Not the Macquarie Model: Using U.S. Sovereign Wealth to Renew America's Civil Infrastructure

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Executive Summary

As this paper is written, the United States finds itself at the vortex of multiple converging forces that could change permanently the manner in which the nation's civil infrastructure is funded and paid for. Simply put, there is recognized need for comprehensive reinvestment in the infrastructure of the United States and the magnitude of the shortfall between needs and spending is daunting. Taken together, annual investment in public and quasi-public infrastructure systems of 4 to 6 per cent of GDP ($500 - $700 Billion) will probably be necessary for the foreseeable future. At the same time, no funding source, either dedicated such as the Highway Trust Fund, or general, such as the Budget of the United States, is projected to have the capacity to generate funds sufficient for infrastructure investment at these levels. Private capital, broadly deployed through various forms of public private partnerships (PPP or P3) could address a portion of the shortfall but PPPs have generated considerable opposition in the U.S. and the long-term viability of this model in the face of the on-going financial crisis is unclear.

At the same time, there is widespread interest on the part of public and institutional pension funds to invest in revenue-producing infrastructure projects that can generate stable, long-term returns on equity. In a similar vein, there have been numerous proposals to "privatize" social security through the establishment of private investment accounts that would have placed a portion of individual payroll contributions into the equities market as a means of addressing projected shortfalls in revenues versus pay-outs in the future. Although social security privatization never generated substantial political support, it is a fact that returns on social security investments have been several hundred basis points lower than historical returns in the U.S. stock market.

This paper attempts to weave together these multiple strands to begin a dialogue on a conceptual approach that appears to have the capacity to supply significant additional capital for infrastructure investment while at the same time addressing the needs of public pension funds and the Social Security Administration to obtain higher returns with minimal risk. The core idea of the proposal is to utilize a combination of public and institutional pension funds, individual retirement accounts, and private equity funds, together with Social Security Trust Funds to provide equity and debt shares to fund projects and programs supported by reliable and sustainable revenue streams generated by user fees. For most of the U.S., this would require the states to impose tolls on at least some of their highways and water and sewer systems to develop rate structures based on sound business and cost recovery models. Revenues thus collected would be used to pay returns to equity for the public pension and other direct investors and interest on loans funded with Social Security Trust Funds. A National Infrastructure Investment Fund (NIIF) could be established within the U.S. Treasury Department to administer such a program. Modeled on the Bureau of the Public Debt, the NIIF would be empowered to invest in financially sound, revenue-backed projects that met pre-determined funding criteria[1]. The National Infrastructure Investment Fund would be managed by an independent board that would hire professional investment counselors and money managers to ensure that all investments met strict funding and performance criteria.

Although this administrative structure for the program is briefly discussed later in this paper, the myriad political and legislative issues associated with actually implementing this proposal are not addressed. To try to do so at this stage would deflect any useful discussion of a new and novel way of raising the massive amounts of capital that will be necessary to recapitalize America's infrastructure.

Background and Introduction

There is widespread agreement that much of the civil infrastructure in the United States is at or nearing the end of its useful life and requires extensive repair, rehabilitation, or replacement. Although estimates to carry out this work vary, it is not unreasonable to assume that the cost over the next 20 years could be as much as several trillion dollars. Although much has been written to document the seriousness of this need and the magnitude of its cost[2], beyond

1 This would permit investors at all levels to purchase equity stakes in U.S. infrastructure projects. Large institutional and corporate investors could place significant amounts into equity pools while small, individual investors could purchase smaller shares appropriate to IRAs, 401k, and other individual investment plans.

2 For example, the American Society of Civil Engineers has estimated the cost of renewing the nation's infrastructure to be $1.6 trillion over the next 5 years. More

recent fragmented attempts to involve the private sector through structured project finance, government at all levels has shown little inclination to move away from traditional infrastructure funding models. Recent proposals to raise the priority of infrastructure renewal and increase investment levels still look to the federal government to provide large amounts of stimulus capital through a traditional grantor/grantee relationship. However, regardless of the efficiency or equity of this traditional model, there is little reason to believe that existing revenue sources can deliver the funding levels necessary over the timeframes required to make a meaningful impact on the problem.

Even prior to the massive infusions of federal funds into the banking and finance sectors that have occurred since September 2008, projections of future federal funding availability were dire. This paper supports the premise that alternative revenue sources and financing models will be needed and proposes a heretofore unexplored model of infrastructure funding. Namely, the viability of public and institutional pension funds, including social security trust funds, to serve as a source of equity capital for direct *investment* into a next generation of revenue-supported infrastructure projects. Not only could these sources provide much needed investment capital but this approach would have the collateral benefit of providing the stable, long-term returns necessary to maintain the fiscal integrity of U.S. retirement systems.

From a conceptual standpoint, this proposal is appealing on several fronts. First, it would provide a funding source for infrastructure renewal separate and apart from general tax revenues and the Highway Trust Fund. General revenues will be constrained by competing program demands, existing entitlements, and interest payments on dramatically increasing federal debt levels. The Highway Trust Fund is limited by the unwillingness of the Congress to consider increases in federal fuel taxes. Other large federal grant programs such as for water and wastewater facilities and navigation and flood control have never been tied to dedicated revenue sources.

The key to this proposal is a willingness to consider that in the future, major infrastructure systems will move from tax-supported public services to revenue-supported enterprise systems. This will require that much of the nation's interstate highway system may have to become toll based at least part of the time and that other major federal infrastructure programs will have to recover capital costs through other user fees. Once dependable revenue streams have been identified to serve as a cost-recovery mechanism, the prospect of infrastructure investment can move closer to reality by employing the spirit, if not the letter, of the structured project finance model.

Project finance underlies the emergent phenomena of PPPs to fund major infrastructure investment. By creating toll- or fee-based revenue streams, equity interests have been able to leverage commercial debt to create a project structure that provides a return on equity, retires the debt, and provides a reliable service that government entities have been unable or unwilling to provide for themselves. Although employed throughout the world, a major complaint (and constraint) with PPPs in the U.S. is that tolls and fees paid by the users would ultimately find their way to the foreign investment banks and sovereign wealth funds that have been major players in this area. Despite this limitation, many U.S. pension funds have looked to revenue producing infrastructure as a means of providing the stable, long-term cash flows needed by retirees.

This paper explores the conceptual feasibility of structuring project finance-type arrangements purely within the U.S. public and institutional sectors. The advantages would be that the argument that fees paid by U.S. users were enriching foreign investors would be negated. If social security trust funds were employed to supply long-term debt, tolls paid by U.S. motorists would find their way back into their own retirement funds. In a similar way, public and institutional pension funds would also benefit from investing in U.S. infrastructure and supporting U.S. employment. Such a financing arrangement would also serve as a surrogate for investing a portion of social security funds in the stock market but arguably with far less risk.

Funding Infrastructure Renewal

Over the past several years there have been numerous proposals for radical change in how infrastructure renewal is funded and financed. One side of the conversation calls for increased reliance on PPPs that utilize as much private capital as possible so that public funds can be diverted to other purposes. At the other end of this discussion are those who believe that large increases in federal grant-making would be desirable to spur job creation, economic productivity, and quality of life improvements. Although legislation to authorize PPPs has been successful in some states, legislatures in others such as California have refused to allow anymore than token, pilot projects, often imposing "guaranteed to fail" conditions on those that could go forward. In addition, Congressman Oberstar, Chair of the House Committee on Transportation and Infrastructure and Congressman DeFazio, Chair of the Subcommittee on Highways and Transit have issued a series of letters openly questioning the financial viability and social equity of using PPPs to construct or operate parts of the Interstate Highway System[3].

The Federal Budget Situation

There is not room in this short paper to discuss the rapidly changing nature of the financial and economic crisis currently confronting the United States and the rest of the world. However, a snapshot of the capacity of the federal

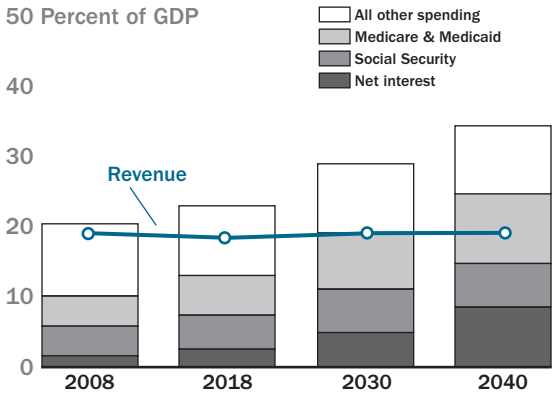
recently, the National Surface Transportation Policy and Revenue Study Commission estimated the need of $225 billion annually from all sources for the next 50 years for the transportation system alone. Similar estimates of unmet needs exist for other infrastructure systems.

3 See for example, November 4, 2008 letter to Transportation Secretary Mary Peters, online at: http://transportation.house.gov/Media/File/press/11-04-08%20JLO-PAD%20Ltr%20PPP.pdf and May 10, 2007 letter to governors, state legislators, and state transportation officials, on-line at http://transportation.house.gov/Media/File/Full%20Committee/PPP%20letter%20to%20Govs%2005-14-07.pdf.

budget to meaningfully contribute to infrastructure investment may be found in recent testimony provide to Congress by the Government Accountability Office (GAO)[4]. In June 2008, GAO concluded that:

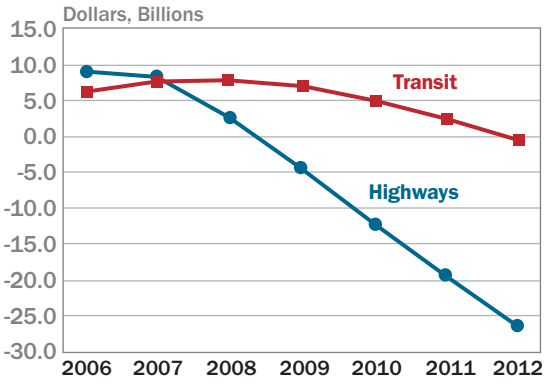
> ...the federal government unified budget still faces large and growing structural deficits driven primarily by rising health care costs and known demographic trends. Simply put, the federal government is on an unsustainable long-term fiscal path.

Figure 1: Potential Fiscal Outcomes under GAO's Alternative Simulation: Revenues and Composition of Spending as Shares of GDP



Source: GAO's April 2008 analysis
Notes: Discretionary spending grows with GDP after 2008. The Alternative Minimum Tax (AMT) exemption amount is retained at the 2007 level through 2018 and expiring tax provisions are extended. After 2018, revenue as share of GDP returns to its historical level of 18.3 percent plus expected revenues from deferred taxes (i.e., taxes on withdrawals from retirement accounts). Medicare spending is based on the Trustees' 2008 projections adjusted for the Centers for Medicare and Medicaid Services' alternative assumption that physician payments are not reduced as specified under current law.

Figure 2: Projections of Highway and Transit Account Balances Through 2012



Source: U.S. Department of the Treasury projections.
Notes: This exhibit shows projected balances in the Highway and Transit Accounts of the Highway Trust Fund through 2010 assuming no change in revenues or program levels.

4 "Long-Term Federal Fiscal Challenge Driven Primarily by Health Care," Testimony of Gene L. Dodaro, Acting Comptroller General of the United States Before the Committee on Finance, U.S. Senate. June 18, 2008. GAO-08-912T.

> Although Social Security is important because of its size, over the long term health care spending is the principal driver—Medicare and Medicaid are both large and projected to continue growing rapidly in the future.

The implications of this dire forecast reverberate directly on the expectation for long-term funding for infrastructure. Namely, that current revenues are below the amount budgeted (the federal budget is in deficit). By 2030 projected expenditures for Medicare and Medicaid, Social Security, and interest on the debt will consume all projected revenues; there is no projected revenue to fund any other programs. By 2040, projected revenues will be sufficient for only slightly more than half of the projected expenditures for Medicare and Medicaid, Social Security, and interest. This situation is depicted graphically in Figure 1.

Or as the Acting Comptroller summarized it in his testimony to the Senate Finance Committee,

> The estimated growth in Medicare, Medicaid, and to a lesser extent Social Security leads to an unsustainable fiscal future. In this figure the category "all other spending" includes much of what many think of as "government"—discretionary spending on such activities as national defense, homeland security, veterans health benefits, national parks, highways and mass transit, and foreign aid, plus mandatory spending on the smaller entitlement programs such as Supplemental Security Income, Temporary Assistance for Needy Families, and farm price supports. The growth in Social Security, Medicare, Medicaid, and interest on debt held by the public dwarfs the growth in all other types of spending.

Although this paper focuses on infrastructure funding, such funding cannot be considered outside of the broader federal budget context. As the GAO report makes perfectly clear, absent substantial changes in tax and/or spending policy, there is little realistic expectation that the federal government will be in a position to contribute to infrastructure investment at the levels identified.

The Highway Trust Fund

Since the establishment of the Interstate Highway System in 1956, a dedicated stream of revenues primarily provided by excise taxes on motor fuels, has provided the federal contribution to construction and operation of the system. For a variety of reasons, most notably that the tax is based on the volume of fuel consumed and not its cost and that it is not indexed to inflation[5], the Highway Trust Fund has essentially run out of money. The National Surface Transportation Policy and Revenue Study Commission was established under Section 1909 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users (SAFETEA-LU) in 2005 and has produced an

5 The federal excise tax on motor fuels has not been increased since 1994. Since that time, the cost of highway construction has increased by more than 200 percent.

Figure 3: Capitalization of private equity funds targeted to infrastructure (as of May 2008)

Fund Name	Parent	Amount (M) Raised/Target	Vintage Year/Status	Geographic Target
GS Infrastructure Partners I	Goldman Sachs	$6,500	2006	Global
Macquarie European Infrastructure Fund II	Macquarie Bank	€4,600	2006	Europe
Macquarie Infrastructure Partners	Macquarie Bank	$4,000	2007	North America
Alinda Capital Partners I	Alinda Capital Partners	$3,000	2007	North America
AIG Highstar III	AIG Highstar	$3,000	In Market	Global
Citigroup Infrastructure Investors	Citigroup Alternative Investments	$3,000	In Market	Developed Markets
Morgan Stanley Infrastructure	Morgan Stanley	$3,000	In Market	Global
RREEF Pan-European Infrastructure Fund	Deutche-RREEF	€2,000	In Market	Europe
Abraaj Infrastructure and Growth Capital Fund	Abraaj Capital	$2,000	In Market	Global
Babcock & Brown Infrastructure Fund	Babcock & Brown	$2,000	In Market	North America

exhaustive report[6] on nationwide transportation needs and potential revenue sources. The Commission's findings and recommendations are too extensive to be summarized here but some key observations capture the essence of the Commission's work.

- The U.S. now has incredible economic potential and significant transportation needs. We need to invest at least $225 billion annually from all sources for the next 50 years to upgrade our existing system to a state of good repair and create a more advanced surface transportation system to sustain and ensure strong economic growth for our families. We are spending less than 40 percent of this amount today.

- Balances in the Federal Highway Trust Fund (HTF) are rapidly declining, especially in the Highway Account. The latest projections by the U.S. Department of the Treasury and the Congressional Budget Office indicate that, by the end of Federal Fiscal Year (FY) 2009, the Highway Account of the HTF will have a negative balance of between $4 and $5 billion if no corrective actions are taken (See Figure 2).

- A significant increase in public funding is needed to keep America competitive. Additional private investment in our system is also needed. We will need to price for the use of our system. More tolling will need to be implemented and new and innovative ways of funding our future system will need to be employed.

- Having the world's best transportation system will require a sea change in the way surface transportation is planned, funded, and delivered. It will require courageous decision making, financial innovation, and unity of purpose.

Public Private Partnerships

Over the past several years, the infrastructure world became enamored by the potential for private equity capital to play a major role in addressing underinvestment in U.S. infrastructure. Tens of billions of dollars have been assembled into various equity funds to improve the movement of people and goods in the U.S. (Figure 3). Two factors were driving this trend. First, it was recognized that the need for capital to maintain, upgrade, and expand transportation and other infrastructure systems far exceeded the capacity of traditional revenue streams. Second, private capital involvement in transportation and other civil infrastructure through some form of public concession had been slow to be utilized in the U. S. despite being widespread internationally. Although a strong case can be made for these arrangements, many state legislatures have been reluctant to enact the broad-based policies necessary to implement them absent demonstrated proof that their citizens will be well served and the public interest will be protected.

A major issue with PPPs is who actually sets the level of tolls or other user charges and how far and fast they are permitted to rise. Due to the natural monopoly characteristics of most infrastructure systems, the public sector must maintain a role in the process lest issues of price gouging and lack of transparency assume prominence. In well-structured PPP agreements, initial fees are usually established jointly and permitted to increase in accordance with predetermined schedules according to inflation or some other economic marker. From a political standpoint, it is actually to the benefit of the public entity not to be involved in the direct setting of tolls and the resultant political risk.

The Role of Project Finance

The key to most PPP ventures is the use of project finance to structure a highly leveraged arrangement of debt and equity. Project finance is a well-established method used by the private sector to finance large, capital-intensive, revenue-producing projects so that they do not impact the corporate balance sheet. The key to project finance is that in most cases, only the cash flow generated is used to service debt and to provide a return of and a return on invested

6 Transportation for Tomorrow, Report of the National Surface Transportation Policy and Revenue Study Commission. December 2007. On-line at: http://www.transportationfortomorrow.org/final_report/.

equity. In this case, the project is considered *nonrecourse*. That is, the sponsors have no underlying responsibility; debt is secured by operating revenues and the underlying value of the assets producing the cash flows. If the sponsors are obligated to make up some amount of a shortfall in cash flow, the project is considered *limited recourse*.

Typically, the private partner will bring a fraction (this has recently been as little as 10 percent) of the total cost of the project to the deal as its equity share and raise the remaining 90 percent through commercial loans and other sources. The private sector partner usually participates through a "project finance entity" or Special Purpose Vehicle (SPV) especially created to be financially responsible for the project's performance separate and apart from the corporate entity it supports and taking full advantage of the non-recourse nature of project finance. That is, the private sector pledges only the revenue (tolls in the case of highways) to be generated by the project to retire the debt and make returns to equity. In the event that the project defaults or experiences other difficulties or liabilities, the SPV alone is responsible; the parent organizations have no obligation to honor the debt or otherwise be accountable for the performance of the project. Because this aspect of PPP arrangements can become problematic if significant cost overruns occur or projected user volumes fail to materialize, it is important that due diligence be exercised so that only projects with a high likelihood of success are selected for funding in this manner.

Due to the limited liability inherent in the SPV, even if projects experience serious financial difficulties, the potential loss of equity may not be sufficient to compel the private partner to prevent default. This is particularly true if the SPV is comprised of several private parties whose equity share might be quite small compared to the overall cost of the project. For example, the equity investment or "at risk" capital of 5 equal-equity partners in a $1 billion project could be as little as $20 million. Although this is not a trivial amount, it does represent the upper bound on the financial risk faced by the private partners.

Are PPPs the Solution to Infrastructure Investment?

A major decision point employed in the decision to use a PPP is the "value for money" (VFM)[7] analysis. This exercise is intended to determine whether the "best" model for service provision is via public or private delivery. However, a very real limitation on the VFM analysis is that it fails to take into account the social and other non-financial objectives that public sector policy makers must address. For example, if cost reductions (and higher VFM scores) are achieved by reducing the benefits paid to workers, eliminating subsidies to low-income customers, or cancelling community outreach, then this method would not be the most desirable from a social welfare perspective.

Although there are those who would argue that subject to a favorable VFM analysis almost everything within the realm of civil infrastructure should be considered a potential PPP, experience has shown that this is an overly optimistic view of this project delivery vehicle. For example, the assumptions developed early in the life of a project, such as construction cost, projected use, acceptable fee structures, cost of capital, etc., are subject to considerable volatility. A fluctuation of a few basis points on the cost of commercial credit (or its sudden unavailability as during the current credit crisis) can have a measurable and substantive impact on the fees that must be collected through tolls or other user charges. If fees must consequently be set so high that use is negatively impacted, the financial viability of the overall project could be affected.

With so many potential caveats, it is not unreasonable to ask why private participation in public infrastructure services should be considered at all. In a perfect or at least better functioning world, the public sector should be able to raise the necessary capital, build and operate the desired infrastructure economically and efficiently, and provide reliable service at a fair price. Although this statement is certainly true in the abstract, government at all levels has been reluctant to charge citizens for the full cost of services, preferring perhaps to have non-elected and absentee managers bear responsibility for unpopular decisions.

The Public Interest

"Protecting the public interest" has become a mantra of those who demand accountability from the PPP process, but this catch phrase means different things to different people. An examination of recent experience with the concession model in the United States[8] found that most concerns with "the public interest" could be distilled down to whether the presence of the private sector in the transaction would cause system users to pay more than they would have under a public provision model. The general perception, underscored by many articles in the popular press, is that revenue-based projects, operated by any entity other than a government agency, will somehow cost more and provide a lower level of service. At the same time, the revenues generated by these projects oftentimes flow to foreign investment banks and their investors with little long-term benefit to the users of the system.

Despite the controversy, up-front concession payments and the ability to move infrastructure costs off the books remain attractive lures to public officials concerned with dwindling revenue streams and out-of-balance budgets. Those opposed to any private involvement in the delivery of "public" services see price gouging as the inevitable outcome of these arrangements. A legitimate retort to these

7 'Value for money' (VFM) is a term used to assess whether or not an organization has obtained the maximum benefit from the goods and services it both acquires and provides, within the resources available to it. Achieving VFM can be described in terms of economy (careful use of resources to save expense, time or effort), efficiency (delivering the same level of service for less cost, time or effort) and effectiveness (delivering a better service or getting a better return for the same amount of expense, time or effort).

8 Ortiz, I.N., J.N. Buxbaum, and R. Little. 2008. "Protecting the Public Interest: The Role of Long-Term Concession Agreements for Providing Transportation Infrastructure." Proceedings of the 84th Annual Meeting of the Transportation Research Board. Washington, DC. National Academies Press.

arguments is whether the public interest is well-served by a system where prices are kept artificially low so as to preclude the delivery of safe, reliable services and where sufficient revenue cannot be generated to support routine maintenance, repair, and renovation[9].

Although there are definitely social and moral questions that can be raised regarding what constitutes equitable charges for the basic building blocks of civil society and, in some instances, the necessities of life itself, these questions do not obviate the fundamental reality that projects and services must be paid for; if not directly by some or all of the users, then by the larger "public" in their stead. There is no way to finesse this issue over the long term. Civil infrastructure must be supported by revenue streams generated either by taxes or fees that are paid to a service provider whether public or private[10].

Whether this provider is in the public or private sector should be less a matter of ideology than whether the customers receive good value for their money. Several recent assessments[11] have demonstrated somewhat mixed results from around the world in this regard. The most recent indicates that for a suite of Canadian PPP projects representing several sectors, the total costs (production costs and all contracting costs) did not differ appreciably from what might have been achieved under a more traditional design-build approach. The higher transaction costs of PPPs are ascribed to inherent goal conflicts between the public and private partners and the unwillingness of the private partner to take on high levels of cost and revenue risk.

If PPPs are going to serve as a useful model for infrastructure delivery, there needs to be a robust set of metrics that can capture the essence of the arrangement and quickly and transparently convey to all interested parties whether the venture has been a "success". Success in a PPP needs to be carefully defined and based on the input of all stakeholders in the process. PPPs developed to date have notably lacked the input of the user community who will actually pay for the services. The details usually are explained after the fact (if at all), which is fertile ground for the skepticism and mistrust which inevitably seems to follow.

How the local community views private participation in infrastructure will also determine whether it believes its interests are being protected. Typically, the equity partner in U.S. PPPs has been an international consortium of engineering, construction, utility operations, finance, and legal firms. The debt component likely will be provided by an international lending institution. Both of these entities, but particularly the SPV, will exert considerable influence on the provision of local services. Increasingly, in the era of the dedicated global infrastructure investment fund, urban infrastructure is becoming little more than a financial product subject to what has been termed "glocal" governance, where local stakeholder concerns will not be the first priority. Thus financial decisions made a continent or half a world away will have very real and personal local impacts. To the extent that this evokes memories of the Chinese proposal to purchase Unocal in 2005 and the proposal for Dubai Ports World to take over operations at 6 U.S. seaports in 2006 could strongly influence their reaction to the PPP arrangement.

The Macquarie Model

In simple terms, the "Macquarie Model" is nothing more than the application of basic project finance principles to the acquisition of revenue-producing infrastructure projects using highly leveraged private debt. Macquarie Bank, through a number of subsidiaries and public and private funds, has acquired a number of existing (brownfield) and new (greenfield) airports, toll roads, port facilities, and water utilities around the world. In exchange for the revenues produced by these facilities, a separate corporate entity is created to operate and maintain them under long-term concession agreements[12]. In some notable cases, long-term concession agreements for tolled transportation facilities in the United States have generated large, up-front payments to the public sector. For example, the City of Chicago received $1.8 billion from a deal offered by Macquarie/CINTRA for the right to operate the Chicago Skyway and the State of Indiana received $3.2 billion for a similar deal for the Indiana Toll Road[13]. The potential for infrastructure to generate stable returns over the long term inspired many private investment banks to raise capital for their own infrastructure equity funds[14]. At the same time, the long term sustainability of the Macquarie Model has been called into question because shareholder dividends often exceed current revenues and the difference is paid out of capital. In light of increased financial scrutiny and the tightness and cost of commercial credit experienced during the autumn 2008 financial crisis, many have questioned the long-term viability of the model[15].

9 The previously cited report of the U.S. National Surface Transportation and Revenue Study Commission (2007) found that the chronic revenue shortfalls besetting the U.S. Interstate Highway System are partially the result of not indexing fuel excise taxes (the major source of revenue to the Highway Trust Fund) to inflation and the rapidly rising costs of construction.

10 Little, R.G. 2008. "Time to ask the infrastructure funding question." *San Francisco Chronicle*, March 5, 2008.

11 Hodge, G.A. and C. Greve. 2007. "Public-Private Partnerships: An International Performance Review. *Public Administration Review*. 67(3):545-558.; *Vining*, A., A. Boardman and F. Poschmann. (2006). "Public-Private Partnerships in the U.S. and Canada: There Are No 'Free Lunches'," *Journal of Comparative Policy Analysis*, 7(3): 1- 22.; Vining, A.A. and A.E. Boardman. 2008. "Public-private partnerships in Canada: Theory and evidence." *Canadian Public Administration*, 51(1):9-44.

12 These agreements typically range in duration from 20 to 99 years with 35 to 50 years the norm. The agreements are quite detailed regarding the responsibilities of the operator for day-to-day operations, performance of required maintenance, how, when, and by how much tolls and fees can be increased. At the end of the specified performance period, the facility may revert to the public sector or continue in private operation.

13 These long-term concessions have also produced considerable backlash. After entering into initial discussions with prospective bidders, the State of New Jersey abandoned plans to negotiate concessions for the New Jersey Turnpike and the Garden State Parkway. Similarly, in 2008 Pennsylvania failed to enact legislation that would have allowed the Governor to enter into an agreement for the Pennsylvania Turnpike that would have provided more than $12 billion to the state.

14 "Would you buy a bridge from this man?" Bethany McLean, *Fortune*, October 2, 2007, on-line at: http://money.cnn.com/2007/09/17/news/international/macquarie_infrastructure_funds.fortune/index.htm.; "Infrastructure Funds Raise Nearly $10 Billion," *Business Week*, May 13, 2008.

15 See, for example, "Taking its Toll," *The Economist*, August 28, 2008; "Unwinding of Infrastructure Funds," Amarik Ubhi, October 13, 2008, online at: http://www.mercer.com/summary.htm;jsessionid=6EIF0qKoADaW1EK1Xd3k@A**.mercer04?siteLanguage=100&idContent=1324620.

Figure 4: Operations of the Combined OASI and DI Trust Funds Calendar Years 2003-17 (Amounts in billions)

		Income				Cost				Assets		
	Calendar Year	Total*	Net Contribution	Taxation of Benefits	Net interest	Total	Benefits payments	Administrative costs	RRB interchange	Net increase during year	Amount at the end of year	Trust fund ratio**
Historical Data	2003	631.9	533.5	13.4	84.9	479.1	470.8	4.6	3.7	152.8	1,530.8	288
	2004	657.7	553.0	15.7	89.0	501.6	493.3	4.5	3.8	156.1	1,686.8	305
	2005	701.8	592.9	14.9	94.3	529.9	520.7	5.3	3.9	171.8	1,858.7	318
	2006	744.9	625.6	16.9	102.4	555.4	546.2	5.3	3.8	189.5	2,048.1	335
	2007	784.9	656.1	18.6	110.2	594.5	584.9	5.5	4.0	190.4	2,238.5	345
Intermediate	2008	819.7	682.1	20.5	117.1	623.5	613.7	5.8	4.0	196.2	2,434.7	359
	2009	872.8	723.3	23.9	125.7	660.0	560.0	6.0	4.0	212.8	2,647.5	369
	2010	925.0	761.2	26.1	137.6	699.6	689.4	6.1	4.1	225.3	2,872.8	378
	2011	977.5	798.0	28.4	151.1	743.7	733.2	6.3	4.2	233.8	3,106.6	386
	2012	1,031.9	835.0	31.6	165.3	793.4	782.4	6.5	4.4	238.6	3,345.2	392
	2013	1,087.8	872.8	35.4	179.7	848.8	837.5	6.7	4.6	239.1	3,584.2	394
	2014	1,144.2	912.0	38.2	194.0	908.3	896.6	6.9	4.8	235.9	3.820.2	395
	2015	1,201.9	952.3	41.5	208.1	971.6	959.4	7.2	5.0	230.4	4,050.5	393
	2016	1,261.8	994.4	45.2	222.2	1,039.0	1,026.5	7.5	5.0	222.8	4.273.4	390
	2017	1,323.9	1,037.9	49.1	236.8	1,110.8	1,097.7	7.7	5.4	213.0	4,486.4	385

Note: Totals do not necessarily equal the sums of rounded components.

Sovereign Wealth and Infrastructure Investment

It was noted earlier that absent significant actions on federal tax and/or expenditure policies, or a willingness to continue to grow the federal budget deficit, there was little likelihood that significant general revenues would be available for infrastructure investment. In the same vein, until demonstrative action is taken to ensure the solvency of the Highway Trust Fund, funding from this traditional source will be limited as well. For these basic and well-documented reasons, this paper has identified U.S. pension and social security funds as a potential source of "sovereign wealth" for investment in America's infrastructure. The premise underlying this proposal is that U.S. infrastructure is in need of significant investment capital. Although the private equity PPP model has generally performed well for investors and the states in which it has been employed, concerns have been raised with foreign involvement and private sector profit-making. At the same time, public pension funds which totaled almost $3 trillion at the end of FY2006[16] are seeking hedges against inflation through investment in infrastructure. For example, in 2007 the California Public Employees Retirement System (CalPERS) established a pilot program to allocate up to $2.5 billion for infrastructure investment[17] with a performance goal of meeting or exceeding the Consumer Price Index plus five percent[18].

The Social Security Trust Fund

Funds held in trust by the U.S. Government for Old Age and Survivor's Insurance (OASI) and Disability Insurance (DI) totaled over $2.2 trillion at the end of 2007. Based on the Intermediate range projections of the Board of Trustees for the years between 2008 and 2017[19], this balance is projected to increase by more than $200 billion annually so that the 2017 balance is projected to total more than $4.4 trillion (See Figure 4)[20].

These balances are not held in gold, currency, or other readily negotiable instruments. Instead, certificates of indebtedness are issued on a daily basis for the investment of receipts not required to meet current expenditures. These special-issue securities bear a nominal rate of interest determined by a formula which sets the rate applicable in a given month to the average market yield on marketable interest-bearing securities of the Federal government which are not due or callable for a minimum of 4 years. The interest rate earned in October 2008 was 3.625 per cent[21]. This rate is more than 150 basis points below the comparable yield for 30-year AAA-rated municipal debt and 250 basis points below investment-grade corporate debt of the same duration.

Although these special issue securities have been characterized by some as "worthless IOUs," they are backed by the full faith and credit of the U.S. Government just as publically held Treasury Notes and Bonds. So from this standpoint, the Social Security Trust Fund can be considered as "real" as any other money under the control of the Federal Government.

16 http://www.census.gov/govs/retire/2006ret01.html

17 http://www.calpers.ca.gov/index.jsp?bc=/about/press/pr-2007/sept/infra-invest-prog.xml

18 The unadjusted CPI for the 12 months ending October 2008 was 3.7. A return on equity of 8.7 per cent would not be unusual for infrastructure investment.

19 The 2008 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds. House Document 110-104. April 10, 2008. Washington, DC. U.S. Government Printing Office.

20 One of the provisions that has been analyzed to ensure the future solvency of the OASI fund is to increase the payroll tax withholding rate by a combined 1.8 per cent in 2009. This change is projected to maintain year-end balances at a level 3.5 to 5 times larger than projected annual outflows over the next 30 years. Regardless of the likelihood of such a change being enacted, it does illustrate that relatively small changes in payroll tax rates will produce considerably larger increases in fund balances.

21 Under this formula, the highest interest rate is 15.250 percent (October 1981) and the lowest rate is 3.375 percent (March 2008).

Reinvesting in America

The investment of private pension funds in infrastructure has been considered before. This was a core feature of a proposal put forward by the Commission to Promote creation of a National Infrastructure Corporation (NIC) to purchase and bear the credit risk of municipal bonds issued by states and localities to provide long-term financing for infrastructure projects; it would also insure private firms against a portion of the risk of developing new facilities. An Infrastructure Insurance Company (IIC), initially to be a subsidiary of the NIC, was also proposed to insure the infrastructure bonds issued. The commission also recommended that the Congress consider changes in federal law that would offer expanded tax subsidies to encourage municipal investment in infrastructure.

The proposal failed to generate support primarily because there was no incentive for the already tax-exempt pension funds to purchase lower yielding tax-exempt municipal debt and the fact that few of the projects would have had associated revenue streams. In essence, the NIC and IIC would have been purchasing debt and insuring projects over which they would have little direct financial control.

Investing U.S. Sovereign Wealth

The current proposal aims to avoid these two pitfalls by allowing pooled capital, from pension funds, private equity funds, and individual investors to take equity positions directly through the U.S. Treasury[22] and restricting the lending of Social Security Trust Funds[23] only to projects that have identified and reliable revenue streams and meet other funding criteria. In the case of transportation, the primary revenue streams would be generated by highway tolls.

For example, if a state wished to finance a $1.5 billion toll road project that met a set of financial, economic, and environmental performance criteria, a pool of equity capital equal to 40 percent of the estimated cost ($600 million) from pension systems and other private funds could be combined with 60 percent ($900 million) of long-term debt. Returns on the equity investments and the loan from the Social Security Trust Funds would be paid from revenues collected by the state. Private and institutional investors would receive taxable returns at a rate based on 30-year treasuries plus a premium and the rate charged to the state for Social Security Trust Funds could be the rate for Social Security special issue securities plus a similar premium. In both cases, equity investors and the Social Security Trust fund would benefit from the higher yields received. Motorists using tolled facilities or customers of other utilities would recieve an ancillary benefit because a portion of the tolls paid would support the long-term solvency of U.S. pension systems, Social Security, and individual investment plans.

Conclusion

This proposal is both preliminary and incomplete. It will strike some as impossible to consider seriously let alone implement. This is a valid concern but the blurring lines between the public and private sectors that have emerged during the on-going global financial crisis show that a new role for federal participation in infrastructure investment as both banker and broker may not be as radical as it would have once appeared. Although precise, up-to-date figures are not available, it is reasonable to assume that there is on the order of $8-$10 trillion held in public pension systems, individual retirement accounts and the Social Security Trust Fund. Private equity funds targeted to infrastructure add several hundred billion more. Investing as little as 10 percent of these funds as described in this paper would unleash almost $1 trillion for investment in U.S. infrastructure. This would have a major beneficial impact on physical infrastructure and add hundreds of millions of dollars to combined U.S. retirement accounts. At the same time, it would create jobs and generate growth through personal savings and investment. By focusing on revenue-backed projects, this proposal also shifts the primary source of infrastructure funding away from a tax allocation model where everyone pays regardless of usage to a more equitable model where people pay only for their actual use of the system. Our political process needs to be forthright with voters on this matter and let them know that absent a move to revenue-based models or a massive increase in fuel taxes, necessary renewal and expansion of the highway system will be long-delayed if provided at all. Similarly, unless rates for water and sewerage systems are tiered to generate sufficient revenues to recapitalize these systems and keep them in good repair, they also will decline to unacceptable levels. As noted by the most recent transportation revenue Commission, this is the time to seek out and discuss innovative new approaches, not to rely on proven but now obsolete methods from the past.

Acknowledgements

The author would like to acknowledge the support of America 2050 and the Regional Plan Association in the preparation of this paper. Jennifer Mayer of the Federal Highway Administration suggested the possibility of using Social Security Trust Funds to support infrastructure investment during a conversation in March 2008. However, the application developed in this paper as well as all errors or oversights are solely the responsibility of the author.

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22 The National Infrastructure Investment Fund would be able to pool assets from several pension systems thereby reducing the risks of a single project and also overcoming state restrictions on the amount of investment that the pension plan can make within its home state. At the same time, projects could be self-insured by the U.S. Government which would eliminate the risk of default but without the Government taking on the direct responsibility for repayment.

23 The interest rate charged for these funds could be a pre-determined spread such as 200-250 basis points over 30-year U.S. Treasury bonds.