Anti-Avoidance Rules and Profit Shifting: Evidence from Ownership Bunching*

Jianguo Wang,† Yanxi Wu‡

Abstract

Do anti-avoidance rules still leave multinational firms with incentives to book profits in tax havens? This paper develops a revealed-preference test based on ownership bunching at statutory thresholds for preferential parent-country taxation of foreign dividends. Crossing such a threshold lowers the tax cost of repatriation but requires costly ownership adjustments. If tax-haven affiliates hold larger booked profits, they should bunch more strongly at these thresholds than non-haven affiliates. We estimate *excess haven bunching* using a difference-in-differences-in-bunching design: the excess bunching at the ownership threshold for haven affiliates relative to non-haven affiliates, net of the corresponding haven–non-haven difference for placebo parent groups not facing the same notch. Using 357,675 global parent-affiliate links from Orbis, we find positive excess haven bunching under territorial systems backed mainly by traditional CFC rules, especially at higher thresholds. In contrast, excess haven bunching is not detectable for U.S. multinationals under GILTI relative to Germany's same-threshold traditional-CFC benchmark. DPT regimes in the U.K. and Australia show directionally similar but smaller attenuation. China provides a null benchmark under worldwide taxation. The results show that costly ownership adjustments at repatriation-tax thresholds reveal incentives to book profits in tax havens, and that these incentives vary across anti-avoidance regimes.

Keywords: Profit Shifting; Multinational Firms; International Tax; Ownership Bunching

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†Jianguo Wang, School of Business, Renmin University of China, email: wangjianguo@rmbs.ruc.edu.cn.

‡Yanxi Wu, School of Business, Renmin University of China, email: wyxkilo@gmail.com.

1 Introduction

Do anti-avoidance rules still leave multinational firms with incentives to book profits in tax havens? This question is central to international tax policy. Multinational enterprises (MNEs) continue to report large amounts of income in low-tax jurisdictions, eroding corporate tax bases and generating cross-border fiscal externalities (e.g., Tørsløv et al. [2023b]). These concerns have motivated major reforms, from tighter Controlled Foreign Corporation (CFC) rules to the OECD/G20 Base Erosion and Profit Shifting project and the design of Pillar Two. Yet shifted profits are not directly observed, and cross-country policy comparisons are difficult because tax regimes differ along many dimensions at once. Existing approaches infer profit shifting from profitability gaps, tax sensitivities of reported income, transaction prices, or aggregate discrepancies, but these measures combine tax planning with real activity, reporting standards, enforcement, and selection into foreign locations.[1] What is needed is a transparent test that isolates a clearly defined margin and can be applied comparably across regimes.

This paper develops such a test using ownership bunching at statutory thresholds for preferential parent-country taxation of foreign dividends. In many countries, a participation exemption applies only if the parent owns at least a statutory share of the foreign affiliate.[2] Crossing that threshold discretely lowers the tax cost of repatriating affiliate profits. Because increasing direct ownership is costly—it requires additional capital commitment and may reduce flexibility or diversification—excess mass at the threshold reveals that qualification is valuable.

The key insight is that the value of qualifying for preferential dividend treatment rises with the affiliate's booked profit base. If profit shifting makes tax-haven affiliates carry larger booked profits, then crossing the ownership threshold should be more valuable for haven affiliates than for otherwise similar non-haven affiliates. We therefore study *excess haven bunching*: the bunching response of tax-haven affiliates at the threshold relative to non-haven affiliates, net of the corresponding haven–non-haven difference for placebo parent groups that do not face the

[1] Blouin and Robinson [2025] highlights measurement challenges in inferring profit shifting from reported foreign affiliate income, including double counting and misattribution in commonly used datasets.

[2] A participation exemption is a rule under which dividends received from a qualifying foreign affiliate are exempt, fully or partially, from parent-country corporate tax. Qualification typically requires that the parent own at least a minimum share of the affiliate, sometimes together with holding-period or anti-abuse conditions.

same notch. This statistic provides a revealed-preference measure of continuing incentives to book profits in tax havens on a costly ownership-adjustment margin.

The test does not require us to distinguish whether haven-booked profits arise through transfer pricing, intra-group debt, royalties, intellectual property arrangement, or related channels; all such channels are included in the design because they enlarge the booked-profit base in tax haven that makes threshold qualification valuable. If we observe excess haven bunching at the dividend-tax threshold, firms reveal that threshold qualification is especially valuable to justify costly ownership adjustment, indicating the existence of profit shifting.

Identification comes from a *difference-in-differences-in-bunching* (DDB) design. First, within a parent group, we compare tax-haven and non-haven affiliates. Second, around a given ownership threshold, we compare focal parent groups that face the notch with placebo parent groups that do not. The estimand is the excess bunching mass in the ownership-density curve around the statutory threshold. The identifying assumption is local: absent the focal notch, the haven–non-haven density gap around the threshold would be similar for focal and placebo parent groups.[3] This design differences out generic rounding and stable haven-specific differences unrelated to the notch.

We implement the design using global parent-affiliate ownership data from Moody's Orbis, covering more than 357,675 direct parent-affiliate links observed in mid 2024. The analysis compares three policy environments. The first is a territorial tax system backed primarily by traditional CFC rules, using Japan, Germany, and France as the main cases. The second is a territorial system supplemented by economic-substance-oriented backstops: the U.S. post-TCJA regime, which combines a participation exemption with the Global Intangible Low-Taxed Income (GILTI) regime, and the U.K. and Australian regimes, which add a diverted profits tax (DPT). The third is China's worldwide system, in which crossing the ownership threshold does not eliminate residual parent-country taxation of low-tax foreign income.

The estimates reveal a clear pattern. Under territorial systems backed mainly by traditional CFC rules, tax-haven affiliates display positive excess bunching at the participation-

[3]The assumption is tested via two ways: (i) whether the focal and the placebo parents' density distributions match outside the manipulation region; (ii) whether there is no excess haven bunching when the threshold is non-existent for both parent groups.

exemption thresholds. The response is largest in Japan, where the 25 percent threshold is associated with substantial haven-specific excess mass, and remains positive, though smaller, in Germany and France at their lower thresholds. This pattern indicates that traditional CFC rules do not fully neutralize the private value of qualifying haven affiliates for preferential dividend treatment, indicating the existence of profit shifting. It also suggests that raising the ownership threshold is not, by itself, sufficient to eliminate the incentive when the underlying return to booking profits in tax havens remains.

The evidence changes in regimes with economic-substance-oriented backstops. Holding the 10 percent threshold fixed, U.S. multinationals exhibit no detectable excess haven bunching relative to Germany's traditional-CFC benchmark, consistent with GILTI attenuating the haven-specific return to crossing the threshold. The estimates for Australia and the U.K. point in the same direction under DPT regimes, although the evidence is more modest. China provides a useful benchmark under worldwide taxation: because residual parent-country tax remains after the threshold is crossed, the haven-specific repatriation incentive is muted, and the estimate is not positive, confirming that the estimates are tied to the repatriation incentive created by the threshold, rather than to generic differences between haven and non-haven affiliates.

Several diagnostics address alternative threshold motives. The DDB counterfactual densities closely track the observed densities outside the manipulation region, which is the key validation exercise in a bunching design. The results are robust to alternative placebo parent groups, alternative tax-haven classifications, and parametric bunching estimators. Affiliate-country withholding taxes do not drive the results: withholding schedules matter for our estimand only if they generate a discontinuity at the same ownership threshold, and only for the focal parent group, and differentially for haven affiliates relative to non-haven affiliates. The main conclusions remain when we restrict to affiliate locations whose withholding-tax schedules do not mechanically create the focal discontinuity.

The paper makes three contributions. First, it introduces a behavioral diagnostic of haven-specific profit-shifting incentives that does not require direct observation of shifted profits. The diagnostic identifies a costly organizational margin – ownership structuring around repatriation thresholds – that has not been studied in the profit-shifting literature. Second, it adapts

bunching methods to an international setting with heterogeneous tax rules and rounding, using a difference-in-differences-in-bunching design to compare density responses. Third, it uses the same test to compare traditional CFC regimes, economic-substance-oriented backstops, and a worldwide benchmark on a common observable margin. The results point to a broader lesson about anti-avoidance design: ownership thresholds raise the cost of qualifying for preferential dividend treatment, but they do not directly reduce the return to booking abnormal profits in low-tax affiliates. On the margin we identify, economic-substance-based backstops attenuate haven-specific incentives more effectively than threshold design alone.[4]

Related Literature. This paper contributes to three strands of literature. First, it speaks to work on the effectiveness of international anti-avoidance rules. A large literature documents that multinational firms shift income across borders in response to tax incentives and that unilateral enforcement is limited by cross-border externalities and firm adjustment margins. High-tax countries may redirect enforcement toward other high-tax peers rather than toward haven shifting (Tørsløv et al. [2023a]). Consistent with these enforcement frictions, traditional anti-avoidance tools often appear "leaky". Firms respond to CFC rules by reallocating profits through transfer pricing or by moving income to jurisdictions just above low-tax thresholds (Clifford [2019], Albertus [2025], Hansen et al. [2023]), and stronger transfer-pricing enforcement has had limited effects in practice (Bustos et al. [2022]). Recent reforms such as GILTI and diverted profits taxes attempt to reduce the payoff to low-substance profit shifting more directly, but their effectiveness and real consequences remain debated (Dharmapala [2024], Suárez Serrato [2018]). Our contribution is to provide a common behavioral diagnostic for comparing these regimes on the same ownership-threshold margin.

Second, the paper contributes to the literature on identifying profit shifting and multinational adjustment margins. Existing work studies profit shifting through transfer pricing, intellectual property location, intra-group debt, tax-haven substitution, and abnormal affiliate profitability (Zucman [2014], Cristea and Nguyen [2016], Garrett and Suárez Serrato [2019], Bilicka [2019], Tørsløv et al. [2023b]). Other studies use taxable-profit distributions, nonparametric firm-level methods, or long-run aggregate data to quantify the scale and persistence of

[4]The China benchmark helps validate the mechanism, but it may mute this margin partly by preserving residual parent-country tax and related *lockout* distortions.

shifted profits (Koethenbuerger et al. [2019], Wier and Zucman [2022]). Related work also shows that tax havens distort measured cross-border capital flows and the allocation of global financial claims [Coppola et al., 2021]. A related literature examines how parent-country taxation of foreign income affects repatriation, cash holdings, real investment, and the location of booked profits around territorial reforms (Hasegawa and Kiyota [2017], Xing [2018], Liu [2020], Langenmayr and Liu [2023]). These approaches are informative, but they often require direct or indirect measurement of reported profits, which can be difficult to interpret because foreign affiliate income may reflect real activity, accounting conventions, enforcement, and double counting. To our knowledge, we are the first paper to identify this costly organizational response: ownership bunching at participation-exemption thresholds. Because crossing the threshold requires real ownership adjustment, excess bunching by tax-haven affiliates relative to non-haven ones, after netting out stable haven-non-haven differences, provides a revealed-preference test on continuing incentives to book profits in tax havens.

Third, the paper contributes to the bunching literature by focusing on parent-affiliate ownership bunching using a difference-in-differences-in-bunching (DDB) design. Bunching at kinks and notches has been used to recover behavioral responses and adjustment frictions in tax and regulatory settings (Saez [2010], Chetty et al. [2011], Kleven and Waseem [2013], Kleven [2016], Garicano et al. [2016], Bilicka [2019], Chen et al. [2021], etc.). Recent work emphasizes the value of policy variation and control groups for identification (Blomquist et al. [2021]). We extend this logic to an international setting in which statutory ownership thresholds differ across parent countries and ownership shares exhibit strong rounding. Our difference-in-differences-in-bunching design compares the haven–non-haven bunching gap for focal parent groups that face a statutory notch with the corresponding gap for placebo parent groups that do not. This differences out generic rounding and stable haven-specific ownership patterns, isolating the local excess mass attributable to the threshold.

The interpretation is deliberately local. Positive excess haven bunching implies that a regime leaves haven-specific return to crossing a statutory ownership threshold, indicating profit shifting. A null estimate means that this ownership-threshold margin is attenuated, not that all profit shifting has disappeared. With that scope condition, the paper offers a transpar-

ent way to compare participation exemptions, CFC rules, minimum-tax-style backstops, and worldwide-tax benchmarks using a common revealed-preference statistic.

The rest of the paper proceeds as follows. Section 2 describes the institutional setup and the economic intuition for excess haven bunching. Section 3 introduces the data and sample construction. Section 4 develops the empirical framework. Section 5 reports the main results. Section 6 discusses robustness and policy implications, and Section 7 concludes.

2 Institutional Setup and Economic Intuition

This section describes the institutional variation that underpins our empirical design. The key source of variation is the parent-country tax treatment of dividends received from foreign affiliates. In many countries, preferential treatment of foreign dividends applies only if the parent's ownership share exceeds a statutory threshold. This creates a discontinuity in the parent-country tax liability on repatriated dividends. We use that discontinuity as a behavioral notch and study whether the response to the notch is systematically stronger for tax-haven affiliates than for non-haven affiliates.

2.1 The dividend-repatriation notch

We focus on corporate tax imposed by the parent country on dividends received from a foreign affiliate. Let D_{pa} denote dividends remitted by affiliate a to parent p, and let α_{pa} denote the parent's direct ownership share. Preferential treatment of foreign dividends is typically available only when α_{pa} exceeds a statutory ownership threshold α^*. As a result, moving from just below to just above α^* can generate a discrete reduction in the parent-country tax burden on repatriated dividends. This is the focal discontinuity throughout the paper.

The precise form of the discontinuity depends on whether the parent country operates a territorial or worldwide system.

1. Under a **territorial system**, dividends from foreign affiliates are generally exempt, or nearly exempt, once the ownership threshold is met, denoted as *participation exemption*. Below the threshold, those dividends are taxed under the ordinary corporate tax rule. The

result is a sharp repatriation notch: the parent-country tax on foreign dividends falls discretely when ownership share crosses α^*. Specifically, the parent-country tax $T_{pa}^{territorial}$ is:

$$T_{pa}^{territorial} = \begin{cases} D_{pa} \times t_p & \text{if } \alpha_{pa} < \alpha^* \\ D_{pa} \times 0 & \text{if } \alpha_{pa} \geq \alpha^* \end{cases} \tag{1}$$

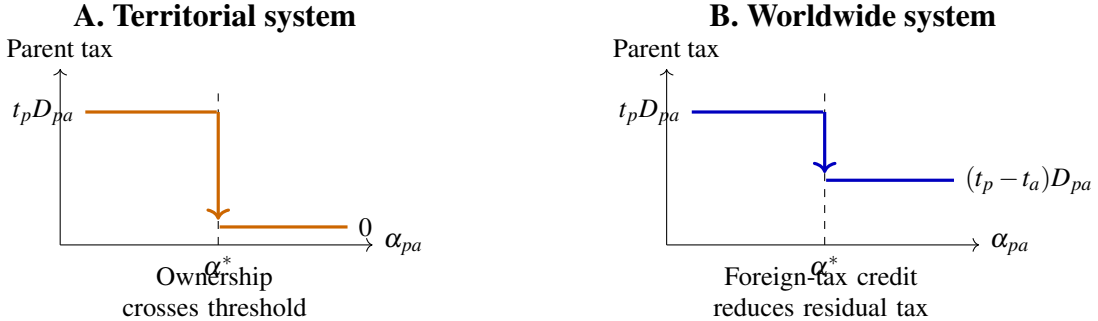
where t_p is the tax rate in the parent country. Figure 1, Panel A, illustrates the resulting territorial-system notch.

2. Under a **worldwide system**, the notch is conceptually different. The parent country taxes foreign-sourced income, but a *foreign tax credit* is available if the parent owns at least a minimum share of the foreign affiliate. In that case, crossing the threshold does not eliminate parent-country tax, but it can reduce residual taxation by allowing the parent to claim an underlying foreign tax credit. The notch therefore remains a discontinuity in parent-country tax liability, although it is smaller than under territorial exemption. Specifically, the parent country tax $T_{pa}^{worldwide}$ is:

$$T_{pa}^{worldwide} = \begin{cases} D_{pa} \times t_p & \text{if } \alpha_{pa} < \alpha^* \\ D_{pa} \times (t_p - t_a) & \text{if } \alpha_{pa} \geq \alpha^* \end{cases} \tag{2}$$

where t_a is the tax rate in the affiliate country. Figure 1, Panel B, illustrates the smaller residual-tax notch under worldwide taxation.

Figure 1: **Parent-Country Tax on Foreign Dividends at the Ownership Threshold**



Notes: D_{pa} denotes the dividend base, t_p is the parent-country tax rate, and t_a is the affiliate-country tax rate. Crossing α^* discretely lowers parent-country tax on foreign dividends. Under territorial taxation, the tax falls to zero or near zero; under worldwide taxation, the tax falls only to the residual tax after foreign-tax-credit relief.

A pivotal feature common to both systems is that preferential treatment in the parent

country typically requires a **minimum ownership share** α^* in the foreign affiliate. The minimum ownership requirements represent deliberate policy choices–often motivated by a desire to encourage substantive investment relationships, deter purely tax-motivated portfolio structures, and balance base protection with international capital mobility. In Japan, the relevant threshold is 25% for most affiliates in our main sample.[5] In Germany, the U.K., Australia, and the U.S., the relevant threshold is 10%. In France, it is 5%, and in Canada, it is 1%. In China's worldwide system, the relevant ownership threshold is 20% for access to the underlying foreign tax credit.[6] These differences generate the cross-country variation in ownership notches that we exploit.

Two institutional clarifications are useful before turning to the example. First, although multinational groups may use multi-layer ownership chains, the entity claiming the participation exemption or underlying foreign tax credit must satisfy the statutory ownership condition at that layer. Direct ownership therefore remains a meaningful and costly adjustment margin even in multi-tier structures. Second, the focal discontinuity is the parent-country tax treatment of foreign dividends, not affiliate-country withholding taxes. Withholding taxes can affect the level of payout taxation, but many tax-haven locations impose zero or very low withholding without an ownership threshold, while some non-haven locations reduce withholding at certain thresholds. That pattern works against, rather than mechanically creates, positive excess haven bunching.[7] Any remaining withholding-tax schedules are further differenced out unless they generate a threshold-specific haven premium only for focal parents.

2.2 A simple numerical example

Consider a parent country with a 30% tax rate on non-qualifying foreign dividends and a 10% ownership threshold for exemption under a territorial system. A parent initially owns 9.7% of two affiliates, one in a tax haven and one in a non-haven country. Raising ownership to 10% requires an incremental equity commitment and associated ownership-adjustment cost of 5 units

[5] The ownership threshold α^* is lowered from 25% to 10% if affiliates are located in countries that have treaties with Japan.

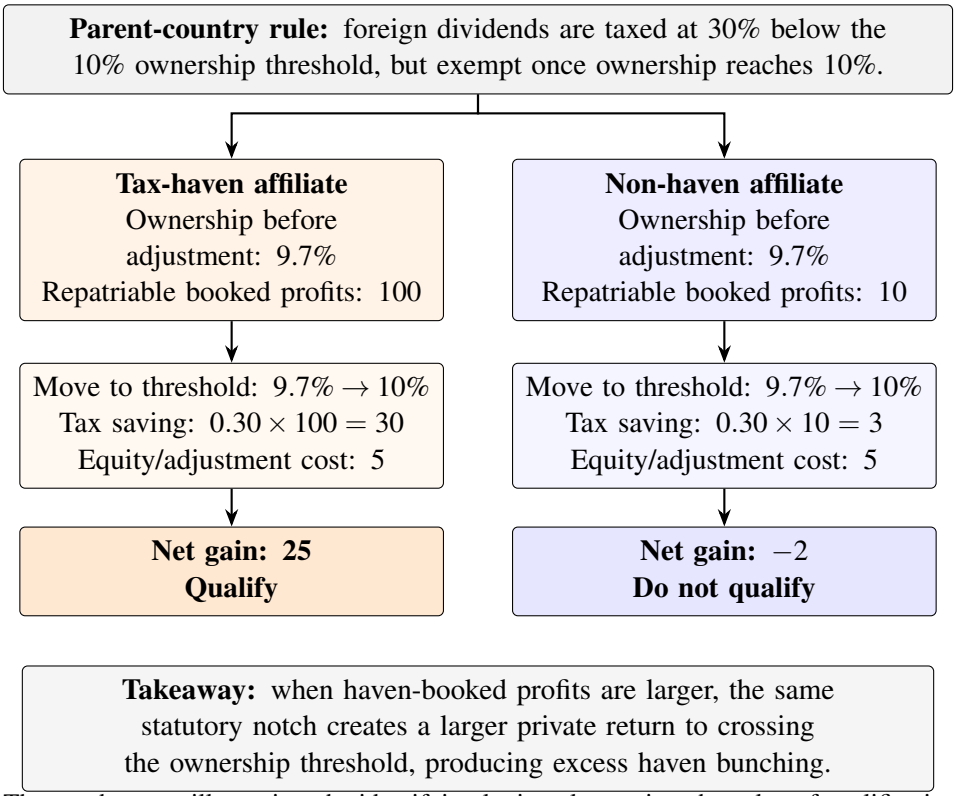
[6] The 20% ownership threshold requirement is removed if the affiliate is located in the list of designated high-tax countries.

[7] Section 6 confirms this withholding-tax point in subsamples that neutralize withholding-tax schedules.

for each affiliate. This cost is not merely administrative: the parent must put additional capital into the affiliate, or purchase and concentrate a larger equity stake, which can reduce financial flexibility. Suppose the haven affiliate has 100 units of repatriable booked profits, while the non-haven affiliate has 10 units. These numbers are illustrative, but they capture the economic logic of profit shifting: the haven affiliate carries a larger booked profit base because profits may have arrived through transfer pricing, intra-group debt, royalties, intellectual property location, or related channels.

Crossing the threshold saves 30 units of parent-country tax for the haven affiliate but only 3 units for the non-haven affiliate. After the 5-unit equity and adjustment cost, the net gain is 25 for the haven affiliate and -2 for the non-haven affiliate. The parent therefore qualifies the haven affiliate but does not qualify the non-haven affiliate. If many parents face similar choices, the ownership distribution displays more excess mass at the threshold for haven affiliates than for non-haven affiliates. This is the bunching object we study. Figure 2 summarizes the arithmetic.

Figure 2: **Numerical Illustration: Profit Shifting Amplifies the Ownership-Threshold Incentive**



Notes: The numbers are illustrative; the identifying logic only requires the value of qualification to rise with the repatriable booked-profit base.

The example also clarifies why the paper does not need to identify the precise profit-shifting channel. Haven-booked profits may arrive through transfer pricing, intra-group debt, royalties, intellectual property location, or related channels. Any channel that enlarges the booked profit base in the haven raises the value of qualifying for preferential dividend treatment. If part of the booked profit base is expected to return through dividends, the tax saving is smaller, but the same logic applies as long as dividends are a relevant path. The test is therefore informative about a dividend-relevant component of haven-booked profits and the residual profit-shifting incentives that make threshold qualification valuable.

2.3 Predictions across tax systems

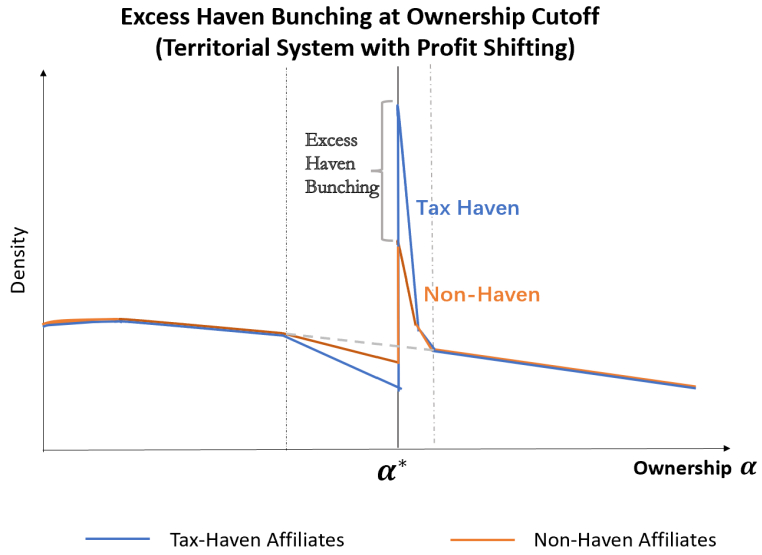
The numerical example generalizes to a simple prediction. Let D_{pa} denote the expected dividend base from affiliate a to parent p. Under a territorial system, crossing α^* reduces parent-country tax on those dividends by approximately $\Delta T_{pa}^{territorial} = t_p D_{pa}$. Equivalently, the local private value of moving an affiliate to the threshold is

$$V_{pa}(\alpha^*) \approx \underbrace{t_p D_{pa}}_{\text{tax saving on repatriable booked profits}} - \underbrace{K(\alpha^* - \alpha_{pa}^{init})}_{\text{equity and ownership-adjustment cost}},$$

where $K()$ is the cost function for adjusting ownership. The benefit of qualification therefore scales with the repatriable booked-profit base. If tax-haven affiliates contain large booked profits, parents should be more willing to incur the equity and organizational cost required to qualify haven affiliates than non-haven affiliates. The result is *more bunching* for tax-haven affiliates at the ownership threshold, as illustrated in Figure 3. Appendix C formalizes this local private-value logic and derives the corresponding bunching interval.

Because crossing the threshold requires real equity commitment and ownership adjustment, bunching is a revealed-preference measure of the private value of qualification. If the response is systematically stronger for tax-haven affiliates, the threshold is more valuable for tax-haven affiliates than for non-haven affiliates, consistent with shifted profits enlarging the value of preferential repatriation treatment. Conversely, anti-avoidance rules that reduce the value of booking profits in havens should compress this haven-specific return to qualification

Figure 3: **Illustration for Bunching under Territorial Taxation with Profit Shifting**



Notes: The parent country operates a territorial system and exempts foreign dividends only if the parent's ownership share in the affiliate reaches the threshold α^*. The return to crossing the threshold is larger when the affiliate has a larger booked-profit base, so the figure illustrates stronger bunching for tax-haven affiliates than for non-haven affiliates under profit shifting. The placebo logic used to estimate this difference is introduced in Section 4.

and reduce the haven-non-haven bunching gap.[8]

A worldwide system provides a useful benchmark. There, crossing the ownership threshold typically unlocks the underlying foreign tax credit, so the tax saving from qualification is approximately $\Delta T_{pa}^{worldwide} = t_a D_{pa}$. For tax-haven affiliates, t_a is low, so the gain from crossing the threshold is mechanically limited; moreover, tax-haven profits remain subject to substantial residual parent-country tax $(t_p - t_a)$ even after qualification. As a result, repatriating haven profits remains relatively unattractive, and the incentive to raise ownership in order to cross the threshold is weak. We therefore do not expect a positive haven-non-haven bunching gap under worldwide taxation. Finding no such haven-specific bunching differential under a worldwide regime supports the interpretation that bunching under territorial regimes is driven by repatriation incentives at the participation-exemption threshold rather than by generic differences between tax-haven and non-haven affiliates.

[8]Similar to many quasi-experiment methods, our estimate is local to affiliates whose direct ownership lies near the statutory threshold. It does not identify shifting responses for affiliates whose ownership is far above the threshold, including wholly owned affiliates. Those affiliates may remain relevant for aggregate profit shifting and may face different governance structures, or enforcement scrutiny.

2.4 Anti-avoidance regimes compared

The paper compares three broad policy environments, as summarized in Table 1.

The first is a *territorial system backed primarily by traditional CFC rules*, which we treat as the baseline regime. Traditional CFC rules refer to regimes whose main backstop is current taxation of selected categories of low-taxed foreign income, typically subject to control thresholds, passive-income distinctions, exemptions, and entity-specific tests. Conventional CFC rules are designed to limit deferral by taxing certain categories of mobile foreign income currently at the parent level.[9] In practice, however, they often apply only when control thresholds are met and frequently distinguish between passive and active income. These features can leave room for multinationals to continue booking profits in low-tax jurisdictions while still benefiting from participation exemption on repatriation. Japan, Germany, and France are our main examples of this baseline regime.

Table 1: Parent-Country Dividend-Tax Notches and Anti-Avoidance Regimes

Parent Country	**Tax System**	**Threshold α^***	**Tax Rate Change at α^***	**Anti-Avoidance Rules**
Archetype 1: Baseline Anti-Avoidance				
Japan$^{(1)}$	Territorial	25%	$t_p \to 0.05t_p \approx 0$	CFC
Germany	Territorial	10%	$t_p \to 0.05t_p \approx 0$	CFC
France	Territorial	5%	$t_p \to 0.05t_p \approx 0$	CFC
Archetype 2: Enhanced Anti-Avoidance				
U.S.	Territorial	10%	$t_p \to 0$	CFC + GILTI
Australia	Territorial	10%	$t_p \to 0$	CFC + DPT
U.K.	Territorial	10%	$t_p \to 0$	CFC + DPT
Conceptual Counterfactual				
China$^{(2)}$	Worldwide	20%	$t_p \to (t_p - t_a)$	CFC

Note: t_p and t_a are the statutory (or effective) corporate tax rates in the parent and affiliate countries. The column "Tax change at α^*" describes the *parent-country* corporate tax rate on foreign dividends that is discontinuous in direct ownership at α^*. In territorial systems this is the participation-exemption notch; in China's worldwide system it is the availability of an underlying foreign-tax credit. In addition, (1) denotes that Japan's 25% ownership threshold applies to affiliate locations without treaties, and the threshold is reduced to 10% for affiliate locations with treaties; (2) denotes that China's 20% ownership threshold is removed for designated affiliate locations with high tax rates (i.e., $t_a > t_p$). Regarding anti-avoidance regimes, CFC denotes traditional controlled foreign corporation rules, GILTI denotes the Global Intangible Low-Taxed Income regime, and DPT denotes the diverted profits tax.

The second environment augments the territorial system with *economic substance-oriented*

[9] A foreign corporation is treated as a controlled foreign corporation (CFC) under the tax rules of a parent country if residents (or entities resident) in that country collectively own more than 50% of its stock (by vote or value). Consequently, a specific parent company may hold an ownership stake below 50% while the aggregate ownership by all entities from the parent country exceeds the 50% threshold.

backstops. The most important case is the U.S. post-TCJA regime, which combines a dividends-received deduction with the Global Intangible Low-Taxed Income regime (GILTI). GILTI subjects U.S. shareholders to current taxation on low-taxed foreign income exceeding a routine return on tangible assets and is computed on a globally blended basis: aggregated foreign income, routine tangible-asset return, and foreign taxes across foreign affiliates.[10] This design reduces the marginal payoff to concentrating unusually high profits in low-tax entities, especially those with little real activity. Australia and the U.K. provide a related, though institutionally distinct, comparison through the Diverted Profits Tax (DPT), which raises the expected cost of arrangements that allocate profits away from the location of key functions, personnel, and economic substance.

The third environment is a *worldwide system*, represented by China. The repatriated foreign income remains subject to residual parent-country taxation, and the ownership threshold governs access to foreign tax credits rather than exemption. We use China as a mechanism benchmark, because the residual tax reduces the gain from repatriating low-tax foreign income and therefore should mute the haven-specific bunching differential at the threshold.

These institutional differences imply clear empirical predictions. If traditional CFC rules do not fully offset the value of booking profits in tax havens, territorial systems with participation-exemption notches should display more bunching for tax-haven affiliates than for non-haven ones. If economic substance-based backstops materially reduce the payoff to locating profits in low-tax, low-economic-substance affiliates, the haven-non-haven bunching gap should be attenuated. And if residual parent-country taxation remains large enough under a worldwide system, the haven-non-haven bunching gap should be weak or absent.

3 Data

We use global parent-affiliate ownership data from Moody's Orbis, which provides worldwide coverage of public and private firms and detailed ownership links across entities. The empirical

[10] Under GILTI, tested income and tested loss are netted across CFCs. However, only CFCs with tested income contribute qualified business asset investment (QBAI) to the routine-return allowance; CFCs with tested losses contribute none (i.e., they have no specified tangible property for GILTI purposes). The allowance is therefore computed on an aggregate, shareholder-level basis rather than affiliate-by-affiliate.

unit of observation is a direct cross-border parent-affiliate link. For each link, Orbis records the country of the parent, the country of the affiliate, and the parent's direct ownership share in the affiliate. This direct ownership share is the running variable for our analysis because the tax rules studied condition preferential parent-country treatment of foreign dividends on statutory ownership thresholds at the level of the entity claiming the exemption or foreign-tax credit. Even when multinational groups organize affiliates through multi-tier ownership chains, the relevant ownership condition must be satisfied at each layer, so direct stakes remain a meaningful, costly adjustment margin.

Our analysis focuses on multinational groups in China, Japan, France, Germany, the U.K., Australia, the U.S., and Canada, and traces their foreign affiliates worldwide, including affiliates in tax havens and non-havens.[11] Canada plays two roles in the design. Because Canada's relevant threshold is 1%, it is not a main high-threshold focal case. Instead, it provides an additional placebo parent group around higher pseudo-thresholds and a useful low-threshold benchmark for the policy discussion. The data are drawn from a mid 2024 Orbis snapshot,[12] The estimand is a diagnostic of residual profit-shifting incentives visible at statutory thresholds across different anti-avoidance regimes. We drop observations with missing or non-numeric ownership shares.[13] The resulting sample contains 357,675 direct parent-affiliate observations.

We classify affiliate locations as tax havens or non-havens using the tax haven list in Gravelle [2009]. The baseline tax haven set includes the standard zero- and low-tax jurisdictions used in the international-tax literature.[14] The tax haven indicator is assigned at the

[11]These parent countries are chosen because they are important capital exporters and, crucially, provide sufficient numbers of foreign affiliates around the relevant statutory thresholds for bunching analysis. Many other candidate jurisdictions do not yield enough support near the threshold for a transparent bunching exercise. We do not include Italy because the relevant policy is not notched, and we do not include South Korea because its recent reform in 2023 is too close to our data-collection period.

[12]Japan began implementing Pillar Two in April 2024. Because cross-border ownership adjustment is slow, the mid 2024 snapshot is unlikely to reflect that reform. A supplementary check using data through mid 2025 shows that the Japan bunching pattern remains unchanged within a year from the reform. In addition, the snapshot data for Canada were collected in early 2026. This does not affect our estimates as Canada is included primarily as an additional placebo group.

[13]The dropped observations include interval-coded or qualitative ownership entries, such as $-$, UO, UO+, MO, FME, ADV, and bracketed values such as > 50 or > 25.

[14]Following Gravelle [2009], tax havens include Andorra, Anguilla, Antigua and Barbuda, Aruba, Bahamas, Bahrain, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Channel Islands (Guernsey and Jersey), Cook Islands, Costa Rica, Cyprus, Dominica, Gibraltar, Grenada, Hong Kong, Ireland, Isle of Man, Jordan, Lebanon, Liberia, Liechtenstein, Luxembourg, Macau, Maldives, Malta, Marshall Islands, Mauritius, Monaco, Montserrat, Nauru, Netherlands Antilles, Niue, Panama, Samoa, San Marino, Seychelles, Singapore, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Tonga, Turks and Caicos Islands, U.S. Virgin Islands, and

affiliate-location level and is applied symmetrically across focal and placebo parent groups. This symmetry matters for our difference-in-differences-in-bunching design: any stable difference between tax-haven and non-haven affiliates that is unrelated to the parent-country ownership notch is differenced out.

Table 2 summarizes the ownership distribution by parent country. Two features are important for the empirical analysis. First, the statutory thresholds generally lie between the 5th and 25th percentiles of the ownership distribution, so the relevant thresholds are in interior parts of the support rather than in a thin tail. This provides substantial mass on both sides of the threshold and makes bunching estimation feasible. Second, ownership shares exhibit bunching at round numbers, including 5, 10, 25, and 50 percent. Such rounding is visible and similar across many parent-country groups. Figure A1 illustrates the pattern by comparing the ownership distributions for Chinese and Japanese multinationals; outside the policy thresholds, the two groups display similar rounding patterns, while each also bunches at their relevant statutory thresholds. It is one reason why we rely on placebo parent groups and on the difference-in-differences-in-bunching framework in Section 4 so that rounding is netted out.

Table 2: Summary Statistics of Parent-affiliate Ownership

Parent-Affiliate Pairs	Observations	ownership share		
		p5	p10	p25
China-Abroad	17,078	9.1%	25.5%	80%
Japan-Abroad	27,293	4.1%	10%	40%
France-Abroad	55,244	2.5%	10.8%	50%
Germany-Abroad	67,838	1.9%	10.4%	51%
U.S.-Abroad	94,097	0.5%	1.2%	11.3%
Canada-Abroad	16,017	0.5%	3.0%	40%
Australia-Abroad	23,920	0.2%	0.8%	12.6%
U.K.-Abroad	56,188	0.8%	4.6%	57.5%

Notes: The thresholds for parent-country preferential tax treatment generally lie between the 5th and 25th percentiles of the ownership distribution. Countries with lower thresholds, such as the U.S., U.K., Australia, Canada, France, and Germany, show more diversification (lower 5th percentile values) than countries with higher thresholds, such as China and Japan.

One measurement issue deserves discussion. Prior work notes that earlier Orbis vintages may under-represent some private firms and entities in tax-haven jurisdictions [Tørsløv et al., 2023b]. In our setting, sit does not by itself generate the bunching patterns we estimate. The

Vanuatu. The main results are robust under reasonable modifications of the tax haven list, as shown in section 6.

DDB design compares haven and non-haven affiliates within a focal parent-country regime and then *nets out* the corresponding haven–non-haven difference for placebo parent groups that do not face the same ownership notch. Thus, a coverage problem would bias the estimate only if missingness changed discontinuously at the statutory threshold, and did so differentially for focal parents but not for placebo parents. Smooth under-coverage of haven affiliates would primarily affect the level of observed haven ownership links rather than create excess mass exactly at the relevant threshold. Moreover, our data come from the expanded Moody's Orbis snapshot, which reduces the relevance of coverage concerns documented for earlier data vintages.

4 Empirical Framework

This section explains how we take the mechanism in Section 2 to the data. The key empirical object is local excess density mass at a statutory ownership threshold. We first define ordinary bunching, then define *excess haven bunching*, and finally show how the difference-in-differences-in-bunching (DDB) estimator nets out generic ownership rounding and stable haven–non-haven differences.

4.1 From bunching to excess haven bunching

Bunching is the excess mass of observations around a policy threshold relative to a counterfactual distribution that would have prevailed without the tax notch. In this paper, the running variable is the parent's direct ownership share in a foreign affiliate, and the notch is the ownership threshold α^* at which parent-country taxation of foreign dividends changes discretely. Let h_j^{obs} denote the observed number of ownership links in ownership bin j, and let h_j^{cf} denote the counterfactual number of links that would appear in the same bin absent the tax notch. The bunching mass in a local region around the threshold is the difference between the observed and counterfactual densities: $B = \sum_{j \in \mathscr{J}^+} \left(h_j^{obs} - h_j^{cf} \right)$, where $\mathscr{J}^+ = \{\alpha^*, ..., \alpha^* + u_2\}$ is the bunching region at the threshold or just above it.

The counterfactual distribution need not be smooth. Ownership shares may bunch at round numbers such as 5, 10, 25, or 50 percent for reasons unrelated to tax notches. The

relevant question is whether the observed density contains *additional* mass around α^* relative to a counterfactual that already includes rounding. If there is no tax notch, the observed density should track this counterfactual locally. If the notch matters, affiliates that would otherwise have located just below the threshold may move to the threshold or just above it, generating excess mass in the bunching region.

Our design applies this bunching logic to compare excess mass across parent groups and affiliate types. For a parent group $g \in \{\text{focal}, \text{comp}\}$, where comp denotes the relevant comparison group, and affiliate type $s \in \{\text{haven}, \text{nonhaven}\}$, define the excess bunching in the bunching region as

$$B_s^g = \sum_{j \in \mathscr{J}^+} \left(h_{gsj}^{obs} - h_{gsj}^{cf} \right),$$

where h_{gsj}^{obs} is the observed ownership-bin count and h_{gsj}^{cf} is the counterfactual count for the same parent group and affiliate type in the absence of notch-induced manipulation.

The first comparison asks whether excess bunching is larger for haven affiliates than for non-haven affiliates within the focal parent group: $B_{haven}^{focal} - B_{nonhaven}^{focal}$. This difference is not yet sufficient, because haven affiliates may differ from non-haven affiliates for reasons unrelated to the focal tax notch. We therefore subtract the corresponding haven–non-haven bunching gap for a comparison parent group:

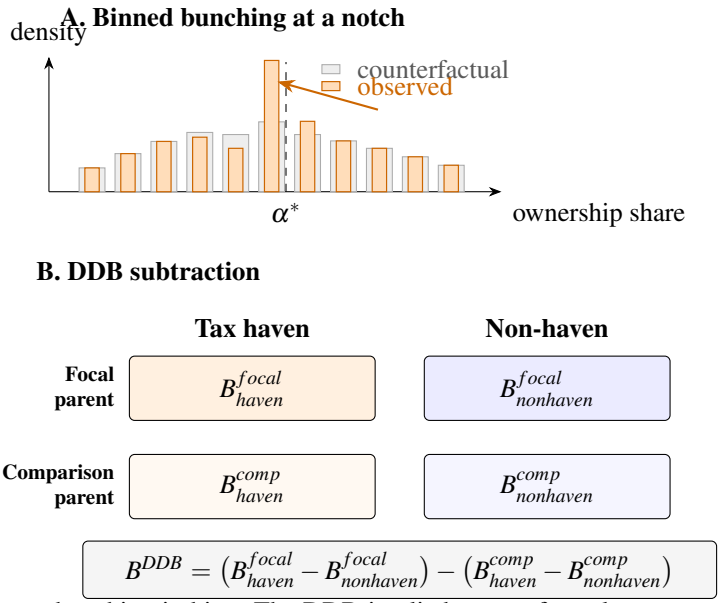
$$B^{DDB} = \left(B_{haven}^{focal} - B_{nonhaven}^{focal} \right) - \left(B_{haven}^{comp} - B_{nonhaven}^{comp} \right). \tag{3}$$

Equation (3) is the paper's central estimand. A positive value means that, after accounting for generic rounding and stable haven–non-haven differences, tax-haven affiliates of the focal parent group display additional bunching at the ownership threshold. Under the mechanism in Section 2, this indicates that threshold qualification is especially valuable for haven affiliates with larger repatriable booked-profit bases.

4.2 Estimation: the one-step DDB estimator

Let j index ownership bins centered at α_j, and let h_{paj} be the number of parent–affiliate observations with parent country p, affiliate location a, and ownership share in bin j. Let

Figure 4: **Bunching and the DDB Comparison**



Notes: Panel A illustrates bunching in bins. The DDB-implied counterfactual accounts for rounding at α^*; excess bunching is the residual focal-haven mass above that counterfactual. Panel B shows the DDB comparison used in the paper. The estimator subtracts the haven–non-haven bunching gap for a *comparison* parent group from the corresponding gap for *focal* parents, leaving the focal, haven-specific threshold response.

$\mathscr{W} = \{\alpha^* - u_1, \ldots, \alpha^* + u_2\}$ denote the manipulation window around the statutory threshold. In the baseline implementation, we estimate the DDB object in one regression:

$$\begin{aligned} h_{paj} = \lambda_{pj} + \mu \cdot \mathbb{1}\{a \in \text{haven}\} + \sum_{x \in \mathscr{W}} \beta_x \mathbb{1}\{\alpha_j = x\} \cdot \mathbb{1}\{a \in \text{haven}\} \\ + \sum_{x \in \mathscr{W}} \gamma_x \mathbb{1}\{\alpha_j = x\} \cdot \mathbb{1}\{p \in \text{focal}\} \cdot \mathbb{1}\{a \in \text{haven}\} + \varepsilon_{paj}. \end{aligned} \tag{4}$$

The parent-by-bin fixed effect λ_{pj} absorbs the ownership distribution of each parent group at each bin, including parent-specific rounding common to haven and non-haven affiliates. The coefficients β_x absorb threshold-specific haven–non-haven differences that are common across parent groups. The coefficients γ_x are therefore the residual local excess mass that is simultaneously focal-parent-specific, haven-specific, and threshold-specific. The one-step DDB estimate is

$$\widehat{B}^{DDB} = \sum_{x \in \mathscr{J}^+} \widehat{\gamma}_x.$$

This one-step specification is the most compact way to estimate the local DDB object. The decomposed two-step estimator, which first estimates the haven–non-haven bunching gap sep-

arately within the focal and comparison parent groups and then subtracts the two gaps, targets the same DDB object. We report it as a diagnostic and provide its construction in Appendix A.

To express the magnitude in units of the running variable, we map $\widehat{B}^{DDB}$ into an equivalent ownership shift. The DDB-implied counterfactual density for focal-parent haven affiliates is $\widehat{h}^{cf}_{focal,haven,j} = \widehat{\lambda}_{focal,j} + \widehat{\mu} + \sum_{x \in \mathscr{W}} \widehat{\beta}_x \mathbb{1}\{\alpha_j = x\}$. Let $\widehat{h}^{cf}_{focal,haven}(\alpha)$ denote the corresponding density over ownership shares. Define the nonnegative magnitude $\delta_{\alpha^*} \geq 0$ by

$$|\widehat{B}^{DDB}| = \int_{\alpha^* - \delta_{\alpha^*}}^{\alpha^* - \varepsilon} \widehat{h}^{cf}_{focal,haven}(\alpha)\, d\alpha, \tag{5}$$

where $\varepsilon > 0$ excludes the threshold bin itself. The signed equivalent-width statistic is

$$\Delta\alpha^* = \begin{cases} \delta_{\alpha^*}, & \text{if } \widehat{B}^{DDB} > 0, \\ 0, & \text{if } \widehat{B}^{DDB} = 0, \\ -\delta_{\alpha^*}, & \text{if } \widehat{B}^{DDB} < 0. \end{cases} \tag{6}$$

The statistic δ_{α^*} is an absolute width, while $\Delta\alpha^*$ carries the sign of $\widehat{B}^{DDB}$. We bootstrap the full procedure so that standard errors incorporate both the bunching estimate and the conversion into equivalent ownership-share units.

4.3 Comparison groups and policy interpretation

The same DDB estimator is used throughout the paper, but its interpretation depends on the comparison group. We use two comparison designs. The first compares a focal parent country that faces a statutory threshold with placebo parent countries that do *not* face a parent-country dividend-tax notch at that same ownership share. This design estimates the haven-specific response to the focal country's tax notch under its existing anti-avoidance regime. The second compares parent countries that share the same ownership threshold but differ in the additional anti-avoidance backstop layered on top of the baseline regime. This design is used to evaluate the incremental role of GILTI or DPT-type rules.

The first comparison is a *no-focal-threshold placebo* design. The focal parent country

faces the statutory ownership threshold α^*, while the placebo parent countries do not face a parent-country dividend-tax threshold at that same ownership share. For example, when Japan is focal at $\alpha^* = 25\%$, the placebo group consists of parent countries whose relevant parent-country dividend-tax thresholds are not 25 percent. A positive $\Delta\alpha^*$ means that Japanese haven affiliates display additional bunching at the Japanese threshold, relative to the DDB-constructed counterfactual. This estimate captures the response around Japan's 25 percent notch under Japan's territorial system and traditional CFC regime, after removing generic 25 percent rounding and generic haven–non-haven differences. The Germany and France baseline exercises are interpreted in the same way. China also uses this design, but as a mechanism benchmark: because China's worldwide system does not eliminate residual parent-country taxation of low-tax foreign income when the ownership threshold is crossed, the haven-specific response should be muted, supporting that the territorial participation-exemption notch is the relevant mechanism.

The second comparison is a *same-threshold policy* design. Here the focal and benchmark parent groups face the same ownership threshold, so the statutory notch itself is held fixed. The comparison then asks whether an additional anti-avoidance backstop attenuates haven-specific bunching at that common threshold. The U.S.–Germany comparison is the main example. Both countries operate territorial systems with a 10 percent ownership threshold and traditional CFC rules, but the U.S. additionally implements GILTI. A negative $\Delta\alpha^*$ for the U.S. relative to Germany therefore means that the U.S. regime exhibits less haven-specific bunching than the same-threshold German benchmark, consistent with GILTI attenuating the ownership-threshold response. The U.K.–Germany and Australia–Germany comparisons are interpreted analogously, with DPT-type rules as the additional backstop.

4.4 Identification, common concerns, and diagnostics

The object of interest is excess density mass around a known statutory threshold. The identifying assumption of the DDB design is therefore local: absent the focal parent-country tax notch at α^*, the haven–non-haven density gap around α^* for the focal parent group would have followed the corresponding haven–non-haven density gap for the comparison parent group.

The DDB design removes several common sources of concern. Generic ownership round-

ing, stable haven–non-haven differences, and parent-country differences in the overall ownership distribution do not threaten identification by themselves, as they are absorbed by parent-by-bin fixed effects, by the haven–non-haven comparison, or by the focal–comparison subtraction. Thus, an alternative explanation must generate local excess mass exactly at α^*, only for the focal parent group, and differentially for haven affiliates relative to non-haven affiliates. In other words, the remaining threat is a shock that is simultaneously focal-parent-specific, haven-specific, and threshold-specific, but unrelated to the focal tax rule.

In the no-focal-threshold placebo design, the comparison parents do *not* face a parent-country dividend-tax notch at the focal threshold. The estimate therefore isolates the haven-specific response to the focal country's tax notch under its existing anti-avoidance regime. A violation would require some other force to create a focal-parent-specific and haven-specific discontinuity at the same ownership share. In the same-threshold policy design, the focal and benchmark countries share the same ownership threshold, but the focal country has an additional anti-avoidance regime. Common motives for bunching at that threshold—such as rounding and control motives—are part of the benchmark and are differenced out. The estimate isolates whether the focal regime exhibits more or less haven-specific bunching than the same-threshold benchmark regime without the additional backstop. For the U.S.–Germany comparison, for example, a confounder would have to be a U.S.-specific, and haven-specific, and 10-percent discontinuity unrelated to the economic-substance backstop.

Affiliate-country withholding taxes fit naturally into this logic. If the withholding-tax schedule is linear at α^*, it cannot generate bunching at the focal threshold. If it changes at a different ownership threshold, it does not contaminate the local discontinuity studied here. If it changes at the same threshold but does so equally for focal and comparison parents, it is differenced out by the DDB design. Moreover, because withholding-tax rates in tax havens are often zero, while some non-haven locations reduce withholding only above thresholds such as 10% or 25%, ignoring withholding taxes should, if anything, work against finding positive excess haven bunching. Section 6 verifies this directly using subsamples constructed to neutralize withholding-tax schedules.

We assess the identifying assumption with three diagnostics. First, we compare the ob-

served focal-haven density with the DDB-implied counterfactual outside the manipulation region to see whether the counterfactual tracks the observed density outside the bunching region. Second, we vary the placebo or comparison parent group to check whether the estimates are driven by a particular comparison group. Third, we run pseudo-threshold exercises at ownership shares where no relevant notch applies to see whether there is indeed no excess haven bunching. These diagnostics verify the local identifying assumption in the data.

5 Main Results

This section reports the main estimates of haven-specific bunching at statutory ownership thresholds. We summarize the magnitude of the response using the signed equivalent ownership shift, $\Delta\alpha^*$, estimated from the difference-in-differences-in-bunching specification in (4). It expresses excess haven bunching in ownership-share units, making the estimates comparable across thresholds and regimes. In the focal-versus-placebo designs, $\Delta\alpha^* > 0$ means that tax-haven affiliates of the focal parent group exhibit more bunching at the statutory threshold than predicted by the DDB counterfactual, indicating haven-specific return to crossing the ownership threshold. In same-threshold policy comparisons, where the focal and benchmark countries face the same ownership cutoff, $\Delta\alpha^*$ is a relative statistic: negative values indicate that the focal regime exhibits less haven-specific bunching than the benchmark regime.

Table 3 provides the roadmap for the results. The Main column reports the preferred one-step DDB estimates; the Diagnostic column reports the decomposed two-step estimates. We discuss the patterns in turn below.

Table 3 highlights three patterns. First, territorial systems backed mainly by traditional CFC rules display positive excess haven bunching, with the largest response in Japan and smaller but positive responses in Germany and France. Second, China provides a null benchmark under worldwide taxation: residual parent-country tax mutes the haven-specific repatriation incentive, and the estimate is not positive. Third, holding the 10 percent threshold fixed, the U.S. exhibits substantially less excess haven bunching than Germany, consistent with GILTI reducing the haven-specific return to threshold qualification. Australia and the

Table 3: **Main Estimates: Excess Haven Bunching Across Anti-Avoidance Regimes**

(**Focal parent** − **Comparison parent**)	Cutoff Focal α^*	(**Haven** − **Non-haven**) **Excess Haven Bunching** $\Delta\alpha^*$	
		Diagnostic two-step	**Main one-step**
A. Territorial + traditional CFC			
Japan (focal, $\alpha^* = 25\%$) − Others (placebo, $\alpha^* \neq 25\%$)	25%	3.5***	4.0***
		(0.67)	(0.52)
Germany (focal, $\alpha^* = 10\%$) − Others (placebo, $\alpha^* \neq 10\%$)	10%	1.0***	1.0**
		(0.38)	(0.48)
France (focal, $\alpha^* = 5\%$) − Others (placebo, $\alpha^* \neq 5\%$)	5%	0.5***	0.5**
		(0.19)	(0.21)
B. Worldwide benchmark			
China (focal, $\alpha^* = 20\%$) − Others (placebo, $\alpha^* \neq 20\%$)	20%	-2.0***	-1.0**
		(0.65)	(0.42)
C. Same-threshold GILTI comparison			
U.S. (GILTI, $\alpha^* = 10\%$) − **Germany** (no GILTI, $\alpha^* = 10\%$)	10%	-1.5**	-1.0***
		(0.62)	(0.29)
D. Same-threshold DPT comparisons			
U.K. (DPT, $\alpha^* = 10\%$) − **Germany** (no DPT, $\alpha^* = 10\%$)	10%	-0.5	-0.5**
		(0.52)	(0.25)
Australia (DPT, $\alpha^* = 10\%$) − **Germany** (no DPT, $\alpha^* = 10\%$)	10%	-1.0*	-0.5*
		(0.55)	(0.27)

Notes: It reports difference-in-differences-in-bunching estimates of excess haven bunching at parent-country ownership thresholds. The Main column reports the preferred one-step estimator from Equation (4); the Diagnostic column reports the decomposed two-step estimator. Estimates are signed equivalent ownership-share points, $\Delta\alpha^*$. Positive values indicate additional bunching of tax-haven affiliates relative to non-haven ones for the focal parent group, net of the corresponding haven–non-haven difference for the comparison group. Negative values in same-threshold policy comparisons indicate lower haven-specific bunching for the focal regime relative to the benchmark regime. Standard errors are in parentheses. ***, **, and * denote significance levels.

U.K. show reductions under DPT regimes, although with smaller magnitudes. It suggests that haven-specific bunching is stronger under traditional CFC rules and weaker when economic-substance-oritened backstop is added.

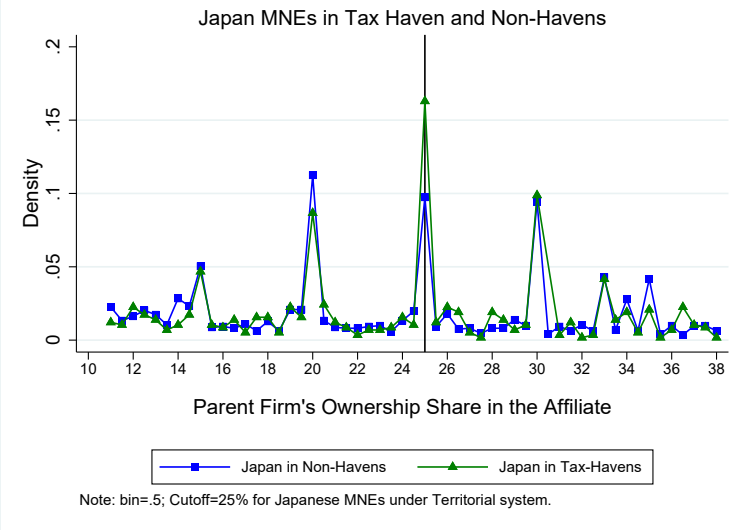
5.1 Territorial systems with traditional CFC rules

We begin with the baseline regimes: territorial systems backed primarily by traditional CFC rules. Japan provides the clearest case. Figure 5 shows the raw ownership distributions for Japanese and Chinese multinationals by affiliate haven status. For Japan, the density of tax-haven affiliates displays a sharp spike at the 25 percent ownership threshold, while the corre-

sponding spike for non-haven affiliates is smaller. Figure 6 then plots the observed density for Japanese haven affiliates against the counterfactual density constructed via the DDB design.

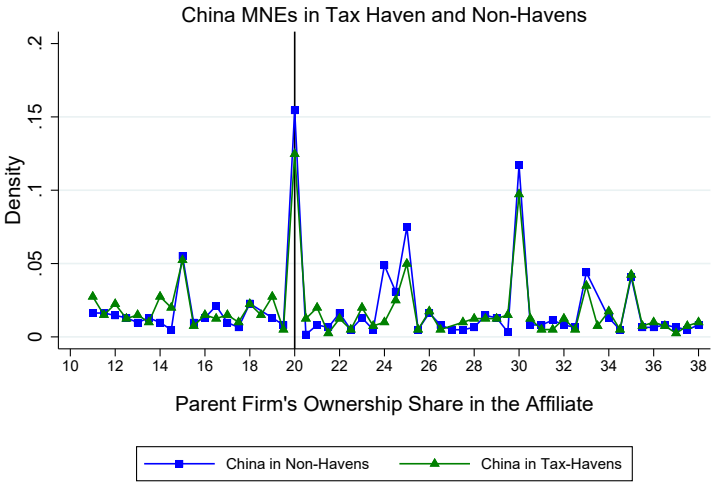
Figure 5: **Raw Ownership Densities by Affiliate Haven Status: Japan and China**

Panel A: Japan, territorial system, $\alpha^* = 25\%$



Note: bin=.5; Cutoff=25% for Japanese MNEs under Territorial system.

Panel B: China, worldwide system, $\alpha^* = 20\%$



Note: bin=.5; Cutoff=20% for Chinese MNEs under Worldwide system.

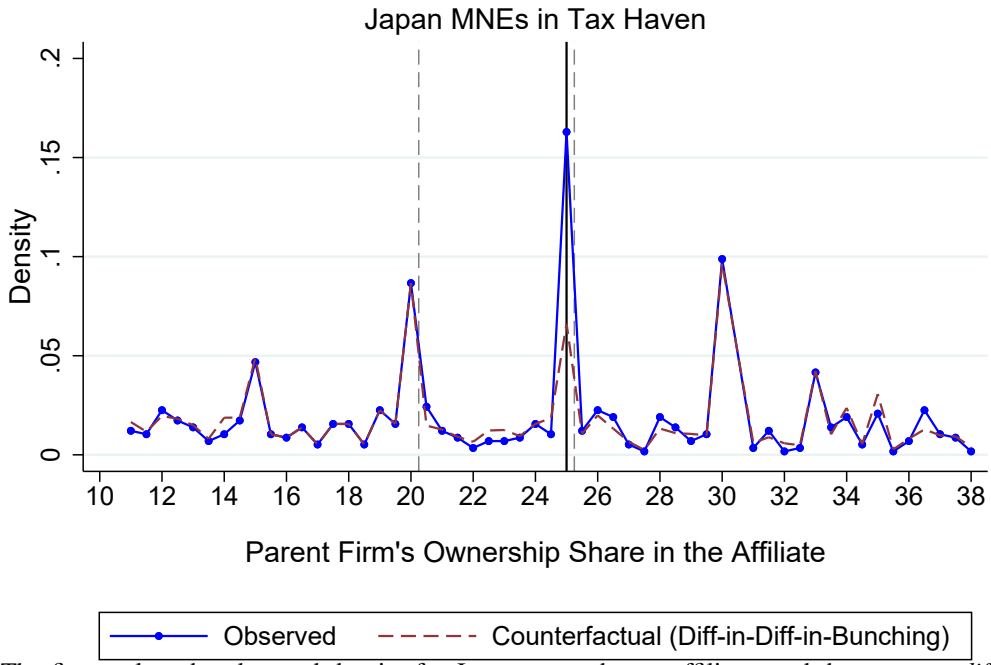
Notes: The figure plots raw ownership distributions for tax-haven and non-haven affiliates of Japanese and Chinese multinationals. To focus on foreign affiliates and maintain comparability, we exclude affiliates located in the parent country. These raw densities provide descriptive intuition; the DDB estimates in Figures 6 and 8 construct counterfactual densities that net out rounding and stable haven–non-haven differences.

The estimated response is large. The preferred one-step estimate in Table 3 implies $\Delta\alpha^* = 4.0$ ownership-share points, with a standard error of 0.52. The two-step diagnostic estimate is similar, at 3.5 points.[15] These magnitudes indicate that, after removing generic

[15]Robustness checks that vary the placebo group (Table A1, Figure A2) and the estimation method (Figure A3) yield similar conclusions. Section 6 further shows that the result remains when restricting attention to affiliate locations whose withholding-tax schedules do not change at the focal ownership threshold.

Figure 6: **Main CFC-Only Result: Excess Haven Bunching for Japan at the 25 Percent Threshold**

Observed Japanese tax-haven affiliates versus the DDB counterfactual
Comparison: {Japan ($\alpha^* = 25\%$) vs Placebo parents ($\alpha^* \neq 25\%$) $\times$ {Haven vs Non-haven affiliates}



Notes: The figure plots the observed density for Japanese tax-haven affiliates and the one-step *difference-in-differences-in-bunching*-implied counterfactual around the 25% threshold, using 0.5-point ownership bins. The counterfactual accounts for ownership rounding and stable haven–non-haven differences using the comparison groups. The estimated excess haven bunching is $\Delta_{\alpha^*} = 4.0$ ownership-share points (s.e. 0.52). A positive value means that Japanese parents display additional haven-specific threshold bunching, indicating residual profit-shifting incentives under territorial taxation backed mainly by traditional CFC rules. Results remain robust to changes in the placebo parent group and alternative estimation methods, as shown in Table A1 and Figures A2-A3 in the Appendix.

rounding and stable haven–non-haven differences using the DDB counterfactual, Japanese parents exhibit substantial additional bunching at the 25 percent threshold for tax-haven affiliates. This is the revealed-preference response predicted by the framework: qualifying for preferential taxation of foreign dividends is especially valuable when haven affiliate carries a larger repatriable booked-profit base.

Japan is not an isolated case. Germany and France also display positive excess haven bunching at their participation-exemption thresholds. In the preferred specification, the estimate is 1.0 ownership-share point for Germany at the 10 percent threshold and 0.5 points for France at the 5 percent threshold.[16] These magnitudes are smaller than the Japanese estimate because the threshold itself is smaller, but they point in the same direction. The common pattern

[16]The detailed density plots are reported in Figure A5 in the appendix.

indicates that traditional CFC rules do not fully eliminate the haven-specific return to qualify for preferential dividend treatment, indicating the existence of profit shifting.

The cross-country pattern is also informative about threshold design. Japan has the highest threshold in this group and the largest estimated response. Thus, a higher ownership threshold, by itself, does not eliminate the haven-specific incentive.

5.2 Same-threshold comparison: the U.S. versus Germany

The most informative policy comparison is between the U.S. and Germany. Both countries operate territorial systems with a 10 percent ownership threshold and a traditional CFC rule. The key difference is that the post-TCJA U.S. also subjects low-taxed foreign income to GILTI (Global Intangible Low-Taxed Income). Because the statutory ownership notch is held fixed, the comparison isolates whether an additional minimum-tax-style backstop attenuates haven-specific bunching at the same threshold.

Figure 7 presents the DDB comparison. Relative to the German benchmark, U.S. multinationals display substantially less haven-specific bunching at the 10 percent threshold.[17] In Table 3, the preferred one-step estimate for the U.S.-Germany contrast is (-1.0) ownership-share point, with a standard error of 0.29. This magnitude is roughly large enough to offset Germany's positive response under the same-threshold traditional-CFC benchmark.[18]

The contrast points to the incremental role of GILTI. By taxing low-taxed foreign income above a routine return on tangible assets, and by doing so on a blended foreign-income base, GILTI reduces the marginal payoff to concentrating unusually high profits in low-tax, low-substance affiliates. The design shows that, relative to a same-threshold territorial regime backed mainly by traditional CFC rules, the U.S. regime exhibits a muted haven-specific ownership-threshold response.

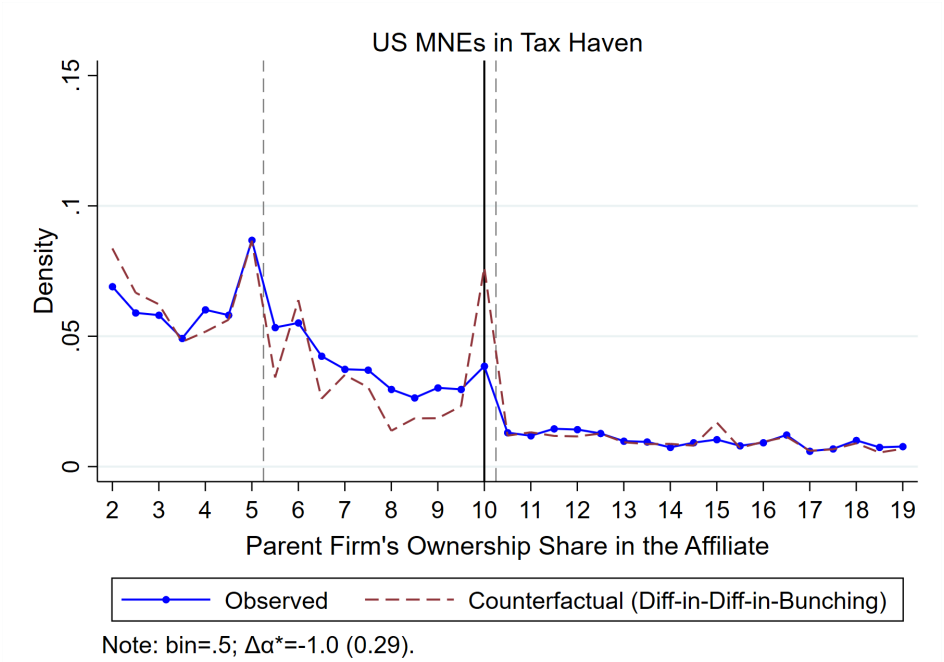
The U.S. placebo exercises in the appendix support the same interpretation. When the U.S. is compared with placebo parent groups that do not face a 10 percent parent-country notch, the estimate is economically small and statistically indistinguishable from zero, as shown in

[17] Figure A6 in the Appendix reports the corresponding raw U.S. densities as descriptive evidence.

[18] Section 6 further shows that the U.S.-Germany contrast remains in subsamples where withholding-tax thresholds are common across the two parent groups and therefore differenced out.

Figure 7: **Same-Threshold GILTI Comparison: U.S. versus Germany at 10 Percent**

Observed U.S. tax-haven affiliates versus the same-threshold DDB counterfactual
Comparison: {U.S. (CFC + GILTI, $\alpha^* = 10\%$) vs Germany (CFC, $\alpha^* = 10\%$)} × {Haven vs Non-haven affiliates}



Notes: Both the U.S. and Germany set $\alpha^* = 10\%$ under territorial systems, but Germany is backed mainly by traditional CFC rules while the U.S. additionally implements GILTI. The figure plots the observed density for U.S. tax-haven affiliates and the DDB-implied counterfactual based on the same-threshold German benchmark, using 0.5-point ownership bins. The estimate, $\Delta_{\alpha^*} = -1.0$ ownership-share point (s.e. 0.29), means that haven-specific bunching is lower in the U.S. than in Germany at the common 10% threshold. This pattern is consistent with GILTI attenuating haven-specific incentives on the ownership-threshold margin.

Table A2. Taken together, the same-threshold comparison and the placebo comparisons indicate that a territorial regime supplemented by a minimum-tax-style backstop can substantially weaken the haven-specific incentive revealed by ownership bunching.

5.3 Supporting evidence from Diverted Profits Taxes

Australia and the U.K. provide a second set of comparisons involving economic-substance-oriented backstops. Like Germany, both countries operate territorial systems with a 10 percent ownership threshold. Unlike Germany, both supplement their baseline international tax rules with a diverted profits tax (DPT). These comparisons therefore ask whether DPT-type rules are associated with lower haven-specific bunching at a common threshold.

The estimates point in the same direction as the U.S. result, but they are smaller.[19] Rel-

[19]The corresponding estimates are summarized in Table 3 and reported in detail in Figure A7 in the appendix.

ative to Germany, the preferred one-step estimates are (-0.5) ownership-share point for the U.K. and (-0.5) point for Australia. The two-step estimates are also negative, though less precise for the U.K.. These results suggest that DPT regimes reduce the haven-specific return to crossing the threshold, but the evidence is more modest than in the U.S.-Germany comparison. We interpret the DPT evidence as supportive. It is consistent with the broader hypothesis that anti-avoidance rules aimed at economic substance attenuate the ownership-threshold response.

5.4 China as a mechanism benchmark

China provides a complementary benchmark for the mechanism. Under China's worldwide system, crossing the 20 percent ownership threshold affects access to foreign tax credits, but it does not eliminate residual parent-country taxation of low-tax foreign income. We therefore do not expect a positive haven-non-haven bunching gap under a worldwide system.

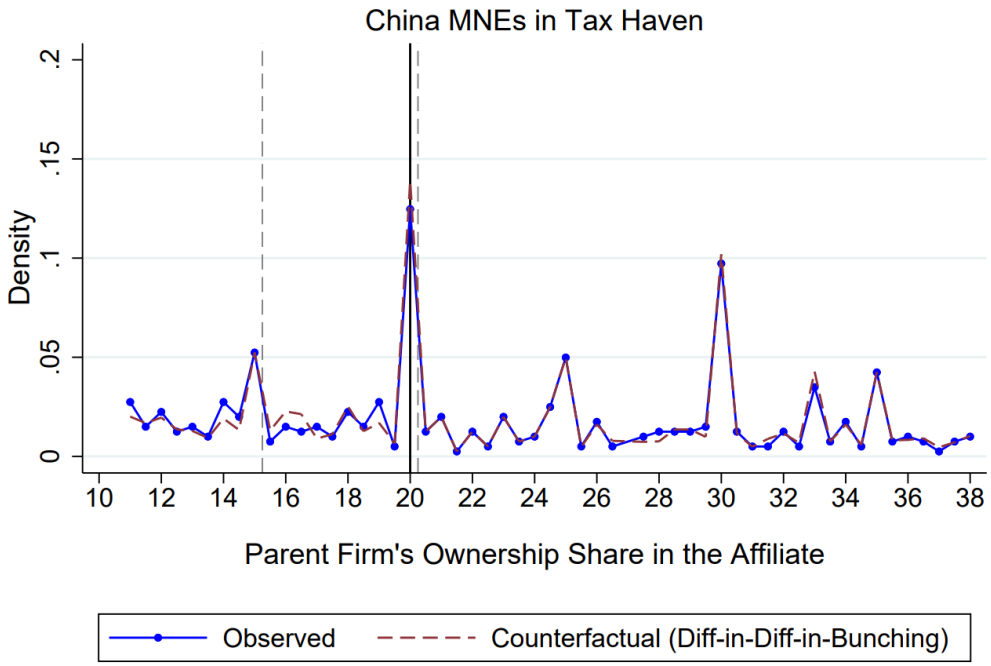
The data align with this prediction. Figure 5 shows that, unlike Japan, the raw ownership bunching for tax-haven affiliates at the 20 percent threshold is smaller than the non-haven ones for Chinese multinationals. Figure 8 formalizes this comparison using the DDB counterfactual. In the preferred specification, the estimate is (-1.0) ownership-share point, with a standard error of 0.42. Thus, the China estimate indicates the lack of haven-specific excess bunching.

The China result provides a useful mechanism check. Finding no haven-specific bunching differential under a worldwide regime supports the interpretation that bunching under territorial regimes is driven by repatriation incentives at the participation-exemption threshold rather than by generic differences between tax-haven and non-haven affiliates.[20]

[20]Consistent with this interpretation, Figure A4 shows no detectable excess haven bunching around pseudo-thresholds where no relevant notch exists.

Figure 8: **Worldwide-Tax Benchmark: No Positive Excess Haven Bunching for China**

Observed Chinese tax-haven affiliates versus the DDB counterfactual
Comparison: {China ($\alpha^* = 20\%$) vs Placebo parents ($\alpha^* \neq 20\%$)} $\times$ {Haven vs Non-haven affiliates}



Notes: The figure plots the observed density for Chinese tax-haven affiliates and the one-step DDB-implied counterfactual around the 20% threshold, using 0.5-point ownership bins. The estimate is $\Delta\alpha^* = -1.0$ ownership-share point (s.e. 0.42), so Chinese multinationals do not display a stronger threshold response for tax-haven affiliates than for non-haven affiliates, consistent with residual parent-country taxation under China's worldwide system muting the haven-specific repatriation incentive. Results remain robust to changes in the placebo parent group and alternative estimation methods, as shown in Table A1 in the Appendix.

Overall, the evidence supports the paper's central interpretation. Territorial systems backed mainly by traditional CFC rules leave a positive haven-specific ownership-threshold response, indicating profit shifting to tax havens. Same-threshold comparisons show that economic-substance-oriented backstops attenuate this response, most clearly in the U.S. under GILTI and more modestly in the DPT regimes. The worldwide benchmark further confirms that the estimates are tied to the repatriation incentive created by the threshold, rather than to generic differences between haven and non-haven affiliates. The results are local to affiliates near statutory thresholds, but on that margin they provide a transparent revealed-preference diagnostic of residual profit-shifting incentives across anti-avoidance regimes.

6 Robustness and Scope

The evidence above interprets excess haven bunching as a revealed-preference measure of continuing incentives to book profits in tax havens on a costly ownership-adjustment margin. The identifying requirement is local: absent the focal parent-country notch, the haven–non-haven density gap around the threshold would have been similar for focal and comparison parent groups. This section probes that assumption and the main competing explanations. We first show that the results are not driven by the choice of comparison group, the construction of the bunching counterfactual, the definition of tax havens, or affiliate-country withholding-tax schedules. We then clarify what the estimand identifies, and discuss the policy lessons that follow from this local revealed-preference test.

6.1 Robustness diagnostics

Alternative comparison groups. Table A1 and Figure A2 vary the placebo group by using each parent country that does not face the focal threshold as a separate placebo group. The pattern is stable. Territorial systems backed mainly by traditional CFC rules continue to display positive excess haven bunching, as evidenced by the large response in Japan. In contrast, China continues to show no positive excess haven bunching under worldwide taxation. These exercises are important because the DDB estimator does not require the comparison group to have the same ownership distribution as the focal group; it requires the comparison group to capture the local haven–non-haven density gap that would have prevailed absent the focal notch. The stability of the estimates across placebo groups supports that counterfactual.

Alternative estimation methods. The preferred specification is the nonparametric DDB estimator in Equation (4), which uses policy variation across parent countries and affiliate locations to construct the counterfactual density. As a complementary check, Figure A3 reports a parametric bunching exercise for Japan, where observations outside the manipulation region are used to fit group-specific counterfactual densities. The conclusion remains: Japanese tax-haven affiliates exhibit stronger bunching at the 25 percent threshold than non-haven affiliates. The result is not an artifact of the particular nonparametric method used in the baseline estimates.

Psuedo-Threshold. We conduct pseudo-threshold exercises at ownership shares where no relevant notch applies to see whether there is indeed no excess haven bunching. Figure A4 shows no detectable excess haven bunching around pseudo-thresholds where neither the focal nor the comparison parent groups face a notch, supporting the local identifying assumption.

Alternative tax-haven classifications. The baseline analysis classifies tax havens using Gravelle [2009]. Because any haven list necessarily involves judgment about borderline jurisdictions, Table A3 repeats the analysis using the classification in Tørsløv et al. [2023a].[21] The estimates remain similar. This robustness check matters because haven status proxies for affiliates that are more likely to carry large booked profits. The results are not driven by a particular definition of tax-haven status.

Affiliate-country withholding taxes. A remaining concern is that affiliate-country withholding taxes may also vary with ownership. Such schedules confound the DDB estimand only under a narrow condition: they must create a discontinuity at the same ownership threshold as the parent-country dividend-tax notch, and they must do so differentially for the focal parent group and for haven affiliates relative to non-haven affiliates. Most withholding schedules do not satisfy this condition. If the withholding schedule is smooth at the focal threshold, it cannot generate bunching there. If it changes at a different ownership share, it is outside the local manipulation region. If it changes at the same threshold but applies similarly to focal and comparison parents, it is differenced out by the DDB design.

The direction of the potential bias also works against the main positive findings. Tax-haven jurisdictions typically impose zero or very low dividend withholding taxes, often without an ownership threshold, while some non-haven jurisdictions reduce withholding taxes once ownership exceeds thresholds such as 10 or 25 percent. Ignoring withholding taxes would therefore tend to create additional bunching incentives for non-haven affiliates, working against positive excess haven bunching rather than mechanically generating it.

We address this issue directly in two restricted-sample exercises. For comparisons such

[21] The tax-haven list in Tørsløv et al. [2023a] includes Belgium, Cyprus, Ireland, the Netherlands, Hong Kong, Luxembourg, Malta, Marshall Islands, Puerto Rico, Switzerland, Singapore, and a standard set of smaller haven jurisdictions.

as Japan versus China, Figure A8 restricts the sample to affiliate locations whose withholding-tax schedules either do not change at the focal parent-country threshold or change at a different threshold. The Japanese estimate remains positive and economically similar to the baseline. For same-threshold policy comparisons such as the U.S. versus Germany, Figure A9 restricts the sample to affiliate locations for which any withholding-tax discontinuity is common across the two parent groups and therefore differenced out. The U.S. estimate remains attenuated relative to Germany at the common 10 percent threshold. These exercises support the interpretation that the main estimates reflect the parent-country dividend-tax notch interacting with haven-specific booked profits.

Taken together, the diagnostics reinforce the identifying logic. Generic ownership rounding, stable differences between haven and non-haven affiliates, parent-country differences in ownership distributions, and common withholding-tax discontinuities are removed by the DDB design. To overturn the results, an alternative explanation would need to generate local excess mass exactly at the focal threshold, only for the focal parent group, and differentially for haven affiliates. The robustness exercises make this type of explanation unlikely.

6.2 Scope and Policy Interpretation

The estimates identify a local but policy-relevant object. Excess haven bunching captures whether haven-booked profits are valuable enough for firms to incur the cost of adjusting direct ownership around statutory thresholds for preferential parent-country taxation of foreign dividends. It links a clearly defined tax discontinuity to an observable organizational response. The test does not require us to observe shifted profits directly or to distinguish whether haven-booked profits arise through transfer pricing, intra-group debt, royalties, intellectual-property arrangements, or related channels. All such channels are included in the design because they enlarge the booked-profit base that makes dividend qualification valuable.

Within this scope, the results have three implications for anti-avoidance design. First, traditional CFC rules do not fully neutralize haven-specific incentives on the ownership-threshold margin. Japan, Germany, and France all exhibit positive excess haven bunching under territorial systems backed mainly by traditional CFC rules. The response is largest in Japan and smaller,

but still positive, in Germany and France. Thus, firms appear to place especially high value on qualifying tax-haven affiliates for preferential dividend treatment, consistent with tax-haven affiliates carrying unusually large booked profit bases under traditional CFC rules.

Second, a higher ownership threshold is not sufficient by itself to eliminate the incentive identified here. A higher thresholds raises the cost of qualifying for preferential dividend treatment, but they do not directly reduce the return to booking abnormal profits in tax havens. The Japanese evidence illustrates this distinction. Japan has the highest threshold among the main territorial-CFC cases and also the largest excess haven bunching response. When the underlying haven-specific return remains in place, a high threshold may transform it into a larger ownership distortion rather than remove the incentive.

Third, anti-avoidance rules tied more directly to economic substance appear to attenuate the haven-specific response. The clearest evidence comes from the same-threshold comparison between the U.S. and Germany. Both countries use a 10 percent ownership threshold, but the U.S. additionally applies GILTI. Relative to Germany's traditional-CFC benchmark, U.S. parents exhibit substantially lower excess haven bunching, consistent with GILTI reducing th haven-specific incentives. The DPT comparisons for the U.K. and Australia point in the same direction, though the estimates are smaller and are best interpreted as supporting evidence. China provides a mechanism benchmark: under worldwide taxation, where qualifying for the threshold does not eliminate residual parent-country tax on low-tax foreign income, the haven-specific response is absent.

Similar to other quasi-experimental methods, the DDB estimates speaks to affiliates located near ownership thresholds. Other margins, including planning through wholly owned affiliates, may remain important. The value of the test is that it isolates one well-defined, costly margin through which firms reveal the private return to booking profits in tax havens.

The implication is specific and policy-relevant. Ownership thresholds raise the cost of qualifying for preferential dividend treatment, but they do not directly reduce the return to booking profits in low-tax affiliates. Where that return remains high, stricter thresholds may induce costly ownership restructuring rather than eliminate the underlying incentive. A low-threshold territorial system paired with an economic-substance backstop may better target the

ownership-threshold/repatriation margin identified here: the low threshold limits unnecessary ownership restructuring, while the backstop reduces the haven-specific return to qualification.

7 Conclusion

Do anti-avoidance rules still leave multinational firms with incentives to book profits in tax havens? This paper develops a revealed-preference test for this question using ownership bunching at statutory thresholds for preferential parent-country taxation of foreign dividends. Crossing these thresholds lowers the tax cost of repatriation, but requires costly direct ownership adjustment. If tax-haven affiliates carry larger booked profit bases, firms should be especially willing to incur that cost for haven affiliates.

We estimate this behavior through *excess haven bunching*: the local excess mass of tax-haven affiliates at the relevant ownership threshold relative to non-haven affiliates, net of the corresponding haven–non-haven difference for placebo parent groups not facing the same notch. This statistic does not require observing shifted profits directly or assigning them to specific channels. Instead, it asks whether haven-booked profits make a concrete organizational choice—direct ownership around a repatriation-tax threshold—especially valuable.

The evidence shows that this ownership-adjustment margin is economically meaningful and varies systematically across anti-avoidance regimes. Territorial systems backed mainly by traditional CFC rules exhibit positive excess haven bunching, with the largest response in Japan and smaller but positive responses in Germany and France. By contrast, holding the 10 percent threshold fixed, U.S. multinationals under GILTI show no detectable excess haven bunching relative to Germany's traditional-CFC benchmark. The DPT comparisons for the U.K. and Australia point in the same direction, although more modestly. China provides a mechanism benchmark: under worldwide taxation, where qualifying for the threshold does not eliminate residual parent-country tax on low-tax foreign income, the haven-specific response is absent.

The paper's interpretation is local by design. Ownership bunching identifies whether haven-booked profits are valuable enough to induce costly adjustment in direct ownership around repatriation-tax thresholds. A positive estimate reveals a haven-specific return to thresh-

old qualification, indicates the existence of profit shifting; a muted estimate means that this particular ownership-threshold margin is attenuated. The value of the test is that it isolates a well-defined, costly margin through which firms reveal the private return to booking profits in tax havens.

Within that scope, the implication is specific and policy-relevant. Ownership thresholds raise the cost of qualifying for preferential dividend treatment, but they do not directly reduce the return to booking profits in low-tax affiliates. When that payoff remains high, a higher threshold may simply induce more ownership restructuring rather than eliminate the underlying incentive. Economic-substance-oriented backstops appear better suited to attenuating the response identified here. More broadly, excess haven bunching provides a transparent diagnostic for comparing anti-avoidance regimes and evaluating whether anti-avoidance reforms reduce residual incentives to book profits in tax havens.

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Appendix

Appendix A. Two-Step DDB Estimator

This appendix reports the decomposed two-step version of the difference-in-differences-in-bunching estimator. The main text uses the one-step specification in Equation (4) because it directly estimates the DDB object and gives the counterfactual density. The two-step version estimates the same object in a more transparent sequence and is reported as the diagnostic estimate in Column (1) of the main tables.

Let $g \in \{F, P\}$ index the focal parent group and the placebo or comparison parent group, let $s \in \{H, N\}$ index haven and non-haven affiliates, and let j index ownership bins centered at α_j. Let $\mathscr{J}^+$ denote the bins in the bunching region at and just above the statutory threshold. In the first step, we estimate the haven–non-haven bunching gap separately within each parent group:

$$h_{gsj} = \lambda_j^g + \mu^g \cdot \mathbb{1}\{s = H\} + \sum_{x \in \mathscr{W}} \beta_x^g \, \mathbb{1}\{\alpha_j = x\} \cdot \mathbb{1}\{s = H\} + \varepsilon_{gsj}. \tag{7}$$

The bin fixed effects λ_j^g absorb the ownership distribution within parent group g, including rounding common to haven and non-haven affiliates. The coefficients β_x^g capture the additional haven-specific mass at bin x within that parent group. Summing those coefficients over the bunching region gives the parent-group-specific haven–non-haven bunching gap:

$$\widehat{B}_{H-N}^g = \sum_{x \in \mathscr{J}^+} \widehat{\beta}_x^g. \tag{8}$$

In the second step, the DDB estimate subtracts the placebo or comparison gap from the focal gap:

$$\widehat{B}^{DDB,2step} = \widehat{B}_{H-N}^F - \widehat{B}_{H-N}^P. \tag{9}$$

This is the decomposed version of the estimand in Equation (3). It first asks whether haven affiliates bunch more than non-haven affiliates within the focal parent group, then asks whether that focal haven–non-haven gap exceeds the corresponding gap in the placebo or same-notch comparison group. Thus it removes generic ownership rounding, and stable haven–non-haven

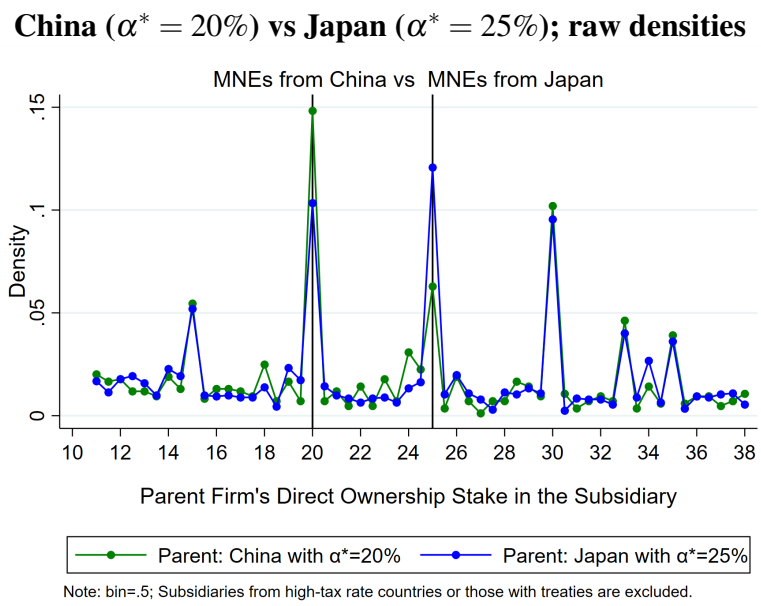
differences before attributing the remaining local excess mass to the focal parent-country tax notch or anti-avoidance regime.

Under the same controls and window definitions, Equation (9) targets the same DDB object as the one-step estimator in Equation (4). We therefore use the two-step estimate as a diagnostic for transparency, while the main text emphasizes the one-step estimator because it produces the DDB-implied counterfactual density $\widehat{h}^{cf}_{focal,haven}$ used to compute $\Delta\alpha^*$.

Appendix B. Additional Tables and Figures

This appendix reports the diagnostics that support the main empirical interpretation. Tables A1 and A2 examine sensitivity to alternative placebo parent groups. Table A3 repeats the core estimates using an alternative tax-haven classification. Figures A1-A4 document generic threshold salience and placebo behavior, Figures A5-A7 report supporting policy comparisons, and Figures A8 and A9 address affiliate-country withholding-tax thresholds.

Figure A1: Raw Ownership Densities and Generic Threshold Salience: China and Japan



Notes: This raw-density figure is descriptive. It shows ownership densities around the statutory thresholds for Chinese parent firms, whose relevant threshold is 20% and Japanese parent firms, whose relevant threshold is 25%. To enhance comparison, we focus on affiliates in non-high-tax-rate countries and countries without treaties. The figure illustrates generic notch salience: both parent groups display local mass around their relevant thresholds, while sharing similar rounding away from the threshold. The DDB design used in the main analysis differences out this kind of generic salience and rounding, and asks whether haven affiliates exhibit additional bunching relative to non-haven affiliates and placebo parent groups.

Table A1: Alternative-Placebo Diagnostics: Japan and China

(**Focal parent** − **Placebo parent**)	Cutoff Focal α^*	(**Tax haven** − **Non-haven**) **Excess haven bunching** Δ_{α^*}	
		Diagnostic two-step	**Main one-step**
A. Territorial + traditional CFC			
Japan (focal, $\alpha^* = 25\%$) − China (placebo, $\alpha^* \neq 25\%$)	25%	4.5***	4.0***
		(0.31)	(0.41)
Japan (focal, $\alpha^* = 25\%$) − Germany (placebo, $\alpha^* \neq 25\%$)	25%	3.0***	4.0***
		(0.88)	(0.62)
Japan (focal, $\alpha^* = 25\%$) − Canada (placebo, $\alpha^* \neq 25\%$)	25%	3.5***	3.0***
		(0.67)	(0.33)
B. Worldwide benchmark			
China (focal, $\alpha^* = 20\%$) − Japan (placebo, $\alpha^* \neq 20\%$)	20%	-1.0*	-0.5***
		(0.56)	(0)
China (focal, $\alpha^* = 20\%$) − Germany (placebo, $\alpha^* \neq 20\%$)	20%	-1.5	0
		(1.19)	(0.30)
China (focal, $\alpha^* = 20\%$) − Canada (placebo, $\alpha^* \neq 20\%$)	20%	0	0
		(1.19)	(0.20)

Notes: The Diagnostic column reports the decomposed two-step DDB estimate; the Main column reports the preferred one-step DDB estimate used in the text. Estimates are signed equivalent ownership-share points, Δ_{α^*}. Each row compares a focal parent group with a placebo parent group that does not face the focal threshold, so positive values indicate focal-parent excess haven bunching at that statutory notch. The table focuses on the two exercises central to the paper's interpretation: Japan as the clearest CFC-only territorial case and China as the worldwide benchmark. Estiamtes for the U.S. are shown in Tale A2. Japan's positive excess haven bunching is stable across placebo parent groups, whereas China's estimates provide no evidence of positive excess haven bunching. Standard errors are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

Table A2: U.S. Placebo Estimates under the GILTI Regime

(**Focal parent** − **Placebo parent**)	Cutoff Focal α^*	(**Tax haven** − **Non-haven**) **Excess haven bunching** Δ_{α^*}	
		Diagnostic two-step	**Main one-step**
Territorial + GILTI			
U.S. (focal, $\alpha^* = 10\%$) − Others (placebo, $\alpha^* \neq 10\%$)	10%	-0.5	-0.5*
		(0.40)	(0.27)
U.S. (focal, $\alpha^* = 10\%$) − Japan (placebo, $\alpha^* \neq 10\%$)	10%	0	-0.5
		(0.45)	(0.31)
U.S. (focal, $\alpha^* = 10\%$) − Canada (placebo, $\alpha^* \neq 10\%$)	10%	0	0
		(0.26)	(0.30)

Notes: The Diagnostic column reports the decomposed two-step DDB estimate; the Main column reports the preferred one-step DDB estimate. Estimates are signed equivalent ownership-share points, $\Delta\alpha^*$. Unlike the same-threshold U.S.–Germany comparison in Table 3, this table compares the U.S. with placebo parent groups that do not face the same 10% parent-country ownership notch. The estimates provide no evidence of positive excess haven bunching for U.S. affiliates, consistent with muted haven-specific incentives under the overall U.S. regime. Standard errors are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

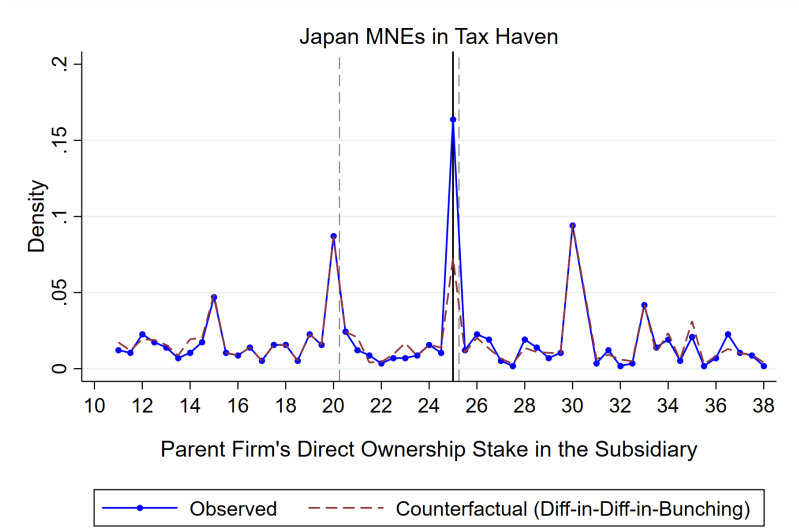
Table A3: **Alternative Tax-Haven List: Core DDB Estimates**

(**Focal parent** − **Comparison parent**)	Cutoff Focal α^*	(**Tax haven** − **Non-haven**) **Excess haven bunching** $\Delta\alpha^*$	
		Diagnostic two-step	**Main one-step**
A. Territorial + traditional CFC			
Japan (focal, $\alpha^* = 25\%$) − Others (placebo, $\alpha^* \neq 25\%$)	25%	4.5***	4.5***
		(0.76)	(0.50)
B. Worldwide benchmark			
China (focal, $\alpha^* = 20\%$) − Others (placebo, $\alpha^* \neq 20\%$)	20%	-2.0***	-1.0***
		(0.56)	(0.30)
C. Same-threshold GILTI comparison			
U.S. (GILTI, $\alpha^* = 10\%$) − **Germany** (no GILTI, $\alpha^* = 10\%$)	10%	-1.5*	-1.5***
		(0.60)	(0.33)

Notes: This table repeats the core DDB estimates under the alternative tax-haven classification in Tørsløv et al. [2023a]. The Diagnostic column reports the decomposed two-step estimate; the Main column reports the preferred one-step estimate. Estimates are signed equivalent ownership-share points, $\Delta\alpha^*$. The table focuses on the three comparisons central to the interpretation: Japan as the strongest CFC-only territorial case, China as the worldwide benchmark, and the U.S.–Germany same-threshold comparison for GILTI. The signs and magnitudes are consistent with the baseline evidence: Japan shows large positive excess haven bunching, China shows no positive excess haven bunching, and the U.S. shows attenuated excess haven bunching relative to Germany at the common 10% threshold. Standard errors are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels.

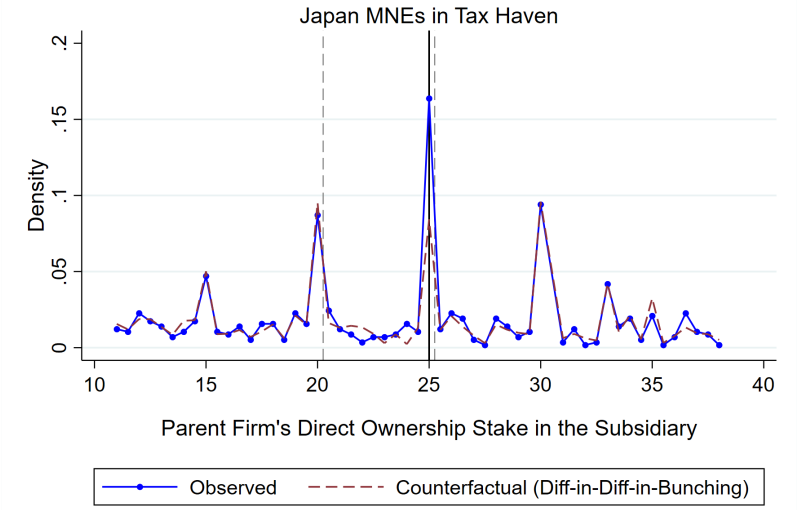
Figure A2: Japan Placebo Diagnostics: Excess Haven Bunching at the 25 Percent Threshold

A. DDB: {Japan ($\alpha^* = 25\%$) vs China (no 25% notch)} × {haven vs non-haven affiliates}



Note: bin=.5; Δα*=4.0 (0.4).

B. DDB: {Japan ($\alpha^* = 25\%$) vs Germany (no 25% notch)} × {haven vs non-haven affiliates}

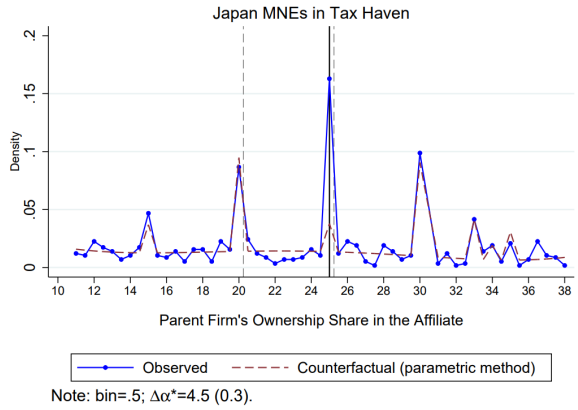


Note: bin=.5; Δα*=4.5 (0.63).

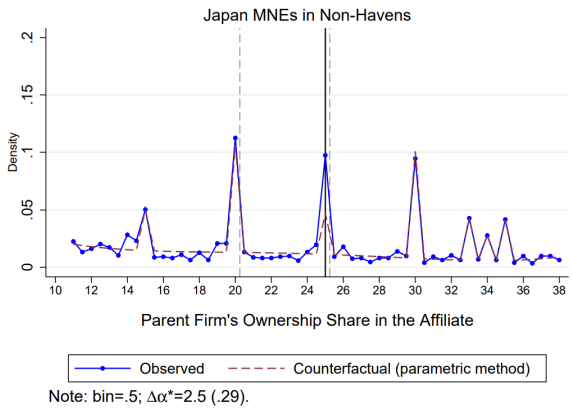
Notes: Each panel plots the observed density for Japanese tax-haven affiliates against the one-step DDB-implied counterfactual, using 0.5 ownership-share-point bins. The placebo parent groups do not face a 25% parent-country notch, so the counterfactual nets out generic rounding and stable haven–non-haven differences. In both panels, Japanese tax-haven affiliates exhibit additional local mass at the 25% threshold relative to the counterfactual. The pattern supports the main Japan result and is consistent with stronger haven-specific incentives to cross the participation-exemption threshold.

Figure A3: Parametric Bunching Check for Japan at the 25 Percent Threshold

A. Japanese tax-haven affiliates



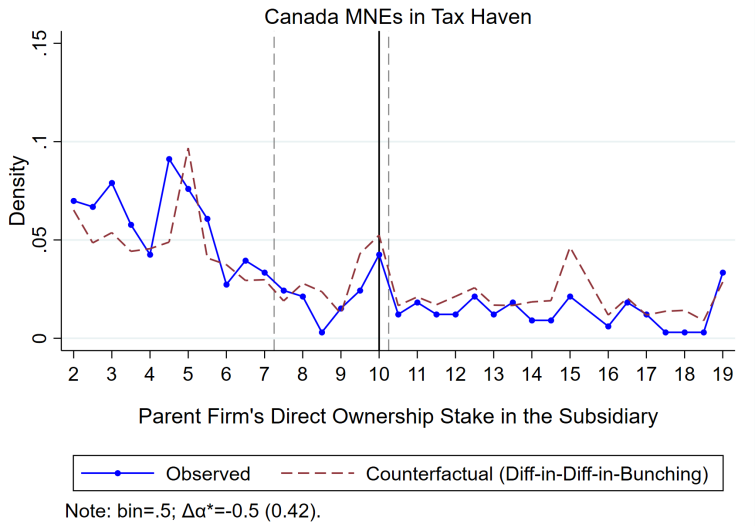
B. Japanese non-haven affiliates



Notes: Japan operates a territorial system backed mainly by traditional CFC rules. Panels A and B use a parametric bunching method in which observations outside the manipulation region fit the counterfactual trend inside the manipulation region. This exercise is a within-Japan diagnostic, not the preferred DDB estimator. The visual pattern is consistent with stronger threshold bunching for Japanese tax-haven affiliates than for Japanese non-haven affiliates, supporting the nonparametric DDB evidence in the main text.

Figure A4: Pseudo-Threshold Placebo: Canada at 10 Percent

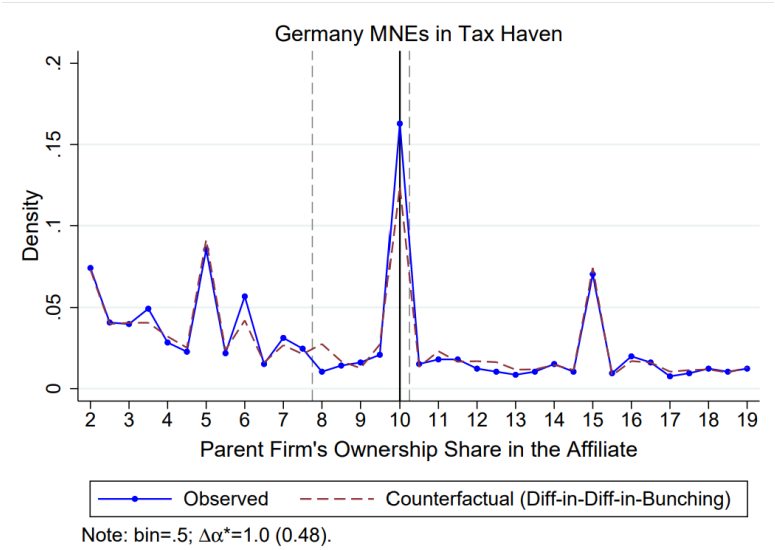
DDB at a 10% pseudo-threshold:
{Canada (actual $\alpha^* = 1\%$) vs Japan (actual $\alpha^* = 25\%$)} $\times$ {Haven vs Non-haven affiliates}



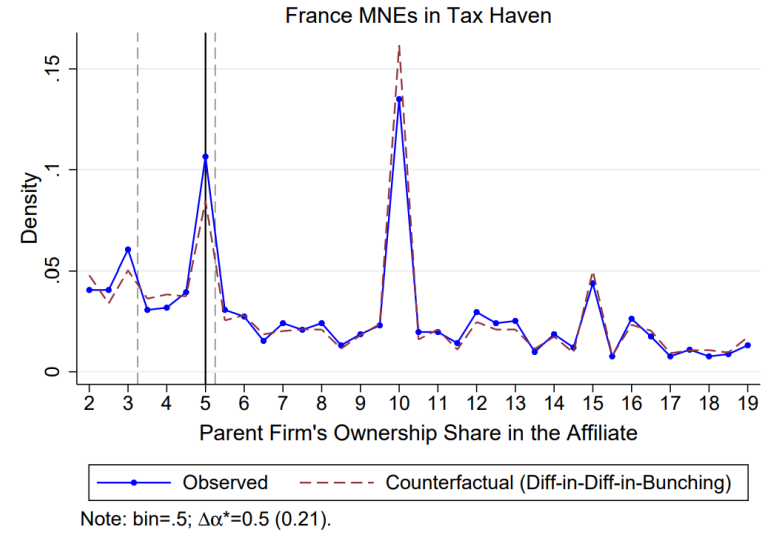
Notes: The figure plots the observed density for Canadian tax-haven affiliates against the one-step DDB-implied counterfactual at a 10% pseudo-threshold, using 0.5 ownership-share-point bins. Canada sets $\alpha^* = 1\%$, while Japan sets $\alpha^* = 25\%$ after excluding affiliates in treaty jurisdictions. Around the 10% pseudo-threshold, neither parent group faces the relevant parent-country dividend-tax notch. The absence of positive excess haven bunching around this placebo threshold supports the interpretation that the main estimates are tied to statutory notches rather than generic haven status or rounding.

Figure A5: Supporting Lower-Threshold Cases: Germany and France

A. Germany: {Germany ($\alpha^* = 10\%$) vs Placebo parents ($\alpha^* \neq 10\%$)} $\times$ {Haven vs Non-haven affiliates}



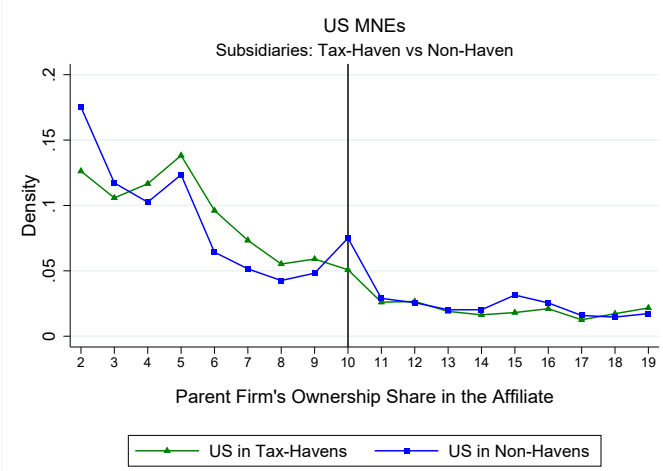
B. France: {France ($\alpha^* = 5\%$) vs Placebo parents ($\alpha^* \neq 5\%$)} $\times$ {Haven vs Non-haven affiliates}



Notes: Each panel plots the observed focal-parent tax-haven density against the one-step DDB-implied counterfactual, using 0.5 ownership-share-point bins. Germany and France operate territorial systems backed mainly by traditional CFC rules, but their ownership thresholds for participation-exemption are lower than Japan's. The point estimates are positive but much smaller than Japan's 25% threshold response. These supportive evidence indicates that lower-threshold CFC-only regimes still leave residual haven-specific threshold responses.

Figure A6: Raw U.S. Ownership Densities around the 10 Percent Threshold

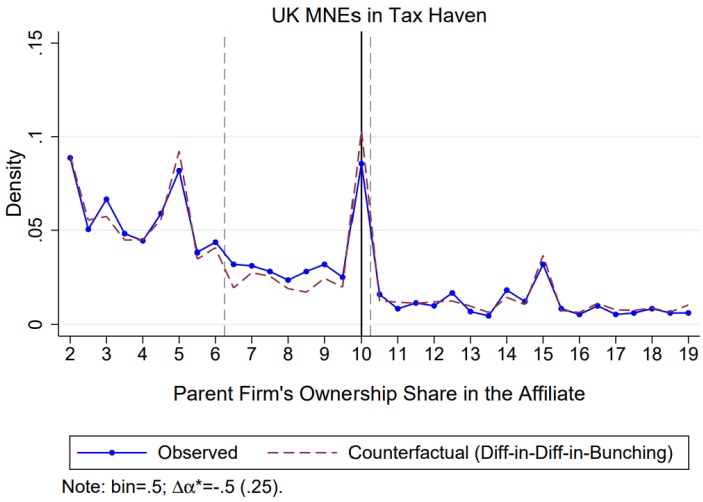
U.S. parent firms under GILTI; descriptive raw densities



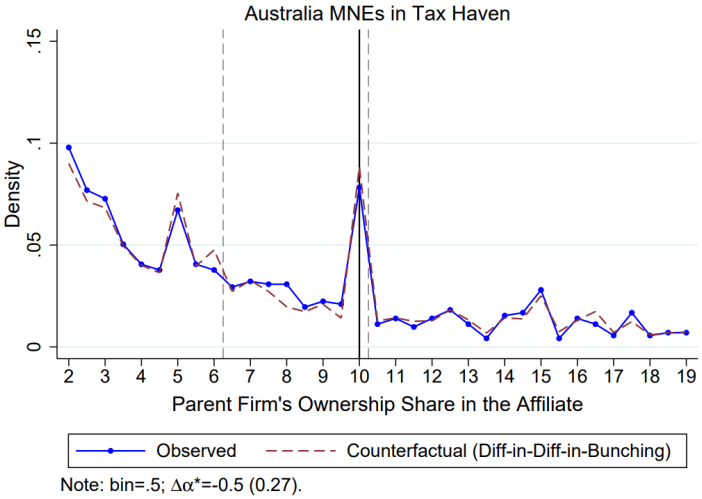
Notes: The figure plots raw U.S. ownership densities using 1 ownership-share-point bins. Under the territorial system with a 10% ownership threshold, the U.S. implements the Global Intangible Low-Taxed Income (GILTI) regime, which taxes low-taxed foreign income above a routine return on tangible assets and applies on a globally blended basis. This raw-density figure is descriptive and should not be read as the identifying comparison. The DDB estimates in Figure 7 and Table 3 provide the main evidence that U.S. haven-specific bunching is attenuated relative to the same-threshold German benchmark.

Figure A7: Same-Threshold DPT Diagnostics: U.K. and Australia

U.K. DPT comparison: {U.K. (CFC+DPT, $\alpha^* = 10\%$) vs Germany (CFC, $\alpha^* = 10\%$)} $\times$ {Haven vs Non-haven affiliates}



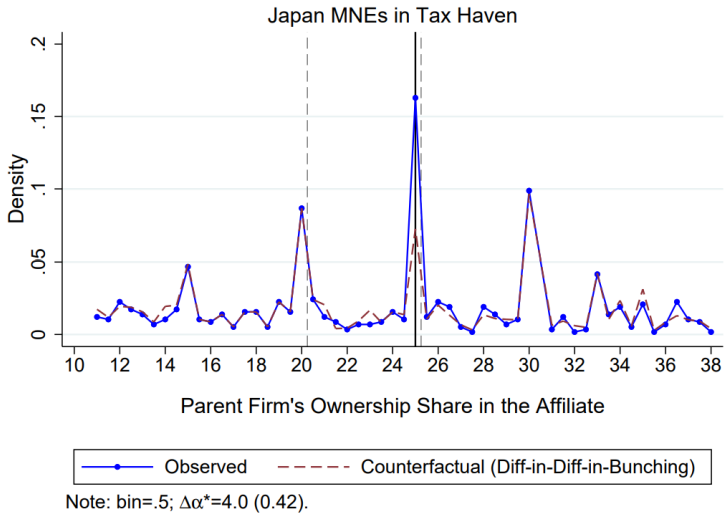
Australia DPT comparison: {Australia (CFC+DPT, $\alpha^* = 10\%$) vs Germany (CFC, $\alpha^* = 10\%$)} $\times$ {Haven vs Non-haven affiliates}



Notes: Each panel plots the observed focal-parent tax-haven density against the one-step DDB-implied counterfactual, using 0.5 ownership-share-point bins. The U.K., Australia, and Germany all set $\alpha^* = 10\%$ under territorial systems, while the U.K. and Australia additionally implement DPT policies. These same-threshold comparisons ask whether DPT regimes display less haven-specific bunching than Germany's traditional-CFC benchmark. The estimates are directionally smaller than Germany, but more modest than the U.S.–Germany GILTI comparison. We therefore treat the DPT evidence as supporting evidence that substance-oriented backstops can attenuate haven-specific incentives on this margin.

Figure A8: Withholding-Tax Diagnostic for Japan

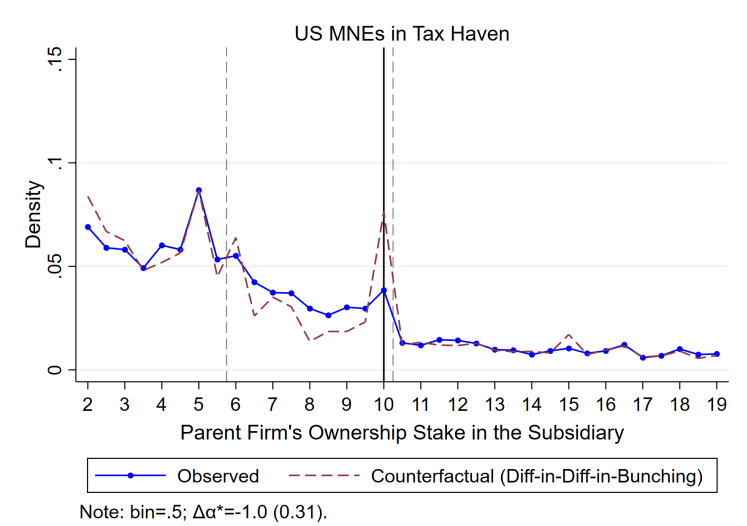
DDB: {Japan ($\alpha^* = 25\%$) vs China (no 25% notch)} $\times$ {Haven vs Non-haven affiliates} restricted to locations without a withholding-tax discontinuity at 25%



Notes: The figure plots the observed density and the one-step DDB-implied counterfactual for Japanese tax-haven affiliates around the 25% threshold, using 0.5 ownership-share-point bins. To address withholding-tax concerns, the sample is restricted to affiliate locations whose withholding-tax schedules do not create a discontinuity at the Japanese 25% parent-country threshold. All tax-haven locations are included because most impose zero withholding tax and the few threshold-based cases use a 10% threshold, so withholding-tax rules do not create a mechanical positive haven response at Japan's cutoff. Among the top-20 non-haven locations, the restricted sample includes the U.K., New Zealand, Australia, the U.S., India, Portugal, Brazil, and Poland. The estimate remains 4.0 ownership-share points (s.e. 0.42), supporting the interpretation that the Japan result is not mechanically generated by affiliate-country withholding-tax thresholds.

Figure A9: Withholding-Tax Diagnostic for the U.S.–Germany GILTI Comparison

DDB: {U.S. (GILTI+CFC, $\alpha^* = 10\%$) vs Germany (CFC, $\alpha^* = 10\%$)} $\times$ {Haven vs Non-haven affiliates}
restricted to locations whose withholding-tax thresholds are absent or common across parent groups



Notes: Both the U.S. and Germany set $\alpha^* = 10\%$ under territorial systems, but Germany is backed mainly by traditional CFC rules while the U.S. additionally implements GILTI. Figure A9 plots the observed density and DDB-implied counterfactual for U.S. tax-haven affiliates in a restricted sample designed to neutralize affiliate-country withholding-tax thresholds, using 0.5 ownership-share-point bins. The restriction keeps locations with no relevant withholding-tax threshold or with a threshold common across the U.S. and Germany, so that any common withholding-tax discontinuity is differenced out. All tax-haven locations are included; among the top-20 non-haven locations, the restricted sample includes the U.K., Italy, New Zealand, Japan, Australia, Austria, France, Canada, Brazil, Spain, Poland, and Russia. The attenuated U.S. response remains, supporting the same-threshold GILTI interpretation in the main text.

Appendix C. Conceptual Model and Derivations

This appendix provides a stylized model for the mechanism in the main text. It characterizes the private return to moving an affiliate from just below to the statutory ownership threshold.

C.1 Setup

Consider a parent-country tax system with a direct ownership threshold α^*. Let α_a^{init} denote the parent's ex ante direct ownership share in foreign affiliate a. Under a territorial system, dividends from affiliate a face the following parent-country tax rate:

$$t_{pa}^{territorial} = \begin{cases} t_p, & \text{if } \alpha_a < \alpha^*, \\ 0, & \text{if } \alpha_a \geq \alpha^*. \end{cases} \tag{10}$$

Let q_a indicate whether affiliate a qualifies for preferential taxation, with $q_a = 1$ if and only if $\alpha_a \geq \alpha^*$. Adjusting ownership stakes to qualify is costly. The cheapest way to qualify is to set $\alpha_a = \alpha^*$ whenever $\alpha_a < \alpha^*$. We model the associated cost as

$$K(\alpha_a^{init}) = \frac{(\alpha^* - \alpha_a^{init})^2}{2\kappa} \cdot 1\{\alpha_a^{init} < \alpha^*\}, \tag{11}$$

where $\kappa > 0$. This cost captures the equity commitment and organizational adjustment required to cross the threshold.

C.2 One-affiliate benchmark

The parent controls a domestic source of profits, denoted D, taxed at rate t_p, and one foreign affiliate a, with foreign tax rate $t_a < t_p$. Pre-shifting profits are (π_D, π_s), where π_s is a reduced-form booked-profit base that may embody transfer pricing, intra-group debt, royalties, intellectual-property location, or related channels. The parent can shift an amount $x_D \geq 0$ of profits from the domestic source to the foreign affiliate at convex cost

$$C(x_D) = \frac{x_D^2}{2\psi}, \tag{12}$$

where $\psi > 0$. The group's payoff is

$$\Pi(q_a, x_D) = (1-t_p)(\pi_D - x_D) + \big(1 - t_p(1-q_a)\big)(1-t_a)(\pi_s + x_D) - \frac{x_D^2}{2\psi} - q_a K(\alpha_a^{init}). \quad (13)$$

The optimal shifting choice is

$$x_D^*(0) = 0, \qquad x_D^*(1) = \psi(t_p - t_a). \quad (14)$$

Substituting this choice into (13), the gain from qualifying affiliate a relative to not qualifying it is

$$\Pi(1, x_D^*(1)) - \Pi(0,0) = \left[\frac{\psi}{2}(t_p - t_a)^2 + t_p(1-t_a)\pi_s\right] - \frac{(\alpha^* - \alpha_a^{init})^2}{2\kappa} \cdot 1\{\alpha_a^{init} < \alpha^*\}. \quad (15)$$

Thus affiliates bunch at the threshold when their initial ownership lies in the interval

$$\alpha_a^{init} \in \left[\alpha^* - \sqrt{2\kappa\left(\frac{\psi}{2}(t_p - t_a)^2 + t_p(1-t_a)\pi_s\right)}, \alpha^*\right). \quad (16)$$

The bunching interval is larger when the affiliate tax rate is lower or when the booked-profit base is larger.

C.3 Tax-haven and non-haven affiliates

Now suppose the parent controls a domestic source of profits D, a non-haven affiliate *non*, and a tax-haven affiliate *hav*, with $t_{non}, t_p > t_{hav}$ and $t_{non} \approx t_p$. The parent can shift profits from the domestic source to the haven and from the non-haven affiliate to the haven. Let $x_D \geq 0$ denote shifting from D to *hav*, and let $x_{non} \geq 0$ denote shifting from *non* to *hav*. The haven affiliate's after-foreign-tax dividend base is $(1-t_{hav})(\pi_{hav} + x_D + x_{non})$, while the non-haven affiliate's after-foreign-tax dividend base is $(1-t_{non})(\pi_{non} - x_{non})$.

Let q_{hav} and q_{non} indicate whether the haven and non-haven affiliates qualify for the parent-country participation exemption. The parent's payoff is

$$\Pi(q_{hav},q_{non},x_D,x_{non}) = (1-t_p)(\pi_D - x_D) + (1-t_p(1-q_{hav}))(1-t_{hav})(\pi_{hav}+x_{non}+x_D) - \frac{x_D^2}{2\psi}$$

$$(1-t_p(1-q_{non}))(1-t_{non})(\pi_{non}-x_{non}) + -\frac{x_{non}^2}{2\psi} - q_{hav}K_{hav} - q_{non}K_{non}, \tag{17}$$

where $K_{hav} = K(\alpha_{hav}^{init})$ and $K_{non} = K(\alpha_{non}^{init})$.

The optimal shifting levels are

$$x_D^*(q_{hav}): \quad x_D^*(0) = 0, \quad x_D^*(1) = \psi(t_p - t_{hav}), \tag{18}$$

$$x_{non}^*(q_{hav},q_{non}) = \psi m_{non}(q_{hav},q_{non}), \tag{19}$$

where $m_{non}(q_{hav},q_{non}) = (1-t_p(1-q_{hav}))(1-t_{hav}) - (1-t_p(1-q_{non}))(1-t_{non})$. This implies

$$x_{non}^*(0,1) < x_{non}^*(0,0) < x_{non}^*(1,1) < x_{non}^*(1,0).$$

Qualifying the haven affiliate while leaving the non-haven affiliate below the threshold yields the highest level of profit shifting $x_{non}^*(q_{hav},q_{non})$ under territorial system

Parents' Payoff under Optimal Shifting Decisions. Substituting optimal shifting $x_D^*(q_{hav})$ and $x_{non}^*(q_{hav},q_{non})$ into the parent's payoff (17) yields optimized value shown below.

$$\begin{aligned}
\Pi\big(1,0,x_D^*(1),x_{non}^*(1,0)\big) =& (1-t_p)(\pi_D - x_D^*(1)) + (1-t_{hav})(\pi_{hav}+x_{non}^*(1,0)+x_D^*(1)) \\
&+ (1-t_p)(1-t_{non})(\pi_{non}-x_{non}^*(1,0)) - \frac{(x_D^*(1))^2}{2\psi} - \frac{(x_{non}^*(1,0))^2}{2\psi} - K_{hav} \\
\Pi\big(0,0,0,x_{non}^*(0,0)\big) =& (1-t_p)\pi_D + (1-t_p)(1-t_{hav})(\pi_{hav}+x_{non}^*(0,0)) \\
&+ (1-t_p)(1-t_{non})(\pi_{non}-x_{non}^*(0,0)) - \frac{(x_{non}^*(0,0))^2}{2\psi} \\
\Pi\big(0,1,0,x_{non}^*(0,1)\big) =& (1-t_p)\pi_D + (1-t_p)(1-t_{hav})(\pi_{hav}+x_{non}^*(0,1)) \\
&+ (1-t_{non})(\pi_{non}-x_{non}^*(0,1)) - \frac{(x_{non}^*(0,1))^2}{2\psi} - K_{non} \\
\Pi\big(1,1,x_D^*(1),x_{non}^*(1,1)\big) =& (1-t_p)(\pi_D - x_D^*(1)) + (1-t_{hav})(\pi_{hav}+x_{non}^*(1,1)+x_D^*(1)) \\
&+ (1-t_{non})(\pi_{non}-x_{non}^*(1,1)) - \frac{(x_{non}^*(1,1))^2}{2\psi} - \frac{(x_D^*(1))^2}{2\psi} - K_{non} - K_{hav}
\end{aligned}$$

where ownership adjustment cost $K_{non} = K(\alpha_{non}^{init})$, and $K_{hav} = K(\alpha_{hav}^{init})$.

Gross gains from alternative qualification decisions. The gross gain from haven-only qualification $(q_h, q_n) = (1,0)$, relative to the baseline $(q_h, q_n) = (0,0)$ is

$$\begin{aligned} &\Pi\big(1,0,x_D^*(1),x_{non}^*(1,0)\big) - \Pi\big(0,0,0,x_{non}^*(0,0)\big) \\ =&\Gamma_{hav}^{(1,0)_vs_(0,0)} - K_{hav} \end{aligned} \tag{C.1}$$

The gross gain from non-haven-only qualification $(q_{hav}, q_{non}) = (0,1)$, relative to the baseline $(q_h, q_n) = (0,0)$ is

$$\begin{aligned} &\Pi\big(0,1,0,x_{non}^*(0,1)\big) - \Pi\big(0,0,0,x_{non}^*(0,0)\big) \\ =&\Gamma_{non}^{(0,1)_vs_(0,0)} - K_{non} \end{aligned} \tag{C.2}$$

The gross gain from qualifying both tax-haven and non-haven affiliates $(q_{hav}, q_{non}) = (1,1)$, relative to non-haven-only qualification $(q_{hav}, q_{non}) = (0,1)$, is

$$\begin{aligned} &\Pi\big(1,1,x_D^*(1),x_{non}^*(1,1)\big) - \Pi\big(0,1,0,x_{non}^*(0,1)\big) \\ =&\Gamma_{hav}^{(1,1)_vs_(0,1)} - K_{hav} \end{aligned} \tag{C.3}$$

and the gross gain from qualifying both tax-haven and non-haven affiliates $(q_{hav}, q_{non}) = (1,1)$, relative to haven-only qualification $(q_{hav}, q_{non}) = (1,0)$, is

$$\begin{aligned} &\Pi\big(1,1,x_D^*(1),x_{non}^*(1,1)\big) - \Pi\big(1,0,x_D^*(1),x_{non}^*(1,0)\big) \\ =&\Gamma_{non}^{(1,1)_vs_(1,0)} - K_{non} \end{aligned} \tag{C.4}$$

Because the last term in (C.4) is non-positive, qualifying the non-haven affiliate after the haven already qualifies tends to be much less attractive than haven-only qualification. This is why the region in which both affiliates bunch is limited.

Qualification regions. From Equations (C.1)–(C.4), we have:

- **Neither affiliate qualifies** if $\Gamma_{hav}^{(1,0)_vs_(0,0)} < K_{hav}$ and $\Gamma_{non}^{(0,1)_vs_(0,0)} < K_{non}$.

- **Haven-only qualification** is optimal if

$$\Gamma_{hav}^{(1,0)_vs_(0,0)} \geq K_{hav}, \qquad \Gamma_{non}^{(1,1)_vs_(1,0)} < K_{non}, \qquad \Gamma_{hav}^{(1,0)_vs_(0,0)} - K_{hav} \geq \Gamma_{non}^{(0,1)_vs_(0,0)} - K_{non}.$$

- **Non-haven-only qualification** is optimal if

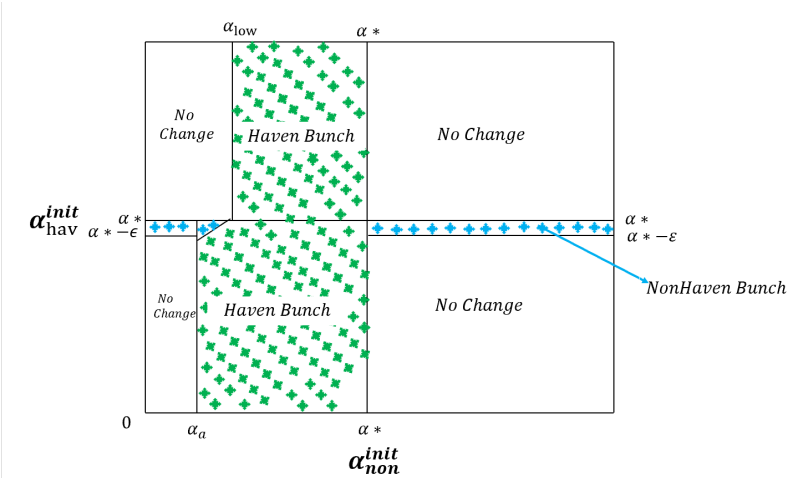
$$\Gamma_{non}^{(0,1)_vs_(0,0)} \geq K_{non}, \qquad \Gamma_{hav}^{(1,1)_vs_(0,1)} < K_{hav}, \qquad \Gamma_{non}^{(0,1)_vs_(0,0)} - K_{non} \geq \Gamma_{hav}^{(1,0)_vs_(0,0)} - K_{hav}.$$

- **Both affiliates qualify** if $\Gamma_{hav}^{(1,1)_vs_(0,1)} \geq K_{hav}$ and $\Gamma_{non}^{(1,1)_vs_(1,0)} \geq K_{non}$.

Note that non-haven-only bunching requires not only that the non-haven strategy have positive net value, but also that the haven strategy be sufficiently unattractive because the haven affiliate is much farther from the threshold. Since adjustment costs are quadratic in the distance to the threshold, this occurs only when α_{non}^{init} is much closer to α^* than α_{hav}^{init}.

Figure C1 illustrates the qualification decisions as a function of the initial ownership shares that parent firms hold in the two foreign affiliates.

Figure C1. Local Qualification Regions in the Conceptual Model



Notes: The figure illustrates the local qualification decision under a parent-country dividend-tax notch. The horizontal axis is the parent's initial ownership share in the tax-haven affiliate, α_{hav}^{init}, and the vertical axis is the corresponding initial ownership share in the non-haven affiliate, α_{non}^{init}. Profit shifting, broadly defined, raises the booked-profit base in the haven affiliate and therefore raises the private value of qualifying that affiliate for preferential dividend treatment. The green region marks cases in which the parent optimally adjusts ownership so that the haven affiliate crosses α^*; the blue region marks cases in which the non-haven affiliate crosses α^*. The figure illustrates the local ownership-threshold margin studied in the paper.