Creating a Multilateral Wealth Fund for a Global Public Good: Proposed Financing Strategy for a Tropical Forest Financing Facility

Kenneth Lay, Michele de Nevers, Michael Wolosin, and Patricia Bliss-Guest

Abstract

The Tropical Forest Finance Facility is a proposal to establish a pay-for-performance mechanism to finance reduced deforestation of tropical forests. The overarching goal of the Tropical Forest Financing Facility (TFFF) would be to slow and reverse tropical deforestation. The TFFF would support the development, environmental and global benefits that reducing deforestation and protecting tropical forests can ensure. The facility would be akin to a multilateral sovereign wealth fund whose investment returns, above the rate of return to funders on the initial investments, would be used to reward tropical forest countries for their performance in reducing, and eventually halting or reversing, deforestation. The TFFF would mobilize significant low-cost resources that can be invested in private markets to generate substantial financial returns, above the cost of funds. Performance would be measured using global satellite monitoring data against a benchmark, specified in advance by investors who are funding the offer. It would build on major technology breakthroughs in satellite monitoring for measuring results. The proposal would maximize the efficient use of public credit and not rely on overseas development assistance.

This paper outlines the proposed financing strategy for the pay-for-performance financing facility. The performance payments would be distributed as part of a global offer, available to all countries with extensive tropical forests.

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This initiative is the result of the generous and immensely valuable input of many people over the last few years. We are grateful for valuable feedback on the ideas presented here and on initial drafts of the paper by a long list of people, too numerous to include here. We were able to share and discuss the ideas outlined here with a wide range of people in CGD, other think tanks and NGOs and government representatives, particularly from forest countries and from potential sponsor investor countries. Their guidance and outreach were critical to the enhancement and refinement of the proposal. We appreciate how much the analysis and design were improved by so many people who gave their expertise and encouragement at consultation meetings at CGD and in Belgium, California, Canada, Denmark, France, Germany, Norway, Switzerland, the UK, and the US and with officials at the IMF, International Forum of Sovereign Wealth Funds, and the World Bank.

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Any remaining errors are our full responsibility.

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Note

This paper is one of four related papers. The overarching paper, "Creating a Multilateral Wealth Fund for a Global Public Good: A Proposal for a Tropical Forest Financing Facility," presents a summary of all the components of the proposal. Three complementary papers focus in depth on the core elements of the proposal related to: financing strategy (the current paper), performance assessment and allocation of investment returns, and governance arrangements, respectively. For the reader's ease, each complementary paper includes a brief summary of the overall proposal.

Contents

I. Introduction

Reaching the Sustainable Development Goals will require new investments estimated well into the trillions of dollars annually, an order of magnitude greater than total global annual foreign aid. This investment will be needed in traditional development sectors, such as education and health, as well as in global public goods like climate change mitigation.

Given the scale of the challenge, there is a keen recognition that public sector funding will not be sufficient to achieve the SDGs, and scarce public resources must be leveraged effectively to deliver development returns. Recognizing the strains on national budgets and new demands on foreign assistance and climate change finance, CGD's work in sustainable development finance explores how to maximize the efficient use of public credit and to structure effective partnerships between public and private investors.

Catalyzing "massive transformative investments" is at the heart of the discourse on sustainable development and global public goods.

This paper sets forth an innovative financing proposal aimed at addressing a critical environment and development challenge: reducing the loss of tropical forests, both for national development benefits and to promote the global public goods they provide, including biodiversity and climate mitigation. The proposed financing mechanism would generate substantial resources to provide an incentive for action to halt deforestation without encumbering national budgets nor drawing on foreign aid budgets.

The proposal is to establish a long-term investment fund, akin to a multilateral sovereign wealth fund. Investors (sovereigns and private investors) would provide low-cost loans to the fund, which would then be invested in a diversified portfolio of higher return assets. Drawing on CGD's work on Cash-on-Delivery aid,[1] the excess returns on the investment fund, above the cost of the loans and fund management, would be used to reward tropical forest countries for their successful performance in reducing deforestation. While the proposal outlined here utilizes an innovative financing mechanism to address environmental goals, the ideas could as well be applied to other sustainable development priorities and global challenges.

Why Forests?

Healthy forests are a cornerstone of sustainable economic growth across the tropics. Halting and reversing tropical forest loss yields large-scale development and ecosystem service benefits, including protecting biodiversity, local and global water cycling, carbon sequestration and climate protection, reduced flooding and landslides, health, food, and

[1] See Nancy Birsdall and William Savedoff. *Cash on Delivery: A New Approach to Foreign Aid.* Washington DC: Center for Global Development, 2010, and Birdsall, N. and O. Barder. "Payments for Progress: A Hands-Off Approach to Foreign Aid." *CGD Working Paper* 102. Washington DC: Center for Global Development, 2006. https://www.cgdev.org/publication/payments-progress-hands-approach-foreign-aid-working-paper-102

pollination. Furthermore, local communities and indigenous peoples often depend on forests for their livelihoods, health, food security, culture, and safety. Ecosystem approaches, including the maintenance of forest cover, can also strengthen resilience and adaptation to climate change. Maintaining forests and other ecosystems to buffer the impacts of climate change is often less costly than having to replace lost ecosystem functions through infrastructure or technology.

Although tropical forests generate both local development benefits and global public goods, such as biodiversity and climate mitigation, tropical forest countries face significant political and economic pressures to convert forest lands to other uses. Cleared forest land often can be "repurposed" for agriculture or other uses that quickly produce steady streams of much-needed income for individuals, businesses, local communities, and provincial and national governments. Globally, the annual rate of deforestation remains unacceptably high, with an area the size of Austria being cleared every year. Unless deforestation is halted, it is likely that an area the size of India will be lost by 2050.

Why Pay for Results?

The Development Case

Results-based payment approaches focus on structuring incentives to change behavior. CGD has carried out research and developed policy advice on results-based approaches in a range of sectors. An extension of these ideas, Cash-on-Delivery (COD) aid , aims to change the behavior not just of recipients but also of funders. COD aid provides funding for the achievement of results aimed at addressing constraints to development at the national level. COD aid differs from other programs in that it eschews the imposition of pre-conditions and does not require agreements between funders and recipients on strategies to achieve results. The only "preconditions" relevant to COD aid are a good measure of progress and a credible way to verify it.

One of the key features of COD aid is that the funder embraces a hands-off approach, emphasizing country ownership and the power of incentives to drive outcomes, rather than financing projects that provide guidance or technical assistance. Many tropical forest countries may lack capacity to deliver results; TFFF may provide an additional incentive for these countries to fully utilize, invest in and seek success on capacity building work that may be financed by the various traditional mechanisms of support. Building on the goals articulated in the 2005 Paris Declaration on Aid Effectiveness, COD aid aims to foster accountability among funders, recipients and their constituents, build local ownership and rely on local institutions, permit learning by doing, experimentation and assessment. Without information about whether goals are being met, it is difficult to determine whether programs are successful. COD aid also seeks to attract new funders, including private sources, enable better funder coordination, reduce administrative and reporting burdens and generally promote the expansion of aid.

Under the COD aid model, at no point does the funder specify or monitor inputs. Similarly, the funder does not impose conditions or restrictions on the use of funds (rewards payments). It provides recipient countries with full authority and flexibility to undertake interventions or address policy issues that will lead to the desired results, even if such interventions and policies are outside the domain of the relevant sector ministry or sub-national government entity. It does this by recognizing and further encouraging the recipient country's inherent ownership and responsibility over strategies and implementation, and then paying for measured and verified results.

Results-Based Payments for Forests

A major incentive is needed to encourage the governments of the countries in which tropical forests are located to protect and conserve them. With the exception of a few large bilateral programs between Norway and countries with large forest resources, until now, almost all the money spent by governments and aid organizations to reduce deforestation is channeled through traditional aid approaches that focus on inputs such as technical assistance for "readiness," analytical studies, project-based financing and staff salaries, rather than paying for actual results—reduced forest loss. Toward this end, CGD has been working with tropical forest countries, potential investors to create a multilateral wealth fund, similar to a sovereign wealth fund (SWF), whose proceeds, after costs, would reward tropical forest countries for their results in reducing deforestation and protecting forests.

Forests lend themselves to pay-for-performance funding approaches because recent advances in satellite monitoring technology make results measurement relatively straightforward, transparent and consistent, compared to other sectors where there may be less agreement on outcomes and performance measures, and where assessing outcomes would require expensive on-the-ground surveys.

In the case of forests and climate, a results-based payment mechanism called REDD+ has been developed through more than a decade of efforts by dedicated professionals around the world under the aegis of the UNFCCC. This framework for international partnerships to support forest country efforts to protect and enhance forests has been codified and embodied in a series of international climate agreements, including most recently the sections relating to REDD+ in the Paris Climate Agreement. The idea is that by offering serious and reliable funding to reward successful efforts to reduce deforestation, a major incentive can be provided to developing countries to move forward with the necessary actions.

Like COD aid, REDD+ recognizes that macro decisions that are in the purview of national governments, such as prices, taxes, and land use policies, shape actions on the ground and that the problem of deforestation cannot be addressed simply by building capacity and enforcement at the local level. A large and visible payment for reducing deforestation can help to strengthen public institutions and motivate politicians, not just technocrats, triggering helpful changes in political and bureaucratic arrangements. The incentive payment complements conventional forest assistance programs and motivates countries to draw on

the range of other forest finance programs already in place (FCPF, Profor, UN REDD+, etc.).

While there is widespread agreement that a financial incentive to tropical forest countries to reduce deforestation is essential, until now, the large-scale, results-based finance initially envisioned for REDD+ has yet not materialized. Finance for forests in tropical forest countries accounts for less than 2 percent of global mitigation-related development funding, with total REDD+ assistance of about USD 1.7 billion and results-based commitments of USD 4.1 billion cumulative since 2010. Total finance for forests is insufficient, and is dwarfed by private investments and public-sector subsidies in agriculture and other deforestation drivers.

Furthermore, even if the REDD+ mechanism were dramatically scaled up, carbon-based payments would still be insufficient to generate economically optimum forest protection. According to one recent estimate, carbon and climate regulation services make up only about 39 percent of the total ecosystem services value provided by a hectare of tropical forest. There is no major performance-based financing supporting the non-carbon public goods from forests. The TFFF is being proposed in the context of an international forest financing landscape that is fragmented and insufficient:

- Foreign assistance to promote the development benefits of forests is limited.
- Support for forests' global public goods is limited in scope to just carbon.
- Even for carbon services, forests are globally underfunded through REDD+ compared to the value of those services.
- Progress in "greening" the trade and investment in forest-risk commodities is slow.

This paper describes the financing mechanism for The Tropical Forest Finance Facility, a multilateral wealth fund whose excess returns would be used as performance payments to reward reductions in deforestation. The paper describes the proposed financing strategy for TFFF and analyzes TFFF's potential risks and returns for its investors and for tropical forest countries. For simplicity, it uses data and examples grounded in the US dollar markets. The TFFF portfolio—as with those of other sovereign wealth funds such as those of Norway, the UAE, New Zealand, etc.—can be diversified across markets and currencies without fundamentally altering the financial dynamics described therein.

II. Overview: A Proposal for a Tropical Forest Finance Facility

This section outlines the proposal to establish the TFFF. It describes its goals, performance measurement and allocation formulas and proposed governance arrangements. The third section of the paper focuses on the details of the proposed financing strategy.

2.1 Goal of TFFF

The overarching goal of the TFFF would be to slow and reverse tropical deforestation. The theory of change is that the promise of results-based payments to governments will raise the domestic political priority of forest protection by giving it financial value. This could catalyze a shift in economic development pathways away from deforestation-intensive practices.

In creating the multilateral wealth fund, the immediate operational objectives are to (1) maximize the returns on the invested capital to generate significant funds that can be used as performance payments, and (2) ensure that payments to tropical forest countries are made in accordance with a performance measure that is credible, sustainable, objective, and comparable across countries with reference to an agreed global benchmark.

By setting up a long-term investment portfolio that is funded with non-ODA assets and managed consistently with global best practice, investors will both dramatically amplify the incentive to protect forests and maximize the efficient use of public credit.

The Global Offer

The global offer itself would be put forth by a group of investor sponsors. These may be governments of donor countries, philanthropies, or private investors for whom reducing deforestation is a high priority. The global offer will clearly specify how performance is to be measured and how the annual returns on the invested funds are to be allocated to forest countries.

2.2 Performance Assessment and Allocation of Returns

2.2.1 Performance Assessment.

The TFFF business model contemplates that the performance measure determining a country's allocation of TFFF's excess returns would score a country's annual rate of net forest loss against a baseline that would incorporate recent historical deforestation rates, and an allocation formula that would incorporate both the performance score and a measure of each country's forest extent.

Performance in maintaining and expanding natural forests should be measured annually using global satellite data that is (a) comparable across all countries, (b) accurate in measuring natural forest loss, (c) consistent across time, (d) complete by including all areas of natural forest without exclusions, and (e) transparent so that results can be reproduced and share allocations can be verified, including being made publicly available to all if possible.

The performance assessment function should become more stringent over time, in line with the target of reaching zero natural forest loss by 2030. The performance measurement and allocation formulas should provide an incentive for maintaining and improving forest protection regardless of recent forest cover loss rates—e.g., for both high- and low-deforestation countries. The formulas should also provide incentives for both short-term and long-term performance success.

The performance would be independently verified by a third party, rather than the investor or the tropical forest country.

2.2.2 Allocation of Returns

Shares of the fund's eventual returns would accrue to a forest country on an annual basis according the country's performance. The performance measure and the formula to allocate the fund's returns will be publicized at the time the offer is made. To heighten attention to the status of tropical forests, annual performance will be published in a global scorecard, showing each country's results in reducing deforestation, and the resulting accrual of the fund's returns—or foregone rewards if the country is not successful.

Shares of the earnings generated by the financing facility (net of funding and financial administration costs from the funds) would accrue annually to tropical forest countries based on each country's relative performance in maintaining and expanding its natural forests, and on each country's natural forest extent, such that a country with more forest would receive more shares for any given level of performance than a country with less forest. An agreed formula would be used for determining each country's shares of annual excess returns. A formula agreed prior to the start of the TFFF would be applied in a non-discretionary manner.

See the CGD working paper "Creating a Multilateral Wealth Fund for a Global Public Good: Proposed Approach to Assessing Performance and Awarding Returns for a Tropical Forest Finance Facility" for more details.

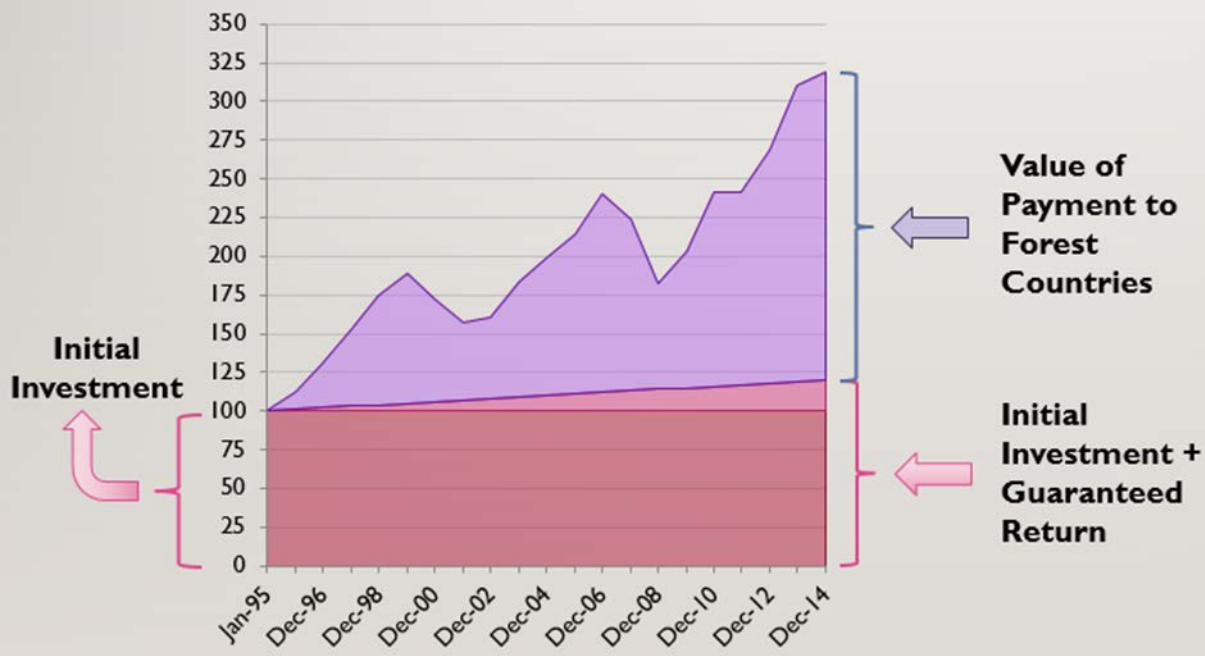
2.3 Governance Arrangements for the TFFF

The governance arrangements for the TFFF would draw on principles and lessons from CGD's COD aid model and the Santiago Generally Accepted Principles and Practices of Sovereign Wealth Funds. The TFFF would be set up as a "global offer," that is, an offer, presented to the global community by investors, to pay a substantial sum to tropical forest countries that are successful in maintaining or enhancing their forests over a period of time. The global offer would be issued by a group of investors (governments of donor countries, philanthropic organizations or private investors for whom reducing deforestation is a priority). The rules and formulas for measuring performance and allocating investment returns to forest countries would be agreed in advance of the TFFF's establishment and clearly defined in the global offer. The global offer would constitute a contract, with independent verification, between investors and tropical forest countries. It is neither a demand nor a requirement. To ensure confidence and trust in the arrangements by both investors and tropical forest countries, the offer should be transparent, credible, and insulated from political revisions. See the CGD policy paper "Creating a Multilateral Wealth Fund for a Global Public Good: Proposed Governance Arrangements for a Tropical Forest Finance Facility" for details.

III. TFFF Financing Strategy

The TFFF proposal is for a group of sovereign sponsors—with the potential participation of private sponsors, as well—to establish a large investment fund to generate financial rewards for tropical forest nations that succeed in maintaining or enhancing their forests. These rewards would be comprised of the investment returns on TFFF, net of payments to sponsors to cover the cost to them to finance their sponsorship or a return equivalent to that of sovereign debt in the currency in which they make their investment, and net of repayment to sponsors of the amount they advance in sponsorship. This "excess return" is the foundation of TFFF's value proposition. Figure A, below, illustrates the TFFF "value proposition," based on excess returns that could have been generated over a 20-year horizon had it been established in 1995. Over extended periods, developed-country borrowing costs have been greatly exceeded by the returns on diversified portfolios of equity, debt and other investments.

Figure A. TFFF "Value Proposition"



At the outset, it is important to emphasize that TFFF would create an entirely new source of funding for forests. TFFF funding would not come from traditional "official development assistance" spending or aid budgets, nor would they necessarily appear in national budgets. Instead, TFFF would serve as a savings account for the countries or other investors funding its portfolio. This TFFF account would offer them returns commensurate with the financing cost of the sovereigns in the currencies of which the TFFF portfolio is denominated, and repayment of their investment at the end of the period for which TFFF is established. And, because its portfolio would be invested in a diversified asset portfolio that, over multiyear

horizons, would offer substantially higher returns, TFFF would generate the funds needed to reward forest countries for forest conservation.

3.1 Mobilizing Funding

Countries funding TFFF could choose one or more of the following approaches to mobilize funding:

- Countries with substantial reserves in, e.g., a sovereign wealth fund, central bank reserves or other savings could simply lend to TFFF, in which case they would receive returns commensurate with investments in the sovereign debt of the countries which lend to TFFF.
- Other countries could lend to TFFF from the proceeds of their own government borrowing, in which case they would receive from TFFF periodic interest payments and a final principal repayment equal to the terms and amount of their borrowing.
- Another option is for countries to permit TFFF to gather assets from its commercial banks or other depository institutions drawn from deposits that benefit from government deposit insurance programs. Depositors would be free to make daily deposits and withdrawals; the government guarantee protects TFFF (as it does other deposit-taking institutions) from a "run" on deposits, thus insuring the long-term sustainability of TFFF. This would produce extremely low-cost funding (lower cost that the foregoing two options), but it would require TFFF to maintain a modest cash portfolio to manage potential withdrawals.
- A further approach would be for TFFF to borrow in global capital markets in its own name, but with the benefit of sponsors' sovereign guarantees. This would require TFFF to be set up as an independent legal entity and likely would be somewhat more costly for TFFF than the foregoing options, which would reduce excess returns to reward forest countries, but it would, nevertheless, provide an adequate foundation for the TFFF business model.

Each of the foregoing approaches would produce extremely low-cost financing for TFFF and thus effectively monetizes the sovereign credit of the countries that fund it. This would enable the funding countries to reward forest countries for effective custodianship of a key global resource without encumbering funding countries' public finances.

Obviously, the particulars of each country's respective budget accounting protocols and other financial management policies would have an effect on their decision with respect to the manner in which they choose to fund TFFF. Based on conversations with central banks, debt management personnel and budget accounting authorities, primarily in Europe, it appears that TFFF would have no material impact on sovereign accounts.

3.2 Investing the TFFF Portfolio

TFFF would invest its low-cost funds over a long horizon in a diversified, endowment-like portfolio of relatively riskier assets with higher expected returns, akin to the portfolios of major universities, endowments and foundations, sovereign wealth and pension funds. The cost of servicing the return on bank deposits or bond payments would come from the returns on the invested funds, so investment in the fund would not entail any annual out-of-pocket costs for investor countries.

Over time the invested funds would generate a growing pool of earnings that would be allocated to tropical forest countries based on annual performance in slowing and reversing forest loss. The annual earnings would not be paid out each year but would be reinvested in TFFF. Each year tropical forest countries would be allocated a share of the earnings based on performance so their participation, or ownership, of the fund would be adjusted each year. TFFF would operate for a fixed period, e.g. 20 years, after which the original capital contribution would be returned to investors. The pool of earnings beyond this would be distributed to forest countries on the basis of their accumulated shares, either at the end of the period or potentially much sooner through a range of mechanisms. (It would also be possible to structure TFFF as a permanent vehicle in support of tropical forest protection backed by a fund without a fixed expiration. This approach could involve periodic capital raises and would allow TFFF to pursue a more aggressive investment allocation over time with potentially higher returns.)

3.2.1 Size of fund and expected returns

The TFFF will need to be big enough to generate earnings that create real incentives for forest countries. We have contemplated TFFF having a target size of USD 100 billion. For the last decade (based on the average return to US university endowments and the average cost of short-term US government borrowing) a dollar-based fund would have returned on average about 5.5 percent, net of estimated expenses including the cost of borrowing. The fund could be scaled up to generate larger returns if needed. Annual returns of $5 billion per year would substantially exceed the current global annual commitment of results-based finance for REDD+.[2] This amount would be only 25 percent or less of current global estimates of the annual cost of halving or eliminating tropical forest loss, but we have been assured by forest countries that this would be large enough to make it interesting for them.

3.2.2 Eligible investment assets

While the details of portfolio structure would await adoption of an appropriate investment policy and a comprehensive strategic asset allocation,[3] this proposal assumes that, after

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[2] From 2007-2015 annual funding for REDD+ from all sources averaged $1 billion per year; a small fraction of this was for results payments.

[3] The TFFF investment policy would be formulated as part of the Governance Agreement that would constitute the Governing Board of the TFFF. The Governing Board would appoint an qualified investment committee responsible for the further elaboration of the investment policy, consistent with the provisions of the Governance Agreement. The Governing Board would approve the strategy, standards and procedures proposed

setting aside a cash reserve sufficient to meet the short-term cash needs associated with the money-market deposits funding it, the TFFF would invest in the full array of asset classes customary for long-term endowments and pension funds. The essence of this proposal is the willingness of investors to forgo the excess returns associated with the higher returns (and of course volatility) of this long-term diversified portfolio.

Accordingly, we anticipate that the fund would invest in a variety of assets including, *inter alia*:

- Publicly traded equities worldwide;
- Publicly traded debt worldwide, and across the risk spectrum;
- Private equity, via limited partnership interests or co-investment;
- Real estate, whether through traded vehicles (for example, REITs), limited partnerships, co-investment, or direct ownership;
- Infrastructure, again through any of the various vehicles customary in sound investment practice; and
- Currencies (solely for risk-management purposes).

As an example, the average asset allocation for US college and university endowments over $1 billion during FY2017 included 13 percent publicly traded US equities, 19 percent publicly traded non-US equities, 7 percent publicly traded fixed income, 4 percent short-term securities, and 57 percent alternative strategies. This final and largest category includes: private equity via limited partnership interests or co-investment; and infrastructure through customary vehicles.

3.2.3 Portfolio "tilts"

While the proposal contemplates a fully diversified, conventional endowment portfolio of the kind maintained by major universities, foundations, and pension funds, investors could request that the TFFF emphasize certain kinds of investments. These could include, for example, those that would accelerate the flow of investment into opportunities related to climate change mitigation or adaptation, or other environment-enhancing opportunities (a so-called green tilt), or more narrowly into investments that would themselves help tropical forest countries deal with deforestation or other forms of land degradation (a "REDD+ tilt"). However, each of these decisions could have an effect on risk-adjusted return and in the length of time required to build the investment portfolio to reach the envisioned scale. In general, as constraints increase, risk rises, often without a concomitant increase in return, and the time required to build the portfolio would also increase. This proposal does not lend itself to using the portfolio for direct financing in forest countries of the kind carried out by multilateral development banks and other international financial institutions. The financial and nonfinancial transactions costs necessarily associated with such activity, even if the investments themselves were otherwise competitive, would undermine the basic value

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by the investment committee. See the CGD policy paper "Creating a Multilateral Wealth Fund for a Global Public Good: Proposed Governance Arrangements for a Tropical Forest Finance Facility" for further details.

proposition of this proposal, which is to generate funds simply to reward easily measurable, on-the-ground, results in tropical forest countries' REDD programs.

In Annex 1, we analyze four different portfolio alternatives, ranging from a conservative portfolio which invests solely in money market and bonds to an endowment portfolio.

3.3 Expected Returns and Volatility of Returns

While past performance can never guarantee future outcomes, the past decade—encompassing as it does the 2007–09 financial crisis—offers a useful perspective on the dynamics of the proposed vehicle. During this period, diversified endowments in the United States earned an average of 8.5 percent, while one-month certificates of deposit (a good proxy for the rates at which the fund would borrow in money markets) averaged 1.56 percent. Assuming a total of 1 percent in fees and costs and a 10 percent cash reserve for the ins and outs of deposits, that leaves an average annual accretion of 5.25 percent on participation units in the endowment. If a country were to have a 25 percent interest in a US$100 billion fund, for example, that's an average of US$1.3 billion *per year* as long as it continued qualifying. Last year, that figure would have been US$3.4 billion.

Expected annual volatility accompanying this return would be about 11 percent, with an approximately 1 in 3 chance that returns in any given year would be less than TFFF's money-market financing cost and thus result in a net loss to the fund. As in conventional deposit insurance situations, the investor's respective guarantees would only be called in the event that a "run" on deposits threatened to exceed the cash reserve established to accommodate expected net withdrawals by depositors. There exist ample data to model the probability of such an occurrence, which has proven highly unlikely in situations in which creditworthy domestic government guarantees back deposits, as would be the case under the TFFF proposal.

3.3.1 Portfolio valuation

The TFFF portfolio would be marked to market quarterly, both for general reporting purposes and to value the interests of forest countries in the return on the endowment.

3.3.2 Financial dynamics of the TFFF

The key to what, for potential sponsors, may appear to be an implausible "free lunch" is that the risks associated with the returns on the diversified endowment portfolio funded by their borrowings are born virtually exclusively by forest countries, not investor/sponsors. It is extremely unlikely that sponsors would have to call on other resources to pay the interest on, or repay principal of, the debt they incur, or to make good on the guarantees they offer, to fund the TFFF.

This analysis seeks to quantify the TFFF's potential risks and return for both its investors and forest countries. For simplicity, it uses data and examples grounded in the U.S. dollar-denominated markets. The TFFF portfolio—as with those of other sovereign wealth funds

such as those of Norway, the UAE, New Zealand, etc.—can be diversified across markets and currencies without fundamentally altering the financial dynamics described herein.

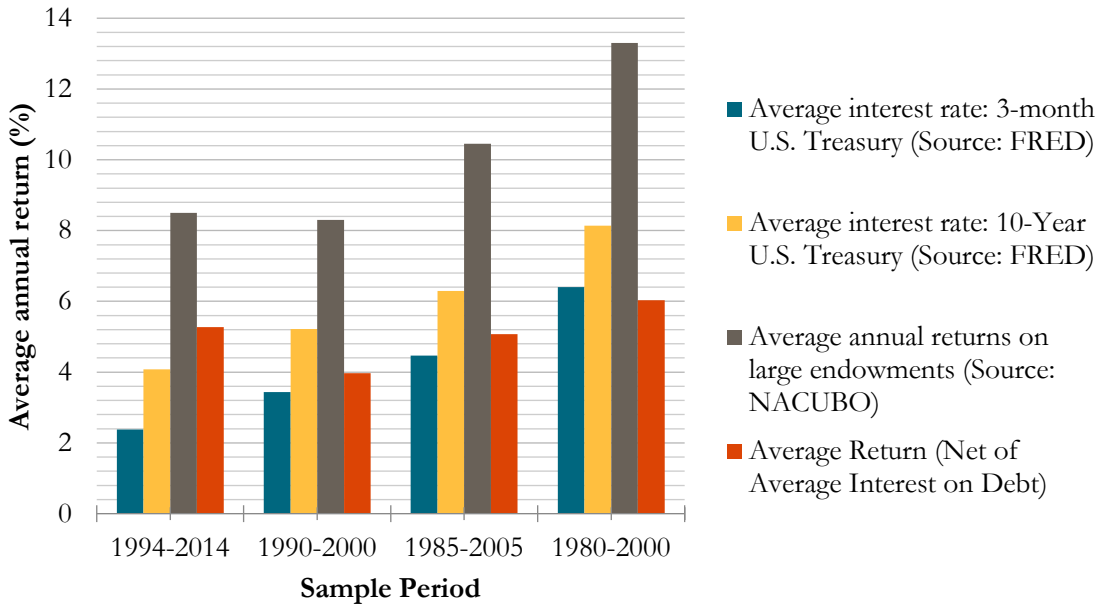
Simple Illustration: A 20-year TFFF Funded in the US Money Market

We start with a simple illustration to help illustrate the TFFF's financial dynamics. The following chart assumes establishment of a USD 100 billion TFFF on January 1, 1995, and that it repays investors and pays out its net gains to forest countries on December 31, 2014. The illustration assumes a US dollar endowment funded at short-term interest rates prevailing in the U.S. during the life of the facility, using the yield on the 3-month US Treasury bill as a proxy. It assumes returns on the endowment equal to the average returns of large US university endowments, using data provided by the National Association of College and University Business Officers (NACUBO), which is the generally accepted source for such information.

In this example, the annualized financing cost for the TFFF (interest on its debt funding) would have averaged about 2.4 percent, bringing its annualized net return to 5.4 percent per year. For forest countries, assuming a $100 billion initial funding, this would have resulted in a net distribution of nearly $200 billion at the end of the 20-year period, after repayment of the debt funding the endowment.

Returns would vary, of course, depending on the time period involved. The following chart provides comparisons over different 20-year periods, based, again, on 3-month Treasury bill and NACUBO endowment-return data for the pertinent period.

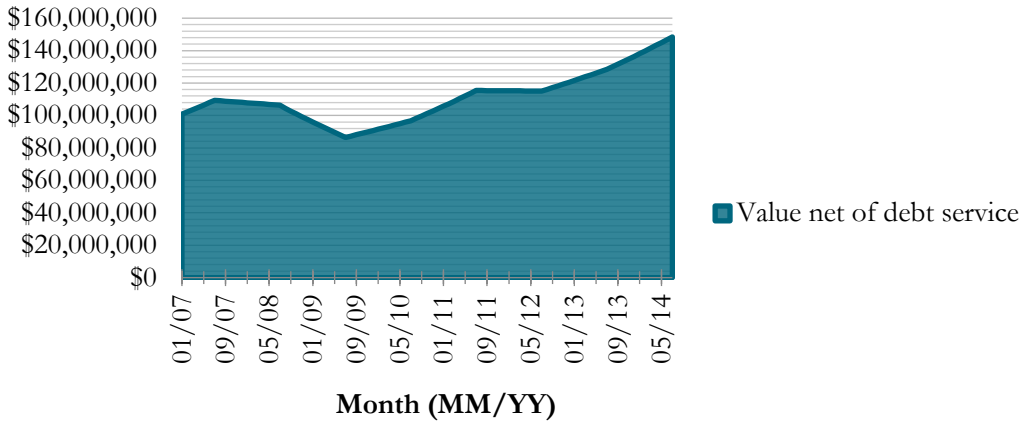
Figure B. Forest Foundation Fund: notional returns over 20-year periods (1980-2014)



What is notable about the foregoing examples is the consistency of the net return that would have accrued to forest countries. Finance practitioners will not be surprised by this: The results illustrate the well-understood principles of risk and return in the financial markets. Rich-country governments are rewarded for their high credit ratings with low borrowing costs, while investors (the TFFF in this case) are rewarded with high long-term returns for their willingness to tolerate fluctuations in the value of a diversified portfolio of riskier investments.

Obviously, there can be circumstances in which, at points during its life, the value of the endowment falls below the principal amount of the debt funding it. An example of this would have occurred if the TFFF had been established early in 2007. After a short period of net gains, the dramatic decline in prices for assets other than high-grade sovereign debt that began late that year would have caused the value of the TFFF endowment to fall to roughly 85 percent of the principle amount of the debt funding it.

Figure C. Notional value of a $100 billion endowment (financial crisis and beyond: 2007-2014, $000)



These mark-to-market losses in the TFFF portfolio, however, would not have required investors to make good on guarantees or cover other debt funding the endowment. This is because, during crisis periods such as occurred during 2008 and 2009, investors increase—they don't reduce—demand for high-grade sovereign debt. Even after experiencing major losses, the endowment easily could pay the interest owed on the sovereign debt and guaranteed deposits funding it.

Forest countries, however, would have seen unrealized losses in the value of the endowment intended to reward them for avoided deforestation. Since the bottom of the market early in 2009, however, the performance of the endowment would have more than recovered those losses. And this would have been only eight years into the expected 20-year life of the TFFF.

The probability that investors would be required to cover repayment of the funds they borrow or guarantee to establish the TFFF—while not zero—is extremely low. In the U.S. dollar financial markets, for example, there has been no 20-year period in the past 88 years in which even a basic diversified portfolio of 70 percent public equities and 30 percent bonds

would have been unable to cover principal and interest on the government debt or guaranteed deposits funding it. If the fund were to go seriously into deficit at the time sponsors are scheduled to recover the principal amount of their investments, the contributor countries/investors could take the hit on their contributed assets. The benefit of the TFFF is that it pools investments/loans across many contributors so the risk of loss is spread widely. Moreover, the size of the TFFF relative to global assets of similarly structured funds is small. The proposal to raise $100 billion is modest in comparison with $6,200 billion in bank deposits guaranteed by the US Government alone and with investment funds such as the California Public Employee Retirement System ($295 billion) or the Abu Dhabi Investment Authority ($775 billion estimate). Thus, across many contributors the pool can be constituted without substantially endangering sovereign financial stability.

The following are some additional observations respecting TFFF finances:

A long-term investment horizon is essential. The TFFF is a form of shared sovereign wealth fund for its forest countries. As with any sovereign wealth fund (and other long-term investment portfolios such as endowments and pension funds), a multi-year investment horizon is essential to maximizing returns and minimizing the possibility that forest countries would not be rewarded for success in their avoided-deforestation efforts.

The risk that the TFFF could fail to reward forest countries, while small, is not zero. Forest countries bear the investment risk associated with the volatility of the TFFF endowment, as they would for any sovereign wealth fund invested in a similarly diversified portfolio.

For investors, the TFFF requires no net expenditure of scarce public resources and is a highly efficient use of public credit. For a sovereign, it is "balance-sheet neutral." While sponsorship could require borrowing and thus create a sovereign liability, the proceeds would remain on the investors' books as a sovereign asset, namely, the investor's first call on the earnings of the fund and the proceeds of its ultimate distribution.

Obviously, there is no assurance that the historical relationships described in this paper, and elsewhere, will be sustained. Indeed, some financial analysts and market participants are concerned that the macroeconomic factors that have contributed both to slower global growth and extremely low interest rates may warrant a significant decline in long-term return expectations across major asset classes in typical endowment portfolios. The higher returns associated with these diversified portfolios however, remain substantial compared with high-grade sovereign debt and continue to exceed expected inflation in developed economies. This leaves intact the basic financial dynamic underlying the TFFF, while warranting forward-looking financial modeling based on varying assumptions to better assess the probabilities of differing outcomes.

3.4 Investor Decision-making, Management, and Payout

The choice of which option(s) to use to capitalize the TFFF would be made by the appropriate authorities in investor countries or other funders contemplating TFFF sponsorship. Among potential sovereign investors, of course, the formalities of

authorization and the details of government budget accounting vary. While the choice of how to fund the TFFF likely would be made by the appropriate finance ministry or borrowing authority in each investor country, the decision to do so would in the first instance requires leadership, encouragement and endorsement from other relevant ministries such as those concerned with development, foreign affairs, climate or environment.

These sectoral ministries would validate the importance of an innovative financing mechanism to accelerate performance payments for reduced deforestation and would confirm that such a mechanism would further the achievement of the investor country's international development and climate change goals and commitments.

To maximize capitalization of the TFFF, the facility must be financially sound and professionally managed, aligned with the goals of the potential investor countries, simple, transparent, and effective. Developed country treasuries or borrowing authorities will assess the financial model of the TFFF carefully against these criteria. See the CGD policy paper "Creating a Multilateral Wealth Fund for a Global Public Good: Proposed Governance Arrangements for a Tropical Forest Finance Facility" for details.

Shares of the returns on the facility's investments (net of the cost of the funds) would be allocated or transferred annually to tropical forest countries based on their performance in reducing deforestation against a benchmark. Performance would be assessed as simply as possible and would be consistent across countries, transparent, public, and independently verified. The performance metric would be measured by publicly available satellite data using a transparent and globally comparable methodology that covers the entire tropics. See the accompanying CGD working paper "Creating a Multilateral Wealth Fund for a Global Public Good: Proposed Approach to Assessing Performance and Awarding Returns for a Tropical Forest Finance Facility" for details on performance measurement.

3.5 Conclusion

With greater global integration, developing countries face increasing risks over which they have little or no control and which no one country has the incentive nor the ability to tackle on its own. Hence there is a need to provide additional international financing to developing countries to address those challenges.

TFFF is a proposal to mobilize significant low cost resources which can be invested in private markets to generate a financial return for rewarding successful actions that contribute to achieving a global goal, reduced deforestation. If it works, it could be an example of a new approach to delivering international financing for achieving the SDGs, and the sustainable delivery of international finance for securing global public goods.

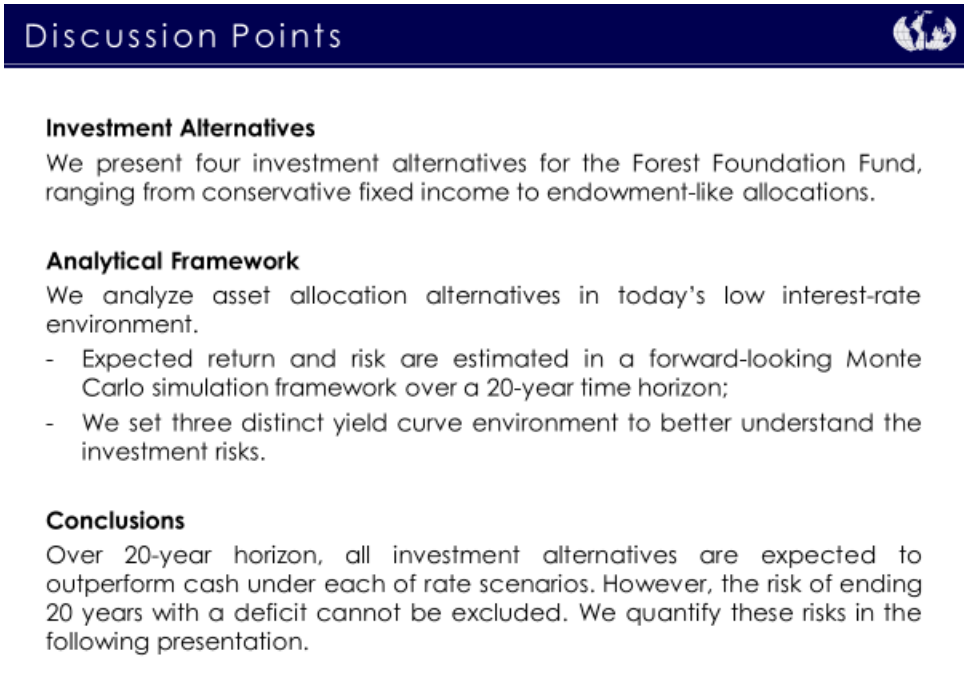
TFFF borrows from the experiences and cultures of both the public sector and the private sector. Utilizing primarily public funds to generate investment profits from the private sector that in turn provide international finance for public goods could serve to move beyond the finite borders of overseas development aid.

We propose that the first such financing facility be established to generate resources to protect tropical forests due to the crisis of reversing deforestation trends. Without urgent action, there will be few remaining forests to protect. But if successful, this model would demonstrate a pathway to unlock a reliable and significantly enhanced flow of funds that could be used to address the SDGs and other critical global needs. The advantage of starting with forests is that modern satellite technology provides a relatively easy way to measure success, unlike other outcomes at the domestic level, which are more granular, subjective and expensive to measure. The high quality of satellite data allows shareholders in TFFF to agree on what success means ex ante and to pool their resources to measure it. Each agency does not need to mobilize its own satellite system.

A key challenge will be to align the culture and governance principles associated with achieving greater societal goals with the culture and principles associated with generating profits through the private sector—a challenge that sovereign wealth funds are successfully addressing.

Annex 1


The Rock Creek Group
October, 2015
Forest Foundation Fund Investment Alternatives
Rock Creek's website can be accessed at www.therockcreekgroup.com


Discussion Points
Investment Alternatives
We present four investment alternatives for the Forest Foundation Fund, ranging from conservative fixed income to endowment-like allocations.
Analytical Framework
We analyze asset allocation alternatives in today's low interest-rate environment.
- Expected return and risk are estimated in a forward-looking Monte Carlo simulation framework over a 20-year time horizon;
- We set three distinct yield curve environment to better understand the investment risks.
Conclusions
Over 20-year horizon, all investment alternatives are expected to outperform cash under each of rate scenarios. However, the risk of ending 20 years with a deficit cannot be excluded. We quantify these risks in the following presentation.
THE ROCK CREEK GROUP
2

Investment Strategies

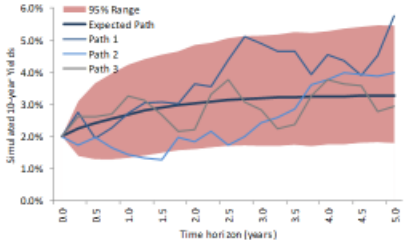
We consider four portfolio alternatives in our analysis:

1. Conservative portfolio: invested solely in money market and bonds
2. 60/40 portfolio: a classic tilt between equities and bonds
3. Endowment-tilt: 20% of the portfolio allocated to alternatives
4. Endowment: a broad allocation consistent with NACUBO or Cambridge Associates surveys

	MMkt	Bonds	Equities	Alternatives	Total	Duration	Beta
Conservative (Port 1)	50%	50%	0%	0%	100%	3.8	-
60/40 Portfolio (Port 2)	5%	35%	60%	0%	100%	2.5	0.6
Endowment tilted (Port 3)	5%	25%	50%	20%	100%	1.8	0.6
Endowment (Port 4)	5%	10%	45%	40%	100%	0.7	0.6
Duration	0.5	7.0	-	-			
Beta	-	-	1.0	0.4			
Alpha	-	-	-	2.5%			
Volatility	1.3%	6.6%	18.8%	9.5%			

Modeling Approach

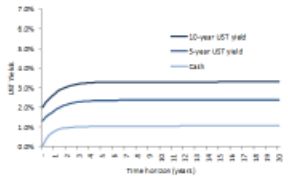
- Forward-looking Monte Carlo simulation: 10,000 paths over 20-year horizon in quarterly steps
- We simulate the following five variables in a VAR(1) framework:
  - The three yield curve factors of the Nelson-Siegel yield curve model, interpreted as yield curve level, slope and curvature;
  - U.S. equity returns;
  - Absolute return pure alpha, i.e. the excess return of hedge funds over U.S. equities on a beta-adjusted basis (beta≈0.4).
- Parameters estimated over 1997-2015
  - US Treasury yield curve, Russell 3000 Index, HFRI Fund-Weighted Index
- Liability assumption: 3-month deposit



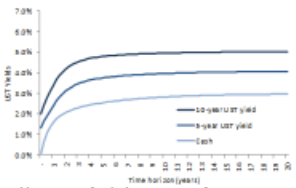
Yield Curve Scenarios and Return Expectations

We run 10,000 simulations under each of three distinct yield environment scenarios:

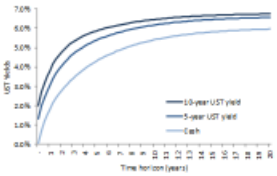
1. Mild Yield Hike



2. Hike to Normal



3. Aggressive Bear Flattener



Return Expectations under the three yield scenarios:

Scenarios	MMkt	Bonds	Equities	Alternatives	Port 1	Port 2	Port 3	Port 4	MM Liability
Mild Yield Hike	1.7%	3.8%	6.6%	5.7%	2.7%	5.4%	5.5%	5.7%	1.7%
Hike to Normal	2.7%	4.8%	7.4%	6.0%	3.7%	6.3%	6.2%	6.3%	2.8%
Aggressive Bear Flattener	4.8%	4.9%	8.8%	5.3%	4.9%	7.2%	6.9%	6.8%	4.8%

Current 20-year yields – these level could be lock in for highest rated issuer if 20-year bonds were issued in the current environment:

- USD: 2.5%
- EUR: 1.0%
- GBP: 2.2%
- JPY: 0.8%

Comparison with Historical Endowment Returns

Our "Portfolio 4" aims at approximating Endowment-like portfolios. Under the three yield scenarios, expected returns are in a 5.7%-6.8% range over 20-year horizon.

This range is comparable to what endowment funds actually generated over the past 10 years:

2014 NACUBO-COMMONFUND STUDY OF ENDOWMENTS

Average One-, Three-, Five- and 10-Year Net Returns* for Fiscal Years 2013 and 2014

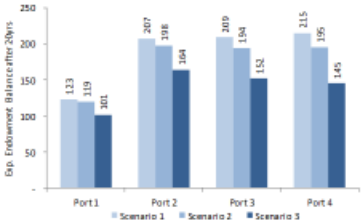
numbers in percent (%)	Total Institutions		Over $1 Billion		$501 Million–$1 Billion		$101–$500 Million		$51–$100 Million		$25–$50 Million		Under $25 Million	
	835	832	82	91	70	77	261	262	166	168	125	125	131	109
	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14	'13	'14
Annual total net return	11.7	15.5	11.7	16.5	12.0	15.8	11.9	15.5	11.5	15.2	11.4	15.2	11.7	15.5
3-year net return	10.2	9.0	10.5	9.5	10.2	9.1	10.2	8.9	10.0	8.7	10.1	8.9	10.6	9.4
5-year net return	4.0	11.7	3.8	12.1	4.0	11.8	3.8	11.8	4.0	11.4	4.3	11.4	4.9	12.0
10-year net return	7.1	7.1	8.3	8.2	7.6	7.3	7.0	7.1	6.7	6.5	6.4	6.5	6.3	6.6

*net of fees

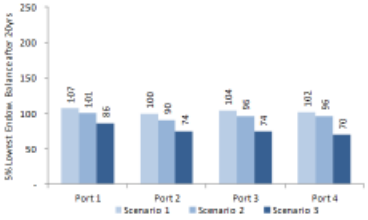
Source: NACUBO, 2015

Simulation Output: Money Market Liability

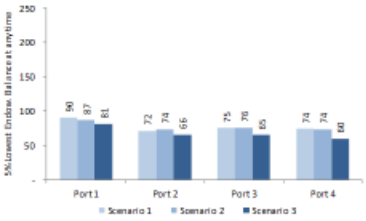
Fund balances are expected to exceed the initial investment by the end of the 20-year period, after taking the deposit interest payments into account.



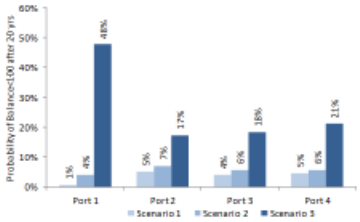
However, there is a risk that the fund balances (after deposit interest) would fall below their initial value by 4%-30% by the end of the 20-year period, depending on the portfolio allocation and the assumed yield environment.



Balance shortfall may be more severe over shorter time horizons.

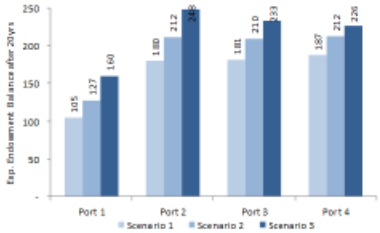


While the "conservative" portfolio has the lowest downside risk, it also has the highest probability to fall below its initial value under the bear flattener scenario.

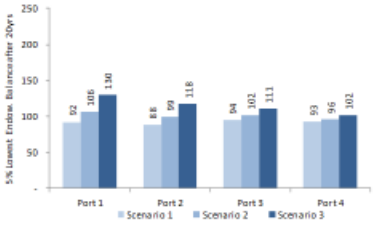


Simulation Output: 20-year Bond Liability

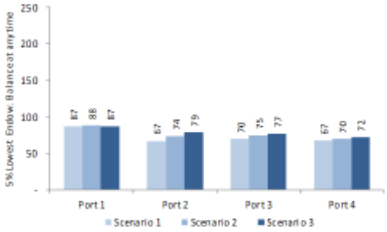
20-year bond financing is more advantageous compared to money market funding in case we expect more aggressive rate hikes.



The risk that the terminal fund balances (after 20-year bond interest) would fall below their initial value is more contained than if funded by money market liability.



Balance shortfall may be more severe over shorter time horizons.



The "conservative" portfolio has the highest probability to fall below its initial value, mainly under the milder yield hike scenario.