



FRAMEWORK FOR SELECTION OF INTERNATIONAL FINANCING INSTRUMENTS FOR INFRASTRUCTURE PROJECTS

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Abstract: The funding of large-scale high-risk infrastructure projects is always challenging. This issue is of special importance and of growing importance in the Middle East as the emerging economies of the region strive for expanding in infrastructure projects and find the optimum financing schemes. Egypt is no exception, with a portfolio of infrastructure projects for which the country is in dire need to be executed, there is a need to assess the current infrastructure financing methods and identify the associated risks with each method. The World Bank is one of the main financing entities that support infrastructure projects in developing countries. Not only does the bank support such projects through funding, but also through technical assistance. There are three main financing tools offered by the bank, namely; Development Policy Lending, Investment Lending, and the relatively recently proposed Program-for-Results. The latter two are currently used to support an array of infrastructure projects dispersed in a variety of developing nations. The aim of this paper is to compare between the financing schemes provided by the World Bank and to propose a framework to determine which of these tools would be suitable for any given project. Structured interviews are conducted with international professionals and experts working on World Bank financed projects in Egypt in order to identify the criteria for the optimum selection of finance methods, the risks associated with each method, and risks associated with different infrastructure projects. The outcome of the interviews and the existing literature are analyzed to develop the sought-after framework.

1 Introduction

The Egyptian government cooperates with several development partners in order to secure the necessary funds to develop the country's infrastructure. According to the Central Bank of Egypt quarterly report for the fiscal year 2014/2015, 25.5 % of Egypt's external debt is owed to multilateral international entities. The World Bank, African Development Bank group, and the European Investment Bank are the main development banks contributing to these loans (CBE, 2015). The Egyptian government cooperates with several development partners in order to secure the necessary funds to develop the country's infrastructure. According to the Central Bank of Egypt quarterly report for the fiscal year 2014/2015, 25.5 % of Egypt's external debt is owed to multilateral international entities. The World Bank, African Development Bank group, and the European Investment Bank are the main development banks contributing to these loans (CBE, 2015). The review of the development banks and the financial products they offer revealed that these entities provide project finance alternatives that are similar to a great extent. These alternatives include project loan, grants, guarantees and some of these banks provide "Result-Based Finance", which is relatively a novel approach to infrastructure project finance compared to other conventional methods. Zahran et al. (2016) provides an overview on the major international financial institutions and the sectors, regions and funding mechanisms offered by each of these institutions. This research focuses on the finance methods provided by the World Bank in particular, due to the significant volume of funds provided by the

bank for infrastructure projects in Egypt to date compared to other entities as shown in Figure 1. Also, the World Bank lending instruments appear to be representative of the available finance alternatives provided by other international development banks.

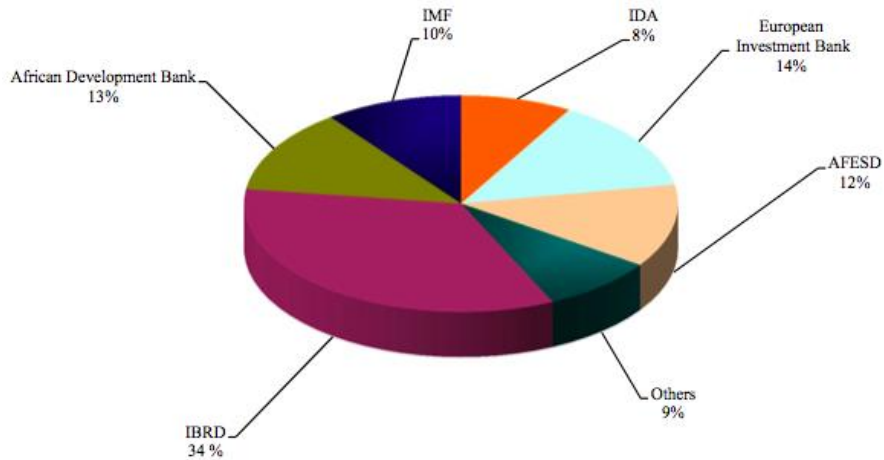


Figure 1: Public External Debt as of March 2015 -Multilateral Institutions– Central Bank of Egypt External Debt Report Volume 49

The World Bank Group is formed of the following five entities: the International Bank For Reconstruction and Development (IBRD), the International Development Association (IDA), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency, and the International Centre for settlement of Investment Disputes. The IBRD and the IDA together make up “The World Bank” (World Bank, 2017). The financial instruments provided by the IBRD in particular are the focus of this dissertation, namely; the Development Policy Finance (DPF), the Investment Project Finance (IPF), and the Program for Results (P-for-R) (Zahran et al. 2016). This is due to the obvious relevance of the tools provided by the IBRD to the to the finance of infrastructure project, in addition to the amount of finance provided by the IBRD to Egypt in comparison to other entities within the World Bank Group or otherwise.

1.1 Background On The World Bank Financing Instruments

The World Bank offers a variety of lending services to serve the different nature and needs of its member countries. The lending instruments are divided into Investment Project Finance (IPF) and Development Policy Finance (DPF). A new addition to the World Bank lending instruments is the Program-for-Results (P-for-R), which was developed to fill the gap between Investment Lending and Development Policy Lending as demonstrated in Figure 2.

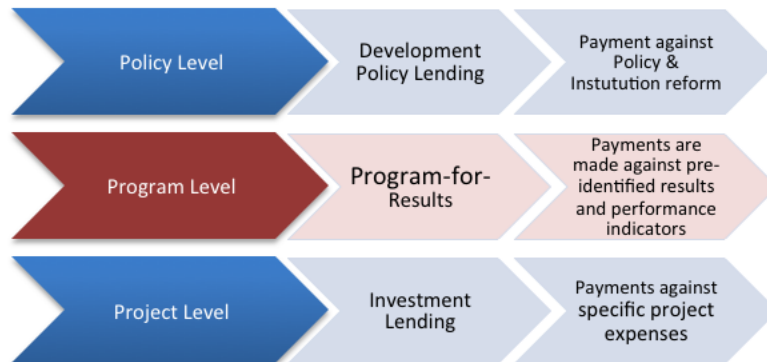


Figure 2: P-for-R fills the gap in The World Bank Menu of Services

1.1.1 Development Policy Financing

Development Policy Finance (DPF) evolved from what was called “Adjustment Lending tools. DPF is the main tool used by the bank to support institutional and policy changes that are believed to be in favor of a country’s development. DPF are not concerned with funding specific tangible infrastructure projects, hence they will not be the focus of this research

1.1.2 Investment Project Financing

Investment Project Financing (IPF) assist sustainable development in client countries by financing the enhancement of the infrastructure of these countries. Investment loans finance projects in an array of sectors whose development is vital for poverty reduction and the improvement of living standards. Disbursement of investment loans is done against previously identified material, equipment, and any other goods and services that are required for the implementation of a project. Some loans are paid against certain components of projects.

1.1.3 Program-for-Results

The Program-for-Results (P-for-R) was developed to address the gap between DPL that supports general policy adjustments and reform in certain economic sectors, and IL that provides specific project-level financing. P-for-R provides program level finance for client countries in order to meet their need to support government programs whose results require both financing and capacity building for the government systems.

The four main features of the P-for-R are: (1) P-for-R may support entire programs or sub-programs, (2) disbursements are made against pre-identified performance indicators and results, as opposed to IL where payment relies on whether or not expenses have been incurred, (3) P-for-R places focus on capacity building and institutional strengthening, hence, making the achieved results more sustainable, and (4) P-for-R entails a number of extensive assessment and monitoring procedures that aim at assuring the proper use of bank financing.

Disbursement Linked Indicators are considered the main pillar of the P4R instrument since they are the means to make bank’s finance truly result-based. There is a wide range of indicators that can qualify as DLIs including service delivery indicators, institutional indicators or actions. However, the main categories of DLIs currently in use are indicators that measure the (1) Specific program outcomes, (2) Participatory governance, (3) System improvements, and (4) Access to services.

Zahran et al. (2016) provides a roadmap for the application of P-for-R throughout the different stages of the World Bank project cycle starting with the borrower country preparations up to closing.

1.2 World Bank Guidance on The Selection of Finance Instrument

The World Bank provides guidelines on the uses of P-for-R and IPF in the P-for-R concept note, P-for-R Bank Policy and Directive, and the P-for-R two year review assessment. The P-for-R concept note stipulates that the newly introduced P-for-R would be the instrument of choice when (1) expenditure is necessary for achieving project goals, (2) the borrowing government aims at achieving the project goals using its existing systems, (3) and the main risk to the achievement of such goals relate to the institutional capacity of the relevant government bodies to accomplish the necessary outcomes. While the conventional IPF would be more suitable for projects where (1) main risks to be managed are related to the inputs, (2) the main challenges relate to the design and execution of the project, and (3) most of the expenditure involves the procurement of goods and services.

It is noteworthy that according to the PforR Bank Directive and Bank Policy issued on July 2015, projects with possible serious unfavorable social or environmental repercussions are not to be financed by PforR. Also, the aforementioned documents refer to “High-value Contracts” and indicate that such contracts are to be excluded from PforR financing. The bank directive defines high-value contracts as contracts with values higher than the threshold beyond which a review from the World Bank Operating Procurement Review Committee (OPRC) is mandatory. These threshold values are specified in the Bank Procedures BP11 Annex D, and they are subject to changes from time to time. However, exceptions with respect to

High-Value Contracts might be accepted in case these contracts are vital for the integrity of the overall program financed and/or the value of these contracts has to be less than 25% of the overall program budget. Although these exclusions might appear to be restrictive for the use of P-for-R, they are fairly expected since the P-for-R projects rely on the mainly on the borrowing country systems and there is less room to enforce the Bank's policies and Safeguards that relate to social risks, environmental risks and procurement. Moreover, this exclusion from financing is limited to the specific project activities not the whole projects. Meaning that while the bank would normally refrain from financing high-value contracts or activities of considerable social and environmental risks through PforR, the rest of the project might still be eligible for P-for-R finance.

1.3 Literature on The Criteria of Selection of Finance Instrument

This section is more inclined to academic research tackling the issue rather than official bank documents. Examining such literature provides a more complete picture for assessing the tools at hand through establishing a better understanding for the criteria offered by the bank policy, or even shed light on other criteria that can assist in the selection process.

1.3.1 Sources of Finance

The two main types of finance are debt (loans) and equity (private or public). For large-scale projects, a mix of both finance types can be used to finance a single project (Venkataraman et al, 2011). Prior to addressing the question of the choice of lending method, the issue of what *portion* of the project is to be financed by debt should be tackled first. Turner (2007), Estache et al (2015), and Venkataraman et al. (2011) all identified the Cost of Capital as the primary determinant for determining how much of the project would be financed by equity and how much would be financed through debt. In the context of large-scale infrastructure projects, the majority of the finance would be through loans because debt is generally cheaper than equity. However, lenders usually require a portion of the project to be financed by equity. This measure decreases the risk on the banks since debt is repaid ahead of equity, and this causes equity holders (whether the executing company or private investors) to exercise better management practices to protect their investments (Turner, 2007). Accordingly, the selection of sources of finance depends on determining the combination of debt and equity that yields the least Cost of Capital. In addition to debt and equity, Estache et al (2015) recognizes Public/Government Funds as a source of finance and includes it in the Cost of Capital equation. The cost of public funds in that case is considered to be equal to the opportunity cost of such investment.

1.3.2 Risks Affecting The Selection of Finance Instrument

Yousefi et al (2015) identifies risk as one of the main criteria for the process of finance method selection. Yousefi argues that identifying project risks addressed by each finance method is among of the very first steps for assessing the available finance options. Yescombe (2002), Turner (2007) and Venkataraman et al. (2011) indicate that studying risk and its allocation among the different project stakeholders is an important part of the financial feasibility study process. Risks categories that should be tackled according to Yescombe are macroeconomic, political, and commercial risks. Turner and Venkataraman provide the same categories as Yescombe, and include contractual risks under a separate category. Table 1 shows the four risk categories proposed by Ventakaraman et al. (2011) with corresponding examples for each category.

Table 1: Types of Financial Risks – (Ventakaraman et al, 2011)

Type of Risk	Examples
Macroeconomic	Inflation, interest rates, currency and exchange rate fluctuations
Political	Country Risks, changes in laws and legislation.
Commercial	Feasibility, cost and schedule completion, revenue availability
Contractual	Management risks, equipment supply, license and sales agreements

The World Bank currently adopts the unified Systematic Operations Risk-rating Tool (SORT) for the identification and evaluation of risks in its projects. This framework replaces the Operations Risk Assessment Framework (ORAF) in IPF and the Integrated Risk Assessment Framework (IRAF) in P-for-R. SORT comprises the following risk categories (World Bank 2014): (1) Political and Governance, (2) Macroeconomic, (3) Sector Strategies and Policies, (4) Technical Design and Implementation, (5) Institutional Capacity, (6) Fiduciary, (7) Environmental/Social, (8) Stakeholders, and (9) Other.

It is important to note that the risk categories considered by the World Bank are broader than the risk classifications proposed in the literature tackling the finance of infrastructure projects that focus primarily on financial risks. This research will utilize the risk categorization of SORT and will use the “Other” category for Liquidity risks in order to orient the analysis more towards the borrower country’s perspective.

1.3.3 Financial Barriers

Hussain (2013) proposes that the selection between financial tools should be based on two criteria; the barriers for the project to access finance, and the risks associated with the project at hand. Financial barriers for certain sectors might include high upfront financing or the unavailability of funds. The paper also introduces the concept of “Leverage” in the context of financing infrastructure projects. The Leverage measures the amount of extra funding induced by the loan. For an entity such as the World Bank, leverage would be an indicator for the efficiency of the bank’s lending. A high leverage ratio would mean that the bank is making more projects possible with less investment from the bank’s side.

1.4 Research Objective

This paper has already identified a number of criteria for the selection of financial instruments, the objective of this research is to (1) determine the importance of each of the identified criteria, (2) determine how well does IPF and P-for-R address each of the SORT risks, and (3) to propose a framework for the selection of best suited financial instrument for any given infrastructure project in Egypt.

2 Research and Methodology

2.1 Methodology

This paper relies on structured interviews with international finance professionals and experts who have been involved in World Bank financed projects in Egypt in order to address the research objectives posed in the previous section. Interviewees were given the chance to elaborate on their answers to allow them to contribute with their experiences in the theoretical framework of approaching the research objective. The answers are then plotted graphically for analysis.

2.2 Structured Interview Questions

The first question requires the respondent to rate the importance of each of the proposed criteria for the selection of finance method (from 1:least important to 5:most important).

The second question asks the respondent which of the two lending instruments he believes is better suited for his sector.

The third question asks the respondent to state whether P-for-R or IPF would be more attractive for private investors to participate in the project. The question was triggered by the low ratings provided by respondents to the importance of attraction of private investment.

The last question requires the respondent to rate to what extent does the IPF and the P-for-R address each of the SORT risks (1:exacerbates the risk factor to 5:fully addresses risk factor).

2.3 Structured Interviews Results and Discussion

As demonstrated in Figure 3 responses to the first question showed that cost of finance is considered the most important factor in the decision of the finance instrument, followed by the financial barriers and associated risks in each sector. Notably, the average rating for the importance of attracting private investment was only 2.5. Respondents involved in the Energy and Healthcare sector pointed out that the ability to formulate practical and scalable DLIs is a major criteria in the case of selection between World Bank instruments

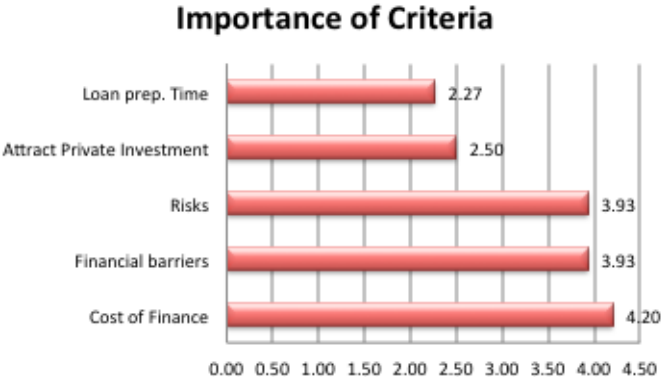


Figure 3: Average Rating of Respondents for the Importance of each Selection Criteria

When asked about the preferred lending instrument for their sectors, 87% of the respondents chose P-for-R, while the remaining 13% that chose IPF were professionals working in the Energy and Healthcare sectors. Professionals in both sectors believe that IPF is better suited to the nature of projects in their sectors that require major upfront financing. However, it was noted that P-for-R can accommodate for certain types of projects in these sectors such as primary healthcare centers and the upgrading of existing services.

The interviews revealed that professionals working on infrastructure projects in Egypt are not concerned with the involvement of the private investors. In fact, 53% of the respondents stated that the sector does not target private investors since the service is subsidized which makes it hard to accommodate for private investors. Also, 23% of the respondents indicated that neither of the instruments would attract private investors to participate in infrastructure projects.

Answers to the fourth question indicate that P-for-R is believed to address Institutional Capacity, Sector Strategies and Policies and Stakeholder risks better than IPF. While IPF is believed to address Fiduciary, Technical Design/Implementation, Environmental/Social, and Liquidity risks more effectively.

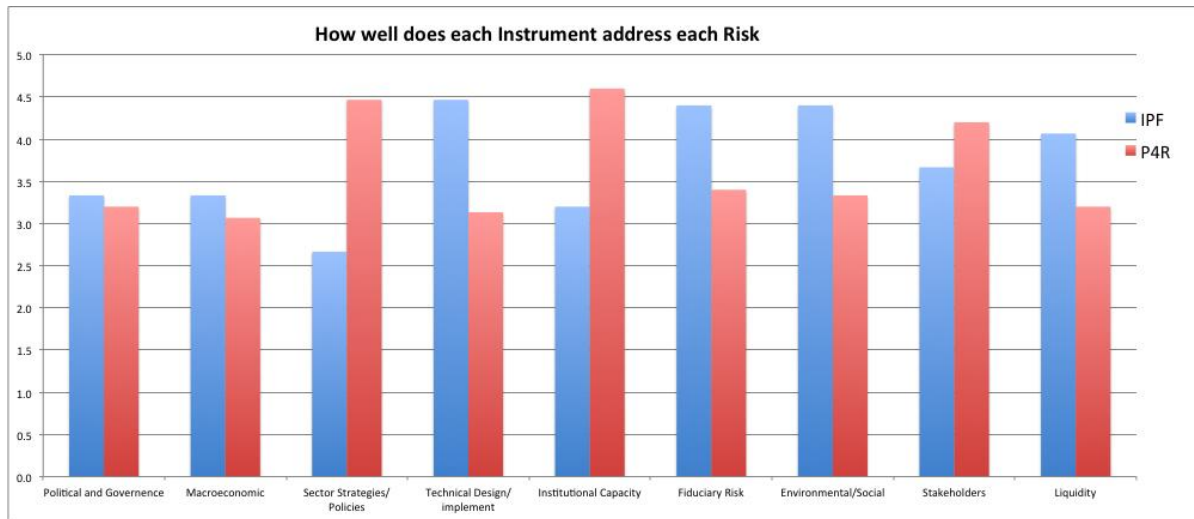


Figure 4: Average score for the extent to which IPF and P-for-R address each SORT risk

The difference in scores assigned by the respondents to IPF and P-for-R against each risk was then tested for statistical significance using Mann-Whitney test as shown in Table 2. The test revealed that there is no statistical significance for the difference in scores assigned to IPF and P-for-R with respect to Macroeconomic, Political and Governance and Stakeholder risks. On the other hand, the P-value is less than 0.05 for the difference in scores between the two instruments concerning Sector Strategies/Policies, Technical Design/Implementation, Institutional Capacity, Fiduciary risks, Environmental/Social, and liquidity risks, which indicates that there are significant differences between the two instruments regarding addressing these risks.

Table 2: Mann-Whitney test P-Value for question four responses

SORT Risks	Investment Project Finance			Program for Results			Mann-Whitney Test
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	P-value
Political and Governance	3.33	3.00	0.98	3.20	3.00	1.08	0.870
Macroeconomic	3.33	3.00	0.72	3.07	3.00	0.80	0.567
Sector Strategies/Policies	2.67	3.00	0.90	4.47	5.00	0.74	0.000
Technical Design/implement	4.47	4.00	0.52	3.13	3.00	0.92	0.000
Institutional Capacity	3.20	3.00	0.41	4.60	5.00	0.51	0.000
Fiduciary Risk	4.40	4.00	0.51	3.40	3.00	1.12	0.015
Environmental/Social	4.40	4.00	0.51	3.33	3.00	0.90	0.001
Stakeholders	3.67	4.00	0.98	4.20	4.00	0.86	0.116
Liquidity	4.07	4.00	1.03	3.20	3.00	1.15	0.029

3 Proposed Framework For The Selection of Financing Instrument

After analyzing the interviews, relevant literature and World Bank guiding documents for the optimum selection of lending instrument for financing infrastructure projects, the following simple 4-step framework is proposed to approach the issue:



Figure 5: 4-step framework for the selection of financing instrument

3.1 Determining the Amount to be Financed Through Loans

The borrowing government must determine the most economic combination of public funds, private equity, and loans. The average cost of capital for different scenarios should be studied along with the optimum debt/equity ratios that would yield the maximum efficiency according to the literature and past experiences. Also, the financial barriers including the availability of each type of finance should be considered in this stage.

3.2 Determining the Financial Institution

Once the amount to be financed through loans is determined, a survey of the international financial institutions that are active in Egypt has to be conducted. Zahran et al. (2016) presented a list of the major financial institutions and analyzed the trend of funding provided by these institutions. This includes an analysis of the regions, infrastructure sectors, and finance mechanisms that each financial institution tend to focus on in their funding activities. The list of institutions can then be sorted by the likelihood to approve the funding required in order to approach the institutions that are most likely to approve. The borrower may choose to cover the required loan amount by more than one lender.

3.3 Choice of the Optimum World Bank lending Instrument

Following the choice of the lending institution, the borrower can proceed with comparing the lending instruments provided by the chosen institution. This stage might overlap the previous stage in some cases where the choice of financial institution might be itself affected with lending instrument offered by the financial institution.

Several criteria have been identified in this paper that would affect the choice of lending instrument. However, in the case of World Bank, cost of finance and the loan terms are negotiated with the borrowing country separately and are not related to the choice of instrument. Accordingly, this paper proposes that the choice of instrument would be based on (1) the risks associated with the project, (2) the amount of upfront financing required at the beginning of the project, and (3) the ability to determine practical and scalable DLIs in case there is a tendency to opt for P-for-R.

According to the conducted interviews, IPF is better-suited projects that are expected to face technical design/implementation, liquidity, environmental/social and fiduciary risks. While P-for-R is more suitable for

projects where the main risks relate to institutional capacity and sector strategies and policies. Hence, identifying the main risks associated with a project would be a major step in determining the suitable financing instrument.

3.4 Check the Compliance with IPF Safeguards and P-for-R Bank policy and Directive

After a decision is reached regarding the lending instrument, the IPF safeguards and P-for-R bank policy and directive must be reviewed to verify that the project is eligible for finance through the selected method. Restrictions on the use of any of the selected instruments might be limited to just a portion of the project or certain activities and not necessarily the whole project.

4 Conclusion

This paper highlights the criteria for the selection of financial instruments for infrastructure projects. The focus of this research is the relevant World Bank financing instruments and the considerations for the optimum selection among them. Structured interviews were conducted with international experts including World Bank professionals to identify the criteria for selecting the best suited financing instrument, and to what extent does each instrument address possible risks associated with any infrastructure project. The paper builds on the literature and the findings of the interviews to propose a framework for the optimum selection of financing scheme for infrastructure projects.

References

- Central Bank of Egypt. "Egypt External Position Quarterly Report Volume No 50". (accessed February 2017) <http://www.cbe.org.eg/en/EconomicResearch/Publications/Pages/ExternalPosition.aspx>
- Estache, Antonio, Tomas Serebrisky, and Liam Wren-Lewis. "Financing infrastructure in developing countries." *Oxford Review of Economic Policy* 31, no. 3-4 (2015): 279-304.
- Hussain, Mustafa Zakir. "Financing renewable energy options for developing financing instruments using public funds." *World Bank, Washington, DC* (2013).
- The World Bank. "About the World Bank". (accessed February 2017)
- The World Bank. 2014. *Guidance Note Systematic Operations Risk-Rating Tool (SORT)*. (accessed February 2017) www.worldbank.org
- The World Bank. 2015. "Bank Directive, Program-for-Results Financing". (accessed February 2017) www.siteresources.worldbank.org/EXTOPMANUAL/.../PforRDirective-July2015.pdf
- The World Bank. 2015. "Bank Policy, Program-for-Results Financing". (accessed February 2017) www.siteresources.worldbank.org/OPSMANUAL/112526.../PforRPolicy-July2015.pdf
- The World Bank. 2011. "A New Instrument to Advance Development Effectiveness: Program-for-Results" (accessed February 2017) www.siteresources.worldbank.org/.../Resources/P4R_CN_2-23-2011_SECPO.final.pdf
- World Bank. 2013. "Program for results two year review : concept note" (accessed February 2017) <http://documents.worldbank.org/curated/en/315491468183841347/Program-for-results-two-year-review-concept-note>
- Turner, Rodney. "The financing of projects." *The Wiley Guide to Managing Projects* (2007): 340-358.
- Venkataraman, Ray R., and Jeffrey K. Pinto. *Cost and value management in projects*. John Wiley & Sons, 2011.
- Yescombe, Edward R. *Principles of project finance*. Academic Press, 2002.
- Zahrn, Kareem, and A. Samer Ezeldin. 2016. "Funding Infrastructure Projets through International Financial Institutions." *Canadian Society of Civil Engineers Conference*. London, Canada

Zahran, Kareem, and A. Samer Ezeldin. 2016. "The Application of Program-for-Results Funding Mechanisms on Infrastructure Programs" Canadian Society of Civil Engineers Conference. London, Canada.