Geofinance: Following Sovereign Capital Home*

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Abstract

I study whether and when sovereign wealth fund (SWF) private investments change where recipient firms do business. This departs from the standard separation benchmark, in which financier identity should not determine a firm's real operating choices. I develop a geofinance framework in which an investment relationship can induce recipient business activity toward the financier's home country. The model predicts stronger directed activity when recipients have weaker outside options and when the relationship is more valuable for home-country activity. Following SWF private investments, recipients with weaker outside options are more likely to enter SWF home countries than the home countries of non-SWF investors in the same financing round. The response is not explained by firm scale, ownership dilution or round pricing, and is stronger in sectors where SWF home countries have revealed export disadvantages. Similar business redirection appears during the 2007–2008 financial crisis: banks with larger write-downs increased syndicated lending activity toward sovereign-fund home countries on both extensive and intensive margins.

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1 Introduction

In May 2025, Saudi Arabia's Public Investment Fund (PIF) and Google Cloud announced a $10 billion joint investment to build an artificial intelligence hub in Saudi Arabia.[1] Finance flowed one way while economic activity followed the other. This pattern recurs as sovereign wealth funds (SWFs), managing over $12 trillion, have become large cross-border private-market investors since the mid-2000s.[2] Yet in the Modigliani–Miller benchmark, the identity of capital providers should not determine a firm's real operating choices (Modigliani and Miller, 1958). I show that this separation fails when a strategic financier combines capital with relationship value: recipients with weaker outside financing options become more likely to direct business activity toward the financier's home country.

I develop a geofinance framework in which an investment relationship can support directed business activity toward the financier's home country. After the investment relationship forms, the recipient values preserving access to the financier, and the relationship may also lower the cost of entering the financier's home market. Directed activity is sustained when the value of preserving the relationship exceeds the private cost of departing from the recipient's commercial benchmark. The model therefore predicts a conditional effect, not a uniform financing effect: directed activity should be stronger when the recipient has weaker outside options and when the relationship is more valuable for the business activity in the financier's home country. SWFs are the empirical focus because they are large cross-border investors with potential home-country objectives, but the mechanism is not unique to sovereign capital.

I take this prediction to private-company financing rounds by measuring new entry into investor home countries after investment. This is a geographic outcome, not the usual SWF outcome of target value, governance, or operating performance (Bernstein, Lerner and Schoar, 2013; Kotter and Lel, 2011; Bortolotti, Fotak and Megginson, 2015): it asks whether sovereign capital changes where recipient firms do business.

That question cannot be answered by comparing raw post-investment entry rates, because SWF-backed private-company deals are highly selected. In the cross-border private-company universe, SWF participation is concentrated in high-valuation firms, larger employers, and sectors that SWFs had previously overweighted, often where the SWF home country has a revealed export disadvantage. SWF investors are also more likely than same-round commercial co-investors to

[1] Google Cloud and PIF Advance AI Hub in Saudi Arabia.

[2] For scale, the $12 trillion figure is comparable to the $12.7 trillion in total loans and leases held by U.S. commercial banks (Federal Reserve H.8 release, March 2025). SWFs deployed roughly $1.28 trillion in cross-border private-market investments over 2002–2022, computed from GSWF and SWFI transaction databases.

return to the same portfolio company in later private financing rounds. These patterns show both nonrandom selection into SWF capital and the investment relationship structure through which the continuation value can operate.

These patterns make across-firm comparisons a poor basis for identifying the mechanism. The identifying test therefore moves within SWF-backed financing rounds. Holding fixed the recipient and financing event, I compare new entry into the SWF investor's home country with new entry into the home countries of same-round non-SWF investors, and ask whether that gap varies with the model's two shifters: recipient outside-option weakness and the strategic value of the home-country link.

Before conditioning on these two shifters, mere SWF presence does not produce a stable average gap in new market entry. In raw comparisons, SWF home countries are less common expansion destinations, partly because same-round non-SWF investors are often based in deep markets such as the United States and the United Kingdom. Once I absorb destination-year conditions and country-pair differences, the average SWF-country gap turns positive but remains statistically indistinguishable from zero. The absence of a stable average gap rules out a simple mechanical story in which SWF-backed firms uniformly enter SWF home countries more often. The evidence must come from the conditional cases where the model predicts directed activity.

The new-market-entry gap rises with recipient outside-option weakness. I proxy for outside-option weakness with the firm's valuation discount, defined as lower post-money valuation relative to same-sector-year peers. In the same within-deal design, a one-standard-deviation increase in this discount raises the SWF–non-SWF new-entry gap by 5.46 percentage points, about 72% of the non-SWF baseline rate. This result should be read within the selected SWF-backed sample. SWFs invest in large, high-valuation private companies in the broad private-company universe; the mechanism test asks whether relatively lower valuations among those selected firms predict a larger expansion tilt toward the SWF home country.

I interpret valuation discount as a reduced-form proxy for weak outside financing options. Private-round valuation is an observable price of external equity, so a low valuation relative to peers is a natural marker of costly outside finance, in the spirit of private-placement discounts (Hertzel and Smith, 1993). The financial-constraints literature often uses firm size and age as indirect proxies, while also warning that common proxies are imperfect (Hadlock and Pierce, 2010; Farre-Mensa and Ljungqvist, 2016). The proxy survives controls and horse races for firm scale, age, employees, ownership-dilution measures, and alternative valuation benchmarks, suggesting that the slope is not driven by a simple size, lifecycle, control-rights, or valuation-benchmark artifact.

The strategic-value margin appears in the sectors where outside-option weakness matters most.

Firms with weaker outside options are especially more likely to enter the SWF's home country when that home country has historically low export strength in the firm's sector. These are settings where new links are plausibly more valuable to the SWF because entry does not simply extend an established export specialization. This matches the model's complementarity: weak outside options matter most when the home-country link is most valuable.

The same outside-option margin appears in crisis-era bank recapitalizations. During the 2007–2008 financial crisis, banks with larger pre-crisis write-down exposure had greater demand for outside capital, and SWFs were a major source of recapitalization.[3] In syndicated lending data, high-write-down banks became more likely to enter sovereign-fund home-country markets and increased deal counts toward those destinations after the crisis cutoff. The setting is smaller and crisis-specific, but it tests the same framework with sharper variation in recipient need for sovereign capital. It also aligns with the strategic-value margin: the directed activity is financial intermediation, a sector in which the SWF home countries were generally not export specialists.

Taken together, the two micro settings point to the same geofinance mechanism: investment relationships can induce business activity back toward the financier's home country. The effect is not uniform. It is strongest when recipients have weaker outside options and when the relationship is more valuable for home-country activity. Because sovereign capital transactions are large, strategic, and infrequent, I rely on complementary designs rather than a single all-purpose experiment: the private-company setting provides a broad mechanism test in private markets, while the bank setting provides sharper crisis variation in demand for sovereign capital.

Related literature. The paper first contributes to geoeconomics. Recent theory shows how states project power through existing trade and financial relationships (Clayton, Maggiori and Schreger, 2025, 2026), and network accounts emphasize coercion through control over hubs (Farrell and Newman, 2019). Related empirical work shows that state influence and state-backed finance can redirect economic activity: political influence redirected trade toward American products (Berger et al., 2013), China manages foreign access to its bond market (Clayton et al., 2025), and export-credit agencies raise exports where financing and contracting frictions bind (Kabir et al., 2025). The distinction is formation. These papers study pressure through existing dependencies; I study how state capital can create new bilateral business links rather than only exploit existing ones.

The paper also contributes to work on SWFs and sovereign investment. Existing studies describe SWF investment strategies, political motives, and differences between government-linked and private acquirers (Chhaochharia and Laeven, 2008; Bernstein, Lerner and Schoar, 2013; Knill, Lee

[3]The International Monetary Fund's *Global Financial Stability Report* (April 2008). Public offerings and other institutional investors were the other major sources of funding.

and Mauck, 2012; Karolyi and Liao, 2017). A related strand estimates target-firm announcement, governance, and operating effects (Dewenter, Han and Malatesta, 2010; Kotter and Lel, 2011; Bortolotti, Fotak and Megginson, 2015); see Megginson and Fotak (2015) for a survey. More recent work shows that SWF investment increases home-country exports after a U.S. regulation shock (Zhang and Zhou, 2025). I shift the outcome from target-firm value, governance, or sovereign portfolio allocation to the geography of recipient activity. The question is not only whether SWF capital affects recipients, but whether and how it changes where recipient firms and banks do business.

Finally, the paper speaks to corporate finance by studying when financing relationships affect real decisions beyond the separation benchmark. Existing departures emphasize costly external finance and relationship lending: financing frictions affect investment, and repeated lender relationships shape credit access and future financial business (Myers and Majluf, 1984; Boot, 2000). I study a different departure. The relevant friction is not only that external finance is costly, but that the financier has a strategic objective over the recipient's real activity and the recipient values preserving the relationship when outside options are weak. Capital can therefore support not only investment, but destination-specific business activity.

The remainder of the paper is organized as follows. Section 2 develops the geofinance model and derives the main empirical predictions. Sections 3 and 4 present the micro evidence from the private-company and bank-recapitalization settings. Section 5 concludes.

2 A Framework for Geofinance: Sovereign Relationships and Directed Business

I model geofinance as a relationship channel through which investment can support directed business activity. A recipient can undertake activity toward the financier's home country, but doing so may be privately costly relative to its commercial benchmark. After receiving investment, the recipient values preserving the relationship, and the relationship may lower the cost of operating in the financier's home market. Directed activity is implementable when this continuation value covers the private cost of departing from the recipient's commercial benchmark and when the financier has a strategic reason to request it.[4]

The model is intentionally reduced-form. Its purpose is to discipline the paper's micro-level

[4]The incentive-constraint logic is related to models of implicit contracting and repeated financing relationships, including Gil and Marion (2013); the distinction between financial payoffs and strategic investor objectives is related to the large-investor and strategic-investment literatures.

empirical tests, not to model two-sided matching, investor-specific pricing, or financier's portfolio choice. The core mechanism has one endogenous object, directed activity, and two scalar shifters: the firm's outside-option weakness and how valuable the relationship is for doing business in the financier's home country. A minimal payoff block separates financial-only investments from relationships in which the financier has a strategic objective over directed activity.

2.1 Setup

Let i index recipient firms and let s denote the financier's home country. I condition on the investment relationship being formed, because the empirical tests study post-investment behavior. Let

$$k_{is} \geq 0 \tag{1}$$

denote firm i's business activity toward country s above the level it would choose under ordinary commercial finance. Thus $k_{is} = 0$ is the commercial benchmark and $k_{is} > 0$ is directed activity.

The private accommodation cost of directed activity is

$$D_i(k_{is}; \psi_{is}), \tag{2}$$

where $\psi_{is} \geq 0$ captures how useful the relationship is for firm i's activity toward country s. Higher ψ_{is} lowers the firm's private cost of implementing directed activity in the financier's home country.

I normalize $D_i(0; \psi_{is}) = 0$ and assume that, for $k_{is} > 0$,

$$D_k > 0, \qquad D_\psi < 0. \tag{3}$$

Directed activity is privately costly, but a relationship that is more useful for activity in country s lowers the firm's cost of doing business there.

The firm also values preserving access to the investment relationship. Let

$$T_i(\omega_i) \tag{4}$$

denote this continuation value, where ω_i measures the weakness of the firm's outside option. I assume

$$T_\omega > 0. \tag{5}$$

Firms with weaker outside options place greater value on preserving the investment relationship. A high ω_i can reflect costly external finance, limited investor competition, balance-sheet pressure,

urgency, opacity, risk, or other sources of outside-option weakness. Appendix A gives a two-period microfoundation in which failure to accommodate directed activity ends future access to financing or relationship support.

2.2 Directed Activity and Incentives

The model characterizes implementability conditional on the investment relationship being formed. The financier requests directed activity $k_{is} \geq 0$ toward its home country. The firm either accommodates or refuses and loses the relationship. With the refusal payoff normalized to zero, accommodating yields continuation value $T_i(\omega_i)$ less private cost $D_i(k_{is}; \psi_{is})$:

$$T_i(\omega_i) - D_i(k_{is}; \psi_{is}). \tag{6}$$

The firm accommodates if and only if

$$D_i(k_{is}; \psi_{is}) \leq T_i(\omega_i). \tag{7}$$

This incentive constraint is the model's central object: directed activity is sustained only when the relationship value at stake covers the private cost of departing from the commercial benchmark.

The financier's payoff from realized activity toward its home country is $G_s(k_{is})$, with $G_k \equiv \partial G_s / \partial k$. A purely financial investor has $G_k = 0$ and requests $k^*_{is} = 0$. The comparative statics below apply to relationships with a strategic objective, $G_k > 0$. In the benchmark case, the financier requests the largest implementable action, so

$$k^*_{is} = k^{\max}_{is}, \qquad D_i(k^{\max}_{is}; \psi_{is}) = T_i(\omega_i). \tag{8}$$

Appendix A considers more general interior request rules. I assume $D_i(k; \psi)$ is continuous and strictly increasing in k, with $\lim_{k \to \infty} D_i(k; \psi) = \infty$, so $k^{\max}_{is}$ is unique and finite whenever $T_i(\omega_i) > 0$.

To discipline how outside-option weakness and relationship usefulness interact, I assume that a more useful relationship lowers the marginal cost of expanding directed activity, evaluated at the binding activity level:

$$\frac{d}{d\psi_{is}} D_k(k^{\max}_{is}; \psi_{is}) < 0. \tag{9}$$

Economically, the condition means that relationship infrastructure–local partners, certification, regulatory introductions, customer access, or credibility–makes additional activity in the destination less costly at the margin. Without this condition, the model still predicts positive level effects

of outside-option weakness and a more useful relationship, but the interaction between them is ambiguous.

A simple example is

$$D_i(k_{is};\psi_{is}) = \frac{c(k_{is})}{1+\psi_{is}}, \qquad c' > 0,\ c'' > 0. \tag{10}$$

Here relationship intensity lowers both the level and marginal cost of directed activity. The quadratic case $c(k) = k^2/2$ is the benchmark example. The maintained interaction condition is Equation (9).

Proposition 1 (Outside options, relationship intensity, and directed activity)**.** *Under Equations* (3) *and* (5)*, in an interior binding case the level effects are signed:*

$$\frac{\partial k_{is}^{\max}}{\partial \omega_i} = \frac{T_\omega}{D_k} > 0, \qquad \frac{\partial k_{is}^{\max}}{\partial \psi_{is}} = -\frac{D_\psi}{D_k} > 0.$$

The interaction is not signed by these assumptions alone. Let $\chi_{is} \equiv -\frac{d}{d\psi_{is}} D_k(k_{is}^{\max};\psi_{is})$*. Then*

$$\frac{\partial^2 k_{is}^{\max}}{\partial \omega_i\, \partial \psi_{is}} = \frac{T_\omega}{D_k^2}\,\chi_{is}, \qquad \operatorname{sign}\left(\frac{\partial^2 k_{is}^{\max}}{\partial \omega_i\, \partial \psi_{is}}\right) = \operatorname{sign}(\chi_{is}),$$

so the cross-partial is positive if and only if relationship intensity lowers marginal accommodation cost ($\chi_{is} > 0$*), the case of marginal-cost complementarity. The multiplicative specification in Equation* (10) *gives a simple example of this case.*

Intuition. A weak outside option raises the value of preserving the investment relationship, so the firm is willing to accept more directed activity. A more useful relationship lowers the private cost of doing business in the destination. The financier's payoff slope determines whether this implementable activity is sustained: financial-only investors have $G_k = 0$, while strategic investors have $G_k > 0$. Under marginal-cost complementarity, outside-option weakness matters most when the relationship is especially useful for accessing the destination market.

2.3 From Model to Tests

The model object is directed activity above the recipient's commercial benchmark. The empirical sections observe proxies for that object: new entry and expansion in private-company investments, and new lending or number of lendings in the bank setting. These tests are reduced-form counterparts to the model's comparative statics. They do not estimate the structural primitives D_i, T_i, or

ψ_{ij}, and they do not separately identify the financier payoff G_j.

In the private-market investments setting, the main test compares post-deal expansion by the same recipient into the SWF home country with expansion into the home countries of non-SWF investors in the same financing round. The comparison matters because commercial co-investors also provide capital. If generic post-financing expansion were the mechanism, expansion should tilt similarly toward commercial co-investor home countries. An SWF-relative gap that rises with recipient outside-option weakness instead points to the SWF home-country relationship.

The bank setting applies the same recipient-side margin during the financial crisis. Losses create sharper variation in demand for outside capital, and lending toward sovereign-fund home countries proxies for directed activity after sovereign recapitalization.

One useful interpretation of outside-option weakness is weak outside financing options. Costly external finance makes continuation financing relationships more valuable (Fazzari, Hubbard and Petersen, 1988; Holmström and Tirole, 1998). In this interpretation, when alternative capital is costly, preserving the sovereign investment relationship becomes more valuable and can support additional activity toward the sovereign's home country.

The core prediction is not an unconditional SWF-home-country effect. It is that the SWF-relative directed-activity gap rises with recipient outside-option weakness and is strongest where the home-country link is more valuable.

3 Directed Expansion in Private-Market Investments

The private-company evidence shows a conditional, not uniform, SWF-home-country tilt. In financing rounds with both SWF and non-SWF institutional investors, SWF participation alone does not produce a stable average new-entry gap toward the SWF home country. The gap rises instead among firms raising equity at larger valuation discounts relative to sector-year peers. It is strongest in sectors that SWFs had historically overweighted and where the SWF home country has historically low export strength. The setting therefore tests the model's two margins inside the same financing round: recipient outside-option weakness and the value of the home-country link.

3.1 Private-market investments data and institutional setting

Data and sample. I use PitchBook as the primary data source for private-company financing and later expansion transactions. PitchBook records financing rounds across venture capital, growth equity, buyouts, and M&A, and reports the investor composition of each round, round-level

pricing, firm financial characteristics, and subsequent corporate expansion events.[5] These features are necessary for the mechanism test: the same data source identifies SWF participation, non-SWF co-investors in the same round, recipient valuations, and post-deal activity by investor home country.

In terms of data quality, external-source checks suggest that PitchBook is close to Capital IQ and Mergermarket on the margins most relevant for this section. The median disclosed PitchBook SWF-backed deal size and the major target geographies are similar across sources.[6] The sample should nevertheless be interpreted as cross-border SWF participation in private-company financing transactions, not as a census of all SWF investments. Broad SWF deal sources include domestic investments, real estate, infrastructure, public equity, and fund commitments, which are outside the mechanism tested here.

Directed-expansion outcome. I measure directed activity as post-deal expansion into an investor's home country. Expansion events are subsequent PitchBook-recorded transactions by the financing company in the investor's home country, including acquisitions, joint ventures, corporate transactions, and new private financing rounds. [7] I identify these events by linking financing companies to subsequent PitchBook transactions in each investor's home country.[8] The main outcome is new market entry. It equals one if the target had no recorded activity in the investor's home country before the focal deal but expanded there within five years after the deal.[9] This keeps the main outcome on the entry margin rather than mixing new entry with continuation in countries where the firm was already active.

I use this outcome to test whether post-deal expansion tilts toward SWF home countries relative

[5] PitchBook is a widely used private-market data provider. It is the official data source for National Venture Capital Association, the main U.S. trade association for the venture capital industry.

[6] In the representativeness audit, PitchBook's broad cross-border SWF-backed sample has a median disclosed deal size of $160 million, compared with $150 million in Capital IQ and $225 million in Mergermarket. PitchBook's broad cross-border SWF-backed sample is 29.6% United States targets, 7.0% China/Hong Kong, and 10.2% India; the corresponding shares are 34.7%, 8.7%, and 7.7% in Capital IQ, and 40.0%, 9.4%, and 11.6% in Mergermarket.

[7] The included PitchBook transaction types are M&A, buyouts, corporate asset purchases, joint ventures, PE growth/expansion, corporate transactions, seed, early-stage VC, later-stage VC, and private placement transactions.

[8] Appendix B.1 describes the exact normalized-name bridge used to link focal companies to PitchBook investor IDs. I do not use fuzzy matching, alias expansion, or manual predecessor-name stitching. As a result, the measure may miss expansion activity conducted under alternate legal names, subsidiaries, or affiliates that are not linked to the focal firm in PitchBook. This creates potential attenuation from missed true expansions rather than false positives from incorrect matches.

[9] For later financing rounds whose five-year post-deal window extends beyond the latest observed PitchBook expansion data, outcomes are measured through the end of the observed expansion window. I do not condition on firm survival or continued PitchBook coverage; the issue is only calendar observability. Because the regressions include deal-by-year fixed effects, implemented as deal fixed effects, all investor-country rows within a financing round share the same available post-deal window.

to other investor home countries, and whether that tilt is strongest when the mechanism predicts it should be. The design therefore requires financing rounds with both an SWF and at least one non-SWF institutional co-investor, so that investor home countries can be compared within the same deal. The unit of observation is an investor–deal pair, and the main new-entry tests keep only investor-country rows where the firm had no recorded prior activity in that investor's home country. This no-prior-history sample contains 3,174 investor–deal pairs across 831 deals from 1998 to 2025.[10]

The sample restriction changes the population, but two facts make the mechanism sample informative. First, the retained mechanism deals are similar to the broader SWF-backed cross-border sample on the main scale and geography margins.[11] Second, the restrictions are imposed for identification and pre-treatment measurement, not on the post-deal expansion outcome. The broad SWF-backed cross-border layer contains 4,667 deals. Requiring a same-round SWF and non-SWF institutional co-investor comparison leaves 2,362 deals, and requiring the valuation-discount measure leaves 833 deals. The final no-prior-history restriction changes the deal count only slightly, from 833 to 831, while removing investor-country rows where the firm had already operated in that country before the round. Thus the restriction narrows the population away from sole-SWF and otherwise non-comparable deals, but it is the restriction that makes the within-deal mechanism test possible. However, I do use the broader cross-border universe when describing SWF participation patterns. Appendix B.1 documents the data construction and cleaning steps.

Table 1 summarizes the sample layers and the role each layer plays in the argument. The broad cross-border universe is used to describe where SWFs participate. The SWF-backed cross-border layer is the external-validity benchmark for the mechanism sample and shows that retained mechanism deals are similar on scale and target geography. The mechanism sample is narrower because it requires the key ingredients for the within-round test: same-round SWF and non-SWF institutional co-investors, non-missing relative valuation, investor-country expansion outcomes, and no prior activity in the investor's home country.

Selected and continuing SWF relationships. SWF-backed private-company deals are selected along firm scale and sector-priority margins. SWF participation is concentrated in large, high-valuation firms that are not necessarily mature: it rises with post-money valuation and employees

[10] In this sample, the typical deal has one SWF and roughly three institutional co-investors: the mean is 4.15 investor rows per deal and the median is 3; 36.6% of deals pair a single SWF with a single non-SWF investor; 89.6% involve only one SWF.

[11] Median deal size is $189 million in the mechanism sample, compared with $160 million in the broader SWF-backed sample; median post-money valuation is $724 million versus $807 million; and the U.S. and advanced-economy target shares are close.

Table 1: SWFs Cross-Border Private Investment Samples

Panel A: Sample Support

	Cross-border universe	SWF-backed cross-border	Main mechanism sample
Unit	Deal	Deal	Investor–deal
Years	1995–2025	1995–2025	1998–2025
Observations	423,850 deals	4,667 deals	3,174 rows; 831 deals
SWF coverage	4,667 SWF-backed deals; 1.10%	61 SWFs; 32 homes	42 SWFs; 20 homes
Role in paper	SWF participation universe	SWF-backed source layer	Within-deal mechanism

Panel B: Deal and Firm Characteristics

	Cross-border universe	SWF-backed cross-border	Main mechanism sample
Median deal size	$7.0M	$160M	$189M
Median post-money valuation	$34M	$807M	$724M
Median revenue	$15M	$115M	$135M
Median firm age	6 yrs	12 yrs	8 yrs
Deal type mix: VC/growth; buyout/M&A; other	46.5%; 45.0%; 8.5%	34.3%; 49.6%; 16.1%	57.3%; 38.1%; 4.6%
Target HQ advanced economy	77.1%	71.8%	68.5%
Target HQ United States	22.8%	29.5%	32.9%

Note: Panel A reports the sample layers used in the SWF selection analysis. The cross-border universe includes completed PitchBook deals with known target home country, sector, and at least one foreign investor. The SWF-backed cross-border layer restricts this universe to deals with at least one cross-border SWF investor. The main mechanism sample further requires same-round SWF and non-SWF institutional co-investors, non-missing relative valuation, investor-country expansion outcomes, and no prior target activity in the investor's home country. Panel B reports deal-level medians and shares for these layers.

but falls with firm age. Conditional on valuation, age, employees, target geography, and deal type, deal size is smaller, so the pattern is not simply that SWFs join larger rounds. SWF participation is also higher in sectors that SWFs had previously overweighted in their cross-border portfolios. Appendix Table 9 reports deal-level linear probability models in which the outcome equals one if any cross-border SWF investor participates in the deal.

The relationships also have a continuation component. Appendix Table 11 shows that SWF investors are more likely than same-round non-SWF co-investors to appear again with the same company within five years.

I interpret these selection and continuation patterns as descriptive evidence for the framework's starting point: SWF relationships are selected, continuing relationships whose future value recipients may want to preserve. They do not imply that SWFs generally target distressed or low-valuation private firms in the broad cross-border universe. The mechanism test therefore asks a conditional question: inside selected SWF relationships, does directed activity follow the model's comparative statics in recipient outside options and home-country relationship value?

3.2 Empirical design and results

3.2.1 Within-deal Entry and Recipient Outside Options

I test the mechanism within SWF-backed financing rounds. I compare expansion toward the SWF home country with expansion toward the home countries of non-SWF investors in the same financing round. This comparison holds fixed the recipient firm, financing round, timing, and common round-level terms. It asks whether the direction of post-deal activity loads specifically on sovereign investor identity, and whether the SWF-relative entry gap rises when recipient outside options are weaker.

The outside-option proxy is the valuation discount. For each deal d in sector s and year t, I construct it as the negative of the deal's log post-money valuation residual relative to the sector×year mean:[12]

$$\text{ValDiscount}_d = -\left(\log(\text{PostVal}_d) - \overline{\log(\text{PostVal})}_{s(d),t(d)}\right), \tag{11}$$

where the benchmark is computed across all completed deals in sector s and year t from the full PitchBook deal universe.[13] Higher values indicate lower valuations relative to sector×year peers. I interpret this discount as a reduced-form proxy for weaker outside options, not as a direct measure of financing access. Lower relative valuation can reflect costly outside finance, higher perceived risk, less investor competition, or other outside-option premia. The prediction does not require high-discount firms to expand more in absolute terms; it requires the SWF-minus-non-SWF entry gap to rise with valuation discount.

I estimate

$$Y_{jdt} = \beta_1 \,\text{SWF}_{jdt} + \beta_2 \,(\text{SWF}_{jdt} \times \text{ValDiscount}_d) + \alpha_d + \alpha_{j\times t(d)} + \alpha_{j\times hq(d)} + \varepsilon_{jdt}, \tag{12}$$

where j indexes the investor's home country, d indexes the financing round, $t(d)$ is the deal year, and $hq(d)$ is the target firm's headquarters country. Y_{jdt} is new entry into country j for deal d, so the main estimating sample excludes investor-country rows with prior activity in that country. β_1 captures the within-deal SWF–non-SWF expansion differential at the mean valuation discount. β_2 captures whether that differential is larger in higher-discount deals. Deal fixed effects absorb the recipient firm, financing round, deal year, and all deal-level selection margins. Investor-home-country×deal-year fixed effects absorb time-varying differences in destination-country attractiveness, and the

[12] I use post-money rather than pre-money valuation because PitchBook reports post-money for roughly twice as many completed deals (21.2% versus 11.0% of the universe). The two values are correlated at over 95%.

[13] The measure is winsorized at the 1st and 99th percentiles and standardized to unit standard deviation.

investor-home-country×target-HQ-country fixed effects absorb stable country-pair differences.[14] The identifying condition is narrow: conditional on the financing round, destination-year conditions, and stable country-pair differences, the SWF home country is not differentially associated with unobserved pre-planned entry relative to same-round co-investor countries in a way that varies with the recipient's outside option.

Outside-option driver. Table 2 reports the main within-deal estimates. Columns (1)–(3) first show no stable average SWF-country entry premium. Column (1) gives a raw SWF differential of -5.13 percentage points, consistent with destination composition: SWF home countries are often smaller and less common expansion destinations than the United States, the United Kingdom, and other major non-SWF co-investor homes. With deal fixed effects in Column (2), the differential is -2.50 percentage points. With investor-home-country×deal-year and investor-home-country×target-HQ-country fixed effects in Column (3), the estimate turns positive but remains statistically indistinguishable from zero.

This pattern is useful because non-SWF co-investors also provide capital. If generic post-financing expansion toward investor countries were the mechanism, expansion should tilt similarly toward SWF and non-SWF investor home countries. If sovereign capital generated a uniform home-country pull, the SWF coefficient should be stably positive. The absence of a stable average gap cuts against that simple mechanical story. The next columns therefore test the model's sharper prediction: whether the SWF-relative entry gap rises with recipient outside-option weakness.

The SWF-relative entry gap rises strongly with valuation discount. In the full specification, a one-standard-deviation increase in valuation discount raises the within-deal SWF–non-SWF new-entry gap by 5.46 percentage points, about 72% of the non-SWF baseline rate of 7.59%.[15] This coefficient is a differential slope: it does not imply that high-discount firms expand more in absolute terms, but that their entry tilts more toward the SWF home country relative to same-round non-SWF investor home countries. Columns (4)–(6) show that this interaction is positive without fixed effects, with deal fixed effects, and with the full destination-year and country-pair controls. I interpret valuation discount as the proxy for weaker recipient outside options. The result is the empirical counterpart of the model's $T_\omega > 0$ margin: weaker outside options raise the continuation value of preserving the investment relationship, making directed activity more implementable. The estimate is not a structural estimate of T_ω, but it provides the sign test that the recipient-side

[14] The within-deal investor-level design follows the within-borrower design of Khwaja and Mian (2008), applied here to investor–deal pairs.

[15] Out of 100 non-SWF investor–deal pairs in the no-prior-history sample, the target expands into that non-SWF investor's home country within five years in roughly 7.6 cases. The low baseline reflects the sparsity of bilateral cross-border expansion.

mechanism requires. I next check whether the valuation-discount slope is simply relabeling more familiar financing-friction proxies.

Table 2: Outside-Option Weakness and the Within-Deal SWF Entry Gap

	New Entry					
	(1)	(2)	(3)	(4)	(5)	(6)
SWF	-0.0513***	-0.0250***	0.0320	-0.0538***	-0.0295***	0.0086
	(0.0151)	(0.0095)	(0.0263)	(0.0152)	(0.0104)	(0.0277)
SWF × Val. Discount				0.0525***	0.0351***	0.0546***
				(0.0141)	(0.0114)	(0.0200)
Deal-by-year FE (deal FE)	–	✓	✓	–	✓	✓
Investor-home-country × deal-year FE	–	–	✓	–	–	✓
Investor-home-country × target-HQ-country FE	–	–	✓	–	–	✓
R^2	0.010	0.583	0.804	0.061	0.587	0.809
SE clustered by company	✓	✓	✓	✓	✓	✓
Control mean	0.0759	0.0759	0.0759	0.0759	0.0759	0.0759
Observations	3,174	3,174	3,174	3,174	3,174	3,174

Note: Linear probability models estimated at the investor–deal level; each observation is an investor in a financing round, matched to that investor's home country. The new-entry outcome equals one if the target had no prior expansion in the investor's home country before the deal but did expand within five years after the deal, or by the end of the observed PitchBook expansion window for later deals. Columns (1)–(3) estimate the average SWF–non-SWF new-entry differential under no fixed effects, deal-by-year fixed effects, and the full fixed-effect specification. Columns (4)–(6) add the SWF×valuation discount interaction under the same sequence of controls. Valuation discount is the standardized proxy for the firm's outside-option weakness, defined in Equation 11. Deal-by-year fixed effects are implemented as deal fixed effects because each deal occurs in one year. The full fixed-effect specification includes deal-by-year fixed effects, investor-home-country×deal-year fixed effects, and investor-home-country×target-HQ-country fixed effects. Control mean is the mean of new entry for non-SWF co-investors. SE clustered by company. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Interpreting valuation discount. The valuation-discount result is not explained by observable pricing, scale, maturity, or control-share proxies. Table 3 shows that some standard outside-option proxies do predict the SWF-relative entry gap when entered alone. Smaller firms, measured by log employees, have a larger SWF-relative entry gap, consistent with the financial-constraints literature's use of firm size as an indirect proxy (Hadlock and Pierce, 2010; Farre-Mensa and Ljungqvist, 2016). Ownership-dilution measures also predict the gap on their own: total dilution and SWF-bloc dilution are positive and significant, consistent with the idea that firms selling larger ownership stakes may have weaker outside financing options or give investors more influence. These variables are therefore related to outside-option weakness, but they do not exhaust it.

When horse-raced against valuation discount, these alternative measures do not absorb the main slope. The log-employees and dilution interactions become smaller and statistically insignificant once valuation discount enters, while the SWF×valuation-discount coefficient remains positive and significant. Round-pricing and financing-package measures, including up-round status and deal

size relative to revenue, have little independent power. I therefore interpret valuation discount as a reduced-form proxy for weak outside financing options: private-round valuation is an observable price of external equity, so a low valuation relative to sector-year peers is a natural marker of costly outside finance, in the spirit of private-placement discounts (Hertzel and Smith, 1993). The table does not make valuation discount a structural measure of costly external finance, but it shows that the slope contains information beyond observable scale, ownership dilution, and generic round pricing.

Table 3: Valuation Discount versus Scale, Dilution, and Round Pricing

	Pricing / Capital Need		Firm Characteristics		Ownership / Control	
	Up Round	DealSize/ Revenue	log Employees	log Firm Age	Total Dilution	SWF-bloc Dilution
Panel A: Alternative proxies and new entry						
SWF × proxy	-0.0232	0.0414	-0.0555**	0.0034	0.0419**	0.0277**
	(0.0351)	(0.0294)	(0.0223)	(0.0122)	(0.0164)	(0.0139)
Panel B: Horse race with valuation discount						
SWF × proxy	0.0012	0.0179	-0.0244	0.0026	0.0210	0.0086
	(0.0347)	(0.0223)	(0.0209)	(0.0124)	(0.0135)	(0.0113)
SWF × Val. Discount	0.0548***	0.1384***	0.0405**	0.0558***	0.0472**	0.0533***
	(0.0202)	(0.0410)	(0.0198)	(0.0208)	(0.0190)	(0.0194)
Outcome	New Entry	New Entry	New Entry	New Entry	New Entry	New Entry
Deal-by-year FE (deal FE)	✓	✓	✓	✓	✓	✓
Investor-home-country × deal-year FE	✓	✓	✓	✓	✓	✓
Investor-home-country × target-HQ-country FE	✓	✓	✓	✓	✓	✓
Cluster	Company	Company	Company	Company	Company	Company
Observations	3,174	1,407	2,849	2,950	3,123	3,123

Note: Linear probability models estimated at the investor–deal level; each observation is an investor in a financing round, matched to that investor's home country. The dependent variable is new entry into the investor's home country within five years, conditional on no prior activity there before the focal deal. Each column reports a separate proxy diagnostic. Panel A includes the listed SWF×proxy interaction without valuation discount. Panel B reports the horse race between the listed SWF×proxy interaction and SWF×valuation discount. Up-round is a 0/1 indicator equal to one if the current round's valuation exceeds the firm's previous recorded round valuation. The continuous proxy variables are winsorized and standardized before estimation, so their coefficients are effects of a one-standard-deviation increase. DealSize/Revenue is deal size divided by revenue, a financing-package-size measure scaled by firm revenue. Total dilution is deal size divided by post-money valuation. SWF-bloc dilution is total dilution multiplied by the SWF share of retained investors in the round; it is a round-level sovereign-bloc proxy, not an individual investor stake. All columns include deal fixed effects, investor-home-country×deal-year fixed effects, and investor-home-country×target-HQ-country fixed effects. SE clustered by company. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

3.2.2 Strategic Value: Where the Outside-Option Slope Is Strongest

I proxy strategic value in two ways: the SWF's prior portfolio tilt toward the recipient's sector and the SWF home country's revealed export disadvantage in that sector. Portfolio tilt is the SWF's

cross-border portfolio share in a sector minus the corresponding share for non-government deep-pocket private investors.[16] Appendix Figure 2 shows that these tilts vary sharply across SWF home countries. Export disadvantage is measured using revealed comparative advantage (RCA), with RCA below one indicating that the sector accounts for a smaller share of the SWF home country's exports than of world exports.[17]

The two proxies are related but not identical. Appendix Figure 3 shows that 72% of high-tilt SWF country–sector cells with early export-RCA data are sectors in which the SWF home country has RCA below one. SWFs therefore often overweight sectors where the home country is not already an export specialist. This pattern points toward sectors where sovereign investors plausibly value new foreign linkages, rather than sectors where expansion would simply follow existing home-country export strength. I use these proxies to test the model's second margin: whether outside-option weakness matters more where the home-country link is more valuable.

Table 4 proceeds in three steps and maps to the model in a reduced-form way. Columns (1) and (4) show that strategic-value cells do not have an unconditional SWF-relative entry premium. The SWF×strategic-value level terms are negative and statistically insignificant for both export disadvantage and prior SWF sector tilt. I do not interpret these level nulls as evidence against the model's $D_\psi < 0$ condition. In the model, ψ is relationship usefulness for the recipient; in the data, export disadvantage and portfolio tilt are noisy proxies that also capture the financier's strategic payoff from new links and sector-destination composition. The level nulls therefore say only that, at the mean valuation discount, high-strategic-value cells do not exhibit a larger SWF-relative entry gap.

Columns (2) and (5) show that adding these strategic-value level terms does not absorb the outside-option result. The SWF×valuation-discount coefficient remains about 5.6 percentage points in both specifications. Thus the valuation-discount slope is not just a proxy for sector-destination cells that SWFs favor or for sectors where the home country lacks export strength. Together, the level nulls and the continuing outside-option slope suggest the conditional nature of the mechanism: strategic-value sectors do not generate a larger SWF-relative entry gap for the average recipient, but the gap rises among recipients with weaker outside options.

Columns (3) and (6) test the model's sharper complementarity prediction. With export disad-

[16] For Table 4, the tilt is computed at the individual-SWF level using only portfolio history before the focal deal year. The descriptive heatmap in Appendix Figure 2 reports pooled 2005–2025 home-country tilts. Both measures are count-based rather than value-weighted.

[17] For country c and PitchBook sector s, RCA is $(X_{c,s}/X_c)/(X_{W,s}/X_W)$, where $X_{c,s}$ is the country's mapped goods-plus-services exports in sector s, X_c is its total goods-plus-services exports, and W denotes the corresponding world totals. I use the geometric mean of annual RCA over 2005–2007. The appendix documents the non-overlapping goods-services mapping and source-level checks on world totals.

vantage, the SWF×valuation-discount slope is small in export-specialized sectors, 1.78 percentage points, and statistically insignificant. The RCA-below-one differential is 5.69 percentage points, implying a 7.47 percentage-point slope in sectors where the SWF home country lacks export strength. With prior SWF sector tilt, a 10 percentage-point higher prior tilt raises the valuation-discount slope by 1.65 percentage points, implying a 7.46 percentage-point slope at a +10 percentage-point tilt. This interaction is the reduced-form counterpart to the model's marginal-cost complementarity condition: recipient outside-option weakness matters most where the home-country link is plausibly more valuable. The tilt interaction is statistically modest, so I treat it as supporting evidence rather than as a standalone identification result.

The export-disadvantage pattern also runs against a mechanical comparative-advantage story. If SWF-country entry simply followed sectors where the home country was already strong, the outside-option slope should be concentrated in export-specialized sectors. Instead, it is larger where the SWF home country lacks export strength.

3.2.3 Threats to the mechanism

The remaining checks address three alternative stories. First, lower-valuation recipients may have unobserved plans to enter the SWF home country exactly when they raise SWF capital. This concern is narrow but real: the main sample already excludes investor-country rows with recorded prior activity, but it cannot observe private expansion plans. The within-deal design, no-prior-entry restriction, destination-year fixed effects, and country-pair fixed effects narrow the concern without eliminating it. Appendix Table 17 provides a complementary destination-fixed benchmark. When the comparison is tied to the main mechanism sample and tightened on observable support, the average SWF-country level premium is small and sensitive. This reinforces the paper's interpretation that the evidence is not a blanket SWF-home-country level effect; it is the within-deal outside-option slope.

The second concern is that the result is an artifact of investor labels or concentrated support. Appendix Table 13 randomly reassigns SWF labels among investors in the same financing round while holding fixed the deal, investor home countries, valuation discount, and the number of SWF investors. The observed SWF×valuation-discount coefficient lies outside the placebo distribution from 1,000 within-deal reassignments, so the pattern is not reproduced by arbitrary same-round SWF labels. Appendix Figure 4 then drops each SWF home country in turn. The coefficient remains positive and statistically significant under every omission. The estimate moves most when Singapore or the UAE is omitted, reflecting their large share of SWF investor–deal rows and new-entry events. Appendix Table 12 similarly shows that the coefficient remains positive under every

Table 4: Strategic Value and the Outside-Option Slope

	Export Disadvantage			Prior SWF Sector Tilt		
	(1) Level	(2) + VD	(3) Interaction	(4) Level	(5) + VD	(6) Interaction
SWF × Strategic Value	-0.0213	-0.0371	-0.0455	-0.0066	-0.0113	-0.0154
	(0.0256)	(0.0324)	(0.0344)	(0.0119)	(0.0116)	(0.0126)
SWF × Val. Discount		0.0560***	0.0178		0.0563***	0.0581***
		(0.0199)	(0.0244)		(0.0202)	(0.0204)
SWF × Val. Discount × Strategic Value			0.0569*			0.0165
			(0.0328)			(0.0106)
Implied SWF × Val. Discount slope			0.0747***			0.0746***
			(0.0253)			(0.0274)
Outcome	New Entry	New Entry	New Entry	New Entry	New Entry	New Entry
Deal-by-year FE (deal FE)	Yes	Yes	Yes	Yes	Yes	Yes
Investor-home-country × deal-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Investor-home-country × target-HQ-country FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Company	Company	Company	Company	Company	Company
Observations	3,151	3,151	3,151	3,174	3,174	3,174

Notes: Linear probability models estimated at the investor–deal level; each observation is an investor in a financing round, matched to that investor's home country. The dependent variable is new entry into the investor's home country within five years, conditional on no prior activity there before the focal deal. Columns (1)–(3) use export disadvantage as the strategic-value proxy, equal to one for SWF rows when the SWF home country's mapped sector export RCA is below one and zero otherwise; these columns require nonmissing early export RCA for the SWF country–sector cell. Export RCA is the geometric mean of mapped goods-plus-services RCA over 2005–2007; RCA above one means the sector's export share exceeds the world benchmark. Columns (4)–(6) use prior individual-SWF sector tilt as the strategic-value proxy. Sector tilt is the individual SWF's prior cumulative cross-border sector share minus the prior non-government deep-pocket benchmark share; the variable is not standardized, and one unit equals 10 percentage points. Valuation discount is standardized. The interaction columns include the lower-order SWF×strategic-value and SWF×valuation-discount terms. The implied slope is the SWF×valuation-discount slope evaluated at export RCA below one in Column (3) and at a +10 percentage-point prior tilt in Column (6). Deal fixed effects are equivalent to deal-by-year fixed effects because each deal occurs in one year. All columns include deal fixed effects, investor-home-country×deal-year fixed effects, and investor-home-country×target-HQ-country fixed effects. SE clustered by company. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

sector omission, with the largest sensitivity coming from Consumer Products and Services.

The third concern is measurement and specification sensitivity. Appendix Table 16 shows that the result is not driven by mechanically overlapping same-country non-SWF co-investors: estimates remain positive when those rows are kept and when entire rounds containing such co-investors are dropped. Appendix Table 14 shows that the valuation-discount result is stable to alternative tail treatment, and Appendix Table 15 shows positive estimates under 3-, 5-, and 7-year outcome windows and under minimum-follow-up restrictions.

These checks do not turn the PitchBook setting into a natural experiment. The evidence instead narrows the concern: the average SWF-country level effect is weak once support is tightened; the within-deal gap rises with recipient outside-option weakness in a no-prior-entry sample; the slope is strongest where the sovereign investor plausibly values new home-country links; and random same-round SWF labels do not reproduce the pattern. I next turn to crisis-era bank recapitalizations, where pre-crisis write-down exposure provides sharper variation in recipients' demand for sovereign capital.

4 Directed Lending after Bank Recapitalizations During the Crisis

The bank setting provides corroborating micro evidence on the same two margins: recipient need for sovereign capital and sovereign value from home-country financial links. During the 2007–2008 financial crisis, banks' pre-crisis need for outside capital varied sharply with write-down exposure on mortgage-backed and related structured securities, while recapitalizing SWF home countries were generally not export specialists in financial services. In a bank–country–quarter syndicated-loan panel built for 29 globally systemically important banks, I find that high-write-down banks increased syndicated-loan activity toward SWF home countries after 2007Q3, relative to banks with smaller write-downs.

4.1 Data and Empirical Design

Data. I assemble a 2005Q1–2008Q4 bank–country–quarter panel of cross-border syndicated lending from Refinitiv DealScan. Appendix B.3 details the panel construction, parent-bank assignment, and loan-term variables. The bank universe is externally defined by the 2011 Financial Stability Board list of global systemically important banks. The bank-level first-stage sample contains 30 banks, five of which received SWF equity during the 2007–2008 financial crisis. In the

realized DealScan lending panel, Wachovia does not appear as a separate parent after its late-2008 acquisition by Wells Fargo, so the lending regressions use 29 bank parents: five treated and 24 controls.

Syndicated lending is sparse at the bank–country–quarter level, so I use two outcomes: an extensive-margin indicator for whether lending begins and an intensive-margin log deal count among cells with positive lending. I do not use allocated loan volume as an outcome because DealScan reports tranche commitments at the syndicate level; mapping dollar amounts to parent banks requires allocation rules, whereas bank participation and deal counts are directly observed. The realized panel contains 163 borrower destination countries, of which 14 are effective SWF-status destinations.

SWF equity injections. Five banks received equity injections from eight SWFs across seven SWF countries, for a total of ten events. I define 2007Q3–2008Q1 as the clean recapitalization window. Banks first reported large structured-credit write-downs in 2007Q3, and SWF equity injections began in 2007Q4. I end the treatment window in 2008Q1 to avoid contamination from later government recapitalization programs and late-crisis private placements.[18] This period also corresponds to the interval in which SWFs were a major source of external recapitalization, providing roughly 39% of all bank capital raised (International Monetary Fund, 2008). Table 5 lists the SWF injection events and the bank write-down ratios used in the exposure variable.

Key regressors. I measure bank capital need with WriteDownRatio_b, defined as cumulative structured-credit write-downs in 2007Q3 and 2007Q4 divided by 2006 common equity.[19] Higher values indicate a larger crisis-era hit to bank capital.

SWFStatus_c indicates whether country c was home to an active cross-border SWF as of 2006. This is an ex ante destination-level treatment: it classifies countries by the pre-crisis presence of sovereign investors, not by whether a particular bank ultimately received capital from that country. The baseline set contains 15 countries: the seven countries that injected equity into treated banks plus eight additional countries with documented pre-2007 cross-border private-market activity.[20]

[18] The U.S. Troubled Asset Relief Program and the U.K. bank rescue scheme both began in 2008Q4. Once government equity became available, it became difficult to separate the lending response to SWF capital from the response to public recapitalization. Barclays is the main example: its late-2008 capital raise falls outside the clean window. I therefore keep Barclays in the control group rather than treat it as exposed, and the results are robust to dropping it.

[19] The Bloomberg write-down tracker compiles quarterly mark-to-market losses on subprime RMBS, CDOs, CMBS, leveraged loans, Alt-A securities, credit default swaps, and SIVs reported by financial institutions in their public filings.

[20] The seven injection countries are Singapore, the UAE, Kuwait, Qatar, Saudi Arabia, China, and South Korea. The eight additional countries are Bahrain, Australia, Oman, Malaysia, New Zealand, Brunei, Libya, and Algeria. Norway, Kazakhstan, and the United States are excluded from the baseline definition.

Libya has no realized syndicated-loan observations in the DealScan panel, so the estimating sample contains 14 effective SWF-status destinations.

Because the bank outcome is syndicated lending, SWFStatus_c also has a strategic-value interpretation: it marks destinations where sovereign investors may value new financial-intermediation links. Among the effective SWF-status destinations with early financial-services export-RCA data, seven of eight have RCA below one, meaning that financial services accounted for a smaller share of their exports than of world exports.[21] I therefore interpret SWFStatus_c as a broad ex ante marker for sovereign-capital destinations where financial links may have strategic value, not as a direct measure of realized bank–SWF relationships.

Post_t equals one in quarters at or after 2007Q3. I use 2007Q3 as the cutoff because large structured-credit write-downs first became public in that quarter and recapitalization negotiations began before most SWF injections formally closed in 2007Q4 or 2008Q1. This dating captures the onset of the crisis shock without conditioning on realized bank–SWF match timing. The results are robust to using 2007Q4 or 2008Q1 instead.

Specification and identification. SWF equity receipt is endogenous at the bank level, so I estimate a reduced-form design that interacts bank write-down severity, destination-country SWF status, and the crisis cutoff. Write-downs reflect pre-crisis portfolio exposure and mark-to-market losses rather than country-specific lending choices, so WriteDownRatio_b is plausibly exogenous to the cross-country allocation of lending. SWFStatus_c is defined ex ante using countries with active pre-crisis SWFs. The design is therefore an intent-to-treat specification: it uses broad SWF-destination exposure rather than only the ten realized bank–SWF-country injection pairs.[22] The estimating equation on the bank–country–quarter panel is

$$\begin{aligned} Y_{bct} = {} & \beta \left(\text{WriteDownRatio}_b \times \text{SWFStatus}_c \times \text{Post}_t\right) \\ & + \sum_{\ell} \gamma_\ell \left(\text{WriteDownRatio}_b \times X_{bc}^{\ell} \times \text{Post}_t\right) + \alpha_{bc} + \alpha_{bt} + \alpha_{ct} + \varepsilon_{bct}. \end{aligned} \tag{13}$$

where Y_{bct} is new entry or log deal count on cells with positive lending. I do not use allocated loan volume as an outcome because DealScan reports tranche commitments at the syndicate level; mapping dollar amounts to parent banks requires allocation rules, whereas bank participation and

[21] Early financial-services export RCA is measured over 2005–2007 using the same goods-plus-services RCA construction as in the PitchBook section. The seven RCA-below-one countries with available data are Australia, China, Kuwait, Malaysia, New Zealand, Oman, and South Korea; Singapore is the RCA-above-one case.

[22] In the estimation window, the realized G-SIB panel contains 2,664 bank–country pairs, including 346 pairs involving SWF-status destinations. The full-controls specification uses 2,465 bank–country pairs and retains all 346 SWF-status pairs.

deal counts are directly observed. The log-count specification conditions on positive lending, so it describes intensive-margin changes among active bank–country–quarter cells; the new-entry outcome captures the extensive margin.

β asks whether, after 2007Q3, lending activity rises more toward SWF-status destinations for high-write-down banks than for low-write-down banks. $\mathbf{X}_{bc}$ is a vector of pair-level controls at their 2006 values, including the pre-crisis lending share, FTA, common language, and political distance, each interacted with WriteDownRatio_b and Post_t. Bank×country fixed effects absorb time-invariant bilateral relationships, bank×quarter fixed effects absorb bank-specific supply shocks, and country×quarter fixed effects absorb destination-specific demand shocks.[23] Appendix Figure 5 shows that WriteDownRatio is balanced on pre-crisis bank characteristics: none of the five standardized covariates is significant at the 5% level. The identification assumption is that, conditional on these fixed effects and controls, high-write-down banks would not otherwise have increased lending disproportionately toward SWF-status countries after 2007Q3.

Table 5: SWF Equity Injections and Bank Write-Down Ratios

Bank	SWF investor	SWF country	Announcement quarter	Injection size ($bn)	Write-down ratio
Citi	ADIA	UAE	2007Q4	7.50	0.199
Merrill Lynch	Temasek	Singapore	2007Q4	4.40	0.703
Morgan Stanley	CIC	China	2007Q4	5.60	0.292
UBS	GIC	Singapore	2007Q4	9.70	0.435
UBS	Saudi	Saudi Arabia	2007Q4	1.75	0.435
Citi	GIC	Singapore	2008Q1	6.88	0.199
Citi	KIA	Kuwait	2008Q1	3.00	0.199
Credit Suisse	QIA	Qatar	2008Q1	3.00	0.255
Merrill Lynch	KIA	Kuwait	2008Q1	2.00	0.703
Merrill Lynch	KIC	South Korea	2008Q1	2.00	0.703

Note: Panel A reports SWF bank recapitalization events in the clean 2007Q3–2008Q1 window. Injection size is in USD billions. Panel B reports the write-down ratio used in the exposure variable, defined as cumulative 2007Q3–2007Q4 structured-credit write-downs divided by 2006 common equity. Full summary statistics are in Appendix D.

4.2 Directed Lending

Validating the capital-need proxy. Table **??** shows that banks with larger crisis write-downs were more likely to receive SWF equity. In the 30-bank G-SIB cross-section, a one-standard-deviation increase in WriteDownRatio (SD $\approx$ 0.149) is associated with about a 31-percentage-point

[23] Without country×quarter fixed effects, the coefficient on SWFStatus×Post is negative, reflecting the post-crisis contraction in cross-border bank lending (Cetorelli and Goldberg, 2011; De Haas and Van Horen, 2013). The full specification absorbs this aggregate pullback and isolates the relative increase toward SWF-status countries among high-write-down banks.

increase in the probability of receiving an SWF injection.[24] This pattern supports interpreting write-down severity as a bank-level proxy for demand for sovereign capital.

Table 6: Bank Write-Downs and SWF Recapitalization

	P(Injection) (1)	asinh(Total Amt.) (2)
WriteDownRatio	2.095**	5.830**
	(0.956)	(2.570)
Banks (total)	30	30
Treated banks	5	5
R^2	0.682	0.661
SE	HC3	HC3

Note: Cross-sectional bank-level OLS on the 30-bank G-SIB universe from the Financial Stability Board's 2011 list. The unit of observation is a bank. The outcome in Column (1) is an indicator for receiving any SWF equity injection. The outcome in Column (2) is asinh(total SWF injection amount, USD billions) across the clean 2007Q4–2008Q1 SWF injection window. WriteDownRatio is measured in raw units on a 0–1 scale. Standard errors are heteroskedasticity-robust HC3, used because clustering is uninformative in this small cross-section. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Main results. Table 7 shows that high-write-down banks increased lending activity toward SWF-status destinations after the crisis cutoff. The effect appears on both margins: banks became more likely to begin lending in SWF-status countries, and among positive-lending cells they increased deal frequency. This is the bank-setting analogue of the model's outside-option prediction. The relevant object is not an unconditional shift toward SWF-status countries, but whether the SWF-status lending tilt rises with recipient need for sovereign capital, proxied by write-down severity.

The estimates are stable after accounting for pre-crisis lending orientation. Columns (2) and (5) add WriteDownRatio×Pre-share×Post, where Pre-share is the bank–country lending share before the cutoff. This addresses the concern that high-write-down banks were simply expanding in destinations where they were already active before the crisis. Columns (3) and (6) further add regional trade agreement (FTA), common-language, and political-distance controls, fixed at 2006 and interacted with WriteDownRatio and Post. In the full-control specifications, the new-entry coefficient is 0.028 and the log-count coefficient is 1.144. A one-standard-deviation increase in WriteDownRatio, 0.152 in the realized panel, implies about 0.17 log points, or roughly 19%, higher deal counts among positive-lending cells.[25]

[24] As in any linear probability model, fitted probabilities can exceed the unit interval at extreme write-down values in this small sample. The 0.149 standard deviation is computed across the 30-bank bank-level universe; the corresponding realized-panel bank-level standard deviation is 0.152.

[25] A placebo-destination exercise that draws 1,000 non-SWF country sets gives a right-tail randomization-inference p-value of 0.074 and a two-sided p-value of 0.138 for the full-controls log-count coefficient. I therefore read the bank evidence as directionally consistent but more finite-sample sensitive than the PitchBook co-investment evidence.

Table 7: Bank Write-Down Ratios, SWF-Status Countries, and Syndicated Lending Activity

	New Entry			log(Count)		
	(1)	(2)	(3)	(4)	(5)	(6)
WD × SWFStatus × Post	0.037***	0.036***	0.028***	1.114***	1.010***	1.144***
	(0.007)	(0.007)	(0.008)	(0.308)	(0.330)	(0.381)
WD × Pre-share × Post	–	-0.027*	-0.024	–	-1.635**	-1.508*
		(0.013)	(0.048)		(0.771)	(0.824)
Add. controls (FTA, language, pol. dist.)	–	–	✓	–	–	✓
Bank×Country FE	✓	✓	✓	✓	✓	✓
Bank×Quarter FE	✓	✓	✓	✓	✓	✓
Country×Quarter FE	✓	✓	✓	✓	✓	✓
SE clustered by bank	✓	✓	✓	✓	✓	✓
Observations	37,296	37,296	34,510	10,761	10,761	10,010
R^2	0.260	0.260	0.268	0.809	0.809	0.813

Note: Bank–country–quarter regressions estimated within $[-8, +5]$ quarters of 2007Q3. The treatment variable is $\text{WriteDownRatio}_b \times \text{SWFStatus}_c \times \text{Post}_t$, where Post_t equals one from 2007Q3 onward. Columns progress within each outcome group: Columns (1) and (4) are baseline specifications; Columns (2) and (5) add $\text{WriteDownRatio}_b \times \text{Pre-share}_{bc} \times \text{Post}_t$, where Pre-share is the bank–country average quarterly lending share over the 12 quarters before 2007Q3; Columns (3) and (6) add $\text{WriteDownRatio}_b \times X_{bc} \times \text{Post}_t$ controls, where X_{bc} includes Pre-share, CEPII Gravity's FTA (regional-trade-agreement) indicator, CEPII Gravity's common-official-language indicator, and UN-voting ideal-point distance between the borrower country and the bank parent country, all fixed at pre-crisis values. The new-entry outcome in Columns (1)–(3) is an LPM equal to one in the first post-cutoff quarter with positive lending for bank–country pairs with zero lending in all eight pre-cutoff quarters in the estimation window. The log-count outcome in Columns (4)–(6) is log(deal count), estimated on cells with positive deal counts. All columns include bank×country, bank×quarter, and country×quarter fixed effects. SE clustered by bank. Significance levels: $^{*}\ p < 0.10$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

Dynamic evidence. Figure 1 reports the binned event study for log deal count using the baseline specification, with the quarter immediately before the crisis cutoff as the omitted bin.[26] Each coefficient is the event-time slope on $\text{WriteDownRatio}_b \times \text{SWFStatus}_c$ relative to the omitted quarter. The pre-period coefficients are statistically indistinguishable from zero and do not show a systematic upward trend before the cutoff. After the cutoff, the coefficients turn positive: 0.755 in the first post-cutoff bin, 1.655 in quarters 2–3, and 1.203 in quarters 4–5. The pattern points to a sustained post-cutoff increase in deal frequency toward SWF-status destinations among banks with larger write-down exposure, rather than a pre-existing upward trend.

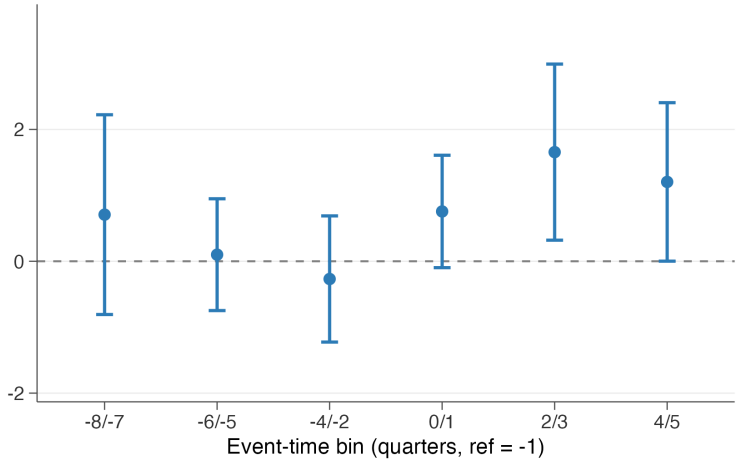


Figure 1: Binned Event Study: Deal Count

Notes: The figure plots coefficients on $\text{WriteDownRatio}_b \times \text{SWFStatus}_c$ by binned event time relative to 2007Q3. The outcome is log(deal count), restricted to bank–country–quarter cells with positive deal counts. The omitted reference bin is $t = -1$, the quarter immediately before 2007Q3. Error bars are 95% confidence intervals, with SE clustered by bank. The baseline specification includes bank×country, bank×quarter, and country×quarter fixed effects.

Threats and residual scope. The bank design leaves three main concerns: bank-side selection into write-down exposure, destination-side definition of SWF-status countries, and finite-sample concentration in a small set of crisis destinations. Appendix Figure 5 addresses the first concern by showing that write-down exposure is not systematically related to observable pre-crisis bank characteristics, including the pre-crisis share of lending to SWF-status countries. The pre-share controls further address the possibility that high-write-down banks were already more exposed to SWF-status destinations, while the bilateral control bundle allows the post-cutoff write-down gradient to vary with standard country-pair frictions. The event study does not show an upward

[26] I focus the main dynamic figure on log deal count because it is the most stable intensive-margin response. I aggregate individual quarters into two-quarter bins because quarterly bank–country lending is sparse, making quarter-by-quarter estimates noisy (Schmidheiny and Siegloch, 2023).

pre-trend in the log-count outcome. Appendix Table 19 addresses cutoff timing by moving the post date from 2007Q3 to 2007Q4 or 2008Q1 while holding the sample window fixed. The log-count response remains positive and significant under both later cutoffs, although the new-entry estimate is more timing-sensitive.

The SWF-status definition is addressed in two ways. First, SWFStatus_c is defined ex ante using pre-crisis sovereign-investor presence, not realized bank–SWF matches. Second, Appendix Table 18 replaces the baseline definition with the 20 PitchBook SWF home countries; the coefficients remain positive, with the strongest response again on the log-count margin. The timing check points in the same direction but is strongest for deal frequency.

The remaining concern is finite-sample concentration. Appendix Figure 6 drops each SWF-status destination in turn and re-estimates the full-controls log-count specification. The coefficient remains positive in every omission and remains statistically significant except when Australia is omitted. Because Australia is part of the ex ante SWF-destination set but is not one of the realized sovereign capital providers in the crisis recapitalization window, this sensitivity is best read as a precision issue rather than evidence that a single capital-provider country drives the result. Appendix Table 20 reinforces this caution: the actual log-count coefficient is positive, but the randomization-inference exercise gives a right-tail p-value of 0.074 and a two-sided p-value of 0.138. I therefore use the bank setting as corroborating evidence for the outside-option margin, not as a standalone estimate of the average effect of sovereign capital in banking.

The two micro settings point to the same outside-option margin. The core prediction is not an unconditional SWF-country effect. It is that directed activity toward SWF-relevant destinations increases with recipient outside-option weakness, measured by valuation discount in private-companies and by write-down severity in the banks. PitchBook additionally shows that this slope is strongest where the SWF-country relationship is plausibly more valuable.

5 Conclusion

Sovereign capital does more than finance firms. Conditional on an observed investment relationship, it can support directed activity toward the financier's home country. The mechanism is relational: recipients with weaker outside options place greater value on preserving the relationship, and directed activity is most likely where the home-country link is plausibly valuable to the sovereign investor.

The evidence comes from two complementary micro settings. In private-company investments, the average SWF-country entry gap is not stable, but the within-deal gap rises sharply with recipient

outside-option weakness and is strongest where the SWF home country lacks export strength. In the bank setting, high-write-down banks increase syndicated-loan activity toward SWF-status destinations on both extensive and intensive margins. Together, the results point to a conditional geofinance mechanism: sovereign-capital relationships are followed by directed activity where relationship incentives should have the most bite.

The evidence has limits. The estimates identify directed responses around observed SWF investments, not the effect of changing sovereign-capital policy or the matching process that forms SWF relationships. SWF transactions are large and infrequent, so treatment variation is limited in each setting. The analysis also focuses on private investments and crisis recapitalizations; passive public-market portfolios remain outside the scope of the paper.

The framework developed here, geofinance, may extend beyond sovereign wealth funds. It applies most naturally when a financier can exchange capital, relationship access, or market support for destination-specific real activity. Development finance institutions, state-owned enterprises, export-credit agencies, and strategic corporate investors are natural settings in which the same logic may operate.

Appendix Overview

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A Model Derivations and Scope

A.1 Continuation Value and Outside Options

This subsection gives a simple microfoundation for the continuation value $T_i(\omega_i)$ used in Section 2. Consider a two-period relationship after an SWF investment relationship has been formed. In the empirical settings below, this relationship is created by SWF equity investment. In period 1, the SWF requests directed business activity k_{is}, where "request" is reduced-form language for an implicit relationship incentive rather than an observed contractual requirement. If the firm delivers the activity, it preserves access to future sovereign relationship support in period 2. If it does not deliver, the SWF terminates the relationship and the firm relies on its outside option.

Let $V_i^S(\omega_i)$ and $V_i^O(\omega_i)$ denote the discounted period-2 values with and without the SWF relationship. The continuation value is

$$T_i(\omega_i) = V_i^S(\omega_i) - V_i^O(\omega_i), \tag{14}$$

where any common survival probability or scale of the financing relationship is absorbed into T_i. The maintained assumption in the main text,

$$T_\omega > 0,$$

says that preserving the relationship is more valuable when the firm's outside option is weaker. In the two-period notation, this is equivalent to

$$T_\omega = V_\omega^S - V_\omega^O > 0.$$

The condition holds when outside-option weakness lowers the value of the outside option more than it lowers the value of preserving the SWF relationship.

I decompose the relationship into a firm-level continuation value $T_i(\omega_i)$ and a destination-specific relationship-intensity parameter ψ_{is}. The former captures the value of preserving access to the SWF relationship. The latter captures how useful that relationship is for lowering the cost of activity toward a particular destination. Any destination-specific market-access component is assigned to ψ_{is}, not to T_i.

The object $T_i(\omega_i)$ is not a current-round price concession. It is the value of preserving future access to the relationship. This distinction matters for the empirical design: same-round investors may face common financial terms, while the SWF relationship can still create continuation value

for the recipient firm. Evidence on follow-on financing, repeat interaction, and other persistent ties therefore supports the premise that the relationship has value beyond the initial round.

The scalar ω_i collects sources of outside-option weakness. It can reflect costly external finance, limited investor competition, balance-sheet pressure, urgency, opacity, risk, or related frictions. Different empirical settings can therefore use different proxies for the same theoretical object. In the PitchBook setting, valuation discount summarizes weak outside options relative to sector-year peers. In the crisis-bank setting, write-down severity proxies for outside-option weakness created by balance-sheet distress.

A useful special case is a period-2 financing need x_i. If outside-option weakness is specialized to a literal outside financing rate r_i, so that $\omega_i = r_i$, and preserving the SWF relationship lets the firm finance this need at a rate governed by ρ_s, then in the interior case $r_i > \rho_s$, with x_i held fixed, a more structural version can write

$$T_i(r_i; x_i, \rho_s) = x_i(r_i - \rho_s). \tag{15}$$

This special case recovers the original cheap-capital wedge as one possible source of continuation value, with $T_r = x_i > 0$. The main text keeps $T_i(\omega_i)$ more general because the relationship may also include certification, guarantees, follow-on investment, or other forms of future sovereign relationship support.

The period-1 directed action is acceptable to the firm when the private accommodation cost does not exceed this continuation value:

$$D_i(k_{is}; \psi_{is}) \leq T_i(\omega_i). \tag{16}$$

This is Equation (7) in the main text.

The main text distinguishes mission-relevant financier rows from financial-only rows through the slope of the financier's payoff from directed activity. When $G_k = 0$, the financier may still invest for financial return, but it does not request directed activity and realized directed activity is zero. When $G_k > 0$, the financier requests the implementable activity described by the constraint above.

A.2 Proof of Proposition 1

For notation, let j denote a generic investor home country or destination. The SWF-home-country case in the main text sets $j = s$. The same notation can also represent a same-round commercial co-investor's home country h in the within-deal comparison. Assume $D_i(k; \psi)$ and $T_i(\omega)$ are

continuously differentiable in the relevant interior region, and that D_k is differentiable along the implementability locus.

Let

$$F(k_{ij}^{\max}, \omega_i, \psi_{ij}) = D_i(k_{ij}^{\max}; \psi_{ij}) - T_i(\omega_i).$$

All derivatives of D_i are evaluated at $(k_{ij}^{\max}, \psi_{ij})$, and T_ω is evaluated at ω_i. At an interior binding solution, $F = 0$. Since $D_k > 0$, the implicit function theorem gives

$$\frac{\partial k_{ij}^{\max}}{\partial \omega_i} = \frac{T_\omega}{D_k} > 0, \tag{17}$$

$$\frac{\partial k_{ij}^{\max}}{\partial \psi_{ij}} = -\frac{D_\psi}{D_k} > 0. \tag{18}$$

Setting $j = s$ gives the comparative statics in Proposition 1.

For the interaction between outside options and relationship value, differentiate Equation (17) with respect to ψ_{ij}. Since T_i is a relationship-continuation value and does not depend directly on the destination-specific ψ_{ij},

$$\frac{\partial^2 k_{ij}^{\max}}{\partial \omega_i \, \partial \psi_{ij}} = -\frac{T_\omega}{D_k^2} \frac{d}{d\psi_{ij}} D_k(k_{ij}^{\max}; \psi_{ij}).$$

The marginal-cost complementarity condition in the main text states that the total derivative along the implementability locus satisfies

$$\frac{d}{d\psi_{ij}} D_k(k_{ij}^{\max}; \psi_{ij}) < 0.$$

This total derivative is

$$\frac{d}{d\psi_{ij}} D_k(k_{ij}^{\max}; \psi_{ij}) = D_{kk} \frac{\partial k_{ij}^{\max}}{\partial \psi_{ij}} + D_{k\psi}.$$

Together with $T_\omega > 0$ and $D_k > 0$, this implies

$$\frac{\partial^2 k_{ij}^{\max}}{\partial \omega_i \, \partial \psi_{ij}} > 0.$$

A.3 Empirical Implications

The comparative statics imply two broad empirical predictions for mission-relevant rows with $G_k > 0$. For financial-only rows with $G_k = 0$, realized directed activity is zero and the derivatives

of realized directed activity are zero. First, holding relationship intensity fixed, directed activity is increasing in recipient outside-option weakness:

$$\frac{\partial k_{is}^{\max}}{\partial \omega_i} > 0.$$

This implication is common across the paper's empirical settings. The PitchBook tests use valuation discounts as the proxy for ω_i. The bank tests use crisis write-down severity as the proxy for the same object.

Second, when the empirical design observes activity toward multiple investor home countries for the same recipient, the PitchBook comparison can be read as a mission-relevant SWF row relative to ordinary co-investor rows. Let s denote the SWF home country and h the home country of a same-round non-SWF co-investor. The observed outcome is entry into an investor home country; the model object is the directed component above the commercial benchmark. If the co-investor is financial-only with respect to destination h, then its payoff slope on directed activity is $G_k = 0$ and the model predicts no directed activity on that row. If the SWF has a strategic objective over activity toward s, then $G_k > 0$, and realized directed activity is increasing in the implementability frontier $k_{is}^{\max}$.

In the benchmark boundary case,

$$k_{is}^{*} = k_{is}^{\max}, \qquad k_{ih}^{*} = 0,$$

so the SWF–co-investor directed-activity gap is increasing in recipient outside-option weakness:

$$\frac{\partial}{\partial \omega_i}\left(k_{is}^{*} - k_{ih}^{*}\right) = \frac{T_\omega}{D_k} > 0.$$

This is the model counterpart of the within-deal PitchBook slope: the SWF-relative entry gap should rise when the recipient's outside option is weaker.

Relationship usefulness governs where this slope is strongest. A higher ψ_{is} raises $k_{is}^{\max}$, and under marginal-cost complementarity it also raises the outside-option slope. More generally, if an ordinary investor-country link also creates some implementable destination-specific activity, it can be represented by $k_{ih}^{\max}$ with relationship usefulness ψ_{ih}. In that case, when

$$\psi_{is} > \psi_{ih},$$

the SWF–co-investor gap rises more steeply with ω_i. To see this, use Equation (17) for each

destination. The derivative of the implementability-frontier gap is

$$T_\omega \left[\frac{1}{D_k(k_{is}^{\max}; \psi_{is})} - \frac{1}{D_k(k_{ih}^{\max}; \psi_{ih})} \right].$$

Marginal-cost complementarity implies that the marginal accommodation cost is lower in the higher-ψ destination, provided the condition holds over the relevant interval between ψ_{ih} and ψ_{is}. Thus, when $\psi_{is} > \psi_{ih}$, the expression is positive. This extension maps to the PitchBook driver–channel tests; the bank setting instead uses the first prediction, with write-down severity measuring outside-option weakness.

A.4 Corners and Scope

The main text states the clean interior case. The corner cases have the same interpretation but weaker notation.

First, if the financier's payoff from directed activity is flat, $G_k = 0$, the financing relationship can still form for financial reasons, but the model predicts no directed activity on that row. This is the formal version of an SWF or co-investor relationship with no relevant nonfinancial objective over the destination.

Second, if the SWF's requested activity is below $k_{is}^{\max}$, the firm's incentive constraint is slack. The comparative statics then describe the upper bound on directed activity rather than the realized choice. More generally, suppose realized directed activity follows a monotone interior request rule $k^* = g(k^{\max})$. If $g' > 0$, the level comparative statics of $k^{\max}$ carry over to k^*. The interaction sign is not automatic:

$$\frac{\partial^2 k^*}{\partial \omega \, \partial \psi} = g'' \frac{\partial k^{\max}}{\partial \omega} \frac{\partial k^{\max}}{\partial \psi} + g' \frac{\partial^2 k^{\max}}{\partial \omega \, \partial \psi}.$$

The second term is positive under Proposition 1, but the first term has the sign of g''. Thus an interior request rule preserves the interaction prediction only with additional curvature, such as convex g. In the current data, an interior request is also observationally equivalent to a lower implementability frontier, so it adds realism but no separate testable margin. The main text therefore uses the boundary rule $k^* = k^{\max}$ on mission-relevant rows, which keeps the interaction prediction tied directly to Proposition 1.

Third, if the relationship has no continuation value, $T_i(\omega_i) = 0$, no positive directed activity can be sustained. Since $D_i(0; \psi) = 0$ and $D_k > 0$ for $k > 0$, $D_i(k; \psi) > 0$ for any $k > 0$. With indivisible actions or fixed setup costs, small positive continuation values may also leave observed directed activity at zero.

Fourth, relationship scale can be folded into T_i. If a larger deal or a larger recipient relationship raises continuation value proportionally, write $T_i(\omega_i) = \tau_i \widetilde{T}_i(\omega_i)$, with $\tau_i > 0$. This expands $k_{is}^{\max}$, but it does not require a separate proposition unless the empirical design separately tests variation in relationship scale. If relationship scale is systematically correlated with outside-option weakness, empirical gradients may combine outside-option and relationship-scale channels.

Finally, the model is conditional on the SWF relationship being formed. It does not model two-sided matching between SWFs and recipient firms, SWF portfolio choice, or investor-specific contract pricing. It also does not separately identify the firm-side primitives D_i, T_i, and ψ_{is}, or the financier payoff G_s. The role of the model is narrower: conditional on the SWF relationship being formed, it shows how a sovereign investment relationship can make directed business activity implementable, when a financier requests that activity, and how implementability varies with recipient outside options and SWF-country relationship intensity.

B Data Construction

B.1 PitchBook Co-Investment Panel

This subsection documents the PitchBook panel behind Section 3. The construction choices are part of the empirical design: the sample keeps deals with both SWF and non-SWF investors, drops same-country comparisons that would mechanically favor the SWF, and uses an exact normalized-name bridge to PitchBook investor IDs to avoid fuzzy-name false positives.

Source tables. I link five PitchBook tables: *Deal* (2.5M transactions with deal date, size, post-money valuation, revenue, type, and status), *Investor* (400K profiles with type, headquarters country, and AUM), *DealInvestorRelation* (3.0M investor–deal participation records), *CompanyInvestorRelation* (2.4M company–investor relationship records), and *Company* (1.0M firms with headquarters country, sector, founding year, and financials). All monetary values are in USD millions.

SWF classification. I start from PitchBook's "Sovereign Wealth Fund" investor type, which includes 98 investors across 51 countries. I then exclude 28 entities that are not SWFs, such as state pension funds, regional development agencies, and charitable foundations, and add 7 government entities that function as de facto SWFs, including the Future Fund of Australia, the Hong Kong Monetary Authority, and the Monetary Authority of Singapore. The resulting classification is then filtered by the co-investment and valuation-discount regression sample; 20 SWF home countries

contribute SWF investor–deal observations to the main regression sample. The replication files report the full investor list.

Co-investment identification. A deal enters the co-investment sample if it includes at least one SWF and at least one deep-pocket non-SWF investor, defined as PE/buyout, VC, asset manager, hedge fund, investment bank, university, family office, growth/expansion, government investor or mutual fund. Of 2.5M completed deals with valid dates, 6,789 satisfy this filter.

Panel filters.

1. *Investor join*: DealInvestorRelation and CompanyInvestorRelation are linked to Investor by the PitchBook investor identifier. Rows whose investor IDs do not appear in Investor are dropped rather than imputed, which is conservative but avoids assigning SWF status or investor home country using uncertain identifiers.

2. *Target-country assignment*: I use the company-level headquarters country when available. If it is missing, I fall back only to validated site-location tokens: exact country names are accepted, and exact US state names or postal abbreviations are mapped to the United States. Unvalidated strings remain missing.

3. *Same-country drop*: Remove investor–deal pairs where the target headquarters country equals the investor's home country, avoiding the mechanical confound that firms do more business at home.

4. *Same-as-SWF drop*: Remove non-SWF investors from the same country as the deal's SWF, since these cannot contribute clean cross-country within-deal variation.

5. *Both-arm requirement*: After each filter, verify that every deal still contains at least one SWF and one non-SWF row; drop deals that lose an arm.

6. *Contamination filter*: For multi-round companies, drop later-round rows where the *same investor* (by ID) appeared in an earlier round, to avoid double-counting repeat relationships. Later-round rows with new investors are retained.

7. *Deduplication*: Remove exact duplicate investor–deal rows inherited from duplicates in the raw DealInvestorRelation table.

The final panel contains 9,646 investor–deal pairs across 2,362 deals and 2,308 companies, with 2,677 SWF rows and 6,969 non-SWF rows. Rows with unresolved target country are dropped before the cross-border filters because they cannot establish whether the investor and target are foreign to one another. Most of the attrition from the 6,789 candidate co-investment deals to the final 2,362 deals comes from enforcing clean cross-country comparisons, requiring both investor arms after those exclusions, and dropping contaminated later rounds with repeat investors. The regression samples are smaller because the financing proxies impose additional non-missingness restrictions: the parent valuation-discount sample contains 3,456 investor–deal pairs across 833 deals, the common valuation-discount-plus-dilution sample contains 3,403 pairs across 821 deals, and revenue-scaled proxy diagnostics use the smaller revenue-available subsample. The main new-entry mechanism sample then excludes investor-country rows with recorded prior activity in that country, leaving 3,174 investor–deal pairs across 831 deals.

Outcome construction. I identify expansion events through two relationship routes after linking focal companies to PitchBook investor IDs by exact normalized name: lower-cased, trimmed company name must equal lower-cased, trimmed investor name. In route 1, the panel company appears as a new investor, acquirer, follow-on investor, or add-on sponsor in PitchBook's DealInvestorRelation table for expansion-type deals, including M&A, buyout/LBO, corporate asset purchase, joint venture, PE growth/expansion, corporate, seed, early-stage VC, later-stage VC, and PIPE. In route 2, the panel company appears in CompanyInvestorRelation with an active, former, acquirer, or add-on sponsor relationship. I combine the two routes and deduplicate them on company, target country, and date, which yields 9,731 unique expansion events. Focal IPO and PIPE rounds are excluded from the co-investment panel; PIPE can enter only as a later expansion event. I do not use fuzzy matching, alias expansion, or manual predecessor-name stitching, so any resulting measurement error should attenuate the estimates by missing true expansions rather than inflate them through false matches.

For each investor–deal pair, I construct two outcomes:

- *New entry* (Y_{ext}): equals 1 if the target expanded into the investor's home country within 5 years after the deal, or through the end of the observed expansion window for later deals, and had no prior expansion activity in that country before the deal. The main mechanism regressions are estimated on investor-country rows with no recorded prior activity in that country; rows with pre-deal activity are retained in the broader valuation sample for intensive-margin and prior-orientation diagnostics rather than coded as new-entry controls.
- *Count* (asinh(Count)): inverse hyperbolic sine of the number of expansion events in the

investor's home country over the same observed post-deal window.

Valuation discount. For each deal d in industry sector s at year t:

$$\text{ValDiscount}_d = -\Big(\log(\text{PostVal}_d) - \overline{\log(\text{PostVal})}_{s(d),t(d)} \Big),$$

where the benchmark $\overline{\log(\text{PostVal})}_{s,t}$ is computed from the full PitchBook deal universe, not just the co-investment panel. The sign flip ensures that higher values correspond to lower valuations relative to peers, which I interpret as evidence of weaker outside options, that is, higher ω_i. I winsorize the variable at the 1st and 99th percentiles and standardize it to unit SD. I construct dilution (= dealsize/postvaluation) analogously, winsorize it at the 99th percentile, and standardize it.

Revenue-scaled round measures. Some proxy diagnostics use revenue-scaled round measures. Revenue in PitchBook is deal-specific rather than taken from the static Company.dta snapshot. Some pre-revenue firms, mainly in biotech, mining exploration, and early-stage technology deals, report zero or negative revenue. I exclude those deals from log revenue-scaled calculations and propagate the resulting missing values through the relevant regression samples. This does not affect the main valuation-discount specification.

Pre-deal geographic orientation. For each investor–deal pair, I compute the target company's pre-deal expansion share toward the investor's home country: the number of expansion events in that country during the three years before the deal divided by the total number of expansion events across all countries in the same window. This variable is used in diagnostics on the broader valuation sample. In the main no-prior-history mechanism sample, investor-country rows with recorded pre-deal activity in the investor's home country are excluded.

Table 8 summarizes the final investor–deal panel used in the main PitchBook regressions. It connects the construction steps above to the paper's within-deal design by showing the outcome rates, SWF and non-SWF row counts, and the valuation-discount and dilution measures used in the mechanism checks.

B.2 SWF Participation Patterns

Table 9 reports the descriptive deal-level selection exercise discussed in Section 3. The outcome equals one if any cross-border SWF investor participates in the completed PitchBook deal. This

Table 8: PitchBook Co-Investment Panel: Summary Statistics

	N	Mean	SD	p25	p50	p75
Panel A: Regression Variables (investor–deal level)						
New entry (5yr post-deal)	3,174	0.06	0.24	0.00	0.00	0.00
Expansion count (5yr)	3,174	0.12	0.72	0.00	0.00	0.00
asinh(expansion count)	3,174	0.08	0.34	0.00	0.00	0.00
SWF investor	3,174	0.29	0.46	0.00	0.00	1.00
Valuation discount (std.)	3,174	0.08	0.97	-0.62	0.02	0.71
Dilution (std.)	3,123	0.03	0.99	-0.86	-0.41	1.39
Deal size ($M)	3,123	906.31	2581.83	60.00	180.00	574.90
Pre-acq. geographic share	3,174	0.00	0.00	0.00	0.00	0.00
Baseline (country deal share)	3,174	0.13	0.18	0.01	0.02	0.44
Panel B: Panel Dimensions						
Investor–deal pairs (regression obs.)	3,174					
Deals	831					
Target companies	800					
SWF investor–deal pairs	935 (29.5%)					
Unique SWF investors	42					
SWF home countries	20					
Non-SWF investor–deal pairs	2,239					
SWF Investment Breadth (per SWF investor):						
Deals per SWF	22 (median 5, range 1–243)					
Target countries per SWF	5.9 (median 3)					
Sectors per SWF	3.4 (median 3)					
Panel C: Broader Clean Co-Investment Panel						
Investor–deal pairs	9,646					
Deals	2,362					
Target companies	2,308					
SWF investor–deal pairs	2,677					
Non-SWF investor–deal pairs	6,969					
SWF investors	48					
SWF home countries with any row	24					

Notes: Panel A reports investor–deal level variables used in the main no-prior-history mechanism regressions: new entry and expansion-count outcomes within 5 years of the deal, or through the end of the observed PitchBook expansion window for later deals, the SWF-investor indicator, the standardized valuation discount and dilution measures, deal size in USD millions, and baseline destination activity measures. Panel B reports dimensions for the main no-prior-history mechanism sample with non-missing valuation discount. Panel C reports the broader cleaned co-investment panel before imposing the valuation-discount restriction, with 9,646 investor–deal pairs, 2,362 deals, and 2,308 target companies. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

table characterizes the selected private-market relationships that enter the later mechanism tests; it is not an identification design for directed expansion.

Table 9: Characteristics of Cross-Border Deals Receiving SWF Capital

	Any cross-border SWF participation		
	(1) Firm chars.	(2) + SWF tilt	(3) + RCA < 1
log post-money valuation, std.	0.0231***	0.0222***	0.0221***
	(0.0022)	(0.0019)	(0.0019)
log deal size, std.	-0.0054***	-0.0049***	-0.0048***
	(0.0021)	(0.0019)	(0.0019)
log firm age, std.	-0.0050***	-0.0054***	-0.0053***
	(0.0008)	(0.0007)	(0.0007)
log number of employees, std.	0.0049***	0.0048***	0.0048***
	(0.0008)	(0.0007)	(0.0007)
Lagged aggregate SWF sector tilt, std.		0.0016***	0.0017***
		(0.0005)	(0.0005)
Share of active SWF countries with export RCA < 1, std.			-0.0008
			(0.0006)
Target-HQ country × sector × year FE	Yes	–	–
Year FE	–	Yes	Yes
Coarse deal-type FE	Yes	Yes	Yes
Target geography controls	–	Yes	Yes
SE clustered by company	Yes	Yes	Yes
Mean dep. var.	0.0158	0.0158	0.0158
Observations	94,519	94,462	94,462

Note: Deal-level linear probability models in the completed cross-border PitchBook deal universe. The outcome equals one if any cross-border SWF investor participates in the deal. Coefficients are in probability units, so 0.01 equals one percentage point, and continuous regressors are standardized. Column (1) includes target-HQ-country×sector×year and coarse deal-type fixed effects. Columns (2)–(3) include year and coarse deal-type fixed effects because the sector-level tilt and RCA measures vary at the sector level. Columns (2)–(3) also include controls for target headquarters in an IMF advanced economy and target headquarters in an offshore financial center or unknown jurisdiction. The lower observation count relative to the full cross-border universe reflects complete-covariate availability, especially post-money valuation and employee counts. SE clustered by company. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

B.3 DealScan Syndicated Lending Panel

This subsection documents the construction of the bank–country–quarter syndicated lending panel from Refinitiv DealScan.

Raw data. The source file is the DealScan general-syndicate extract, which contains lender–tranche-level records for syndicated loan facilities worldwide. Each row represents one lender's participation in one tranche. I retain the following fields: lender parent name and operating country, borrower country, deal and tranche identifiers, deal active date, tranche type, tranche amount (USD

converted), lender share (USD), number of lenders, primary role, loan purpose fields, tranche maturity dates, tenor, average life, all-in spread drawn (bps), margin (bps), and fee variables (upfront, commitment, and annual fees in bps).

Lender parent assignment. DealScan assigns each lender to a parent entity. I apply one override: any row whose lender name contains "Merrill Lynch" (case-insensitive) is reassigned to the parent "Merrill Lynch," regardless of DealScan's current parent mapping. This preserves Merrill Lynch as a distinct treated unit in the pre-2008 period rather than merging Merrill-branded subsidiaries into post-acquisition parents such as BofA Securities.

Bank–country lending shares. The main outcomes do not use allocated loan volume. DealScan records lender participation directly, so new entry and deal count can be constructed from observed bank–tranche links. I use DealScan commitment amounts only to construct the pre-crisis bank–country lending-share control. For that control, I use reported lender shares when available and otherwise follow the standard lead-arranger allocation convention in DealScan (Sufi, 2007; Ivashina and Scharfstein, 2010). Because this allocation rule is needed only for the pre-share control, not for the outcomes, the main bank results are not driven by allocated loan-volume measurement.

Aggregation to bank–country–quarter. Deal counts are summed within each (lender parent, borrower country, year-quarter) cell to produce the *book panel*. A *balanced panel* is then constructed by cross-joining all observed (bank, country) pairs with all observed quarters, filling missing cells with zero deal count.

Summary statistics. Table 10 documents the bank–country–quarter panel used in the crisis design. It reports the outcome variables, the ex ante SWF-status indicator, the bank-level write-down ratio, and the pair-level controls used in the fully controlled specification. The table connects the appendix construction to Table 7: the balanced panel contains many zero cells, so the paper reports new entry separately and estimates log count on the positive-lending subsample.

C Additional PitchBook Results

This appendix collects robustness checks and supporting evidence for the PitchBook co-investment results in Section 3. The active checks cover SWF country-sector tilts, follow-on financing, sector heterogeneity, leave-one-SWF-country sensitivity, permutation inference, valuation-discount

Table 10: DealScan Bank–Country–Quarter Panel: Summary Statistics

	N	Mean	SD	p25	p50	p75
Panel A: Regression Variables (bank–country–quarter level)						
Deal count	37,296	1.90	8.44	0.00	0.00	1.00
log(deal count), positive cells	10,761	1.148	1.058	0.000	1.099	1.792
New entry (LPM)	37,296	0.005	0.073	0.000	0.000	0.000
Lending share (within-bank quarter)	37,296	0.011	0.061	0.000	0.000	0.001
Write-down ratio (bank)	37,296	0.096	0.133	0.022	0.065	0.092
SWF status (country)	37,296	0.130	0.336	0.000	0.000	0.000
Post ($\mathbf{1}[t \geq 2007Q3]$)	37,296	0.429	0.495	0.000	0.000	1.000
WD × SWFStatus	37,296	0.013	0.062	0.000	0.000	0.000
WD × Pre-share	37,296	0.0012	0.0102	0.0000	0.0000	0.0001
WD × FTA	37,254	0.022	0.068	0.000	0.000	0.000
WD × Common language	36,960	0.018	0.073	0.000	0.000	0.000
WD × Political distance	34,804	0.164	0.324	0.012	0.060	0.165
Panel B: Panel Dimensions						
Bank–country–quarter observations	37,296					
Banks	29 (5 treated, 24 control)					
Borrower countries	163 total (14 SWF-status)					
Quarters in window	14 ($[-8, +5]$ around 2007Q3)					

Notes: Panel A reports bank–country–quarter level variables used in the main continuous DiD (Table 7). Outcomes are deal count, log deal count on positive cells, and the new-entry LPM. The bank-level write-down ratio and country-level SWF-status indicator define the treatment interaction WD × SWFStatus, and the additional pair-level controls (Pre-share, FTA, common language, political distance) enter the fully saturated specification interacted with Post. Panel B reports panel dimensions: 29 realized G-SIB bank parents (5 treated, 24 control), 163 borrower countries in total (14 SWF-status), and the $[-8, +5]$ quarter window around 2007Q3, that is, eight pre-treatment quarters and six quarters from 2007Q3 through 2008Q4. Significance levels: $^{*}\ p < 0.10$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

winsorization, alternative outcome windows, same-country co-investor handling, and destination-fixed matched comparisons.

C.1 SWF country-sector portfolio tilts

Figure 2 reports sector tilts for the 20 SWF home countries in the PitchBook valuation-discount sample, using a common 2005–2025 base period. For each home country and primary sector, I compute the sector's share of cross-border SWF investor–deal observations for SWFs headquartered in that country and subtract the corresponding share among cross-border investor–deal observations backed by non-government deep-pocket private investors. The measure is count-based, not value-weighted, and is not residualized by year.

The tilts vary sharply across SWF home countries, but they do not map mechanically to home-country revealed comparative advantage. Figure 3 focuses on country–sector cells with large positive tilts and benchmarks each cell against the SWF home country's early revealed comparative advantage (RCA) in the mapped sector. For country c and PitchBook sector s, I compute

$$\mathrm{RCA}_{c,s} = \frac{X_{c,s}/X_c}{X_{W,s}/X_W},$$

where $X_{c,s}$ is the country's mapped goods-plus-services exports in sector s, X_c is total goods-plus-services exports, and W denotes the corresponding world totals. RCA above one means that the sector accounts for a larger share of the country's exports than of world exports. The benchmark uses the geometric mean of annual RCA over 2005–2007, the earliest service-export window with broad country coverage.[27]

The sector mapping is deliberately non-overlapping. For mixed sectors such as IT, mapped goods and services components are summed before forming $X_{c,s}$ and $X_{W,s}$. Goods exports use four-digit SIC codes: Energy uses coal, oil and gas, and petroleum products; Materials uses natural resources, basic materials, and non-pharmaceutical chemicals; B2C uses consumer goods, cosmetics, household appliances, and audio/video goods; B2B uses industrial products, machinery, transport equipment, and non-medical instruments; IT uses computer hardware, communications equipment, and electronic components; and Healthcare uses pharmaceuticals and medical or ophthalmic instruments. Services exports enter through balance-of-payments categories: Financial Services uses financial services only; IT uses telecommunications, computer, and information ser-

[27] World totals are constructed from the same source files used for country totals. Sanity checks confirm that no mapped sector total exceeds the corresponding goods, services, or combined export total. The seven mapped PitchBook sectors cover about 88% of world goods-plus-services exports in 2005–2009, so the RCA denominator remains the full export basket rather than only mapped sectors.

vices; B2B uses other business services; Healthcare uses health services plus health-related travel; and B2C uses travel and personal-cultural services net of health components. This construction is a revealed-comparative-advantage proxy, not a complete production taxonomy.

The benchmark separates high-tilt cells into aligned and non-aligned cases. Most high-tilt cells with available export data have RCA below one. A smaller set lines up with revealed comparative advantage: China overweights Materials, while Oman, Qatar, and the United Arab Emirates overweight Energy. The more common low-RCA cells include Kuwait's finance overtilt, Saudi Arabia's B2C overtilt, and China's energy and B2B overtilts. The narrow reading is that sector tilts proxy SWF-specific sector weights, not a simple rule of investing only where the home country already has an export advantage. In strong sectors, directed business links can complement existing domestic clusters. In weak sectors, they can be read as consistent with diversification or capability-building motives, subject to the coarse PitchBook-sector aggregation.

C.2 Follow-on Financing

Table 11 reports two pieces of evidence on follow-on financing and investor continuation. Panel A asks whether an SWF investor is more likely to return to the same company. Let c index target companies, j investors, and d financing rounds. Columns (1)–(2) estimate

$$\text{Return}_{cjd}^{5y} = \alpha_d + \beta\,\text{SWF}_{jd} + X_{cjd}'\gamma + \varepsilon_{cjd},$$

where Return_{cjd}^{5y} equals one if the exact investor appears in any later completed PitchBook deal record for the same company within five years. This broad follow-on measure includes later private financings, IPOs, PIPEs, M&A, joint ventures, asset purchases, and corporate transactions when PitchBook records the same investor-company relationship again. It is therefore a continuation-relationship measure, not a fresh-capital-only reinvestment measure. The original-round fixed effect compares SWF and non-SWF investors in the same original financing round. Column (1) includes no controls. Column (2) adds investor j's own prior follow-on rate, computed from earlier portfolio-company relationships whose five-year return window had closed before round d. This is an investor-history control, not a measure of the target firm's prior fundraising. Column (2) also controls for same-home-country co-investors in the original round. The SWF coefficient is 3.37 percentage points in column (1) and 2.29 percentage points in column (2), so SWF investors are more likely than same-deal non-SWF co-investors to return.

Panel B then classifies the same valuation-discount focal-deal universe by realized later deal activity. Among the 819 classifiable focal SWF-backed deals, 405 have no later completed private

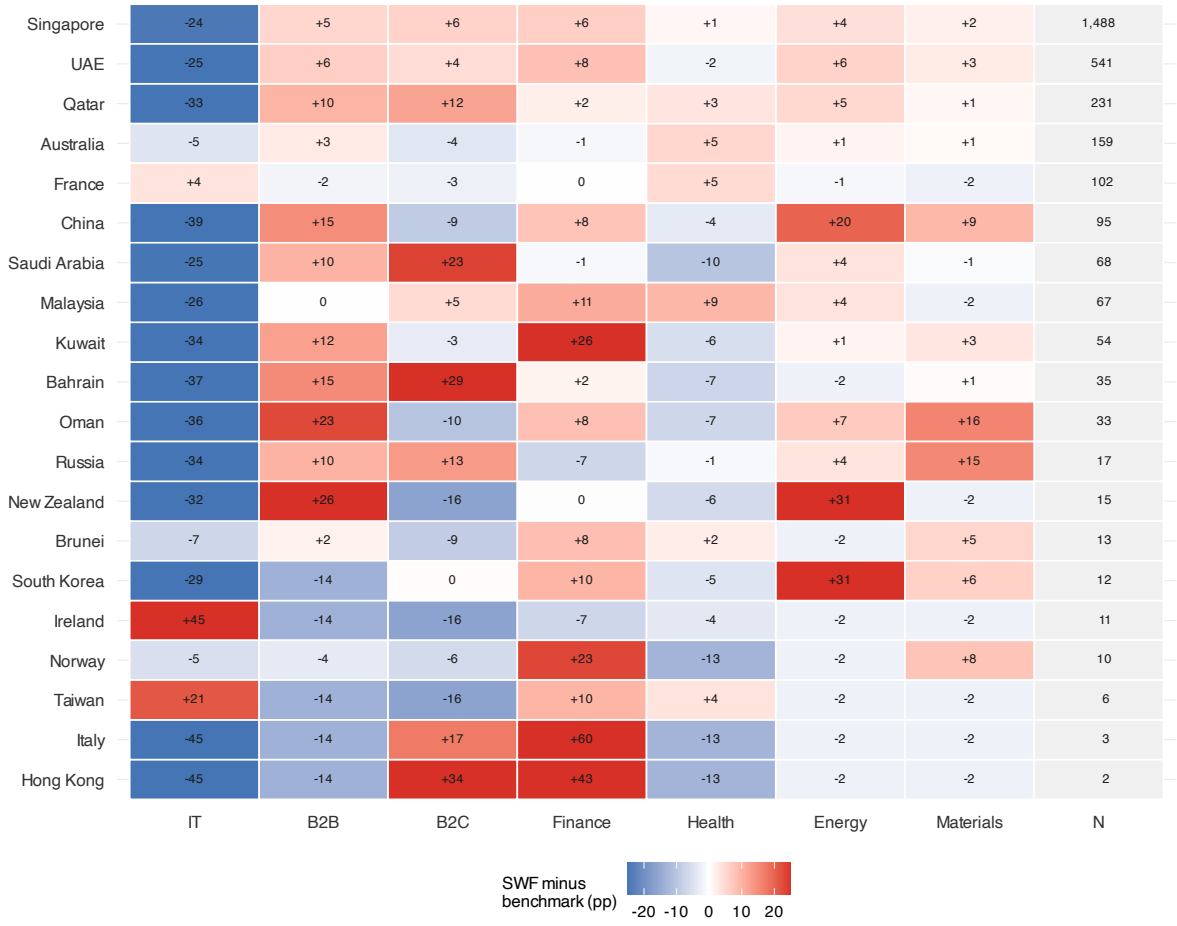


Figure 2: SWF Country-Sector Portfolio Tilts

Notes: Rows are the 20 SWF home countries that contribute SWF investor–deal observations to the PitchBook valuation-discount sample. Colored cells report each country's pooled 2005–2025 cross-border sector share minus the corresponding 2005–2025 cross-border benchmark share for non-government deep-pocket private investors, in percentage points. SWF and benchmark portfolios are counted at the investor × deal level; when multiple SWFs from the same home country join the same deal, each contributes one portfolio row before pooling to home-country shares. Deal-investor rows with Add-on Sponsor status are excluded from this descriptive portfolio-count exercise. The final column reports the number of cross-border SWF investor–deal observations used to compute each SWF home country's sector shares. The measure is count-based.



Figure 3: High-tilt sectors and early revealed comparative advantage, all SWF home countries

Notes: Rows are the 20 SWF home countries that contribute SWF investor–deal observations to the PitchBook valuation-discount sample. Colored cells report 2005–2025 country–sector overtilts of at least 5 percentage points and indicate whether the SWF home country's 2005–2007 export RCA in the mapped PitchBook sector is above or below one. France has no highlighted cell because all of its exact sector tilts are below 5 percentage points in absolute value. Grey cells indicate that no early export-RCA benchmark is available for the mapped sector. Cell labels report the portfolio overtilt in percentage points and the export-RCA value; a dagger (†) after the overtilt number marks cells from home countries with fewer than 25 total cross-border SWF investor–deal observations. Deal-investor rows with Add-on Sponsor status are excluded from the descriptive portfolio-count measure. Goods sectors use a clean non-overlapping four-digit SIC mapping; services use balance-of-payments services categories. Constructing the same export-RCA diagnostic with cumulative SWF portfolios through 2015 or 2018 gives qualitatively similar patterns, although very early sector-tilt support is limited. In the regression design, sector tilts are constructed from prior cumulative individual-SWF portfolios before the focal deal year, and the valuation-discount regressions retain the original sample for comparability.

PitchBook deal with usable investor links, 251 have later private deals but no later SWF participation, and 163 have at least one later private deal with SWF participation. The re-up firms are selected: their median post-money valuation is $1.0 billion, their mean valuation discount is lower, and they raise more later rounds. Their cross-border SWF-row expansion rate is 3.9 percent, compared with 3.7 percent among firms with later private deals but no SWF re-up and 1.2 percent among firms with no later private deal. I use these moments as descriptive support for the continuation-value premise, not as a causal re-up design.

Table 11: Follow-on Financing and Re-up Anatomy

Panel A: Exact investor continuation

	Same-Investor Return	
	Base	+ Controls
SWF investor	0.0337***	0.0229**
	(0.0114)	(0.0111)
Investor baseline return controls	–	✓
Other same-country investor controls	–	✓
Observations	3,174	3,174
Deals / firms	831 / 800	831 / 800
Original-round FE	✓	✓
SE clustered by company	✓	✓

Panel B: Focal SWF-backed deal groups

	(1)	(2)	(3)
Group	A1	A2	B
Definition	No later financing	Later, no SWF	Later, SWF re-up
Focal SWF deals	405	251	163
Share of focal deals	49.5%	30.6%	19.9%
Median post-money ($M)	533	721	1,000
Median employees	640	350	420
Mean valuation discount	0.31	0.01	-0.21
Mean later rounds	0.00	1.78	2.88
Later-stage VC share	20.5%	61.0%	66.9%
SWF-row expansion rate	1.2%	3.7%	3.9%

Note: Both panels use the valuation-discount sample. Panel A reports investor–deal regressions where the outcome equals one if the exact investor appears in any later completed PitchBook deal record for the same company within five years. This broad continuation measure includes later private financings, IPOs, PIPEs, M&A, joint ventures, asset purchases, and corporate transactions when PitchBook records the same investor-company relationship again. Panel B collapses the sample to focal SWF-backed deals and classifies them using later completed private PitchBook deal records within five years, excluding IPO and PIPE later rounds and requiring usable investor links. A1 has no such later private deal; A2 has a later private deal but no SWF participation; B has at least one later private deal with SWF participation. SWF-row expansion rate is measured on cross-border SWF investor rows. The Panel B groups are selected after the focal deal and should be read as descriptive continuation anatomy, not as a causal re-up design. SE clustered by company. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.3 Sector Heterogeneity

Table 12 asks whether the PitchBook result is a sector artifact. It drops each primary industry sector in turn and re-estimates the main specification. The new-entry estimate remains positive under every omission, but it is most sensitive to Consumer Products and Services (B2C): omitting that sector lowers the coefficient from 0.055 to 0.024 and removes conventional statistical significance. The count-based appendix outcome is also most sensitive to omitting B2C, falling from 0.065 to

0.044. This pattern suggests that consumer-facing targets contribute meaningfully to the directed-expansion result.

Table 12: Sector Heterogeneity: Leave-One-Sector-Out

	New Entry	asinh(Count)
Baseline (all sectors)	+0.055***	+0.065***
Business (B2B)	+0.062***	+0.072***
Consumer (B2C)	+0.024	+0.044
Energy	+0.055***	+0.064***
Fin. Services	+0.059***	+0.065***
Healthcare	+0.058**	+0.068***
Info. Technology	+0.065**	+0.067**
Materials	+0.054***	+0.065***

Notes: Each row drops one PitchBook primary industry sector (Business Products and Services (B2B), Consumer Products and Services (B2C), Energy, Financial Services, Healthcare, Information Technology, or Materials and Resources) and re-estimates the baseline specification (SWF × Valuation Discount with deal-by-year FE, implemented as deal FE, plus investor-home-country × deal-year FE and investor-home-country × target-HQ-country FE; SE clustered by company). New Entry = **1**[no pre-deal activity in investor country AND post-deal activity]. Asinh(Count) uses all post-deal activity (not conditioned on pre=0). Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.4 Leave-One-SWF-Country-Out

Figure 4 drops each SWF investor home country in turn. This check addresses the main external-validity concern in PitchBook: the identifying variation is concentrated in a small number of active SWF countries. The coefficient remains positive under every omission, preserving the sign of the result, but the sensitivity to Singapore and the UAE qualifies how broadly the PitchBook estimate should be generalized.

C.5 Permutation Inference

Table 13 asks whether the PitchBook pattern could be generated by randomly labeling same-round investors as SWFs. The exercise leaves the realized expansion outcomes unchanged. It also leaves each deal's investor set, investor home countries, valuation discount, and number of SWF investors fixed. Within each deal, I randomly reassign the SWF labels and recompute two statistics. Panel A uses a model-free statistic: the difference between SWF and non-SWF new-entry rates after scaling each group by its baseline country deal share. Panel B re-estimates the main regression and stores the placebo coefficient on SWF×valuation discount.

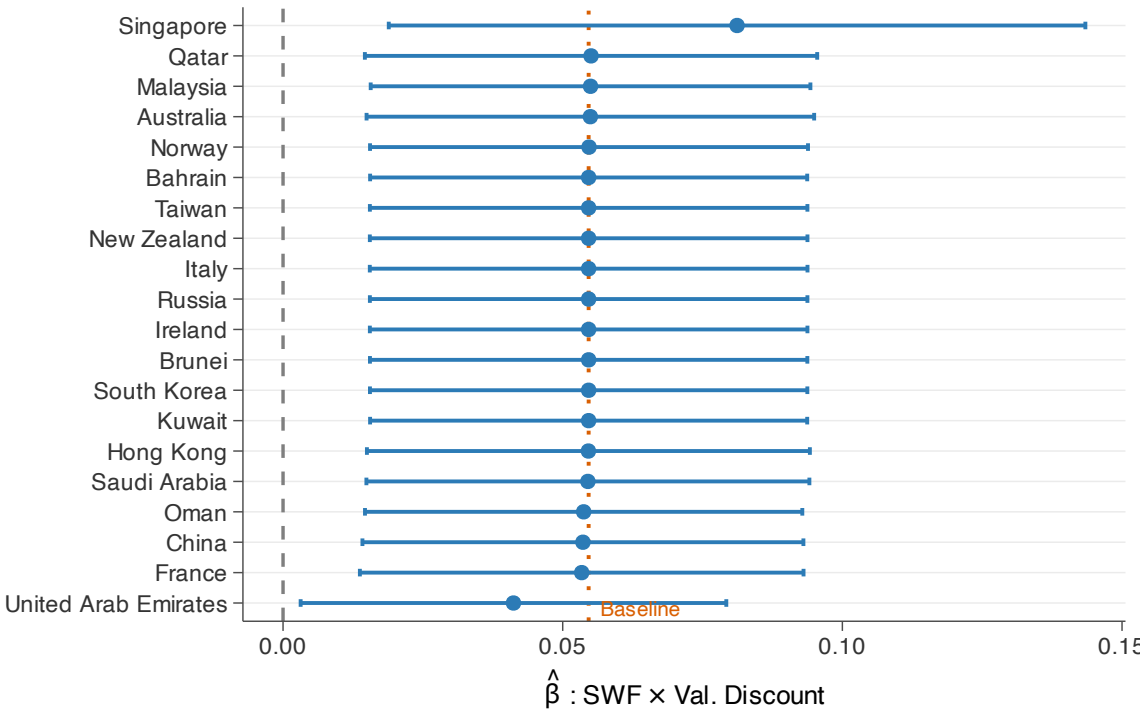


Figure 4: Leave-One-SWF-Country-Out: SWF × Val. Discount Coefficient

Notes: Each row drops one SWF investor home country and re-estimates the full-FE valuation-discount specification (deal-by-year FE, implemented as deal FE, plus investor-home-country × deal-year FE and investor-home-country × target-HQ-country FE). Orange dashed line: full-sample baseline. Error bars: 95% CIs; SE clustered by company. Singapore and the UAE together account for 73% of SWF investor–deal rows and 88% of SWF new-entry events in the valuation-discount sample. Dropping the UAE attenuates the estimate, while dropping Singapore amplifies it; both omissions leave the coefficient positive and statistically significant.

Table 13: Permutation Inference

	Observed	Null Mean [SD]	RI $p_{\text{two-sided}}$
Panel A: Model-free ratio statistic			
SWF vs. non-SWF ratio	0.877	-0.033 [0.017]	0.000
Panel B: Regression coefficient			
New Entry	0.0546***	-0.0003 [0.0088]	0.000
asinh(Count)	0.0645***	-0.0002 [0.0122]	0.000
Permutations		1,000	

Note: Within-deal random reassignment of SWF investor labels (1,000 permutations). Panel A tests a model-free ratio statistic: $\mathrm{E}[Y|\mathrm{SWF}=1]/\mathrm{E}[\mathrm{baseline}|\mathrm{SWF}=1] - \mathrm{E}[Y|\mathrm{SWF}=0]/\mathrm{E}[\mathrm{baseline}|\mathrm{SWF}=0]$; RI p = share of permuted ratios with $|\mathrm{ratio}^{\mathrm{perm}}| \geq |\mathrm{ratio}^{\mathrm{obs}}|$. Panel B permutes the SWF indicator and re-estimates the main specification (deal-by-year FE, implemented as deal FE, plus investor-home-country × deal-year FE and investor-home-country × target-HQ-country FE; SE clustered by company); RI p = share of permuted SWF × Val. Discount coefficients with $|\hat{\beta}^{\mathrm{perm}}| \geq |\hat{\beta}^{\mathrm{obs}}|$. Stars on observed coefficients reflect asymptotic p-values from the main regression. Two-sided p-values reported. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.6 Winsorization Sensitivity

Table 14 tests whether the valuation-discount result is driven by extreme valuation residuals. It re-estimates the main specification with no winsorization and with a tighter two-sided winsorization cutoff. The coefficient is stable across the non-winsorized and winsorized specifications, so the valuation-discount result is not an artifact of a small number of extreme observations.

Table 14: Winsorization Sensitivity

	Outcome: New Entry (5yr)		
	Main: winsor p1/p99	No winsorization	Winsor p5/p95
	(1)	(2)	(3)
SWF × Val. Discount	0.0546***	0.0527***	0.0524***
	(0.0200)	(0.0198)	(0.0195)
Deal-by-year FE (deal FE)	Yes	Yes	Yes
Investor-home-country × deal-year FE	Yes	Yes	Yes
Investor-home-country × target-HQ-country FE	Yes	Yes	Yes
Observations	3,174	3,174	3,174

Note: Each column re-standardizes valuation discount under a different tail treatment and re-estimates the main specification (deal-by-year FE, implemented as deal FE, plus investor-home-country × deal-year FE and investor-home-country × target-HQ-country FE; SE clustered by company). Column (1) is the main-text specification, which winsorizes valuation discount at the 1st and 99th percentiles. Column (2) uses the raw valuation discount without winsorization. Column (3) winsorizes valuation discount at the 5th and 95th percentiles. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.7 Alternative Outcome Windows

Table 15 reports two checks on the timing of the PitchBook outcome. Panel A asks whether the new-entry result depends on the post-deal window used to construct the dependent variable, while keeping the main regression sample fixed. The 3-year, 5-year, and 7-year estimates are all positive, with coefficients rising from 0.0479 to 0.0546 to 0.0581.

Panel B addresses right-censoring by holding the baseline five-year new-entry outcome fixed and restricting the sample to deals with at least 3, 5, or 7 years of observable post-deal expansion history. The SWF × valuation-discount coefficient remains positive: 0.0674 in the at-least-3-year sample, 0.0492 in the at-least-5-year sample, and 0.0807 in the at-least-7-year sample. Precision declines as the restrictions reduce the regression sample to 2,303, 1,186, and 734 investor–deal rows, respectively.

Table 15: Alternative Outcome Windows and Follow-up Restrictions

Panel A: Alternative post-deal outcome windows

	New Entry		
	3-year	5-year	7-year
	(1)	(2)	(3)
SWF × Val. Discount	0.0479**	0.0546***	0.0581***
	(0.0193)	(0.0200)	(0.0200)
Deal-by-year FE (deal FE)	Yes	Yes	Yes
Investor-home-country × deal-year FE	Yes	Yes	Yes
Investor-home-country × target-HQ-country FE	Yes	Yes	Yes
SE clustered by company	Yes	Yes	Yes
Observations	3,174	3,174	3,174

Panel B: Minimum observable post-deal follow-up

	Baseline 5-year New Entry		
	≥3-year	≥5-year	≥7-year
	(1)	(2)	(3)
SWF × Val. Discount	0.0674**	0.0492	0.0807
	(0.0275)	(0.0417)	(0.0769)
Deal-by-year FE (deal FE)	Yes	Yes	Yes
Investor-home-country × deal-year FE	Yes	Yes	Yes
Investor-home-country × target-HQ-country FE	Yes	Yes	Yes
SE clustered by company	Yes	Yes	Yes
Non-SWF mean	0.0889	0.0793	0.0892
Observations	2,303	1,186	734

Note: Panel A constructs the new-entry outcome using different post-deal windows (3, 5, or 7 years) and re-estimates the main specification on the same regression sample as the main table. Panel B uses the baseline five-year new-entry outcome and restricts the sample by minimum observable follow-up, measured relative to the last observed PitchBook expansion date (February 9, 2025). New entry equals one if the target expands into the investor's home country within the relevant window and there was no prior activity in that country before the focal deal. All columns include deal-by-year FE (implemented as deal FE), investor-home-country × deal-year FE, and investor-home-country × target-HQ-country FE; SE are clustered by company. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.8 Same-Country Non-SWF Co-Investors

The baseline sample drops non-SWF investors headquartered in the same country as the deal's SWF because their outcome, expansion into the investor's home country, is mechanically identical to the SWF outcome. If an SWF-backed firm expands into the SWF home market, a same-country non-SWF co-investor inherits the same outcome without adding independent within-deal variation. Table 16 reports two diagnostics: an expanded sample that keeps those rows, and a stricter sample that drops the entire financing round whenever it contains a same-country non-SWF co-investor. The estimates remain positive across entry and expansion count, so the result is not driven by how these mechanically overlapping co-investors are handled.

Table 16: Same-Country Non-SWF Co-Investors: Stability Check

	Expanded Sample		Drop Same-Country Deals	
	New Entry	asinh(Count)	New Entry	asinh(Count)
	(1)	(2)	(3)	(4)
SWF × Val. Discount	0.0408***	0.0923***	0.0491***	0.1131***
	(0.0134)	(0.0205)	(0.0170)	(0.0280)
SWF	-0.0081	-0.0198	0.0002	0.0341
	(0.0149)	(0.0205)	(0.0330)	(0.0463)
Deal-by-year FE (deal FE)	Yes	Yes	Yes	Yes
Investor-home-country × deal-year FE	Yes	Yes	Yes	Yes
Investor-home-country × target-HQ-country FE	Yes	Yes	Yes	Yes
SE clustered by company	Yes	Yes	Yes	Yes
Observations	3,737	3,737	2,920	2,920

Notes: Investor–deal level panel. Dependent variables are new market entry and asinh(expansion count), measured within 5 years post-deal or through the end of the observed PitchBook expansion window for later deals. Columns (1)–(2) use the expanded sample that keeps non-SWF investors whose home country matches the deal's SWF home country. Columns (3)–(4) drop the entire financing round if it contains any such same-country non-SWF co-investor. Outcomes are constructed from the same PitchBook expansion-event matching procedure used in the main specification. All columns use the sector-year valuation-discount benchmark, include deal-by-year FE, implemented as deal FE, investor-home-country × deal-year FE, and investor-home-country × target-HQ-country FE, and cluster SE by company. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.9 Destination-Fixed Matched Counterfactual

The within-deal specification in Section 3 compares SWF and non-SWF co-investors in the same financing round, which absorbs deal-level heterogeneity. The matched counterfactual in Table 17 asks a different, across-firm question: whether main-sample SWF-backed firms expand more into the SWF's home country than observationally similar non-SWF-backed firms expand into the same country.

The treatment unit is a deal–candidate-country pair. Treated observations are the SWF deal–country pairs from the 831-deal no-prior-history mechanism sample. Control observations are

non-SWF-backed cross-border PitchBook deals paired to the same candidate SWF country and retained only when they share an exact cell with a treated pair. The baseline exact cell is candidate country × three-year deal-year bin × PitchBook sector × target-HQ region. Same-country pairs are excluded, and both treated and control rows are required to have no recorded pre-deal activity in the candidate country.

The estimating equation is

$$Y_{dc} = \beta\,\mathrm{SWFPair}_{dc} + X_d'\Gamma + \alpha_{m(dc)} + \delta_{t(d)} + \eta_{c\times h(d)} + \varepsilon_{dc}, \tag{19}$$

where Y_{dc} equals one if the recipient firm in deal d records an expansion into candidate country c within five years of the deal, or before the PitchBook observation endpoint for later deals. $\mathrm{SWFPair}_{dc}$ identifies main-sample SWF-backed deal–country pairs. The fixed effects are match-cell, deal-year, and candidate-country×target-HQ-country effects. X_d contains the deal and firm controls added in columns (2)–(4): standardized log post-money valuation, asinh deal size, asinh employees, founding year, and the firm's prior investor-country footprint. Columns (3)–(4) further tighten common support by augmenting the exact cell with tercile bins for size, employees, age, valuation, and prior footprint as shown in the table.

The level comparison is weak once it is tied to the main mechanism sample and tightened on observable support. The exact-cell estimate is 0.71 percentage points (SE 0.47), and adding firm and deal controls gives 0.49 percentage points (SE 0.63). Requiring common support on size, employees, and age moves the estimate to −0.35 percentage points (SE 0.25), and further matching on valuation and prior footprint gives −0.53 percentage points (SE 0.30). The table is therefore a diagnostic counterfactual rather than the paper's main identifying comparison: the core evidence comes from the within-deal SWF–non-SWF gradient with recipient valuation discount.

D Additional Bank Results

This appendix reports robustness checks for the bank syndicated lending results in Section 4. The checks address the main design risks: whether write-down exposure proxies for pre-crisis bank characteristics, whether any single SWF destination drives the estimate, whether alternative SWF-treatment definitions change the estimand, whether the result depends on the post-cutoff date, and whether placebo destination sets reproduce the result.

Table 17: Destination-Fixed Matched Counterfactual

	Exact FE (1)	Exact + Controls (2)	CEM: Size, Emp., Age (3)	CEM: All Controls (4)
SWF-backed deal–country pair	0.71	0.49	-0.35	-0.53*
	(0.47)	(0.63)	(0.25)	(0.30)
SWF-backed mean (%)	2.44	2.44	2.43	2.70
Matched control mean (%)	1.20	1.20	1.76	2.32
Match-cell FE	Yes	Yes	Yes	Yes
Deal-year FE	Yes	Yes	Yes	Yes
SWF country × target-HQ FE	Yes	Yes	Yes	Yes
Regression controls	No	Yes	Yes	Yes
CEM on size, employees, age	No	No	Yes	Yes
CEM on valuation and prior footprint	No	No	No	Yes
Outcome window	Observed	Observed	Observed	Observed
Observations	72,482	72,321	10,775	4,393
SWF-backed pairs	900	739	699	556
Match cells	373	373	563	492

Notes: Deal–candidate-country pair regressions. Treated observations are SWF-backed deal–country pairs from the main no-prior-history PitchBook mechanism sample. Controls are non-SWF-backed cross-border PitchBook deals paired to the same candidate SWF country and retained within the exact or coarsened-exact match cells described in the text. The dependent variable equals one if the recipient firm records a post-deal expansion into the candidate country within five years, or before the PitchBook observation endpoint for later deals. Columns (1)–(2) use the exact cell candidate country × three-year deal-year bin × sector × target-HQ region; columns (3)–(4) augment the match cell with tercile bins for the listed CEM variables. All columns include match-cell, deal-year, and candidate-country×target-HQ-country fixed effects. Regression controls are standardized log post-money valuation, asinh deal size, asinh employees, founding year, and prior investor-country footprint. Standard errors are clustered by company and candidate country. Coefficients and standard errors are reported in percentage points. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

D.1 Pre-Crisis Balance: Write-Down Ratio

Figure 5 asks whether the bank write-down ratio is simply proxying for pre-crisis bank characteristics. It regresses WriteDownRatio on five standardized covariates computed from the bank–country–quarter panel over 2004Q3–2007Q2. Four covariates are pre-window levels, and the fifth is a within-window growth measure that compares 2004Q3–2005Q4 with 2006Q1–2007Q2. The balance check is reassuring overall: all five coefficients are statistically insignificant, including pre-crisis SWF-country lending share. The main specification additionally absorbs bank–country level differences through bank×country fixed effects and the WD × Pre-share × Post control. Taken together, the figure argues against the most direct continuation story that distressed banks were already systematically more tilted toward SWF-country lending before the crisis.

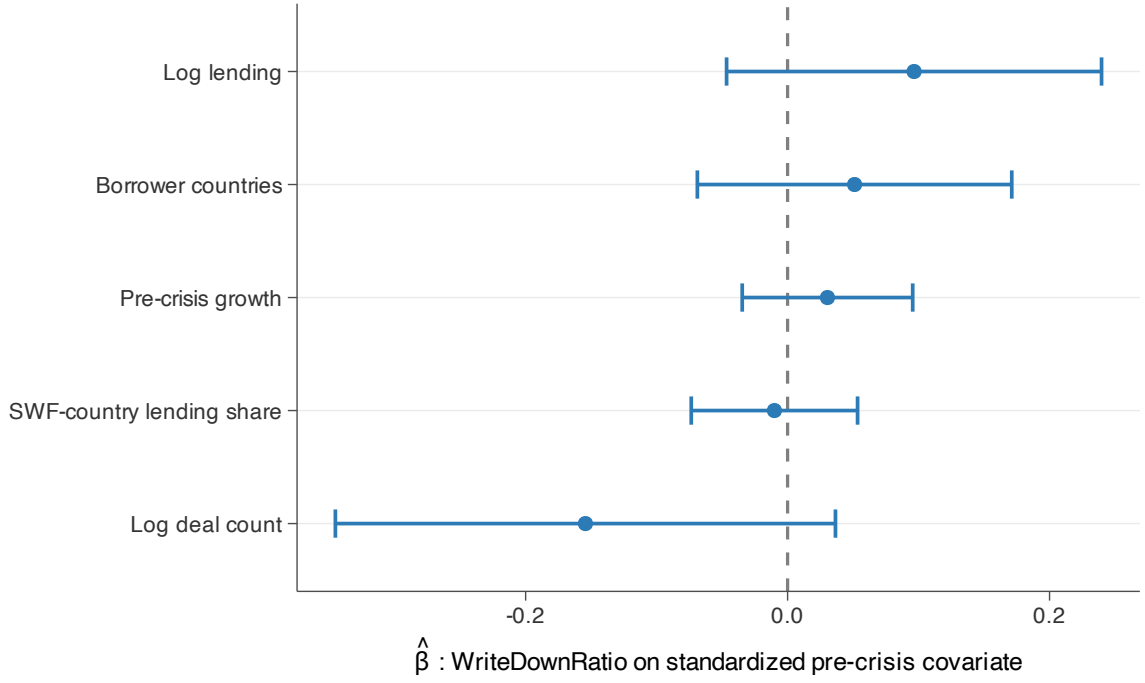


Figure 5: Bank Pre-Crisis Balance: WriteDownRatio on Standardized Covariates

Notes: Cross-sectional OLS of the bank-level WriteDownRatio on five standardized pre-crisis covariates (N=29 realized G-SIB bank parents). Pre-crisis covariates aggregate the bank–country–quarter panel over 2004Q3–2007Q2: total cross-border lending (USD), deal count, number of borrower countries, share of total lending to SWF home countries, and a pre-crisis lending growth measure defined as the log of total lending in 2006Q1–2007Q2 relative to 2004Q3–2005Q4. Each covariate is standardized to mean zero and unit standard deviation. Error bars: 95% confidence intervals from OLS standard errors. Coefficients near zero indicate balance; any residual level differences are absorbed by the Bank×Country and WD × Pre-share × Post controls in the main specification.

D.2 Leave-One-SWF-Country-Out

Figure 6 drops each SWF destination country in turn from the full-controls log-count DID specification. This addresses the bank-sample concentration concern: with a finite set of SWF destinations, the estimated reallocation could in principle be carried by one destination market. The coefficient remains positive in every omission and remains statistically significant at the 5% level except when Australia is omitted. The exercise therefore rules out a sign reversal or a result driven mechanically by one country.

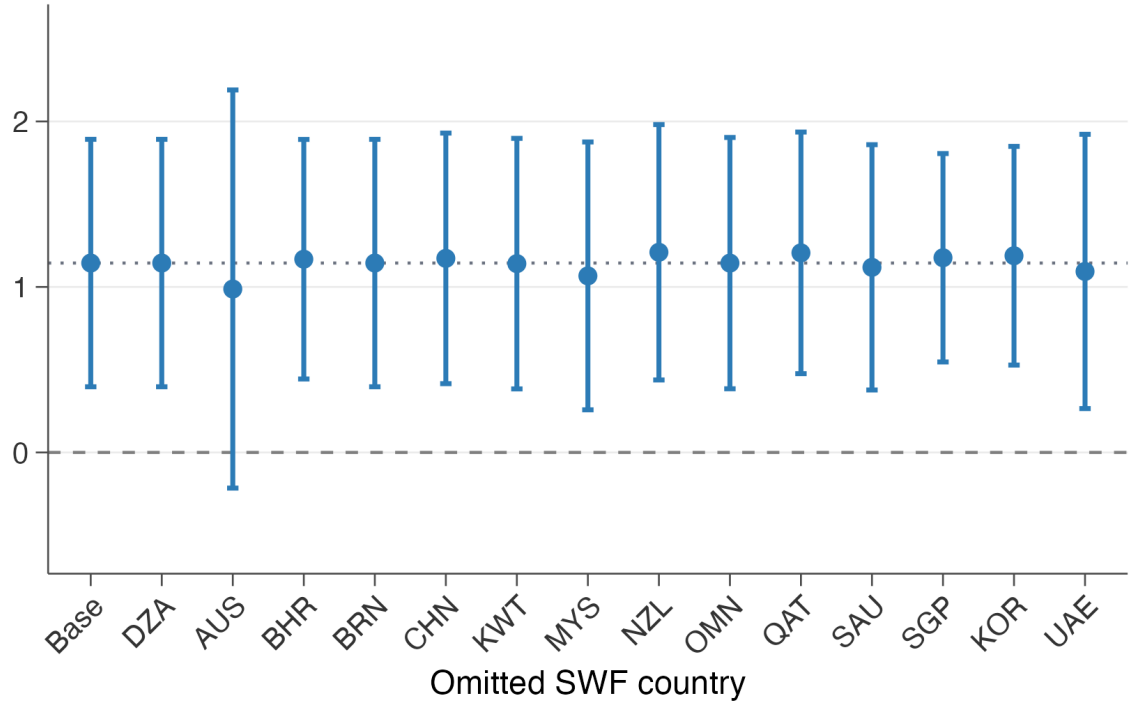


Figure 6: Leave-One-SWF-Country-Out: Deal Count

Notes: Each point is the WD coefficient from the log(deal count) specification, restricted to cells with positive deal count, omitting one SWF country from the destination set. Dashed line: full-sample baseline. Error bars: 95% CIs; SE clustered by bank. Full-controls specification with three-way FEs.

D.3 Alternative SWF Treatment Definitions

The baseline bank specification uses an ex ante destination-level treatment. SWFStatus_c equals one for countries that had active cross-border sovereign investors before the crisis: the 7 countries whose funds later injected equity into treated banks plus 8 additional pre-2007 SWF countries in the

defined set.[28] This definition is chosen before observing the realized crisis-era bank–SWF matches. It asks whether banks with greater demand for sovereign capital increased lending activity toward sovereign-capital destinations, not only toward the specific countries that ultimately provided their equity.

Table 18 replaces the baseline SWF-status set with the 20 PitchBook SWF home countries that contribute to the valuation-discount regression sample. This check uses the same full-controls specification as the main bank table. The coefficients remain positive across both reported outcomes. New entry is positive but imprecise, 0.0092; the log-count coefficient is 0.7863 and significant at the 1% level. The PitchBook-based definition therefore preserves the sign of the bank result, although the strongest response remains on the deal-frequency margin. I treat this as a destination-set diagnostic rather than a preferred specification, because the baseline bank definition is chosen ex ante for the pre-crisis syndicated-lending setting.

Table 18: Alternative SWF Treatment Definition: PitchBook SWF Home Countries

	New Entry (1)	log(Count) (2)
Panel A: PitchBook SWF home countries (20 countries)		
WD × SWF (PitchBook) × Post	0.0092	0.7863***
	(0.0072)	(0.2794)
Bank × Country FE	✓	✓
Bank × Quarter FE	✓	✓
Country × Quarter FE	✓	✓
SE clustered by bank	✓	✓
Observations	34,510	10,010

Note: Bank–country–quarter panel around 2007Q3, $[-8, +5]$ quarters. The table replaces the baseline ex ante SWF-status destination set with the 20 PitchBook SWF home countries that contribute to the valuation-discount regression sample. All columns use the full-controls specification with bank×country, bank×quarter, and country×quarter fixed effects; SE clustered by bank. Columns include WD × Post interactions with pre-lending share, FTA, common language, and UN-voting political distance. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

D.4 Alternative Post Cutoffs

The baseline bank specification defines Post_t from 2007Q3, when large structured-credit write-downs first became public and recapitalization negotiations began. Table 19 repeats the full-controls specification while holding the original bank–country–quarter sample fixed to 2005Q3–2008Q4 and moving the post cutoff to 2007Q4 or 2008Q1. I keep the calendar endpoint at 2008Q4 to avoid mixing the SWF-recapitalization window with later public recapitalization programs. The exercise is therefore a fixed-window post-cutoff check, not a symmetric alternative-event-window design.

[28] The defined set contains 15 countries in total. Libya has no lending observations in the realized panel, leaving 14 effective SWF-status destinations in the estimation sample.

Under this fixed-window check, the intensive-margin result is stable under the later cutoffs. The log-count coefficient is 0.994 when post begins in 2007Q4 and 1.177 when post begins in 2008Q1, compared with 1.144 in the baseline. The extensive-margin estimate is more timing-sensitive: the new-entry coefficient falls to 0.001 under the 2007Q4 cutoff and is 0.018 under the 2008Q1 cutoff. I therefore read the timing check as supporting the deal-frequency margin while showing that the entry margin depends more on how the crisis onset is dated.

Table 19: Alternative Post Cutoffs

	New Entry			log(Count)		
Post cutoff	≥2007Q3	≥2007Q4	≥2008Q1	≥2007Q3	≥2007Q4	≥2008Q1
	(1)	(2)	(3)	(4)	(5)	(6)
WD × SWFStatus × Post	0.028***	0.001	0.018**	1.144***	0.994**	1.177***
	(0.008)	(0.008)	(0.008)	(0.381)	(0.377)	(0.419)
Observations	34,510	34,510	34,510	10,010	10,010	10,010
Full controls	✓	✓	✓	✓	✓	✓
Bank×Country FE	✓	✓	✓	✓	✓	✓
Bank×Quarter FE	✓	✓	✓	✓	✓	✓
Country×Quarter FE	✓	✓	✓	✓	✓	✓
SE clustered by bank	✓	✓	✓	✓	✓	✓

Note: Bank–country–quarter panel held fixed to the main 2005Q3–2008Q4 window, corresponding to $[-8, +5]$ around 2007Q3. Columns are grouped by outcome and repeat the post-cutoff definition within each outcome group. The reported coefficient is $\text{WriteDownRatio}_b \times \text{SWFStatus}_c \times \text{Post}_t$. New Entry is recomputed for each cutoff as the first post-cutoff positive-deal quarter for bank–country pairs with zero deals before that cutoff within the fixed window. Full controls are WriteDownRatio_b interacted with Pre-share, FTA, common language, political distance, and Post_t. Three-way fixed effects are bank×country, bank×quarter, and country×quarter. SE clustered by bank. Significance levels: $^{*}\ p < 0.10$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

D.5 Randomization-Inference Placebo Tests

Table 20 draws placebo destination sets from non-SWF countries and re-estimates the continuous DID. It asks whether high-write-down banks expanded toward arbitrary non-SWF foreign markets after the crisis or specifically toward the actual SWF-country geography. Under the log-count specification, the actual coefficient is positive but does not exceed the placebo 95th percentile; the right-tail RI p-value is 0.074 and the two-sided RI p-value is 0.138. The RI evidence is therefore conservative: it does not reproduce the conventional log-count significance, but it confirms that the actual estimate is positive while highlighting finite-destination uncertainty.

Table 20: Randomization-Inference Placebo Tests

Outcome	Actual coef.	Placebo mean	Placebo 95th pct.	RI p_{right}	RI $p_{\text{two-sided}}$
Deal count	1.144^{***}	-0.047	1.361	0.074	0.138

Note: Placebo destination sets drawn from non-SWF countries (1,000 draws). Each draw selects 14 placebo destinations, excluding the 14 realized SWF-status countries as well as the United States and the United Kingdom, and re-estimates the full-controls log specification with three-way FEs. The actual coefficient is then compared to the placebo distribution. The table reports both the one-sided RI p-value (p_{right}: fraction of placebo draws $\geq$ actual) and the two-sided RI p-value ($p_{\text{two-sided}}$: fraction with |placebo| $\geq$ |actual|). Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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