Magdalena Zioło
Department of Public Finance, Faculty of Management and Economics of Services, University of Szczecin, Poland
E-mail: magdalena.ziolo@wzieu.pl

MIGHT FINANCIAL SOURCES BE A PROBLEM IN THE FINANCING OF PUBLIC INVESTMENT? THE THEORETICAL AND EMPIRICAL STUDY[1]

JEL classification: G19

Abstract

Municipal investments and related expenditures are an important field of activity at the subnational government tier. There are many ways of financing public investment tasks using different financial structures. However, the key role involves financial risk and other factors which determine access to financial sources (inter alia types of investment, debt limit, purpose of financing, collateral, risk, efficiency). The purpose of this article is to point out the main obstacles and challenges in the financing of municipal investment. In the research process revenues, transfers, and debt instruments have been considered. The author has also paid attention to a hybrid form of financing which integrates different kinds of instruments. As a result, the paper presents the crucial problems in investment financing which influence the investment dynamic and financial decisions made by self-government entities. The general findings are regarding: debt limits and debt policy, a revenue system which is not sound, poor experience in using structural and hybrid financing, problems with cash flow and the maturity of financial instruments, financial standing and public procurement law.

Keywords: self-government, investment, financing

[1] The research project is financed from the Polish Science budget for the years 2010 – 2013

1. INTRODUCTION

From a financial point of view, public investment offers alluring benefits but also creates costs. According to D. A. Aschauer, there is a strong link between public and private investment spending. Movements in public investment bring forth movements in private sector outputs that mean the public spending raises the private sector productivity (Aschauer, 1988, p. 178). On the other hand, public investment might result in the crowding out effect, which is balanced by a crowding in action and this tends to raise the demand for the infrastructural services accumulating public capital (Ramirez, Esfahani, 1999, p. 3).

The relationship between public investment, productivity, economic growth and development make it one of the most important instruments of fiscal policy and the global challenge (Improving, 2012). The OECD estimates that between 2006 and 2030 investment in infrastructure will exceed 57 trillion euros (2.4 trillion annually, improving, 2012). The question is how to finance it in the conditions of the unbalanced public budgets (with extensive deficit and debt problems) and the tightening of banks' prudential regulations.

B. Eichengreen claimed that "with the lack of infrastructure limiting finance and the lack of finance limiting infrastructure investment countries can find themselves in the low-level equilibrium trap from which it is difficult to escape" (Eichengreen, 1994, p. 1).

Nowadays, the problem is not only the lack of public capital and debt regulations but also limited access to private capital and to the financial market. Additionally, there are many internal obstacles excluding public entities from applying to external financial sources.

The goal of this paper is to overview the main difficulties in municipal investment financing (especially infrastructural). The considerations presented in the article concern the problem of investment financing and point out the role of different means of financing; especially grants, transfers and debt.

The paper is organized as follows. The first section presents theoretical considerations regarding financial sources of municipal investment; the second section is devoted to the methodology of the research and the last part discusses the results of the survey and presents the conclusions of the study.

The literature overview concerns the problem of the general rules of financing and financial sources of public investment (municipal investment projects case). Special attention has been paid to the difficulties related to grants, transfers, own revenues and debt financing.

The theoretical and practical analysis of financial sources has been divided into two groups: own sources and borrowing instruments. Every kind of financing has been considered from the perspective of the difficulties of using it.

2. THE FINANCIAL SOURCES OF MUNICIPAL PROJECTS - THEORETICAL CONSIDERATIONS

There are many financial sources and a lot of models of financing the municipal investment which differ between countries. Municipal infrastructure is one of the most commonly financed municipal investmments. It is defined as "buildings, structure, facilities, equipment, rolling stock, land and furnishings needed to provide minicipal services" (Tomalty, 2007, p. 3). In this context, the financing of such projects is a crucial problem because of the limitation of the budgetary finance at the local self-government tier.

It is worth mentioning that there are two kinds of revenues financing municipal projects; the first one that might be used for the full range of investments (inter alia property tax) and the second one which can be provided only to a specific type of projects, such as road infrastruture (fuel taxes) (Tomalty, 2007, p. 3).

The other classification highlights the problem of the own-revenues and general borrowing in financing infrastruture and the financial models linked to it, defined as pay-as-you-use (debt) and pay-as-you-go (cash) (Wang, Hou, 2009, p. 90-107). According to this approach, debt limits and types of own revenues are very important. Depending on the state and their legal debt restrictions, there might be soft, hard and fiscal autonomy of sub-central government determining the value of the own revenues at the local tier, which could be high or low (Blöchliger, Robesona, 2009, p. 4).

An interesting approach is presented in the work of K. Tóth and B. Dafflon, who have focused on the difficulties in using grants, transfers and own revenues for financing local infrastructure (Tóth, Dafflon, 2006, p. 5, see Table 1).

Table 1

The difficulties linked to the financing of municipal infrastructure with grants, transfers and own revenues

Type of financing	Difficulties
Conditional grants and targeted investment subsidies	Poor predictability, "free of charge" grants, availability of grants which are out of the authority of local entities; in some countries, grants cannot be used in on-going projects
Intergovernmental transfers and general grants	Rules of revenue sharing are changed very often; local government depends very heavily on the national tax office; transfers are subject to annual changes in the budget
Revenues from privatisations	Running out of assests, reducing the potential for the future, cash flow might not be sufficient to cover costs of investment projects
Local taxes and fees	Local governments are reluctant to raise local taxes and fees, small entities have little revenue from this source,

	interregional taxbase is not equal
Foreign grants-in-aid	Co-financing requirements, ex post reimbursement, strong project capacity needed
Public-private partnerships	Efficient for a single project but cannot ensure financial basis for the entire infrastructure

Source: K. Tóth, B. Dafflon (2006). Managing local public debt in transition countries: An issue of self-control? Paper prepared for the 14th Annual Conference of the Network of Institutions and Schools of Public Administration in Central and Eastern Europe (NISPAcee), Ljubljana, May 11-13, 2006, p. 5

Similarly to grants, transfers and own revenues, access to debt financing is also limited, especially by the debt limits. R. Singh and A. Plekhanov conducted an in-depth study of the debt regulations in different countries (Singh, Plekhanov, 2005, p. 11). The main debt regulations are presented in Table 2.

Table 2

Subnational borrowing regulations

Restriction	Types and number of countries				
	Total	Emerging	Industrial	With bailout history	Without bailout history
Unrestricted	13	5	8	6	7
Self-imposed rules	3	1	2	1	2
Centrally imposed rules	12	6	6	4	8
Administrative	15	13	2	7	8
Cooperative	9	2	7	4	5
Total	52	27	25	22	30

Source: R. Singh, A. Plekhanov (2005) How Should Subnational Government Borrowing Be Regulated? Some Cross-Country Empirical Evidence. International Monetary Fund Working Paper WP/05/54, Fiscal Affairs Department, p. 11.

In the global market economy, subject to the conditions of extensive deficits and debts, conventional wisdom regarding financing municipal investment projects has been revisited and a lot of attention is nowadays paid to the innovative funding mechanism (Tomalty, 2007, p. 3). Innovative funding mechanism is based on traditional financial sources and includes a mixture of them (borrowing is based on revenue from a specific source or development charges etc.).

Worth mentioning is Land Value Capture mechanism (LVC) which integrated such techniques of financing as land value taxation, negotiated exactions, tax increment financing, special assessments, joint development, transportation utility fees and air rights (Medda, Modelewska, 2011, p. 11-12). Nowadays, LVC might be an alternative for debt financing, especially in the conditions of increasing debt restrictions and difficulties in public-private partnerships financing.

3. METHODOLOGY

The study is based on the survey and the case study analysis. The survey encompasses 114 entities representing the municipal tier of Polish self-government located in the region of Western Pommerania. The municipalities in Poland have the highest level of financial autonomy; hovewer, it is still limited compared to federal or regional countries. To collect the represented data base, the CATI and CAWI methods have also been implemented. The results of the study were:

- the diagnosis of the most commonly used financial sources;
- the identification of the crucial difficulties in using each financial source;
- a proposal of ways of improving the efficiency of investment financing.

Three kinds of municipalties have been analyzed; rural, urban and rural-urban (Table 3). The response rate reached the level of 64%.

Table 3

Types and structure of the reviewed entities

Kind of municipality	The number of entities	Percentage of the sample
Rural	34	47%
Urban	33	45%
Rural-urban	6	8%

Source: own data, survey, M. Zioło: Modelowanie źródeł finansowania inwestycji komunalnych a efektywność wydatków publicznych, CeDeWu, Warszawa, 2012, p. 217.

Survey questions were of the closed type, mostly with the use of weights for individual variants' answers. Identification of the study sample was made by identifying the variables, such as:

- the type of community (rural, urban-rural, urban);
- the budgetary revenues executed by the municipality in the past three years;
- the overall structure of budgetary revenues;
- the level of municipal investment in the last three years;
- the types of major capital expenditure carried out by the municipalities (Zioło, 2012 p. 217).

In the group of municipalities surveyed, 34.25% (25 municipalities) of entities had budgetary revenues at the level of 5001 thousand zlotys to 15000 thousand zlotys. Those which did not exceed revenues of 5000 thousand zlotys in the last 3 years constituted 8.22% (6 municipalities) of the research sample.

The largest share in the examined budgetary reveneues had the own sources, subventions and state grants.

The largest amount of capital expenditures in the surveyed municipalities was allocated to finance road projects (municipal roads) spending on average 26.57% of the total investment. Another group of capital expenditures related to funding (Zioło, 2012 p. 219):

- water and sewage projects (approximately 25.29% in the structure of investment spending in total);
- educational infrastructure (average 14.78%);
- tourist infrastructure (average 7.63%);
- social housing (approximately 4.42%);
- property infrastructure (average 1.99%);
- the infrastructure of health care (average 0.43%).

In the structure of liabilities of the surveyed municipalities, credits dominated, with an average share in the structure of 44.16%, followed by securities (average 16.11%) and loans (average 8.75%).

4. STUDY RESULTS AND DISSCUSIONS

The first part of the study was focused on the structure of the financial sources which are used to finance the capital expenditures executed by the reviewed municipalities. The research has taken into account the most popular financial sources belonging to such categories of financing as: grants, transfers, own revenues and debt financing. The structure of the answers is presented in Table 4.

Table 4

Main financial sources involved in the financing of the municipal investment

Type of financial source	Percent of answers	Number of municipalities
Bank credits in zlotys	75.34%	55
European Union funds	67.12%	49
Capital revenues	60.27%	44
Preferential credit from bank and public funds	49.32%	36
Grants from state budget	46.58%	34
Local taxes and fees	32.88%	24
Bonds	23.29%	19
Foreign grants-in-aid	10.96%	8
EBI, EBRD credits	8.22%	6

Source: own data, survey, M. Zioło: Modelowanie źródeł finansowania inwestycji komunalnych a efektywność wydatków publicznych, CeDeWu, Warszawa, 2012, p. 223.

According to the survey data, the most popular source of financing for municipal investments is bank credits in zlotys and European Union (EU) funds. That, of course, is not suprising because since 2007 Poland has been the most significant beneficiary of aid from the EU budget (over 80 billion euros of financial support was put at Poland's disposal in the period 2007-2013) and Polish self-government entities are the most active units which absorb and spend the most EU money. Bank credits have been the most popular way of financing the municipal investment project since 1990. The zloty as the currency of credit is determined by the Polish Public Finance Act, which limited the possibility of issuing debt in other currencies under specified requirements (Zioło, 2012 p. 224).

Preferential credits and grants are also significant sources of financing, especially for projects regarding environmental protection and the water and sewage system. The low level of local taxes and fees in investment financing reflects the problem of the limited fiscal autonomy of the municipalities which have hardly any impact on the cash flow from local taxes and fees. The other problem is that local taxes and fees are not sufficient to cover the current budgetary tasks, so the municipalities are forced to gain money from fixed assets. There is still a potential in using such financial sources as private capital, revenue bonds, forfeiting and securitization.

The municipalities taking part in the research sample were aware of the benefits and threats of debt financing; especially, they pointed out such issues as: the financial leverage effect, the liquidity and insolvency threat, the roll-over problem and decreasing credit value after issuing debt.

The next step was to diagnose the crucial difficulties related to every kind of financing. The most significant obstacles are characterized for each financial source presented in Table 5.

Table 5

Main financial sources involved in the financing of municipal investment

Type of financial source	Difficulties	Number of answers
Bank credits in zlotys	Financial cost	22
European Union funds	Red tape, formal requirements	43
Capital revenues	Efficiency, running out of assests	16
Grants from state budget	Limited access, poor predictability	46

Local taxes and fees	Little revenue from this source, interregional taxbase is not equal	36
Bonds	Financial cost, lack of knowledge about financing	26
Private capital	Strong project capacity needed	13

Source: own data, survey, M. Zioło: Modelowanie źródeł finansowania inwestycji komunalnych a efektywność wydatków publicznych, CeDeWu, Warszawa, 2012, p. 242.

The survey data presented in Table 5 reflects the difficulties in financing pointed out by K. Tóth and B. Dafflon (Tóth, Dafflon, 2006, p. 5). The crucial problem regards the formal aspects of involving grants and EU funds in the financial structure of the investment projects and the efficiency of own revenues.

The little knowledge of the local authorities about the bonds makes this kind of financing useless in practise from the reviewed minicipalities' point of view. The shortage of local taxes and fees is another problem which determines the access to this kind of financial instrument which demands cofinancing. The shortage of own sources determines the level of operational surplus which is one of the indicators impacting on the potential for issuing debt.

According to the survey, there is still a place for private capital in the financing of the municipal infrastructure. However, the main obstacle related to public-private partnerships (PPP) is finding suitable kinds of investment projects which might be executed in the PPP model. The big cities are usually interested in PPP and the reviewed sample consists of rural and urban-rural entities. The second obstacle is the financial risk and financial cost which might outweigh the benefits of PPP. The problem raised very often by the municipalities was the lack of experience in PPP projects and, as a result, a shortage of best practise to share (Zioło, 2012 p. 244).

The survey data may be suprising for anyone who is interested in project financing. No municipality was willing to undertake the investment as project finance. This type of transaction is quite new and innovative for the reviewed municpalities and no local authority has seen the potential of the project finance for financing municipal infrastructure.

The final part of the survey was focused on the most common problems with the financing of municipal investment. Three categories of factors were especially important in that field; the cost of financing, the payment schedule and cash flow. In the process of selection of financial sources, the most common problem was a too-conservative (PAYG) or too-risky (PAYU) approach to building a municipal finance strategy. Both options create a certain risk and result in difficulties in financing.

In the case of excessive concentration on own sources of capital, the capital expenditure is much lower, the investment cycle is much longer and the ability of the investment community remains limited. In this case, however, the liquidity risk is minimal. However, too high a share of the debt in the financing structure may result in the loss of liquidity and the credit status of the municipalities (negative financial leverage). The budgetary limitations and the high capital investment are the crucial factors responsible for issuing debt.

The surveyed municipalities do not have or do not see the problem of risk resulting from incorrect parameters of the financing structure. It might be partially justified by the statutory restrictions (Public Finance Bill), which regulate the issues of: the type of currency (denominated loans, foreign exchange rate), the capitalization of interest, discount, frequency of repayments of short-term expenditure declared state-funding shortfall of funds during the financial year.

The other difficulty was in maintaining the integrity between the investment cash flows and debt maturities and correctly identifying the criterion for choosing the external sources of financing. The first problem is a financial planning error which appears at the stage of the investment project budgeting and maintaining the required quality of the planning process. The role of the financial institutions which verify the budgets and financial plans in the process of credit worthiness assessment is important at this stage; in particular, the assessment of the budget and cash flows, the feasibility study and its assumptions and the repayment schedule adjusted to cash flow (Zioło, 2012 p. 246).

An important and more complex problem seems to define the criteria for selecting the correct source of external financing. The criterion of the financial cost (the lowest price) is dominant in public procurement. It is, however, worthwhile to exceed and verify the approach in the selection of external financing, especially the long-term nature of other factors, such as flexibility, availability, additional services and the existence of substitutes, which will allow for better management of local finances over a longer period of time.

5. CONCLUSIONS

The research carried out confirmed the existence of dysfunction in the financing of the municipal investment for the reviewed sample of entities. The interviewed municipalities had a sufficient level of knowledge and experience in the field of traditional instruments of financing and were able to properly use them. The lack of knowledge regarding innovative forms of financing makes it difficult to use the complex formula based on hybrid financing, such as PPP, project finance and market-based instruments such as securitization.

The detailed results of the study allow us to assume that:

- the high cost of capital is the major obstacle in credit and bonds financing;
- local taxes and fees are not a sufficient source for municipal investment financing;
- there is little space for the local authorities to increase their own revenues as a result of the legal regulations and the system of self-government financing;
- the budgetary grant system is malfunctional and does not ensure the sustainable financing of municipal investment tasks (poor predictability problem);

- financial risk, lack of knowledge and experience are crucial obstacles in hybrid financing;
- municipal investment projects are very often not suitable for hybrid financing (size, risk);
- the financial cost is the most important factor in choosing a source of financing for municipal investment according to the Polish public procurement law;
- private capital is not commonly used as a source of municipal financing because of the cofinancing requirements and lack of projects meeting the requirements of such financing;
- the leading problem in the shaping of financial structure is the lack of coherence between investment cash flow and maturity of liabilities;
- the crucial item is to maintain a positive degree of financial leverage.

REFERENCES

Aschauer D.A. (1988). *Is Public Expenditures Productive ?,* Journal of Monetary Economics, 23, pp.177-200.

Blöchliger H., Rabesona J. (2009). *The fiscal autonomy of sub-central governments – an update. OECD Network of Fiscal Relations Across Levels of Government.* COM/CTPA/ECO/GOV/WP/2009(9), www.oecd.org/ [accessed 10.05.2013].

Eichengreen, B. (1994). *Financing Infrastructure in Developing Countries. Lessons from Railway Age*. Policy Research Working Paper 1379, World Bank

Eurofi. (2012). *Improving the financing of long term projects*. http://www.eurofi.net/?document=improving-the-financing-of-long-term-projects-to-favour-growth [accessed 10.05.2013].

Medda F., Modelewska K. (2011). *Land value capture as a funding source for urban investment. The Warsaw metro system*. Sprawne Państwo. Program Ernst&Young, Warsaw

Ramirez, T., Esfahani H., S. (1999). *Infrastructure and Economic Growth*, Borradores de Economia 123, Banco de la Republica de Colombia

Singh R., Plekhanov A. (2005). *How Should Subnational Government Borrowing Be Regulated? Some Cross-Country Empirical Evidence*. International Monetary Fund Working Paper WP/05/54, Fiscal Affairs Department

Tamalty R., (2007). *Innovative Infrastructure Financing Mechanism for Smart Growth*, Smart Growth BC

Tóth K., Dafflon B. (2006). *Managing local public debt in transition countries: An issue of self-control ?* Paper prepared for the 14th Annual Conference of the Network of Institutions and Schools of Public Administration in Central and Eastern Europe (NISPAcee), Ljubljana, May 11-13, First draft (11 April 2006) [accessed 10.05.2013].

Wang W., Hou Y. (2009). *Pay-as-You-Go Financing and Capital Outlay Volatility: Evidence from the States Over Two Recent Economic Cycles*. Public Budgeting & Finance, Vol. 29, No. 4

Zioło M., *Modelowanie źródeł finansowania inwestycji komunalnych a efektywność wydatków publicznych,* CeDeWu, Warszawa, 2012