



A PUBLIC-PRIVATE INFRASTRUCTURE COOPERATIVE FOR CALIFORNIA

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Summary

With almost three decades of collective experiences globally, the U.S. is well positioned to lead the future P3 market and to do it better than ever. However, the prevailing capital structures of recent P3 projects exhibit a significant level of subsidy-like contributions from the federal and state governments. This is due in part to the perceived difficulty in securing long-term funding as a result of more stringent post-2007 liquidity and leverage standards for banks and insurance companies. This P3 climate in the U.S., however, has not mirrored the climate in the global investment community. The investor appetite for infrastructure is at an all-time high and infrastructure as an asset class is seen as the next fixed income. Despite the current hype, the inherent challenges to P3 financing and financial viability remain: in particular, the capital-intensive upfront construction-phase funding, the prolonged negative cash flow, and the post-construction restructuring. Due to these early phase risks, many banks charge high risk premiums or are staying away from greenfield projects with large construction commitments altogether. A public-private infrastructure cooperative or “I Co-op” is proposed in this paper to address these critical early phase funding risks for the P3 market in California. I Co-op’s business model helps to eliminate the need for subsidies on P3 projects by converting them into market-driven P3 equity and debt capacity with returns for reinvestment. The model is also explicitly designed to mitigate key political risks underlying P3 projects. I Co-op is an independent infrastructure bank dedicated to financing P3 projects in California. Its ownership is founded on public-private partnership and its initial capitalization draws upon the State’s non-capital contribution in the form of P3 participation guarantees, private capital contributions from local and global investors, and its own bank deposits. Through I Co-op, the State can effectively increase its debt capacity without jeopardizing its current debt limit and with no direct capital contributions. For global investors, I Co-op provides a new vehicle to access a portfolio of infrastructure assets, thereby offering them the opportunity to further diversify their risks. It is recommended that the State consider I Co-op as one of the solutions for actively promoting private sector participation as it strives to bring its infrastructure back up to the world-class level it enjoyed in the past.

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I. INTRODUCTION

Global and Historical Perspective on Infrastructure Privatization

Infrastructure is crucial for alleviating poverty, generating economic growth and employment, and increasing international competitiveness. Recognizing its importance, many developed and developing countries around the world have implemented far-reaching reforms over the past three decades—restructuring, encouraging private sector participation for efficiency gains, and establishing new approaches to regulation (see Appendix A for more details on infrastructure privatization experience outside the U.S.).² For the developing economies, most significant privatization took place in the 1990s, peaking right before the 1997 financial crisis. For the advanced economies, although privatization started in the 1980s, a significant momentum was not built up until the late 1990s, peaking just preceding the global economic downturn in 2007. Initially heralded as the panacea for all infrastructure ills, the global financial crises of 1997 and 2007 created unusually high levels of public, political, and media attention to privatization.

Interestingly, the period of heightened political criticism was marked by a discrepancy between public perception and scholarly assessment. As dissatisfaction and opposition to privatization increased, there was mounting empirical evidence that privatization brings real benefits *if done correctly*.³ Doing it correctly means, among others, better tailoring privatization to local conditions, deepening efforts to promote competition, establishing an appropriate regulatory framework, enforcing transparency in the processes, and introducing mechanisms to ensure benefits are equitably distributed.

Although experience varied from country to country, empirical evidence suggests privatization has improved levels of infrastructure investment and thus service expansion, increased operating efficiency, and ultimately resulted in more equitable distribution of benefits. As a project delivery mechanism, the lifecycle approach to privatization has also resulted in significant reductions in cost and schedule overruns, more transparency in the delivery process, and improvements in transaction costs when compared to the traditional design-bid-build approach.

Many privatization models have emerged in the last three decade that include different ways of outsourcing public services and leasing and/or selling state-owned infrastructure assets. In the advanced economies, the most prevalent and effective mode of privatization has been Public-Private Partnership (P3), or variations thereof, where the private sector is responsible for designing, building, operating, maintaining, and/or financing the public infrastructure assets through long-term concession agreements.⁴

Because of the complexity of P3 and resulting high transaction costs, the role of P3 in the overall infrastructure space has been historically moderate. Through mid-2000s, P3 has consistently remained around 10-15 percent of total infrastructure expenditures for Australia, Canada, U.K. and most of Europe. P3, however, has played a critically important role, especially for social

infrastructure and surface transportation sectors. Since the mid-2000s, the share of P3 has been growing steadily, as many advanced economies have started to recognize its value.⁵

Infrastructure P3 Experience in the U.S.

Unlike Australia, U.K., and Canada, the U.S. has been lagging behind in the infrastructure P3 space. P3 projects have been less prevalent in the U.S. in part due to an infrastructure tradition that relied heavily on federal subsidies and tax-exempt municipal bonds. Until recently, many states have also lacked the legal framework to apply tolls or utilize private capital to finance public infrastructure. The U.S. P3 market has also had a checkered past with its set of political challenges and impediments. As a result, the number of P3 projects has been few and far between (see Appendix B for more details on the U.S. P3 experience).

Chicago Skyway and Indiana Toll Road marked a turning point for the U.S. P3 market. They were the first two brownfield P3 toll road projects implemented in the U.S. that, despite political challenges, were considered largely successful. For both Chicago and Indiana, the P3 capital proceeds were used to pay off the public debt, including defeasing the existing toll roads' outstanding bonds, and also to fund other critical infrastructure related spending. Since these two projects, many more P3 projects have been emerging.

While the U.S. has done much to promote the benefits of P3 in recent years, there are three primary bottlenecks that have impeded P3 implementation in the U.S. and the unleashing of the private capital. The first is related to environmental clearances and institutional inefficiencies inherent in infrastructure planning and development processes in the U.S. The second is the lack of effective enabling P3 legislations and institutional capacity to implement P3 projects. The third is the continuing political opposition, public controversies, and related political challenges associated with P3 projects.

The inefficiencies inherent in the infrastructure planning and development processes in the U.S. reach beyond the P3 domain and continuing efforts are being made at all levels of government to streamline the process. Regarding the P3 enabling legislation, much progress has been made in recent years and there are now 33 states that have enacted such legislation. The details of the P3 legislation have varied across states in several key respects (see Appendix B for more details). Among others, the provisions related to availability payments, legislative approval, and non-compete clauses have received most public attention with significant political risk implications. Building P3 institutional capacity at all government levels has also been one of the important P3 challenges. Most importantly, at the state level, P3 capacity has been building up gradually in various forms. Some have dedicated P3 units with strong central control whereas, for others, resources are embedded within the state's regional districts with a more decentralized implementation approach. Both approaches have worked equally effectively.

Some institutional capacity building has been more informal in nature and profound. For example, there has been a profound cultural change in the U.S. construction industry. The P3

market in the U.S. has been dominated by the more experienced Europeans and Australians who have routinely taken equity stakes on U.S. P3 projects, sitting at the head table in contract negotiations. In the past, few U.S. contractors have taken on equity positions in P3 projects and, as a result, they have had little control over how risks were allocated during the construction phase. With the increase in P3 activity, U.S. contractors are starting to embrace the P3 market and beginning to take on a more active role by taking equity positions. In recent years, Europeans have also been acquiring more U.S. firms in an effort to integrate their P3 experience with the U.S. firms' local construction knowledge.⁶

It is generally recognized that the biggest threat to private sector investment in infrastructure is not financial, but political.⁷ The U.S. has been facing its own brand of political risks on P3 projects and, for private investors, the risks have been exacerbated by the 50 states having 50 different sets of political culture and rules of engagement. Key issues underlying the political risks in the U.S. have been wide ranging. Some political risks have been external factors that could not be mitigated easily (e.g., the global financial crisis or macroeconomic shifts, and preferences on purely ideological grounds). Others have involved issues that are of real concern requiring serious policy debates but not germane to P3 only (e.g., tolls and cost-reflective pricing, safeguarding environmental standards). Some have been simply misconceptions and, more often than not, misuse of information on ideological grounds that require better data, education, and communication (e.g., windfall profits for private sector, loss of jobs resulting from foreign participants). Judging from the lessons learned both domestically and internationally, many of these political risks are inherently part of P3 projects. In due course, it has been found that these risks can be mitigated by explicitly addressing the underlying causes, by improving policies, regulations, and processes, and through better education of all concerned (see Appendix B for more detailed discussion on P3 political risks).

With the dire fiscal conditions currently experienced by all levels of governments, P3 is increasingly recognized as an important, albeit modest, part of the future infrastructure solution in the U.S., especially for delivering large, capital intensive projects. The serious conditions and funding shortages of the U.S. infrastructure have been well publicized in recent years.⁸ In the next 5 years, given the fiscal conditions of all levels of governments, public funds are expected to handle only 47 percent of the total infrastructure investment needs, with the remaining 53 percent, or the \$1.3 trillion in funding gap, to be made up from tolls and other non-governmental sources. Given the historical precedents, P3 can potentially take up 10 to 25 percent of this gap, or between \$130 billion to \$320 billion.

Europe, Australia, and Asia have had healthy and robust P3 markets in the past 25 years together accounting for 70 percent of the total global P3 investments.⁹ With the ongoing financial crisis, the value of completed P3 projects in Europe tumbled to a 10 year low in 2012.¹⁰ As the investment opportunities get depleted in Europe, Australia, and other parts of the industrialized world, the investors are increasingly looking to the U.S. and Canada as offering the next wave of infrastructure investment opportunities.¹¹ *Public Works Financing (PWF)* reports that the U.S.

share of the global P3 market will increase from 9 percent in the past to 22 percent in the future based on the size of planned P3 projects in the pipeline.¹²

Because P3 projects are long-term, their true effects are only beginning to be realized as the operational terms of many projects are coming to fruition. The time is ripe for the U.S. to truly benefit from the lessons learned from almost three decades of P3 experiences around the world, including the political risk dimensions. Given the anticipated high P3 demand, the U.S. is best positioned to improve upon the past, to *do it correctly*, and to lead the charge in the future P3 market. This trend was evidenced in a recent infrastructure investors' roundtable held in New York, where it was observed that 2012 has been the strongest year for P3 activities in the U.S. and that there is a notable change in the perceptions of P3 from a way of fixing short-term budgetary deficits to genuine partnerships for sharing capital, knowledge, and global best practices that produce long-term benefits.¹³

P3 Financing Dilemma

As mentioned, with almost three decades of collective experiences globally, the U.S. is well positioned to lead the future P3 market and to do it better than ever. However, the prevailing capital structures of recent P3 projects exhibit a significant level of subsidy-like contributions from the federal and state governments. This is due in part to the perceived difficulty in securing long-term funding as a result of more stringent post-2007 liquidity and leverage standards for banks and insurance companies. This P3 climate in the U.S., however, has not mirrored the climate in the global investment community. The investor appetite for infrastructure is at an all-time high and infrastructure as an asset class is seen as the next fixed income.

Despite the current hype, the inherent challenges to P3 financing and financial viability remain: in particular, the capital-intensive upfront construction-phase funding, the prolonged negative cash flow, and the post-construction restructuring. Due to these early phase risks, many banks charge high risk premiums or are staying away from greenfield projects with large construction commitments altogether. Many long-term institutional investors, especially those who have chosen direct investment route through their own in-sourced capacity, are also staying away from any P3 undertakings (including both greenfield and brownfield P3 projects) because of the perceived risk and their reluctance to retain the P3 specialty knowledge in-house.

A public-private infrastructure cooperative or "I Co-op" is proposed in this paper to address these critical early phase funding risks. I Co-op is an independent infrastructure bank dedicated to financing P3 projects in California. Its ownership is founded on public-private partnership and its initial capitalization draws upon the State's non-capital contribution in the form of P3 participation guarantees, private capital contributions from local and global investors, and its own bank deposits. I Co-op's business model helps to eliminate the need for subsidies on P3 projects by converting them into market-driven P3 equity and debt capacity with returns for reinvestment. The model is also explicitly designed to mitigate key political risks underlying P3 projects. To demonstrate its workings, the concept is applied to the P3 market in California.

Through I Co-op, the State can effectively increase its debt capacity without jeopardizing its current debt limit and with no direct capital contributions. For global investors, I Co-op provides a new vehicle to access a variety of infrastructure assets, thereby offering them the opportunity to further diversify their risks. I Co-op is recommended in this paper as a part of the broad infrastructure privatization solution for the State.

Report Organization

Section 2 of this paper provides an overview of the current P3 financing climate. It starts with a discussion of the prevalent capital structures of recent P3 projects in the U.S. and how they compare to the global investor appetite for infrastructure investments. It also identifies alternative investment vehicles available for global investors to access infrastructure assets and how this asset class has generally performed in the past. Section 2 also discusses the financial viability and financing challenges inherent in P3 projects and the critical role of the public sector can play in mitigating some of these challenges over and beyond direct subsidies.

Section 3 presents the basic concept of “I Co-op” and how it can be implemented in California. It starts with a brief description of the P3 climate in California and the scale of the State’s infrastructure deficit. The paper then describes in some detail I Co-op’s ownership structure and initial capitalization approach; its business model and various products and services; and its expansion potential through securitization, divestment, and scalability. Section 3 also discusses potential implementation challenges facing I Co-op, including some useful precedents as reference. It also offers a summary of potential benefits.

Finally, Section 4 provides a brief summary of conclusions and recommendations.

II. OVERVIEW OF P3 FINANCING CLIMATE

Prevalent P3 Capital Structure in the U.S.

Recent U.S. P3 Projects Include High Subsidy-like Public Sector Funding

As mentioned, the Chicago Skyway and Indiana Toll Road were turning points in the U.S. P3 market. It is interesting to note that the prevalent P3 project capital structure since this turning point has included a significant portion—almost half (48%)—of subsidy-like funding contributions from the public sector (see Table 1). Collectively, the P3 projects to date have included: (1) 12 percent of state or local grants with no repayment obligations, (2) 24 percent of TIFIA federal loans subordinated and at close to the long-term treasury rate (~3.6%), and (3) 12 percent of Private Activity Bonds (PAB) issued on behalf of the private sector, tax-exempt and some 1-2% lower than taxed bonds from private capital market. With these public sector funding sources and subsidies, the private sector’s responsibility has been limited to 20 percent in equity and no more than 31 percent in debt financing.

Table 1: U.S. P3 Capital Structure (2005 to Present) (PWF, Oct 2011)

Project	State	Year	Public Sector		PAB (Tax- Exempt)	Private Sector		Other	Total	Private Partners	Toll vs. AP
			State/ Local Grant	TIFIA/ Federal (Subord.)		Equity	Debt (Senior)				
Chicago Skyway	IL	2005				\$882	\$948		\$1,830	Cintra/ Macquarie	T
Indiana Toll Road	IN	2006				\$748	\$3,030		\$3,778	Cintra/ Macquarie	T
Pocahontas Pkwy	VA	2006		\$150		\$141	\$475		\$766	Transurban	T
I-495 HOT Lanes	VA	2007	\$495	\$589	\$589	\$348		\$47	\$2,068	Fluor/ Transurban	T
SH-130 Seg. 5-6	TX	2008		\$430		\$210	\$686	\$2	\$1,328	Cintra/ S.A.Zachary	T
I-595 Man. Lanes	FL	2009	\$232	\$603		\$208	\$781	\$10	\$1,834	ACS/ TIAA-CREF	AP
Port Miami Tunnel	FL	2009	\$310	\$341		\$80	\$342		\$1,073	Meridiam/ Bouygues	AP
N. Tarrant Expwy	TX	2009	\$573	\$650	\$398	\$426			\$2,047	Cintra/Meridiam/ DPF Pension	T
IH-635 Man. Lanes	TX	2010	\$490	\$850	\$615	\$664		\$17	\$2,636	Cintra/Meridiam/ DPF Pension	T
Denver Eagle Rail	CO	2010	\$183	\$1,372	\$396	\$92			\$2,043	Fluor/Uberior/ John Laing	AP
PR-22/ PR-5	PR	2011				\$455	\$825		\$1,280	Gold Sachs/ Abertis	T
Midtown Tunnel	VA	2012	\$408	\$465	\$675	\$272		\$268	\$2,088	Skanska/ Macquarie	T
Presidio (Ph 2)	CA	2012		\$153		\$43	\$167		\$366	Hochitef/ Meridiam	AP
Total			\$2,691	\$5,603	\$2,673	\$4,257	\$7,254	\$344	\$23,137		
			% 12%	24%	12%	20%	31%	1%	100%		

Note: Figures are in \$millions.

This capital structure is a significant departure from those observed historically. Outside the U.S., tax-exempt bonds, low-interest government loans, and direct grants are a rarity on P3 projects. For example, in the first ten PFI road concessions procured in the U.K. in 1993-2003 period, there were no grants or tax-exempt bonds. The only public sector contribution was subordinated sponsor loans comprising only 8 percent of the total financing. Furthermore, the interest rate on these loans was 2.75 percent *higher* than that for the private sector bank loans (see Table 2).¹⁴

The high level of public sector contributions in the U.S. has been driven in part by (1) the U.S. government's desire to stimulate P3 activities through TIFIA and PAB and (2) state and local governments' need to fill the unmet financing gap from the shortages in toll revenues. Equally important reason, however, has been the perceived difficulty in securing private sector funding stemming from the post-2007 market climate that has increasingly discouraged banks

and insurance companies from long-term lending. The 2007 global financial crisis triggered major reforms in international financial regulatory standards that require more stringent liquidity and leveraging requirements for banking and insurance industries, e.g., Basel II/III Accord and Solvency II Directive.¹⁵ For the infrastructure space, this has meant that banks have been less willing to provide long-term lending and insurance companies' desire for investments that tie up their capital for the long term has been rapidly dwindling. Interestingly, against this backdrop, the private sector's appetite for infrastructure investment by institutional investors has been robust and growing.

Table 2: Early U.K. PFI Roads Financing Assumptions (Bain, 2009)

Funding Type	U.K.		U.S. (from Table 7)	
	% Capital Structure	All-in Rate	% Capital Structure	All-in Rate
Equity	8%	20%	20%	N.A.
Senior Debt:				
- Bond	50%	9.95%	0%	-
- Bank Loan[1]	34%	9.25%	31%	N.A.
Subordinated Debt:				
- Sponsor Loans	8%	12%	24%	3.6%
Other:				
- Tax-Exempt Bond	-	-	12%	~5%
- Grant/Other	-	-	13%	0%
Total	100%	10.7%	100%	N.A.

[1] Bank loans for U.K. PFI roads were from European Investment Bank (EIB).

Global Investor Appetite for Infrastructure

Long-term investors hold half of the professionally managed investment capital in the world today. Insurance companies, pension funds, sovereign wealth funds (SWFs), endowments, foundations, and family offices, which all have the ability to invest over inter-generational spans, together had \$27 trillion in assets under management after the 2007 financial crisis.¹⁶ These investors, which have unparalleled scale and longer time horizons than typical investors, hold clear competitive advantages in markets for long-term, illiquid assets. However, many investors in practice focus their resources and capital on generating returns over periods that rarely extend past 24 months. As such, an investor with a horizon that extends to 24 years naturally has a leg up in asset classes for which shorter-term rivals cannot compete due to time horizon.

The characteristics of an infrastructure investment are well suited to institutional investors.¹⁷ For example, infrastructure businesses often have high barriers to entry due to the sheer size of investment required to develop the underlying assets. But investment size is a relatively small problem for the community of long-term institutional investors, in particular, public pensions and SWFs. In addition, infrastructure assets also have return profiles that can extend for decades, which can be a problem for a short-term investor. However, it isn't a problem for funds with inter-generational objectives, such as family offices and endowments. Finally, liquidity is generally a cause for concern among short-term infrastructure investors, but it isn't a concern for

a fund that can hold an investment for the life of the asset. In short, infrastructure's *problems* don't appear to be problems for the community of long-term investors; they represent competitive advantages and, as such, unique return generating opportunities.

For these and other reasons discussed in more detail in the following, the global investor appetite for infrastructure has been growing, especially from these long-term institutional investors. With the dismal performance of the financial market post-2007 crisis, this appetite has been at all time high in recent years. In particular, the year 2012 marked several new precedents in infrastructure investment space, especially for infrastructure equity funds, infrastructure debt market, and pension funds.

Infrastructure Equity Funds

Among others, global infrastructure funds, investment banks, and pension funds have been the three major players in the infrastructure equity investment space, each accounting for about 30 percent in terms of capital contribution.¹⁸ In the last five years, for example, the top 30 infrastructure equity funds alone have raised over \$180 billion. By some accounts, this number could be significantly higher if governments were forthcoming in their desire to forge true strategic long-term alliance with the private sector and were not just looking for a quick fix to monetize their infrastructure assets in the short run.¹⁹

In addition to the record level P3 activities in the U.S. mentioned earlier, the year 2012 also marked a new precedent in infrastructure equity space in the U.S. Global Infrastructure Partners (GIP), a New York-based infrastructure equity fund, raised a record \$8.25 billion in 2012, the largest vehicle the infrastructure asset class has ever seen.^{20,21} Interestingly, compared to average private equities, these "elite" infrastructure equity funds such as GIP, Macquarie, and Goldman Sachs have been able to amass large commitments in infrastructure in much shorter time than for investments that are longer life-span and lower promised returns. Many industry specialists predict infrastructure to claim as large a slice of institutional equity capital as real estate within the next 10-15 years.²²

Infrastructure Debt Market

The infrastructure debt market also took off in 2012. With banks retreating from long-term lending and disappointing returns on government bonds, institutional investors are increasingly turning to infrastructure to replace the traditional fixed-income investment space.²³ The interest in infrastructure debt has been at an all-time high with many new products coming to market to cater to the increased demand.²⁴ The year 2012 marked the largest fundraising for new infrastructure debt funds, now making up over 10 percent of the total raised for all infrastructure funds. Products offered in the debt fund space have been also wide ranging, from bond-oriented funds to subordinated debt funds. Banks and insurance companies are also teaming up to systematically target infrastructure loans (short-term). Others are building in-house capability to focus on infrastructure debt portfolios. There is also enough confidence in this asset class that

some investors are accessing the infrastructure debt space through their fixed income allocations. With a smaller risk profile than equity, stable cash flow, uncorrelated inelastic demand, inflation hedging, and higher returns than government bonds (3% vs. 6%), some postulate that infrastructure debt as an asset class is the perfect replacement as *the next fixed income*—and this trend of thought has been gaining strength.^{25,26}

Pension Funds

Pension funds have been playing a growing role in infrastructure. In the U.S., pension funds have experienced deep losses in recent years and their long-term obligation gap has been widening as a result. A recent first-of-a-kind analysis done by the Pew Charitable Trust estimated that the state pension funds in the U.S. collectively owe \$2.73 trillion in long-term obligations and they are facing a shortfall of \$731 billion, or 37 percent, in meeting these obligations.²⁷ As a result, public pension funds have been searching for inflation-linked assets with safer and more stable long-term returns and a few have begun allocating as much as 10 percent of their portfolio to infrastructure projects.²⁸ Infrastructure and real estate assets generate steady cash flow and are seen to provide some measure of inflation protection. Given the current market environment, there has also been increasing debate recently about the need to lower the rate of return expectations by large public pension funds from about 8 percent to 6 percent, more in line with the returns that can be expected from infrastructure debt investments.²⁹

U.S. pensions funds have been late into the infrastructure game compared to their counterparts in Australia, Canada, and the U.K. In 2012, however, U.S. pensions funds stepped up *en masse* into the infrastructure space. The record fundraising for GIP mentioned earlier included participation by an unprecedented number of U.S. pensions, including CALPERS (California), WSIB (Washington), VRS (Virginia), FSBA (Florida), and MPERS (Maine).³⁰ Some U.S. pensions funds are also choosing to “club invest” with other pension funds, side-stepping the general partnership (GP) fee-model required by most infrastructure funds. Australia’s Industry Funds Management (IFM) has been a longstanding “club” investor, responsible for managing the country’s 32 pension funds through a collaborative arrangement and boasting a 12 percent net return over the last 18 years. In 2012, both CALSTRS and VRS chose to commit a significant portion of their infrastructure allocations to IFM.^{31,32} Increased club investing has not been limited to the U.S. In U.K., for example, the Pension Infrastructure Platform (PIP) was able to sign up eight U.K. pensions in 2012.

These pensions and other long-term oriented institutional investors are filling several critical gaps in infrastructure space. They are replacing the gap created by banks and insurance companies in long-term lending but also creating a new investment climate of accepting longer term capital commitments and trading lower returns for stable cash flow. Recent market feedback received by U.K.’s HM Treasury also indicates a changing appetite by pensions and other long-term institutional investors. Pension funds have historically been unwilling to put equity into the construction phase of P3 projects. However, in the infrastructure debt space, an increasing number is interested in earlier involvement, from development and construction

phases and over the long term.³³ Some industry experts are even suggesting governments should offload their existing long-term infrastructure loans from banks and sell them to pension funds at discounted rates.³⁴

Infrastructure Investment Vehicles and General Performance Record

Infrastructure Fared Well Against Real Estate, Fixed Income (Bonds), and Public Equity (Stocks) Markets

As mentioned, a large infrastructure investment community currently exist that includes long-term institutional investors. These investors have common interest in long-term investments that are low-risk/low-return and that provide stable cash flow with an inflation hedge. In addition, the fundamental characteristics of infrastructure assets also include: (1) monopolistic or high barriers to entry due to very high initial fixed cost, (2) relatively inelastic demand because the services are essential, and (3) hybrid asset because it shares common trait with a variety of assets, including fixed income, real estate, and private equity.^{35,36}

Alternative investment vehicles currently exist for these investors to access infrastructure assets. These vehicles can broadly be categorized into (see Figure 1): (1) direct investments on projects, (2) listed and unlisted infrastructure funds that are either equity or debt-based (including club pension funds), and (3) listed infrastructure securities. Listed and unlisted infrastructure funds in turn can invest into direct projects and/or listed infrastructure securities.

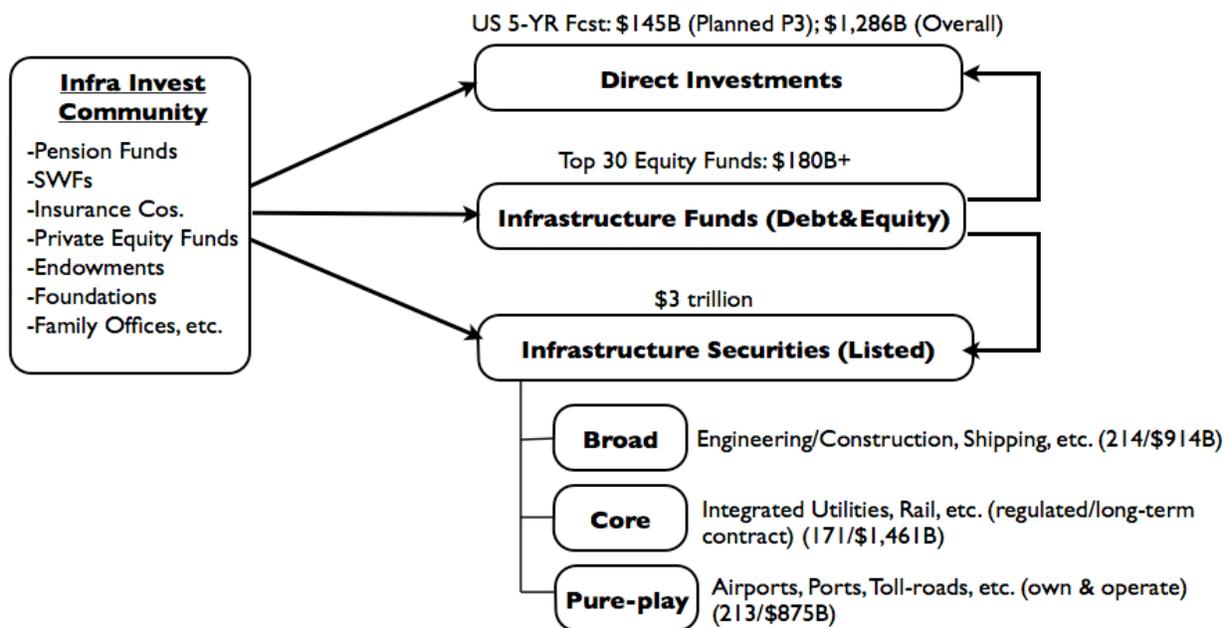


Figure 1: Alternative Infrastructure Investment Vehicles (Various Sources)³⁷

Direct investments are investments in either greenfield or brownfield projects on a project-by-project basis, e.g., Chicago Skyway, and investors can access these projects either as an equity or debt investor. Infrastructure funds, e.g., GIP, are listed or unlisted third-party fund managers that serve as intermediaries. They are founded on fee-based general partnership (GP) model and manage infrastructure investments on behalf of their limited partners (LP) who are generally long-term institutional investors. Among all infrastructure funds, *unlisted infrastructure equity* funds take up a large space and a separate discussion is provided later regarding somewhat dysfunctional investment climate historically observed for these funds.

Listed infrastructure securities basically include companies whose primary business is in infrastructure. Collectively representing about \$3 trillion in market capitalization (MC), these companies fall into: (1) a “broad” category that includes construction and other businesses generally in the CapEx space that are capital-intensive and that do not have stable cash from the operations phase (214 listed companies with \$914 billion in MC), (2) a “core” category that includes utilities, rail, and other companies that primarily occupy the operations space (OpEx), are regulated, and have long-term operator contract with little capital investment responsibilities (171 listed companies with \$1,461 billion in MC), and (3) a “pure play” category that includes airports, ports, toll roads, and other businesses that own and/or operate infrastructure assets that exhibit fundamental infrastructure characteristics described earlier (213 listed companies with \$875 billion in MC).³⁸

Interestingly, the growing and robust appetite for infrastructure investment in recent years discussed earlier is mostly geared to unlisted infrastructure funds and “core” infrastructure securities.³⁹ The investor appetite has been very limited in direct investments on projects and in “broad” and “pure-play” infrastructure securities, the primary investment vehicles that can enhance P3 standing.⁴⁰ Historically, unlisted and direct vehicles have been the primary domain for institutional investors. The number of listed infrastructure vehicles have been growing in recent years and several indices now exist to represent performance characteristics. Overall, in the listed infrastructure securities universe, general performance and return record for infrastructure as an asset class have measured well against real estate, bonds, and stocks, especially in recent years (see Table 3).

Unlisted Infrastructure Equity Funds Have Been Largely Dysfunctional and Insourcing is Emerging as a Potential Remedy⁴¹

Historically, long-term institutional investors have accessed infrastructure assets largely through third-party unlisted infrastructure equity funds. By packaging the assets in a way that would appeal to institutional investors’ profit motives, third party managers created an active market from what was otherwise an inactive and untraded sector. However, despite the clear affinity between the investor and the investment, however, a variety of constraints have prevented long-term institutional investors from playing a more active role in the private infrastructure equity market. Ironically, it appears to be the third-party intermediaries, crucial facilitators in helping to develop this market in the early 1990s, that are hindering the market from attaining maturity.

Over time, it has become clear that the interests of the institutional investors were not completely aligned with the interests of the managers.^{42,43} In particular, many investors have been unhappy with (1) the mismatch between the lifecycle of infrastructure assets and of the vehicles in which they are packaged (referred to as a “time inconsistency” issue) and (2) misaligned carry-based incentive structures that incentivized risky asset selection and excessive leveraging (referred to as a “principal-agent” problems).⁴⁴ As a result, third party funds have fallen out of favor among some long-term investors.

Table 3: Comparative Characteristics and Returns on Major Asset Classes (RREEF, 2011)

General Characteristics:

Type	Return Composition	Size	Asset Availability	Liquidity	General Annual Return
Unlisted Infrastructure	Early-stage capital growth; income-dominated later	>\$200 mil	>Asset scarcity	Long term	Mature: 7-10 %
Infrastructure Equities	Mix of growth and income	Any amount	Established & increasing volumes in most markets	Short to long term	Typical historical: 10%+
Institutional Direct Real Estate	Mixed income and capital appreciation	>\$20 mil	Moderate to deep volumes in most markets	Medium to long term	Core: 7-9% Value-Added: 11-15% Opportunity: 18%
Institutional Bonds	Set coupon and low growth rate	Any amount	Deep volumes in most markets	Medium to long term	5-7%
Public Equities	Mix of growth and income	Any amount	Deep volumes in most markets	Short to long term	Wide possible range of returns

Recent Returns:

Asset Type	Representative Index	Annualized Returns			5-Year Risk Measures	
		1 Year	3 Year	5 Year	Std Dev (Volatility)	Sharp Ratio (Return/Risk)
Listed Infrastructure	Dow Jones Brookfield Global Infrastructure	35.9%	6.0%	8.6%	19.9%	0.41
Listed Real Estate	FTSE EPRA/NAREIT Developed Rental	39.3%	4.0%	2.0%	32.2%	0.05
Private Real Estate	NCREIF Property	16.0%	-3.6%	3.5%	8.1%	0.36
Bonds	Barclay’s Capital Global Aggregate	10.5%	6.0%	7.1%	6.9%	0.95
Stocks	MSCI World Index	30.5%	0.5%	2.3%	21.9%	0.08

Nevertheless, many institutional investors have remained interested in infrastructure. In fact, because the third-party management arrangements has proven unattractive, some funds have set about developing internal investment capabilities to invest in infrastructure on a direct basis. Today, more than 20 pensions and SWFs are investing in infrastructure on a direct basis. However, while “in-sourcing” may offer a better alignment of interests than the traditional GP structure, it comes with its own set of challenges. These include the recruitment of competent investment professionals, the setting-up of competitive compensation systems, and the creation of back-office support functions. Especially for those institutions in the public domain, such as public pensions and SWFs, it can be very difficult to get the buy-in for these costly policies.

The more critical issue regarding the in-sourcing and other direct investment options, however, has been the preclusion of both greenfield and brownfield P3 projects for investment consideration by these institutional investors. Among others, the reasons for such preclusion have included the mixed history of P3 projects, the perceived need for specialty knowledge, high bidding risks, long-term oversight needs, etc. For the majority of these investors, construction companies and sector specialists are seen to be better positioned to handle these difficulties than their in-sourced investment team.

P3 Financial Viability and Financing Challenges

Construction-Phase Funding, Post-Construction Refinancing, Prolonged Negative Cash Flows, and Structural Complexity All Add to P3 Financial Challenges

Despite the current hype in the global investment community, it is important to have an understanding of financial viability and financing challenges of infrastructure investments to avoid the potential risk of creating another bubble. Although infrastructure privatization has been around long enough to generate some level of confidence, the current financial market environment is substantially different from any encountered in the years past. The performance of listed infrastructure securities presented earlier is also largely outside the P3 space and also reflects accounting indices that may not accurately portray a complete financial picture. In addition, most of the P3 performance assessments to date have in essence focused on the construction phase—operations-phase financial data have been limited and incomplete. In short, P3 financial viability over the project lifecycle is still not well understood.

Given the limited operations data, and purely from a financial standpoint (assuming most of the political and other risks discussed earlier can be overcome), it appears there are two major hurdles to ensure financial viability of P3 projects. First, P3 projects require large upfront capital that results in significant negative cash flow for an extended period of time for both greenfields and brownfields alike. For greenfields, the negative cash flows extend well beyond construction completion and arise primarily from the lion’s share of capital input required during the construction phase. For brownfields, the negative cash flows, though substantially better than those for greenfields, result from the concession bids that are often unnecessarily high due to the perceived level of competition in the procurement process.⁴⁵

Even with the reasonable internal rate of returns over the lifecycle, the negative cash flow in the initial phase substantially limits the financeability of P3 projects. Especially for greenfields, construction phase funding requires either a very high risk premium (i.e., higher cost of capital to secure both equity and debt financing) or no financing at all. Based on a recent analysis, for example, if funding can be secured for equity, the risk premium spread between construction and operations phases can be as much as 6 percent (see Table 4), i.e., between maximum 14 percent in construction phase vs. minimum 8 percent in long-term operations phase.⁴⁶ In the debt space, most banks are unwilling to undertake construction risks as a matter of bank policy, even those who are open to short-term lending, and some have shied away from greenfield projects altogether.

Table 4: Required Equity Returns by Phase for U.S. P3 Market (IPD, 2012)

Phase	Risk-Free Rate	Project Risk	Phase Risk	Equity Return
Construction	6%	2-4%	4%	12-14%
Ramp-Up	6%	2-4%	2%	10-12%
Long-term Operation	6%	2-4%	0%	8-10%

The second challenge is related to post-construction refinancing necessary to reduce the cost of capital, improve cash flow, and minimize the opportunity cost of tying up large amounts of expensive capital for a long time. In addition to the critical post-construction restructuring, as called for, one or more subsequent rounds of refinancing/restructuring of debt and/or equity may be necessary during the operations phase to further reduce the cost of the capital. These refinancing/restructuring activities are subject to external market conditions that prevail at the time of refinancing and are beyond the control of concessionaires. They can be also quite complex especially when they are accompanied by the change in the ownership structure that has operational impact.

The ownership of P3 concessions generally is made up of some combination of construction companies, operators/developers, and/or financiers. Each of these concession constituents has a different modus operandi in how they make themselves financially whole (see Table 1 as a reference for U.S. P3 concessions):

1. Major construction companies—e.g., Fluor (U.S.) in I-495, ACS (Spain) in I-595, Bouygues (France) in Port of Miami, Skanska (Sweden) in Midtown Tunnel, Hochtief (Germany) in Presidio—take equity positions in P3 projects primarily to secure construction work. Their financial goal is to exit the equity position as early as possible post-construction (and, as desired, to retain maintenance and rehabilitation responsibilities during the operations phase as a non-equity participant)
2. Major operators/developers—e.g., Cintra (Spain, now part of Ferrovial), Transurban (Australia), John Laing (U.K.), Abertis (Spain, partially owned by ACS)—are integrated full-service providers with strong operations and financing capacity (some also with

construction capabilities). They take on equity positions primarily to secure overall development rights to rely on stable cash flow during the operations phase and, to a limited extent, also for arranging financing

3. Financiers—e.g., Macquarie (Australia), TIAA-CREF (U.S.), Meridiam (France), Goldman Sachs (U.S.)—can be investment banks, infrastructure funds, other direct institutional investors. Their financial model is largely fee-based and their primary goal in taking equity stakes is to gain control over arranging debt financing and subsequent refinancing activities.

Whenever there is refinancing/restructuring, there is an accompanying risk both from financial and operations standpoints, because the integrity of the initial rigor in the procurement process and resulting concession makeup is compromised. All three project dimensions—CapEx, OpEx, and financing—need to be aligned with each other and with respect to the prevailing investment climate at different phases of the project lifecycle, especially at critical refinancing/restructuring milestones (see Figure 2).

Public Sector Role from P3 Financing Perspective

Under current market conditions, the two key P3 financing challenges in *both debt and equity space* appear to be: (1) identifying the most efficient ways of securing the initial construction phase financing, particularly in light of the significant decrease in bank and insurance capital pool, along with an equally significant increase in pensions and other institutional capital, and (2) minimizing refinancing risks by capitalizing on deep and ever-growing secondary post-construction investment capital with a wide range of return requirements.

From a financing standpoint, the public sector can play an effective role in helping the private sector deal with initial capital-intensive construction-funding challenges, post-construction refinancing risks, and other challenges at critical refinancing/restructuring milestones over the project lifecycle. This role should be over and above the current subsidy-like contributions. At the federal level, TIFIA and PAB programs have proven to be effective and should continue to support P3 financing to the extent that authorized funding is available. However, more innovative thinking may be required at the state level, especially for those states that do not have the financial wherewithal to provide direct grants for toll-based P3s or to afford AP-based P3s.⁴⁷ The state-level goals would be to (1) minimize (or eliminate altogether) direct grants, (2) develop innovative ways to increase the states' debt capacity, (3) leverage the increased debt capacity to maximize P3 funding by minimizing the cost of capital, and (4) focus P3 funding support to early phases, i.e., construction and ramp up, and at critical refinancing junctures.

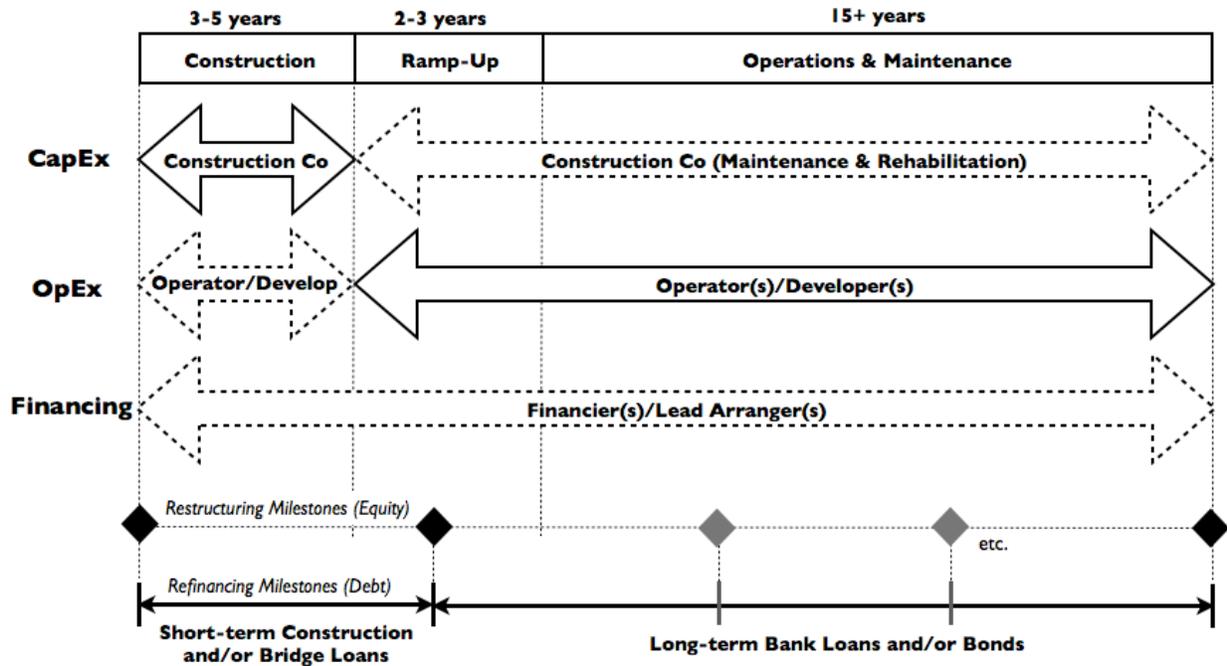


Figure 2: P3 Concession Lifecycle, Team Composition, and Financing Milestones

III. A PUBLIC-PRIVATE INFRASTRUCTURE COOPERATIVE (“I CO-OP”) FOR CALIFORNIA

P3 Climate and Infrastructure Funding Gap in California

California was at the forefront of infrastructure privatization in the U.S. It was one of the early pioneers of state-wide P3 legislation with the passage of State Assembly Bill 680 (AB 680) in 1989 (see Appendix C for more details on the P3 climate in California). Nevertheless, California has had more than its share of politics, especially surrounding the three P3 projects to date: (1) State Route 91 Expressway (SR-91), (2) State Route 125 Toll Road or South Bay Expressway (SR-125/SBX), and (3) Presidio Parkway (Phase 2). Some political opposition and negative public opinions were directly attributable to these projects but others were more general in nature stemming indirectly from the remnants of the earlier deregulation fiascos, such as the 2000-2001 California energy crisis.⁴⁸ These have all added to the general public’s mistrust of privatization.

Since AB 680 in 1989, several state laws have been enacted to accommodate P3 projects in California, including AB2660 in 1997, AB 521 and AB 1467 in 2006, and SB 4 in 2009. All of these laws have expanded the use of P3 by the state, regional, and local agencies. SB 4 also allowed the establishment of the Public Infrastructure Advisory Commission (PIAC), a new auxiliary unit within the Business, Transportation, and Housing Agency (BT&H) and the only formal public sector unit dedicated to P3. However, PIAC is an advisory commission that has

neither funding nor functional-level capabilities to administer and oversee P3 projects.⁴⁹ In the recent past, many key government and business leaders and groups, such as the Little Hoover Commission and the Bay Area Council Economic Institute, have advocated the creation of a state-level P3 procurement center of excellence to support P3 activities.

A range of forecasts currently exists that estimate the state's infrastructure funding gap in the next 10 to 20 years. These forecasts have ranged from \$527 billion to \$765 billion in the next decade. Given these forecasts, the potential share of P3 in this space could be between \$75 billion to over \$190 billion if a 15 to 25 percent P3 market share is assumed (see Appendix C for more detailed discussion of these forecasts).

The “I Co-op” Basic Concept

As discussed, the prevailing capital structure for P3 projects in the U.S., with its high subsidy-like contribution from the public sector, has not mirrored the unprecedented—and still growing—appetite for infrastructure investments by the global investment community. There thus appears to be a room for further convergence between the public and private sectors in future P3 transactions. The public sector should reduce the subsidy-like funding, especially direct grants, and instead encourage a more market-driven approach to support the private sector at critical financing junctures in the P3 lifecycle. The private sector, in turn, should step up their financing commitment true to the “spirit of P3” and bring in the *new* private capital at a competitive rate, especially in the infrastructure debt space. Each state, including California, should bear this market climate in mind as they procure more P3 projects in the future. For California, P3 would need to play a vital role as the State struggles with the serious infrastructure funding gap discussed earlier. As P3 activities increase in the future, the State's funding solution should also address the ongoing political risks and controversies surrounding P3 projects. A new P3 financing paradigm—Public-Private Infrastructure Cooperative or “*I Co-op*”—is proposed herein as such a solution.

The basic goal of I Co-op would be to improve upon the current P3 financing structure by: (1) minimizing the subsidy-like contributions for the benefit of the government, (2) offering cheaper financing terms than the private capital market can offer for the benefit of the concessionaires, (3) reducing the cost of capital and non-productive P3 transaction costs (thereby reducing tolls and taxes) for the benefit of the users and taxpayers, and (4) providing acceptable returns for the benefit of the I Co-op equity owners. I Co-op is also intended to address some of the key political issues of oppositions to P3, including issues related to high tolls, unfair private sector profiteering, threats to public sector labor unions, and perceived inequities for the benefit of non-local participants. In addition, I Co-op directly addresses the P3 financing and financial viability challenges discussed earlier.

Although it is intended to be a for-profit undertaking, the term “cooperative” is used to embody I Co-op's broader business philosophy that mirrors a “cooperative” in the sense of: (1) pooling of resources to take advantage of the economies of scale, (2) equitable sharing of the returns, (3)

having broader goals that benefit the larger community, and (4) emphasis on education and training.

I Co-op would be an independent, for-profit financing institution dedicated to financing P3 infrastructure projects in California. It is also a bank that accepts deposits and provides banking services to its customers. The ownership structure of I Co-op would be a public-private partnership with its participants from both public and private sectors having an equity interest. The initial capitalization of the bank would come from the equity contributions from the government, private sector participants, and from the bank deposits. The initial capital raised would be leveraged to finance P3 projects, thus effectively increasing the State's debt capacity to fund P3 projects. I Co-op would be a strictly a financing institution with no decision-making authority in the procurement and selection of P3 concessionaires, except to provide financing support equally for all concessionaires in the bidding.

The P3 financing activities of I Co-op would be primarily for debt financing but, under limited circumstances and when called for, it would also provide short-term equity financing. The debt financing would focus on early phases of P3, i.e., construction and ramp-up phases, and on critical refinancing/restructuring milestones during operations phase. For early phases, the debt financing would be for short-term only, requiring post-construction refinancing by the concessionaires. For viable P3 projects that are subject to high risk premium and/or are experiencing difficulty securing debt financing for construction phase, I Co-op would provide short-term direct loans (both senior and subordinated), bridge loans, loan guarantees, and/or other instruments to facilitate construction phase financing.

For the early phase short-term debt financing, I Co-op would capitalize on the large spread between pre- and post-construction debt market, both in terms of the difference in prevailing interest rates and the size of the market. The short-term interest rates offered by I Co-op would be slightly lower than the prevailing pre-construction rates in private market (say, by ~0.5%) but still higher than the prevailing post-construction rates, thereby ensuring higher than average market returns. Because of the deep secondary post-construction debt market with significantly lower prevailing rates as discussed earlier, the refinancing risks for the concessionaires would be relatively low. This would ensure short-term repayments for I Co-op and also help avoid the need to tie up its capital for a long-term, as is typical of infrastructure investments.

For post-construction phases, the debt financing could be for a longer term. I Co-op would focus on those viable P3 projects faced with refinancing challenges (e.g., due to economic downturn or other external market conditions) and capitalize on the risk premium spreads as was the case for the short-term construction-phase loans described above. Similarly, I Co-op would also provide short-term equity financing under limited circumstances for viable P3 projects that, for example, fell short in the required equity capital or failed to raise the capital within the specified time. I Co-op may also choose short-term equity financing as an incentive for P3 projects that are deemed critical for the State but failed to generate sufficient competitive bids at the procurement stage. These short-term equity financing would be designed to reduce the risk sufficiently low

enough to set the stage for the institutional investors to enter into P3 deals and commit their equity for the long term.

In all of these “risky” long-term debt and short-term equity financing situations, the return requirements would be slightly lower than the premium rates required by the private market commensurate with the specific financing risks but higher than the average market returns. For both debt and equity financing, the lower-than-market rates would be possible for I Co-op because of (1) the public sector equity participation in the form of guarantees serving as a collateral (described later), (2) I Co-op’s own bank deposit capital with very low interest rates, and (3) the select institutional and impact investors who are willing to accept lower-than-market returns for lower risks.⁵⁰

Ownership Structure and Initial Capitalization

I Co-op would be founded on both public and private sector owners with initial capitalization drawn from their respective equity contributions.

On the public side, the primary equity stake would come from the State of California who will be using P3 for its infrastructure delivery. The State’s equity contribution to I Co-op would be to provide I Co-op the rights to participate in the financing of all P3 projects to be implemented in California in the future. The participation “rights” would take the form of a combination of: (1) the right of first refusal (RFR) to participate in each and all P3 projects and (2) if it should choose to participate, a pre-established minimum participation rate (PR) in financing each and all P3 projects. The RFR would protect I Co-op on the downside by providing the ability to opt out of risky transactions. The pre-established PR would protect I Co-op on the upside with a minimum guaranteed level of financing opportunities.

Similar to P3 concessions where the concession agreements (i.e., “rights” to concessions) are considered as the primary assets in the concessionaires’ balance sheets, the RFR and pre-established PR (that provide guaranteed rights to arrange financing for future P3 deals) would serve as assets equivalent to the State’s equity contributions to I Co-op. No other State contributions would be necessary unless the State chooses to provide additional capital from its P3 budget. Such capital over and above the “rights” (i.e., the RFR and minimum PR) would be treated in the same manner as any other equity contributions subject to the same returns (and risks).

The value of the State equity contributions in the form of the “rights” can be estimated based on the estimated value of the P3 projects. For example, as discussed earlier, the potential level of the State’s P3 projects in the future can range between \$75 billion and \$190 billion if the P3 share is assumed to be 15 to 25 percent of the total infrastructure funding gap. If we take a nominal \$100 billion as the State’s P3 potential, the effective asset value of the State’s equity contribution can be around \$25 billion if the pre-established minimum PR is 25 percent.⁵¹ This

means I Co-op has guaranteed opportunity to finance at least \$25 billion worth of P3 projects in the future with the RFR and minimum PR.

On the private side, the following parties would have the initial ownership stakes, each bringing in their own equity contributions to the initial capitalization of I Co-op:

1. State and local public employee pension funds in California—California boasts two of the largest public employee pension funds in the U.S., CALPERS and CALSTRS, and, as mentioned earlier, they are becoming more active in the infrastructure investment space with favorable returns.⁵² In addition, there are some 40 additional public employee pension funds within California that cover counties, cities, districts, and universities.⁵³
2. Global institutional investors, the “usual suspects” interested in infrastructure equity investments discussed earlier, including infrastructure equity funds, other public and private pension funds, SWFs, private equities, endowments, family offices, insurance companies, and others.
3. Major businesses and vendors that provide infrastructure-related products and services, including construction companies, equipment and rolling stock manufacturers, construction material dealers (steels, concrete, etc.), integrated utilities, and other select businesses that occupy the broad, core, and pure-play infrastructure securities space discussed earlier. These businesses can be drawn primarily from within California, nationally, and/or from worldwide.
4. Local businesses and investors who reside within the State who have vested interests in the health of California’s economy, including companies and high-net worth individuals in technology, entertainment, and other industries.

Through its bank services, the initial capitalization of I Co-op would also draw upon the bank deposits from its customers. These bank deposits can be sourced primarily within the State or, more broadly, nationally and/or globally. As discussed earlier, these bank deposits would help I Co-op to provide more competitive financing terms by reducing the cost of capital. In addition, they would also help in dealing with the liquidity issues associated with long-term infrastructure investments.

The size of initial capitalization would depend on the extent to which the equity capital can be leveraged in financing the P3 debt and equity. Basel II, the current international banking regulation, requires that a bank’s total capital ratio, i.e., the percentage of the bank’s capital to its risk-weighted assets, be no lower than 8 percent. This is equivalent to a leverage ratio of 12.5 or less. If we use a leverage ratio of 10, and using the previous example of minimum \$25 billion in guaranteed P3 financing opportunity, the initial capitalization requirement would be \$2.5 billion. This level of capitalization would come from the combined contributions provided by the private equity participants listed above and the bank deposits.

With the initial capitalization, an ownership structure can be solidified based on some agreed-upon formula between the public and private participants. The formula would essentially be

based on the public sector bringing guaranteed opportunity for a minimum \$25 billion in P3 project financing and the private sector collectively bringing an equity capital of \$2.5 billion that can be leveraged to secure the \$25 billion financing. The ownership/capital structure would entail several dimensions that include, among others, liquidation rights (rights to residual assets), income rights (rights to dividends and interest payments), appreciation rights (rights to capital gains/losses), voting rights (rights to control operational decisions), transfer rights (rights to withdraw or trade with other investors), information rights (rights to policy and performance data), and public rights (tax and regulation rights).

Ultimately, however, the key question underlying the ownership structure is whether the public or private sector holds the controlling interest. Past P3 privatization experience around the world suggest that little de facto difference exist between the two models. For example, a majority of airports in Europe, Asia, and Latin America partially divested their airports with government controlling interest in the ownership, operations, and management. Denmark, Austria, and Switzerland, on the other hand, adopted the partially private model but with private controlling interest, the majority share often held by a single investor.⁵⁴ It was found little difference existed between the two models because: (1) the private sector participants were able to bring an entrepreneurial and commercial orientation whether or not they had majority ownership and (2) through regulation and oversight, the government was also able to exercise significant influence and impose constraint, whether or not they had majority ownership. Consequently, the relative ownership stake of public vs. private owners has depended on the political climate of local regulations and jurisdiction.⁵⁵

Business Model and Products/Services

After initial capitalization, I Co-op will be self-sufficient and operate like a revolving loan fund, relying on repayments/returns from debt/equity financing and other revenues from banking/financial services for both its operations and reinvestments. As mentioned, I Co-op's two basic functions would be in financing (investment) and in banking services (deposits).

On the financing side, I Co-op's business model would be to provide cheaper and more competitive lending and equity return rates—but still better than average returns for the equity owners of I Co-op—to the concessionaires than what they would get from the private capital market. On the banking side, I Co-op would operate like a “cooperative” in the sense that the returns on P3 financing and investments would be shared with deposit customers by offering interest rates that are competitive and slightly higher than the prevailing rates from other major banks. This sharing of the profits, together with the reduced P3 financing costs offered on the financing side, would help to dispel some of the political issues related to high tolls, perceived inequities, and unfair private sector profiteering on P3 projects. By design, a substantial part of the I Co-op's returns would also remain within the State, e.g., returns to the local government agencies, local public pension funds, local vendors, and local investors. This would further help mitigate the political oppositions from, for example, labor unions who have a stake in the local pension funds.

As discussed, the historical returns on infrastructure investments have exceeded average returns on fixed income (institutional bonds) and public equities (stocks) (refer back to Table 3). For example, unlisted infrastructure, of which P3 concessions are included, have enjoyed an annual return of 7 to 10 percent historically. For infrastructure equities, which include infrastructure funds, the returns have generally exceeded 10 percent per annum. Both have outperformed the fixed income market, where the historical annual returns have been more modest at 5-7 percent.⁵⁶ The difference has been more pronounced with respect to public equity market. In the last five years, for example, the average annual return on stocks has been at 2.5 percent compared to 8.6 percent for listed infrastructure. On the P3 project level, the expected project internal rate-of-returns (PIRR) on AP and toll-based P3 projects have been 9-10 percent and 14-15, respectively.⁵⁷ Like other infrastructure investments, these project return requirements have also been significantly higher than called for by the general market conditions.

I Co-op would offer to concessionaires returns that are slightly lower than the expectations of the private capital market. The large spread in returns between infrastructure and other assets described above would strengthen I Co-op's ability to do so. In addition, I Co-op can further reduce its risk exposure and seek protection through insurance policies and loan repayment guarantees. As a notional example, if a syndicated bank loan has a prevailing market rate of 8 percent, I Co-op could strive to get the P3 debt at, say, as low as 6 percent and offer the debt back to the concessionaire at 7.5 percent.⁵⁸ In addition, to ensure the debt repayment, I Co-op can insure its debt for guaranteed repayment at a nominal cost of, say, 0.5 percent (see Figure 3). Despite the cost of insurance, I Co-op can retain a positive net gain in the transaction as shown in Figure 3, which can, in turn, go into the reinvestment pool for other P3 projects.

I Co-op would offer a number of financing products and services as called for by the particular needs of the individual P3 projects. The financing would take the form of direct loans (both senior and subordinated), bridge loans, credit guarantees, equity investments, etc. On both debt and equity financing, I Co-op would focus on early phase and short-term financing (i.e., construction and/or ramp up phases) when the financing risk is the greatest for the concessionaires. By focusing on these early phase short-term financing opportunities, I Co-op would fill in the critical gap that exists in the current P3 financing space, as discussed earlier.

A significant part of P3 financing would involve AP-based projects, which are often subject to political risks associated with annual budget appropriations by the State Legislature. These risks are transferred as risk premiums in the concessionaires' bid price. As necessary, I Co-op financing could also help to reduce this risk premium by securing a lump sum financing on behalf of the State, function as an intermediary in funneling the annual availability payments, and insulating the concessionaire from the appropriation risks thus reducing the risk premium (see Figure 3). Insurances and guarantees can also be used here to reduce the I Co-op risk exposure.

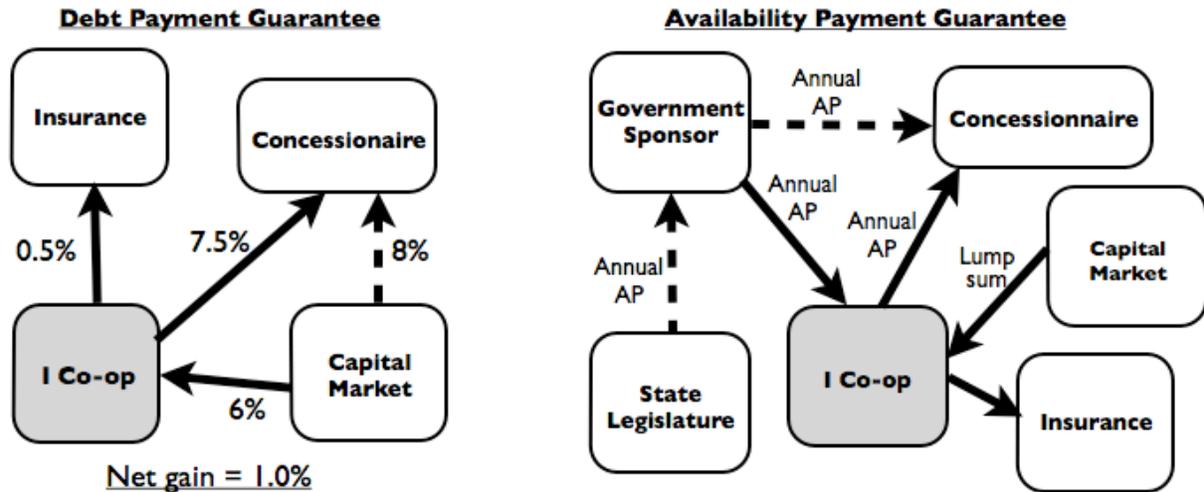


Figure 3: I Co-op Financing Examples (Notional Only)

In providing these products and services, especially for large complex transactions, I Co-op would establish strategic alliances with one or more U.S. banks that can support activities such as syndication of loans, underwriting of bonds, etc. European and Australian banks have been much more active in the infrastructure space in general. The presence of U.S. banks in P3 financing have been virtually non-existent partly due to the U.S. banks being more risk-averse compared to their European and Australian counterparts (see Table 5). The strategic alliances with Co-op would help the U.S. banks become more competitive in the U.S. P3 market with less risks, especially if I Co-op concept is expanded to other states and scaled at national level as discussed later. Instead of taking on project-specific risks, I Co-op can offer the banks a portfolio of P3 projects with more diversified risk profile and reduced risk. Given the current financial health of many European banks, it may become necessary for the U.S. banks to be more active the U.S. P3 space.

To further mitigate political challenges, I Co-op would promote socially responsible investments in line with long-term infrastructure investors such as sovereign wealth funds. In this regard, I Co-op would allocate a nominal but explicit amount from the investment returns to one or more designated State programs. These programs, for example, can help to improve education, encourage R&D and innovations, etc., in the State. Another indirect but important aspect of dealing with P3 political risks is to enhance financial literacy in the public sector (FLIPS). I Co-op would establish a formal P3 education and training programs for local, regional, and State agencies and, as called for, for the general public. Such FLIPS programs can interface closely with the P3 procurement center of excellence mentioned earlier when it becomes a reality.

Securitization, Divestment, and Scalability

As mentioned, the basic operations of I Co-op would rely on loan repayments, both principal and interest, fees, and other revenues associated with its various products/services to recapitalize and

replenish its funds internally. If desired, however, additional capitalizations from external sources could take place after some stability in the financial performance of the I Co-op operations has been achieved. These capitalizations could take the following two forms: (1) increased participation rates (PR) as additional contributions from the State and (2) pooling and securitization.

Table 5: Syndicated Loan Bank Compositions on U.S. P3 Projects

Project	Senior Debt (\$M)	Foreign Banks	U.S. Banks
Chicago Skyway	\$948	Banco Santander Central Hispano (Spain) Calyon (France) Banco Bilbao Vizcaya Argentaria (Spain) Depfa Bank (Ireland)	Citigroup
Indiana Toll Road	\$3,030	Banco Bilbao Vizcaya Argentaria (Spain) Banco Santander Central Hispano (Spain) Caja de Ahorros y Monte de Piedad de Madrid (Spain) BNP Paribas (France) Depfa Bank (Ireland) RBS Securities Corporation (Scotland) Dexia Credit Local (France)	None
Pocahontas Pkwy	\$475	DEPFA Bank (Ireland) Banco Espirito Santo de Inverimento (Spain) Bayerische Hypo und Vereinsbank (Germany)	None
SH-130	\$686	N.A.	N.A.
I-595	\$781	N.A. (12 bank club)	N.A.
Port of Miami	\$342	BNP Paribas (France) Banco Bilbao Vizcaya Argentaria (Spain) RBS Citizens (Scotland) Banco Santander Central Hispano (Spain) Bayerische Hypo und Vereinsbank (Germany) Calyon (France) Dexia Credit Local (France) ING Capital (Netherlands) Societe Generale (France) WestLB (Germany)	None
PR-22/PR-5	\$825	TBD	TBD
Presidio	\$167	N.A.	N.A.

If I Co-op is proven to be successful, the pre-established minimum PR can be raised. Theoretically, I Co-op's PR can be as high as 80 percent for toll-based (where the equity requirement for the concessionaire is 20 percent of the total project cost) and 90 percent for AP-based P3s (where the equity requirement is 10 percent). Under these high PR levels, the State would effectively consider I Co-op as a quasi-public entity to facilitate and secure all debt financing for P3 projects on behalf of the State because its business model serves the broader interest of the State. All other banks and debt financiers would still participate but their investments would be through I Co-op (e.g., I Co-op would function as a lead arranger for a

syndicated loan and involve other banks). A more practical approach, however, would be to increase the minimum PR gradually in stages as the P3 market in California unfolds.

Using the same example as before, if the minimum PR was raised to 40 percent from 25 percent, the guaranteed P3 financing opportunity for I Co-op would be \$40 billion (40 percent of the nominal \$100 billion). This would mean a total capital requirement of \$4 billion and an additional capitalization of \$1.5 billion above the initial \$2.5 capitalization. For these additional capitalizations, the equity stakes of the existing equity owners could be increased as desired or new investors could be added.

Once I Co-op has an adequate portfolio of P3 projects in its balance sheet, it can also create new funding structures to pool and securitize P3 project loans. Such pooling and securitization would allow I Co-op to issue bonds and underwrite the pooled P3 project assets, triggering another inflow of substantial outside investment capital. Such activities would be undertaken through the creation of a “ring-fenced” special purpose vehicle (SPV) in the form of a trust to shield other assets owned by I Co-op.

Optionally, at an appropriate juncture, I Co-op could ultimately decide to fully divest its ownership either through trade sales (i.e., sale to a private investment consortium) or go public through flotation (i.e., initial public offering (IPO) of I Co-op shares on a securities exchange). In this regard, I Co-op can potentially become a part of pure-play listed securities discussed earlier.

The concept of I Co-op is highly scalable to other states, to a multi-state regional level, and to the national level within the U.S. The concept is also readily scalable outside the U.S. in centrally-controlled emerging economies, such as the Arab Spring countries in the Middle East and countries like Myanmar in Asia, where infrastructure is critical to their economic growth and where the government has a firm control of the development “rights.” When fully scaled and divested, I Co-op can emerge as a new, separate vehicle for investors to access infrastructure investments with risk/return profiles that are materially different from the existing broad, core, and pure-play listed securities.

Other Considerations

As needed and practical, some of I Co-op’s basic operations can be outsourced such as banking services, pooling and securitization, etc. The motivation behind the outsourcing decisions would be to minimize I Co-op’s operating costs, increase efficiency, and avoid long-term commitment to retain unnecessary operating burdens.

In addition, for risky but viable P3 transactions that are vital to the State’s infrastructure system that were mentioned earlier, a separate fund—e.g., “I Co-op Venture Fund”—could be established for those institutional and impact investors who have vested interest in California and

also have an appetite for high-risk/high-return investments. Again, this fund can be ring-fenced through the establishment of a SPV to protect I Co-op's other assets.

Finally, depending on the funding needs and the level of interest in P3, various regional and local governments can also participate in I Co-op by contributing similar RFR and PR rights for P3 infrastructure projects under their jurisdiction where they have some funding responsibilities. Provided all legal ramifications can be worked out, the federal government can also contribute equity capital from its varied P3 budget appropriation. Unlike subsidies and federal loans with no or little repayment opportunities, these contributions would generate the same level of returns as any other equity contributions to I Co-op and can in turn be reinvested in other P3 projects.

Implementation Considerations

Embedding I Co-op Within Existing CA I-Bank

In the implementation, embedding I Co-op within CA I-Bank may offer a natural progression for I-Bank to further expand its current role. This is in part because I-Bank already has the basic foundations and resources of an infrastructure financing institution. Discussion with I-Bank management indicated that, although never attempted, it is within I-Bank's current purview to accept private equity capital for its own capitalization. It can also establish a separate special purpose trust for I Co-op to operate as a non-public entity, where it could capitalize on I-Bank's current operational resources. However, there are a few implementation challenges to be overcome for I Co-op to be embedded within the I-Bank: (1) I-Bank currently do not have the expressed "rights" (RFR or minimum PR) for P3 projects and this would require new State legislation, (2) under current legislation, I-Bank is expressly prohibited from taking money for time or demand deposits and to operate like a bank or credit union, and (3) accepting private capital investments may jeopardize I-Bank's current ability to issue tax-exempt bonds. These challenges would need to be overcome whether I Co-op is embedded within the I-Bank or not.

Recently, I-Bank has been participating in the West Coast Infrastructure Exchange (WCX), a multi-state initiative involving California, Oregon, Washington, and British Columbia. WCX's basic aim is to facilitate the selection, development, and finance of future infrastructure projects.⁵⁹ Through I-Bank, WCX may potentially provide an opportunity to scale I Co-op to a multi-state, regional level. The tradeoff in this regard would be the private investors' preference for investments that are consolidated with larger guaranteed opportunities and the public sector's challenge in managing potentially complex and disparate inter-state politics and priorities.

Useful Precedents in Establishing I Co-op as a New Entity

The most important implementation challenges for I Co-op would be assessing all legal ramifications of the proposed concept. As I-Bank has identified, the most critical issue in this regard would be obtaining the participation "rights" from the State and the ability to operate as a

bank and accept deposits. Once these hurdles are overcome, the other challenges, such as securing private sector equity interest, would be relatively easier.

The basic business tenet for I Co-op is to leverage public resources to attract private capital for public-use purposes but also to offer the private investors a reasonable financial returns. There are two examples of this “hybrid” public-private infrastructure fund model in the U.S.: Chicago Infrastructure Trust (CIT) and Connecticut’s Clean Energy Finance and Investment Authority (CEFIA).⁶⁰ These models may serve as important precedents when establishing I Co-op as a new entity.

CIT is a special purpose infrastructure trust established by the City of Chicago through a city ordinance. The intent is to capitalize the trust with both public and private sector equity contributions and use it to fund the city’s infrastructure. To date, the City has put in \$2.7 million into the trust, some of which is to be used as CIT’s operating budget.⁶¹ Thus far, however, no private sector financial commitments have been made although some have expressed interest conditional upon their evaluation of specific projects to be funded.⁶² CIT is different from Co-op in the sense that CIT is a non-profit entity, the government contribution is in the form of capital, no specific “rights” to project participation is expressly stated, it is not a bank and cannot accept deposits, and it functions like a regular infrastructure fund where the financing terms offered are no different from any other infrastructure funds in the private market.

CEFIA and, more generally, “green banks,” are closest to I Co-op in their basic business model. Prior to CEFIA, Connecticut had several different clean energy funds that had been set up by state legislation. Although these funds had reliable funding sources, e.g., state utility charges and bond revenues, they worked largely through direct grants and low-interest loans. CEFIA, the first state-based quasi-public clean energy finance bank in the U.S., was created to combine several clean energy funds to make loans instead of grants, to leverage its capital with private capital, and with the investors receiving a reasonable rate of return on their investments.⁶³ Created as a key component of a broader energy legislation, it received almost complete bipartisan support. In addition to direct loans and loan guarantees, CEFIA is also authorized to issue special obligations bonds.

CEFIA represents a successful precedent for I Co-op concept and has many of the features described above for I Co-op. There are, however, a few important differences. On the positive side, the government contribution to CEFIA is in the form of direct capital from other existing energy funds with reliable funding sources. From the outset, CEFIA also had an operating staff that came from the consolidated energy funds. On the downside, CEFIA charter does not include participation “rights” to all clean energy projects. The average clean energy projects are typically very small compared to P3 projects. CEFIA is also essentially a public entity with more regulatory constraints than a for-profit private business. For example, there is a maximum cap on the average rate of return for the investors, which is set by the board of directors. Some of these differences represent important tradeoffs that need to be examined more carefully as part of the I Co-op implementation due diligence.

Building Asset Management Capabilities within I Co-op

Once the political buy-in is established for the broad conceptual framework for I Co-op, the next critical implementation challenge would be the build-up of in-house asset management expertise within I Co-op. As was the case for the in-sourcing institutional investors mentioned earlier, these challenges may be far ranging from recruiting competent investment professionals, setting competitive compensation systems, and creating back-office support to dealing with government bureaucracies and legislative politics. As noted, many long-term institutional investors have recently selected the in-sourcing approach as the preferred infrastructure investment mode. Important lessons can be gleaned from their recent experience, especially from those investors that serve the public domain such as public pension funds and SWFs. Drawing upon 20 in-depth case studies of in-sourcing institutional investors from around the world, a recent study by the Stanford Global Projects Center developed a series of principles and policies that identify the basic ingredients for effective in-house asset management.⁶⁴ These ingredients comprised the following nine elements:

1. People—ability to offer compensation packages sufficient to get the talent required
2. Organization—optimal allocation of resources to balance in-house capability vs. outsourcing
3. Risk—building operational as well as financial risk management capability
4. Culture—creating a culture of risk taking that is not present in most external institutional investors
5. Assets—carefully selecting which assets to focus consistent with risk-return objectives
6. Mandates—conceptualizing, selling and launching internal mandates with rigor
7. Delegation—delegating to experts and segregating duties to ensure expert accountability
8. Communication—Being pro-active with stakeholder outreach to ensure continuing legitimacy
9. Networks—Developing a network to share opportunities and best practices.

No doubt, these and other elements need to be addressed thoroughly as a part of implementation due diligence.

Cooperative or Not Cooperative?

Among others, one of the tradeoffs that may need to be explored is adopting “cooperative” as a potential structure for I Co-op, particularly if the basic business philosophy underlying I Co-op is “quasi-public.” Cooperatives have become much more sophisticated, some adapting more capital intensive industry models to become bona fide business corporations—e.g., limited liability companies or partnerships, that allow some members to have a greater share of control and a return that exceeds fixed interest.⁶⁵ A recent study found that, during the recent global crisis, cooperatives had on average performed better and had higher entrepreneurial sustainability than traditional for-profit corporations.⁶⁶ In Europe, the size of “social” enterprises, also refer to

as the “third sector” that includes cooperatives, has grown to almost 7 percent of the wage-earning population of the EU.^{67,68}

There are both advantages and disadvantages to establishing I Co-op as a cooperative. On the upside, I Co-op can tap on the existing network of credit unions, cooperatives, and federations of cooperatives. In the U.S., for example, there are almost 7,400 federally-insured credit unions with collective deposits valued at \$680 billion.⁶⁹ Among others, I Co-op’s initial deposit capital can be sourced from these deposits. On the downside, there are regulatory requirements that may jeopardize the financial and operational flexibility and robustness of I Co-op. No doubt, various capital/ownership structures for I Co-op should be explored as part of its implementation due diligence. Cooperative structure should be considered to the extent that it does not materially limit I Co-op’s financial sustainability as a business enterprise in the long run.

Competition with Other Banks

One potential impediment that I Co-op may face is the perception that it may be in direct competition with other major banks in the country, especially for deposits. The size of deposits and the scale of operations for I Co-op, however, would be substantially smaller than other major banks to be considered a potential threat. The top four U.S. banks, for example, currently have \$7.7 trillion in assets and \$4.0 trillion in deposits (Table 6); the top four California banks currently have \$133 billion in assets and \$102 billion in deposits (Table 7).

Table 6: Top Four U.S. Banks Assets and Deposits (WSJ, 2012)⁷⁰

Bank	Location	Assets (in \$B)	Deposits (in \$B)	ROA (%)	ROE (%)
JPMorgan Chase	New York, NY	2,290	1,116	0.84	10.12
Bank of America	Charlotte, NC	2,161	1,036	0.25	2.32
CitiGroup	New York, NY	1,916	914	0.39	4.11
Wells Fargo	San Francisco, CA	1,336	929	1.45	13.38

Note: ROA-return on assets; ROE-return on equity

Table 7: Top Four California Banks Assets and Deposits (CA DFI, 2012)⁷¹

Bank	Location	Assets (in \$B)	Deposits (in \$B)	ROA (%)	ROE (%)
Bank of the West	San Francisco	62.6	44.8	1.38	7.42
First Republic	San Francisco	31.0	24.2	1.95	17.97
East West Bank	Pasadena	21.5	17.5	1.79	18.49
Silicon Valley Bank	Santa Clara	20.0	18.1	1.44	18.97

Note: ROA-return on assets; ROE-return on equity

Summary of Potential Benefits

As mentioned, the private sector’s commitment to infrastructure investment can be strengthened if a genuine partnership can be forged with the public sector that, instead of short-term fixes, together seek long-term solutions and benefits to both parties. I Co-op presents a step towards

such a partnership. True to the initial intent of privatization, I Co-op is market-driven and introduces a level of competition that aims to increase the efficiency in current P3 financing space in the U.S.

The potential benefits of I Co-op can be summarized as follows:

1. First and foremost, I Co-op provides a substantial new funding for California to fill the infrastructure funding gap, especially for P3 projects. I Co-op effectively increases the State's debt capacity without jeopardizing its current debt limit and with no direct capital contribution. Through multiple capitalizations and leveraging, and with the State's non-capital participation, I Co-op can also amass a significant debt and equity capacity up to 25 percent of the State's overall infrastructure spending gap as desired.
2. Through its business model, I Co-op explicitly mitigates the key issues underlying the P3 political oppositions of the past. Among others, it mitigates issues related to unfair private sector profiteering, high toll levels, job and economic losses to non-local participants, and lack of transparency. Most importantly, I Co-op's profits will remain largely within the State for its own benefit.
3. I Co-op directly addresses the financing and financial viability challenges of P3 projects, i.e., construction phase funding and post-construction refinancing. In so doing, I Co-op fills the critical gap that exist in the current P3 financing space in the U.S. Instead of direct grants and subsidy-like contributions, I Co-op's model helps to put these subsidies to work, converting them into market-driven equity and debt capacity with returns for reinvestment.
4. From a financial standpoint, I Co-op serves as a new financial engineering vehicle/approach to transfer the P3 project risks to various investors and stakeholders who are best suited for them. Ultimately, I Co-op helps to lower the financing risk premiums by (a) bringing a large short-term funding without going through another commercial bank, thereby avoiding the mark up, (b) for investors, allowing to bypass direct investments into P3 projects, thereby mitigating the liquidity and other related risks associated with direct investments, and (c) for concessionaires, helping to tap into a larger pool of more mainstream investors over and beyond what is available on a project-by-project basis.
5. For the global investors, I Co-op provides a new vehicle to access infrastructure assets. With a guaranteed portfolio of projects, I Co-op offers them investment opportunities with risks that are more diversified and lower. Issuing bonds by securitizing pooled project assets (and, if desired, full divestment through IPO or trade sales ultimately) would provide additional opportunity for a larger investment community with further risk diversification.
6. With the new funding capacity from I Co-op, the State can reallocate its scarce capital resources to other critical programs that are less financially viable than P3 projects, e.g., in education and health areas.
7. As a new, robust business enterprise, I Co-op creates jobs and add to the State's economy. It introduces competition in financing/banking space to ensure better returns to its equity investors and customers. As needed, it also provides outsourcing opportunities for areas that require special expertise or that can be done more efficiently externally.

8. By establishing strategic alliances, I Co-op helps the U.S. banks and construction companies to become more competitive in the U.S. P3 space.
9. By dedicating a nominal but explicit portion of its returns to select State programs of its choosing, I Co-op can bring a broader community benefit in areas critical to the State's long-term economic health, such as education and innovations in technology. In addition, I Co-op can also help to improve financial literacy in the public sector (FLIPS) by establishing formal P3 training programs for state, regional, and local agencies.
10. Finally, as desired, through their capital and/or non-capital participations in a similar manner as the State, I Co-op can also help local and regional governments within California and the federal government to secure new funding and/or further leverage their existing funding to carry out future P3 projects

IV. CONCLUSIONS AND RECOMMENDATIONS

The size of the potential U.S. market, the favorable investment climate, and almost three-decades of collective experience globally are all setting the right stage for the U.S. to lead the global P3 market in the future and to do it better than ever before. This would require strong leadership and innovative thinking on the part of both the public and private stakeholders in the U.S. In particular, the federal and state governments, major U.S. construction companies, and major U.S. banks will need to work in concert to face the challenges of developing a new and better approach to P3 delivery in the U.S.

For the federal and state governments, more sophisticated and market-driven thinking is required in putting their own assets to work for better leveraging—beyond the current mechanisms of direct grants, tax-exempt bonds, and low-interest loans and guarantees—in order to better incentivize the private sector to unleash their pent-up capital. Much of the early phase P3 risks reside in the hands of construction companies. For U.S. construction companies, increased at-risk equity participation is thus needed to reduce the P3 risk premiums and perhaps to serve as the first step in better aligning their businesses to a lifecycle approach. For additional efficiency gain, they should also explore potential integration with their foreign operator-developer counterparts, either through stronger teaming arrangements or through formal M&As. For U.S. banks, increased competitiveness through active participation in P3 financing needs to be sought, especially given the growing depth of the infrastructure debt market and the declining health of the European banks that have been the P3 predominant player in the past.

Through I Co-op, the State of California would be in a unique position to lead the U.S. states in developing an innovative and a first-of-a-kind P3 financing solution that goes beyond direct subsidies and that also addresses some of the key political controversies underlying P3 projects. Working alongside U.S. construction companies and banks, I Co-op eliminates the need for subsidies in P3 projects, converting them into new P3 debt and equity capacity with returns for reinvestment. The State's contribution in I Co-op would be to grant participation guarantees in P3 financing with no capital contributions and without compromising the P3 competitive bidding

processes. It is recommended that the State use I Co-op as a vehicle to reduce its infrastructure deficit and to rebuild the State's infrastructure back up to the world-class level it enjoyed in the past.

APPENDIX A: INFRASTRUCTURE PRIVATIZATION EXPERIENCE OUTSIDE THE U.S.

Infrastructure is crucial for alleviating poverty, generating economic growth and employment, and increasing international competitiveness. Recognizing its importance, many developed and developing countries around the world have implemented far-reaching reforms over the past three decades—restructuring, encouraging private sector participation for efficiency gains, and establishing new approaches to regulation.⁷²

A Global Shift Towards Infrastructure Privatization Occurred in Mid-80s for Both Efficiency and Ideological Reasons

Although the concept was not new, there was a distinct shift in the mid-1980s towards infrastructure privatization both in advanced and developing economies. Led by Europe, the shift in many advanced economies was motivated in equal parts by the failures of public sector reforms to gain efficiency, a sea change in ideology following the rise of Thatcherism, and the resulting short-sighted fiscal attraction of monetizing state assets through quick sales.^{73,74} In developing economies, the impetus was primarily financial in nature where privatization was vigorously promoted to reduce the budgetary burden on the public sector that was incapable of funding the needed infrastructure. The financial burden on these economies was further exasperated by a policy change in multilateral institutions that reduced their traditional role and increasingly relied on the private sector for infrastructure expansion and modernization.⁷⁵

Because of the lack of a strong institutional foundation, the privatization reforms in developing economies were much more sweeping in nature with a broader policy perspective that focused on social equity and distributional issues as well as economic efficiency concerns. The key components of their reform agenda were *cost-reflective* pricing, institutional restructuring aimed at *increased competition*, and *effective regulations* to safeguard both the public and private sector interests. At first ideologically driven, the advanced economies focused more on short-term economic gains and on reforms that involved fine-tuning of the institutions that were already in place. Subject to ever-present public scrutiny, however, tremendous institutional learning—in the way of continuous refinements in policies, regulations, and processes—had to take place. An important aspect of the learning has been to strike a right balance between the use of legislative versus contractual vehicles to effect the privatization policies.

Global Financial Crises Triggered Growing Political Oppositions to Privatization

For the developing economies, most significant privatization took place in the 1990s peaking right before the 1997 financial crisis. For the advanced economies, although privatization started in the 1980s, a significant momentum was not built up until the late 1990s, peaking just preceding the global economic downturn in 2007. Initially heralded as the panacea for all infrastructure ills, the global financial crises of 1997 and 2007 created unusually high levels of public, political, and media attention to privatization. For developing and advanced economies alike, the global crises triggered growing opposition, swinging the pendulum back toward increased government supervision.

With the growing doubts about the true benefits of privatization, the last decade has been a period of reflection for multilateral institutions, policymakers, the research and academic community, the global investment community, and other industry stakeholders. There have been concerted efforts by all concerned to shed some light on the merits and pitfalls of infrastructure privatizations based on almost three decades of experiences. The bulk of privatizations in the 1990s took place in the absence of empirical support. Throughout the 1990s and onward, the privatization assessment industry grew rapidly as more information became available.⁷⁶

Despite Mounting Political Challenges, Empirical Evidence Suggests Privatization Can Bring Benefits “If Done Correctly”

Interestingly, the period of heightened political criticism was marked by a discrepancy between public perception and scholarly assessment. As dissatisfaction and opposition to privatization increased, there was mounting empirical evidence that privatization brings real benefits *if done correctly*.⁷⁷ Doing it correctly means, among others, better tailoring privatization to local conditions, deepening efforts to promote competition, establishing an appropriate regulatory framework, enforcing transparency in the processes, and introducing mechanisms to ensure benefits are equitably distributed.

Although experience varied from country to country, a recent World Bank report indicated that privatization has improved infrastructure performance overall in most developing economies.⁷⁸ Specifically, the reforms have:^{79,80}

1. Improved the levels of infrastructure investment and thus service expansion—e.g., more than \$750 billion of private capital was invested in 2,500 projects during 1990-2001 period;
2. Increased operating efficiency—e.g., dramatic improvements in service quality and availability, labor productivity, and cost control were evident, along with the increased adoption of new technology and management practices; and
3. Ultimately resulted in more equitable distribution of benefits across all income classes—e.g., short-term adverse effects due to job cuts and price adjustments for those affected were shown to be more than offset in the long run by the improvements in service quality and access, general growth in the economy, and the change in the structure of public finances.

Most performance assessments in advanced economies have also favored privatization but they focused primarily on efficiency in procurement and transaction costs. Specifically, the assessments cited:⁸¹

1. Increased infrastructure investments and service expansion and quality—e.g., more than \$500 billion of private capital was invested in OECD countries from 1990 to mid-2000, primarily in the utilities, transportation, and telecommunications sectors;^{82,83}
2. Increased operating efficiency—e.g., in Australia, when compared to traditional delivery methods, privatization exhibited lower cost overruns (1 percent vs. 15 percent), better on-time delivery (3.4 percent delivered early vs. 23.5 percent schedule overruns), higher reliability (no change vs. 50 percent increase in cost and schedule between initial estimate and upon construction completion), more transparency (significant increase in publicly available project data), and more pronounced benefits the larger and the more complex the project; and
3. Improvements in P3 transaction costs and risk premiums with market maturation—e.g., in U.K. from 1995 to 2001, a gradual decrease was observed in project IRR (from 13.5 to 10 percent), nominal return on equity on P3 bids (from 15 to 13.5 percent), and cost of debt (ADSCR from 1.4 to 1.25).⁸⁴

The Infrastructure Privatization Market Is Maturing and Public-Private Partnership (P3) is Emerging as the Most Effective, Albeit Moderate, Mode of Privatization

With Australia and U.K. leading the charge, the infrastructure privatization market has been maturing in the last three decades (see Figure A.1).⁸⁵ Many privatization models have emerged in the process that included different ways of outsourcing public services and leasing and/or selling state-owned infrastructure assets. In the advanced economies, the most prevalent and effective mode of privatization has been Public-Private Partnership (P3), or variations thereof, where the private sector is responsible for designing, building, operating, maintaining, and/or financing the public infrastructure assets through long-term concession agreements.⁸⁶

Because of the complexity of P3 and resulting high transaction costs, the role of P3 in the overall infrastructure space has been historically moderate. Through mid-2000s, P3 has consistently remained around 10-15 percent of total infrastructure expenditures for Australia, Canada, U.K. and most of Europe, with the exception of Spain which stood at as high as 27 percent. P3, however, has played a critically important role, especially for social infrastructure and surface transportation sectors. Many countries have found availability payment (AP)-based P3 (versus user fees like tolls) to be a successful model for funding social infrastructure. In surface transportation, P3 has been instrumental in delivering large, capital-intensive, and complex projects faster and cheaper, which otherwise would not have been possible under traditional approach. Since mid-2000s, the share of P3 has been growing steadily, as many advanced economies have started to recognize its value.⁸⁷

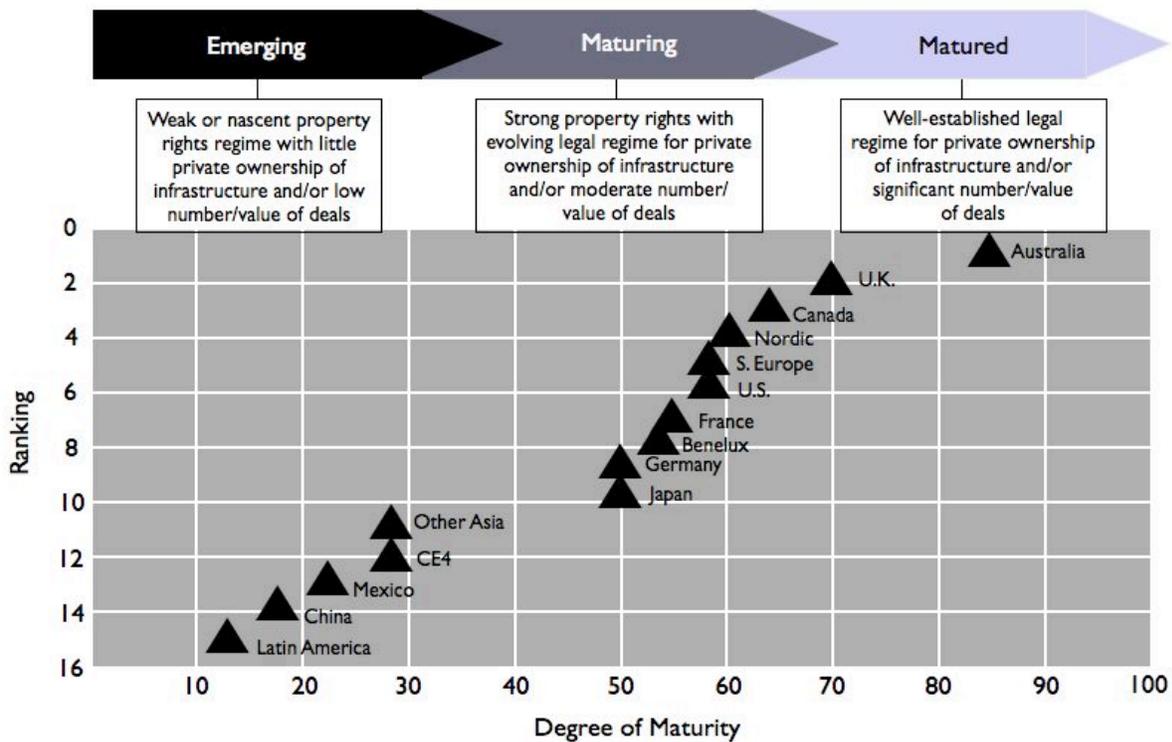


Figure A.1: Infrastructure Maturity Across Global Markets⁸⁸ (OECD, 2007)

APPENDIX B: STATE OF THE U.S. INFRASTRUCTURE P3

P3 Project History

Heavily Subsidized Culture and Political Oppositions Have Discouraged P3

P3 projects have been less prevalent in the U.S. in the past in part due to an infrastructure tradition that relied heavily on federal subsidies. In surface transportation where privatization has been most active, public policies that encouraged a large network of free, non-tolled public roads financed with tax-exempt municipal bonds made privatization much less attractive in the U.S. compared to other countries without such policies.⁸⁹ Until recently, many states have also lacked the legal framework to apply tolls or utilize private capital to finance public infrastructure. The U.S. P3 market has also had a checkered past with its set of political challenges and impediments. As a result, the number of P3 projects has been few and far between since the first modern P3 project—State Route 91 (SR-91)—was launched in 1993 in California. Because of no prior experience, SR-91 and other early P3 projects had their share of heated political oppositions and public debates.

The issues that triggered political oppositions and public debates have been far ranging. Some, such as toll increases and job losses, were explicit in nature with direct short-term negative impacts whereas others, such as the distributional equity issues of high profits for a few at the expense of many, have been more nuanced with longer-term implications. It is interesting to note that P3 projects *can* be less political in the long run. If *done correctly*, the private sector is ultimately accountable for both its customers (the users and the government) and its shareholders, all of whom require more transparency and less unnecessary political meddling that can impede the efficient provision of services.

The Chicago Skyway and Indiana Toll Roads marked a turning point for the U.S. P3 market. They were the first two brownfield P3 toll road projects implemented in the U.S. that, despite political challenges, were considered largely successful. For both Chicago and Indiana, the P3 capital proceeds were used to pay off the public debt, including defeasing the existing toll roads' outstanding bonds, and also to fund other critical infrastructure related spending. Since these two projects, many more P3 projects have been emerging (see Table B.1).

Table B.1: U.S. P3 Projects to Date (Various Sources)⁹⁰

Project Name	State	NTP Year	Phase	Public Sponsor	Contract Type	Funding Mechanism	Project Cost
SR-91	CA	1993	O	Caltrans	DBFOM	Toll	\$130M
Dulles Greenway	VA	1993	O	VA DOT	DBFOM	Toll	\$378M
Foley Beach Express	AL	1999	O	City of Foley	BOO	Toll	\$44M
Camino Columbia	TX	1999	O	TX DOT	BOO	Toll	\$90M
Las Vegas Monorail	NV	2000	O	Clark County	DBFOM	Fare Box	\$343M
SR-125	CA	2003	O	Caltrans	DBFOM	Toll	\$700M
Chicago Skyway	IL	2005	O	City of Chicago	99-Yr Lease	Toll	\$1,830M
Indiana Toll Road	IN	2006	O	IN Finance Authority	75-Yr Lease	Toll	\$3,850
Pocahontas Parkway	VA	2006	O	VA DOT	99-Yr Lease	Toll	\$611M
Northwest Parkway	CO	2007	O	NW Pkwy Authority	99-Yr Lease	Toll	\$603M
I-495 HOT Lanes	VA	2007	C	VA DOT	DBFOM	Toll	\$1,937M
SH-130 (Seg. 5-6)	TX	2008	C	TX DOT	DBFOM	Toll	\$1,326M
I-595 Managed Lanes	FL	2009	C	FL DOT	DBFOM	AP	\$1,592M
Port of Miami Tunnel	FL	2009	C	FL DOT	DBFOM	AP	\$863M
N. Tarrant Expwy	TX	2009	C	TX DOT	DBFOM	Toll	\$2,047M
I-635 Managed Lanes	TX	2010	C	TX DOT	DBFOM	Toll	\$2,618M
Denver Eagle Rail	CO	2010	C	Denver RTD	DBFOM	AP	\$2,100M
Jordan Bridge	VA	2011	C	Chesapeake	BOO	Toll	\$100M
PR-22/PR-5	PR	2011	O	Gov't Develop. Bank	40-Yr Lease	Toll	\$1,136M
Midtown Tunnel	VA	2012	C	VA DOT	DBFOM	Toll	\$2,089M
Presidio Parkway	CA	2012	F	Caltrans	DBFOM	AP	\$365M

Note: Excludes design-build projects.

Major P3 Impediments

While the U.S. has done much to promote the benefits of P3 in recent years, there are still several major bottlenecks in P3 implementation. The number of P3 projects in the pipeline has not kept

up with the level of private capital and government support. There are three primary bottlenecks that have impeded P3 implementation in the U.S. and the unleashing of the private capital. First is related to reasons not specific to P3 and involves environmental clearances and institutional inefficiencies inherent in infrastructure planning and development processes in the U.S. The second is the lack of effective enabling P3 legislations and institutional capacity to implement P3 projects. The third is the continuing political opposition, public controversies, and related political challenges associated with P3 projects.

The inefficiencies inherent in the infrastructure planning and development processes in the U.S. reach beyond the P3 domain. Continuing efforts are being made at all levels of government to streamline the process. For example, the concept of creating “plug and play” economic zones that are targeted for critical development areas and that are pre-approved for environmental and zoning permits has recently emerged.⁹¹ For P3, innovations have been also sought from the private sector for ways to improve compliance with environmental requirements that, at the same time, improve project efficiency.⁹² The remaining two bottlenecks, however, are specific to P3 and are addressed in some detail in the following.

Promising Signs in P3 Enabling Legislations and Institutional Capacity Building

Due to the “natural monopolistic” nature of infrastructure, effective regulation is the key to the success of infrastructure privatization in serving the best interests of both the general public and the private sector businesses. The U.S. has had considerable experience in successfully regulating privatized rail, air transportation, gas, electricity, and telephone systems. Although most of these privatized industries are primarily in the operations space (OpEx), as opposed to the capacity expansion space (CapEx), the U.S. government has developed an extensive knowledge base in the past several decades, successfully responding to constantly changing regulatory needs, especially in effecting cost-reflective pricing. Unfortunately, this knowledge base is yet to be transferred to the P3 market. Nevertheless, and despite the lack of clarity and guidance in many states’ existing P3 legislations, significant progress has been made in the past few years especially in states and territories like Florida, Virginia, Indiana, Texas, California, and Puerto Rico.

P3 has been more prevalent in surface transportation and 33 states currently have P3 legislation for this sector.^{93,94} The details of the P3 legislation have varied across states in several respects but key aspects of P3 enabling legislations have included (see Table B.2): (1) broad application of P3 legislation beyond highways and roads, (2) acceptance of unsolicited proposals, (3) use of availability payments or shadow tolls as alternative or supplement to toll revenues, (4) authority of lower level agencies to engage in P3 (including veto power), (5) requirement for prior approval by the state legislature before P3s can be developed, (6) whether a non-compete clause prohibiting the public sector from building competing facilities can be included in P3 agreements, and (7) ability to use outside consultants in P3 evaluation and implementation. Among others, the provisions related to availability payments, legislative approval, and non-compete clauses have received most public attention with significant political risk implications.

Table B.2: State Enabling Legislations as of July 2012 (Istrate and Puentes, 2012)

State	Broad Application	Unsolicited Proposal	AP/Shadow Tolls	Lower P3 Authority	Prior Legislature Approval	Non-Compete Clauses	Outside Consultants
Alabama	*		*	*		*	
Alaska							*
Arkansas				*		N	
Arizona	*	*	*	*		*	
California	*	*		*		*	
Colorado	*	*		*			*
Connecticut							
Delaware	*	*			*	*	
Florida		*	*	*	*	N	*
Georgia	*	*	*				*
Illinois	*		*				
Indiana	*			*	*		*
Louisiana	*	*	*	*			
Maine	*	*			*		
Maryland	*	*					*
Massachusetts	*	*					*
Minnesota		*		*			
Mississippi		*		*		N	*
Missouri	*	*		*	*		
Nevada	*	*		*			
North Carolina	*	*			*	N	*
North Dakota	*	*		*			
Ohio	*	*					
Oregon	*	*	*				*
Pennsylvania	*	*	*	*			*
South Carolina							
Tennessee					*		
Texas	*	*	*	*		N	*
Utah		*					*
Virginia	*	*		*			*
Washington	*	*			*		*
West Virginia	*				*		
Wisconsin							

The second component to “P3 enabler” is institutional capacity. The skill sets and mindsets required by P3 are substantially different from those required for a traditional design-bid-build project delivery approach. Building institutional capacity at all government levels has been one of the important challenges. At the federal level, the Federal Highway Administration (FHWA) has started building P3 capacity in the Office of Innovative Program Delivery (IPD), which provides tools, expertise, financing, and other support to state and local governments in their P3 implementations. At the state level, P3 capacity has been built up in various forms. Some have dedicated P3 units with strong central control, such as the Office of Transportation P3 (OPT3) in Virginia, whereas, for others like Florida, resources are embedded within the state’s regional districts with a more decentralized implementation approach.⁹⁵ Both approaches have worked equally effectively. Strong leadership and dedicated P3 units at state and provincial levels were

critical to P3 success in Australia and Canada. Currently, there are only seven states in the U.S. that have a formal P3 office, with only three having dedicated P3 units. More P3 capacity will be needed as the industry matures.⁹⁶

There also has been a profound cultural change in the U.S. construction industry. The P3 market in the U.S. has been dominated by the more experienced Europeans and Australians. These P3 concessionaires—such as Ferrovial, which has been vertically integrated for many years with substantial operational knowledge and financing capacity—have routinely taken equity stakes on U.S. P3 projects, sitting at the head table in contract negotiations. In the past, few U.S. contractors have taken on equity positions in P3 projects and, as a result, they have had less control over how risks were allocated during the construction phase. With the increase in P3 activity, U.S. contractors are starting to embrace the P3 market and beginning to take on a more active role by taking equity positions.^{97,98} No doubt, the role of U.S. contractors will continue to evolve, perhaps in an innovative and unprecedented direction, as the U.S. P3 market unfolds in the future.

Political Challenges Have Been Far Ranging But Most Can Be Mitigated

As mentioned, both emerging and advanced economies outside the U.S. have had their share of public oppositions and political risks in their infrastructure privatization. Some have led to street riots, others to negative press coverage and mounting criticisms of international financial institutions. It is now generally recognized that the biggest threat to private sector investment in infrastructure is not financial, but political.⁹⁹ Multilateral institutions have long discovered what makes or breaks infrastructure privatization projects is not so much the lack of funding but the political process and an efficient interface between the public and private sector participants.¹⁰⁰ The U.S. has been facing its own brand of political risks on P3 projects and the risks have been exacerbated by the 50 states having 50 different sets of political culture and rules of engagement. In a recent business roundtable, for example, there was a general consensus among the leading U.S. infrastructure investment and advisory professionals about the perils of increasingly high P3 political risks encountered in the U.S.¹⁰¹

Key issues underlying the political risks in the U.S. have been wide ranging. Some political risks have been external factors that could not be mitigated easily (e.g., the global financial crisis or macroeconomic shifts, and preferences on purely ideological grounds). Others have involved issues that are of real concern requiring serious policy debates but not germane to P3 only (e.g., tolls and cost-reflective pricing, safeguarding environmental standards). Some have been simply misconceptions and, more often than not, misuse of information on ideological grounds that require better data, education, and communication (e.g., windfall profits for private sector, loss of jobs resulting from foreign participants).

All of these political issues, when taken together, can be grouped into eight different categories with various stakeholders having varying levels of influence and/or control in dealing with the issues (see Table B.3):¹⁰² (1) policy and regulatory framework, (2) institutional capacity, (3)

communication, transparency, and accountability, (4) socioeconomic impacts, both direct/indirect and short-term/long-term, (5) private sector mistrust, (6) loss of control and natural monopoly concerns, (7) misaligned incentives, and (8) other external factors. Judging from the lessons learned both domestically and internationally, many of these political risks are inherently part of P3 projects. In due course, it has been found that these risks can be mitigated by explicitly addressing the underlying causes, by improving policies, regulations, and processes, and through better education of all concerned.

For political risks stemming from shortcomings in policy and regulatory frameworks, establishing clear P3 strategy/enabling legislation/approval protocols and reaching consensus between the legislative and executive branches *before initiating procurement* have proven to be crucial in avoiding potential political land mine. Open and clear policy in the use of P3 proceeds and in safeguarding the environmental and labor concerns have also served as important mitigating measures. As mentioned, it has been found that an effective means to manage and defuse political risks in this category is to properly balance the use of legislative vs. contractual vehicles to effect the P3 policies.

There have been several effective ways to address the lack of P3 institutional capacity. Among others, these have included, e.g., establishing independent P3 units, leveraging resources through interagency secondments, sharing best practices through standardization of contracts where practical, and formalizing P3 education and training programs.¹⁰³ An important aspect of P3 capacity building has been the recognition that the crux of P3 contract management is in operations stage that can last over 50 years. As such, critical to contract administration capability has been the operations-phase knowledge and the wisdom to understand the spirit of the contract as well as the letter of the contract, to sustain the public-private relationship over the project lifecycle.

Lack of communication, transparency, and accountability have been the recurring theme in the P3 political climate. It has been proven that early involvement of the public, local businesses, public employees, labor unions, and other stakeholders can help assess “political feasibility” (even before “financial feasibility” is considered), formulate a smart communication strategy, and avoid potential political controversy. Providing public access to project information can also enhance transparency, along with formal project audits to measure project performance. Objective project performance data have also helped to dispel the political questions about P3’s true merits.

Regarding the political risks resulting from direct socio-economic impacts, such as resistance to tolls or job losses, a few lessons learned from overseas can be helpful, e.g., smooth toll transition plans, employee protection programs, partial employee or union ownership of privatized assets, etc.¹⁰⁴ Despite public resistance, however, there needs to be a continued public debate about “who pays”—in particular, about the relative merits of tax-based vs. user-based funding (and whether costs are to be paid by current and/or future generations)—and “who benefits”—in particular, accessibility for the poor, appropriate returns for the private sector, etc. Considering

the precedents from utility and other privatized industries, the *lifecycle cost-reflective pricing* should be an ultimate aim in these debates to ensure a sustained funding basis for infrastructure improvements in the long run.

Table B.3: Summary of Key Issues Underlying P3 Political Oppositions (Kim, 2012)

Key Issues	Stakeholder Influence/Control				
	Govt.	Concess.	User	Labor	Advoc.
POLICY/REGULATORY FRAMEWORK:					
1. Lack of long-term transportation plan	D	I	I	I	V
2. Lack of clear P3 strategy/policy	D	I	I	I	V
3. Lack of enabling P3 legislation	D	I	I	I	V
4. Lack of consensus between legislative and executive	D	I	I	I	V
5. Sequencing problem; implementation before legislation	D	I	I	I	V
6. Failure to define specific uses of P3 proceeds	D	I	I	I	V
7. Concerns about safeguarding environmental standards	D	I	V	I	V
8. Concerns about safeguarding labor contracts	D	I	V	D	V
INSTITUTIONAL CAPACITY:					
9. Lack of P3 expertise; technical, financial, legal	D	I	I	I	V
10. Lack of P3 project experience	D	D	I	I	V
11. Inadequate concessions contract terms	D	D	I	V	V
COMMUNICATION/TRANSPARENCY/ACCOUNT.:					
12. Lack of public/business/employee involvement in plan.	D	I	D	D	V
13. Lack of communication strategy	D	I	D	D	V
14. Lack of transparency	D	I	D	D	V
15. Lack of accountability, project audit trail & monitoring	D	I	D	D	V
SOCIOECONOMIC IMPACTS:					
16. Tolls/price increases; double taxation concerns	D	D	D	I	V
17. Loss of jobs/less pay (union/employees/local contractors)	D	D	D	D	V
18. Future liabilities and long-term tax burdens	D	I	D	I	V
19. Long-term social equity/distributional concerns	I	I	V	V	V
PRIVATE SECTOR MISTRUST:					
20. Private sector profiteering; high transaction costs	I	D	V	V	V
21. Suspicion of corruption	I	D	V	V	V
22. Taxpayer bailout when P3 bankrupt	I	D	V	V	V
23. Mistrust in commitment to maintenance & repairs	I	D	V	V	V
LOSS OF CONTROL/NATURAL MONOPOLY ISSUES:					
24. Loss of control of public assets; natural monopoly issues	D	I	V	D	V
25. Mistrust in foreign participants; national security issues	D	I	V	D	V
26. Provision for competing facilities (non-compete clause)	D	D	V	V	V
MISALIGNED INCENTIVES:					
27. Use of P3 to solve fiscal budget problems	D	I	D	D	V
28. Off-balance sheet accounting	D	I	V	D	V
OTHER EXTERNAL FACTORS:					
29. Impact from high-profile project failures	I	I	I	I	V
30. General economic downturn	I	I	I	I	V
31. Ideological responses per anti-P3 or pro-P3 beliefs	I	I	I	I	V
32. Mismatch in election cycle and long-term P3 project	I	I	I	I	I

Note: D=direct; I=indirect; V=various

To address private sector profiteering concerns, opportunities to “tighten” project economics should be explored continuously, especially for non-productive transaction costs. As was done in the U.K., mitigation measures in this regard can involve, e.g., building more flexibility into contracts in case of scope change or voluntary termination, sharing the upside whenever possible, including gains from refinancing, and introducing financing competition after the preferred bidder selection to reduce the cost of capital.¹⁰⁵ Where possible and practical, additional financial transparency and project performance data have also helped dispel or confirm private sector mistrust.

In terms of natural monopoly and loss of control issues, the question is not so much who owns the assets but how to establish effective regulations that balances the public need for quality infrastructure and the private need for sustained business. National security concerns about loss of public sector control over vital infrastructure assets and resulting mistrust of foreign participants have been especially acute in the U.S., partly as a backdrop of 9/11. More often than not, however, these mistrust issues, such as local job losses to foreign companies, have been based on misconceptions. One way to mitigate this concern would be for the U.S. contractors to take a stronger role in P3 market by increasing their stakes, establishing stronger teaming relationships with foreign partners, and, as practical, increasing vertical integrations, similarly to those undertaken by their foreign counterparts in the past.

The fiscal problems faced by the state and local governments are serious and extant. In addressing misaligned incentive issues, it should not be forgotten that resource realignment and debt reduction for the public sector is one of the basic motivations behind infrastructure privatization. However, the selection of P3 as a preferred delivery mechanism should be decided on its own merits before other fiscal offsets are considered. In addition, P3 capital proceeds should be used to defease existing infrastructure debts and for other infrastructure spending first, before other allocations are entertained. Lastly, most external factors cannot be controlled and some robustness and flexibility should be built into the P3 legislation and/or contracts, e.g., terms related to voluntary termination, appropriate level of capital reserves, etc.

Given the criticality, the analysis of political risks and their impact on the U.S. P3 market have thus far been mostly anecdotal in nature and not sufficiently rigorous. Cross-country data collection and more rigorous assessment of political risk metrics would be helpful in treating the political risks more explicitly. Such rigor would help to better link the risks directly with investment risk premiums and help understand their ultimate impact on the overall P3 project efficiencies.

Future P3 Outlook

P3 Can Play a Moderate but Critical Role in Improving U.S. Infrastructure and Reducing the Funding Gap

With the dire fiscal conditions currently experienced by all levels of governments, P3 is increasingly recognized as an important, albeit modest, part of the future infrastructure solution in the U.S., especially for delivering large, capital intensive projects. The serious conditions and funding shortages of the U.S. infrastructure have been well publicized in recent years (see Table B.4).¹⁰⁶ In the next 5 years, given the fiscal conditions of all levels of governments, public funds are expected to handle only 47 percent of the total infrastructure investment needs, with the remaining 53 percent, or the \$1.3 trillion in funding gap, to be made up from tolls and other non-governmental sources. Given the historical precedents, P3 can potentially take up 10 to 25 percent of this gap, or between \$130 billion to \$320 billion.

Table B.4: Status of U.S. Infrastructure and Five-Year Projections (ASCE, 2009)

Sector	Overall Grade	Total Investment Needs (\$B)	Total Budgeted (\$B)	Funding Gap (\$B)	Percent Gap
Aviation	D	\$87	\$46	\$41	47%
Rail	C-	63	51.3	11.7	19%
Roads/Bridges	D-/C	930	380.5	549.5	59%
Transit	D	265	74.9	190.1	72%
Inland Waterways	D-	50	29.5	20.5	41%
Dams	D	12.5	5.0	7.5	60%
Levees	D-	50	1.1	48.9	98%
Drinking Water	D-	255	146.4	108.6	43%
Wastewater	D-	255	146.4	108.6	43%
Solid Waste	C+	77	33.6	43.4	56%
Hazardous Waste	D	77	33.6	43.4	56%
Energy	D+	75	45.5	29.5	39%
Parks & Recreation	C-	85	36.8	48.2	57%
Schools	D	160	125	35	22%
Total		\$2,442	\$1,156	\$1,286	53%

U.S. Has Lagged Behind in Global P3 Market But Is Best Positioned to “Do It Correctly”

Europe, Australia, and Asia have had healthy and robust P3 markets in the past 25 years together accounting for 70 percent of the total global P3 investments (see Table B.5).¹⁰⁷ Some of these markets are beginning to wane as the markets mature and saturate. With the ongoing financial crisis, the value of completed P3 projects in Europe tumbled to a 10 year low in 2012.¹⁰⁸ A recent survey also indicated that, in the last two years, institutional investors have also shifted infrastructure allocations markedly away from emerging markets towards developed markets for concerns over political, economic, and currency risks.¹⁰⁹

Table B.5: P3 Market Share by World Region, To Date and Planned (PWF, 2011)

World Region	To Date (1985-2010)		Planned (as of Oct 2011)	
	Value (\$B)	Percent	Value (\$B)	Percent
US	68.4	9%	144.5	22%
Canada	45.3	6%	21.4	3%
Latin America	88.5	11%	95.3	14%
Europe	353.3	46%	281.5	42%
Africa/Middle East	31.5	4%	39.0	6%
Asia/Australia	187.2	24%	89.0	13%
Worldwide	774.1	100%	670.7	100%

As the investment opportunities get depleted in Europe, Australia, and other parts of the industrialized world, the investors are looking to the U.S. and Canada as offering the next wave of infrastructure investment opportunities.¹¹⁰ *Public Works Financing (PWF)* reports that the U.S. share of the global P3 market will increase from 9 percent in the past to 22 percent in the future based on the size of planned P3 projects in the pipeline (see Table B.5). The planned P3 level as of 2011 is estimated to be almost \$145 billion for road, rail, water, and building sectors in the U.S.

Because P3 projects are long-term, their true effects in advanced economies are only beginning to be realized as the operational terms of many projects are coming to fruition. The timing is right for the U.S. to truly benefit from the lessons learned from almost three decades of P3 experiences both from the developing and advanced economies around the world, including the political risk dimensions. Given the anticipated high P3 demand, the U.S. is best positioned to improve upon the past, to *do it correctly*, and to lead the charge in the future P3 market. This trend was evidenced in a recent infrastructure investors' roundtable held in New York, where it was observed that 2012 has been the strongest year for P3 activities in the U.S. and that there is a notable change in the perceptions of P3 from a way of fixing short-term budgetary deficits to genuine partnerships for sharing capital, knowledge, and global best practices that produce long-term benefits.¹¹¹

APPENDIX C: P3 CLIMATE IN CALIFORNIA

P3 Politics

California Energy Crisis and Misconception from Three P3 Projects To Date Have Contributed to Current P3 Political Climate

California was at the forefront of infrastructure privatization in the U.S. It was one of the early pioneers of state-wide P3 legislation with the passage of State Assembly Bill 680 (AB 680) in 1989. Nevertheless, California has had more than its share of politics surrounding P3 projects.

Some political opposition and negative public opinions were directly attributable to the P3 projects themselves but others were more general in nature stemming indirectly from the remnants of the earlier deregulation of electricity and other sectors. Major fiascos from these deregulations, such as the 2000-2001 California energy crisis, have added to the general public's mistrust of privatization as a result.

There have been three P3 projects to date in California: (1) State Route 91 Expressway (SR-91), (2) State Route 125 Toll Road or South Bay Expressway (SR-125/SBX), and (3) Presidio Parkway (Phase 2). Both SR-91 and SR-125/SBX were toll roads authorized under AB 680. Presidio Parkway, AP-based and the most recent, was authorized under State Senate Bill 4 (SB 4) which passed in 2009.

SR-91 was the first P3 transportation project in the U.S., the first to implement variable congestion pricing, and the first fully automated toll road in the world with electronic transponders and free-flow tolling technology. Funding was 100 percent private with no public money and the project became profitable within three full years of operations. Interestingly, the political oppositions to SR-91 was triggered ultimately because the project was too successful. From its opening in 1995, the traffic demand on the expressway was much higher than expected. Legal contention and public furor ensued when CalTrans could not add free general-purpose lanes to accommodate the excess demand due to the non-compete clause in the concession agreement. The concessionaire's high profitability, the near *carte blanche* flexibility in changing pricing structure, and the general sense of unfair private sector *profiteering* created additional political volatility, especially when it came to the subsequent divestiture of the assets. After several political attempts to block the divestiture efforts by the concessionaire, the assets were ultimately sold back to the public sector (Orange County Transportation Authority, OCTA). Despite the surrounding politics, however, SR-91 was largely successful—the concessionaires ultimately recouped their capital and made a profit; OCTA has been able to maintain its financial solvency and has sufficient surpluses from the current toll revenues to fund other improvements in the region; and recent survey indicated that 90 percent of users were satisfied.¹¹²

SR-125 was initially touted as a success story until the concessionaire, Macquarie Infrastructure Group (MIG), declared bankruptcy in 2010 and sold the assets back to the public sector (San Diego Association of Governments, SANDAG). The political issues on SR-125/SBX can be ultimately traced back to the 2007 financial crisis that coincided with the critical post-construction refinancing milestone. San Diego was one of the hardest hit communities in the U.S. when the housing market fell in 2008. This resulted in significantly less than anticipated traffic demand on the toll road, exacerbating the post-construction negative cash flow situation and, with the global financial crisis making it difficult to restructure the construction-phase debt, created almost a perfect storm. There was also a significant construction cost overrun due to the delay in environmental clearance and permitting processes that took almost 9 years. Ultimately, however, SR-125/SBX highlighted the benefits of P3 approach under these risky conditions. The private sector absorbed over 82 percent of the losses, including the writing off of their entire \$130 million equity stake on the project, and none of the losses were transferred to the State.

SANDAG, having purchased the assets at a reduced price, was able to retain the first toll road in San Diego County with cutting edge FasTrak technology, and built 20 years ahead of time.^{113,114}

Presidio Parkway had strong oppositions from Professional Engineers in California Government (PECG), a public employee union made up of 13,000 state-employed engineers and related professionals. PECG brought a lawsuit against Caltrans contesting the legality of the P3 projects on several grounds. In essence, however, PECG's primary concerns were issues of job losses to the private sector and to foreign companies who were selected for the P3 concession.¹¹⁵ The concerns about the job losses to the private sector were not limited to P3 projects. They entailed a broader policy issue about whether the design work should be performed by the government or by private contractor regardless of whether the project is P3 or traditional design-bid-build.¹¹⁶ The concerns about local job losses to foreign companies have also been misconceptions because foreign consortia have generally hired local work force either directly or through their local subsidiaries. Faced with strong local political opposition against tolls, the project was also changed midstream to availability payments. Despite all of this political turmoil, the project achieved its commercial closure in January 2011, financial closure in June 2012, and construction is due to start in late 2012. If built, the project will represent the first AP-based P3 in California.

P3 Enablers

Substantive Progress Has Been Made on P3 Legislation and P3 Institutional Capacity; Recent State Executive Branch Reorganization Promises Additional Progress

Since AB 680 in 1989, several state laws have been enacted to accommodate P3 projects in California. AB 680 authorized up to four P3 transportation demonstration projects, under which SR-91 and SR-125/SBX were implemented. In 2006, AB 521 and AB 1467 were enacted that (1) authorized CalTrans and regional transportation agencies to enter into P3 agreements and (2) allowed the State Legislature 60 days after the submittal of P3 negotiated concession agreements for approval. In 2009, Senate Bill Second Extraordinary Session 4 (SB X2 4 or SB 4) was passed that allowed CalTrans and regional authorities to enter into an unlimited number of P3 agreements and lifted restrictions on the number and type of P3 projects that may be undertaken.¹¹⁷

As a result of SB 4, the Public Infrastructure Advisory Commission (PIAC) was established as a new auxiliary unit within the Business, Transportation, and Housing Agency (BT&H). PIAC's charter was to assist CalTrans and regional transportation agencies in developing P3 financing agreements for high-priority infrastructure projects throughout the state. Currently, PIAC is the only formal public sector institution in California that is dedicated to P3. However, PIAC is an advisory commission that has neither funding nor functional-level capabilities to administer and oversee P3 projects.¹¹⁸ In the recent past, many key government and business leaders and groups, such as the Little Hoover Commission and the Bay Area Council Economic Institute,

have advocated the creation of a state-level P3 procurement center of excellence to support P3 activities.

In addition to CalTrans and regional agencies, the State also authorized local agencies to enter into P3 contracts by enacting a broad and flexible Infrastructure Finance Act (IFA).¹¹⁹ IFA was adopted as AB 2660 in 1996 and authorized local agencies the use of private capital for delivering projects in utilities (water and wastewater), transportation (seaports, airports, roads, bridges, tunnels, commuter and light rail), and building sectors. IFA also allowed local agencies to establish an independent legal authority to administer P3 projects. AB 2660, however, had some restrictions—for example, while allowing local and federal funds, it expressly stated state grants could not be used. In addition, P3s had to be user fee-based, with the responsibility of the rate-setting in the hands of the local government, and a maximum term limit of 35 years.

Governor Brown's recent reorganization of the State executive branch can also help streamline the P3 implementation and strengthen P3 institutional capacity. Notably, (1) creation of Governor's Office of Business and Economic Development ("GO-Biz") has put a significant emphasis on short-term job creation through construction and infrastructure development; (2) the recent incorporation of California Infrastructure and Economic Development Bank (CA I-Bank) into GO-Biz will further help raise infrastructure to the forefront of the State's priorities; and (3) the establishment of a new, separate Transportation Agency should help to streamline complex multi-agency coordination often required of P3 procurements.

In May 2012, a one-of-a-kind California Economic Summit was held by an unprecedented gathering of both government and business leaders to put California's economy back on track. Infrastructure occupied two of the seven major action areas in the Summit, one of which was on infrastructure financing and increased private sector participation. No doubt, the follow-on actions taken by the Summit leaders will also help to strengthen the rationale for P3, for building P3 institutional capacity, for reducing the serious infrastructure funding gap, and for helping to restore the State's infrastructure to a world class level.

P3 Space in Infrastructure Funding Gap

California Infrastructure Funding Gap Estimated to Range Between \$527 to \$765 Billion

Among others, the recent ASCE's 2009 Report Card for America's Infrastructure indicates that California has the two most congested cities in the country (see Table C.1). Much has been written about the condition of California infrastructure, the need for short-term and long-term improvements, the state's infrastructure investment history, and the resulting funding gap.¹²⁰

A range of forecasts currently exists that estimate the state's infrastructure funding gap in the next 10 to 20 years. California's infrastructure spending has historically varied from 1.6 percent of Gross State Product (GSP)—during the decade 1978-1987 that marked the beginning of deregulation (e.g., airline)—to 3.6 percent—during the decade 1957-1967 that marked the Pat

Brown years when the development of much of the state’s existing infrastructure took place. In the last 45 years, the state’s infrastructure spending has averaged around 2.5 percent of GSP on an annual basis. A study by the Bay Area Economic Forum reports a 10-year infrastructure funding gap that could range from \$527 billion (based on 2.5 percent of GSP) to \$737 billion (based on 3.6 percent of GSP).¹²¹ *The Think Long Committee for California* went further and placed the state’s infrastructure “deficit” at \$765 billion.¹²² The Little Hoover Commission in its 2010 report on “Building California: Infrastructure Choices and Strategy” cites the state’s own estimate of \$500 billion in transportation sector investment gap in the next two decades.¹²³

Table C.1: Top 10 Most Congested Cities in the U.S. (ASCE, 2009)

Rank	City/CA	Hours of Delay/ Traveler
1	Los Angeles/Long Beach-Santa Ana, CA	72
2	San Francisco-Oakland, CA	60
3	Washington, D.C.	60
4	Atlanta, GA	60
5	Dallas-Fort Worth-Arlington, TX	58
6	Houston, TX	56
7	Detroit, MI	54
8	Miami, FL	50
9	Phoenix, AZ	48
10	Chicago, IL	46

Given the wide variation in these funding gap projections, some perspective by the World Economic Forum (WEF) may be helpful. WEF recently placed the U.S. at twenty-third in infrastructure quality between Spain and Chile. This ranking reflected the U.S. government expenditures on infrastructure at 2.4 percent of GDP, in contrast to Europe at 5 percent and China at 9 percent of its GDP.¹²⁴ As discussed above, if the State’s infrastructure deficit lies between \$500 billion to \$765 billion in the next 10-20 years, the potential share of P3 in this space could be between \$75 billion to over \$190 billion if a 15 to 25 percent P3 market share is assumed.

Endnotes

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² Kessides, I.N., “Reforming Infrastructure: Privatization, Regulation, and Competition,” A World Bank Policy Research Report, 2004 (co-publication with Oxford University Press).

³ Kikeri, S. and J. Nellis, “An Assessment of Privatization,” *The World Bank Research Observer*, Vol. 19, No. 1, Spring 2004.

⁴ The first P3 model was Private Finance Initiative (PFI) that was launched in UK in 1992. Many other P3 variations have been developed since, e.g., Alternative Financing and Procurement (AFP) in Canada and, more recently, non-profit distributing model (NPD) in Scotland that in essence is PFI with a cap in private sector returns. The primary variations in these P3 models are funding/payment mechanisms that rely on real tolls (user pay), shadow tolls, or availability payments (AP). Shadow tolls and AP, respectively, represent the cases where the public sector pays the private sector based on the volume of users (volume-based) or on the availability of service (service-based).

⁵ For example, in U.K., the percentage share is expected to increase from 10 to 17 percent; in Spain, from 27 to 33 percent; and in Portugal, 97 percent of new highways will be P3. In Australia, P3 is used exclusively for highway projects and the aim is to achieve 25 percent for all infrastructure projects ultimately. In British Columbia in Canada, P3 is a default delivery method for all projects that are Cdn \$30 million or more in cost.

⁶ These acquisitions—e.g., Balfour Beatty acquired PB and Skanska acquired multiple U.S. constructors—are geared to leverage the European’s longer P3 experience with local U.S. construction expertise.

⁷ Infrastructure Investor Week in Review, “2012: The Year of the Politician,” March 15, 2012.

⁸ American Society of Civil Engineers (ASCE), *2009 Report Card for America’s Infrastructure*.

⁹ Public Works Financing (PWF), *2011 Survey of Public Private Partnerships Worldwide*, Vol. 264, Oct 2011.

¹⁰ Infrastructure Investor Week in Review (IIWR), “The Pipeline Runs Dry,” October 18, 2012.

¹¹ Infrastructure Investor, August 1, 2012.

¹² PWF (Oct 2011)

¹³ IIWR, “P3s: No Longer about Upfront Cash,” October 4, 2012.

¹⁴ Bain, R., “Private Finance Rates of Return: Evidence from the U.K.’s PFI Roads Sector,” Institute of Transport Studies, University of Leeds, 2009 (?).

¹⁵ Among others, Basel II/III and Solvency II, respectively, require greater capital holdings and higher liquidity for banks and insurance companies to reduce the risk of insolvency and to safeguard economic stability of these institutions.

¹⁶ World Economic Forum (2011). “The Future of Long-term Investing.”

¹⁷ Clark, G.L., A.H.B. Monk, R. Orr, and W. Scott, “The New Era of Infrastructure Investing,” 2012.

¹⁸ Reason Foundation, Annual Privatization Report (APR), 2011.

¹⁹ PriceWaterhouseCoopers (PWC), “Public-Private Partnerships: The U.S. Perspective,” June 2010.

²⁰ IIWR, “Not Everyone is GIP,” October 4, 2012.

²¹ Previous record was held since 2006 by Goldman Sachs’ \$6.5 billion debut infrastructure fund.

²² IIWR (October 4, 2012).

²³ IIWR, “Infra: the New Fixed Income,” July 5 2012.

²⁴ IIWR, “The Year of Infra Debt,” October 25, 2012.

²⁵ RREEF America LLC, “A Compelling Investment Opportunity: The Case for Global Listed Infrastructure Revisited,” July 2011.

²⁶ IIWR, “Debt Funds Come of Age,” August 23, 2012.

²⁷ Barrett, K. and R. Greene, “Promises with a Price,” *The Pew Charitable Trusts*. Center of States, 2007.

²⁸ PWC (2010)

²⁹ See, for example, (1) “Warren Buffet on Pension Fund Investment Return Assumptions,” excerpted from the Chairman’s letter, 2007 Berkshire Hathaway Annual Report, and (2) “Experts Downwardly Revise Pension Earning Forecasts,” *The People’s Vanguard of Davis*, Jan 30, 2012.

³⁰ CALPERS-California Public Employees Retirement System; WSIB-Washington State Investment Board; VRS-Virginia Retirement System; FSBA-Florida State Board of Administration; MPERS-Main Public Employees Retirement System.

³¹ CALSTRS-California State Teachers Retirement System.

³² IIWR, “For Pensions, By Pensions,” August 30, 2012.

³³ HM Treasury, “Reforms of the Private Finance Initiative,” December 2011.

³⁴ IIWR (July 5, 2012).

³⁵ Investing in mature, regulated utility is analogous to fixed income; developing infrastructure assets in India share common risk/return characteristics as opportunistic real estate; and investing in airports and associated operating companies is common to private equity.

- ³⁶ Mansour, A. and H. Nadji, "Performing Characteristics of Infrastructure Investment," RREEF Research, August 2007.
- ³⁷ Sources: (1) RREEF (July 2011), (2) Reason APR (2011), (3) PWF (Oct 2011), and (4) ASCE (2009).
- ³⁸ RREEF (July 2011).
- ³⁹ This is because (1) third-party funds provide specialty expertise and ability to diversify risks through the funds' portfolio and (2) "core" securities provide guaranteed steady cash flow as dictated by long-term contracts with little capital investment needs.
- ⁴⁰ Broad securities include much of the major engineering and construction community. Pure-play securities largely represent either privatized entities that own formerly divested public assets, e.g., Gatwick Airport, or integrated developers that hold a portfolio of long-term concession contracts, e.g., Ferrovial.
- ⁴¹ For more detailed discussion on the topic, refer to: Clark et. al. (2012).
- ⁴² Preqin, a data provider, recently reported that 73 percent of investors do not believe that limited partner (LP) and general partner (GP) interests are aligned in infrastructure funds.
- ⁴³ Preqin (2010). "Infrastructure: Lost in Transition? Investor Survey Results". Infrastructure Spotlight, August 2010.
- ⁴⁴ Inderst, G. (2010). "Infrastructure as an asset class." EIB Papers. Vol 15(1): 70-105.
- ⁴⁵ A wide spread between bids are sometimes observed in brownfield projects. For example, for Chicago Skyway, the winning bid was 2.6 times higher than the second highest bid with a spread of more than \$1.1 billion between the two bids. This may be an indication that the industry is yet to have level playing field and not sufficiently mature, requiring increased competition.
- ⁴⁶ Innovative Program Delivery, "Financial Structuring and Assessment for P3: A Primer," October 1, 2012.
- ⁴⁷ It is not surprising that the states who have been able to implement P3s successfully are those that have relatively sound budget conditions, i.e., those that are able to provide direct grants or afford to pay annual obligations in AP-based P3s.
- ⁴⁸ California energy crisis is associated with a series of large-scale, unprecedented power blackouts that occurred between June 2000 through May 2001. Largely as a result of the deregulation of electricity market in 1998, the crisis was caused by private sector market manipulations and illegal shutdown of pipelines by Texas energy consortiums. Enron was implicated in the price manipulation and went bankrupt amidst of the related investigations.
- ⁴⁹ PIAC is currently dormant, since a PIAC chair has not been appointed during the reorganization of BT&H.
- ⁵⁰ CH2MHill, "West Coast Infrastructure Exchange, Final Report," November 2012.
- ⁵¹ If we take the higher estimate at \$190 billion and the same 25 percent PR, the value can be almost \$50 billion.
- ⁵² For example, CALPERS acquired 12.7 percent stake in Gatwick Airport in 2010 and, according to CALPERS officials, that transaction resulted in more than 20 percent return per annum. This investment made infrastructure one of the best performing asset classes for CALPERS in the last two years.
- ⁵³ California Association of Public Retirement Systems (CALAPRS), a non-profit corporation founded in 1985, for example, provides education and information exchange support for all public pension systems in California.
- ⁵⁴ For Copenhagen airport, for example, Macquarie Airports was the single investor with a majority stake but has since sold its interest to others.
- ⁵⁵ Gillen, D., "Airport Governance and Regulation: the Evolution over Three Decades of Aviation System Reform, University of British Columbia, October 2008.
- ⁵⁶ As mentioned, the fixed income market has been further declining steadily since the 2007 financial crisis, especially with the dismal returns on municipal bonds that resulted from the collapse of monoline insurance industry. Monoline insurers who provided guarantees on municipal bonds' debt obligations (which impacted the bonds' ratings) collapsed with the 2007 financial crisis because of their investments in subprime mortgages and other derivative markets. See, for example, "Deterioration of Monoline Insurance Companies and the Repercussions for Municipal Bonds" by Wells Fargo Advantage Funds.
- ⁵⁷ The corresponding equity requirements for the concessionaires on AP and toll-based P3 have been 10 and 20 percent of the total project costs, respectively.

- ⁵⁸ A rate of return of 6 to 10 percent is an acceptable range for private sector long term loans. See Berlin, K., R. Hundt, M. Muro, and D. Saha, "State Clean Energy Finance Banks: New Investment Facilities for Clean Energy Deployment," Brookings-Rockefeller Projects on State and Metropolitan Innovations, September 2012.
- ⁵⁹ CH2MHill (2012)
- ⁶⁰ NY Works is often misquoted as another hybrid example. However, NY Works is a public infrastructure program capitalized completed by state appropriations. It is not capitalized by direct equity contributions from the private sector. The program, however, allows P3 as one of the infrastructure delivery mechanisms and, as such, the private sector involvement is only through P3 projects on a project-by-project basis as a part of the private concession.
- ⁶¹ Ordinance Establishing the Chicago Infrastructure Trust and Providing for Certain Related Matters, March 2012.
- ⁶² Merrion, P., "Everything You Know about the Infrastructure Trust is Wrong," This Week's Crain's, August 3, 2012.
- ⁶³ Berlin, K., R. Hundt, M. Muro, and D. Sahal, "State Clean Energy Finance Banks: New Investment Facilities for Clean Energy Deployment," Brookings Rockefeller Project on State and Metropolitan Innovation, September 2012.
- ⁶⁴ Clark, G.L. and A.H.B. Monk, "Principles and Policies for In-House Asset Management," Stanford Global Projects Center, 2012.
- ⁶⁵ Brown, J., "Equity Finance for Social Enterprises," Baker Brown Associates, 2007 (?).
- ⁶⁶ Their survival rates, for example, after three and ten years were 75 and 44 percent, respectively, compared to 48 and 20 percent for other types of enterprises. See Bajo, C. S. and B. Roelants, *Capital and the Debt Trap: Learning from Cooperatives in the Global Crisis*, Palgrave Macmillan, 2011.
- ⁶⁷ Monzon, J. L. and R. Chaves, "The European Social Economy: Concept and Dimensions of the Third Sector," Annals of Public and Cooperative Economics, 79:3/4, 2008.
- ⁶⁸ The United Nations also declared 2012 to be the International Year of Cooperatives (IYC), highlighting their contribution to poverty reduction, employment, and social integration.
- ⁶⁹ National Credit Union Administration (NCUA), "2010 Year-end Statistics for Federally Insured Credit Unions," NCUA 8060.
- ⁷⁰ Wall Street Journal, "Ranking the Largest U.S. Banks," August 30, 2012.
- ⁷¹ California Dept of Financial Institutions. See <http://www.dfi.ca.gov/publications/stats/bankstats/2012/fin2q12.pdf>.
- ⁷² Kessides (2004)
- ⁷³ Kikeri and Nellis (2004)
- ⁷⁴ Many advanced economies were faced budgetary constraints with limits on public debt levels externally imposed by, for example, EU convergence criteria in Europe and General Government Debt Elimination Act (1995) in Australia. These constraints triggered strong incentive to remove debt from public sector balance sheets through the sales of the state infrastructure assets, thus encouraging off-balance sheet accounting practices.
- ⁷⁵ Kikeri and Nellis (2004)
- ⁷⁶ Kikeri and Nellis (2004)
- ⁷⁷ Kikeri and Nellis (2004)
- ⁷⁸ Kessides (2004)
- ⁷⁹ Benitez, D., O. Chisari, and A. Estache, "Can the Gains from Argentina's Utilities Reform Offset Credit Shocks?" In C. Ugaz and C. Waddams Price, eds., *Utility Privatization and Regulation: A Fair Deal for Consumers?*, Northampton, Mass, 2003. et. al.
- ⁸⁰ McKenzie, D. and D. Mookherjee, "Distributive Impact of Privatization in Latin America: An Overview of Evidence from Four Countries," *Economia* 3, Vol. 2, P.161-218, 2003.

⁸¹ See, for example, (1) The Allen Consulting Group (ACG), “Performance of PPPs and Traditional Procurement in Australia,” Final Report, Report to Infrastructure Partnerships Australia, November 30, 2007; (2) HM Treasury, “PFI: Meeting the Investment Challenge,” July 2003; (3) HM Treasury, “PFI: Strengthening Long-Term Partnership,” March 2006; and (4) Brown, J.W., R. Pipeplow, R. Driskell, S. Gaj, M.J. Garvin, D. Holcombe, M. Saunders, J. Seiders, and A. Smith, “Public-Private Partnerships for Highway Infrastructure: Capitalizing on International Experience,” *International Technology Scanning Program*, FHWA-PL-09-010, March 2009.

⁸² The Organization for Economic Co-operation and Development (OECD) is an international organization of 34 member countries that are regarded as high-income, developed economies.

⁸³ OECD, “Infrastructure to 2030, Mapping Policy for Electricity, Water and Transport (Volume 2),” 2007. During the same period, value of privatization in non-OECD countries was about \$400 billion, of which 50 percent was in infrastructure.

⁸⁴ In 2002, PriceWaterhouseCoopers (PWC) performed a rate-of-return analysis on 64 PFI projects implemented between 1995 and 2001 in the U.K., which accounted for 23 percent of the total PFI transactions during that period; a summary of the report is included as Appendix C in HM Treasury 2003).

⁸⁵ OECD (2007). The chart include all infrastructure sectors, including utility (power, energy, telecommunication), transportation, water, waste treatment, building, social infrastructure, and others. The maturity and ranking were based on country risk (including legal, regulatory, political, economic, and financial risks) together with a measure of completed deals as a percentage of GDP. If utility sector is excluded, the U.S. would lag behind Asia and Latin America.

⁸⁶ The first P3 model was Private Finance Initiative (PFI) that was launched in UK in 1992. Many other P3 variations have been developed since, e.g., Alternative Financing and Procurement (AFP) in Canada and, more recently, non-profit distributing model (NPD) in Scotland that in essence is PFI with a cap in private sector returns. The primary variations in these P3 models are funding/payment mechanisms that rely on real tolls (user pay), shadow tolls, or availability payments (AP). Shadow tolls and AP, respectively, represent the cases where the public sector pays the private sector based on the volume of users (volume-based) or on the availability of service (service-based).

⁸⁷ For example, in U.K., the percentage share is expected to increase from 10 to 17 percent; in Spain, from 27 to 33 percent; and in Portugal, 97 percent of new highways will be P3. In Australia, P3 is used exclusively for highway projects and the aim is to achieve 25 percent for all infrastructure projects ultimately. In British Columbia in Canada, P3 is a default delivery method for all projects that are Cdn \$30 million or more in cost.

⁸⁸ Benelux includes Belgium, the Netherlands, and Luxembourg. CE4 are Poland, Hungary, the Czech Republic, and the Slovak Republic.

⁸⁹ “Challenges and Opportunities Series: Public Private Partnerships in Transportation Delivery,” FHWA Office of Innovative Program Delivery (IPD), May 2012 (draft).

⁹⁰ Derived from various PWF project database and TIFIA P3 project profile data.

⁹¹ Nicolas Berggruen Institute (NBI), “A Blueprint to Renew California: Report and Recommendations Presented by the Think Long Committee for California,” November 2011.

⁹² For example, Federal Highway Administration (FHWA) has recently launched Special Experimental Project No. 15 designed to encourage private sector inputs for innovative ways to comply with the current environmental clearance processes that, at the same time, improve efficiency in P3 project delivery.

⁹³ Istrate, E. and R. Puentes, “Moving Forward on Public Private Partnerships: U.S. and International Experience with PPP Units,” Brookings-Rockefeller Project on State and Metropolitan Innovation, December 2011.

⁹⁴ For additional information on state-level P3 legislation, see: http://www.fhwa.dot.gov/ipd/p3/state_legislation/.

⁹⁵ See Istrate and Puentes (2011) for more detailed discussions about P3 units.

- ⁹⁶ Some P3 capacity building has been less formal in nature, but nevertheless effective. For example, the National Conference of State Legislatures (NCSL) Working Group on Transportation P3, established in 2008, supports state legislatures by providing education and guiding principles for potential transportation P3 implementations in respective states. Building America's Future (BAF) was also formed in 2008 to serve as an advocacy group for the use of P3 and other innovative methods for building the nation's infrastructure. BAF is a coalition made up of local and state representatives from 32 states.
- ⁹⁷ Dunning, M., "How U.S. Construction and Engineering Firms are Starting to Embrace the P3 Market," *InfraAmericas*, June 1, 2012.
- ⁹⁸ Domestic players such as Fluor, Walsh Group and Kiewit are becoming increasingly active in P3 space. See "From Hype to Hope," *Infrastructure Investor Week in Review*, September 6, 2012.
- ⁹⁹ IIWR (March 15, 2012)
- ¹⁰⁰ See, for example, "Asia: It's Not All About Capital," *Infrastructure Investor Weekly Review*, September 2011.
- ¹⁰¹ "Making the Case for Private Capital," *Infrastructure Investor*, U.S. Roundtable, October 2011.
- ¹⁰² For more detailed discussion on political issues, see Kim, J., "Understanding Political Risks in U.S. Infrastructure Privatization," Policy Study, *Reason Foundation*, publication pending.
- ¹⁰³ See, for example, HM Treasury (2003, 2006).
- ¹⁰⁴ See, for example, HM Treasury (2003, 2006). Also, see Haarmeyer, D. and P. Yorke, "Port Privatization: An International Perspective," Policy Study No. 156, *Reason Foundation*, April 1993.
- ¹⁰⁵ See, for example, HM Treasury (2003, 2006).
- ¹⁰⁶ ASCE (2009). The validity of the size of funding needs is sometimes questioned. The ASCE data presented in Table 1 are sourced from other references. For example, the data pertaining to roads and bridges were based on *Report of National Surface Transportation Policy and Revenue Study Commission: Transportation for Tomorrow* published in December 2007. For airports, the data were derived from *Airports Council International Airport Capital Development Costs 2007-2011* published in May 2007.
- ¹⁰⁷ PWF (Oct 2011). Unlike Figure A.1, Table B.5 excludes utility sector (power, energy, telecommunications). The bulk of the \$145 billion for U.S. P3 estimate is in transportation and includes rail/transit (\$66 billion), roads/bridges (\$71 billion), water (\$5 billion), and buildings (\$2 billion).
- ¹⁰⁸ IIWR, "The Pipeline Runs Dry," October 18, 2012.
- ¹⁰⁹ Andy Thomson, "Investors Shun Emerging Markets," *Infrastructure Investor*, July 9, 2012.
- ¹¹⁰ *Infrastructure Investor*, August 1, 2012.
- ¹¹¹ IIWR, "P3s: No Longer about Upfront Cash," October 4, 2012.
- ¹¹² Carollo, G., M. Garvin, R. Levitt, A. Monk, and A. South, "Public-Private Partnership for Infrastructure Delivery," Collaboratory for Research on Global Projects (CRGP), 2012.
- ¹¹³ FasTrak is an electronic toll collection system that allow toll collection at full highway speed.
- ¹¹⁴ Carollo et. at. (2012)
- ¹¹⁵ The selected P3 foreign consortium was made up of Hochtief (German) and Meridiam (French).
- ¹¹⁶ In addition, P3s generally makes up no more than 15 percent of overall infrastructure spending and this 15 percent is from new funding that would not have existed if P3 was not used.
- ¹¹⁷ The lift in restriction is effective through January 1, 2017. SB 4 also authorized up to 15 design-build demonstration projects to be undertaken before January 1, 2014.
- ¹¹⁸ PIAC is currently dormant, since a PIAC chair has not been appointed during the reorganization of BT&H.
- ¹¹⁹ It should be noted that state agencies and projects were excluded from IFA to convince PCEG to withdraw its opposition to AB 2660.
- ¹²⁰ See, for example, Bay Area Economic Forum's (BAEF) report "Investing in California's Infrastructure: How to Ensure Value for Money and Protect California's Competitive Position in the National and Global Economy," June 2006.
- ¹²¹ BAEF (June 2006).
- ¹²² NBI (November 2011).
- ¹²³ Little Hoover Commission (LHC), "Building California: Infrastructure Choices and Strategy," January 2010.
- ¹²⁴ Homeland Security News Wire, "U.S. Infrastructure lagging far behind Europe," May 2, 2011.