

**COMMERCIAL REAL ESTATE: FINANCIAL STABILITY RISKS
DURING THE COVID-19 CRISIS AND BEYOND**

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Motivation

- The commercial real estate (CRE) sector is amongst the hardest hit by the COVID-19 crisis
- CRE is highly procyclical and relevant to financial stability due to the significant exposures of banks and other (often highly leveraged) investors
- Beyond its immediate adverse impact on the sector, the pandemic may also exacerbate pre-existing trends (decline in brick-and-mortar retail; increased remote working) posing significant challenges and valuation uncertainty for some CRE segments in the medium-term

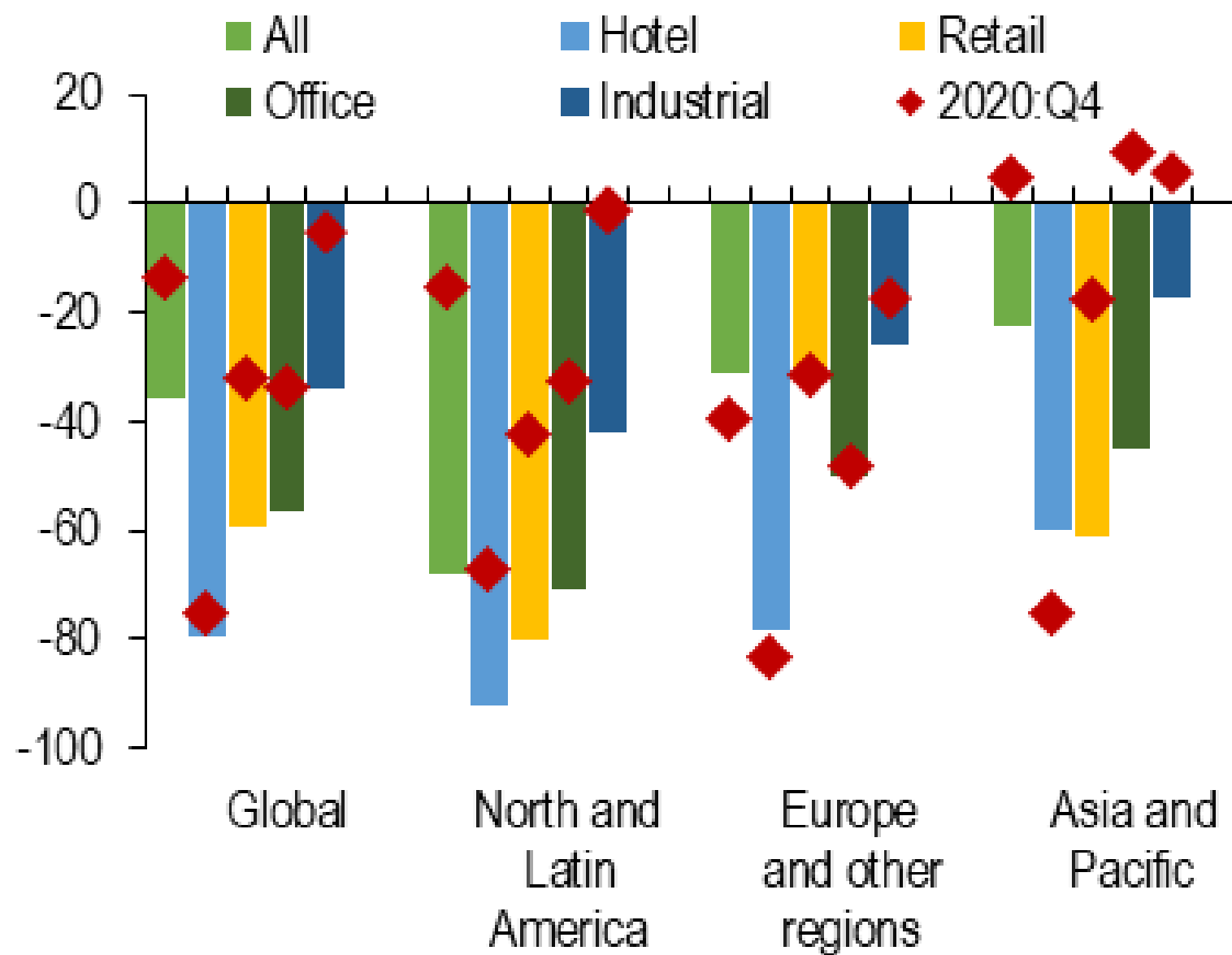
The CRE sector has been hard hit by the COVID-19 crisis

Transaction volumes decreased across regions ...

... while retail and hotel segments were the hardest-hit.

Delinquency rates in CMBS Retail and Hotel segments are at an all-time high.

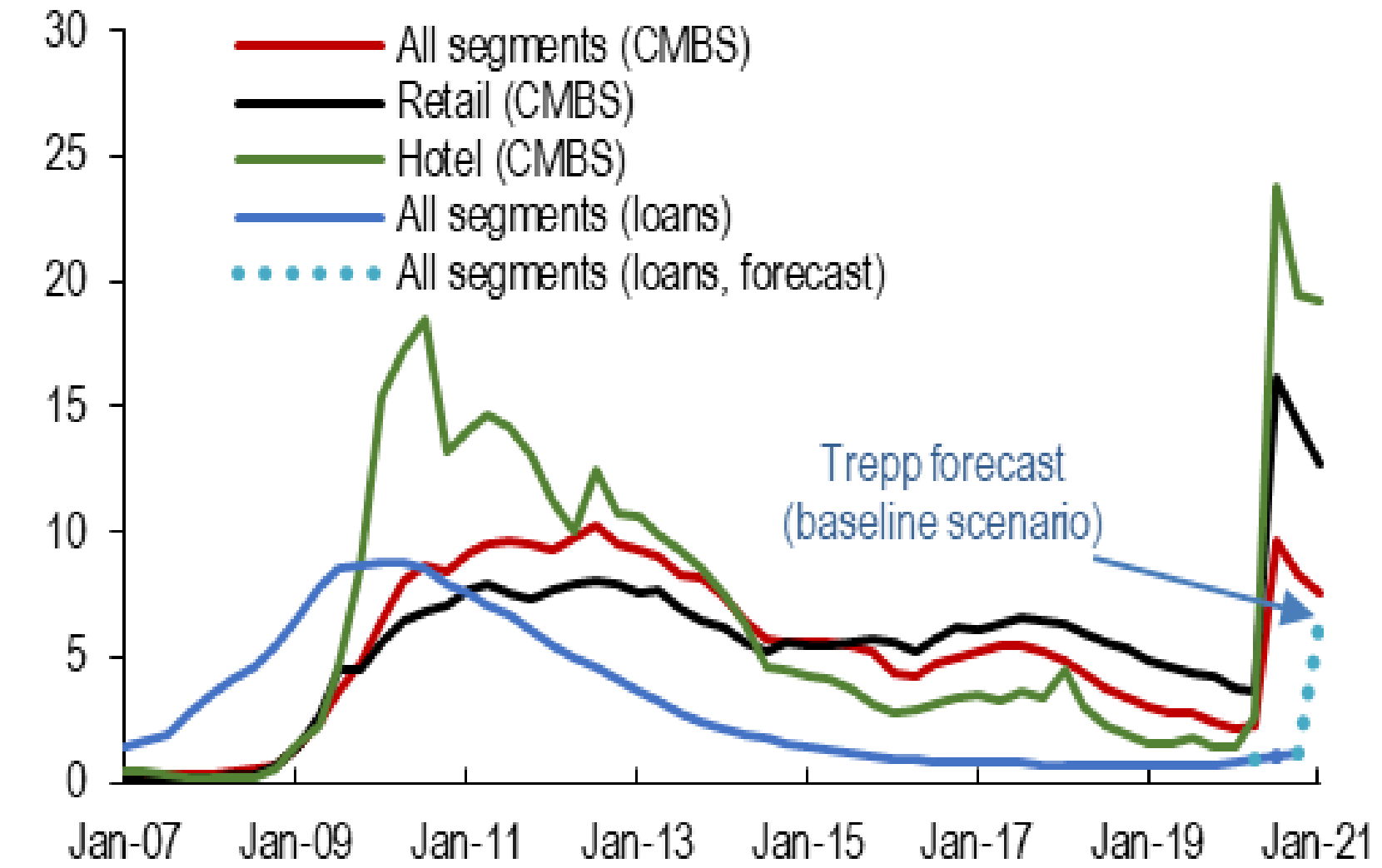
Change in CRE Transaction Volumes
(Percent)



Global NOI Growth
(Percent, 6-month growth)



CRE Loans and CMBS Delinquency Rates
(Percent)



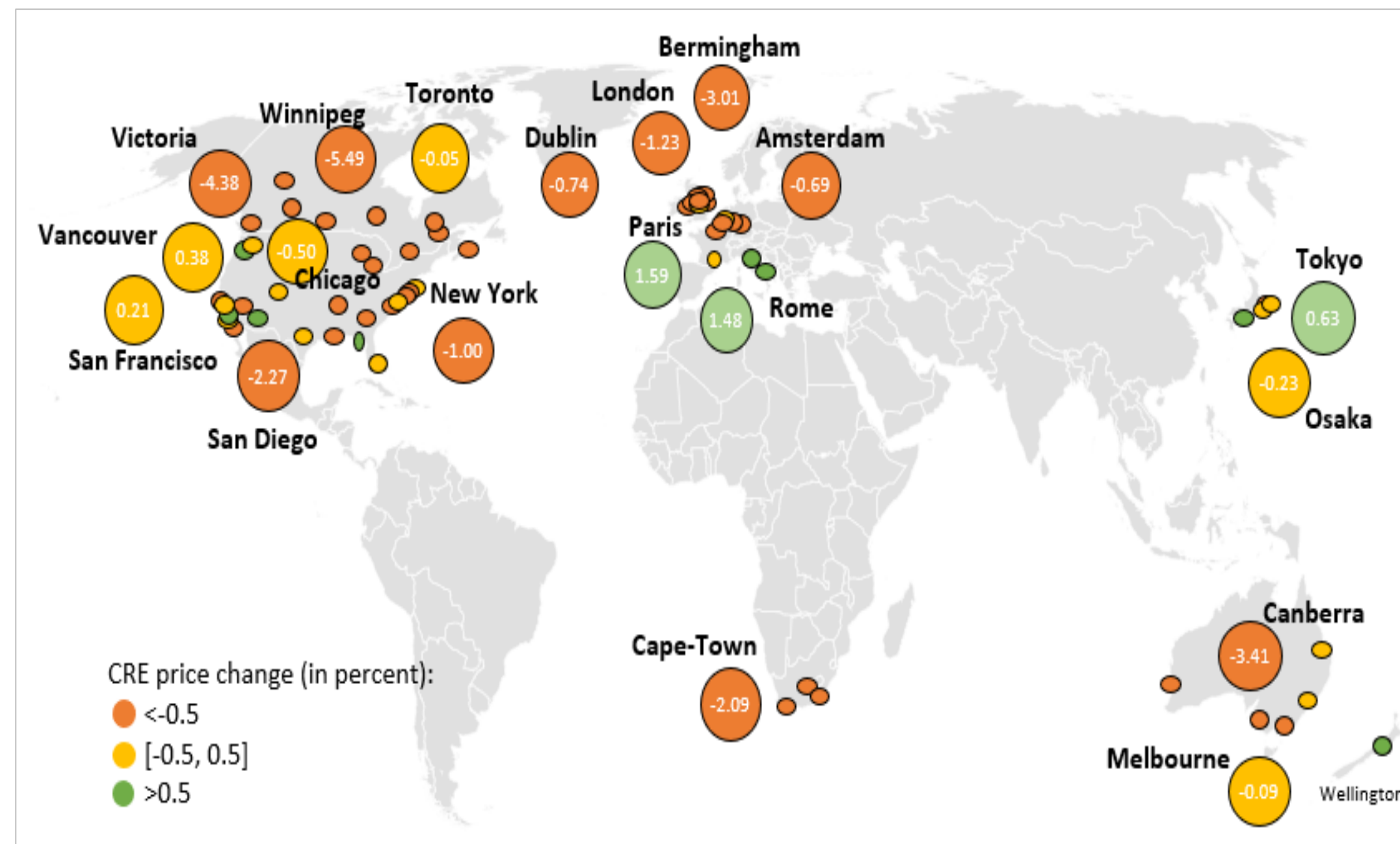
Note: NOI = Net Operating Income

Sources: Green Street Advisors; MSCI; Oxford Economics; Real Capital Analytics; Trepp; and IMF staff calculations.

The price decline has been particularly large in some cities

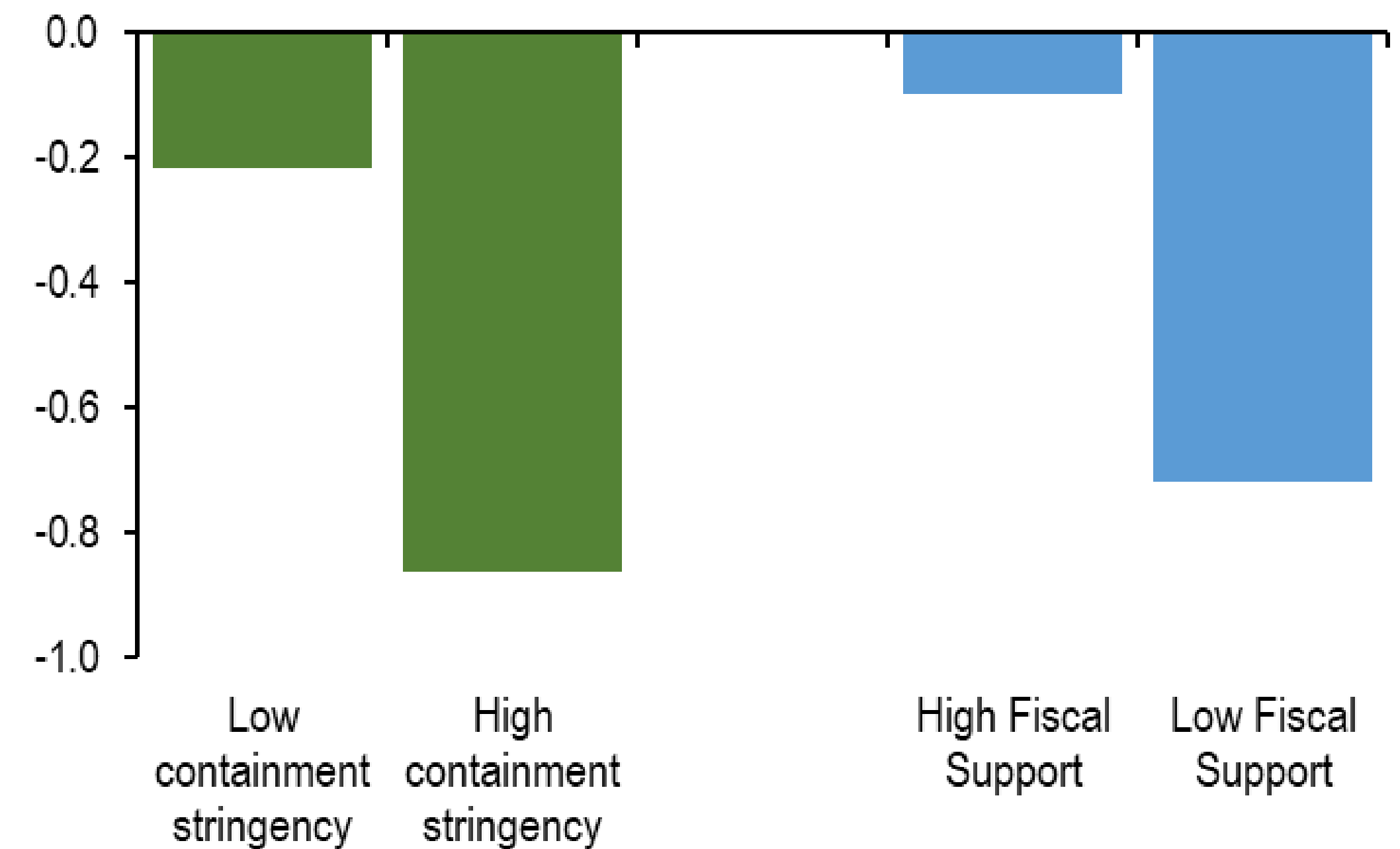
The impact of the pandemic has been heterogeneous across cities.

City-level Change in CRE Prices
(Percent, 2020Q2)



More stringent containment measures and smaller fiscal support have been associated with larger price declines.

Change in CRE Prices by Stringency of Containment Measures and Level of Fiscal Policy Support
(Percent, 2020Q2)

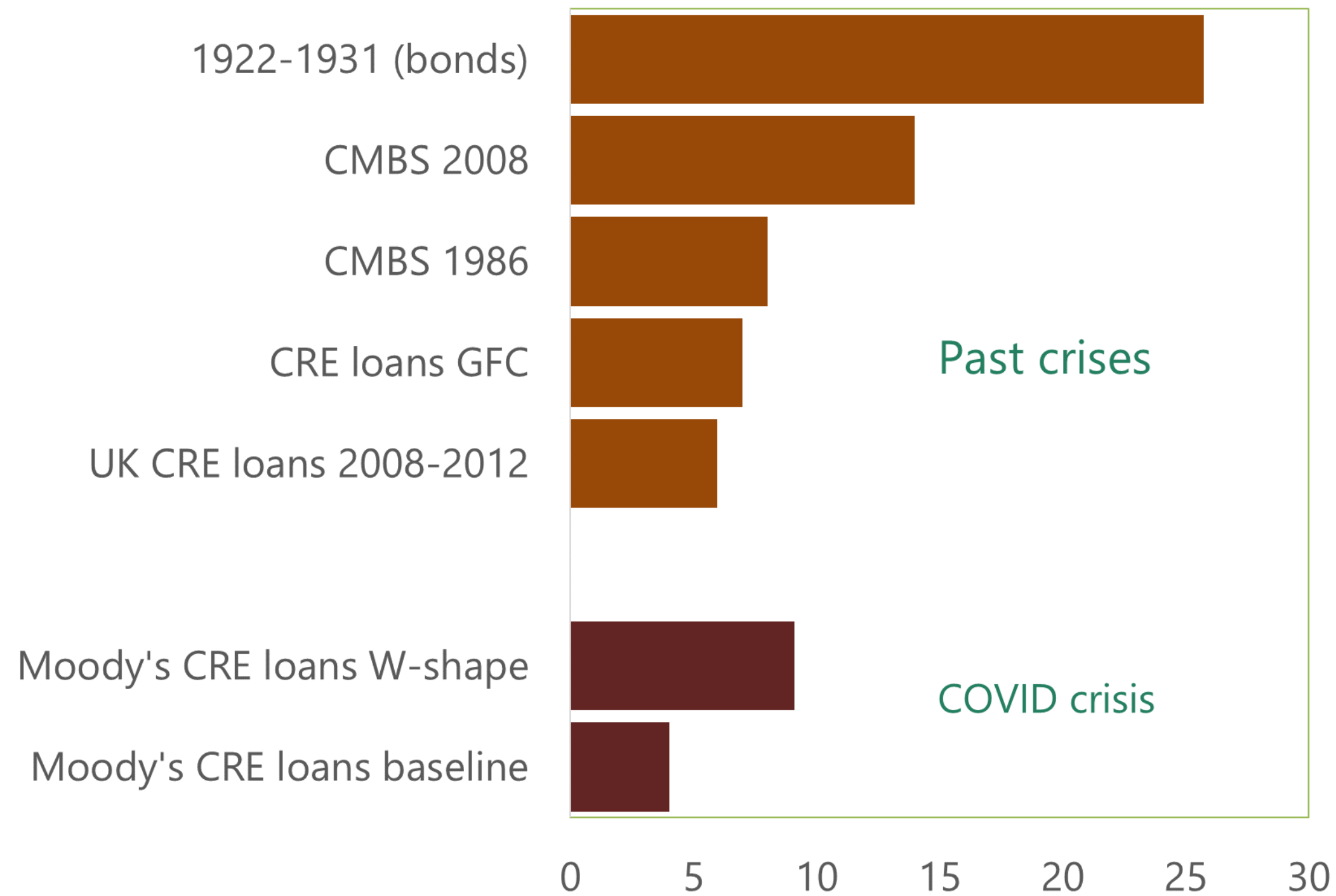


The CRE sector is relevant to financial stability

Losses related to CRE have been substantial in past crises.

Commercial Property Loss Estimates

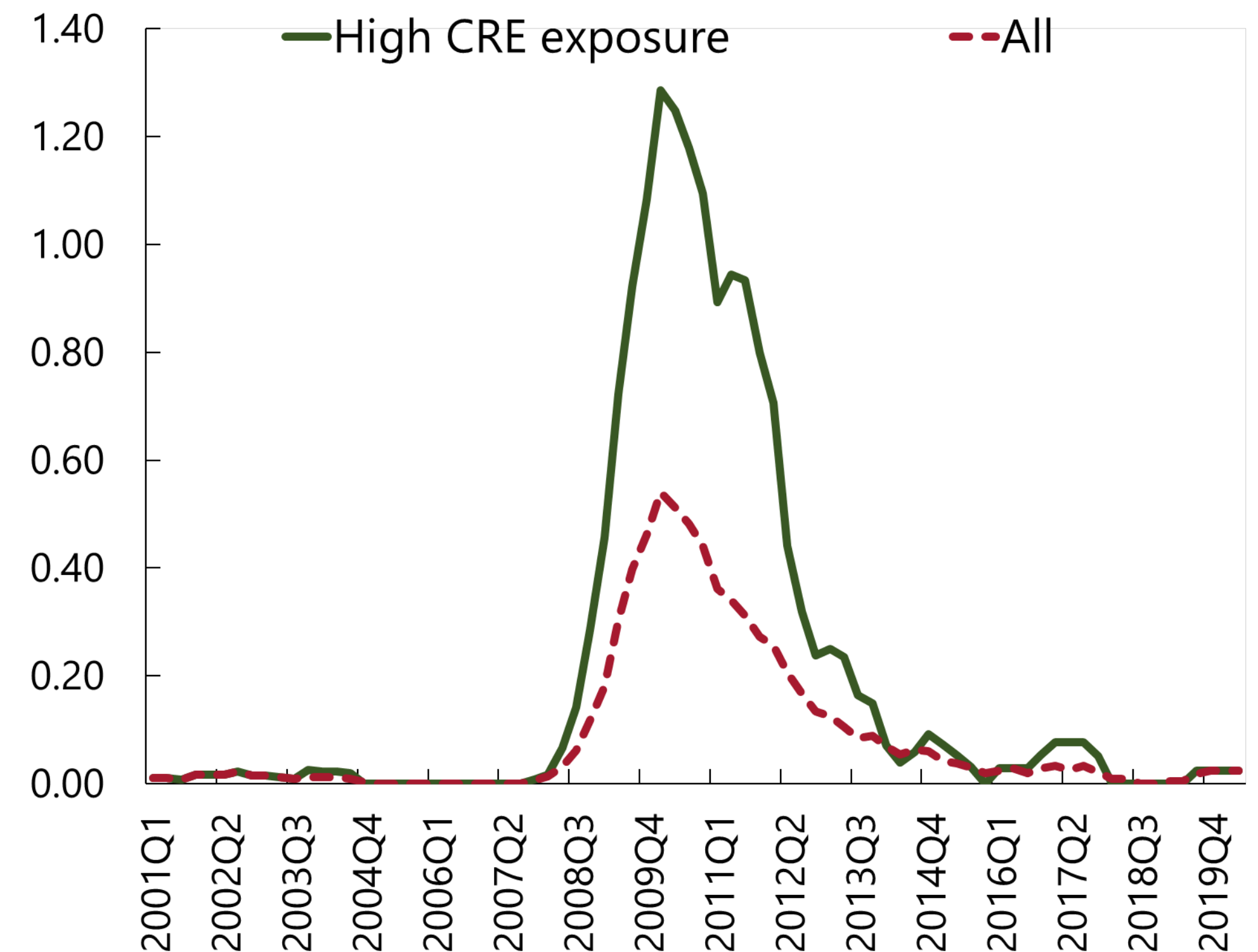
(Percent loss rate, for U.S. unless stated otherwise)



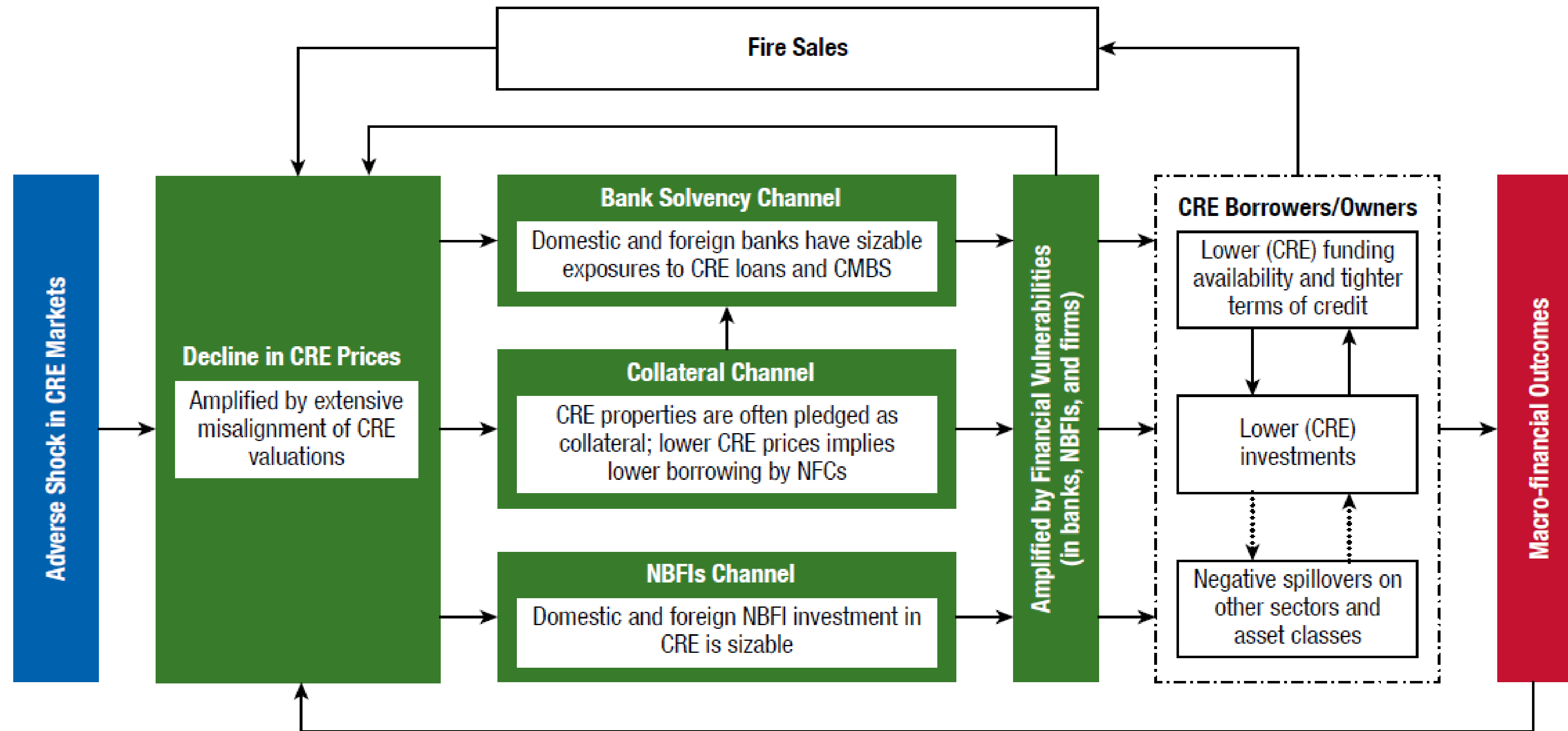
During the GFC, greater CRE exposure was correlated with bank failures.

Bank Failure Conditional on CRE Exposure

(Percent, 2001Q1-2020Q2)



Why CRE matters for financial stability?



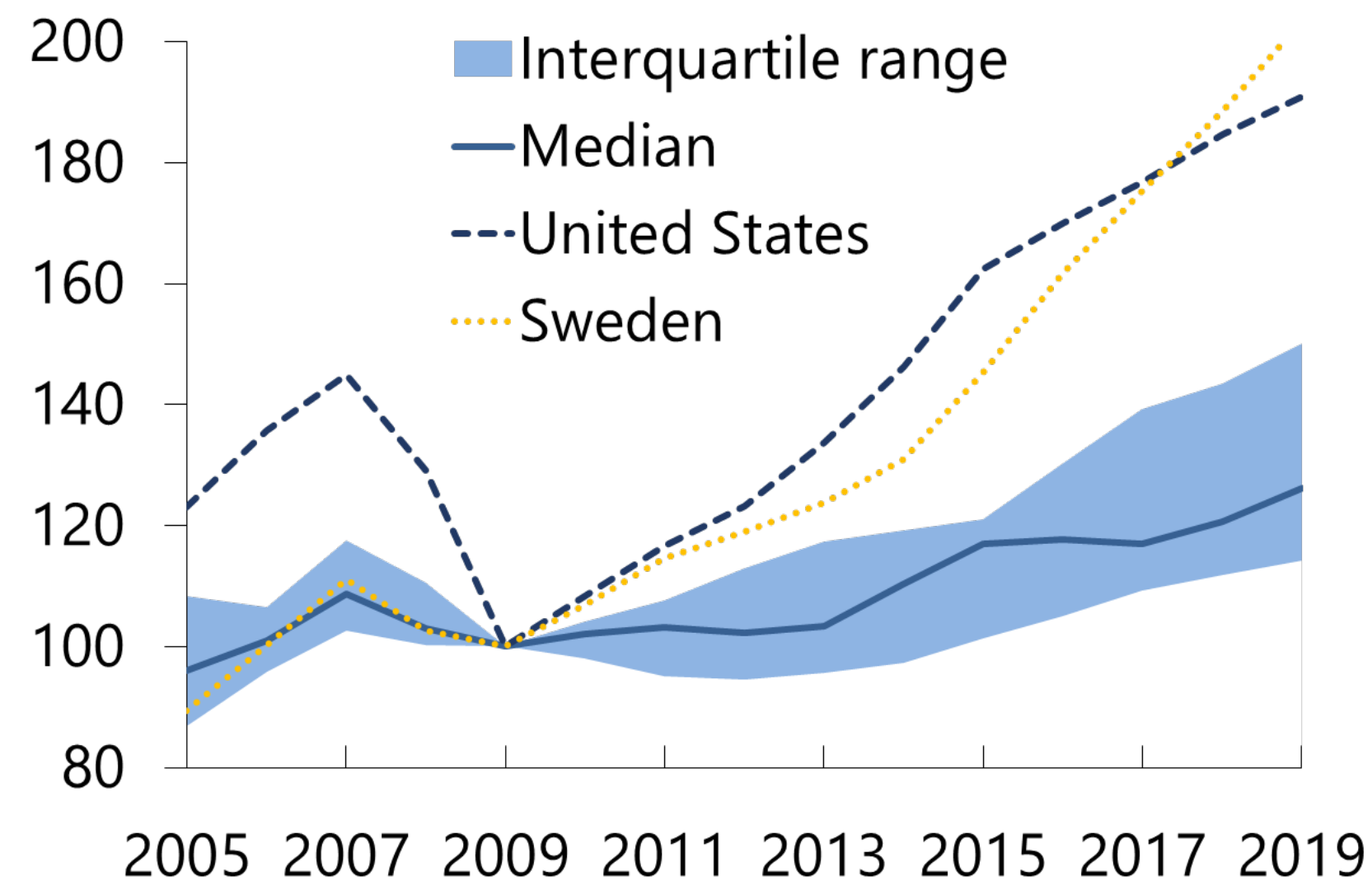
Main questions

- I. **How have CRE markets evolved over the past two decades?**
- II. Do CRE prices reflect macroeconomic fundamentals?
- III. What is the impact of CRE price shocks on financial stability?
- IV. Do macrofinancial policies help to mitigate risks in the CRE market?

How have CRE markets evolved over the past two decades?

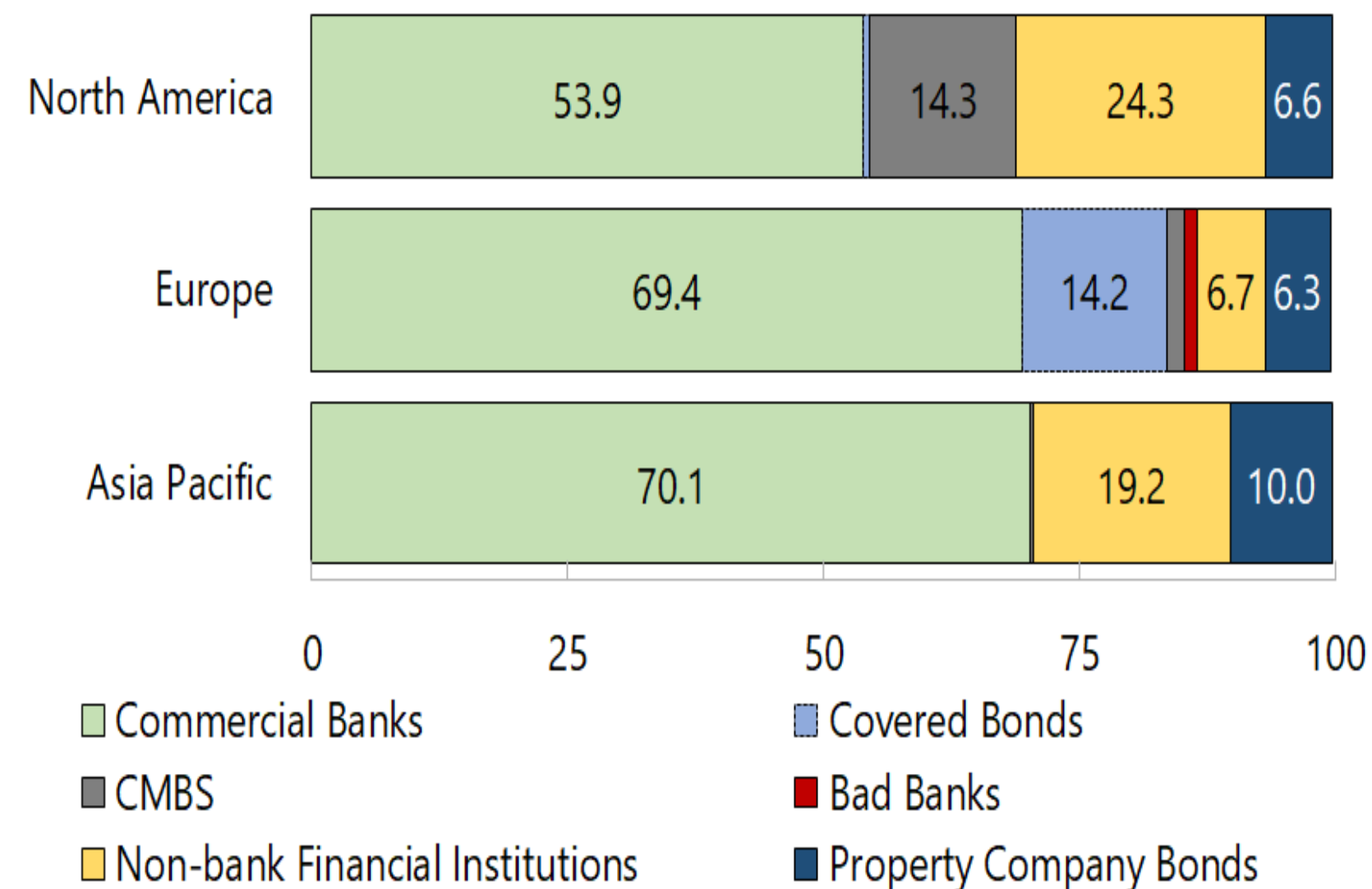
In most economies, real commercial property prices have risen above their levels before the global financial crisis.

Real Commercial Real Estate Prices in Selected Economies
(Index, 2009=100)



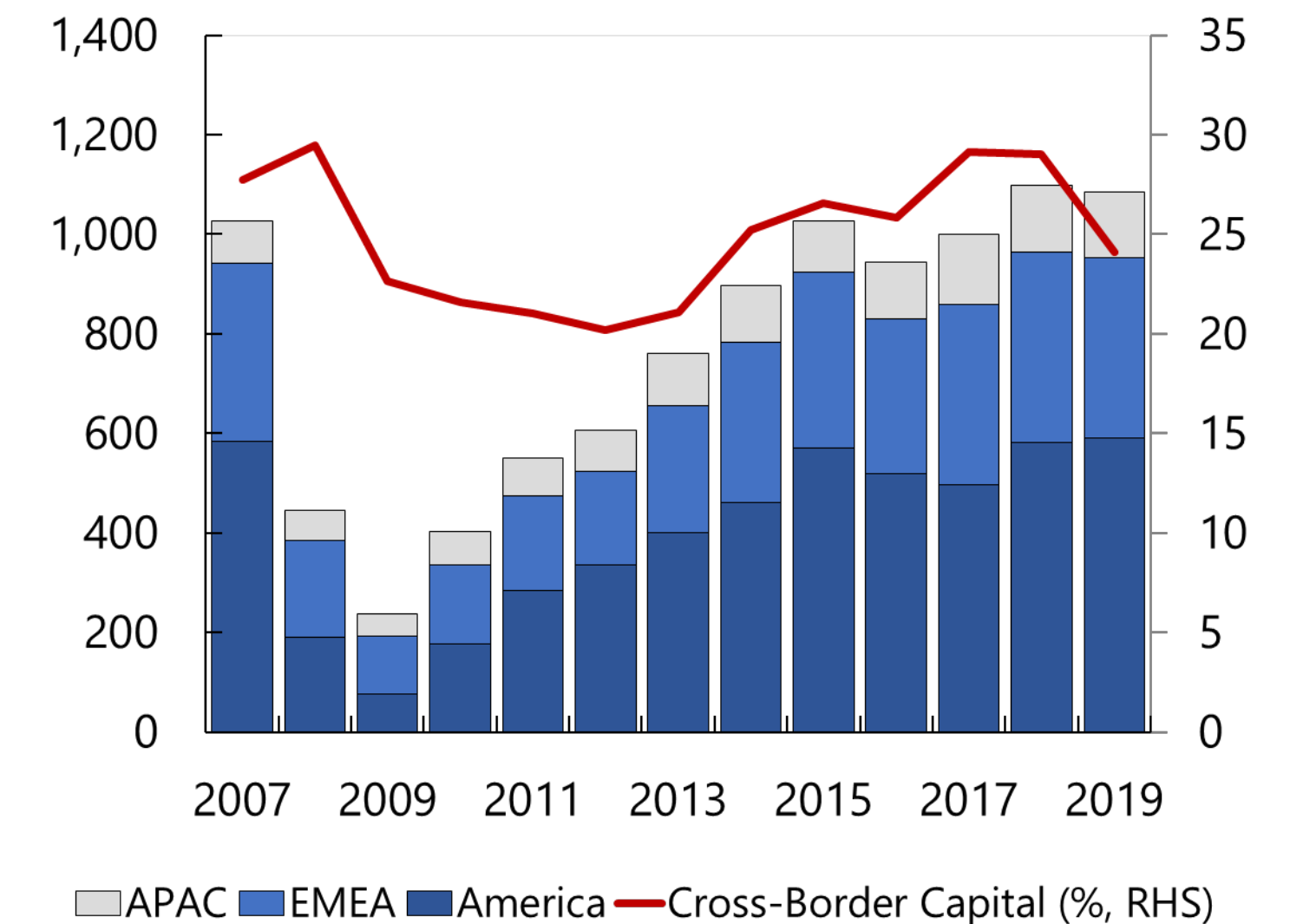
Bank lending is the dominant type of CRE financing.

CRE Debt Holdings by Investor Type
(Percent of total, as of 2018)



Cross-border capital flows to CRE have increased since the GFC.

Total Transaction Volume
(Billions of US dollars)



Main questions

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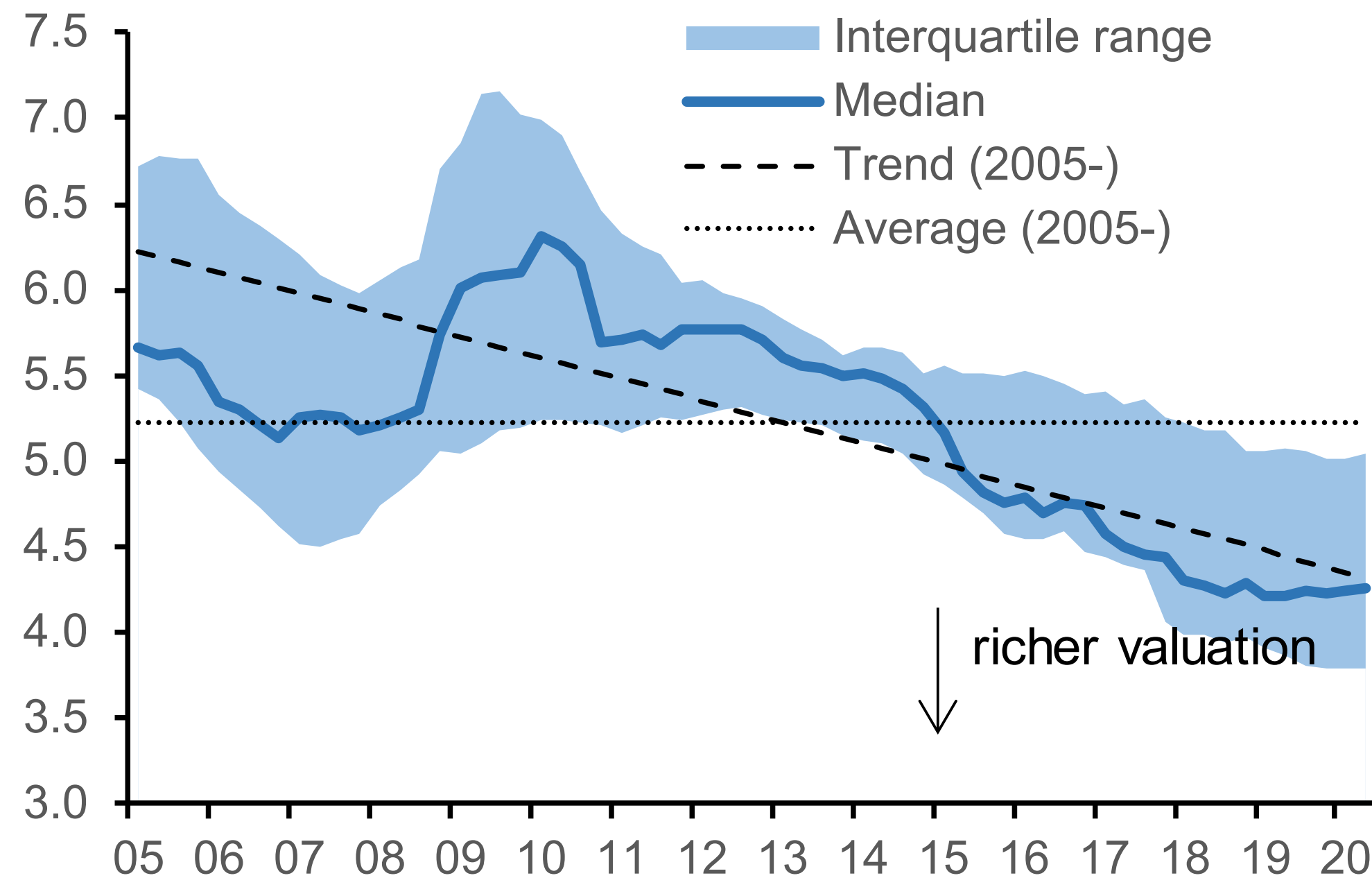
Do CRE prices reflect macroeconomic fundamentals?

Capitalization rates have fallen over the last decade ...

... but the average cap rate spread over real government bond yields is not much different from 2009-10.

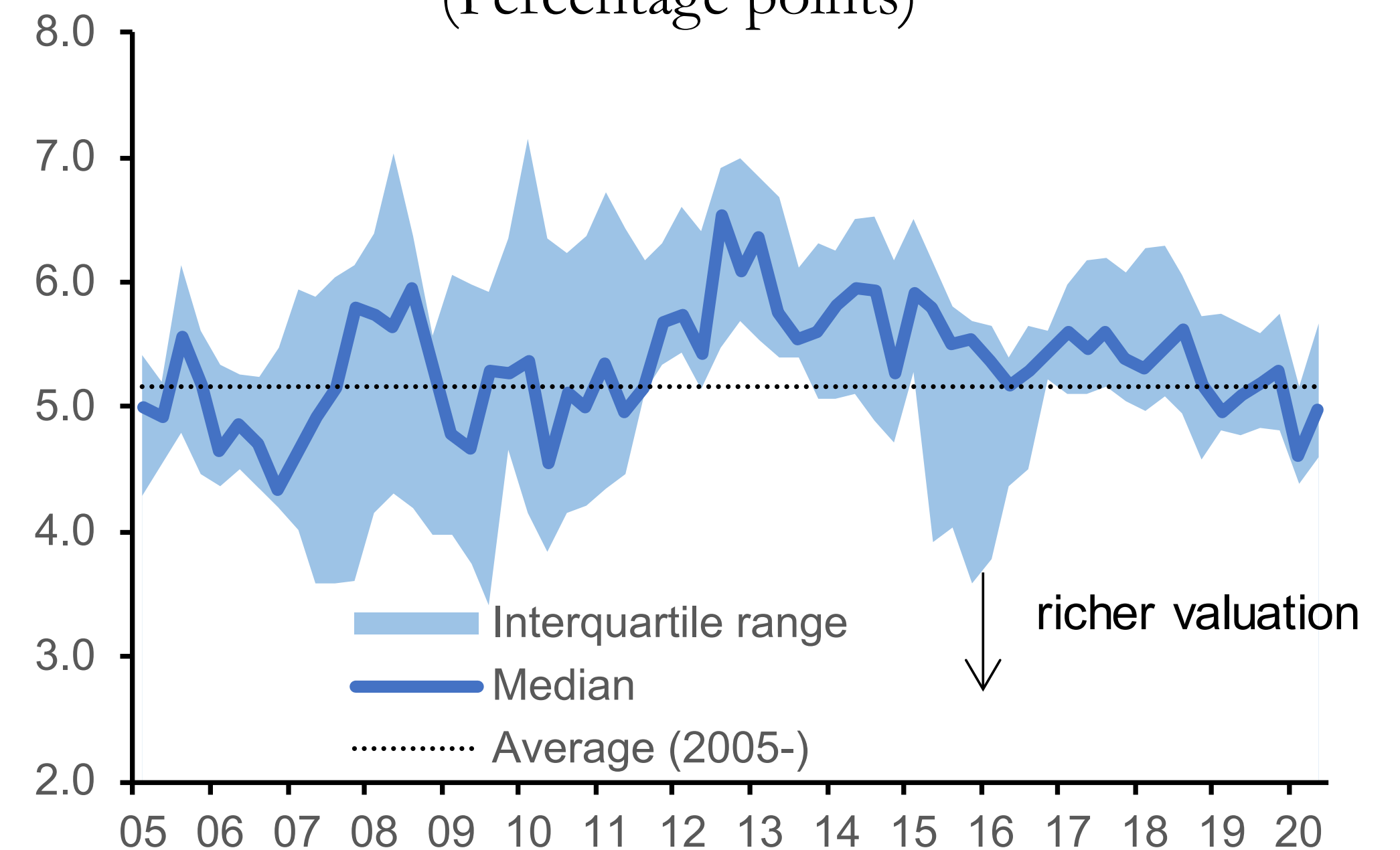
Capitalization Rate

(Ratio of net operating income to price, percent)



Real Capitalization Rate Spread over 10-year Real Government Bond Yield

(Percentage points)



Sample: (Left panel) BEL, CAN, CHE, CHN, CZK, DEU, DNK, ESP, FRA, GBR, HKG, HUN, IDN, IRL, ITA, JPN, KOR, MYS, NLD, NOR, NZL, POL, PRT, SGP, SWE, THA, USA, ZAR
 (Right panel) AUS, CAN, DEU, DNK, ESP, GBR, ITA, PRT, SWE, USA, ZAR

Note: Capitalization rate = NOI/price; real capitalization rate spread = cap rate – (10-year nominal government bond yield – 10-year breakeven inflation rate)

Sources: Bank for International Settlements; Haver Analytics; MSCI; and IMF staff calculations.

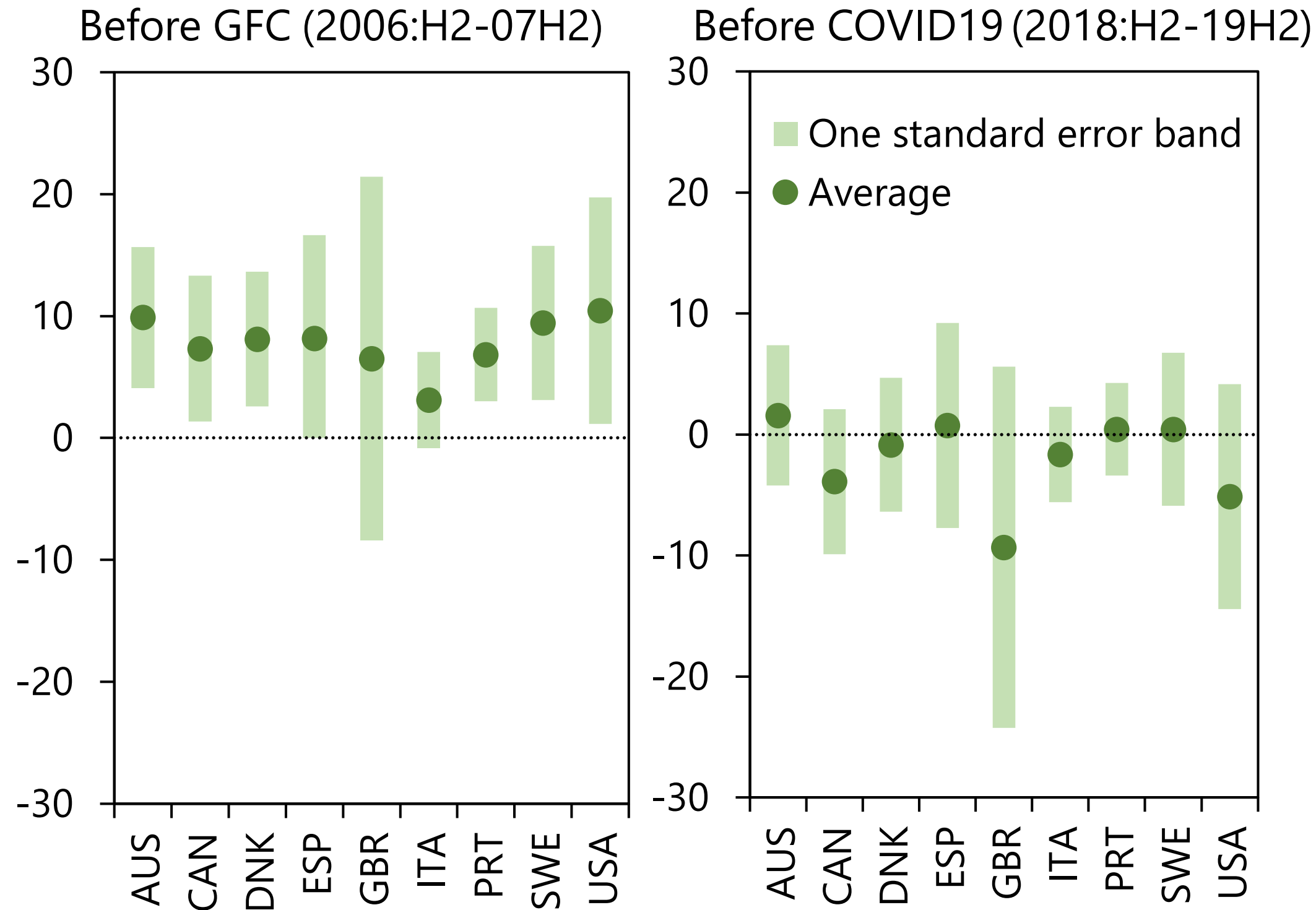
A novel valuation framework for the CRE sector

CRE prices were generally overvalued before the GFC but not so much in the run-up to the pandemic.

Price misalignments have shot up in 2020.

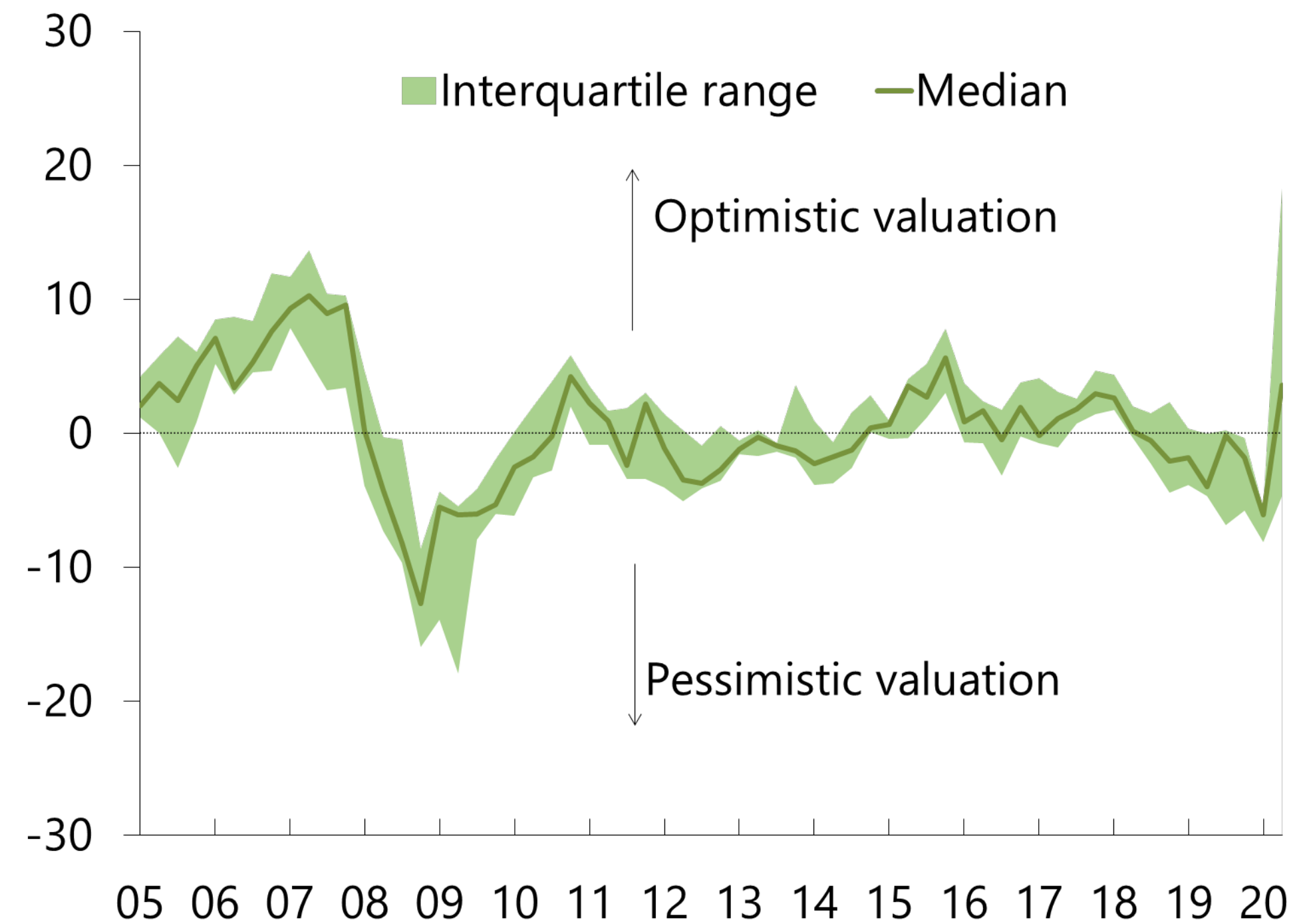
Misalignment before GFC and COVID19

(Deviation from fair value, percentage points)



Estimated Misalignment: Pre-Global Financial Crisis and Pre-COVID-19 Snapshot

(Deviation from fair price, percent)



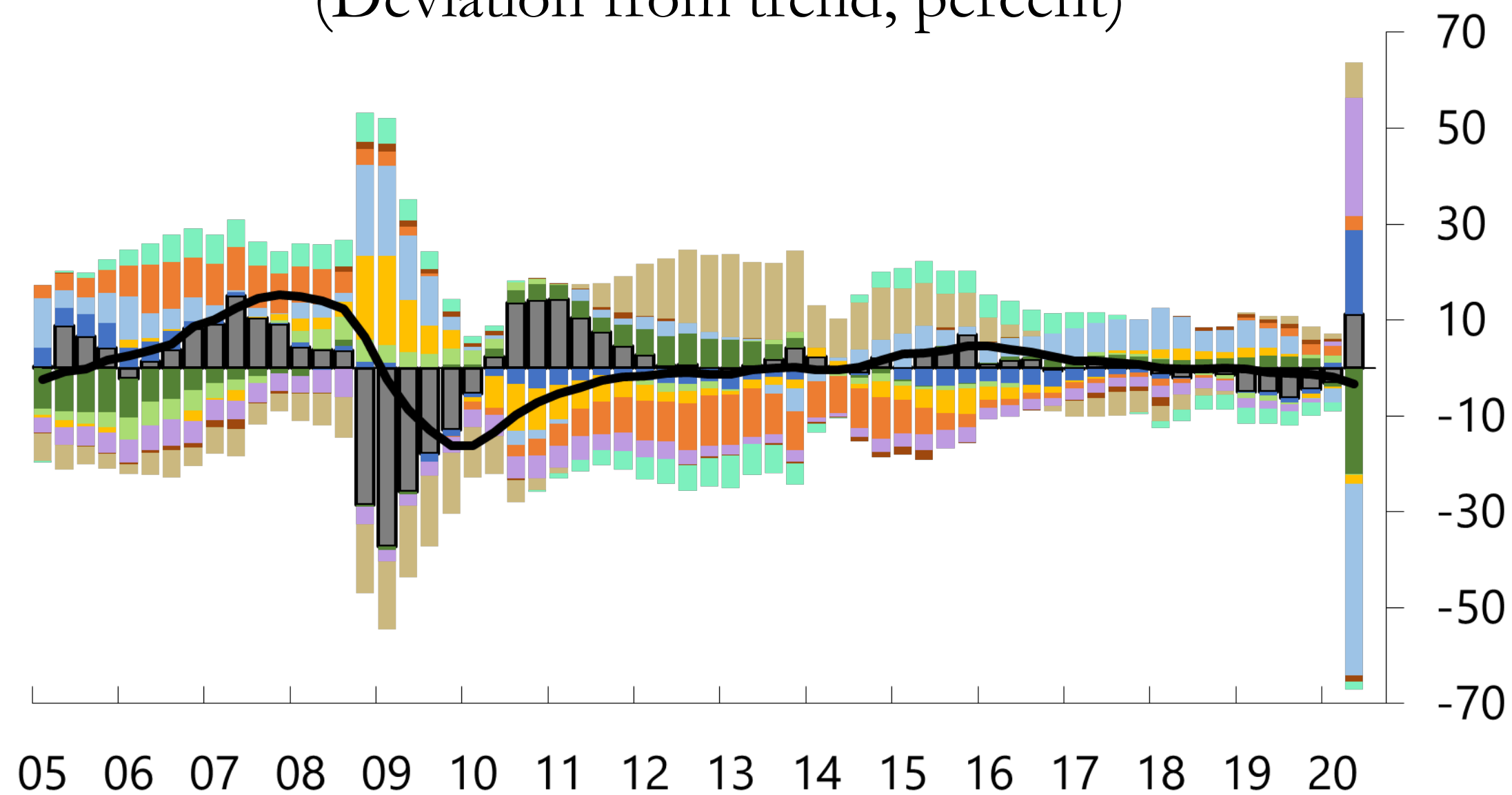
Sample: AUS, CAN, DEU, DNK, ESP, GBR, ITA, PRT, SWE, USA, ZAR
Sources: Bloomberg L.P.; Haver Analytics; MSCI; and IMF staff calculations.

A new normal?

In the United States, the sharp decline in aggregate demand and net operating income during 2020 put downward pressure on fair values, implying an overvaluation.

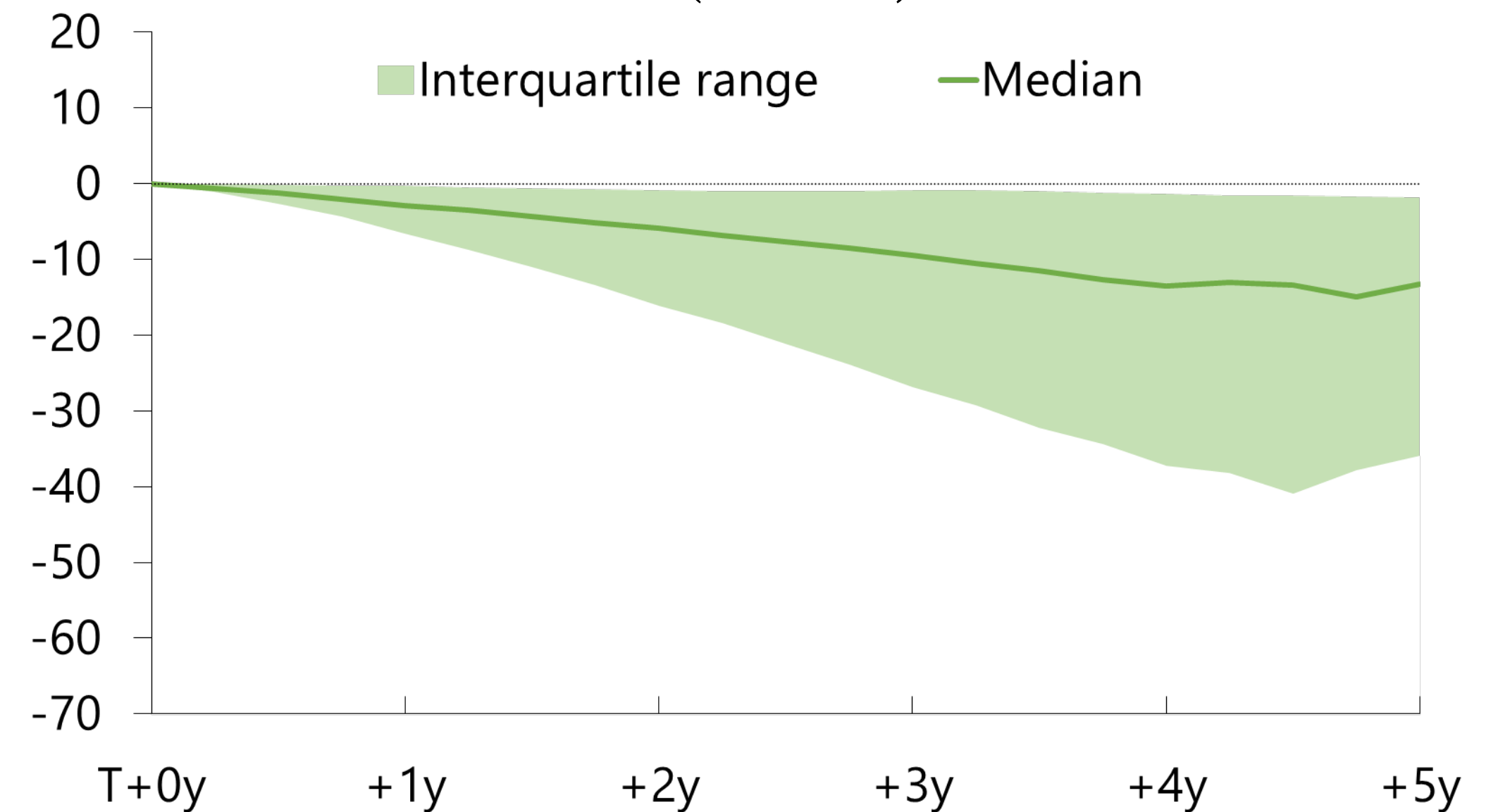
Potential structural shifts in CRE demand could lower CRE fair values significantly going forward.

United States: Decomposition of Estimated Misalignment
(Deviation from trend, percent)



- Misalignment
- Aggregate demand
- Spread
- Credit-to-GDP
- Capital flow-to-GDP
- Aggregate supply
- Monetary policy
- NOI growth
- Broad money-to-GDP
- Other

Response of CRE Prices across Economies to a Permanent Shock to the Vacancy Rate
(Percent)



Impulse response of CRE prices to a CRE specific demand shock

- CRE specific demand shock expressed as a sustained increase in the vacancy rate.
- The size of the shock: Vacancy rate would gradually increase on average by 5 percentage points in the next 10 years.

Sources: Bloomberg L.P.; Haver Analytics; MSCI; and IMF staff calculations.

III) What is the impact of CRE shocks on financial stability?

1. **Impact of CRE prices on downside risks to GDP growth**
2. Impact of CRE price shocks on the banking sector
3. Effect of CRE prices on corporate investment

Does CRE price misalignment affect downside risks to growth?

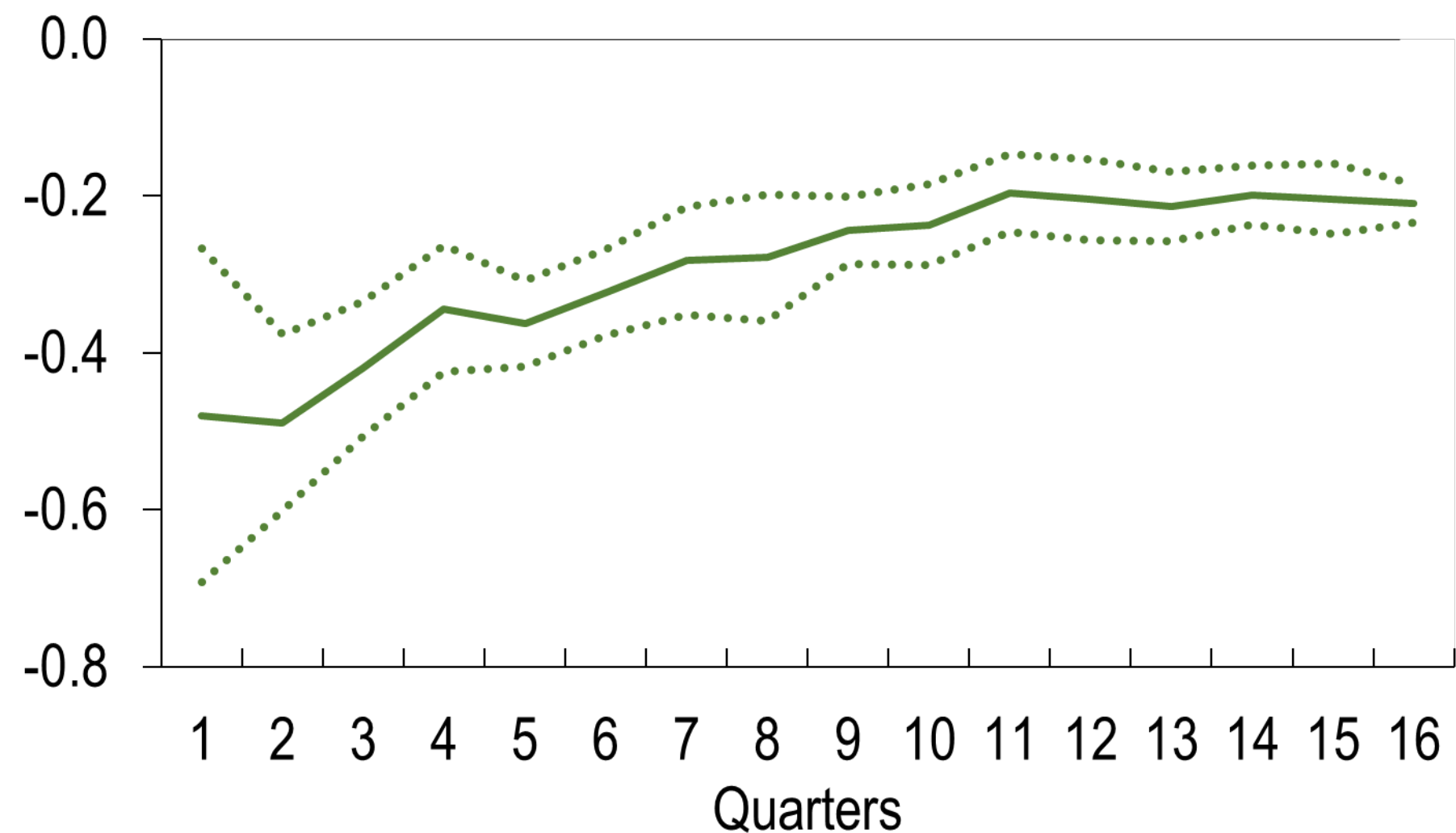
Extended Growth-at-Risk (GaR) model:

$$\Delta_h Y_{i,t,\tau} = \alpha_{i,\tau}^h + \beta_\tau^h \text{Misalignment}_{t-1} + \theta_\tau^h \text{Controls}_{i,t-1} + \epsilon_{i,t,\tau}^h$$

Advanced Economies:

Impact of CRE Price Misalignment on Downside Risks to GDP Growth

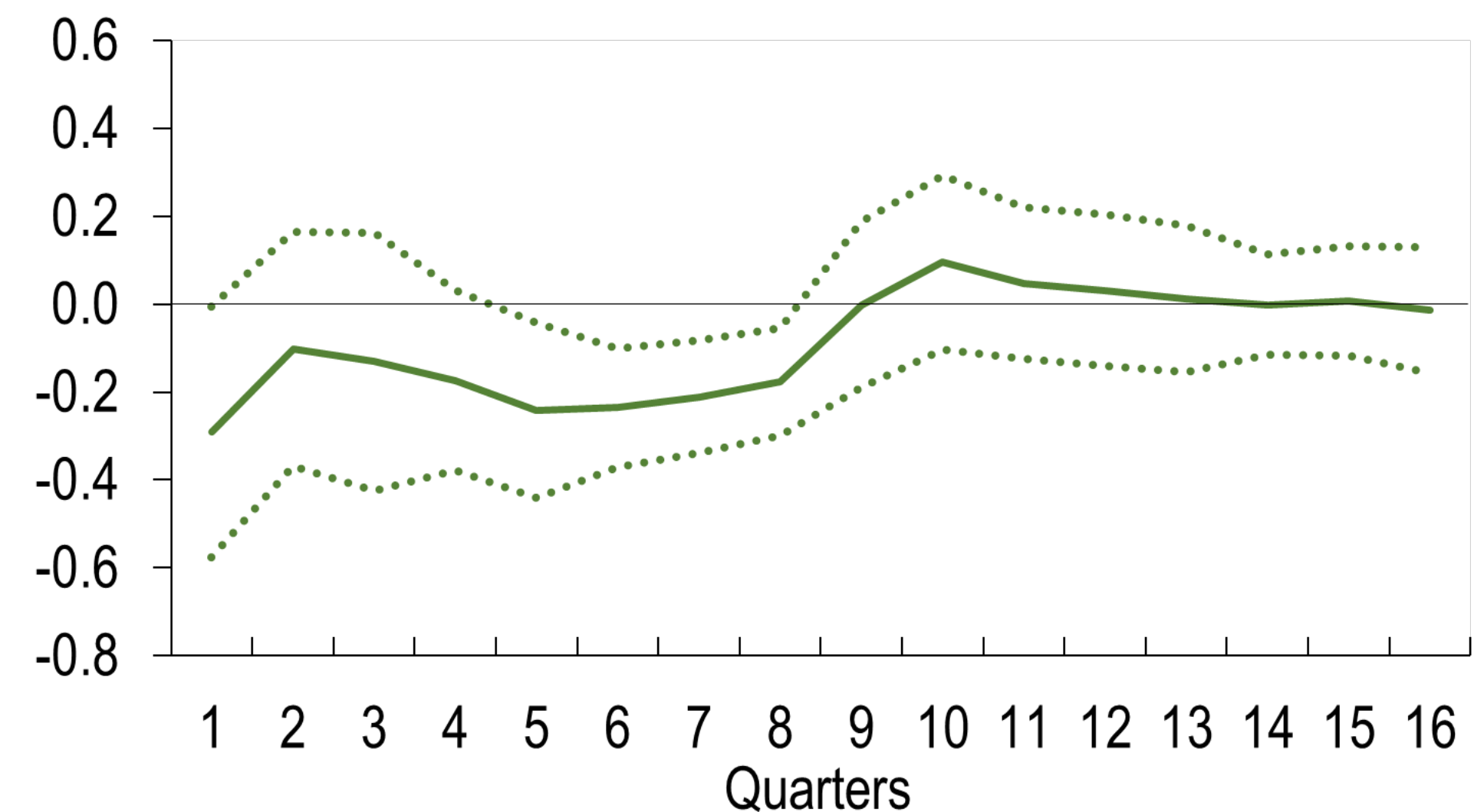
(Percentage points, 5th percentile)



Emerging Market Economies:

Impact of CRE Price Misalignment on Downside Risks to GDP Growth

(Percentage points, 5th percentile)



- ❖ Higher CRE price misalignment amplifies downside risks to future GDP growth in the near/medium term.

III) What is the impact of CRE shocks on financial stability?

1. Impact of CRE prices on downside risks to GDP growth
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CRE price shocks and banks' performance

Mechanism: ↓ CRE prices ► ↑ Loan Delinquencies ► ↑ Loan charge-offs ► ↓ Bank Capital

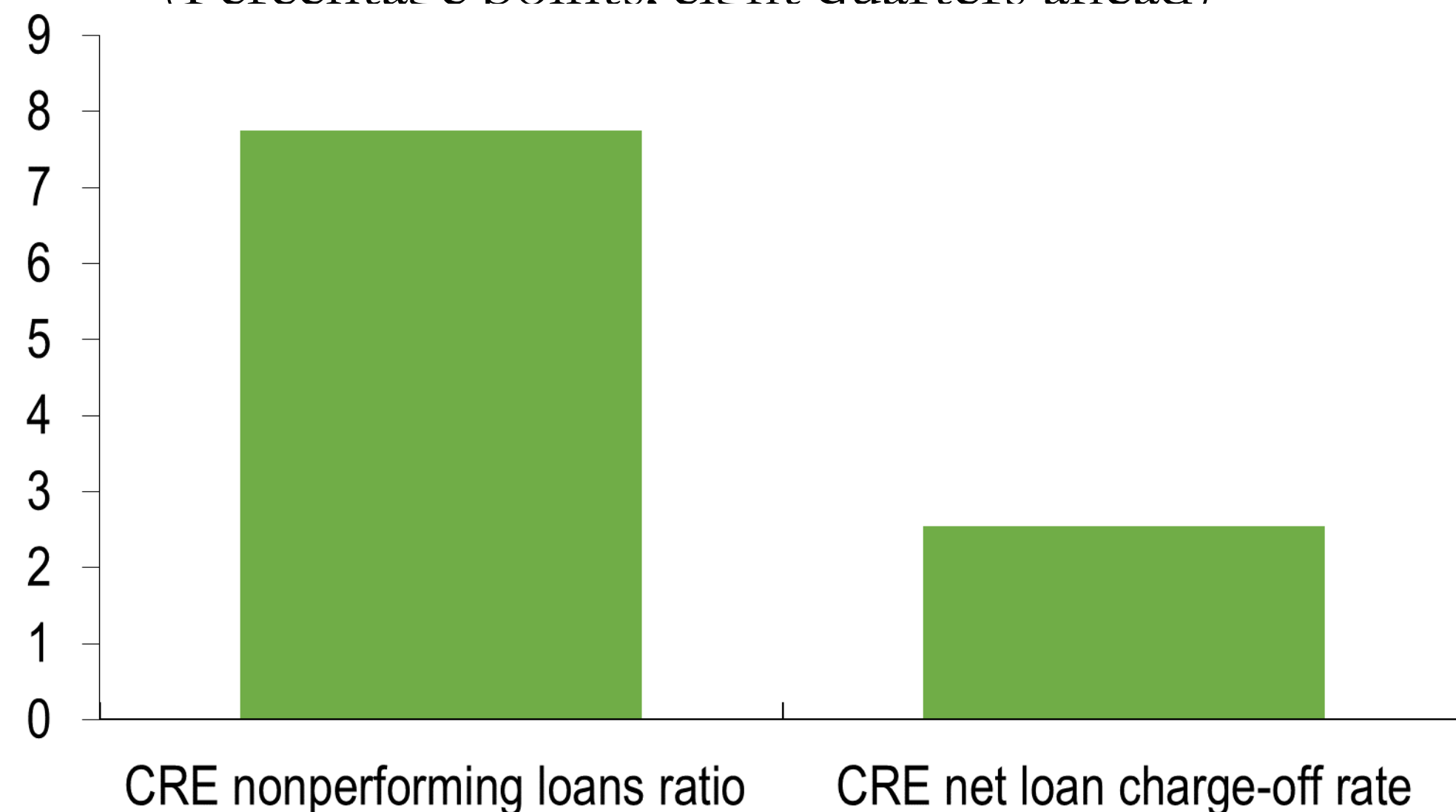
Baseline Specification:
$$Y_{b,t}^l = \alpha^k \cdot CRE\ Exposure_{b,t-k}^l * \Delta P_{t,t-k}^l I(\Delta P_{t,t-k}^l < 0) + \beta^k \cdot CRE\ Exposure_{b,t-k}^l * \Delta P_{t,t-k}^l + Controls_{b,t-k}^l + \mu_b + \eta_{l,t} + \varepsilon_{b,t}^l$$

Following a CRE price decline (that amounts to 16% drop over 8 quarters), banks with higher ex-ante exposure to CRE loans (at the 3rd quartile) experience higher CRE NPLs and CRE loan charge-offs...

...as well as lower bank revenues and capital.

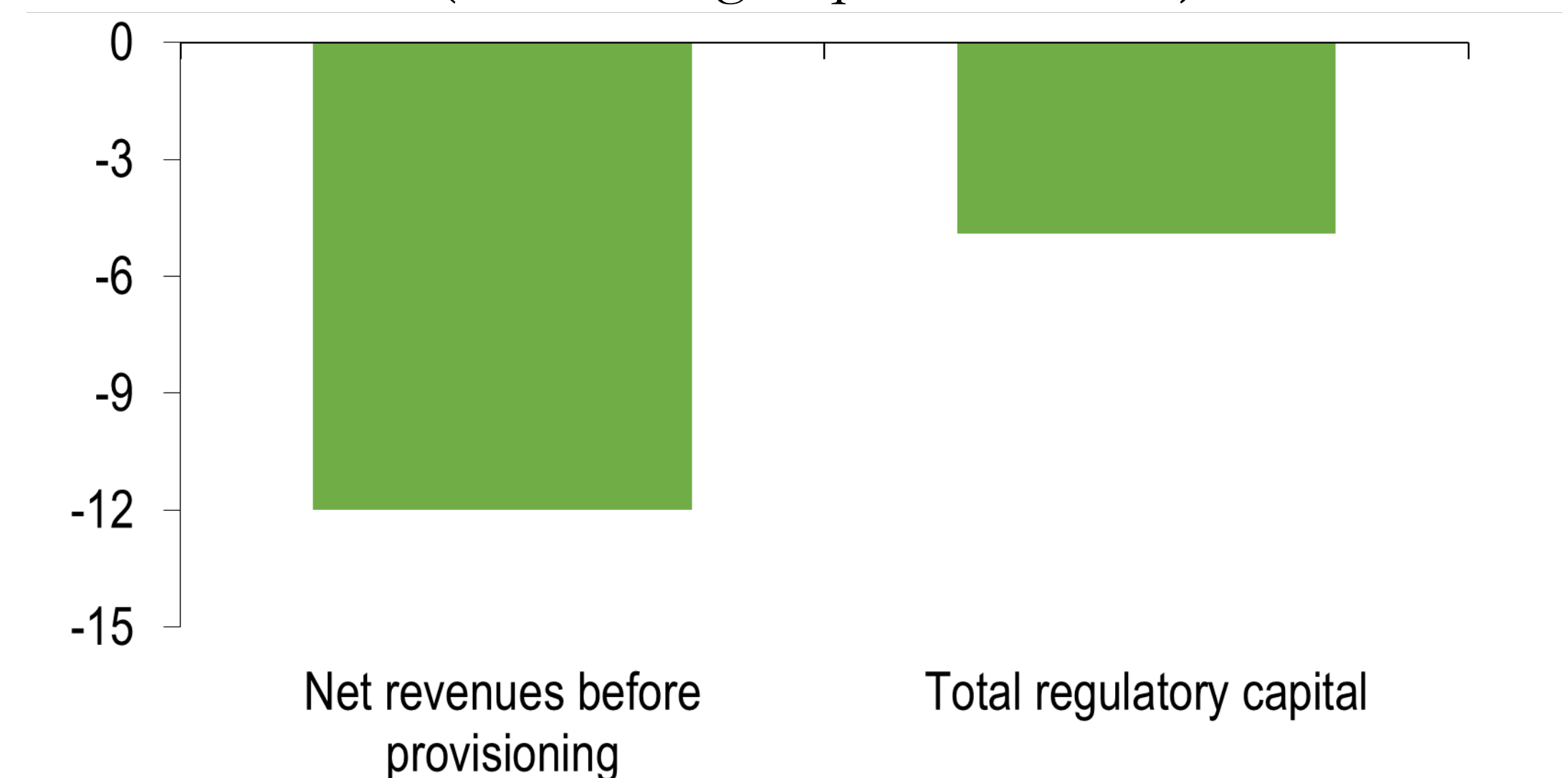
Change in Loan Portfolio Performance of Banks with Higher CRE Exposures

(Percentage points, eight quarters ahead)



Change in Revenue and Risk-Based Capital of Banks with Higher CRE Exposures

(Percent, eight quarters ahead)

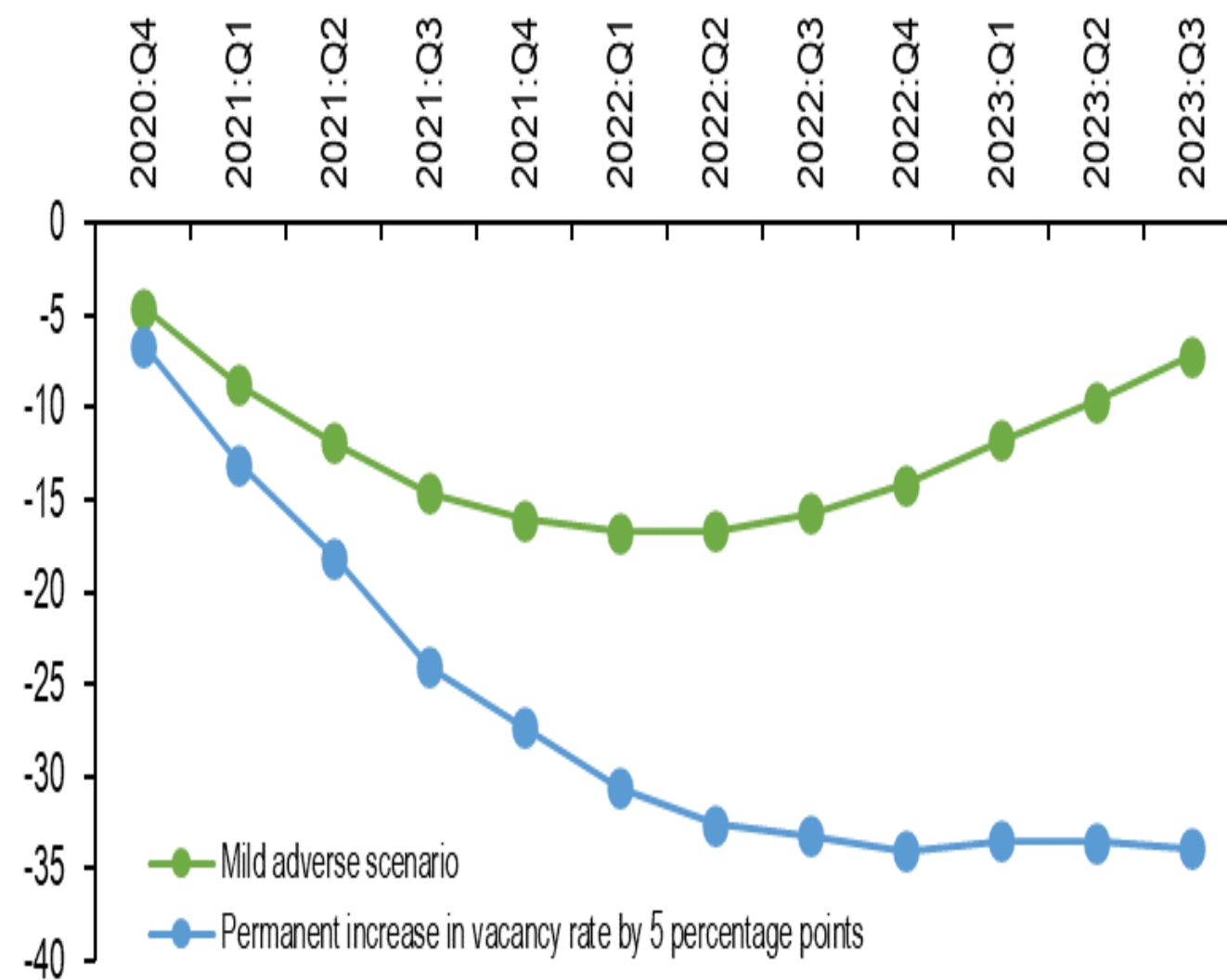


Capital Losses under Stressed CRE Price Scenarios

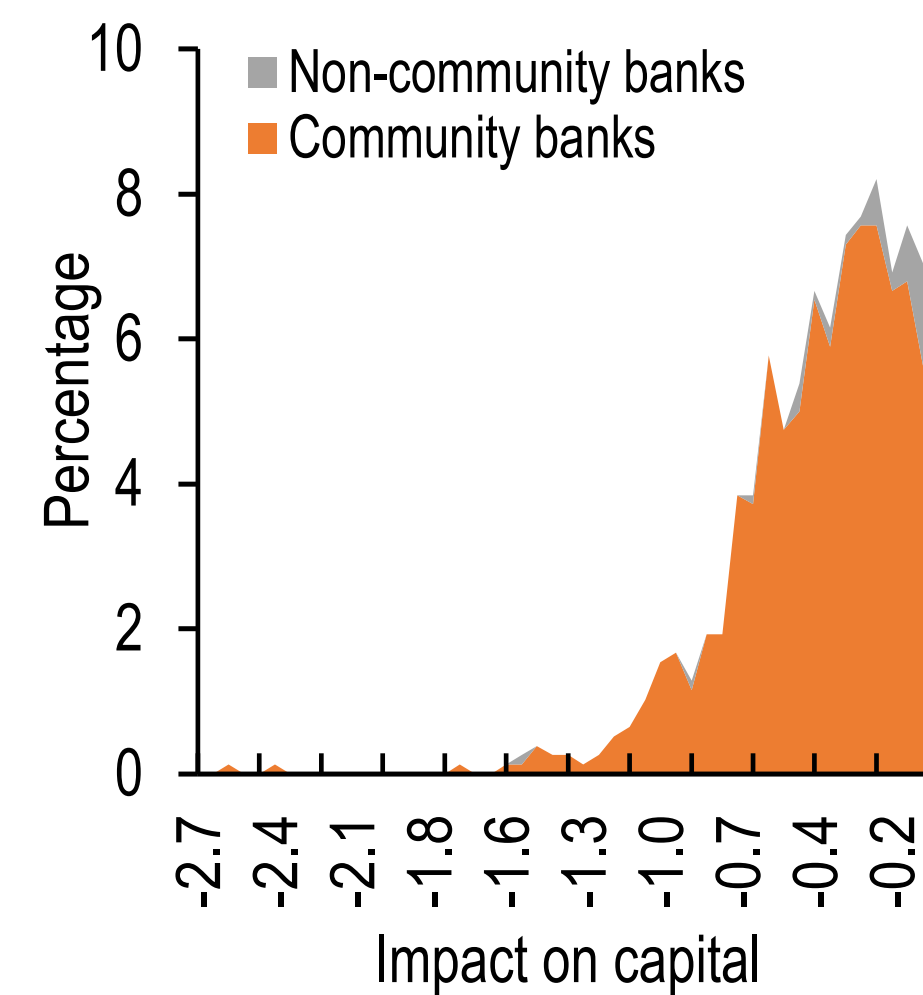
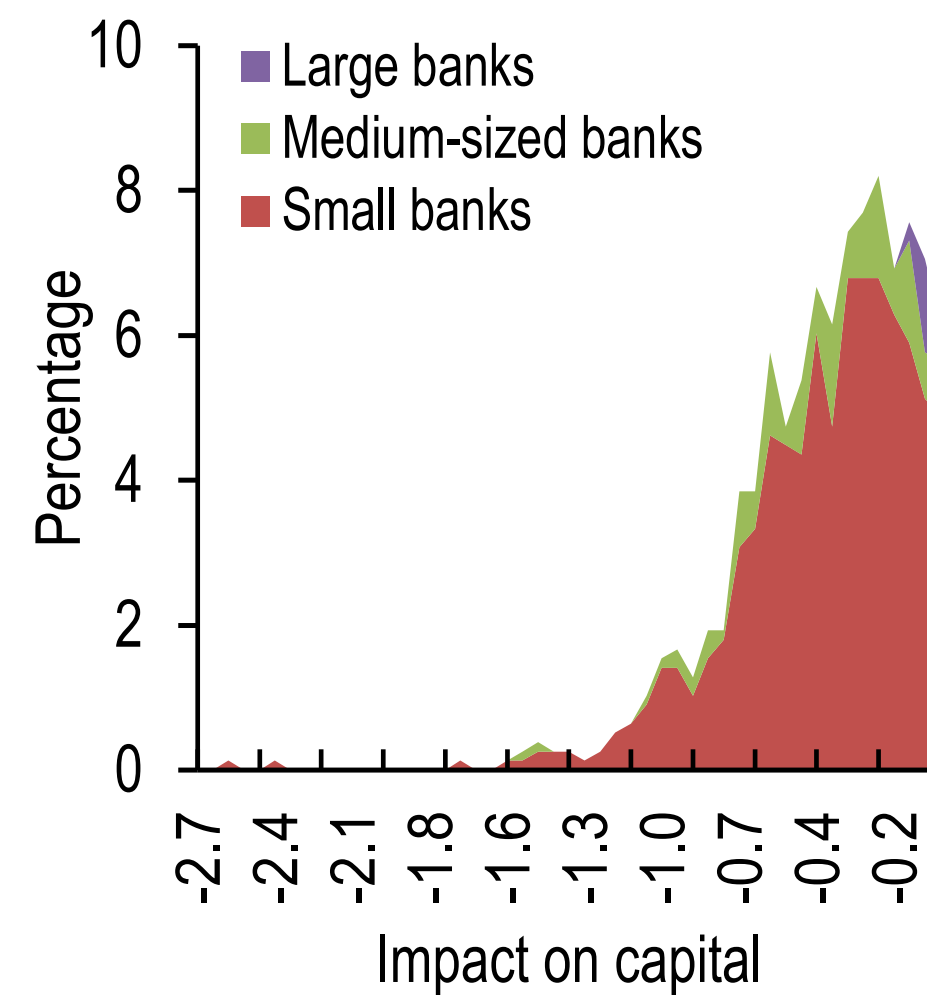
Capital losses are concentrated in smaller and geographically concentrated banks...

...and could potentially be amplified by structural shifts in CRE demand.

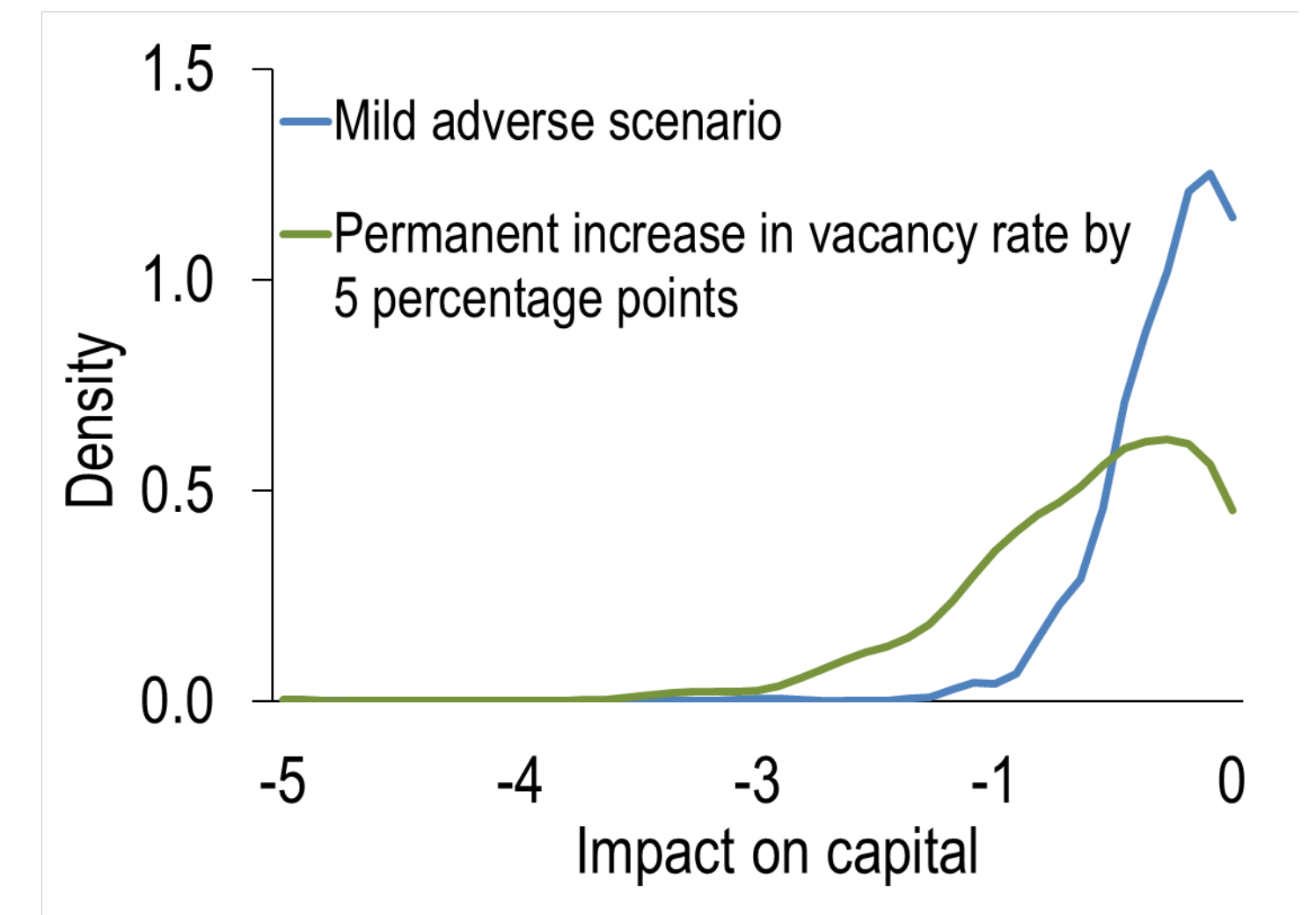
Cumulative Change in Average CRE Prices Under Different Scenarios
(Percent)



Distribution of Capital Losses Under Mild Adverse Scenario
(Percent of risk-weighted assets)



Distribution of 8-quarters-ahead Projected Capital Losses with Permanent Shocks to Vacancy Rates
(Percent of risk-weighted assets)



III) What is the impact of CRE shocks on financial stability?

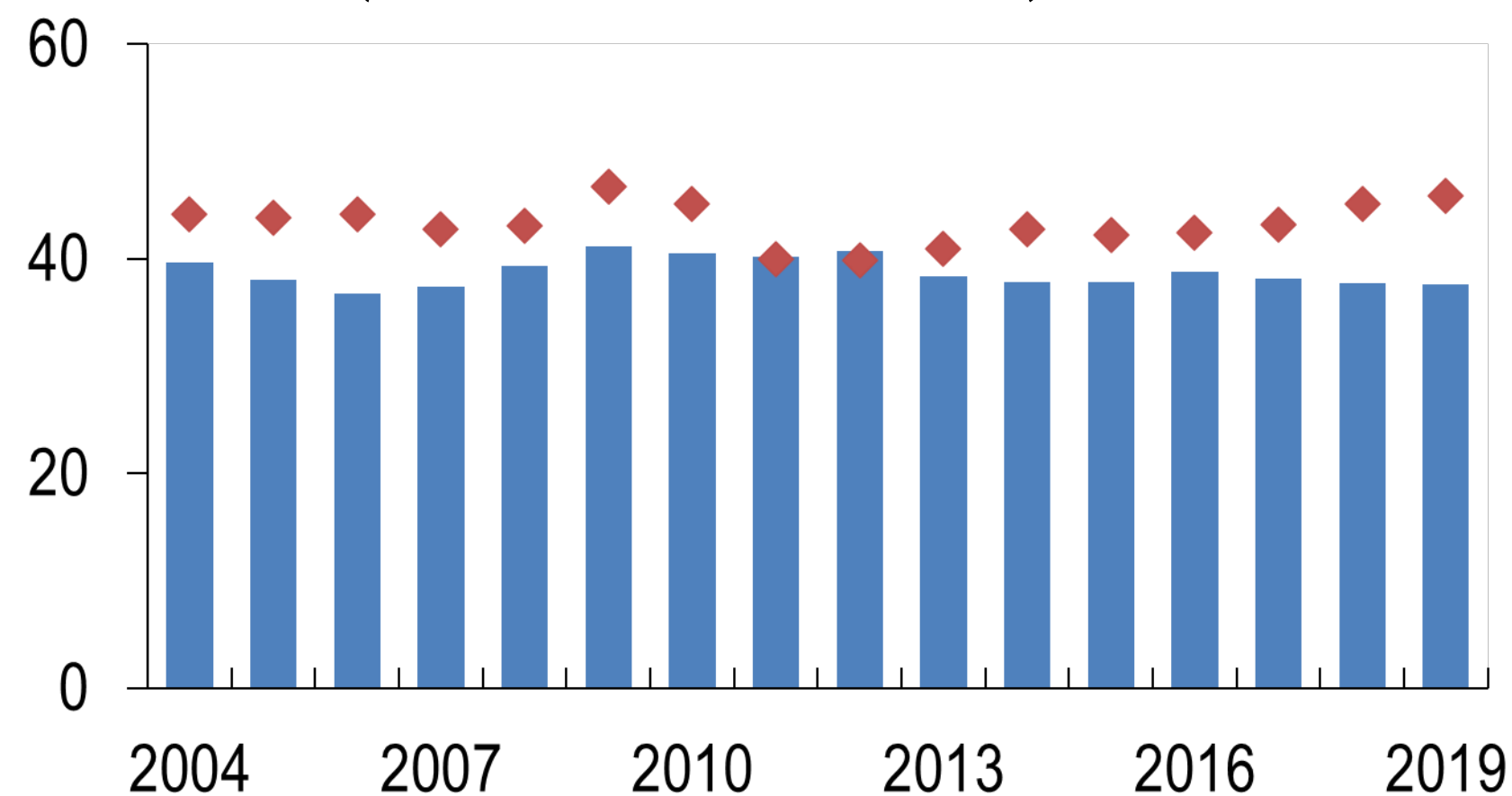
1. Impact of CRE prices on downside risks to GDP growth
2. Impact of CRE price shocks on the banking sector
3. **Effect of CRE prices on corporate investment**

CRE price shocks and firms' investment

Mechanism: ↓ CRE prices ► ↓ Market Value of Collateral ► ↓ Financing Conditions ► ↓ Firm-level Investment

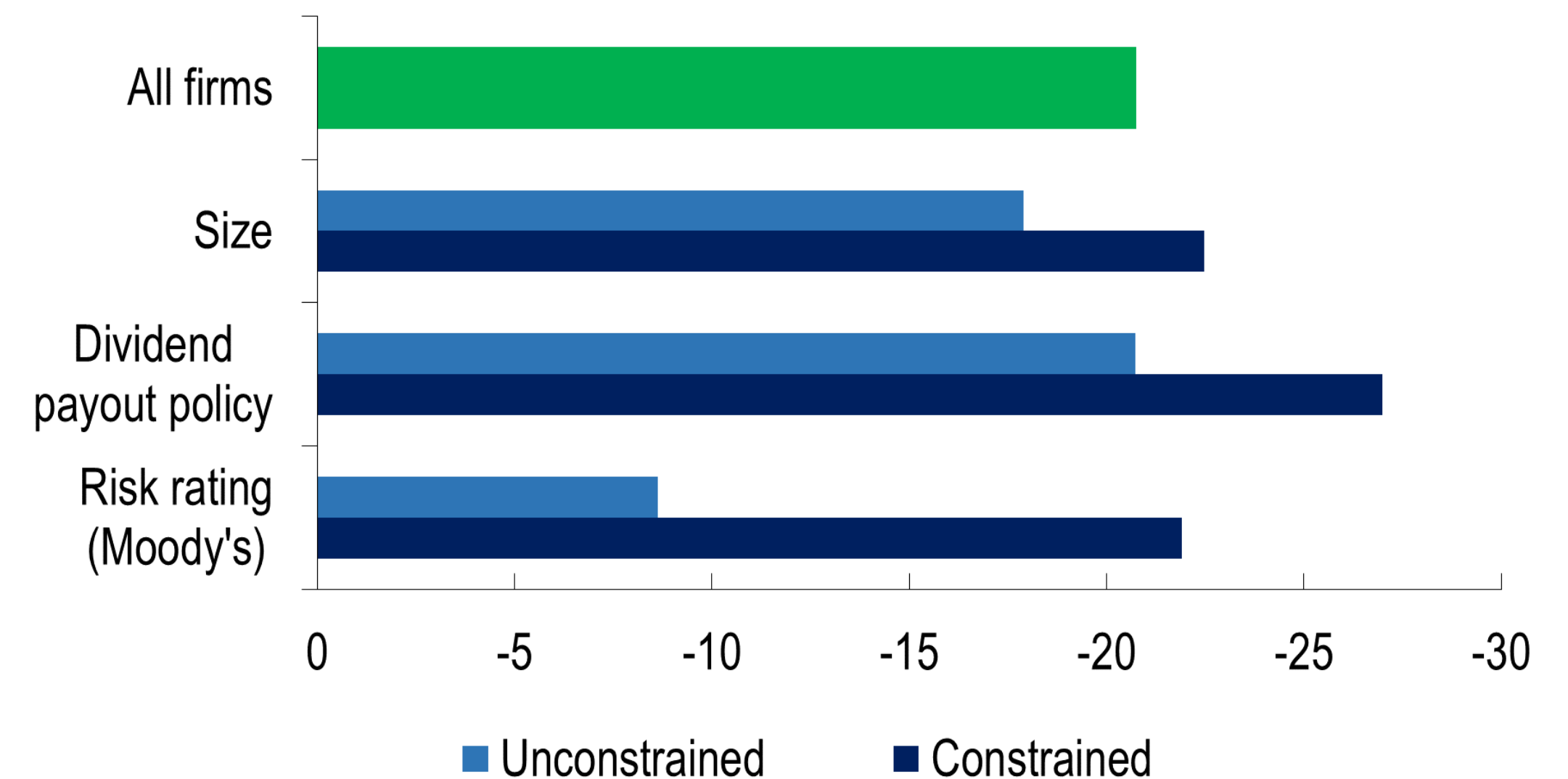
Baseline Specification: $Investment_{i,t} = \beta \cdot RE\ Value_{i,t} + \gamma \frac{P_t^c}{P_{t=0}^c} + \sum_k k_k \cdot X_{k,t=0}^i \cdot \frac{P_t^c}{P_{t=0}^c} + [Controls]_{i,t|t-1} + \alpha_i + \delta_{c,s,t} + \epsilon_{i,t}$

Average Real Estate Holdings by Nonfinancial Corporations, 2004–19
(Percent of total assets)



■ Advanced economies
◆ Emerging market economies

Effect of a CRE Price Decline on Nonfinancial Corporations' Investment
(Percent)



CRE price shocks and financial stability: summary

- ❖ **GaR analysis.** Higher CRE price misalignment amplifies downside risks in the short- and medium terms.
- ❖ **Bank-level analysis.** Drop in CRE prices
 - adversely affect bank revenues and capital.
 - imply mild losses on average (14 bpts), but entail significant capital losses for some banks with very high CRE loan exposures,
 - especially if structural changes in the CRE market are to materialize, projected losses can be large.
- ❖ **Firm-level analysis.** A decline in CRE prices has a significant adverse effect on firm investment. A 1 std lower market value of real estate assets leads to a decline in investment ratio (by about 1/5).

Main questions

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Do macrofinancial policies help to mitigate risks in the CRE market?

Macroprudential policy measures:

CRE Targeted Measures	Broader Borrower-based Measures
LTV limits specific to CRE loans Higher risk weights on CRE exposure Guidance on concentration in CRE lending	LTV/DTI/DSCR limits Stricter credit standard

- ❖ A limited number of macroprudential policies directly target the CRE sector, so the assessment of their effectiveness are rare.
- ❖ The macroprudential policy measures are “purged” of variations in credit-to-GDP to address potential endogeneity concerns
- ❖ Source: IMF iMaPP database, BIS and ESRB’s policy databases

Capital flow management measures

- ❖ CFM shocks are constructed by purging the policy index from changes in capital inflows-to-GDP
- ❖ Example: Hong Kong SAR (2013): a 15% stamp duty applies on acquisitions of residential properties by non-Hong Kong permanent residents.
- ❖ Source: IMF’s Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) Database

Additional Controls: lagged real GDP growth, FCI, change in credit-to-GDP, capital inflow-to-GDP, VIX

Sample: 30 economies (23 advanced and 7 emerging markets) from 2000Q1 to 2019Q4

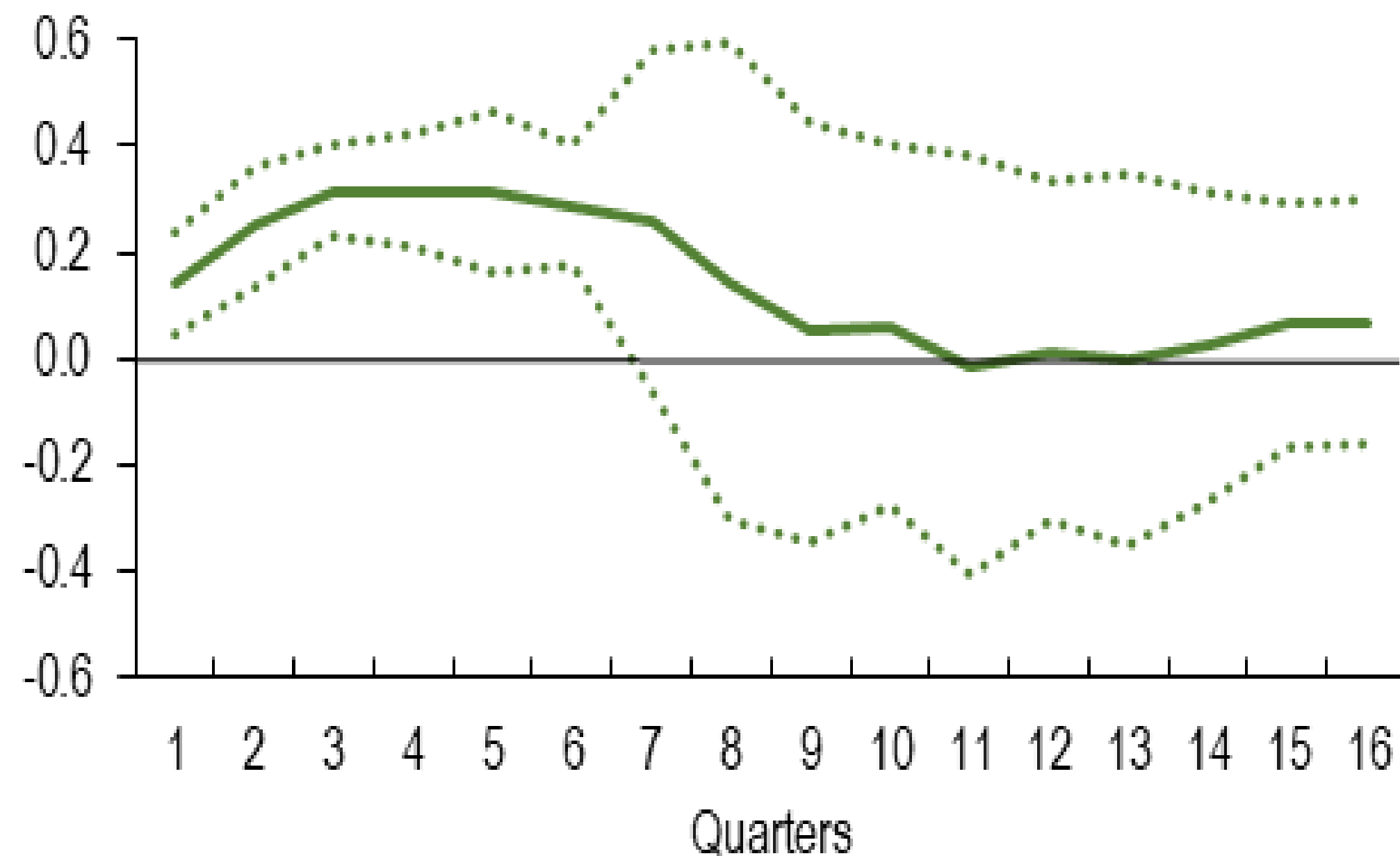
Macroprudential policy tightening reduces downside risks to CRE prices

Model Specification: $\Delta_h Y_{i,t,\tau} = \alpha_{i,\tau}^h + \beta_{\tau}^h \Delta Policy_{i,t} + \gamma_{\tau}^h MP_{i,t} + \theta_{\tau}^h Controls_{i,t-1} + \epsilon_{i,t,\tau}^h$

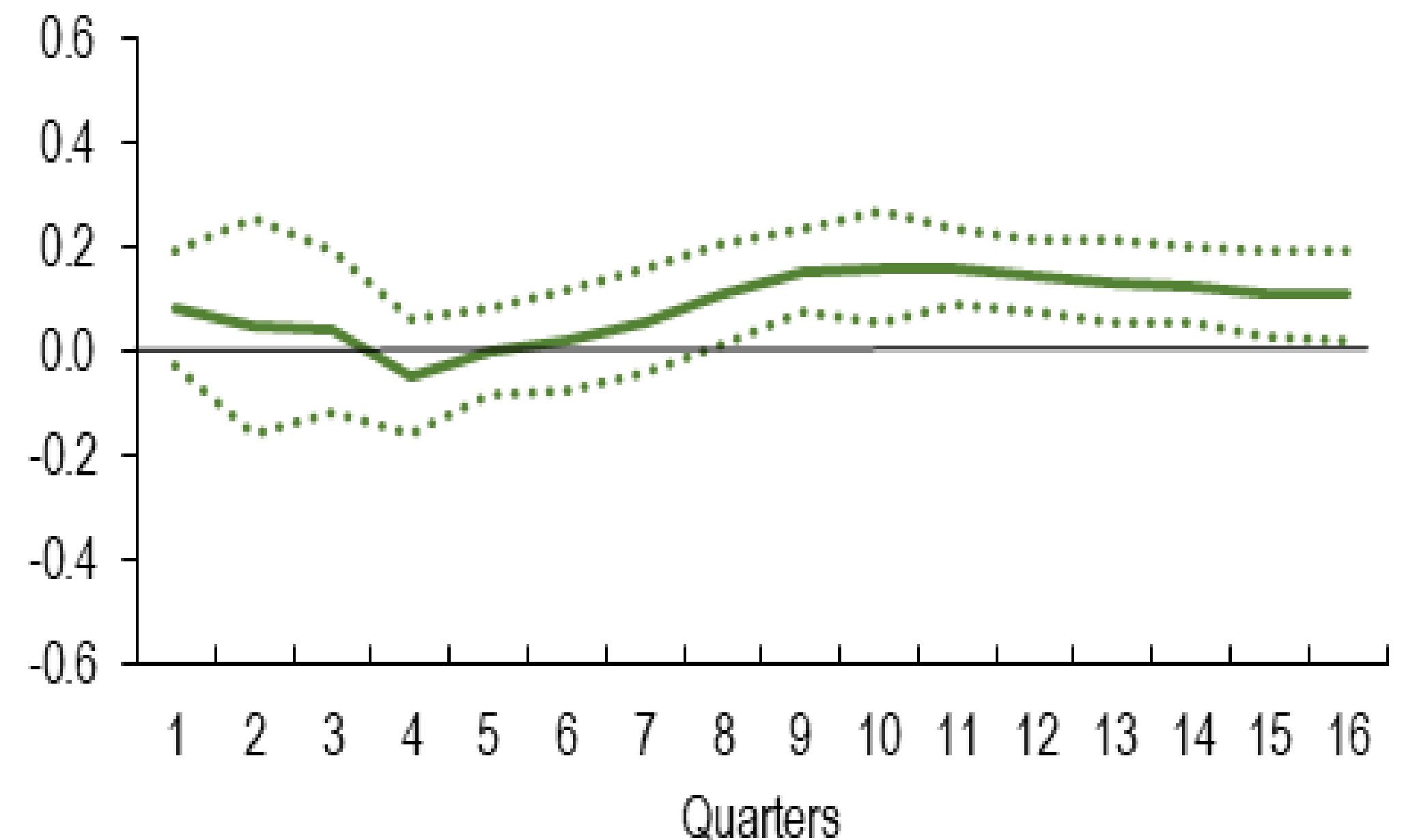
CRE-specific macroprudential tightening measures are effective in limiting downside risks to CRE prices in the short term.

Broader borrower-based tightening measures reduce downside risks to CRE prices in the medium and long terms.

Impact of a CRE-specific Macroprudential Tightening Measure on Downside Risks to CRE Prices
(Percentage points)



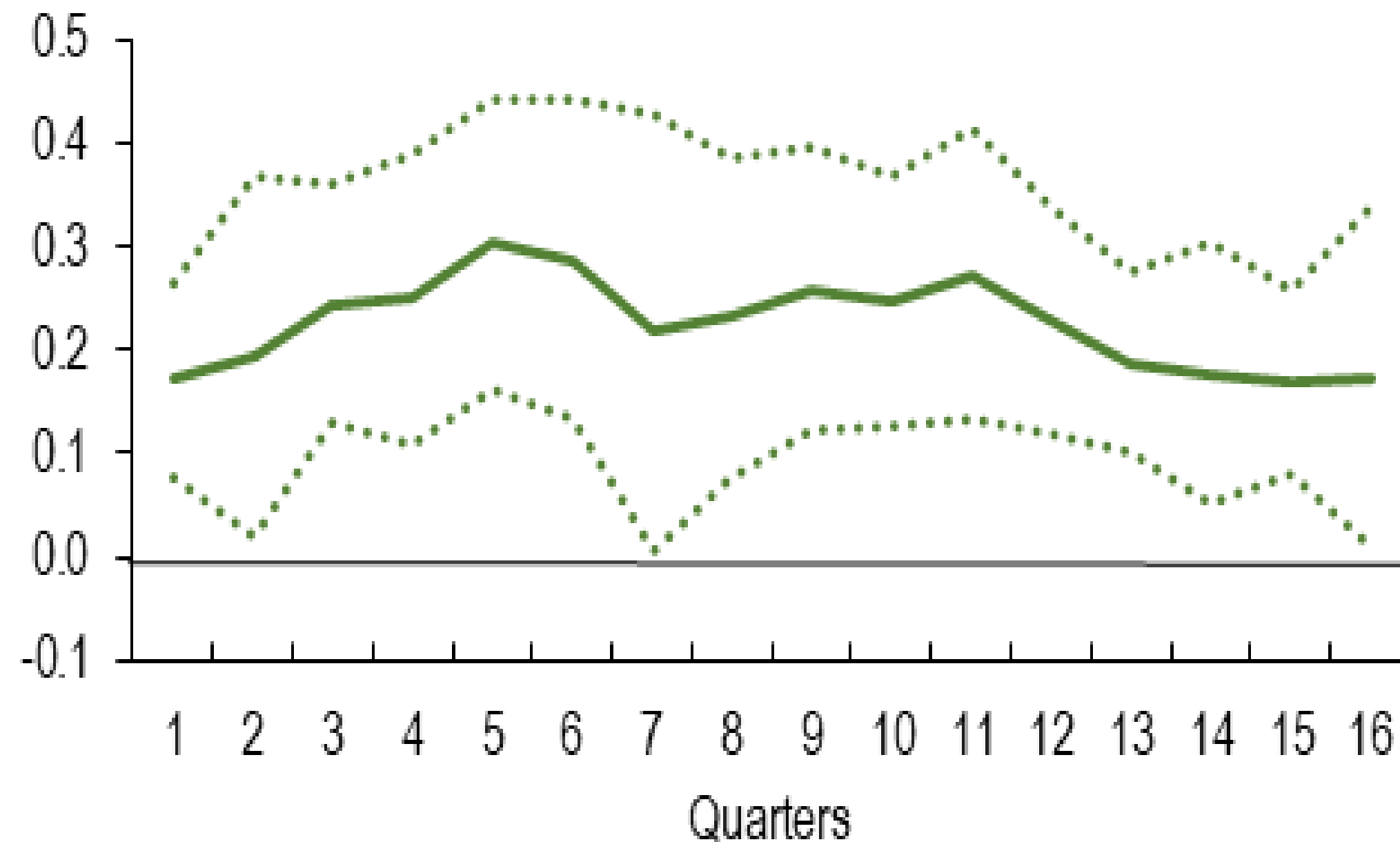
Impact of a Borrower-based Macroprudential Tightening Measure on Downside Risks to CRE Prices
(Percentage points)



CFMs can also reduce downside risks to CRE prices

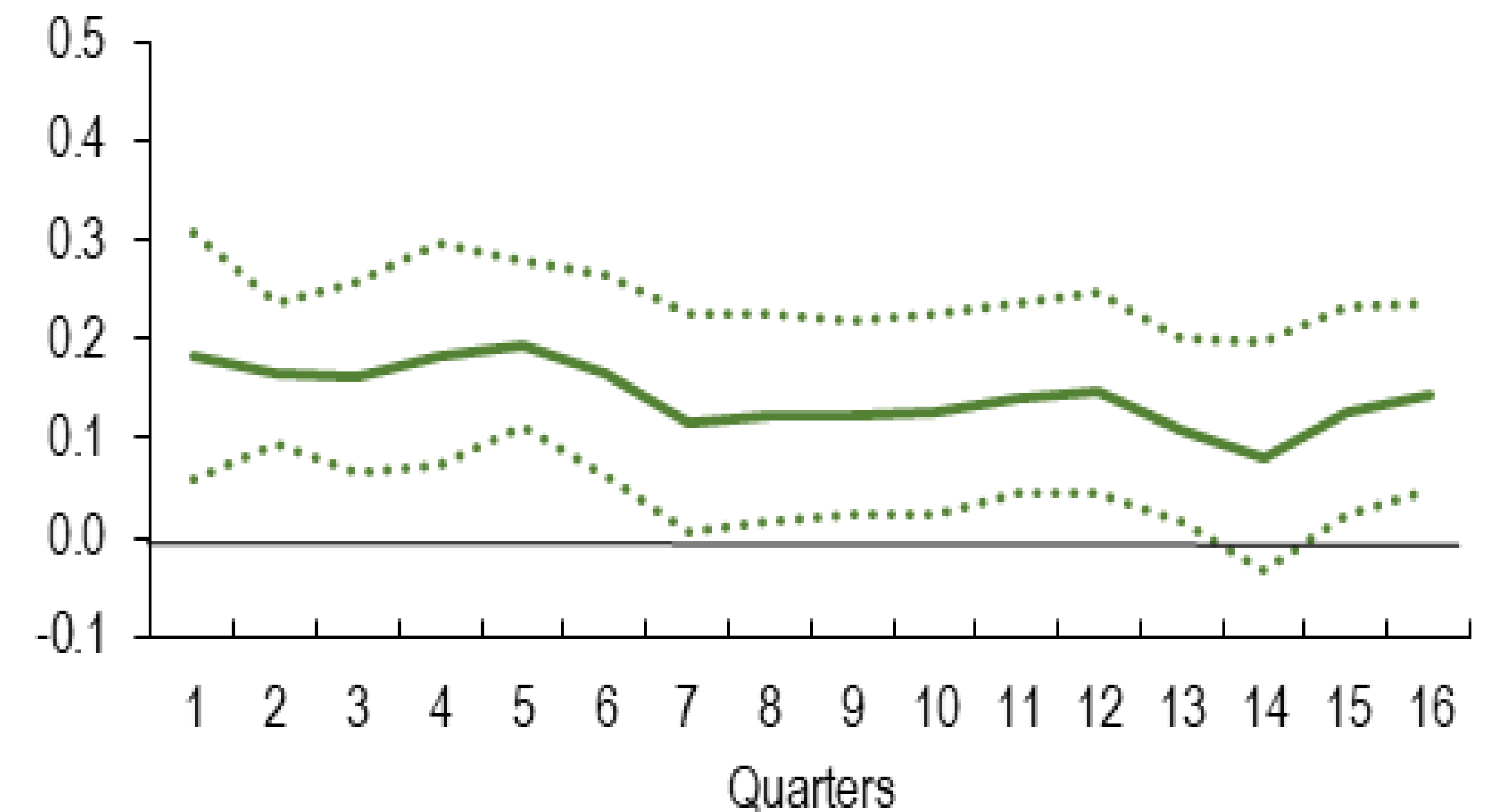
Capital flow management measures appear to limit tail risks to CRE prices ...

Impact of Overall Capital Inflow Restrictions on Downside Risks to CRE Prices
(Percentage points)



... with CRE-specific measures having a more pronounced effect.

Advanced Economies: Impact of Real Estate Inflow Restrictions on Downside Risks to CRE Prices
(Percentage points)



- The use of capital flow measures to address financial stability risks should be considered only under specific circumstances.



Conclusion and Policy Implications

Conclusions and policy implications

- ❖ The commercial real estate sector has been severely affected by the COVID-19 crisis. Especially retail, hotels, and office segments have been suffering from large declines in demand.
- ❖ CRE price misalignments have increased during the pandemic and can exacerbate downside risk to GDP growth. Adverse shocks to CRE prices can damage bank solvency and reduce investments by non-financial corporations.
- ❖ Policies can mitigate the macro-financial stability risks associated with the CRE sector:
 - At the current juncture, continued policy support remains warranted to stimulate aggregate demand and aid the recovery of the sector.
 - Once the extent of structural changes as a result of the pandemic becomes clearer, targeted macroprudential policy (such as limits on the loan-to-value and debt-service-coverage ratios) should be swiftly deployed to tackle pockets of elevated vulnerabilities.
 - Given the increasingly important role of nonbank financial institutions in the CRE market, efforts should be undertaken to broaden the reach of macroprudential policy to cover nonbank financial institutions.