

**ONLINE APPENDICES TO
THE NEXUS OF MONETARY POLICY AND SHADOW BANKING
IN CHINA**

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APPENDIX A. DETAILS OF THE MICRODATA CONSTRUCTION

This section provides a detailed description of how we constructed the two micro datasets. We first show in detail how we constructed the data on entrusted loans and then describe the construction of balance sheet data of individual commercial banks.

A.1. Construction of entrusted loan data. The data on entrusted loans are off banks’ balance sheets. We read all the raw announcements of entrusted lending between nonfinancial firms from 2009 to 2015. One main reason we must read raw announcements line by line is that there were often multiple announcements made by an individual lender for the same transaction. In such cases, we manually combined these raw announcements into one announcement. Some announcements were for repayment of entrusted loans. To avoid double counting, we drop those announcements because the same transaction was recorded in previous announcements. Another reason for reading through raw announcements relates to the nuances of the Chinese language in expressing how the transaction of a particular entrusted loan was conducted. For some announcements, the amount of an entrusted loan was planned but never executed or executed with a different amount in a later announcement. During the loan planning stage, the name of the trustee was often not given in an announcement. If we had not been careful about these announcements, we would have exaggerated the number and the amount of entrusted loans collected. A fourth reason is that we must remove announcements about loans that had already been paid to avoid duplication. The announcements organized this way are the ones we use for the paper and we call them “announcements” rather than “raw announcements” with the understanding that those announcements have been already cleaned up from raw announcements.

Our data construction involves extracting the transaction data, manually, from our cleaned-up announcements of new loans. For each announcement, we recorded the names of the lender and the borrower. Because the same transaction may be announced by both lender and borrower, two announcements may correspond to only one transaction. In these cases, we manually compared both announcements to ascertain the accuracy of our processed data set.¹ After the comparison, we merged the two announcements for the same transaction into one unique observation. It turns out that there was only one such announcement for the period 2009-2015. Subtracting this double-counted announcement gives us 1379 unique

¹We find that the lender’s announcement typically contains more information than the borrower’s.

observations. The timing of the observation corresponds to the exact timing of the transaction and does not necessarily correspond to the time when an announcement was made. The transaction data constructed from these unique observations are used for our empirical analysis.

The announcement data we constructed is the most important source for off-balance-sheet activities. These data were also used by the PBC in their financial stability reports and we cross-checked our data with these reports. We read through more than a thousand relevant announcements line by line and cross-checked the data from different sources to decipher the reporting nuances in the Chinese language, eliminate redundant and duplicated observations, and obtain accurate and comprehensive data for entrusted lending facilitated by banks and nonbank trustees. During this construction process that has taken us years to complete, we identified lending firms, borrowing firms, and, most important of all, trustees that facilitated entrusted lending between nonfinancial firms. Our data sample begins in 2009 and ends in 2015. There are relatively few observations before 2009.

Table A1 shows the number of unique observations without duplicated announcements. The total number of unique observations must equal the sum of “NLA” and “NBA” minus “NLABA” (the number of duplications). Clearly, the number of announcements made by lenders was considerably greater than the number of announcements made by borrowers, a fact that is consistent with the legal requirement that listed lending firms must reveal all the details of entrusted loan transactions.

Table A2 shows a breakdown of transactions by different types of trustees and different types of loans. Affiliated loans involve both lending and borrowing firms within the same conglomerate. While most entrusted loans facilitated by nonbank trustees were affiliated ones, a majority of affiliated loans were channeled by banks, a fact that is not well known. As one can see from the table, no matter whether entrusted loans were affiliated, small banks facilitated more transactions than large banks, and large banks facilitated more transactions than nonbank trustees. Thus, banks played a critical role in facilitating both affiliated and non-affiliated entrusted loans.

Nonstate banks accounted for the largest fraction of both loan transactions (number) and loan volume (amount). Table A3 shows that the number of entrusted loan transactions facilitated by nonstate banks took 50% of the total number and the amount of entrusted loans 47% of the total amount in 2009-2015. Thus, nonstate banks played a special role in funneling entrusted loans.

TABLE A1. Number of announcements made by lenders and borrowers

Description	NLA	NBA	NLABA	Total
Number of observations	1152	228	1	1379

Note. NLA: number of lenders' announcements; NBA: number of borrowers' announcements; NLABA: number of the same transactions announced by both lenders and borrowers.

TABLE A2. A breakdown of the total number of transactions by types of trustees and types of loans

Description	NBTs	State banks	Nonstate banks	Total
Non-affiliated loans	5	11	255	376
Affiliated loans	304	256	443	1003
Total	309	372	698	1379

Note. NBTs: nonbank trustees.

TABLE A3. Proportions (%) of loan transactions and loan volume according to different types of trustees

Description	NBTs	State banks	Nonstate banks	Total
Number of transactions	22.41	26.98	50.62	100
Loan volume	28.73	24.03	47.24	100

Note. NBTs: nonbank trustees.

A.2. Construction of bank asset data. The bank asset data contain bank loans and ARI on banks' balance sheets. We constructed the bank asset dataset using banks' quarterly reports downloaded from the WIND database. The Bankscope database is also used for obtaining annual balance sheet information such as LDR, capital adequacy ratio, liquidity ratio, and size for all Chinese commercial banks, including banks other than the 16 large publicly listed banks. Quarterly series of bank-specific attributes are unavailable for most private banks. Our panel regression analyses in Sections IV.A and IV.B of the main text include private banks as facilitators of entrusted lending.

As for bank loans and ARI, we downloaded the quarterly reports for each of the 16 commercial banks listed in the Hongkong, Shenzhen, or Shanghai Exchanges from WIND. Chinese commercial banks publish a first quarterly report (Q1), an interim report (Q2), a

third quarterly report (Q3), and an annual report(Q4). The ARIX series, equal to ARI subtracting the amount of central bank bills and government bonds, is available only annually; we interpolated the quarterly ARIX series by the quarterly ARI series. Since the annual ARIX series is missing for a number of commercial banks in 2009 and 2010, the interpolated quarterly ARIX series are missing for these banks during these years. We organized all these data into an unbalanced quarterly panel dataset from 2009Q1 to 2015Q4.

During the process of constructing our bank asset dataset, we discovered that commercial banks were not required to report the detailed products within ARIX until recently and there was no breakdown of the ARIX series until recent years as the CBRC regulations have been increasingly enforced over time. We find that during 2014-2015, a breakdown of ARIX may include asset management plan, trust plan, wealth management products, and various bonds issued by corporations, financial institutions, and local governments (see Figures A1 and A2 for examples). The name “trust plan” or “asset management plan” can be deceiving because the beneficiary rights of entrusted loans (entrusted rights) were repackaged by trust companies or asset management companies into a trust plan or an asset management plan to be sold to banks and other investors. In other words, investors (e.g., banks) did not buy entrusted rights directly from the firm who was the lender of entrusted loans, but rather they invested in a trust plan or an asset management plan used to transfer entrusted rights. As an example of a trust plan, on July 8, 2010 CICTC trust announced a trust plan to transfer the beneficiary right of an entrusted loan made by Guangzhou Electronic Real Estate Development Co. Ltd to its affiliated company (see Figures A3-A5). As an example of an asset management plan, Zhongrong (Beijing) Asset Management Co. Ltd issued an announcement describing an asset management plan that was created to transfer entrusted rights between two nonfinancial companies (see Figures A6-A7). We approximate the amount of entrusted rights as the sum of trust plan and asset management plan, which has an average 78.04% (43.64%) share of ARIX for nonstate (state) banks during 2014-2015. The high share for nonstate banks is consistent with the high correlation between entrusted loans and ARIX documented in Section IV.D of the main text.

Bonds issued by local governments within ARIX are related to Chen, He and Liu (2017) as part of shadow banking products showing up on banks’ balance sheets. But unfortunately, this portion is not always available on banks’ annual reports. Although we suspect that bonds issued by local governments are part of ARIX, we cannot separate them from ARIX.

APPENDIX B. A DYNAMIC EQUILIBRIUM MODEL

In this section, we construct a dynamic theoretical model fully in regard to the impacts of monetary policy shocks on banks' portfolio allocation and total credit. The purpose of this section is to provide a mechanism that shows that contractionary monetary policy causes bank loans to decline as expected (the bank lending channel) but risky nonloan assets to increase (dampening the effectiveness of monetary policy).

We begin with a description of the model and the bank's optimization problem. We then establish important features of the model, which makes it tractable to solve an individual bank's optimization problem. After that, we characterize the equilibrium solutions on banks' portfolio and dividend choices. The proofs of all lemmas and propositions in this section are provided in Appendix C.

To maintain tractability, we abstract from a host of factors such as reserve requirements to highlight the bank lending channel. Instead, we focus on the two regulatory constraints (LDR and safe-loan constraints) and regulatory costs associated with deposit shortfalls.

The economy is populated by a continuum of infinitely-lived banks whose identity is denoted by $j \in [0, 1]$. Each bank is subject to an idiosyncratic withdrawal shock to its deposits with a fraction ω_t of deposits withdrawn. Specifically, the idiosyncratic shock ω_t is continuously distributed with the probability density function $f(\omega_t)$ that is uniformly distributed with the support of $[\mu(\varepsilon_{m,t}), 1]$, where $\varepsilon_{m,t}$ is an i.i.d. monetary policy shock as in previous empirical sections. As shown in Section V.A of the main text, a contractionary monetary policy shock leads to a fall of aggregate deposits by changing the distribution of idiosyncratic deposit withdrawals. That is,

$$\mu(\varepsilon_{m,t}) \simeq -(2\varepsilon_{m,t} + 1).$$

In the subsequent analysis of an individual bank's problem, we omit the subscript j as we show that the bank's equity is a sufficient statistic for that bank's individual state. The dynamic aggregation problem is postponed to Appendix C (see in particular equation (C48)). The bank has three types of assets to choose: (i) cash represented by C , (ii) traditional bank loans, B , subject to both LDR and safe-loan regulations, and (iii) risky investment assets, I^r , subject to a default risk but not to the two regulations as I^r is not regarded as a part of bank loans. Bank loans have a longer maturity than risky investment assets.²

Within each period, the banking activity involves two stages: lending and balancing stages.

²This feature is consistent with our empirical finding that entrusted loans had a shorter maturity than bank loans (Table 1 of the main text).

B.1. Lending stage. At the lending stage, the bank decides the amount of deposits to demand, how much of the dividend to distribute, and how to allocate three types of assets for investment: inter-temporal bank loans, within-period risky nonloan assets, and cash. Bank loans, B_t , are safe (default free) but subject to the regulatory constraint on the LDR, and are purchased at a discount price q_t . Risky assets, I_t^r , have a default probability p_t^r and are purchased at a discount price $0 < q_t^r < 1$.

The law of motion for bank loans evolves as

$$B_t = \delta \tilde{B}_t + S_t, \quad (\text{B1})$$

where \tilde{B}_t represents outstanding bank loans at the beginning of time t , $(1 - \delta)\tilde{B}_t$ represents a fraction of loans that are retired, and S_t represents new bank loans. Denote cash at the beginning of t by \tilde{C}_t such that

$$C_t = \tilde{C}_t + \varphi_t, \quad (\text{B2})$$

where φ_t represents additional cash holdings chosen by the bank.

At the beginning of period t , the repayment of the bank loan that is retired reduces the bank's liability by $(1 - \delta)\tilde{B}_t$. Accordingly, the bank's balance sheet constraint is

$$\tilde{D}_t - (1 - \delta)\tilde{B}_t + \mathcal{E}_t = \tilde{C}_t + q_t \delta \tilde{B}_t, \quad (\text{B3})$$

where \tilde{D}_t denotes deposits before the bank loan is repaid and \mathcal{E}_t the bank's equity or capital. Table B4, below, represents the balance sheet in which the left column indicates the asset side and the right column the liability side.

TABLE B4. Balance sheet at the beginning of the period

Asset	Liability
Cash (\tilde{C}_t)	Deposits $(\tilde{D}_t - (1 - \delta)\tilde{B}_t)$
Loans $(q_t \delta \tilde{B}_t)$	Equity (\mathcal{E}_t)

The bank's balance sheet constraint, after choosing C_t (or φ_t), I_t^r , B_t (or S_t), D_t , and dividend DIV_t , is

$$D_t/R_t^D + \mathcal{E}_t - \text{DIV}_t = C_t + q_t^r I_t^r + q B_t, \quad (\text{B4})$$

where R_t^D is the deposit rate. Without loss of generality, we assume $R_t^D > 1$. Rearranging the above equation yields the following balance sheet equation

$$\underbrace{D_t/R_t^D}_{\text{deposits}} + \underbrace{\mathcal{E}_t - \text{DIV}_t + (1 - q_t^r)I_t^r + (1 - q_t)B_t}_{\text{equity}} = \underbrace{C_t}_{\text{cash}} + \underbrace{I_t^r + B_t}_{\text{assets}}. \quad (\text{B5})$$

The balance sheet now becomes Table B5.

TABLE B5. Balance sheet after the bank's optimization

Asset	Liability
Cash (C_t)	Deposits
Risky assets	D_t/R_t^D
I_t^r	Equity
Loans	$\mathcal{E}_t - \text{DIV}_t +$
B_t	$(1 - q_t^r)I_t^r + (1 - q_t)B_t$

Substituting (B1), (B2), and (B3) into (B5) gives us the flow-of-funds constraint as

$$\underbrace{D/R_t^D - \tilde{D}_t}_{\Delta \text{deposits}} + \underbrace{(1 - q_t^r)I_t^r + (1 - q_t)S_t - \text{DIV}_t}_{\Delta \text{equity}} = \underbrace{\varphi_t + I_t^r + (B_t - \tilde{B}_t)}_{\Delta \text{assets}}. \quad (\text{B6})$$

The leverage constraint is

$$D_t/R_t^D \leq \kappa [\mathcal{E}_t - \text{DIV}_t], \quad (\text{B7})$$

where κ is the leverage ratio and the term in brackets after κ represents the equity net of the dividend payout. The liquidity constraint, as a proxy for a regulation on the sufficiency of the bank's liquid assets, is a lower bound for cash holdings in the model:

$$C_t \geq \psi [\mathcal{E}_t - \text{DIV}_t]. \quad (\text{B8})$$

B.2. Balancing stage. In the balancing stage, two random events occur: an idiosyncratic withdrawal shock to deposits and a default shock to risky assets. When the first random event occurs, the volume of bank loans is constrained by the LDR regulation as

$$qB_t \leq \theta \frac{(1 - \omega_t) D_t}{R^D},$$

where θ is the LDR ceiling set by the government.

Denote the deposit shortfall as

$$x_t = qB_t - \theta \frac{(1 - \omega_t) D_t}{R^D} \quad (\text{B9})$$

and the extra cost to recoup the shortfall by

$$\chi(x_t) = \begin{cases} r^b x_t & \text{if } x_t \geq 0 \\ 0 & \text{if } x_t < 0 \end{cases},$$

where $r^b > 0$ is an extra cost of acquiring additional deposits x .

When the default on I_t^r does not occur (the no-default state), the bank's liability is reduced at the end of the period because of repayment of the principal of risky assets. If I_t^r is defaulted (the default state), the bank's equity is reduced. We use the stochastic variable ξ to denote this default contingency:

$$\xi_t = \begin{cases} 1 & \text{with probability } 1 - p^r \text{ (the no-default state)} \\ \phi & \text{with probability } p^r \text{ (the default state)} \end{cases},$$

where $0 \leq \phi < 1$ represents the recovering rate of risky assets in the default state. The balance-sheet constraint for each bank is

$$\underbrace{D_t/R_t^D - \xi_t I_t^r}_{\text{liabilities}} + \underbrace{\mathcal{E}_t - \text{DIV}_t - (1 - \xi_t) I_t^r + (1 - q_t^r) I_t^r + (1 - q_t) B_t}_{\text{equity}} = \underbrace{C_t + B_t}_{\text{assets}}.$$

At the end of period t (the beginning of period $t + 1$), the stock variables are balanced as

$$\tilde{D}_{t+1} = D_t(1 - \omega_t) + \chi(x_t) - \xi_t R_{t+1}^D I_t^r, \quad (\text{B10})$$

$$\tilde{C}_{t+1} = C_t - \omega_t D_t, \quad (\text{B11})$$

$$\tilde{B}_{t+1} = B_t. \quad (\text{B12})$$

When there is a liquidity shortfall ($C_t < \omega_t D_t$) due to a deposit withdrawal, the bank can borrow from the central bank to satisfy depositors' withdrawal needs and repay the loan at the beginning of the next period.³ Accordingly, \tilde{C}_{t+1} corresponds to the net balance with the central bank. A negative value of \tilde{C}_{t+1} simply means a net borrowing from the central bank. Note that the balance sheet constraint (B4) makes sure that the bank repays the borrowed amount to the central bank at the beginning of the next period.⁴

B.3. The bank's optimizing problem. The bank takes $\mu(\varepsilon_{m,t})$, as well as r^b , q_t , q_t^r , R_t^D , as given when solving its problem. To avoid notational glut and make our theory transparent, we omit the time subscript whenever no confusion arises. The optimizing behavior at the

³A major task of the PBC is to maintain the stability of liquidity within the banking system to prevent default. For instance, the PBC provides short-term liquidity to the bank in need of liquidity via central bank liquidity loans or the standing lending facility (SLF). The practice of these policy instruments is documented in the PBC's quarterly MPRs.

⁴To highlight the costs associated with a deposit shortfall and its impact on the bank's portfolio choice between bank loans and risky non-loan assets, we assume that the interest rate for the bank to borrow from the central bank is zero.

lending stage can thus be described as

$$V^l(\tilde{C}, \tilde{B}, \tilde{D}; \varepsilon_m) = \max U(\text{DIV}) + E_{\omega, \xi} [V^b(C, B, D; \varepsilon_m)],$$

where V^l is the value function at the lending stage, V^b is the value function at the balancing stage, and $E_{\omega, \xi}$ is the mathematical expectation with respect to the (ω, ξ) measure. By choosing $(\text{DIV}, \varphi, S, I^r, D)$, the bank solves the above problem subject to

$$D/R^D = \tilde{D} - (1 - \delta)\tilde{B} + \text{DIV} + \varphi + q^r I^r + qS, \quad (\text{B13})$$

$$C = \tilde{C} + \varphi, \quad (\text{B14})$$

$$B = \delta\tilde{B} + S, \quad (\text{B15})$$

$$D/R^D \leq \kappa [C + q^r I^r + qB - D/R^D], \quad (\text{B16})$$

$$C \geq \psi [C + q^r I^r + qB - D/R^D], \quad (\text{B17})$$

where constraint (B13) corresponds to (B6), and constraint (B16), derived from equation (B5) and (B7), represents the leverage constraint on the bank's optimization problem.

The balancing stage behavior can be described as

$$V^b(C, B, D; \varepsilon_m) = \beta E_m [V^l(\tilde{C}', \tilde{B}', \tilde{D}'; \varepsilon'_m) | \varepsilon_m]$$

subject to

$$\tilde{D}' = (1 - \omega)D + \chi(x) - \xi R^D I^r, \quad (\text{B18})$$

$$\tilde{C}' = C - \omega D, \quad (\text{B19})$$

$$\tilde{B}' = B, \quad (\text{B20})$$

$$x = qB - \theta(1 - \omega)D/R^D, \quad (\text{B21})$$

where β is a subjective discount factor and E_m represents the mathematical expectation with respect to monetary policy shocks. Constraints (B18), (B19), and (B20) correspond to (B10), (B11), and (B12), respectively, and constraint (B21) corresponds to (B9).

Combining the two stages, we describe the overall optimization problem as

$$\begin{aligned} V^l(\tilde{C}, \tilde{B}, \tilde{D}; \varepsilon_m) = & \max U(\text{DIV}) \\ & + \beta E_{m, \omega, \xi} [V^l(C - \omega D, B, (1 - \omega)D + \chi(x) - \xi R^D I^r; \varepsilon'_m) | \varepsilon_m] \end{aligned} \quad (\text{B22})$$

subject to (B13), (B14), (B15), (B16), and (B17). The choice variables for this optimization are $(\text{DIV}, \varphi, S, I^r, D)$.

B.4. Features of the bank's optimization problem. We show that the original bank's optimization problem can be simplified into the single state-space representation. Moreover, it satisfies two nice properties: homogeneity in bank equity and separability of portfolio choice from dividend choice.

Proposition B1. The optimization problem (B22) can be simplified and collapsed into the single-state representation

$$V(\mathcal{E}; \varepsilon_m) = \max U(\text{DIV}) + \beta E_{m,\omega,\xi} [V(\mathcal{E}'; \varepsilon'_m) | \varepsilon_m] \quad (\text{B23})$$

subject to (B16), (B17), (B21), and

$$\mathcal{E} - \text{DIV} = C + q^r I^r + qB - D/R^D, \quad (\text{B24})$$

$$\mathcal{E}' = C - \omega D + q'\delta B + (1 - \delta)B - [(1 - \omega)D + \chi(x) - \xi R^D I^r], \quad (\text{B25})$$

where the single state is \mathcal{E} , (B24) corresponds to (B4), (B25) is derived from (B3), (B10), (B11), and (B12) (by moving time t in (B3) forward to time $t + 1$), and the choice variables are $(\text{DIV}, C, B, D, I^r)$.

Since constraints (B16), (B17), (B24), and (B25) are linear in \mathcal{E} and the objective function is homothetic in \mathcal{E} , the solution to the bank's problem not only exists but also is unique and the policy function is linear in equity \mathcal{E} . Moreover, thanks to the Principle of Optimality, the bank's dynamic problem can be separated into two subproblems, one concerning an intertemporal choice of dividend payoffs and the other relating to an intratemporal portfolio allocation. The following proposition formalizes these two results.⁵

Proposition B2. Let

$$U(\text{DIV}) = \frac{\text{DIV}^{1-\gamma}}{1-\gamma},$$

where $\gamma \geq 1$. Optimization problem (B23) satisfies the two properties: homogeneity in \mathcal{E} and separability of portfolio choice from dividend choice.

• **Homogeneity.** The value function $V(\mathcal{E}; z)$ is

$$V(\mathcal{E}; z) = v(z)\mathcal{E}^{1-\gamma},$$

and $v(z)$ satisfies the Bellman equation over the choice variables $\{\text{div}, \tilde{c}, \tilde{i}^r, \tilde{b}, \tilde{d}\}$

$$v(z) = \max U(\text{div}) + \beta E_{m,\omega,\xi} \left[v(z') (e'(\omega, \xi; \varepsilon'_m, \varepsilon_m))^{1-\gamma} | z \right] \quad (\text{B26})$$

⁵The homogeneity and separability properties in Proposition B2 are similar to Bianchi and Bigio (2017).

subject to

$$d/R^D \leq \kappa [c + q^r i^r + qb - d/R^D], \quad (\text{B27})$$

$$1 = c + \text{div} + q^r i^r + qb - d/R^D, \quad (\text{B28})$$

$$e' = c + (q'\delta + 1 - \delta)b - d - \chi (qb - \theta(1 - \omega)d/R^D) + \xi R^D i^r, \quad (\text{B29})$$

$$c \geq \psi [c + q^r i^r + qb - d/R^D], \quad (\text{B30})$$

where

$$[\text{div}, c, b, d, i^r, e'] = \frac{[\text{DIV}, C, B, D, I^r, \mathcal{E}']}{\mathcal{E}}. \quad (\text{B31})$$

- **Separability.** Problem (B26) can be broken into two separate problems. The first problem is for banks to make an optimal portfolio choice by choosing $\{w_c, w_i, w_b, w_d\}$ to maximize the certainty-equivalent portfolio value as

$$\Omega(\varepsilon'_m, \varepsilon_m) = \max\{E_{\omega, \xi} [w_c + R^I w_i + R^B w_b - R^D w_d - R^x]^{1-\gamma}\}^{\frac{1}{1-\gamma}} \quad (\text{B32})$$

subject to

$$1 = w_c + w_i + w_b - w_d, \quad (\text{B33})$$

$$w_d \leq \kappa(w_c + w_i + w_b - w_d), \quad (\text{B34})$$

$$w_c \geq \psi(w_c + w_i + w_b - w_d), \quad (\text{B35})$$

and taking the following prices as given

$$R^I = \frac{\xi R^D}{q^r}, R^B = \frac{q'\delta + 1 - \delta}{q}, R^x = \chi (w_b - \theta(1 - \omega)w_d), \quad (\text{B36})$$

where

$$w_c = \frac{c}{1 - \text{div}}, w_i = \frac{q^r i^r}{1 - \text{div}}, w_b = \frac{qb}{1 - \text{div}}, w_d = \frac{d/R^D}{1 - \text{div}}.$$

The second problem is to choose div in response to aggregate shocks:

$$v(\varepsilon_m) = \max_{\text{div}} U(\text{div}) + \beta(1 - \text{div})^{1-\gamma} E_m [\Omega(\varepsilon'_m, \varepsilon_m)^{1-\gamma} v(\varepsilon'_m) | z]. \quad (\text{B37})$$

Note that equations (B27), (B28), (B29), and (B30) are derived from equations (B16), (B24), (B25), and (B17) and that equation (B29) implies e' is a function of $\omega, \xi, \varepsilon'_m$, and ε_m such that

$$e'(\omega, \xi; \varepsilon'_m, \varepsilon_m) = (1 - \text{div})R^E(\omega, \xi; \varepsilon'_m, \varepsilon_m), \quad (\text{B38})$$

where R^E is the return on the bank's equity after dividend payout

$$R^E(\omega, \xi; \varepsilon'_m, \varepsilon_m) = w_c + R^I w_i + R^B w_b - R^D w_d - R^x. \quad (\text{B39})$$

Proposition B2 breaks the potentially unmanageable problem into two tractable problems by separating dividend decision about DIV from portfolio choice of φ, S, I^r , and D .

Thanks to the homogeneity feature, banks during the lending stage are replicas of one another scaled by equity, making aggregation a straightforward exercise. In other words, the equilibrium sequence of the aggregate variables $\{\text{DIV}_t, C_t, B_t, D_t, I_t^r, \mathcal{E}_t\}_{t=0}^\infty$ is the same as its counterpart in an otherwise identical representative bank environment in which the representative bank faces a deposit withdrawal shock $\mu(\varepsilon_m)$ in each period. This allows us to simplify the problem by solving the competitive equilibrium of the representative bank's problem numerically.

B.5. Characterizing the optimal portfolio allocation. The separability feature of the bank's optimal problem allows us to solve the bank's optimal portfolio choice separately from its dividend choice. In this section, we characterize the optimal choice of cash holdings, deposits, and a portfolio allocation between bank loans and risky assets. The next section characterizes the dividend choice and how it responds to monetary policy shocks.

Assumption 1.

$$R^D < R^B - r^b, \quad (\text{B40})$$

Assumption 1 can be justified by the unique Chinese institutional feature that the deposit rate imposed by the government was kept artificially low. We now establish the following lemma regarding the bank's optimal portfolio choice:

Proposition B3. With the low deposit rate satisfying Assumption 1, the bank's optimal portfolio choice $\{w_c, w_i, w_b, w_d\}$ satisfies

- (1) Both the leverage constraint (B34) and the liquidity constraint (B35) are always binding;
- (2) The equilibrium portfolio allocation between w_b and w_d is governed by the following no-arbitrage condition

$$E_\xi(R^I) - \underbrace{\left[-\frac{\text{Cov}_\xi(R^I, E_\omega(R^E)^{-\gamma})}{E_\xi[E_\omega(R^E)^{-\gamma}]} \right]}_{\text{default risk premium}} = R^B - \underbrace{E_\omega[R_b^x(w_b, w_d; \omega)]}_{\text{expected regulation cost}} - \underbrace{\frac{\text{Cov}_\omega(R_b^x, E_\xi(R^E)^{-\gamma})}{E_\omega[E_\xi(R^E)^{-\gamma}]} }_{\text{regulation risk premium}}, \quad (\text{B41})$$

where $R_b^x(w_b, w_d; \omega)$ is the partial derivative of $R^x(w_b, w_d; \omega)$ with respect to w_b :

$$R_b^x(w_b, w_d; \omega) = \frac{\partial R^x(w_b, w_d; \omega)}{\partial w_b} = \begin{cases} r_b & \text{if } \omega > 1 - w_b/(w_d \theta) \\ 0 & \text{otherwise} \end{cases}.$$

The intuition for the binding leverage constraint is straight forward. Under Assumption 1, the borrowing cost R^D is lower than the effective return on bank loans. As a result, the leverage constraint represented by (B34) is binding in equilibrium. The intuition for the binding liquidity constraint as represented by (B35) is also simple: Since $R^D > 1$ (a positive deposit rate), with the return for cash lower than the borrowing cost, the bank would like to hold the minimum cash in this economy to satisfy the liquidity constraint.

In equation (B41), the left side is the expected return on risky nonloan investments, adjusted for the risk premium due to the default risk. The right side is the expected return on bank loans, adjusted for the expected (marginal) regulation cost and regulation risk premium. The risk premium is always positive. The expected regulation cost is the expected marginal cost of recovering deposit shortfalls associated with lending amount B under the LDR regulation. The non-negativeness of R_b^x implies that the expected regulation cost is always positive.

The necessary condition for (B41) to hold is

$$E_\xi(R^I) > R^B - E_\omega[R_b^x(w_b, w_d; \omega)] - \frac{\text{Cov}_\omega(R_b^x, E_\xi(R^E)^{-\gamma})}{E_\xi[E_\omega(R^E)^{-\gamma}]}. \quad (\text{B42})$$

Equation (B42) states that the expected return on risky investments is greater than the effective return on bank loans such that the bank has an incentive to invest in risky assets, even if the bank is risk averse. Thus, it is optimal for the bank to increase the share of risky assets in its total investment on the asset side of the balance sheet.

To understand the effects of monetary policy shocks on banks' portfolio choice, note that the expected regulation cost can be expressed as

$$\begin{aligned} E_\omega[R_b^x(w_b, w_d; \omega)] &= r^b \times \underbrace{\text{Prob}(\omega \geq 1 - w_b/(w_d\theta))}_{\text{Probability of deposit shortfalls}} \\ &= r^b \frac{w_b/(w_d\theta)}{1 - \mu(\varepsilon_m)}. \end{aligned}$$

Contractionary monetary policy causes the risk of deposit withdrawal to increase (i.e., $\mu(\varepsilon_m)$ increases), which in turn increases the expected regulation cost. This tends to reduce the effective return on bank loans. According to the no-arbitrage condition (B41), the decline of the effective return on bank loans encourages the bank to substitute risky nonloan assets for bank loans.⁶

⁶The effect of a monetary policy shock on the covariance terms in (B41) is of second order in magnitude when compared with its effect on the expected regulation cost.

B.6. Characterizing the optimal dividend choice. Because of the homogeneity and separability features, the policy function for the portfolio choice of the bank, scaled by ex-dividend equity, is the same every period. We now solve the value function and dividend payout for transitional dynamics as well as the steady state. It follows from the first-order condition for problem (B37) that

$$\text{div}^{-\gamma} = \beta (1 - \gamma) (1 - \text{div})^{-\gamma} E_M [v(\varepsilon'_m) \mid \varepsilon_m] \Omega(\varepsilon'_m, \varepsilon_m)^{1-\gamma} \quad (\text{B43})$$

which gives

$$\text{div} = \frac{1}{1 + \{(1 - \gamma) \beta E_M [v(\varepsilon'_m) \mid \varepsilon_m] \Omega(\varepsilon'_m, \varepsilon_m)^{1-\gamma}\}^{\frac{1}{\gamma}}}. \quad (\text{B44})$$

Substituting (B44) into (B37) and reorganizing the terms, we obtain the value function

$$v(\varepsilon_m) = \frac{1}{1 - \gamma} \left\{ 1 + [(1 - \gamma) \beta E_M [v(\varepsilon'_m) \mid \varepsilon_m] \Omega(\varepsilon'_m, \varepsilon_m)^{1-\gamma}]^{\frac{1}{\gamma}} \right\}^{\gamma}. \quad (\text{B45})$$

At steady state, $\varepsilon_m = \varepsilon'_m$ and $v(\varepsilon_m) = E_m [v(\varepsilon'_m) \mid \varepsilon_m]$. Hence, (B45) implies the steady state value function as

$$v^{ss}(\varepsilon_m) = \frac{1}{1 - \gamma} \left[\frac{1}{1 - \beta^{\frac{1}{\gamma}} \Omega(\varepsilon_m)^{\frac{1-\gamma}{\gamma}}} \right]^{\gamma}. \quad (\text{B46})$$

Substituting (B46) into (B44), we obtain

$$\text{div}^{ss} = 1 - \beta^{\frac{1}{\gamma}} \Omega(\varepsilon_m)^{\frac{1-\gamma}{\gamma}}. \quad (\text{B47})$$

To understand the impacts of monetary policy shocks on the total credit, we establish the following lemma:

Lemma B1. With $\gamma > 1$, $\frac{\partial \text{div}}{\partial \varepsilon_m} > 0$.

Equipped with Lemma B1, we have the following proposition regarding the impacts of monetary policy shocks on total bank credit.

Proposition B4. With $\gamma > 1$, a contractionary monetary policy shock increases the total credit. In other words,

$$\frac{\partial (q^r i^r + qb)}{\partial \varepsilon_m} < 0.$$

Proposition B4 shows that a sufficient condition for a contractionary monetary policy shock to increase the total credit is $\gamma > 1$, under which dividend payout (ex-dividend equity) falls (increases) when there is monetary policy tightening. This can be seen from equation (B4) in which the left side term increases when DIV_t falls. This increase of total liability on the bank's balance sheet, together with the decline in bank loans in response to monetary policy

tightening, implies that $q_t^r I_t^r$ must increase more than the drop in bank loans, implying an increase in total credit.

Intuitively, when the income effect of a reduction in the expected return on equity ($E_{\omega,\xi} R^E$) due to an increase in the expected regulation cost dominates the corresponding substitution effect (the substitution between today's and tomorrow's dividend payoffs), it is optimal for the bank to expand total credit via risky assets to compensate for extra costs of recouping deposit losses. Note that in our theoretical model, the expected net return for leverage adjusted for the risk premium is always greater than R^D . Hence, when the risk of deposit withdrawals increases due to monetary policy tightening, it is profitable for banks to borrow as much as possible at the lending stage until the leverage constraint binds. The resource from deposits, together with ex-dividend equity, is used to purchase risky nonloan assets to compensate for the costs associated with actual deposit shortfalls in the balancing stage.

APPENDIX C. ADDITIONAL DETAILS TO THE DYNAMIC MODEL

In this section, we provide additional details to the dynamic model described in Appendix B. This includes the definition of the competitive equilibrium, proofs of lemmas and propositions, and an algorithm for solving the model numerically. We also calibrate the model to the Chinese economy and simulate the impulse responses to be comparable with the point estimates of VAR impulse responses presented in Section V.B of the main text.

C.1. Equilibrium. Define $\bar{\mathcal{E}} = \int_0^1 \mathcal{E}(j) dj$ as the aggregate of equity in the banking sector. The equity of an individual bank evolves according to $\mathcal{E}'(j) = e'(\omega, \xi; \varepsilon'_m, \varepsilon_m) \mathcal{E}(j)$. The measure of equity holdings of each bank is denoted by $\Gamma(\mathcal{E})$. Since the model is invariant to scale, we only need to keep track of the evolution of the average equity, which grows at the rate $E_{\omega,\xi} [e'(\omega, \xi; \varepsilon'_m, \varepsilon_m)]$ because

$$\begin{aligned} \bar{\mathcal{E}}' &= \int_0^1 \mathcal{E}'(j) dj = \int_0^1 \mathcal{E}(j) dj \int_{\xi,\omega} e'(\omega, \xi; \varepsilon'_m, \varepsilon_m) f(\omega, \xi) d(\omega, \xi) \\ &= \bar{\mathcal{E}} \times E_{\omega,\xi} [e'(\omega, \xi; \varepsilon'_m, \varepsilon_m)]. \quad (\text{C48}) \end{aligned}$$

We define the (partial) equilibrium for the banking sector as follows.

Definition C1. Given M_0, D_0, B_0 , a competitive equilibrium is a sequence of bank policy rules $\{c_t, d_t, b_t, i_t^r, \text{div}_t\}_{t=0}^\infty$, bank value $\{v_t\}_{t=0}^\infty$, government policies $\{\mu(\varepsilon_{m,t})\}_{t=0}^\infty$, and the measure of equity distribution $\{\Gamma_t\}_{t=0}^\infty$ such that

- (1) Given policy sequences $\{\mu(\varepsilon_{m,t})\}_{t=0}^{\infty}$, the policy functions $\{c_t, d_t, b_t, i_t^r, \text{div}_t\}_{t=0}^{\infty}$ are a solution to problem (B32). Moreover, v_t is the value for problem (B37).
- (2) Γ_t evolves consistently with $e'(\omega, \xi; \varepsilon'_m, \varepsilon_m)$.
- (3) All policy functions satisfy $[\text{div}, c, b, d, i^r, e'] = \frac{[\text{DIV}, C, B, D, I^r, \mathcal{E}']}{\mathcal{E}}$.

C.2. Proofs of lemmas and proposition.

Proof of Proposition B1. The proof for Proposition B1 follows from the fact that \mathcal{E} is a sufficient statistic for the bank's problem. In other words, once \mathcal{E} is determined, the bank's optimal decision does not depend on the sources from which the equity \mathcal{E} is accumulated. \square

Proof of Proposition B2. We begin with the proof of *homogeneity*. We use the conjecture-verify approach to this complicated problem. We conjecture that the form of the value function is

$$V(\mathcal{E}; \varepsilon_m) = v(\varepsilon_m) \mathcal{E}^{1-\gamma}.$$

Because

$$\mathcal{E}' = e'(\omega, \xi; \varepsilon'_m, \varepsilon_m) \mathcal{E},$$

the optimization problem (B23) can be rewritten as

$$\begin{aligned} V(\mathcal{E}; \varepsilon_m) &= \max U(\text{div } \mathcal{E}) + \beta E_{m,\omega,\xi} \left[v(z') (e'(\omega, \xi; \varepsilon'_m, \varepsilon_m) \mathcal{E})^{1-\gamma} \mid \varepsilon_m \right] \\ &= \mathcal{E}^{1-\gamma} \left\{ \max U(\text{div}) + \beta E_{m,\omega,\xi} \left[v(\varepsilon'_m) (e'(\omega, \xi; \varepsilon'_m, \varepsilon_m))^{1-\gamma} \mid \varepsilon_m \right] \right\} \end{aligned}$$

subject to (B27), (B28), (B29), and (B30). Let $\tilde{v}(\varepsilon_m)$ be the solution of

$$\tilde{v}(\varepsilon_m) = \max U(\text{div}) + \beta E_{m,\omega,\xi} \left[\tilde{v}(\varepsilon'_m) (e'(\omega, \xi; \varepsilon'_m, \varepsilon_m))^{1-\gamma} \mid \varepsilon_m \right] \quad (\text{C49})$$

subject to (B27), (B28), (B29), and (B30). Hence, $v(\varepsilon_m) = \tilde{v}(\varepsilon_m)$, which verifies the conjecture of our Bellman equation

$$V(\mathcal{E}; z) = v(z) \mathcal{E}^{1-\gamma}.$$

We turn to the proof of *separability*. From (B38) we have

$$(e'(\omega, \xi; \varepsilon'_m, \varepsilon_m))^{1-\gamma} = (1 - \text{div})^{1-\gamma} (R^E(\omega, \xi; \varepsilon'_m, \varepsilon_m))^{1-\gamma}$$

so that

$$E_{\omega,\xi} \left[(e'(\omega, \xi; \varepsilon'_m, \varepsilon_m))^{1-\gamma} \right] = (1 - \text{div})^{1-\gamma} E_{\omega,\xi} \left[(R^E(\omega, \xi; \varepsilon'_m, \varepsilon_m))^{1-\gamma} \right]. \quad (\text{C50})$$

Since the utility is a power function, the certainty equivalence of $E_{\omega,\xi} \left[\left(R^E(\omega, \xi; \varepsilon'_m, \varepsilon_m) \right)^{1-\gamma} \right]$, denoted as $\Omega(\varepsilon'_m, \varepsilon_m)$, follows as

$$\begin{aligned} \Omega(\varepsilon'_m, \varepsilon_m) &= \max_{\{w_c, w_i, w_b, w_d\}} \left\{ E_{\omega,\xi} \left[\left(R^E(\omega, \xi; \varepsilon'_m, \varepsilon_m) \right)^{1-\gamma} \right] \right\}^{\frac{1}{1-\gamma}} \\ &= \max_{\{w_c, w_i, w_b, w_d\}} \left\{ E_{\omega,\xi} \left[(w_c + R^I w_i + R^B w_b - R^D w_d - R^x)^{1-\gamma} \right] \right\}^{\frac{1}{1-\gamma}} \end{aligned} \quad (\text{C51})$$

subject to (B33), (B34), and (B35). Substituting (C50) into (C49) and using the definition of $\Omega(\varepsilon'_m, \varepsilon_m)$ in (C51), we obtain (B37). \square

Proof of Proposition B3. We first prove that the liquidity constraint (B35) is always binding. Substituting (B33) into (B32), (B34) and (B35) transforms the optimization problem (B32) to

$$\max_{\{w_c, w_i, w_d\}} \left\{ E_{\omega,\xi} \left[\left(-(R^B - 1)w_c + (R^I - R^B)w_i - (R^B - R^D)w_d - R^x(w_b, w_d; \omega) \right)^{1-\gamma} \right] \right\}^{\frac{1}{1-\gamma}} \quad (\text{C52})$$

subject to $w_d \leq \kappa$ (with the Lagrangian multiplier ϕ_d) and $w_c \geq \psi$ (with the Lagrangian multiplier ϕ_c). The first order condition with respect to w_c gives

$$\tilde{\phi}_c = R^B - E_{\omega} (R_b^x) - \frac{\text{Cov}_{\omega} (R_b^x, E_{\xi}(R^E)^{-\gamma})}{E_{\omega} [E_{\xi}(R^E)^{-\gamma}]} - 1. \quad (\text{C53})$$

where

$$\tilde{\phi}_c \equiv \frac{\phi_c}{E_{\omega,\xi} [(R^E)^{-\gamma}]^{\frac{\gamma}{1-\gamma}} E_{\omega,\xi} [(R^E)^{-\gamma}]}$$

We now show that $\tilde{\phi}_c > 0$. Note that

$$\begin{aligned} \text{Cov}_{\omega} (R_b^x, E_{\xi}(R^E)^{-\gamma}) &= E_{\omega} [E_{\xi}(R^E)^{-\gamma} R_b^x] - E_{\omega} (R_b^x) E_{\omega} [E_{\xi}(R^E)^{-\gamma}] \\ &= r^b E_{\omega} \left[E_{\xi}(R^E)^{-\gamma} \mid \omega > 1 - \frac{L}{\theta} \right] - r^b \text{prob} \left(\omega > 1 - \frac{L}{\theta} \right) E_{\omega\xi} [(R^E)^{-\gamma}] \\ &\leq r^b E_{\omega\xi} [(R^E)^{-\gamma}] - r^b \text{prob} \left(\omega > 1 - \frac{L}{\theta} \right) E_{\omega\xi} [(R^E)^{-\gamma}] \\ &= r^b \left[1 - \text{prob} \left(\omega > 1 - \frac{L}{\theta} \right) \right] E_{\omega\xi} [(R^E)^{-\gamma}] \end{aligned}$$

Hence,

$$\frac{\text{Cov}_{\omega} (R_b^x, E_{\xi}(R^E)^{-\gamma})}{E_{\omega} [E_{\xi}(R^E)^{-\gamma}]} \leq r^b \left[1 - \text{prob} \left(\omega > 1 - \frac{L}{\theta} \right) \right] \quad (\text{C54})$$

Accordingly, we have

$$\begin{aligned}
& R^B - E_\omega [R_b^x] - \frac{\text{Cov}_\omega (R_b^x, E_\xi (R^E)^{-\gamma})}{E_\omega [E_\xi (R^E)^{-\gamma}]} \\
& \geq R^B - r^b \times \text{prob} \left(\omega > 1 - \frac{L}{\theta} \right) - r^b \left[1 - \text{prob} \left(\omega > 1 - \frac{L}{\theta} \right) \right] \\
& = R^B - r^b \\
& > R^D.
\end{aligned} \tag{C55}$$

Plugging (C55) into the right side of (C53), we have

$$\tilde{\phi}_c > R^D - 1 > 0.$$

Hence, the liquidity constraint (B35) is always binding. In other words, $w_c = \psi$.

We now derive the optimal allocation between w_b and w_d . Denote

$$R^x(L, 1; \omega) = \chi(L - \theta(1 - \omega)), \tag{C56}$$

where $L \equiv w_b/w_d$. The portfolio choice of the representative bank can be rewritten as

$$\max_{L, w_d} \left\{ E_{\omega, \xi} [R^I - w_c(R^I - 1) + w_d[(R^I - R^D) - (R^I - R^B)L - R^x(L, 1; \omega)]]^{1-\gamma} \right\}^{\frac{1}{1-\gamma}}$$

subject to $w_d \leq \kappa$ and $w_c = \psi$.

The first order condition with respect to L is

$$\begin{aligned}
R^B - \underbrace{E_\omega [R_L^x(L, 1; \omega)]}_{\text{expected liquidity cost}} - \underbrace{\frac{\text{Cov}_\omega (R_L^x, E_\xi (R^E)^{-\gamma})}{E_\omega [E_\xi (R^E)^{-\gamma}]}_{\text{regulation risk premium}} = E_\xi (R^I) - \underbrace{\left[-\frac{\text{Cov}_\xi (R^I, E_\omega (R^E)^{-\gamma})}{E_\xi [E_\omega (R^E)^{-\gamma}]} \right]}_{\text{default risk premium}}.
\end{aligned} \tag{C57}$$

where $R_L^x(L, 1; \omega)$ is the partial derivative of $R^x(L, 1; \omega)$ with respect to L

$$R_L^x(L, 1; \omega) = \begin{cases} r^b & \text{if } \omega \geq 1 - \frac{L}{\theta} \\ 0 & \text{otherwise.} \end{cases}$$

Hence,

$$R_L^x(L, 1; \omega) = R_b^x(w_b, w_d; \omega). \tag{C58}$$

Plugging equation (C58) into (C57), we obtain (B41).

Finally, we prove that the leverage constraint (B34) is always binding. Define $R^L \equiv (R^I - R^D) - (R^I - R^B)L - R^x(L, 1; \omega)$. The first order condition with respect to w_d is

$$E_{\omega, \xi} [(R^E)^{-\gamma} R^L] = \frac{\mu}{E_{\omega, \xi} [(R^E)^{-\gamma}]^{\frac{\gamma}{1-\gamma}}} \equiv \tilde{\mu}, \tag{C59}$$

where μ is the Larangian multiplier associated with the inequality constraint $w_d \leq \kappa$. Plugging the definition of R^L into (C59) and reordering the terms, we have

$$E_\xi \left\{ [(R^B - R^I) L + (R^I - R^D)] E_\omega [(R^E)^{-\gamma}] \right\} - E_\omega [E_\xi (R^E)^{-\gamma} R^x(L, 1; \omega)] = \tilde{\mu},$$

which gives

$$\begin{aligned} \frac{\tilde{\mu}}{E_{\omega, \xi} [(R^E)^{-\gamma}]} &= LR^B - R^D + (1 - L) \left[E_\xi (R^I) + \frac{\text{Cov}_\xi (R^I, E_\omega (R^E)^{-\gamma})}{E_\xi [E_\omega (R^E)^{-\gamma}]} \right] \\ &\quad - \frac{E_\omega [E_\xi (R^E)^{-\gamma} R^x(L, 1; \omega)]}{E_{\omega, \xi} [(R^E)^{-\gamma}]} \\ &= LR^B - R^D + (1 - L) \left[R^B - E_\omega [R_b^x(w_b, w_d; \omega)] - \frac{\text{Cov}_\omega (R_L^x, E_\xi (R^E)^{-\gamma})}{E_\omega [E_\xi (R^E)^{-\gamma}]} \right] \\ &\quad - \frac{LE_\omega [E_\xi (R^E)^{-\gamma} R_b^x] + E_\omega [E_\xi (R^E)^{-\gamma} R_d^x]}{E_{\omega, \xi} [(R^E)^{-\gamma}]}, \end{aligned} \quad (\text{C60})$$

where the second equality is derived by utilizing equation (C57) and

$$R^x(L, 1; \omega) = LR_b^x + R_d^x,$$

$$R_b^x = \begin{cases} r^b \text{ if } \omega \geq 1 - \frac{L}{\theta} \\ 0 \text{ otherwise} \end{cases},$$

and

$$R_d^x = \begin{cases} -r^b \theta (1 - \omega) \text{ if } \omega \geq 1 - \frac{L}{\theta} \\ 0 \text{ otherwise} \end{cases}.$$

Note that

$$\begin{aligned} \frac{E_\omega [E_\xi (R^E)^{-\gamma} R_b^x]}{E_{\omega, \xi} [(R^E)^{-\gamma}]} &= \frac{E_{\omega, \xi} [(R^E)^{-\gamma}] E_\omega [R_b^x] + \text{cov}_\omega [E_\xi (R^E)^{-\gamma}, R_b^x]}{E_{\omega, \xi} [(R^E)^{-\gamma}]} \\ &= E_\omega [R_b^x(w_b, w_d; \omega)] + \frac{\text{cov}_\omega [E_\xi (R^E)^{-\gamma}, R_b^x]}{E_{\omega, \xi} [(R^E)^{-\gamma}]} \end{aligned} \quad (\text{C61})$$

Substituting (C61) into (C60), we have

$$R^B - E_\omega [R_b^x(w_b, w_d; \omega)] - \frac{\text{Cov}_\omega (R_L^x, E_\xi (R^E)^{-\gamma})}{E_\omega [E_\xi (R^E)^{-\gamma}]} - R^D - \frac{E_\omega [E_\xi (R^E)^{-\gamma} R_d^x]}{E_{\omega, \xi} [(R^E)^{-\gamma}]} = \frac{\tilde{\mu}}{E_{\omega, \xi} [(R^E)^{-\gamma}]}.$$

We now show that $\tilde{\mu} > 0$, which implies that the collateral constraint is binding. It is easy to show that

$$\begin{aligned} & -\frac{E_{\omega} \left[E_{\xi} (R^E)^{-\gamma} R_d^x \right]}{E_{\omega, \xi} \left[(R^E)^{-\gamma} \right]} \\ &= r^b \theta E_{\omega \xi} \left[(R^E)^{-\gamma} (1 - \omega) \mid \omega \geq 1 - \frac{L}{\theta} \right] \\ &> 0 \end{aligned}$$

Together with (C55), this implies that $\tilde{\mu} > 0$. Hence, the leverage constraint (B34) is always binding. \square

Proof of Lemma B1. Equation (B43) expresses div as an implicit function of ε_m . Taking the partial derivative of div with respect to ε_m , we have

$$\frac{\partial \text{div}}{\partial \varepsilon_m} = \frac{\beta (1 - \gamma) (1 - \text{div})^{-\gamma} \left[E_M [v(\varepsilon'_m) \mid \varepsilon_m] \frac{\partial E_{\omega, \xi} [(R^E)^{1-\gamma}]}{\partial \varepsilon_m} + E_{\omega, \xi} [(R^E)^{1-\gamma}] \frac{\partial E_M [v(\varepsilon'_m) \mid \varepsilon_m]}{\partial \varepsilon_m} \right]}{-\gamma \text{div}^{-\gamma-1} - \beta (1 - \gamma) (1 - \text{div})^{-\gamma-1} E_M [v(\varepsilon'_m) \mid \varepsilon_m] E_{\omega, \xi} [(R^E)^{1-\gamma}]} \quad (\text{C62})$$

Given $\gamma > 1$, the denominator on the right side of (C62) is negative.⁷ Hence, to prove $\frac{\partial \text{div}}{\partial \varepsilon_m} > 0$, we only need to show the numerator is negative. We now show

$$\frac{\partial E_{\omega, \xi} [(R^E)^{1-\gamma}]}{\partial \varepsilon_m} < 0 \quad (\text{C63})$$

Since $\frac{\partial \mu(\varepsilon_m)}{\partial \varepsilon_m} < 0$, this is equivalent to $\frac{\partial E_{\omega, \xi} [(R^E)^{1-\gamma}]}{\partial \mu(\varepsilon_m)} > 0$. Note that

$$\begin{aligned} E_{\omega, \xi} [(R^E)^{1-\gamma}] &= \int_{\mu}^{1-L/\theta} E_{\xi} (R^E(\omega))^{1-\gamma} \mathfrak{f}(\omega) d\omega + \int_{1-L/\theta}^1 E_{\xi} (R^E(\omega))^{1-\gamma} \mathfrak{f}(\omega) d\omega \\ &= E_{\xi} (R^E (R^x = 0))^{1-\gamma} \frac{1 - L/\theta - \mu}{1 - \mu} + \int_{1-L/\theta}^1 E_{\xi} (R^E(\omega))^{1-\gamma} \frac{1}{1 - \mu} d\omega \end{aligned}$$

Hence,

$$\frac{\partial E_{\omega, \xi} [(R^E)^{1-\gamma}]}{\partial \mu(\varepsilon_m)} = -E_{\xi} (R^E (R^x = 0))^{1-\gamma} \frac{L/\theta}{(1 - \mu)^2} + \int_{1-L/\theta}^1 E_{\xi} (R^E(\omega))^{1-\gamma} \frac{1}{(1 - \mu)^2} d\omega \quad (\text{C64})$$

Given the definition of R^E as in (B39), it is easy to show that $\forall \omega \in (1 - L/\theta, 1]$, $\frac{\partial R^E(\omega)}{\partial \omega} < 0$. Hence, with $\gamma > 1$, we have $\forall \omega \in (1 - L/\theta, 1]$

$$E_{\xi} (R^E(\omega))^{1-\gamma} > E_{\xi} (R^E(\omega = 1 - L/\theta))^{1-\gamma} = E_{\xi} (R^E(R^x = 0))^{1-\gamma}.$$

⁷Equation (B45) implies that when $\gamma > 1$, $E_M [v(\varepsilon'_m) \mid \varepsilon_m] < 0$.

Therefore,

$$\begin{aligned} \int_{1-L/\theta}^1 E_{\xi} (R^E(\omega))^{1-\gamma} \frac{1}{(1-\mu)^2} d\omega &> \int_{1-L/\theta}^1 E_{\xi} (R^E(R^x=0))^{1-\gamma} \frac{1}{(1-\mu)^2} d\omega \\ &= E_{\xi} (R^E(R^x=0))^{1-\gamma} \frac{L/\theta}{(1-\mu)^2}. \end{aligned} \quad (C65)$$

Plugging (C65) into (C64), we have

$$\frac{\partial E_{\omega,\xi} [(R^E)^{1-\gamma}]}{\partial \mu(\varepsilon_m)} > -E_{\xi} (R^E(R^x=0))^{1-\gamma} \frac{L/\theta}{(1-\mu)^2} + E_{\xi} (R^E(R^x=0))^{1-\gamma} \frac{L/\theta}{(1-\mu)^2} = 0.$$

Therefore, $\frac{\partial E_{\omega,\xi} [(R^E)^{1-\gamma}]}{\partial \varepsilon_m} < 0$. Since ε_m is serially independent random shocks, $\frac{\partial E_M[v(\varepsilon'_m) | \varepsilon_m]}{\partial \varepsilon_m} = 0$. Hence,

$$\begin{aligned} &\beta(1-\gamma)(1-\text{div})^{-\gamma} \left[E_M[v(\varepsilon'_m) | \varepsilon_m] \frac{\partial E_{\omega,\xi} [(R^E)^{1-\gamma}]}{\partial \varepsilon_m} + E_{\omega,\xi} [(R^E)^{1-\gamma}] \frac{\partial E_M[v(\varepsilon'_m) | \varepsilon_m]}{\partial \varepsilon_m} \right] \\ &= \beta(1-\gamma)(1-\text{div})^{-\gamma} E_M[v(\varepsilon'_m) | \varepsilon_m] \frac{\partial E_{\omega,\xi} [(R^E)^{1-\gamma}]}{\partial \varepsilon_m} < 0. \end{aligned}$$

□

Proof of Proposition B4. By definition,

$$\begin{aligned} q^r i^r + qb &= (1-\text{div})(w_i + w_d) \\ &= (1-\text{div})(1 - w_c + w_d) \\ &= (1-\text{div})(1 - \psi + \kappa) \end{aligned}$$

By Lemma B1, with $\gamma > 1$, $\frac{\partial \text{div}}{\partial \varepsilon_m} > 0$. Hence, $\frac{\partial(q^r i^r + qb)}{\partial \varepsilon_m} = -(1 - \psi + \kappa) \frac{\partial \text{div}}{\partial \varepsilon_m} < 0$. □

C.3. Calibration. To obtain quantitative implications of the dynamic model, we calibrate the key model parameters. These parameters are $\{\beta, \kappa, R^D, \delta, q^r, q, \psi, p^r, \gamma, \mu, r^b, \phi, \theta\}$. The time period of the model is calibrated to be quarterly.

Following Bianchi and Bigio (2017), we set $\beta = 0.98$. We set $\theta = 0.75$, which is the PBC's official LDR limit. We set $\kappa = 7.2$ so that the capital adequacy ratio $\mathcal{E}/(C + qB + q^r I^r)$ is 12% in steady state as in the data. The quarterly deposit rate $R^D = 1.0068$ corresponds to an annual interest rate of 2.7%, which is the mean deposit interest rate between 2009 and 2015. We set $\delta = 0.33$ such that the average maturity of bank loans is 1.5 times that of risky assets to be consistent with the data. We set $q^r = 0.9882$ such that an annualized return of a risky investment is 7.5% $\left(\frac{R^D}{q^r} \times 4\right)$, consistent with the mean return on entrusted lending

during the 2009-2015 period (Table 1 of the main text). We set $q = 0.9762$ such that an annualized loan rate is 6.5% $\left(\left(\delta + \frac{1-\delta}{q}\right) \times 4\right)$, consistent with the average loan rate for the 2009-2015 period (Table 1 of the main text). The parameter for the lower bound for the liquidity constraint is set at $\psi = 2.354$ such that the liquidity ratio, $\frac{C}{C+qB+q^r I^r}$, is targeted at 27% , which equals the average liquidity ratio for the 2009-2015 period (Table 6 of the main text).

According to Sheng et al. (2015), the NPL rate for China's shadow banking is 4% under their optimistic scenario and 10% under their benchmark scenario. Therefore, we take the median and set the probability of default for risky investments at $p^r = 0.07$, which is much higher than the average NPL rate for bank loans reported in Table 6 of the main text. Such a low NPL rate for bank loans is consistent with the assumption that bank loans are safe.

Without loss of generality, we set the risk aversion parameter at $\gamma = 2$. The steady state value of μ is set to be -1 for $\varepsilon_m = 0$ (no monetary policy shock in the steady state). The cost of meeting deposit shortfalls is set at $r^b = 1.75\%$ according to the recent WIND data. The recovery rate of risky assets is set at $\phi = 0.85$. This high rate reflects the reality in China that banks benefit from the government's implicit guarantees on their deposits as well as on risky investments.⁸

C.4. Impulse responses. We use the calibrated model and simulate the dynamics of bank loans and risky nonloan assets in response to contractionary shocks to monetary policy. The simulation is based on the aggregate (average) bank loans and risky assets to be comparable with the VAR results.

The impulse responses of aggregate bank loans and risky assets are computed as the sum of the impulse responses for state and nonstate banks. To obtain the impulse responses of state banks, we simulate a counterfactual economy in which the response of I_t^r to contractionary monetary policy (a one-standard-deviation fall of $\varepsilon_{m,t}$) is restricted to be zero, while all parameter values are the same as in our benchmark economy. This setup stems from the institutional fact that state banks are part of the government and hence have no incentive to exploit shadow banking activities for regulatory arbitrage.

The initial state at $t = 0$ is in the steady state. A negative shock to monetary policy, $\varepsilon_{m,t} < 0$, occurs at $t = 1$.⁹ In response to a one-standard-deviation shock, we simulate the dynamic paths of new bank loans S_t and risky investments I_t^r for $t \geq 1$ with the initial

⁸See Dang, Wang and Yao (2015) for a formal model of implicit guarantees of China's shadow banking.

⁹Without loss of generality, we assume that the path of money growth after $t = 1$ is perfectly foresighted.

response of I_t^r set at 0.5%, the same value as the estimated one for the empirical panel VAR model studied in Section V.B of the main text.

Figure A8 displays the cumulative impulse responses of I_t^r and S_t . Risky assets increase and reach 1.9% at the tenth quarter. Note that the response of aggregate risky assets to contractionary monetary policy shocks is equal to the response of nonstate banks. By contrast, bank loans of both state and nonstate banks decline in response to contractionary monetary policy shocks via the bank lending channel. The economic intuition behind the opposite effects of contractionary monetary policy on risky assets and bank loans comes directly from the asset pricing equation governing the tradeoff between bank loans and risky investment assets (equation (B41)). When $\varepsilon_{m,t}$ falls, the probability of deposit shortfalls increases. This leads to a rise of the expected regulation cost. As a result, the return on risky assets relative to the return on bank loans increases, making it optimal for the bank to rebalance its portfolio by increasing risky assets in total assets.

The bottom panel of Figure A8 shows that the response of total credit for the whole banking system is slightly above zero for most periods, indicating that the decline of aggregate bank loans is offset by the increase of aggregate risky assets.

C.5. Algorithms for a numerical solution.

C.5.1. *Steady state.* Given $\mu(\varepsilon_m), r^b, q, q^r$, and R^D , we need to solve for

$$\{L^*, w_d^*, w_b^*, w_i^*, R^{B*}, \Omega^*, \text{div}^*, v^*, w_\varsigma^*\},$$

where $\varsigma = \{c, i, b, d\}$ and the superscript $*$ indicates that the values are at steady state. The algorithm for computing the steady state is as follows.

- (1) Guess q , the price for B .
- (2) Calculate $w_d^* = \kappa, w_c^* = \psi, R^B = \delta + \frac{1-\delta}{q}$.
- (3) Solve L^* according to the no-arbitrage equation

$$R^B - r^b \times \text{prob} \left(\omega > 1 - \frac{L}{\theta} \right) - \frac{\text{Cov}_\omega (R_b^x, E_\xi (R^E)^{-\gamma})}{E_\omega [E_\xi (R^E)^{-\gamma}]} = E_\xi (R^I) - \left[-\frac{\text{Cov}_\xi (R^I, E_\omega (R^E)^{-\gamma})}{E_\xi [E_\omega (R^E)^{-\gamma}]} \right],$$

where

$$\text{Prob} \left(\omega > 1 - \frac{L}{\theta} \right) = \frac{L/\theta}{1 - \mu}.$$

- (4) Calculate $w_b^* = Lw_d^*, w_i^* = 1 - w_b^* - w_c^* + w_d^*$.

(5) Solve Ω^* according to

$$\Omega(\varepsilon'_m, \varepsilon_m) = \{E_{\omega, \xi} [R^I w_i^* + w_c^* + R^B w_b^* - R^D w_d^* - R^x]^{1-\gamma}\}^{\frac{1}{1-\gamma}},$$

$$\text{where } R^I = \frac{\xi R^D}{q^r}, R^x = \chi(w_b^* - \theta(1 - \omega)w_d^*).$$

(6) Solve the value function and dividend payout according to (B46) and (B47).

(7) Calculate

$$c = w_c^* (1 - \text{div}), q^r i^r = w_i^* (1 - \text{div}), qb = w_b^* (1 - \text{div}), d/R^D = w_d^* (1 - \text{div})$$

(8) Calculate $E_{\omega, \xi} [e'] = c + [q\delta + (1 - \delta)] b - r^b \left[qb \frac{L/\theta}{1 - \mu(\varepsilon_m)} + \frac{\theta d/R^D (L/\theta)^2}{2(1 - \mu(\varepsilon_m))} \right] + R^D (1 - p^r) i^r$.

(9) If expected equity growth equals zero (i.e., $E_{\omega, \xi} [e']$ does not change within the numerical tolerance), stop. Otherwise, adjust the value of q and continue the iteration.

C.5.2. *Transitional dynamics.* Given the sequence of $\{\mu(\varepsilon_{m,t})\}_{t=0}^\infty$, the algorithm for computing the dynamic responses is as follows:

(1) Calculate $w_{d,t} = \kappa, w_{c,t} = \psi, R_t^B = \frac{q\delta + 1 - \delta}{q}$.

(2) Solve L_t according to the no-arbitrage equation

$$R_t^B - r^b \times \text{prob}_t \left(\omega_t > 1 - \frac{L_t}{\theta} \right) - \frac{\text{Cov}_\omega (R_b^x, E_\xi (R^E)^{-\gamma})}{E_\omega [E_\xi (R^E)^{-\gamma}]} = E_\xi (R^I) - \left[-\frac{\text{Cov}_\xi (R^I, E_\omega (R^E)^{-\gamma})}{E_\xi [E_\omega (R^E)^{-\gamma}]} \right],$$

where

$$R_t^E = R_t^I - w_{c,t} (R^I - 1) + w_{d,t} [(R_t^I - R_t^D) - (R_t^I - R_t^B) L_t - R^x (L_t, 1; \omega_t)],$$

$$R_t^I = \frac{\xi_t R_t^D}{q^r},$$

$$R^x (L_t, 1; \omega_t) = \chi (L_t - \theta (1 - \omega_t)).$$

(3) Calculate $w_{b,t} = L_t \kappa; w_{i,t} = 1 - w_{b,t} - w_{c,t} + w_{d,t}$.

(4) Solve Ω_t according to $\Omega_t = \{E_{\omega, \xi} [R_t^E]^{1-\gamma}\}^{\frac{1}{1-\gamma}}$.

(5) Solve the value function and dividend payout according to (B45) and (B44).

(6) Calculate

$$c_t = w_{c,t}^* (1 - \text{div}_t), q^r i_t^r = w_{i,t}^* (1 - \text{div}_t), qb_t = w_{b,t}^* (1 - \text{div}_t), d_t/R^D = w_{d,t}^* (1 - \text{div}_t).$$

(7) Calculate $E_{\omega, \xi} [e_{t+1}] = c_t + [q\delta + (1 - \delta)] b_t - r^b \left[qb_t \frac{L_t/\theta}{1 - \mu(\varepsilon_{m,t})} + \frac{\theta d_t/R^D (L_t/\theta)^2}{2(1 - \mu(\varepsilon_{m,t}))} \right] + R^D (1 - p^r) i_t^r$.

(8) Calculate $\bar{\mathcal{E}}_{t+1} = E_{\omega, \xi} [e_{t+1}] \bar{\mathcal{E}}_t$.

(9) Calculate $[\overline{\text{DIV}}_t, \overline{C}_t, \overline{B}_t, \overline{D}_t, \overline{I}_t] = [\text{div}_t, c_t, b_t, d_t, i_t^r] \bar{\mathcal{E}}_t$.

REFERENCES

- Bianchi, Javier, and Saki Bigio.** 2017. “Banks, Liquidity Management and Monetary Policy.” Unpublished Manuscript.
- Chen, Zhuo, Zhiguo He, and Chun Liu.** 2017. “The Financing of Local Government in China: Stimulus Loan Wanes and Shadow Banking Waxes.” Unpublished Manuscript.
- Dang, Tri Vi, Honglin Wang, and Aidan Yao.** 2015. “Shadow Banking Modes: The Chinese versus US System.” Columbia University Working Paper.
- Sheng, Andrew, Christian Edelmann, Cliff Sheng, and Jodie Hu.** 2015. “Bringing Light upon The Shadow—An Analysis of China’s Shadow Banking.” Oliver Wyman Management Consulting Company and Fund Global Institute. Research Report (in Chinese).

China Construction Bank

中国建设银行股份有限公司
财务报表附注
(除特别注明外，以人民币百万元列示)

16 应收款项类投资

注释	本集团		本行	
	2015 年	2014 年	2015 年	2014 年
政府				
-特别国债 (1)	49,200	49,200	49,200	49,200
-其他	82,177	781	82,177	530
银行及非银行金融				
机构	91,717	78,320	91,717	78,320
企业	60,348	27,470	60,348	27,470
其他 (2)	87,967	15,975	69,420	-
合计	371,409	171,746	352,862	155,520
减值准备(附注 26)	(1,908)	(945)	(1,896)	(944)
净额	369,501	170,801	350,966	154,576
于香港以外地区上市 (3)	191,407	47,585	191,407	47,334
非上市	178,094	123,216	159,559	107,242
合计	369,501	170,801	350,966	154,576

(1) 特别国债是指财政部于 1998 年为补充原建行资本金而发行的面值为人民币 492 亿元的不可转让债券。该债券于 2028 年到期，固定年利率为 2.25%。人行已批准本行将特别国债视为存放于人行的超额存款准备金的合资格资产，可用于清算用途。

(2) 其他包括资产管理计划和资金信托计划等，到期日为 2016 年 1 月至 2025 年 9 月，预期年利率为 2.86%至 9.5%。本报告期间本集团未出现已到期未收回金额。

(3) 于香港以外地区上市债券包含在中国内地银行间债券市场交易的债券。

2015 ARIX: ¥ 369,501 - ¥ 49,200 - ¥ 82,177 = 238,124

2015 Entrusted rights proxy: ¥ 87,967

FIGURE A1. A snapshot of the balance sheet of China Construction Bank (state bank). Source: an annual report of China Construction Bank.

Industrial Bank

11. 应收款项类投资

	本集团		本银行	
	12/31/2014 人民币百万元	12/31/2013 人民币百万元 (已重述)	12/31/2014 人民币百万元	12/31/2013 人民币百万元
政府债券	436	528	436	528
金融机构债券	8,881	8,719	8,881	8,719
公司债券	19,723	17,747	18,782	17,747
理财产品(注 1)	15,413	5,936	15,413	5,936
信托及其他受益权(注 2)	669,516	297,939	663,167	295,405
应收款项类投资总额	713,969	330,869	706,679	328,335
减：应收款项类投资减值准备	(5,523)	(1,372)	(5,523)	(1,372)
应收款项类投资净额	708,446	329,497	701,156	326,963

注 1：理财产品为购买的其他金融机构发行的有确定期限的理财产品。

注 2：信托及其他受益权系购买的信托受益权、资产管理计划等，该等产品的投资方向主要为信托公司、证券公司或资产管理公司作为资金受托管理人运作的信托贷款或资产管理计划等。

Arix: ¥ 708,446- ¥ 436

Entrusted rights proxy: ¥ 669,516

FIGURE A2. A snapshot of the balance sheet of Industrial Bank (nonstate bank). Source: an annual report of Industrial Bank.

中信信托有限责任公司
中信乾景·广电地产工行委托贷款收益权
集合资金信托计划清算报告

尊敬的委托人/受益人：

感谢您投资“中信乾景·广电地产工行委托贷款收益权集合资金信托计划”（以下简称“本信托计划”），中信信托有限责任公司（以下简称“本公司”或“中信信托”）很荣幸作为受托人为您提供理财服务。

本信托计划于 2010 年 7 月 8 日成立，已于 2011 年 5 月 10 日终止。本公司为该项目设立了信托专户：

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开户银行：中国工商银行股份有限公司广州市天河支行

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按照信托合同约定，项目所募集的信托资金全部用于受让广州广电房地产开发集团有限公司通过中国工商银行广东省分行营业部向其旗下武汉广电海格房地产开发有限公司发放的金额人民币 25,000 万元的委托贷款的收益权。

根据信托合同的约定，本公司已经将信托资金本金和信托收益按期划拨至受益人指定的银行账户。

本计划存续期间的总体支付情况是：

	项目	总额(元)	收益率(%)	支付日
1	信托本金	250,000,000.00	-	2011 年 5 月 13 日

FIGURE A3. A snapshot of the description of a trust plan that was created to transfer entrusted rights (see the circled portion). Source: a public announcement by a trust company.

2	收益分配	14,909,326.10	300 万元（不含）以下 投资者年收益率为 6.8%；300 万元（含） 以上的投资者年收益率 为 7.2%；	2011 年 5 月 13 日
3	合计	264,909,326.10	-	-

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FIGURE A4. A snapshot of the description of a trust plan that was created to transfer entrusted rights (continued). Source: a public announcement by a trust company.

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信托执行团队成员：王汝鹏
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Email: wangrp@citic.com

中信信托有限责任公司
二〇一一年五月三十一日

FIGURE A5. A snapshot of the description of a trust plan that was created to transfer entrusted rights (continued). Source: a public announcement by a trust company.

6/2/2016

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预期收益	100≤认购<300 300≤认购	9.5% 10%	
募集帐号	预约中（详细信息请咨询400-8800-209）		

收益计算器： 投资金额： 万元 收益率： % 计算收益 收益总额：**300000元**

资金用途

本计划募集的资金拟用于受让新润通租赁通过民生银行兰州分行向兰州伦华发放人民币委托贷款而享有的全部委托贷款债权收益权（兰州伦华以该委托贷款用于中央商务区改造项目拆迁及开发建设，该委托贷款视项目流动性情况分批次发放）

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一、区位优势：兰州中央商务区位于省政府对面，是兰州市的最核的行政中心和传统商业中心，属于最核心地段。
二、土地成本低！！预期收益高收益率较高。
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2：用款项目公司本身的经营收入；
3：充分有效的抵押质押及保证措施。

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二、连带责任担保：兰州正和集团及实际控制人对贷款项目到期回购承担连带责任担保。
三、全面监督：中融国际信托有限公司旗下子公司中融惠诚对项目公司兰州伦华实行全面监督。
四、回购担保：资管计划到期由新润通国际融资租赁有限公司回购，中泰创展控股有限公司提供回购担保。

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1/3

FIGURE A6. A snapshot of the description of how an asset management plan was created to transfer entrusted rights (see the circled portion). Source: a public announcement by an asset management company.

6/2/2016

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FIGURE A7. A snapshot of the description of how an asset management plan was created to transfer entrusted rights (see the circled portion)—continued.
Source: a public announcement by an asset management company.

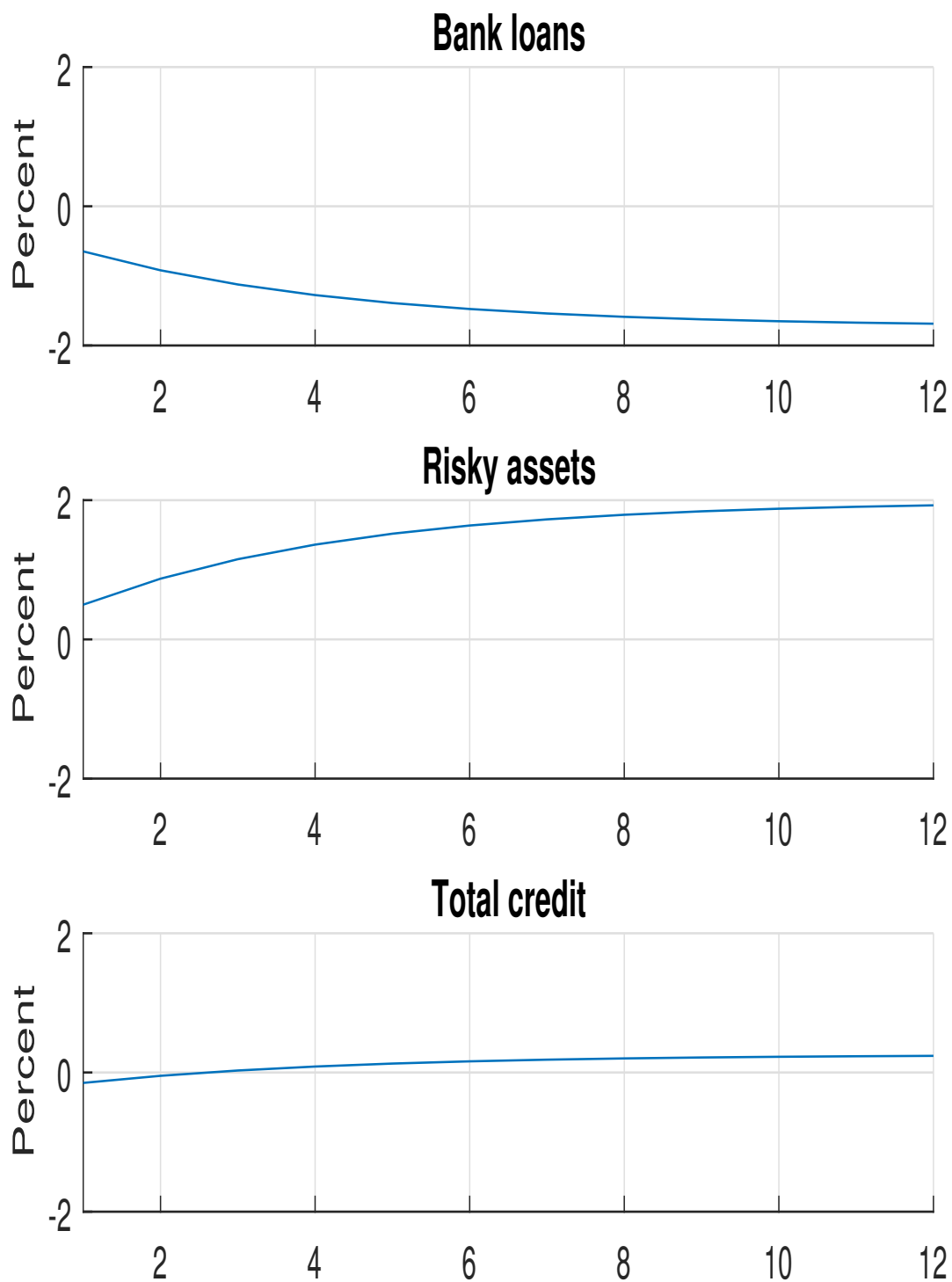


FIGURE A8. Dynamic responses to a one-standard-deviation fall of exogenous money growth in the theoretical model.