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country>IE> Euro Area Bank Lending Survey>Bank Lending Survey Results January 2003-October 2021 Remarks: Only diffusion index is available. Standards&Factors :-(Mean Responses-3) ÷ 2 × 100. Demand : (Mean Responses-3) ÷ 2 × 100.

C.21 Italy

Code: ITA IT Keyword: Bank Lending Survey Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html

Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country/IT/ Bank Lending Survey (BLS) /Results For Italy/ Excel data (last update - October 2021) Remarks: For diffusion index, The raw data*100.

C.22 Japan

Code: JPN JP Keyword: Senior Loan Officer Opinion Survey Source link: https://www.boj.or.jp/en/statistics/dl/loan/loos/index.htm/

Source steps: Home > Statistics > Deposits and Loans Market > Loans > Senior Loan Officer Opinion Survey on Bank Lending Practices at Large Japanese Banks **Remarks**: • Enterprise-Credit standards:

The average of credit standards for large firms, medium-sized firms and small firms.

Net percentage index = (The number of banks answering "tightened considerably" + The number of banks answering "tightened somewhat" - The number of banks answering "eased somewhat" -The number of banks answering "eased considerably") *100/ Total number of participating banks. Diffusion index = (The number of banks answering "tightened considerably" + The number of banks answering "tightened somewhat" *0.5 - The number of banks answering "eased somewhat" *0.5 - The number of banks answering "eased considerably") *100/ Total number of participating banks.

• Enterprise-Credit demand:

Net percentage index = (The number of banks answering "substantially stronger" + The number of banks answering "moderately stronger" - The number of banks answering "moderately weaker" - The number of banks answering "substantially weaker") *100/ Total number of participating banks.

Diffusion index = (The number of banks answering "substantially stronger" + The number of banks answering "moderately stronger" *0.5 - The number of banks answering "moderately weaker" *0.5 - The number of banks answering "substantially weaker") *100/ Total number of participating banks.

• Enterprise-The factors affecting credit standards:

Only diffusion index is available. The average of credit standards for large firms, medium-sized firms and small firms. Asset portfolio is overall balance sheet cost (BSC-OA).

Diffusion index = ((the mean score of tighted -1) $/2^*$ The number of banks answering tighted – (the mean score of eased -1) $/2^*$ The number of banks answering eased) / Total number of participating banks.

• Housing and Consumer:

There are only data for household. So, the related indicators for both housing and consumer are fill with the same data. The calculation method is the same as that of the enterprise.

C.23 Korea

Code: KOR KR

Keyword: Senior Loan Officer Opinion Survey Source link:

http://www.bok.or.kr/eng/main/main.do

Source steps: News & events>Press Releases

Remarks: Based on the report "Loan Officer Survey on Financial Institution Lending" published quarterly. For credit standards: the raw data*-1. For enterprise: the average of "Large Corporations" and "SMES".

C.24 Lithuania

Code: LTU LT Keyword: Bank Lending Survey

Source link:

https://www.lb.lt/en/reviews-and-publications?query=&ff=1&series%5B%5D=196

Source steps: Publications/ Review of the Bank Lending Survey

Remarks:

- Based on the report before 2017. Based on the excel table of the Review of the Bank Lending Survey (2021/1) since 2017.
- Some raw data is semi-annual and is released once in April and October. Therefore, the data in April is used to fill in Q4 of the previous year and Q1 of this year, and the data in October is used to fill Q2 and Q3 of this year.
- Since October 2008, there is mean index. We convert the mean index into diffusion index, and the conversion method is as follows:
 Standards & Factors : -(the raw data 3) ÷ 2 × 100.
 Demand : (the raw data 3) ÷ 2 × 100.

C.25 Luxembourg

Code: LUX LU Keyword: Bank Lending Survey Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country > LU Remarks: Based on Financial Stability Review>Encadré 3.3>L'ENQUÊTE TRIMESTRIELLE SUR LA DISTRIBUTION DU CRÉDIT BANCAIRE.

C.26 Latvia

Code: LVA LV Keyword: Bank Lending Survey Source link: https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country>LV>Euro Area Bank Lending Survey Remarks: Based on the chart in the report.

C.27 Macedonia

Code: MKD MK Keyword: Bank Lending Survey Source link: http://www.nbrm.mk/ns-newsarticle-bank_lending_survey_time_series.nspx Source steps: Home>Publications>Surveys>Bank Lending Survey Remarks: Based on Bank Lending Survey-time series.

C.28 Malta

Code: MLT MT Keyword: Bank Lending Survey Source link: https://www.centralbankmalta.org/en/financial-stability-report Source steps: Home>Publications>Financial Stability Report Remarks: Based on Financial Stability Report.

C.29 Netherlands

Code: NLD NL Keyword: Bank Lending Survey Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html
Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country>NL>Data
search> Data and files

C.30 Norway

Code: NOR NO

Keyword: Survey of Bank Lending

Source link:

https://www.norges-bank.no/en/

Source steps: Home>News&events>News> Reports > NORGES BANK'S SURVEY OF BANK LEND-ING> Lower margins on residential mortgage lending> Data (xlsx)

Remarks: There are only data for household. So, the related variables for both housing and consumer are fill with the same data. (A special case: household residential mortgage demand is credit demand for housing. Credit demand for consumer is not available).

Only diffusion index is available.

For standards and contributing factors: (-the raw data/2*100).

For demand: the raw data /2*100.

• Enterprise:

RSK-BR (Borrower risk) = Sector-specific prospects RSK-RT (Risk tolerance) = Banks' risk appetite CPT-BC (Bank competition) = Market share objectives BSC-LP (Liquidity position) = Funding BSC-CP (Capital position) = Capital adequacy

 Housing and Consumer: RSK-RT (Risk tolerance) = Banks' risk appetite BSC (Balance sheet cost) = The average of funding and capital adequacy CPT-BC (Bank competition) = Market share objectives

C.31 New Zealand

Code: NZL NZ **Keyword**: Credit Conditions Survey

Source link:

Source mix.

https://www.rbnz.govt.nz/statistics

Source steps: Lending and monetary statistics>C60 Credit conditions

Remarks:

The raw data is semi-annual (released at the end of March and the end of September respectively), therefore, half of the value of data in March is used to fill in Q4 of the previous year and Q1 of this year, and half of the value of data in September is used to fill Q2 and Q3 of this year.

For credit standards and contributing factors: the raw data*-1.

BSC-LP (Liquidity position) = Cost of funds.

BSC-CP (Capital position) = Balance sheet constraints.

RSK-BR (Borrower risk) = Preception of risk.

C.32 Philippines

Code: PHL PH Keyword: Senior Loan Officers' Survey (SLOS) Source link:

http://www.bsp.gov.ph/publications/regular_slos.asp

Source steps: Statistics>Surveys>Senior Loan Officers' Survey (SLOS)>Table 1 and Table 2

Remarks:

Diffusion index in raw data corresponds to the net percentage index in our dataset. Weighted diffusion index in raw data corresponds to the diffusion index in our dataset. Credit standards and demand in net percentage index are based on Table 2. Data in diffusion index and contributing factors in net percentage index are based on Table 1.

• Enterprise: Overall.

Standards:

Net percentage index = (Tightened considerably + Tightened somewhat) - (Eased considerably + Eased somewhat).

Diffusion index = (Tightened considerably*1 + Tightened somewhat*0.5) - (Eased considerably*1 + Eased somewhat*0.5).

Demand:

Net percentage index = (Increased considerably + Increased somewhat) - (Decreased considerably + Decreased somewhat).

 $\label{eq:Diffusion index = (Increased considerably*1 + Increased somewhat*0.5) - (Decreased considerably*1 + Decreased somewhat*0.5).$

Factors:

Diffusion index = (tighted score-1)/2* the percentage of banks reporting tighted – (eased score-1)/2* the percentage of banks reporting eased.

If a factor is further subdivided, the average value of the subdivided factors is taken to fill.

BSC-CP (Capital position) = the profitability of your bank's portfolio;

BSC-LP (Liquidity position) = liquidity of your bank's portfolio;

BSC-MF (Market finance) = access of your bank to money or bond market;

CPT-OA (Overall competition) = competition from banks and non-bank lenders;

RSK-EO (Economic outlook) = uncertain economic outlook;

RSK-BR (Borrower risk) = industry- or firm-specific outlook;

RSK-RT (Risk tolerance) = tolerance for risk.

• Housing:

Housing Loans. Calculation method is the same as that of the enterprise. The average of "the profitability of your bank's portfolio", "the liquidity of your bank's portfolio" and "access of your bank to money or bond market financing" is BSC (Balance sheet cost).

• Consumer:

We take the average of the data of "Credit Card Loans", "Auto Loans" and "Personal/Salary Loans". Calculation method is the same as that of the enterprise.

C.33 Poland

Code: POL PL Keyword: Senior Loan Officer Opinion Survey Source link: https://www.nbp.pl/homen.aspx?f=/en/systemfinansowy/kredytowy.html Source steps: Home page>Financial System>Senior loan officer opinion survey Remarks:

- Enterprise: We take the average of "Large enterprises short term loans", "Large enterprises long term loans", "Small- and medium-sized enterprises short term loans" and "Small- and medium-sized enterprises long term loans". For credit standards and the contributing factors: the raw data* -100. For credit demand: the raw data*100.
- Housing and Consumer: For credit standards and contributing factors: the raw data* -100. For credit demand: the raw data*100. Current or expected capital position of the bank is BSC (Balance sheet cost).

C.34 Portugal

Code: PRT PT Keyword: Bank Lending Survey Source link:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html

Source steps: Home>Statistics>ECB surveys>Bank lending survey (BLS)>Results by country>PT>Complete series-since January 2003 (xls)

C.35 Romania

Code: ROU RO Keyword: Bank Lending Survey Source link:

https://www.bnr.ro/Bank-lending-survey-6512.aspx

Source steps: Publications>Regular publications>Bank lending survey-Annexes>Survey results archive–Time series

Remarks:

• For standards and contributing factors:

Diffusion index = (The percentage of banks answering "tightened considerably" + The percentage of banks answering "tightened somewhat" *0.5 - The percentage of banks answering "eased somewhat" *0.5 - The percentage of banks answering "eased considerably").

• For demand:

Diffusion index = (The percentage of banks answering "increased considerably" + The percentage of banks answering "increased somewhat" *0.5 - The percentage of banks answering "decreased somewhat" *0.5 - The percentage of banks answering "decreased considerably").

• Household-BSC (Balance sheet cost) = Current or expected costs related to your bank's capital position.

C.36 Russia

Code: RUS RU

Keyword: Bank Lending Conditions

Source link:

http://www.cbr.ru/eng/statistics/dkp/bank_lending_terms/#highlight=bank%7Clending%7Cconditions%
7Cbanks

Source steps: Statistics>Monetary Policy>Bank Lending Conditions

Remarks:

• Enterprise:

Based on the average of data of "Large companies" and data of "Small and medium enterprises". ECCS (Credit standards) = General lending conditions; BSC-CP (Capital position) = Asset/liability management policy; BSC-LP (Liquidity position) = Liquidity; BSC-MF (Market finance) = Funding conditions at domestic market; CPT-OA (Overall competition) = Competition; RSK-EO (Economic outlook) = Situation in non-financial sector of economy; ECCD (Credit demand) = Demand for new loans.

• Housing and Consumer:

The data of housing is based on mortgage loans section in Table-Households.

The data of consumer is based on consumer loans section in Table-Households.

BSC (Balance sheet cost) = The average of asset/liability management policy, liquidity, and funding conditions at domestic market;

HCCD (Credit demand) = Demand for new loans.

C.37 Serbia

Code: SRB RS

Keyword: Bank Lending Survey

Source link:

https://nbs.rs/en/drugi-nivo-navigacije/publikacije-i-istrazivanja/anketa-kreditna-aktivnost/

Source steps: PUBLICATIONS AND RESEARCH>Bank Lending Survey> Results of the Bank Lending Survey

Remarks: DINAR. The raw data*100.

• Housing and Consumer:

There are only data on factors affecting credit standards for household. So, the related varibles for both housing and consumer are fill with the same data.

RSK-BR (Borrower risk) = Uncollectibility of receivables;

Housing-RSK-CR (Collateral risk) = Property market outlook. (just for "Housing").

C.38 Slovakia

Code: SVK SK

Keyword: Bank Lending Survey

Source link:

https://www.nbs.sk/en/financial-market-supervision-practical-info/publications-data/selected-data/ bank-lending-survey

Source steps: Home> Financial market supervision>Publications, Data, Presentations>Selected Data **Remarks**:

- Since the survey is released semi-annually, the data of the corresponding two quarters is half of the value of the half-year data. All the following instructions are based on this remark.
- Net percentage = (Tightened considerably + Tightened somewhat) (Eased considerably + Eased somewhat)

Diffusion index = (Tightened considerably*1 + Tightened somewhat*0.5) - (Eased considerably*1 + Eased somewhat*0.5)).

• Enterprise-Credit standards:

2005Q1- 2008Q2: Based on the average of the eight categories (Large corporates, SKK up to 1Y – Small and medium enterprises, FC over 1Y).

2008Q2- 2021Q2: Overall.

Enterprise-Credit demand:

2005Q1- 2008Q2: Based on the average of the four categories.

2008Q3-2021Q2: Based on "Corporate (Overall)".

Enterprise-The factors affecting credit standards:

Net percentage index = "Net percentage share*" *-1.

Diffusion index is not available.

Housing-Credit standards and Credit demand:

2005Q1-2005Q4: Based on "Housing loans".

2006Q1- 2008Q2: Based on the average of "Specific purpose loans to households secured by real estate" and "Any purpose loans to households secured by real estate".

2008Q3- 2021Q2: Based on "Loans for house purchase".

Housing-The factors affecting credit standards:

2005Q1-2008Q2: There are only data on factors affecting credit standards for household. So, the related indicators for both housing and consumer are fill with the same data. Only net percentage index is available. The net percentage index = "Net percentage share*" *-1.

2008Q3- 2021Q2: Based on "Loans for house purchase".

Consumer-Credit standards and Credit demand:

2005Q1-2006Q2: Based on "Other household loans".

2006Q3- 2008Q2: Based on the average of "Current account overdrafts and credit cards" and "Other household loans".

2008Q3- 2021Q2: Based on "Consumer credit and other lending".

Consumer-The factors affecting credit standards:

2005Q1-2008Q2: There are only data on factors affecting credit standards for household. So, the related indicators for both housing and consumer are fill with the same data. Only net percentage index is available. The net percentage index = "Net percentage share*" *-1. 2008Q3- 2021Q2: Based on "Consumer credit and other lending".

C.39 Slovenia

Code: SVN SI Keyword: Bank Lending Survey Source link: https://www.bsi.si/en/publications/financial-stability-review Source steps: Publications>Financial Stability Review Remarks: Based on the chart in Financial Stability Review. The raw data /2.

C.40 Sweden

Code: SWE SE Keyword: Financial Stability Report Source link:

https://www.riksbank.se/en-gb/financial-stability/financial-stability-report/2021/financial-stabilit

Source steps:

Appendix to Financial Stability Report 2019:1

Chart A:29 Banks' assessment of lending to non-financial corporations in Sweden

Remarks: The raw data *-1.

C.41 Thailand

Code: THA TH Keyword: Senior Loan Officer Survey Source link:

https://www.bot.or.th/English/MonetaryPolicy/EconomicConditions/Pages/CreditCondition.aspx
Source steps: Home> Monetary Policy> Economic Conditions> Table: Credit Conditions Survey

Remarks: For credit standards and contributing factors: the raw data*-1.

• Enterprise:

CPT-MC (Market competition) = - (the average of "Equity market" and "Bond market" in "Competition").

• Consumer:

Based on the average of "Credit card", "Auto leasing loans" and "Other consumer loans".

C.42 Turkey

Code: TUR TR

Keyword: Bank Loans Tendency Survey

Source link:

https://evds2.tcmb.gov.tr/index.php?/evds/serieMarket/collapse_15/5954/DataGroup/english/ bie_bkea/

Remarks:

For credit standards and contributing factors: the raw data*-1.

Consumer: Based on the average of "Vehicle Loans" and "Other Consumer Loans".

C.43 United States

Code: USA US

Keyword: Senior Loan Officer Opinion Survey

Source link:

https://www.federalreserve.gov/data/sloos.htm

Source steps: Home>Data> Senior Loan Officer Opinion Survey on Bank Lending Practices **Remarks**: All Respondents.

• Credit standards:

Net percentage index = (Tightened considerably + Tightened somewhat) - (Eased considerably + Eased somewhat).

Diffusion index = (Tightened considerably*1 + Tightened somewhat*0.5) - (Eased considerably*1 + Eased somewhat*0.5).

Credit Demand:

Net percentage index = (Substantially stronger + Moderately stronger) - (Moderately weaker + Substantially weaker).

Diffusion index = (Substantially stronger*1 + Moderately stronger*0.5) – ((Moderately weaker *1 + Substantially weaker *0.5).

Factors:

Net percentage index = (The number of banks answering "Very important for tighting" + The number of banks answering "Somewhat important for tighting" - The number of banks answering "Very important for easing" - The number of banks answering "Somewhat important for easing") / The total number of banks answering "tighting" and "easing".

Diffusion index = (The number of banks answering "Very important for tighting" + The number of banks answering "Somewhat important for tighting" *0.5 - The number of banks answering "Very important for easing" - The number of banks answering "Somewhat important for easing" *0.5) / The total number of banks answering "tighting" and "easing".

• Enterprise-Credit standards and demand: 1996Q4-1997Q1: We take the average of "Standards for large firms", "Standards for middle-market firms" and "Standards for small firms".

1997Q2-2021Q2: We take the average of "Standards for large and middle-market firms" and "Standards for small firms".

Enterprise-The factors affecting credit standards:

1996Q4- 2007Q3: Only diffusion index is available. Diffusion index = ((tighting score-1) / 2*the percent of tighting – (easing score-1)/2*the percent of easing) *100.

2007Q4-2021Q2: According to the calculation method described in the first note.

Housing-Credit standards and demand:

2007Q1-2014Q3: We take the average of "prime residential mortgages", "nontraditional residential mortgages" and "subprime residential mortgages".

2014Q4-2021Q: We take the average of the seven categories.

Factors contributing to the changes of credit standards are not available.

Consumer-Credit standards:

1996Q4-2010Q: We take the average of "credit cards" and "consumer loans other than credit card loans".

2011Q1-2021Q: We take the average of "credit cards", "auto loans" and "consumer loans other than credit card and auto loans".

Consumer-Credit demand:

2011Q1-2021Q: We take the average of "credit cards", "auto loans" and "consumer loans other

than credit card and auto loans".

Factors contributing to the changes of credit standards are not available.

C.44 Ukraine

Code: UKR UA

Keyword: Bank Lending Survey

Source link:

https://www.bank.gov.ua/news/all/opituvannya-pro-umovi-bankivskogo-kredituvannya-iv-kvartal-2019-ro Source steps: National Bank of Ukraine > News > Media space > Bank Lending Survey Remarks: Based on Bank Lending Survey, Q4 2021.