Supply-Side Tightening and Credit Rationing in Post-COVID Thailand

Author: Varit Bhanijkasem, Thanapoom Nisamaneewong
Organization: Monetary Policy Department, Bank of Thailand
Email: varitb@bot.or.th , thanapon@bot.or.th

Key contributions:

- Bring together **granular firm-bank matched data** (firms' financial statements and loan-level credit registry) to structurally identify credit demand and supply, moving beyond survey-based evidence.
- Introduce a novel **aggregate credit tightness indicator** to capture macro-level credit frictions.

Key takeaway:

- Firms' fragility persists post-COVID, **but firms with credit access recover faster.**
- **Observed credit rationing** (post-COVID) is largely driven by macro-level credit frictions – not just firm fundamentals – highlighting the need for targeted policy support.

Motivation:

- In the wake of COVID-19, corporate credit growth, particularly among SMEs, remained weak despite economic reopening.
- This raises a key question: **does the slowdown reflect lower credit demand, or are viable firms being rationed by cautious lenders?**

Figure 1: Corporate Credit Growth (%YoY)

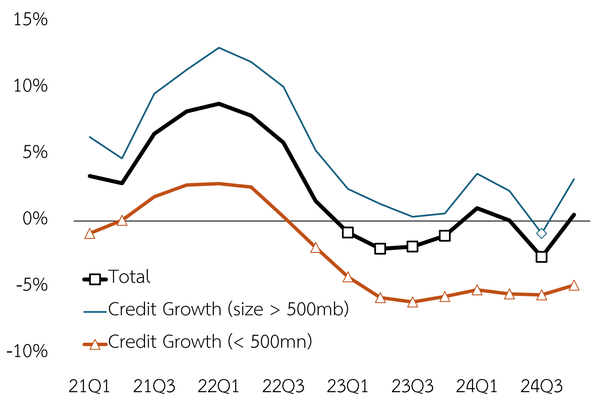
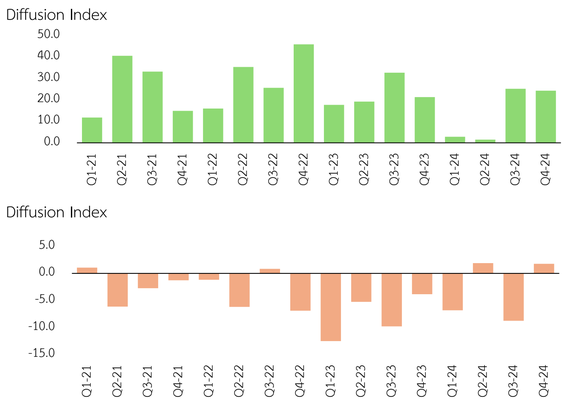


Figure 2: Credit Condition Survey:

Corporate Credit Demand VS Credit Standard



Data: This study uses three datasets including:

Firm-level Financials	Loan-level Credit Registry	Bank Supervisory Data
(CPFS database, DBD)	*(LARSMD database, BOT)*	*(BOT)*

*Firms are matched across datasets via masked firm's / bank's id. The sample spans 2012 to 2024 and **covers ~ 15k firms per year**, enabling analysis of both pre- and post-COVID dynamics.*

Part 1: Firms' resiliency and credit access:

Key observations:

- Firms show persistently weaker solvency post-COVID.
- Profitability improved by 2023, but smaller firms still lag behind. Firms with credit access appear more resilient, with levels close to their pre-COVID baseline.

Figure 3: Firm Profitability by Revenue Decile

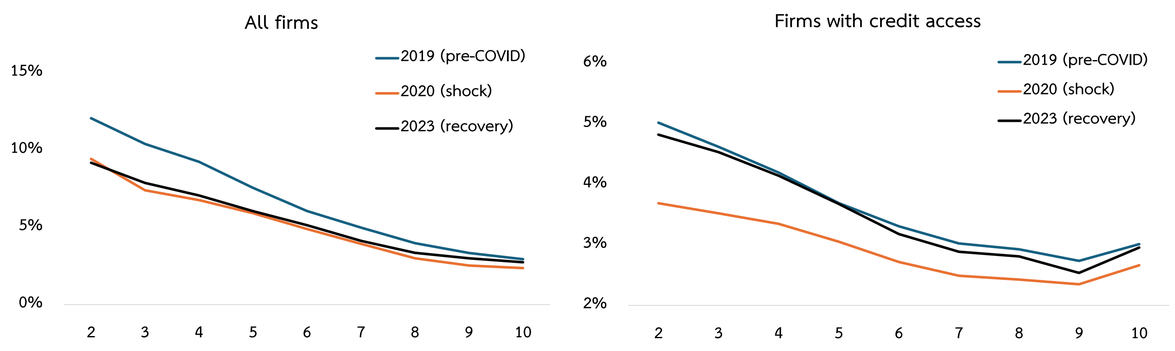
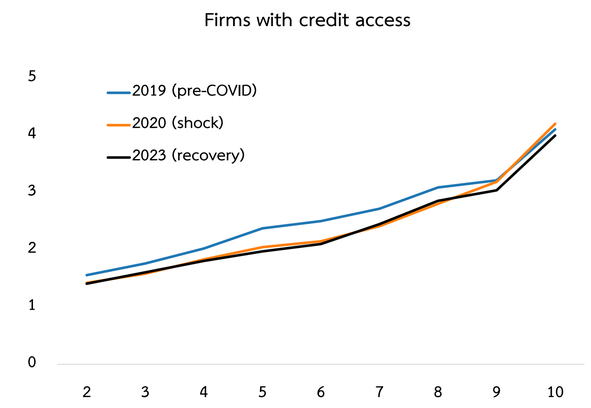
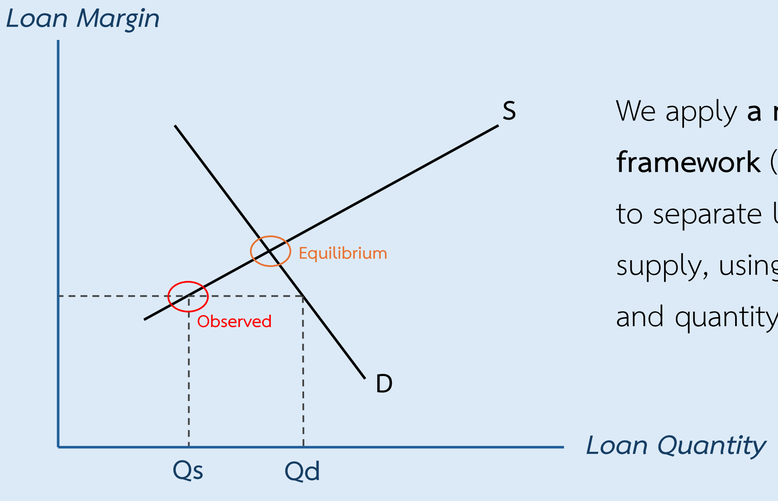


Figure 4: Firm Solvency by Revenue Decile



Note: Revenue decile (2 = smallest, 10 = largest, remove first decile to adjust for some data irregularities). Balanced sample with 321k, 37k, and 28k firms respectively

Part 2: Quantifying Credit Rationing with bank-firm level data



We apply **a market disequilibrium framework** (Maddala & Nelson, 1974) to separate latent credit demand and supply, using observed loan margins and quantity.

Model Setup: **Let P and Q denotes the observed loan margin (effective rate minus policy rate) and loan quantity for each firm-bank relationship.** Latent credit demand and supply are modeled as linear functions of observables:

$$Q_d = X_d' \beta_d,\ Q_s = X_s' \beta_s \text{ where } Q = \min(Q_d, Q_s) \text{ is observed.}$$

We estimate both equations jointly via 2-step procedure.

1st: estimate loan margin using observables in $X = X_d \cup X_s$

2nd: Use full-information MLE (Maddala & Nelson) to estimate β_d, β_s.

Baseline Result: (sample = 178k firm-bank data)

(Dependent variable)	Interest rate eq. (Loan margin)	Demand eq. (Loan quantity)	Supply eq. (Loan quantity)
Loan margin	-	**-0.71 *****	**0.24 *****
Short maturity	0.04 ***	0.14 ***	-
NPLSM	-0.02 ***	-	-0.02 ***
NPLSM*TFRS9	0.05 ***	-	0.08 ***
Tier-1 Capital Ratio	0.05 ***	-	-0.03 ***
Firm assets	-0.43 ***	0.46 ***	0.65 ***
Internal Financing (Cashflow / Sales, Trade Credit / Asset)	✓	✓	-
Firm's Vulnerability (Debt/Asset, EBIT Margin, Current Ratio, Interest Coverage Ratio)	✓	-	✓
Collateralization	✓	-	✓
Fixed effects	Years, Sectors, Banks, Districts	Years, Sectors, Districts	Years, Sectors, Banks

Measuring degree of tightness / rationing:

Q: What is credit rationing?

A: *'Credit rationing refers to a situation in which, at prevailing market interest rate, **the quantity of credit demanded exceeds the quantity supplied,** and lenders are unwilling to extend additional credit even to borrowers who are willing to pay higher interest rates.' – Stiglitz & Weiss (1981)*

We can calculate **firm-level probability of rationing (π)** with

$$\pi = P(Qd > Qs \mid X) = \Phi\left(\frac{Q_d - Q_s}{\sqrt{(\sigma_d)^2 + (\sigma_s)^2}}\right)$$

Burlon et al (2016) proposed rationing indicator (I1) where

I1 = proportion of firms which $\pi > 0.8$

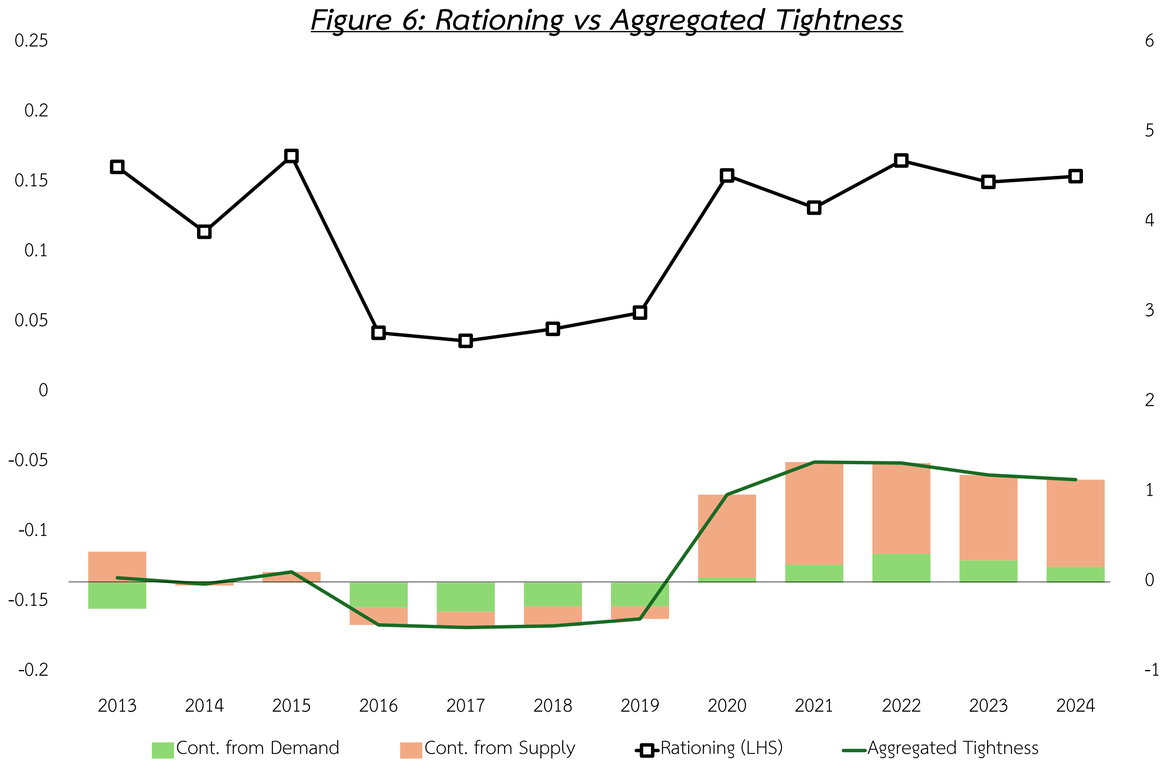
To isolate the drivers of rationing, **we construct an aggregate tightness index (AT),** defined as the difference between **year fixed effects** from the latent demand and supply equations. This captures macro-level credit market conditions that shift the entire distribution of firms in each year.

$$AT_t = \alpha_t^d - \alpha_t^s$$

We interpret I1 as a function of AT and other heterogeneity:

I1 = f(AT_t, other heterogeneity factor).

Figure 6: Rationing vs Aggregated Tightness



Conclusion:

- Credit access remains essential for SME recovery, yet many viable firms continue to face constraints from system-wide frictions.
- These non-price rationing do not necessarily reflect broad-based credit tightening but can limit the effectiveness of traditional MP easing. Hence, targeted credit measures to improve access are especially important in this period.

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