

Characteristics and Reference Value of Canadian Public-private Partnership Model

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Abstract

This paper adopting thesis analysis, case analysis and comparative analysis focuses on the study of the PPP model(Public-private Partnership is a partnership between the Public and Private sectors to provide infrastructure assets and public goods or services) in Canada, and through the study of Canada, the characteristics of its PPP model and the reference value for the development of PPP models in other countries are obtained. This paper reviewed 20 literatures at home and abroad, based on the relevant theories of PPP model, sorted out the development process of the Canadian PPP model, learned the experience and lessons in the development process of the Canadian PPP model, and summarized the two developments of the Canadian PPP model in the past 30 years. The PPP model in the first wave from 1991 to 2003 is a typical "hybrid", which is in the difficult stage of turning theory into practice. The second wave is from 2004 to the present, the provincial government of Canada as the main pioneer of PPP, PPP model has developed into a continuous institutionalization, providing large-scale infrastructure construction and services of the conventional model, creating a more dynamic PPP market.

Key Words PPP Model, Canada, Characteristics, Reference Value

1. Introduction

When the public-private partnership model is popular all over the world, the development maturity of Canada's PPP model is in the leading position in the world, and it has achieved good

economic and social benefits. This paper analyzes the reasons for its leading role as a reference for other countries Since the beginning of the 1990s, after 30 years of two waves of development, it now has a relatively perfect legal system, many practical experience and high-profile typical examples. As of June 2020, there have been 290 PPP projects in Canada with a total value of \$139.35 billion, and the scale and number of investments have maintained an upward trend over the past decade, with nearly 90% of projects financed in the second wave of development. Led by Ontario, British Columbia, Quebec and Alberta, Canada has always maintained a high level of private enterprise participation, combining an attractive infrastructure investment and financing market, strong potential for public service demand, stable market supply and business environment, a sound full-process regulatory system, and a sound legal system. A dynamic and mature public-private infrastructure partnership market has been created. From the perspective of the operation effect of the PPP model in Canada, compared with other mature regions, it has achieved higher procurement efficiency and lower procurement cost in procurement, and also achieved a high proportion of implementation on budget and punctuality in project operation and delivery. Therefore, the research on how Canada achieves the leading position and efficient operation mechanism of PPP model is helpful for other countries in the development of PPP model in the field of infrastructure to learn from the experience and lessons of other countries in public-private cooperation, and to deepen international cooperation in the field of infrastructure and promote the cause of PPP through exchanges and learning from the past The sustainable development of health has far-reaching practical significance.(Pang Deliang, Liu Kun.2021)

2. Literature Review

2.1 Theory

2.1.1 Public Choice Theory

In the field of public goods and services, government dominance or intervention and market mechanisms as resource allocation tools alternate. Pigou, Samuelson, Harding and other economists systematically studied the ineffectiveness of public goods provided by the market mechanism (Zheng Hui.2011). Coupled with the influence of Keynesianism, it is accepted that the government makes up for market failures, and it is inevitable that the government directly provides or indirectly intervenes in infrastructure. The main function of the government is to solve the

problem of market failure by providing public goods and services. However, in the 1960s, supporters of the public choice theory led by Buchanan found that the government's choice of public goods also has ineffectiveness and deficiency, that is, government failure is also the core problem of the public choice theory. Public choice theory is a cross theory that integrates economics and politics, and studies the political decision-making mechanism with the principles and methods of economics. People's choice of private goods and public goods is called private choice and public choice respectively. The results of public choice are realized by non-economic market collective decision-making methods, which determine the demand, supply and distribution of public goods. The economic market and the political market constitute human activities (Government of Canada, Energy, Environment and Transportation Policy. 2010). The former takes the cost-benefit analysis of economic man's egoism as the core, consumers pursue utility maximization and producers pursue profit maximization. The latter is different from the traditional political analysis that regards politicians as altruistic "public welfare people", but assumes that politicians are "economic people" who rationally pursue the maximization of their own interests, and their utility functions include variables such as power, status, fame, high salary, comfort and enjoyment. It also extends the analysis of economics with transaction as the core to political decision-making, and holds that politics is the activity of realizing each person's goal in the form of groups, and the government is the trading market of participants. The final conclusion of the public choice theory is that the government is dysfunctional and inefficient, which can not achieve the purpose of correcting the market failure, and even bring worse results than the market failure(National Bank of Canada. 2011).

2.1.2 Government Failure Theory

Government failure is an important core topic in public choice theory. According to Buchanan, government failure makes social individuals' demand for public goods unmet in politics, and the public sector presents waste and abuse of resources when providing public goods, leading to excessive public expenditure or low efficiency, and government activities and interventions are inefficient and inefficient. The reason that public goods are provided by the government is not sufficient, and it also demonstrates the limitation of the government being the sole investor in infrastructure (Kyle Leung.2015).

2.2 Concept

2.2.1 Concept of PPP Mode

The UK Treasury defines a PPP as an agreement between two or more departments to deliver a public service project through joint investment, where the cooperation has a certain degree of shared rights and responsibilities, and both parties bear risks and share benefits. The British government took the lead in introducing the PFI (Private Finance Initiative) private active financing model in 1992, and released a series of reform measures on the PF2 model in 2012, both of which are the government's available payment-type PPP models. Recently, in the 2018 Budget Report released by the British government, it was announced that the PF2 model would no longer be used for infrastructure and public service procurement, and a new PPP model would be introduced in the future (Bu Chunmei, Wang Quanbao.2018).

The Australian Federal Government's PPP guidelines define it as a long-term contract between the public and private sectors. The private sector is involved and rewarded for providing infrastructure and related services. The private sector is usually responsible for the construction and maintenance of infrastructure throughout its life cycle, including economic and social infrastructure, as well as the operation of non-core services. Australia is also the first country to adopt the funder-led PPP model, where the project private sector consortium is led by a single entity and is suitable for relatively simple PPP projects. The landmark event of Japan's PFI is the "PFI Promotion Law" promulgated by the Cabinet in 1999 on the full use of private funds to promote the construction of public facilities and other decrees, in order to deal with the huge fiscal deficit after the bursting of the economic bubble, and the establishment of the PFI Promotion Committee official body. The PPP model is defined as the efficient and high-quality introduction of the private sector in the improvement of public facilities, using its capital, management and technical advantages to ensure the provision of low-cost and high-quality services to the people and promote the healthy development of the economy (Shen Yuzheng.2013).

The Canadian Council for Public-Private Partnerships (CCPPP) defines the PPP model as a partnership between the public and private sectors for infrastructure projects that build on the capabilities of each partner's areas of expertise and operate more efficiently to meet public service needs through appropriate allocation of resources, risks and rewards. PPP Canada defines PPP as a long-term approach to the procurement of public infrastructure based on output performance and public service performance, with the private sector assuming primary responsibility. It covers five major aspects, ranging from infrastructure design, project financing and construction, to long-term maintenance and operation. The difficulty and focus of implementation lies in the risk management

of public and private parties, performance supervision and project financing capacity of infrastructure. Ontario, the province with the largest number of PPP projects in Canada, has created Infrastructure Ontario (IO), a company dedicated to regulating infrastructure. The PPP model is called the AFP Alternative Financing Procurement Model, which combines private and public sector expertise in a unique structure. Transfer the risk of increased project costs and delays, construction risks, and operations and maintenance services typically associated with traditional delivery methods to private partners. Partnership BC (PBC), as the province's dedicated PPP regulator, considers this to be a long-term contractual arrangement involving a public sector organization and one or more private parties. The private sector takes significant financial, technical and operational risks in financing, designing, building and operating public infrastructure such as roads, Bridges, schools and hospitals (Yuan Zhongyi.2016).

2.2.2 Characteristics of PPP Mode

From the summary of the concept of PPP model, it can be found that at present, each country has its own understanding and definition, but in general, PPP model mainly has the following five characteristics, namely, multi-party participation, partnership, risk sharing, benefit sharing and service performance. The essence of the so-called PPP model is to give full play to the respective advantages of the government or the public sector and the private sector to cooperate with each other. Under this system, the operation of infrastructure-related industries is dominated by the private sector, which not only gives play to its advantages in capital raising and management, but also has a more sensitive market marginal effect due to the intrinsic incentive generated by the clear property structure, and improves the operational efficiency of infrastructure. The government or the public sector has the power to make rules and can carry out incomplete symmetrical system design arrangements, especially in terms of market access, price formation and supervision of public services, and urge project operators to provide uninterrupted, high-quality and affordable public goods and services. Therefore, the complementary relationship between efficiency and fairness in the PPP model is a revolution of the traditional subordination relationship between the government and the private sector, and it is also an innovation of the management system (Grimsey D,Mervyn K L.2016).

3. Methodology

3.1 Thesis Analysis Method

This method was adopted in the study of the 20 articles (from 2005 to 2021). By reading books, journals, academic reports and Internet information about the Canadian PPP model at home and abroad, literature review was carried out according to the theoretical basis of PPP model, and the research status and historical origin of the research topic were fully understood. Find out the problems in its development, and explore the model experience worth learning.

3.2 Case Analysis

Half of the references were studied using case analysis method (10 articles from 2011 to 2021), some of them take the operation of the PPP model in the fields of affordable housing (Wang Jingsen. 2014), ecotourism, medical services (Xing Mengru. 2020), Aboriginal ecotourism PPP projects in Canada (Kyle Leung. 2015) and pension fund investment in Canada (Yuan Zhongyi. 2016) as case studies to explore the main characteristics of the PPP model in Canada. Zheng Hui studied the public service reform in Canada based on the public service supply mechanism (Zheng Hui.2011). In the article, the Department of Finance of the Ministry of Finance analyzed the management system of PPP in Canada from a macro perspective (The Department of Finance of the Ministry of Finance. 2015). Guan Hailong and Zhang Hengquan analyze the behavior pattern of people in the PPP model (Guan Hailong, Zhang Hengquan. 2017). This is a kind of qualitative research that can be extracted by logical summary. Some characteristics of Canada's PPP model have been summarized in previous studies, but they are not complete (Pang Deliang, Liu Kun. 2021). Of course, there are also studies involving the law and opinion polls on PPP projects in Canada (Pei Junwei, Bao Qianyu. 2015). There is also a scholar who have studied the implications of the Canadian PPP model for China (Shen Yuzheng. 2013). Through a non-contact analysis of a typical case of Canadian PPP model, important information is extracted from it.

3.3 Comparative Analysis

In this study, a quarter of the selected articles were studied by comparative analysis (5 articles. from 2014 to 2019). Some articles compare and analyze the reference value of foreign PPP models (He Baizhou, Liu Chen.2016), some sort out and compare the development trends of foreign PPP models (Li Mingzhe. 2014), and some focus on the development of PPP models in foreign libraries (Li Yingzhen. 2019). Focusing on the development of foreign educational PPP, taking the United Kingdom, Australia, Canada and the United States as examples, the operation mode is compared and analyzed, and the development experience is learned (Bu Chunmei, Wang

Quanbao.2018). Through the comparison of international pension fund investment PPP infrastructure projects, the development path of PPP model is found (Yuan Zhongmei. 2016). The five articles studied the dynamics of advanced countries in the international PPP model development, systematically identified and summarized the characteristics of vertical history, horizontal regions and different types of fields, and explored the laws and differences of the development and evolution of things.

4. Finding and Discussion

In the 30 years of the development of the Canadian PPP model, with the steady development of the experience curve and the growth of the market, two development waves have been experienced before and after 2004 as the dividing line, and the main characteristics of the two development waves of the Canadian PPP model are as follows. The research team could not go to Canada for field study due to various problems such as funding, so in the future research, if conditions permit, they can go to Canada for field study.

4.1 The main characteristics of the first wave of development of the Canadian PPP model

Since the 1980s, as a result of the new public management movement and the privatization of public utilities, many projects in Canada have had some characteristics of public-private partnership, but the normative model of PPP was not gradually improved until the mid-1990s. A landmark event was the 1992 announcement by the federal government of the construction of the Commonwealth Bridge between New Brunswick and Prince Edward Island using the PPP model. From this beginning, the Canadian PPP model officially opened the curtain of the first wave of development. In this development, Canada has just introduced the public-private cooperation model in the field of infrastructure construction, and is in the process of learning from the more advanced countries such as the United Kingdom in applying this model, and pays more attention to the construction of PPP principles, trading mechanisms and operational processes. It can be said that the first batch of PPP projects launched in Canada in the 1990s experienced a mixed success process, which was a difficult process from theory to practice. This learning and experience curve is expensive but necessary, and it will take time to confirm both the level of understanding of the PPP model and the establishment of a professional regulatory team and legal framework.

First of all, at this stage, the government regards PPP as one of the strategic measures to maintain its high cost and high-quality public infrastructure development from the policy and

concept, and focuses on reducing the pressure on the government to raise funds by finding suitable private sector financing, and initially recognizes the advantages of off-balance sheet financing (Simiatycki M.2013). This off-balance sheet commitment removes the constraint on public lending from infrastructure investment by accounting for government spending on projects as fiscal expenditure rather than government debt. Secondly, in this stage, based on the fact that the private sector has a higher ability to cope with the market environment and resource allocation than the government, there is no screening procedure for the suitability of the PPP model of the project, and the responsibility and risk are transferred to the private sector as much as possible, so that the supply of public facilities and services develops in the direction of privatization. It not only ignored the principle of rational risk allocation in the private sector, but also caused the government to lose control and management rights over the project, and finally broke away from the original PPP model based on cooperation. Finally, the government desperately lacks professional institutions and talents to manage the procurement process, project approval, whole-process supervision, the whole-process procurement lacks transparency, and does not have the expertise and experience to handle PPP projects that are more complex than traditional delivery structures.

For all these reasons, the result is that some PPP projects in the first wave have presented many problems and even project failures (Mehra N.Flawed,Failed,Abandoned.2005). These problems are mainly manifested in project cost overruns, delays or non-on-time delivery, design and construction defects, lack of performance monitoring and delivery quality issues, dispute resolution deficiencies and legal disputes, loss of control by governments, forced buy-back contracts by governments, and arbitrary service cuts by the private sector during operations and maintenance. Among these failures, the Highway 407 PPP project in Ontario, due to the lack of proper transfer of financing risk, construction cost overruns, legal risks, substantial privatization resulting in loss of government control, and poor social benefits, is considered to be a typical case of the first wave of development of the Canadian PPP model.

On the whole, the PPP model in the first wave is a typical "hybrid", which is in the difficult stage of turning theory into practice. Some problems are gradually exposed with practice. As mentioned in the report of the provincial audit departments of Ontario and Quebec, there are problems in the early stage of PPP projects in Canada, such as the lack of preliminary evaluation and screening work, the lack of specialized agencies and relevant personnel for complex projects, the lack of government control over important infrastructure assets, and the lack of transparency

of project processes and information. This stage provided Canada with the rudiment of government-private cooperation model and basic policy and theoretical support, and the image of the Canadian central bank is called "policy window for the introduction of the system".

4.2 The main characteristics of the second wave of development of the Canadian PPP model

With the experience and lessons learned in the first wave, Canada became a leader in the PPP field in the second wave, bringing great benefits to the Canadian public and public sector, and the PPP model has evolved into a regular model of institutionalizing large-scale infrastructure construction and service delivery. In general, the development of the second wave of PPP in Canada has the following five characteristics:

4.2.1 More power to improve and complement the existing PPP operation mechanism

Provincial governments in Canada, as the main pioneers, and municipal governments, as practitioners, are granted more power to improve and supplement the original PPP operating mechanism. This initiative began in 2002 with the introduction of the Capital Asset Management Framework, under which the definition, operational model and procurement audit requirements were specifically set for PPP models. Dedicated PPP regulators, such as Infrastructure Ontario and Partnership BC, have been established in several provinces and have issued support and guidance policies on PPP. Professional institutions have taken the lead in improving the legal framework of PPP, and issued a series of operational guidelines. While learning from the experience of other countries, they have paid attention to making appropriate adjustments and changes according to their own characteristics.

4.2.2 Eliminate the government's blindness in adopting the PPP model

Project identification and screening is taken as the first step to eliminate the blindness of the government in adopting the PPP model. The federal and provincial governments have set the PPP mode matching threshold for all projects, such as the federal and Ontario set more than 100 million Canadian dollars or the project term of more than 20 years, must go through the PPP screening and identification process. Among them, the most important means is value for money evaluation,

which breaks the single basis of private sector capital demand for large-scale infrastructure construction. The key of PPP model is not the off-balance sheet commitment of accounting treatment, but the best use value of funds. Infrastructure Canada has four value-for-money goals to enhance pre-project planning; Innovative and flexible incentive mechanisms to enable projects to be completed on time and within budget, and to improve output efficiency and user experience; Adopt cost management for the whole life cycle; Allocate different risks to those departments best able to bear them. The second wave of PPP projects in Canada has brought significant benefits to the public sector, with value-for-money estimates ranging from a few million Canadian dollars per project to 750 million Canadian dollars for the Route 30 project south of the Montreal region. At the same time, the second wave of Canadian PPP projects also provides a higher degree of cost and timing certainty from financial close to construction completion than the first wave.

4.2.3 Ensure the government's macro-control and support for the project

First of all, the right to select PPP projects in Canada is determined by government departments, just like traditional infrastructure construction. Second, the PPP model is not a privatization of public assets, and the ownership of projects remains with the public sector. In addition, the private sector is paying more attention to urban public services (such as road transportation, water treatment, etc.) and flexible project design, contract management, financing, and management and maintenance of hardware, while core social services and operational content (such as hospital medical and nursing services) are still provided by the government. Finally, in order to support the development of the PPP model, the government established a PPP fund and an infrastructure bank to attract the participation of the private sector and institutional investors. Moreover, the procurement process for the second wave of PPPS is much more transparent than for traditional infrastructure projects of the same size. This is because the key procurement documents, including the project contract, RFP and RFQ evaluation report, value for money VFM evaluation report, project progress performance audit report, etc., are public, and the project equity specialist will ensure the fairness and transparency of all bidders, which are not typical characteristics of traditional public infrastructure procurement.

4.2.4 Financing structure adjustment

On the one hand, it is reflected in the continuous innovation of PPP project investment and financing models, such as the participation of institutional investors such as pensions, mutual funds and insurance companies; The wide application of PPP project bonds, the synergistic development

of green bonds and PPP green projects, and the innovative pilot of social benefit bonds for government purchase of public services. On the other hand, the application of the PPP model to private sector investment and financing has also changed. The investment cost of the private sector will be reimbursed by the government through milestone payment, substantial completion payment, availability payment and other means according to the contract agreement, and most projects do not involve the user payment mechanism and the impact of project income source risk. However, the private debt or equity introduced by the government sector is for proper risk transfer, optimizing the contract structure and incentive mechanism;

4.2.5 Limited demand risk transfer

Canadian PPP projects transfer the risks of project construction, design and financing to the private sector, while only transferring limited income or demand risks to the private sector. In long-term projects involving operation and maintenance, the private sector recovers costs based on operational performance under contractual payment arrangements with government departments. For example, in the Canada Line program, only 10 percent of the investment is paid based on bus ridership, with the government paying the rest based on the availability of transportation facilities and the quality of related services. Under this model, when project output expectations are not met, the government will be exposed to significant financial risks, and it is estimated that the government spends as much as \$45 million per year to compensate for demand risks. But this limited demand-risk transfer has also helped Canada avoid serious challenges faced by other countries, such as a lack of government control over pricing mechanisms for facility services and project size, and private sector renegotiation of contract modifications when benefits do not meet contract expectations (Siemiatycki M, Friedman J. 2012).

5. Conclusion

In general, the two development waves of the Canadian PPP model are moving forward along the experience curve. Due to the failure of some early projects, there are doubts about the value of PPP applications in Canada. This reflects the lack of experience in early PPP development, as well as inadequate governance and regulatory systems, and has obscured the public's deep understanding and support for the value of the model. But it is precisely these early, immature implementations that have brought ample experience and lessons to the second wave of development, creating vital knowledge and insights on how to unlock the potential of public-

private partnerships, revolutionizing the Canadian PPP model, and moving toward a position of global leadership. The second wave of development has brought more specialized technology, broader market opportunities, clearer institutions and rules, and the establishment of a dedicated public regulatory body for PPP. These institutions, with their best-in-class talent and rigorous screening and vetting standards, have dramatically changed the nature of the PPP model, procurement efficiency, delivery quality, and regulatory complexity, while deepening the ability of public and private partners to work together.

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