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John C. Driscoll, Benjamin S. Kay, Geng Li, and Cindy M. Vojtech

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# The Standards Are in the Mail: Comparing Credit Card Supply Indicators

By JOHN C. DRISCOLL AND BENJAMIN S. KAY AND GENG LI AND CINDY M. VOJTECH\*

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*We provide the first lender-level analysis linking two independently constructed credit supply measures: the Federal Reserve’s Senior Loan Officer Opinion Survey (SLOOS) and credit card mail offers from Mintel Comperemedia. Using a matched panel of 73 banks from 2000 to 2019, we find that quarterly mail volume growth was 18 percent lower when banks reported tightening credit card lending standards, a relationship robust to including credit demand indicators. In addition, SLOOS responses on credit limits and interest rate spreads are also correlated with these terms observed in mail offers. Our findings validate both measures as informative credit supply indicators.*

**JEL classification:** G21; G28; E51.

**Keywords:** Credit availability; credit standards; offer rates.

## I. Introduction

Credit plays an essential role in financial markets and the economy more broadly. Tight or scarce credit supply may hinder household spending and business investment, diminishing economic growth. Conversely, easy or excessive credit supply may fuel over-borrowing and leveraging, leading to credit quality deterioration and asset bubbles. However, measuring changes in credit supply is challenging because the price and quantity of borrowing reflects changes in both credit supply and demand. These measurement challenges, along with the the multi-dimensional nature of credit terms (Geanakoplos, 2009), have complicated the search for an informative, practical, and consistent indicator of credit supply.

Two data sources offer promise in addressing this measurement challenge. First, the Federal Reserve’s Senior Loan Officer Opinion Survey on Bank Lending Practices (hereafter, SLOOS) provides a survey-based measure: it asks loan officers directly about changes in loan underwriting policies, terms, and perceived demand for major loan categories at their banks, with officers using

\* All authors are at the Federal Reserve Board. Driscoll: [john.c.driscoll@frb.gov](mailto:john.c.driscoll@frb.gov), Kay: [benjamin.s.kay@frb.gov](mailto:benjamin.s.kay@frb.gov), Geng: [geng.li@frb.gov](mailto:geng.li@frb.gov), and Vojtech: [cindy.m.vojtech@frb.gov](mailto:cindy.m.vojtech@frb.gov). The views expressed here solely reflect those of the authors and not necessarily those of the Federal Reserve Board, the Federal Reserve System as a whole, nor of anyone else associated with the Federal Reserve System. We thank Haja Sannoh, Hannah Farkas, and Hannah Case for superb research assistance. We thank our Board colleagues for several useful conversations and data support, especially Jose Berrospide, Felicia Ionescu, and Rebecca Zarutskie.

their judgment to provide a univariate measure that encompasses and weights all changes in loan underwriting and terms. Second and in the credit card market specifically, an action-based measure has emerged: mail offer volume provides a quantifiable metric of credit supply that banks fully control. [Han, Keys, and Li \(2018\)](#) show that aggregate credit card offer mail volume in the Mintel Comperemedia tracks aggregate SLOOS measures of card lending standards closely.

This paper examines whether banks' words match their actions in credit markets. At the lender level, we combine SLOOS survey responses with observed credit card mail offers from Mintel Comperemedia and ask: when loan officers report tightening lending standards, do their banks actually send fewer credit card offers with tighter terms? And when easing, do they mail out more offers with looser terms? More specifically, we quantify this relationship: by how much does mail volume decline when a bank reports tightening standards? Matching SLOOS and Mintel Comperemedia data for 73 banks from 2000:Q1 to 2019:Q4, we estimate the magnitude of the association between reported policy changes and observed changes in offer volume and terms, controlling for bank fixed effects, time effects, and crucially, credit demand changes. Beyond quantifying these relationships, our analysis provides mutual validation: consistency between these two independently constructed measures—one based on self-reported policies, the other on observed actions—reinforces the notion that both metrics capture genuine credit supply dynamics rather than noise or demand-side factors.

While this paper focuses on banks and credit cards, the analysis has broader implications. Credit cards are the dominant form of unsecured consumer borrowing (\$1.3 trillion outstanding),<sup>1</sup> and commercial banks hold over 90 percent of credit card loans.<sup>2</sup> Recent research demonstrates that consumer credit fluctuations are a major determinant of real economic outcomes like employment dynamics ([Herkenhoff, 2019](#)). The credit card market thus provides an ideal laboratory to assess the consistency of two independently constructed credit supply indicators to explore bank credit supply dynamics.

Banks acquire credit card customers through four primary channels: internet, direct mail, telemarketing, and direct selling. [Steffes, Murthi, and Rao \(2011\)](#) find that internet and direct mail campaigns generate more profitable customers, suggesting that mail solicitations closely reflect

<sup>1</sup>Federal Reserve Board, the G.19 Statistical Release of Consumer Credit

<sup>2</sup>Federal Reserve, FR Y-9C, "Consolidated Financial Statements for Holding Companies."

banks' credit standards. Because banks fully control the volume and terms of mailed offers, these offers provide a cleaner credit supply measure than equilibrium outcomes like new credit card originations, which are contaminated by demand factors.

Our first contribution establishes consistency between SLOOS-reported lending standard changes and observed changes in credit card mail offers at the lender level. Prior research finds that SLOOS-reported changes in lending standards predict subsequent movements in banking variables and macroeconomic outcomes (Lown, Morgan, and Rohatgi, 2000; Lown and Morgan, 2006; Cunningham, 2006; Bassett, Chosak, Driscoll, and Zakrajsek, 2014; Haltenhof, Jung Lee, and Stebunovs, 2014; Vojtech, Kay, and Driscoll, 2020). Han et al. (2018) show that aggregate mail volume tracks SLOOS responses closely. Our paper is the first to study this relationship at the lender level, exploiting the longitudinal structure of both data sets to characterize the relationship between these credit supply measures, thereby providing mutual validation of their information tracking credit supply changes.

Our second contribution extends the analysis beyond mail volume to examine how SLOOS indicators regarding specific credit card terms correlate with observed terms in mail offers. These term-specific indicators—changes in credit limits and interest rate spreads—are not perfectly correlated with lending standard changes, as we document. By examining both standards and terms, we provide a comprehensive assessment of how survey-based credit supply measures relate to observed lender behavior.

Our primary empirical approach regresses quarterly mail volume growth on banks' reported changes in lending standards (tightening, easing, or no change), controlling for bank and time fixed effects (both year and quarter-of-year). Crucially, we control for SLOOS credit *demand* changes based on individual bank survey responses to isolate mail offer changes from feedback effects attributable to demand conditions. This specification tests whether reported tightening (easing) of standards is associated with lower (higher) mail volume growth, holding constant credit demand.

We complement this bank-level analysis with borrower-level and offer-level regressions. At the borrower level, we estimate a linear probability model where the dependent variable indicates whether a borrower received an offer from a particular lender in a given quarter, regressed on that lender's reported lending standard changes and the borrower's credit score bucket (prime, near-prime, or subprime). At the offer level, we regress observed credit terms—minimum credit limits and regular purchase interest rates (the “go-to” rate)—on lenders' SLOOS responses regarding

changes in those specific terms. These complementary approaches examine the SLOOS-Mintel Comperemedia relationship from multiple angles, strengthening our inference about the consistency of these credit supply measures.

We find a strong, economically meaningful relationship between reported lending standards and observed mail volume. Quarterly mail volume growth is 18 percentage points lower when banks report tightening credit card lending standards, relative to quarters with no change—a margin exceeding one quarter of the sample standard deviation. This relationship is robust to including bank-reported credit demand changes, whose coefficients are numerically small and statistically insignificant, corroborating that mail volume and SLOOS lending standards are credit supply measures largely insulated from credit demand variations. This mail volume to lending standards association is asymmetric. We find no significant correlation between mail volume growth and easing of credit card lending standards. Banks’ reported easing does not translate into higher mail volume growth in our sample period.

Borrower-level analysis corroborates our bank-level findings. Tightening of lending standards is associated with an appreciably lower likelihood of receiving an offer from that particular lender, controlling for the borrower’s credit score. The coefficient on lender tightening ( $-0.704$ , standard error  $0.420$ ) is comparable to the coefficients on the near-prime and subprime indicators ( $-0.603$  and  $-0.955$ , respectively), indicating that reported tightening meaningfully decreases the likelihood of receiving an offer. By contrast, easing shows no such association, consistent with the asymmetric pattern in mail volume growth.

Turning to credit terms, SLOOS responses on credit card terms correlate with observed terms in Mintel Comperemedia offers. Credit limits in offers extended by banks tightening (easing) credit limits are 9 percent lower (11 percent higher) than those from banks reporting no changes. This relationship is largely symmetric: both tightening and easing translate into observable behavior. Similarly, interest rates in offers from banks reporting widening rate spreads are 33 basis points higher than those from banks reporting no changes. Yet, narrowing spreads does not predict lower offered rates, resembling an asymmetry similar to that observed for lending standards and mail volume.

Several robustness checks confirm our results. First, restricting the sample to lenders present in the data for more than 20 quarters leaves baseline estimates robust and, if anything, stronger. Second,

restricting to lenders with average quarterly mail volume above 500,000 offers yields consistent results. Third, we find little systematic difference in the relationship between lending standard changes and mail volume growth across the credit score distribution, though we note suggestive evidence of stronger effects for subprime borrowers during easing episodes. Fourth, we examine whether the relationship shifted around the Credit Card Accountability Responsibility and Disclosure (CARD) Act and find that the relationship between standard tightening and lower mail volume growth was subdued before the CARD Act but became sizeable and statistically significant afterward.

The remainder of the paper proceeds as follows. Section II describes the SLOOS and Mintel Comperemedia data and explains how we match them to create a lender-level panel. Section III presents our main results: the relationship between lending standards and mail volume growth, how term-specific SLOOS responses relate to observed offer terms, and borrower-level evidence on the likelihood of receiving offers. Section IV concludes and discusses implications for measuring credit supply in other markets.

## II. Data Description

We take data from two principal sources: (1) the Federal Reserve’s SLOOS on changes in loan underwriting standards, terms, and demand (2) and the Mintel Comperemedia data of credit card offers. In this section, we describe these sources, how we match them, and provide summary statistics.

### A. Senior Loan Officer Opinion Survey

#### UNDERWRITING STANDARDS AND DEMAND

The Federal Reserve’s SLOOS has polled banks about changes in their lending standards for major categories of loans to households and businesses as well as about changes in demand for those loan categories since the early 1990s. The survey is conducted (usually quarterly) by the Federal Reserve Board; and, for the majority of our sample, nearly 60 U.S. commercial banks participate in each survey.<sup>3</sup> We use data through 2019:Q4, before the onset of the pandemic. The survey panel of domestic banks spans all 12 Federal Reserve Districts, while balancing the need to keep it heavily

<sup>3</sup>While the survey has been conducted since 1966, a stable, consistent set of questions have only been asked since 1990. Up to 24 U.S. branches and agencies of foreign banks also participate in the survey, though they do not answer questions about credit card loans, as such loans are generally not a large part of their business. The survey is voluntary, but banks invited to participate in the survey almost always agree to do so. In 2012, the domestic panel was expanded to allow up to 80 banks. For more information on the survey, see [www.federalreserve.gov/boarddocs/SnLoanSurvey](http://www.federalreserve.gov/boarddocs/SnLoanSurvey).

weighted toward large banks. Survey respondents hold about 70 percent of all assets at domestically chartered banking institutions.

The primary cause of sample attrition is the acquisition of a respondent bank by another bank that already participates in the survey. Thus, non-response selection bias in the respondents is likely to be limited. Banks are asked to report whether they have changed their standards during the survey period (i.e., over the previous three months) on the following seven categories of core loans: commercial and industrial (business), commercial real estate, residential mortgages to purchase homes, home equity lines of credit, credit cards, auto, and consumer loans other than credit cards or auto loans.

The question about changes in credit card standards is, “Over the past three months, how have your bank’s credit standards for approving applications from individuals for credit card loans changed?” Similarly, the question about changes in demand is, “Apart from normal seasonal variation, how has demand for credit card loans changed?” Banks are asked to answer both questions using a five-point scale. In the case of standards questions, the scale is: 1=“eased considerably”; 2=“eased somewhat”; 3=“about unchanged”; 4=“tightened somewhat”; and 5=“tightened considerably.” For demand questions, “eased” and “tightened” are replaced with “strengthened” and “weakened,” respectively.<sup>4</sup>

It has been historically rare that banks characterize their changes in standards or demand as having changed “considerably.” As such, we use a variable that takes a value of -1 when a bank reports that standards have eased considerably or somewhat, 0 if standards are reported as unchanged, and 1 if a bank reports that they have tightened considerably or somewhat. A similar variable is constructed for demand.<sup>5</sup>

The top panel of figure 1 plots changes in credit card loan underwriting standards over the sample period. The positive blue bars show the percentage of respondents reporting they have tightened standards, and the negative red bars the fraction reporting that they have eased standards. During the 2008–09 recession (shaded), more than half of the banks reported tightening standards in multiple quarters, and none eased. The post-recession period was marked by easing for the first five years.

<sup>4</sup>The question on credit card-specific demand changes was introduced in the early 2010s. Before that, the SLOOS asked a more general question on demand changes of consumer loans.

<sup>5</sup>In the full testing panel of 1,030 bank-quarter observations, banks report considerable tightening once, considerable easing 7 times, considerable strengthening 8 times, and considerable weakening 10 times, a total of fewer than 3 percent.

Because these measures are qualitative and their interpretation can vary across banks and over time, the bar heights do not necessarily reflect the actual magnitude of tightening or easing. The data also indicate periods—such as from 2016 through 2019—when a sizable share of banks reported both tightening and easing standards simultaneously. Moreover, banks may be somewhat reluctant to report easing: on average, the proportion of banks reporting a tightening is larger than the proportion reporting an easing. Some of this is effectively a form of measurement error, attenuating our results relative to their true relationships, and some of this can be managed by using firm level data to calculate the relationship between standards and measures of credit availability.

#### TERMS

The SLOOS asks questions on credit card terms and conditions, using a similar format to the questions on underwriting standards and demand. Specifically, it asks how, over the past three months, banks have changed: credit limits; spreads of interest rates charged on outstanding balances over the bank’s cost of funds; the minimum percent of outstanding balances required to be repaid each month; the minimum required credit score; and the extent to which loans are granted to some customers that do not meet credit scoring thresholds.

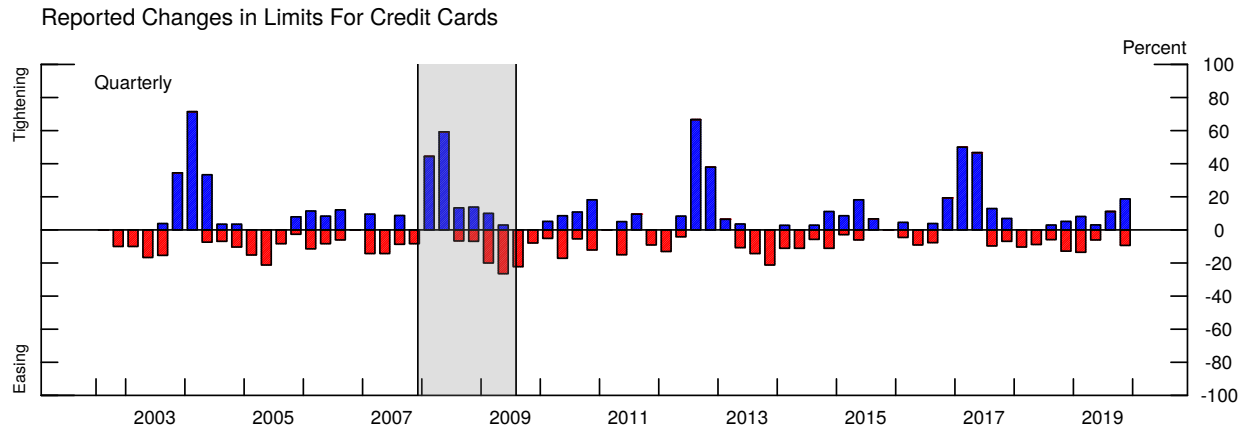
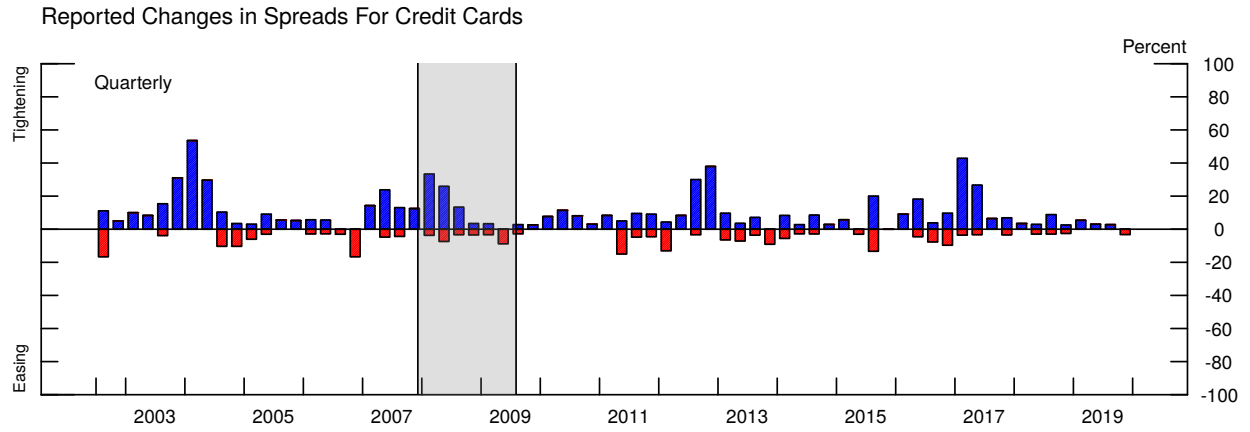
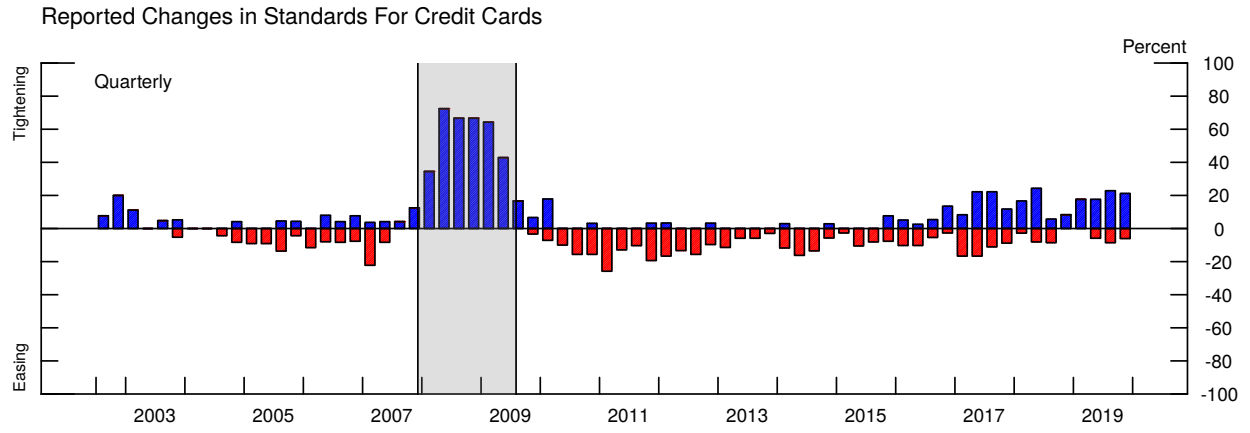
Of these five questions, the last two overlap closely with the questions on underwriting standards, and we do not consider them further. Minimum required payments are not recorded in the Mintel Comperemedia offers data. Accordingly, our analysis on credit terms will focus on the price of credit and credit limit offered.

The bottom two panels of Figure 1 plot the responses to changes in terms for spreads and credit limits. Here, tightening refers to increased spreads or decreased limits, respectively. In contrast to the standards question, the terms responses by a given bank often have reported easing and tightening in the same quarter. These situations can be seen in the figure in quarters where there are red and blue bars at the same time.

#### *B. Mintel Comperemedia*

Our data source for credit card offers is Mintel Comperemedia’s proprietary survey of U.S. consumers, and our sample begins 2000:Q1. Each month, Mintel Comperemedia randomly selects about 4,000 consumers from a pool of one million consumers that the firm acquired from a large survey service provider. On average, about 2,500 consumers per month choose to participate in

FIGURE 1. SLOOS DATA FOR CREDIT CARDS



Source: SLOOS

the survey. Each participant sends their commercial mail from certain tracked sectors, including credit card offers, to Mintel Comperemedia weekly. If consumers wish to respond to a credit card offer, they are instructed to detach the response portion and forward Mintel Comperemedia the remainder of the offer materials. Consumers are offered prize raffles as a participating incentive.

Mintel Comperemedia records information on the forwarded mail offers. This allows us to study not only whether a consumer receives any credit card offers, but also terms of the contracts offered. For example, the data include information about the price of credit—the so-called “go-to” interest rate, which is the regular non-promotional interest rate for outstanding balances. The vast majority of the mail offers collected in the survey are personal credit card offers, as the personal credit card industry exhibits large reliance on direct mail for customer acquisition.

In addition to the survey on credit card offers, Mintel Comperemedia conducts a separate survey on participating consumers to collect their demographic and socioeconomic information. This information is used to calculate post-stratification weights that facilitates the estimation of aggregate mail volume at the national level. A unique feature of these data is that, from 2007, survey participants’ VantageScore 2.0 credit score was merged in from TransUnion, one of the major credit reporting agencies, for each offer recipient.<sup>6</sup>

### *C. Matching and Summary Statistics*

Mintel Comperemedia provides the name of each financial institution making an offer. Because we wish to examine the impact of changes in bank lending standards, we confine our analysis to those institutions in Mintel Comperemedia that are associated with commercial banks on the SLOOS panel.<sup>7</sup> We hand-match the Mintel Comperemedia lender name to its unique, contemporaneous identifier, the RSSD ID, and use this RSSD ID to merge with the SLOOS data.

The merged panel data set contains 73 unique banks with about 19 banks on average in each quarter. Table 1 describes the distribution of SLOOS responses at the lender  $\times$  quarter level. As shown in column 1 of the top panel, 80 percent of the responses in our sample indicated unchanged credit card lending standards, with 12 and 8 percent reporting tightening and easing standards during the previous three months, respectively. The distribution of credit limit standards is largely

<sup>6</sup>The data we use removed all personal identifiable information (PII).

<sup>7</sup>The SLOOS panel consists of commercial banks, and given the limited sample, commercial banks in the same bank holding company (BHCs) are avoided in the sample selection process, with the assumption that lending standards are roughly consistent across subsidiaries within the same BHC.

similar. In contrast, only 4 percent of the sample indicated widening credit card interest rate spreads and 10 percent indicating narrowing the spreads.

TABLE 1—SLOOS CREDIT CARD LENDING AND TERMS STANDARDS

Percent	(1) Lending standard	(2) Credit limits	(3) Interest rate spreads
Tightening (widening)	11.8	11.8	4.2
Unchanged	80.2	79.1	85.4
Easing (narrowing)	8.0	9.2	10.4
N	1,457	1,442	1,442

	Lending standards		
	Tightening	Unchanged	Easing
<u>Credit limit standard</u>			
Tightening	60.2	5.1	6.8
Unchanged	36.3	87.3	59.8
Easing	3.5	7.6	33.3

	Lending standards		
	Tightening	Unchanged	Easing
<u>Spreads standard</u>			
Widening	32.8	7.0	11.1
Unchanged	64.9	88.9	80.3
Narrowing	2.3	4.1	8.6

*Source:* SLOOS and authors' calculations.

*Note:* The upper panel shows the distribution of banks' responses to SLOOS questions on changes in lending standards and terms of credit. The middle and low panels show how lending standard changes are related to terms of credit changes.

The middle and lower panels of the table show the correlations between lending standard and term standards (each column adds up to 100 percent). The matrices are far from diagonal, indicating less-than-perfect correlations. For example, among the banks reported tightening lending standards, only 33 percent also reported widening interest rate spreads. Among the banks reported easing lending standards, the majority reported no change in credit limit, whereas 7 percent reported tightening credit limits.

Table 2 summarizes main Mintel Comperemedia variables. At the lender level, the average mail volume growth between two quarters is about 18 percent.<sup>8</sup> The average offered minimum credit

<sup>8</sup>The quarterly mail volume growth at the lender level is volatile and has a significant number of outliers that do not necessarily reflect underlying changes in credit card mail offering. We trim the sample at the top and bottom 5 percent of the mail volume growth distribution to limit the effect of outliers.

limit is above \$1,400 and the average offered regular purchase “go-to” rate is about 14 percent.

TABLE 2—MINTEL COMPEREMEDIA MAIL VOLUME GROWTH AND OFFER TERMS

	(1)	(2)	(3)
	$\Delta\%$ Mail volume (percent)	Credit limit (\$)	Interest rate (percent)
Mean	17.9	1,445	14.0
Standard deviation	68.5	1,638	4.6

*Source:* Mintel Comperemedia and authors’ calculations.

*Note:* Credit limit refers to the minimum credit limit in credit card offers. Interest rate refers to the regular purchase interest rate, which is also referred to as the “go-to” rate.

### III. Results

#### A. Lending Standards

We first analyze whether bank lenders’ reported lending standard changes are correlated with the mail volume growth of credit card offers extended by the same bank. In the simplest specification below,

$$(1) \quad \Delta\%mail\ volume_{j,t} = \alpha + \beta_1 Tighten_{j,t} + \beta_2 Ease_{j,t} + \phi_j + \theta_t + \epsilon_{j,t},$$

where percent change in mail volume,  $\Delta\%mail\ volume_{j,t}$ , in quarter  $t$  is regressed on bank  $j$ ’s reported change in its lending standard,  $Tighten_{j,t}$  and  $Ease_{j,t}$ .  $\phi_j$  is bank fixed effects, and  $\theta_t$  is time fixed effects. To help control for potential seasonality and aggregate credit conditions, we include both year and quarter-of-year fixed effects. In general, if a bank increases lending standards, mail volume is expected to fall because fewer households will qualify for a credit card. The expected sign of the coefficient  $\beta_1$  is negative. By contrast, the coefficient on  $Ease_{j,t}$  is expected to be positive. This specification allows us to explore asymmetry in bank behavior. In addition, as shown in figure 1 (top panel), there are many quarters in which some banks report tightening credit card standards and others report easing.

The estimated coefficients in column 1 of table 3 show that mail volume growth on average is 18 percent lower during the quarter when the bank reported tightening lending standards, consistent with our prior. The margin is greater than one quarter of the sample standard deviation of the dependent variable. However, banks’ reported easing of lending standards does not appear to be correlated with mail volume growth. Importantly, these coefficients are essentially unchanged when

SLOOS credit demand indicators are included in the model (column 2). The coefficients of the demand indicators are also numerically small and statistically insignificant. The comparison between columns 1 and 2 further corroborate the interpretation of SLOOS lending standard and Mintel Comperemedia mail volume as credit supply metrics that are largely insulated from credit demand variations.

TABLE 3—MAIL VOLUME GROWTH AND CREDIT CARD LENDING STANDARD CHANGES

	(1)	(2)	(3)	(4)	(5)	(6)
Tightening lending standard	-18.367*** (6.635)	-18.352*** (6.653)	-28.861*** (5.723)	-21.095*** (6.201)	-18.229** (7.749)	-7.033 (10.646)
Easing lending standard	1.602 (7.926)	1.596 (8.228)	-1.163 (8.330)	0.412 (9.025)	-4.792 (7.354)	4.287 (13.215)
Stronger demand		0.046 (6.995)				
Weaker demand		-1.928 (5.106)				
Post Card Act						-19.134 (20.222)
Tightening × Post						-24.400* (12.410)
Easing × Post						-3.330 (13.907)
Near prime (NP)					7.193** (2.673)	
Subprime (Sub)					6.552* (3.700)	
Tightening × NP					-5.389 (8.389)	
Tightening × Sub					9.074 (14.461)	
Easing × NP					3.240 (10.971)	
Easing × Sub					20.901 (13.266)	
R-squared	0.100	0.100	0.073	0.071	0.067	0.102
N	1,146	1,146	983	960	1,548	1,146

Source: SLOOS, Mintel Comperemedia, and authors' calculations.

Note: Robust standard errors clustered at the bank level in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Col. 1 is the baseline specification, col. 2 add credit demand changes controls, col. 3 restricts the sample to banks that appeared more than 20 quarters, and col. 4 restricts the sample to banks with average mail volume greater than 500,000 offers. Col. 5 compares mail volume growth by offer recipients credit scores, and col. 6 compares the association before and after the CARD Act.

The SLOOS-Mintel Comperemedia panel is unbalanced because of coverage variation of both surveys and credit card market entries and exits. Column 3 shows a robustness analysis where the sample is restricted to lenders present in the data for more than 20 quarters. As noted before, quarterly mail volume growth tends to be volatile, particularly for small lenders. Accordingly, column 4 shows the results estimated with the restricted sample of lenders with an average quarterly mail volume of above 500,000. As shown in both columns, the baseline estimates are robust to these

sample specification changes.

We further explore if the link between SLOOS-reported lending standard changes and mail volume growth is more pronounced for credit card offers extended to borrowers in any specific credit score range. To do so, we calculate the mail volume growth separately for offers extended to prime, near prime, and subprime borrowers. We then add interacted terms (e.g. *Tightening*  $\times$  *Subprime*) to the model different outcomes based on credit score. Because credit scores in the Mintel Comperemedia data are only available from 2007, this analysis uses a shorter sample period. The results, shown in column 5, suggest that the relationship between lending standard changes and mail volume growth is largely similar across the credit score distribution as the coefficients on the interaction terms are all statistically insignificant. However, we note that the coefficient on *Easing*  $\times$  *Sub* is economically large and has a sizeable t-statistic (p-value = 1.58).

We finally test whether the link shifted before and after the CARD Act by interacting the standard change dummies with a post CARD Act dummy. Interestingly, the estimates (column 6) suggest that the relationship between standard tightening and lower mail volume growth was subdued prior to the CARD Act but became sizeable and statistically significant during the post-CARD Act era. We do not find any discernable link between standard easing and higher volume growth either before or after the CARD Act.

#### B. Likelihood of Receiving Offers and Offered Terms

The analysis above established a robust, consistent statistical relationship between reported tightening of credit card lending standards and the mail volume growth of credit card offers of the same lender. We corroborate with borrower-level analysis to test if lending standard changes are associated with a borrower’s likelihood of receiving a credit card offer from that bank, controlling for the borrower’s credit score. This specification uses data across all of the households in the Mintel Comperemedia data—those that received an offer from a SLOOS bank in a given quarter, and those that did not. Specifically, we estimated the following linear probability model

$$(2) \quad Offer_{i,j,t} = \alpha + \beta_1 Tighten_{j,t} + \beta_2 Ease_{j,t} + \theta Score_i + \phi_j + \theta_t + \epsilon_{j,t},$$

where the indicator whether borrower  $i$  received an offer from lender  $j$  in quarter  $t$  is regressed on

that lender’s reported tightening/easing of lending standard as well as the borrower’s credit score bucket (prime, near prime, and subprime). The standard errors are clustered at the lender level. Similar to equation (2), the model controls for lender, year, and quarter fixed effects. The Fair Lending Act generally prohibits the use of demographic information in credit underwriting and pricing. Credit card lenders generally avoid using such information in customer solicitation. Instead, the decision regarding to which consumer to extend an offer is based on a “soft-pull” of potential consumers’ credit history. Accordingly, we choose to include only *Score* as a consumer level control variable in the equation above. Note that the credit score information in the Mintel Comperemedia data was pulled a few months before the survey, mimicking the information set lenders look at in determining credit card offers sent in quarter  $t$ .

Consistent with the mail volume analysis, as shown in column 1 of table 4, we find that tightening of lending standards is associated with an appreciably lower likelihood of receiving an offer from that particular lender, whereas no such association was estimated for reported easing of lending standard. Because of the large variation in market share of lenders, the point estimates should be taken with proper caveats. That said, the magnitude of the estimated  $\beta_1$  coefficient is similar to that of *Nearprime*, indicating reported tightening of lending standard is associated with a substantial decrease in the likelihood of receiving an offer from this particular lender.

We conclude our analysis with how credit terms-specific responses in the SLOOS are related to observed terms in credit card offers. As shown in table 1, whether a lender tightened credit limits or widened interest rate spreads is not perfectly lined up with its general lending conditions. We find that when a lender indicated tightening credit limits, the minimum credit limit in the offers extended in the same quarter was on average 9 percent lower, whereas the limit is over 11 percent higher when the lender indicated easing credit limits in its SLOOS responses (column 2). This results is somewhat different from our other estimates as the credit limit response to SLOOS appears to predict credit limits in mail offers in a symmetric fashion. Such a symmetry is not found in offered interest rates. As shown in column 3, the SLOOS indicator of widening interest rate spreads is associated with a 46-basis point higher regular purchase rate (the so called “go-to” rate) in offers, whereas the indicator of narrowing rate spreads does not predict lower offered go-to rates.

TABLE 4—INDIVIDUAL-LEVEL AND OFFER-LEVEL ANALYSIS

	(1) P(offer %)	(2) Log(Min. Limit)	(3) Reg. Pur. Rate (%)
Tightening lending standard	-0.704* (0.420)		
Easing lending standard	-0.014 (0.222)		
Tightening credit limit		-0.089* (0.045)	
Easing credit limit		0.110** (0.045)	
Widening rate spread			0.463*** (0.128)
Narrowing rate spread			0.029 (0.215)
Near prime	-0.603** (0.266)	-0.683** (0.315)	3.794*** (1.149)
Subprime	-0.955** (0.379)	-0.832** (0.325)	3.918** (1.690)
R-squared	0.064	0.190	0.443
N	20,388,364	196,155	285,221

*Source:* SLOOS, Mintel Comperemedia, and authors' calculations.

*Note:* Robust standard errors clustered at the bank level in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Col. 1 correlates the likelihood of an individual receiving a credit card offer from a lender with that lender's SLOOS response of lending standard changes. Col. 2–3 correlated credit limits and regular purchase interest rates in offers with offering banks' SLOOS responses of corresponding credit term changes.

#### IV. Conclusion

This paper establishes a robust empirical relationship between two independently constructed measures of credit supply in the credit card market: the Federal Reserve's Senior Loan Officer Opinion Survey and observed credit card mail offers from Mintel Comperemedia. By matching these data sources at the lender level and exploiting their longitudinal structure, we provide the first comprehensive evidence that qualitative, survey-based indicators of credit supply align closely with quantitative, action-based measures of bank lender behavior.

Our findings demonstrate that when banks report tightening credit card lending standards to the SLOOS, their mail volume growth falls by over 18 percentage points in the same quarter, controlling for bank and time fixed effects. This relationship is robust to including credit demand indicators, confirming that both SLOOS responses and mail volume changes capture credit supply factors largely orthogonal to demand conditions. We further show that SLOOS responses regarding specific credit terms—credit limits and interest rate spreads—correlate significantly with observed terms in mail offers. Banks reporting tighter credit limits extend offers with 9 percent lower minimum limits, while banks reporting wider rate spreads offer interest rates 33 basis points higher. Borrower-level

analysis corroborates these patterns, demonstrating that reported tightening substantially reduces the likelihood that individual borrowers receive offers from those lenders.

These results have important implications for measuring credit supply. First, they validate the SLOOS as an informative indicator of actual lender behavior, not merely subjective assessments. Second, they establish credit card mail offers as a complementary, quantitative measure of credit supply that can be observed at high frequency and with granular detail. The consistency between these measures suggests that researchers and policymakers can use them jointly to gain a more complete picture of credit supply dynamics.

While our analysis focuses on banks and credit cards, the framework developed in [Lown et al. \(2000\)](#), [Bassett et al. \(2014\)](#) and [Vojtech et al. \(2020\)](#) and refined here, matching survey responses to observed lender actions, could be extended to other credit markets and lender types. The credit card market’s unique features—including the availability of detailed offer data and the dominance of large banks—make it an ideal laboratory for this validation exercise. Future research might explore whether similar relationships hold in other consumer credit markets, such as auto loans or personal loans, or in commercial real estate lending, where offer data are less readily available but alternative action-based measures might be constructed. Additionally, the asymmetry we document—tightening predicts volume declines but easing does not predict volume increases—warrants further investigation into the mechanisms underlying banks’ credit supply decisions.

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