

Chapter 4

Renegotiation of transportation public private partnerships: The United States experience

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Public private partnerships (PPPs) typically rely on long-term contracts between participants. When conditions arise that fall outside the expectations embodied in the contract, one party may seek to renegotiate the contract terms. Globally, the frequency of PPP contract renegotiations has been sufficient to raise questions regarding why these events occur and what their consequences are for the projects and society. The literature highlights four relevant causes behind renegotiation occurrences: unexpected exogenous changes, the complexity of the contractual relationship, winner's curse and rent seeking behaviour.

This chapter examines the United States experience with highway PPP renegotiations, including four types of event: contract modifications, defaults, bankruptcies and buyouts. While the United States highway PPP market has grown gradually, failure to understand renegotiations and their potential consequences may dampen the market and adversely affect national infrastructure investment efforts. The analysis finds that insufficient evidence exists to disentangle the drivers of renegotiation in the United States, although exogenous changes and contractual relationship complexity appear to be paramount. The analysis highlights the distinct political and institutional environment that shapes highway PPP renegotiations in the US, suggesting the need for continuing and sensible analysis to effectively manage the undesirable consequences of renegotiations.

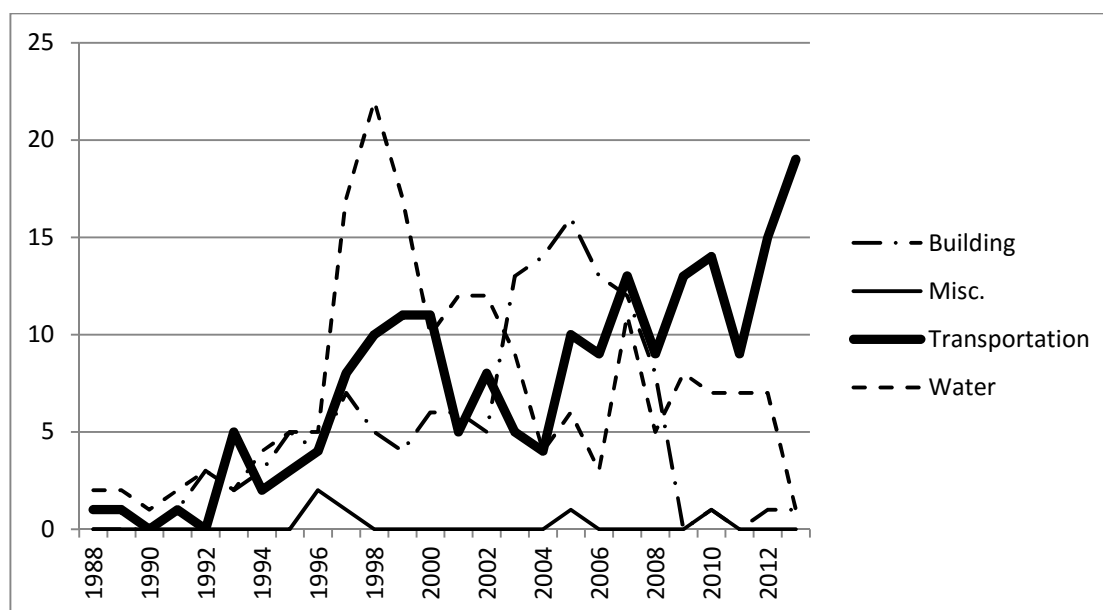
Contract renegotiation allows contract participants to accommodate changes brought on by unexpected state changes not accounted for in original (incomplete) and often long-term contract relationships (Hart and Moore, 1988). While parties to a contract might desire agreements that account for every contingency and preclude future renegotiations, such contracts would be prohibitively expensive to develop. As a result, compromises are required. However, this often enables contract parties to behave opportunistically with asset specificity, necessitating sometimes costly renegotiations of earlier contractual agreements (Klein, Crawford and Alchian, 1978; Williamson, 1996).

This study focuses on contract renegotiation within the United States highway public-private partnership (PPP) market. Contract renegotiation is common in the private sector, especially in finance (Roberts and Sufi, 2009) and labour contracts facing unexpectedly high inflation (Rich and Tracy, 2013). Considering infrastructure PPPs' long-term nature, inherent uncertainty and need for sophisticated expertise, one may expect contract renegotiations to form an important component of the PPP contract process (Saussier, Staropoli and Yvrande-Billon, 2009). However, a number of unique complexities arise when contractual renegotiations involve the public sector. In addition, when renegotiation possibilities emerge in the infrastructure PPP context, public perceptions can be very negative. Observers may suspect that such renegotiations result from poor planning or opportunistic behaviour by parties seeking rent at the cost of users and taxpayers. All these factors make PPP contract renegotiations a fruitful topic for research.

In addition, a deeper understanding of PPPs may provide particular assistance for policy makers, especially in the transportation sector. Alternative procurement mechanisms for transportation infrastructure investment have experienced growing interest in the United States (US Department of the Treasury, 2014) and PPPs in particular have become increasingly popular, as severe budgetary and financial constraints drive governments to employ project equity and debt to access private sector funding and financing (Engel, Fischer and Galetovic, 2006; Small, 2010). Figure 4.1 shows the growing trend in United States PPPs reaching financial closure each year between 1986 and 2013, across four infrastructure sectors. The number of deals closing annually increased rapidly during the mid-1990s and has fluctuated since then. The transportation sector in particular included increasing numbers of projects during this period, especially since 2010, despite some dips in the 2000s. In total, 512 PPP projects reached financial closure across all four sectors by the end of 2013. While the number of United States transportation-sector PPPs remains relatively small compared to other world regions, the highway and tolled highway subsectors have provided the largest proportion of PPPs in recent years.

Despite PPPs' growing popularity, an inadequate understanding of what drives renegotiation may affect the approach's future viability. Several notable United States highway PPP renegotiation and bankruptcy cases have received wide attention and analysing why these occurred and drawing policy conclusions may inform future PPP implementation. The existing literature focuses on Latin American and European experience with PPP contract renegotiations, but it lacks an adequate analysis of the United States context. Knowledge of foreign market experiences is valuable, but the United States PPP market's unique characteristics, like its combination of common law, a federal system of government and its bankruptcy law, may have practical implications for how economic institutions evolve and how renegotiations proceed (Beck, Demirgüç-Kunt and Levine, 2003; Katsivela, 2007; La Porta, Lopez-de-Silanes and Shleifer, 2008; Qian and Weingast, 1997; Cirmizi, Klapper and Utamchandani, 2012).

Figure 4.1. Number of DB & PPPs financial closes in the United States by sector, 1986-2013



Note: PPPs of all contract types, including concessions, management contracts and Design-Build contracts.

Source: *Public Works Financing Newsletter*, 2014.

As a result, this study explores the United States PPP renegotiation experience by addressing the following research questions: (1) How has the United States experienced highway PPP renegotiations? (2) Does the United States market demonstrate any distinct characteristics with regard to the drivers of renegotiation?

While the term “PPP” may refer to a variety of contracts between public agencies and private firms, our interests reflect the Organisation for Economic Co-operation and Development’s (OECD) definition:

“an agreement between the government and one or more private partners (which may include the operators and the financiers) according to which the private partners deliver the service in such a manner that the service delivery objectives of the government are aligned with the profit objectives of the private partners and where the effectiveness of the alignment depends on a sufficient transfer of risk to the private partners (ITF, 2008).”

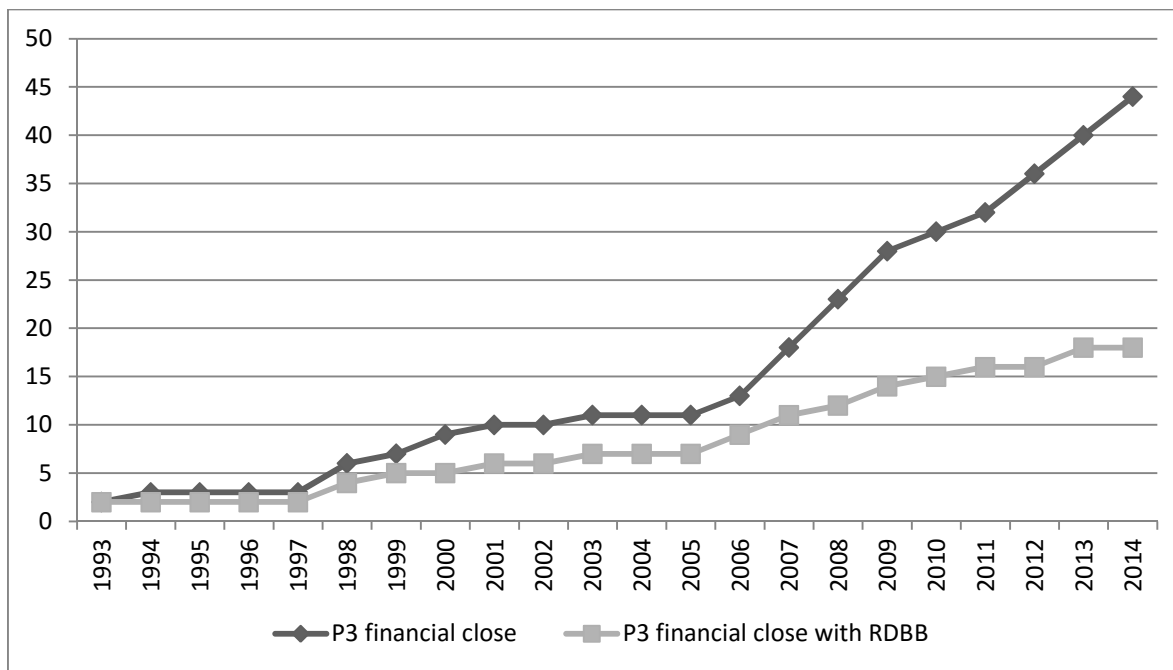
In the context of this study, we employ the term “PPP” when referring to infrastructure projects and facilities delivered through arrangements where private firms partner with a public agency in delivering and providing a service, including Design-Build-Operate-Maintain (DBOM), Design-Build-Finance (DBF) and Design-Build-Finance-Operate-Maintain (DBFOM), but not Design-Build (DB).

Turning next to renegotiation, the theoretical literature often defines the term broadly to include any modifications to PPP concession contracts (Guasch, 2004; Guasch, Laffont and Straub, 2008). The empirical literature, in contrast, tends to consider only major revisions to contractual agreements that the original contracts did not account for (Guasch, Laffont and Straub, 2008). Given this chapter’s case study approach, we require a broader definition to help us understand the nuances of the United States PPP market. Consequently, in this chapter we will analyse, under the definition of renegotiation, the following events: contract modification, defaults, bankruptcies and buyouts (RDBBs). We define PPP contract modification to include modifications to PPP contractual agreements involving associated legal

processes. Defaults occur when the private partner fails to meet the debt service requirements. Bankruptcies occur when the corresponding legal process is used for an illiquid or insolvent firm to pay its debts. Buyouts of the private consortium occur when the new owners buy the PPP project. We believe our definition does not substantially alter the literature’s conventional view, although we acknowledge that our perspective is motivated primarily by historical events in the United States PPP market¹.

Due to the small number of PPP renegotiation cases in the United States highway sector – see Figure 4.2 where we accounted for 18 projects – we explore the research questions through a series of case studies. Ultimately, the analysis highlights several unique characteristics of the US PPP market. First, the 2008 financial crisis acted as an external shock to a number of United States highway PPPs, directly and indirectly affecting demand for these facilities. Second, contractual complexities may explain why some PPP projects, particularly early ones, underwent renegotiations. Third, partner inexperience, both public and private, as well as underdeveloped institutional environments, influenced several cases. Overall, we find that the factors driving PPP contract renegotiations are very complex. Attributing a renegotiation case to any single factor or cause would be naive. Furthermore, empirically validating several theoretical explanations proved difficult (e.g. opportunism and the “winner’s curse” effect). Often, only circumstantial evidence is available. To conclude, we suggest some directions for further analysis.

Figure 4.2. **Cumulative highway PPP financial closes**
Total & renegotiation: 1993-2014



Sources: Public Works Financing Newsletter, 2014.

The next section summarises the theoretical and empirical literature regarding PPP renegotiation and the following section presents six case studies. The final section discusses the case study findings and offers concluding remarks.

Literature review

Drivers of renegotiation: Theory

Renegotiations can occur for several reasons. Economists, for example, have focused on the inherent incompleteness of PPPs' contractual agreements (Guasch, 2004). Given infrastructure projects' complexity and uncertain environments, contracts between public agencies and private partners cannot account for every contingency. As a result, incomplete contracts may cause renegotiations due to both strategic and non-strategic factors.

The perception that renegotiations produce negative consequences for the public arises from literature focused on opportunistic behaviour by the private and the public sectors (Guasch, 2004). For instance, PPP actors might pursue contract renegotiation as a strategic or opportunistic response to rent extraction opportunities, even at the expense of other parties in the deal. Both government and private actors can behave opportunistically, against each other or against the public. In the government case, incumbent politicians might use PPPs as an off-balance-sheet mechanism to increase debt for infrastructure (Engel, Fischer and Galetovic, 2001; Engel, Fischer and Galetovic, 2009), expecting increases in infrastructure investment to produce favourable political outcomes.

Alternatively, private partners might behave opportunistically by winning PPP contracts with low offers, only to hold up the government later by asking for higher compensation via renegotiations (Guasch, 2004). Given the often prohibitive financial and political costs associated with soliciting new firms, the sponsoring public agency, at a disadvantage, may succumb and agree to change the terms as demanded.

The Mexican highway case offers a well-known example of such bidder opportunism. The government of Mexico granted 52 highway projects to private contractors during the 1990s, but many bids employed extremely optimistic forecasts. As a result, the government was forced to refinance the highways in 1997 at a cost of USD 3.3 billion².

Public and private partners involved in a PPP project may also pursue contract renegotiation in order to defend themselves against potentially negative outcomes. The literature suggests three causes of non-strategic renegotiation: a) exogenous changes; b) inadequate preparation for complex contractual relationships; and c) ruinous agreements generated by excessive competition during the bidding process (known as the “winner’s curse”).

In the first case, renegotiations can help adapt the original contracts to current environment when unexpected exogenous events like macroeconomic shocks occur (De Brux, 2010; Guasch, Laffont and Straub, 2008). Abrupt fluctuations in supply prices, interest rates or regional economic activity can profoundly affect a PPP project's financial performance. In these instances, the project's financial equilibrium changes without inducement by either the public agencies or the private firms. Similarly, before using *force majeure* clauses after events like earthquakes, storms or riots, the parties may try to maintain the relationship through renegotiations.

The financial crisis in 2008, for example, likely triggered a number of United States highway PPP renegotiations. Such shocks can have direct effects, given the close association between macroeconomic output and travel demand. Intuitively, a highway project's travel demand decreases during a recession, lowering the facility's revenue. In addition, the 2008 financial crisis' impacts in the housing sector undermined travel demand. Several highway PPPs appeared financially viable given assumptions regarding increasing regional demand. During the crisis, however, many development projects stalled,

lowering demand for transportation facilities. Looking internationally, Guasch and co-authors highlight the 2001 Argentinean currency devaluation and Brazil's similar experience in 1999 (Guasch, Laffont and Straub, 2003). The authors suggest that uncertainty surrounding such events and the lack of guiding principles for readjustment introduce regulatory risk for PPP projects.

The second case involves situations with very complicated contract development, especially when adequate bureaucratic capabilities are lacking (Saussier, Staropoli and Yvrande-Billon, 2009). For example, public agencies may authorise PPP executions without adequate project management, legal and/or financial staff. The private sector might also lack adequate staff or PPP experience. Confusion often emerges under these circumstances, motivating either or both partners to consider renegotiation. Which party initiates the process depends on which party the ambiguity favours.

The third case, referred to as the winner's curse, develops when bidding processes produce ruinous agreements. This situation may occur, for instance, when a public agency puts an existing toll road concession out for bid. The winner would make a financial arrangement to pay the government upfront to operate and maintain the facility for a pre-determined period. Subsequent toll revenues would cover the debt obligation as well as the facility's operation and maintenance costs. Since the facility's physical condition and future demand are often unknown, firms submit bids based on limited information with respect to the asset's true value. Auction processes favour the highest bids, potentially selecting a firm that overestimated the asset value. In such cases, unexpectedly low profits or even losses may result. After executing the contract, the winner may discover the concession's financial unsustainability and may request a contract renegotiation to continue operating the facility (Thaler, 1988)³.

A survey of empirical literature

While the literature lacks a clear-cut test to determine why any particular renegotiation takes place, several empirical studies have investigated PPP renegotiations outside the United States. Although far from comprehensive, this section reviews some of the findings.

A number of studies have summarised statistics pertaining to PPP renegotiations in the Latin American transportation sector. An analysis of 218 Latin American transport concessions between 1989 and 2000 showed that 45% of the concessions underwent a renegotiation process. Fifty per cent of these were initiated by the private partners (Guasch, Laffont and Straub, 2008). Similarly, an earlier study of the Latin America and Caribbean region from 1985 to 2000 found that 55% of transportation concessions faced renegotiation, compared to 9.7% for electricity concessions and 74% for water and sanitation (Guasch, 2004). The study also found that, on average across all sectors, renegotiation occurred two years after the contract award. In the transportation sector, however, renegotiation occurred after three years on average, usually during the construction process, an unexpected result that usually is linked to private opportunism, as the private partner has the upper hand and the public sector may not be able to find an adequate substitute company to take over the project. In addition, renegotiation occurred more frequently after competitive bidding (46% of concessions) than after bilateral negotiations (8%), offering some support for the winner's curse theory. Renegotiations were also more prevalent under lowest tariff award criteria (60%) and under requirements for private partner investment in the contract's underlying asset (70%), and occurred more frequently under price caps (83%), probably because they made the private sector more vulnerable to external shocks. Table 4.A1.1 summarises additional findings.

Guasch and co-authors developed a model for contract renegotiations initiated by private contractors, empirically estimating factors associated with 307 PPP renegotiations in five Latin American countries' transportation and water sectors (Guasch, Laffont and Straub, 2008). The authors found that

having an established PPP regulatory environment reduced the probability that a PPP project would undergo renegotiations. The regulatory framework helped prevent mistakes, decreased the risk of disruptive modifications to contractual agreements and provided a means for both partners to address contingencies. The authors also found an association between price cap provisions⁴ and higher renegotiation probabilities; the greater risk to private partners under price caps increased agreement fragility. Private investment was also associated with significantly higher renegotiation probabilities, as were minimum revenue guarantees, introduced to protect private partners. The authors argue that revenue guarantees lower efficiency incentives while raising incentives for strategically aggressive bidding. In addition, the authors found that most of the statistically significant variables, namely, regulator existence, price cap regulation, concession duration, elections, economic growth, etc., generated the same directional effects for both government-initiated and firm-initiated renegotiations.

As regards government-initiated PPP renegotiations, the literature has also found links between institutional instability and politically motivated renegotiations initiated by public agencies to extract rent from private firms (De Brux, 2010). Guasch et al. discuss a “typical” case where a newly-elected political authority, seeking voter approval, unilaterally decides either to dishonour the initial contract’s toll increases or to lower existing tolls (Guasch, Laffont and Straub, 2006). The authors formalise such renegotiations, finding that contract designs, inadequate regulatory frameworks, deficient institutional environments and external shocks all increase the probability of government-initiated concession renegotiations. These findings support the public-sector opportunism and the exogenous shocks and complexity arguments. The authors argue that these factors have distinct effects for public agency-initiated renegotiations compared to renegotiations initiated by private partners. In contrast, private financing and investment requirements decreased the likelihood of government-initiated renegotiations but increased the likelihood of renegotiations initiated by private partners. Higher corruption levels, conversely, increased government-initiated renegotiations while decreasing renegotiations led by private partners.

The literature also finds institutional effects for private partner opportunism. Athias and Nuñez empirically investigated 49 toll road concessions around the world, focusing on the relationship between competition levels during initial bidding and renegotiation likelihoods (Athias and Nuñez, 2009). Analysing differences between original traffic forecasts, as included in winning bids and actual traffic levels, the authors find an association between higher numbers of bidders in toll road concession auctions (more competition) and aggressive bids. This finding supports the winner’s curse explanation for renegotiation. The analysis shows a stronger effect when public procuring agencies withhold their traffic forecasts while soliciting bids. The authors also demonstrate a stronger winner’s curse effect when the public agency has limited experience with PPPs (civil law countries or countries lacking stable institutions)⁵. In other words, bidders behave strategically and the winner’s curse effect is stronger when renegotiations are easier.

Case studies

Table 4.A1.2 shows the geographic dispersion of highway PPP projects with financial close in the United States (45) and those that have had renegotiations (17). Out of these 17 projects, seven had contract modification, six defaulted, five went bankrupt and twelve were bought up. We examine the renegotiation experiences of six United States highway PPPs, or a third of the total to date. The six cases are: the Dulles Greenway (Virginia), Pocahontas Parkway (Virginia), the Elizabeth River Crossings (ERC, also known as Midtown and Downtown Tunnels, Virginia), State Route 91 Express Lanes (SR-91, California), the South Bay Expressway (SBX, California) and the Indiana Toll Road (Indiana). We selected these cases to encompass the diversity of United States experiences with PPP highway

renegotiations, especially across different geographies and years. We are including two cases from the West coast, one from the Midwest and three from the East coast. While the two cases from California originate from efforts done at the end of the 1980s, one of the Virginia cases, ERC, had its financial close in 2012. We included three cases from Virginia to understand the evolution of a state that is particularly active in the PPP market and that plans to pursue this further⁶.

As shown in Tables 4.A1.3 and 4.A1.4, the six projects were developed in the two decades between 1993 and 2012 and they vary across several metrics: design characteristics, road length, road opening date and the time of financial closure. Newly-constructed roadway lengths range from relatively minor new construction (the Indiana Toll Road was a brownfield project) to 14 miles (22.5 km, the Dulles Greenway). Some projects, like the Otay River Bridge (SBX) and the new Midtown Tunnel (ERC), include sophisticated technical designs; others do not. The following sections briefly describe each case in turn, with an emphasis on renegotiations.

The Dulles Greenway

The Dulles Greenway is located in Loudoun County, Virginia and covers 14 miles (22.5 km), connecting the Washington Dulles International Airport with Leesburg. As Virginia's first modern toll road, it was built in 1993 and opened in 1995 using the state's Highway Corporation Act of 1988. The project began with an unsolicited proposal from the Toll Road Corporation of Virginia (TRCV) that convinced legislators that approving the Act would provide private funds for unfunded infrastructure projects (Wang, 2010).

The project's original construction cost estimate came to USD 350 million, and the Toll Road Investors Partnership II, LP (TRIP II), owned by the Shenandoah Group, Autostrade International and Kellogg Brown & Root, provided USD 40 million in equity. The remaining funding derived from private debt, involving CIGNA Investments, Prudential Power Funding Associates, John Hancock Mutual Life Insurance Company, Barclays, NationsBank and Deutsche Bank AG (FHWA, 2014a). The project was financed purely by the private sector and the TRCV even acquired most of its right of way without using condemnation through eminent domain. After 42.5 years, facility ownership would revert to the Commonwealth of Virginia.

The initial contract closed in 1993, but after the facility opened in 1995, traffic volumes were lower than expected. Revenues during the first years amounted to only 20% to 35% of initial expectations. TRIP II then sought to increase facility usage, including a toll reduction during the first year of operation that required approval from the state. Revenue did not grow to financially sustainable levels and the project went into default the next year. In 1997, the partners increased toll rates and raised the speed limit to 65 miles per hour (104.5 km/h). Two years later, the project restructured its debt and reached an agreement to increase the number of lanes from four to six. In 2001, TRIP II obtained a 20-year concession extension (to 2056) and three years later, they introduced variable toll rates adjusted for distance and time of day.

In 2005, Macquarie Infrastructure Group (now Macquarie Atlas Roads) bought TRIP II, with 50% of it eventually purchased by Macquarie Infrastructure Partners (Macquarie Atlas Roads, 2009). In 2013, Virginia granted TRIP II the right to increase tolls annually by one percentage point above the consumer price index (Samuel, 2008). That same year, and following California's South Bay Expressway experience (see below), an effort commenced to have the Commonwealth of Virginia "buy back" the toll road to lower the toll rates (Tanner, 2013).

Pocahontas Parkway

The Public-Private Transportation Act (PPTA) of 1995 increased the flexibility provided by the Highway Corporation Act of 1988. It allowed Virginia to evaluate unsolicited proposals from private entities and employ financing tools like tax-free bonds (Commonwealth of Virginia, 2012). Fluor Daniel and Morrison Knudsen (FD/MK) submitted a proposal to VDOT seeking a PPP agreement to design and build State Route 895, also known as Pocahontas Parkway. The road had been planned and approved by VDOT since 1983, but no funds were available for construction (Wang, 2010). The Pocahontas Parkway Association (PPA) was formed as a non-profit 63-20 corporation to raise tax-exempt revenue bonds to finance the project's USD 354 million construction cost⁷. The remaining financing consisted of a USD 18 million State Infrastructure Bank loan and USD 9 million in federal funding for roadway design (FHWA, 2014c). FD/MK provided an additional USD 5 million in equity. The agreement included a four-lane toll road with an 8.8-mile (14 km) extension, including a 0.3-mile (500 m) bridge connecting Chesterfield and Henrico south to Richmond. When the facility opened to traffic in 2002, revenue came to 45% of expectations [USGAO (US Government Accountability Office) 2004].

In 2006, facing a PPA default, VDOT received an unsolicited proposal from Transurban LLC regarding the project (Samuel, 2006). As a result, the contract with FD/MK was terminated and a new agreement was signed with Transurban LLC. The new agreement included rights to enhance, manage, operate, maintain and collect tolls from the roadway for 99 years. However, the agreement also included an obligation to construct the 1.85 mile (3 km) Richmond Airport Connector (RAC), with the expectation that the extension would increase demand for the Parkway. The agreement's financial structure included USD 141 million in private equity, USD 55 million in subordinated debt, a USD 150 million Transportation Infrastructure Finance and Innovation Act (TIFIA) loan, and USD 420 million in bank debt (FHWA, 2014c). Three banks participated in the deal: Depfa Bank, Banco Espirito Santo de Investimento and Bayerische Hypo- und Vereinsbank.

After 2009, facility usage diminished due to toll increases and declining regional travel demand after the 2008 financial crisis. Even the airport connector's completion did not increase demand enough to cover debt service. In 2012, Transurban completely wrote off its project equity and planned to turn the toll facility over to its lender before becoming insolvent (Samuel, 2013). In May 2014, DBi Services, a private company, took control of the road (Martz, 2014).

The Elizabeth River Crossings

Using the PPTA legal framework for unsolicited projects, VDOT approved an agreement with Elizabeth River Crossings OPCO, LLC (ERC) to design build, finance, operate and maintain (DBFOM) the Downtown Tunnel/Midtown Tunnel/MLK Extension, also named the Elizabeth River Crossings project. The project will increase the connection capacity between Norfolk and Portsmouth and includes: a) a new two-lane tunnel next to the existing Midtown Tunnel; b) improvements to the Downtown Tunnel; and c) improvements to a 0.8-mile (1.3 km) stretch of US Route 58. Construction began in 2012 with a concession length of 58 years and cost estimates of USD 2.1 billion, not including costs related to renegotiations. ERC, a joint venture of Skanska Infrastructure Development and the Macquarie Group, invested USD 272 million in project equity. Additional funding derived from a USD 465 million TIFIA loan, USD 408 million in public funds, USD 675 million in private activity bonds and USD 268 million in toll revenue from the existing tunnels (FHWA, 2014d).

The project underwent a public-sector-initiated renegotiation in 2012 to delay tolling in exchange for a government payment of USD 100 million (Samuel, 2012). Then, in 2014 when tolls were set to begin, a new governor renegotiated the contract terms to lower tolls during the first revenue-generating

years. The renegotiation cut toll rates in exchange for USD 82.5 million (Office of Governor, 2014). Toll collection at the new rates commenced on 1st February 2014. The public had severely objected to the original plan involving tolls on the existing tunnels in advance of the project's completion. Opponents claimed that such tolls were effectively taxes rather than user fees, since users saw no viable, free alternative (Reinhardt, 2012). Danny Meeks, a resident of Portsmouth, filed a lawsuit contending that VDOT unlawfully imposed the toll charges. Eventually, the Supreme Court of Virginia ruled in VDOT's favour (*Meeks v. Elizabeth River Crossings, OPCO, LLC and Virginia Department of Transportation*, 2013, VA App. 2013).

California State Route 91 Express Lanes

In the 1980s, many believed that Southern California needed a billion-dollar investment in its road infrastructure (www.roadtraffic-technology.com, 2012). To address this need, the state enacted Assembly Bill No. 680, allowing PPP use in four demonstration projects (Giuliano *et al.*, 2012). The four projects were selected through a competition organised by the State Department of Transportation, one of which included a project building express toll lanes in the existing State Route 91's median⁸. In 1990, the state signed a build-transfer-operate (BTO) franchise agreement with the California Private Transportation Company (CPTC) as the private partner. The companies forming this entity included Level 3 Communications, Inc., Compagnie Financière et Industrielle des Autoroutes (Cofiroute) and Granite Construction Inc. (Caltrans [California Department of Transportation], 2009). The private partner provided USD 20 million in equity with additional funding coming from a USD 7 million subordinated loan from the Orange County Transportation Authority (OCTA) and USD 100 million in bank loans from Citicorp USA, Banque National de Paris, Société Générale, Deutsche Bank and CIGNA Investments (FHWA, 2014e).

The toll lanes opened in 1995, connecting Orange County to Riverside County through a four-lane, 10-mile (16 km) extension. The operation agreement was to last 35 years. In addition, it was the first United States road to rely completely on electronic toll collection and congestion management pricing, that is, prices adjusted to traffic flow.

Given the growing transportation infrastructure needs in the area, the OCTA faced citizens' discontent regarding the lack of additional investment in transportation infrastructure. Of particular concern was the original franchise agreement's "non-compete" clause constraining Caltrans and OCTA's ability to add "competing" or "complementary" road capacity. First, OCTA attempted to abrogate the clause but was prevented from doing so in court, as it was attempting to overcome the non-compete clause by arguing, without support, that the additional infrastructure was to be built for safety reasons. Finally, the OCTA bought out CPTC in 2003 in order to reduce traffic congestion. As a result, OCTA issued USD 195 million in toll revenue bonds (Metro Express Lane, 2014), purchasing the project for USD 207.5 million.

South Bay Expressway

The South Bay Expressway (SBX), like the State Route 91 Express Lanes, grew out of Assembly Bill No. 680. The project was designed as a design-build-operate-transfer (DBOT) agreement, lasting 35 years and covering a 9.4-mile (15 km) extension, connecting Spring Valley to Otay Mesa in southern San Diego County, California. The goal was to serve anticipated development generated by growing trade with Mexico (Wang, 2010). The state signed an agreement in 1991 with California Transportation Ventures, Inc. (CTV), originally owned by Parsons Brinckerhoff, Egis Projects, Fluor Daniel and Prudential Bache, although the first two partners left after 1992. In 1997, Koch Industries bought 29% of

the stock (Giuliano *et al.*, 2012) and in 2002 CTV was bought completely by Macquarie Infrastructure Group.

The project experienced several delays. First, the private firm had agreed to manage the project's environmental permits. However, it did not obtain the requisite permits until 2001, despite the franchise agreement having been signed in 1991. Government environmental agencies, including the US Fish and Wildlife Service, the Army Corps of Engineers and the US Environmental Protection Agency, imposed permit requirements, including wetlands restoration, protected habitats for endangered species and recreational improvements in nearby communities.

Second, Parsons Brinckerhoff decided to sell its stake to Macquarie Infrastructure Group in 2002 after the permitting delay. This change in the agreement allowed Macquarie to access public funds to offset costs associated with the construction delays and environmental permitting. This included USD 140 million from the US Department of Transportation (USDOT) via the Transportation Infrastructure Finance and Innovation Act (TIFIA) (FHWA, 2014f). Additional funding came from private equity (USD 130 million) and bank debt (USD 400 million) from Banco Bilbao Vizcaya Argentaria, Depfa Bank plc, Allied Irish, Bank of Ireland, BNP Paribas, Commonwealth Bank, DVB Bank, DZ Bank and HSH Nordbank (Fretz, 2010).

Third, design changes to reduce environmental impacts complicated the Otay River Bridge construction, requiring a “top-down” approach using precast segmental structures to build the 19-storey bridge (Soule and Tassin, 2007). Ultimately, the contract between CTV and the bridge constructor, Otay River Contractors (ORC), involved a schedule that could not be fulfilled (according to ORC) due to requirements by Caltrans, the City of Chula Vista and the County of San Diego. This eventually led to litigation. Ultimately, the bridge-related issues delayed the project's opening by over 15 months and raised the estimated cost from USD 400 million in 1990 to USD 635 million when the project opened in 2007.

In addition, the project opened just as the subprime mortgage crisis hit San Diego, reducing demand to about a third of expectations (Chapter 11. Case No. 10-04516-LA11. Declaration of Anthony G. Evans, Chief Financial Officer of South Bay Expressway, LP, in support of the debtor's chapter 11 petitions and first-day motions, 2010). This situation eventually led CTV to file for bankruptcy in March 2010. After a settlement between the creditors, the US Bankruptcy Court created the New SBX Equity owned by all the creditors (Samuel, 2011). USDOT claims were reduced from USD 170 million to USD 99 million and the banks' claims were reduced from USD 361.4 million to USD 210 million. Finally, the San Diego Association of Governments (SANDAG) bought the New SBX Equity, paying the banks USD 247.5 million in cash and extinguishing the private sector participation in the project. Of the original USD 172 million owed to USDOT (capital plus USD 32 million in capitalised interest), the Department will receive an estimated USD 93 million from toll revenues and will keep 32% of the project ownership, sharing any of the operation's surpluses (Hawkins, 2011; Jensen, 2011; FHWA, 2014f). Following its acquisition, SANDAG decreased toll rates by 40%, thus decreasing revenues by 20% (Poythress, 2012).

The Indiana Toll Road

The Indiana Toll Road (ITR) provides particularly valuable insights for policy debates regarding toll road PPPs (Wee, 2012). The project, originally named the Indiana East-West Toll Road, was funded by tolls through a legal framework established in 1951. The road opened in 1956 as part of the United States Interstate Highway System, covering 156.28 miles (251.5 km) and connecting Chicago, Indiana and Ohio. The Indiana Toll Road Commission managed the road until 1981, after which the road became

part of the Department of Highways. In 1983, the newly-created Indiana Toll Finance Authority, later the Indiana Transportation Finance Authority, took over the highway, giving it political and financial independence from the state (Levy, 2011).

In 2006, under Governor Mitch Daniels, Indiana awarded the rights to maintain, operate and collect tolls from the Indiana Toll Road to ITR Concession Co. LLC for the following 75 years. The ITR agreement included an operations and maintenance (O&M) contract covering the 156-mile (251 km), four-lane highway and the construction of additional lanes along ten of those miles. Four companies submitted proposals and ITR Concession Co. LLC, a joint venture between Cintra Concesiones de Infraestructuras de Transporte (acquired by Ferrovial in 2009) and Macquarie Atlas Roads, won the bid, offering to pay USD 3.8 billion up-front. The deal included USD 748 million in equity and USD 3 248 million in debt from Santander, Bankia, Dexia, The Royal Bank of Scotland, BNP Paribas, Banco Bilbao Vizcaya Argentaria and Depfa Bank (InfraDeals, 2014). The deal allocated USD 255 million to the seven counties adjacent to the toll road, USD 250 million to the third-lane expansion and USD 40 million to introduce electronic toll collection. An additional USD 150 million went to Indiana's 92 counties for road improvements (Gilroy and Aloyts, 2013).

The deal raised much opposition, arguing that the state would see short-term gains in exchange for private firms profiting at the expense of citizen welfare over the long term. However, the joint venture faced a USD 260 million loss in 2010, with expectations for debt service default by 2012 (Holeywell, 2011). The recession and gas prices offer possible explanations. Given growing debt service concerns in 2013 and 2014, the participants began renegotiations with their lenders. In March 2014, for example, the project partners sold USD 500 million of their debt to investment firms “for around 60 cents on the dollar” (Glazer, 2014).

In total, five renegotiations have occurred between the Indiana Toll Road's public and private actors (IFA, 2013a). First, in exchange for state reimbursement (USD 60 million), the private actors agreed to a “toll freeze” in 2006 until electronic tolling was in place. Second, that same year, the state agreed to an investment obligation reduction. Third, in 2007 the state agreed to delays on certain investments until 2010. Fourth, it agreed to reimbursements in 2008 due to lost revenue connected to the electronic tolling (USD 60 million). Finally in 2010, the state agreed to additional delays on certain investments until 2011. In September 2014, ITR Concession Co. LLC announced it would file for bankruptcy, as the project's interest rate swaps, a condition imposed by the lenders, worked against its financial position by increasing its debt by USD 2.15 billion (Benman, 2014).

Discussion

The cases of PPP contractual renegotiations in the United States in the previous section demonstrate the unique characteristics of the market distinct from other regions of the world. Table 4.A1.5 summarises our overall assessment of these cases and Table 4.A1.6 which follows Guasch (2004) on Latin American concessions compares the consequences of the renegotiations. These cases can be categorised with respect to the sector that initiated the renegotiation process, while highlighting some of the consequences.

Among the cases we analysed, the public sector started the renegotiation process in two of the six cases. In the Elizabeth River Crossings case, toll deferral was the main interest; while in the State Route 91 Express Lanes case, the OCTA repurchased the concession to overcome the non-compete clause that was preventing the expansion of the general-purpose lanes. In the other cases, the private sector initiated renegotiations. The Dulles Greenway case involved tariff changes, additional investments

and the extension of the concession term. The Pocahontas Parkway project involved additional investments and extending the term of the concession. The Indiana Toll Road case resulted in a reduction of the investment obligations and compensation for toll freezes. The private partner changed in three of these four projects, while the Indiana Toll Road may undergo further changes, as the concessionaire filed for bankruptcy recently in September 2014⁹.

In the absence of a clear test to determine the cause of each renegotiation in a robust manner from competing hypotheses, we will instead discuss circumstantial evidence that may provide insight for our analysis in the United States. We focus on the four theoretical explanations discussed above – opportunism, exogenous changes, complexities and the winner’s curse effect.

Opportunism

Determining opportunistic motives (Williamson, 1996) of one party or the other requires careful evaluation. In the case of the SR-91 Express Lanes project, the opportunism hypothesis sheds light on the interesting mix of claims on opportunistic behaviour of both the public and private partners (Vining, Boardman and Poschmann, 2005). On the one hand, the private party obtained substantial profits, USD 29 million in just one year, which some may consider as substantial compared to the project’s construction cost of USD 130 million. The contractual agreement also included a non-compete clause, protecting the concession from possible competition with expanded general-purpose lanes. On the other hand, the government attempted to bypass the non-compete clause in expanding the capacity of general-purpose lanes (citing safety reasons), but was eventually forced to settle in court. Furthermore, the government attempted to acquire the Express Lanes legislatively through condemnation. Therefore, one may find it difficult to reject opportunistic motives of the public sector more so than the private partner, although the final purchase agreement implicitly indicates satisfactory outcomes for both parties.

Elections have been considered to provide insights with respect to the public sector’s opportunism (Guasch, Laffont and Straub, 2007). As already discussed above, changes in public leadership may trigger attempts to gain political advantage, or to protect from the accusation of gaining political advantage¹⁰. Facing the threat of losing in upcoming elections, incumbents may resort to renegotiation of PPPs for popular policies (e.g. lower tolls, adding capacity for low public cost). An incoming public official may attempt similar policies for the same reason. We identify shifts in political party control since 1992 in one or more state government branches – governor and both legislative chambers – although we recognise that the executive branch is the primary decision maker with respect to PPP renegotiations.

As Table 4.A1.7 shows, Indiana demonstrates the lowest contestability in its senate (no party shifts) and governorship (one shift), but the highest contestability in its house of representatives (four shifts). The renegotiation began under complete Republican Party control (2006) and lasted when Democrats took control of the State House (2007). No further renegotiation occurred since the Republicans recovered complete control in 2010, until the Indiana Toll Road filed for bankruptcy in 2014. We cannot conclude in this case that public opportunism motivated the renegotiation in Indiana.

Over the study period, California experienced no changes in its senate’s party control, two changes in its House and three changes in its governorship. The state’s purchase of State Route 91 took place in 2003, one year before Democrats lost the executive branch. Similarly, the significant South Bay Expressway renegotiation took place when the Democratic Party controlled the governorship and both legislative houses, but the party had either just gained or was about to lose that control. This may favour the hypothesis of public opportunism but the evidence remains insufficient.

Virginia shows the highest political contestability across the governorship and both legislative chambers. The Pocahontas Parkway renegotiation coincided with changes in party control across all three bodies. Similarly, the Elizabeth River Crossings renegotiations took place as the senate and the executive branch experienced changes in party control. Although one may argue from these cases that this state is more prone to renegotiations by public sector opportunism, in the absence of information regarding their motives, the evidence is insufficient.

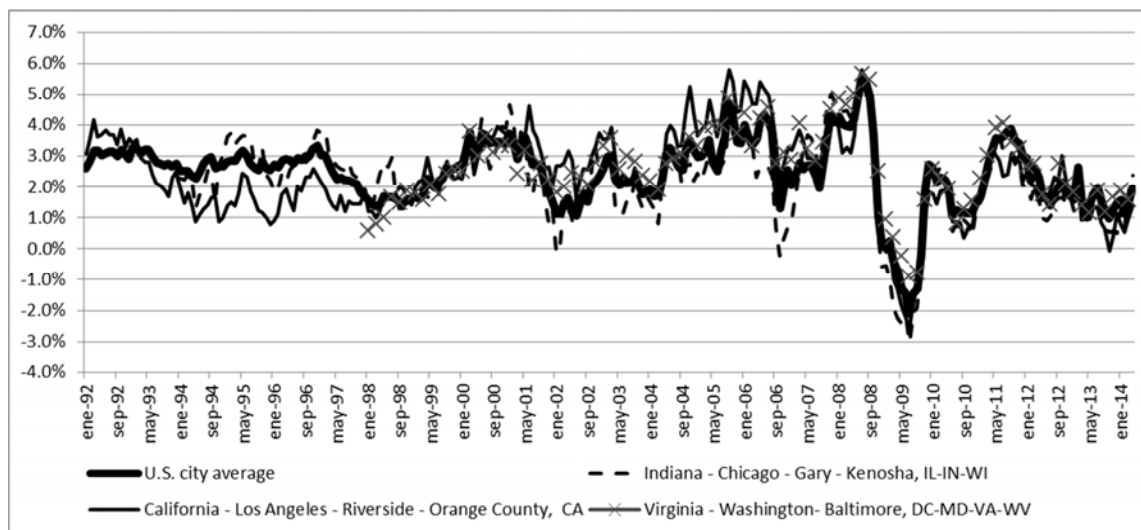
It is difficult to detect private opportunism. However, we can show whether the companies behind the deal have faced other renegotiations (see Table 4.A1.8). Previous renegotiation experiences might familiarise a company with renegotiation procedures, aiding them when complexity or exogenous shocks overwhelm subsequent projects. From this table, we see that, as of 2012, Macquarie, Fluor, Skanska Infrastructure Development and Ferrovial all participated in highway PPP projects around the world that experienced renegotiation at some point. However, most companies active in the PPP industry are likely to have some experience with renegotiation. Further research is necessary to understand the implications of these measures¹¹.

Exogenous changes

In the presence of exogenous shocks, renegotiations may help both parties accommodate unexpected changes. In the case of highway PPPs, we need to consider macroeconomic risks as potentially significant exogenous changes. To evaluate whether exogenous changes drive United States renegotiations, we investigate five macroeconomic variables found in the literature: inflation rate; economic growth; unemployment rate; input prices; and interest rate (Guasch, Laffont and Straub, 2007).

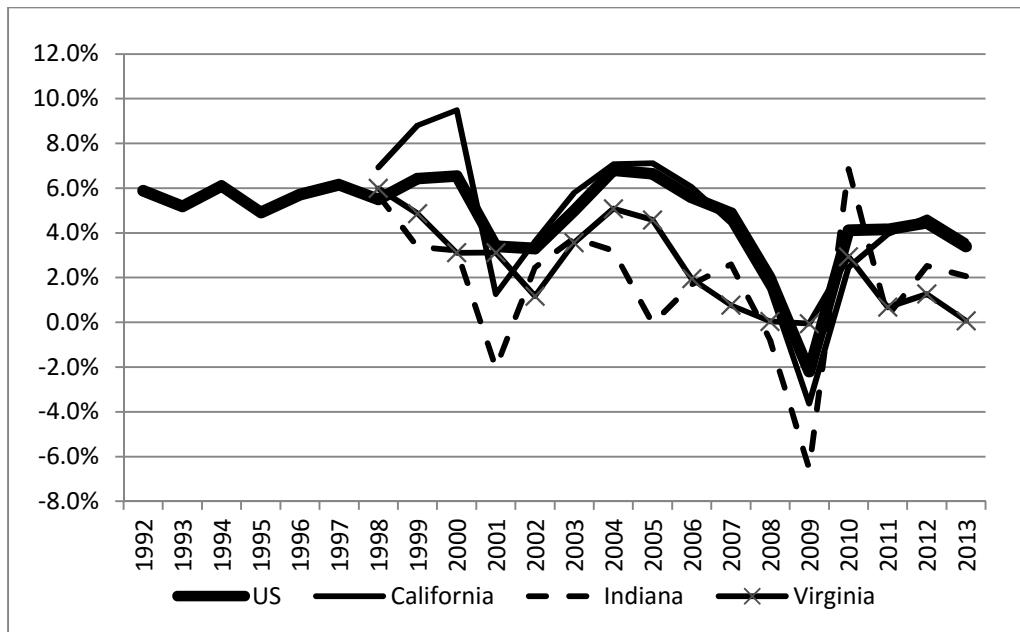
To capture negative demand shocks we focus on changes in the inflation rate, economic growth and the unemployment rate. First, we consider whether sudden increases in the inflation rate, measured through the Consumer Price Index (CPI), indicate negative real-income shocks. If toll road usage presents positive income elasticity, then sudden increases in the inflation rate should decrease available income and the revenue generated by transportation PPPs. Figure 4.3 shows no inflationary spike since 1992. In fact, the most significant shifts reflect the Great Recession's deflationary period, spanning March 2009 through October 2009. This suggests that inflation shocks could not have triggered the case study renegotiations.

Figure 4.3. Consumer price index – All urban consumers (1992-2014)



Source: Bureau of Labor Statistics. 2014.

Figure 4.4. Real GDP growth in select states (1992-2014)

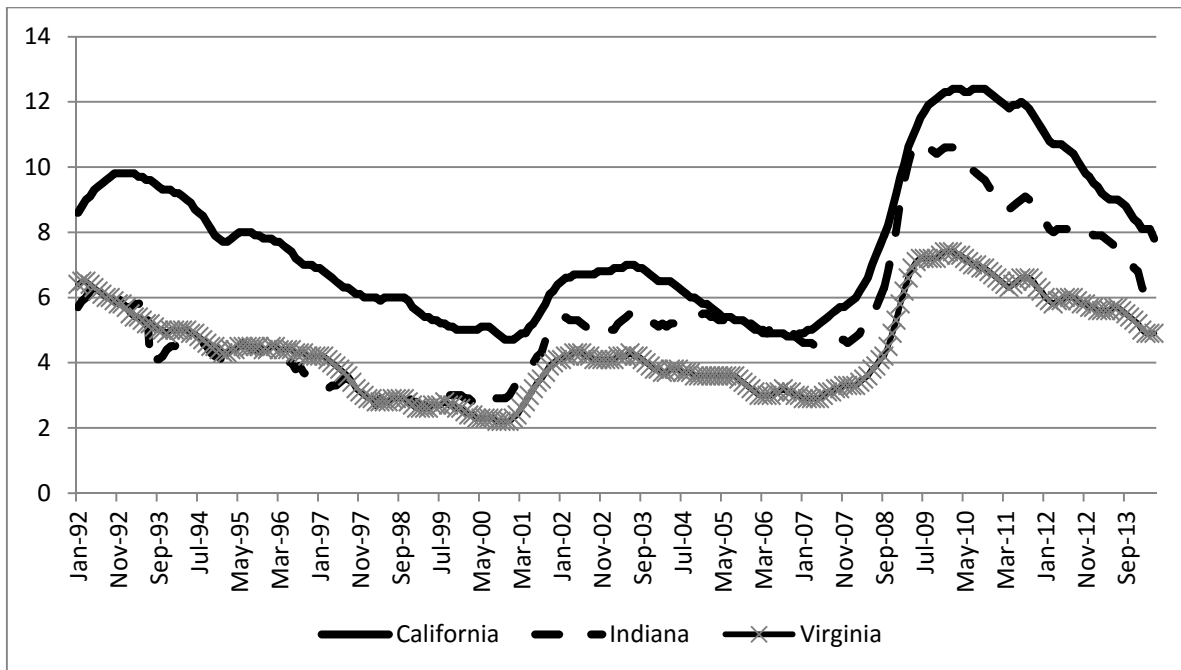


Source: Bureau of Economic Analysis, 2014a; Bureau of Economic Analysis, 2014b.

Second, declines in economic growth, measured through Gross Domestic Product (GDP), may diminish the income available to spend on toll roads. Figure 4.4 shows that California and Virginia experienced negative growth in 2009. In addition, both states experienced almost zero growth between 2001 and 2002, potentially affecting the Dulles Greenway and South Bay Expressway renegotiations. Indiana, by contrast, experienced four years of negative growth (2001, 2005, 2008 and 2009). While these GDP declines were important in the state, the Indiana Toll Road's financial close (2006) and its renegotiations (2012 and 2014) do not coincide with these economic downturns. However, the recessions' effects may have persisted over several years despite rapid recoveries in economic growth. For example, the 2009 recession may not have immediately influenced the projects, but its effects may have rather accumulated in the following years, affecting government budgets and elevating unemployment. It appears that the evidence linking shocks to the economic growth with renegotiations is mixed.

Third, a surge in unemployment may also have decreased demand for toll roads. We include unemployment in addition to economic growth because unemployment rates can rise or remain high despite recovery to economic growth. Figure 4.5 shows the unemployment rate from January 1992 to April 2014. Unemployment showed a decreasing trend until the economic downturn of 2001, increasing by almost 2% in the states under analysis. Unemployment rates declined again, starting in 2003 but, with the exception of California, they did not reach their previous lows. Unemployment increased again with the recession, peaking between 2009 and 2010 before slowly declining. The persistently high unemployment rates seen after 2009 may help explain the demand risk-related renegotiations occurring after the recession (e.g. Pocahontas Parkway and South Bay Expressway).

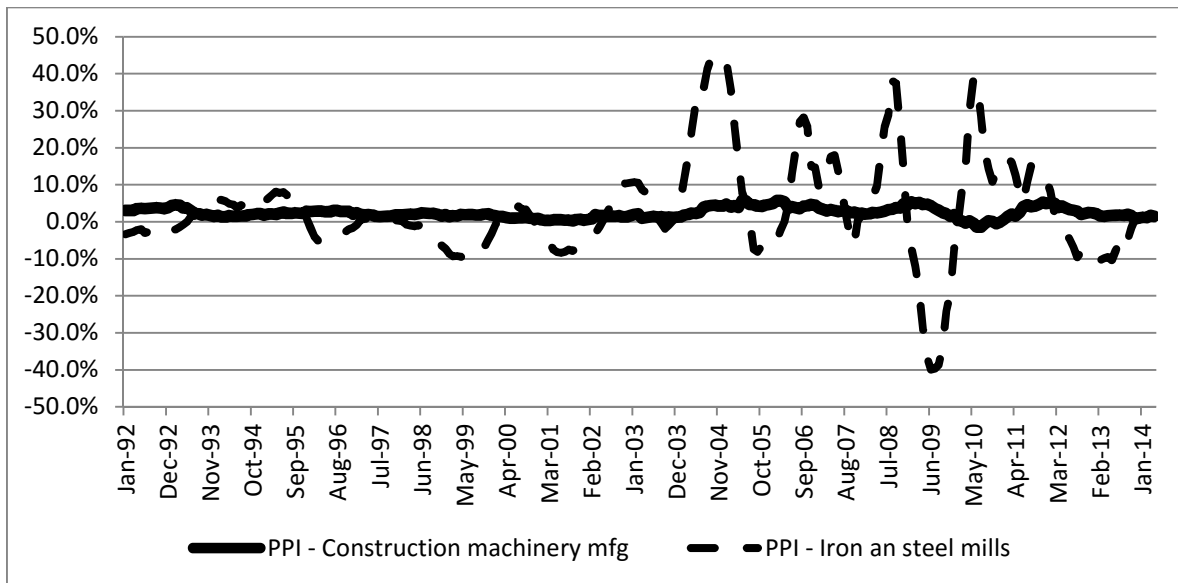
Figure 4.5. Unemployment rates in states with highway PPP renegotiations, 1992-2014



Source: Bureau of Labor Statistics. 2014.

A different perspective considers how changes to input prices and interest rates may have affected the supply of transportation infrastructure by altering project profitability. Using the Producer Price Index (PPI), we first consider two potential sources of cost increases: construction machinery manufacturing and iron and steel mills. Figure 4.6 shows PPI changes for both sources starting in 1992. Inflation for construction machinery manufacturing has remained constant at under 10%. Iron and steel mills' production costs, however, have shown much more volatility, particularly between 2002 and 2011. Cost changes during this period ranged from 45% inflation in November 2004 to 40% deflation in June 2009. These unexpected fluctuations in steel costs may have driven the South Bay Expressway's renegotiation.

Figure 4.6. PPI (construction machinery & iron and steel mills) 1992-2014

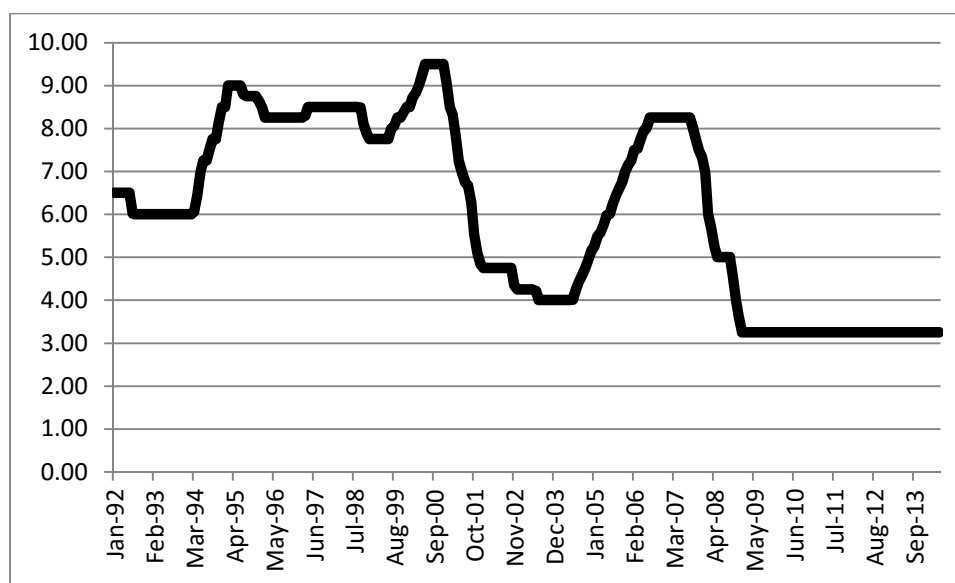


Source: Bureau of Labor Statistics, 2014.

Interest rate shifts may also have affected the project's perceived profitability. Partners may prefer to invest their money under variable market rates rather than in a PPP project. Figure 4.7 shows the bank prime loan rate from 1992 to 2014, noting how debt service increased 50% between 1993 and 1994 and increased 100% between 2003 and 2005. These high interest rates may have affected the Dulles Greenway renegotiations (1994 to 2000, 2005). The combination of financial practices and persistent market conditions may also affect PPP projects. In the case of the Indiana Toll Road, in 2007, banks conditioned their funds on the acquisition of an interest rate swap which would protect the project in case of raising interest rates. However, as a consequence of the recession, interest rates fell below the 2007 levels instead of rising, which put the project under financial stress and eventually drove the project to bankruptcy in 2014¹².

Considering this evidence, it appears that economic growth, unemployment rates, input prices and interest rates may have had important effects on the renegotiation of the cases, although more robust analysis is necessary to be more conclusive.

Figure 4.7. Prime bank loan rate, not seasonally adjusted (1992-2014)



Source: Federal Reserve Bank of St. Louis. 2014.

Complexity

The political environment of PPPs can also increase complexity, which decision makers need to account for in reaching a deal or respond to when circumstances change, requiring renegotiation with the partner at any point through the project life. In the United States, the politics of not only the PPPs but also public infrastructure investment in general have experienced political backlash, on the basis of civil rights, environmental protection, opposition to tolls and so forth. Opposition to the rapid growth of the interstate highway network nationwide during the 1960s-70s emerged in urban regions across the nation, significantly influencing the outcome of some of the planned facilities. For example, the Washington DC region once embraced the plan of a 38-mile interstate highway network. Many of the planned links were to pass through predominantly black neighbourhoods. After 22 years of fierce political battles, only ten miles were ever built, and the issue of race played a considerable role in shaping the actual limited highway network in the District of Columbia (Levey and Levey, 2000). As such, one may therefore argue that civil rights issues have played an important role in the politics of highways at all levels in the United States.

Intuitively, toll charges on freeways would face equivalent political challenges, especially when a given toll scheme may be perceived to disproportionately affect particular neighbourhoods. The Elizabeth River Crossings project predominantly serves cross-river commuters and businesses in port-related industries in Hampton Roads. It is in this context of United States politics that tolling free facilities resulted in persistent opposition, conceivably leading the public decision makers to delay the imposition of tolls and to lower the toll levels during the ramp-up period (VDOT, 2014).

Resonating with the political dynamics of the Elizabeth River Crossings Project, the literature on ethnic, linguistic and religious fractionalisation and fragmentation of communities has suggested that population diversity may complicate the implementation of public goods projects (Alesina, Baqir and Easterly, 1999; Alesina and La Ferrara, 2000; Alesina, Glaeser and Sacerdote, 2001). We investigate the potential of public disagreement on particular policies or projects, through estimating an ethnic fractionalisation index using census information from 2010. Table 4.A1.10 shows that fractionalisation is

the highest in California (0.77), high in Virginia (0.58) and relatively low in Indiana (0.37)¹³. When compared worldwide, data as summarised in Table 4.A1.11 show California and Virginia with a high proportion of ethnic diversity. Accordingly, the renegotiation experiences of PPPs in these states can be partially explained on this basis, although obviously more rigorous and across-the-board analysis would be necessary to draw conclusive insights in this regard.

Looking next at the public partners, we evaluate whether each state had previous experience with PPPs. Governments with limited PPP experience may struggle to manage such innovative projects. Five of the case study projects were among the first in their state. The Indiana Toll Road was the first PPP in Indiana, while the SR-91 Express Lanes project was the first in California. The South Bay Expressway, despite its construction a decade after State Route 91, was part of California's initial 1989 experiment, under Assembly Bill No. 680. The Dulles Greenway was Virginia's first private toll road since the 1800s, a project constructed under the Highway Corporation Act of 1988 (VDOT, 2006). Similarly, the Pocahontas Parkway was the first project to take advantage of the state's Public-Private Transportation Act of 1995 and was the first 63-20 corporation for highways. As a result, government inexperience offers a possible explanation for these project's renegotiations, as governments had neither the appropriate expertise nor the human resources with the experience to deal with some of the uncertainties in handling these agreements. The Elizabeth River Crossings project, however, cannot possibly be considered as novel. The financial close in 2012 and the state's two-decade experience with PPPs prior to the deal indicate that inexperience of the state agency may not be able to explain this project's renegotiation.

Finally, a state's institutional environment can also contribute to the relational complexity of PPP deals. Even with decades of PPP experience, a firm or government may not have the technocratic capacity to manage a PPP contract. We review state management capacity, using the State Management Report Card funded by The Pew Charitable Trusts, evaluating state performance and focusing our attention on the infrastructure component¹⁴ (summarised in Table 4.A1.12 for 1999, 2005 and 2008) (Barrett and Greene, 2008; Government Performance Project, 2005; King, Zeckhauser and Kim, 2004). According to these ratings, Virginia demonstrates the strongest infrastructure performance during the analysis period. Indiana falls in the middle of the table, with California showing one of the lowest scores. In this regard, one would expect Virginia to have the strongest institutional quality of the states under consideration. The case results do not reflect this expectation, so government management capacity may not necessarily be a factor driving United States PPP renegotiations.

In addition, since Guasch et al. find evidence that regulatory bodies diminish renegotiation probabilities in highly corrupt environments, we analyse whether state regulatory bodies oversee the PPP contract process (Guasch, Laffont and Straub, 2007). In Virginia, the Office of Transportation Public-Private Partnership (OTP3) has the objective to ensure the timely delivery of the Public-Private Transportation Act (PPTA) projects, which address priority transportation needs. The OTP3 operates under the Secretary of Transportation and, while outside VDOT, it receives administrative support from the agency (Virginia Office of Transportation Public-Private Partnerships, 2014)¹⁵. In addition, the multimodal PPTA Steering Committee reviews the OTP3 recommendations. In contrast, California and Indiana both rely on their Departments of Transportation to oversee their PPP projects (KPMG, 2013). These institutional differences suggest that OTP3's independence and dedicated resources should reduce the number of negotiations in Virginia. The case results do not reflect this expectation, suggesting that the presence of dedicated regulatory agencies may not reduce renegotiation occurrences for these cases.

Winner's curse

Finally, we discuss the possibility that the winner's curse effect may have been in place in any of these cases. This effect, in the context of brownfield concessions, would take the form of unreasonably high bids, generating profit shortfalls that necessitate contract renegotiations (Athias and Nuñez, 2009). In contrast, in the context of greenfield PPP projects, this effect would be reflected in unreasonably low bids, which would then require renegotiation to ensure construction completion and continuing operation by the private partner. To investigate whether this "winner's curse" effect influenced any of the study cases, we evaluate the award processes and the numbers of bidders involved. Only two of the case projects involved bidding processes: the Indiana Toll Road and Elizabeth River Crossings. The winning Indiana bid by Cintra Concesiones de Infraestructura de Transporte and Macquarie Atlas Roads offered USD 3.8 billion up-front. In contrast, Indiana Road Company LLC offered USD 2.8 billion, Itinere Infraestructuras S.A. offered USD 2.5 billion and Indiana Toll Road Partners LLC offered USD 1.9 billion (IFA, 2013). Given that the competing bids were lower than the winning bid by at least USD 1 billion, it is difficult to reject the claim that the "winner" over-bid, leading to the renegotiations that the concession eventually underwent¹⁶.

In contrast, the Elizabeth River Crossings' renegotiations appear to be unrelated to the winner's curse. While three companies submitted statements of interest, only one pursued the project. As a result, a bilateral negotiation process between the public and private actors established the deal's final elements, including the price.

Conclusion

The aim of this research was to investigate the United States highway PPP market experience, focusing on contractual renegotiations. Beginning with a theoretical framework derived from a brief literature review, we conducted six case studies of tolled highway PPP renegotiations. These cases vary considerably with respect to their contract types, engineering characteristics and political and economic circumstances. Moreover, in contrast to the EU or Latin American markets, these United States projects inhabit distinct, state-based, institutional and regulatory environments. However, United States PPP renegotiation has not experienced the same level of analysis as international markets. The relatively few United States PPPs and scarce data availability might explain this situation, while they present considerable difficulty in employing econometric analysis methods for addressing the research questions. This research serves as a foundation to bridge this gap in the literature.

The six case studies presented in this chapter underline a few distinct characteristics of the United States highway PPP market. Regarding the renegotiations initiated by the private partners, we found that public agencies in the United States have demonstrated their willingness to let their private partners default, go bankrupt, or be bought out when the facilities are performing poorly in terms of usage. Notably, these events did not involve risking the public sector funds, except in one case (South Bay Expressway and TIFIA). With respect to the renegotiations initiated by the public sector, we find that the changes to the PPP schemes have often been claimed to be beneficial for society, when careful evaluation is actually necessary to make such claims. The critical issue that we find is the need for public education to promote a sound understanding of how PPPs work and what the implications for the public of each renegotiation may be.

Rather than jumping to conclusions, we need to recognise that the cases reviewed in this chapter demonstrate the effect of multiple factors in leading to unexpected contractual renegotiations. The existing body of literature provides poor guidelines to disentangle the complexity behind each

renegotiation case and to distinguish the effect of one hypothesis from another. Therefore, the analysis in this study highlights the need for scholars to continue developing analytical frameworks by which such insight can be effectively drawn from the experiences. It is equally important to emphasise the need for policy makers to reasonably disclose PPP information to allow these analyses.

The United States infrastructure PPP market is relatively new and still growing. The experience of PPP renegotiations may be a reflection of the learning curve that policy makers are climbing before a robust market emerges, with reasonable returns to both public and private partners. One may find in the literature a number of proposals to manage the undesirable consequences of PPP renegotiations (e.g. Engel, Fischer and Galetovic, 2006). Yet, the analysis in this chapter points to the need for a continuing evaluation of PPP management and renegotiations, in a manner that is sensitive to the unique characteristics of the United States.

Notes

1. We provide two examples. First, the United States has a very active tax-exempt municipal bond market which makes buy-out a relevant event to take into consideration. In the case of a negative, exogenous shock, a contract modification may be avoided if a new private partner is willing to take a higher risk or is willing to introduce new management that may be able to manage the impact of the shock. This would be a renegotiation in the sense that the private partner's asset ownership has changed. Second, the US has a different legal framework in terms of bankruptcy procedures. While in the US the bankruptcy framework primarily serves to protect the debtors, aiming to help companies survive liquidity events, in the EU the institutional framework is more lender-friendly (Cirmizi, Klapper and Utamchandani, 2012). The former favours the debtor to keep control of the company during the bankruptcy event and even allows the debtor to acquire additional debt to restructure the company. The latter focuses on paying back the debtor as soon as possible, implying an emphasis on quick liquidation of the company. This difference has practical implications in the highway PPP market, as pointed out recently by a leader in the US market (Nicolás Rubio, US President, Cintra, personal communication, November 20, 2014).
2. All references are in nominal US dollars unless otherwise indicated.
3. Another potential explanation was discussed during the ITF Roundtable where a draft of this research was presented. Renegotiations may be Pareto-enhancing to all the parties involved. This could happen with an unexpectedly high tax collection that is used to lower toll rates, permanently or temporarily.
4. Price-capping refers to a regulation developed “*to squeeze out inefficiencies (...) by forcing transport industries to provide their services at increasingly lower real prices*” (Button, 2010, 470).
5. According to the authors, renegotiation is easier in civil law countries because legislation is the primary source of law. The court system must ponder and evaluate different codes, many of which may contain contradictory principles. In contrast, legal cases provide the primary source of law in common law countries, so contradictory statutes are less common (Athias and Nuñez, 2009, 18-19).
6. See, for example, its project pipeline here: <http://www.vappta.org/projects.asp>
7. In the United States, public agencies may issue tax-exempt municipal bonds, enabling more cost-effective financing of public projects. Under the Internal Revenue Service Rule 63-20 and Revenue Proclamation 82-26, non-profit public benefit corporations (“63-20 corporations”) are also allowed to issue tax-exempt bonds. As a result, groups can establish 63-20 corporations that then form concession agreements with private firms to deliver, for instance, design-build-operate-maintain stages of an infrastructure facility. While the private partner usually arranges financing, the 63-20 corporation issues the debt (FHWA, 2014b).

8. The criteria used by Caltrans included: the importance of the transportation need served, the ease of implementation, the experience of the consortium, the promotion of economic development and how innovative it was (Wang, 2010).
9. South Bay Expressway: here, a tariff decrease occurred after the local government took charge of the road.
10. The former makes reference to the differences in the incentives faced by the roving and stationary bandit (Olson, 2000). The latter makes reference to third-party opportunism and political contestability explored for public contracts (Moszoro and Spiller, 2012).
11. The evidence of private-sector renegotiation experience is inconclusive because it applies not only to private companies but to lenders also, as most of the banks involved in the highway PPP market in the US are foreigners. As lenders lose from private opportunism this would help diminish its occurrence.
12. The interest-rate swap is a financial instrument used for hedging the risk of rising interest rates. In the case of ITR, if the interest rates had increased, it would have been protected. However, as the interest rates decreased instead of increased, it put the project under stress.
13. The fractionalisation index follows this formula: $FRACT_j = 1 - \sum_{i=1}^N s_{ij}^2$, where s_{ij} is the proportion that any particular racial group has in state j . This index follows the work by (Alesina *et al.*, 2003).
14. This component evaluates states based on five dimensions (Barrett and Greene, 2008): i) the state regularly conducts a thorough analysis of its infrastructure needs and has a transparent process for selecting infrastructure projects; ii) the state has an effective process for monitoring infrastructure projects throughout their design and construction; iii) the state maintains its infrastructure according to generally recognised engineering practices; iv) the state comprehensively manages its infrastructure; v) the state creates effective intergovernmental and interstate infrastructure co-ordination networks. The evaluation takes into consideration academics' and journalists' expert knowledge of the area and the states.
15. In November 2014, the OPT3 changed its name to the Virginia Office of Public-Private Partnerships.
16. During the ITF Roundtable where a draft of this research was presented it was argued that this behaviour could also be interpreted as “aggressive bidding” a form of private opportunism, where a company bids to obtain the contract, hoping to obtain better conditions afterwards, via renegotiations. In that regard, SBX had not occurred, so there was not a highly publicised highway PPP bankruptcy case showing that the US public sector would behave differently from that of Latin America.

Annex 4.A1

Tables

Table 4.A1.1. Outcome of renegotiations in Latin America and the Caribbean (1985-2000)

| Renegotiation outcome | Percentage of renegotiated concession contracts with the given outcome |
|--|--|
| Delays on investment obligations targets | 69 |
| Acceleration of investment obligations | 18 |
| Tariff increases | 62 |
| Tariff decreases | 19 |
| Increase in the number of cost components with an automatic pass-through to tariff increases | 59 |
| Extension of concession period | 38 |
| Reduction of investment obligations | 62 |
| Adjustment of canon – annual fee paid by operator to government: favourable to operator | 31 |
| Adjustment of canon – annual fee paid by operator to government: unfavourable to operator | 17 |
| Changes in the asset-capital base: favourable to operator | 46 |
| Changes in the asset-capital base: unfavourable to operator | 22 |

Source: Guasch, 2004.

Table 4.A1.2. Geographic distribution of United States PPPs, renegotiations and our case studies

| State | P3 Highways | P3 Highways Facing Renegotiations | | | | | Cases Under Analysis | | | | |
|----------------|-------------|-----------------------------------|----------|------------|-----------|----------------|-----------------------|----------|------------|----------|----------------|
| | | Contract modification | Default | Bankruptcy | Buy-out | Total Projects | Contract modification | Default | Bankruptcy | Buy-out | Total Projects |
| Alaska | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| California | 4 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 2 |
| Colorado | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Florida | 13 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Georgia | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Indiana | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Massachusetts | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Michigan | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| New Mexico | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| North Carolina | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| South Carolina | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Texas | 10 | 1 | 1 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 0 |
| Virginia | 6 | 3 | 2 | 1 | 3 | 5 | 2 | 2 | 1 | 1 | 3 |
| TOTAL | 45 | 7 | 6 | 5 | 12 | 17 | 4 | 4 | 3 | 4 | 6 |

Sources: Public Works Financing Newsletter, 2014, InfraDeals, 2014.

Table 4.A1.3. Summary of United States PPP renegotiation cases (1995-2013)

| Project | State | Main Revenue Source | Contract Type | Original Cost Estimate | Final Construction Cost | Purchase Price From Original Private Partners |
|-----------------------------------|------------|---------------------|---------------|------------------------|-------------------------|---|
| Dulles Greenway | Virginia | Toll | DBFOM | 350 million (1993) | 338 million | 617.5 million (2005) |
| Pocahontas Parkway | Virginia | Toll | DBFOM | 381 million (1998) | 314 million (2002) | 611 million (2006) |
| Elizabeth River Crossings | Virginia | Toll | DBFOM | 2 089 million | n/a | n/a |
| State Route 91 | California | Toll | DBFOM | 88.3 million (1990) | 130 million (1995) | 207.5 million (2003) |
| South Bay Expressway ^a | California | Toll | DBFOM | 400 million (1990) | 722 million (2007) | 351.7 million (2011) |
| Indiana Toll Road ^c | Indiana | Toll | DBFOM + OM | n/a | n/a | n/a |

Source: Compiled by authors from multiple sources.

Note: DBFOM: Design, Build, Finance, Operate and Maintain. OM: Operate and Maintain

a) Includes the construction of non-toll 3.2 miles (5 km).

b) Construction of 1.2 miles (1.9 km) of tunnel and 1 mile (1.6 km) of highway. Maintenance of 50 lane mile.

c) Acquisition required the construction of 10 miles (16.1 km). The upfront payment was USD 3 778 million.

Table 4.A1.4. Complexity in the design and construction of PPP cases

| Project | State | Constructed Length miles (km) | Bridges | Tunnels |
|---------------------------|------------|-------------------------------|---------|---------|
| Dulles Greenway | Virginia | 14 (22.5) | Yes | No |
| Pocahontas Parkway | Virginia | 8.8 (14.1) | Yes | No |
| Elizabeth River Crossings | Virginia | 2.2 (3.5) | Yes | Yes |
| State Route 91 | California | 10 (16.1) | No | No |
| South Bay Expressway | California | 12.7 (20.4) | Yes | No |
| Indiana Toll Road | Indiana | 10 (16.1)* | No | No |

Source: Compiled by authors from multiple sources.

Note: Indiana Toll Road includes the operation and maintenance of the originally constructed 2+2 lanes for 156 miles (251km). In addition it includes the design, construction, finance, operation and maintenance of a third line, in each direction, for 10 miles (16.1km).

Table 4.A1.5. Summary of PPP renegotiation cases (1993-2013)

| Project | Return | Tolls | Problems | Dates | Relevant dates |
|----------------------------------|---------------------------------|--|----------------------------|--|---|
| Dulles Greenway | From 30% down to 14% | Tolls regulated by Virginia State Corporation Commission | Demand lower than expected | 1993 1993 1995 1995 1997 1999 2001 2004 2005 2013 | Financial close Construction starts Opening year Tolls decreased. Owners default on debt. Tolls increased. Speed limit increased (65 mph) Debt restructured. Project modified: from 2*2 lanes to 3*3. Extension of concession period (20 years) Variable peak and discounted off-peak point-to-point rates Macquarie Infrastructure Group purchases PPP Tolls (2013-2020): the higher of CPI plus 1%, real GDP, or 2.8%. |
| Pocahontas Parkway | Originally not-for-profit | First 2 years in contract. VDOT adjusts afterwards | Demand lower than expected | 1998 1998 2002 2006 2012 2014 | Financial close Construction starts Opening year Transurban USA purchases the contract for: Lease Develop-Operate Extension of concession period (to 99 years) Additional investments: 1.6-mile (2.6km), four-lane (Airport Connector) and electronic tolling Transurban USA writes off its equity on the parkway to zero. Transurban USA transfers the operation to DBi Services |
| Elizabeth River Crossings | Revenue-sharing after threshold | Highest of 3.5% or CPI | Community opposition | 2012 2012 2012 2014 2017 | Financial close Construction starts Delays tolling until 2014 in exchange for USD 125 million. Private partners increased equity by USD 207 million. Tolls are decreased. Compensation USD 82.5. Expected opening |

Table 4.A1.5. (cont'd) Summary of PPP renegotiation cases (1993-2013)

| Project | Return | Tolls | Problems | Dates | Relevant dates |
|----------------------|--------|---------------|--------------------|--|---|
| State Route 91 | 17% | | Non-compete clause | 1993 1993 1995 2003 | Financial close Construction starts Opening year Orange County (OCTA) purchases it to eliminate non-compete clause |
| South Bay Expressway | 18.50% | - | | 2002 2003 2007 2010 2011 | Macquarie Infrastructure Group (MIG) purchases CTV Financial close Opening year Files for bankruptcy Exits Chapter 11 as San Diego Association of Governments (SANDAG) purchases it. Tolls are decreased. |
| Indiana Toll Road | - | Inflation cap | - | 2006 2006 2006 2006 2007 2007 2008 2010 2014 | Financial close Opening year "Toll freeze" until electronic tolling is in place. State reimbursement amounts to USD 60 million Reduction on investment obligations Construction starts Delays in certain investments until 2010 State reimbursement amounts to USD 60 million due to lost Delays in certain investments until 2011 Filed for bankruptcy |

Source: Compiled by authors from multiple sources.

Table 4.A1.6. Outcome of renegotiations in the United States highway PPP cases (1995-2013)

| Renegotiation Outcome | Dulles Greenway | Pocahontas Parkway | Midtown and Downtown Tunnels | State Route 91 | South Bay Expressway | Indiana Toll Road |
|--|-----------------|--------------------|------------------------------|----------------|----------------------|-------------------|
| Delays on investment obligations targets | No | No | No | No | No | Yes |
| Acceleration of investment obligations | No | No | No | No | No | No |
| Tariff increases | Yes | No | No | No | No | No |
| Tariff decreases or freeze or delay | Yes | No | Yes | No | Yes | Yes |
| Increase in the number of cost components with an automatic pass-through to tariff increases | No | No | No | No | No | No |
| Extension of concession period | Yes | Yes | No | No | No | No |
| Reduction of investment obligations | No | No | No | No | No | Yes |
| Adjustment of canon –annual fee paid by operator to government: favourable to operator | No | No | No | No | No | No |
| Adjustment of canon –annual fee paid by operator to government: unfavourable to operator | No | No | No | No | No | No |
| Changes in the asset-capital base: favourable to operator | No | No | No | No | No | No |
| Changes in the asset-capital base: unfavourable to operator | No | No | Yes | No | No | No |
| Other: increase speed | Yes | No | No | No | No | No |
| Other: private partner changes | Yes | Yes | | Yes | Yes | No |
| Other: additional investment | Yes | Yes | No | No | No | No |
| Other: decrease in investment | No | No | No | No | No | Yes |
| Other: eliminate non-compete clause | No | No | No | Yes | No | No |
| Renegotiation initiated by | Private | Private | Public | Public | Private | Private |

Sources: IFA (2014); Levy (2011); FHWA (2014); Wang (2010).

Note: Designed based on Guasch, 2004

Table 4.A1.7. Changes in the majority party, state executive and legislative branches

| State | Years of changes in Governor's Party | Years of changes in State Senate Majority Party | Years of changes in State House Majority Party |
|------------|--------------------------------------|---|--|
| Virginia | 1993, 2002, 2009 | 1995, 2008, 2011 | 1997 |
| California | 1999, 2003, 2011 | None | 1995, 1997 |
| Indiana | 2004 | None | 1994, 1999, 2004, 2010 |

Source: Lucy Burns Institute, 2014; Ballotpedia, 2014.

Table 4.A1.8. Primary private owners and their road asset portfolio facing renegotiations

| Project | Dates | Main Private Stockholders Behind the Project | Asset Portfolio of Other Roads of Stockholders (2012) | Asset Portfolio of Other Roads Facing renegotiation (2012) |
|---------------------------|--|--|---|---|
| Dulles Greenway | 1993 | Shenandoah Group, Kellog Brown & Root | None | None |
| | 1995 | | | |
| | 1997 | | | |
| | 1999 | | | |
| | 2001 | | | |
| | 2004 | | | |
| | 2005 | Macquarie Infrastructure Group (now Macquarie Atlas Roads) | B103, Indiana Toll Road, M6 Motorway Toll, Societes des Autoroutes Paris-Rhin-Rhone | Indiana Toll Road, M6 Motorway Toll, Societes des Autoroutes Paris-Rhin-Rhone |
| 2006 2013 | Macquarie Infrastructure Group and Macquarie Infrastructure Partners | B103, Indiana Toll Road, M6 Motorway Toll, Societes des Autoroutes Paris-Rhin-Rhone, Autoroute A25 | Indiana Toll Road, M6 Motorway Toll, Societes des Autoroutes Paris-Rhin-Rhone | |
| Pocahontas Parkway | 1998 | Fluor Daniel and Morrison Knudsen | A59 Motorway Project, I-495 Capital Beltway HOT Lane Project, I-95 HOV/HOT Lanes Project, Windsor-Essex Parkway | A59 Motorway Project |
| | 2006 | | | |
| | 2012 | Transurban DRIVE (owned by Transurban Group and Capital Partners, now CP2) | I-495 Capital Beltway HOT Lane Project, I-95 HOV/HOT Lanes Project | None |
| | 2014 | Dbi Services | None | None |
| State Route 91 | 1993 | Level 3 Communications, Inc., Compagnie Financière et Industrielle des Autoroutes (Cofiroute owned by Vinci Autoroute) and Granite Construction Inc. | None | None |
| | 2003 | N/A | None | None |
| Elizabeth River Crossings | 2012 | Skanska Infrastructure Development, Macquarie Infrastructure Partners II and Macquarie Mercer Infrastructure Trust | A1 Motorway, Antofagasta Regional Highway, M25 Widening Scheme, | A1 Motorway, Antofagasta Regional Highway |
| | 2012 | | | |
| | 2014 | | | |

Table 4.A1.8. (cont'd) Primary private owners and their road asset portfolio facing renegotiations

| Project | Dates | Main Private Stockholders Behind the Project | Asset Portfolio of Other Roads of Stockholders (2012) | Asset Portfolio of Other Roads Facing Renegotiation (2012) |
|-----------------------------|--|---|--|---|
| South Bay Expressway | 1991 | Parsons Brinkerhoff, Egis Projects, Fluor Daniel and Prudential Bache | A59 Motorway Project, HSL/Zuid, I-495 Capital Beltway HOT Lane Project, I-95 HOV/HOT Lanes Project, Windsor-Essex Parkway, A2 Motorway PPP Phase 1, A24/IP3 Viseu-Chaves, A28 Rouen-Alencon Motorway, A63 Highway, A8, A88 Motorway Falaise-Sées, L2 Bypass Marseille, M25 Widening Scheme, M6 Motorway Phase III, North Luzon Expressway, Ostregion PPP Package 1 | A59 Motorway Project |
| | 1992 | Parsons Brinkerhoff and Egis Projects | A2 Motorway PPP Phase 1, A24/IP3 Viseu-Chaves, A28 Rouen-Alencon Motorway, A63 Highway, A8 (Augsburg-Munich), A88 Motorway Falaise-Sées, L2 Bypass Marseille, M25 Widening Scheme, M6 Motorway Phase III, North Luzon Expressway, Ostregion PPP Package 1 | A2 Motorway PPP Phase 1, A24/IP3 Viseu-Chaves, A8 (Augsburg-Munich), |
| | 1997 | Parsons Brinkerhoff, Egis Projects and Koch Industries | A2 Motorway PPP Phase 1, A24/IP3 Viseu-Chaves, A28 Rouen-Alencon Motorway, A63 Highway, A8, A88 Motorway Falaise-Sées, L2 Bypass Marseille, M25 Widening Scheme, M6 Motorway Phase III, North Luzon Expressway, Ostregion PPP Package 1 | A2 Motorway PPP Phase 1, A24/IP3 Viseu-Chaves, A8 (Augsburg-Munich), |
| | 2002 | Macquarie Infrastructure Group | B103, Indiana Toll Road, M6 Motorway Toll, Sociétés des Autoroutes Paris-Rhin-Rhone | Indiana Toll Road, M6 Motorway Toll, Sociétés des Autoroutes Paris-Rhin-Rhone |
| | 2003 | | | |
| | 2010 | | | |
| 2011 | Banks: DEPFA Bank plc, Allied Irish, Bank of Ireland, BNP Paribas, Commonwealth Bank, DVB Bank, DZ Bank and HSH Nordbank | None | None | |

Table 4.A1.8. (cont'd) Primary private owners and their road asset portfolio facing renegotiations

| Project | Dates | Main Private Stockholders Behind the Project | Asset Portfolio of Other Roads of Stockholders (2012) | Asset Portfolio of Other Roads Facing Renegotiation (2012) |
|-------------------|-------|--|--|---|
| Indiana Toll Road | 2006 | Cintra Concesiones de Infraestructuras de Transporte, Macquarie Infrastructure Partners, and Macquarie Atlas Roads | A-22 Algarve Shadow Toll Road, A-27/28 Norte Litoral Shadow Toll Road, A-66 Motorway - Benavente to Zamora, Acores Shadow oil Road, AP-36 Ocaña-La Roda Highway, C-16 Sant Cugat-Terrassa-Manresa Highway, Central Greece E-65 Highway Project, Costa del Sol Highway - Ausol II, Costa del Sol Highway - Ausol I, Highway 407, Highway 407 East to Highway 35/115, I-635, Ionian Roads Project, M-203 Alcalá O'Donnell Highway, M-30 Ring Road PPP, M3 Clonee-Kells, Madrid-Ocaña Highway Concession, N4/N6 PPP, North Tarrant Expressway, North Tarrant Expressway Segments 3A and 3B, Trans-Texas Corridor SH130 SEg 5&6, B103, Dulles Greenway, M6 Motorway Toll, Societes des Autoroutes Paris-Rhin-Rhone, Autoroute A25, Dulles Greenway | A-22 Algarve Shadow Toll Road, A-27/28 Norte Litoral Shadow Toll Road, AP-36 Ocaña-La Roda Highway, C-16 Sant Cugat-Terrassa-Manresa Highway, Highway 407, M-203 Alcalá O'Donnell Highway, Madrid-Ocaña Highway Concession, Dulles Greenway |
| | 2006 | | | |
| | 2006 | | | |
| | 2007 | | | |
| | 2008 | Ferrovia, Macquarie Infrastructure Partners, and Macquarie Atlas Roads | A-22 Algarve Shadow Toll Road, A-27/28 Norte Litoral Shadow Toll Road, A-66 Motorway - Benavente to Zamora, Acores Shadow oil Road, AP-36 Ocaña-La Roda Highway, C-16 Sant Cugat-Terrassa-Manresa Highway, Central Greece E-65 Highway Project, Costa del Sol Highway - Ausol II, Costa del Sol Highway - Ausol I, Highway 407, Highway 407 East to Highway 35/115, I-635, Ionian Roads Project, M-203 Alcalá O'Donnell Highway, M-30 Ring Road PPP, M3 Clonee-Kells, Madrid-Ocaña Highway Concession, N4/N6 PPP, North Tarrant Expressway, North Tarrant Expressway Segments 3A and 3B, Trans-Texas Corridor SH130 SEg 5&6, B103, Dulles Greenway, M6 Motorway Toll, Societes des Autoroutes Paris-Rhin-Rhone, Autoroute A25, Dulles Greenway | A-22 Algarve Shadow Toll Road, A-27/28 Norte Litoral Shadow Toll Road, AP-36 Ocaña-La Roda Highway, C-16 Sant Cugat-Terrassa-Manresa Highway, Highway 407, M-203 Alcalá O'Donnell Highway, Madrid-Ocaña Highway Concession, Dulles Greenway |
| | 2009 | | | |
| 2010 | 2014 | A-22 Algarve Shadow Toll Road, A-27/28 Norte Litoral Shadow Toll Road, A-66 Motorway - Benavente to Zamora, Acores Shadow oil Road, AP-36 Ocaña-La Roda Highway, C-16 Sant Cugat-Terrassa-Manresa Highway, Central Greece E-65 Highway Project, Costa del Sol Highway - Ausol II, Costa del Sol Highway - Ausol I, Highway 407, Highway 407 East to Highway 35/115, I-635, Ionian Roads Project, M-203 Alcalá O'Donnell Highway, M-30 Ring Road PPP, M3 Clonee-Kells, Madrid-Ocaña Highway Concession, N4/N6 PPP, North Tarrant Expressway, North Tarrant Expressway Segments 3A and 3B, Trans-Texas Corridor SH130 SEg 5&6, B103, Dulles Greenway, M6 Motorway Toll, Societes des Autoroutes Paris-Rhin-Rhone, Autoroute A25, Dulles Greenway | A-22 Algarve Shadow Toll Road, A-27/28 Norte Litoral Shadow Toll Road, AP-36 Ocaña-La Roda Highway, C-16 Sant Cugat-Terrassa-Manresa Highway, Highway 407, M-203 Alcalá O'Donnell Highway, Madrid-Ocaña Highway Concession, Dulles Greenway | |
| 2014 | | | | |

Source: InfraDeals, 2014.

Table 4.A1.9. Contract complexity of PPP cases

| Project | State | Type of Contract | Original Contract Duration (years) | Is the contract available online? | Original Contract Length (pages without exhibits) |
|---------------------------|------------|----------------------------------|------------------------------------|-----------------------------------|---|
| Dulles Greenway | Virginia | DBFOM | 40 | Yes | 61 |
| Pocahontas Parkway | Virginia | Original: DBOT. Modified: BOT | 30 | Yes | 96 |
| Elizabeth River Crossings | Virginia | DBFOM | 75 | Yes | 160 |
| State Route 91 | California | BTO | 35 | No | * |
| South Bay Expressway | California | BTO | 35 | No | * |
| Indiana Toll Road | Indiana | DBFOM + OM | 58 | Yes | 112 |

Source: Compiled by authors from multiple sources.

Note: No information was available on the California P3 highway contracts.

Table 4.A1.10. Fractionalisation index for the United States (2010)

| US State | Ethnic Fractionalisation |
|----------------|--------------------------|
| Maine | 0.1166 |
| West Virginia | 0.1391 |
| North Dakota | 0.2214 |
| Minnesota | 0.3431 |
| Wisconsin | 0.3464 |
| Ohio | 0.3495 |
| Missouri | 0.3564 |
| Indiana | 0.3733 |
| Pennsylvania | 0.4018 |
| Tennessee | 0.4364 |
| Utah | 0.4433 |
| Oregon | 0.4631 |
| Arkansas | 0.4717 |
| Massachusetts | 0.4790 |
| Alabama | 0.5113 |
| Washington | 0.5398 |
| Mississippi | 0.5439 |
| South Carolina | 0.5456 |
| Louisiana | 0.5547 |
| Connecticut | 0.5548 |
| Delaware | 0.5759 |
| Colorado | 0.5812 |
| North Carolina | 0.5829 |
| Virginia | 0.5831 |
| Alaska | 0.5915 |
| Illinois | 0.6362 |
| Georgia | 0.6370 |
| Florida | 0.6451 |
| Maryland | 0.6511 |
| Arizona | 0.7041 |
| Texas | 0.7238 |
| Nevada | 0.7440 |
| Hawaii | 0.7521 |
| California | 0.7665 |

Source: US Census Bureau, 2013.

Table 4.A1.11. **Ethnic fractionalisation of select countries**

| | Country | Ethnic Fractionalisation |
|----------------------|---------------------|--------------------------|
| Maximum value | Uganda | 0.9302 |
| Percentile 90 | Gambia | 0.7864 |
| Percentile 75 | Nepal | 0.6625 |
| Percentile 50 | Palau | 0.4342 |
| Percentile 25 | El Salvador | 0.1984 |
| Percentile 10 | Cyprus ¹ | 0.0938 |
| Minimum value | Comoros | 0.0000 |

Source: Alesina et al., 2003.

¹. Note by Turkey: The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Table 4.A1.12. **The state management report card:
Infrastructure grade, states with PPP enabling legislation**

| US States | 1999 | 2005 | 2008 |
|----------------|------|------|------|
| Alabama | 1 | 2 | 6 |
| Alaska | 6 | 6 | 4 |
| Arizona | 3 | 7 | 7 |
| Arkansas | 5 | 6 | 6 |
| California | 4 | 5 | 7 |
| Colorado | 5 | 6 | 6 |
| Connecticut | 6 | 6 | 6 |
| Delaware | 8 | 9 | 9 |
| Florida | 5 | 9 | 10 |
| Georgia | 5 | 6 | 8 |
| Illinois | 7 | 6 | 5 |
| Indiana | 5 | 7 | 9 |
| Louisiana | 8 | 6 | 6 |
| Maine | 4 | 8 | 6 |
| Maryland | 10 | 10 | 9 |
| Massachusetts | 9 | 4 | 3 |
| Minnesota | 10 | 8 | 6 |
| Mississippi | 8 | 6 | 6 |
| Missouri | 10 | 7 | 9 |
| Nevada | 9 | 9 | 7 |
| North Carolina | 9 | 6 | 7 |
| North Dakota | 9 | 7 | 7 |
| Ohio | 8 | 10 | 7 |
| Oregon | 7 | 8 | 6 |
| Pennsylvania | 8 | 9 | 7 |
| South Carolina | 7 | 6 | 4 |
| Tennessee | 7 | 7 | 8 |
| Texas | 5 | 7 | 8 |
| Utah | 10 | 11 | 11 |
| Virginia | 11 | 10 | 9 |
| Washington | 11 | 8 | 9 |
| West Virginia | 6 | 5 | 4 |
| Wisconsin | 10 | 5 | 7 |

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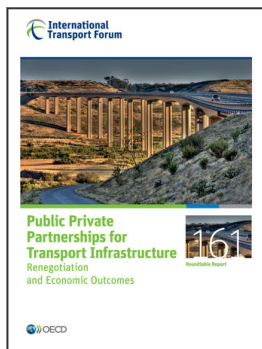
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