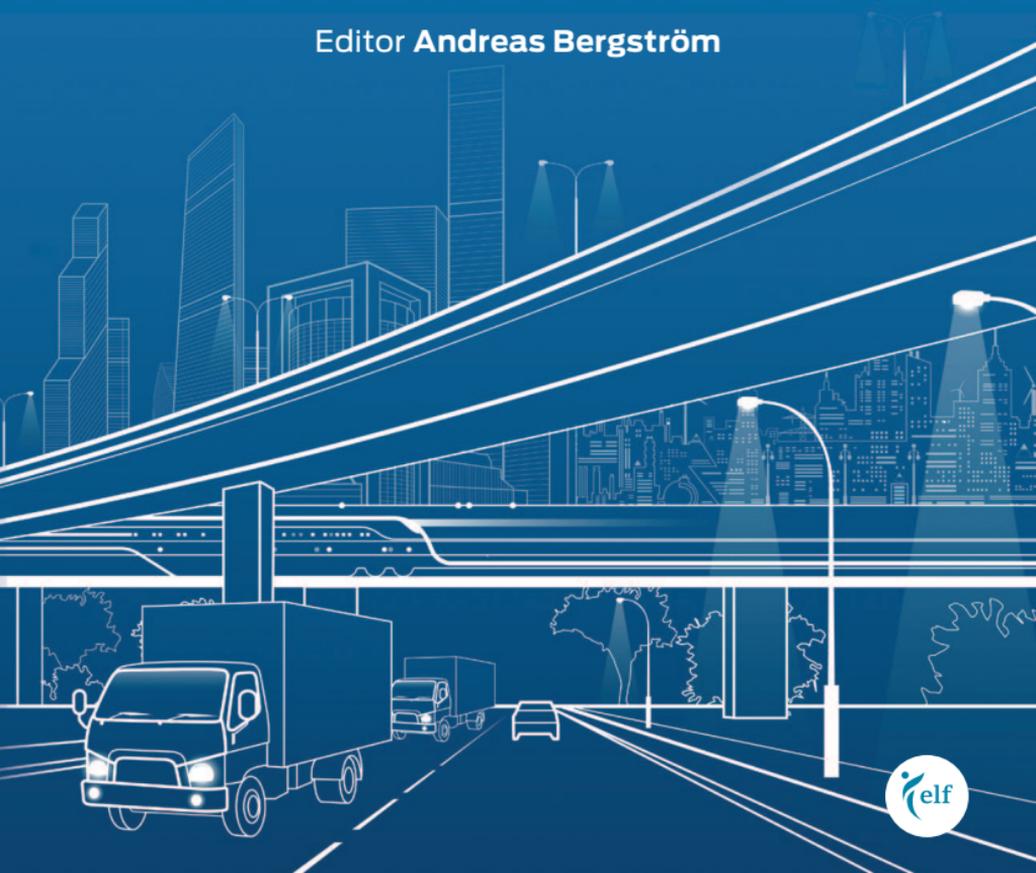


Tim Bruyninckx, Lars Hultkrantz, Tom Willems

Smarter investments in transport infrastructure

Involving the private
sector for more efficiency

Editor **Andreas Bergström**



TIM BRUYNINCKX
LARS HULTKRANTZ, TOM WILLEMS

Smarter investments in transport infrastructure

Involving the private
sector for more efficiency

EDITOR: ANDREAS BERGSTRÖM



Smarter investments in transport infrastructure

Involving the private sector for more efficiency

Authors: Tim Bruyninckx, Lars Hultkrantz, Tom Willems

Editor: Andreas Bergström

Graphic design: Epique Studio

European Liberal Forum asbl
Rue d'Idalie 11-13, boîte 6, 1050 Ixelles, Brussels (BE)
info@liberalforum.eu
www.liberalforum.eu

Fores
Kungsbropplan 2, 112 27 Stockholm
info@fores.se
www.fores.se

Published by the European Liberal Forum asbl with the support of (member organisations' name). Co-funded by the European Parliament. Neither the European Parliament nor the European Liberal Forum asbl are responsible for the content of this publication, or for any use that may be made of it. The views expressed herein are those of the author(s) alone. These views do not necessarily reflect those of the European Parliament and/ or the European Liberal Forum asbl.

© 2020 the European Liberal Forum (ELF). This publication can be downloaded for free on www.liberalforum.eu or <https://fores.se>. We use Creative Commons, meaning that it is allowed to copy and distribute the content for a non-profit purpose if the authors and the European Liberal Forum are mentioned as copyright owners. (Read more about creative commons here: http://creativecommons.org/licenses/by_nc_nd/4.0)

Printed by Spektar, Bulgaria 2020

ISBN: 978-91-87379-76-5



FORES

STU
DIE
CEN
TR
UM

ALBERTUS JORDENS

Contents

About the publisher	v
About the authors	vii
CHAPTER 1	
Introduction and policy recommendations	1
<i>Andreas Bergström</i>	
A summary	3
Conclusions	9
References	13
CHAPTER 2	
Research overview	14
<i>Lars Hultkrantz</i>	
The reasons for and drawbacks of public control	14
Private sector incentives and competition	17
Quality and risk	20
Contract variants	21
Experiences from PPP contracts	23
Conclusions	26
References	28

CHAPTER 3**PPP in Belgium: Where are we now? 29***Tom Willems and Tim Bruyninckx*

High hopes	29
The government: should I stay or should I go?	31
You can't always get what you want	33
Parliamentary inquiry as catharsis and revival	35
Looking forward	37
Conclusions	40
References	42

CHAPTER 4**Scandinavian experiences 44***Lars Hultkrantz*

Introduction	44
Norway	45
Denmark	47
Sweden	50
What's next?	54
References	57

About the publisher

v **European Liberal Forum**

The European Liberal Forum (ELF) is the official political foundation of the European Liberal Party, the ALDE Party. Together with 46 member organisations, we work all over Europe to bring new ideas into the political debate, to provide a platform for discussion, and to empower citizens to make their voices heard.

ELF was founded in 2007 to strengthen the liberal and democrat movement in Europe. Our work is guided by liberal ideals and a belief in the principle of freedom. We stand for a future-oriented Europe that offers opportunities for every citizen. ELF is engaged on all political levels, from the local to the European.

We bring together a diverse network of national foundations, think tanks and other experts. At the same time, we are also close to, but independent from, the ALDE Party and other Liberal actors in Europe. In this role, our forum serves as a space for an open and informed exchange of views between a wide range of different actors.

FORES

The Forum for Reforms, Entrepreneurship and Sustainability (Fores) is an independent think tank dedicated to furthering entrepreneurship and sustainable development through liberal solutions to meet the challenges and possibilities brought on by globalization and global warming. The principal activities of Fores are to initiate research projects and public debates that result in concrete reform proposals in relevant policy areas, such as environmental policy, migration, entrepreneurship, economic policy and the digital society.

Studiedienst Albert Maertens

Studiecentrum Albert Maertens (Research Centre Albert Maertens) is the policy institute of Open Vld, the Flemish liberal democrats in Belgium. SAM offers day-to-day policy advice to the party leaders and members of parliament of Open Vld and prepares briefings and papers on important themes on the regional, national and European level. It also researches long-term issues that will affect society in the future.

About the authors

vii

Andreas Bergström is Deputy Director at Fores and head of Fores' programme for economic reforms and entrepreneurship. He has worked as a science journalist and as political advisor to several liberal ministers in the Swedish government, including the party leader. He has also been a member of the ELF board of directors.

Tim Bruyninckx studied law at the Katholieke Universiteit Leuven (master in law), Université Libre de Bruxelles (DES en droit européen) and the European University Institute (LLM in Comparative, European and International Laws). He wrote a PhD titled "Enriching public procurement regulation through EU state aid law-based principles". After working as a lawyer at the Brussels bar and as a PhD researcher at the European University Institute he joined 'De Werkvennootschap' as inhouse legal counsel and project manager. 'De Werkvennootschap' was founded by the Flemish Government to deliver large infrastructure projects in an accelerated and integrated manner.

Lars Hultkrantz is Professor (Em.) of Economics at Örebro University, Sweden and has held chairs at the universities of Umeå, Uppsala and Örebro. His fields are Public, Transportation and Environment Economics. He has been the main advisor of 25 completed PhD theses. Among others, he was a member of the Expert Group on Public Economics at the Ministry of Finance 1993-2019, advisor to the cost-benefit frameworks in Sweden and Norway, and a member of the board of the National Road Administration.

Tom Willems studied public administration and wrote a PhD manuscript and several journal articles on the accountability and performance of public-private partnerships in Belgium. After working as a senior researcher at the University of Antwerp, he worked a couple of years at the study center of Open VLD (the Flemish liberal party). Since 2018 he is working as a project manager of the missing link road project 'Noord-Zuid Limburg' at 'De Werkvennootschap'. 'De Werkvennootschap' was founded by the Flemish Government to deliver large infrastructure works in an accelerated and integrated manner.

Chapter 1

Introduction and policy recommendations

Andreas Bergström

Infrastructure investments are big decisions with long-term effects. They are important at any time, but now more than ever. As this is written, negotiations for a crisis package for the effects of Covid-19 have only just begun. Almost everyone seems to agree that we should increase investment and maintenance spending on both the national and EU level as a way to boost the economy.

The connection between Covid-19 and new infrastructure projects is debatable. In an economic crisis, it is generally a good idea to secure financing for projects already started, and in some cases, it might

be possible to increase the pace of ongoing projects. However, for political reasons, the focus of the debate is often on new projects. They take time to plan, and construction happens long after the effects of the pandemic fade. There is a risk that the projects will cause a shortage of construction workers and other resources during the next boom. And the long-term benefits of a new project is spread out over decades.

This book was planned before the pandemic. Infrastructure investment is always an important part of the EU economy and a significant factor in economic growth. And we are likely to see decisions about large infrastructure investments in the near future, regardless of the objections above.

Experience shows that large investments often do not end up as planned. One international study showed that the costs were underestimated in nine out of 10 transport infrastructure projects.¹ This can partly be explained by the prestige in certain projects. Politicians, engineers and others involved can build a career on shiny new infrastructure, and have much to gain from exaggerating the benefits of investments. This can be seen as deception or self-deception; the results are the same. At the same time, the individual

1 Flyvbjerg, B., Holm, M. K. S., and S. L. Buhl, 2005, How (in)accurate are demand forecasts in public works projects? The case of transportation. *Journal of the American Planning Association*, 71(2), 131–146.

taxpayer is not much affected by the cost of each project, and will therefore probably not oppose it.

Smaller projects of less political importance often become more expensive than planned, as well, so prestige is not the only factor here. Whatever the causes, there is an “optimism bias”, a tendency to believe that costs will be lower than they eventually are.

One possible way to reduce the cost-overrun problem is to involve the private sector. Private investors are not politicians. They make decisions, not based on getting re-elected, but rather on the possible profits. With the right contracts, private companies can be incentivised to keep the costs low and the utility of a project high. They can be involved not only in construction – which is almost always the case – but also in the planning, financing and long-term maintenance.

A summary

This book presents research and experiences around private-sector involvement in all stages of transport-infrastructure investment. By looking at several countries, we can learn from each other and draw conclusions that are relevant for the decisions that will be made in the near future.

Chapter 2 is an overview of research in the field. It outlines the main reasons the public sector is usually responsible for traffic infrastructure: user charges are not feasible or desirable, investments are large and long-term, and there is a need for coordination between investments. The downside is the reduced potential for dynamic improvements. By involving the private sector, the forces of incentives and competition can make investments cheaper, better or both. Another motive is to move financing off government balance sheets to avoid an increase in public debt. This is, however, limited by Eurostat rules to cases where the government relinquishes control of how the asset is used. In the end, the investments have to be paid for, no matter what the contract looks like.

The chapter describes various forms of contract, which differ in the degree of private participation. The form perhaps most discussed is PPP, Public-Private Partnerships, which can be defined as a contract for designing, building, financing and managing an asset for an extended period of time. Seven possible advantages of PPP over public provision are listed:

1. Narrow focus and dedicated management
2. Advantages of bundling
3. Fewer delays in construction

4. Filtering assets whose cost is out of proportion to their usefulness
5. Avoiding the cost of bureaucracy
6. Disciplining effects of private financing
7. Better (and often cheaper) maintenance

The first three apply to all PPPs, the latter only where the PPP is user-funded, such as toll roads. In all cases, the advantages will only occur under the appropriate organisational, institutional, and regulatory conditions.

When quality comes at a cost, there is always the risk that a private provider will cut costs and quality. This means that contracts that give a larger degree of freedom for the provider must be accompanied by high expertise in the public sector concerning quality management. The private contractor will also demand a risk premium for taking the risk for cost overruns (and will, in turn, usually have higher costs for borrowing than the government). To compensate for this, a substantial increase in efficiency is needed.

Chapter 3 describes Belgian experiences with PPP, and more specifically Flemish experiences – there have been few projects on the national level. Initially, from 2004, the Flemish government used PPP con-

tracts mainly to put costs outside the public balance sheet. This led the Belgian Court of Audit to recommend looking past how the costs are registered and to consider financial, societal, and operational values. The result has been smaller, more manageable projects and less-complex contracts, lacking one or more of the Design-Build-Finance-Maintain parts.

Flemish PPP projects are frequently participative in nature and thus have been built by Special Purpose Vehicles (SPV), construction companies where the public sector owns a minority. The idea is that private partners are more likely to invest when the government puts its resources at risk also. In addition, it enables the public actor to have a strategic voice in the project and some opportunities for risk and benefit sharing.

The Flemish parliament has issued a framework decree regarding the governance and institutional arrangements, that applies from 2020. The framework decree describes the process of choosing the most appropriate form of public investment in an early phase. It stresses the importance of getting early on a clear view on their financial impact and budgetary feasibility. It also protects future public policy-making against excessive use of numerous long-term availability fees for PPP projects via a kind of budgetary ‘safe-guard ceiling’.

There has been little practical experience with toll schemes for public infrastructure in Flanders. However, since 2016, there is a kilometre charge for trucks, and tolls are used or planned for a couple of new projects.

The framework decree is a clear sign that the Flemish parliament sees a future for PPP solutions. Toll schemes might be a more important part of projects in the future, but that is still largely uncharted waters. A conclusion is that capacity building and a legal framework would be much welcomed. Also, the potential advantages of the participative and hybrid PPP model could be further explored, also in a European context.

Chapter 4 collects experiences from the Scandinavian countries (Sweden, Denmark and Norway). All have some experience of PPP contracts, as well as other forms of performance (build-operate-maintain) contracts. Also, there has been an upsurge in interest for PPP contracting in all three countries.

In 2001, Norway decided to build three motorways using PPP contracts. The contractors finance, build, operate and maintain the roads until they are transferred to the state after 25 years. They are paid based on availability, with some compensation for increased maintenance costs if road use exceeds a certain thresh-

old. Constructions were in all three cases completed on time. Contractors were not given much room for technical innovation, but there was a considerable amount of innovation in implementation strategies, project organisation, contracting and financing.

Since 2017, the Norwegian government has tendered another three motorway links for 25-years PPP contracts. The most important change of contract design in this round was that contractors receive a large part of the total compensation on completion of the construction work. This change was made in order to reduce the contractors' financing costs, presumably at the expense of some loss of the strength of performance incentives.

Denmark has used state-owned SPVs for some megaprojects. The SPV finances and contracts design, build, operation and maintenance sub-contractors, with the financing fully guaranteed by the state. There has, in some cases, been considerable freedom in designing sub-contracted parts. These projects are considered success stories. Possible disadvantages compared to PPP contracts is a risk for political interference, and that construction contracts are not connected to operations and maintenance. A possible advantage is that the investment horizon is not limited to a specific contract length.

Sweden has one PPP for land-transportation infrastructure, the Stockholm-Arlanda airport rail link. The asset is owned by the state, but the contractor has a concession that gives exclusive rights for traffic for 45 years with an option for another 10 years. The contractor is free to set ticket prices. Evidence is incomplete on the total cost of the project, but there is no indication that it was more expensive than if the construction work had been procured on conventional terms. It opened one year before schedule. Services have been operated with high levels of punctuality.

In 2017, a Swedish government committee concluded that there was a strong case for getting experience on how PPP would work in practice in the Swedish context, as a possible remedy to notorious cost overruns and delays of road and rail-infrastructure projects. So far, however, this has not led to further action.

Conclusions

The country illustrations in this book show the variation in attempts to combine the public interest with the efficiency of private companies. PPP and other solutions are far from finding their definitive form,

and we are still seeing a high level of experimentation.

One important lesson is that one of the original reasons for PPP contracts, to put costs outside public balance sheets, is seldom relevant because of stricter interpretation of rules. This is probably for the better, since it could worsen the already considerable problem of governments promising big investments, regardless of cost-benefit analyses.

From a Liberal perspective, there is always a reason to be sceptical of large-scale public-sector solutions. In the case of infrastructure, however, it is hard to argue against an important role for government. Some possible conclusions on involving the private sector more are:

1. Use the forces of incentives and competition in the private sector to increase efficiency: lower costs for construction and maintenance, shorter construction times, and assets that are as useful as possible. Do not use the private sector to try to hide costs that will ultimately be borne by the taxpayer. A project with small benefits compared to costs should not be built, whether by PPP or not.

2. Strive to involve the private sector in projects that will be funded in the near future as a response to Covid-19, to avoid that the response becomes an anti-Liberal example.
3. The ongoing discussions about kickstarting the economy can be a good time to introduce more user funding of transport infrastructure. This can be a powerful part of long-term investment contracts.
4. As there is no obvious best practice in the field, it is important to learn from examples. This book gives a brief introduction. Much more can be found at the European PPP Expertise Centre, at Eurostat. But remember that PPP is just one of many alternatives.
5. More complex solutions than straightforward outsourcing of construction means that the public sector needs more competence in designing contracts and controlling quality. The risks with bad contracts can be considerable, but not insurmountable.
6. Because of the complexity of the contracts, these solutions might be too demanding for the public sector for small investments.

7. Developing national legal frameworks might be helpful to facilitate private participation.

Generally, liberals should aim to involve the private sector as much as possible in all stages of infrastructure investments, without being naïve to the risks that follow with complex contracts and long-term commitments.

References

Flyvbjerg, B., Holm, M. K. S., and S. L. Buhl, 2005, How (in) accurate are demand forecasts in public works projects? The case of transportation. *Journal of the American Planning Association*, 71(2), 131–146.

Chapter 2

Research overview

14

Lars Hultkrantz

The reasons for and drawbacks of public control

Private-public relationships in transportation systems are often intertwined and complex. In the early days, railroads were, to large extent, private businesses, and in recent times infrastructure such as electronic-communication networks, ports and airports have been privatised through divestiture or established as greenfield projects by private firms. Public ownership and management of infrastructure is obviously not always a necessity, but three reasons prevail as to why infrastructure, in particular for land transport, is often controlled by national, regional or local government:

- *User charges are not feasible or desirable.* Infrastructure is a public good. Charging users may not be feasible because of transaction costs, nor desirable if facilities would be utilised below capacity. When feasible, charges may still be capped at low levels that do not allow investment costs to be recovered, for instance because government wants to avoid diversion of traffic to other modes or routes.
- *High long-term sunk-cost capital expenditure requirements.* Investments are site and relationship specific (unlike for instance airplanes that can be leased or sold on secondary markets), so capital expenditure is essentially irreversible and can be recovered only over a long period. An incumbent firm with a variable cost that's much lower than the market price can be a strong deterrent to potential entrants. To protect consumers from abuse of the market power of a firm in such a strong position, a government can choose between price regulation and state ownership. Also, any long-term investment horizon makes the investment vulnerable to political risks from expropriation, taxation,

and red tape etc. If institutions that protect property rights are not strong enough, state ownership is often the default option.

- *Network properties.* Transportation-infrastructure assets need to be coordinated by land-use planning, common technical standards, timetables, price schemes, etc. Such compatibility may or may not be in the interest of private firms owning and managing a specific asset¹, so once again government intervention, in the form of regulation and/or ownership, may be called for.

These features, i.e., the long-term and large-scope management requirements, are the major motives for public control. However, the downside of the coin is the lack of a potential for dynamic improvements. Innovation, productivity growth, and in the end, overall economic growth come from efforts by people that have the freedom, means and incentives to come up with smarter solutions and from market competition that not just gives space for new ideas, but also weeds out non-viable suggestions and facilitates the creative destruction of old solutions. Public ownership is at a

¹ Michael L. Katz, Carl Shapiro, 1985, "Network Externalities, Competition, and Compatibility". *The American Economic Review*, Vol. 75, No. 3, pp. 424-440.

disadvantage here. The state is by its very definition a monopoly and public bodies are less free than private enterprises in their ability to design incentives for individuals, as abuse of the state's exclusive coercive powers, for example by corruption, must be avoided. That is not to say that the state cannot be a driver of innovation, but its role is limited in various ways.

Private sector incentives and competition

The wish to promote higher service quality and lower life-cycle cost of construction and maintenance has therefore led to a wide array of efforts to increase private-sector involvement in the provision of transportation infrastructure^{2 3} by sophisticated procurement, finance, contract and organisation arrangements. What is sought is public-private interfaces that make it possible to exploit the forces of private-sector incentives and competition, such as more flexibility, speed and more tailored to the wishes of the customers, to the benefit of the provision of public good. The essen-

2 Eduardo Engel, Ronald D. Fischer, Alexander Galetovic, 2020, "When and How to Use Public-Private Partnerships in Infrastructure: Lessons from the International Experience". NBER Working Paper No. 26766.

3 Dejan Makovšek, 2019, "What is Private Investment in Transport Infrastructure and Why is it Difficult?". OECD/ITF Working Group Paper.

tial public aspect when it comes to land-transport infrastructure is usually the overall planning, i.e., the oversight that each specific component fits into the transport network. The government thus provides the opportunity for investment, and private business is to a varying degree invited to participate in the design, construction, finance, operation and maintenance.

There are other motives as well. The most prominent, especially in Europe⁴, is the desire to spend more on infrastructure programmes. In a way, this is what is achieved if competition and stronger incentives lead to enhanced cost efficiency, making it possible to finance more objects with a given public budget. In addition, private financing can be a means for getting things done faster or mediating financial solutions for cross-border projects involving several countries. Finally, fiscal regulation or international agreements on public debt and deficits can sometimes be circumvented by moving assets and debt out of a government's balance sheet^{5 6}. According to Eurostat rules, this requires that the government is willing to forego control over the services a private partner must provide for an asset, to whom it must provide them, at what price, and any significant residual interest at

4 Engel et al., "When and How to Use Public-Private Partnerships in Infrastructure".

5 Engel et al., "When and How to Use Public-Private Partnerships in Infrastructure".

6 Makovsek, "What is Private Investment in Transport Infrastructure and Why is it Difficult?"

the end of the term of the arrangement⁷. In addition, at the end of the day, bills have to be paid, no financial arrangement provides an escape from the ultimate need for taxpayers and/or infrastructure users to bear the burden of a debt. Only Baron von Münchhausen lifts himself in the hair⁸, so innovative financial solutions are no escape from careful cost-benefit analysis to assess whether an asset is worth its cost.

Incentives for private involvement can be introduced in two ways, through competition and rent-sharing. Competition means that the government organises procurement of contracts to build, operate and/or maintain infrastructure. In still much too rare cases, bids are evaluated not just on price, but also on quality and/or suggestions on design. Assuming there is a prize for the winner, bidders have incentives to come up with solutions that are better than those of the other bidders, which drives innovation. Rent sharing means that there is a further gain for the winning contractor if he/she can make further improvements. Depending on the type of procurement and contract, this can be made in part or all of the design, building, operating and maintenance stages of an infrastructure asset.

7 Makovsek, "What is Private Investment in Transport Infrastructure and Why is it Difficult?"

8 Rudolf Erich Raspe, 1786, Baron Munchausen's Narrative of his Marvellous Travels and Campaigns in Russia. Wikisource.

Quality and risk

There are, however, two major challenges to raising incentives: management of quality and risk. The scope for increased private involvement, for instance by contracting out of operations, therefore usually depends on whether quality-management systems, and the expertise and experience of public-administration servants, are good enough and how risk is shared and priced.

The challenge regarding quality arises when high quality comes at a cost. An incentive to improve productivity is then also an incentive for holding back quality, unless quality can be specified, measured and controlled or paid for, for instance by an enforceable contract, a reputation mechanism (making new contracts contingent on past behaviour) or by side-payments from tolls or charges on (informed) users.

The second challenge, *risk*, is connected to the trade-off between insurance and incentives. Bearing risk is costly, so an agent that is given a high-powered incentives scheme, for instance by compensation strongly dependent on whether an outcome is a success or a failure, will require a risk premium. This risk cost can be reduced by collection and communication of information that can be used to assess risks (for instance geological data) and by an efficient allocation

of various risk components, imposing a specific risk on the party that can affect it (endogenous risk) and otherwise (exogenous risk) on the party that has the lowest cost of bearing risk⁹. Also, since contracts always are incomplete and renegotiations are frequent, mutual trust and long-term credibility are important determinants of the cost of bearing risk.

Contract variants

Private participation in the provision of transportation and transportation services can be organised in many ways. On a scale of increasing “intensity” of private participation, contractual relationships can be classified as:¹⁰

- Outsourcing (contracting on specific services)
- Management contracts (for management of operations and/or maintenance)
- Lease contracts (services are paid by consumers)

⁹ Makovsek, “What is Private Investment in Transport Infrastructure and Why is it Difficult?”

¹⁰ Makovsek, “What is Private Investment in Transport Infrastructure and Why is it Difficult?”

- Government-funded build-operate-transfer (BOT)
- User-funded BOT
- Divestitures

A further distinction of BOT-contracts with respect to the involvement of prospective bidders and the winning contractor in different stages before and after a competitive tendering can be made¹¹. In conventional procurement, the procurer plans and designs an object before the tender and pays the winning contractor when the construction work is finished. Two variants of this process makes it possible for bidders to take part in the design process, either by Collaborative Design-Build Contracts, where prospective bidders contribute to planning and design before bids are submitted or by Early Contractor Involvement based on consultancy contracts during the design stage. Two other variants are based on long-term relationship: Design-Build-Maintain and Design-Build-Finance-Maintain contracts. The latter form is better known as Public-Private Partnerships (PPP), but as is evident from this typology public-private collaboration comes in many flavours.

11 Per Erik Eriksson, Leentje Volker, Anna Kadefors, Sofia Lindegård, Johan Larsson, Lilly Rosander, 2019, "Collaborative procurement strategies for infrastructure projects: a multiple-case study", Proceeding of the Institution of Civil Engineers – Management, Procurement and Law 172(5):197-205.

Experiences from PPP contracts

There has been a considerable research on PPPs. However, most are case studies, often based on qualitative information, that do not allow conclusions on how specific design features affect outcomes. A recent overview of lessons from the international experience are provided by Engel et al.¹² and OECD/ITF¹³. The former work lists seven efficiency claims that have been advanced to prefer PPPs over public provision. Three of them apply irrespective of whether the PPPs are government or user funded (for instance by road tolls): Narrow focus and dedicated management; the advantages of bundling (i.e., of construction, operation and/or maintenance); and fewer delays in construction. The remainder accrue for user funding: Filtering white elephants (i.e., assets whose cost is out of proportion to their usefulness); avoiding the cost of bureaucracy; the disciplining effects of private financing; and better (and often cheaper) maintenance.

Engel et al.¹⁴ provide only fragmentary evidence of whether these claims are justified. Makovšek & Moszoro¹⁵ however, in a study of greenfield assets in

12 Engel et al., “When and How to Use Public-Private Partnerships in Infrastructure”.

13 Dejan Makovšek, 2019, “The Role of Private Investment in Transport Infrastructure”. OECD/ITF Working Group Paper.

14 Engel et al., “When and How to Use Public-Private Partnerships in Infrastructure”.

15 Dejan Makovšek & Marian Moszoro, 2018, Risk pricing inefficiency in public-private partnerships, *Transport Reviews*, 38:3, 298-321, DOI: 10.1080/01441647.2017.1324925, p. 298.

developed countries, find that “the risk transfer to a PPP entails an inefficient risk-pricing premium which goes beyond the direct cost of financing”. They argue that a high price for PPPs results from among others “uncertainty around the past and future performance of public–private consortia”, implying that “the efficiency gains from a PPP must be much higher than commonly expected to deliver a greater value for the money than under a traditional approach”.

Likewise, Makovšek¹⁶ concludes that a high frequency of renegotiations suggests that there can be a credible commitment problem in PPPs that undermines their ability for being the ultimate resolution of prevalent problems of conventional procurement with systematic cost overruns and demand shortfalls. However, this work also concludes that there is evidence on efficiency gains in the cases of passenger rail franchising, seaports and airports. It concludes that “private investment can result in efficiency gains and increased consumer welfare if appropriate organizational, institutional, and regulatory conditions are met”¹⁷.

It can be observed that several of the alleged merits of PPPs apply also to other types of BOT-contracts, not just those that require an upfront private invest-

16 Dejan Makovšek, “The Role of Private Investment in Transport Infrastructure”.

17 Dejan Makovšek, “The Role of Private Investment in Transport Infrastructure”, p. 6.

ment. Eriksson et al.¹⁸ studies a broad range of such contracts for road and rail projects; 10 without private investment in Sweden and three PPPs in the Netherlands. These cases are compared with respect to differences in delivery system, reward system, contractor selection, and collaboration model and evaluated by how overall efficiency is affected by scope, depth, duration, and intensity of the collaboration with private bidders and/or contractors. In a qualitative analysis, it is found that efficiency is influenced by all these dimensions. Regarding *scope* i.e., “the nature and number of companies involved in the integrated supply chain”, the findings from the PPP projects “indicate that the inclusion of a private funder may result in a more economically sound tender strategy and solid technical solutions with lower risk”¹⁹. For *depth*, i.e., “the integration of different types of professionals and hierarchical levels within the companies involved in the projects”, it is found that PPPs raise the transaction costs in the procurement phase and “resulted in slower decision-making but the decisions were more carefully made and, therefore, of higher quality”²⁰. For *duration*, i.e., “the length of the collaboration and

18 Per Erik Eriksson et al., “Collaborative procurement strategies for infrastructure projects”.

19 Per Erik Eriksson et al., “Collaborative procurement strategies for infrastructure projects”, p. 23.

20 Per Erik Eriksson et al., “Collaborative procurement strategies for infrastructure projects”, p. 24.

integration of project stages or sub-projects”, it is concluded that early involvement of the contractors has high time-saving potential in all types of contracts. Prolonged duration by responsibility for operation and maintenance was found to have major positive efficiency effects by prompting contractors to invest in higher-quality materials and technical solutions that raised initial expenses but was cost saving in the long term. However, there were significant difficulties of making long-term contractual agreement, leading to need for renegotiation.

Conclusions

In conclusion, public-private collaboration in provision of transportation infrastructure can come in many forms and there is not just one answer to what is the “best” design of finance, procurement or contractual relations between private and public actors. However, three aspects can be emphasised:

1. There are many alternatives to the conventional forms for organising procurement and contracting that exploit the forces of private-sector competition and incentives,

in order to encourage innovation and life-cycle efficiency in design, operation and maintenance of transportation infrastructure.

2. Private financing deserves careful consideration. On the one hand, it is a means for providing strong incentives for innovation and cost efficiency. Importantly, upfront private money enhances commitment. This is not available in other contracting forms. On the other hand, it imposes extra strong requirements on the procurer's ability to manage, control and allocate quality and risk.
3. Private funding from road and bridge tolls, track-use charges or tickets sales can reduce some of the economic burden on taxpayers from increased pressures for investment and maintenance of transportation infrastructure. The role of such funding is therefore likely to increase in the coming years, as much infrastructure is in need of reinvestment and maintenance, climate policies require radical restructuring of transportation systems, and public finances in many countries will have to be consolidated after the Covid-19 pandemic.

References

Eduardo Engel, Ronald D. Fischer, Alexander Galetovic, 2020, “When and How to Use Public-Private Partnerships in Infrastructure: Lessons from the International Experience”. NBER Working Paper No. 26766.

28

Per Erik Eriksson, Leentje Volker, Anna Kadefors, Sofia Lindegård, Johan Larsson, Lilly Rosander, 2019, “Collaborative procurement strategies for infrastructure projects: a multiple-case study”, Proceeding of the Institution of Civil Engineers – Management, Procurement and Law 172(5):197-205.

Michael L. Katz, Carl Shapiro, 1985, “Network Externalities, Competition, and Compatibility”. *The American Economic Review*, Vol. 75, No. 3, pp. 424-440.

Dejan Makovšek, 2018, “Mobilising Private Investment in Infrastructure: Investment De-Risking and Uncertainty”, OECD/ITF Working Group Paper.

Dejan Makovšek, 2019a, “What is Private Investment in Transport Infrastructure and Why is it Difficult?”. OECD/ITF Working Group Paper.

Dejan Makovšek, 2019b, “The Role of Private Investment in Transport Infrastructure”. OECD/ITF Working Group Paper.

Dejan Makovšek & Marian Moszoro, 2018, Risk pricing inefficiency in public-private partnerships, *Transport Reviews*, 38:3, 298-321, DOI: 10.1080/01441647.2017.1324925.

Rudolf Erich Raspe, 1786, *Baron Munchausen’s Narrative of his Marvellous Travels and Campaigns in Russia*. Wiki-source.

Chapter 3

PPP in Belgium: Where are we now?

29

Tom Willems and Tim Bruyninckx

High hopes

Belgium started relatively late with the implementation of PPPs defined as Design-Build-Finance-Maintain(-Operate) (DBFM(O)) contracts¹, as compared to leading PPP countries like the UK, Australia and Canada. In 2004, the regional Flemish government launched several large DBFM programs in various policy sectors, such as education, urban development, healthcare, mobility and public works, public transport, social housing, and sports. In contrast with the Flemish government, the federal Belgian government

¹ Verhoest, K., Van Garsse, S., Van den Hurk, M., & Willems, T. (2016). Developments of public private partnership in Belgium. In A. Akintoye, M. Beck & M. M. Kumaraswamy (Eds.), *Public private partnerships: a global review* (pp. 45-58). London/New York: Routledge.

has used PPP more scarcely. The main PPP projects at the federal level are five DBFM projects to construct new prison buildings and two large railway-tunnel DBFM projects. The value of these initiatives amounted to 10 billion euros.

The rationale(s) behind PPP policies at both the Flemish and Belgian levels are similar and manifold². Budget neutrality, or off-balance sheet financing in the European System of Accounts (ESA), has been an important motivation for applying PPPs to deliver public infrastructure. Public policy makers conceived PPP as a tool for increasing public investment capacity without direct consequences for the annual public budget and public debt. Hodge & Greve therefore notoriously described PPPs as a ‘mega credit card’ for governments³.

In addition, given the high societal needs in policy domains to renew outdated school buildings or build necessary ‘missing link’ roads, the rationales of on-time and on-budget delivery and potential cost efficiencies through a bundled approach were also at play. The hope was to make the private sector more accountable to perform and deliver⁴. Finally, there

2 Willems, T., Verhoest, K., Voets, J., Coppens, T., Van Dooren, W., & Van den Hurk, M. (2017). ‘Ten lessons from ten years PPP experience in Belgium’. *Australian Journal of Public Administration*, 76, 316–329.

3 Hodge, G. and C. Greve. 2007. ‘Public–Private Partnerships: An International Performance Review’. *Public Administration Review* 67(3):545–558.

4 Willems, T. (2014). ‘Democratic accountability in public-private partnerships: The curious case of Flemish school infrastructure’. *Public Administration*, 92, 340–358.

was also a broad desire for innovation and efficiency by capturing private sector expertise and experience⁵. Value for money was crucial, with a focus on swift project delivery, optimal risk allocation, and a lifecycle approach by connecting project construction and maintenance.

The government: should I stay or should I go?

In its early PPP practice, the Flemish government applied a *sui generis* ‘hybrid’ PPP model⁶. This PPP model is characterised by both contractual and participative elements of PPPs as it features a double control and steering structure: a separate Special Purpose Vehicle (SPV) to execute the program, and a strict DBFM framework agreement between the Flemish government and the SPV, and separate DBM and F contracts between the SPV and other private partners. In this hybrid PPP the public actor participates as a minority shareholder in the SPV, sometimes in combination with a government guarantee scheme. This

5 Van den Hurk, M., & Hueskes, M. (2017). ‘Beyond the financial logic: realizing valuable outcomes in public-private partnerships in Flanders and Ontario’. *Environment and Planning C: Politics and Space*, 35(5), 784-808.

6 Van Gestel, K., T. Willems, K. Verhoest, J. Voets and S. Van Garsse. 2014. ‘Public-Private Partnerships in Flemish Schools: A Complex Governance Structure in a Complex Context’. *Public Money & Management* 34(5):363-370.

model is used for a variety of reasons. It allows the public actor to facilitate the financing of the project. Private partners are more likely to invest when the government puts its resources at risk also. In addition, it enables the public actor to have a strategic voice in the project, and safeguard the public interest. Moreover, it generates an opportunity for risk and benefit sharing in general. PMV, a public investment company, played a crucial role here. It was founded as an autonomous agency under private law, but fully owned by the Flemish government with the goal of supporting economic investment initiatives in Flanders.

The drawbacks of this hybrid PPP model are two-fold⁷. First, it increases the legal and governance complexity of PPPs which was largely unknown and untested at that moment and therefore increased transaction costs to international banks, investors and private consortia. In addition, the international best practices are less unambiguously applied to the Flemish context, because they are usually drawn from contractual PPPs. Second, the stricter interpretation of Eurostat (the statistical office of the European Commission) of the ESA accounting rules since the financial crisis of 2008 has forced the Flemish government to take some (not all) large PPP projects back

7 Van den Hurk M. 2018. 'Public-Private Partnerships: Where Do We Go From Here? A Belgian Perspective' *Public Works Management & Policy*, 23(3), 274–294.

on its balance sheet. The risk analysis by Eurostat classified an important DBFM project like the school building program as on-balance mainly due to the government guarantee scheme. Another large DBFM project, the missing link road project A11, was meanwhile confirmed by Eurostat as off-balance. But the Flemish government moved on to looking more towards the contractual PPP formula.

You can't always get what you want

Even though PPP became a genuine policy tool its application at times got into dire straits. In 2009 the Court of Audit⁸ criticised the strong budgetary rationales behind PPP policy in Flanders. It concluded that off-balance sheet financing should not be the only motive for using PPPs, because it leads to suboptimal results. It recommended that both financial, societal and operational value should be taken into account. Apart from this criticism, there was also the negative impact of the financial crisis in 2008 on the number of closed deals in Europe, due to liquidity shortages and the stricter interpretation of the accounting rules by

8 Belgian Court of Audit. 2009. 'Public-Private Partnerships by the Flemish Government'. Brussels.

Eurostat. Policymakers were forced to refine, or even reinvent, PPP as a policy instrument⁹.

The growing criticism and the financial-market evolution had an impact on the size and complexity of PPP projects. As a result, increasing attention has been devoted to smaller and more manageable PPP projects in, for instance, the school-building programs. In addition, a growing diversity of PPP types arose, as less complex contracts like DBF, DBM or DB were applied more frequently. In general, a trend towards more contract standardisation emerged¹⁰, based on lessons learned from previous projects. Simultaneously, at a policy level, the strong push of PPP as a policy instrument in the early 2000s with broad political support gradually disappeared in subsequent years. Yet, there was no real public debate on the matter¹¹. It was seen as just another procurement and financing technique, where the policy focus shifted towards more professionalism and operational efficiency¹².

9 Willems, T., Verhoest, K., Voets, J., Coppens, T., Van Dooren, W., & Van den Hurk, M. (2017). 'Ten lessons from ten years PPP experience in Belgium'. *Australian Journal of Public Administration*, 76, 316–329.

10 Van den Hurk, M., & Verhoest, K. (2016). 'The challenge of using standard contracts in public-private partnerships'. *Public Management Review*, 18(2), 278–299.

11 Willems, T. and Van Dooren, W. 2016. '(De)politicization Dynamics in Public-Private Partnerships (PPPs): Lessons from a Comparison between UK and Flemish PPP Policy'. *Public Management Review* 18(2):199–220.

12 Van den Hurk, M. (2016). 'Learning to contract in public-private partnerships for road infrastructure: recent experiences in Belgium'. *Policy Sciences*, 49(3), 309–333.

Parliamentary inquiry as catharsis and revival

Eyes on the prize

In order to deal with this public criticism combined with acknowledging that growing societal needs have to be addressed within a budgetary straightjacket, the Flemish Parliament launched on 28 September 2016 a parliamentary inquiry on ‘alternative financing of public investment’ as an initiative by the opposition Green political party. In its mission statement, the parliamentary commission stated that it wanted to map and evaluate public investment tools/methods and aimed at a new parliamentary framework decree. The commission wanted to ensure the Flemish government can significantly increase its level of investments, within the strict ESA framework.

The new decree regarding the governance and institutional arrangements was voted on 13 March 2019 in the Flemish Parliament (and applies starting from 1 January 2020¹³) and is an important step forward, because it provides an answer to the critical public attitude towards PPPs. The new decree reassured its critics that the government had her eyes on the prize

13 Decreet houdende een kader voor grote projecten en programma's. Tekst aangenomen door de plenaire vergadering op 13 maart 2019 (2018-2019). Stuk nr. 1785 (2018-2019) – Nr. 7.

and was following the budgetary consequences of the PPP projects closely. It formulates a vision on the monitoring and reporting on large investment projects, while also emphasising the need for structural capacity building within the Flemish government. It should also be stressed that it was an exclusive parliamentary initiative, built on a consensus of both majority and opposition parties. The parliamentary inquiry led to hearings with several PPP experts (both academics and professionals) and was technically supported by members of the Court of Audit.

The projects within the scope of the new framework decree are broadly defined and not limited to just PPP projects as DBFM(O). The decree sets threshold values to be defined as a large project (> €100 million for construction projects, and > €20 million for supplies or services) and a large program (> €200 million).

The framework decree also describes the process of choosing the most appropriate form of public investment in an early phase: PPP or not, and if PPP which kind of PPP. It stresses the importance of getting early on a clear view on financial impact and budgetary feasibility. It also protects future public policy-making against excessive use of numerous long-term availability fees for PPP projects via a kind of budgetary 'safeguard ceiling'. The implementation of a major project

or program may not limit the policy budget of future generations: the payments of availability fees may not exceed more than 60 percent of the total budget of a policy domain, or exceed more than 10 percent of the total budget of the Flemish government.

The framework decree finally reforms the information provision and evaluation of large-scale investment projects and introduces annual self-assessments by the investment actors, supported by an administrative ‘support entity’ (i.e. the PPP expertise center) and the Inspectorate of Finance and/or a government commissioner.

Looking forward

Even though the above-mentioned parliamentary initiative resulted in a much-welcomed decree, work remains to be done for PPP to step up as a ‘smart’ device for public investment.

Initially the parliamentary commission had the ambition to draft a complementary framework decree on the financial and funding aspects. Elections in May 2019 and the renewed composition of the Flemish Parliament stopped the momentum and led to an unfortunate standstill. Today no new initiative to relaunch

this part of the important discussion on how to use private financing to deliver public infrastructure appropriately is imminent.

As mentioned before, an important rationale behind PPPs are the budgetary challenges facing both the Flemish and Belgian governments, while other solutions (such as separating infrastructure investments for the general budget) may not be feasible in the short run. Hence the importance of fully grasping the opportunities regarding private input in public infrastructure¹⁴. In this respect, a distinction must be made between financing and funding. Financing is the way in which the money can be obtained to deliver the project. Funding (public, private or a combination of both) is the actual payment for (the availability of) the infrastructure to the private partner (e.g. one-off payment upon delivery, monthly payments during the construction phase, periodic payments of availability fees, private tolls, etc.). While private financing is quite common in Flemish and Belgian PPP practice, private funding seems somewhat overlooked. Hence, a challenge within a Flemish or Belgian context lies within the funding part of the deal.

Most international examples of private funding

14 Greve., C. & Hodge, G. 2017. 'Private Finance: What Problems Does It Solve, and How Well?' In Flyvbjerg B. (Eds.) *The Oxford Handbook of Megaproject Management* (pp. 362-388). Oxford: Oxford University Press.

driven PPPs are linked to the construction of traffic infrastructure with a toll mechanism, thus the private user provides the funding for the infrastructure. In Flanders there is little practical experience with toll schemes related to public infrastructure. The ‘liefkenshoektunnel’, built in the 1990s to unlock the Port of Antwerp, was for a long time an exception. In 2016, the three regions of Belgium – Flanders, Wallonia and Brussels – introduced the Kilometer Charge: not taxing the possession of a truck, but rather, its use. This allows the infrastructure cost to be charged, with the possibility to include also the environmental effects of its use. Also, the planned megaproject ‘the Oosterweel link’ to resolve the traffic jams near Antwerp, will make to some extent use of a toll mechanism to fund the large investments.

Given the already burdened or distressed Flemish public budget, combined with the high societal needs to invest in new public infrastructure, the opportunities regarding more private funding via direct citizen or user payments should be further explored. Given the little experience in Flanders and Belgium in this respect, investing in capacity building for private funding driven PPP may prove to pay off in terms of upgrading infrastructure and public service provision.

A related question is whether private fund-

ing-driven PPP requires government participation in the SPV entrusted with the performance of a PPP contract. Apart from strengthening market confidence and thus willingness to enter into such a PPP (see above), such participation, the private and public side being partners in an SPV, may help to align public and private interests. This may contribute to managing conflicts between public and private interests that may arise in such PPP structures¹⁵. As mentioned above, there are also opportunities for risk and benefit sharing and an interesting learning curve for both partners. Finally, the participative PPPs turned out to be Eurostat-proof, if the risk sharing between public and private partners were done according to the principles described in the Eurostat manual¹⁶. This manual was much anticipated to bring some clarity in the complex world of PPP projects.

Conclusion

We discussed that in Flanders and Belgium PPP has never been an uncontested policy tool. However, recent legislative updates in Flanders indicate that

15 Ménard, C. 2013. 'Is Public-Private Partnership Obsolete. Assessing the obstacles and shortcomings of PPP' in de Vries P. en Yehoue E. B. (Eds.) *The Routledge Companion to Public-Private Partnerships* (pp. 151-154), London: Routledge.

16 Eurostat 2016. 'A Guide to the Statistical Treatment of PPPs'. EIB/EPEC: Luxemburg.

the Flemish government sees a future for PPP as a tool for public investment. The 2019 Decree and the framework it provides is therefore a much-welcomed initiative.

Two main challenges however arise. First, due to budgetary constraints which urges authorities to develop innovative financing techniques based on private funding. However, in Flanders and Belgium, private funding techniques are still to a large extent uncharted waters. Also in this respect, capacity building and a legal framework would be very welcome.

Second, given the importance to align public and private interests, the potential advantages of the participative and *sui generis* hybrid model developed in Flanders should be emphasised. Even more so in a budgetary crisis context due to Covid-19 virus and its dramatic consequences, where the government wants to focus on public works and infrastructure to relaunch the economy. It may even be Eurostat-proof, if the risk sharing is done appropriately. A driving force in a Flemish and Belgian context is still to ensure that the governments can significantly increase their level of investments, while staying within the strict ESA framework.

References

- Belgian Court of Audit.** 2009. 'Public-Private Partnerships by the Flemish Government'. Brussels.
- Eurostat** 2016. 'A Guide to the Statistical Treatment of PPPs'. EIB/EPEC: Luxemburg.
- Flemish Parliament** 2019, Decreet houdende een kader voor grote projecten en programma's. Tekst aangenomen door de plenaire vergadering op 13 maart 2019 (2018-2019). Stuk nr. 1785 (2018-2019) – Nr. 7.
- Greve, C. & Hodge, G.** 2017. 'Private Finance: What Problems Does It Solve, and How Well?' In Flyvbjerg B. (Eds.) *The Oxford Handbook of Megaproject Management* (pp. 362-388). Oxford: Oxford University Press.
- Hodge, G. and C. Greve.** 2007. 'Public-Private Partnerships: An International Performance Review'. *Public Administration Review* 67(3):545-558.
- Ménard, C.** 2013. 'Is Public-Private Partnership Obsolete. Assessing the obstacles and shortcomings of PPP' in de Vries P. en Yehoue E. B. (Eds.) *The Routledge Companion to Public-Private Partnerships* pp. 151-154, London: Routledge.
- Van den Hurk, M.** 2016. 'Learning to contract in public-private partnerships for road infrastructure: recent experiences in Belgium'. *Policy Sciences*, 49(3), 309-333.
- Van den Hurk M.** 2018. 'Public-Private Partnerships: Where Do We Go From Here? A Belgian Perspective' *Public Works Management & Policy*, 23(3), 274-294.

- Van den Hurk, M., & Hueskes, M.** 2017. 'Beyond the financial logic: realizing valuable outcomes in public-private partnerships in Flanders and Ontario'. *Environment and Planning C: Politics and Space*, 35(5), 784-808.
- Van den Hurk, M., & Verhoest, K.** (2016). 'The challenge of using standard contracts in public-private partnerships'. *Public Management Review*, 18(2), 278-299.
- Van Gestel, K., Willems, T., Verhoest, K., Voets, J. and Van Garsse S.** 2014. 'Public-Private Partnerships in Flemish Schools: A Complex Governance Structure in a Complex Context'. *Public Money & Management* 34(5):363-370.
- Verhoest, K., Van Garsse, S., Van den Hurk, M., & Willems, T.** 2016. Developments of public private partnership in Belgium. In A. Akintoye, M. Beck & M. M. Kumaraswamy (Eds.), *Public private partnerships: a global review* (pp. 45-58). London/New York: Routledge.
- Willems, T.** 2014. 'Democratic accountability in public-private partnerships: The curious case of Flemish school infrastructure'. *Public Administration*, 92, 340-358.
- Willems, T. and Van Dooren, W.** 2016. '(De)politicization Dynamics in Public-Private Partnerships (PPPs): Lessons from a Comparison between UK and Flemish PPP Policy'. *Public Management Review* 18(2):199-220.
- Willems, T., Verhoest, K., Voets, J., Coppens, T., Van Dooren, W., & Van den Hurk, M.** 2017. 'Ten lessons from ten years PPP experience in Belgium'. *Australian Journal of Public Administration*, 76, 316-329.

Chapter 4

Scandinavian experiences

44

Lars Hultkrantz

Introduction

PPP contracts have not been extensively used for development of transportation infrastructure in Scandinavia (Norway, Denmark, and Sweden). However, all countries have some experience from such contracts as well as other forms of performance (build-operate-maintain) contracts. Also, in all countries there has been an upsurge in interest for PPP contracting. This chapter briefly reviews the experience from PPP and other forms of performance contracts in road and in rail infrastructure in the three countries and discusses prospects for further developments.

Norway

Norway's long coast with extensive archipelagos has made travel between islands and peninsulas extremely cumbersome. The introduction of ferries charging for crossing was a huge improvement. Being used to pay for crossings made it straightforward to pay also for tunnels and bridges when ferries gradually have been replaced. The country therefore has a long tradition of toll funding of road infrastructure. The country has realised more than a hundred toll-funded projects since WW2, initially in non-urban areas and later in inter-urban and urban roads, including in the three largest cities¹. However, it was not until 2001, that Stortinget decided to tender three motorway links, to be partly funded by road tolls, for PPP contracts.

In these three cases, contractors finance, build, operate and maintain roads until they are transferred to the state after 25 years. In spite of the toll funding, contractors are not paid by usage, but on an availability basis, although there is some compensation for increased maintenance costs if road use exceeds a certain threshold. Toll revenues are collected and kept by the state. Each tender started with a pre-qualification, after which four consortia were invited to submit bids. In a second round, two of them were invited to com-

1 Odeck, James & Bråthen, Svein. (2002). Toll financing in Norway: The success, the failures and perspectives for the future. *Transport Policy*. 9. 253-260.

petitive dialogue before their submission of final bids. The winners in the three tenders were three separate consortia.

An initial evaluation conducted in 2007 by the Institute of Transport Economics² concluded that these tenders had been successful. Constructions were in all three cases completed on time. Delays that otherwise are common were avoided, which was estimated to correspond to a gain of 10-15 percent of the calculated net present value of the road links compared to what could have been expected in a standard procurement. The main source of this is road users' benefits from immediate access. On the other hand, it was noticed that contractors were not given much room for technical innovation and there was no evidence indicating any substantial reduction of costs of construction or maintenance. On the other hand, the evaluators recorded a considerable amount of innovation in other dimensions, such as implementation strategies, project organisation, contracting and financing. It was also found that risk allocation had been more appropriate than if a conventional procedure had been used.

More recently, since 2017, the Norwegian government has tendered another three motorway links for

2 Knut Sandberg Eriksen, Harald Minken, Glenn Steenberg, Thorleif Sunde, Karl-Erik Hagen, 2008, *Evaluering av OPS i vegsektoren*. Transportøkonomisk institutt, Oslo, rapport 890/2007.

25-years PPP contracts. The most important change of contract design in this round was that contractors receive a large part (but not all) of the total compensation on completion of the construction work. This change was made in order to reduce the contractors' financing costs, presumably at the expense of some loss of the strength of performance incentives.

Denmark

Like Norway, Denmark was a late starter in tendering PPP contracts for transportation infrastructure. However, the Danish government has developed a specific institution for procurement of integrated mega-size design-build-operate-maintain projects, called the State Guarantee Model, SGM³. It is not a PPP, but bears resemblance in some dimensions. In this model, a so-called special purpose vehicle is established that finances and contracts design, build, operation and maintenance sub-contractors. This body is responsible for the financing of the projects, but based on a full guarantee by the Danish state. Further, the final funding is (supposed to be) entirely based on tolls paid by users.

³ Kaj V. Holm, Thomas Horstmann Nielsen, 2018, *The Danish State Guarantee Model for Infrastructure Investment*. OECD/ITF Working Group Paper.

This concept was first developed for the Storabælt Fixed Link that opened 1998, then for the Öresund Fixed Link (jointly owned and guaranteed with Sweden) that opened in 2000, and is now used for the Femernbælt Fixed Link that is expected to open in 2028. Both links currently in operation were completed on time and are considered to be success-stories⁴. In fact, as traffic volumes on the Storabælt link turned out to be much higher than projected, the Danish parliament decided to let the company finance other infrastructure investments by dividend payments. To further allow this, the repayment period was extended from 25 to 30 years.

Procurement and contracting were adapted in several ways in order to give bidders and contractors strong incentives to contribute to the design of the objects, in spite of the weaker commitment compared to in a PPP contract. In the case of Storabælt link, the form of the structure of one of four sections was not at all defined before the tender, so bidders were asked to make their own proposals for this. For another section, several alternatives that bidders could choose among were identified. A two-stage procedure with competitive dialogue was used and bids were evaluated on a quality-price basis, where quality criteria

4 Holm & Horstman Nielsen, *The Danish State Guarantee Model for Infrastructure Investment*.

included robustness of the management systems and construction methods⁵.

Reflecting on the experiences so far, Holm & Horstmann Nielsen⁶ remark that the SGM has both merits and drawbacks compared to a PPP model. A possible disadvantage is the division of contracts between construction on the one hand and operations and maintenance on the other. To alleviate this problem, contracts for the Femernbelt link cover both construction and the early years of operation. Another disadvantage could be the possibility of political interference, as the special purpose vehicle is fully owned by the state. On the other hand, a possible advantage is that the investment horizon is not limited to a specific contract length. As an example of this, the special purpose vehicle has developed innovative ways of prolonging the expected life of the assets by corrosion protection. However, it should be noticed that there may be similar incentives in a PPP model if the expected remaining life length affects the transfer value of the asset. Another merit of this model is the learning within the same organisation made possible, and which seems to have benefitted the Fix-Link projects following the first one.

5 Leif Vincentsen, Kim Smedegaard Andersen, 2018, *Risk Allocation in Mega-Projects in Denmark*. OECD/ITF Working Group Paper.

6 Holm & Horstman Nielsen, The Danish State Guarantee Model for Infrastructure Investment.

More recently, Denmark has come to use PPPs in several sectors, but so far there is only one case in land transportation. This is a 26 km motorway-project that was built 2010-2011 in southern Jutland. The concession for this is for 26 years, includes maintenance and is paid for quarterly by availability fees. This project was initiated at the county level but the central government had to take over when counties were abolished in a reform of the sub-government sector⁷.

Sweden

The first and so far only experience of PPP for land transportation infrastructure in Sweden is the Stockholm-Arlanda airport rail link that opened for services in November 1999, one year before schedule.

The tender for this contract included a pre-qualification process with 30 bidders followed by a final round with four bidding consortia. The A-Train consortium was finally selected and approved by Riksdagen in April 1994. The construction was jointly financed by the state and the private consortium, with

⁷ Warsen, Rianne, Carsten Greve, Erik-Hans Klijn, Joop Koppenjan, 2018, *With or without you? Perceptions on governing Public-Private Partnerships by public and private actors in Denmark*. Paper prepared for the XXII Annual IRSPM conference Edinburgh, 11-13 April 2018. https://irspm2018.exordo.com/files/papers/319/final_draft/Warsen_et_al_IRSPM_paper_2018_Governing_PPPs_in_Denmark.pdf

a private contribution of approximately two-thirds. The asset is owned by the state, but A-Train has a concession that gives exclusive rights for traffic in 45 years (1995-2040) with an option for prolongation in another 10 years. A-Train is free to set ticket prices, but faces competition primarily from bus services with considerably lower prices (albeit longer travel time).

A follow-up by the National Audit⁸ concluded that evidence is incomplete on the total cost of the project, but there is no indication that it was more expensive than if the construction work had been procured on conventional terms. Also, as in the case of the Norwegian motorways, delivery on time or even in advance of schedule was considered to be a substantial benefit of this contract design.

Further, it seems that the winning consortium had to pay a high price for accepting the revenue risk, as there was a slump in air travel in the years after commencing traffic, because of the 9/11 and SARS events, which brought the consortium near to defaulting on its loans⁹. However, in January 2004, the Macquaire Group acquired all shares in A-Train plus its outstanding debt, which brought in an owner with deep

8 Riksrevisionen, 2004, *Arlandabanan – Insyn i ett samfinansierat järnvägsprojekt*, RiR 2004:22.

9 Nilsson Jan-Eric & Hultkrantz Lars & Karlström Urban, 2008. "The Arlanda Airport Rail Link: Lessons Learned from a Swedish Construction Project," *Review of Network Economics*, De Gruyter, vol. 7(1), pages 1-18, March.

insight into the appropriate management of this type of operations, something that was lacking among the partners of the original consortium¹⁰. Services have been operated since then with high punctuality and without major interruptions. The number of passengers annually has increased from 3.4 million 2005 to 5.8 million 2019.

The contract period is extremely long compared to what is usual in PPP projects for road infrastructure. The agreement was signed just before regulatory reforms that liberalised the Swedish market for rail travel and in hindsight, several features of the contract terms would probably had been different if that had been projected. In particular, the terms for third party access to the stations were initially not very favourable to competition, and the platforms were higher than the national standard, which means that the operator's rolling stock cannot be used in other parts of the national network¹¹ ¹². However, today close to 40 per cent of the train passengers to and from Arlanda ride on trains operated by other companies and pay a fee for entering the airport.

In road infrastructure there are a few long-term Design-Build-Maintain (i.e., not Finance) objects in

10 Nilsson et al., "The Arlanda Airport Rail Link"

11 Nilsson et al., "The Arlanda Airport Rail Link"

12 Riksrevisionen, 2016, *Erfarenheter av OPS-lösningen för Arlandabanan*, RiR 2016:3.

operation in Sweden. The first such object is a cross-link between two motorways north of Stockholm that was built 2005-2008. The contract includes a commitment for operation and management during a 15-year period. These have been followed by two bridge-based by-passes in central and northern Sweden, with a 20-year term for operation and maintenance duties. Both projects are partly funded by bridge tolls, but these are collected by the state. Contractors are paid a fixed price, with bonus opportunities for early completion.

In 2017, a government committee review investigated whether private finance could be a possible remedy to notorious cost overruns and delays of road and rail infrastructure experienced in construction projects. This was especially noticeable in connection to the completion of seven mega-size road and rail objects that were initiated in the 1990s and finalised during 2006-2017 (another one is expected to be opened in 2030). A recent study on Swedish data by Nilsson et al.¹³ has provided evidence on this issue also for “normal-size” objects. 776 contracts relating to contracts in both the road and rail sectors for both investments and maintenance measures that cost

13 Nilsson, Jan-Eric, Johan Nyström and Johan Salomonsson, 2019, *Cost overruns in construction contracts tendered by the Swedish Transport Administration*. Swedish National Road and Transport Research Institute, VTI rapport 1011.

more than €1 million were studied. It was found that cost overruns for railway contract have a 94 percent probability and for road contracts it is 86 percent. The average cost overrun for rail contracts is 32 percent and for road contracts 20 percent.

Based on economic and legal arguments, the committee concluded that there was a strong case for getting experience on how PPP would work in practice in the Swedish context. It suggested that the government should go ahead with PPP contracts for three objects on a trial basis. So far, however, this has not led to further action.

What's next?

It is clear that PPPs and other performance contracts do not dominate the scene for procurement of large infrastructure investment in Scandinavia. In fact, the opposite is true. The Norwegian PPPs for motorways are exceptions in Scandinavia as a whole. The Danish PPP motorway was initiated at the county level, not by the national government. In Sweden, the rising interest in PPPs for transportation infrastructure demonstrated in a government committee report in 2017 has cooled down, at least for the time being. The reason is

a recent scandal caused by massive cost-overrun and operational failures in Stockholm's New Karolinska Hospital, which was built under a PPP contract. This seems to have lowered decision-makers' appetite for PPP in general, irrespective of the large differences in challenges and experiences from meeting them with such contracts in other fields such as road construction.

However, the construction sector in Scandinavia, as in the rest of Europe, is very much in need of impetus for technological development and productivity growth. Also, as demonstrated¹⁴ in the case of Sweden, the industry has not yet come to terms with the systematic cost overruns. These two motives are the likely drivers of a continued search for organisation and contracting forms that allow the forces of competition and incentives to develop the sector.

In all Scandinavian countries, there are two further factors that will probably energise this pursuit the coming years. One is the need for fiscal consolidation in the years to come after the coronavirus pandemic, which makes it likely that projects that can be fully or partially funded by user charges will have some advantage in the overall prioritisation of projects. Some road cases have already been suggested for

¹⁴ Nilsson et al., *Cost overruns in construction contracts tendered by the Swedish Transport Administration*.

Stockholm. The second is that there are some large cross-border projects in Scandinavia (Metro Copenhagen-Malmö, Fix-Link Helsingborg-Helsingör and railway Oslo-Stockholm) that are in various stages of the planning process. These projects would require special solutions with respect to organisation, financing and funding.

As an example, the proposed rail line between Oslo and Stockholm would reduce travel time from 5h20m to 2h55m and thus make train travel competitive with air travel. This could be accomplished in part by two new sections that shorten the existing line and in part by an upgrade of the current infrastructure to double track from single track. A published “business proposal”¹⁵ proposes a profit-sharing model to attract private capital to the two green-field parts, which represent approximately two-thirds of the total investment. In return investors would get concession to a special track fee on these segments.

Therefore, the experiences from the Norwegian PPP contracts will be followed by great interest in all Scandinavian countries. If they turn out to be successful, they are likely to be followed by more, and even larger, objects.

¹⁵ Oslo-Stockholm, 2019, “Business case”. <https://www.oslo-sthlm.se/wp-content/uploads/2019/05/mzovzswcjkrlrhcvckrau.pdf>

References

- Knut Sandberg Eriksen, Harald Minken, Glenn Steenberg, Thorleif Sunde, Karl-Erik Hagen**, 2008, *Evaluering av OPS i vegsektoren*. Transportøkonomisk institutt, Oslo, rapport 890/2007.
- Kaj V. Holm, Thomas Horstmann Nielsen**, 2018, *The Danish State Guarantee Model for Infrastructure Investment*. OECD/ITF Working Group Paper.
- Nilsson Jan-Eric & Hultkrantz Lars & Karlström Urban**, 2008. "The Arlanda Airport Rail Link: Lessons Learned from a Swedish Construction Project," *Review of Network Economics*, De Gruyter, vol. 7(1), pages 1-18, March.
- Nilsson, Jan-Eric, Johan Nyström and Johan Salomonsson**, 2019, *Cost overruns in construction contracts tendered by the Swedish Transport Administration*. Swedish National Road and Transport Research Institute, VTI rapport 1011.
- Odeck, James & Bråthen, Svein**. (2002). "Toll financing in Norway: The success, the failures and perspectives for the future". *Transport Policy*. 9. 253-260.
- Oslo-Stockholm**, 2019, "Business case". <https://www.oslo-sthlm.se/wp-content/uploads/2019/05/mzovzsw-cjklrhcvckrau.pdf>
- Riksrevisionen**, 2004, *Arlandabanan – Insyn i ett samfinansierat järnvägsprojekt*, RiR 2004:22.
- Riksrevisionen**, 2016, *Erfarenheter av OPS-løsningen for Arlandabanan*, RiR 2016:3.
- Leif Vincentsen, Kim Smedegaard Andersen**, 2018, *Risk*

Allocation in Mega-Projects in Denmark. OECD/ITF Working Group Paper.

Warsen, Rianne, Carsten Greve, Erik-Hans Klijn, Joop Koppenjan, 2018, *With or without you? Perceptions on governing Public-Private Partnerships by public and private actors in Denmark*. Paper prepared for the XXII Annual IRSPM conference Edinburgh, 11-13 April 2018. https://irspm2018.exordo.com/files/papers/319/final_draft/Warsen_et_al_IRSPM_paper_2018_Governing_PPPs_in_Denmark.pdf

Smarter investments in transport infrastructure

Experience shows that investments in transport infrastructure often do not end up as planned. Costs are often underestimated and projects are delayed. One possible way to reduce the problems is to involve the private sector more. This can be done with Public-Private Partnerships (PPP) and other forms of contracts for designing, building, financing and managing an asset.

Under the right circumstances, the forces of incentives and competition in the private sector can be used to decrease costs for construction and maintenance, shorten construction times, and produce assets that are as useful as possible. These solutions are still far from definitive, and we see a lot of variation and experimentation around Europe. There are risks that follow with complex contracts and long-term commitments. This book summarises the research in the field and describes examples from Belgium and the Scandinavian countries, with relevant conclusions for decision-makers.

Andreas Bergström is Deputy Director at Fores. He has a background as a science journalist and as a political advisor to several liberal ministers in the Swedish government, including the party leader. He has also been a member of the ELF board of directors.

