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Brownfield regeneration and the shifting of financial risk: between plans and reality in public-private partnerships

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ABSTRACT

Internationally, brownfield regeneration projects are delivered through public-private partnerships that form complex legal and structural delivery mechanisms. Utilizing private-sector finance and skills is an accepted practice to reduce financial risk for the public sector while delivering profits for the private sector. This article explores three international brownfield regeneration schemes. It highlights how and why financial risk remains within the public sector from the outset or returns to the public sector over time, despite the initial rhetoric for this burden to be carried mainly by the private sector. The analysis improves the empirical understanding of financial risk dynamics in brownfield regeneration.

KEYWORDS

Public-private partnerships; Financial risk; Brownfield regeneration; Local government; Governance

1 Introduction

Public-private partnership (PPP) has become a common arrangement for regenerating previously developed land, also known as *brownfields* (Glumac et al. 2015). Brownfields provide a range of potential new functions and uses, including new office and retail space, housing and communal space, and the associated infrastructure to improve accessibility. Public and private-sector actors enter PPPs for brownfield regeneration for different reasons. First, PPP agreements benefit the public sector as they can be used to decontaminate and remediate difficult sites, generate tax returns, deliver public infrastructure and services, and return a profit on brownfield redevelopment. PPPs can help create a new urban area for the city's and its residents' benefit while limiting various risks for public-sector actors (including financial risks), as particular tasks and responsibilities are transferred to private-sector actors. Second, the model is attractive to private-sector actors as it allows developers to maximize their profits while sharing risks with the public sector (Mota and Moreira 2015). Having the municipality as a partner in the development process means the public sector, as the planning

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authority, has a vested interest in ensuring the scheme provides a financial return for both themselves and the private-sector investors.

Over the past few decades, the revitalization of run-down neighbourhoods and brownfields has increasingly come to rely on schemes in which private-sector property development is the driving force (Turok 1992). Magalhães and Karadimitriou (2018) state that these projects used to be led and funded by the public sector but 'have become dependent upon private initiative, private funding and the dynamics of real estate markets for the delivery of the social and economic policy goals expected from them' (see also Karadimitriou, De Magalhães, and Verhage 2013). Weber (2010: 256) observes a 'penetration of finance into particular sectors of the economy', including property markets: 'Capital is switched to the development and acquisition of property, as real estate experiences erratic bursts of hyperactivity when rates of profit from other investments are relatively low and falling' (Weber 2010; 256; see also Beauregard 1994).

Risk transfer is a crucial component of regeneration projects built on PPP arrangements: a government hands over particular types of project-related risk to private-sector partners with the knowledge and expertise to manage or mitigate it. In doing so, local governments allegedly free themselves from recurring burdens such as delays and cost overruns (Flyvbjerg, Skamris Holm, and Buhl 2014; Wolmar 2018). This rationale has been particularly evident regarding the delivery and operation of large-scale public infrastructure, but it applies just as much to regeneration schemes for brownfields and urban districts (Alexander 2012; Codecasa and Ponzini 2011; Kort and Klijn 2011, 2013). Scholars have written most extensively on PPPs in the provision of public infrastructures and facilities (Barlow and Köberle-Gaiser 2008; Bel, Brown, and Marques 2013; Carpintero and Siemiatycki 2015). These PPPs are 'long-term infrastructure contracts that emphasize a tight specification of outputs in long-term legal contracts' (Hodge and Greve 2007; 547; see also Hodge and Greve 2010). As for the topic of *risk* in PPPs, there has generally been a focus on public infrastructures and facilities (Carpintero and Siemiatycki 2015; Hellowell and Vecchi 2013; Iossa and Martimort 2012; Siemiatycki and Farooqi 2012). Brownfield regeneration PPPs, which belong to the PPP category of 'partnerships for urban renewal and economic development' (Hodge and Greve 2007: 547), have long received less academic attention – particularly regarding the logic and dynamics of risk. For instance, Alexander (2012) and Codecasa and Ponzini (2011) touch upon PPP issues relative to brownfield redevelopment, and Kort and Klijn (2013) address PPP in inner-city revitalization, but none of them discuss financial risk. Comparing brownfield regeneration projects to widely studied public infrastructure projects, they: (1) come with different risk allocations; (2) are of different and often higher political salience; (3) tend to involve multiple sectors and users; (4) have a direct impact on (future) residents; and most importantly, (5) for their complex urban environment involve risks that are more difficult to distinguish, assess, and allocate. Brownfield regeneration projects come with higher complexity and uncertainty, making it more challenging to extract risk allocations in contractual arrangements and retain their original setup in the longer term.

More recently, planning scholars have started to research considering financial risk relative to brownfield or urban regeneration processes and outcomes. A common finding is that (global) finance capital and property markets are strongly linked to the viability and social benefits of partnership contracts and urban regeneration schemes

(Guironnet and Halbert 2015; Halbert and Rouanet 2014; Theurillat, Vera-Büchel, and Crevoisier 2016). This leads to a further 'marketization of planning' (Ferm and Raco 2020: 218).

This article seeks to contribute to the aforementioned literature and provide a better understanding of how and why financial risk dynamics evolve throughout brownfield regeneration PPPs. Furthermore, we seek to uncover recurring themes at play internationally, i.e. transcending local or national factors. We address the dynamics and logic of financial risk transfer by analyzing brownfield regeneration cases in Brazil, the Netherlands, and the United Kingdom (UK). For each of these cases, the article (1) discusses the transfer of financial risk, (2) explains the motives, actions, and implications for the parties involved as they manage financial risk in different settings, and (3) argues how through time the burden of financial risk remains with or passes back to the public sector.

The article opens with a literature-based overview of PPPs in brownfield regeneration and the management of financial risk within such schemes. Second, in the methodology section, we present three questions about the logic and dynamics of financial risk and discuss how we collected and analysed our data. Third, we disentangle three cases and highlight their backgrounds and financial risk transition processes. Finally, the discussion and conclusion draw together the empirical findings to address this study's broader implications for research and practice.

2 PPP, financial risk, and brownfield regeneration

Generally accepted understandings of the concept of PPPs are hard to find, partly because the phenomenon has been around for centuries. Partnerships have been applied in various forms and in diverging sectors – treasure management, mercenary warfare, and railway exploitation, to mention a few historical examples (Wettenhall 2005). PPP are often seen as a form of project finance wherein the private sector handles the upfront costs for the provision of public infrastructures. The proliferation of PPP relates to the New Public Management approach, developed in the 1980s and intended to make public service more 'business-like' and efficient, using private-sector management models. PPPs enable local government organizations to deliver complex schemes or services (Bel, Brown, and Marques 2013). Being 'incentive-compatible contracting arrangements' (Grimsey and Lewis 2004: 6), they are more than just financing tools to allow these developments to take place, though. They also allow upfront engineering with the private party, project managing delivery, and access to a revenue stream once development is complete (Grimsey and Lewis 2004). As such, PPPs are part of a governance rationale that focuses on performance and results control, guided by ideas on efficiency.

Their significant physical and temporal scale render brownfield regeneration PPPs risky ventures, typically involving complex actor constellations in particular socio-spatial environments compared to the relative straightforwardness of public infrastructures and facilities. Regeneration always affects (future) residents directly, and it generally involves more speculative forms of investment: there are planning restrictions that need to be circumvented; land may or may not be contaminated; there is a lack of infrastructure on-site; and there is no clarity on who will take care of it (Dixon 2007; Dixon, Otsuka, and Abe 2011, 971–972). Then

some risks are difficult to foresee, let alone manage, such as macroeconomic shifts and their impacts on property markets. Rybnicek, Plaklom, and Baumgartner (2020: 1181) highlight that in 'long-term partnerships, contractual arrangements need to cover a long period and it is not possible to define a "complete" contract considering all relevant aspects and future incidents.' Uncertainties – i.e., risks – are everywhere. These risks influence the success or failure of the scheme. Consequently, common contractual arrangements for brownfield regeneration significantly differ from the long-term infrastructure contracts used for roads, hospitals, and other large-scale infrastructure projects.

What is risk?

In this article, we define risk within brownfield regeneration PPPs as: the probability of an event or type of behaviour and the severity of the impact on the project. Many types of risk affect the delivery of a PPP scheme, for instance, site risks; design and construction risks; financial risks; changes in law; and political change. Financial risks include, among others, a lack of capital and inappropriate debt management. Changes in borrowing costs, general economic conditions, or fluctuating exchange rates are a few possible causes of these problems that could lead to insolvency. Examples of construction risks are delays due to unanticipated construction problems or site conditions, and faulty construction techniques. Many of these impacts can be predicted and mitigated through effective planning. However, the impact of these risks can delay the progress of a regeneration project or lead to cost overruns, either for a public-sector partner, a private-sector partner, or both (Lammam, MacIntyre, and Berechman 2013). This is particularly the case for brownfield regeneration PPPs, where the works can take place over decades, increasing risks associated with economic cycles, political change and associated government support and funding (Rybnicek, Plaklom, and Baumgartner 2020). For instance, if a private concessionaire bears the risk of a task it has failed to accomplish – as in not meeting a requirement set in the contractual agreement – it has to fix the problem at its own expense, or it may face financial consequences and thus not recoup its initial investment in the project.

Financial risk transfer

Financial risk, and most importantly, how actors involved in urban or infrastructure projects deal with it, is a challenge for both public and private-sector actors. Flyvbjerg (2009) finds that cost overruns are a common theme in large-scale infrastructure projects. In transportation projects, management and staff depict 'surprisingly little systematic knowledge … about costs, benefits and risks involved' (Flyvbjerg, Skamris Holm, and Buhl 2014: 131). Risk transfer is, therefore, one of the critical motivations for (local) governments to embark on PPPs and resolve recurring issues. Incorporating private-sector skills is utilized to improve records of on-time and on-budget project delivery and building projects of better quality. Whether these promises hold has been debated in the academy and practice (Flyvbjerg, Skamris Holm, and Buhl 2014; Siemiatycki and Farooqi 2012; Vecchi, Hellowell, and Gatti 2013; Yescombe 2007). For instance, Loosemore and Cheung (2015) argue that the underlying problem with many PPPs is that risks are managed as a linear process rather than a systems issue.

They explain that while a systems approach to risks would help mitigate these issues, silo mentalities and path dependencies of projects mean that many risks are difficult to remove. Carpintero and Petersen (2016) suggest from their research on water infrastructure provision that a stable network of actors is required to minimize weaknesses in a partnership and ensure an appropriate allocation of risks to reduce construction and revenue risks. Kelly et al. (2015) highlight that insufficient planning for risks continues to occur at the planning stage of projects due to optimism bias, with underestimation of costs occurring in most infrastructure schemes.

Dynamics of risk in regeneration projects

In the field of brownfield regeneration, PPP as a project arrangement brings, in particular, practices related to risk. Alexander's (2012) research focuses on municipality-led developments that leverage private finance to enable the decontamination of brownfields to make them available for regeneration. He highlights that 'private development partners explore avenues for distributing the risk inherent in the project to their public partners' (2012: 754). Glumac et al. (2015) emphasize that consensus between the public and private sectors is essential to delivering a brownfield regeneration scheme, especially when designed to enhance the local environment. Savini (2017) discusses risk dynamics in incremental, co-produced forms of urbanism, which are becoming increasingly popular. He argues that recent reforms of urban development policy in Amsterdam (the Netherlands) followed a discourse of trying to reduce the long-term risks of development. These policy reforms, however, have not reduced risk but shifted and reorganized it toward individuals and public budgets within a frame of short-term investment strategies – which has triggered fragmentation of the urban fabric. Also, Savini (2016) illustrates the limited adaptive capacity of private-law instruments, such as contracts for regeneration projects, with implications for the organization and distribution of risks across the actors involved in these projects.

Several scholars dive into financial risk in specific urban regeneration policies and projects, paying attention to the micro-dynamics and details of arrangements. Weber (2010: 254) addresses the use and impact of Tax Increment Financing (TIF) in Chicago, critically examining an incentive that 'allows municipalities to designate a "blighted" area for redevelopment and use the expected increase in property … taxes there to pay for initial and ongoing redevelopment expenditures, such as land acquisition, demolition, construction, and project financing' (see Pacewicz 2013 for a study on TIF in two other US cities). By discussing in-depth the internal economic mechanics of an urban redevelopment project in the Milan Region, Savini and Aalbers (2016) reveal an increased detachment between land-use planning processes at the local level and the logic of financial investors at other scales. Guironnet, Attuyer, and Halbert (2016) also focus on the entanglements between financial capital and the built environment, reporting a case of a large-scale redevelopment project in the French municipality of Saint-Ouen where the expectations of investors are met at the expense of the local authority's agenda. Each of these studies demonstrates that urban redevelopment is shaped by an increased dependence of local governments on property markets, which has significant implications for the financial risk of land development for local governments (see also Guironnet and Halbert 2015; Hackworth 2002). Furthermore, local

governments may take care of collateral management when unforeseen yet inevitable events occur, such as macroeconomic turning points. Here, public-sector actors face the challenge of trying to serve the public interest – e.g., guaranteeing the production and delivery of public facilities and services through a brownfield regeneration project – while trying to keep private-sector actors on board with acceptable returns. As Klink (2022) puts it, with these unexpected events and imperfect risk filtering, 'planning becomes effectively locked in and must respond to its formal responsibility to make ends meet.' In Ashton, Doussard, and Weber's (2016) case study of infrastructure asset leases by the City of Chicago they find that while the respective concession agreements 'seemingly protect the City [of Chicago] from the claims of investors, creditors and counterparties and provide it with new powers, they enmesh the City in a set of financial relationships that expose it to liabilities not accounted for in lease agreements' (2016: 1384). Against this backdrop of critical perspectives on the ambiguous design of risk transfer in a wide range of PPPs, from infrastructure leases to neighbourhood revitalization projects, little is known about how and to what extent public-sector actors shift responsibilities and financial risks in brownfield regeneration PPPs.

3 Methodology

To better understand risk dynamics in brownfield regeneration, we explore financial risk transfer in three diverse cases. The cases vary in geography, as they are based in different planning systems: Brazil, the Netherlands, and the UK. Furthermore, the cases differ in scale, scope, delivery stage, and the number and types of project partners involved. Although this made it challenging to develop an analytical framework that could address the specificity of each of the cases while allowing for cross-case comparison, finding similarities within a heterogeneous sample could reveal general empirical patterns. As such, our case selection strategy potentially strengthens the argument and theoretical contribution of the study (Seawright, Gerring, and Gerring 2008).

Within each case, a PPP has been set up to regenerate a brownfield site within an urban area. We explain the dynamics of risk transfer in each case by addressing the three questions mentioned above. First, we discuss the background of each case by explaining the project plan and original risk arrangement and by setting the stage for a deeper discussion (question: how and to what extent do public-sector actors shift responsibilities and financial risks in brownfield regeneration?). Second, we provide an account of when and how the financial risk arrangement changed (question: how do these arrangements for financial risk evolve?). Third, we address the impact and legacy of the dynamics of both financial and other risks associated with the project (question: how do real-life events and decisions on risk – i.e. risk transfer in practice – compare to the original risk allocations – i.e. risk transfer in contract?). Each answer comes with specific aspects of focus (see Table 1). Focusing on a small number of cases enables us to observe their similarities and differences (Pickvance 2001). By identifying similarities and differences in time and size, we illuminate how financial risks are initially allocated and how this allocation works or may change through the course of a regeneration process regardless of the size and scale of the development.

The empirical data collection is based on qualitative analyses in three phases. The first phase involved the identification of regeneration schemes in each country. Cases

Table 1. Research questions: what they involve and how we report on them.

Research questions	Aspects covered	Empirical report
(1) How and to what extent do public-sector actors shift responsibilities and financial risks?	Original actor constellation, contractual agreement, and financial risk allocation	Background to case study, explaining original project plan and financial risk arrangement
(2) How do arrangements for financial risk evolve over time?	Key moments and decisions in development and/or planning process that bear relevance to financial risk arrangement	Account of when and how financial risk arrangement changed (dynamics)
(3) How do real-life events and decisions compare to the original financial risk allocations?	Consequences of financial risk shifting for actor constellation, contractual agreement, financial risk allocation, and project plan in general	Discussion of impact and legacy of dynamics of financial risk

were selected based on scale, stage of delivery, and timescale of delivery. A desktop study was conducted on each case to identify the key agencies and actors involved in the regeneration process and the relevant documentation about the partnership.

The second phase involved semi-structured interviews with nineteen respondents who were or had previously been involved with the regeneration process: three respondents for the Dutch case (respondents MA1-MA3), seven for the Brazilian case (RJ1-RJ7), and nine for the English case (TA1-TA9). The interviews took place between September 2016 and April 2018. The use of semi-structured interviews allowed the interviewees to add new information to the conversation yet allowed the interviewer to retain control of the discussion. Confidentiality requirements preclude the publication of the positions of informants, who were developers, local politicians, officers of governmental organizations, municipality planning staff, and representatives from interest groups. This broad range of respondents provided varied interpretations of the regeneration process, the contractual process, funding arrangements, and risk management processes involved in each PPP. The interviews lasted between 45 and 90 minutes, were digitally recorded, and processed into summaries of the research questions (Table 1). To ensure empirical accuracy, we fed back our interpretations to the interviewees.

The third phase of data collection involved the review of relevant (and in some cases confidential) contractual documentation relating to the regeneration programme. This was especially relevant in the Dutch case: having detailed contractual data about this case allowed us to conduct fewer interviews, as significant amounts of information could be extracted from confidential documents. The three-stage approach to data collection has allowed us to provide documented evidence to support or correct the information we had been provided with through the qualitative interviews.

4 Findings

This empirical section reports the results of the case study research we conducted on risk dynamics: Belvédère in Maastricht (the Netherlands), Firepool in Taunton (UK), and Porto Maravilha in Rio de Janeiro (Brazil). Table 2 provides a brief overview of each case study; Table 3 summarizes the financial risk dynamics in the projects analysed.

Table 2. Case studies: facts and figures.

Case study	Belvédère (NL)	Firepool (UK)	Porto Maravilha (BRA)
Location	Maastricht	Taunton	Rio de Janeiro
Project start-end Date	2000-unclear (no formal project schedule)	2012–2021	2009–2026
Public-sector party(ies) – Contract Signatories	Municipality of Maastricht (City Council and Board of Mayor and Aldermen)	Network Rail, Taunton Deane Borough Council (TDBC), Somerset County Council, and the Heart of the South West Local Enterprise Partnership (HSWLEP)	Urban Redevelopment Company of the Port Region (CDURP); Real Estate Investment Trust Porto Maravilha (REIT PM)
Private-sector party(ies) – Contract Signatories	Until 2010/2011: BPF Bouwinvest; ING Real Estate Since 2011: N/A	Great Western Railway (GWR), formerly First Great Western	Porto Novo Consortium (PNC): Odebrecht (37.5%), OAS (37.5%) and Carioca Engenharia (25%)
Estimated cost of regeneration	€1 billion (approx.)	£8.97 million (2012 prices)	R$8 billion (2011 prices)
Estimated cost split	Until 2010/2011: Municipality of Maastricht 33%; Bouwinvest 33%; ING Real Estate 33% Since 2011: Maastricht 100%	£4.6 million: Local Growth Deal funding (central government) £4.37 million: GWR and TDBC	R$8 billion: REIT PM

4.1 *Belvédère, Maastricht: shifting risk back to the public sector for better performance*

Background

A former brickyard northwest of Maastricht's old town (a city with approximately 120,000 inhabitants), Belvédère had been a largely vacant area renowned for crime when in the late-1990s a master revitalization plan was presented. Five years later, in 2005, the Municipality of Maastricht and two private-sector actors, ING Real Estate and BPF Bouwinvest, signed a partnership agreement and founded *WOM Belvédère*. WOM Belvédère was a public-private Urban Regeneration Company (URC) that would buy plots in the project area, service the land, then sell it to one of the partners for further development. Each partner invested €26 million into the public-private company (Interviewee MA1), with each partner having a 33% share. The Dutch Municipal Bank (BNG), a bank specializing in providing financing for (semi-)publicly owned organizations, provided an additional loan of €68 million and became the leading (debt) financier of the joint venture. BNG is owned by the Dutch state, provinces and municipalities.

Although each of the three contract signatories for the public-private URC – i.e. the Municipality of Maastricht, ING Real Estate, and BPF Bouwinvest – had a 33% share of that URC, the municipality had a 50% say in the decision-making process. The original plan for Belvédère was to build dwellings, offices, and retail space, with the capital value of the project expected to exceed €1 billion. This plan was considered realistic at the project's inception, with interviewees explaining that it was developed during economic growth and optimism. PPPs were the default delivery vehicle for joint ventures in the Netherlands, where public and private-sector partners shared project risks equally. Interviewee MA3 explained that transferring risks was 'a matter of course' during this

Table 3. Financial risk dynamics in the cases studied.

Case study	Belvédère (NL)	Firepool (UK)	Porto Maravilha (BRA)
Background	Urban regeneration company founded by municipality and two private-sector actors, with equal shareholdings and risk allocation.	Project Taunton established as a public arms-length delivery body to regenerate derelict railyards and cattle market.	Urban regeneration company founded by the municipality, real estate investment trust created by quasi-public welfare fund, and private concessionaire, all with different roles in the regeneration scheme.
Dynamics	Changing local real estate market affected business case of land development; private-sector actors exited joint-venture, leaving local government as single shareholder.	Politically sensitive scheme. National government funding would need to be returned if scheme was not delivered.	A shift in macroeconomic conditions (2014) affected the local real estate market and frustrated the aim of financing the regeneration plan through the assetization of development rights.
Risk transfer in contract	Equal allocation of shares and risk among Municipality of Maastricht and two private-sector actors.	Risk of failure placed on local government, rather than private company Great Western Railway (GWR).	Private developers and investors would assume financial risk of the regeneration plan by providing upfront cash through the acquisition of CEPACs.
Risk transfer in practice	Original risk transfer was undone by the municipality's decision to take over shares from private-sector partners.	GWR's costs underwritten by local municipality removing financial risk from private-sector company.	Never applicable, considering the key role of public-sector actors in speculating on the property market.
Impact and legacy	Depreciation of land value; municipality remained single landowner and manager to better monitor financial risks. Revised regeneration strategy was launched based on piecemeal approach to mitigate risk.	Work started on site seven years after government funding announced and was completed in 2021.	Public and quasi-public institutions assumed a prominent role as investors and risk takers; infrastructure improvements have been delivered; new real estate developments are taking place very slowly; public agents involved suffered financial losses.

period, with limited risk management undertaken compared with current planning practices.

In 2007 the two private-sector partners signed a partnership agreement that established a development corporation owned by private-sector developers 3W (on behalf of ING Real Estate) and BPF Bouwinvest. This private-sector development corporation, called the *OCB*, bore practically all of the risk of the real estate development, meaning that this neither fell on the public-private URC nor the municipality. The OCB thus meant that nearly every sub-project for real estate development was allocated to one of the two private-sector contractual partners.

Dynamics

Between the setting up of the public-private URC in 2005 and the establishment of the private-sector development corporation OCB in 2007, the local housing market had

begun to change, making it difficult to forecast future housing demand. This caused the actors' hesitation to move forward with their development plans after 2007. The differences between each private partner in the private-sector development corporation OCB started to come to the fore, with fierce discussions about how development should proceed. Interviewee MA2 explained: 'The two private-sector partners had different objectives … One of them was an investor who was interested in making good investment products … while [the other] was a commercial project developer.' This statement highlights the differences between an investor's long-term approach and a developer's short-term profit orientation within PPPs.

Each of the private parties had a conflict of interest in both the public-private URC and private-sector development corporation OCB, with the URC wishing to sell serviced land at the highest price possible, and the OCB's desire to buy this land at the lowest price possible (Interviewee MA3). Moreover, no formal agreement had been signed between the URC and the OCB that obliged them to make development decisions, let alone hold each other accountable for delaying those decisions. This standstill led to financial issues for the municipality. As the municipality had no control over the private-sector development corporation OCB, the lack of a final agreed project meant that the municipality was waiting for the regeneration to start, bearing the interest costs on the land purchased through the public-private URC. Interviewee MA2 explained: 'the municipality was waiting: when is the OCB finally taking off? Is anything ever going to happen?' This was a pertinent issue due to the financial investment (€26 million) and the outstanding loan from BNG (€68 million) with interest and no means of generating income from the land.

The global economic crisis of 2008 and its aftermath led to further delays, with private-sector developer ING Real Estate pulling out of the project in 2010; the bank's corporate strategy changed, and it decided to move away from risky project developments (Interviewees MA2 and MA3). ING Real Estate transferred its shares in the public-private URC, its development rights, and the associated risks to the municipality for free; it took its loss on its equity funding of the URC. ING's leaving was followed by private-sector developer BPF Bouwinvest's departure, where leadership had grown sceptical of the investment opportunities at Belvédère (Interviewee MA2). The municipality paid €3.6 million for BPF Bouwinvest's development rights (originally worth €23.4 million). Interviewee MA2 explained: 'None of the parties felt like they should feel bad about all this. [The municipality] felt like: just leave, because the partnership has had no use.'

Impact and legacy

The global economic crisis and the retrenchment of the private-sector partners had significant consequences for the Belvédère project budget, which had been on the books for over €140 million but was now worth approximately €70 million (Interviewee MA1). As interviewee MA3 explained, the public-private URC 'had bought a considerable amount of expensive land … which was absolutely no longer worth that much a couple of years later', so the municipality had no choice but to reconsider the project. A restart was required, including a new plan for land development and the acquisition of new project partners. The municipality had no intention of finding new shareholders for the public-private URC, as the company would remain in the hands of

the municipality for the sake of early involvement and the ability to monitor financial risks.

The restart of Belvédère was considered a window of opportunity: 'After [private-sector developer] BPF Bouwinvest had left, the people at the municipality must have felt that they could finally press ahead, having the authority of an acting director and being able to sell land to those who wanted it' (Interviewee MA3). Following a revised regeneration strategy, Belvédère has been redeveloped step by step since 2012, acknowledging uncertain market conditions and allowing for flexibility and temporality in planning practice. This has resulted in the municipality taking control of the whole project and managing the financial risks it is exposed to throughout the regeneration process. The size of the redevelopment plan has been reduced significantly. Ever since the municipality took over the shares and positions of private-sector developers ING Real Estate and BPF Bouwinvest in 2010 and 2011, the deficit on the land development plan has been decreasing as the municipality has been able to gain control over the development process.

4.2 *Firepool, Taunton: underwriting private company costs to protect government funding*

Background

Taunton is a medium-sized town in the southwest of England with a population of 70,000. In 2004, Taunton Deane Borough Council (TDBC), the local municipality, identified several sites close to the railway station that could be redeveloped as part of the *Taunton Vision* (TDBC 2004). The *Taunton Vision* was a master-planning exercise to identify how the town centre should redevelop. The regeneration sites included the former cattle market and railway yards, collectively known as Firepool. The local municipality created an arms-length delivery body, *Project Taunton*, to deliver regeneration. Project Taunton was funded by four public-sector bodies and quasi-governmental organizations (quangos): (1) TDBC and (2) Somerset County Council as the local municipalities, the now-defunct (3) South West Regional Development Agency (SWRDA), and (4) The Environment Agency (both quangos).

Like the Belvédère project, the regeneration of Firepool was impacted by the economic crisis in 2008, and the regeneration of the former cattle market site stalled. The housing development on the former rail yard, delivered by private developer Crest Nicholson, continued and was completed in 2018. Following the dissolution of SWRDA in 2011, a new sub-regional quango, The Heart of the South West Local Enterprise Partnership (HSWLEP), was set up in its place, albeit with significantly less funding and power than SWRDA. HSWLEP supported TDBC's delivery of the *Taunton Rethink* in 2014 (TDBC 2014), which altered the plan for the cattle market site from an office-led employment development into a retail and property-led development.

A significant part of the regeneration focused on accessibility, including enhancing the town's railway station within the Firepool site. Taunton Station provides frequent services to the major cities of London, Bristol, and Exeter. To fund the regeneration, TDBC, with the support of the HSWLEP, applied for £4.6 million of national government funding via the Local Growth Fund in 2012. As part of this award, local train operator First Great Western (now Great Western Railway [GWR]) agreed to provide

£4.37 million to install a new car park at the station, along with a bus interchange and a new main entrance for the station. Without GWR's match funding, TDBC would lose the government funding. As part of the agreement, Network Rail, the publicly owned rail company, and landowners of the former goods yard agreed to release land for 500 dwellings as part of the £4.37 million of GWR's contribution to the scheme. In entering the PPP, it was agreed that the financial risk for delivering the new car park would be shared between the local government, TDBC (through the Local Growth Funding), and the private-sector GWR.

Dynamics

When the station regeneration scheme progressed through the various planning stages the costs of providing the parking elements of the station renewal escalated. As part of their franchising agreement to provide rail services across the southwest of England, GWR was committed to supplying new parking spaces at any of the stations their services covered. This meant that GWR, as part of their rail service contract, did not have to supply new parking spaces at Taunton, despite their initial agreement with TDBC. This provided GWR with a strong position from which to de-risk their investment. Interviewee TA8 explained: 'So GWR have got as far as they'd be comfortable in putting money in … what happens with the HSWLEP funding is that if the scheme never comes to fruition then all the money has to be paid back [to the national government].' The contract agreed between TDBC and GWR allowed for a break clause for GWR if the costs escalated.

The station's regeneration was politically sensitive, as Interviewee TA2 explained that the scheme was highlighted as a public transport project by the UK government, which led to considerable political pressure to ensure that the scheme was delivered. The Conservative Member of Parliament for Taunton, Rebecca Pow, first elected in 2015, used the then Secretary of State [SoS] for Transport, Patrick McLoughlin, to promote the scheme as part of her re-election campaign. Interviewee TA3 explained: 'We've got many photographs with the SoS there [Taunton Station], and [the SoS] stated: "This station is so important".' GWR threatened to pull out of providing the car parking due to the escalating costs and the whole station regeneration scheme was at risk of failing due to a lack of funding from the private sector. This would have resulted in the £4.6 million of Local Growth Funding being returned to the national government. The reputational risk for this would be felt by the Member of Parliament, by failing to deliver her election pledge, and the local municipality, who would be seen by the civil service and the public as an authority that failed to deliver.

Impact and legacy

To ensure that the scheme could proceed, the local municipality, TDBC agreed to underwrite the private company, GWR's costs. This meant that if the scheme did not proceed GWR's investment was protected and the local municipality bore all the financial risk.

The failure to deliver the railway station improvements was also set against the backdrop of the stalled cattle market redevelopment (part of the wider Firepool regeneration). The cattle market scheme was finally granted planning permission in May 2018, having initially been rejected in 2016. The private-sector developer, St

Modwen, pulled out of the development process in September 2018, casting more uncertainty as to whether the site would ever be delivered. This further heightened TDBC's need to deliver the train station upgrade, as the car park would help to attract future developers to the cattle market site. In May 2019, work finally started to regenerate the station and was completed in 2021.

4.3 *Porto Maravilha, Rio de Janeiro: public-sector speculation on the property market*

Background

Porto Maravilha is a large-scale brownfield regeneration project in Rio de Janeiro that started in 2009 (Mosciaro 2018). It was conceived at a time of great economic optimism, as part of the 2016 Olympic Games legacy for the city, and aimed at recovering urban infrastructure and turning the old harbour into a mixed-use neighbourhood. The regeneration would bring in housing, offices, shops, hotels, museums, art galleries, restaurants, and improved public space.

The institutional and contractual schemes that were set up for this project were complex and involved a diverse constellation of public and private actors who assumed specific roles and risks. The project involved three main agents. First, the Urban Redevelopment Company of the Port Region (CDURP), a private law-based yet public company established by the Municipality of Rio de Janeiro in 2009, was assigned the task of carrying out the Porto Maravilha redevelopment project. Second, the Porto Novo Concessionaire (PNC), a private consortium, won the tender to deliver the project's works and services under a PPP contract – approximately R$ 7.6 billion at the time (US$ 2.5 billion). The contract comprised significant road works, including the demolition of an elevated expressway along the waterfront and the construction of a new road complex to replace it, involving tunnels and new avenues; the construction of a cycling network; the improvement of sidewalks and squares; and the restoration of several archaeological and architectural heritage sites, among other (smaller) interventions. Also, the PPP contract included public services for urban cleaning, garbage collection, public lighting, traffic monitoring, and control and routine maintenance of the road system and infrastructure networks for a period of fifteen years. A third key actor was the Real Estate Investment Trust Porto Maravilha (REIT PM), which Fundo de Garantia do Tempo de Serviço (FGTS) established – a semi-public welfare fund governed by workers, employers, and the federal government. FGTS is a prominent actor in financing real estate and infrastructure development.

The financial scheme adopted in this project is based on a planning instrument called 'Consorted Urban Operation' (CUO) (*Operação Urbana Consorciada*). A CUO is a financing mechanism for urban improvement through the 'assetization' of development rights (Klink and Stroher 2017). In it, the municipality issues a financial title called *Certificate of Additional Development Rights* (CEPAC), which developers can purchase and use to build beyond standard limits within a designated area. Regardless of the specificities, the rationale behind this instrument is similar to that of Tax Increment Financing bonds as analysed by Weber (2010). The advance sale of CEPACs promises to raise the resources necessary to finance improvements that trigger urban change in the area, creating conditions for these assets to appreciate together

with property prices. Following a similar logic to an Initial Public Offering, the issuance of CEPACs, if successful, would enable the municipality to benefit from the 'urban founder's profit' effect as scrutinized by Klink (2022). The potential returns of sold CEPACs are subject to market dynamics and expectations, tending to reflect land and property prices; they are often depicted as a tool that enables local governments to share the financial risks of urban redevelopment with private agents (Klink and Stroher 2017; Mosciaro 2018). However, the caveat is that local real estate market trends must be positive for the mechanism to work beneficially. If they are not, financial flows are bound to run dry and thus interrupt the regeneration process.

In Porto Maravilha, CDURP sold its entire stock of CEPACs to REIT PM in a single transaction. Also, CDURP delegated the works and services for the regeneration to PNC through an 'umbrella' PPP contract of 15 years, with an approximate value of R$ 7.6 billion. The contract that was established between CDURP and REIT PM placed the financial obligations of this PPP contract on the latter, which would guarantee the completion of the project. This deal also assigned CDURP the task of offering purchase options of a set of previously publicly-owned land plots within the area to REIT PM. The requirement to pay the instalments of the PPP contract by REIT PM was calculated based on a formula that considered the potential for converting the CEPACs into construction rights in plots whose purchase options had already been offered by CDURP. In practice, this provision pressurized CDURP to carry the task of gathering this land, whose ownership was distributed among a varied set of public bodies from different federative entities (union, state and municipality). In addition, the contract provided that the amounts paid for the effective exercise of the purchase option could be deducted from REIT PM's obligations, which meant that, in practice, such operations functioned as public land transfers to this agent.

Still, the arrangement transferred a significant amount of project risk from CDURP (a public agent) to REIT PM (a quasi-public body), which depended on the local real estate market's long-term performance to generate sufficient revenue. Also, the contract established between CDURP and REIT PM contained several exit clauses which allowed the latter to withdraw from the contract in the case of financial insolvency. In this situation, the CEPACs and the charge of paying the PPP contract would return to CDURP, making the Municipality of Rio de Janeiro the guarantor of last resort.

Dynamics

The financial plan for Porto Maravilha was conceived in times of fast economic growth and an optimistic real estate sector (Mosciaro 2018). In the early years, the project was generally considered a successful partnership: unlike many previous regeneration attempts, this arrangement led to ambitious, high-paced real estate development in the area. However, as economic growth stalled in 2014 and the country entered an economic and political crisis, Porto Maravilha directly felt the adverse effects. Real estate investment dropped far below the levels necessary for REIT PM to remain able to pay PNC for its works and services.

With REIT PM lacking financial liquidity, delays or even termination loomed for the infrastructure works and the entire regeneration process. To avoid this, FGTS (the founding agent of REIT PM) made an additional contribution to guarantee the continuity of payments and ensure the completion of work in progress. Political

factors were at play behind this decision: with Porto Maravilha being presented as a legacy of the 2016 Olympics, any failure to deliver this would be considered a fiasco. Although not formally a public entity, FGTS's investment decisions were susceptible to political influences since a tripartite council manages this institution with representatives of workers, employers and the federal government. In sum, the solution to address the liquidity problem implied a greater exposure to project risks by FGTS.

Furthermore, in light of the furthering economic crisis, CDURP started buying back CEPACs from REIT PM to guarantee the financial flow of the project, revealing a tendency of the public sector to resume risk when things go wrong, and illustrating the unlikelihood that the financial instrument works in times of economic downturn.

Impact and legacy

Most of the infrastructure improvements that were mentioned in the original regeneration plan for Porto Maravilha have been delivered. The main works were scheduled for the first five years of the PPP contract so that they would be completed before the start of the 2016 Olympic Games. However, the real estate developments that were expected to come along with the infrastructure improvements, and to pay for them indirectly, have not occurred significantly.

Raising financial resources for a high-risk project like this, without resorting to the public budget, was possible due to the existence of FGTS. In this organization, investment decisions and risk exposure are influenced by political dynamics and not conditioned exclusively by business logic. In addition, the progressive resumption of financial risks by the Municipality of Rio through CDURP, which happened against the backdrop of deteriorating financial prospects, indicated that the transfer of such risks to the private sector remained thin – despite there being a discourse claiming the prominent role for a private-sector actor.

5 Discussion

We selected the cases of Belvédère, Firepool, and Porto Maravilha because of their differing backgrounds and scale. By laying bare the diversity in financial risk dynamics, we expected to understand better how financial risk allocation and management unfold in brownfield regeneration projects. The empirical findings of the three case studies proved to be diverse. While the rhetoric of financial risk transfer was present in each case, the institutionalization of financial risk allocations in the respective arrangements took different forms. The specificities of these arrangements illustrate how complex the institutional structure of PPPs can be, as well as how actors can choose between a range of different approaches to brownfield regeneration and risk allocation, even when the main objective is similar across the board. Financial risk, and how and to what extent it is being transferred from one actor to another in project arrangements, provides a breadth of approaches that bears relevance to developing a better understanding of brownfield regeneration. Project scale and timing often offer (partial) explanations for project performance. However, there is a conversation to be held beyond these determinants. Each brownfield regeneration project has a unique, inherent logic, requiring in-depth analysis to unravel the critical events and decisions relative to risk

management. We opened this conversation by discussing several cross-case similarities and peculiarities that resulted from the analysis.

Rhetorical financial risk transfer versus actual financial risk transfer

First, the three cases bore significant resemblances in how narratives unfolded over time. In each case, we noticed the rhetorical value of financial risk transfer: governments presented a public-private approach to brownfield regeneration as a vehicle for efficiency maximization. Also, all projects started with clear intentions of (at least partial) financial risk transfer from public to private-sector actors. This cross-case similarity fits the dominant narrative of arrangements for brownfield regeneration, which emphasizes private risk-taking to achieve efficiency gains and the alleged relief of public budgets (Greve and Hodge 2013; Grimsey and Lewis 2004; Raco 2012). Also, in each case we recognized an essential role for real estate markets relative to the progress made – or the lack thereof – in the respective projects and the dependence of public-sector actors on these markets, indicating the driving force of private-sector property development (cf. (Turok 1992; Magalhães C and Karadimitriou 2018).

In each case, the turn toward a public-private arrangement for regeneration was often characterized by an optimistic view of real estate and financial markets—'market sentiment'. The actors involved in designing the arrangements paid limited attention to the real and lasting impacts of economic factors outside their control. This is a critical finding, as the same mistakes with financial risk planning are being made in brownfield PPPs in all three countries. Although complex, the governance vehicles and mechanisms were designed to work in favourable or stable market situations. Here, Flyvbjerg, Skamris Holm, and Buhl (2014) offer a parallel with infrastructure planning, which has often demonstrated optimism bias and sub-standard risk assessment processes (see also Kelly et al. 2015). As such this research highlights that the viability of brownfield regeneration schemes is almost naturally at risk, as their temporal nature – regeneration can take decades – and optimistic financial outsets are prone to internally and externally-induced changes that disturb initial master plans and expected returns. Financial crises interrupted brownfield regeneration plans, for instance, in Porto Maravilha, where public-sector funders had speculated on the real estate market growth, and in Belvédère, where initial projections proved overly optimistic. These interruptions stirred planning interventions in the form of adapted contracts and plans to save the viability of urban regeneration schemes, safeguard the delivery of social benefits, or both (cf. Guironnet and Halbert 2015).

Public-sector risk-bearing from the outset and over time

The second similarity is governments' sustained and deliberate active involvement – and therefore continued risk-bearing – in the three cases. The research highlighted that, against the popular discourse of governments handing over responsibilities and risks to private actors for brownfield regeneration projects, governments never fully stepped back. For instance, the Municipality of Maastricht was a shareholder of Belvédère's public-private urban regeneration company from the outset. By allowing private actors

to establish a separate development corporation, it put itself in a riskier position right away, having limited control over the plans of that corporation while being dependent on its land purchases. As for Firepool, even though public and private parties committed to providing funding, the former quickly took the burden of the financial risk by comforting GWR with significant financial guarantees. In the Porto Maravilha case, the mechanism designed to sell additional development rights (CEPACs) could be considered a method of public-sector speculation. It was in the details of all three projects, and more specifically in the original contractual arrangements, that the seeds for dynamics in financial risk allocations were planted – even though the public rationale may have been different. In the design of the public-private arrangements, there were already in-built mechanisms that reduced risks for private-sector actors (cf. Ashton, Doussard, and Weber 2016).

Furthermore, we found that public-sector actors were prepared to take on a more significant burden of financial risk once project delivery was underway, despite initial motivations to transfer risk and liabilities within original actor constellations. In Belvédère, the original arrangements were modified significantly or even terminated to return once-transferred liabilities and risks to the public sector. In Firepool, arrangements included a 'light' version of risk transfer as private-sector actors planned to exercise a break clause within the contract until strong government local guarantees were provided. In Porto Maravilha, a semi-public actor provided financial resources as private developers and investors refused to purchase development rights. These observations are essential as public-sector partners need to understand the likelihood of financial risk transfer before entering into a PPP for brownfield development. Eventually, in all three cases, financial and inevitably systemic risk fell considerably on the public side of the project arrangement, forcing public actors involved to change tack and intervene to keep projects going. This observation contrasts sharply with PPP practice in infrastructure programmes, such as the 1 billion GBP M6 Toll Road in the UK, where the brunt of financial failings of projects has been borne by the private sector, due to the deal struck by the national government rather than a regional or local government body (Williams 2022).

Public-sector interventions

Third and finally, in all cases, it was considered necessary for project completion to adapt initial project arrangements, and public-sector actors stepped in. In Maastricht it enabled the local government to relaunch the project, taking back complete control over the development decisions in the area, lowering the envisaged pace for redevelopment, and cutting the master plan into small pieces. Firepool in Taunton became an object of politicization: the accountability and reputations of (political) decision makers were at stake if the scheme was not delivered. GWR used this knowledge strategically in negotiations where it sought public guarantees for project failure, threatening to walk away from the project if public partners did not meet their requirements. In Rio de Janeiro, the municipality (through CDURP) bought up CEPACs from REIT PM – which the municipality had sold to REIT PM earlier in the project – to ensure infrastructure delivery, stepping in as a financial guarantor. The temporal nature of brownfield regeneration means that the economic climate of delivery and completion

phases can differ significantly from the planning stage, leaving the public sector as one of the few constants throughout the brownfield regeneration process. The findings demonstrate that the need to develop a place, rather than an infrastructure project which may or may not fail to achieve its planned outcomes, places further pressure on the public sector to ensure that the scheme is completed. Here, we notice the difficult balancing act for public-sector actors, as Klink (2022) discussed. There is a formal responsibility to deliver the public good, yet with finite resources, which in turn affects the means to keep private-sector actors on board.

6 Conclusion

PPPs have become a modus operandi in urban districts' complex, costly, and time-consuming regeneration, particularly for large-scale brownfield sites. Financial risk transfer between public and private-sector actors determines success in these endeavours. This article analysed three international cases to demonstrate how financial risk, particularly its bearing, evolves in PPP for brownfield regeneration. We explained the dynamics of financial risk by highlighting: (1) original actor constellations, contractual agreements, and risk allocations; (2) moments and developments in projects that affected risk arrangements; and (3) the consequences of shifted financial risk patterns for those projects.

First, as expected, the three cases were diverse and dynamic regarding actor constellations, contractual agreements, and financial risk allocations. For instance, within and across the cases, we observed differences among the actors involved regarding their long-term versus short-term orientations. Second, we found similarities in several aspects. In each case, the rhetoric of risk transfer proved promising and was successful until market circumstances changed. Also, public-sector actors remained financially invested in the projects and sometimes stepped forward to intervene to ensure that works proceeded. In all cases, it proved challenging to seal financial risk allocations in contractual arrangements and retain that original setup of financial risk transfer in the longer term as adaptations were necessary. The results prove that, despite the initial plan for financial risk transfer from public to private-sector actors, the financial risk remains in or returns to the hands of public-sector actors during brownfield regeneration projects. The transfer of financial risk proved more rhetorical than real. Here, we see a parallel with Savini's (2017) finding that risk is not reduced but shifted and reorganized toward – among others – public budgets, and with Alexander's (2012) comment that private-sector partners explore how to distribute risk to their public partners. Our empirical observations broadly align with our expectations that the complexity and scale of brownfield regeneration challenge the removal of risks (cf. Loosemore and Cheung 2015), the stability of networks of actors (cf. Carpintero and Petersen 2016), and the curbing of optimism bias (cf. Kelly et al. 2015). Also, this research adds to the body of knowledge on PPPs in the redevelopment of brownfields (cf. Codecasa and Ponzini 2011; Glumac et al. 2015). Finally, by zooming in on project arrangements, this study has provided project-specific details about questions of contracts and financial risk, as opposed to many studies that have applied generic and country-wide approaches in studying PPP (cf. Klijn and Koppenjan 2016; Siemiatycki and Farooqi 2012; Warsen, Klijn, and Koppenjan 2019).

Practically, our findings indicate the importance of engaging early with a project's financial risks in any brownfield regeneration project and remaining engaged throughout. While this implication seems evident following the 2007/2008 financial crisis, as well as the persistent economic crisis that began in Brazil at the end of 2014, market sentiment is always looming, as is optimism bias. Also, considering the vast size of the three cases and the challenge for public-sector actors to maintain control of the project, it is worth considering splitting grand schemes into manageable components, as in the Belvédère case. The compartmentalization of the Firepool scheme has allowed the housing development to proceed, despite the delays and changes to the cattle market site. The critical pathway for each scheme was not linked.

To conclude, this article has addressed the micro-dynamics of project-level arrangements. Most empirical findings are case-specific, so the analysis creates a differentiated picture. However, by illuminating the specificities of project arrangements, a more articulate understanding of risk dynamics can be achieved. We encourage urban planning scholars to dig deep into empirical questions of financial risks: what are the motivations; what actions are undertaken; and what does this imply for cities and communities? There tends to be a complexity within these contracts that may rest on reducing private-sector exposure to risk and providing for contractual variations when perspectives of financial return change. These schemes' peculiarities are always relevant, and they can be striking.

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Data availability statement

The datasets generated and/or analysed during the current study are not publicly available due to political and commercial confidentiality and sensitivity. Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available. In line with the ESRC guidelines the anonymized transcripts for the UK case studies can be accessed via the UK Data Service website: https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=853302.

Ethics approval

Approval from two ethics committees was obtained before the commencement of data collection: Ethics Review Board, University of Amsterdam/Amsterdam Institute for Social Science Research

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