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# The Political Economy of “P3” Public-Private Partnerships: Chilean Lessons for Rebuilding US Infrastructure



By **Jeff Makholm, PhD**

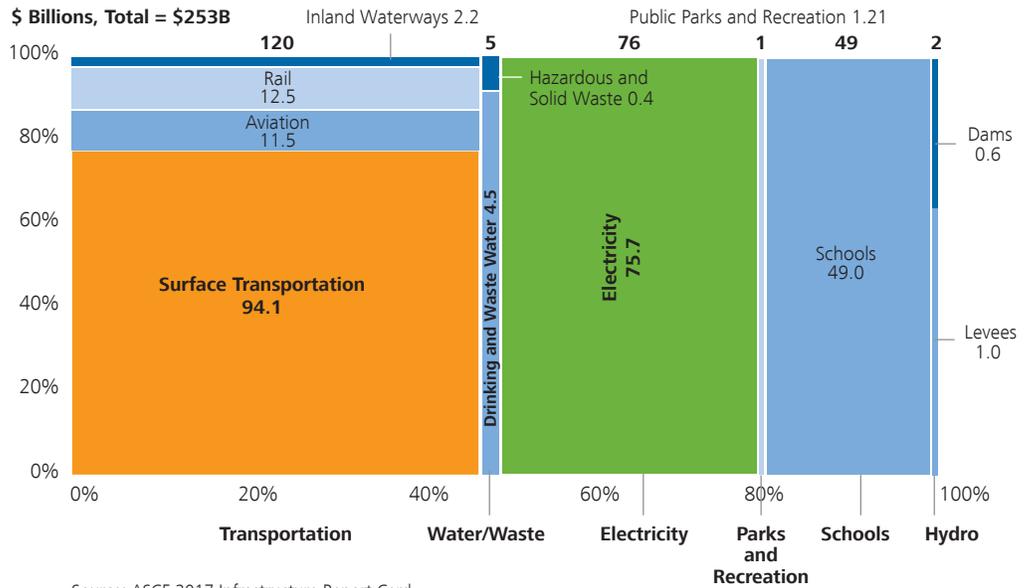
## Introduction

As the United States grapples with strong, popular interest in re-investing in national infrastructure in an era of sharp budgetary constraints, and as President Trump himself announced to Congress an interest in harnessing private capital to assist, it is natural to look to other countries' experience with a type of enterprise that has long been disfavored in the US.<sup>1</sup>

The American Society of Civil Engineers (ASCE) recently scored America's infrastructure a dismal D+ in its latest Infrastructure Report Card, issued on 9 March 2017.<sup>2</sup> It estimates a funding gap of more than \$2 trillion to meet the country's \$4.59 trillion in needs over the next 10 years, in the areas specified in Figure 1.<sup>3</sup>

President Trump stated in his inaugural address that he intends to build “new roads, and highways, and bridges, and airports, and tunnels, and railways all across our wonderful nation.”<sup>4</sup> He has discussed investing in infrastructure through “P3” public-private partnerships, with his campaign suggesting using tax credits for 82% of the equity investment put up by the project consortium in order to attract investors.<sup>5</sup> In the United States, public-private partnerships are a relative rarity, with only five projects completing financing in 2015.<sup>6</sup> Those include the \$4 billion improvement of New York's LaGuardia Airport that will be completed through a partnership (New York is also planning a \$10 billion revamp of John F. Kennedy International Airport).<sup>7</sup> Pennsylvania, meanwhile, entered into a \$1.1 billion partnership to repair 558 bridges throughout the state.<sup>8</sup>

Figure 1. **Estimated Annual Public Infrastructure Spending, 2016-2025**



Part of the reason why P3 projects are common in much of Europe and the rest of the world, but not in the United States, lies in a deep 19th century institutional split in US public and private infrastructure funding. That split drove an evolution of US political and legal institutions designed to provide constitutional protections to property developed through privately funded infrastructure capital. Those institutions sharpened the distinctions between US private and public infrastructure funding in a way not found elsewhere.

Given the budget and infrastructure demands facing both the Trump administration and the nation's aging infrastructure generally, it may be time to address that historical US split and see how economic principles have shaped successful new P3 projects in nations that have recently had to address infrastructure needs for the first time. In this respect, the Latin American experience in the 1990s, particularly the advances in bidding and payment mechanisms developed by Chilean economists, provide a very useful example.

## The Unique Historical Split in Private and Public Funding for Major US Infrastructure Projects.

There is irony in the newfound calls for P3 private participation in the funding of US public infrastructure projects. Large-scale private infrastructure financing *originated* in the United States. But the history of that private funding, and the institutions developed by legislatures and the courts to protect the private property bound up in those investments, created a sharp division between “private” and “public” infrastructure projects—a division with which major new P3 initiatives have to contend in the United States.

The first large-scale infrastructure project in the United States was the construction of the Erie Canal to tie the “Northwest Territories” of the early 19th century (i.e., Illinois, Indiana, Michigan, and Ohio) to East Coast markets. Begun in 1817 and completed in 1825, the canal—a public project financed by New York bonds—linked Lake Erie, one of the Great Lakes, to the Hudson River, which flows to New York City. As recounted by economists L. E. Davis and Douglass North (the latter of whom was the co-recipient of a Nobel Prize in 1993), because of the project’s size and uncertainty, the budding nature of large-scale US capital markets during that period, and the non-existent nature of the agricultural markets that the canal was designed to promote, government involvement in finance was a necessity.<sup>9</sup>

The public seemed to have accepted government participation *until* the widespread commercial failures of the 1839-1842 depression, the Erie Canal among them, left taxpayers with the bill for a project that had far smaller financial returns (which were needed to fund the original bonds) than the original backers had projected. The public’s reaction was an initial refusal to meet state obligations, followed by the passage of legislation in the various affected states to prevent the recurrence of such political problems—which basically amounted to a prohibition on future public funding for such transport projects. Those reactions, which essentially raised the cost of public borrowing, were followed by the railroad-inspired capital markets from the mid-1850s onward—which lowered the cost and uncertainty of private borrowing. The canal experience and the birth of very large-scale private financing for the rail system generally ensured that other large-scale US overland transport systems—e.g., oil and gas pipelines and electricity transmission lines—would not be government-financed. The institutional evolution from public to strictly private financing for US railroads in the mid-19th century was a reaction both to public opinion under unique circumstances and a change in the relative cost of private versus public finance. Outside of the United States, governments built most major overland transport and other infrastructure projects with public funds until late in the 20th century.

In the early 20th century, a newsworthy national task force studied the wisdom of continuing the use of private capital for the building and operation of US regulated infrastructure. Major players in the development of the future US regulation, including economist John R. Commons and future Supreme Court Justice Louis Brandeis, were involved in this study, which represented the lasting confirmation of the role of private capital in US regulated infrastructure businesses.<sup>10</sup>

But the United States still needed institutions to protect property rights in those private infrastructure investments—and it took until the 1940s to solidify them, through a Supreme Court ruling on the first regulatory action taken under new 1930s legislation regarding gas pipelines (the *Hope* decision).<sup>11</sup> The *Hope* ruling was otherwise unremarkable: a typical event within the US common law system where the Supreme Court took up a case brought by an individual or corporation against the state or federal authorities on the grounds that the government’s actions conflicted with the US Constitution’s protections of property. The economists of the time vied with each other to memorialize the decision’s importance. James Bonbright, who more than any other economist studied the basis of the valuation of property in all of its forms in the 1930s, called it “one of the most important economic pronouncements in the history of American law.”<sup>12</sup>

Among other legislative and judicial actions in the 1930s and 1940s, the *Hope* decision solidly defended private infrastructure property, under the US Constitution, from the action of legislatures or administrative agencies in ways not seen in any other country—further sharpening the distinction between private and public infrastructure property. The split is particularly evident in Figure 1, where the long history of US spending on electricity projects is heavily dominated by private capital, while surface transportation is equally heavily dominated by the use of public spending, from the municipal to the federal level. Indeed, municipal funding for local bridge and highway projects grew rapidly, owing to another Supreme Court decision in 1895, which held that the federal government had no power under the US Constitution to tax interest on municipal bonds.<sup>13</sup> Such income tax-free municipal bonds hid part of cost of infrastructure projects in the federal deficit and made private finance for many projects look relatively unattractive.

Perhaps the best example of public spending on surface transportation has been the US interstate highway system. In the 1950s, President Eisenhower signed the Federal Aid Highway Act of 1956, which allocated \$25 billion to be distributed by the federal government over 13 years to fund a 41,000-mile network of highways linking major US cities.<sup>14</sup>

## **The Rest of the World Privatizes Despite a History Dominated by Public Funding of Infrastructure**

Privatization has been one of the more important economic developments of the last two decades as governments try to improve utility services and end the drain on public funds.<sup>15</sup> The privatization trend effectively began in the United Kingdom in 1979. The country was experiencing oil shocks along with the rest of the world, and expenditures were growing faster than revenues. Having committed not to curtail health and social security expenditures, the government was forced to cut public-sector investment. For the government of Prime Minister Margaret Thatcher (newly elected in 1979), privatization emerged as an attractive solution to fiscal problems. Consequently, between 1979 and 1992, 39 UK companies were privatized by share sales. Subsequent privatizations included 10 water companies in 1989 and electricity generation, transmission, and distribution assets in the early 1990s.<sup>16</sup> Numerous countries followed Britain’s lead. Between 1988 and 1993, roughly 2,700 state-owned enterprises in more than 95 countries were transferred to private interests, raising more than \$270 billion.<sup>17</sup>

The consequences of this wave of worldwide privatization have been complex and uneven. In the UK, the government has permanently exited many industries—from airports to railways, public utilities, and telecommunications—with considerable evident success. Both Australia and New Zealand reversed decades of increasing public participation, lack of competition, and declining growth in their economies through their privatization programs.<sup>18</sup>

Other countries had problems with their privatizations, notably Argentina. After seemingly successful privatizations in the 1990s, the economy of Argentina collapsed in early 2002. On 6 January 2002, Argentina unilaterally suspended the US dollar terms in utility concession contracts and called for a renegotiation of terms in all privatized concession contracts, leading directly to rapid default on the dollar obligations of the country's privatized businesses. The result was that the Argentine government attracted a large number of bilateral treaty claims for expropriation. By November 2004, 74 cases were pending before the World Bank's International Centre for Settlement of Investment Disputes (ICSID), of which 30 involved claims against the Argentine government by oil, gas, and utility companies looking to be compensated for losses incurred subsequent to the emergency law.<sup>19</sup>

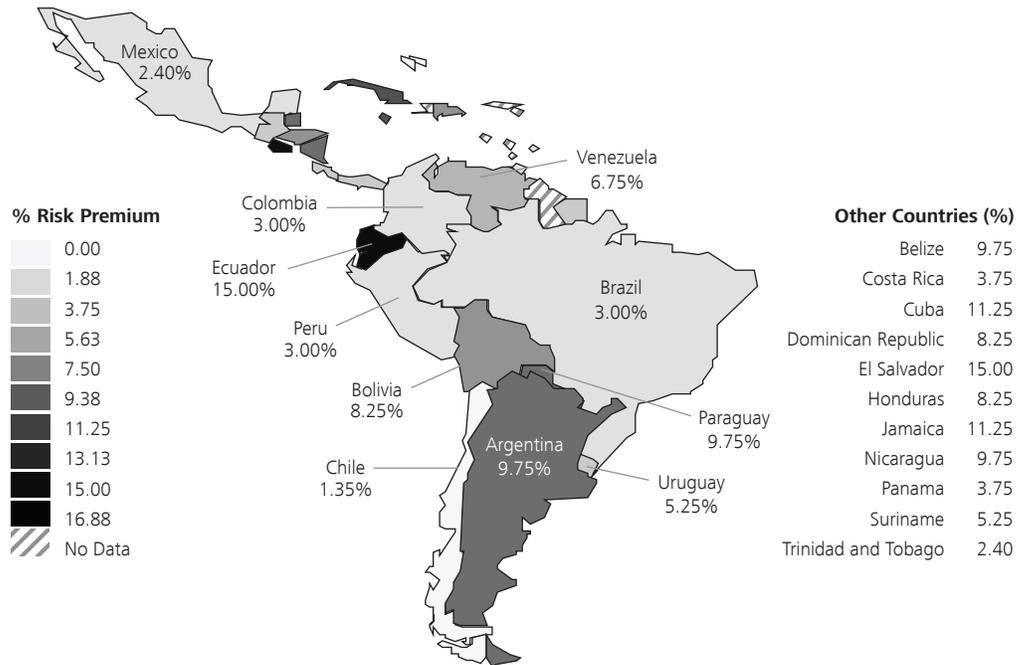
The experience in Argentina confirmed that, when an economy is in crisis and public opinion is sharply against transfers from consumers to investor-owners of transport infrastructure assets, the public comes first. That was as true when Argentina failed to live up to its concession contract obligations in 2002 as when New York failed to live up to its Erie Canal bond obligations in the depression of 1839-1842.

## **Private Concession Failures in Latin America and the Emergence of Chile's Unique Public/Private Stability**

Many governments in Latin America enter into long-term contracts with private parties that provide a public asset or service or construct infrastructure, where the private party bears risk and management responsibility and where compensation is linked to performance.<sup>20</sup> Chile is consistently ranked as a leader in analyses of P3 projects in Latin America. *The Economist Intelligence Unit (EIU)* rates Chile at the top in its evaluation of the ability of Latin American and Caribbean countries to successfully engage in infrastructure partnerships with the private sector—and has done so since the first report in 2009. In its analysis, the *EIU* cites Chile's longstanding investment evaluation system.<sup>21</sup>

Chile is the most credit-worthy country in Latin America, with, among other things, the highest Moody's long-term government bond rating in Latin America of Aa3 in 2016. Shown in Figure 2 for 2010, Chile also has the lowest country risk premium—the additional market-assessed risk associated with investing in a country outside the United States.<sup>22</sup>

Figure 2. Latin American Country Risk Premium Compared to United States

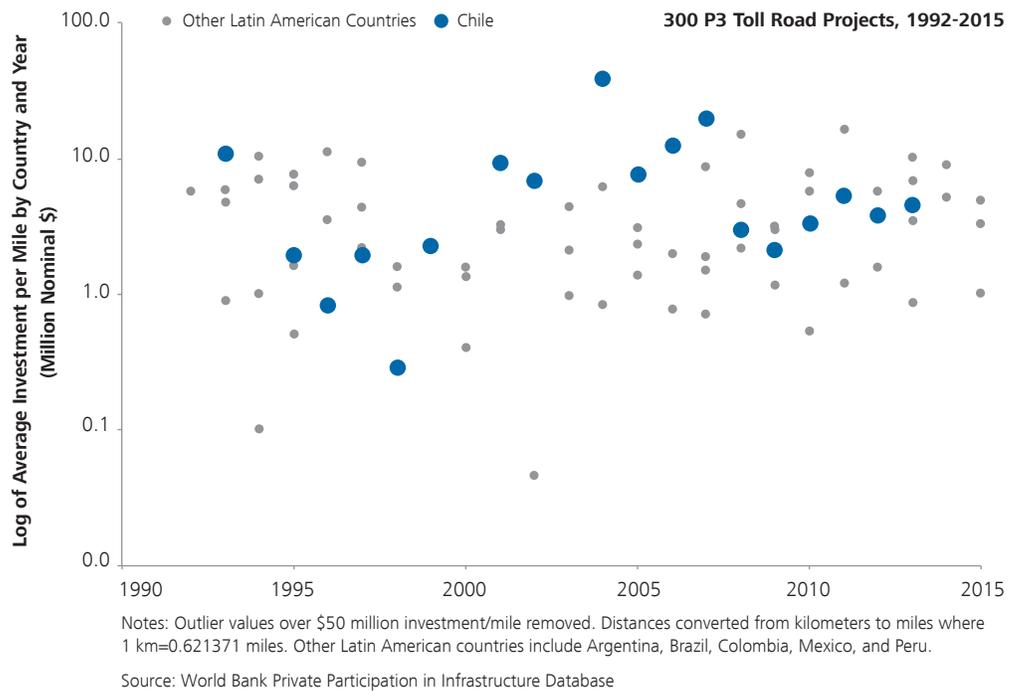


Source: Country risk premium from Aswath Damodaran at New York University Leonard N. Stern School of Business.

Chile’s well-developed economy and mature P3 program make investments through the concessions program highly desirable and valuable endeavors. Other than the 1.35% country risk premium applied to Chilean investments for 2010 (which deals fully with the market’s assessment of the differential investment risk in Chile compared to countries like the United States), there is no particular reason to treat an investment in Chilean infrastructure projects as any different than an infrastructure investment in the United States.

Chile has a long history of P3 infrastructure projects—specifically the build, operate, and transfer (BOT) arrangement. Chile implemented its P3 concession program to improve its highways, approving its first concessions law in 1991 after experiencing growing burdens on its infrastructure.<sup>23</sup> Chilean toll roads are similar in scope to other Latin American countries’ projects. Figure 3 shows the average investment per mile for toll road projects in Argentina, Brazil, Chile, Colombia, Mexico, and Peru (countries with significant private participation programs), highlighting the regular progression of almost yearly Chilean P3 road projects—in an economy not burdened by the kind of ongoing investment disputes evident in other countries in Latin America. Indeed, the Investment Policy Hub of the United Nations Conference on Trade and Development lists only three international arbitration disputes involving Chile, none of which involved P3 concession disputes.<sup>24</sup>

Figure 3. **Chile is One of Many Countries Building P3 Toll Roads**



Between 1995 and 2008, Chile’s Ministry of Public Works (MOP) awarded 55 concessions totaling an investment of \$11.5 billion, with investments ranging from \$8 million to \$850 million. During that time, more than 120 private companies participated in projects, including concessions for airports, seaports, roads, and prisons.<sup>25</sup> Chile’s concession law requires that contract awards take place through a competitive, transparent bidding process open to any foreign or national firm.<sup>26</sup> The winning bidder is responsible for completing the project within the time frame established by the MOP in its tender and maintaining quality throughout the franchise period. The MOP monitors the franchise, and the law establishes a dispute resolution mechanism to resolve any conflicts that may arise.<sup>27</sup> Once the concession expires, either through completion of a specified time period or once a particular monetary figure is reached, ownership of the infrastructure is transferred back to the government.

The bidding process has evolved over time to better define risks and avoid post-bidding disputes. The first concessions were awarded based on several criteria, including toll level, tariff structure, concession period, and payments committed to the state. This method was difficult to apply and did not always result in the most efficient allocation of concessions. The next set of concessions was awarded based on the bidder that offered the lowest toll rate. This method resulted in underbidding and subsequent renegotiation when the concessionaire could not financially sustain the low toll level. Both problems resulted in considerable and notable research by Chile-based economists working on better theoretical frameworks for reliably placing risks with the parties most responsible for them, so as to elicit more reliable bids.

Drawing upon such research, Chile has since adopted the Least Present Value of Revenue, or LPVR, method of awarding concessions. The government specifies the toll rates for proposed projects and awards the concession to the bidder with the lowest present value of toll revenues—meaning the winning bidder is the one that requires the least amount of revenue to recover costs and earn a profit. The government sets the discount rate in the LPVR formula at a level fairly representative of the cost of capital for bidding firms.<sup>28</sup> The concession ends when the present value of the toll revenues equals the original bid, allowing for flexibility on the end date to reach the specified return on investment in the winning bid. The term flexibility ensures that the value of the concession is less dependent on demand projections and traffic fluctuations—elements over which the bidder has little, if any, control.<sup>29</sup> Additionally, Chile offers a minimum revenue guarantee for months when traffic unexpectedly falls below a certain threshold in order to make sure that bidders earn a specified level of revenue.

Chile also utilizes the first successful indexed currency, the Unidad de Fomento (UF), rather than the Chilean peso for P3 concessions—taking another risk away from bidders.<sup>30</sup> The UF is not true money (as it is not a medium of exchange nor does it have a physical embodiment). But, as it adjusts daily for inflation using Chile’s consumer price index, it protects P3 concessionaires from the risk of local input price changes and, thus, facilitates transactions.<sup>31</sup> The economic literature refers to the UF as “self-stabilizing money,” the first appearance of such a currency (proposed by US economist Irving Fisher in 1920) in international trade.<sup>32</sup>

Such innovations have greatly enhanced the reputation of Chile as a reliable public partner in P3 projects and facilitated the steady flow of private capital for competitive products for tolled, surface transportation projects throughout the country. Subject to the detailed specifications in the P3 bids, which focus bidding on the duration of private operation before infrastructure programs revert to the state, the program supports a high degree of certainty regarding the ability of bidders to recoup costs plus reasonable returns—shielded from risks that they cannot control (such as traffic and local input costs). Driven by economic research into the institutions and methods that support *orderly action* between the private and public parties that could otherwise be in conflict, Chilean P3 transport infrastructure projects have been a highly visible, international success.

## Conclusion: The Best Economics for P3 Infrastructure Projects

The governance institutions surrounding infrastructure investments in particular countries are complex products of relatively ancient social customs, public opinion, legislative action, and judicial precedent. As in other spheres of governance in democratic societies, such institutions evolve. And more often than not, the evolution looks less like Darwin's "gradualism" and more like the late evolutionary biologist Stephen J. Gould's "punctuated equilibrium"—with episodic evolutionary leaps resulting from current events.

The leap to private capital funding for US infrastructure came in the early 19th century when, after the experience with the canal linking Lake Erie to the Hudson River, infrastructure promoters found private capital to be more reliable than public capital. The line between US private and public funding for infrastructure sharpened in the first few decades of the 20th century, when US regulatory institutions sprang up in response to questions about the US Constitution's protections for the value of infrastructure property. Privatization of infrastructure in many sectors became a worldwide trend when Thatcher's UK government ran out of public funds and turned to investors for help with many types of infrastructure projects traditionally funded by the public.

It may well be time for US governments, at the federal, state, and local levels, to take a leap and use P3 projects that involve more private funding for traditionally public US surface transportation projects. While it has been true that the challenges of replacing and renovating existing built-out infrastructure are more complex than building new multi-lane toll highways and bridges, new technology in tolling (for new lanes and bridges) provide novel ways to tie infrastructure users with revenues. The innovative economic work underlying the successful implementation of P3 projects in Chile, coupled with new technology in tolling and payments (both to fund projects and to alleviate congestion—just as economist William Vickrey, the 1996 Nobel Prize winner, long ago proposed),<sup>33</sup> can help to facilitate the leap by ensuring flow of capital, and orderly operation and administration of infrastructure projects, for a nation that badly needs to work on that dismal D+ grade.

## Notes

- 1 President Trump: "I will be asking the Congress to approve legislation that produces a \$1 trillion investment in the infrastructure of the United States." See <http://blogs.marketwatch.com/capitolreport/2017/02/28/president-trumps-address-to-congress-live-blog-and-video>.
- 2 ASCE, "2017 Infrastructure Report Card," available at <http://www.infrastructurereportcard.org>.
- 3 ASCE, "2017 Infrastructure Report Card – Economic Impact," available at <http://www.infrastructurereportcard.org/the-impact/economic-impact>.
- 4 Ben Wolfgang, "'Off of Welfare and Back to Work Rebuilding Our Country': Trump Vows Massive Infrastructure Spending," *The Washington Times*, 20 January 2017.
- 5 Brian Christaldi, "Trump's Infrastructure Tax Credits Would Benefit Businesses at America's Expense," *The Washington Post*, 24 January 2017.
- 6 Brian Eckhouse, Amanda Albright, and Martin Z. Braun, "Public-Private Partnerships," *Bloomberg QuickTake*, 10 February 2017, available at <https://www.bloomberg.com/quicktake/public-private-partnerships>.
- 7 "Jager Robinson, "Rethinking 21st Century Needs," *Newsday*, 27 February 2017.
- 8 US Department of Transportation, "Pennsylvania Rapid Bridge Replacement Project, Statewide," 17 July 2015.
- 9 L.E. Davis and D.C. North, *Institutional Change and American Economic Growth*, p. 77-79, 139-143. Even the State of New York had trouble raising the \$7 million needed for a canal that was 363 miles long, 20 feet wide, and 4 feet deep, with a rise of 630 feet and a drop of 62 feet from the Hudson River to Lake Erie.
- 10 National Civic Federation, *Municipal and Private Operation of Public Utilities* (three volumes), 1907. The National Civic Federation investigating committee spent six months intensively studying dozens of publicly owned and investor-owned utilities in the US and UK, with the goal of settling the issue of whether private or public utility infrastructure ownership was in the nation's best interest. In recommending against public ownership, the committee's report helped shape a future of investor-owned utilities in the United States. The importance of this report in laying the foundation for private utility ownership, in a methodical and disinterested manner, was well-recognized at the time. See W. B. Munro, "Review: The Civic Federation Report on Public Ownership," *Quarterly Journal of Economics*, Vol. 23, No. 1, 1908, p. 161-174. For an insightful personal recollection of the work of the Committee on Investigation that produced the report, see: J.R. Commons, *Myself*, p. 111-120.
- 11 *Federal Power Commission et al v. Hope Natural Gas Co*, 320 U.S. 591 (1944), p. 603. The Hope Natural Gas Company was a Standard Oil Company gas pipeline subsidiary that filed suit against the Federal Power Commission (FPC) over its first ruling under the Natural Gas Act of 1938. With the *Hope* decision, the Supreme Court set a new standard for determining "just and reasonable" regulated returns for private infrastructure business.
- 12 See J.C. Bonbright, "Utility Rate Control Reconsidered in the Light of the Hope Natural Gas Case," *The American Economic Review*, Vol. 38, No. 2., 1948, p. 465 and *The Valuation of Property*, Volume II, McGraw-Hill Book Company, 1937. Bonbright was the regulator's expert witness in the *Hope* case.
- 13 *Pollock v. Farmers' Loan & Trust Co.*, 157 U.S. 429 (1895).
- 14 US Department of Transportation, "June 29, 1956: A Day In History - 55th Anniversary of the Interstate Highway System," updated 18 November 2015, available at <https://www.fhwa.dot.gov/interstate/thisday.cfm>.
- 15 Nobel Laureate and economist Gary S. Becker notes that "[t]he privatization revolution sweeping the world surely ranks among the remarkable economic developments of the past few decades." Gary S. Becker, "Surprises in a World According to Adam Smith," *Businessweek*, 17 August 1992, p. 16.
- 16 David M. Newbery, *Privatization, Restructuring, and Regulation of Network Utilities*, MIT Press, 1999, p. 13.
- 17 Energy Information Administration, *Privatization and the Globalization of Energy Markets*, October 1996, p. 4.
- 18 Australia produced what is probably the best written national policy of all, which led to that nation's moves to promote privatization and competition in its economy—a report still revered there. See *Report by the Independent Committee of Inquiry*, National Competition Policy, AGPS, Canberra, 1993 (referred to as the "Hilmer Report" after its chair, Frederick G. Hilmer, then Dean and Director of the Australian Graduate School of Management, University of New South Wales).
- 19 Anouk Honoré, "Argentina: 2004 Gas Crisis," *Oxford Institute for Energy Studies*, November 2004.
- 20 World Bank Group, "Module 1 PPP Basics – What and Why," *Public Private Partnerships Reference Guide Version 2.0 PPP Knowledge Bank*, 2014, p. 3-4, available at <https://pppknowledgebank.org/ppp-cycle/basics>.
- 21 "Evaluating the Environment for Public-Private Partnerships in Latin America and the Caribbean: the 2014 Infrascope," *The Economist Intelligence Unit*, p. 28.
- 22 A. Damodaran, "Country Default Spreads and Risk Premiums," 2016, available at <http://pages.stern.nyu.edu/~adamodar>.
- 23 The concessions law was amended in 1993, 1996, and 2010. See A. Hill, "Foreign Infrastructure Investment in Chile: The Success of Public-Private Partnerships through Concessions Contracts," *Northwestern Journal of International Law & Business*, 32:165, 2011, p. 173-175, 177, 179.
- 24 Investment Policy Hub, "Chile - As Respondent State," available at <http://investmentpolicyhub.unctad.org/ISDS/CountryCases/41?partyRole=2>.
- 25 Andrew Hill "Foreign Infrastructure Investment in Chile: The Success of Public-Private Partnerships through Concessions Contracts," *Northwestern Journal of International Law & Business*, 32:165, 2011, p 166, 175-176.
- 26 C. C. Lorenzen, M. E. Barrientos, and S. Babbar, *Toll Road Concessions: The Chilean Experience*, PFG Discussion Paper Series, Number 124, p. 4., and E. Engel, R. Fischer, and A. Galetovic (1999). *The Chilean Infrastructure Concessions Program: Evaluation, Lessons, and Prospects for the Future*, Stanford Center for International Development, Working Paper No. 40, p. 15.
- 27 Engel, et al., 1999, p. 16, Lorenzen, et al., p. 5.
- 28 E. Engel, R. Fischer, and A. Galetovic, "Privatizing Roads – A New Method for Auctioning Highways," Viewpoint Note No. 112, 1997, p. 3 and J. M. Vassallo, "Traffic Risk Mitigation in Highway Concession Projects: The Experience of Chile," *Journal of Transport Economics and Policy*, 40:3, 2006, p. 364.
- 29 Hill (2011), p. 188-189. Also see E. Engel, R. Fischer, and A. Galetovic "Least-Present-Value-of Revenue Auctions and Highway Franchising," *Journal of Political Economy* 109:5, 2001, p. 993-1020.
- 30 R. J. Shiller, "Indexed Units of Account: Theory and Assessment of Historical Experience," *Indexation, Inflation, and Monetary Policy* ed. Fernando Lefort and Klaus Schmidt-Hebbel, Santiago, Chile, Central Bank of Chile, 2002, p. 106. The Central Bank of Chile defines the UF as "one of the indexation systems authorized by the CBCh for money credit transactions in domestic currency performed by banking and financial institutions, and savings and credit cooperatives. This unit is indexed daily as from the tenth day of each month and until the ninth day of the following month to the geometric average rate of variation of the consumer price index (CPI) during the calendar month preceding the period for which this unit is being determined. Further methodological background of this unit may be found in Chapter II.B.3 of the Compendium of Financial Regulations (CNF), available [on] the CBCh's website: [www.bcentral.cl](http://www.bcentral.cl)." See [http://si3.bcentral.cl/Siete/secure/common/Metadatos\\_Cuadro.aspx?codCuadro=UF\\_IVP\\_DIARIO](http://si3.bcentral.cl/Siete/secure/common/Metadatos_Cuadro.aspx?codCuadro=UF_IVP_DIARIO).
- 31 Shiller (2002), p. 105.
- 32 R. E. Hall, "Irving Fisher's Self-Stabilizing Money," *The American Economic Review*, 87:2, 1997, p. 436-438.
- 33 Richard Arnott, *William Vickrey; Contributions to Public Policy*, Dept. of Economics, Boston College, October 1997, available at <http://fmwww.bc.edu/ec-p/wp387.pdf>.

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## Contact

For further information and questions, please contact the author:

**Dr. Jeff D. Makholm**

Managing Director

+1 617 927 4540

[jeff.makholm@nera.com](mailto:jeff.makholm@nera.com)