

ORIGINAL ARTICLE

Public-Private Partnerships: Rome's ePrix, auto industry mergers and repercussions, turnpikes, and toll roads

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ABSTRACT

This paper uses Public Choice analysis to examine the case for and experience with Public-Private Partnerships (PPPs). A PPP is a contractual platform which connects a governmental body and a private entity. The goal is to provide a public sector program, service, or asset that would normally be provided exclusively by a public sector entity. This paper focuses on PPPs in developed countries, but it also draws on studies of PPPs in developing countries. The economics literature generally defines PPPs as long-term contractual arrangements between a public authority (local or central government) and a private supplier for the delivery of services. The private sector supplier takes responsibility for building infrastructure components, securing financing of the investment, and then managing and maintaining this facility.¹

However, in addition to those formed through contracts, PPPs may take other forms such as those developed in response to tax subvention or coercion, as in the case of regulatory mandates. A key element of PPP is that the private partner takes on a significant portion of the risk through a schedule of specified remuneration, contingency payments, and provision for dispute resolution. PPPs typically are long-term arrangements and involve large corporations on the private side, but may also be limited to specific phases of a project.

The types of PPPs discussed in this paper exclude arrangements which may result from government mandates such as the statutory emission mandates imposed on automobile manufacturers and industrial facilities (e.g., power plants). It also excludes PPP-like organizations resulting from US section 501(c)(3) of the Internal Revenue Code, which provides tax subsidies for certain public charities, scientific research organizations, and organizations whose goals are to prevent cruelty to animals or erect public monuments at no expense to the government.² This paper concludes that an array of Public Choice tools are applicable to understanding the emergence, success, or failure of PPPs. Several short case studies are provided to illustrate the practicalities of PPPs.

Keywords: *Public-Private Partnerships; Public Choice; Virginia School of political economy; anti-commons; rent-seeking; positive-sum rent-seeking; transitional gains trap; regulatory capture; cognitive dissonance; Rome Formula ePrix; Dulles Greenway*

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1. Introduction

The nominal objective of PPP is to obtain the efficiencies of market discipline and engage the enterprise incentives of the private sector to provide a platform for risk-taking. PPPs may alter the risk profiles and the timing of risk in order to stimulate entrepreneurship and innovation in design and management, and exploit expertise not generally available in government. At the same time, PPPs provide a framework to affect government directives that might occur in government projects.

The origin of a PPP begins as a majority-rule collective decision to design a project, specify private sector involvement, and issue a Request for Proposals. While the objective may be to control spending and increase efficiency in production and accountability of public and private sector participants, the effect is most often an expansion of public sector budgets, attendant bureaucracy, and regulatory control. These may be subject to negotiation by both groups. Although it may vary among localities, countries, and specific projects, the institutions characterizing PPP-contracting platforms entail ample opportunities for rent seeking, bureaucratic mismanagement, private sector adventurism, and the expansion of the public sector despite other stated objectives.

PPP clientele groups will seek to use collective decision making for their benefit:

- a) Consultants like them because PPPs provide a role as service providers and advisors.
- b) Bankers and investors like them because PPPs are likely to include government subsidy and various types of financial involvement.
- c) Voters like the PPP concept because of its novelty and illusion that PPP projects will be different than an exclusively government enterprise.

In the abstract, voters may view PPPs as a vehicle or platform for efficient bundling or incentivizing the institutional structure of public sector contracting. However, the more likely outcome is greater protection of inefficient government practices, cartelization of labor or specific categories of assets including centralization of supply options, and protection for capital providers (as in the case of private ownership of United States Postal System facilities).

PPPs provide ample opportunities for rent seeking due to government involvement and would attract participants seeking special privileges. It is questionable that reliance on PPPs will lead to fewer "roads to nowhere," limit government expansion, reduce deficits, or decrease public sector's redundant programs and projects. However, the potential for such PPPs as Rome's ePrix provides an example of a "win-win" opportunity for both the public and private sectors. The basic problems of majority-rule collective decision-making ensure the applicability of the analytical frameworks of

Public Choice and the Virginia School of political economy.

Although popular in many European and developing countries (as promoted and funded by international organizations), acceptance of the use of PPPs in the US has been slow. In the 1980s, the organizational form called “Quangos” emerged in the UK as a form of PPP. Quangos (Quasi-Autonomous Non-Governmental Organizations) refer to organizational forms such as the British Broadcasting Corporation (BBC) and the Bank of England. They are “publicly owned and funded but have considerable independence and limited political accountability.”³ PPPs seek to combine the strength of private sector management with the social concern and community benefits of the public sector.

However, they are increasingly considered for large-scale infrastructure and public works projects. See Appendix I for an example of current legislation on how PPPs might be used to reduce the cost of US federal government operations. The appendix shows the importance of institutions affecting the formation of PPPs. While government contracting with private sector companies has a long history, PPP contractual platforms tend to make private sector firms the stakeholders in the success of the project while limiting their losses. The continuing contractual or institutional connection provides incentives for cost reductions and adherence to production schedules rather than what might occur when firms supply on a “one off” discrete service.

The organization of this paper.

1. Introduction.
2. International governance views – World Bank and IMF.
3. Public Choice and Virginia School insights relevant to PPPs
 - a) Anti-commons.
 - b) Rent seeking – creating special privileges.
 - c) Positive sum rent seeking – breaking down regulatory barriers which provide private and public benefits.
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 - a) Electric Vehicles – Tax subsidies and regulatory mandate make auto manufacturers a subsidiary of the government
 - b) Rome’s Formula EPrix – cooperative PPP exploiting the comparative advantage of its public and private partners.
 - c) Repercussions: Regulatory induced electric vehicle manufacturer merger.
 - d) The Dulles Greenway – Dominant government partner is unable to control private sector partner.
5. Summary and Conclusion.

2. The international governance view of PPPs: Key points

This section summarizes key issues involved in PPPs as seen by the international organizations which fund and often manage PPP programs in developing countries.⁴ PPPs are seen to provide more effective infrastructure solutions than projects that are wholly public or completely private. In theory, as a hybrid institution, PPPs allow each participant to do what it does best, therefore leading to faster project completions, reduced delays, and improved management. International funding

organizations often emphasize such PPP innovations as contractual provisions that emphasize time-to-completion as a measure of performance. In theory, this approach is seen as offering a better guarantee of profitability. International organizations argue that PPP's return on investment (ROI) is increased due to more effective incentivization than occurs in projects with traditional all-private or all-government management. They argue that innovative design and financing approaches are more likely to occur when the two entities work together.

2.1 PPPs are said to offer a more effective allocation of risk

The international governance position is that risks in PPP projects are likely to be more fully appraised early on in the deliberations to determine project feasibility. In the abstract, one could argue that the objections raised by the private partners serve as a check against unrealistic government promises or expectations. Another potentially attractive feature, from the standpoint of public scrutiny, is that operational and project execution risks are transferred from the government to the private participant. One can argue that a properly vetted private sector participant would have more experience in risk assessment and risk management. With regard to public scrutiny, such features are said to provide some degree of confidence in effective cost-containment and adherence to contractual completion terms.

2.2 PPPs free up public sector resources

International organizations often argue that by increasing the efficiency of the government's investment, PPPs allow government funds to be redirected to other important socioeconomic areas presumably where government expertise is better fitted. The greater presumed efficiency of PPPs is seen as reducing government budgets and budget deficits. Because PPP arrangements are negotiated at the beginning, these organizations argue that quality standards are more likely to be maintained throughout the life of the project. They further argue that PPPs reduce the costs over the life of the project, which can lead to lower taxes. Section 4's case studies show that this does not always occur and control may be lost, as in the Dulles Toll Road in Northern Virginia.

2.3 PPPs' disadvantages and shortcomings may lead to hyper protection by the private sector

PPPs involve risks for the private participants regarding the rules for compensation for accepting the project risks in situations where risk-sharing and compensation are possible to reduce government costs. However, when there are only a limited number of private entities that have the capability to complete a project, such as with the development of a jet fighter, the limited number of private participants which may be capable to assume these risks would tend to limit the competitiveness required for cost-effective partnering. In summary, the profits of PPPs can vary depending on the assumed risk, the level of competition, and the complexity and scope of the project. Having outlined the pros and cons as seen by the major players in international economic development, the next section focuses on Public Choice insights for discussing contemporary examples of how PPPs play out in practice.

3. Public choice concepts and tools

Public Choice provides insights which allow a more realistic understanding of the economic and political potential for PPPs. The theory of "anti-commons" envisions the economy as a vast pool of

deals waiting to be made. The tragedy of anti-commons describes a coordination breakdown, where the existence of numerous rights holders and rent seekers limits the achievement of the desired outcomes. The term anti-commons mirrors the older term “tragedy of the commons” used to describe coordination breakdowns arising from incompletely specified property rights.

Buchanan and Yoon sought to analyze anti-commons in which resources are under-utilized rather than over-utilized as in the “commons” setting. They showed that the two problems are symmetrical in several respects which emerge as sources of waste in regulatory bureaucracy. The discussion among scholars and economists concerning anti-commons has focused on questions about obstacles to exchange, discovery, invention, and innovation, which may result from such impediments as intellectual property rights protections. In short, the anti-commons problem arises when there exist multiple rights to exclude viable and potentially beneficial public sector projects—many of which are relevant to the development of PPP projects.

The theory of anti-commons is based on the observation that various recipients act to limit the success or increase the probability of failure of PPP projects. This is the case where excessive or ambiguous property rights prevent the formation of economically beneficial projects such as PPPs. In this sense, the role of the government and the private sector is to ferret out viable projects for PPPs. The search would be for potential joint PPPs in political markets (institutional changes) and in the private sector which are prevented by institutional factors, the lack of necessary implementation incentives, and institutions which diffuse responsibility for involvement. Some potential deals simply do not occur because of these factors, while others are not economically justified due to the high transaction cost in identifying trading options, the terms of trade, and relevant participants with specific skills or assets. Such results describe the tragedy of anti-commons and explain why many potential PPPs do not emerge or do not succeed.

A number of examples of factors may affect anti-commons. For example, recent patent reforms seek to prevent “troll” companies (actually law firms) from buying up obscure patents and suing firms for infringement. The presence of troll patent holders prevents many deals from being made. The US and European economies often have many interested parties and stakeholders. Some have little or no substantive claim due to property loss (in the sense of the US legal system requirements for standing to bring an action). Still, other parties hold varying degrees of property and participation rights, e.g., labor unions, environmental groups, competing firms, and law firms and venture capitalist as rent seekers. These “anti-commons” actors may substantially reduce the relevant playing field for PPPs.⁵

3.1 PPP’s relationship to fiscal federalism

Buchanan’s (1950) fiscal federalism argues that smaller government units are easier for small, concentrated industries to capture than large ones. For example, a group of states or provinces with a large timber industry might have their legislature and/or their delegation to the national legislature captured by lumber companies which prohibit relevant PPPs. Very large and powerful industries (e.g. energy, banking, weapon system construction) can capture national governments, and then use that power to block policies or PPPs at the federal, state or provincial level that the voters may want, although even local interests can thwart national priorities.

3.2 Gordon Tullock’s rent seeking insight, transitional gains, and cognitive dissonance

Tullock's breakthrough insight in 1967 on the cost of pursuing special privileges is useful in understanding why a government may over-regulate behavior in order to prevent rent seeking.⁶ Tullock's development of the concept of cognitive dissonance in the 1970s adds to our understanding of why PPPs might be prevented or thought a less efficient option to existing government programs. Some PPP structures could be subject to fomenting dissonance about the ability of either the public or private sector to accomplish stated goals cost-effectively. In 1974, Tullock published a regulatory paper which he called the "Transitional Gains Trap."⁷ It focuses on rents created for firms or groups by government regulations. Such gains are transitional in that while the recipients may earn an extra \$1 million or so per year into perpetuity, the value of the rent stream is capitalized into the price of the fixed asset. Classic examples are regulations involving taxicab medallions and Sunday closing laws.

The recipient firm's gain is transitional in that the result of the regulation is a one-off increase without any ongoing benefits. Tullock argues that reform is very difficult because it is rational for the recipients of the rents incurring capital losses to lobby and invest in influence up to the expected value of the capital loss. Since the losers can be expected to invest up to their losses, there appears to be little wiggle room. As a consequence, PPPs may be more effective than private or public entities but fail to emerge due to strong opposition from losing coalitions.

3.3 Regulatory capture from cognitive dissonance, rent seeking and transitional losers

The application of Stigler's (1971) insight is important in understanding the potential for both private and public sector actors to collude to prevent effective PPPs from emerging. Stigler's industrial organization logic holds true in forming public PPPs. Regulatory capture is a core of the branch of Public Choice referred to as the economics of regulation; economists in this specialty are critical of conceptualizations of governmental regulatory intervention as being motivated to protect the public good. For PPPs, rents and regulatory capture are negotiated during the PPP's formation and set in stone by contract.

Virginia School of Public Choice theorists argue that regulatory capture occurs because groups or individuals with high stakes in the outcome of policy or regulatory decisions focus their resources and energies in attempting to gain the policy outcomes they prefer. Members of the public have only a tiny stake in the outcome, and may choose rationally to ignore it altogether. Regulatory capture refers to the actions by interest groups when this imbalance of focused resources devoted to a particular policy outcome is successful at "capturing" influence with the staff or commission members of the regulatory agency, so that the preferred policy outcomes of the special interest groups are implemented. Once created and unless properly structured PPPs may be subject to this type of capture. As Stigler noted:

... [A]s a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit.... We propose the general hypothesis: every industry or occupation that has enough political power to utilize the state will seek to control entry. In addition, the regulatory policy will often be so fashioned as to retard the rate of growth of new firms. (Stigler, 1971)

As competitors to "captured" private sector entities, PPPs may simply never emerge due to the opposition of such existing entities, which may have the double power of regulating entry as well as behavior by the cartel. Having sketched the Public Choice factors which may prohibit the

emergence of PPPs, it is useful to provide case studies of PPPs.

4. Case studies: EVs, the ePrix, regulatorily induced mergers, and Virginia toll roads

4.1 Electric vehicles (EVs): Formula ePrix racing in Rome and mergers induced by regulatory mandates

4.1.1 Cooperative or symbiotic PPP – weak partner

Rome's hosting of the ePrix Formula E all-electric street race in Italy's capital in April 2018 was a win-win for the city with its public sector maize of interconnected neighborhoods and narrow winding streets, and definitely for the electric car industry and its patrons.

Rome was once known for its chariots but now is somewhat tarnished by creakingly picturesque infrastructure with the occasional wild boar roaming the streets. The city has a comparative advantage in quaintness, while the folks at Formula E have the comparative advantage in logistics, race management, publicity, and pizzazz, which Webster's Dictionary defines as the quality of being exciting or attractive and associated with such words as glamour and vitality. For Formula E, Rome's part of the deal was to provide a picturesque setting and the opportunity to show its capability to successfully host a complex, modern, and futuristic cutting-edge event which had payoffs that would be difficult for either party individually to produce.

4.1.2 Rome's first-mover's advantage which may have been aided by PPP structure to limit competition

Rome's inaugural Formula ePrix in April 2018 provided a head start on other international contenders such as London and New York. This gave Rome exposure at a "moment of transition towards electric mobility" with private benefits for the Rome's organizers, sponsors, tourist industry, and E-car makers in advertising and market expansion, and a private benefit of increased charging stations. For Rome, the ePrix Formula E street race was a win-win and a first-rate promotion of both parties. Some would argue that being in the EU, although lacking the Coliseum and the city of Rome's other picturesque backdrops, it will be easier to maintain order as well as deal with the crowds and spectators.

4.2 Formula-E as a PPP

Each party involved in Rome and Formula E had a comparative advantage in some important area of the potential interaction --- in essence each provided something the other needed. Rome has the infrastructure, charm, cache, and world class features to attract crowds. Formula E got the exposure and image enhancement of promoting a high-profile international event. The nature of the exchange can be summed up simply that Rome showed its ability to run a logistically complex event while the Formula E people provided the exotic machinery and Gran Prix cache.

To summarize, spillovers to the city of Rome from a well-run racing program managed by experts with skills not generally available to municipal governments would only be needed during race time. (Some might argue that everyday traffic management has a similar look.) EV drivers already in Rome got the spillover benefit of greater convenience and availability of additional

recharging stations.

The next section briefly discusses the related issue of an unintended consequence of government regulation of EVs.

4.3 Regulatory PPP by government mandate: Adaption and use

While Formula E is an example of a PPP, there are a number of angles to the promotion of electric cars as PPPs. We live in a world made increasingly absurd by government subsidies and mandates—which has resulted in producing electric cars at a loss. Tesla has been described as a battery company. This is also close to Italy but not as close as the Esposizione Universale Roma, a residential and business district known as the EUR. The recent megadeal between Renault and Fiat Chrysler is an example of the detrimental tradeoffs which occur due to the scaffolding of government management subsidies and PPP-like structures. In this case, the quid pro quo was that Renault promised a fleet of electric cars and, in return, Fiat Chrysler provided access to the US market. Stated differently: Renault's motivation is a bet to be part of Chrysler's profitable US business; on the other hand, Chrysler will receive an opportunity to be part of Renault's unprofitable EV business.

To some extent, the EV industry grew out of the cognitive dissonance involving the 1970s oil crisis and European distaste for diesel engine emissions—which combined to produce the notion that cars are evil but EVs are green, part of the progressive political agenda, and show concern for the environment.

The roots of the regulation-driven trans-Atlantic marriage happened earlier in 1979 when then-Jeep owner American Motors struck a deal to build the successor to the “Le Car” in US factories in order to meet US fuel mileage mandates. This plan failed and Chrysler got Jeep a bit later. In 2009, Chrysler sought to avoid liquidation by seeking a partner to make the smaller cars to meet the fuel economy standards, the regulatory mandate which drives this. As a condition of the 2008 bailout, regulators made Chrysler include EVs as a condition of producing the gasoline-powered cars that consumers actually wanted..

4.3.1 Facts of life for the development of EVs and mergers

Giant EV losses are looming for the global auto industry, and the heavy hand of government will remain an important factor in EV growth; hence, EVs were *never* capable of making a dent in the global CO₂ emissions. The cruel reality is that the electricity which powers EVs is made from burning coal. While wind and solar investments have peaked in their ability as intermittent energy sources to meet non-intermittent electricity demand, the reality is that coal is again the fuel of choice for up-and-coming countries with the fastest-growing emissions of CO₂, greenhouse gasses, and air pollutant. Because domestic auto and labor interests must be appeased, governments settled on a deal: make EVs and subsidize them with profits from gasoline.

But government mandates are not generally envisioned as the driving force in PPPs. With reference to PPPs, most economists would argue that if the expertise in the partnership lies heavily on the private side, the government is at an inherent disadvantage. For example, it might be unable to accurately assess the proposed costs.

4.4 The Dulles Greenway: A case where the “dominant” government partner lost control

Many PPP projects in recent decades have been successful.⁸ The high-occupancy toll lanes project in Virginia is said to be an example of a successful PPP. Several private sector firms participated in this partnership, resulting in cost savings in the millions of dollars and untold wealth for its investors. In addition, the collaboration between government and private partners is said to have brought expanded highway capacity online years earlier than a traditional government-does-all approach might have done.

The Dulles connector highway was envisioned as early as the 1970s, when new residents were attracted to Loudoun County because of the relatively low cost of real estate. The Greenway proposal prompted the enactment of the Virginia Highway Corporation Act of 1988 that authorized the construction of new toll roads without the use of eminent domain under rates set by the Virginia Corporation Commission. The law requires the facility to be turned over to the state after a stated time period. The road was completed and opened in 1995, but the original owners defaulted on its loan due to lower-than-projected use. It receives no public funds, was built with no subsidies, and is policed at its own expense, competing as a wholly private enterprise with the state-built and -maintained roads. However, a provision in its PPP charter allows tolls are to be computed to assure that the owner will recover the original investment plus a return on that investment. The losses incurred during the early years of the project are rolled forward to justify higher tolls in later years. Subsequent improvements also to be captured by increased tolls include an extension of the toll road to include adding a third lane in each direction, resurfacing the entire road in 2009, and the construction of an improved eastbound exit ramp to Dulles Airport in 2009.

The road was privately built and is not a public asset. The current owner is “Toll Road Investors Partnership II” (TRIP II), which was a consortium of Bryant/Crane Family LLC, Franklin L. Haney Co., and Kellogg Brown & Root (KB&R). On August 31, 2005, Australian firm Macquarie Infrastructure Group announced that they had paid \$533 million to TRIP II to acquire its 86.7% ownership of the Greenway, and were negotiating with KB&R for the remaining ownership rights. Initially, as the road was built as a “Design-Build-Finance-Operate” (DBFO) project, the responsibility for operating the road was scheduled to revert to Virginia in 2036 via a concession agreement. In 2001, The Virginia State Corporation Commission extended this period to the year 2056.

4.4.1 Dulles Greenway, Loudoun County, VA Project overview

The Dulles Greenway was the first toll highway in the US in the Interstate era to be developed under a long-term Design-Build-Finance-Operate-Maintain (DBFOM) public-private partnership (P3) concession. The project was developed by Toll Road Investors Partnership II (TRIP II), currently owned by affiliates of the Australia-based Macquarie Group. The road is operated by Autostrade International, one of the original investors in the project.

The Dulles Greenway is a six-lane, 14-mile, limited-access toll highway in Loudoun County, Virginia, a suburb of Washington, DC, connecting Dulles International Airport with US-15 in Leesburg. It serves as an extension of the state-owned Dulles Toll Road (DTR), which connects Dulles Airport and other high-density employment centers in the corridor to the rest of the Washington metropolitan area. The two toll roads connect at a toll plaza, where drivers pay a single

toll that is divided by the two operators.

4.4.2 History of the Greenway

Washington Dulles International Airport opened to commercial service to serve long-distance air travelers in the national capital region in 1962. The new airport project included the Dulles Airport Access Road (DAAR), a four-lane, 14-mile highway developed on land owned by the airport authority linking the airport to the District of Columbia and other areas in the region's core. The toll-free DAAR had no intermittent points of access or egress, and was designated exclusively for traffic traveling to and from the airport.

Heavy development in the Dulles corridor in Fairfax County during the 1970s brought mounting pressure to expand the roadway network in the area. In the early 1980s, the Dulles Airport Authority allowed the Virginia Department of Transportation (VDOT) to build the Dulles Toll Road (DTR) within in the airport access corridor, outside of the lanes of the DAAR. As growth in the corridor continued to spread into Loudoun County west of Dulles Airport, VDOT became interested in extending the DTR to serve traffic in that developing area.

In 1988, the state legislature passed the Virginia Highway Corporation Act (VHCA), which allowed private developers to submit applications to the Virginia State Corporation Commission (SCC) to build and operate toll roads in the Commonwealth. Under the terms of the VHCA, toll rates and rates of return would be regulated by the SCC, similar to a public utility. The VHCA also required that any privately developed toll roads would be turned over to the state after a specified period of time.

In 1989, the Toll Road Corporation of Virginia presented a proposal to privately fund and construct an extension of the existing Dulles Toll Road to Leesburg. The application was approved by the Commonwealth Transportation Board in July 1989, and in June 1990 the SCC issued a Certificate of Authority to the private consortium, by then known as TRIP II, to build and collect tolls on the Dulles Greenway over a 40-year operating period. The Shenandoah Group, a local family-owned investor, held a majority interest in TRIP II, while minority stakes were held by Autostrade International S.p.A (a large Italian toll road operator) and Brown & Root (a US-based construction firm). Financing was secured by 1993, and construction on the \$350-million project began in September of that year. The Dulles Greenway opened to traffic in September 1995.

The Dulles Greenway was the only toll facility in Virginia to be developed under the public utility model of the VHCA. Subsequent long-term P3 concessions for transportation facilities in the state have been implemented under the Public Private Transportation Act, enacted in 1995.

4.4.3 Project financing and delivery

To finance the construction of the Greenway, TRIP II put up \$40 million in private equity and secured \$310 million in privately placed taxable debt. Ten institutional investors led by CIGNA Investments, Prudential Power Funding Associates, and John Hancock Mutual Life Insurance Company provided \$258 million in long-term, fixed-rate notes (due in 2022 and 2026). Three banks agreed to provide part of the construction funding and \$40 million in revolving credit. Repayment of loans was to come from toll revenues generated by the facility.

After opening in 1995, traffic and revenues on the Greenway fell far short of expectations, with

traffic volumes nearly 70 percent below the projected levels. In response, toll rates were reduced nearly in half, a measure that increased traffic levels but not revenues; the state also allowed the speed limit on the facility to be increased from 55 to 65 miles per hour to increase its attractiveness. Still facing financial challenges, TRIP II restructured its debt in 1999 with \$332 million in privately placed, insured bonds maturing in 2003 and 2005. In 2001, the Virginia State Corporation Commission extended the term of TRIP II's concession for an additional 20 years to 2056. In September 2004, variable peak and discounted off-peak point-to-point rates were introduced to better manage peak-period congestion on the facility.

In March 2005, Macquarie Infrastructure Group (MIG) acquired TRIP II and gained control of the Dulles Greenway for \$617.5 million, while also issuing \$391 million in additional revenue bonds at that time. Ownership in TRIP II is now held in equal shares by Macquarie Atlas Roads and Macquarie Investment Partners I, funds both managed by Macquarie Group Limited.

Despite changes to the 1988 Act allowing for annual toll rate increases and the Dulles Greenway's location in the highest-income county in the US, the facility continues to struggle financially. Traffic levels on the toll road have declined due to toll rate increases and the effects of the economic recession, combined with improvements made to competing greenways in the area. The outstanding revenue bonds issued by TRIP II are currently rated BB+ by Fitch Ratings, one notch below investment grade.

4.4.4 The major controversy involves uncertainty about tolls and who is to control the rents

The 1988 statute authorizing the private toll road permitted toll increases above the rate of inflation under a three-part test: (1) The new fee must not "materially discourage" drivers from using the road, (2) the company must not make more than a "reasonable rate of return" from the increase, and (3) the road's benefit must match its cost.

Critics claim that the decline in use following the 2009 toll increase is evidence that the test has not been met. Rep. Frank Wolf (R-Va.), the Congressman representing the area served by the road, stated, "It's highway robbery. It's a disgrace. Everyone knows that these tolls are ripping people off and there's not much we can do about it." The competition over the control of rates implies great uncertainty about costs and revenue. The relative power appears to be in the hands of the private entity rather than the state of Virginia—not likely to have been envisioned at the time the PPP was formed..

5. Summary and conclusion

The types of Public Choice tools described as applicable to PPPs include the "anti-commons," the rent-seeking insight, positive-sum rent seeking, the transitional gains trap, and Tullock's insights in "cognitive dissonance". This paper concludes that an array of Public Choice tools is applicable to understanding the emergence, success, or failure of PPPs. Several short case studies are provided to illustrate the practicalities of PPPs. The Rome Formula ePrix appears a "win-win" for Rome and the Formula E group, while the Dulles Greenway shows the difficulties in preventing the private sector from structuring the rules in their favor. Public Choice would have predicted some of these outcomes, but perhaps the extent of the gains and losses (to Dulles Greenway users).

Appendix I.

H.R. 723: Energy Savings Through Public-Private Partnerships Act of 2017

An example of recent legislation involving PPPs is found in H.R. 723, Energy Savings Through Public-Private Partnerships Act of 2017. H.R. 723 proposed to modify federal agencies' authority to enter into energy savings performance contracts (ESPCs). This involved a specific type of long-term contract used to procure equipment and services to conserve energy in federal buildings. The bill also would specify new reporting requirements for federal agencies.

The Congressional Budget Office (CBO) reviewed the legislation and in CBO's view, commitments under ESPCs create direct spending because agencies enter into such contracts without appropriations in advance to cover their full costs. CBO estimated that enacting H.R. 723 would increase direct spending by \$441 million over the 2019–2027 period. CBO also estimated that reductions in federal agencies' energy costs attributable to investments in energy-related services and equipment procured through contracts authorized under the bill would total \$166 million over the 2019–2027 period (and additional amounts after 2027). Over that period, CBO also estimated that discretionary spending for certain services related to those contracts would total \$36 million.

Because H.R. 723 would affect direct spending, pay-as-you-go procedures apply. Enacting the bill would not affect revenues.

CBO estimated that enacting H.R. 723 would not increase net direct spending or on-budget deficits by more than \$2.5 billion in any of the four consecutive 10-year periods beginning in 2028.

For purposes of determining budget-related points of order for legislation considered by the House, Section 5109 of H. Con. Res. 71, the Concurrent Resolution on the Budget for Fiscal Year 2018, specifies how CBO should prepare cost estimates for ESPCs. Specifically, that resolution requires CBO to estimate, on a net-present value basis, the lifetime net cost or savings attributable to projects financed by such contracts and to record that amount as an upfront change in direct spending. Using those procedures, CBO estimated that H.R. 723 would reduce direct spending by \$27 million over the 2019–2027 period. However, H. Con. Res 71 also specifies that, in the House of Representatives, any estimated savings calculated on that basis may not be used as an offset for purposes of budget enforcement. H.R. 723 contains no intergovernmental or private sector mandates as defined in the Unfunded Mandates Reform Act and would impose no costs on state, local, or tribal governments.

¹ See, e.g., Iossa and Martimort (2015). See, also, a discussion of the argument that the profits of monopoly power are shifted to private parties is found in <https://www.imf.org/en/Publications/Fiscal-Affairs-Department-How-To-Notes/Issues/2018/10/17/How-to-Control-the-Fiscal-Costs-of-Public-Private-Partnerships-46294>

² <https://www.irs.gov/charities-non-profits/charitable-organizations>. Also, in Section 501(c)(3), public interest law firms are eligible to receive tax-deductible contributions and court-awarded legal fees.

³ The Chartered Institute of Marketing (2012), p 98.

⁴ This section summarizes the views of the World Bank and the OECD and general work on the role of PPPs in economic development. See, e.g., http://ppi.worldbank.org/~media/GIAWB/PPI/Documents/Global-Notes/PPI_2017_AnnualReport.pdf. Best practices are discussed at <https://pppknowledgelab.org/documents/5453> and <https://www.oecd.org/governance/budgeting/PPP-Recommendation.pdf>.

⁵ Buchanan and Yoon (2000). See, also, Heller (2010)..

⁶ See Tullock (1967; 2013).

⁷ Tullock (1971)

⁸ The Dulles Greenway is a privately owned toll road in Northern Virginia, running for 12.53 miles (20.17 km) northwest from the end of the Dulles Toll Road to the Leesburg Bypass (US Route 15/State Route 7). Although privately owned, the highway is also part of SR 267. The speed limit is 65 miles per hour (105 km/h). A useful commentary is provided by Cliff Winston's book on the broader subject of private involvement in infrastructure at <https://www.brookings.edu/book/last-exit/> and https://en.wikipedia.org/wiki/Virginia_State_Route_267.

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