

CHAPTER EIGHT

The Financial Reality

Working draft.

8.1 Introduction

Chapter 6 described the Tropical Forest Investment Fund as the Concept Notes present it. The fund is to hold \$125 billion, of which \$25 billion comes from sponsor governments and \$100 billion is borrowed from institutional investors. The money is invested in emerging-market bonds. Each year the fund pays its lenders, and whatever is left is transferred to the Facility for Forest Payments. Chapter 7 examined the incentive mechanism those payments are meant to support and found it well designed. This chapter asks two questions about the fund itself: how much it can be expected to transfer to the Facility in a typical year, and how reliably it can be expected to do so.

The amount required is larger than the Concept Notes emphasise. The Facility is designed to pay \$4 per hectare of standing tropical forest, and the countries eligible to join hold more than one billion hectares.¹ The target is therefore about \$4 billion a year. Concept Note 3.1 puts the initial requirement at \$2 billion, but only because roughly half of the forest area does not yet qualify. Countries with a deforestation rate above 0.5% a year are excluded at entry, and the discounts of 100 and 200 hectares for every hectare lost reduce the paid area further, so that only about 500 million hectares are expected to be eligible at launch.² The \$2 billion is a starting point. If the mechanism works, more countries qualify, deforestation falls, and the payment rises toward \$4 billion. The fund does not grow with it.

For the \$2 billion, the Concept Note gives its own arithmetic. “For a \$125B levered portfolio to produce \$2B in excess cashflow, it will be required to have a net excess spread of 160 bps. This is what the TFIF must generate net of paying for its cost of capital and fees.”³ It estimates the cost of capital at “72-140 bps over the reference UST” and expenses at “15-25 bps,” both on the full \$125 billion, and concludes that “a portfolio generating between 247 bps and 325 bps of gross

¹ Concept Note 3.1, §1: the Facility “will provide annual, large-scale payments to up to 74 developing countries that collectively hold more than one billion hectares of tropical and subtropical moist broadleaf forests”; and §2, Figure 3(a). The \$4 figure: §1.3, p. 9, “Forest Payments are currently expected to be around USD 4 per hectare of Eligible Forest, subject to annual adjustment for inflation, capped at 2% per year,” and §8.4, Figure 9, p. 39, where “\$4 / Hectare” is the fixed item in the payment order.

² Concept Note 3.1, §4 (deforestation cap of 0.5% at entry; discounts of 1:100 for loss up to 0.3% and 1:200 between 0.3 and 0.5%), and §8.5, p. 40: “only around 500 million hectares (under conservative estimates) will be eligible for Forest Payments at the launch of TFIF.”

³ Concept Note 3.1, §7.5, p. 40.

spread over UST would be necessary.” Its cash-flow projection assumes 350.⁴ For \$4 billion the same arithmetic requires 320 bps net, or 407 to 485 gross. That is more than the projection assumes. The projection itself, Figure 10 of Concept Note 3.1, has the fund doing everything at once. Starting from \$125 billion in its fourth year, the fund grows steadily for forty years to hold more than \$200 billion, its market borrowing rising with it; it pays forest countries \$2.2 billion in the first full year, rising to about \$5 billion a year by year forty; and it repays the sponsors’ \$25 billion out of retained earnings over the same period, so that by year forty it holds its own equity in place of theirs.⁵ Growth, rising payments and repayment are all to come from the same 350 bps.

Section 8.2 explains what the difference in yield between emerging-market bonds and US Treasuries represents, and why not all of it can be collected. Section 8.3 checks the three parts of the Facility’s arithmetic against the evidence: what emerging-market debt has actually paid over Treasuries since 2000, what the TFIF would pay to borrow, and what it would cost to run. It then works out what is left. Section 8.4 puts the averages aside and runs simulations of the TFIF investment strategy day by day through the market history of 2000 to 2026, testing launches in each year from 2000 to 2018, to see whether it would have made its payments. Section 8.5 asks what the spread available in September 2026 would support if the fund were launched now. Section 8.6 summarises.

Before turning to the evidence, we set out the conventions used in this chapter. Yields, spreads and fees are given in basis points (bps). A basis point is one hundredth of a percentage point, so 100 bps is 1.00%; the differences that matter here are smaller than one percentage point. Where the Facility supplies a figure we use it; where it supplies a range we say which end we think plausible and why, and where the choice matters we show both. Our focus in this chapter is the fund, the TFIF, though we also include the costs of running the Facility itself, which are dealt with more thoroughly in Chapter 10. One feature of the design should also be kept in mind throughout. The fund’s income is paid out in a fixed order: fees first, then interest on the senior bonds, then interest on sponsor capital, and the Forest Payment last, from whatever remains. In a bad year, the Forest Payment is the first thing cut.

8.2 What the spread represents

The TFIF’s business model is to borrow at one rate and invest at a higher one. Concept Note 3.0 gave the example plainly: “the current yield of a representative USD-denominated portfolio of bonds from EMDE countries with an average rating of BB+ and maturity of 10+ years is 8.3%. If TFIF’s average cost of capital is 5.3%, the positive spread available for payment to TFCs would

⁴ Concept Note 3.1, §7.5, pp. 40–41. Figure 10 assumes a “gross z-spread (yield over UST) of 350 bps from a BB+ sample portfolio comprised of EM bonds only,” market borrowing “at an average cost of 100 bps over UST,” and “fees and expenses adding up to 23 bps.”

⁵ Concept Note 3.1, §7.5, Figure 10, p. 41, “Projected Potential TFFF Cashflows,” read from the chart: total capital (market borrowing, sovereign investment and retained capital) rises from about \$125 billion in year 4 to a little over \$200 billion in year 40; sovereign investment falls from \$25 billion to nil; payments to forest nations rise from about \$2.2 billion to about \$5 billion a year. The accompanying text: “payments to TFCs reaching USD 2.2 billion after the first year of full capitalization and excess capital being retained over time. As indicated, in this case retained capital is expected to replace sovereign investment after 40 years and TFIF would hold its own equity.”

be 3.0%. In this example, a USD 125 billion fund after costs and provisions would generate approximately USD 3.4 billion per year, on average, of cashflow that would be available to TFCs.”⁶ Three percent of \$125 billion is \$3.75 billion; the note deducted \$350 million for costs and provisions and kept the rest. In financial markets this strategy of borrowing to invest is called a carry trade. It is not new, and there is nothing about it that is specific to forests.

The three percentage points existed because the borrowers are more likely not to pay. A bond issued by a country rated BB+ yields more than a US Treasury bond because there is a real chance that the country will default, that its debt will be restructured at a loss to bondholders, or that the bond’s price will fall sharply when investors grow nervous about prospects for repayment. The size of that chance is not a matter of opinion. S&P’s record of sovereign ratings from 1975 to 2024 shows that a sovereign rated BB at the start of a year had a 10.1% probability of defaulting on its foreign-currency debt within ten years; for the speculative-grade group as a whole the figure was 23.5%.⁷ Bondholders in sovereign restructurings have typically lost between a third and a half of their claims.⁸ Taking the BB figure and a loss of half, a BB portfolio can expect to lose about 5% of its value to default over a decade, or roughly 50 bps a year, before anything is paid to anyone. That is the ordinary, expected cost of holding the asset, and it comes out of the spread.

Beyond that expected loss, investors require additional compensation for uncertainty: the losses are not spread evenly across years but arrive in clusters, and a fund that must make fixed payments every year cannot treat a bad year as a rounding error. Emerging-market bonds fell by 29% between May and October 2008 and by 26% between September 2021 and October 2022.⁹ The spread pays for bearing that as well. Higher risk bonds are often less liquid, meaning that the trade in these bonds is thinner, so that it may be difficult to find a buyer without cutting the price.

If more of the spread were free money than this suggests, the largest investors in the world would already be taking it. In a competitive market, investors trying to make a profit will buy any asset that yields more than its risk justifies; their demand drives the price up until the price reflects the risk, leaving no excess profit available. Sovereign wealth funds, hedge funds, pension funds and insurers face no rule against appropriate diversification into emerging-market bonds, and most hold a small share of their bond portfolios in them. Norway’s Government Pension Fund Global, the largest sovereign wealth fund in the world, is permitted by its Ministry of Finance to hold up to 5% of its fixed-income investments in emerging markets. At the end of

⁶ Concept Note 3.0 (September 2025), §7, p. 33. The 8.3% is sourced in the note’s footnote 20 to “Yield of JP Morgan Global EMBI spread plus the long-term US Treasury Yield (07/01/2024),” a single day’s observation.

⁷ S&P Global Ratings, *2024 Annual Global Sovereign Default and Rating Transition Study*, Table 16, “Sovereign foreign currency cumulative average default rates without rating modifiers (1975–2024)”: BB, 10-year, 10.13%; speculative grade, 10-year, 23.52%.

⁸ Cruces and Trebesch (2013), “Sovereign Defaults: The Price of Haircuts,” *American Economic Journal: Macroeconomics* 5(3): 85–117, covering 180 restructurings with foreign banks and bondholders in 68 countries, 1970–2010: the average haircut is 37% in present-value terms, with individual cases from about 10% to 90%. Meyer, Reinhart and Trebesch (2022), “Sovereign Bonds since Waterloo,” *Quarterly Journal of Economics* 137(3): 1615–1680, find a median creditor loss below 50% across more than 300 restructurings since 1815. A loss of half is therefore at the upper end of the record; a loss of 37% would give about 4% over the decade, or 40 bps a year.

⁹ J.P. Morgan EMBI Global total return index, peak-to-trough: 21 May to 24 October 2008, –29.3%; 15 September 2021 to 21 October 2022, –26.0%.

2025 it held 2.5% in emerging markets.¹⁰ The managers of this fund, with a horizon measured in generations, choose to hold only half of what it is allowed of the asset class the TFIF proposes should make up 90% of its portfolio.

There is a respectable argument that some part of the spread is nonetheless uncompensated. Rating agencies have been shown to rate developing-country sovereigns more harshly than their default record warrants, emerging-market bonds are less liquid than developed-market bonds, and some institutional investors are prevented by regulation from holding more of them.¹¹ Each of these could leave a premium on the table for a patient investor. We do not dispute that such a premium may exist or at least may have existed in the past, when emerging-market bonds were a relatively new product. But the TFIF would be buying the same bonds, from the same dealers, at the same prices as the fund managers who already hold them, and \$125 billion is a large sum to place in this market without moving the price against oneself. More important, whatever the source of the premium, collecting it means holding the bonds through the years in which their prices fall. The question for the rest of this chapter is therefore not whether there is a real spread between a risk-free asset such as US Treasuries and emerging-market bonds, but how much of that spread survives the costs of running the fund and the years in which the losses arrive.

8.3 The Facility's arithmetic, tested

The Concept Note's requirement has three parts: a gross spread over Treasuries, a cost of capital, and a running cost. Each can be checked against evidence. We take them in turn and then compute what is left.

8.3.1 The spread that was actually earned

The TFFF Concept Note's projection assumes that its portfolio will yield 350 bps over Treasuries. Its historical analysis uses the J.P. Morgan EMBI Global index as the benchmark, and that index is the natural place to check the assumption.¹² The spread on an index is the extra yield its bonds promise over Treasuries if every bond pays in full. It is a promise, not a return. By construction it assumes that there will be no defaults, no restructurings and no fall in prices. What an investor actually earns over Treasuries is a different number, and it is the one that matters for a fund that has to pay its bills out of realised income.

¹⁰ Norges Bank Investment Management, "Risk management," key figures for the fund's risk and exposure as at 31 December 2025: "Maximum 5% of fixed-income investments may be in emerging markets," actual 2.5; "Maximum 5% of fixed-income investments may be rated below BBB-," actual 1.0. The fund's fixed-income portfolio was 26.6% of its market value on the same date.

¹¹ On rating-agency treatment of emerging-market sovereigns, Reinhart (2002), "Default, Currency Crises, and Sovereign Credit Ratings," *World Bank Economic Review* 16(2): 151–170, and Cantor and Packer (1996), "Determinants and Impact of Sovereign Credit Ratings," *FRBNY Economic Policy Review*, October. On liquidity and common factors in sovereign spreads, Longstaff, Pan, Pedersen and Singleton (2011), "How Sovereign Is Sovereign Credit Risk?" *American Economic Journal: Macroeconomics* 3(2): 75–103.

¹² Concept Note 3.1, §7.6, p. 41: "To assess historic performance, the J.P. Morgan EMBI Global Spread was used as the benchmark."

Table 8.1 shows both. The spread is the average of the EMBI Global spread over each period.¹³ The excess return is the difference between the annualised total return on the EMBI Global index and the annualised total return on the Bloomberg US Treasury 7–10 Year index, which has a similar duration.¹⁴ The total return includes every default and restructuring in the period, among them Argentina in 2001 and 2020, Ecuador in 2008 and 2020, Venezuela from 2017, Lebanon, Zambia and Suriname in 2020, Sri Lanka, Russia, Belarus and Ghana in 2022, and Ethiopia in 2023.

Table 8.1. Spread offered and excess return earned, EMBI Global over US Treasuries

Period	Average spread, bps	Excess return earned over Treasuries, bps a year
2000–2007	317	426
2008–2014	358	124
2015–2019	373	300
2020–2025	356	223
2000–2025	352	272
2008–2025	362	206

Source: Authors' calculations from the J.P. Morgan EMBI Global stripped spread (Bloomberg JPEIGLSP Index), the J.P. Morgan EMBI Global total return index (Bloomberg JPEIGLBL Index) and the Bloomberg US Treasury 7–10 Year total return index (LT09TRUU Index), daily, January 2000 to August 2026. Returns are computed from year-end index values and annualised; the spread series ends in September 2025. See notes 13 to 15.

Over the whole period the spread averaged 352 bps, which is the figure the Note assumes, and the excess return was 272. Since 2008 the spread has averaged 362 and the excess return 206.¹⁵ The difference between the two columns, 80 bps over the whole period and about 155 since 2008, is the cost of holding the asset: the defaults, the restructurings and the price falls that the spread promises away. Only in 2000–2007 did the investor earn more than the spread, and that was because spreads fell from over 700 bps to under 200 during those years, so that bondholders collected a large capital gain on top of their coupons. Spreads cannot fall by 500 bps from where they are now. In every period since 2008 the return has fallen short of the spread by between 73 and 235 bps a year.

¹³ J.P. Morgan EMBI Global stripped spread (Bloomberg JPEIGLSP Index), monthly from January 2000 and daily from 30 June 2003 to 16 September 2025. Period averages are simple averages of the observations in each period. Maximum of the daily series 891bp on 24 October 2008; the monthly observations reach 1001bp at the end of October 2001; minimum 151bp on 1 June 2007.

¹⁴ Bloomberg JPEIGLBL Index (J.P. Morgan EMBI Global total return) and LT09TRUU Index (Bloomberg US Treasury 7–10 Year total return), daily, 3 January 2000 to 31 August 2026. The Treasury index is investable and its duration is close to that of the EMBI; the iShares funds EMB and IEF track the corresponding J.P. Morgan and Treasury benchmarks.

¹⁵ Annualised total returns from year-end index values (2000 from the first quote of the year), from the series in note 14. 2000–2025: EMBI Global 7.08%, Treasury 7–10 Year 4.37%. 2008–2025: 5.20% and 3.14%. Measured from 17 December 2007 (the inception date of the EMB fund) to 31 August 2026 the figures are 5.16% and 3.01%. For comparison, BlackRock reports EMB's annualised total return since inception as 4.78% at net asset value to 30 June 2026, against 5.30% for its benchmark, the J.P. Morgan EMBI Global Diversified Core; the gap is the fund's 39 bps fee and tracking difference (iShares EMB product page, accessed 12 September 2026). The full annual series is in TFFF-Cho8-Table-spread-vs-return.md.

The figures for the periods starting in 2008 are the right ones to use. They exclude the one-off gain of the early 2000s, and they still cover eighteen years in which emerging-market debt did well by historical standards. We therefore take 206 bps as the excess return the TFIF could have expected to earn over the period, and 272 as an upper bound that depends on the good years before 2008.

Neither figure is a safe basis for a forty-year projection. The Concept Note's own analysis covers only "the past 20 years."¹⁶ The index fell by 29% in 2008 and by 26% in 2021–22. Forty years is long enough for both to happen again and for something worse to happen once.

8.3.2 The cost of borrowing

The Concept Note puts the TFIF's weighted average cost of capital at 72 to 140 bps over Treasuries. The figure applies to the whole \$125 billion, sponsor capital included, not to the \$100 billion of market borrowing alone.¹⁷

The low end of the range is not available on the terms sponsors have offered. The 72 bps figure belongs to what the Note calls the "Unsecured Option" for issuing senior bonds, and that option requires that "a minimum of 2/3 of capital needs to be paid in equity."¹⁸ The Note continues: "If the majority of junior sponsor capital (over 2/3) will not be provided in the form of paid in equity, then the Secured Option represents the most viable way forward."¹⁹ The sponsor commitments made so far are mostly loans. The United Kingdom's £400 million is a loan, and Norway's \$3 billion, the largest pledge, is a loan to be disbursed to 2035 and repaid by 2075. Brazil and Indonesia have each committed \$1 billion, described as investments, without saying publicly whether as loans or equity.²⁰ Germany has committed EUR1 billion in what appears to

¹⁶ Concept Note 3.1, §7.6, p. 42: "The EMBI has a track record for the past 20 years with approximately 5400 observations."

¹⁷ The Note's own arithmetic shows this: 160 bps of net spread plus 72 of funding cost plus 15 of expenses is 247, and 160 plus 140 plus 25 is 325, which are the two ends of the range it publishes. On \$100 billion the same figures would give 233 and 297.

¹⁸ Concept Note 3.1, §7.2.2, p. 37, which also describes the Unsecured Option as "less complicated to set up and administer" and "cheaper," and the Secured Option as "a more complicated and costly structure to set up and administer over time." Equity here means paid-in capital that the sponsor owns rather than lends. The Note's term sheet for it (§8.2.1, p. 34, "Paid-in Equity") describes "a perpetual investment" that "pays a discretionary distribution from the TFIF balance sheet but is dependent on the financial performance of TFIF" and "ranks junior to TFIF Senior Debt." The fund therefore owes an equity holder no interest: it pays a distribution only if its board decides it can afford one, and pays nothing otherwise without being in default. Nor does it ever have to repay the money; the sponsor's claim is on whatever is left after the bondholders, for as long as the fund exists. That is why the Unsecured Option's cost of capital is lower: not because the bonds are cheaper, but because the equity itself costs the fund nothing in cash, and \$16.67 billion of capital that pays no coupon takes about 67 bps off the average cost of the \$125 billion (note 22). A loan, even a subordinated one with a coupon that can be cancelled, is not the same thing: it has a due date and, in the ordinary course, a coupon. The Note's second instrument, the Sponsor Capital Note, is a hybrid: a loan with a coupon that can be cancelled and an option to convert into equity after ten years. The Unsecured Option's requirement is stated in terms of "paid in equity," so a hybrid does not count toward it.

¹⁹ Concept Note 3.1, §7.2.2, p. 38.

²⁰ HM Government, "Investment boost for climate action and forest protection," 3 September 2026, describing the £400 million as a loan "subject to final due diligence." Norway: Office of the Prime Minister, "Norwegian Government to provide up to 3 billion USD to new fund to preserve tropical forests," 6 November 2025: "Norway will provide up to 3 billion USD in loans over ten years," "disbursed gradually in the period up to 2035 and must be repaid by 2075," conditional on at least \$10 billion being mobilised by the end of 2026 and on Norway providing no more than 20% of the total. Brazil and Indonesia: TFFF, "Over USD 5.5 billion Announced for Tropical Forest Forever Facility," 7 November 2025 ("Brazil and Indonesia reconfirmed their USD 1 billion commitments"); President Prabowo, 23

be equity, but as of September 2026 it is uncertain whether that commitment will hold.²¹ Even if Brazil's and Indonesia's money were equity, equity would be less than half of the \$6.8 billion pledged, not two thirds. The Facility is therefore on the Secured Option, at the upper end of its own range. We use 140 bps as the central case and 120 as a generous one. Since sponsor capital receives the Treasury rate, a weighted average of 120 bps on \$125 billion means 150 bps on the \$100 billion of senior bonds, and 140 means 175.²²

It should not be surprising that investors would require a spread of 150 bps or more over Treasuries to hold the TFIF's senior bonds, and there are three reasons why. First, the bonds are claims on a portfolio that is 90% emerging-market debt rated around BB, protected by a cushion of \$25 billion. Losses beyond 20% of the portfolio fall on the senior bonds. The index fell by 29% in 2008 and by 26% in 2021–22, so a senior investor is buying exposure to the same defaults and price falls described in Section 8.2, one layer removed. Second, the portfolio would be actively managed. An investor who buys an index fund knows what he holds; an investor who buys the TFIF's bonds knows the investment guidelines, and has to trust that the composition, the credit quality and the leverage will not drift over the years the bond is outstanding. The Secured Option narrows this without removing it. Under it each series of bonds is backed by its own compartment of assets and carries its own rating, so the investor can see what secures his bond and the manager's discretion is confined to the rules of that compartment. But the compartment is still a managed portfolio, whose eligibility rules and coverage tests the investor has to monitor, and the structure that gives him this protection has to be set up, rated series by series, and administered for as long as the bonds are outstanding. The Note says as much: the Secured Option is “a more complicated and costly structure to set up and administer over time.”¹⁸ Discretion has a price; where the structure limits it, part of that price moves from the coupon to the running cost, which is taken up in Section 8.3.3. Third, the TFIF would be a new issuer with no record. There is no established market for its bonds, no history of how they trade under stress, and no assurance that an investor who needs to sell in a bad year will find a buyer without cutting the price. Investors charge for that uncertainty as well. The Concept Note itself

October 2025: “Indonesia will invest there.” Neither government has published the instrument. The \$6.8 billion total is as reported in July 2026 (Climate Home News, 3 July 2026). On the pledges generally, see Chapter 13, note 8.

²¹ Federal Ministry for the Environment (BMUV), “Germany pledges one billion euros to innovative rainforest conservation fund,” press release, 21 November 2025: “Germany will provide a total of one billion euros over the next ten years for the Tropical Forests Forever Facility ... The funding will come from Germany's federal budget. They will help capitalise the fund ... This commitment is still subject to approval by the German Parliament.” On the domestic opposition to the commitment, see Peter Tiede, “Schluss mit Milliarden-Geschenken,” *Bild*, 10 September 2026, <https://www.bild.de/politik/meinung-kommentare-kolumnen/kommentar-von-chef-autor-peter-tiede-schluss-mit-milliarden-geschenken-6aa2eb0311c988e0af3e2adc>, which treats the billion as a gift (“Diese Freihändig-verschenkt-Milliarden haben wir derzeit nicht”) and endorses the block placed on it by the CDU's budget spokesman Andreas Mattfeldt (“Das Stopp des CDU-Haushälters Andreas Mattfeldt für des Kanzlers Wald-Kohle ist schon deshalb richtig”).

²² The 72 bps cost over Treasuries, which is achievable only in the Unsecured structure, assumes that two-thirds of sponsor capital, \$16.67 billion, arrives in the form of equity, on which no interest payments are due, and the remainder in loans at the Treasury rate. At an interest rate of 5%, this means a reduction in interest payments due of around \$16.67 billion $\times$ 0.05 = \$0.83 billion a year, or about 67 bps on the \$125 billion of capital. This is why the weighted average cost of capital is so much cheaper for the Unsecured funding model. The difference between the two ends of the Note's range, 140 – 72 = 68 bps, is almost exactly this figure.

says that “it is difficult to estimate where the market rate for TFIF’s senior debt will be at the time of issuance.”²³

8.3.3 The cost of running the fund

The Concept Note expects the TFIF’s expenses to be “in the 15-25 bps range (also referenced to the entire USD 125 billion asset base).” These expenses are to cover “the TFIF CFO, CIO and staff, the TFFF Secretariat, the operations of the Trustee of the TFFF, the Boards of Directors of the Facility and the TFIF, and the securing of a range of services the TFIF will require from the Treasury Manager, Asset Managers engaged to manage the TFIF portfolio, risk monitoring by experienced experts and other service providers.”²⁴ The Note attaches the lower figure to the Unsecured Option, whose administrative cost it puts at 7 bps plus 16 bps of negative carry on the liquidity it must hold, and the upper figure to the Secured Option.

Fifteen basis points is not a realistic figure for a fund of this kind, and here we do not take the end of the range that favours the Facility. We assume 25 bps, the top of the Note’s range, for four reasons. First, the TFIF would issue its own bonds, and underwriting fees on a public bond issue are typically between 0.5 and 1% of the amount raised. On \$100 billion of eight-year bonds that is \$500 million to \$1 billion for every issue, or 5 to 10 bps a year on the fund once it is spread over the life of the bonds, and the fees recur each time the bonds are refinanced. Second, the portfolio would be actively managed, not indexed. The Facility’s own call for service providers, issued in July 2026, describes a permanent fund manager delegating portfolio management “to one or more portfolio managers under segregated mandates across investment sleeves,” with a separate depositary, central administrator and banking provider.²⁵ Each of those is paid. For comparison, the largest fund tracking the emerging-market index, the iShares J.P. Morgan USD Emerging Markets Bond ETF, charges 39 bps a year on \$14.4 billion of assets with no active management at all; the equivalent Treasury fund charges 15.²⁶ Third, the TFIF is a multinational institution answerable to dozens of sponsor and forest-country governments, with the boards, reporting and compliance that implies, and it would need to obtain and keep a credit rating; under the Secured Option, which is where the sponsors’ loans put it, it would need a rating for each series of bonds and a separate issuing entity, with its compartments, to administer. Fourth, it is to be domiciled in Luxembourg, one of the most expensive jurisdictions in the world in which to run a fund.²⁵ Concept Note 3.0’s own example implied 28 bps: \$3.75 billion of spread less the \$3.4 billion it said would be available.²⁷ Twenty-five bps is therefore a floor rather than a central estimate, and it covers the fund alone. The Facility itself, the secretariat, boards and

²³ Concept Note 3.1, §7.5, p. 40.

²⁴ Concept Note 3.1, §7.5, p. 40.

²⁵ TFFF Transition Committee, *Call for Expressions of Interest: Provision of services related to Depositary, Commercial Banking and Central Administration functions for the Luxembourg-domiciled Tropical Forest Investment Fund (TFIF)*, 2 July 2026: “TFIF is expected to be established as a Luxembourg-domiciled reserved alternative investment fund (‘RAIF’), in the form of a public limited company (société anonyme)”; “The Permanent AIFM may delegate portfolio management activities to one or more portfolio managers under segregated mandates across investment sleeves.”

²⁶ iShares J.P. Morgan USD Emerging Markets Bond ETF (EMB): expense ratio 0.39%, net assets \$14.43 billion at 4 September 2026. iShares 7–10 Year Treasury Bond ETF (IEF): expense ratio 0.15%. Product pages accessed 8 September 2026.

²⁷ Concept Note 3.0, §7, p. 33.

verification apparatus that decide who is paid and how much, is a separate cost. Chapter 10 builds it up line by line and puts it at \$60 to \$95 million a year. We take the lower figure, which is about 5 bps on the fund, so the running cost used from here on is 30 bps: 25 bps for the fund and 5 bps for the Facility.

8.3.4 What is left

Table 8.2 subtracts the cost of capital and the running cost from the spread. The two rows use the excess returns actually earned over Treasuries in Table 8.1, for 2000–2025 and for 2008–2025. The two columns are the generous and the central cases for the cost of capital; both use 30 bps for the cost of running the fund and the Facility. The Note’s requirement for \$2 billion is 160 bps net; the requirement for \$4 billion is 320.

Table 8.2. Net spread available for Forest Payments, bps on \$125 billion

Gross spread over Treasuries	Cost of capital 120bp, expenses 30bp	Cost of capital 140bp, expenses 30bp
272bp (earned, 2000–2025)	122bp = \$1.53bn	102bp = \$1.28bn
206bp (earned, 2008–2025)	56bp = \$0.70bn	36bp = \$0.45bn

Source: Authors’ calculations. Spreads earned are from Table 8.1; cost of capital and expenses are from Sections 8.3.2 and 8.3.3. All figures are before repayment of sponsor capital or retained capital, and are net of the defaults that occurred in the period but make no allowance for future defaults.

No entry in the table reaches \$2 billion, and none comes close to \$4 billion. The most favourable case, the full period from 2000 with the generous cost of capital, gives \$1.5 billion, and that period includes the one-off gain of 2000–2007. On the period since 2008 the fund would have had between \$0.45 and \$0.7 billion a year for the forests, a small fraction of the target. The 20 bps between the two columns, worth \$250 million a year, lie within the Facility’s own published range for its cost of capital.

The Note’s requirement of 160 bps is itself incomplete. It is, in the Note’s own words, what is needed to meet “minimum TFC Forest Payments in the initial years.”²⁴ The \$2 billion is the starting level, when only about half of the eligible forest qualifies; as countries bring their deforestation below the cap the payment is meant to rise, and Concept Note 3.0’s example already had payments of \$2.8 billion at \$4 per hectare on current deforestation, with the fund generating \$3.4 billion. The equilibrium requirement (assuming that the effect of the TFFF is to slow down deforestation) is nearer 320 bps than 160. Beyond that, the Note says that the fund will retain part of its income so that it can repay the \$25 billion of sponsor capital over forty years and hold its own equity in its place. Spread over forty years that is \$625 million a year, or 50 bps on the fund, and the 160 bps contain no allowance for it. Nor do they allow for the 2% a year by which the per-hectare payment is to rise. On a full accounting the bar is higher than 160 by at least 50 bps.

Table 8.2 treats the spread as if it arrived evenly, every year, on a fund that was fully invested from the first day. Neither is true. Emerging-market returns come in runs of good years broken by a year in which a quarter of the portfolio’s value disappears, and the fund would be built up over several years and financed with borrowed money that has to be refinanced. This is

important, and to illustrate how the fund would have fared in the past, Section 8.4 runs the fund through the years as they happened.

8.4 The TFIF run through the markets of 2000 to 2026

The averages in Section 8.3 can be argued with. A defender of the Facility can say that the period chosen was unrepresentative, that the cost of capital will be lower, or that the fund will be managed better than the index. A fairer test is to take the investment strategy the Concept Note describes, with its own rules for borrowing, refinancing and paying out, and ask how it would have fared had it been put in place at some point in the past. The record is then not an average but a sequence: the prices and yields of every day, in the order they came, including the crises that an average smooths over. The usual caveat applies: what happened between 2000 and 2026 does not tell us what will happen between 2026 and 2052, and a fund that would have failed in the past might succeed in the future. But a fund that would have failed in every year it could have been launched carries a burden of explanation, and the historical record is the only evidence there is.

This section builds the TFIF as the Concept Note describes it and runs simulations of it, day by day, through the emerging-market and Treasury markets as they actually behaved from 2000 to August 2026. The fund is launched on the first trading day of each year from 2000 to 2018, so there are nineteen runs. Each is one possible history of a single fund, so we report the range across the nineteen and the number that pass or fail, never a sum. Nothing in the model is random: every price and every interest rate is the one that occurred.²⁸

The fund is capitalised over eight years, with sponsor money and market borrowing arriving together every day in the ratio 1:4 until \$25 billion and \$100 billion have been raised. This matches the way sovereign commitments are in fact being made, in instalments over several years rather than up front.²⁹ It also has an analytical merit: a fund that buys over eight years buys at ninety-six months' prices rather than one day's, so no launch is a bet on the spread of a single date, and the nineteen launches together approximate what a sponsor should expect who does not know in what year the fund will start. In our simulations, we build the fund up daily, roughly \$43 million per day, so that the simulation captures the average outcomes; this is more representative than investing \$16 billion on one day each year. The proceeds are invested 90% in the EMBI Global index and 10% in Treasuries, the liquidity buffer described in the Concept Note. Each day's market borrowing is an eight-year bond paying that day's eight-year Treasury yield plus 150 bps, fixed for the life of the bond; 150 bps on the senior bonds is a weighted average of 120 on the whole fund, the generous end of the range in Section 8.3.2. Sponsor loans carry the Treasury yield with no spread, as the Note specifies, and are repaid only under the rule set out below. The fund pays a management fee of 15 bps a year and an underwriting fee of 1% on every bond it issues, including refinancings; together these come to about the 25 bps

²⁸ Data are the J.P. Morgan EMBI Global total return index and a synthetic eight-year Treasury yield and total return ($0.4 \times 5\text{-year} + 0.6 \times 10\text{-year}$), daily.

²⁹ Germany's one billion euros is to be paid over ten years (note 21); the United Kingdom's £400 million is subject to due diligence (note 20). Concept Note 3.1, §7.2.1, acknowledges that "certain sponsors wish to make contributions over a few years."

assumed in Section 8.3.3. The Facility's own running cost, \$60 million a year as set out in Chapter 10, is taken out of the fund's assets at the end of every month, \$5 million at a time. It is paid first and in full whatever the state of the fund, because the Facility's staff, boards and verification work do not stop when the market falls.

Three rules govern what happens when markets fall, and all three come from the Note. A maturing bond is refinanced only if the fund's assets are at least 125% of its outstanding bonds, which is the Note's requirement that the structure be "5x leverageable"; if the test fails the bond is repaid out of assets and the fund shrinks. Interest on sponsor loans is settled once a year. It is paid in full if, after paying it, the fund's assets would still cover the bonds outstanding; if not, the fund pays only what it can while keeping assets at least equal to the bonds, and the rest of that year's coupon is cancelled, as the Note's term sheet for sponsor capital provides: the coupon "can be cancelled at discretion of TFIF Board or automatically when certain % loss of equity triggers are met."³⁰ The Forest Payment is made at the end of each year, with the amount capped at the largest amount that leaves the bonds at or below 85% of assets, up to the scheduled amount, following the Note's rule that "if the gearing (senior liabilities / assets) exceeds key thresholds (e.g. 85%), the payouts from the TFIF will start to be curtailed until the market normalises."³¹ The scheduled payment follows the Note: \$2 billion in the first year, rising by \$250 million a year to \$3 billion in the fifth year as more forest qualifies, and by 2% a year after that. Any shortfall against the schedule is carried forward and paid in a later year when the gearing rule allows, as the Note provides: "TFCs may subsequently receive catch-up payments in later years if the TFIF's financial performance improves."³² Two further rules follow the Note's provision that after ten years the fund may begin a thirty-year process of repaying its sponsors.³³ At each year end from the tenth onward, if sponsor interest and the Forest Payment, including any arrears, have been paid in full and the fund's assets would still be at least 125% of its bonds afterwards, it repays one thirtieth of the sponsors' \$25 billion. Then, on the same conditions and to the same limit, it borrows: during the eight-year build-up, to make up any part of the \$100 billion programme it has repaid; after that, without limit, so that the fund can grow, as the Note's cash-flow chart shows it growing, whenever its cover allows. Sponsor repayment comes first.

Several things are left out. The model does not charge the fund anything for selling bonds in a falling market, does not raise the fund's own borrowing cost as its cushion thins, does not model a rating downgrade or the loss of market access that would follow one, and does not include currency risk. Each of these would make the results worse.

³⁰ Concept Note 3.1, §7.2.1, p. 34, term sheet for Sponsor Capital Notes, item 3; the same wording appears for sponsor loans. A cancelled coupon is not owed, so it is not counted in the sponsors' loss in Table 8.3. Treating missed coupons instead as deferred and paid, ahead of the forests, once assets again exceed the bonds changes almost nothing: across the nineteen launches only \$1.5 billion of deferred coupons would ever have been caught up, all in the 2014 and 2015 launches.

³¹ Concept Note 3.1, §12.1.1, Table 8. "5x leverageable" is at §8.5, p. 41.

³² Concept Note 3.1, §1.4: "TFCs may subsequently receive catch-up payments in later years if the TFIF's financial performance improves."

³³ Concept Note 3.1, §7.2.1, p. 34, term sheet for Sponsor Capital Notes, item 5: "After 10 years, Sponsor has right to begin 30-year process of converting into equity of TFIF, TFIF has right to begin 30-year process of repaying Sponsor with new contributions or possibly retained capital." The Note does not say when the fund may re-borrow after a forced deleveraging; the condition used here is the same 125% cover that governs refinancing.

The model also gives the bondholders no say. It lets the fund carry on when its assets have fallen below its bonds, keep paying coupons, and repay each bond at par as it matures, so that in the 2000 launch the fund spends 1,338 days under water and its bondholders are made whole throughout. Bonds of this kind do not normally carry those terms. A leveraged fund that borrows in the public market lives under an asset-coverage test, and the asset-backed structure the Note proposes for the Secured Option is the structure of a collateralised loan obligation, whose notes carry overcollateralisation tests as a matter of course: when the collateral falls below the required multiple of the senior notes, every dollar of income is diverted to pay them down, and when it falls to about the par of the senior notes there is an event of default and the senior holders can direct an orderly wind-down, with the proceeds going to them first and whatever remains to the junior capital. Applied here, that rule would end every launch at its first crisis: the launches of 2000 to 2008 in October 2008, those of 2009 to 2014 on 19 March 2020, and those of 2015 to 2018 in May or June 2022. The bondholders would be paid out of the run-off, at a small loss in most cases, since the breaches are shallow at first. The sponsors would lose their \$25 billion in one event rather than over a decade, and Forest Payments would stop on the same day and never resume. The 2007 and 2008 launches, which had paid one year and none respectively when the crisis came, would have delivered almost nothing. The simulations that follow assume the bondholders wait. On the terms such bonds normally carry, they would not have to.

The Note also relies on three things that might be thought to make them better, and none does. The first is hedging of interest-rate risk. The fund's bonds are fixed-rate and eight years long, and its assets have a duration of about seven years, so the two sides are already matched; the risk that sinks the fund in every run is the widening of credit spreads, and protection against that costs roughly the spread itself. The second is active credit selection. S&P's scorecard of active fund managers finds that 85% of actively managed emerging-market debt funds in the United States underperformed their benchmark over ten years, and every one of them over fifteen, after fees.³⁴ The third is a temporary shift into developed-market bonds in a crisis. The Note's trigger is the crisis, so the shift would be made after prices had fallen, and a fund that sold in October 2008 or March 2020 would have crystallised its losses and missed the recoveries that followed.

³⁴ S&P Dow Jones Indices, *SPIVA U.S. Scorecard, Year-End 2024*, Report 11a: share of Emerging Markets Debt funds underperforming the Bloomberg Emerging Markets USD Aggregate index, 85.25% over ten years and 100.00% over fifteen years.

Table 8.3. The TFIF launched on the first trading day of each year, 2000–2018, run to August 2026

Launch	Years run	Forest Payments delivered, share of schedule	Sponsor capital remaining in the fund, \$bn	Retained earnings, \$bn	PV to forests per \$ of sponsor cost
2000	26	51%	0.0	−24.1	3.10
2001	25	56%	1.4	−22.8	3.16
2002	24	56%	1.6	−22.5	2.93
2003	23	50%	0.0	−25.0	2.18
2004	22	49%	0.0	−25.1	1.95
2005	21	48%	0.0	−25.0	1.78
2006	20	48%	0.0	−25.5	1.59
2007	19	50%	0.0	−25.7	1.48
2008	18	52%	0.0	−26.4	1.39
2009	17	50%	0.0	−26.7	1.22
2010	16	46%	0.0	−26.9	1.01
2011	15	46%	0.0	−27.0	0.92
2012	14	45%	0.0	−26.8	0.83
2013	13	45%	0.0	−25.4	0.74
2014	12	42%	1.0	−24.0	0.66
2015	11	39%	4.4	−20.6	0.66
2016	10	42%	6.9	−18.1	0.71
2017	9	47%	8.3	−16.7	0.74
2018	8	53%	10.7	−14.3	0.81

Source: Authors' simulation of the TFIF on the J.P. Morgan EMBI Global total return index (Bloomberg JPEIGLBL Index) and Bloomberg US Treasury yields and total returns, daily, January 2000 to August 2026. Delivery is the total paid, including catch-up payments, as a share of the total scheduled. Sponsor capital remaining in the fund is the value of the sponsors' claim in August 2026, assets less bonds outstanding, up to the capital still outstanding; it excludes the \$0.83 billion repaid to the sponsors of the 2000–2002 launches in 2013. Retained earnings are assets less bonds outstanding and sponsor capital outstanding in August 2026; a figure below zero means the sponsors' capital has been eaten into, and a figure below minus \$25 billion means assets are below the bonds. Present values are discounted at the eight-year Treasury yield from each launch date; the cost to sponsors is what they paid in less the interest they received and the value of their remaining claim. The launches from 2013 onward have run for only eight to thirteen years and their sponsor capital has not yet been through a full cycle, so the improvement in the last rows is an artefact of the data ending in August 2026, not evidence that later launches work better.

The fund never delivers what it promises. Across the nineteen launches the share of scheduled Forest Payments actually made, catch-up payments included, runs from 39 to 56%, with a median of 48%. No launch delivers three quarters, and seven deliver half. Across the 323 fund-years in the nineteen runs the scheduled payment is made in full in 91, or 28%; in part in 103, or 32%; and not at all in 129, or 40%. Catch-up payments do not raise the total, because what the fund can pay is set by what it earns and not by what it owes; they move payments forward into

the recoveries, and the arrears owed to forest countries grow once the fund has shrunk. The 2000 launch reaches August 2026 owing forest countries \$45 billion that it will never pay. The Note describes curtailment as something that “should only occur in the case of a structural widening of all credit spreads due to a global liquidity event. Such events do occur, but are temporary.”³⁵ On the record, a full payment is the exception.

Sponsor capital is used up. In eleven of the nineteen launches, every one from 2003 to 2013, the sponsors’ \$25 billion is gone by August 2026. No launch returns even half of it. Repayment of sponsor investments occurs in only three of the launches, once each in January 2013 by the launches of 2000 to 2002, for \$0.83 billion apiece, and never again; in every other simulation the sponsors are not repaid a dollar by August 2026. Similarly, the fund is not able to grow by borrowing after the initial eight-year growth period, because there is never enough retained capital to support it, except at the same moment in the 2000 to 2003 launch simulations.³⁶ Neither repayment nor reinvestment can occur more often, because the Forest Payment rule pays out until the bonds are 85% of assets, which is 118% cover, and the repayment and re-borrowing rules need 125%; the cushion between the two exists only in a year when the schedule has capped the payment. Nothing replaces the capital.

The Note expects the fund to build retained earnings in place of the sponsor capital, but the payment rule sends every dollar above the gearing limit to the forests, so retained earnings never accumulate; in every one of the nineteen launches they are negative in August 2026, and in eleven they are below minus \$25 billion, which is to say the fund owes its bondholders more than it holds. As set out above, a fund in that position is in breach of the covenants that bonds of this kind normally carry, and its bondholders could wind it up. As the sponsor capital is consumed, the cushion under the bonds goes with it, the refinancing test fails, and maturing bonds are repaid to market investors instead of being rolled. The fund shrinks in every run. The launches of 2000 to 2009 each raised the full \$100 billion of bonds; the three that borrowed again in 2013 hold \$13–21 billion of them in August 2026, and the other seven hold less than \$10 billion.³⁷

The Note’s own risk assessment, a Monte Carlo simulation, gives “a 10.6% chance of a coupon skip and a 1.1% chance of a capital impairment” on its most conservative portfolio.³⁸ This is implausible, given the outcome of these simulations, which rely on the total return from the carry trade the Note proposes: the sponsor coupon is short in 18% of fund-years, and sponsor

³⁵ Concept Note 3.1, §12.1.1, Table 8.

³⁶ The repayment is \$833 million, pro rata across the sponsor tranches; the borrowing is the amount that leaves assets at 125% of bonds after the 1% underwriting fee. At the January 2013 settlement the 2000, 2001, 2002 and 2003 launches borrow \$6.0, \$18.3, \$20.1 and \$2.6 billion, taking the 2002 launch’s bonds to a peak of \$105 billion; the 2003 launch, at 125.8% cover after its Forest Payment, would fall below 125% by making the repayment and so cannot. Without either rule the results are almost identical: delivery 39–57%, median 48%; sponsor capital exhausted in fourteen launches; the three earliest launches reach August 2026 with \$2–6 billion of assets instead of \$13–23 billion. Capping the borrowing at the \$100 billion programme changes only the 2002 launch, which then borrows \$14.7 billion and returns \$1.8 billion to its sponsors.

³⁷ Retained equity in August 2026 is negative in all nineteen launches; market bonds outstanding in August 2026 are \$12.9, \$20.7 and \$21.2 billion for the 2000–2002 launches and between \$1.4 and \$9.5 billion for the 2003–2009 launches, against \$100 billion raised; the median across the nineteen is \$12.9 billion.

³⁸ Concept Note 3.1, §7.6, p. 43, and Table 6, which gives probabilities of a sponsor coupon skip of 10.58, 7.58 and 4.48%, and of capital impairment of 1.14, 0.68 and 0.24%, for portfolios with 0, 10 and 25% of assets outside ODA-eligible countries.

capital is impaired in every launch and exhausted in eleven, including every launch from 2003 to 2013. The Note also reports that over twenty years there were only 216 days on which its unlevered portfolio traded below 85% of par, and concludes that “it is only during the Global Financial Crisis of 2008/9 that there would have been a TFIF Investor and Sponsor coupon disruption.”³⁹ That is a fair description of a portfolio that keeps its income and its cushion. It is not a description of the TFIF. The Note’s 85% threshold is the point at which a fund levered four to one and sitting at its gearing limit is insolvent, so the Note’s own figures put such a fund under water for 216 days; and the TFIF sits at its limit in every good year, because everything above it is paid out, so that the income which lifts a static portfolio back above 85% has, in the TFIF, already been paid away. That is why the 2000 launch is below its bonds for 1,338 days rather than 216.

The failures come in two clusters. Every launch from 2000 to 2008 first falls below its senior debt in October 2008, every launch from 2009 to 2014 on 19 March 2020, and every launch from 2015 to 2018 between May and June 2022. Figure 8.1 shows the 2000 launch: its assets, its bonds, and what would be left for the sponsors if the bonds were repaid. It reached \$122 billion of assets in January 2008, eight years after launch, with \$97 billion of bonds outstanding; the refinancing test had held back the last \$3 billion of borrowing. It had paid forest countries in full for the previous five years, including a catch-up payment in 2003 that cleared the shortfalls of its first three years. Those payments had taken it to its gearing limit: it held no retained earnings above the sponsor capital. During 2008 the portfolio lost \$31 billion of value. The fund repaid \$12 billion of bonds as they matured and could not be refinanced, which was all the maturity schedule allowed, and on 10 October 2008 its assets fell below its remaining bonds. By the start of 2009 three quarters of the sponsors’ \$25 billion had been consumed. Nothing was paid to forest countries for 2008; in 2009 the fund paid \$5.0 billion, the scheduled amount plus half of the arrears, and was back at its limit. It paid in full from 2010 to 2012, and in January 2013, with the payment made and its bonds at 80% of assets, it repaid \$0.83 billion to its sponsors and borrowed \$6 billion, which went into the sell-off of 2013. It paid nothing for 2013, in part in most years from 2014, and nothing from 2021. In August 2026 it would have held \$13.0 billion of assets against \$12.9 billion of bonds, with nothing left for the sponsors (who had received only \$0.83 billion repaid to them in 2013) and unpayable arrears of \$45 billion owed to forest countries.

³⁹ Concept Note 3.1, §7.6, p. 42, and Table 5.

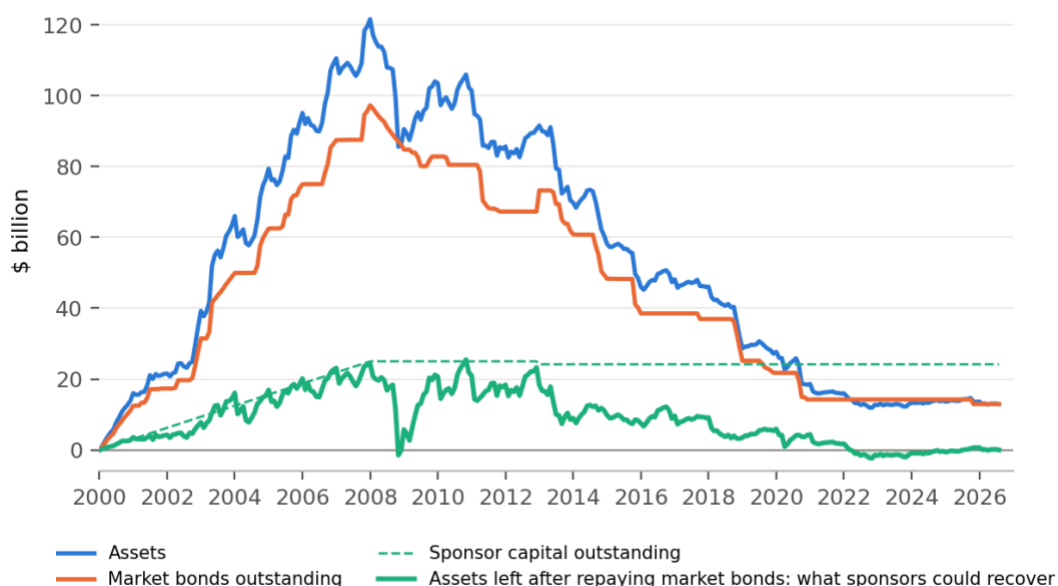


Figure 8.1. The TFIF launched on 3 January 2000, \$ billion, monthly to August 2026. Assets and market bonds outstanding from the simulation; the sponsors' claim is what would remain after the bonds were repaid, against the sponsor capital still outstanding (\$25 billion, less the \$0.83 billion repaid in January 2013). *Source: Authors' simulation of the TFIF on the J.P. Morgan EMBI Global total return index (Bloomberg JPEIGLBL Index) and Bloomberg US Treasury yields and total returns, daily, January 2000 to August 2026.*

The last column of Table 8.3 asks a different question: not whether the fund kept its promise but whether the forests received more, in present value, than the sponsors gave up, once the interest sponsors were paid and the capital they got back are netted off. The answer is yes in eleven launches of nineteen, all of them 2010 or earlier, and no in every launch from 2011 on. The median launch returns \$1.22 of Forest Payments per dollar of sponsor cost, the best \$3.16 and the worst \$0.66. In the good launches the fund simply earned more on emerging-market debt than it paid on its bonds, and market investors were paid every dollar they were owed throughout. This is what one might expect: if you take a position in a market, sometimes it will pay off, and sometimes not.

The simulations also show who is paid. In the 2000 launch the fund paid its bondholders \$57 billion of interest over twenty-six years and its sponsors \$15 billion, and paid the banks and managers that underwrote its bonds and ran its portfolio \$3.6 billion in fees, against \$47 billion to the forests. Across the nineteen launches the bondholders receive a median \$1.13 for every dollar that reaches the forests, and the fees add another 9 cents; in only five of the nineteen do the forests receive more than the bondholders.⁴⁰ That is the arithmetic of borrowing four dollars

⁴⁰ Totals over each run of market interest paid, underwriting and management fees paid, sponsor interest paid and Forest Payments made. 2000 launch: \$57.4, \$3.6, \$15.1 and \$46.8 billion. Medians across the nineteen launches of market interest and of fees, each divided by Forest Payments: \$1.13 and \$0.09. The forests receive more than the bondholders in the 2010, 2011, 2012, 2017 and 2018 launches. Fees are the model's 15 bps management fee and 1% underwriting, below the 25 bps of Section 8.3.3.

for every one of capital: most of what the portfolio earns is owed to the people who lent the four. The banks that have championed the structure are paid whether or not the forests are. The underwriting fee is earned when the bond is sold and the management fee accrues every day, and both stand at the head of the waterfall, ahead of the bondholders, the sponsors and the forests alike.

One feature is reliable: the TFIF shrinks to a fraction of its intended size as the sponsor capital disappears, as it does in every simulated launch up to 2014. “Forever” is in the Facility’s name. It does not describe the fund that is meant to pay for it.

The simulation results are not a matter of bad luck in particular years. Anyone who borrows to invest in an asset class faces the ordinary problem of investing: some years make money and some lose it. The TFIF adds three things to that problem. It pays fees every year, whatever the market does. It pays a premium over Treasuries to borrow. And it pays out its profits to the forests in every good year, down to its gearing limit, so that the good years leave nothing behind to absorb the bad ones. A fund built that way cannot accumulate equity, and the equity it starts with is spent in the first serious downturn. That is what Table 8.3 shows, launch after launch, and it is the arithmetic of the design rather than an accident of the period.

The simulations above use the realised returns on the asset classes the Concept Note specifies. Past performance, as every investment prospectus warns, is not indicative of future results. But we can at least ask what the spread available today would leave for the forests if the fund were launched now. That is the question of Section 8.5.

8.5 The spread available in 2026

The Concept Note’s projection assumes a gross spread of 350 bps over Treasuries.⁴ Concept Note 3.0’s worked example used a portfolio yield of 8.3%, the EMBI spread plus the long-term Treasury yield on a single day in 2024, when the index spread was about 340 bps.⁶ Neither figure describes the market of 2026.

Two measures of the spread are available. The first is the yield gap between the two largest funds tracking the relevant indices. On 4 September 2026 the iShares J.P. Morgan USD Emerging Markets Bond ETF, which tracks the diversified core of the EMBI Global, reported an average yield to maturity of 6.45%; the iShares 7–10 Year Treasury Bond ETF, of similar duration, reported 4.73%.⁴¹ The gap is 172 bps. The second is the stripped spread of the EMBI Global Diversified index, which fund managers publish in their monthly commentaries: 244 bps at the end of July 2026, after 235 at the end of June and 289 at the end of March.⁴² The

⁴¹ iShares EMB and IEF product pages, accessed 8 September 2026. EMB (iShares J.P. Morgan USD Emerging Markets Bond ETF, which tracks the J.P. Morgan EMBI Global Diversified Core Index): average yield to maturity 6.45%, effective duration 6.46 years, weighted average maturity 10.62 years, as of 4 September 2026. IEF (iShares 7–10 Year Treasury Bond ETF): average yield to maturity 4.73%, effective duration 6.95 years, weighted average maturity 8.49 years, as of 4 September 2026. The 30-day SEC yields on the same date were 5.97% and 4.58%, a gap of 139 bps, which would make the arithmetic in this section worse.

⁴² State Street Investment Management, *Emerging Market Debt Market Commentary*: July 2026 (EMBI Global Diversified spread 244bp and yield 7.26% at 31 July 2026, spread up 9bp in the month); Q2 2026 (235bp and 6.92% at 30 June 2026, spread 53bp tighter over the quarter; “spreads retraced to historically tight levels” in May); Q1 2026 (289bp and 7.31% at 31 March 2026, after widening of about 35bp in the quarter); February 2026 (259bp and 6.66%

Diversified index gives more weight to smaller issuers than the EMBI Global the Note uses, the fund's version of it excludes the smallest and least liquid issues, and a stripped spread measures each bond against its own Treasury rather than one fund against another, so the two figures are not the same thing. The higher one is used below wherever the Facility is to be given the benefit of the doubt. Both are at or below the 247 bps floor of the Note's own required range. Since 2000 the EMBI Global spread has been below that floor on 9% of trading days, almost all of them in 2005, 2006 and 2007; its average over the period was 352.⁴³ The managers' commentaries describe the spreads of early 2026 as "multi-year lows" and "historically tight."⁴³

Table 8.4. Net spread available for Forest Payments on the spreads of 2026, bps on \$125 billion

Gross spread over Treasuries	Cost of capital 120bp, expenses 30bp	Cost of capital 140bp, expenses 30bp
244bp (index spread, July 2026)	94bp = \$1.18bn	74bp = \$0.93bn
172bp (yield gap, September 2026)	22bp = \$0.28bn	2bp = \$0.03bn

Source: Authors' calculations. The July 2026 index spread is the J.P. Morgan EMBI Global Diversified stripped spread as reported by State Street Investment Management; the September 2026 yield gap is the difference between the average yields to maturity of the iShares EMB and IEF funds; cost of capital and expenses are from Sections 8.3.2 and 8.3.3. Both rows are before any allowance for defaults, repayment of sponsor capital or retained capital.

Table 8.4 gives the result. At 244 bps, less 140 for the cost of capital and 30 for running the fund and the Facility, 74 bps are left, or \$0.93 billion a year on \$125 billion; with the generous cost of capital, 94 bps and \$1.18 billion. At 172 bps the residual is 2 bps, or \$25 million a year, and 22 bps, or \$275 million, in the generous case. The requirement is 160 bps for the starting payment of \$2 billion and 320 for the \$4 billion target. On the higher measure the fund would cover a little under half of its starting payment and a quarter to three tenths of its target. On the lower measure it would cover almost none of the starting payment.

These figures are before defaults. The spread is a promise, as Section 8.2 set out, and Table 8.1 shows that the promise exceeded what was collected by 80 bps a year over 2000–2025 and by 156 since 2008. Deduct the 50 bps a year that Section 8.2 derived from the rating agencies' default and recovery rates, and 244 becomes 194, leaving 24 bps in the central case, \$300 million a year. Deduct the 80 bps by which the spread overstated the return over the full period, and nothing is left. At 172 bps the fund would expect to lose money after its costs on every one of these assumptions. None of the figures allows for the 50 bps a year needed to repay sponsor capital or for the 2% escalator.

at 28 February 2026: "Having hovered around multi-year lows through much of February, EMD hard currency sovereign spreads widened late in the month as a risk-off tone began to grip global financial markets"). The Q2 commentary's full sentence is: "By May, the recovery had become more differentiated: the US dollar regained ground, local currency performance turned uneven, and hard currency spreads retraced to historically tight levels." The August 2026 commentary had not been published when this section was drafted.

⁴³ From the series in note 13: 528 of 5,588 observations below 247bp, 523 of them between 2005 and 2007; average 352bp over January 2000 to September 2025. The Concept Note 3.0 footnote cites the spread on "07/01/2024"; the EMBI Global stripped spread was 336–344bp on 5–8 January 2024 and 349bp on 1 July 2024, so the reading of the date does not matter.

The spread is also a price. A bond bought at 244 bps over Treasuries falls in value when the spread widens, by roughly its duration multiplied by the change; the emerging-market fund's duration is 6.5 years.⁴² A return to the 2000–2025 average of 352 bps would take about 7% off the portfolio, or \$8 billion on the \$112.5 billion the fund would hold in emerging-market bonds, a third of the sponsors' capital. A move to the 496 bps of July 2022 would take about 16%, or \$18 billion; a move to the 662 of March 2020, about 27%, or \$30 billion, more than the sponsors' capital in total.⁴⁴ These are not forecasts. They are what the fund's balance sheet would show if the spread went back to levels seen in the last six years. The spread was last near its 2026 level in 2006 and 2007. It touched 151 bps on 1 June 2007 and stood at 891 in October 2008.¹³ The launches in Section 8.4 that did best, those of 2000 to 2003, began buying when the spread was between 650 and 820 bps; they collected a high income and gained as spreads fell. A fund launched in 2026 would buy at the other end of the range.

To put the section in dollars: the Facility promises forest countries \$2 billion a year to begin with and \$4 billion a year once the eligible forest is fully enrolled. On the market of mid-2026, after the cost of borrowing and the cost of running the fund and the Facility, a \$125 billion TFIF would have at most \$1.2 billion a year for the forests, and that is on the wider of the two spread measures, the generous cost of capital, and no allowance for any borrower ever failing to pay. With the default allowance and the central cost of capital it would have about \$300 million. On the yield gap the two largest funds actually show, it would have nothing. On the 500 million hectares the Note expects to qualify at launch, the range runs from nothing to about \$2.40 a hectare, against the \$4 promised. None of this depends on the simulations of Section 8.4; it is the Note's own arithmetic with the prices of 2026 in place of its assumptions.

8.6 Conclusion

This chapter asked how much the TFIF can be expected to transfer to the Facility in a typical year, and how reliably. The answers are in Tables 8.2, 8.3 and 8.4.

On the first question, the Concept Note needs 160 bps of net spread on \$125 billion to pay \$2 billion a year, and 320 to pay the \$4 billion its own design implies. Emerging-market bonds earned 206 bps a year over Treasuries between 2008 and 2025, after the defaults that occurred. Borrowing \$100 billion against that portfolio costs 120 to 140 bps on the fund, and running the fund and the Facility costs about 30. That leaves 36 to 56 bps, or \$0.45 to \$0.70 billion a year: a fifth to a third of the starting payment, and a small fraction of the \$4 billion target. Only by counting the years 2000 to 2007, when spreads fell from 800 bps to 200, does the figure reach \$1.3 to \$1.5 billion, and it still falls short of \$2 billion. On the market of mid-2026, with the spread at or below the floor of the Note's own required range, the fund risks clearing nothing at all.

⁴⁴ Duration approximation: price change $\approx -6.46 \times$ change in yield. Widening from 244bp to 352bp (108bp): 7.0%; to 496bp, the 2022 maximum of the EMBI Global stripped spread on 15 July 2022 (252bp): 16.3%; to 662bp, the 2020 maximum on 23 March 2020 (418bp): 27.0%. Applied to 90% of \$125 billion. The approximation ignores convexity and any change in Treasury yields; it also ignores the 2026 spread being that of the Diversified index while the peaks are those of the EMBI Global, which understates the widening if anything.

On the second question, a fund built and run as the Note describes, launched in any year from 2000 to 2018 and carried through the markets that followed, paid forest countries between 39 and 57% of what it had promised. It made the full scheduled payment in about one year in four. In eleven of the nineteen launches the sponsors' \$25 billion was gone by August 2026, and in every launch the fund was smaller in August 2026 than it had been at its peak, because the design pays out every good year's surplus and keeps nothing back for the bad ones. The record contains no launch in which the fund did what the Note says it will do. Rather than growing continuously, as the Concept Notes suggest, the fund would have collapsed: every launch from 2000 to 2009 built up to more than \$100 billion and holds less than a quarter of that in August 2026.

The Note's projections rest on a generous spread and no allowance for default. Those choices are favourable to the Facility, and together they turn a fund that might have paid about half of its promise into one that pays in full. The spread of 350 bps is the long-run average of a quoted yield difference, not of a realised return; it was last available for any length of time in the years around 2009 and 2020, at the bottom of two crises, and it is not available now.

The Facility's designers may answer that the portfolio could be changed: less emerging-market debt, more equities, property, infrastructure or private credit, or some mixture that has done better over the last twenty years. A portfolio that is 90% one asset class is unusually exposed, and a broader one would be less so. But the alternative does not escape the arithmetic. Any asset that pays more than Treasuries does so because it can lose value, and at four dollars of borrowing for every dollar of capital a fall of 20% in whatever the fund holds consumes the whole cushion; global equities fell by half in 2008–09, and listed property by two thirds.⁴⁵ The fees are paid every year whatever the fund holds, and so is the premium on the bonds. Above all, the payment rule is the same: everything above the gearing limit goes to the forests in a good year, so nothing is kept for a bad one, and the only way to hold a cushion is to pay the forests less. That is true of any portfolio, and it is the design, not the asset class, that produces the collapses in Table 8.3.

The other lesson of Table 8.3 is that the outcome is set by the year the fund happens to start. The same design, run by the same rules, delivered 56% of its promise when launched in 2001 and 39% when launched in 2015, and the difference is nothing but the order in which the markets' good and bad years arrived. A sponsor deciding today cannot know which sequence lies ahead. But the Facility's purpose, described in Chapter 7, is a payment a forest country can count on year after year, large enough and certain enough to change decisions about land; a payment that arrives in full in one year in four, and that stops for years at a time after each crisis, cannot do that work, however well it averages. What the markets offer is a chance of success. What the forests need is reliability, and there is nothing in the design that converts the one into the other.

⁴⁵ The S&P 500 "fell 57 percent from its October 2007 peak to its trough in March 2009" (Robert Rich, "The Great Recession," Federal Reserve History, 22 November 2013); the maximum drawdown of the MSCI World Index over the same months was 54% (Walter Scott, "Downside protection – the other side of the return equation," 26 June 2025). The FTSE Nareit All Equity REITs Index "fell from a high of 10,256 in January 2007 to a low of 3,337 in February 2009, a cumulative loss of 67%" (Libo Sun, Sheridan Titman and Garry Twite, "REIT and Commercial Real Estate Returns: A Post Mortem of the Financial Crisis," May 2013, p. 1).

The historical record of emerging bond returns demonstrates that the TFIF would not have achieved what is hoped for, and the current yields are inadequate to support the claims being made. A likely outcome is that the TFIF's managers would come under pressure to take bigger risks to earn higher returns. There are many earlier instances of public institutions that, under financial pressure, tried to outsmart the market. The record of those attempts is the subject of Chapter 9, and it is not a happy one.