PRACE NAUKOWE
Uniwersytetu Ekonomicznego we Wrocławiu

RESEARCH PAPERS
of Wrocław University of Economics

Nr 428

Wrocław Conference in Finance: Contemporary Trends and Challenges

Publishing House of Wrocław University of Economics
Wrocław 2016

Copy-editing: Marta Karaś
Layout: Barbara Łopusiewicz
Proof-reading: Barbara Cibis
Typesetting: Małgorzata Czupryńska
Cover design: Beata Dębska

Information on submitting and reviewing papers is available on websites
www.pracenaukowe.ue.wroc.pl
www.wydawnictwo.ue.wroc.pl

ISSN 1899-3192
e- ISSN 2392-0041

ISBN 978-83-7695-583-4

The original version: printed

Publication may be ordered in Publishing House
Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu
ul. Komandorska 118/120, 53-345 Wrocław

tel./fax 71 36-80-602; e-mail: econbook@ue.wroc.pl
www.ksiegarnia.ue.wroc.pl

Printing: TOTEM

Contents

Introduction

One of the fastest growing areas in the economic sciences is broadly defined area of finance, with particular emphasis on the financial markets, financial institutions and risk management. Real world challenges stimulate the development of new theories and methods. A large part of the theoretical research concerns the analysis of the risk of not only economic entities, but also households.

The first Wrocław Conference in Finance WROFIN was held in Wrocław between 22nd and 24th of September 2015. The participants of the conference were the leading representatives of academia, practitioners at corporate finance, financial and insurance markets. The conference is a continuation of the two long-standing conferences: INVEST (Financial Investments and Insurance) and ZAFIN (Financial Management – Theory and Practice).

The Conference constitutes a vibrant forum for presenting scientific ideas and results of new research in the areas of investment theory, financial markets, banking, corporate finance, insurance and risk management. Much emphasis is put on practical issues within the fields of finance and insurance. The conference was organized by Finance Management Institute of the Wrocław University of Economics. Scientific Committee of the conference consisted of prof. Diarmuid Bradley, prof. dr hab. Jan Czekaj, prof. dr hab. Andrzej Gospodarowicz, prof. dr hab. Krzysztof Jajuga, prof. dr hab. Adam Kopiński, prof. dr. Hermann Locarek-Junge, prof. dr hab. Monika Marcinkowska, prof. dr hab. Paweł Miłobędzki, prof. dr hab. Jan Monkiewicz, prof. dr Lucjan T. Orłowski, prof. dr hab. Stanisław Owsiak, prof. dr hab. Wanda Ronka-Chmielowiec, prof. dr hab. Jerzy Różański, prof. dr hab. Andrzej Sławiński, dr hab. Tomasz Słoński, prof. Karsten Staehr, prof. dr hab. Jerzy Węcławski, prof. dr hab. Małgorzata Zaleska and prof. dr hab. Dariusz Zarzecki. The Committee on Financial Sciences of Polish Academy of Sciences held the patronage of content and the Rector of the University of Economics in Wroclaw, Prof. Andrzej Gospodarowicz, held the honorary patronage.

The conference was attended by about 120 persons representing the academic, financial and insurance sector, including several people from abroad. During the conference 45 papers on finance and insurance, all in English, were presented. There were also 26 posters.

This publication contains 27 articles. They are listed in alphabetical order. The editors of the book on behalf of the authors and themselves express their deep gratitude to the reviewers of articles – Professors: Jacek Batóg, Joanna Bruzda, Katarzyna Byrka-Kita, Jerzy Dzieża, Teresa Famulska, Piotr Fiszeder, Jerzy Gajdka, Marek Gruszczyński, Magdalena Jerzemowska, Jarosław Kubiak, Tadeusz Kufel, Jacek Li-

sowski, Sebastian Majewski, Agnieszka Majewska, Monika Marcinkowska, Paweł Miłobędzki, Paweł Niedziółka, Tomasz Panek, Mateusz Pipień, Izabela Pruchnicka-Grabias, Wiesława Przybylska-Kapuścińska, Jan Sobiech, Jadwiga Suchecka, Włodzimierz Szkutnik, Mirosław Szreder, Małgorzata Tarczyńska-Łuniewska, Waldemar Tarczyński, Tadeusz Trzaskalik, Tomasz Wiśniewski, Ryszard Węgrzyn, Anna Zamojska, Piotr Zielonka – for comments, which helped to give the publication a better shape.

Wanda Ronka-Chmielowiec, Krzysztof Jajuga

PRACE NAUKOWE UNIWERSYTETU EKONOMICZNEGO WE WROCŁAWIU
RESEARCH PAPERS OF WROCŁAW UNIVERSITY OF ECONOMICS nr 428 • 2016

Wrocław Conference in Finance: Contemporary Trends and Challenges ISSN 1899-3192
e-ISSN 2392-0041

Anna Wojewnik-Filipkowska
University of Gdańsk
e-mail: anna.filipkowska@ug.edu.pl

THE IMPACT OF FINANCING STRATEGIES ON EFFICIENCY OF A MUNICIPAL DEVELOPMENT PROJECT

WPŁYW STRATEGII FINANSOWANIA NA OPŁACALNOŚĆ GMINNEGO PROJEKTU DEWELOPERSKIEGO

DOI: 10.15611/pn.2016.428.26
JEL Classification: H21, O22, R58

Abstract: The purpose of the paper is to provide an insight into local government's investment financing determinants and into the impact of financing strategies on financial efficiency of a development project. The first part of the research covers literature background. The second part includes description of the property under development, selection of financial strategies, and evaluation of their impact on project financial efficiency from the local government's point of view. The main idea behind this research is that project financing strategies must be flexible, but subordinated to municipality financial strategy, and that considering financial circumstances new financing models for municipal development projects are needed. The proposed framework supports ex-ante investment evaluation from the perspective of investor. The model may be also an example of how to evaluate financial results of local planning.

Keywords: public investment, development investment project, project financing, financial evaluation.

Streszczenie: Celem pracy jest przegląd czynników determinujących finansowanie inwestycji jednostek samorządu terytorialnego oraz ocena wpływu strategii finansowania na opłacalność projektu deweloperskiego. Pierwsza część badań obejmuje przegląd literatury. Druga część to studium przypadku – zawiera opis inwestycji, wybrane strategie finansowania i ocenę wpływu wybranych strategii na opłacalność projektu. Główne założenie badań stanowi, iż strategie finansowania projektu muszą być elastyczne, ale podporządkowane startegii finansowej gminy, oraz w aktualnych warunkach finansowych należy poszukiwać nowych modeli finansowania inwestycji komunalnych. Proponowana koncepcja prezentuje ocenę inwestycji z punktu widzenia inwestora. Przedstawiony model to również przykład, w jaki sposób można oceniać skutki finansowe lokalnego planowania.

Słowa kluczowe: inwestycje publiczne, deweloperski projekt inwestycyjny, finansowanie projektu, ocena opłacalności.

1. Introduction – study justification, aim, methodology

The research is justified by the existence and acknowledgement of several problems and/or facts. Firstly, there is a problem of under-investment. The existence of an 'infrastructure gap' indicates insufficient quantity and/or quality of existing facilities [Deloitte 2006; European Commission 2012; World Economic Forum 2012]. Many years of neglect due to insufficient financial resources make it necessary to modernize fixed assets and sometimes build them from scratch. 'Infrastructure gap' is then connected with the 'financing gap'.

Research carried out by Orłowski [2011] shows the gap financing of about PLN 116-197 billion in the period of 2011-2022. Public private partnership [Orłowski 2011; Węgrzyn 2013], economic (enterprise) special zones [Goodhall 1985], value capture financing [Bassett 2009; Medda, Modelewska 2011; Squires 2012; Squires, Lord 2012] are deployed alongside 'gap financing' instruments. Several studies [OECD 2006; European Investment Bank 2013; World Bank 2014] underline the importance of infrastructural investment for economic growth and development.

Infrastructural expenditure has a stimulus effect in terms of job creation and increase in aggregate demand (e.g. [Röller, Waverman 2001; Datta, Agarwal 2004; European Construction Industry Federation 2014]). The question whether the infrastructural investment dives development, or development drives infrastructural investment, is still open to debate [World Bank 1994]. Yet, the greater impact of infrastructural development on the growth of income in regions with weaker economic position is suggested as well [Brenneman, Kerf 2002, Gannon, Liu 1997]. Secondly, infrastructural investment determines a high proportion of public wealth [Delloite 2011, Rymarzak, Trojanowski 2012; Kaganova 2012].

Infrastructure embraces different types of assets (investment) and three main groups can be distinguished [Pylak 2015]. The economic (technical) infrastructure includes development relating to energy, transportation and communication, water and sewage. Social infrastructure includes social system (education, culture, health, social service and recreation) and institutional system (public order and administration, e.g. justice, police, army, and prisons). Finally, business environment infrastructure includes institutional support such as special investment (economic) zones, science parks, centres of technology transfer, incubators. Although Longhi [1999] includes these objects in the social infrastructure, it seems that nowadays the practice, scale and difference of this type of infrastructure, justifies its distinction in a separate group of investment.

Simultaneously, from the perspective of the municipal assets management, the property should be divided into: functional (statutory, mandatory), instrumental (discretionary), and income-generating (surplus) property [Dent 1997; Dziworska, Trojanowski 2008; Kaganova 2012]. The proper classification of the assets is important as "[f]or each of the above, different management methods will be needed, as seen through various financial goals" [Rymarzak, Trojanowski 2012,

p. 9]. Therefore, finally, efficient management of public sector investment requires professionalization [Deloitte 2011; Owsiak (ed.) 2011]. Particularly, adequate management tools (concerning a certain type of the asset), including correct evaluation criteria and techniques, are needed [Bond, Dent 1998, Kaganova 2012] as options appraisal, accountability and performance information are the three main reasons to measure results of investment [Wojewnik-Filipkowska, Kowalski 2015].

The process of public finance consolidation and public management professionalization shapes the determinants of investment management and criteria for evaluation of this investment, too. Local government strategies should provide higher efficiency of public resources management. Rationalization of resources, cooperation between the local governments and business, and public governance should be taken under consideration while searching new financing models for implementation of the municipal development projects, which seems to be a research gap.

The research fits, then, within an existing trend of the studies relating to public assets management and focuses on the investment in local government in particular. Its aim is to provide an insight into the local government's investment financing determinants and into the impact of financing strategies on the financial efficiency of the exemplary development project. The research questions relating to the issues of 'whether to invest', 'how to finance it', and 'what are the financial results' are primarily motivated by the infrastructure and financing gap. The main ideas which are behind this research are that project financing strategies must be flexible, but subordinated to the municipality financial strategy, and that new financing models for municipal development projects are needed.

The first part of the research covers the literature background relating investment financing determinants in a local government. In literature, investment appraisal are topics which discussed broadly by both academics and professionals, and example references in methodology description are recalled below. Second part of the research includes the description of the financial situation of Municipal investor, property under development, selection of three financial strategies with justification and evaluation of their impact on the project efficiency. The evaluation is limited to financial analysis. The socio-economic impact of the project is not analysed.

The research uses the following methods: overview of the literature, methods of comparison, analysis and logical reasoning. The research is case-based, as the focus of the study is a contemporary phenomenon [Yin 2014]. Financial evaluation of the case study is performed from the Municipality point of view with respect to the appropriate guidelines [MIR 2014; MIR 2015; European Commission 2015] and is conducted on the basis of the standard method. The method applies in particular to projects carried out under the assumption that the funds assigned for debt financing of the project are to be repaid based on the financial surplus generated by the project, and so securing the repayment of this debt with the project itself.

The aim of the analysis is to calculate the financial impact of the project on the Municipality cash flow assuming market rate of return. According to usual formulas

(e.g. [Pastusiak 2003; Rogowski 2008; Michalski 2009; Czarnek (ed.) 2010]), internal rate of return (IRR), net present value (NPV), profitability index (PI) and debt service cover ratio (DSCR), when appropriate, are calculated for three financing variants of the selected case study.

2. Investment financing determinants in local governments – literature background

Investment policy is a conscious and deliberate choice of investment projects according to the agreed criteria and identification of sources of finance. Investment policy includes also an appropriate selection of the sources of financing. It is then determined by the revenue policy and debt policy.

The revenue policy defines the possibility of municipality to use the revenues for investments. Local governments have been empowered in competences to collect the revenues and make expenditures. They use it to plan development and infrastructural investments. According to Jastrzębska [2012], infrastructure investments contribute to improving the living conditions and business environment. They can also positively influence the labour market. Investments in technical infrastructure are more associated with an increase of the municipalities' attractiveness for potential investors than the investment in social infrastructure [Jastrzębska 2012]. Local governments' investments are generally non-profit, yet, concerning the revenue policy, some expenditures can be recovered in the form of local fees.

Secondly, investment policy is associated with the local government's policy of debt. Local governments make use of debt limits, resulting from the legal and economic constraints, which relates to the solvency ability to service debt. Primary categories informing about local government's ability to meet expenses for debt service and investment are 'free resources' and 'operating balance'. These categories are part of the long-term financial planning. The difference between the total revenues and operating expenses is called the 'gross free resources'. And, if deducted by debt service, it is 'net free resources', which can be spend on investment and new debt service.

The operating balance, as the difference between the operating revenues and operating expenditures, indicates whether the local government is able to cover current expenses with current income without violation of the municipal assets and drawing additional debt [Jastrzębska 2009; Perło et al. 2010]. The higher the operating balance, the greater the ability of the local government to invest, either directly through the allocation of the operating balance for investment, or indirectly through the repayment of drawn debt. So operating balance indicates investment prospects and is a criterion for defining the ability of the local government to make financial commitments (draw debt).

Accordingly, the choice of an appropriate financing model is one of the key questions relating to public investment [Wojewnik-Filipkowska, Trojanowski 2012]. Municipal investments can be financed with the following sources: current

revenues, funds from national government and special funds, non-refundable off-budget funds (incl. foreign funding from the European Union funds), positive budget balance (or budget surplus) from previous years, long-term debt, bonds [Misterek 2008; Wiśniewski (ed.) 2008; Jastrzębska 2012]. The choice of financing sources is affected by several groups of factors as shown in Table 1.

Table 1. Determinants of financing optimization in public finance

Group	Determinant
Financial market	Changes in the interest rates on the interbank money market, profitability of the governmental bonds, currency rates, market responses to politico-economic changes, supply and demand of money, and instability in shaping the balance of payments.
Legal regulations	Changes in the state budget, financial situation of a municipality, debt limits applicable to public sector entities, impact on debt limits, Public Procurement Law, legal regulation regarding the repayable financing.
The principles of municipality functioning	Political changes, wrong choice of sources of financing in previous years, numerous reliefs in local taxes and fees, reluctance to repayable financing.
Characteristics of the source	Financial cost (direct and indirect), funding period, form of payment and repayment obligations, flexibility, availability, performance impact (e. g. DSCR), substitutability, securing the return of capital, promotional effect.
Formal and organizational factors	The procedure for obtaining, type of documents required, the level of knowledge and experience of decision-makers required.

Source: Author's own study based on Wojewnik-Filipkowska [2011], Zioło [2011], Jastrzębska [2009].

Financing optimization plays a significant role in corporate finance and project financing [Yescombe 2002; Michalski 2009]. Yet, it is overlooked in public finance, even though local governments operate in a changing and turbulent environment, carrying out different tasks. Actually, the act of public finance (pl: [Ustawa z dnia 27 sierpnia 2009]) indirectly refers to financing optimisation by pointing out diversified sources of revenues [Art. 5] as a primary source of capital and thus the source of funding for local governments.

The Act has also identified a closed list of situations allowing using the repayable financing by local government [Art. 89]. Moreover, local governments should reduce the risks associated with the effects of their debt [Art. 91, Art. 91]. The act refers directly to limiting the risk of increasing debt service costs. In addition, a significant limitation of local governments' access to external financing [Marchewka-Bartkowiak, Wiśniewski 2012] is redefined by current debt limit [Art. 243]. Common to all local governments debt ratios (15% limit of the relationship of planned repayment of debt to budget revenues, and 60% limit of the relationship of total debt to budget revenues) have been replaced by the individual local government debt indicator [Art. 242], starting from 2014.

According to the formula, during the financial year, the value of debt repayment, together with the costs of their service to total revenues, cannot exceed the arithmetic average of the relationship of current revenues, plus income from the sale of assets, and minus current expenditures to total revenues, calculated for the previous three years. In addition, the Act excludes the possibility of using repayable instruments whose mechanism would assume the capitalization of interest or discount of more than 5% of the nominal value of the liability. It is also necessary to determine the outstanding nominal amount calculated at the date of repayment, at the moment of making an obligation [Art. 92].

The regulations intend to ensure the municipalities' safety and stability of financing tasks in the long term. Despite these regulations, from financial and economic point of view, municipal investments should be financed with debt instruments due to: the possibility of moving financial burden on future generations, especially in the context of intergenerational projects, a higher level of efficiency, unjustified fluctuations in the value of taxes. Tax hikes may, in fact, cause the migration of residents to units with lower local taxes.

Rules for a municipality financing strategy optimization should include, then, also the availability of specific financing sources. Formal and organizational determinants, including promotion effects are also important. Last, but not least, optimization should include characteristics of a certain project which may be more appropriate to be financed with uncommon, as for Municipality, source of financing [Krzyśko, Marciniak 2001].

3. The case study of the property under development

3.1. The financial situation of the Municipality

The project was defined by the Municipality with approximately 20,000 residents and the area of 200 km^2. The surrounding area is characterised by low-lying landscape and the lack of natural hills. The structure of land use in the Municipality is characterized by a dominant share of agricultural land (over 70%) however agricultural activity constitutes only about 3%. Most of the private entities are single-owned companies. The unemployment rate for 2014 is 14% which is higher that the ratio for the region (10.3%) and for Poland (10.8%). General demographic situation does not differ much from other cities and is characterised by aging and decreasing population.

Figure 1 illustrates general financial situation of the Municipality, which improves as the worrying deficit stopped and reversed in 2012. Yet, in the prospects of external European Union financing in 2014-2020, the funds available for new capital projects may be insufficient to fully exploit the opportunities related to the EU funds. The Municipality may face financial and organizational difficulties which determine implementation of large projects.

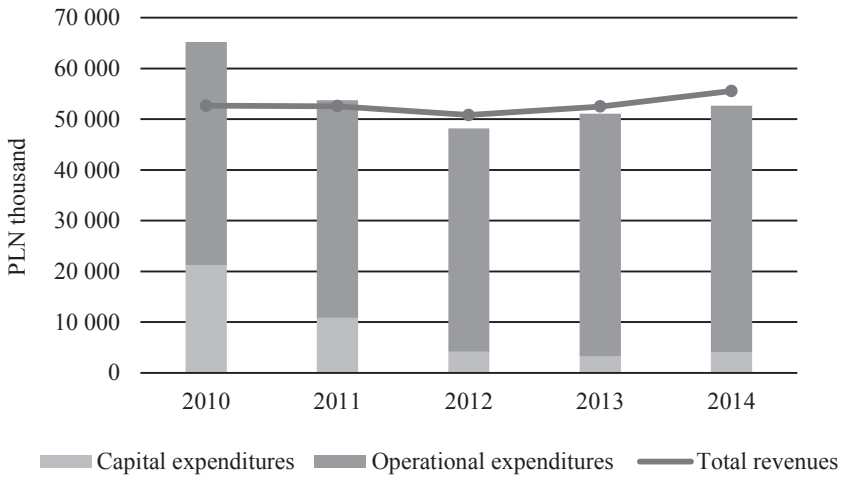

Figure 1. General financial situation of the Municipality (2010-2014)

Source: Author's own study based on [Local Data Bank 2010-2014; Budget Execution Reports 2010--2014].

In the studied period 2010-2014, according to the Municipality's revenues, current revenues generated about 87% of total revenues, while capital revenues decreased to 13% on the average. According to the revenues per section, revenues in agriculture (PLN 1.6 m in 2014), communal economy and environment protection (PLN 0.7 m) stabilized after decrease in 2012, while revenues from fees and taxes have been increasing (PLN 20.2 m in 2014). This indicates high dependence of the Municipality revenues on the economic cycle. The structure of revenues reflects the trend. The share of the revenues from fees and taxes is the greatest (38.47% in 2014), while agriculture relatively small (3.16% in 2014).

It is worth to underline zero revenues from tourism in 2013-2014. According to expenditures per sections in 2010-2014, expenditures for agriculture were decreasing (PLN 1.6 m in 2014), while expenditures for communal economy and environment protection (PLN 3.4 m in 2014), and transport and communication (PLN 1.7 m in 2014) were increasing. The structure of expenditures reflects the trend. The share of social expenditures is the greatest (35.50% in 2014), while agriculture expenditures (3.2% in 2014) and tourism expenditures (0.41% in 2014) are relatively small. Taking under consideration the agricultural characteristics of the Municipality, the observation related to the structure and trends of revenues and expenditures per sections seems worrying.

Table 2 shows selected measures which supplement presentation of the Municipality activity and its financial condition. Debt ratios have been very high, however still below the legal limits (that is: 15% and 60%). In 2013 the Municipality

issued bonds to pay off its earlier debt, which would ease the use of the EU funds in a new financial perspective for 2014-2020. The interest of bonds explains high debt servicing/current revenue ratio and decreasing debt/current revenue ratio.

Table 2. Selected measures of the Municipality (2010-2014)

Item	2010	2011	2012	2013	2014
Capital expenditures per capita [PLN]	1153	589	221	158	216
Capital expenditures/total expenditures	32.38%	19.99%	8.38%	5.61%	7.40%
European Union Funds per capita [PLN]	463	399	208	78	89
European Union funds/capital expenditures	40.17%	67.78%	94.12%	49.43%	41.28%
Debt/ total revenues	55.09%	59.80%	59.63%	54.34%	52.20%
Debt servicing/total revenues	6.19%	11.07%	10.96%	30.09%	6.03%
Interests paid/total revenues	2.41%	3.55%	3.63%	2.87%	2.02%

Source: Author's own study based on [Local Data Bank 2010-2014; Budget Execution Reports 2010--2014].

3.2. Property description

The Municipality owns the property for development. It is of about 60 ha and can be reached only by a private transportation from nearby national road leading to the capital of Poland. It is 4 km away from the local city centre and 30 km away from the regional capital city. Traffic intensity results from the regional and national transport. There has been a considerable movement of vehicles aiming at warehouses and logistics centres, and high-traffic passenger cars movement related to tourist destinations and work in the regional capital city. The parcels are integral property, crisscrossed by ditches. The shape of the parcels is not regular. The area is flat, with a high ground water levels. Currently, the area is used for agricultural purposes based on the lease agreement with the local farmers.

There are single residential properties and a commercial property (inn with parking) in the neighbourhood. The market analysis shows very few and poorly developed touristic resources. There are some specialized agricultural farms offering fishing or horse riding. The housing resources are about 3.3 thousand dwellings.

In terms of real estate market transactions, there are generally individual investors creating the market of land properties. The prices are similar to prices in the outskirts of the neighbouring regional capital city. Housing development trends are not observed in the Municipality. The interest of developing companies is low because of relatively low prices which results in development of individual single-family housing instead. The key criterion determining the location is availability of the technical infrastructure.

The main conclusion from this brief market analysis is that due to the level of prices and technical infrastructure condition, most investors would rather prefer

investing in the outskirts of larger cities. On the other hand, the natural values favouring clean and natural agriculture has become a very important trend being advantageous for the project.

The concept of the development project includes the realization of the following interconnected ventures on the area of about 60 ha:

- service & retail (hotels, gastronomy, services, tourist information, conference and exhibition centre),
- residential complex,
- agricultural production and model farms: flowerland (dedicated for gardening business), fishland (fish farming), grassland & cornland (diversified agriculture ecological production).

Table 3. Project development program and basic prices

Item	Value
Area of property under development [m^2]	600 000
Area of roads and communication [m^2]	44 000
Area for parcels [m^2]	556 000
Area for service and retail investment [m^2]	5 000
Area for residential investment [m^2]	273 000
Area for agriculture investment [m^2]	278 000
Plots for residential investment [no]	273
Current value of the land used for agricultural purposes [PLN]	2 178 000
Average price of land for agricultural purposes to value Municipality's contribution in-kind [no infrastructure] [PLN/m^2]	3.63
Average price of land for retail & service, and agriculture production with model farms, with infrastructure [PLN/m^2]	25.00
Average price of land for residential investment with infrastructure [PLN/m^2]	42.00

Source: Author's based on the Investor's assumptions.

The implementation of the investment requires preparation of proper infrastructure and promotion of the project. The development program assumes service & retail, and residential complex on the half of the parcels, and agriculture production with model farms on the other half. The Municipality will develop technical infrastructure and sell parcels. There is also a possibility beyond the analysis, that the Municipality will implement selected ventures making in-kind contribution to special purpose vehicle companies (SPVs) on the principles of Project Finance or execute projects under the public-private partnership. Table 3 shows the project development program and basic assumptions used in calculations.

3.3. Evaluation assumptions and financial analysis

The time horizon of the analysis covers the period associated with sale of the parcels (11 years). Considering relatively short period (at least as for infrastructure investment), the analysis is conducted in current (nominal) prices, which requires current (nominal) rate of discounting and Consumer Price Index (CPI) forecast. For the purpose of financial analysis, the real discount rate is assumed at the market level of 10% to reflect investor's expectations. It is recalculated to nominal value applying Fisher equation which results in 11,76% discount rate. CPI was taken into account in the corresponding revenue forecast [Dziworska 2000; Podgórska, Klimkowska 2013; European Commission 2015]. Income tax is skipped, as municipalities making investment do not pay income tax. Macroeconomic assumptions regarding CPI is based on the forecast of the European Bank for Reconstruction and Development (EBRD).

Capital expenditures (CAPEX) relate to the construction period and include realization of technical infrastructure: water supply, sewage system, gas supply. No provision is assumed regarding replacement investment and capital expenditure during the operation phase. Capital expenditure is valued in gross prices – they contain value added tax (VAT), as local governments do not have the right to VAT deduction. The investment expenditures contain also the value of the land. Table 4 shows capital expenditures of the project.

Table 4. Capital expenditures of the project

Item	The value of the cost estimate [without VAT] [PLN]	VAT [PLN] (23%)	The value of the cost estimate [with VAT] [PLN]	[%]
Water and energy infrastructure	4 965 216	1 142 000	6 107 216	42%
Water	481 796	110 813	592 609	4%
Sewage	3 952 436	909 060	4 861 496	34%
Gas	530 984	122 126	653 111	5%
Communication infrastructure (roads)	5 012 768	1 152 937	6 165 705	43%
Current value of the land used for agricultural purposes	2 178 000		2 178 000	15%
Total expenditures	12 155 985	2 294 937	14 450 921	100%

Source: Author's own study.

In terms of the revenues, it is anticipated that the Municipality sells 5% of all parcels before the start of the investment to fund a part of the capital expenditure. Parcels without technical infrastructure are valued with 20% discount. In the following years, the Municipality will sell 25 parcels of 1000 m^2 for housing in the

Table 5. Revenues, operation costs and DSCR for the project

Item	0	1	2	3	4	5	6	7	8	9	10
CPI	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%	1.60%
Indexed price (basic 25.00 PLN/m^2)	25.40	25.81	26.22	26.64	27.07	27.50	27.94	28.39	28.84	29.30	29.77
Indexed price (basic 42.00 PLN/m^2)	42.67	43.35	44.05	44.75	45.47	46.20	46.94	47.69	48.45	49.23	50.01
Sold area for production investment [m^2]	13 900	132 050	132 050								
Parcels sold for housing investment [no.]	14.00	25.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00	26.00
Sold area for housing investment [m^2]	14 000	25 000	26 000	26 000	26 000	26 000	26 000	26 000	26 000	26 000	26 000
Sold area for service & retail investment [m^2]	5 000										
Revenues (production) [PLN thousands]	282.4	3 407.7	3 462.3								
Revenues (housing) [PLN thousands]	477.9	1 083.9	1 145.3	1 163.6	1 182.2	1 201.1	1 220.3	1 239.9	1 259.7	1 279.9	1 300.3
Revenues (service and retail) [PLN thousands]	101.6										
Total revenues [PLN thousand]	862.0	4 491.6	4 607.5	1 163.6	1 182.2	1 201.1	1 220.3	1 239.9	1 259.7	1 279.9	1 300.3
OPEX [PLN thousands]	43.1	224.6	230.4	58.2	59.1	60.1	61.0	62.0	63.0	64.0	65.0
Net operating profit [PLN thousands]	818.9	4 267.0	4 377.1	1 105.4	1 123.1	1 141.1	1 159.3	1 177.9	1 196.7	1 215.9	1 235.3

Source: Author's own study.

second year, and 26 parcels from 3rd to 10th year of the analysis. The other parcels (for agricultural production, and service & retail) will be sold to investors within

2 years. Operational expenditures (OPEX) include the costs for the Municipality associated with the sale of parcels and have been estimated at 5% of the sales revenue as in similar projects. OPEX include the division of property, valuation, and preparation for sale. Other costs do not occur. Table 5 shows forecast of revenues, costs, and net operating profit.

The project financing assumes three options. The first option (variant 1.0) assumes that the project will be financed only from own sources of the investor. Yet, the positive budget balance for 2014 of about PLN 3 m and forecast for 2015 seems harsh as for a single financing source for 14 m capital investment. Yet, the Municipality can gather more money from pre-sales of parcels. The increase of pre-sales from 5% to 25% of the parcels results in additional PLN 2.8 m revenues. Still, own contribution of PLN 10.8 m would be needed. The pre-sale of 25% parcels makes the project efficient. Therefore, it is worth to consider rigorous promotion to reach this level of pre-sale in case the external financing is not available.

In the second option (variant 2.0), capital expenditure on technical infrastructure will be co-financed by commercial debt with respect to current individual debt ratio for the Municipality. Individual debt ratio for 2014 for the Municipality, calculated with the formula provided in [Art. 242] shows that the limit for debt service is not exceeded (2.52% < 2.91%). The 'safety margin', understood as the difference between ratio of planned debt service to budget revenues for 2015 (2.91%) and ratio determining limits (3.72%), is even higher. It is therefore assumed, that the additional debt service connected with the project shall not cause exceeding the limit.

Based on this assumptions, the simulation allowed to estimate the maximum debt service as PLN 455 340. The debt conditions are based on the market conditions, which is 5% interest, 10-year period of repayment and annuity repayment. Taking into consideration the above, the value of the debt is PLN 3 500 000 with the annuity payment PLN 453 266 per year. Taking into account the current debt service and new debt service, that individual debt ratio for the Municipality is not under threat.

The calculations in this option include also the loan repayment schedule and debt service cover ratio (DSCR) to prove self-refinancing of the project. Unlike the debt ratio, the DSCR takes into consideration all expenses related to debt, including interest expense and capital rate. In this way, the DSCR tells more of a project's ability to pay its debt than the debt ratio [Yescombe 2007]. The average DSCR for the project is 3.97. Table 6 shows revenues and DSCR calculation.

The third variant assumes non-repayable funding. Part of the expenditures on technical infrastructure may be financed from the European Union funds under the European Agricultural Fund for Rural Development (action related to roads construction and modernisation, and water and sewage management) within Common Agricultural Policy. The program is a continuation of the same financial assistance granted in previous period of the EU's aid (2007-2013). The aid takes the form of reimbursement of the maximum of 63.63% of the qualified costs which may not exceed EUR 1 000 000. The aid cannot also exceed PLN 3 000 000 for a beneficiary during the implementation of the Programme (MRI 2015).

Table 6. DSCR of the project

Item	0	1	2	3	4	5	6	7	8	9	10
Net operating profit [PLN thousands]	818.9	4 267.0	4 377.1	1 105.4	1 123.1	1 141.1	1 159.3	1 177.9	1 196.7	1 215.9	1 235.3
Debt's interest rate [PLN thousands]		175.0	161.1	146.5	131.1	115.0	98.1	80.4	61.7	42.1	21.6
Debt's capital rate [PLN thousands]		278.3	292.2	306.8	322.1	338.2	355.1	372.9	391.5	411.1	431.7
DSCR		9.41	9.66	2.44	2.48	2.52	2.56	2.60	2.64	2.68	2.73

Source: Author's own study.

It is assumed for the calculations, that as co-financing is available for projects which are not financially efficient (in terms of NPV and IRR), but generate external benefits for the economy and society, the maximum EU funding is calculated under condition of NPV = 0 and mentioned significant external benefits occur. The project might also be financed within the Regional Operational Program for Pomerania, however the detailed procedures of certain program and its requirements are beyond this research. Pre-financing may be secured in three ways: by the Municipality's own funds (variant 3.1), by long-term debt (variant 3.2), by short-term debt (variant 3.3).

Table 7. Financing, financing structure and efficiency of the project in selected variants

Variant	1		2		3.1		3.2		3.3	
Total budget [PLN thousands]	14 450.9	100.00%	14 450.9	100.00%	14 450.9	100.00%	14 450.9	100.00%	14 450.9	100.00%
Own funds [PLN thousands]	14 450.9	100.00%	10 950.9	75.78%	12 593.0	87.14%	10 114.0	69.99%	9 329.5	64.56%
Commercial debt [PLN thousands]	0	0.00%	3 500.0	24.22%	0	0.00%	3 500.0	24.22%	3 500.0	24.22%
European Union funds [PLN thousand]	0	0.00%	0	0.00%	1 858.0	12.86%	837.0	5.79%	1 621.4	11.22%
Pre-financing	Not applicable		Not applicable		Own sources		Long-term debt		Short-term debt	
NPV [PLN thousands]	–1 662.4		–748.9		0		0		0	
IRR	7.54%		8.88%		11.76%		11.76%		11.76%	
PI	0.88		0.93		1.00		1.00		1.00	

Source: Author's own study.

Income statement and cash flow have been prepared for all financing options described above (1.0, 2.0, 3.1, 3.2, and 3.3). Cash flows do not include changes in

working capital. Internal rate of return (IRR), net present value (NPV), profitability index (PI), and safety margin (based on PI) of the project have been calculated. Table 7 presents results of detailed calculations.

4. Conclusion and discussion

Contemporary approach to public finance is characterised by the application of recognized and commonly used methods respecting the economic regime from the private sector. Because of the limitations related to financing sources, but also because of the specific effects of the performance, the approach to public finance, as private is right, yet – not easy. These factors cannot cause the resignation of systematic approach to assessing the efficiency of invested funds and presented approach can be applied to analyse the consequences of financing strategies, and an example tool on how to evaluate financial results of local planning.

A rational investor will seek to maximize the NPV, IRR and PI indicators. The answer, however, in that case is not so straightforward. For sure, variant 1.00 and 2.00 should not be implemented under assumed conditions. Only if the project generates external effects (of the social, economic, environmental nature – which is beyond this research), it may qualify for the EU support, and in that case it can be considered for implementation. Moreover, the support cannot make the project effective, therefore the EU funding is only about 12.86% of the total capital expenditures in variant 3.1, 5.79% – in variant 3.2, and 11.22% – in variant 3.3. At this stage, further selection criteria should be implemented, as all three variants (3.1, 3.2, 3.3) generate the same NPV = 0, and IRR = 11.76%.

The criteria should be coherent with the financing strategy of the Municipality. The option 3.1 should be recommended if the criterion is to maximise the EU aid. The option 3.2 should be recommended if the criterion is to use long-term debt. The option 3.3 should be recommended if the criterion is to minimise own financial input. Simultaneously, the size of required own financing is also under a question of availability, as the budget balance of the Municipality for 2014 was only about PLN 3 m. That fact contests the 'traditional' financing model based on investment financing with own funds, debt and EU funds. Public private partnership, special economic zone, or even value capture financing might be considered.

The insight into the local government's financing strategies and analysed case study confirms that project financing strategies must be flexible, but subordinated to the municipality financial strategy, and that considering financial circumstances, new financing models for municipal development projects are needed. The ability to obtain additional funds, implement new mechanism, or even develop a new financing model determines the implementation of municipal investments. The level of the grant depends on the efficiency and effectiveness of the project, but also on the skills and abilities to mobilize an adequate own contribution through own revenues or debt. Hence, richer municipalities have a greater opportunity to mobilize its own resources for investments.

Ability to prepare a proposal and cost-benefit analysis in the context of projects financed by the European Union or the World Bank is of the key importance to prove economic-social impact of the investment. It's also worth to cooperate with master units in the region so that the investment will be included in the strategy development of the region. Investment needs and the lack of financial resources for their implementation should encourage municipalities to seek new solutions, for instance in the field of above mentioned public-private partnerships, special economic zones and value capture financing, which should be subjects of further analysis.

The main purpose of the paper was to provide an insight into local government's investment financing determinants and into the impact of financing strategies on the financial efficiency of exemplary development project. But the question of the project efficiency should be seen broader. The purpose of the investment policy related to development projects is to influence the environment and improve investment attractiveness. The authorities can impact investment attractiveness through single investment projects, complex infrastructure development programs, promotion system of tax and fee reliefs, and the supply of land to the investor. Therefore, the answer whether to invest should be based on conjoint analysis of the financial efficiency and socio-economic effectiveness. In this case, the first step related to financial analysis, has already been made.

References

Bassett L. M., 2009, *Tax Increment Financing as a Tool for Redevelopment: Attracting Private Investment to Serve a Public Purpose – The Example of Michigan*, The Urban Lawyer Vol. 41, No. 4 Fall, pp. 755-786.

Bond S., Dent P., 1998, *Management of public sector assets*, Journal of Property Valuation & Investment, Vol. 16, No. 4, 1998, pp. 369-385.

Brenneman A., Kerf M., 2002, *Infrastructure and Poverty Linkages: A Literature Review*, Mimeograph. Washington. D.C, The World Bank, December.

Budget Execution Reports 2010-2014.

Czarnek J. (ed.), 2010, *Efektywność projektów inwestycyjnych*, Dom Organizatora, Toruń.

Datta A., Agarwal S., 2004, *Telecommunications and Economic Growth: a Panel Data Approach*, Applied Economics 36 (15), pp. 1649-1654.

Deloitte, 2006, *Closing the Infrastructure Gap: The Role of Public-Private Partnerships*. A Deloitte Research Study, Deloitte Development LLC, http://www.deloitte.com/view/en_AU/au/services/financial-advisory/infrastructureadvisory/144abfa6faaa2210VgnVCM100000ba42f00aRCRD.htm# (01.07.2015).

Deloitte, 2011, *Municipal real estate, Comparing public real estate management in European cities*, http://www.deloitte.com/assets/Dcom-UnitedKingdom/Local%20Assets/Documents/Industries/Real%20Estate/uk-re-municipal-real-estate.pdf?utm_source=Mondaq&utm_medium=syndication&utm_campaign=inter-article-link (01.07.2015).

Dent P., 1997, *Managing public sector property assets: the valuation issue*, Property Management, Vol. 15/1997, No. 4, pp. 226-233.

Dziworska K., 2000, *Decyzje inwestycje przedsiębiorstw*, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk.

Dziworska K., Trojanowski D., 2008, *Podstawy strategii zarządzania nieruchomościami komunalnymi*, Inwestycje i nieruchomości. Wybrane problemy, Prace i Materiały Wydziału Zarządzania UG, No. 1, pp. 131-138.

European Commission, 2012, *Connecting Europe – Infrastructure Investment Strategy*, Directorate General for Mobility and Transport, http://ec.europa.eu/bepa/pdf/cef_brochure.pdf (01.07.2015)

European Commission, 2015, *Guide to Cost-benefit Analysis of Investment Projects, Economic appraisal tool for Cohesion Policy 2014-2020*, http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/cba_guide.pdf (12.02.2016).

European Construction Industry Federation, 2014, *FIEC Annual Report 2014*, http://www.fiec.eu/en/library-619/annual-report-english.aspx (12.02.2016).

European Investment Bank, 2013, *Investment and Investment Finance in Europe*, http://www.eib.org/attachments/efs/investment_and_investment_finance_in_europe_en.pdf (01.07.2015).

Gannon C., Liu Z., 1997, *Poverty and transport*, World Bank Discussion Paper, No. TWU-30, http://www.rhd.gov.bd/Documents/ExternalPublications/WorldBank/TransSectPub/contents/documents/B03.pdf (01.07.2015).

Goodhall P., 1985, *Urban development grant – an early assessment of regional implications*, Journal of Environmental Planning and Management, Vol. 28 No. 1, pp. 40-42.

Jastrzębska M., 2009, *Zarządzanie długiem jednostek samorządu terytorialnego*, Wolters Kluwer, Warszawa.

Jastrzębska M., 2012, *Finanse jednostek samorządu terytorialnego*, Lex a Wolters Kluwer Busieness, Warszawa.

Kaganova O., *Guidebook on Real Property Asset Management for Local Governments*, Urban Institute Center on International Development and Governance, 2012, http://www.urban.org/sites/default/files/alfresco/publication-pdfs/412531-Guidebook-on-Real-Property-Asset-Management-for-Local-Governments.PDF (14.02.2016).

Krzyśko G., Marciniak C., 2001, *Optimising real estate financing*, Journal of Corporate Real Estate, Vol. 3, Issue 3, pp. 286-297.

Local Data Bank 2010-2014, http://stat.gov.pl/bdl/app/strona.html?p_name=indeks (03.07.2015).

Longhi C., 1999, *Networks, Collective Learning and Technology Development in Innovative High Technology Regions: The Case of Sophia-Antipoli*. Regional Studies, Vol. 33, No. 4, pp. 333–342.

Marchewka-Bartkowiak K., Wiśniewski M., 2012 *Indywidualny wskaźnik zadłużenia JST – ocena krytyczna i propozycje zmian*, Analizy, Biuro Analiz Sejmowych, no 21 (88), 21st of December, pp. 1-6.

Medda F. R., Modelewska M., 2011, *Finansowanie transportu publicznego metodą Land Value Capture: zastosowanie dla metra w Warszawie*, Ernst & Young, Sprawne Państwo, http://www.ey.com/PL/pl/Industries/Government-Public-Sector/Sprawne-Panstwo_Raporty (14.02.2016).

Michalski G., 2009, *Strategie finansowe przedsiębiorstw*, ODDK, Gdańsk.

Minister Infrastruktury i Rozwoju (MIR), 2014, Programowanie perspektywy finansowej 2014-2020-Umowa Partnerstwa, http://www.fundusze.uj.edu.pl/documents/31275205/6556b38b-3139-4a3e--ae69-5ed74e1d1694 (01.07.2015).

Minister Infrastruktury i Rozwoju (MIR), 2015, *Wytyczne w zakresie zagadnień związanych z przygotowaniem projektów inwestycyjnych, w tym projektów generujących dochód i projektów hybrydowych na lata 2014-2020*, Warsaw, 18th of March, https://www.funduszeeuropejskie.gov.pl/media/5193/NOWE_Wytyczne_PGD_PH_2014_2020_podpisane.pdf (01.07.2015).

Misterek W., 2008, *Zewnętrzne źródła finansowania działalności inwestycyjnej jednostek samorządu terytorialnego*, Difin, Warszawa.

OECD, 2006, *Infrastructure to 2030, Telecom, Land Transport, Water & Electricity*, Vol. 1. OECD Publishing, DOI:10.1787/9789264023994-en (01.07.2015).

Orłowski W. M., 2011, *Potencjalne makroekonomiczne korzyści stosowania PPP w Polsce*, Niezależny Ośrodek Badań Ekonomicznych NOBE, Warszawa.

Owsiak S. (ed.), 2011, *Nowe zarzadzanie finansami publicznymi w warunkach kryzysu*, Polskie Wydawnictwo Ekonomiczne, Warszawa.

Pastusiak R., 2003, *Ocena efektywności inwestycji*, CeDeWU, Warszawa.
Perło D., Poniatowicz M., Salachna J. M., 2010, *Efektywne zarządzanie długiem w jednostce samorządu terytorialnego*, Wolters Kluwer, Warszawa.
Podgórska M., Klimkowska J., 2013, *Matematyka finansowa*, Wydawnictwo Naukowe PWN, Warszawa.
Pylak K., 2009, *Podręcznik ewaluacji efektów projektów infrastrukturalnych*, Ministerstwo Rozwoju Regionalnego, https://www.ewaluacja.gov.pl/ewaluacja_wstep/Documents/623.pdf (13.02.2016).
Rogowski W., 2008, *Rachunek efektywności inwestycji*, Oficyna Wolters Kluwer Business, Kraków.
Röller L.H., Waverman L., 2001, *Telecommunications, Infrastructure and Economic Development: A Simultaneous Approach*, American Economic Review, Vol. 91, No. 4, pp. 909-23.
Rymarzak M., Trojanowski D., 2012, *Asset Management of the Public Sector in Poland*, Real Estate Management and Valuation, Vol. 21, No. 1, pp. 5-13.
Squires G., 2012, *Dear Prudence': An overview of Tax Increment Financing*, Journal of Urban Regeneration and Renewal Vol. 5 (4), pp. 356-366.
Squires G., Lord A., 2012, *The transfer of Tax Increment Financing (TIF) as an urban policy for spatially targeted economic development initiatives*, Land Use Policy, Vol. 29, No. 4, pp. 817-826.
Ustawa z dnia 27 sierpnia 2009 finansach publicznych, Dz.U. 2009 nr 157 poz. 1240 z późn. zm.
Węgrzyn J., 2013, *Perspektywy rozwoju partnerstwa publiczno-prywatnego w Polsce w warunkach kryzysu gospodarczego*, [in:] Marcinek K. (ed.), *Inwestowanie w aktywa rzeczowe i finansowe*, Wydawnictwo Uniwersytetu Ekonomicznego, Katowice, pp. 246-358.
Wiśniewski R. (ed.), 2008, *Gospodarowanie gminnymi zasobami nieruchomości*, Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego, Olsztyn.
Wojewnik-Filipkowska A., 2011, *Zasady finansowania inwestycji rewitalizacyjnych na przykładzie wybranych inwestycji w Gdańsku i Sopocie*, [in:] Nalepka A. (ed.), *Inwestycje i Nieruchomości, Wyzwania XXI wieku*, Wydawnictwo Fundacji Uniwersytetu Ekonomicznego w Krakowie, Kraków, pp. 501-512.
Wojewnik-Filipkowska A., Kowalski R., 2015, *Investing in Industrial-Technology Parks in City Development – A Cost – Benefit Analysis*, Real Estate Management and Valuation, Vol. 23, No. 1, pp. 24-41.
Wojewnik-Filipkowska A., Trojanowski D., 2012, *Principles of public private partnership financing – Polish experience*, Journal of Property Investment & Finance, Vol. 31, Issue 4, pp. 329-344.
World Bank, 1994, *World Development Report 1994: infrastructure for development – executive summary*. World Development Report. World Development Indicators. Washington, DC, World Bank Group, http://documents.worldbank.org/curated/en/1994/06/8470239/world-development-report-1994-infrastructure-development-executive-summary (14.02.2016).
World Bank, 2014, *World Development Indicators*, http://data.worldbank.org/sites/default/files/wdi-2014-book.pdf (01.07.2015).
World Economic Forum, 2012, *Strategic Infrastructure – Steps to Prioritize and Deliver Infrastructure Effectively and Efficiently*, World Economic Forum, http://www3.weforum.org/docs/IP/2012/IU/WEF_IU_Strategic_Infrastructure_PhaseI.pdf (01.07.2015).
Yescombe E.R., 2002, *Principles of project finance*, Yescombe Consulting, London/San Diego.
Yescombe E.R., 2007, *Project Finance. Wybrane element finansowania strukturalnego*, Oficyna Wolters Kluwer Business, Kraków.
Yin R.K., 2014, *Case Study Research, Design and Methods*, Sage, Los Angeles/London/New Dehli/Singapore/Washington DC.
Zioło M., 2011, *Zewnętrzne, obce źródła finansowania wydatków inwestycyjnych gmin i determinanty ich doboru*, Zeszyty Naukowe vol. 10, Kraków, Polskie Towarzystwo Ekonomiczne, Uniwersytet Szczeciński, pp. 283-298.