

What are the Benefits of the Portuguese Public Investment Projects?

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Abstract - The aim of this paper is to provide a deeper understanding about the effective benefits of public investment projects carried out in Portugal, since their entry into the European Union, in 1986, so far and, additionally, to know the main causes for cost project deviations.

Since the entry of Portugal in European Union, the country image has changed, where public investment in infrastructure played a critical role.

However one question remains unanswered which are frequently asked by Portuguese people, namely:

- What are the Benefits of the Portuguese Public Investment Projects?

In addition to the above question, the present study will try as well to answer the following question:

- What were the main causes for the project deviations?

This research allowed conclude that, although cost/investment deviations have been observed in the majority of projects, and reported through public audits, the benefits deviation analysis between the estimated values to society and what their realization was, are in the most cases, unknown.

Portuguese national authorities are concerned to measure the deviation of costs/investment, but nobody has analyzed so far the benefits deviation for society and community.

Keywords: Benefits, Costs, Evaluation, Public Investment.

I. INTRODUCTION

The most developed and democratic States, in Europe, America and Australia, have a large culture in terms of accountability and transparency of public finances, in particular public investment spending, since these public investments are supported by taxpayers' money.

In fact, the management of public money in those countries plays a decisive role for taxpayers, which evaluation of performance management and measurement of the results/benefits of projects is extremely rigorous. In this regard mention that, evaluation (*ex-post*) examines the implementation and impacts of a project to assess whether the anticipated effects, costs and benefits were in fact realized. Evaluation findings can identify “what works”, where problems arise, highlight good practice, identify unintended consequences or unanticipated results and demonstrate value for money, and hence can be fed back into the appraisal process to improve future decision-making [21].

Today in developed countries, it is key that all decision-makers and public financial management, including politicians, respond with all the precision, accuracy and technical basis, regarding the options and decisions about public investments they consider essential to economic and social development for the country [21] [22].

In this context, we will try to demonstrate that, in Portugal, in spite of the State have spent a large amount of public funds in project investments during the last thirty years, the real benefits to society of these investments has not been evaluated, measured and quantified in order to allow assessing the effectiveness of implementation of these projects [8] [10] [11].

II. LITERATURE REVIEW

The following points identify the most important concepts to describe the meaning of some technical terms developed in this study:

Investment Projects - An investment activity upon which resources (costs) are expended to create capital assets that will produce benefits over an extended period of time [3]. According Esperança & Matias (2009), whether it is an individual, a public organization or a private company an investment usually consists on the application of funds in real or financial assets in order to obtain a surplus which will pay-off the expenses on a medium-long term.

Benefit - Something that will provide an advantage for others, something you may receive as compensation from an organization or public investments. An advantage provided to an element or group of interested elements in the organization or region (shareholders, employees, management, citizens, etc.), for example, increase customer satisfaction levels, reduce costs or improve working conditions for employees, construction a road, an hospital or a bridge [3] [22].

Cost - An amount that has to be paid or given up in order to get something. An amount paid or required in payment for a purchase or making something. The expenditure of something, such as time or labor, necessary for the attainment of a goal: In business, cost is usually a monetary valuation of (1) effort, (2) material, (3) resources, (4) time and utilities consumed, (5) risks incurred, and (6) opportunity forgone in production and delivery of a good or service.

Cost-Benefit Analysis - Conceptual framework applied to any systematic, quantitative appraisal of a public or private project to determine whether, or to what extent, that project is worthwhile from a social perspective. Cost-benefit analysis (CBA) differs from a straightforward financial appraisal in that it considers all gains (benefits) and losses (costs) to social agents. CBA usually implies the use of accounting prices (the opportunity cost of goods, sometimes different from actual market prices and from regulated tariffs. They are used in the economic analysis to better reflect the real costs of inputs to society, and the real benefits of the outputs. Often used as a synonym for shadow prices [3].

Social Benefit - Total increase in the welfare of society from an economic action - the sum of the benefit to the agent performing the action plus the benefit accruing to society as a result of the action [19].

Social Cost - Total cost to society of an economic activity - the sum of the opportunity costs of the resources used by the agent carrying out the activity, plus any additional costs imposed on society from the activity [19].

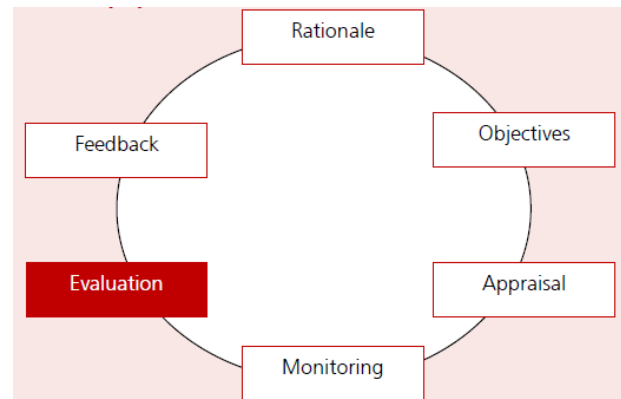
Benefit Cost Ratio - The net present value of project benefits divided by the net present value of project costs. A project is accepted if the benefit-cost ratio is equal to or greater than one. It is used to accept independent projects, but it may give incorrect rankings and often cannot be used for choosing among mutually exclusive alternatives [3].

Evaluation - The last phase of the project cycle. It is carried out to identify the success factors and the critical areas in order to understand and diffuse the lessons learnt for the future [3]. Retrospective analysis of a project, to

assess how successful or otherwise it has been, and what lessons can be learnt for the future [19].

Evaluation is an integral part of a broad policy cycle that The Green Book [19] formalizes in the acronym ROAMEF, stands for Rationale, Objectives, Appraisal, Monitoring, Evaluation and Feedback [19] [21].

Figure 1: ROAMEF Cycle



Source: UK, HM Treasury - The Magenta Book (2011)

Evaluation is, in other words, the assessment of the project effectiveness and efficiency during and after implementation. It seeks to measure outcomes and impacts in order to assess whether the anticipated benefits have been realized.

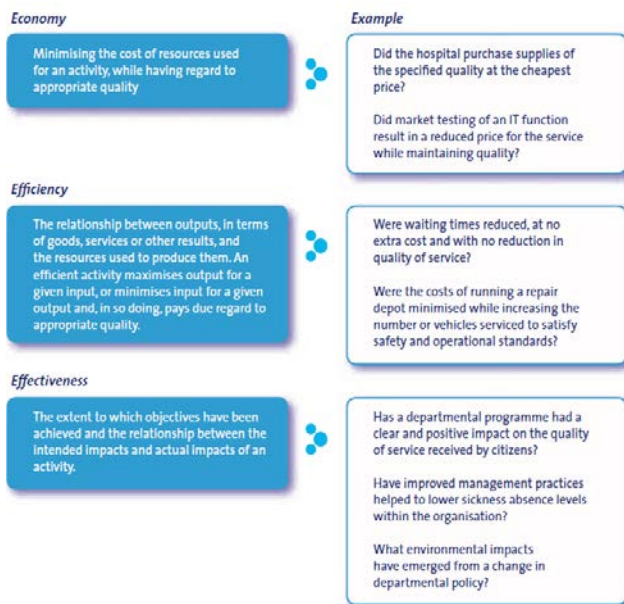
The evaluation process itself would normally follow this sequence [21]:

1. Establish exactly what is to be evaluated and how past outturns can be measured;
2. Choose alternative states of the world and/or alternative management decisions as counterfactuals;
3. Compare the outturn with the target outturn, and with the effects of the chosen alternative states of the world and/or management decisions;
4. Present the results and recommendations;
5. Disseminate and use the results and recommendations.

In this context, it should be noted that, good governance of the public resources is known in the United Kingdom for the management of the **three E** - economy, efficiency and effectiveness.

Figure 2, inserted in next page, give some textbook resume definitions and examples of the **three E**.

Figure 2: What is meant by economy, efficiency and effectiveness?



Source: UK, National Audit Office - VFM Handbook (2008)

Finally, as already mentioned before, another term very well known in the field of transparency of the British people is "accountability". This term means that, in terms of people, money matters so it shall be explained to taxpayers in detail by politicians - why, what for and how is useful [19] [22].

III. RESEARCH QUESTIONS

The questions which aim to guide the present study and to support the provision of conclusions and recommendations are:

- What are the Benefits of the Portuguese Public Investment Projects?
- What were the main causes for the project deviations?

IV. RESEARCH METHODOLOGY

In this study, to seek answer the research questions, texts and documentation have been used as a research instrument for the data collection purpose. Note that texts and official documents is a method widely used in qualitative research [4] [23].

To pursue the objective of this study and the quality of the investigation results and consequently its conclusions, the type of documents that the researcher has chosen to generate the required information and gathered practical evidence are fundamentally audit

reports of public projects conducted by the Court of Portuguese Auditors (*Tribunal de Contas*), for reasons related of the rigor of the audits, to its credibility, information detail, independence, apart from the accessibility of the audits because they are official publicising. The audit reports are available in the official website of *Tribunal de Contas* (<http://www.tcontas.pt>).

It should be noted that, for reasons related to the credibility of the audits themselves of *Tribunal de Contas*, the audits are conducted in strict compliance with the auditing standards and international norms of professional organisations of auditors, namely the International Federation of Accountants (IFAC) and the *Fédération des Experts Comptables Européens* (FEE). It also reflects the move toward harmonisation which has been felt at an international level through the support of the International Organization of Supreme Audit Institutions (INTOSAI).

V. RESULTS OF THE STUDY

Over the past 30 years the Portuguese State have held several public investments which have resulted in significant deviations, both in costs and time, which outputs are critical in terms of public charges, with strong consequences for current and future generations.

Figure 3 summarizes the overall amount of cost deviation of twenty three public works and Public Private Partnerships (PPP) and sub-concessions of roads realized in Portugal over the last 30 years.

Figure 3: Overall amount of cost deviations in major public works, PPP and sub-concessions in Portugal

Project Designation	Business Sector	Deviation of Costs
Motorways (subconcessions)	Road transport	+ 688.700.000 €
Euro 2004 Stadiums	Culture	+ 183.392.973 €
Modernization and Rehabilitation of Rossio Tunnel	Rail transport	+ 9.522.810 €
Building of the House of Music	Culture	+ 77.193.368 €
Construction of Palace Square Tunnel	Rail transport	+ 29.139.075 €
Expansion of Sá Carneiro Airport	Air transport	+ 98.760.225 €
Construction of the Bridge Santa Isabel Queen	Road transport	+ 40.977.248 €
Cultural Center of Belém	Culture	+ 184.000.000 €
Metro Sul do Tejo	Rail transport	+ 77.000.000 €
EXPO 98	Culture	+ 300.000.000 €
Granting of the Bridges Vasco Gama and 25 April	Road transport	+ 400.000.000 €
Organic Recovery Plant	Environment	+ 20.639.338 €
Parque Escolar	Education	+ 2.228.000.000 €
Total		+ 4.337.325.037 €

Source: Adapted by the author based on the Court of Portuguese Audit Reports (2005-2013); Traloxo (2013); SIC (2012); Moreno (2010).

For a better awareness about the real dimension of the deviations, as shown in Figure 3, the deviations

with regard to the most media public works and direct managed by the State, and under a concession scheme, reached an amount of over 4.3 billion Euros, i.e., 2.5% of the Portuguese Gross Domestic Product (GDP) in 2014.

It should be noted that these figures only refer to deviations from projected capital expenditure, which does not include potential deviations of income and benefits in a social cost-benefit logical analysis.

1. What are the Benefits of the Portuguese Public Investment Projects?

As evidenced before from various sources, the project budget deviations are known. However, the question which arises is, if are known the benefits deviations between the value which was proposed to the Portuguese society and what has been achieved with the implementation of public projects.

To answer the above question, we have examined eleven audits reports, conducted by Court of Portuguese Auditors, to projects of public works for direct management of State, concretely:

A. Audit Report n° 17/2009 – Global Report of five Public Works Developments, through direct State management, namely [14]:

1. Audit to the project of construction of House of Music.
2. Audit to the project of construction of Queen Santa Isabel Bridge.
3. Audit to the project of construction of Palace Square Tunnel.
4. Audit to the expansion project of Sá Carneiro Airport.
5. Audit to the project of modernization and rehabilitation of Rossio Tunnel.

B. Audit Report n° 37/2005 – Global Report of construction of six Euro 2004 Stadium, through direct State management, namely [9]:

1. Municipal Stadium of Braga.
2. D. Afonso Henriques Stadium.
3. Municipal Stadium of Aveiro.
4. Municipal Stadium of Coimbra.
5. Dr. Magalhaes Pessoa Stadium.
6. Algarve Stadium.

After a rigorous examination to all above audits reports, it has been possible to draw the following main conclusions:

- If cost/budget deviations were observed and reported in the majority of projects analyzed, there is no evidence between estimated benefits (*ex-ante*) and the benefits (*ex-post*) generated by each project after implementation;
- Besides, the investigation found out as well a “widespread phenomenon” of the lack of previous cost benefit studies and ex-post evaluation of Public Works through direct State management (Audit Report n° 17/2009) [13].

In this context, the Court of Portuguese Auditors found that:

“As a rule, investments in public infrastructure were not preceded by studies of cost - benefit (value for money), including no indication of the expected rate for the use of infrastructure, as well as the expected impact on the development of the country or region concerned”, and,

“It was also found that, the phases of ex-ante and ex- post, in practice, did not exist. In the five projects audited, only was carried out one ex-ante evaluation, in the case of Queen Santa Isabel bridge, not having been carried out ex-post evaluations in any of the five public works analyzed”, and,

“Similarly, it was not carried out any ex-post evaluation of the projects (Lessons Learned), which prevented that were not drawn conclusions and guidelines for future public projects.”

Based on the results and evidence collected, it is possible to say that, so far, the benefits of the Portuguese Public Investment Projects, on a cost-benefit analysis, are unknown.

The following Figure 4 presents the results of research and the situation regarding the first investigation question.

Figure 4: What are the Benefits of the Portuguese Public Investment Projects?

Project Identification	Localization	Activity Sector	Date of Conclusion	Benefits
Modernization and Rehabilitation of Rossio Tunnel	Lisbon	Rail Transport	2005	No evidence
Building of the House of Music	Porto	Culture	2006	No evidence
Construction of Palace Square Tunnel	Lisbon	Rail Transport	2007	No evidence
Expansion of Sá Carneiro Airport	Porto	Air Transport	2007	No evidence
Construction of the Bridge Santa Isabel Queen	Coimbra	Road Transport	2004	No evidence
Municipal Stadium of Braga.	Braga	Sports and Culture	2004	No evidence
D. Afonso Henriques Stadium.	Guimarães	Sports and Culture	2004	No evidence
Municipal Stadium Dr. Magalhães Pessoa	Leiria	Sports and Culture	2004	No evidence
Municipal Stadium of Aveiro	Aveiro	Sports and Culture	2004	No evidence
Municipal Stadium of Coimbra	Coimbra	Sports and Culture	2004	No evidence
Algarve Stadium	Faro	Sports and Culture	2004	No evidence

Source: Self-constructed.

Following will be answered the second question, namely:

2. What were the main causes for the project deviations?

This study examined as well the issue concerned cost deviations over the project budget to try to understand their origin and dimension. To this end we collect the data required to obtain the answer to the question set out above from the information contained in the following audit reports of the Court of Portuguese Auditors:

A. Audit Report nº17/2009 – Global Report of five Public Works Developments, namely [14]:

1. Audit to the project of construction of House of Music (Casa da Música).
2. Audit to the project of construction of the Bridge Santa Isabel Queen.
3. Audit to the project of construction of Palace Square Tunnel.
4. Audit to the expansion project of Sá Carneiro Airport.
5. Audit to the project of modernization and rehabilitation of Rossio Tunnel.

Following the analysis carried out to in the above audit reports, it is possible to conclude about a “widespread phenomenon” of cost deviation (between 25% and 295% above the ceiling rates established by the contracts), and, cumulatively, significant deadline deviations (between 1.4 and 4.6 years more than expected for the conclusion of the works) [14]:

According the audits of the Court of Portuguese Auditors, the main causes for those deviations include:

In terms of cost deviations:

- The lack of previous studies and the revision of projects;
- Works being carried out at the same time as projects;
- Modifications to the works and extra works;
- Due to project errors and omissions;
- Due to unforeseen events;
- Due to “by the way” reasons;
- Deadline extensions.

In terms of deadline deviations:

- Delays in expropriating lands and in obtaining the Environmental Impact Statement;
- Delays in elaborating and/or approving execution projects;

- Delays in delivering project documents and, also, in terms of consignments;
- Work interruptions;
- Constructive process modifications;
- Change of project or contractor; and, “by the way” reasons;
- Extra-works;
- Unforeseen events.

Figure 5 summarize the deviations in % and value of the projects discussed above.

Figure 5: Cost deviations

Project	Deviation		Ranking
	Amount (€)	%	
Building of the House of Music	62.761.555	295,5%	1.º
Construction of the Bridge Santa Isabel Queen	37.101.238	128,9%	2.º
Construction of Palace Square Tunnel	28.603.680	60,4%	3.º
Expansion of Sá Carneiro Airport	73.852.190	27,2%	4.º
Modernization and Rehabilitation of Rossio Tunnel	7.935.028	25,0%	5.º
	210.253.691	52%	

Source: Court of Portuguese Auditors - Audit Report nº 17/2009.

B. Audit Report nº 37/2005 – Global Report of construction of six Euro 2004 Stadium, through direct State management, namely[9]:

1. Municipal Stadium of Braga.
2. Afonso Henriques Stadium.
3. Municipal Stadium of Aveiro.
4. Municipal Stadium of Coimbra.
5. Dr. Magalhaes Pessoa Stadium.
6. Algarve Stadium.

In the context of the Euro 2004, hosted by Portugal, which took place between June 12 and July 4, according to the Audit Report nº 37/2005, the cost related to the renovation and construction of new stadiums for holding games registered an average deviation of 131% over the reference price. The calculation of the reference cost obeys the rule that every place to remodeling cost about 350 Euros and each new place (either a new stadium or a renovation stadium) would cost almost 998 Euros. On the basis of this estimate, was predicted that the construction/renovation of the six stadiums would cost about 140 million Euros (Court of Portuguese Auditors, 2005).

The stadium of Braga is the worst example. The 29.9 million Euros reference cost increased by up to 108

million Euros, representing a deviation of 261%. The Algarve Stadium was what deviated less than the reference price, i.e., 54%, as shown in Figure 6 below.

Figure 6: Deviations in the works of the Euro 2004 stadiums

Project	Reference Cost	Final Cost	Deviation	
			Amount	%
Municipal Stadium of Braga.	29.927.874 €	108.094.387 €	+ 78.166.513 €	+ 261%
Municipal Stadium Dr. Magalhães Pessoa	19.453.118 €	53.850.170 €	+ 34.397.052 €	+ 177%
Municipal Stadium of Coimbra	14.963.937 €	38.029.638 €	+ 23.065.701 €	+ 154%
Municipal Stadium of Aveiro	29.927.874 €	51.054.129 €	+ 21.126.255 €	+ 71%
D. Afonso Henriques Stadium.	15.961.533 €	26.386.279 €	+ 10.424.746 €	+ 65%
Algarve Stadium	29.927.874 €	46.140.544 €	+ 16.212.670 €	+ 54%
Total	140.162.210 €	323.555.147 €	+ 183.392.937 €	+ 131%

Source: Court of Portuguese Auditors, 2005.

Many factors contributed to increase the final cost of the projects, including [8]:

- Poor definition of projects;
- Errors, omissions and project deficiencies;
- The project changes during construction only aimed improvements;
- New technical and safety conditions in the Stadiums, published subsequent to the award of projects;
- The lack of alignment and coordination between projects (architecture, structure and special technical facilities);
- The absence of the appointment a project managers that could ensure the completion of the works with quality, deadlines and the expected costs;
- The extensions of time resulting from extra works, errors and omissions of project, contributed to the worsening of the burden of price revisions;
- The timely availability of land and the little deepening of geotechnical studies at the design stage;
- Insufficient technical assessment of projects put out to tender.

C. Metro Sul do Tejo Concession Audit - Report nº 22/2011

This report describes a follow-up performance audit carried out in respect of the Metro Sul do Tejo – (MST) concession, which was mainly aimed at furthering and updating relevant matters regarding the concession at issue, particularly focusing on the performance of the project [16].

The above audit found out that the MST project does not appear to be economically feasible. The Concessionaire itself recognizes that the economic

feasibility of the MST project, in accordance with the terms defined and subject to the current tariff system, is impossible without government backing, and further stated that the current tariffs fall within the scope of “social tariffs”, which do not bear the running and financial costs of the project.

The MST concession has already used up, until 2011, 384 million Euros of public money, which are broken down as follows: 284 million Euros for the initial public investment, 77.5 million Euros regarding the Financial Rebalance Agreement, and nearly 23 million Euros as compensatory fees.

The lack of economic feasibility of the MST project is due, among other reasons, to the fact that [16]:

- Since the initial concession period, the amount of traffic has not reached the minimum limit of the reference traffic interval;
- Decisions on the basis of absence of credible and conservative demand studies and,
- Projects based on lack of rigor of economic and social feasibility studies.

VI. CONCLUSION

This study has concluded that, in Portugal, there is no evidence regarding the evaluation of the benefits generated by the projects, namely the confrontation between the estimated benefits (*ex-ante*) and benefits generated after the project implementation (*ex-post*), which shows a lack of transparency and accountability in this field of public resources management.

This study has concluded as well that, on public works by direct administration of the Portuguese State and under PPP, the additional costs registered on all projects analyzed, confirm that this poor management practice is widespread in Portugal, namely that is committed and repeated, systematically, the same mistake: extra works; errors and omissions of the project; ineffective planning and decisions on the basis of absence of credible and conservative demand studies; lack of consensus between the various stakeholders enhance future modifications of projects as well; the risk matrices contracted in the PPP are often not the most appropriate for the public sector; not to mention the skills gap and accountability of public managers who are in the basis of these decisions that caused serious damage to the public treasury.

VII. RECOMMENDATION

According to the topics under research, below are presented the following recommendations which may assist Government to improve their projects quality.

The first recommendation which can be drawn from this study is that, we should not leave the public investment in infrastructure, but must put into practice rigorous methodologies of project selection, either from a strategic point of view to an analytical cost-benefit analysis of each project in particular and an independent oversight of these assessments.

The second recommendation relates to the importance of conducting projects evaluations (ex post) carried out to identify the success factors and the critical areas in order to understand and diffuse the lessons learnt for the future.

The third recommendation is regarding the Public-Private Partnership (PPP). In fact, in recent years, the Portuguese Government has become a less provider and more a purchaser of services. Privatization, contracting out, private/public partnerships have already led different arrangements for the provision of public services.

In this context, when launching PPP, the Awarding State shall be responsible for taking its decisions on the basis of more credible and conservative demand studies and the projects must be based upon rigorous economic and social feasibility studies.

Likewise, the Awarding State shall be responsible for systematically and continuously reassessing the risks arising from any process of negotiation or renegotiation of PPP contracts in order to measure the respective impact on its financial effort.

Aware of the heavy commitments taken on for the future generations, the launch and commissioning of projects within the framework of PPPs should have broad consensus among all stakeholders.

The use of PPP must be managed to protect the interests of the State, i.e., taxpayers, through balanced risk sharing.

Government spending should be based on effective use of the infrastructure and not on availability payments the same, because, in fact, if private companies are not willing to be paid for the actual use, this is the best proof that the expected usage infrastructure does not justify its construction.

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