The Market Value of Releasable Capital: Positive-Neutral CCyB Frameworks and European Bank Prices*

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Abstract

Positive-neutral countercyclical capital buffer frameworks change the timing and interpretation of macroprudential capital requirements: banks build releasable buffers in normal times rather than only after credit booms. This paper studies how listed-bank equity markets price that regime change. A valuation framework shows that announcement returns are theoretically ambiguous because the market value of future buffer release must be weighed against the private normal-times cost of higher required capital. I construct a country-level chronology of positive-neutral and early-activation CCyB frameworks in Europe and match it to listed-bank daily equity data, MOVE, sovereign benchmark controls, historical EBA balance-sheet measures, public ECB Pillar 2 requirement data, and V-Lab stress-risk proxies. Pooled bank-level event regressions show a positive $[-5, +5]$ response of about 32 basis points per event-window day, but the evidence weakens under country-level inference, clean-event restrictions, and a diagnostic recoding of Spain's event date. Mechanism diagnostics using EBA variables, public buffer-distance proxies, SRISK, and LRMES do not support a simple weak-bank channel, and current local bond files contain sovereign benchmark controls rather than issuer-level bank-bond spreads. The results suggest that PNR-CCyB announcements are market-relevant, but they do not by themselves establish a clean causal effect or a settled bank-level channel.

JEL classification: G21, G28, E44, E58.

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1 Introduction

Macroprudential capital policy increasingly relies on buffers that are meant to be used in bad states, not merely accumulated in good states. The countercyclical capital buffer (CCyB) was introduced with exactly this logic: banks should build capital when cyclical systemic risk is elevated, and authorities should release the buffer when stress threatens credit supply. The design is attractive because it links resilience to the financial cycle. It is also fragile. If the buffer is zero in normal times, there may be little to release when an adverse shock arrives before standard indicators signal overheating. A zero buffer is easy to defend in quiet times, but it provides no usable macroprudential space when the shock is sudden.

Several European authorities have responded by adopting positive-neutral or early-activation CCyB frameworks. Under these frameworks, banks build releasable capital before cyclical systemic risk is visibly elevated. The policy shift is subtle but important. The authority is no longer using the CCyB only as a late-cycle response to credit booms. It is also using the CCyB as standing releasable capital: a normal-times stock of capital intended to be available when stress arrives. This paper studies how listed-bank equity markets price that institutional change.

The question matters because the social and private valuations of releasable capital need not coincide. From a macroprudential perspective, a positive-neutral buffer can be valuable because it creates release capacity, reduces procyclicality, and gives authorities room to support lending in bad states. From a shareholder perspective, the same buffer can look like higher required capital in normal times. It may constrain payout policy, reduce balance-sheet flexibility, or force adjustment for banks that already operate near regulatory or market constraints. A positive-neutral framework can therefore be both socially useful and privately costly. It can also be privately valuable if investors believe the buffer will be released in stress and that the release will reduce dilution, distress costs, or franchise-value losses. The sign of the market reaction is consequently an empirical object, not a theoretical primitive.

This valuation problem is especially relevant for the new positive-neutral regimes. An ordinary CCyB hike during a credit boom can be interpreted as a capital tightening and as a signal that the authority sees elevated risk. A positive-neutral adoption in normal or standard-risk conditions has a different interpretation. It changes the expected timing of capital accumulation and the expected amount of releasable capital available in future stress. It also asks markets to believe that the buffer is not just legally releasable but economically usable. If investors expect stigma, funding-market discipline, ratings concerns, or payout restrictions to prevent buffer use, then the announcement is priced mainly as capital tightening. If investors expect credible release,

then the same announcement has insurance value.

The paper develops this tradeoff and disciplines it with European listed-bank evidence. I construct a country-level chronology of positive-neutral and early-activation CCyB frameworks and match it to EBA banks with daily listed-equity data. The empirical setting is useful because European authorities adopted these frameworks at different times and used different institutional language: standard-risk targets, neutral benchmarks, resilience-tool announcements, and early-activation approaches. It is also difficult because the treatment varies at the country-event level while prices are observed for individual listed banks. A large number of bank-day observations does not eliminate the fact that the identifying variation comes from a small number of national announcements.

The first contribution is a simple valuation framework for releasable capital. A positive-neutral announcement changes bank value through two opposing channels. The first is the private marginal cost of carrying more required capital in normal times. The second is the expected marginal value of future release in stress. The announcement raises equity value if and only if the expected insurance value of release exceeds the private capital cost. This condition also explains why weak or risky banks need not react more positively. Those banks may have larger insurance benefits because they are more exposed to stress, but they may also have higher capital costs, tighter payout constraints, greater funding-market sensitivity, or more scope for negative signalling. The model therefore predicts sign ambiguity and heterogeneity ambiguity.

The second contribution is an event-level empirical audit of the new European PNR-CCyB regimes. I separate clean market-observable announcements from events with timing ambiguity or identifiable bank-news confounds. This classification is central to the paper rather than a robustness appendix. Some countries signal the new framework before the formal decision. Some early-activation cases do not specify a positive-neutral target. Some legal steps and policy recommendations occur on different dates. Spain's October 2024 formal decision is institutionally important but overlaps with BBVA–Sabadell takeover-offer news. These features are exactly why daily event-study evidence must be treated with caution.

The third contribution is a disciplined market-pricing exercise. The baseline outcome is the bank's daily price return minus the STOXX Europe Banks return. I report bank-level event regressions, country-event cumulative returns, leave-one-country diagnostics, clean-event estimates, and random-date inference at the country level. The full direct-listed bank-level sample shows a positive announcement-window response. Over the broad $[-5, +5]$ window, the coefficient is about 32 basis points per event-window day and is statistically significant with bank-clustered standard errors. This is the

motivating market-pricing fact: listed-bank equity prices can move as if releasable capital has positive private value.

The same evidence is not strong enough to be the paper's headline causal estimate. Excluding Spain roughly halves the bank-level coefficient and removes statistical significance. Restricting to clean events preserves the positive sign but leaves the estimate statistically imprecise. Restricting further to clean euro-area events weakens precision again. Country-event estimates are also positive, but they are not statistically significant, and a country-level random-date exercise does not reject the null. The paper therefore keeps the event study in the main text as a market-pricing fact, not as a clean average treatment effect.

Spain illustrates the identification problem. Spanish listed banks rise strongly around the October 2024 formal decision, and that movement contributes substantially to the full bank-level result. But the October window overlaps with BBVA–Sabadell takeover-offer news that moved Spanish bank stocks. Spain had also publicly signalled planned CCyB activation in June 2024. When the event date is moved to that earlier public signal, the positive Spanish return disappears. The Spanish episode is therefore not evidence to hide or discard quietly. It is a diagnostic case that clarifies the limits of the design.

The mechanism diagnostics reinforce the same disciplined interpretation. Historical EBA balance-sheet variables, public ECB Pillar 2 requirement data, and V-Lab SRISK/LRMES proxies do not support a simple weak-bank or stress-exposed-bank channel. Low-CET1, low-leverage, low-ROA, and high-RWA-density splits are statistically insignificant. A public partial buffer-distance proxy has the opposite sign in clean events: banks closer to the partial requirement react less positively, not more positively. High-SRISK banks do not react more positively, and high-LRMES banks have lower returns in the full matched sample. These results do not reject the valuation framework, because the model allows capital costs and insurance benefits to offset. They do reject the simplest interpretation of the pooled event coefficient: the evidence does not show that weak banks benefit more.

The same audit also clarifies what the paper cannot yet do. Bank-level CDS spreads are not available, and the local bond files do not solve that problem: they are sovereign benchmark country-tenor curves, useful as controls but not as issuer-level bank-bond spreads. The feasible market-risk extension is an issuer-level FactSet bank-bond panel with bank identifiers, bond identifiers, dates, maturities, seniority, prices, yields, and OAS or Z-spreads. Until such an export exists, the paper should not claim bond-market evidence for the default-risk channel.

The paper's claim is therefore deliberately narrower than a causal policy evaluation.

It does not claim that PNR-CCyB announcements causally raise bank equity values. It does not claim that constrained banks benefit more. It does not claim that positive-neutral buffers mechanically increase effective loss-absorbing capacity one-for-one. Instead, the paper shows why the market value of releasable capital is theoretically ambiguous, documents that positive-neutral announcements are market-relevant and can be priced positively, and then uses event-quality and mechanism diagnostics to show why the strongest causal and weak-bank interpretations are not supported by the current data.

This positioning places the paper between several literatures. It is related to macro-finance work on credit cycles, intermediary balance sheets, and asset prices, because releasable capital is valuable only in states where bank balance sheets matter. It is related to macroprudential policy work on CCyB design, positive-neutral buffers, and buffer usability, because the object being priced is a new policy reaction function. It is related to bank-capital valuation, because capital can be both privately costly and privately valuable. It is also related to event-study work in finance and monetary policy, because the empirical design uses asset prices around policy news while confronting anticipation and confounding. The paper's contribution is to connect these strands around one object: the private market value of standing releasable capital.

The results also define what data would be needed for a stronger paper. A direct mechanism design would require full distance to MDA or combined-buffer requirements, voluntary management buffers, payout restrictions, liquidity or funding pressure, and issuer-level bank-bond spreads or comparable stress-risk prices. The current data provide useful public and supervisory proxies, but not the full capital-stack object or a bank credit-spread outcome. Until those variables are available, the publishable object is a theory-led market-pricing paper with honest empirical discipline, not a definitive causal mechanism paper.

The remainder of the paper is organized as follows. Section 2 places the question in the macro-finance literature. Section 3 describes positive-neutral CCyB frameworks and the treatment chronology. Section 4 positions the contribution relative to macroprudential, bank-capital, and market-pricing work. Section 5 develops the valuation framework. Section 6 describes the data and measurement. Section 7 sets out the event-study design. Section 8 presents market-event evidence and mechanism diagnostics. Section 9 concludes.

2 Macro-Finance Foundations

The economic question is not whether bank capital is good or bad in general. It is how markets value a regulatory asset that is costly to carry in normal times but designed to be released in stress. Positive-neutral CCyB frameworks therefore sit at the intersection of two macro-finance ideas: financial intermediaries amplify shocks when their balance sheets are constrained, and asset prices reveal how investors value changes in those constraints.

The first idea is the credit-amplification view of banking. In financial accelerator models, borrower and intermediary net worth shape the supply of external finance and amplify aggregate shocks (Bernanke and Gertler, 1989; Kiyotaki and Moore, 1997; Bernanke et al., 1999). Historical evidence on credit booms and financial crises gives this mechanism macroeconomic content: credit expansions are not merely passive reflections of fundamentals, but can predict deeper recessions and crisis risk (Schularick and Taylor, 2012; Jorda et al., 2013). The original CCyB was built for this world. It asks banks to hold more capital when cyclical systemic risk is high, so that the banking system can absorb losses and continue supplying credit when the cycle turns.

The positive-neutral innovation changes the timing of that insurance. If the buffer starts from zero in ordinary times, it may be unavailable when an unexpected shock arrives. A standing releasable buffer solves that timing problem by creating macroprudential space before the authority observes a large credit boom. For shareholders, however, the same design creates a valuation tradeoff. The bank carries more required capital today. The payoff is contingent: it arrives only if future stress occurs, the authority releases the buffer, and markets believe banks can use the released space without stigma or binding payout constraints.

The second idea is that intermediary balance sheets matter for prices, not only quantities. Bank balance-sheet channels in monetary and credit transmission emphasize that lending depends on intermediary net worth, liquidity, and regulatory constraints (Bernanke and Blinder, 1988; Kashyap and Stein, 2000; Holmstrom and Tirole, 1997; Gertler and Kiyotaki, 2010). The cleanest empirical studies of credit supply use borrower-bank relationships or loan applications to separate supply from demand (Khwaja and Mian, 2008; Jimenez et al., 2012). This paper does not have those confidential data and should not claim a lending channel. Its object is narrower: how listed-bank prices react when a national authority changes the expected path and usability of releasable capital.

Asset prices are useful for that narrower object because they summarize investor beliefs about future payoffs, discount rates, and constraints. Credit spreads are a canonical diagnostic for expected default losses and risk premia (Gilchrist and Zakrajsek, 2012).

Event-study designs use high-frequency asset price movements to isolate policy news when the event is sharp and other news is limited (MacKinlay, 1997; Kothari and Warner, 2007). Monetary-policy event studies illustrate the discipline required: the researcher must define the announcement, separate policy news from bundled shocks, and avoid interpreting every price movement as a structural channel (Gertler and Karadi, 2015).

This discipline is central here. A positive bank-equity response around a PNR-CCyB announcement is consistent with investors valuing future releasable capital, but it is not by itself proof of that mechanism. The same window may contain bank-specific news, anticipated policy signals, or broader risk-premium movements. The empirical design therefore treats market prices as diagnostics for a valuation framework, not as a stand-alone causal experiment.

3 Positive-Neutral CCyB Frameworks

The institutional change studied in the paper is the move from a purely state-contingent CCyB to a framework with positive releasable capital in ordinary times. Under the original Basel III logic, the CCyB rises when cyclical systemic risk is elevated and can be released when stress materializes (Basel Committee on Banking Supervision, 2010). That design is conceptually attractive but operationally fragile. If the buffer remains at zero for much of the expansion, the authority has little releasable capital when an unexpected shock arrives before conventional credit-gap indicators give a warning. Positive-neutral frameworks are a response to that timing problem.

European authorities do not use identical language. Some announce a "standard-risk" CCyB target. Others describe a neutral benchmark, a resilience tool, or a more active early-activation approach. The common economic feature is that the CCyB becomes part of normal-times macroprudential space. The authority is no longer saying only that capital should rise after measured cyclical risk is high; it is saying that releasable capital should exist before the next stress arrives. For a market-pricing paper, this is the object that matters. The event is a change in the expected reaction function and in the expected stock of usable stress-state capital, not simply another rate change.

3.1 Why the Regime Change Is Priced Ambiguously

A positive-neutral adoption has two private-value components. First, it may raise the expected path of required capital in normal times. This is costly for shareholders if regulatory capital is privately expensive, if banks care about distribution flexibility, or if investors expect the higher requirement to force balance-sheet adjustment. Second, the framework may increase the expected amount of releasable capital in future stress.

This is valuable if the release reduces shareholder losses, preserves franchise value, or avoids distressed equity issuance. The same institutional reform can therefore be socially desirable, privately costly, and privately valuable at the same time.

This ambiguity distinguishes positive-neutral adoption from ordinary CCyB hikes. A standard CCyB increase during a boom can be read as both capital tightening and a signal that the authority observes elevated systemic risk. A positive-neutral adoption in normal times instead says that the authority wants a standing buffer even before visible overheating. That makes the announcement closer to a change in the insurance technology available to the banking system. The relevant market question is whether investors believe the insurance technology is valuable enough to offset the cost of carrying the buffer.

3.2 Chronology and Event Classification

The treatment chronology starts from the EEA country-level policy record. For each jurisdiction, I code whether the authority adopted a formal positive-neutral framework, used an early-activation approach, or did not adopt such a framework during the sample. For treated jurisdictions, I record the first communication date, the formal announcement or decision date, the implementation date, and the target or benchmark rate when available. The market-event design uses the announcement date because listed-bank prices should react when the policy news becomes public, not when a phased-in requirement later becomes binding.

The chronology is not mechanical because policy communication often precedes formal implementation. Lithuania is a timing example: an earlier public position and a later rate decision both contain information. Poland has a legal-timing issue because the Financial Stability Committee recommendation and the ministerial regulation are separate events. Denmark and Norway are early-activation cases rather than clean positive-neutral target announcements. Iceland has a confirmed current benchmark but an original adoption date that still needs documentation. These cases are economically important, but they are not clean daily event-study shocks.

Table 1 is therefore part of the identification argument. It separates clean market-observable events from timing-ambiguous or confounded events. Clean events have a clear public announcement date and no project-identified bank-news confound in the event window. Clean euro events add euro-area membership. Ambiguous events are not discarded from the full descriptive sample, but they cannot carry the causal interpretation. Spain is classified separately because the October 2024 formal decision overlaps with BBVA–Sabadell takeover news. The Spanish event is institutionally relevant, but not clean for bank-return inference.

Table 1: Positive-Neutral and Early-Activation CCyB Events Used in the Market Analysis

Country	Event date	Framework	Audit	Timing interpretation
Denmark	2017-11-17	Early activation	Ambiguous	Method date precedes activation recommendation; no explicit PNR target.
Lithuania	2018-06-22	Formal PNR	Ambiguous	Earlier communication and later rate decision both matter.
Norway	2019-12-19	Early activation	Ambiguous	Framework revision and rate decision are bundled.
Sweden	2021-03-22	Formal PNR	Clean non-euro	Framework date is clear; later rate increase is separate.
Estonia	2021-11-29	Formal PNR	Clean euro	Formal base-requirement announcement.
Netherlands	2022-05-25	Formal PNR	Clean euro	Standard-risk PNR target announced.
Ireland	2022-06-15	Formal PNR	Clean euro	Resilience-tool announcement and decision coincide.
Cyprus	2022-12-01	Formal PNR	Clean euro	Rate decision follows framework communication.
Slovenia	2023-12-22	Formal PNR	Clean euro	Formal positive-neutral decision.
Iceland	2024-03-16	Formal PNR	Ambiguous	Current benchmark confirmed; original adoption date uncertain.
Poland	2024-06-14	Formal PNR	Ambiguous	Recommendation and later legal regulation differ.
Hungary	2024-06-25	Formal PNR	Clean non-euro	Official MNB announcement and decision date.
Spain	2024-10-01	Formal PNR	Confounded	Formal decision overlaps with BBVA–Sabadell news.
Greece	2024-10-18	Formal PNR	Clean euro	Press release is market-observable formal event.
Portugal	2024-12-31	Formal PNR	Clean euro	Formal decision announces 2026 implementation.

Notes: The table reports the direct-listed market-event countries in the current analysis. Clean events have a market-observable announcement date and no project-identified event-window confound. The full audit, including source URLs, implementation dates, listed-bank coverage, and clean-event flags, is generated in `output/tables/event_audit_sample.csv` and reported in Appendix B.

3.3 Release Credibility and Usability

The other institutional object is release credibility. Legal releasability is not the same as economic usability. A regulator can release a buffer, but banks may still avoid using the released space if doing so signals weakness, raises funding costs, threatens ratings, or brings the bank closer to payout restrictions. During stress, a bank that technically has regulatory headroom may still behave as if the headroom is unusable because investors, creditors, or supervisors treat buffer use as bad news.

Positive-neutral frameworks try to make usable release more credible by creating capital space before the downturn. That design matters only if markets believe the authority will actually release the buffer and that banks can use the release without severe stigma or distribution constraints. In the model, this belief is summarized by release credibility. In the data, it is only imperfectly observed. Event quality, country communication, release history, and the treatment audit are partial proxies; none is a direct bank-level measure of usable capital.

Management-buffer behavior is equally important. Banks may respond to a higher formal releasable buffer by reducing voluntary headroom above requirements. If that happens, the policy changes the composition of capital but not effective stress-state headroom one-for-one. This is why the paper avoids claiming that PNR mechanically increases usable loss-absorbing capacity. The empirical question is whether markets price the announcement as if effective usable capital rises. The current data can test only pieces of that claim.

3.4 Implication for the Paper's Claim

The event-date audit is not a robustness afterthought. It defines what the paper can claim. If positive returns are concentrated in ambiguous or confounded windows, the event study motivates the valuation framework but does not identify an average causal effect. If positive returns survive clean country-event inference, the evidence becomes stronger that investors price releasable capital. The current evidence lies between these cases. The pooled bank-level response is positive and statistically significant, but clean-event and country-level estimates are positive and statistically imprecise. The institutional section therefore disciplines the rest of the paper: the market evidence is informative, but it must be read through event quality and release credibility.

4 Related Literature and Institutional Background

This paper studies a narrow object within a large macroprudential literature: the private market valuation of positive-neutral CCyB frameworks. The Basel III CCyB was designed to build capital when cyclical systemic risk is elevated and release it when stress materializes (Basel Committee on Banking Supervision, 2010). In practice, a buffer that is zero in normal times provides little releasable space when a broad shock arrives. Positive-neutral and early-activation frameworks respond by building a standing stock of releasable capital earlier in the cycle. This is not only a rate change. It is a change in the authority's reaction function: the CCyB is no longer interpreted solely as a response to visible credit overheating, but also as a way to preserve usable macroprudential space before stress.

The policy literature now treats this design choice as central. The credit-to-GDP gap and guided discretion motivated the original CCyB framework (Drehmann et al., 2010; Drehmann and Tsatsaronis, 2014), while early critiques emphasized that credit-gap activation can come too late in the cycle (Repullo and Saurina, 2011). Recent Basel and European policy work documents the spread of positive-neutral approaches and frames them as a way to build resilience earlier, clarify release space, and make the buffer more usable (Basel Committee on Banking Supervision, 2024; European Central Bank and European Systemic Risk Board, 2025). The emerging theoretical and calibration literature develops the social and macroprudential rationale for such buffers: positive-neutral CCyB can preserve releasable capital for adverse shocks, but its costs depend on bank conditions and the pace of build-up (Herrera et al., 2024; Muñoz and Smets, 2025). This paper asks a different question. It studies whether listed-bank shareholders price the regime change as costly normal-times capital, valuable future insurance, or something in between.

4.1 Release Credibility and Buffer Usability

The value of a positive-neutral buffer depends on whether markets believe the buffer will be usable in stress. Legal releasability is not the same as economic usability. A regulator can announce that a buffer is releasable, but banks may still hesitate to draw it down if doing so signals weakness, raises funding costs, threatens ratings, or brings them closer to payout restrictions. The Basel Committee's work on buffer usability and cyclicality and the COVID-19 evidence on buffer use make this distinction concrete (Basel Committee on Banking Supervision, 2022; Mathur et al., 2023). A low value of release credibility in the model therefore has a direct institutional interpretation: markets may believe that the buffer is legally releasable but only partly usable by banks in bad states.

Positive-neutral frameworks try to improve this problem by creating releasable space before stress arrives (European Central Bank and European Systemic Risk Board, 2025). That design does not make release automatically valuable for shareholders. If markets believe the authority will release the buffer in bad states and that banks can use it without stigma or distribution constraints, the announcement can have insurance value. If markets doubt release credibility or usability, the same announcement looks closer to ordinary capital tightening. Distance to MDA restrictions and combined-buffer requirements therefore matter because they determine whether a legal release also relaxes private payout and balance-sheet constraints.

Management-buffer crowd-out is the second institutional margin. Banks may respond to a higher formal releasable buffer by reducing voluntary headroom. In that case, the policy changes the legal composition of capital but does not raise effective stress-state headroom one-for-one. Recent work on banks' responses to capital requirements and regulatory risk tolerance makes this margin empirically plausible (Gropp et al., 2019; Abbondanza et al., 2025; Juselius et al., 2025). This possibility is central for interpreting announcement returns: a small or insignificant market response does not imply that the framework is irrelevant, but it does imply that markets may not view the announcement as creating new usable capital.

4.2 Where the Paper Does Not Compete

The paper does not try to contribute to the crowded lending-effects literature. Macroprudential capital buffers can affect credit supply, risk-taking, and balance-sheet adjustment, and the strongest evidence often uses confidential credit-register or supervisory data. Spanish dynamic provisioning smoothed credit supply in bad times (Jimenez et al., 2017); the Swiss CCyB changed the composition of bank lending (Auer et al., 2022); and the 2011 EBA capital exercise led banks to adjust partly through risk-weighted assets rather than new equity (Gropp et al., 2019). COVID-era evidence on buffer releases and lending further shows that capital relief can matter when banks are near constraints (Dursun-de Neef et al., 2023; Mathur et al., 2023). These papers are important motivation, but they also define a boundary. A public listed-bank event study cannot compete with credit-register designs on lending quantities. The contribution here is instead about market prices and investor valuation.

The paper also does not claim that market reactions to capital regulation are a new empirical object. Macroprudential policy has been studied using systemic risk and market outcomes (Meuleman and Vander Vennet, 2020, 2022). The closest benchmark is Couaillier and Henricot (2023), who study market reactions to ordinary CCyB hikes and find evidence in CDS spreads but little equity response. Their paper is a benchmark

precisely because it is close. The distinction is that the present paper studies adoption of a positive-neutral framework rather than a rate hike within an existing framework. The event is a change in the expected timing, interpretation, and credibility of future buffer release.

4.3 Bank Capital, Private Costs, and Market Value

The valuation framework builds on the distinction between social resilience and private bank value. Higher equity capital may be socially desirable even when shareholders perceive private costs through taxes, deposit insurance, debt overhang, payout constraints, or reduced balance-sheet flexibility (Admati et al., 2013). At the same time, capital can be privately valuable because it lowers distress costs and supports franchise value. Cross-sectional evidence links bank capital and bank value (Mehran and Thakor, 2011), and crisis evidence shows that capital can support bank performance in bad states (Berger and Bouwman, 2013). The positive-neutral CCyB setting combines both forces in a single announcement. The normal-times cost term in the model is negative; the stress-state insurance term is positive. The sign of the announcement response is therefore an empirical object, not a theoretical primitive.

This positioning defines the paper's contribution. The existing positive-neutral literature explains why releasable buffers may be socially valuable and how they can be calibrated. The lending literature studies how capital buffers affect credit quantities. The capital and market-pricing literatures show that bank capital can be both costly and valuable. This paper connects those strands by asking how shareholders price a new regime of standing releasable capital. The event study is useful because it observes market prices around regime announcements. It is limited because treatment is country-level, timing can be anticipated, and daily returns can contain bundled bank news. Those limits are why the empirical section treats event evidence as diagnostic rather than as a clean causal estimate.

Table 2 summarizes this positioning. The paper does not claim to out-identify the lending literature or to estimate the causal effect of a generic CCyB hike. Its contribution is the valuation problem created by standing releasable capital: a regime can be socially desirable because it creates release space and privately ambiguous because it raises normal-times capital costs while changing expected stress-state insurance.

5 A Valuation Framework

Positive-neutral buffers have an ambiguous private value because they combine normal-times capital costs with stress-state insurance. A PNR announcement raises the amount

Table 2: Contribution Relative to the Macro-Finance Literature

Literature	What it does	What it does not answer	What this paper adds
Credit cycles and crises	Shows why bank capital and credit cycles matter for macroeconomic risk.	Does not price a normal-times stock of explicitly releasable capital.	Studies the private market value of standing releasable capital.
Bank lending channel of capital regulation	Estimates how capital requirements affect credit supply, often with confidential data.	Does not ask how shareholders price a new releasable-buffer regime.	Uses listed-bank prices to study valuation rather than loan supply.
Ordinary CCyB hikes and releases	Studies time-varying buffers around credit booms and stress releases.	Does not isolate positive-neutral frameworks adopted in standard-risk times.	Separates PNR adoption from ordinary late-cycle CCyB tightening.
Positive-neutral CCyB policy work	Motivates early activation and calibrates releasable macroprudential space.	Usually takes the social value of release capacity as the object.	Asks whether equity markets view the same regime as privately valuable or costly.
Bank capital valuation	Studies the private cost and value relevance of bank equity capital.	Does not embed capital valuation in a releasable macroprudential-buffer regime.	Frames PNR as an insurance-value versus capital-cost tradeoff.
Buffer usability and management buffers	Shows why legal buffers may not be economically usable in stress.	Rarely links usability directly to announcement-window equity pricing.	Uses usability and crowd-out as mechanisms disciplining market reactions.

Notes: The table clarifies that the contribution is not a clean causal estimate of PNR announcement effects. The contribution is the valuation problem created by standing releasable capital and the disciplined evidence on how markets price it.

of capital that markets expect banks to carry before stress arrives. That capital can be costly if equity is expensive, if managers value payout flexibility, or if balance-sheet adjustment is constrained. The same announcement can also raise bank value if investors believe that the buffer will be released in stress and will reduce shareholder losses. The empirical question is therefore not whether PNR is "good" or "bad" for banks in general. It is when the insurance value of future release dominates the private cost of additional normal-times capital.

5.1 Primitives and Timing

Consider a listed bank i in a country that announces a positive-neutral CCyB framework. The announcement changes the market's expected releasable buffer by $b \geq 0$. The bank enters the announcement with voluntary headroom h_i, stress exposure θ_i, capital-cost parameter κ_i, and release credibility $\rho_i \in [0, 1]$. Release credibility summarizes the probability that the buffer will be released in a stress state and that the release will be usable by shareholders rather than neutralized by market discipline, supervisory pressure, or payout restrictions.

There are two states. In the normal state, the bank bears the private cost of carrying the announced buffer. In the stress state, which has risk-neutral probability q_s, releasable capital lowers shareholder losses. The bank's announcement value is

$$V_i(b) = V_i(0) - C_i(b; h_i, \kappa_i) - q_s L_i(K_i + \rho_i b; \theta_i), \tag{1}$$

where $C_i(\cdot)$ is the normal-times private cost of the buffer and $L_i(\cdot)$ is the stress-state shareholder loss. The loss function is decreasing in usable capital, $L_{i,K} < 0$, and the cost function is increasing in the required buffer, $C_{i,b} > 0$. The capital stock K_i is predetermined at the announcement date.

The notation is intentionally reduced form, but each object has a direct economic interpretation. The buffer b is the market's perceived increase in future releasable requirements, not necessarily the current statutory rate. The cost function C_i captures private costs of carrying more required capital in normal times. These costs can arise even when equity capital is not socially expensive: deposit-insurance transfers, tax shields, debt overhang, managerial payout preferences, and costly balance-sheet adjustment all create wedges between social resilience and shareholder value. The stress-loss function L_i captures the shareholder losses that occur when the bank enters a bad state with too little usable capital. These losses include expected dilution, franchise-value losses, forced deleveraging, and distress costs.

Release credibility ρ_i is the institutional bridge between a legal buffer and a market-

valued asset. A value of $\rho_i = 1$ means that the marginal unit of announced releasable capital is expected to be released and usable in stress. A value of $\rho_i = 0$ means that the announcement is priced as normal-times capital tightening only. Intermediate values capture the realistic case in which release is legally possible but only partly usable because of stigma, funding-market discipline, ratings concerns, or payout restrictions.

The two-state structure is not meant to be a full dynamic banking model. It is a pricing representation of an announcement. At the event date, investors learn about the expected future capital path and update the value of the bank. The announcement return is the market's revision in the discounted value of future normal-times costs and stress-state insurance. A richer dynamic model would endogenize balance-sheet choice, payout policy, credit supply, and regulator reaction functions. The present framework keeps only the terms needed to discipline the empirical interpretation.

For a small announcement, the change in bank value is

$$\frac{\partial V_i}{\partial b} = -C_{i,b}(b; h_i, \kappa_i) - q_s \rho_i L_{i,K}(K_i + \rho_i b; \theta_i). \tag{2}$$

The first term is the private capital-cost channel. The second term is positive when release is credible because $L_{i,K} < 0$. Equation (2) is the central object behind the empirical work. Daily announcement returns are informative about the sign of this derivative, but they do not by themselves identify the two components separately.

5.2 From Value Changes to Announcement Returns

The model connects to an event-study return through a standard asset-pricing approximation. Let P_i be the pre-announcement equity market value of bank i. For a small announcement, the abnormal return around the event is approximately

$$AR_i \approx \frac{1}{P_i} \frac{\partial V_i}{\partial b} \Delta b_i + \eta_i, \tag{3}$$

where Δb_i is the perceived change in the bank's expected releasable buffer and η_i contains other news in the event window. The empirical event study observes AR_i but not Δb_i, $C_{i,b}$, $L_{i,K}$, or ρ_i separately. This is the central identification problem. A positive event coefficient means that the average price movement is consistent with positive net valuation of releasable capital; it does not reveal whether the movement comes from a large insurance channel, low capital costs, high release credibility, or unrelated event-window news.

The cross-section is also ambiguous. A high-risk bank has larger potential stress losses, which can make release more valuable. But the same bank may have higher marginal

capital costs because it is closer to payout restrictions, faces higher funding costs, or would need to shrink assets to satisfy a higher requirement. A well-capitalized bank may have low insurance value because it is unlikely to be constrained in stress, but also low normal-times capital costs. The sign of the heterogeneity relation is therefore an empirical object, not a mechanical prediction.

This logic explains the paper's use of mechanism diagnostics. EBA capital ratios, leverage, ROA, and RWA density are not structural estimates of $C_{i,b}$ or $L_{i,K}$. They are proxies that should move with those objects under simple interpretations. Public P2R data are closer to a regulatory constraint but omit important buffer-stack components. V-Lab SRISK and LRMES are closer to stress exposure but not to usable regulatory headroom. The diagnostics can therefore discipline the story but cannot close the model.

5.3 Propositions

Proposition 5.1 (Sign ambiguity)**.** *A PNR announcement raises bank i's equity value if and only if the expected marginal insurance value of release exceeds the private marginal cost of the additional buffer:*

$$q_s \rho_i \left[-L_{i,K}(K_i + \rho_i b; \theta_i) \right] > C_{i,b}(b; h_i, \kappa_i). \tag{4}$$

Proof. The result follows directly from (2). Since $C_{i,b} > 0$ and $L_{i,K} < 0$, the derivative has one negative and one positive component. The announcement return is positive exactly when the positive insurance term is larger than the cost term. □

This proposition gives the paper its main interpretation. A positive average event coefficient is consistent with markets valuing releasable capital, but it does not prove that PNR is valuable for all banks or that the policy effect is causal in a contaminated event window. A zero or negative return is also economically meaningful: it can arise when markets view the same regime change mainly as capital tightening.

The result also explains why the paper should not be written as a one-sided policy evaluation. Macroprudential authorities may prefer a positive-neutral buffer because it increases social resilience, reduces procyclicality, and creates release space. Shareholders price a different object: the private value of the same buffer. The announcement return is therefore not a welfare measure. It is a market diagnostic of how investors trade off expected private costs against expected private insurance benefits.

Proposition 5.2 (Risk and constraint ambiguity)**.** *Suppose a bank characteristic x_i raises both the expected benefit of stress-state release and the private marginal cost of additional capital.*

Then the announcement response can be increasing, decreasing, or flat in x_i:

$$\frac{\partial^2 V_i}{\partial b \partial x_i} = -C_{i,bx}(b; h_i, \kappa_i) - q_s \frac{\partial}{\partial x_i} \left[\rho_i L_{i,K}(K_i + \rho_i b; \theta_i) \right]. \tag{5}$$

Proof. Differentiate (2) with respect to x_i. If x_i raises stress exposure, the second term can be positive because release avoids larger stress losses. If the same x_i raises costly-capital concerns, distribution constraints, or financing frictions, the first term is more negative. The sign is therefore determined by the relative slopes, not by whether the bank is simply weak or risky. □

This ambiguity is crucial for interpreting the evidence. A naive insurance channel predicts that weaker or more systemic banks should react more positively. The model does not require that. Weak banks can also face higher private costs of additional required capital, greater payout pressure, and larger market-discipline costs. The null and opposite-signed EBA, public P2R, SRISK, and LRMES splits therefore discipline a simple mechanism, but they do not mechanically reject the broader valuation framework.

The empirical implication is sharp. If weak-bank proxies strongly predicted positive announcement returns, the data would support a simple relief or insurance story. If weak-bank proxies predict nothing, the evidence is still consistent with the model because costs and benefits may offset. If weak-bank proxies predict lower returns, the evidence suggests that the private capital-cost channel dominates for those banks. The current diagnostics are closer to the second and third cases than to the first.

Proposition 5.3 (Release credibility)**.** *If release credibility affects only the usable stress-state capital generated by the buffer, the announcement value is increasing in release credibility:*

$$\frac{\partial^2 V_i}{\partial b \partial \rho_i} = -q_s \left[L_{i,K}(K_i + \rho_i b; \theta_i) + \rho_i b L_{i,KK}(K_i + \rho_i b; \theta_i) \right], \tag{6}$$

which is positive when the marginal loss reduction from usable capital is positive and not too sharply decreasing.

Proof. Differentiate the insurance term in (2) with respect to ρ_i. Since $L_{i,K} < 0$, higher credibility raises the amount of stress-state capital that shareholders expect to be usable. The expression is positive under the stated curvature condition. □

This proposition explains why PNR frameworks are not equivalent to ordinary capital tightening. The announcement should be more valuable when markets believe the authority will actually release the buffer and that banks will be able to use it without

triggering stigma, payout constraints, or funding-market penalties. If credibility is low, the announcement is priced mainly through the capital-cost channel.

Release credibility has both country and bank components. A country component comes from the authority's framework, communication, release history, and legal discretion. A bank component comes from whether the bank can use released space without sending a negative signal. This distinction matters for the data. The event audit proxies country-level credibility and timing quality, while EBA and P2R variables proxy bank-level constraint exposure. The current data do not observe a direct ρ_i, which is why the paper avoids claiming that release credibility is identified.

Proposition 5.4 (Management-buffer crowd-out)**.** *Let effective stress-state headroom be $H_i = h_i + \rho_i b$. If banks reduce voluntary headroom according to $h_i(b)$ with $h_i'(b) < 0$, the marginal insurance value of a PNR announcement is proportional to $\rho_i + h_i'(b)$. Full crowd-out occurs when $h_i'(b) = -\rho_i$, in which case the announcement does not increase effective stress-state headroom.*

Proof. Replacing usable capital in the stress-loss function with $K_i + h_i(b) + \rho_i b$ gives

$$\frac{\partial H_i}{\partial b} = h_i'(b) + \rho_i.$$

If this derivative is zero, the PNR buffer relabels headroom rather than increasing it. The stress-state insurance term then vanishes at the margin, leaving only the private cost term. □

This proposition connects the market-pricing exercise to the capital-stack question. If banks offset higher releasable requirements by reducing voluntary management buffers, PNR may improve the legal composition of buffers without raising effective loss-absorbing capacity. That possibility can generate small or insignificant announcement responses even when the policy is institutionally important.

Crowd-out also clarifies why management-buffer data are a first-order missing input. A bank may enter the announcement with voluntary capital above regulatory minima. If the authority raises the formal releasable buffer and the bank simply reduces voluntary headroom over time, the expected stress-state capital available to shareholders changes little. In that case, even a credible release policy has limited private insurance value. Without management-buffer data, the paper can model this channel and state the data gap, but it cannot claim that PNR increased effective capital headroom.

5.4 A Normalized Comparative-Statics Representation

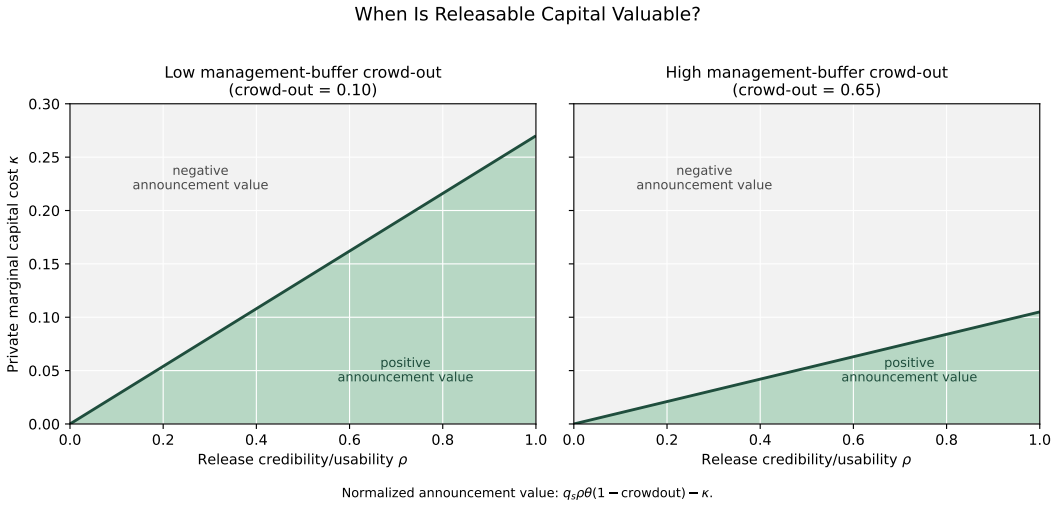
For exposition, the mechanism can be summarized with a normalized marginal announcement value:

$$\Delta_i = q_s \rho_i \theta_i (1 - \omega_i) - \kappa_i, \tag{7}$$

where θ_i is stress exposure, ω_i is management-buffer crowd-out, and κ_i is the normalized private marginal capital cost. This expression is not a calibration; it is a transparent version of Equation (4). The announcement is privately valuable when $\Delta_i > 0$.

The normalized expression highlights four comparative statics. First, higher stress probability q_s raises the value of release because the insurance payoff is more likely to be used. Second, higher release credibility ρ_i raises value because more of the legal buffer is expected to become usable capital. Third, higher stress exposure θ_i raises the gross insurance benefit, but only if release is credible and not crowded out. Fourth, higher private capital costs κ_i or higher crowd-out ω_i reduce the net announcement value. This is the minimum theoretical structure needed for the paper: the sign and heterogeneity of announcement returns are both ambiguous.

Figure 1: When Is Releasable Capital Valuable?



Notes: The figure plots the sign of the normalized announcement value $q_s \rho \theta (1 - \text{crowdout}) - \kappa$. The green region is where the insurance value of future release exceeds the private marginal capital cost. The figure is illustrative and is not a calibration.

Figure 1 summarizes the mechanism. Higher release credibility expands the positive-value region because a larger share of the announced buffer is expected to be usable in stress. Higher private capital costs shrink that region. Higher stress exposure can increase insurance value, but only when release is credible enough to make the buffer usable. Management- buffer crowd-out shifts the economy toward the negative-value region because formal releasable capital replaces voluntary headroom rather than increasing effective stress-state capital. This is why weak or risky banks need not react

more positively in the data: the same characteristic can raise both insurance benefits and capital costs.

5.5 Empirical Mapping

The model gives the empirical section a disciplined role. The full bank-level event coefficient tests whether prices sometimes move as if the insurance term dominates. The Spain, clean-event, country-event, and randomization diagnostics ask whether that fact can be given a causal interpretation. The mechanism diagnostics ask whether observable proxies for stress exposure or capital constraints line up with the model's comparative statics.

The current data cannot separately estimate $C_{i,b}$, $L_{i,K}$, ρ_i, and $h_i'(b)$. EBA capital ratios, leverage, profitability, and risk-weight density are imperfect proxies for the cost and insurance channels. Public P2R provides only a partial buffer-distance measure. V-Lab SRISK and LRMES proxy market stress risk, not regulatory headroom or release credibility. The empirical section therefore uses these variables to discipline interpretation rather than to claim that the mechanism has been identified.

The model also defines the next empirical bottleneck. A direct Route A mechanism paper would need full distance to MDA or combined-buffer requirements, management buffers, payout restrictions, liquidity/funding pressure, or a bank credit-spread outcome such as issuer-level bank-bond spreads. Without those variables, the publishable contribution must come from the valuation framework and from an honest empirical assessment of where the current market evidence is informative and where it is not.

6 Data and Measurement

The empirical data set has four layers: a country-level treatment chronology, an EBA bank universe, listed-bank market data, and mechanism proxies. The unit of treatment is a national policy announcement. The unit of market observation is a listed bank security on a trading day. This mismatch is central for interpretation. Prices are observed at high frequency, but the policy shock is assigned to a small number of country events.

6.1 Treatment Chronology

The treatment source is a hand-coded country-level file for EEA jurisdictions. For each country, I code whether the authority adopted a formal positive-neutral CCyB framework, adopted an early-activation approach, or did not adopt such a framework during the sample. For treated and early-activation countries, I record the first public

Table 3: Model Mechanisms and Empirical Diagnostics

Model object	Empirical proxy	Current result	Interpretation
Insurance value of future release	SRISK, LRMES, weak-bank proxies	No supportive cross-sectional pattern	Simple stress-risk channel is not supported
Private capital cost or constraint	Public P2R partial buffer-distance proxy	Opposite sign in clean events	Constrained-bank response is ambiguous
Release credibility and usability	Event-quality audit and Spain date recoding	Full result is fragile	Timing and bundled news matter for valuation
Management-buffer crowd-out	No direct measure in current data	Not directly tested	Key missing mechanism variable
Average market relevance	Full bank-level event regression	Positive and significant	Motivates the valuation question, not causal proof

Notes: The table maps the valuation framework to the empirical diagnostics used in the paper. The diagnostics discipline interpretation; they do not separately identify structural insurance values, capital costs, release credibility, or management-buffer adjustments.

communication date, the formal decision or announcement date, the implementation date, and the target or benchmark rate when available. The coding is based on national authority documents and the ECB/ESRB policy mapping, with source URLs preserved in the generated audit file.

The market-event design uses announcement dates rather than implementation dates. This choice follows the event-study logic: equity prices should react when investors learn about the new regime, not when the new buffer becomes binding months later. Implementation dates are still recorded because they matter for economic interpretation. A long implementation lag makes the announcement more about expectations, credibility, and future release than about an immediate balance-sheet constraint.

Treatment timing is the most important measurement risk. Some countries signal the framework before the formal decision. Others announce a framework and a rate decision together. A few have legal steps that are observable at different dates. The event-date audit in Appendix B therefore classifies each market-sample event as clean, ambiguous, or confounded. The paper treats this classification as part of the research design, not as a cosmetic robustness check.

6.2 Bank Universe and Listed-Equity Matching

The bank universe starts from the EBA Transparency Exercise. This anchor is useful because it identifies large European banking groups and provides supervisory balance-sheet variables for mechanism diagnostics. I then match EBA banks to listed-equity identifiers and daily prices from local FactSet exports. The baseline event study keeps direct listed-bank or listed-group entities in treated or early-activation jurisdictions. Banks without direct listed-equity coverage are excluded from the baseline because no bank-level market price is observed.

Parent-listed cases are handled separately. A parent-listed security can be a useful robustness observation if a treated subsidiary is part of a listed group, but it is not the same empirical object as a directly listed treated bank. The parent price aggregates exposure to other countries and business lines, so treatment is measured with more noise. For that reason, the headline sample is direct-listed banks, while parent-listed mappings enter only as a robustness sample.

Table 4: Construction of the Market-Event Sample

Sample object	Banks	ISINs	Countries	Rows	Role in the paper
Direct listed baseline	32	32	15	1,292	Main event-study sample for listed-bank prices.
Parent-listed robustness	6	4	2	164	Robustness sample where treatment is subsidiary/country-level but prices are group-level.
Prior EBA matched events	28	–	–	–	Capital, leverage, RWA, asset, and ROA mechanism diagnostics.
Public P2R matched events	17	–	–	–	Partial euro-area buffer-distance diagnostic.
V-Lab matched events	27	–	–	–	Public stress-risk proxies, not CDS equivalents.
Clean events	–	–	9	–	Date-quality subsample excluding timing-ambiguous and confounded events.
Clean euro events	–	–	7	–	Clean-event subsample restricted to euro-area announcements.

Notes: Baseline and parent-listed counts are generated in `output/tables/market_event_sample.csv`. EBA, public P2R, and V-Lab counts are generated by the mechanism diagnostic pipelines. Dashes indicate that the current output is defined at the bank-event or country-event level rather than as a distinct security universe table.

Table 4 summarizes the main sample objects. The baseline direct-listed event sample contains 32 securities in 15 treated or early-activation jurisdictions, generating 1,292 event-window daily rows. A small parent-listed robustness sample contains six banks, four securities, and two countries. The mechanism samples are smaller because they

require additional public or supervisory data: prior EBA observations cover most of the listed bank-events, public P2R data cover recent euro-area events, and V-Lab SRISK/LRMES cover a subset of listed banks.

6.3 Returns and Market Controls

The main outcome is the bank's daily price return adjusted for the STOXX Europe Banks return. The adjustment removes broad European bank-sector movements, which is important because the events occur in periods with common bank equity news, monetary-policy news, and changing risk premia. A raw bank return would mix PNR announcement news with movements in the whole European banking sector. The sector-adjusted return is not a perfect abnormal return, but it is the cleanest available public-price outcome in the current data.

The market data include daily prices, market capitalisation, and shares outstanding from local FactSet exports. The current event-study outcome is a price return rather than a dividend-adjusted total return. This limitation is unlikely to dominate very short windows, but it should be fixed if dividend-adjusted total-return indices become available for all securities. The paper therefore interprets the estimates as short-window price reactions, not as complete shareholder total returns.

Controlled specifications add daily MOVE and sovereign benchmark controls. MOVE captures broad fixed-income volatility and stress in global rates markets. Sovereign benchmark controls capture country and euro-area risk conditions that can move bank equities around the same time as macroprudential announcements. These controls are deliberately modest. The design does not try to partial out every possible event-window shock; it uses controls to remove large common financial-market movements and then relies on event-quality and country-level diagnostics for the core identification concerns.

6.4 Mechanism Proxies

The mechanism data are designed to discipline interpretation, not to identify a structural model. Historical EBA Transparency Exercise files provide capital ratios, leverage, risk-weighted assets, total assets, CET1 capital, and P&L-based ROA. These variables proxy bank strength, capital intensity, and profitability. They are useful because coverage is broad, but they are not direct measures of distance to payout constraints or usable regulatory headroom.

Public ECB Pillar 2 requirement data provide a partial euro-area buffer distance diagnostic. The variable is only partial because the public P2R data do not reconstruct the full combined buffer requirement, MDA distance, or bank-specific voluntary management

buffer. It is therefore informative when it rejects a simple constrained-bank story, but it cannot establish the structural capital-cost channel.

V-Lab SRISK and LRMES provide public stress-risk proxies. They are not equivalent to bank CDS spreads, but they are the feasible public market-risk measures currently available for the listed banks. SRISK is closer to a capital shortfall measure under stress, while LRMES captures market-implied tail exposure. Both variables are useful for asking whether more stress-exposed banks react more positively to PNR announcements. They are not measures of regulatory buffer usability, and they do not observe whether a released buffer would relax payout or funding constraints.

I also audit the available bond-market files because issuer-level bank-bond spreads would be the natural no-CDS substitute. The current local `Bond-benchmark` files are not such a panel. They contain sovereign benchmark country-tenor curves, benchmark ISINs, and benchmark ratings. These data remain useful controls for broad rates and sovereign-risk conditions, but they do not contain bank issuer identifiers, bank bond identifiers, seniority, coupon terms, or issuer-level OAS or Z-spreads. The paper therefore cannot use bond spreads as a credit-risk outcome in the current version.

6.5 Rights, Reproducibility, and Current Limitations

All empirical tables and figures in the results section are generated from code under `src/python/pnrccyb/analysis/`. Paper-facing tables and figures are written to `paper/tables/` and `paper/figures/`. The event audit is generated from the treatment coding, listed-bank coverage, EBA coverage, and manual audit overrides. The mechanism diagnostics are likewise generated from intermediate files rather than hand-entered into the paper.

The main data limitation is not a missing control variable; it is missing mechanism measurement. A stronger mechanism paper would require full distance to MDA or combined-buffer requirements, voluntary management buffers, payout constraints, liquidity pressure, funding pressure, or issuer-level bank-bond spreads. The current data include useful proxies, but they do not directly observe the capital-stack object that the model says should matter, and they do not contain a bank credit-spread outcome. Because the market data are based on local FactSet exports, the current numerical tables should also be treated as internal until data-use rights for circulation are confirmed.

7 Empirical Design

The empirical design asks whether listed-bank prices move around positive-neutral or early-activation CCyB announcements. The design is deliberately layered. The bank-level event study is the natural first look at market pricing, but the treatment is assigned at the country-event level and the number of country events is small. The paper therefore combines bank-level regressions with event-quality restrictions, country-event aggregation, and randomization inference.

7.1 Event Windows and Baseline Regression

The baseline observation is bank i in country c on trading day t around country c's announcement date. The main outcome is the bank-sector-adjusted daily price return, $r^{adj}_{i,c,t}$. The preferred broad event window is $[-5, +5]$. This window is wider than a one-day policy-surprise window because some macroprudential announcements appear in financial-stability reviews, committee decisions, or national-authority releases that may be anticipated or absorbed over several trading days. The cost is that a wider window also admits more confounding news. The paper therefore reports the broad window as a market-pricing diagnostic and checks it against cleaner country-level evidence.

The baseline daily regression is

$$r^{adj}_{i,c,t} = \alpha_i + \sum_{w \in \mathcal{W}} \beta_w \mathbf{1}\{t \in w(c)\} + X'_{c,t}\Gamma + \varepsilon_{i,c,t}, \tag{8}$$

where α_i are bank fixed effects, $\mathcal{W}$ contains event-window indicators, and $X_{c,t}$ contains daily market and sovereign controls when included. The coefficient β_w is the average daily abnormal return during window w, expressed in basis points in the paper tables. The most important coefficient is the broad $[-5, +5]$ indicator.

This regression is useful because it uses daily variation and bank-level price data. It is not sufficient because banks in the same country share the same announcement. Clustering by bank addresses serial dependence in bank returns, but it does not create independent country-level policy variation. A statistically significant bank-level coefficient can therefore overstate the strength of the evidence if one country has many listed banks or a large country-specific shock.

7.2 Inference at the Country-Event Level

The conservative object is the country-event cumulative abnormal return. For each country event, I aggregate bank-sector-adjusted returns over the window and average across listed banks in that country. I then test whether the mean country-event return

differs from zero. This aggregation respects the level at which treatment varies. It also makes the small-sample problem visible: the paper has many bank-day observations but only a limited number of usable country events.

Country-event inference is complemented with a random-date procedure. For each treated country, placebo announcement dates are drawn within the original announcement year, preserving the country composition and broad calendar environment. The observed country-event mean is then compared with the placebo distribution. This test asks whether the observed event-window return is unusual relative to other dates in the same countries and years. It is not a perfect design, but it is more aligned with the treatment assignment than bank-level clustered inference alone.

The paper therefore reports an inference hierarchy rather than a single preferred standard error. Bank-level regressions answer whether listed-bank prices move around the announcements. Country-event means and country-level randomization define how much policy-level evidence can be attached to that movement. Table 5 makes the hierarchy explicit and prevents the full-sample bank-level significance from carrying more weight than the design can support.

7.3 Event-Quality Restrictions

The clean-event restrictions address timing and news contamination directly. The full sample includes all direct-listed treated and early-activation country events with usable market data. The clean-event sample drops events with timing ambiguity or a project-identified confound. The clean-euro sample adds euro-area membership. These restrictions trade sample size for event quality. If the full result is driven by ambiguous or confounded windows, the clean-event estimates should weaken. That is exactly what the current evidence shows: the positive sign remains, but statistical significance does not.

Spain receives separate treatment because it is the clearest contamination case. The October 2024 formal decision is institutionally valid, but the event window overlaps with BBVA–Sabadell takeover-offer news. Spain also had a June 2024 public signal about CCyB activation. The paper therefore reports both the formal-date result and the June-date sensitivity. The purpose is not to choose the date that supports the hypothesis; it is to show how much the headline bank-level result depends on the event definition.

7.4 Mechanism Diagnostics

The mechanism diagnostics test whether the cross-section lines up with the valuation framework. If the insurance channel is dominant, one might expect larger positive

Table 5: Inference Hierarchy for the Main Event Window

Method	Estimate	SE or p-value	Countries	Banks	Interpretation
Bank-level regression, bank-clustered	32.1	SE 12.3; p=0.009	15	32	Motivating market-pricing fact; overstates policy-level precision if countries drive the variation.
Bank-level regression, excluding Spain	14.7	SE 11.9; p=0.218	14	26	Shows that Spain is influential; the coefficient falls and is not statistically significant.
Bank-level regression, clean events	23.6	SE 18.5; p=0.202	9	16	Preferred descriptive bank-level sample; positive but statistically insignificant.
Country-event aggregation	205.3	SE 146.0; p=0.160	15		Policy-level estimate; positive but not statistically significant.
Country-event aggregation, clean events	309.5	SE 204.1; p=0.129	9		Clean policy-level estimate; positive but still statistically insignificant.
Country-level random-date placebo	205.3	randomization p=0.303	15		Observed country mean is not in the placebo tail.
Country-clustered or wild-cluster inference		not reported	15	32	Current design has too few treated country events for this to be the main inferential object.

Notes: Estimates are in basis points for the $[-5, +5]$ window. Bank-level rows report daily event-window coefficients; country-event rows report cumulative country-event returns. The table is designed to separate the motivating market-price fact from the policy-level inference.

responses for banks with greater stress exposure or tighter capital constraints. The model shows why this prediction is not automatic: the same banks may also face higher private costs of additional required capital. The empirical tests therefore reject simple stories rather than estimate structural primitives.

The first set of diagnostics uses EBA balance-sheet variables: CET1 ratios, leverage, profitability, and RWA density. These variables proxy capital strength and balance-sheet risk. The second uses public ECB P2R data as a partial buffer-distance measure for recent euro-area banks. The third uses V-Lab SRISK and LRMES as public stress-risk proxies. In each case, the paper reports split-sample differences with p-values and stars. The interpretation is asymmetric. A significant positive constrained-bank split would support a simple insurance channel. Null or opposite-signed splits do not reject the model, but they do reject the easiest weak-bank interpretation of the pooled event coefficient.

7.5 What Would Make the Evidence Stronger

The strongest empirical version of the paper would measure the model objects directly. The capital-cost term requires full distance to MDA or combined buffer requirements, voluntary management buffers, and payout-constraint exposure. The insurance term requires stress exposure, funding pressure, liquidity pressure, or a market credit-risk outcome such as issuer-level bank bond spreads. Release credibility requires a country-bank measure of whether a legal release is expected to be usable. The current data do not contain those variables. Bank-level CDS data are unavailable, and the current bond files are sovereign benchmark controls rather than bank-bond spreads. This is why the empirical claim is deliberately narrow: PNR announcements are market-relevant and can be priced positively, but the current design does not establish a clean causal average effect or a settled bank-level channel.

8 Market-Event Evidence and Mechanism Diagnostics

8.1 A Main-Text Motivating Fact

The full bank-level sample shows a positive announcement-window response, but the response is not robust enough to be the paper's main causal estimate. The preferred empirical sample is the clean-event sample: announcements with clear market timing and no project-identified confound. The full sample is retained because it is the broad motivating market-pricing fact, but it is not the evidentiary object that carries the paper's claim. Table 6 states this hierarchy directly.

Table 6: Preferred Clean-Event Evidence

Sample	Estimate	SE	p-value	Countries	Banks	Interpretation
Full sample	32.1***	(12.3)	0.009	15	32	Motivating only
Excluding Spain	14.7	(11.9)	0.218	14	26	Spain influence
Clean events	23.6	(18.5)	0.202	9	16	Preferred sample
Clean euro events	16.2	(22.3)	0.467	7	12	Strict sample
Country-event clean	309.5	(204.1)	0.129	9		Conservative inference

Notes: Bank-level rows report coefficients on the $[-5, +5]$ event-window indicator in basis points per event-window day, with bank-clustered standard errors. The country-event clean row reports mean cumulative country returns over $[-5, +5]$. The preferred empirical sample is clean events; the full sample is retained as a motivating market-pricing fact.
Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

Table 7 reports the broader set of supporting market-event diagnostics.

The full-sample coefficient is 32 basis points per event-window day over the $[-5, +5]$ window and is statistically significant with bank-clustered standard errors. This is the fact that motivates the paper and keeps the event study in the main text: on announcement, listed-bank prices can move as if releasable capital has positive value. It should not be interpreted as the paper's headline causal estimate. The effect is much weaker once Spain is removed. The Spain-excluded coefficient is less than half as large and is not statistically significant.

The clean-event estimates reinforce the same conclusion. Dropping countries with ambiguous timing or the Spanish confound leaves a positive bank-level point estimate of about 24 basis points per event-window day, but the estimate is not statistically significant. Restricting further to clean euro-area events shrinks the point estimate to about 16 basis points per day and leaves it even less precise. The audit therefore does not turn the event study into a clean headline result; it shows that the sign is not driven mechanically by the flagged events, but the statistical evidence weakens once the sample is cleaned.

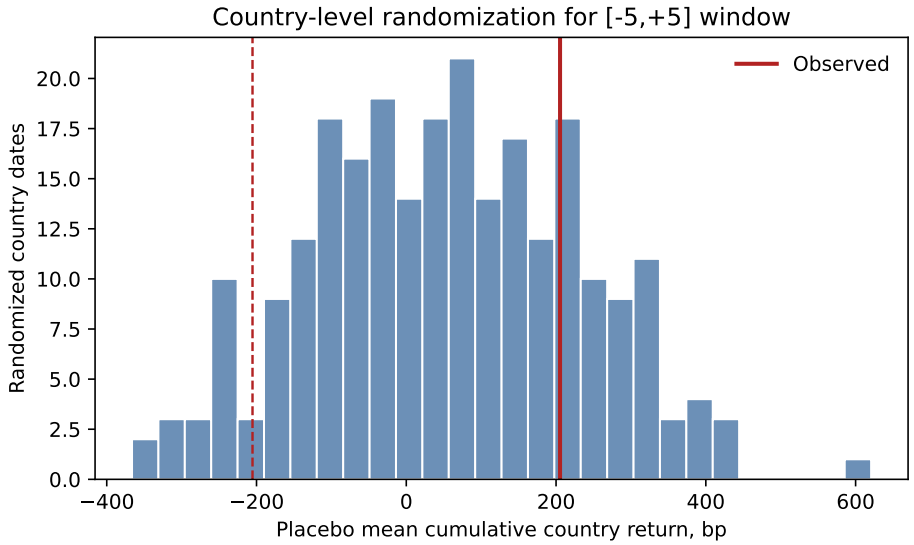
Country-level inference delivers the same warning. The mean country-event cumulative return over $[-5, +5]$ is positive, at about 205 basis points in the full sample and about 310 basis points in the clean-event sample, but neither estimate is statistically significant. A country-level random-date exercise also fails to reject the null. Figure 2 plots the placebo distribution: the observed estimate is on the positive side of the distribution, but not in its tail. Appendix E reports return-outcome and window robustness: the positive full-sample result is concentrated in the broad $[-5, +5]$ window and the source data are price returns rather than dividend-inclusive total returns.

Table 7: Motivating Market Reactions to Positive-Neutral CCyB Announcements

Specification	Estimate	SE	p-value	Unit
Bank-level, full sample	32.1***	(12.3)	0.009	bp per event-window day
Bank-level, excluding Spain	14.7	(11.9)	0.218	bp per event-window day
Bank-level, clean events	23.6	(18.5)	0.202	bp per event-window day
Bank-level, clean euro events	16.2	(22.3)	0.467	bp per event-window day
Country-event mean	205.3	(146.0)	0.160	bp cumulative, [-5,+5]
Country-event mean, clean events	309.5	(204.1)	0.129	bp cumulative, [-5,+5]
Country-event mean, clean euro events	257.9	(257.2)	0.316	bp cumulative, [-5,+5]
Spain, October formal decision	646.5***	(92.9)	< 0.001	bp cumulative, [-5,+5]
Spain, June public signal	-1.1	(145.2)	0.994	bp cumulative, [-5,+5]

Notes: Estimates are in basis points. The table reports main-text motivating evidence, not the paper's headline causal estimate. Bank-level rows report coefficients on the [-5,+5] event-window indicator from daily return regressions using bank-sector-adjusted returns, MOVE, and sovereign benchmark controls, with standard errors clustered by bank. Clean events have clear market timing and no project-identified event-window confound; clean euro events additionally require euro-area membership. Country-event rows report mean cumulative country returns over [-5,+5]. Spain rows compare the current October 2024 formal decision date with the June 2024 public activation signal.
Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

Figure 2: Country-Level Randomization Inference



Notes: The figure plots the distribution of placebo mean cumulative country returns for the $[-5, +5]$ window when announcement dates are randomized at the country level within the original announcement year. The solid vertical line is the observed mean; the dashed line is the symmetric negative value.

8.2 Mechanism Diagnostics

The valuation framework predicts that announcement returns should be larger for banks with higher insurance value from credible release and smaller for banks for which additional capital is privately more costly. I therefore treat heterogeneity as a discipline on the event-study interpretation, not as a separate search for significance. Table 3 in the model section summarizes the mapping between mechanisms and diagnostics; the detailed split tables are reported in Appendix C.

The diagnostics reject the naive claim that weak or stress-exposed banks benefit more. Market-only splits show that pre-event underperformers do not react more positively than other banks, and size splits are imprecise. Historical EBA Transparency Exercise data expand coverage of capital ratios, leverage, profitability, and risk-weight density to most listed bank events, but low-CET1, low-leverage, low-ROA, and high-RWA-density splits are not statistically significant.

The closer public proxies also fail to support the simple mechanism. Public ECB Pillar 2 requirement data allow a partial regulatory-headroom diagnostic for recent euro-area banks. Table 8 formalizes the best feasible public proxy. The proxy subtracts the Pillar 1 CET1 minimum, the public ECB P2R CET1 component, the coded PNR target, and the capital conservation buffer from the bank's CET1 ratio. It is not full MDA distance because it omits bank-specific systemic buffers, Pillar 2 guidance, and other full capital-stack components. Even with that limitation, the result is informative: in the clean-event

matched sample, low-headroom banks react less positively, not more positively. That pattern supports a capital-cost or market-discipline interpretation more than a simple insurance-relief channel.

Table 8: Regulatory-Headroom Mechanism Test

Sample	Diff.	SE	p-value	Banks	Interpretation
Matched public proxy	-301.2	231.5	0.193	17	Low-headroom banks react less positively; consistent with capital-cost or market-discipline channel.
Clean events	-740.7***	281.9	0.009	11	Low-headroom banks react less positively; consistent with capital-cost or market-discipline channel.
Excluding Spain	-740.7***	281.9	0.009	11	Low-headroom banks react less positively; consistent with capital-cost or market-discipline channel.
Clean euro events	-740.7***	281.9	0.009	11	Low-headroom banks react less positively; consistent with capital-cost or market-discipline channel.

Notes: Difference is the [-5,+5] cumulative bank-sector-adjusted return of below-median minus above-median proxy headroom banks, in basis points. Proxy headroom equals CET1 ratio minus Pillar 1 CET1 minimum, public ECB P2R CET1 component, coded PNR target, and the capital conservation buffer. The measure omits bank-specific O-SII/G-SII, systemic-risk buffers, Pillar 2 guidance, and other full MDA components.
Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

V-Lab SRISK and LRMES provide public stress-risk proxies, not bank CDS equivalents. High-SRISK banks do not react more positively, and high-LRMES banks have lower returns in the full matched sample. The bond-market audit does not add a credit-spread outcome: the available bond files are sovereign benchmark curves used as controls, not issuer-level bank-bond spreads. These results do not identify the structural channels separately, but they do rule out the easiest interpretation of the pooled event coefficient.

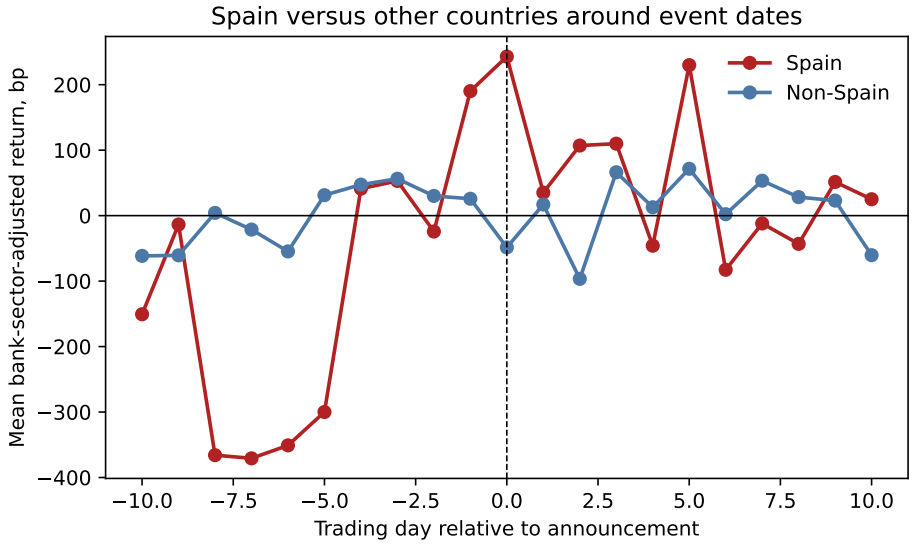
The mechanism evidence therefore constrains the paper's claim: positive-neutral CCyB announcements can be associated with positive bank-price reactions, but the current cross-section does not show that investors value them primarily through relief for more constrained banks. A stronger version of the paper needs full distance-to-MDA or combined-buffer requirements, payout constraints, liquidity pressure, issuer-level bank-bond spreads, or direct stress exposures to test Equation (5) more directly.

8.3 Spain as a Diagnostic Case

Spain explains why the bank-level result needs to be handled cautiously. The October 2024 formal decision is followed by a large and broad positive return among Spanish listed banks. All six Spanish banks in the sample have positive $[-5, +5]$ cumulative abnormal returns, and the average Spanish response is much larger than the non-Spain

response.

Figure 3: Spain Versus Other Treated Countries Around Announcement Dates



Notes: The figure plots mean bank-sector-adjusted daily returns, in basis points, by trading day relative to the announcement. Spain includes the six Spanish listed banks in the baseline sample. The non-Spain series averages listed banks in other treated or early-activation countries.

Figure 3 shows the timing. Spanish banks fall before the event and then rise sharply around the formal decision date. This pattern is not clean evidence of the market value of positive-neutral buffers. Banco de Espana had already publicly signalled planned CCyB activation in June 2024, and the October window overlaps with BBVA–Sabadell takeover-offer news that moved Spanish bank stocks. The date-sensitivity rows in Table 7 are consistent with that concern: the October formal date produces a large positive Spanish return, while the June public signal produces essentially zero over $[-5, +5]$.

The preferred empirical reading is therefore not to choose the Spain date that maximizes the effect. The October formal decision is institutionally relevant but contaminated; the June public signal is cleaner as an information event but does not produce a positive Spanish response. Spain should be treated as a diagnostic case study, while the clean-event sample should discipline the main descriptive evidence.

8.4 Interpretation

The empirical message is therefore narrow but useful. Markets sometimes price positive-neutral CCyB announcements positively, which is consistent with the view that releasable capital has insurance value. That fact is central enough for the main text, but the current sample does not show that it is a clean average causal effect. The strongest

Table 9: Spain Event-Date Sensitivity

Specification	Estimate	SE	p-value	Unit
Spain: October formal decision	646.5***	(92.9)	< 0.001	bp cumulative, [-5,+5]
Spain: June public signal	-1.1	(145.2)	0.994	bp cumulative, [-5,+5]
Full bank-level sample	32.1***	(12.3)	0.009	bp per event-window day
Full bank-level sample excluding Spain	14.7	(11.9)	0.218	bp per event-window day

Notes: Spain rows report average cumulative bank-sector-adjusted returns across the six Spanish listed banks. Full-sample rows report the controlled daily bank-level coefficient for the same broad event window. The October date is the formal decision date; the June date is the earlier public activation signal. Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

positive event is country-specific and plausibly bundled with other bank news, and the country-level tests are not significant.

The results should guide the next version of the paper. The main empirical task is not to add more controls to the same bank-level regression, but to separate clean macroprudential announcements from contaminated country events and to test whether the positive bank-level response survives at the level at which policy is assigned. The first cleaning pass is now informative: the positive sign survives, but statistical significance does not. Until a stronger design or direct mechanism variable changes that assessment, the event study is best used as a motivating market-pricing fact and as a diagnostic for the feasibility of a stronger design.

9 Conclusion

Positive-neutral CCyB frameworks change the timing of releasable capital. They ask banks to carry buffers before cyclical risk is visibly elevated, so that authorities have something to release when stress arrives. This paper studies how listed-bank equity markets price that regime change. The central lesson is that the sign is ambiguous. Future release can insure shareholders against stress-state losses, but higher normal-times capital can also be privately costly.

The model formalizes this tradeoff. A PNR announcement raises bank value only when the expected marginal insurance value of future release exceeds the private marginal cost of additional required capital. The model also explains why weak-bank heterogeneity is not mechanically signed. Banks that are more exposed to stress may gain more from credible release, but they may also face higher capital costs, tighter

payout constraints, and greater market-discipline pressure. Release credibility and management-buffer crowd-out are therefore central to the valuation of positive-neutral regimes.

The empirical evidence shows market relevance, not a settled causal effect. In the full bank-level sample, PNR announcements are associated with positive abnormal returns over the $[-5, +5]$ window. That fact is economically important because it shows that markets sometimes price positive-neutral frameworks as valuable. But the result weakens under the tests that matter most for identification. Excluding Spain removes bank-level significance, clean-event and clean-euro estimates are positive but imprecise, country-event inference is not significant, and country-level randomization does not reject the null.

Spain illustrates the identification problem. Its October 2024 formal decision generates a large positive response among Spanish listed banks, yet the window overlaps with BBVA–Sabadell takeover-offer news. Spain had already publicly signalled planned CCyB activation in June 2024, and that earlier signal does not generate a positive Spanish response. The October event is therefore useful as a diagnostic, but it cannot carry the paper's causal interpretation.

The mechanism diagnostics reject the simplest version of the insurance story. Historical EBA data, public ECB P2R information, and V-Lab SRISK/LRMES measures do not show that weak, constrained, or high-stress-risk banks react more positively. Some estimates are null; some point in the opposite direction. The right conclusion is not that PNR has no value. It is that the current public and local data do not identify a simple bank-level channel.

The project should therefore continue only as a narrow, theory-led market-pricing paper unless stronger mechanism data become available. The next empirical bottleneck is not another control set for the same event regression. It is direct measurement of distance to MDA or combined-buffer requirements, management buffers, payout restrictions, liquidity/funding pressure, or issuer-level bank-bond spreads. The current bond files are sovereign benchmark controls, not bank credit-spread outcomes. With direct mechanism variables or a bank-bond spread panel, the paper could become an empirical mechanism paper. Without them, the honest contribution is to model the ambiguous valuation of releasable capital and to show how the current market evidence disciplines, but does not prove, that mechanism.

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A Data Appendix

The raw PNR treatment source is `data/raw/pnr_adoption.csv`. The generated treatment panel is written by `pnrccyb.ingest.build_pnr_treatment`. The listed-bank market data are parsed from local FactSet files and transformed into daily returns by the market-event pipeline.

The main generated empirical outputs are:

- `output/tables/controlled_daily_event_regressions.csv`;
- `output/tables/market_leave_one_country.csv`;
- `output/tables/country_event_estimates.csv`;
- `output/tables/country_event_random_date_placebo.csv`;
- `output/tables/spain_event_date_sensitivity.csv`;
- `output/tables/bank_bond_spread_event_results.csv`.

The paper-facing table and figures are generated by `pnrccyb.analysis.build_paper_market_pack`. It writes the paper table to `paper/tables/` and the figures to `paper/figures/`.

B Event-Date Audit

The event-date audit separates clean market-observable announcements from events with timing ambiguity or known contamination. Clean events have clear public timing and no project-identified event-window confound. Clean euro events additionally require euro-area membership. The audit is generated by `pnrccyb.analysis.build_event_audit` from `data/raw/pnr_event_audit_overrides.csv`, treatment coding, listed-bank coverage, and EBA prior-observation counts.

Table 10: Treatment-Date Audit for Market-Event Sample

Country	Event date	Banks	EBA	Status	Audit reason
DK	2017-11-17	2	0	Ambiguous	Revised early-activation method has no explicit positive-neutral target and first activation followed one month later
LT	2018-06-22	1	0	Ambiguous	December 2017 position and June 2018 rate decision both matter for market timing
NO	2019-12-19	3	3	Ambiguous	Revised framework and rate decision are bundled and not an explicit positive-neutral target shock
SE	2021-03-22	3	3	Clean non-euro	Clean formal positive-neutral framework announcement but non-euro area
EE	2021-11-29	1	1	Clean euro	Clean formal base-requirement announcement with no project-identified event-window confound
NL	2022-05-25	2	2	Clean euro	Clean formal standard-risk PNR target announcement with no project-identified event-window confound
IE	2022-06-15	2	2	Clean euro	Clean formal resilience-tool announcement with no project-identified event-window confound
CY	2022-12-01	1	0	Clean euro	Clean formal PNR decision with no project-identified event-window confound
SI	2023-12-22	1	1	Clean euro	Clean formal positive-neutral CCyB decision with no project-identified event-window confound
IS	2024-03-16	2	2	Ambiguous	Current source confirms positive-neutral benchmark but original adoption date still needs confirmation
PL	2024-06-14	2	2	Ambiguous	Financial Stability Committee recommendation and ministerial regulation create legal-timing ambiguity
HU	2024-06-25	1	1	Clean non-euro	Clean formal PNR announcement but non-euro area
ES	2024-10-01	6	6	Confounded	Spain October window is plausibly confounded by BBVA-Sabadell takeover-offer news
GR	2024-10-18	4	4	Clean euro	Clean formal positive-neutral framework press release with no project-identified event-window confound
PT	2024-12-31	1	1	Clean euro	Clean formal PNR decision with no project-identified event-window confound

Notes: Banks are direct listed entities in the baseline market-event sample. EBA counts report listed bank-event rows with a prior EBA Transparency observation. Clean events have clear market timing and no project-identified event-window confound. Clean euro events additionally require euro-area membership.

C Mechanism Diagnostic Tables

This appendix reports the detailed mechanism splits summarized in Table 3. The tables are diagnostic rather than structural: they do not separately identify insurance values,

capital costs, release credibility, or management-buffer adjustment.

Table 11: Mechanism Diagnostics: Heterogeneity in Bank Event Returns

Sample	Split	High mean	Low mean	Difference	SE	p-value
Full sample	Pre-event underperf.	299.4	343.9	-44.5	201.6	0.825
Full sample	Large market cap	243.7	384.5	-140.9	198.8	0.479
Full sample	Low EBA CET1 ratio	362.3	360.7	1.6	213.1	0.994
Full sample	Low EBA leverage ratio	478.1	245.0	233.1	208.2	0.263
Full sample	Low EBA ROA	493.2	229.9	263.3	206.8	0.203
Full sample	High EBA RWA density	260.4	462.7	-202.3	209.4	0.334
Excluding Spain	Pre-event underperf.	91.1	343.9	-252.8	235.8	0.284
Excluding Spain	Large market cap	126.3	334.3	-208.0	230.3	0.366
Excluding Spain	Low EBA CET1 ratio	149.2	360.7	-211.6	267.4	0.429
Excluding Spain	Low EBA leverage ratio	351.8	245.0	106.8	253.0	0.673
Excluding Spain	Low EBA ROA	398.3	204.5	193.8	265.7	0.466
Excluding Spain	High EBA RWA density	181.2	407.0	-225.8	259.6	0.384

Notes: The outcome is the bank-level cumulative bank-sector-adjusted return over $[-5, +5]$, in basis points. High mean is the mean for the named high group; low mean is the complementary group. Pre-event underperformers are banks with below-median bank-sector-adjusted returns over $[-20, -6]$. Large banks are banks with above-median pre-event market capitalization. EBA splits use the latest available EBA Transparency Exercise reference date weakly before the announcement date. Differences are high minus low, with Welch standard errors. These are mechanism diagnostics, not causal estimates. Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

Table 12: Public Buffer-Distance Mechanism Diagnostic

Sample	Low buffer	Other banks	Difference	p-value
Matched public P2R	390.5	691.7	-301.2	0.193
Clean events	133.3	874.0	-740.7***	0.009
Clean euro events	133.3	874.0	-740.7***	0.009

Notes: Returns are cumulative bank-sector-adjusted returns over [-5,+5], in basis points. Low buffer means below-median public partial CET1 buffer above requirement, computed from EBA CET1, the Pillar 1 CET1 minimum, public ECB P2R, and the coded PNR target. The measure omits bank-specific CCB, O-SII/G-SII, SyRB, Pillar 2 guidance, and other full MDA components.
Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

D Model Appendix: Voluntary Headroom and Crowd-Out

This appendix formalizes the management-buffer crowd-out channel used in Proposition 5.4. The main text treats voluntary headroom as a state variable. Here, the bank chooses that headroom, which makes clear why management-buffer data are first-order for a stronger empirical mechanism test.

Let b denote the formal releasable buffer created by the positive-neutral framework and let h denote voluntary headroom above the regulatory stack. The bank chooses h after observing the new policy regime. A reduced-form objective is

$$\max_{h \geq 0} -\Psi(h + b) - q_s L(K + h + \rho b), \tag{9}$$

Table 13: V-Lab Stress-Risk Mechanism Diagnostic

Sample	Split	High risk	Low risk	Difference	p-value
Matched V-Lab	SRISK	453.3	296.4	157.0	0.457
Matched V-Lab	LRMES	159.3	613.0	-453.6**	0.019
Clean events	SRISK	549.1	511.3	37.8	0.899
Clean events	LRMES	408.2	652.2	-244.0	0.399
Clean euro events	SRISK	368.4	591.9	-223.5	0.520
Clean euro events	LRMES	324.2	644.9	-320.8	0.370

Notes: Returns are cumulative bank-sector-adjusted returns over [-5,+5], in basis points. SRISK and LRMES are latest available V-Lab observations strictly before the event date. High risk is above-median within each sample. These are public stress-risk proxies, not bank CDS equivalents.
Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

where $\Psi'(\cdot) > 0$ and $\Psi''(\cdot) > 0$ capture the private cost of carrying total normal-times capital, $L'(\cdot) < 0$ and $L''(\cdot) > 0$ capture stress-state shareholder losses, and $\rho \in [0, 1]$ is release credibility. The first-order condition for an interior solution is

$$\Psi'(h + b) = -q_s L'(K + h + \rho b). \tag{10}$$

The left side is the marginal normal-times cost of voluntary headroom. The right side is the marginal expected stress-state benefit of that headroom.

Totally differentiating (10) with respect to b gives

$$\frac{dh}{db} = -\frac{\Psi''(h + b) + q_s \rho L''(K + h + \rho b)}{\Psi''(h + b) + q_s L''(K + h + \rho b)}. \tag{11}$$

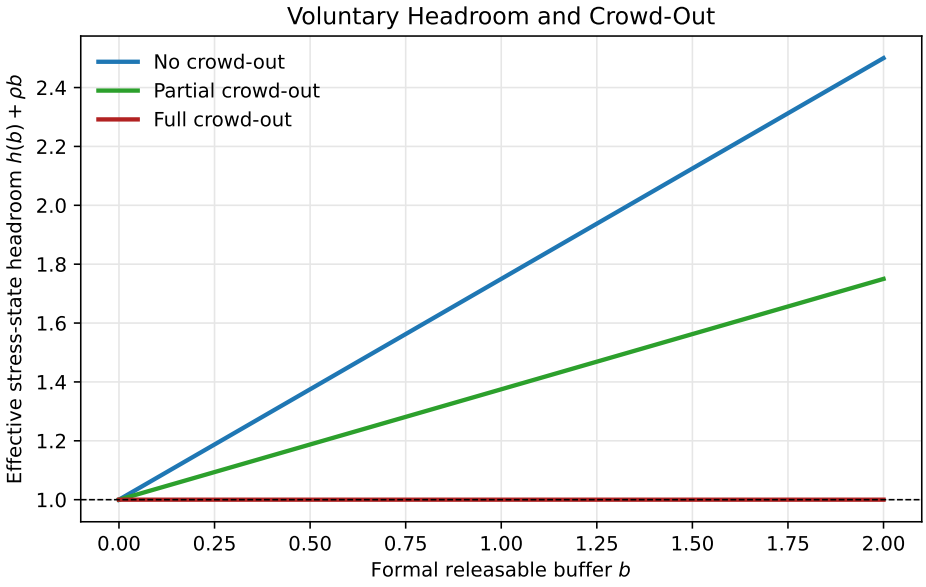
The derivative is non-positive. A higher formal buffer reduces desired voluntary headroom because the bank is already carrying more capital in normal times and because credible release partly substitutes for privately chosen stress-state headroom. The effect on effective stress-state headroom is

$$\frac{d}{db}\left[h(b) + \rho b\right] = \rho + \frac{dh}{db}. \tag{12}$$

If this derivative is positive, the positive-neutral framework raises effective stress-state headroom. If it is zero, formal releasable capital fully crowds out voluntary headroom. If it is negative, the formal buffer is associated with lower effective private headroom because normal-times capital costs dominate.

This appendix sharpens the interpretation of the empirical data gap. If banks maintain voluntary headroom when formal releasable buffers rise, the PNR framework creates additional effective stress-state capital and the insurance channel is stronger. If banks reduce voluntary headroom one-for-one, the policy mainly changes the legal composition of capital and the private insurance channel is weaker. The current public data do not observe full management buffers around each bank event, which is why the paper treats crowd-out as a theoretical channel and a priority data need rather than an established empirical result.

Figure 4: Voluntary Headroom and Crowd-Out



Notes: The figure illustrates effective stress-state headroom $h(b) + \rho b$ under no, partial, and full voluntary headroom crowd-out. Units are normalized model units and the figure is not a calibration.

E Additional Robustness

The main robustness concern is that the full-sample bank-level result may be driven by country-specific events rather than by the macroprudential announcement itself. The current pipeline therefore includes three checks: leave-one-country-out bank-level regressions, country-event aggregation, and country-level randomization of announcement dates within the original announcement year. Spain is additionally checked against an earlier public activation communication date because the formal October 2024 decision overlaps with Spanish bank takeover-offer news.

F Bond-Spread Feasibility

Issuer-level bank-bond spreads would be the natural market-based substitute for unavailable bank CDS data. The current local bond files do not contain such an outcome. They are sovereign benchmark country-tenor curves and ratings. The audit therefore writes an empty bank-bond schema and a blocked-status result table rather than estimating a misleading credit-spread event study.

Future versions should add issuer-level bank-bond spread outcomes where coverage is sufficient, verify all ambiguous treatment dates against national-source documents, and separate clean announcements from announcements bundled with bank-specific or sovereign news.

Table 14: Return and Window Robustness

Sample/outcome	Window	Estimate	SE	p-value	Banks
Full: Bank-sector adjusted	[0,+1]	12.8	(22.8)	0.574	32
Full: Bank-sector adjusted	[-1,+1]	26.7	(23.2)	0.250	32
Full: Bank-sector adjusted	[-5,+5]	32.1***	(12.3)	0.009	32
Full: Market adjusted	[0,+1]	-13.1	(16.8)	0.435	32
Full: Market adjusted	[-1,+1]	-12.0	(12.4)	0.336	32
Full: Market adjusted	[-5,+5]	31.5***	(8.6)	< 0.001	32
Full: Raw price return	[0,+1]	-9.5	(17.8)	0.594	32
Full: Raw price return	[-1,+1]	-8.9	(13.2)	0.502	32
Full: Raw price return	[-5,+5]	31.2***	(9.1)	< 0.001	32
Clean: Bank-sector adjusted	[0,+1]	-34.6	(38.6)	0.370	16
Clean: Bank-sector adjusted	[-1,+1]	-20.6	(36.2)	0.569	16
Clean: Bank-sector adjusted	[-5,+5]	23.6	(18.5)	0.202	16
Clean: Market adjusted	[0,+1]	-42.7	(33.1)	0.198	16
Clean: Market adjusted	[-1,+1]	-36.1	(23.6)	0.126	16
Clean: Market adjusted	[-5,+5]	19.2*	(10.2)	0.060	16
Clean: Raw price return	[0,+1]	-48.4	(33.5)	0.148	16
Clean: Raw price return	[-1,+1]	-41.0*	(22.9)	0.073	16
Clean: Raw price return	[-5,+5]	16.4	(10.3)	0.113	16

Notes: Estimates are basis points per event-window day from the controlled daily regressions with bank-clustered standard errors. The source data are price returns, not dividend-inclusive total returns. The full machine-readable table also reports $[0]$, $[0, +5]$, and clean-euro rows.
Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

Table 15: Bank Bond Spread Evidence Feasibility

Sample	Bank events	Bonds	Status
Full Sample	0	0	blocked_no_issuer_level_bank_bond_data
Clean Events	0	0	blocked_no_issuer_level_bank_bond_data
Excluding Spain	0	0	blocked_no_issuer_level_bank_bond_data
Clean Euro Events	0	0	blocked_no_issuer_level_bank_bond_data

Notes: The current local bond files contain sovereign benchmark country-tenor curves and ratings, not issuer-level listed-bank bonds. They remain valid controls for the equity event study but cannot replace bank CDS as a bank credit-risk outcome.