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The Countercyclical Capital Buffer and International Bank Lending: Evidence from Canada

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Abstract

We examine the impact of the recently introduced Basel III countercyclical capital buffer (CCyB) on foreign lending activities of Canadian banks. Using panel data for the six largest Canadian banks and their foreign activities in up to 94 countries, we explore the variation in CCyB rates across countries to overcome the identification challenge associated with limited time-series evidence on the use of the CCyB in individual jurisdictions. Our main sample focuses on the period from 2013Q2 to 2019Q3, when CCyB rates experienced a prolonged tightening cycle. We show that in response to a 1-percentage-point tightening announcement in a foreign CCyB, the growth rate of cross-border lending between Canadian banks' head offices and borrowers in CCyB-implementing countries decreases by between 12 and 17 percentage points. Most importantly, due to the CCyB's unique reciprocity rule, which also subjects foreign banks to domestic regulation, the direction of this effect differs from that of other forms of foreign capital regulation that have been previously examined in the literature. When investigating the underlying transmission channels of a CCyB change, we find that, in particular, large banks are more able than small banks to shield their cross-border lending against the impact of foreign CCyB changes. Finally, when focusing on the loosening cycle in CCyB rates that emerged in early 2020, we show that our findings on the differential effects for large and small banks also carry over to the COVID-19 episode—a time when various jurisdictions rapidly released their CCyBs to stabilize their banks' lending activities.

Topics: Credit risk management, Financial institutions, Financial stability, Financial system regulation and policies, International topics
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1 Introduction

The experience of the 2007-2008 global financial crisis has forcefully directed the attention of policymakers to the importance of systemic financial stability risks. As a consequence, far-reaching regulatory efforts have been undertaken to mitigate risks arising from existing vulnerabilities and to contain new vulnerabilities that may occur in the future. The core of this response strategy is the implementation of the Basel III framework, which introduced new regulatory measures and governs their use with the aim to strengthen the resilience of the global banking system.[1] One of these measures is the countercyclical capital buffer (CCyB), a macroprudential policy tool that relates the tightness of capital requirements imposed on banks to the current macro-financial environment.

Since its introduction in 2013, the CCyB has undergone a full tightening and loosening cycle. First, the years between 2013 and 2019 saw a gradual activation of CCyBs in various jurisdictions and a subsequent tightening trend that aimed to strengthen banks' capital buffers and slow down the rapid credit expansion that occurred during the upward phase of the financial cycle. Then, in 2020, the COVID-19 shock vividly demonstrated the use of the CCyB during a period of financial stress, when various jurisdictions cut their CCyB rates during the first days of the crisis to alleviate the immediate strain on the capital cushions of their banks and to free additional resources that could facilitate lending during the economic recovery.

In this paper, we contribute to the literature by examining the impact of the Basel III CCyB on foreign lending activities of Canadian banks between 2013 and 2020. Using panel data for the six largest Canadian banks and their foreign lending activities in up to 94 countries, we explore the variation of CCyB rates in a wide range of countries to overcome the identification challenge associated with limited time-series evidence on the use of the CCyB in individual jurisdictions. Canada is a great laboratory for such an exercise because a large portion of Canadian banks' lending is conducted abroad. In 2019, for example, foreign lending made up more than 40 percent of Canadian banks' total lending.[2] Moreover, Canada is a small open advanced economy, whose domestic policy actions have only negligible impact on foreign economies (small), whose banks can freely move their capital in and out of the country (open), and whose financial system exhibits few financial frictions (advanced)—three features that strengthen our identification strategy and

[1] Basel III contains both microprudential tools that focus on increasing the resilience of individual financial institutions' balance sheets to external shocks and macroprudential tools that are designed to reduce systemic risks in the banking sector as a whole.

[2] Calculated as the sum of Canadian banks' cross-border lending and local lending by Canadian banks' foreign affiliates as a share of Canadian banks' total lending.

support the external validity of our findings.

Our results are threefold. First, using our main sample that covers the CCyB's tightening cycle over the 2013Q2 to 2019Q3 period, we show that in response to a 1-percentage-point tightening announcement in a foreign CCyB, the growth rate of cross-border lending between Canadian banks' head offices and borrowers in CCyB-implementing countries decreases by between 12 and 17 percentage points. Most importantly, due to the CCyB's unique reciprocity rule, which also subjects foreign banks to domestic regulation, the direction of this effect differs from that of other forms of foreign capital regulation that have been previously examined in the literature. In particular, our findings on the impact of a CCyB change on international bank lending carry the opposite sign to that in Damar and Mordel (2017), who find that a tightening of conventional capital regulation—which does not apply to foreign banks—increases Canadian banks' lending to policy-implementing jurisdictions. Second, when investigating the underlying transmission channels of the CCyB in this setting, we find that, in particular, large banks are more able than small banks to shield their cross-border lending against the impact of foreign CCyB changes. Moreover, we provide evidence that this finding is associated with the ability of large banks to adjust their inter-office lending instead. And third, when focusing on the loosening cycle for CCyB rates in early 2020, we show that our findings on the differential effects for large and small banks also carry over to the COVID-19 episode—a time when various jurisdictions rapidly released their CCyBs to stabilize their banks' lending activities.

Overall, our analysis and findings support recent efforts of policymakers to better understand the effectiveness and improve the design of macroprudential policies. The CCyB was designed with two objectives.[3] The first one is to protect the banking sector from periods of excess aggregate credit growth by increasing banks' resilience through additional capital (i.e., reduce the amount of risk that emerges from a given amount of lending). The second objective is to reduce the pro-cyclicality of bank lending by "leaning against the wind" in the build-up phase of the credit cycle and by stabilizing the supply of credit in financial downturns (i.e., adapt the amount of lending to the macro-financial environment).[4]

[3] See BIS (2020a) for details.

[4] A central criticism of the Basel II framework was that capital regulation turned out to be pro-cyclical in nature (e.g., Kashyap and Stein, 2004; Andersen, 2011; Repullo and Suarez, 2013; Behn et al., 2016). During an economic downturn, when borrowers' riskiness increases, banks are required to set aside more capital against their existing loans. Since banks face difficulties raising additional capital during such times, they have to deleverage by cutting their existing lending relationships. This reduction in credit supply may then exacerbate the economic downturn. As a result, Basel III was supplemented with the CCyB, which can be set according to the macro-financial environment, and thus helps reduce the pro-cyclical nature of the Basel framework.

Recent anecdotal evidence on the use of the CCyB closely reflects these objectives and suggests that the introduction of a countercyclical policy tool that can be used to smooth the financial cycle is a valuable addition to a policymaker's toolkit. This is especially the case after support to use monetary policy to achieve the same objective appears to be limited in both policy circles and the academic literature (see Smets, 2014, for a survey of this literature). In addition, anecdotal evidence suggests that the use of a CCyB can achieve more desirable distributional outcomes, especially since vulnerable households suffer most from economic downturns (e.g., Rosengren, 2018).

Moreover, our paper contributes to the academic literature on capital regulation. While a large literature has examined the effectiveness, properties, and optimal design of capital regulation more generally,[5] empirical evidence on the effectiveness of time-varying capital regulation—and even more so of the recently activated CCyB—is relatively scarce.[6] However, closest to such evidence comes the experience with changes in specific capital regulations that might exhibit similar time-varying properties in Spain, Switzerland, and Slovenia.

Jiménez et al. (2017) examine the impact of dynamic provisioning on credit supply and the firm sector in Spain at different phases of the financial cycle between 1999 and 2013. Dynamic provisions are macroprudential policies designed to encourage the build up of loan loss provisions when banks' profits are high in good times, so they can draw from these capital buffers in bad times. As such, dynamic provisions are countercyclical in nature, similar to that of the CCyB. The authors show at the loan level that dynamic provisions smooth the credit cycle by reducing the credit supply of affected banks in good times (a 1-standard-deviation increase in dynamic provisioning reduces banks' committed lending to firms by 4 percentage points) and stabilizing it in bad times (a 1-standard-deviation increase in provisioned funds increases credit growth by 8 percentage points). When considering the real implications of dynamic provisioning at the firm level, the authors find that firms are able to switch to unaffected banks in response to a policy tightening and, thus, the impact on firms' assets, employment, and survival is relatively low in good times. In bad times, however, dynamic provisioning can lead to a significant increase in firm employment and

[5] See Behn et al. (2016) and references therein for details.

[6] On the theoretical side, Schroth (2021) studies optimal bank capital requirements in a model of endogenous bank funding conditions. Consistent with the features of the CCyB in Basel III, the author finds that optimal capital requirements are higher during normal times in order to serve as buffers during times of crises. Similarly, Malherbe (2020) finds that optimal capital requirements are tighter during booms than in recessions. Prior to the introduction of the Basel III CCyB, Alpanda et al. (2018) use a small-open-economy, New Keynesian DSGE model with real-financial linkages to analyze the effects of financial shocks on the Canadian economy. The countercyclical capital buffer is among the economic stabilization policies analyzed; it turns out to be superior to monetary policy but inferior to adjustments in the loan-to-value ratio.

firms' survival rates (a 1-percentage-point higher pre-crisis buffer increases employment growth by 6 percentage points and the survival probability by 1 percentage point). Finally, similar to our analysis, the authors find evidence that, in particular, smaller banks and smaller firms experience larger negative effects from a tightening of dynamic provisioning policies.

Both Basten (2020),[7] and Auer and Ongena (2019) exploit the fact that, in February 2013, Switzerland activated a sector-specific CCyB for loans to the residential mortgage sector. From September 2013 onwards, banks in Switzerland had to hold an additional 1 percent in equity to cover loans that were secured against domestic residential properties (the buffer was subsequently increased to 2 percent on 30 June 2014). Analyzing the impact of the CCyB on banks' pricing offers for residential mortgage contracts, Basten (2020) finds that banks with below-median capital levels and those with an above-median specialization in the mortgage sector raise mortgage prices by 8–9 basis points in response to the CCyB activation. Subsequent evidence from bank-level data suggests that, in response to the policy, banks were able to rebuild their capital cushions by lending less at higher prices. As a result, new mortgage issuance shifted from banks that were more exposed to the mortgage sector to less exposed banks. The author argues that this risk-reducing composition effect increased the stability of the Swiss banking system, even though aggregate mortgage credit growth did not decline during this period.

Using national credit register data, Auer and Ongena (2019) assess the impact of the February 2013 CCyB announcement on business loans that were not subject to the buffer. The authors show that the introduction of the CCyB led to an increase in the volume and in the price of loans to firms, which was especially strong for firms that are smaller and riskier. Moreover, the authors supplement their loan-level assessment with a bank-level analysis, which shows that residential mortgage lending growth fell in response to the CCyB announcement but that this impact was fully offset by an increase in other lending. Hence, overall lending in Switzerland did not decline after the introduction of the CCyB, which suggests the existence of a risk-increasing composition effect.

Finally Sivec et al. (2018) make use of the fact that in 2006, the Slovenian central bank introduced a temporary deduction item in the calculation of banks' capital. The authors argue that this was equivalent to an average capital buffer of 0.8 percent of risk-weighted assets. This "buffer" was subsequently released during the 2008 global financial crisis. The authors find that firms borrowing from banks holding a 1-percentage-point higher capital buffer received 11 percentage points more in credit during the financial crisis. In addition, the findings suggest that, in particular, healthy firms

[7] Related to this, Basten and Koch (2015) conduct a similar analysis.

benefitted from this effect, thus, making the Slovenia banking system safer.

Moreover, in the Canadian context, our paper relates to the abovementioned study by Damar and Mordel (2017). The authors examine how changes in conventional prudential regulation affect the international lending activities of Canadian banks.[8] Using an aggregate regulation index, the authors show that when a destination country tightens its prudential measures, Canadian banks increase their lending to that jurisdiction. This effect is particularly pronounced for capital regulations and cross-border lending (as opposed to lending by Canadian banks' foreign affiliates). Finally, the authors also find that Canadian banks increase their foreign lending in response to a tightening of a domestic regulation index.

Besides its reciprocity rule feature, the CCyB employed in this paper differs from the prudential regulations examined in Damar and Mordel (2017) in at least two other ways. First, the CCyB is designed to be modified according to the macro-financial environment. Hence, its effects are likely to differ from those of conventional prudential regulations—especially regulations focusing on bank capital—that are often introduced with a more permanent focus. And second, by relying exclusively on the CCyB, we exploit the quantitative information contained in the changes of the buffer rates and, thus, we are able to capture the intensity dimension of capital regulation more precisely than through an index that combines a broad range of macroprudential measures.[9]

Our paper is organized into six sections and proceeds as follows. After this introduction, Section 2 describes the institutional features of the CCyB, the use of the CCyB across our sample countries, as well as the CCyB's relevance for Canadian banks. Section 3 introduces the empirical methodology of our analysis and provides more information about the underlying banking data. Section 4 presents and discusses the results of our main empirical analysis for the CCyB tightening cycle between 2013Q1 and 2019Q3. Section 5 contains an extension of our main analysis that focuses specifically on the CCyB's loosening cycle during the COVID-19 period. Finally, Section 6 concludes.

[8] Their project was part of the International Banking Research Network (IBRN). For more details on this network project and for related evidence from other countries, see Buch and Goldberg (2017), as well as references therein.

[9] Nevertheless, in our empirical analysis, we still take into account the impact of other Canadian macroprudential regulations that were implemented over our sample period (including permanent ones).

2 Countercyclical Capital Regulation and Canadian Banks

This section provides more details on the institutional features of the CCyB, countries' use of the buffer over time, and its relevance for Canadian banks' foreign lending activities. Moreover, Canadian banks are subject to a domestic stability buffer (DSB), the Canadian equivalent of the CCyB, which we also briefly review in this section.

2.1 The Basel III Countercyclical Capital Buffer (CCyB)

The Basel III CCyB is designed to take into account the macroeconomic and financial environment in which commercial banks operate.[10] The CCyB ranges between 0 and 2.5 percent of a bank's risk-weighted assets and consists of common equity Tier 1 capital. The decision to raise the CCyB is announced up to 12 months in advance in order to give banks time to adjust to a higher buffer level. The decision to decrease the CCyB, however, becomes effective immediately. The CCyB is accompanied by a jurisdictional reciprocity rule that seeks to minimize the degree of cross-border spillovers and regulatory arbitrage. The reciprocity rule states that the CCyB is calculated as the weighted average of non-zero buffers in all jurisdictions to which banks have credit exposure.[11] If a bank breaches the buffer's minimum requirement, regulators can impose a capital distribution constraint. These constraints affect only the distribution of bank capital to shareholders but not the operations of the bank. As discussed in the introduction, the CCyB has two objectives. The first is to protect the banking sector from periods of excess aggregate credit growth by increasing banks' resilience through the creation of additional capital buffers. And the second is to reduce the pro-cyclicality of bank lending in good times and stabilize it in bad times. In particular, this second objective distinguishes the CCyB from other types of (capital) regulation.[12]

2.2 Foreign Countries' Use of the CCyB and Its Relevance for Canadian Banks

The CCyB has been widely and extensively used in recent years. As of 2020Q3, 15 countries in our sample had announced at least one change in their CCyB rates. Figure 1 presents the number

[10] The guidelines for the CCyB are presented under Pillar 1 ("Regulatory Capital") of the Basel III framework. The CCyB is one of three improvements to regulations that target the quality and the level of bank capital. The other two improvements are an increase in the minimum common equity to 4.5 percent of risk-weighted assets and a capital conservation buffer comprising common equity of 2.5 percent of risk-weighted assets that places constraints on a bank's discretionary distributions when capital falls within the buffer range. See Basel Committee (2020) for details.

[11] If a jurisdiction implements a larger CCyB, the reciprocity rule will not apply to the additionally imposed amount.

[12] See BIS (2020a) for details.

of cumulated announced CCyB changes in these countries, regardless of their direction, over time. We observe a steep increase in the use of the CCyB from zero changes in the beginning of 2013 to 64 cumulated changes in 2020Q3. This shows that not only has the CCyB been activated in a significant number of countries but also countries using the CCyB have frequently adjusted their buffer rates.

Turning to the directions of these changes, over the period 2013Q1 to 2019Q3, all but one change represent increases in the CCyB (the exception being the United Kingdom, where a decision to decrease the CCyB from 0.5 to 0 percent was announced on 5 July 2016). However, at the end of our sample period in 2020Q3, and thus after the onset of COVID-19, 46 tightening announcements stand against 18 loosening announcements. This difference motivates our split of the sample into a tightening cycle and a loosening cycle.

Next, we present evidence for the relevance of these CCyB changes for Canadian banks and their international lending activities. Figure 2 shows the share of international lending by Canadian banks (i.e., cross-border lending by Canadian banks' head offices, inter-office lending between head offices and banks' foreign affiliates, and local lending by Canadian banks' foreign affiliates) to jurisdictions that had announced a non-zero CCyB at least once as of 2020Q3.[13] The left-hand panels show the shares of lending to all destinations, while the right-hand panels show the shares of lending to non-US destinations. Lending shares are sizable and range from around 10 percent in the case of local lending to all destinations by Canadian banks' foreign affiliates to close to 60 percent in the case of inter-office lending to non-US destinations. Hence, this suggests that changes in foreign CCyBs have considerable impacts on Canadian banks' international lending activities.

2.3 The Canadian Domestic Stability Buffer (DSB)

While Canada has not yet activated the Basel III CCyB, in June 2018, Canada's regulatory agency—the Office of the Superintendent of Financial Institutions (OSFI)—publicly announced the presence of a DSB for the Canadian domestic systemically important banks (D-SIBs).[14] Even though, in the past, Canadian D-SIBs had to hold capital in excess of the regulatory minimum requirement as a precautionary buffer, OSFI's main motivation behind the public announcement was that the increased transparency would improve the market's understanding of the DSB's purpose and use. The specific vulnerabilities targeted by the DSB evolve over time and currently include Canadian

[13] We discuss the underlying bank lending data and the samples on which these plots are based in Section 3.3.

[14] See OSFI (2020) for details. The DSB is associated with Pillar 2 ("Risk Management and Supervision") of the Basel III framework and thus supplements the CCyB in Pillar 1.

consumer indebtedness, asset imbalances in the Canadian market, and Canadian institutional indebtedness.

The DSB ranges between 0 and 2.5 percent of banks' total risk-weighted assets and is calculated under the capital adequacy requirements (CAR) guideline. The level of the DSB is the same for all D-SIBs and must be met with common equity Tier 1 capital. Moreover, as with the CCyB, buffer increases are subject to a phase-in period and decreases are effective immediately.[15]

A key difference to the CCyB is that the DSB is not a Pillar 1 buffer in the Basel III framework and, thus, breaches of the buffer will not result in Canadian banks being subject to automatic constraints on their capital distributions. Instead, OSFI will require a remediation plan. Only if no remediation plan is produced or if it is not executed in a timely manner, would additional steps follow. Further, the DSB is not subject to the same international reciprocity rules as the CCyB.

Since its introduction, the Canadian DSB has taken on the following values:

Announcement Date	Implementation Date	DSB Level*
25 Jun 2018	25 Jun 2018	1.50%
12 Dec 2018	30 Apr 2019	1.75%
04 Jun 2019	31 Oct 2019	2.00%
10 Dec 2019	30 Apr 2020	2.25%
13 Mar 2020	13 Mar 2020	1.00%

Note: * In percent of total risk-weighted assets. Source: OSFI (2020).

So far, OSFI has made five announcements regarding the DSB. After the initial announcement of setting the buffer at 1.5 percent of risk-weighted assets, in June 2018, OSFI announced three consecutive 0.25 percentage point increases, with the last one in December 2019 suggesting setting the DSB at 2.25 percent from 30 April 2020 onwards. In light of the financial turmoil following the global COVID-19 outbreak, on 13 March 2020, OSFI decreased the DSB from its 2.00 percent level by 1.25 percentage points to a new level of 1.00 percent, which became effective immediately. While our paper focuses primarily on the impact of the Basel III CCyB on Canadian banks' foreign lending activities, we assess the DSB's impact on these activities as part of our analysis in Section 4.1.3.

[15] See OSFI (2020) for details.

3 Methodology

3.1 Identification Strategy and External Validity

Since the CCyB has only been recently introduced, it is difficult to meaningfully identify banks' lending responses to changes in the buffer by relying only on the variation of a single country's CCyB rate over time. To overcome this identification challenge, we exploit the fact that the CCyB has been activated in a variety of countries and that these countries have changed their buffer rates at different points in time. More specifically, depending on the specification, we focus on the variation in CCyB rates both across our sample countries (in the absence of country fixed effects) and within our sample countries over time (when country fixed effects are included). Moreover, the use of bank-level data allows us to explore the heterogeneity of the CCyB's impact across the distribution of Canadian banks. In our most robust specifications, for example, we exploit the variation in cross-border lending growth for different Canadian banks in response to the same change in a foreign CCyB, while controlling for all factors that vary across countries and over time, such as loan demand in the CCyB-implementing country. This approach greatly reduces concerns that endogeneity could affect our estimates.

Further, our analysis profits substantially from the following features of the CCyB that strengthen our identification and increase the external validity of our results. First, due to the underlying Basel III agreement, CCyBs are consistently defined and designed across countries. Moreover, their rates have a quantitative interpretation, which allows us to capture the intensity of the regulation. This feature is absent in many other forms of macroprudential regulation and their corresponding empirical measures: frequently, either the policies themselves are differently defined across countries or, even if they are similar, their empirical measures are only qualitative by nature, such as in the case of binary indicator variables.[16] Lastly, a quantitative empirical measure exhibits more variation than a qualitative one and, thus, strengthens the empirical identification.

Second, while prudential regulators may change CCyB rates in response to the financial cycle and, thus, CCyB changes do not occur randomly, regulators will likely tighten the buffer during financial booms and release it during periods of financial stress. Therefore, the type of endogeneity associated with this pattern would introduce an upward bias in the coefficient on the CCyB in our empirical specifications. Hence, our analysis could be considered a lower bound of the effect

[16] Notable exemptions are the loan-to-value ratios in Alam et al. (2019) and Richter et al. (2019) that contain a quantitative dimension. However, loan-to-value ratios may still be applied differently across countries.

of CCyB changes on Canadian banks' foreign lending activities and the true effect might be even larger.

Third, Canada is a typical example of a small open advanced economy and, thus, an appealing case to study the effects of CCyB changes on international bank lending. For a small open economy, the impact of domestic economic conditions on foreign economic conditions—and therefore on other countries' CCyB responses to these conditions—is negligible. Hence, for a country like Canada, the exogeneity assumptions in the empirical analysis are more likely to hold than for a large (open) economy, like the United States or the United Kingdom, for example. Moreover, as Canada does not restrict the in- and outflow of capital, Canadian banks can freely decide where to direct their funds. Lastly, the fact that Canada is an advanced economy with a well-functioning financial system and high-quality financial data reduces the presence of financial frictions and noise in the data and, thus, increases our chances of identifying the true effects.

3.2 Empirical Specification

In our main analysis that focuses on the tightening cycle of the CCyB, we first examine the aggregate impact of foreign CCyB changes on Canadian banks' foreign lending activities. We then examine the associated transmission channels by exploiting the variation in these effects across Canadian banks. Our empirical specification that tests the aggregate effects is designed as follows:

$$\Delta lending_{b,i,t} = \alpha + \alpha_t + \alpha_{b,i} + \sum_{k=0}^{1} \beta_{t-k} \Delta ccyb_{i,t-k} + \mu controls_{b,t-1} + e_{b,i,t}, \quad (1)$$

where $\Delta lending_{b,i,t}$ is the quarter-on-quarter growth rate[17] of (i) cross-border lending by Canadian banks' head offices (our core focus), (ii) inter-office lending between head offices and Canadian banks' foreign affiliates, or (iii) local lending by Canadian banks' foreign affiliates. $\Delta ccyb_{i,t-k}$ is the announced change in the Basel III CCyB in country i at time $t-k$; thus, the main variable of interest is included in the specification both contemporaneously and with its first lag, respectively.[18] $controls_{b,t}$ is a vector of bank-specific control variables that we lag by one period to reduce endogeneity concerns. α, α_t, and $\alpha_{b,i}$ are the regression constant, time fixed effects, and country-bank fixed effects, respectively. The time fixed effects absorb all factors that affect each period's country-bank observations in the same way. Examples of such factors are policies in Canada or

[17] Computed as the change in the natural logarithm of the variable.

[18] In addition, we present results with the "preferred" lag of each lending type. We determine the "preferred" lag in the next paragraph based on the volatility of the lending types.

elsewhere in the world that are not expected to have considerably heterogeneous impacts on the lending growth response across banks and countries. The country-bank fixed effects, on the other hand, take into account all of the factors that are constant over time but vary by country-bank pair. These factors include country-bank characteristics, such as the size of a Canadian bank's operations in a specific country or a bank's country-specific business model. Moreover, this fixed effects structure controls for all unilateral time-invariant country characteristics (e.g., institutional quality) and bank characteristics (e.g., the banks' general business models). Finally, $e_{b,i,t}$ is the error term of the regression. We use heteroskedasticity-robust standard errors, which we cluster along the country-bank dimension.[19]

The fact that most CCyB changes occurred fairly recently has implications for the lag structure of the CCyB variable in our analysis. First, to be able to exploit the variation from these recent changes, we limit the maximum quarterly lag length in our analysis to one. This is shorter than in previous studies, where up to three lags are usually included in these specifications.[20] Second, our lag structure differs across dependent variables as they exhibit different degrees of volatility. To illustrate these differences, Table 1 presents both the overall and within standard deviations of our three dependent variables over the periods 1998 to 2019 and 2013 to 2019 (the second date range corresponds to our main regression sample), across all sample countries (top rows) and for the United Kingdom (bottom rows), a large country that has witnessed several CCyB changes over our regression sample period. We find significantly higher standard deviations for cross-border lending than for the other two types of lending (0.49-0.56 vs. 0.35-0.43 for the full sample and 0.59-0.68 vs. 0.31-0.43 for the United Kingdom). To account for these differences, while demonstrating the robustness of our results to alternative choices, we present two sets of results throughout this paper: a first specification with a "preferred" lag structure that comprises the contemporaneous CCyB change for the cross-border lending variable (due to its higher volatility) and the first lag for the other two dependent variables (due to their higher persistence). Next to the "preferred" lag structure specification, for all three dependent variables, we present the results of a second specification that includes both the contemporaneous effect and the first lag of the CCyB change. In this second specification, we determine the joint significance of both coefficients capturing the change in the CCyB, based on a t-test that assesses whether the joint effect of a CCyB change is equal to zero.

[19] Due to the small number of Canadian banks, it is not possible to cluster standard errors along the bank dimension.
[20] See Buch and Goldberg (2017), for example.

Next, we explore the heterogeneity of the effects of a foreign CCyB change across Canadian banks, which allows us to identify the underlying transmission channels. More specifically, to Equation (1) we add interaction terms between the change in the CCyB and the different bank controls.

$$\begin{aligned} \Delta lending_{b,i,t} &= \alpha + \alpha_t + \alpha_{b,i} + \sum_{k=0}^{1} \lambda_{t-k} \Delta ccyb_{i,t-k} \times controls_{b,t-1} \\ &\quad + \sum_{k=0}^{1} \beta_{t-k} \Delta ccyb_{i,t-k} + \mu controls_{b,t-1} + e_{b,i,t}, \end{aligned} \tag{2}$$

where, $\sum_{k=0}^{1} \lambda_{t-k} \Delta ccyb_{i,t-k} \times controls_{b,t-1}$ is a set of interaction terms between the CCyB change and banks' balance sheet characteristics. Coefficients λ_{t-k} then show how the impact of a CCyB change on lending growth differs according to these characteristics. In particular, if certain characteristics appear to amplify or dampen the impact of a foreign CCyB change on Canadian banks' foreign lending activities, we learn more about the CCyB's potential transmission channels.

The overall marginal effect of a CCyB change is then a function of the bank control variable included in the interaction term and is depicted as:

$$\frac{\partial \Delta lending_{b,i,t}}{\partial \Delta ccyb_{i,t-k}} = \sum_{k=0}^{1} \lambda_{t-k} \times controls_{b,t-1} + \sum_{k=0}^{1} \beta_{t-k} \tag{3}$$

To demonstrate the robustness of our cross-border lending regressions, we extend Equation (2) in two ways. First, in order to differentiate the effect of a CCyB change from that of other policy changes—in particular, changes in the Canadian DSB, in other Canadian macroprudential regulation, and in Canadian monetary policy—we interact these variables with the bank controls in the same way as the change in the CCyB. Second, we estimate a set of specifications with country-time fixed effects instead of country-bank fixed effects. A fixed effects structure with country-time fixed effects absorbs all of the factors that vary both across countries and over time and, thus, allows us to control for changes in credit demand, for example. Hence, under this fixed effects structure, our identification compares the response of two different Canadian banks conducting business within the same country to a change in that country's CCyB. It should be noted, however, that this specification also absorbs the direct effect of the CCyB variable since the latter varies equally across countries and time. Hence, under this fixed effects structure, we will only be able to

interpret the effects of the interaction terms between the change in the CCyB and the bank control variable included in the interaction term.

3.3 Data

3.3.1 Banking Data

As in Damar and Mordel (2017) and Auer et al. (2019), our data on Canadian banks' international lending activities are obtained from the following regulatory returns filed by all federally regulated banks in Canada: (i) the *Geographical Distribution of Assets and Liabilities Booked in Canada (GQ Return)*, and (ii) the *Geographical Distribution of Assets and Liabilities Booked Outside of Canada (GR Return)*. The data are globally consolidated at the parent level. We use data from the largest six Canadian banks, which cover approximately 93 percent of the assets in the Canadian banking system.[21] Table 2 displays the corresponding summary statistics.

Bank Lending Growth (Dependent Variable): We use three different dependent variables to capture the international lending activities of the Canadian banks in our analysis: (i) cross-border lending by Canadian banks' head offices; (ii) inter-office lending between Canadian banks' head offices and their foreign affiliates;[22] and (iii) local lending by Canadian banks' foreign affiliates in host countries.[23] All three dependent variables enter the regression in quarter-on-quarter growth rates that are calculated as changes in the logarithm of the value of loans outstanding (in Canadian dollars).[24] To reduce the impact of outliers on our results, we replace all observations in the lending growth distribution that have values below -100 percent with -100 percent and all observations that have values above +100 percent with +100 percent, respectively.

We further restrict our sample for each dependent variable in the following ways. First, we drop all outstanding foreign lending observations below $1 million Canadian dollars.[25] Second, we limit our sample to sequences of bank-country-time observations with at least four consecutive quarterly observations to obtain more stable lending growth rates. And third, we use 2013Q2 as

[21] The six largest Canadian banks are the Bank of Montreal, the Bank of Nova Scotia, the Canadian Imperial Bank of Commerce, the National Bank of Canada, the Royal Bank of Canada, and the Toronto-Dominion Bank. These banks also have D-SIB designations.

[22] Our data on inter-office lending corresponds to inter-office positions that include equity and retained earnings as well as inter-company debt balances in addition to loans.

[23] While the vast majority of lending by foreign affiliates occurs within their countries of residence (and thus "locally"), there is a possibility that some loans are made to borrowers in other countries.

[24] Loans denominated in foreign currency are converted to Canadian dollars.

[25] Regardless of this threshold, we keep all foreign lending observations to countries with a non-zero CCyB in the sample; however, these are only very few cases.

the start date of our sample because 2013 corresponds to the year in which the first CCyB change was announced.[26]

While we discuss the impact of CCyB changes on all three dependent variables, most of our analysis will focus on cross-border lending. The resulting sample for our cross-border lending specifications in our analysis of the CCyB tightening cycle in Section 4 consists of up to 7,700 observations from six Canadian banks with lending activities in 78 destination countries over the period 2013Q2 to 2019Q3.[27] A full list of countries included in our analysis is shown in the Country Sample Appendix.

Bank Controls: We construct four bank-specific control variables that allow us to exploit the heterogeneity across banks, based on their balance sheets. These variables are obtained from banks' balance sheets and capital adequacy reports and comprise the following:

- ***Log Total Assets:*** A measure of bank size, calculated as the natural logarithm of its total assets. Source: OSFI Balance Sheet (M4).
- ***Tier 1 Capital Ratio:*** A measure of bank capital, calculated as Tier 1 capital divided by risk-weighted assets. Source: Basel Capital Adequacy Return (BCAR-BA).
- ***Liquid Asset Ratio:*** A measure of liquidity, calculated as the sum of cash and cash equivalents, treasury bills, and short-term papers (issued or guaranteed by Canadian governments) divided by total assets. Source: OSFI Balance Sheet (M4).
- ***Short-term Funding Ratio:*** A measure of funding maturity, calculated as demand deposits from individuals divided by total assets. Source: OSFI Balance Sheet (M4).

All bank control variables are winsorized at the one percent level to reduce the impact of outliers.

3.3.2 Data on the CCyB

We compile a rich dataset of CCyB changes based on all policy actions shown in ESRB (2020) and BIS (2020b).[28] The data in ESRB (2020) and BIS (2020b) contain both the announcement and

[26] In 2013Q4, Norway announced an increase in its CCyB from 0 to 1 percent from 30 June 2015, onwards. Moreover, while our data starts in 2013Q1, the first observation is used to calculate the lags of the explanatory variables and, thus, is not part of the final regression sample.

[27] Coverage of the other two lending types in our main analysis is as follows. The regressions that use inter-office lending as a dependent variable contain 2,254 observations and cover 44 (destination) countries. The regressions for local lending by Canadian banks' foreign affiliates contain 6,741 observations and cover 94 (host) countries.

[28] We cross-checked the information contained in both databases and verified all of the CCyB changes with their original sources.

implementation dates of the CCyB changes.[29] From a conceptual perspective, both dates could be relevant for an empirical analysis that identifies banks' responses to CCyB changes. Banks could react shortly after the announcement and adjust their lending before the policy became effective. However, banks could also continue to lend to a country that had announced a CCyB increase, until this increase becomes effective and, thus, until lending eventually became more costly. Since the time dimension of our analysis is limited and some of the CCyB's effects are expected to occur with a time lag (which, in turn, shortens our sample even more), in this paper we focus on the effects of announced CCyB changes. Moreover, this decision is consistent with evidence from Auer and Ongena (2019), who find that banks significantly respond to the announcement of the CCyB on residential mortgages in Switzerland.

3.3.3 Domestic Policies in Canada

In selected specifications, we include additional controls for the following domestic policies in Canada that help us isolate the effect of changes in foreign CCyBs on Canadian banks' international lending activities.

Canadian Domestic Stability Buffer: First, we control for changes in the Canadian DSB. In response to a tightening of the DSB, all types of lending conducted by Canadian banks should become more expensive. Thus, depending on banks' responses to such a DSB tightening, the observed impact of a DSB tightening on Canadian banks' foreign lending activities might appear similar to that of a tightening in foreign CCyBs. Hence, by including data on changes in the DSB in our regressions, we can exclude the possibility that our results are driven by changes in the DSB instead of in the foreign CCyBs. We take our data on DSB changes from OSFI (2020).

Macroprudential Policies in Canada: We also account for changes in Canadian macroprudential policies that are unrelated to the DSB (or the CCyB) but that could potentially serve as alternative explanations for the observed dynamics in Canadian banks' international lending. Our data on Canadian macroprudential policies come from Duprey and Ueberfeldt (2020) and show that the most frequently applied macroprudential policies are related to residential mortgage lending. These policies comprise changes to loan-to-value ratios, changes to maximum amortization requirements, and the introduction of foreign buyer taxes in large metropolitan areas. We do not attempt to code the intensity of these policy changes, and thus, create an indicator variable that takes on a value

[29] BIS (2020b) additionally provides information on the date on which the policy decision was made.

of +1 for every tightening action, a value of -1 for every loosening action, and a value of 0 otherwise.

Canadian Monetary Policy: Finally, we use data on the Canadian policy interest rate to capture changes in the domestic monetary policy stance. Since the Canadian policy interest rate was above zero throughout our tightening sample period and the Bank of Canada did not conduct any quantitative easing policies during these times, we rely on the Bank of Canada's policy interest rate as our measure of monetary policy.

4 CCyB Tightening Cycle Results

This section presents the results from examining the impact of foreign CCyB changes on international lending activities of Canadian banks over the CCyB tightening cycle from 2013 to 2019. We first assess in detail the impact of the CCyB on cross-border lending and then briefly discuss its impact on inter-office lending and local lending by Canadian banks' foreign affiliates. Section 5 will then focus specifically on the CCyB loosening cycle in 2020, when CCyB rates in various jurisdictions were substantially cut to mitigate the negative impact of the COVID-19 shock.

4.1 Results for Cross-Border Lending by Canadian Banks

4.1.1 Aggregate Effects

This section presents the results from estimating Equation (1) on our sample of Canadian banks' cross-border lending relationships with 78 destination countries over the period 2013Q2 to 2019Q3. These results describe the aggregate response of the growth rate in cross-border lending by Canadian banks to a change in foreign CCyBs and are shown in Table 3.[30]

From the left to the right of this table, we present specifications with increasingly richer sets of bank controls and fixed effects combinations. Moreover, while the odd-numbered specifications in this table represent the "preferred" lag of the $\Delta CCyB$ variable for the cross-border lending growth regressions (the contemporaneous CCyB change), the even-numbered specifications present the results of jointly including the contemporaneous CCyB change and its first lag. We assess the joint impact of both terms with a t-test at the bottom of the table.[31]

Specification (1) only includes the contemporaneous impact of a tightening in foreign countries'

[30] Standard errors are reported in parentheses.

[31] For all joint tests, we report the p-values instead of the standard errors.

CCyBs, measured by coefficient $\Delta CCyB_t$, and does not include any bank controls or fixed effects. Coefficient $\Delta CCyB_t$ indicates that in response to a 1-percentage-point increase in the CCyB, Canadian banks' cross-border bank lending growth declines by 12.40 percentage points. The coefficient is statistically significant at the five percent level. Specification (2) largely mirrors the previous specification but differs by including not only the change in the CCyB variable contemporaneously, $\Delta CCyB_t$, but also its first lag, $\Delta CCyB_{t-1}$. The sum of both coefficients at the bottom of the table suggests that in response to a 1-percentage-point increase in the CCyB, Canadian banks' cross-border lending growth declines by 13.57 percentage points over a two-quarter horizon. Moreover, the joint significance test for both coefficients suggests that their joint impact is significant at the five percent level.

Subsequently, Specifications (3) and (4) add bank controls, Specifications (5) and (6), country-bank (*country* × *bank*) fixed effects, and Specifications (7) and (8), time fixed effects to the specification. Each time, the results indicate that a tightening in foreign CCyBs leads to a reduction in Canadian banks' cross-border lending growth. In the specifications with the richest set of bank controls and fixed effects, Specifications (7) and (8), the drop in lending growth – as a consequence of a 1-percentage-point tightening in the CCyB – amounts to 12.17 percentage points contemporaneously in Specification (7) and 16.78 percentage points over a two-quarter horizon in Specification (8).

Next, we focus on the direction and magnitude of these effects and compare them to previous findings in the literature. We start with a discussion of the direction of the effects. Our analysis so far has shown that, regardless of the specification, we find strong evidence that a tightening in foreign CCyBs *reduces* Canadian banks' cross-border lending growth. This is in stark contrast to earlier findings by Damar and Mordel (2017), who show that the growth rate of Canadian banks' lending to other jurisdictions *increases* in response to a tightening in foreign regulation, especially in the case of cross-border lending[32] and in response to a tightening of capital regulations.

The explanation behind this difference lies in the nature of the regulations both studies analyze. While Damar and Mordel (2017) focus mainly on the introduction of sector-specific capital requirements that are not subject to an international reciprocity rule, our measure of capital regulation, the CCyB, is subject to such a rule. In the first case, domestic regulation does not apply to foreign banks

[32]More specifically, Damar and Mordel (2017) find that the positive effects are weaker for local lending by Canadian banks' foreign affiliates (and thus stronger for the second component of their foreign lending variable, cross-border lending).

as long as they engage in cross-border lending or conduct their foreign business through branches.[33] Hence, Canadian banks that emerged relatively well-capitalized from the 2007-2008 global financial crisis might have obtained a comparative advantage when foreign banks became subject to new capital regulations in their own jurisdictions. As a consequence, Canadian banks made use of their larger capital cushions and expanded their foreign lending activities in order to gain foreign market share, resulting in an increase in Canadian banks' cross-border lending growth. In the second case, however, the reciprocity agreement governing the use of the CCyB ensures that the CCyB equally applies to foreign banks, such as to their cross-border lending activities and the lending activities their foreign branches conduct. Moreover, home country regulators have the responsibility of enforcing the CCyB's rules on all banks that lend to CCyB-implementing jurisdictions. As such, Canadian banks' cross-border lending growth is expected to decrease in response to a tightening in foreign CCyBs. Hence, the existence and design of the CCyB's reciprocity rule illustrate how a seemingly similar form of capital regulation can have very different aggregate effects.

After examining the direction of Canadian banks' lending response to a tightening in foreign CCyBs, we also assess the magnitude of these effects and compare them to previous findings in the literature. Jiménez et al. (2017), for example, find that a 1-standard-deviation increase in dynamic provisioning in Spain reduces Spanish banks' committed lending to firms by 4 percentage points. Converting our 1-percentage-point increase in the CCyB to standard deviations of the $\Delta CCyB_t$ variable, we find that a 1-standard-deviation increase in the CCyB leads to a reduction in Canadian banks' cross-border lending growth by between 0.91 and 1.26 percentage points.[34] These calculations indicate that the impact of a change in the CCyB on cross-border lending growth is of a similar order of magnitude as the effects of other macroprudential tools that have been examined in the literature.

Lastly, we assess the economic significance of our results. Table 2 shows that the average quarterly growth rate of cross-border lending for Canadian banks between 2013Q2 and 2019Q3 amounts to 0.6 percent. When we place the decrease in the cross-border lending growth by 0.91 to 1.26 percentage points in response to a 1-standard-deviation tightening of foreign CCyBs to this average growth rate, we find that the CCyB tightening substantially reduces the growth rate of cross-border lending.

[33] Our analysis captures this latter channel in Section 4.3, where we examine the response of local lending by Canadian banks' foreign affiliates.

[34] Table 2 shows that one standard deviation of $\Delta CCyB_t$ amounts to 0.075, which is 13.33 percent of a 1-percentage-point increase. Hence, dividing the effects obtained in Specifications (7) and (8), 12.17 and 16.78 by 13.33 yields 0.91 and 1.26, respectively.

4.1.2 Transmission Channels

Next, we examine the underlying transmission channels that can explain the negative impact of a foreign CCyB tightening on Canadian banks' cross-border lending growth. We conduct this exercise by estimating Equation (2) on the same sample of cross-border lending growth as in the previous section. The results are shown in Table 4. As in the previous table, all odd-numbered specifications pertain to the contemporaneous effect of the CCyB change and all even-numbered specifications to the joint impact of the contemporaneous effect and its first lag. The first eight specifications of the table present the interactions between the change in foreign CCyBs and each of the four bank controls. In the order of presentation, these bank controls are bank size (Log Total Assets) in Specifications (1) and (2), capital (Tier 1 Capital Ratio) in Specifications (3) and (4), liquidity (Liquid Asset Ratio) in Specifications (5) and (6), and funding maturity (Short-term Funding Ratio) in Specifications (7) and (8). Specifications (9) and (10) include all four interactions at once and, thus, represent the highest levels of robustness. Finally, Specification (11) drops all of the CCyB changes that occurred in the third month of each quarter to demonstrate that our findings are not the result of reverse causality between cross-border lending and CCyB changes.

The table shows that bank size is the key variable that characterizes the heterogeneity in the effect of foreign CCyB changes on cross-border lending growth across Canadian banks. The coefficients on the interaction terms between the change in the CCyB and our measure of bank size, $\Delta CCyB_t \times Log\ Tot.\ Assets_{t-1}$, and for the even-numbered specifications, also $\Delta CCyB_{t-1} \times Log\ Tot.\ Assets_{t-1}$, are highly statistically significant in all cases (i.e., Specifications (1), (2) and (9)-(11)). Moreover, the direct effect of the CCyB change, $\Delta CCyB$, is negative and statistically significant in all five cases. Together, this pattern suggests that while all Canadian banks experience a reduction in their cross-border lending growth (negative direct effect), larger banks[35] experience smaller reductions (positive interaction term). The difference between Specifications (1) and (2), on one hand, and Specifications (9) and (10), on the other hand, is that the former only include the interaction terms with the bank size variable and the latter include interactions with all four bank controls. As evidence from Specifications (9) and (10) shows, once the interactions of all bank controls are included, the bank size interactions are the only ones that remain statistically significant. Moreover, comparing the size of the interaction term coefficients, it appears that the size of the interaction terms in Specifications (9) and (10) increase even further relative to Specifications (1) and (2). While this observation highlights the robustness of our findings, we conduct our additional

[35] More specifically, these are bank-time observations with larger values of Log Total Assets.

robustness checks in Section 4.1.3, based on Specifications (1) and (2), as the inclusion of fewer interaction terms is less demanding in terms of sample size. Moreover, for simplicity, we refer to Specifications (1) and (2) as our "baseline specifications" in the remainder of this section.

In addition to the findings on the importance of bank size, Table 4 appears to also provide evidence that a foreign CCyB tightening leads to a larger reduction in Canadian banks' cross-border lending growth when the short-term funding ratio is low (in Specification (8)) but the effect disappears once all bank controls are interacted (in Specifications (9) and (10)).

Finally, to illustrate the relationship between the marginal effect of a foreign CCyB tightening on Canadian banks' cross-border lending growth and bank size, we present the marginal effect of one of our baseline specifications (Specification (1)) as a function of the bank size variable in Figure 3. This marginal effect is shown by the solid line, where the positive slope represents the positive interaction term coefficient in Specification (1).[36] The dashed lines around the solid line represent the 90 percent confidence interval and indicate that the marginal effect is statistically significant whenever the upper bound of the confidence interval is below the zero line (or when the lower bound is above the zero line). The dotted line in the background represents the sample distribution of the bank size variable. As the figure shows, the bank size variable has a bipolar distribution with one part of the sample consisting of smaller banks (albeit the smaller part) and the other part of larger banks.

In line with the discussion of Specification (1) in Table 4, in response to a tightening of foreign CCyBs, the group of smaller banks at the bottom of the distribution experiences a strong reduction of their cross-border lending growth rate (e.g., at the 25$^{\text{th}}$ percentile of the bank size distribution, the marginal effect amounts to -0.22 percentage points).[37] However, the group of larger banks at the top of the distribution, whose marginal effect is statistically not different from zero, does not see a reduction in their cross-border lending growth in response to a foreign CCyB tightening (e.g., at the 75$^{\text{th}}$ percentile of the bank size distribution, the marginal effect amounts to -0.02 percentage points).[38] Hence, while smaller banks cut their cross-border lending more quickly in response to foreign CCyB changes, larger banks appear to be relatively well insulated against such shocks. We will discuss potential explanations for this finding in Section 4.2.

Finally, Specification (11) addresses possible concerns about reverse causality between our de-

[36] The negative intercept corresponds to the negative coefficient on the direct effect of the CCyB change.

[37] Calculated according to Equation (3) as 20.11*0.2558 -5.3652 = -0.2211, where 20.11 is the 25$^{\text{th}}$ percentile of the Log Total Asset distribution.

[38] Calculated according to Equation (3) as 20.89*0.2558 -5.3652 = -0.0215, where 20.89 is the 75$^{\text{th}}$ percentile of the Log Total Asset distribution.

pendent variable, cross-border lending growth, and the contemporaneous change in the CCyB. In particular, we demonstrate that our results are not driven by CCyB changes late in the quarter, which would contradict the idea that CCyB changes are causal to changes in cross-border lending growth. In Specification (11), we therefore re-estimate Specification (10) but set all CCyB changes in the last months of each quarter to zero (i.e., in March, June, September, and December). The results of this exercise show the same pattern as before: negative coefficients for the direct effects of $\Delta CCyB$ and positive coefficients for the interaction terms between $\Delta CCyB$ and *Log Total Assets*. Moreover, the significance of the interaction term coefficients increases notably in this exercise as these coefficients are now significant at the one percent level. A possible explanation for this finding is that by setting to zero the CCyB changes that take place late in the quarter to zero, we remove potentially confounding CCyB observations to which cross-border lending growth cannot meaningfully react before the end of the quarter. This, in turn, strengthens the relationship between CCyB changes and cross-border lending growth and increases the statistical significance of several coefficients in the regression. Overall, this exercise shows that our findings are not the result of reverse causality.

4.1.3 Robustness

In this subsection, we present the outcomes of two sets of additional robustness checks. The first robustness check examines the role of alternative Canadian policies conducted that could affect Canadian banks' lending activities more generally. As discussed in Section 3.3.3, we consider the impact of changes in the DSB, in other macroprudential policies, and in the policy interest rate on our results. As the direct effects of these policies are absorbed by the time fixed effects in our baseline regressions, in this section we focus on the interaction of these policies with our measure of bank size (the fist lag of Log Total Assets). Table 5 presents the results. Specifications (1) and (2) of this table correspond to our baseline specifications (i.e., Specifications (1) and (2) in Table 4) and are displayed as benchmarks. Specifications (3) and (4) add the interaction term(s) between the Canadian DSB change and bank size to the baseline specification. It turns out that the interaction terms between $\Delta CCyB$ and bank size remain positive, highly significant, and of very similar magnitude to the interaction terms of our baseline specifications (e.g., 0.2558 vs. 0.2499 for the specifications that include $\Delta CCyB$ contemporaneously). Hence, our key finding from Section 4.1.2—that smaller banks reduce their cross-border lending more than larger banks—is not driven by changes in the

Canadian DSB.[39] Next, Specifications (5) and (6) repeat the same exercise but with changes in the Canadian macroprudential policy index. Again, the positive and highly significant interaction terms between the CCyB change and bank size indicate that changes in other Canadian macroprudential policies are equally not the drivers of our key results. Moreover, Specifications (7) and (8) then show that changes in Canadian monetary policy are not responsible for our findings either. Finally, Specifications (9) and (10) include all three Canadian policies considered in this robustness check jointly in the regression. Again, our key result remains statistically significant and of very similar magnitude to the baseline specification.

Our second robustness check examines the consequences of applying an alternative fixed effect structure to our baseline specifications. Instead of relying on the previously employed set of *country* $\times$ *bank* fixed effects, we now include sets of *country* $\times$ *time* fixed effects in the specification. This fixed effects structure absorbs all country-time specific influences and is thus frequently used in the literature to control for changes in foreign loan demand. Moreover, this fixed effect structure controls for the impact of changes in all other foreign policies that are considered to affect Canadian banks' foreign lending activities in similar ways across banks. Table 6 presents the results of relying on a *country* $\times$ *time* fixed effect structure in Specifications (3) and (4) (again, Specifications (1) and (2) represent our baseline specifications again and are shown for comparison). As is evident from the table, all three interaction terms in Specifications (3) and (4) are positive, statistically significant, and of similar magnitude as before, suggesting that our results are driven by Canadian banks' supply-side responses and not by foreign borrowers' demand-side decisions.[40]

To conclude our analysis of the impact of foreign CCyB changes on cross-border bank lending by Canadian banks, we have shown that a tightening in foreign CCyBs considerably reduces cross-border lending in the aggregate and even more so for smaller banks. Moreover, evidence from this section has shown that our findings are robust to a wide range of alternative explanations, such as regulatory or monetary policy changes in Canada, as well as to all foreign factors that vary along the country-time dimension. In addition, we have shown evidence that our results are not due to reverse causality between cross-border lending growth and a change in the CCyB. In the remainder

[39] We also observe a marginally significant coefficient on the contemporaneous interaction between the DSB change and bank size, which appears to suggest that Canadian banks conduct more cross-border lending when the DSB is tightened. A potential explanation of this finding could be the anticipation of future DSB tightenings and corresponding adjustments of banks' lending portfolios (i.e., substituting lending abroad for domestic lending).

[40] Note that the presence of *country* $\times$ *bank* fixed effects in the regression absorbs the direct effects of the CCyB change variable, as the latter varies exclusively along the country-time dimension.

of this section, we broaden our analysis and examine the impact of foreign CCyB changes on the other two dependent variables.

4.2 Results for Inter-Office Lending by Canadian Banks

We start with a discussion of our inter-office lending results. The link between Canadian banks' head offices and their foreign affiliates highlights the mechanism behind our key finding, in the previous section, that small banks reduce their cross-border lending but large banks do not. We present the results for estimating Equations (1) and (2) for our sample of Canadian banks' inter-office lending to 44 destination countries over the period 2013Q2 to 2019Q3.[41] The corresponding results are shown in Tables 7 and 8.

Evidence from Table 7 also shows that inter-office lending growth significantly falls on aggregate, in response to a tightening in foreign CCyBs. Specifications (1) and (2), for example, which do not include any bank controls or fixed effects, show that a 1-percentage-point tightening in foreign CCyBs decreases the growth rate of Canadian banks' inter-office lending by between 19.58 (effect after one quarter) and 20.55 percentage points (joint effect over two quarters). Once additional bank controls, country-bank, and time fixed effects are added, inter-office lending growth decreases by 21.52 and 29.02 percentage points in Specifications (7) and (8), respectively. These findings illustrate that Canadian banks not only reduce their aggregate cross-border lending in response to a tightening in foreign CCyBs but also their aggregate inter-office lending. Moreover, the response of inter-office lending appears to be of an even greater magnitude than that of cross-border lending.

As illustrated in Table 8, the reduction in inter-office lending also varies considerably with bank size. As the negative and significant interaction terms between the change in the CCyB and bank size in Specifications (1), (2), (9), and (10) show, larger banks reduce their inter-office lending *more* than smaller banks. In particular, Specification (10), which is the most robust, shows that the contemporaneous interaction term between $\Delta CCyB$ and $Log\ Total\ Assets$ is highly significant. The same holds for the joint effect of both interaction terms. Figure 4, which is based on the coefficient estimates in Specification (1), graphically represents the marginal effect of a CCyB change on inter-office lending growth as a function of bank size. While the marginal effect is insignificant for smaller banks, it becomes negative and significant for larger banks.

In combination with our findings from Section 4.1.2 that larger banks reduce their cross-border

[41] This sample is smaller than our cross-border lending sample as inter-office lending volumes are below our cut-off value of $1 million Canadian dollars in a larger number of countries.

lending *less* than smaller banks, these results appear to provide evidence for the existence of an active internal capital market. Following a tightening of a foreign CCyB, larger Canadian banks reduce their lending from their head offices to their foreign affiliates (i.e., a reduction in inter-office lending) to support their cross-border lending that is now subject to additional capital requirements. Smaller Canadian banks, however, are not able to adjust their inter-office lending in the same way and, instead, see their cross-border lending decline.

These findings are consistent with evidence from the previous literature on the existence of internal capital markets within banks. Cetorelli and Goldberg (2012a), for example, document that globally active US banks manage their liquidity across the entire banking organization. The authors show, in particular, that when parent banks are hit by a funding shock, they reallocate liquidity to the affiliate locations that are the most important for the parent bank's revenue stream.[42] Given our above results, a similar mechanism also appears to exist for larger Canadian banks.[43]

4.3 Results for Local Lending by Canadian Banks' Foreign Affiliates

The third dependent variable in our analysis is the growth rate of local lending by Canadian banks' foreign affiliates in the CCyB-implementing country. Table 9 presents the results of estimating Equation (1) on our sample of local lending growth data. Other than for cross-border and inter-office lending growth, we observe a weaker aggregate impact of $\Delta CCyB$ on local lending growth. The largest effect among the eight specifications in Table 9 shows up in Specification (7), where bank controls and both country-bank and time fixed effects are included. This specification suggests that in response to a 1-percentage-point increase in the CCyB, local lending growth falls by 17.56 percentage points. While this effect is of similar magnitude to the response of inter-office lending growth and is stronger than the response of cross-border lending growth, most of the other coefficients in the table are of weaker statistical significance than in the cases of the two other dependent variables. For example, the joint coefficients of $\Delta CCyB$ are insignificant in all four cases and the individual coefficients are only significant in Specifications (5) to (8). A potential explanation for this lower level of significance is that local developments in the foreign economy might be more important determinants for local lending growth than they are for determining the response of cross-border or inter-office lending growth. Examples of such local developments are changes to

[42] Moreover, in Cetorelli and Goldberg (2012b) the authors document that global banks rely on internal capital markets more generally and thus contribute to the international propagation of shocks.

[43] The inter-office results also point to a role for bank capital. Specifications (3), (4), (9), and (10) provide evidence of a negative and highly significant interaction term between $CCyB$ and banks' T1 capital ratio. This suggests that inter-office lending growth falls more when the Tier 1 capital ratio is high.

economic and financial conditions in the foreign economy or the design and the implementation of other policies by foreign authorities. Nevertheless, overall, it appears that local lending growth of Canadian banks' foreign affiliates also falls in response to a tightening of foreign CCyBs.

5 CCyB Loosening Cycle Results

This section examines the impact of foreign CCyB changes on cross-border lending by Canadian banks for the CCyB's loosening cycle of 2020, which was triggered by the COVID-19 shock. Our focus in this section is on the *transmission channels* of foreign CCyB changes; i.e., the differential impact between large and small banks, corresponding to the results in Table 4 of the previous section.[44]

We first approach this question by extending our main sample to 2020Q3 (previously ranging from 2013Q2 to 2019Q3) and by examining the impact of foreign CCyB changes on Canadian banks' foreign lending activities over the entire sample period. While the advantage of this approach is that the analysis can be conducted in a single sample, it comes at the cost of implicitly assuming that banks' actions in crisis times are the same as in normal times. If banks' actions were not the same in both cases, however, the estimated effects might reflect a change in banks' behaviors over the financial cycle instead of reflecting the actual effects of a CCyB change. Moreover, the approach assumes there is symmetry between the effects of a CCyB tightening and a CCyB loosening on cross-border bank flows. Therefore, we later consider alternative approaches that relax these possibly restrictive assumptions to a certain degree.

Specifications (1) to (4) in Table 10 present the results of this first approach. Analogously to the previous section, Specification (1) presents the contemporaneous effects of a foreign CCyB change on the growth rate of Canadian banks' cross-border lending. This specification includes both the direct effect of a foreign CCyB change and the differential effect for large banks (proxied by the interaction term of the CCyB and the Log Total Assets variable). Specification (2) adds to this the first lags of both variables, and Specifications (3) and (4) add the interactions with other bank variables, such as the T1 Capital Ratio, the Liquid Asset Ratio, and the Short-Term Funding Ratio.

The results of these four specifications are fully in line with our findings during the CCyB

[44] The impact of foreign CCyB changes on Canadian banks' aggregate international lending activities (corresponding to Table 3 in the previous section) turned out to be insignificant in most of these cases. However, this finding can be rationalized by the fact that banks might consider other/additional factors during crisis times, which are often hard to control for in an empirical analysis (e.g., banks' risk management considerations).

tightening cycle discussed in Section 4. While the direct effects of the CCyB change are significantly negative again, the differential effects for large banks are significantly positive again. As discussed in the previous section, this finding suggests that a foreign CCyB tightening reduces the growth rate of all Canadian banks' cross-border lending to CCyB-implementing jurisdictions but that larger banks are less affected by these changes than smaller banks.

Specifications (5) to (8) then focus explicitly on the CCyB loosening cycle and cover the COVID-19 period from 2019Q4 to 2020Q3.[45] This approach has the benefit of a cleaner separation between banks' actions during normal and crisis times but comes at the cost of a considerably smaller sample size.

Again, Specifications (5) and (6) only include the Log Total Asset interactions, while Specifications (7) and (8) also include all other interactions as well. The results have the same pattern as before. The direct effect of the CCyB carries a negative sign and the CCyB's interaction terms with Log Total Asset are positive. In the case of a *cut* in a foreign CCyB—as observed during the period of COVID-19 stress—the negative direct effect would correspond to an *increase* in cross-border lending growth by Canadian banks. In the same case, a positive interaction term would suggest that larger banks respond less to such a change than smaller banks.

Next, we separately identify the effects of CCyB tightening and loosening actions. We conduct this exercise in the extended sample that covers the entire 2013Q2 to 2020Q3 period. In particular, we define a first indicator variable for tightening actions that takes on a value of one when the CCyB has been tightened and the value of zero otherwise. Similarly, we define a second indicator variable for loosening actions that takes on the value of one when the CCyB has been loosened and zero otherwise. The excluded category corresponds to "no change" in the CCyB. The corresponding results are shown in Table 10.

Specifications (1) to (4) focus only on the tightening actions and mirror our previous results. A tightening in the CCyB leads to a reduction in the growth rate of cross-border bank flows. However, this effect is less pronounced for large banks, regardless of whether we include only the contemporaneous effect or both the contemporaneous and lagged effects, and regardless of whether we include the additional interaction terms with other bank variables as controls.

Next, Specifications (5) to (8) focus on loosening actions. Based on the definition of our indicator

[45] While technically not part of the COVID-19 period, we assign 2019Q4 to the CCyB loosening cycle in order to increase the number of observations in this already small sample.

variable that captures loosening actions, the coefficients in these specifications should take on a pattern of opposite signs. And indeed, a CCyB loosening appears to increase the growth rate of Canadian banks' cross-border flows, but less so for large banks, regardless of the specification.

Finally, Specifications (9) to (12) include both the indicator variables for tightening and loosening actions at the same time. Again, the four specifications confirm the same pattern as before. Moreover, when comparing the size of the coefficients for the tightening and loosening actions, we find that loosening actions (relative to tightening actions) appear to be associated with larger coefficients for both the direct effect and the interaction term. For example, in Specification (11), the absolute value of the direct effect of a tightening action amounts to 2.9 and is thus slightly less than half of the size of the effect of a loosening action, which amounts to 7.9. Similarly, the interaction of a tightening action (with the Log Total Asset variable) amounts to 0.17 and is, thus, approximately half the size of the corresponding interaction term of the loosening action at 0.32. In this regard, our findings are consistent with evidence from Jiménez et al. (2017), who find that a 1-standard-deviation increase in dynamic provisioning reduces banks' committed lending to firms by 4 percentage points in good times and a corresponding decrease in dynamic provisioning increases credit growth by 8 percentage points in bad times—which amounts to approximately the same ratio.

Overall, this comparison between CCyB tightening and loosening actions suggests that loosening actions have a stronger impact on the growth rate of Canadian banks' cross-border bank flows. A possible explanation for this finding is that a cut in the CCyB rate is more likely to occur in crisis times. During these times, small banks are, in particular, more likely to be financially constrained and, thus, a policy that provides them with additional capital is more likely to translate into an increase in their lending activities. Moreover, while a CCyB tightening usually takes around twelve months to become effective, a reduction in the buffer rate becomes effective immediately—possibly further amplifying this effect.

6 Conclusion

In this paper, we examined the impact of the recently introduced Basel III countercyclical capital buffer (CCyB) on foreign lending activities of Canadian banks. Using panel data for the six largest Canadian banks and their foreign activities in up to 94 countries, we explored the variation of CCyB rates across countries to overcome the identification challenge associated with the limited time-series evidence on the use of the CCyB in individual jurisdictions. We have shown that during the period,

2013Q2 to 2019Q3, which coincides with the tightening cycle of CCyB rates, a 1-percentage-point tightening announcement in a foreign CCyB decreased the growth rate of cross-border lending between Canadian banks' head offices and the implementing country's borrowers by between 12 and 17 percentage points. Most importantly, due to the CCyB's unique reciprocity rule, which also subjects foreign banks to domestic regulation, the direction of this effect differs from that of other forms of foreign capital regulation that have been previously examined in the literature. When investigating the underlying transmission channels of the CCyB during this period, we found that, in particular, large banks were better able than small banks to shield their cross-border lending from the impact of foreign CCyB changes, in particular, because of the ability of large banks to adjust their inter-office lending. Finally, when extending our sample to 2020Q3 and focusing on the CCyB loosening cycle, we have shown that the differential effects for large and small banks also carry over to the COVID-19 episode—a time when various jurisdictions rapidly released their CCyBs in order to stabilize their banks' lending activities.

Our study extends the current policy debate on macroprudential regulation along at least two dimensions. First, our paper highlights the reciprocity rule, which is a central element in the design of the CCyB. As our comparison between the introduction of the CCyB and findings in the literature on the implementation of conventional capital regulations has shown, the presence of a reciprocity rule expands the regulatory perimeter of macroprudential regulation to all banks and all of their lending activities in the policy-implementing economy, including foreign banks' cross-border lending and their branches' local lending activities. Thus, the presence of a reciprocity rule is likely to reduce the existence of policy leakages, spillovers, and regulatory arbitrage. As a result, the effectiveness of macroprudential regulation is likely to increase and the associated financial stability benefits are likely to be greater. However, whether this generally leads to an increase in financial stability is a more difficult question that requires further analysis. One could imagine a situation, for example, where a regulatory tightening in the absence of a reciprocity rule may lead to better capitalized foreign banks entering the domestic market. If these banks continued to supply credit to the domestic economy while making the domestic financial system safer, then the financial stability benefits of implementing a reciprocity rule could turn out to be more ambiguous.

Second, our study highlights the importance of bank size. This variable seems to be central to the transmission of CCyB changes to banks' international lending activities. In particular, it appears that larger banks can rely on an internal capital market through which they may cushion the impact of foreign regulations on the balance sheets of their head offices.

Our analysis could encourage future research as follows. First, future work could extend this analysis from the perspective of other countries, such as large economies, less open economies, and emerging market economies. Empirical evidence from different country classifications could provide policymakers with a better understanding of the importance of the key features of their economies. Second, it would be interesting to extend the analysis by breaking down banks' foreign lending activities by sector, such as lending to non-financials, households, and the government. Moreover, one could go even one step further and examine the impact of foreign CCyB changes on banks' security holdings—a dimension of banks' balance sheets that has received less attention in the literature than questions related to lending. And third, with the CCyB having an increasingly richer track record in individual jurisdictions, one could further broaden the scope of the analysis by examining transmission channels in more detail and assessing the presence of leakages and spillovers in both policy-implementing and non-implementing countries. Overall, these analyses and their findings will contribute to a better understanding of macroprudential policies and, thus, allow policymakers to use their macroprudential toolsets more effectively.

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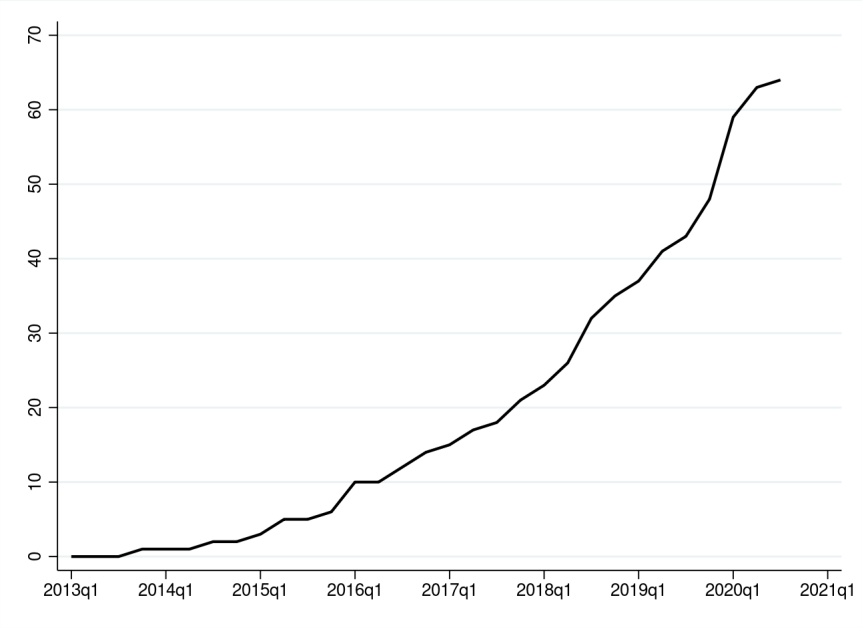
8 Figures and Tables

8.1 Figures

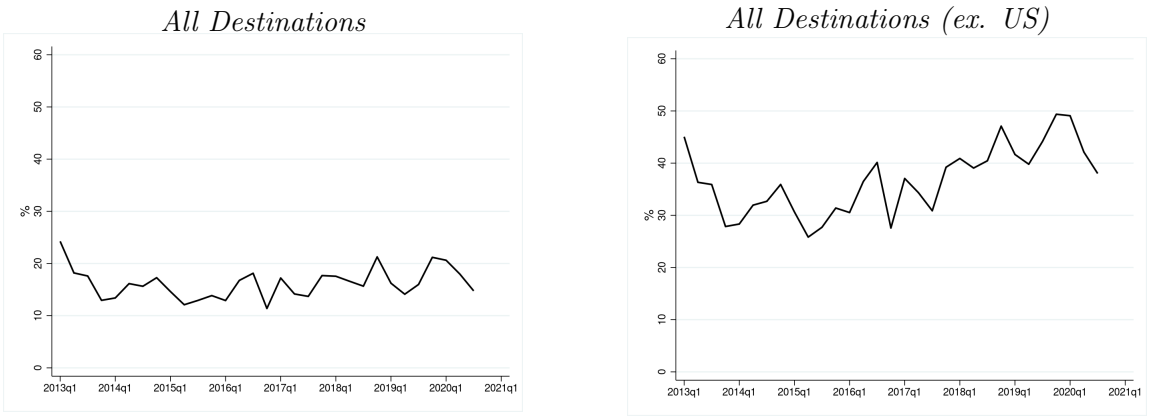
Figure 1: Number of Cumulated CCyB Changes over Time



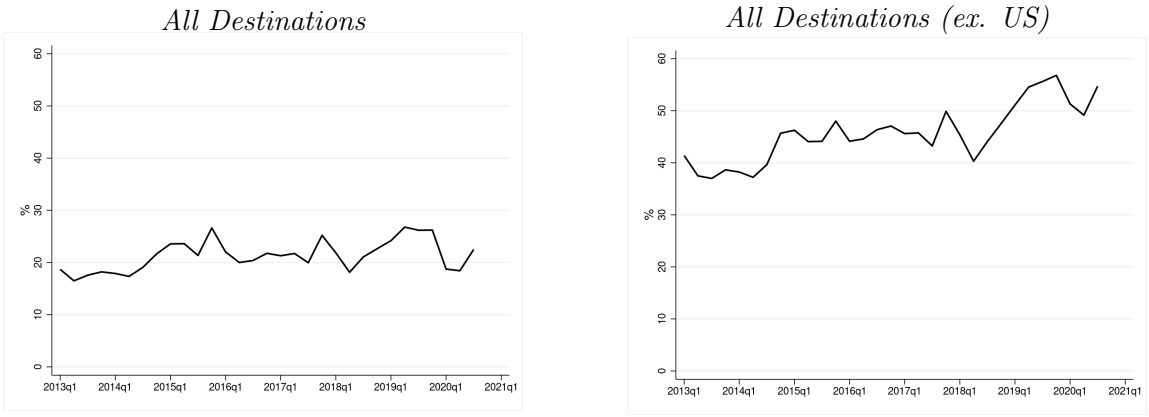
Note: This figure shows the number of cumulated CCyB changes in our sample over time. Details on the sources and construction of the CCyB change variable are shown in Section 3.3.2. Last observation: 2020Q3.

Figure 2: Share of Lending by Canadian Banks to Countries with a Non-Zero CCyB

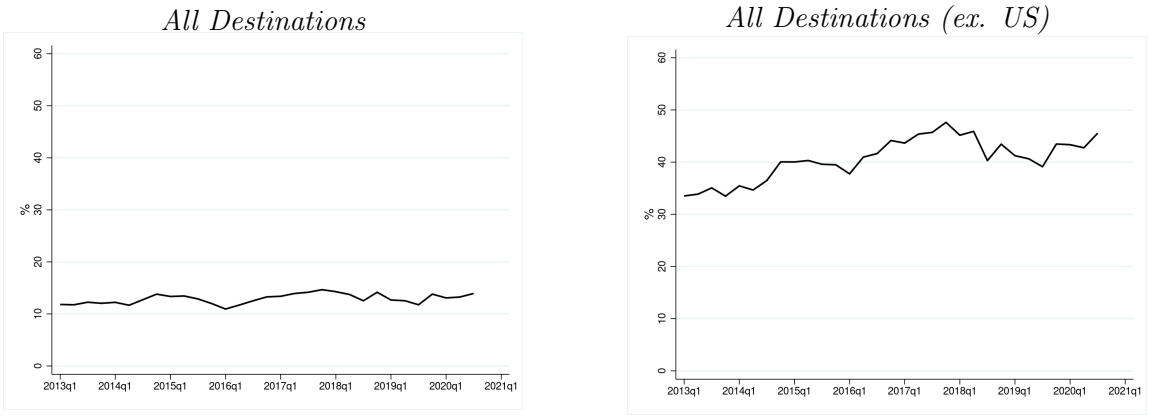
(a) Cross-Border Lending



(b) Inter-Office Lending

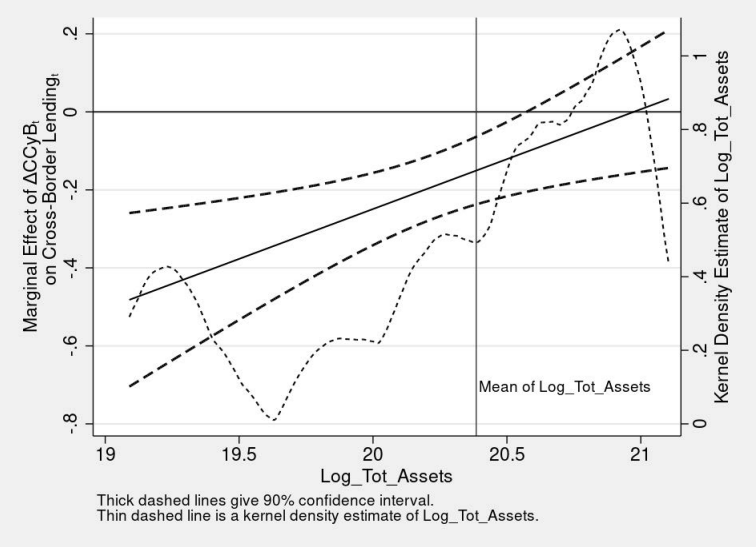


(c) Local Lending by Foreign Affiliates



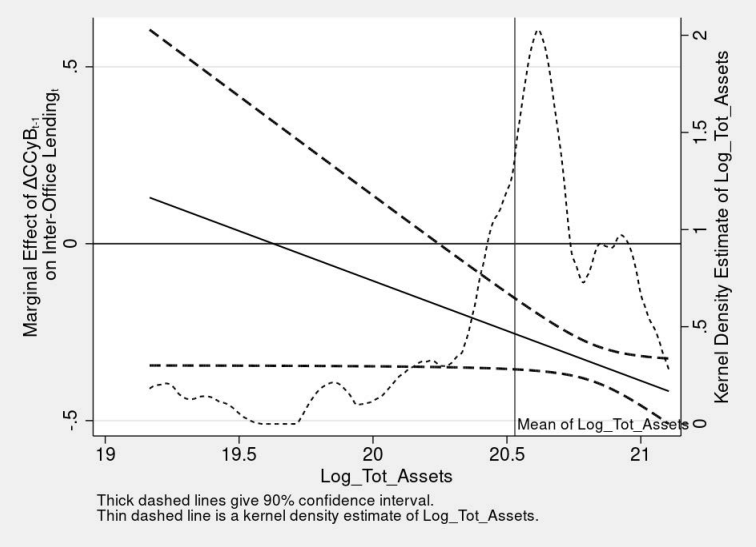
Note: This figure presents the share of foreign lending by Canadian banks to countries that had a non-zero CCyB at least at one point in time relative to all foreign lending by Canadian banks. Details on the sources of the foreign lending variables are described in Section 3.3.1. Details on the sources and construction of the CCyB change variable are shown in Section 3.3.2.

Figure 3: Marginal Effect of a CCyB Change on Cross-Border Lending as a Function of Bank Size



Note: This figure presents the marginal effect of a 1-percentage-point CCyB change on cross-border lending as a function of bank size (Log of Total Assets). The solid black line represents the marginal effect, the dashed black lines surrounding it represent the upper and lower bounds of the corresponding 90 percent confidence interval. The dotted line in the background shows the distribution of the bank size variable. The coefficient estimates are based on Specification (1) of Table 3. For details on the variable constructions see Table 3.

Figure 4: Marginal Effect of a CCyB Change on Inter-Office Lending as a Function of Bank Size



Note: This figure presents the marginal effect of a 1-percentage-point CCyB change on inter-office lending as a function of bank size (Log of Total Assets). The solid black line represents the marginal effect, the dashed black lines surrounding it represent the upper and lower bounds of the corresponding 90 percent confidence interval. The dotted line in the background shows the distribution of the bank size variable. The coefficient estimates are based on Specification (1) of Table 7. For details on the variable constructions see Table 7.

8.2 Tables

Table 1: Determination of the "Preferred" Lag

Lending Type	Sample	Since 1998		Since 2013		"Preferred" Lag
		Overall SD	*Within SD*	*Overall SD*	*Within SD*	
Cross-Border	Full Sample	0.56	0.55	0.49	0.49	Contemp.
Inter-Office	Full Sample	0.35	0.35	0.36	0.36	1^{st} lag
Affiliate	Full Sample	0.43	0.43	0.42	0.41	1^{st} lag
Cross-Border	UK	0.68	0.68	0.59	0.59	Contemp.
Inter-Office	UK	0.43	0.43	0.40	0.40	1^{st} lag
Affiliate	UK	0.39	0.39	0.32	0.31	1^{st} lag

Note: This table presents the "preferred" lag for each dependent variable. The "preferred" lag is based on the standard deviation of the foreign lending variables. Low standard deviations correspond to a longer lag structure (i.e., 1^{st} lag) and high standard deviations to a shorter lag structure (i.e., contemporaneous). *Overall SD* = overall standard deviation; *Within SD* = standard deviation of the within variation. The table presents this variation for the full sample (top three rows) and the United Kingdom (bottom three rows) of our tightening cycle analysis. Moreover, the standard deviations are calculated over two periods, one from 1998 and one from 2013, which corresponds to our main regression sample.

Table 2: Summary Statistics of Key Variables

	Mean	Std. Dev.	Min.	Max.
Baseline Regressions:				
Cross-Border Lending Growth$_t$	0.006	0.490	-1.000	1.000
ΔCCyB$_t$	0.009	0.075	-0.500	1.000
ΔDSB$_t$	0.020	0.069	0.000	0.250
ΔMPP$_t$	0.235	0.424	0.000	1.000
ΔMP$_t$	0.033	0.147	-0.250	0.500
Log Tot. Assets$_{t-1}$	20.385	0.594	19.090	21.105
T1 Capital Ratio$_{t-1}$	0.122	0.010	0.106	0.154
Liq. Assets Ratio$_{t-1}$	0.069	0.019	0.035	0.119
ST Funding Ratio$_{t-1}$	0.183	0.073	0.105	0.332
Alternative Dependent Variables:				
Inter-Office Lending Growth$_t$	0.009	0.361	-1.000	1.000
Local Lending Growth$_t$	-0.007	0.420	-1.000	1.000

Note: The summary statistics for the cross-border lending variable and all explanatory variables are obtained from the sample of Specification (3) in Table 3 and refer to the tightening cycle analysis. The summary statistics for the alternative dependent variables are obtained from the samples of Specification (3) in Tables 7 and 9, respectively. The explanatory variables in these regressions are very similar to those displayed in the table above.

Table 3: Foreign CCyB Changes and Cross-Border Lending – Aggregate Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔCCyB$_t$	-0.1240**	-0.1242**	-0.1195**	-0.1196**	-0.1304**	-0.1339**	-0.1217**	-0.1272**
	(0.054)	(0.054)	(0.052)	(0.052)	(0.063)	(0.059)	(0.060)	(0.057)
ΔCCyB$_{t-1}$		-0.0115		-0.0066		-0.0254		-0.0406
		(0.066)		(0.069)		(0.081)		(0.082)
Log Tot. Assets$_{t-1}$			0.0134**	0.0135**	-0.0513	-0.0506	0.2982*	0.2992*
			(0.006)	(0.006)	(0.056)	(0.056)	(0.174)	(0.174)
T1 Capital Ratio$_{t-1}$			-1.3761***	-1.3740***	-1.0143	-1.0134	-0.7047	-0.7064
			(0.415)	(0.417)	(0.747)	(0.747)	(0.955)	(0.955)
Liq. Assets Ratio$_{t-1}$			-0.3329	-0.3328	-0.2303	-0.2296	-0.8564	-0.8567
			(0.277)	(0.277)	(0.513)	(0.513)	(0.555)	(0.556)
ST Funding Ratio$_{t-1}$			-0.0833	-0.0833	0.3532	0.3515	0.2722	0.2731
			(0.051)	(0.051)	(0.567)	(0.566)	(0.818)	(0.818)
Country × Bank FE	No	No	No	No	Yes	Yes	Yes	Yes
Time FE	No	No	No	No	No	No	Yes	Yes
R^2	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03
Countries	78	78	78	78	78	78	78	78
Observations	7700	7700	7700	7700	7700	7700	7700	7700
Joint CCyB: Level		-0.1357		-0.1262		-0.1593		-0.1678
P-value		0.020		0.040		0.063		0.077

Note: This table presents the results of estimating Equation (1) on our sample of 78 destination countries of Canadian banks' cross-border lending over the period 2013Q2 to 2019Q3. The dependent variable is cross-border lending growth. Details on the source and the construction of this variable are provided in Section 3.3.1. The odd-numbered specifications contain the contemporaneous effect of $\Delta CCyB$ and the even-numbered specifications contain both the contemporaneous effect and the first lag of $\Delta CCyB$. Details on the sources and construction of the CCyB change variable are shown in Section 3.3.2. A constant is included but not reported. Standard errors are in parentheses. * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

Table 4: Foreign CCyB Changes and Cross-Border Lending – Transmission Channels

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
ΔCCyB$_t$	-5.3652**	-5.9779***	0.0235	0.1008	-0.0555	-0.0112	0.0087	-0.0519	-7.7529*	-8.0697**	-2.5781
	(2.175)	(2.015)	(1.096)	(1.069)	(0.394)	(0.368)	(0.257)	(0.253)	(4.134)	(3.982)	(3.649)
ΔCCyB$_{t-1}$		-4.3231*		0.7917		0.4765		-0.4190**		-1.1257	-9.4427***
		(2.530)		(0.725)		(0.395)		(0.184)		(2.719)	(2.714)
ΔCCyB$_t$ × Log Tot. Assets$_{t-1}$	0.2558**	0.2855***							0.3720**	0.3893**	0.1634***
	(0.107)	(0.099)							(0.182)	(0.173)	(0.055)
ΔCCyB$_{t-1}$ × Log Tot. Assets$_{t-1}$		0.2090*								0.0748	0.4827***
		(0.125)								(0.144)	(0.116)
ΔCCyB$_t$ × T1 Capital Ratio$_{t-1}$			-1.1702	-1.8424					4.4494	4.0062	1.6082
			(8.807)	(8.625)					(10.246)	(9.915)	(21.223)
ΔCCyB$_{t-1}$ × T1 Capital Ratio$_{t-1}$				-6.7233						-3.7231	-9.0943
				(5.921)						(7.734)	(6.079)
ΔCCyB$_t$ × Liq. Assets Ratio$_{t-1}$					-0.9985	-1.7428			-2.7152	-3.1149	-13.5654*
					(5.988)	(5.728)			(7.069)	(6.721)	(7.148)
ΔCCyB$_{t-1}$ × Liq. Assets Ratio$_{t-1}$						-7.5085				-3.6137	1.2934
						(4.726)				(5.921)	(6.371)
ΔCCyB$_t$ × ST Funding Ratio$_{t-1}$							-0.6782	-0.3861	-1.9060	-1.7005	-1.4010
							(1.211)	(1.199)	(1.692)	(1.634)	(1.297)
ΔCCyB$_{t-1}$ × ST Funding Ratio$_{t-1}$								1.9835**		1.3748	2.5653**
								(0.938)		(1.214)	(0.989)
Country × Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Countries	78	78	78	78	78	78	78	78	78	78	78
Observations	7700	7700	7700	7700	7700	7700	7700	7700	7700	7700	7700
Joint CCyB: Level		-10.3011		0.8924		0.4652		-0.4709		-9.1954	-12.0209
P-value		0.000		0.397		0.121		0.108		0.009	0.001
Joint CCyB: Interaction		0.4944		-8.5657		-9.2513		1.5974		0.4640	0.6462
P-value		0.000		0.334		0.032		0.279		0.007	0.000

Note: This table presents the results of estimating Equation (2) on our sample of 78 destination countries of Canadian banks' cross-border lending growth over the period 2013Q2 to 2019Q3. For additional explanations, see Table 3. Specification (11) of this table sets all CCyB changes in the last month of each quarter to zero. The joint effects in Specifications (10) and (11) refer to the interaction with the *Log Tot. Assets* variable. A constant is included but not reported. Standard errors are in parentheses. * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

Table 5: Foreign CCyB Changes and Cross-Border Lending – Robustness: Alternative Policies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ΔCCyB$_t$	-5.3652**	-5.9779***	-5.2431**	-5.7800***	-5.3869**	-5.9062***	-5.4223**	-6.0405***	-5.3140**	-5.7738***
	(2.175)	(2.015)	(2.065)	(1.936)	(2.180)	(2.045)	(2.186)	(2.018)	(2.074)	(1.978)
ΔCCyB$_{t-1}$		-4.3231*		-4.2295*		-4.3293		-4.4385*		-4.4051*
		(2.530)		(2.536)		(2.615)		(2.510)		(2.556)
ΔCCyB$_t$ $\times$ Log Tot. Assets$_{t-1}$	0.2558**	0.2855***	0.2499**	0.2759***	0.2569**	0.2819***	0.2586**	0.2886***	0.2534**	0.2756***
	(0.107)	(0.099)	(0.102)	(0.096)	(0.108)	(0.101)	(0.108)	(0.100)	(0.103)	(0.098)
ΔCCyB$_{t-1}$ $\times$ Log Tot. Assets$_{t-1}$		0.2090*		0.2043		0.2093		0.2147*		0.2129*
		(0.125)		(0.125)		(0.129)		(0.124)		(0.126)
ΔDSB$_t$ $\times$ Log Tot. Assets$_{t-1}$			0.2574*	0.2337*					0.2701**	0.2081
			(0.130)	(0.125)					(0.133)	(0.128)
ΔDSB$_{t-1}$ $\times$ Log Tot. Assets$_{t-1}$				-0.1040						-0.1456
				(0.154)						(0.166)
ΔMPP$_t$ $\times$ Log Tot. Assets$_{t-1}$					-0.0155	-0.0202			-0.0077	-0.0123
					(0.021)	(0.021)			(0.022)	(0.022)
ΔMPP$_{t-1}$ $\times$ Log Tot. Assets$_{t-1}$						-0.0364*				-0.0278
						(0.022)				(0.025)
ΔMP$_t$ $\times$ Log Tot. Assets$_{t-1}$							-0.0845	-0.0908	-0.0979	-0.0987
							(0.069)	(0.071)	(0.068)	(0.072)
ΔMP$_{t-1}$ $\times$ Log Tot. Assets$_{t-1}$								-0.0314		-0.0426
								(0.075)		(0.077)
Country $\times$ Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Countries	78	78	78	78	78	78	78	78	78	78
Observations	7700	7700	7700	7700	7700	7700	7700	7700	7700	7700
Joint CCyB: Level		-10.3011		-10.0095		-10.2355		-10.4790		-10.1788
P-value		0.000		0.000		0.000		0.000		0.000
Joint CCyB: Interaction		0.4944		0.4802		0.4912		0.5032		0.4886
P-value		0.000		0.000		0.000		0.000		0.000

Note: This table presents the results of a robustness check that examines the role of alternative policies in affecting cross-border lending growth by Canadian banks. The policies are: the Canadian domestic stability buffer (DSB), other Canadian macroprudential policies (MPP), and Canadian monetary policy (MP). All policies are included as changes (Δ). The joint effects in Specification (10) refer to the interaction with the *Log Tot. Assets* variable. For additional explanations, see Table 3. A constant is included but not reported. Standard errors are in parentheses. * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

Table 6: Foreign CCyB Changes and Cross-Border Lending – Robustness: Alternative Fixed Effects

	(1)	(2)	(3)	(4)
ΔCCyB$_t$	-5.3652**	-5.9779***		
	(2.175)	(2.015)		
ΔCCyB$_{t-1}$		-4.3231*		
		(2.530)		
ΔCCyB$_t$ × Log Tot. Assets$_{t-1}$	0.2558**	0.2855***	0.2733*	0.2764*
	(0.107)	(0.099)	(0.164)	(0.164)
ΔCCyB$_{t-1}$ × Log Tot. Assets$_{t-1}$		0.2090*		0.2502**
		(0.125)		(0.104)
FE	Country × Bank	Country × Bank	Country × Time	Country × Time
Time FE	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes
R^2	0.03	0.03	0.26	0.26
Countries	78	78	78	78
Observations	7700	7700	7700	7700
Joint CCyB: Level		-10.3011		
P-value		0.000		
Joint CCyB: Interaction		0.4944		0.5266
P-value		0.000		0.000

Note: This table presents the results of a robustness check that examines the role of alternative fixed effect structures. In particular, it explores the role of *country* × *time* fixed effects. Note that the direct effects in Specifications (3) and (4) cannot be estimated as they are absorbed by this fixed effect structure. For additional explanations, see Table 3. A constant is included but not reported. Standard errors are in parentheses. * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

Table 7: Foreign CCyB Changes and Inter-Office Lending – Aggregate Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔCCyB$_{t-1}$	-0.1958***	-0.1959***	-0.1994***	-0.1998***	-0.2324***	-0.2381***	-0.2152**	-0.2226***
	(0.072)	(0.070)	(0.072)	(0.068)	(0.084)	(0.069)	(0.081)	(0.070)
ΔCCyB$_t$		-0.0096		-0.0159		-0.0530		-0.0676
		(0.113)		(0.117)		(0.118)		(0.091)
Log Tot. Assets$_{t-1}$			-0.0328	-0.0330	-0.0236	-0.0239	0.1692	0.1724
			(0.021)	(0.022)	(0.076)	(0.076)	(0.206)	(0.205)
T1 Capital Ratio$_{t-1}$			-0.3066	-0.2907	-0.7989	-0.7531	-0.8296	-0.8171
			(0.841)	(0.808)	(1.380)	(1.346)	(1.953)	(1.952)
Liq. Assets Ratio$_{t-1}$			-0.3435	-0.3440	0.5618	0.5730	-0.0292	-0.0235
			(0.337)	(0.338)	(0.551)	(0.550)	(0.980)	(0.981)
ST Funding Ratio$_{t-1}$			-0.0337	-0.0332	1.1547	1.1716	0.1889	0.1700
			(0.079)	(0.079)	(0.801)	(0.800)	(1.397)	(1.385)
Country × Bank FE	No	No	No	No	Yes	Yes	Yes	Yes
Time FE	No	No	No	No	No	No	Yes	Yes
R^2	0.00	0.00	0.00	0.00	0.03	0.03	0.05	0.05
Countries	44	44	44	44	44	44	44	44
Observations	2254	2254	2254	2254	2254	2254	2254	2254
Joint CCyB: Level		-0.2055		-0.2157		-0.2912		-0.2902
P-value		0.000		0.000		0.000		0.000

Note: This table presents the results of estimating Equation (1) on our sample of Canadian banks' inter-office lending between their Canadian head offices and their foreign affiliates in 44 destination countries over the period from 2013Q2 to 2019Q3. The dependent variable is inter-office lending growth. Details on the source and the construction of this variable are provided in Section 3.3.1. The odd-numbered specifications contain the first lag of $\Delta CCyB$ and the even-numbered specifications contain both the contemporaneous and the first lag of $\Delta CCyB$. Details on the sources and construction of the CCyB change variable are shown in Section 3.3.2. A constant is included but not reported. Standard errors are in parentheses. * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

Table 8: Foreign CCyB Changes and Inter-Office Lending – Transmission Channels

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ΔCCyB$_{t-1}$	5.5399	5.7744	0.9581**	0.9954***	-0.3432	-0.2890	0.1190	0.0765	11.8020**	12.5094**
	(3.305)	(3.498)	(0.426)	(0.369)	(0.545)	(0.574)	(0.291)	(0.287)	(5.453)	(5.888)
ΔCCyB$_{t}$		2.3691		0.6987		0.8442**		-0.4212		7.7940***
		(3.118)		(1.116)		(0.364)		(0.292)		(1.883)
ΔCCyB$_{t-1}$ × Log Tot. Assets$_{t-1}$	-0.2822*	-0.2941*							-0.4502*	-0.4821*
	(0.159)	(0.169)							(0.240)	(0.264)
ΔCCyB$_{t}$ × Log Tot. Assets$_{t-1}$		-0.1195								-0.3202***
		(0.154)								(0.110)
ΔCCyB$_{t-1}$ × T1 Capital Ratio$_{t-1}$			-9.2660***	-9.6230***					-21.4751***	-22.0390***
			(3.065)	(2.692)					(6.222)	(5.902)
ΔCCyB$_{t}$ × T1 Capital Ratio$_{t-1}$				-6.0492						-8.1481
				(8.363)						(10.615)
ΔCCyB$_{t-1}$ × Liq. Assets Ratio$_{t-1}$					1.6916	0.8661			-0.4289	-0.9045
					(6.929)	(7.330)			(3.150)	(3.281)
ΔCCyB$_{t}$ × Liq. Assets Ratio$_{t-1}$						-12.5850**				-9.0384
						(5.840)				(5.422)
ΔCCyB$_{t-1}$ × ST Funding Ratio$_{t-1}$							-1.8957	-1.7014	-0.4908	-0.2439
							(1.536)	(1.584)	(1.534)	(1.724)
ΔCCyB$_{t}$ × ST Funding Ratio$_{t-1}$								2.0322		2.0036*
								(1.293)		(1.066)
Country × Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06
Countries	44	44	44	44	44	44	44	44	44	44
Observations	2254	2254	2254	2254	2254	2254	2254	2254	2254	2254
Joint CCyB: Level		8.1435		1.6940		0.5552		-0.3448		20.3033
P-value		0.157		0.064		0.546		0.403		0.001
Joint CCyB: Interaction		-0.4136		-15.6722		-11.7189		0.3308		-0.8023
P-value		0.144		0.028		0.349		0.891		0.018

Note: This table presents the results of estimating Equation (2) on our sample of Canadian banks' inter-office lending growth between their Canadian head offices and their foreign affiliates in 44 destination countries over the period 2013Q2 to 2019Q3. The joint effects in Specification (10) refer to the interaction with the *Log Tot. Assets* variable. For additional explanations, see Table 7. A constant is included but not reported. Standard errors are in parentheses. * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

Table 9: Foreign CCyB Changes and Local Lending – Aggregate Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔCCyB$_{t-1}$	-0.1013	-0.0989	-0.1029	-0.1000	-0.1676**	-0.1535**	-0.1756***	-0.1617**
	(0.066)	(0.066)	(0.064)	(0.064)	(0.068)	(0.065)	(0.066)	(0.062)
ΔCCyB$_t$		0.1652*		0.1651*		0.1108		0.1122
		(0.092)		(0.093)		(0.101)		(0.094)
Log Tot. Assets$_{t-1}$			-0.0235**	-0.0239**	-0.2803***	-0.2814***	-0.1114	-0.1130
			(0.011)	(0.011)	(0.055)	(0.055)	(0.149)	(0.148)
T1 Capital Ratio$_{t-1}$			0.8400	0.7636	4.5722***	4.5202***	2.9644**	2.9488**
			(0.567)	(0.568)	(1.205)	(1.221)	(1.267)	(1.267)
Liq. Assets Ratio$_{t-1}$			0.5523***	0.5547***	1.1882***	1.1986***	0.8746*	0.8781*
			(0.206)	(0.206)	(0.417)	(0.418)	(0.495)	(0.496)
ST Funding Ratio$_{t-1}$			0.0202	0.0146	-2.6993***	-2.6763***	-1.4134	-1.3985
			(0.074)	(0.074)	(0.668)	(0.686)	(1.115)	(1.122)
Country × Bank FE	No	No	No	No	Yes	Yes	Yes	Yes
Time FE	No	No	No	No	No	No	Yes	Yes
R^2	0.00	0.00	0.00	0.00	0.04	0.04	0.05	0.05
Countries	94	94	94	94	94	94	94	94
Observations	6741	6741	6741	6741	6741	6741	6741	6741
Joint CCyB: Level		0.0663		0.0651		-0.0427		-0.0495
P-value		0.526		0.533		0.714		0.627

Note: This table presents the results of estimating Equation (1) on our sample of Canadian banks' foreign affiliates' local lending activities in 94 host countries over the period 2013Q2 to 2019Q3. The dependent variable is local lending growth of Canadian banks' foreign affiliates. Details on the source and the construction of this variable are provided in Section 3.3.1. The odd-numbered specifications contain the first lag of $\Delta CCyB$ and the even-numbered specifications contain both the contemporaneous and the first lag of $\Delta CCyB$. Details on the sources and construction of the CCyB change variable are shown in Section 3.3.2. A constant is included but not reported. Standard errors are in parentheses. * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

Table 10: Foreign CCyB Changes and Cross-Border lending - Transmission Channels, Loosening Sample I

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ΔCCyB$_t$	-5.2358***	-5.6550***	-5.7571***	-6.1323***	-5.0488**	-7.7656***	-2.3215	-5.1198
	(1.157)	(1.216)	(1.651)	(1.650)	(2.135)	(2.333)	(3.896)	(3.672)
ΔCCyB$_{t-1}$		-3.9915**		-3.6802**		-6.8555*		-7.4839
		(1.553)		(1.636)		(3.549)		(4.620)
ΔCCyB$_t$ $\times$ Log Tot. Assets$_{t-1}$	0.2524***	0.2725***	0.2656***	0.2851***	0.2455**	0.3767***	0.1467	0.2798*
	(0.056)	(0.059)	(0.077)	(0.081)	(0.104)	(0.113)	(0.153)	(0.149)
ΔCCyB$_{t-1}$ $\times$ Log Tot. Assets$_{t-1}$		0.1921**		0.1871**		0.3307*		0.3470**
		(0.077)		(0.071)		(0.172)		(0.169)
ΔCCyB$_t$ $\times$ T1 Capital Ratio$_{t-1}$			2.4632	2.3495			-7.8430	-6.6964
			(5.131)	(5.544)			(8.975)	(11.096)
ΔCCyB$_t$ $\times$ Liq. Assets Ratio$_{t-1}$			-0.5480	-0.7288			1.7900	0.6511
			(3.794)	(3.661)			(6.722)	(6.466)
ΔCCyB$_t$ $\times$ ST Funding Ratio$_{t-1}$			-0.1933	-0.1890			1.3369	1.1422
			(0.861)	(0.848)			(1.592)	(1.606)
ΔCCyB$_{t-1}$ $\times$ T1 Capital Ratio$_{t-1}$				0.3956				2.6084
				(4.654)				(12.455)
ΔCCyB$_{t-1}$ $\times$ Liq. Assets Ratio$_{t-1}$				-2.9358				-0.3957
				(2.542)				(2.923)
ΔCCyB$_{t-1}$ $\times$ ST Funding Ratio$_{t-1}$				-0.1465				-0.1138
				(0.452)				(0.899)
Country $\times$ Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.03	0.03	0.03	0.03	0.18	0.19	0.18	0.19
Countries	78	78	78	78	78	78	78	78
Observations	8940	8940	8940	8940	1226	1226	1226	1226
Joint CCyB: Level		-9.6464		-9.8124		-14.6211		-12.6036
P-value		0.000		0.000		0.004		0.053
Joint CCyB: Interaction		0.4646		0.4722		0.7074		0.6268
P-value		0.000		0.000		0.004		0.012

Note: This table presents the results of estimating Equation (2) on our sample of 78 destination countries of Canadian banks' cross-border lending growth over the following periods: Specifications (1) to (4) 2013Q2 to 2020Q3 and Specifications (5) to (8) from 2019Q4 to 2020Q3. For additional explanations, see Table 3. The joint effects in Specification (8) refer to the interaction with the *Log Tot. Assets* variable. A constant is included but not reported. Standard errors are in parentheses. * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

Table 11: Foreign CCyB Changes and Cross-Border lending - Transmission Channels, Loosening Sample II

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
D_t^T	-3.6224***	-3.8688***	-3.1908*	-3.3824					-3.2962***	-3.4935***	-2.8780	-3.0473
	(1.040)	(1.028)	(1.811)	(2.134)					(1.068)	(1.051)	(1.862)	(2.142)
D_{t-1}^T		-1.9976		-1.9968						-1.9706		-1.9426
		(1.361)		(1.963)						(1.334)		(1.978)
D_t^L					6.7971**	6.5542**	8.3126***	8.0282**	6.4214**	6.2855**	7.9255***	7.7549**
					(2.746)	(2.854)	(2.536)	(3.422)	(2.752)	(2.878)	(2.578)	(3.406)
D_{t-1}^L						1.6201		-0.1377		1.0138		-0.7071
						(3.115)		(4.194)		(3.131)		(4.210)
$D_t^T \times$ Log Tot. Assets$_{t-1}$	0.1741***	0.1861***	0.1853**	0.1934**					0.1583***	0.1678***	0.1712**	0.1769*
	(0.051)	(0.050)	(0.074)	(0.091)					(0.052)	(0.051)	(0.075)	(0.091)
$D_{t-1}^T \times$ Log Tot. Assets$_{t-1}$		0.0973		0.0824						0.0957		0.0786
		(0.067)		(0.087)						(0.065)		(0.088)
$D_t^L \times$ Log Tot. Assets$_{t-1}$					-0.3254**	-0.3134**	-0.3396***	-0.3265**	-0.3075**	-0.3008**	-0.3187**	-0.3107**
					(0.133)	(0.138)	(0.124)	(0.127)	(0.133)	(0.139)	(0.124)	(0.127)
$D_{t-1}^L \times$ Log Tot. Assets$_{t-1}$						-0.0813		-0.0524		-0.0524		-0.0253
						(0.149)		(0.153)		(0.150)		(0.154)
Country × Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Controls Interacted	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
R^2	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Countries	78	78	78	78	78	78	78	78	78	78	78	78
Observations	8940	8940	8940	8940	8940	8940	8940	8940	8940	8940	8940	8940
Joint D^T: Level		-5.8663		-5.3793						-5.4641		-4.9899
P-value		0.001		0.080						0.003		0.108
Joint D^T: Interaction		0.2834		0.2758						0.2635		0.2554
P-value		0.001		0.040						0.003		0.059
Joint D^L: Level						8.1743		7.8905		7.2993		7.0478
P-value						0.023		0.138		0.047		0.187
Joint D^L: Interaction						-0.3947		-0.3789		-0.3531		-0.3360
P-value						0.023		0.052		0.046		0.086

Note: This table presents the results of estimating Equation (2) on our sample of 78 destination countries of Canadian banks' cross-border lending growth with the modification that $\Delta CCyB$ is replaced by an indicator variable for a CCyB tightening announcement (D^T) and an indicator variable for a CCyB loosening announcement (D^L). All specifications are estimated over the sample 2013Q2 to 2020Q3. For additional explanations, see Table 3. A constant is included but not reported. Standard errors are in parentheses. * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$.

9 Appendix: Country Samples

Cross-Border Lending Sample:
Algeria, Argentina, Australia, Austria, Bahamas, Bangladesh, Barbados, Belgium, Belize, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Czech Republic, Denmark, Dominican Republic, Egypt, El Salvador, France, Germany, Guatemala, Guinea, Hong Kong SAR, Iceland, India, Indonesia, Ireland, Islamic Republic of Iran, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea, Kuwait, Lebanon, Lithuania, Luxembourg, Malaysia, Malta, Mexico, Morocco, Nepal, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Pakistan, Panama, Peru, Philippines, Poland, Qatar, Russia, Saudi Arabia, Singapore, Slovak Republic, South Africa, Spain, Sweden, Switzerland, Taiwan Province of China, Thailand, Trinidad and Tobago, Tunisia, Turkey, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela, Vietnam.

Inter-Office Lending Sample:
Antigua and Barbuda, Australia, Bahamas, Barbados, Belize, Brazil, Chile, China, Colombia, Costa Rica, Dominica, Dominican Republic, Egypt, El Salvador, France, Grenada, Guatemala, Guyana, Haiti, Hong Kong SAR, India, Ireland, Jamaica, Japan, Korea, Luxembourg, Malaysia, Malta, Mauritius, Mexico, Netherlands, Panama, Peru, Puerto Rico, Singapore, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Switzerland, Taiwan Province of China, Trinidad and Tobago, United Kingdom, United States, Uruguay.

Local Lending Sample:
Antigua and Barbuda, Argentina, Aruba, Australia, Austria, Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Belize, Brazil, Brunei Darussalam, Bulgaria, Canada, Chile, China, Colombia, Costa Rica, Cyprus, Czech Republic, Denmark, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Finland, France, Germany, Ghana, Greece, Grenada, Guatemala, Guyana, Haiti, Honduras, Hong Kong SAR, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Kazakhstan, Kenya, Korea, Lebanon, Liberia, Lithuania, Luxembourg, Macao SAR, Malaysia, Malta, Marshall Islands, Mauritius, Mexico, Netherlands, New Zealand, Nigeria, Norway, Oman, Panama, Paraguay, Peru, Philippines, Poland, Puerto Rico, Qatar, Russia, Saudi Arabia, Seychelles, Singapore, South Africa, Spain, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Sweden, Switzerland, Taiwan Province of China, Thailand, Trinidad and Tobago, Turkey, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela, Vietnam.