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NEW FINANCIAL RECOVERY PLANS OF ITALIAN LOCAL GOVERNMENTS: AN ASSESSMENT USING OUTCOME-ORIENTED DYNAMIC PERFORMANCE MANAGEMENT

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To all people that have supported and encouraged me,
but also to my detractors!

Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.

from ***Our Common Future***,

Gro Harlem Brundtland
Oslo, 20 March 1987

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Preface

This Ph.D. dissertation investigates a new tool, the Financial Recovery Plan referred to Law Decree No. 174/2012, approved by the Italian central government in order to prevent the bankruptcy of local governments in difficulties.

To this end, the case-study methodology has been applied to analyze the recovery plan of the Catania local government. In terms of populations, Catania is the second largest city in Sicily. In this region, it is also the largest municipality in which such a remedy has been most used.

The purpose of this research is to analyse the critical aspects related to the recovery plan drafting and to assess its policies' sustainability.

The literature on this subject focuses mainly on the legal framework and on how the financial equilibrium is pursued for recovery plans. This research, instead, explores the decision-making process adopted, the degree of involvement of stakeholders in the planning activity, and the sustainability of recovery plan over time.

In this respect, a dynamic performance management approach is suggested to provide decision-makers with useful suggestions for drafting a recovery plan. Such an approach frames the strategic resources, and aims to design and implement performance drivers in order to achieve inter-departmental (and inter-institutional) performance outcomes.

Finally, to move beyond the descriptive information gathered in the fieldwork, the system dynamics methodology is applied to build up a simulation model and to test the patterns of behavior emerging from the adoption of alternative policies. A simulation model may support decision-makers to cope with dynamic complexity, to compare the performance over time, and to adopt sustainable policies.

The work consists of five chapters. The first chapter introduces the research topic and explains the need for a more through study. The research project and the legal context frame the field of research.

The second chapter anchors the topic under study to the literature on strategic planning and bailouts.

The third chapter illustrates the research methodologies and, thus, explores a case-study through a dynamic performance management approach to recovery plans.

The fourth chapter provides a description of the case-study through an analysis of legal provisions, Court of Auditors decisions, other official reports, and of the interviews with executives.

The fifth chapter discusses the dynamic performance management approach and the simulation tests. The dissertation concludes with final remarks and research limitations.

The ultimate aim of the present work is to fill the gap between theory and practice concerning local bodies by means of reducing the distance between legal rules (deductive approach) and current management and operations (inductive approach).

Many efforts must still be made to align legislative regulations with daily management (actions addressing citizen needs) in order to funnel public governance policies toward widespread and sustainable growth.

First and foremost, although the research findings show a clear deterioration of the budget equilibrium of the Municipality of Catania, the study needs to be extended to subsequent fiscal years in order to better understand how the recovery plan acts.

Finally, the analysis of a single case study limits a comprehensive understanding the effectiveness of these recover plans, therefore, it would be desirable to conduct a comparative study with other local governments of similar size that made use of this tool.

Chapter 1

Legal and Institutional Background Underlying the Introduction of Italian Financial Recovery Plans

1.1 The research project

1.1.1 Introduction

Until recently, Italian local governments (LGs) received government funds through the mechanism defined – *ex multis* – by Wildavsky (1964) as the "incrementalist theory of budgeting". Such a mechanism has proven to increase public expenditure and local financial distress without fully meeting citizen needs (Levine, 1985).

Consequently, over the last decade, Italy has experienced serious financial difficulties which have had massive economic and social consequences: first, tight budgets and overall retrenchment of public activities; second, cuts in public services and a reduction in citizen assistance in order to achieve cost savings; and finally, there has been an increase in local taxation levels.

Today, sound local policies are also a national and supranational responsibility, since a significant stream of money, particularly for long-term investments, comes from European institutions. Despite this, the Italian legislation of the last ten years in the area of local finance is clearly characterised by a progressive tightening of budgetary constraints and an intensification of the related controls. In 2012, it was necessary to enact a rule to remedy the endemic state deficits of the regions and, even more so, of local authorities. Multi-year financial recovery plans were thus introduced into Italian law by Law Decree No. 174/2012[1],

[1] Law Decree No. 174/2012 of 10 October 2012, on "Urgent measures on finance and operation of local authorities, as well as further provisions in favour of the earthquake zone in May 2012", ratified by Law No. 213/2013 of 7 December 2012. The Law Decree No. 174/2012 introduced the Articles 243-*bis*, 243-*ter*, 243-*quarter*, and 243-*quinquies* into the Legislative Decree No. 267/2000.

with the aim of providing practical solutions to structural and general critical situations, aggravated by the economic and political crisis (Degni, 2015).

Since the recent Italian literature has analysed the legal framework of such financial recovery plans in depth, the present research aims to verify whether the use of a restructuring procedure has contributed to a real organisational change in management and culture, as well as the introduction of performance management systems that also include an assessment of the value generated by local public policies, as an outcome.

To this end, the research presents a case study, selected from an examination of the documents of 2013 that are resolutions of the Regional Audit Chamber of the Court of Auditors[2] in Sicily: the recovery plan of the Municipality of Catania. This is Sicily's second largest city, and the largest city that made use of this remedy. The field survey, carried out through interviews with key players who participated in the earlier decision-making process to design the document under study, explores the procedure followed from both a subjective and objective perspective. Under the former, the focus is on the role of the elected officials and involvement of internal and external stakeholders. The second perspective involves checking the due analysis of the causes that led to the structural deficit conditions, the perspective adopted (if only financial or outcome-oriented), and the sustainability of the recovery plan after a first period of implementation.

The research proceeds with the goal of providing useful insights for the development of recovery plans through dynamic performance management (DPM) approach in order to support

[2] The Italian Court of Auditors is an institution with the role of safeguarding public finance and guaranteeing respect of jurisdictional system. The Corte pursues these two aims through two functions: the audit function and the jurisdictional function. According to Article 100 of the Italian Constitution, the Corte is responsible for the "a priori" audit of the legality of government acts, and also for the "a posteriori" audit of state budget management. It participates, in the cases and in the manners foreseen by the law, in the assessment of the financial management of those bodies funded by the State on a routine basis. It reports directly to the Chambers of Parliament on its audit findings. The Corte is neither an organ of the parliament nor of the government. Article No. 100 of the constitution places it in the particular position of an organ of constitutional relevance. The Court of Auditors carries out its functions in each region through an audit and the jurisdictional chamber, with the seat in the capital of the region.

decision makers and improve the performance management cycle, surpassing the purely financial dimension of the recovery plan analysed.

In this regard, System Dynamics (SD) methodology will be used to build a simulation model able to represent the effects of local public choices and to investigate the causes upstream of given behaviours over time.

1.1.2 Objectives and Research Questions

This research will analyse the critical aspects of the recovery plans sketched by Italian LGs in financial difficulties in accordance with Law Decree No. 174/2012. Such aspects mainly involve the absence of coordination in the planning process among local public and private actors, a lack of preventative detailed analysis and investigation of the financial crisis causes, a misleading perspective from which economic and financial adjustment programmes are drawn, and to the wide time horizon of plans adopted.

In order to achieve the above goal, this study attempts to answer the following research questions:

1. What decision-making process is put in place by LGs to ensure sustainable development by applying Law Decree No. 174/2012?

   This central issue concerns all activity which leads to defining a recovery plan. It is necessary to investigate how decision-makers reconcile rules of law with recovery plans able to ensure sustainable development, and to explore which subjects and stakeholders are involved in the process. It is relevant to know whether municipalities are aware of the causes of acute difficulties in a particular area, or about severe economic or financial distress resulting from exceptional occurrences beyond their control, or both.

2. How may outcome-based dynamic performance management be applied to this phenomenon?

   It is necessary to understand whether multiannual recovery plans are created only from

a financial perspective and by adopting a cutback expenditure approach, rather than being outcome-oriented from an inter-institutional viewpoint.

3. What are the main advantages, limitations and implications emerging from applying dynamic performance management to a recovery plan?

In this respect, the research is thus geared towards finding out whether this approach will actually generate improvements in building a recovery plan, and its sustainability.

1.1.3 Policy Implications

This research could encourage local policy makers to adopt a scientific method when they undertake a planning activity. A DPM approach is suggested in order to stimulate the accurate exploration of strategic resources and design their appropriate coordination. The choice of a scientific method could put the LGs in contact with universities in such a way that the academic institutions may contribute in the highest degree to providing the knowledge necessary to go beyond formal compliance with procedures and a simple financial perspective. Such a relationship could also trigger an outcome-oriented management approach.

1.2 Historical budget trends in Italian local governments

The history of Italian legislation on local budgets has always had, as the only *dominus*, the public body for excellence, the central state which intervened massively to the rescue local authorities over the 1970s.

The first important legislative measure[3] was aimed, in fact, at short-term debt exposure consolidation of local authorities through the banking system, and to rule prohibitions (such as that on taking out new loans with banks) and limitations (in staffing) on budgetary choices. The launch of a second decree was also significant, approved out of necessity and urgency,

[3] Decree-Law No. 2/1977 of 17 January 1977 converted into Law No. 62 of 17 March 1977, so-called Stammati 1 (to be precise, Stammati is the name of its author, that was a member of Italian Parliament).

which pursued a balanced budget for the LGs through the quantification of transfers with the criterion of historical expenditure[4] and, subsequently, through the distribution of regulated state funds governed by law based on specific parameters. Nonetheless, at the end of the 1980s, the problem of imbalances in the budgets of local authorities re-emerged characterised by many off-balance sheet debts that municipalities and provinces were now no longer able to handle by normal budgetary instruments (Verde, 2013).

The same period saw the debut of a normative process that tried, albeit timidly, to increase fiscal autonomy by increasing the share of resources of local authorities[5], and reforming the way they worked[6].

This evolutionary process was in line with the principles of new public management[7] (NPM). It introduced a new logic of rational management within the public sector, particularly for LGs, with the aim (Bianchi, 2004: 251):

1. to determine behavioural change in local body performance,
2. to stimulate political consultation between provinces and municipalities in the programme field,
3. to support the reorganisation of offices and public services based on independence criteria; the functionality and cost-effectiveness of management, professionalism and accountability,
4. to provide the separation of political and management tasks.

The start of the new millennium brought a review of existing legislation and the enactment of

[4] Such a mechanism was introduced by Stammati Decree 2: Law Decree No. 946/1977 of 29 December 1977 converted into Law No. 43/1978 of 27 February 1978.
[5] Law Decree No. 66/1989 of 2 March 1989 converted into Law No. 144/1989 of 24 April 1989 which introduced a new tax so-called ICIAP. The ICIAP tax was later modified by Law Decree No. 332/1989 of 30 September 1989 converted into Law No. 384/1989 of 27 November 1989.
[6] Law No. 142 of 8 June 1990 "Regulation of local authorities".
[7] The claims of the NPM were mainly in the direction of reducing costs and doing more with less, through a better quality of management and a different structural programming (Hood 1991).

a law on local authorities[8]. Later, legislation[9] that aimed to streamline labour productivity, and efficiency and transparency in public administrations, together with another law[10] for the implementation of the new Article 119 of the Italian Constitution[11], was enacted.

In 2012, although the latter set of reforms introduced a further tightening of fiscal constraints (new systems of measurement and evaluation of performance, greater accountability, a renewed concept of transparency) and strengthened controls, a significant number of local bodies still had worrying financial instability.

Almost in deference to an inescapable historical recourse, and to deal with this cyclical phenomenon and respect commitments made at the European level, the "Save Bodies" Law Decree set up a revolving fund to ensure the financial stability of local bodies through the granting of mortgages used to cover budget deficits.

To this end, "municipalities and provinces for which ... exist structural imbalances in the budget capable of causing financial difficulties ...may appeal by Council resolution to the multi-year financial recovery procedure. Such a Council resolution is transmitted, within 5 days from the date of enforceability to the Regional Audit Chamber of the Court of Auditors and the Ministry of the Interior. The LG Council, by a deadline of 60 days from the enforcement date of the

[8] Legislative Decree No. 267 of 8 August 2000 "Consolidation Act of the laws on local governments".

[9] Delegated Law No. 15/2009 of 4 March 2009 "Delegation to the Government aiming at the optimization of the labour productivity and the efficiency and transparency in public administrations, as well as supplementary provisions of the functions attributed to the National Council of Economy and Labour and the Court of Auditors".

[10] Delegated Law No. 42/2009 of 5 May 2009 "Delegation to the Government on fiscal federalism, in implementation of Article 119 of the Constitution".

[11] Article 119 of the Constitution of the Italian Republic: Municipalities, provinces, metropolitan cities and regions shall have revenue and expenditure autonomy. Municipalities, provinces, metropolitan cities and regions shall have independent financial resources. They set and levy taxes and collect revenues of their own, in compliance with the constitution and according to the principles of co-ordination of state finances and the tax system. They share in the tax revenues related to their respective territories. State legislation shall provide for an equalisation fund - with no allocation constraints – for the territories with lower per-capita taxable capacity. Revenues raised from these sources shall enable municipalities, provinces, metropolitan cities and regions to fully finance the public functions attributed to them. The state shall allocate supplementary resources and adopt special measures in favour of specific municipalities, provinces, metropolitan cities and regions to promote economic development along with social cohesion and solidarity, to reduce economic and social imbalances, to foster the exercise of the rights of the person or to achieve goals other than those pursued in the ordinary implementation of their functions. Municipalities, provinces, metropolitan cities and regions have their own properties, which are allocated to them pursuant to general principles laid down in state legislation. They may resort to indebtedness only as a means of funding investments. State guarantees on loans contracted for this purpose are not admissible.

resolution, must approve a rebalancing plan finance multi-year maximum duration of ten years, including the current year, together with the opinion of the internal economic and financial audit".

This plan must be sent within ten days to the Regional Audit Chamber of the Court of Auditors in Sicily, as well as to the Ministry of Interior, which completes the necessary investigation within 60 days, based on the guidelines approved by the National Autonomies Chamber of the Court of Auditors. The final report is transmitted to the Regional Audit Chamber of the Court of Auditors which will not only decide on the approval of the plan, but also – in the case of a favourable outcome – monitoring of the effects throughout the duration (Albo, 2013).

In the context of the procedural complexity and strict procedural and substantive requirements prescribed by law, a document review of the decisions by the accounting judiciary highlights the rejection of some multi-year financial rebalancing plans. Such plans, in fact, often do not list, as prescribed, the unbalanced factors detected, and the consequential remedial measures taken. They sometimes contain discrepancies between the current data and the data of their last budget; often report an inaccurate survey of off-balance sheet debt; and sometimes do not respect the constraints of the Stability and Growth Pact, and in some cases, this is without the agreement of creditors for deferral of debts. In the final analysis, such plans, not approved punctually by the competent Regional Audit Chamber of the Court, show the characteristics of a simple financial summary, are purely descriptive of the situation at any given time, and the absence, therefore, of retrospective and prospective views essential to ensure a permanently balanced budget.

The goal of balanced budget has also been pursued through a harmonisation process of accounts, linked to the requirements of programming, management and the accountability of public finance, and thus to bringing the accounting systems and the financial statements into harmonisation with each other, and in connection with those adopted at the European level for

the purposes of excessive deficit procedures (Anzalone *et al.*, 2015: 21).

Likewise, the recent provisions contained in the Law of Stability of 2016, are aimed, pending the entry into force of the rules implementing the principle of a balanced budget, at anticipating the requirement for local authorities to replace the rules of the Internal Stability Pact. In particular, since 2016, with the purpose of participating of the containment of the public finances, the Law of Stability also requires local bodies to achieve a balance between receipts and final expenditure in the current year.

1.3 National and European framework

The emergency resulting from the international economic crisis over the last decade has forced national and international institutions to embark upon hard rebalancing processes. The wide financial assistance system adopted by the European Union provides a set of tools to support EU Member States in difficulty. It was reinforced in 2010 by the Council Regulation (EU) No. 407 which, in the light of the unprecedented global financial crisis and economic downturn that had hit many countries over the last two years, enables to better preserve the financial stability of the EU and the Euro area.

In December 2010, the European Council made another important decision by creating an international financial institution called the "European Stability Mechanism" (ESM). The Euro area member states signed an intergovernmental treaty[12] establishing the ESM on 2 February

[12] The contracting parties: the Kingdom of Belgium, the Federal Republic of Germany, the Republic of Estonia, Ireland, the Hellenic Republic, the Kingdom of Spain, the French Republic, the Italian Republic, the Republic of Cyprus, the Republic of Latvia, the Republic of Lithuania, the Grand Duchy of Luxembourg, Malta, the Kingdom of the Netherlands, the Republic of Austria, the Portuguese Republic, the Republic of Slovenia, the Slovak Republic and the Republic of Finland. The ESM is authorised to make use of the following lending instruments for the benefit of its members, subject to appropriate conditionality:
• provide loans in the framework of a macroeconomic adjustment programme;
• purchase debt in the primary and secondary debt markets;
• provide precautionary financial assistance in the form of credit lines;
• finance recapitalisations of financial institutions through loans to the governments of ESM members.
• directly recapitalise financial institutions (as an instrument of last resort - when bail-in and contribution from resolution funds are insufficient to return an institution to viability).

2012. The ESM was inaugurated on 8 October 2012, and is the permanent crisis resolution mechanism for the countries of the Euro area. The ESM issues debt instruments in order to finance loans and other forms of financial assistance for Euro area member states.

Within that European framework, the Italian government also reviewed its public expenditure plans. In 2002 the central government began a process limiting local public expenditure, by linking the hiring of new staff to financial end results, or by limiting the current expenditure of some areas to a given threshold.

In 2009, while the international institutions were increasing their pressure, the Italian central government undertook a new path aimed to change Italian governance and its financing system. Two laws were approved: the Law No. 15 of 4 March well-known as reform of public employees and managers, and the Law No. 42 of 5 May so-called reform of fiscal federalism.

The Law No. 15 through the Legislative Decree No. 150/2009 introduced significant provisions in the field of public employees and managers, productivity, planning, transparency, performance management and measurement.

However, it is hardly necessary to remember that by the early 1990s Italy had launched the first major reforms, including Law No. 142/1990 for a new system of local authorities, the Law No. 241/1990 revision of the administrative procedure, and Law No. 29/1993, the privatisation of public employment. This massive process of reforms shows the deep penetration of NPM doctrines in the Italian public administration, which aimed to make it more efficient, effective and transparent (Anessi Pessina and Cantù, 2000; Grossi and Mussari, 2008; Cantù, 2012; Ongaro *et al., 2*013).

The next paragraph explains in more details the federal reform referred to the Law No. 42/2009 previous mentioned.

1.4 The Italian federal reform

The financial crisis that started in 2008 emphasised the unstable and unbalanced public expenditure in most states, which are now forced to review their own budget policies. With this purpose and to respect the European constraints, the Italian government decided to cut public expenditure (through the process well-known as "spending review") in order to avoid the public system going "into a tailspin".

In 2009, the Italian Parliament approved the Delegated Law No. 42 with provisions implementing the amendments to Article 119 of the constitution in order to ensure – through a definition of the fundamental principles of the coordination of public finances and of the tax system, and the establishment of financial equalisation – financial autonomy for municipalities, provinces, metropolitan cities and regions. It was also to harmonise the accounting systems and the financial statements of these institutions, and the terms of presentation and approval of those financial statements based on the planning, management and accountancy needs of public finance.

From 2010 to 2011 the government thus adopted a coherent set of eight legislative decrees[13] in order to implement the guidelines of the Law No. 42. This path was long, hard and also very expensive, considering the government comprised a distinguished group of experts[14] in the field.

Even in the light of the Stability Growth Pact (SGP) Rule and the international context, the Italian government's purpose was to reduce public expenditure and improve the performance of Italian governance by changing from the historical method of incremental expenditure used

[13] Legislative Decree No. 85 of 28 May 2010; Legislative Decree No. 156 of 17 September 2010; Legislative Decree No. 216 of 26 November 2010; Legislative Decree No. 23 of 14 March 2011; Legislative Decree No. 68 of 6 May 2011; Legislative Decree No. 88 of 31 May 2011; Legislative Decree No. 118 of 23 June 2011; Legislative Decree No. 149 of 6 September 2011.

[14] Technical Commission for the Implementation of Fiscal federalism (Italian acronym COPAFF) established in accordance with Article 4 of the Law No. 42/2009 with the task of designing the consequent Legislative Decrees of Delegated Law just mentioned.

to formulate the budget requirement to a standard costs mechanism in order to quantify the financial requirements upstream. Levine (1985: 692, 697) explains the problems caused by incrementalism, such as declining service and service quality or even general service default. The incremental mechanism generated higher transfers from central government to local bodies; these latter increased their own financial resources and, thus, amount of expenses. Therefore, the total annual expenditure went up and the local governments required higher transfers.

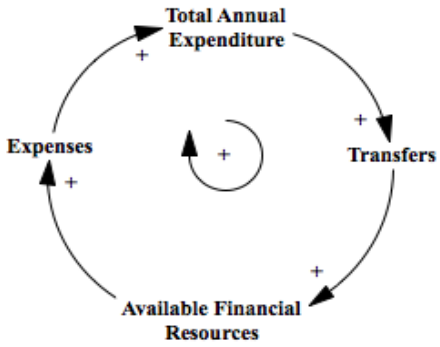


Figure 1: Incrementalism mechanism.

Another element was the introduction of a new rewards and sanctions system by the Legislative Decree No. 149/2011. This decree assigns an additional flow of money in case of the budget surplus, a reduction of resources for the budget deficit (see figure 2, 3, and 4). In the latter case, it also establishes a personal restriction for politicians' career when the Court of Auditors states their mismanagement.[15].

[15] Article 6 "Political responsibility of President of the province and of Mayor", of Legislative Decree No. 149 of 6 September 2011.

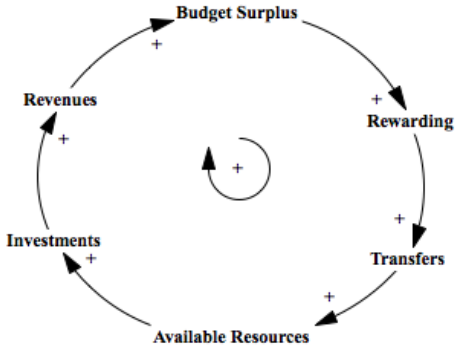


Figure 2: Legislative Decree No. 149/2011 State transfers system: budget surplus condition.

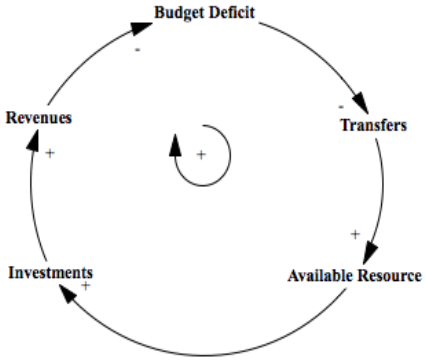


Figure 3: Legislative Decree No. 149/2011 State transfers system: budget equilibrium condition.

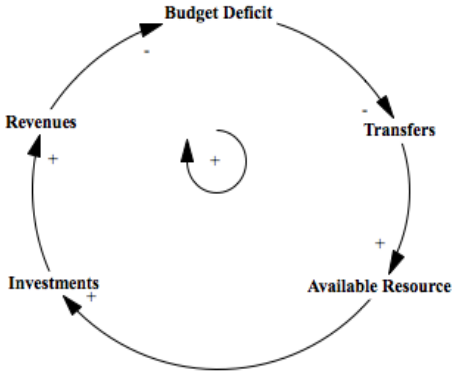


Figure 4: Legislative Decree No. 149/2011 State transfers system: budget deficit condition.

This intense and innovative reform perfectly met the needs of both national parties and European institutions, by respectively satisfying political ideologies and the requirements for reform in order to respect the SGP. In this context, significant change at the political level would have pervaded the public management environment, increasing and spreading

responsibility within the entire public sector and confidence around it.

At first glance, the new institutional environment was fully consistent with the mainstream and looked like the foremost institutional changes of the last fifty years in terms of financial resources to LGs. Despite this, such a new set of measures was not implemented due to a new law. In fact, in 2012, another government[16], called to stem the progressive Italian financial crisis, approved further legal provisions by taking an opposite tack.

The Law Decree No. 174/2012, well-known as the decree for "safe-local authorities", has ended up neutralising the federalist scheme built up by the group of experts. The most important provision in that item is Article 3, paragraph 1, letter r) which introduces a specific procedure for multiannual financial rebalancing of LG budgets through the admission to a revolving fund (Article 4).

The title of Article 5 is, in fact, “anticipation resources” from the revolving fund to ensure financial stability of the local authorities, thus creating the conditions to have an immediate liquidity and dealing with the situation of financial difficulties.

The launch of the multiannual financial recovery plan, as approved within 30 days of the date of receipt by the Court of Auditors, in fact permits to local authorities, where there is a structural imbalance of the budget that can cause financial collapse, the access to measures to ensure their financial stability (figure 5). Such resources are defined as EUR 200.00 per capita, in the case of municipalities, and EUR 20.00 per capita, in the case of provinces.

[16] The Prime Minister was Mr Mario Monti.

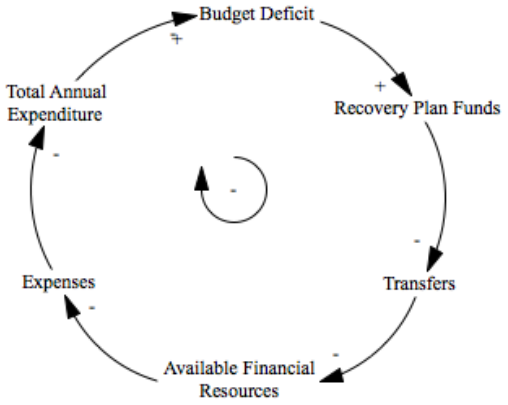


Figure 5: Law Decree No. 174/2012 recovery plans system.

1.5 The financial recovery plans

Within the wide European legislative framework, the complex national system of public financing of multi-level government bodies has changed several times. Since the early reforms of the 1990s up to that which introduced the new financial stability plans in late 2012, in order to improve public performance effectiveness and to pursue relevant public savings, the Italian government sought to increase the accountability of politicians at the local level, through financially more stringent performance assessments.

The 1990s reforms thus mainly emphasised the implementation of new planning and control systems, public manager legislation, and later, a performance management cycle based on a private sector scheme. While the institutional framework was changing over time, however, the cultural model widespread inside the public sector perceived the new rules as a formal duty, as a way to capture public managers for the political environment (often seen as a perverse practice), and as the mandatory adoption of best practices.

Ongaro and Valotti (2008), in their study of regional governments in Italy, remark that administrative tradition and managerial capacity were among the key variables that explained implementation gaps in public management reform. They also noted that the Italian public sector – especially, at regional level – is often an unfavourable environment for managerial

reforms inspired by NPM[17].

The global financial crisis, which started in 2008, highlighted the financial instability and unsustainability of several European countries and, as a result, many have been forced to review their own budget policies.

With the purpose of improving public performance effectiveness, as well as of respecting the EU constraints, in 2009 the Italian government approved two of the laws previously mentioned: Legislative Decree No. 150/2009, which aims to redesign public sector performance assessment, both for employees and managers, and Law No. 42 with provisions implementing amendments to Article 119 of the Constitution.

The amount of public transfers was based on financial performance and on the personal performance of public managers. This solution endeavoured to increase the responsibilities of local politicians through financial performance assessment.

Despite this increase in performance measurement and formal constraints in the public sector, many LGs in 2012 were still suffering from financial instability. In order to deal with the budget difficulties, the Italian government set up a recovery plan (referred to in Article 5 of the Law Decree No. 174/2012) with the purpose of granting loans to LGs in financial crisis.

According to Article 4 of Law Decree No. 174/2012, the LGs, in order to limit widespread financial instability and to avoid the bankruptcy of municipalities, must sketch a ten year (maximum) financial recovery plan. LGs must submit their Financial Recovery Plan and a set of documents (which may also include a Performance Plan) to the Ministry of the Interior, which, in turn, forwards it to the Court of Auditors in order to obtain the final approval (detailed guidelines were provided by the Autonomy Chamber of the Court of Auditors with Decision No. 16/2012 and No. 11/2013).

[17] NPM claims that cutting costs and doing more for less are mainly a result of better-quality management and different structural design. It offers tentative evidence for the proposition that a shift in management structures towards decreed command-orientation and increased 'results-orientation' is associated with improvements in productivity (Hood, 1991).

A number of critical issues emerge in light of this complex procedure aimed at supporting municipalities, their local area, their citizens, and their private and public organisations. They include:

• Incompleteness;

• Lack of formal requirements;

• Discrepancy between data of financial statements and data reported in recovery plans;

• No exact identification of off-balance sheet debts.

Some multi-annual financial recovery plans have been rejected by the Court of Auditors[18] since they are often a financial summary document that describes the accounts of the LG at a given time and, thus, lack a systemic and dynamic vision able to frame the complexity of the local area. As a result, soon after the first implementation phase, some plans were created simply to obtain additional money. Such plans omit what strategic resources the LGs have used, which key actors may play a driving role in pursuing sustainable development, what role can be played by public institutions inside the municipality, and what synergies with the surrounding environment can be established by the local bodies.

The next chapter of the literature review proceeds as follows. Firstly, the general analysis of recovery plans is outlined and their main characteristics discussed, and this kind of recovery plan is then characterised by means of anchoring it to the different streams of literature, financial stabilisation mechanisms and strategic planning.

[18] See as an example: Decision No. 62/2014 Sicily Regional Audit Chamber of the Court.

Chapter 2

Literature review

2.1 Introduction

One major difficulty in the study of Italian financial recovery plans in local governments is the absence of surveys about their implementation. Although some authors (Albo, 2013; Verde, 2013; Degni, 2015; Fiumicello, 2015; Manzetti and Corbo, 2015) frequently refer to legislative descriptions of this specific procedure, a depiction of their legal framework, and of the wide set of similar tools offered by local authority legislations, and the specific real effects are still notably absent from such discussions.

Another stream of recovery plan literature (Caterini and Jorio, 2013; Tenuta, 2015), known under the Italian name "*pre-dissesto*", shows (especially in the earlier stream) the pathological phases of management defined by the Legislative Decree No. 267/200: *illiquidità di cassa*, *pre-dissesto*, and *dissesto*. This literature focuses on a general analysis of the financial conditions of Italian municipalities, as summarised in the following table:

Legislative Decree No. 267/2000 Legal provisions for Local Governments in difficulties			
Degree of difficulty *(Italian definitions)*	**Degree of difficulty**	**Remedy**	**Legal provision**
illiquidità di cassa	Cash problems	State cash advances	Article No. 222
pre-dissesto	Pre-bankruptcy or severe financial difficulties	Recovery plan	Article No. 243-*bis*
dissesto	Bankruptcy	Declaration of bankruptcy	Article No. 246

Table 1: Remedies for local governments in difficulties, in compliance with Legislative Decree No. 267/2000.

Most probably, the rather short time frame (from the date that Law-Decree No. 174/2012

entered into force) is not suitable for comprehensive and accurate governance, decision-making processes, cause analysis, or the responsibilities of decision-makers, nor the implementation of the recovery plan. Compared to the previous tools provided by the law (referred to in Article 222 and 246 of the Legislative Decree No. 267/2000), the literature agrees upon the usefulness of this remedy in order to avoid the collapse of municipalities. Academic books describe the features of the multiannual financial recovery plans, the procedures that LGs must observe, the role of control authorities, and the tasks of policy makers that are to be completed.

In the same way, the early publications in the field focus on descriptions of the new tools rather than investigating the building or the implementation of recovery plans. For example, Verde (2013) discusses the historical financial unbalancing of local governments from the 1980s until Law Decree No. 174/2012, and provides a comparison of the different financial stabilisation mechanisms.

Degni (2015), instead, provides a historical analysis of the bad practices which have led to the financial crisis in Italian municipalities. To this end, he talks about widespread and deeply-rooted issues within the local administrations, such as confusion between policy-makers and managers, as well as between means and ends. He also addresses the critical element of management accounting and strategic control.

Manzetti and Corbo (2015) also emphasise the control process carried out by the Court of Auditors and its relevant role in sending out guidelines, and new jurisprudential orientations. They further discuss the "spending review" processes undertaken by the Italian central government and imposed on the Italian multi-level government system in order to contain public expenditures. Fiumicello (2015) pinpoints geographically the local governments that required financial assistance, analyses the procedural complexity of the submission of recovery plans, and discusses their sustainability over a long the time horizon (usually ten years).

The existing literature has thus extensively discussed the legal and procedural elements of

multiannual financial recovery plans. It has also addressed critical issues of control processes and the specific tasks of the Ministry of the Interior and the Court of Auditors. Such literature already contains a detailed analysis of the number of local governments which have made use of the recovery plans. The time horizon issue is discussed as well, and from this point, it needs to extend the analysis in order to understand what kind of planning is expected, for example, in the human resources employed, as well as perspectives and methodology adopted in making recovery plans. The analysis will also deal with the monitoring of plan implementation.

The absence of literature and dearth of research related to the implementation of Italian recovery plans (referred to in Law Decree No. 174/2012) suggest that it is necessary to investigate the nature of this type of tool and how the recovery plans are used. In fact, as mentioned above, the existing literature deals only with the legal framework into which the Law Decree No. 174/2012 fits and points out the exceptionality of such a remedy, prepared in order to avoid the failure of local budgets.

These voids are explored through a review of the literature in two different fields of study: strategic planning theory and the extraordinary public transfers well known as “bailouts”.

The current examination of the Italian recovery plan explores the conditions under which local authorities adopt such a tool when their budgets are in the red, since planning must be undertaken for the long time horizon. In fact, Law Decree No. 174/2012 was formulated in order to provide a lifeline for local governments in difficulties. They are asked to submit, according to walkthroughs, a long-term plan of recovery. Such a tool, a recovery plan over a ten-year period, is the outcome of a legislative process which has generated a somewhat unusual kind of strategic planning. The purpose of the law decree is to bring local governments in difficulties to a path of financial equilibrium.

A recovery plan is to be a comprehensive master plan stating how the local government will attain financial balance within a ten-year maximum period. Such a plan contains goals and

objectives, means and resources, as well as strategy.

On the other hand, the recovery plans under study are seen as a rescue remedy by the central government, and are well-known as bailouts. Such bailouts are additional flows of money from a superior level of government in order to avoid local budget bankruptcy. In this sense, a bailout is an extreme remedy for coping with rare and unusual budget crises brought on by external forces.

A bailout is thus the opposite tool from a bail-in, that is, an internal funding stream which comes from the so-called "rainy day funds". Some states in the United States of America have – voluntarily – created rainy day funds (*rectius* budget stabilisation funds) to accumulate savings that would allow them to reduce the impact of adverse fiscal conditions[19].

Finally, the prominent studies in the field of local public planning that were developed since the 1960s at the London's Tavistock Institute of Human Relations[20] are considered seminal research, particularly, the Friend, Jessop and Hickling activities carried out within the complex arena of multi-party public decision-making under uncertainty and, often, also under pressure. Their works are central to the present research study, both in the phase of the literature review and in the crafted proposal steps[21]. The dynamic view of the action research developed in his

[19] For further information, see www.pewtrusts.org/~/media/assets/2014/07/sfh_rainy-day-fund-deposit-rules-report_artready_v9.pdf.

[20] The Tavistock Institute of Human Relations (TIHR) applies social science to contemporary issues and problems. It was established as a not for profit organisation with charitable purpose in September 1947. In early work, staff from different disciplines were brought together in order to find ways to apply psychoanalytic and open systems concepts to group and organisational life.
The TIHR is dedicated to the study of human relations for the purpose of bettering working life and conditions for all humans within their organisations, communities and broader societies and to the influence of environment in all its aspects on the formation or development of human character or capacity; to conduct research and provide opportunities for learning through experience for this purpose; to publish the results of such study and research; to train students in or for any branches of the study.
The institute has a history of working with the organisations and sectors that are required to look at systemic questions to achieve greater and more effective change. As a not-for-profit social science enterprise we continue to operate as a bridge between policy and research in that our staff always ask the questions 'so…?' When faced with any data - what does the data mean? And how can we apply it and make sense of it in a way that will serve the purpose for which we work?

[21] Refer to the following books: "Local Government and Strategic Choice, An Operational Research Approach to the Processes of Public Planning" by J.K. Friend and N. Jessop, 1969; "Planning Under Pressure. The Strategic Choice Approach" by J.K. Friend and A. Hickling, 1987.

"strategic choice approach" still enables us to explain the nature of planning activity, to bring it closer and to make public institutions more transparent.

In the case being studied, a strategic approach to cutbacks would entail a multiyear timeframe, usually three to five years, a significant reallocation and reconfiguration of resources, substantial changes in organisational structure and work force activity, and a comprehensive, as opposed to an ad hoc, re-examination of the organisation's problems, mission, and structure (Levine, 1985: 691).

This research may be somewhat outdated, because strategic planning and management are hardly the innovative exercises they once were (Poister *et al.*, 2010).

The literature review proceeds as follows. Firstly, the general local financial stabilisation mechanisms are discussed. A brief historical overview of strategic planning is presented. A wide discussion of strategic planning in the public sector is set forth, as found in the academic literature. The review is concluded with a paragraph discussing the time horizon in strategic planning.

2.2 Local financial stabilisation mechanisms: bail-in and bail-out

Fiscal discipline at the sub-national level is an important concern in any decentralised public sector. Excessive deficits by state and local governments can adversely affect other constituencies if they lead to bailouts or other fiscal transfers by higher levels of government. Both bailouts and transfers that soften sub-national government budget constraints may lead to inefficient resource allocations by those governments. At the same time, designing fiscal rules that do not excessively weaken state and local government autonomy, and that leave them with an adequate capacity for macroeconomic stabilisation is a challenging task[22].

[22] Organisation for Economic Co-operation and Development, Economics Department Working Papers No. 462/2005 by Thomas Laubach.

This section reviews the two main financial stabilisation mechanisms, which are essentially bail-in and bail-out.

Bail-in is a legal procedure that is usually be used for bank resolution. If a bank is failing or likely to fail, carrying out a bail-in means that the shareholders and creditors of a bank are forced to accept the losses incurred by the bank. This is a major difference from the concept of bail-out, where national governments (and through them, taxpayers) supported banks with funds to prevent their failure. In the case of a bail-in, it is the bank's shareholders and creditors, rather than the taxpayers, who meet the costs of bank failure[23].

Bailouts are a kind of *ad hoc* additional funding that is provided when an entity would otherwise be unable to service its obligations. Subnational governments are likely to expand their services to an inefficient extent and other entities are expected to pay part of these costs eventually (Rodden *et al.*, 2003: 8).

Within public governance, budget stabilisation funds, also known as rainy day funds, are a relatively new addition to the set of tools that states have at their disposal to face the fiscal pressures brought about by business cycles. Budget stabilisation funds can help states smooth their consumption by serving as receptacles for savings, to be used in times of economic distress.

Most states in the United States of America have created rainy day funds to accumulate savings that would allow them to reduce the impact of adverse fiscal conditions. Rainy day funds are just one of the tools that states have at their disposal to reduce the negative effects of economic downturns (Rodriguez-Tejedo, 2008).

In the United States and Canada, lower-level governments – states, provinces, or municipalities – occasionally fall into serious fiscal crises in which expenditures are drastically out of balance with current and projected revenues, resulting in a loss of access to the capital market and the

[23] Glossary of website European Stability Mechanism Treaty (ESM): http://www.esm.europa.eu.

prospect of large and sudden reductions in service provision and employment, or increases in local taxes.

Some academic analysis of the financial distresses of U.S. cities investigated how elected officials and managers coped with budget crises due to severe cash flow problems, high levels of borrowing, excessive expenditure for personnel, hidden debts, and even pressure by interest groups.

In a banner article[24], Levine (1979) analysed the case of declining organisations in depth, and the several related and unique problems which their management confronted. He suggested a cutback management approach in order to manage organisational change toward lower levels of resources consumption and organisational activity. The planning process is the means for rethinking an organisation and making new kinds of strategic choices.

Levine *et al.* (1981) emphasise cutback management and the planning process aimed at retrenchment. Their research shows that where there is a low degree of politicisation, managers are able to take quick and effective retrenchment action. To the extent that there is increased politicisation, it will be reflected in intransigence and efforts to block managers-directed retrenchment strategies. When a local government aims to eliminate political conflict and competition between groups representing fundamental social cleavages, different actors may be involved in retrenchment decisions. In an era of cutback management, the most important question is how to reduce public spending and what to curtail. Wolman and Davis (1980: 232) provide a first differentiation of reductions, in operational expenditures, categorised by the object of expenditure, and distinguishing between personnel expenditure and non-personnel expenditure. When looking at this latter, and the related instruments for making cuts, Lewis and Logalbo (1980), Wolman and Davis (1980) list restricting or banning spending on utilities, supplies, equipment, travel and communication. Downs and Rocke (1984), Levine (1978,

[24] See Bozeman 2010.

1985), Wolman and Davis (1980) deal with personnel expenditure: reducing overtime, dismissal, furloughs; wage freezes or reductions in the rate of salary increases; slowing promotion; salary cuts; filling positions with less credentialed, lower-paid staff; reducing pay grades of vacated job lots; early retirement; reshuffling of staff; hiring freeze and layoffs. Dunsire and Hood (1989), and Kogan (1981) describe the main reduction techniques of programme measures: decreases in transfers to citizens and changes in expenditure that lead to a lower quality of public services.

In the investments area, capital expenditure is frequently reduced, often postponed, and sometimes even cancelled; and related maintenance spending is deferred (Lewis and Logalbo, 1980; Scorsone and Plerhoples, 2010), however, some authors note that postponing maintenance may be a useful short-term solution, but from a long-term perspective, it may increase problems for organisations because of the cumulative decline in resources (Behn, 1980: 615). The later costs of maintenance might overcome today's savings (Lewis and Logalbo, 1980; McTighe, 1979: 89).

Empirical studies demonstrate that governments fighting in hard times would often act in the following order of preference: shifting capital expenses, and deferring maintenance activities, and cutting back administrative expenditure and overhead costs (Bowling and Burke, 2006; Dunsire and Hood, 1989; Hood and Wright, 1981; Levine, Rubin and Wolohojian, 1981; Maher and Deller, 2007; Marando, 1990; Schick, 1980; Wolman and Davis, 1980). Some of these authors note that layoffs have been used as the last option (Bowling and Burke, 2006; Maher and Deller, 2007; Marando, 1990; Wolman and Davis, 1980).

In general, the fiscal crises of lower-level governments seem to give rise to varying combinations of added central government control, that is loss of local autonomy, and added fiscal assistance to local governments, so-called 'bailouts'. Bailouts are added fiscal assistance to lower-level governments (Wildasin, 1997).

Wildasin (1997) shows that central authorities may have strong incentives to prop up the finances of local governments when the public services provided locally benefit the rest of society. Such interventions may in turn create incentives for localities to underprovide services that have substantial spillover benefits, instead using local resources for purposes that may benefit local constituencies but not non-residents.

Similarly, when central fiscal interventions are big enough, and when a loss of local control over the use of fiscal resources is not too costly to local residents, local decision-makers will act to induce central government bailouts, resulting in inefficient outcomes for the system as a whole. This is not to say that fiscal decentralisation produces perverse incentives or requires central government control over local fiscal policies, but incentives for bailouts can be especially strong when local governments are considered "too big to fail" (Wildasin, 1997).

Later, however, in a comparative study of subnational governments in four OECD countries, Bordigon *et al.* (2000) responded that, surprisingly, there is little evidence in favour of the "too big to fail" argument explaining for bailouts, since elements of political favouritism play some role in most cases. Their research also indicates the importance of properly designing principal-agent relationships in the decentralisation of public finances. Constitutional mandates for uniform provision of public services and attempts by the central government to dominate subnational governments in matters of fiscal policy, seem to be conducive to bailouts.

In United State Federalism, as asserted by Inman (2003: 35), a stable central government, a mature banking system, and a strong capital and land market are seen as necessary institutional preconditions for an efficient local public sector. Lacking any one of these preconditions, regulatory policies will be necessary to hold local fiscal inefficiencies in check.

Furthermore, Inman (2003: 54) asserts that the United States public economy is seen by many as a federal system that has successfully established the principle of fiscal discipline for its local and state (provincial) governments. Although this impression is largely correct, there are

examples from the historical and contemporary record that illustrate just how fragile hard budget constraint can be. Consequently, in order to control local defaults and central bailouts need:

1. strong executives and national political parties
2. constitutional regulations with clean guidelines for acceptable local behaviour
3. a mature banking system, efficient capital markets, and a well-administered fiscal system
4. a constitutional bankruptcy standard requiring local debt repayment
5. a competitive local bond market that disciplines defaulting local governments and discourages strategic borrowing
6. appropriate incentives for local governments to borrow efficiently
7. land markets as a less effective check on inefficient local borrowing
8. balanced budget rules enforced by a politically independent court that can control inefficient local borrowing.

Recently, problems with weak local public finances and bailouts of subnational governments have moved to the forefront of the debate over public finances in Europe. This triggered European interest in this issue: on the one hand, through the preparation of the European Financial Stabilisation Mechanism[25] (EFSM) in order to address exceptional situations beyond the control of the Member States and, later, through adoption of European Stability Mechanism Treaty[26] (ESM); on the other hand, by reinforcing the internal institutions of Member States, and their legal budget procedures in order to ensure financial equilibrium and avoid potential spillover effects.

[25] Council Regulation (EU) No. 407/2010 of 11 May 2010 establishing a European financial stabilisation mechanism.
[26] See website: European Stability Mechanism Treaty.

In the Italian Member State, Parliament has approved a constitutional law[27] with provisions to ensure balance between revenue and expenditure. Since 2012 such fundamental rules and criteria have been constitutionally enshrined.

2.3 Strategic planning: a historical overview

The word *planning* means, in common understanding, to regulate, to coordinate the development of an activity according to a predetermined action plan, generally controlled by a central authority. The word *strategy* comes from the Greek "strategos" which literally means "the one who leads the army". The "strategos" had to assess their conditions and, comparing them with those of the environment and the enemy, define military actions to get the best results. The genesis of strategic planning is not only due to military activities and preparatory campaigns for war, but also the result of training, education and learning. Learning enables us to increase our awareness in order to modify strategy and attain new and better results. Such cycles take complex scenarios into account in a systematic way.

In *economia aziendale*, indeed, the recurring reference to systems planning, programming and control, includes three closely related phases, although different from each other. For most of the doctrine, through planning, we outline guidelines suitable for achieving macro-objectives over a medium-long timeframe; through programming you choose actions to be implemented to achieve goals in the (usually) short-term; through control we operate the activity up to a certain point in time, we analyse deviations and, if appropriate, re-design objectives. By imagining these three phases as essential parts of a continuous cycle, it is clear that the latter cannot be separated by a moment of learning from the results obtained. Such a learning step is the basis for the constant evolution of an organisation and its activities.

[27] Constitutional Law No. 1/2012 of 20 April 2012 "Introduction of the principle of a balanced budget into the Italian Constitution".

The founder of Italian *economia aziendale*, Gino Zappa (1957: 37) conceived the *azienda* as "the economic institution intended to endure over time, which, for the satisfaction of human needs, orders and undertakes in continuous coordination the production or the procurement or the consumption of wealth". He saw the *azienda* as a complex organisation which puts in place a set of coordinated and combined economic operations. He provides a holistic view of systemic activities that tend, given a certain structure, to achieve certain goals and objectives over time. Zappa analysed the *azienda* phenomenon not as the sum of individuals but as a whole, along with the relevance of its relationships with the external environment in order to satisfy its changing needs. In doing Zappa paved the way for the subsequent development of the dynamic equilibrium concept.

Amaduzzi (1956, 1978) developed a theory for *azienda* equilibrium based on four long-term conditions combined with four short-term conditions (to satisfy long-term profitability and short-term financial requirements). This must be true because the significant characteristics of each organisations is to persist over time.

A successful company tends to remain so for extended periods, a success that is founded in basic organisation and policies (including the essential elements of its leadership) (Forrester, 1992).

The notion of strategic planning can be successfully juxtaposed with the concept of sustainability, which appeared in the mid-1980s in the UN declaration[28] "Our Common Future" by Gro Harlem Brundtland[29]. She launched the challenge of finding sustainable development

[28] The World Commission on the Environment and Development was created as a consequence of General Assembly resolution 38/161, adopted at the 38th Session of the United Nations in autumn 1983. That resolution called upon the Secretary General to appoint the Chairman and Vice Chairman of the Commission and in turn directed them to jointly appoint the remaining members, at least half of whom were to be selected from the developing world. The Secretary General appointed Mrs Gro Harlem Brundtland of Norway, then leader of the Norwegian Labour Party, as Chairman and Dr Mansour Khalid, the former Minister of Foreign Affairs from Sudan, as Vice-Chairman. They appointed the remaining members of the Commission together.

[29] Gro Harlem Brundtland, Norway. Prime Minister, Parliamentary Leader of the Labour Party 1981-86, Member of Parliament from 1977, Minister of Environment 1974-79. Associate Director Oslo School Health Services 1968-74.

paths, facing the future by coordinating political action and responsibility, as well as by taking account of the interrelationships between people, the resource environment, and development. This declaration proposed long-term environmental strategies for sustainable development (UN General Assembly, 1987). The widespread nature of the interdisciplinary concept of "sustainability" thus expanded the scope of tasks for decision-makers, which are used to formulate proper medium- and long-term strategies.

In business, according to Steiner (1979: 348) strategy is what the top management of an enterprise does, which is of great importance to the enterprise. This is a very broad concept, that includes purposes, missions, planning objectives, programme strategies, and key methods to implement strategies. In his business strategy studies, Andrews (1980: 18) defined corporate strategy as the pattern of decisions in a company that determines and reveals its objectives, purposes, or goals, produces the principal policies and plans for achieving those goals, defines the range of business the company is to pursue, the kind of economic and human organisation it is or intends to be, and the nature of the economic and non-economic contribution it intends to make to its shareholders, employees, customers, and communities.

Strategic planning originated in the private sector, nevertheless state agencies that have the closest affiliation with sectoral businesses are most likely to be strategic planning innovators (Berry, 1994).

According to Anthony (2006: 113), strategic planning is the process of deciding on the goals of an organisation and the resources necessary to attain these goals. If planning is an activity aimed to set up targets in the medium-long-term in order to improve the state of the organisation, "strategic" planning is likely to lead to the genesis of the process of planning in the military.

Strategic planning is, thus, a process that, assuming a realistic vision of this in terms of organisation, of results achieved, of available resources, of regulatory framework, of

institutional system, and of politics and culture, aims to give "sense" to future activities, according to a systemic view, and by means of a strategy, by fixing the macro-objectives that must be pursued on the basis of certain available resources.

Strategic planning process is adopted, both in the private and the public sector, to ensure not only the continuity of management, but also a share of sustainable development (Bianchi and Tomaselli, 2013).

Strategic planning is a proper way to ensure the continuity and development of an organisation over time, by seizing the best chances of perspective, and reducing the most likely risks. Olsen and Eadie (1982) defined the planning activity governance with foresight. It is a process through which an organisation can coordinate its actions over time, by starting to study at a point in time, and then adopting a dynamic approach that examines ongoing sequences of internal interactions and external relationships. Using a strategic planning tool means adopting a broader view in order to undertake a sustainable development path. Such a powerful tool promotes sustainable development, since "strategic" means to connect short-term to medium- and long-term policies. Strategic planning from a sustainability perspective means to think globally and in the long-term.

2.4 Strategic planning in the public sector as a core component of the broader performance management system

As remarked by Murray (1975), public and private management are not inherently different. He notes that political considerations affect decisions in both the public and private sectors, and that the boundaries between the sectors are blurring. In 1979, Steiner argued that the business sector strategic planning experience is applicable to the public sector, but that there were more differences than similarities between the two.

Eadie (1983) asserted that the field of strategic planning was developing so rapidly also in

public sector. He argued that the basic methodology is to compare desired and required outcomes with actual outcomes of current planning; the gap indicates where improvements in planning must be made, and the relative priorities determine the schedule for improvements. However, scientific assessment of the outcomes of planning in public sector (going beyond merely documentation) highlights that the results are not still fully in, perhaps, due to its initial stage (Eadie, 1983).

In 1986, Bloom wrote that strategic planning was being adapted for use in the public sector as government organisations at various levels turned to strategic planning over more traditional public sector planning methods. This was changing the way government approached the planning process.

Strategic planning can be the linchpin of good public sector management because it provides the kind of focus that is required for accomplishment and performance in a large organisation. While good strategic planning is very difficult, the barriers to developing a useful strategic plan are not insurmountable (EPA, 1990). The practitioner should always keep in mind that most golden of all maxims: tailor the application to your own organisation with its own unique conditions and needs. The focus on understanding and interpreting an organisation's environment is a basic characteristic of strategic planning (Eadie, 1983). In other words, planning means to have a stake in the future, and strategy is how to have a stake in the future. Bryson (1995) defines strategic planning as a disciplined effort to produce fundamental decisions and actions that shape and guide what an organisation is, what it does, and why it does it.

Strategic planning techniques are devoted to the elicitation of knowledge about a specific area, an organisation as a whole, a market, a community, the surrounding environment, or end-results in order to enrich the knowledge of decision-makers, to be used in the strategic process. Although some of these techniques are well-known – for instance stakeholder engagement,

statistic data, benchmarking, there is still the problem of how the information stream is to be processed into appropriate strategies. The planning activity is thus a complex process which is based on choices; strategic choices. The plan is the coordination of strategic choices, which together aim at attaining the institutional purpose.

One of the early seminal studies (and practices) of strategic choices in the local public sector were carried out in the early 1960s by Friend and Jessop. In their book of 1969 “Local Government and Strategic Choices”, they define planning as a process of decision-making under uncertainty requiring unconventional interpretations of the two words “decision” and "uncertainty" and, in a concise way, as a process of strategic choices (1969: 97).

According to Friend and Jessop (1969: XIX), the planning process in local government, or for that matter in any other sector of the governmental system, requires a technology of choice that explicitly recognises the particular types of challenge posed at this level. This includes the difficulty of isolating one decision from another, the difficulty of appreciating what range of solutions may be possible, the difficulty of making value judgments when confronted with a wide range of social effects, and the difficulty of striking a balance between the pressures for early commitment and the flexibility to adapt to unforeseen circumstances.

Friend and Jessop (1969: XXIV) develop a more general analysis of the nature of planning as a continuing dynamic process, and those special characteristics of this process which distinguish it from other activities of government. They present a series of models (figure 6 portrays the Model 2) based on the idea of a continuing dialogue between government and community, taking place at many levels both within and beyond the framework of local government with which they are especially concerned. Through these models, a picture of planning as a process is built with strategic choice, and requires an ability to anticipate the future and yet also adapt to the unforeseen.

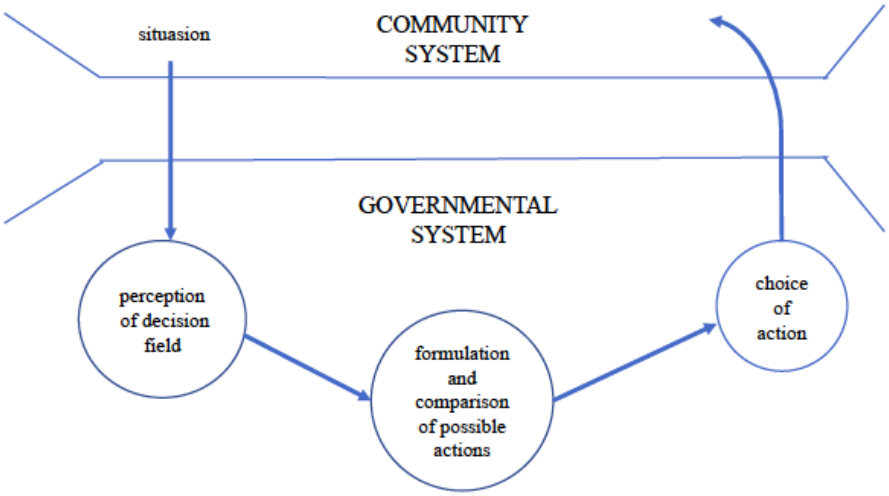


Figure 6: Model 2, the selection of response (Friend and Jessop, 1969: 104).

This idea of a continuing dialogue generates the dynamics of strategic choice, and isolates certain characteristic classes of problems which it presents to those in positions of responsibility, not only in local authorities but in other agencies of government as well (Friend and Jessop, 1969: 101). These authors built up a series of diagrammatic models in order to generalise the representation of the relationships of a process, which serves to throw light on how the relationships between government and community systems might be expected to respond to different forms of change[30]. They claim that a local authority is both a regulator and a provider. Their idea of public authority develops the basic framework of a continuing dialogue between a governmental system and a community system, where the precise boundary between the two systems may not always be easy to define.

In the extent to which a community system's needs change, the governmental system learns by these changing pressures and interacts with the community system. Through such a learning

[30] In using the word "system" our intention is to embrace all the many perspectives from which government and community can be viewed. In writing about the governmental system, we have in mind that its reality extends beyond its formal and legal aspects, and can only be described adequately through a combination of social, political, economic, functional, and many other frames of references; likewise, in writing about the community system we will have in mind a rich network of relationships between people and the environment in which they live. Families, individuals, and organisations may participate in the community system in many different capacities (Friend and Jessop 1969: 102).

process, the appreciation of factors to decision-making may gradually change, so that the range of situations covered by operational policies will either extend or diminish over time. Meanwhile, objectives may either extend or diminish over time; objectives may gradually become modified and the ability to mobilise resources become either more or less constrained (Friend and Jessop, 1969: 105).

In public planning, however, it is exceptionally difficult to formulate strategies in advance which are sufficient to cope with all conceivable contingencies; the complexity of the community system, and the imperfect understanding of it in the governmental system, combine to prevent any complete enumeration of the situations which might be expected. In these circumstances, planning must become, in some degree, an adaptive process. Public planning activity becomes flexible by adopting a strategic approach, involving the formulation and comparison of possible solutions over a wide decision field, embracing anticipated as well as current situations, and the governmental system may find that it is led to select a very different set of immediate actions than would otherwise have been the case (Friend and Jessop, 1969: 112).

In local government, therefore, (perhaps) the only yardstick of a "better" planning process is the degree to which it becomes generally accepted as increasing the capacity of government to make intelligent decisions on behalf of the community; in other words, to choose what actions to take with a fuller awareness of what the consequences are likely to be (Friend and Jessop, 1969: 113).

The strategic planning process needs to include the use of a systematic approach, taking into account the context of complexity and of the dynamic relationships between community and governmental system. With this purpose in mind, decision-makers will tend to develop mechanisms for reducing uncertainties and for managing internal and external pressures (Friend and Jessop, 1969: 123).

Friend and Jessop (1969: 106) identified three fundamental causes of difficulty in making a selection between alternative courses of action, which they defined as uncertainties in knowledge of the external environment, uncertainties as to future intentions in related fields of choice, and uncertainties as to appropriate value judgements. Years later, Friend and Hickling (1987) placed emphasis on planning under pressure, because uncertainties and pressures can jeopardise responsible public planning. These authors use the term ‘planning’ as a process of choosing strategically in which the activities of making plans, decisions and policies can come together in quite subtle and dynamic ways. This is a view in which an organisation's arrangements for making plans, and those for making day-to-day decisions, tend to merge into a less clearly bounded process through which progress is sustained. It is common experience that carefully prepared plans can quickly lose their relevance under the pressure of day-to-day events (Friend and Hickling, 1987: 3).

In further developing the view of planning as a process of strategic choice, it is helpful to see the process as continually shifting between different and complementary 'modes' of decision-making activity. In the simple situation of sequential decision-making, where the nature of the problem input and the expected decision output is well defined, this movement can be seen in terms of only two complementary modes: one concerned with designing possible courses of action, and the other with comparing them in the light of some view of what their consequences might be. The process may not in practice be strictly linear, because a comparison of the consequences of any pair of alternatives could have undesirable consequences and so trigger a search for some other compromise solution. It thus becomes necessary to allow for the possibility of a feedback loop, returning from the comparison to the design mode (Friend and Hickling, 1987: 19).

Also implicit in each situation is some sense of pressure or concern about arriving at a commitment to some preferred course of action amongst those believed to be available – even

though it is only to be expected that some decision areas will carry a greater sense of urgency to act than others. It is this sense of pressure to act that creates a decision problem for those concerned – it being useful to distinguish the idea of a decision problem from that of other types of problem or puzzle which may be picked up and worked on casually as a diversion by anyone looking for interesting ways of passing their time (Friend and Hickling, 1987: 20). They draw up a useful framework, composed of four elements: technology, organisation, process, and product providing general orientations to the strategic choice approach. By contrasting them with the emphasis on more traditional approaches to management and planning, approaches which still have a persistent influence on thinking in both commercial and governmental organisations are seen. In terms of technology, the strategic choice approach involves a shift away from a reliance on the kinds of expert techniques of solution-finding and evaluation which are characteristic of more routine decision-making arrangements. Instead the orientation is towards what can be described as an open technology intended to be freely accessible to participants who have differing and complementary contributions to make (Friend and Hickling, 1987: 86). In terms of organisation, an orientation toward interactive participation is indicated as being characteristic of the strategic choice approach. This is in contrast to the emphasis on individual work on assigned tasks which is characteristic of organisational arrangements for working on more clearly structured, recurrent problems. There is, of course, a direct link between the emphasis on participative forms of organisation and that of open technology. Both stress the idea of people working together in an exploratory way, so as to transcend established boundaries of responsibility and specialist expertise. In terms of process, the shift of emphasis is from reliance on routine procedures for dealing with issues which fall into clearly recognisable categories, toward an acceptance that people should be engaged in a learning process about issues which no one person can claim to understand in full. Again, the emphasis on a learning process is clearly aligned with the emphasis on open

technology and on interactive participation; for in responding to complex decision problems, people must be prepared to learn from each other, recognising that there may be a variety of complementary sources of insight and experience upon which to draw. Again the emphasis on a learning process is not intended to suggest that routine procedures no longer have a part to play: it is simply that they become less appropriate to the more complex challenges of a process of strategic choice. Finally, in terms of products, the emphasis is shifted from the conventional idea of problem-solving toward an orientation to incremental progress through time. Where problems are of a bounded nature, it is reasonable to look for equally clear and definitive "solutions". There will always be some instances where it is not such a straightforward matter to decide what should be done, however. Action must sometimes be postponed, referred elsewhere, or entered into in a partial or qualified way. In a process of strategic choice, this kind of progressive commitment becomes more the exception than the rule (Friend and Hickling, 1987: 86-87).

The orientation toward an open technology is interpreted in terms of a focus on decisions; the orientation towards interactive participation is interpreted in terms of an emphasis on lateral connections; the orientation towards a learning process is interpreted in terms of cyclic continuity; and the orientation towards incremental progress is interpreted in terms of guidelines for strategic products (Friend and Hickling, 1987: 88).

The Friend and Hickling approach is, above all, intended as an instrument to help people plan under the pressures of the continually evolving realities they face; which is not to say they cannot also benefit from standing back occasionally to reach out for a broader, more systemic view. The adoption of a decision perspective therefore offers an important means, now widely tested and adopted in practice, by which the orientation towards an open technology can be given practical expression, and the transparency of complex planning problems thereby increased.

In the process of strategic choice, where the need for continuity is explicitly recognised, flexibility plays a part, since it is appropriate at any moment of a continuous process. This entails weighing up the various urgencies and uncertainties impinging on the choices of current concern, and also considering how foundations for making future decisions can be built (Friend and Hickling, 1987: 101).

The whole task of managing an organisation for strategic choice can thus be seen as a process of dynamic grouping and linking, in which there are many variables. It is not only a question of which people in which decision-making roles should be active, but of how frequently, in which combinations, and in what relationships they should be to each other and the current decision situation (Friend and Hickling, 1987: 271). In this way, the transparency of complex planning problems is thereby increased.

In 1993, the Congress of United States of America approved the Government Performance and Results Act to provide for the establishment of strategic planning and performance measurement in the federal government, and for other purposes. Such a strategic plan is to be drawn by consulting Congress, and by soliciting and considering the views and suggestions of those entities potentially affected by or interested in such a plan. In pursuit of these aims, the Government Performance and Results Act also established detailed provisions about public management in order to improve efficiency and effectiveness in public sector. Strategic planning activity is thus used to make a mission statement, gather information, fix goals and objectives, articulate the processes, illustrate ways and times of stakeholder meetings, verify the end-results achieved, evaluate the outcomes, and promote their public reporting. The Act makes compulsory the planning activities, citizens involvement in public choice, and management for results, in order to attain performance improvement and to better serve the public interest.

Legislatures have created many different access points to influence, and to be able to help shape

governmental decisions. Such opportunities are designed to ensure that elected officials and managers are responsive to the interests of individual citizens, and also to the general will of the public; and on the other hand, to provide a way to express viewpoints to decision-makers. (Anderson, 1997: 28). In fact, the motto "government by the people and for the people" reflects the importance of a representative government (Franklin, 2001). For example, larger and more complex agencies may require more formalised planning systems and need to dedicate more resources to strategic management processes in order to implement strategic plans successfully (Vinzant and Vinzant, 1996). The type of governing body, whether an authority board or a legislative body, and with respect to local governments, and in particular the form of government (e.g. city manager vs. strong mayor systems), is also likely to affect how and to what extent strategic management processes are carried out (Poister *et al.*, 2010).

In the light of these new pathways in public administration, academics and practicing professionals have shown a sustained interest in strategic planning, and it has become a centrepiece of orthodox public management (Poister and Streib, 2005). More generally, organisations in which there is intense conflict within the governing body, the executive staff, or between the two are likely to experience greater difficulties in trying to engage in strategic planning (Gabris, 1992).

Barzelay and Jacobsen (2009) find that strategic planning initiatives can be strong catalysts for change within large-scale bureaucracies in their case study of the European Commission. One of the strongest results of Berry's survey in U.S. (1994) confirms the regional diffusion of strategic planning tool. In fact, state agency directors act as though they are taking cues from their sister agencies adopting strategic planning as part of strategic management leadership.

Strategic planning is backbone support to strategic management. It is not, of course, the entirety of strategic management, but it is a major process in the conduct of strategic management. Everyone recognises that strategic and operational management are tightly linked. Strategic

management provides guidance, direction, and boundaries for operational management (Steiner, 1979: 4).

In the strategic management process, the measurement of performance assumes a key role in order to obtain performance gains. Proponents of performance measurement contend that by focusing attention on important dimensions of performance, tracking results, comparing measures with other service producers, and using measures to assess the efficacy of strategies for performance improvement, performance measures can be important management tools (Ammons, 2013).

In their study of small municipal government, Rivenbark and Kelly (2003) contend that the elements of performance management include strategic planning, which articulates the objectives against which progress is measured; performance measurement, which tracks output, outcomes, and efficiencies; benchmarking, which sets targets and makes performance comparisons; and programme evaluation, which links efforts captured in performance measures to outcomes. These tools are used to make service policy decisions.

While strategic planning is a central element, strategic management is a more holistic — and much more demanding — process. More importantly, the results that a government jurisdiction or agency can achieve through strategic planning depend on the effectiveness of its overall capacity for strategic management (Poister and Streib, 2005).

According to Vinzant and Vinzant (1996), generally speaking, a strategic management system involves four core processes: planning, resource allocation, control and evaluation. They pinpoint the virtual absence of a definition of successful implementation, as one major difficulty in the study of strategic management in public organisations. In order to be useful, a definition of successful implementation must thus include both internal and external factors and be sufficiently specific to allow comparability between organisations, but broad enough to allow for variations in approach. One way to address these requirements is to allow four levels

of success. These authors consider at least four levels of implementation:

- **Level 1** Successful implementation is defined as the completion of a strategic planning process that includes all elements described earlier. Simply going through a formal series of analytic procedures and reaching agreement on an organisation's mission and vision so that these concepts are widely known and shared in the organisation constitutes a significant initial level of success;
- **Level 2** Successful implementation is defined as the completion of a strategic planning process and the production of a strategic planning document. The discipline of producing a document, particularly one that can be used to market the organisation's products and services to external audiences, is a more sophisticated achievement;
- **Level 3** Successful implementation is defined as Level 2 accomplishments plus resulting changes in the resource allocation process. Specifically, the allocation of resource (human, financial, physical, and technological) in the operating and capital budgets is tied to the accomplishment of specific strategies within specified time periods;
- **Level 4** Successful implementation is defined as Level 3 accomplishments plus specific changes in control and evaluation processes that provide feedback on implementing elements of the strategic plan.

The next section of this chapter will examine the financial planning process.

2.5 Financial planning applied to local governments

Until the 1980s, budgeting was a disjointed activity for Italian local bodies, lacking central coordination. They prepared their annual budget requests based on an incremental mechanism, then, the Minister of the Treasury agreed on the annual amount to transfer.

Today, budgets convey a good overview of government's set of policies for the fiscal year it covers. The answers to such policy issues as the balance among different areas of public

expenditure can be found or extracted in the budget. This is because the budgetary process, within the framework of substantive law, is a means for making choices between competing social values and allocating resources for their attainment. The budget is not simply a financial statement; it is also a statement of policy which comes from planning processes within strategic management (Anderson, 1997: 182).

There are connections between budgets and strategic plans. Some planners reflect the prevalent preoccupation of executives with finance. Such planners emphasise projections or extrapolations of current financial trends and budgeting. Financial forecasting and budgeting are essential parts of planning, but they tend to dominate a planner's thinking and to minimise or exclude other essential parts of the planning process (Ackoff, 1970: 8).

Poister and Streib's core survey (2005) involves the relationship between a strategic plan and a budget. In this survey, more than 80% of respondents from local governments indicated that the annual budget prepared by their chief administrators strongly supported their strategic goals and objectives, that their capital budgets reflected these goals, and that "new money" in particular was targeted to achieving strategic goals and objectives. Slightly fewer of these respondents, on the order of 75%, reported that the strategic plan had a strong influence on budget requests submitted by department heads and other managers, and that their city councils considered strategic goals and objectives when reviewing annual budgets. Far fewer of these respondents, however, only 48%, indicated that performance data tied to strategic goals and objectives played an important role in determining the allocation of resources in their cities.

Other studies found that linking the strategic plan to the budget using the strategic plan to drive the organisation's overall performance management system (Poister and Van Slyke, 2002), and using performance measures to monitor the progress of strategic initiatives (Hendrick, 2003; Poister and Streib, 2005) leads to better outcomes (Poister *et al.*, 2010). Rivenbark and Kelly's study (2003) found that performance measures were the least useful indicator in the budgeting

process.

Looming largest on the public (and probably private) sector planning landscape is the annual (and sometimes biennial) operational planning and budget preparation process. Much of the history of the public sector planning reform appears to be a story – sometimes inspiring, often not – of attempts to upgrade the planning content of annual operational budgets (Eadie, 1983). Strategic choices therefore determine the allocation of resources within the budget, and Law Decree No. 174/2012 has attempted to address efficiency concerns by increasing the long hand of government in the budget process, in hopes of taking expenditures under control and improving accountability through the strategic planning process.

Experience with programme budgeting also increases an organisation's capacity for strategic management approaches. Programme budgeting is a management approach to resource allocation that presents the purposes for which funds are requested, estimates the costs of the proposed programmes needed to accomplish its objectives, and offers measures for assessing the performance of work under each programme (Koteen, 1989).

Perhaps the single most important step in linking the strategic planning and resource allocation processes is the development of strategies with specified time frames for the accomplishment of a given programme level. After developing the strategies at a programme level, operating and capital budgets can be prepared that enable the organisation to accomplish the strategies (Vinzant and Vinzant, 1996). What strategic planning is intended to produce is also conceived in various ways. In one public organisation a strategic plan may amount to a lofty vision of success in adding value to the constituents it serves, supported by a few broad goals, whereas in another, strategic planning may be directed to identifying the strategic issues facing the organisation and determining how to resolve them, and in yet another agency, strategic planning may be aimed at developing a set of strategic initiatives complete with action plans, resource commitments, accountability structures and performance measures intended to drive

the enterprise into the future in a more purposeful way (Poister *et al.*, 2010).

The last section of this chapter will examine the time horizon of strategic planning.

2.6 Long- *versus* short-term planning

The strategic planning may differ significantly in terms of overall scope, breadth of focus, time horizons, and extensiveness of information gathering (Eadie, 1989; Toft, 2000). The budget period refers to the time period for which the budget is prepared.

The wide extension of the time period for recovery plans under study seems to have no similarities with corporate planning nor with the strategic planning literature, rather it appears closer to other planning tools such as the long-term programme of public works.

Traditional long-range planning, with its extrapolation of clear trends five and even ten years into the future, has proved increasingly less useful as, in the years since World War II, environmental change has escalated (Eadie, 1983). Similarly, in the long-term capital programme, that the planning horizon extends over a future period of five years appears to those concerned to provide a reasonable compromise between the need to prepare the way for development projects well in advance of actual construction, and the increasing difficulty of making useful predictions over a longer period (Friend and Jessop, 1969: 14). Programmes should be drawn up on the basis of realistic expectations, and a combined list of projects for the fourth and fifth years could be seen as a more tentative guide for longer-term planning activities concerned with the definition and acquisition of sites (Friend and Jessop, 1969: 17).

The typical planning period is five years. There is a tendency for the more technologically advanced companies to plan ahead for seven to ten years. Companies facing a particularly turbulent environment sometimes reduce their planning horizon to four or three years (Steiner, 1979: 20). People often speak of a three-year or a five-year plan but generally strategic planning systems do not have fixed time dimensions. In most companies the basic mission and purpose

of the company has an unlimited time dimension and they are frequently unchanged for a long time (Steiner, 1979: 22).

Selecting a budget period is done bearing in mind the nature of the strategic plan, nature of the business, production period, financial elements of the business, and so on. Usually, a time period of one year is defined as the budget period (ICFAI 2006: 120).

A budget can be a long-term or short-term budget depending on the time period. A budget prepared for one year or less is called a short-term budget. A budget can also be prepared on a quarterly, monthly or weekly basis, depending on the requirements of certain operations. Examples of short-term budgets are annual sales, income and expenditure budgets. A long-term budget covers a period of five years or more. These budgets are usually prepared when an organisation plans for expansion, modernisation, diversification, and so on. Long-term budgets are used for the purpose of planning, while short-term budgets which are designed to implement these plans are used for control purposes. Examples of long-term budgets are capital expenditure budgets and research and expenditure budgets. The time period of a budget can vary depending on the nature of the business, the production period. Electronics and consumer goods industries prefer to prepare annual budgets as they experience a high rate of change. For industries such as shipbuilding, the time period of a budget may vary between 5 to 10 years (ICFAI 2006: 122).

Most of New Zealand's NPM reforms took place in two short years following the passage of the State Sector Act 1988, the Public Finance Act 1989, the Local Government Amendment (No. 2) Act 1989 and other, sector-specific, legislation, for example. In the local government field, councils must agree long-term financial plans for at least ten years into the future, together with investment and funding policies, with their local community. Along with the annual planning process established in 1989, the process is becoming a major vehicle for public participation (Pallot, 1999).

It is worth noting that the involvement of citizens and other stakeholders has been a cornerstone of local strategic planning process, since the early seminal studies of the 60s up NPM and post-NPM theory. Such a process must permit various stakeholders to participate in decision making and, later, evaluate the performance relative to local public policies.

Chapter 3

Methodology

3.1 Introduction

The present research focuses on an analysis of the Recovery Plan of the Catania local government, which has undertaken a financial rebalancing path by adopting the new tool approved by the Law-Decree No. 174/2012. In order to do so, the research is based on four data sources:

1. semi-structured interviews with two managers and a senior manager
2. the Recovery Plan
3. the Court of Auditors resolutions
4. the Ministry of the Internal Affairs
5. the Catania local government website.

The initial interview with the senior manager took place in the mid-2014, when the recovery plan was at an early stage of the implementation process. The meeting for the second interview was, instead, in early 2016, when the Court of Auditors was already carrying out the monitoring steps. The third manager was interviewed in the late 2016.

All the interviews followed the research questions scheme and were integrated according to questions that seemed fruitful to pursue the research goal. Each interview took two hours, on average.

All the managers had a background in economics, the first was a professional with previous working experience in public administration, and the others belonged to the body of public sector executives. The set of three interviews was recorded with the agreement of the subject and on the condition of anonymity, the audio recordings were transcribed, sent to each interviewee, and published after their agreement. At the beginning of November 2016, all

survey activities were closed, all data was collected, checked and categorised.

The analysis of the recovery plan provided quantitative and financial data, and pointed out to internal and external stakeholders the main local policies by which they can reach long-term financial equilibrium.

The Court of Auditors resolutions are a important source if one takes into account those related to the implementation guidelines of Law Decree No. 174/2012 and others about Catania municipality. The available data on the Ministry of the Internal Affairs website and the interview via telephone with the Chief Manager of the Department of Local Government Accounts provide a nationwide overview.

3.2 Research methodology

A method is usually a "solemn gait" from experts in the field in order to provide guidance and support for a specific activity or process. A method is prescriptive and generates homogeneity, on the other side, the actor's style is a part creating the diversity in making.

One might reasonably expect a method to be adopted if it meets three criteria, delivering clear and demonstrable benefits, with reasonable effort and cost, and doing so reliably, where "reliable" implies that the method can be deployed with confidence in similar cases, with similar impact (Warren, 2015).

Method is a part of the (word) methodology. Method implies a set of procedures, guidelines, and criteria, whereas a methodology is a doctrine, namely the dynamic interplay of methods and principles applied to studying a phenomenon. Methodology can address broad contexts and focus on complex phenomena, it allows the investigation of real-life problems, treats theoretical and empirical issues, defines policies, carries out tests and assessments.

Noor (2008) suggests that the choice of which research methodology to employ is dependent upon the nature of the research problem. Morgan and Smircich (1980) argue that the actual

suitability of a research method derives from the nature of the social phenomena to be explored. The present research employs two methodologies: the case study and the SD methodology.

A case study is an empirical enquiry that investigates a contemporary phenomenon within a real-life context, where the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used (Yin, 1984).

SD can organise descriptive information, retain the richness of the real processes, build on the experiential knowledge of managers, and reveal the variety of dynamic behaviours that follow from different choices of policies. SD is fully adopted to moving beyond the case study. A case study starts in the same way as a SD analysis, by gathering and organising information from the actual managerial setting, but the case study leaves that information in a descriptive form that cannot reliably cope with the dynamic complexity that is involved (Forrester, 1995).

The method used to connect SD methodology to the real context, that is the case study, will be DPM (Bianchi, 2010, 2012, 2015). Such a method provides the "high road" to analyse, investigate, and set an organisation by defining its own action plan and policies.

3.3 Case study analysis

A "case" is to an event, an entity, an individual or even a unit of analysis. It involves an empirical enquiry that investigates a contemporary phenomenon within its real-life context using multiple sources of evidence (Yin, 1989). Case studies offer the opportunity for a holistic view of a process, as opposed to a reductionist-fragmented view. According to the holistic view, the whole is not identical with the sum of its parts; consequently, the whole can only be understood by treating it as the central object of study (Gummesson, 1991).

Anderson (1993) sees case studies as being concerned with how and why things happen, allowing the investigation of contextual realities and the differences between what was planned and what actually occurred. Case study is not intended as a study of the entire organisation,

rather is intended to focus on a particular issue, feature or unit of analysis.

This method enables an understanding of the complex real-life activities in which multiple sources of evidence were used. The used of case study to probe an area of interest in depth is particularly appropriate, as described by Patton (1987). Case studies become particularly useful where one needs to understand some particular problem or situation in great depth, and where one can identify cases rich in information (Noor, 2008).

In spite of their frequent use and long history, case studies have historically been stereotyped as the weak sibling among social science methods (Yin, 1984). Investigators who utilise case studies are regarded as having deviated from their academic disciplines, and their investigations are purported to lack precision, objectivity and rigour. A major reason why case studies are seen in a negative light is that many equate "precision, objectivity and rigor" with quantitative measures (Patton and Appelbaum, 2003).

Hamel (1993) emphasises that the case study has been strongly faulted due to: 1) its lack or representativeness as a point of observation for a social phenomenon, and 2) its lack of rigour in the collection, construction, and analysis of the empirical materials that give rise to a study. The first criticism concerns the view that generalisations cannot be made on the basis of case studies, while the lack of rigour criticism is linked to the problem of bias, which is introduced by the subjectivity of the researcher and that of the field informants on whom the researcher relies to gain an understanding of the case.

In general, case studies are the preferred strategy when the investigator has little control over events and when the focus is on a contemporary phenomenon within some real-life context (Yin, 1984). Yin identifies at least four different applications for case studies:

1. To explain the causal links in real-life interventions that are too complex for the survey or experimental strategies. The difference with the natural science approach in terms of explanation is that, while the natural sciences seek to explain universal truths, case

studies strive to explain the particular case at hand with the possibility of coming to broader conclusions;

2. To describe the real-life context in which an intervention has occurred;

3. A descriptive case study of an intervention can serve as an evaluation tool;

4. The case study strategy may be used to explore those situations in which the intervention being evaluated has no clear, single set of outcomes.

The harshest criticisms of the case study approach have revolved around the question of validity. Case studies are accused of being subjective, lacking rigour and yielding findings that cannot be generalised across settings. In terms of generalisation, many state that you cannot generalise from a single case and that case studies are only useful for creating hypotheses, and not for testing them (Patton and Appelbaum, 2003).

Case studies are also criticised for their lack of rigour due to the lack of standard methodological procedures, however, it could be argued that the lack of pre-determined steps makes case studies harder and more demanding. As previously stated, case studies utilise a plethora of data collection methods including observation, interviews, histories and quantitative measures. Rather than lacking rigour, data collection is labour-intensive, can last months or even years, and data overload seems almost inevitable (Miles, 1990).

Patton and Appelbaum (2003), through the works of Stake (1995), Hamel (1993) and Eisenhardt (1989), in particular, draft a clear vision of what activities need to be undertaken in order to conduct a proper and useful case study. Such a roadmap can be summarised in the following points:

1. Determine the object of study: the first crucial step is for the researcher to decide what topic the case will focus on. It is important for the object of study to be broadly defined so that the researcher will have room to manoeuvre and allow the case to lead them in new directions, however, it is important for the aims of the research to be

outlined and tentative hypotheses to be constructed.

2. Select the case: case study research does not rely on random sampling techniques. Rather, the case study researcher must strategically select a case that is pertinent to the object of study and that will allow the subject to be investigated fully.

3. Build initial theory through a literature review: the existing literature on the object of study helps frame the case study and is important for establishing validity in the research and confidence in the findings. If the theories and hypotheses in the existent literature coincide with the findings of the case, than confidence in the findings will be increased. If the results of the case do not coincide with the literature on the subject, however, then an excellent opportunity arises to determine why, and perhaps develop new theory. As Eisenhardt (1989) emphasises, tying emergent theory to existing literature enhances the internal validity, generalisability, and theoretical level of theory building from case study research.

4. Collecting and organising the data gathering: To avoid being overwhelmed with mountains of data, instruments and protocols should be established for the collection of data. While data collection is a constant process of grasping good opportunities as well as setting structured plans for observing events, interviewing sources and reviewing documentation, it is important that the focus remain on the object of study.

5. Analysing the data and reaching conclusions: once again, there is a danger of being overwhelmed by the quantity of data during the analysis phase. The ultimate goal of the case study is to uncover patterns, determine meanings, construct conclusions and build theory. As previously underlined, rich description is a crucial step before conclusions can be offered. Once context is determined, the data can be examined properly and findings can be presented. The quality of the context description, creating links back to the literature, and triangulation will all play a crucial role in determining the validity of

the research.

In spite of the criticism that properly designed case studies lack rigour, case studies are valuable and have traditionally been considered "soft" research (Yin, 1984). SD can support, integrate and improve the research activity, starting with the analysis of a real organisation.

3.4 System dynamics methodology

3.4.1 The system dynamics founder

Jay W. Forrester[31] is the father of system dynamics; he laid the foundations of the methodology at the Massachusetts Institute of Technology (MIT) in the end of 1950s. He did the first simulations using pencil and paper on one notebook page. He noted that there was potential for an oscillatory or unstable system that was entirely internally determined. Those first attempts to control a system using pencil and paper simulation were the beginning of system dynamics. When he was writing the 1958 article, "Industrial Dynamics — A Major Breakthrough for Decision Makers" for the Harvard Business Review, Forrester needed computer simulations and he defined the equations so that he could run them on a computer and model the phenomenon under study.

As seen in the previous chapter, the 1960s were years of widespread operations research in the

[31] It is with great sadness that System Dynamics Italian Chapter report the System Dynamics Society announces that Jay W. Forrester, Professor of Management Emeritus at MIT, has died at the age of 98 on November 16, 2016. Jay founded what became the field of System Dynamics in 1956 and has had a profound and lasting influence on it throughout its 60-year history. A lifelong innovator, Jay was a pioneer in digital computing and helped create the computer age in which we all live today. Trained in electrical engineering, Jay came to MIT in 1939, where he worked on feedback control servomechanisms during World War II. After the war, Jay directed the MIT Digital Computer Laboratory, where he led the design and construction of Whirlwind I, one of the world's first high-speed digital computers. He invented and holds the patent for magnetic core memory, the dominant form of random access memory (RAM) for decades (even travelling to the moon with the Apollo astronauts), until it was eventually replaced by semiconductors. Whirlwind became the basis for many innovations, from numerically controlled machine tools to SAGE, the first integrated continental air defense system. Invited to join the faculty of the MIT Sloan School of Management in 1956, Jay created the field of System Dynamics to apply engineering concepts of feedback systems and digital simulation to understand what he famously called "the counterintuitive behavior of social systems." His groundbreaking 1961 book, Industrial Dynamics, remains a clear and relevant statement of philosophy and methodology in the field. His later books and his numerous articles broke new ground in our understanding of complex human systems and policy problems (http://www.systemdynamics.it).

management environment, and even Forrester was enthralled‘ he left engineering and embraced management studies. Later, Forrester (1995) declared that the field of operations research seemed interesting; it no doubt was useful; but it was not working with issues that made the difference between corporate success and failure. Operations research did not have that practical importance that I had always worked toward.

Forrester developed SD methodology to work anywhere, and everyone raises a number of problems. From the beginning of his management studies, Forrester developed seminal publications in system dynamics, which represented the groundwork and framework for SD methodology for next decades.

3.4.2 The methodology

Case-studies typically combine data collection methods such as archival searches, interviews, questionnaires, and observation (Eisenhardt, 1989). While quantitative data often appears in case studies, qualitative data usually predominates (Patton and Appelbaum, 2003). Case study methodology collects information, analyses it, describes the actual condition, and may propose alternative paths. Such a method can design new policies but equally under uncertainties. SD methodology puts in place a powerful tool in order to support researchers, managers (both private and public sector), and elected officials to better analyse and draft new policies.

As Lane (1993) points out, it is surely a fallacy to propose, implicitly or explicitly, that any single tool or approach can be used in all cases. The notion that any tool might be a panacea is chimerical. Since clients do not wish to be sold tools, but rather have problems studied, they are surely better served by flexibility. Nevertheless, SD methodology is highly successful in complex environments, and it could be used by (private and public) managers coping with the unfolding complexities and high velocity of organisational life.

The availability of data and information, the specific analysis of phenomena, the accurate studies of contexts, and the precise definition of the structures, enable a strong linked of system

dynamics models to real-world phenomena and practices. Forrester developed such a new methodology which enables managers of all fields and at any level to deal with the subtleties and confusions of the situations they face. His seminal works established the now widely accepted distinction between systems thinking, in which parts of the real world are taken to be systems which can be reproduced by a computer simulator, and the more static approach in which the focus is on mainly data and end-results.

In his banquet talk at the international meeting of the System Dynamics Society 1989[32], Forrester explained that in management education we should look forward to a major breakthrough in scope and effectiveness when SD is fully adopted to move beyond the case study method of teaching managers. Case studies were pioneered by the Harvard Business School, around 1910. That approach is widely used around the world. A case study starts in the same way as a SD analysis, by gathering and organising information from the actual managerial setting, but the case study leaves that information in a descriptive form that cannot reliably cope with the dynamic complexity that is involved. SD modelling can organise the descriptive information, retain the richness of the real processes, build on the experiential knowledge of managers, and reveal the variety of dynamic behaviours that follow from different choices of policies. SD methodology also allows researchers and managers to improve the process of enquiry into real-world complexity, it is itself a system for learning by which increasing and structuring the knowledge.

Systems (social, political, economic, management, and so on) can be classified as "open" or "feedback". An open system does not strive for an objective and past actions do not affect future actions. An open system is characterised by output that responds to input, but where the output is isolated from and has no influence on the input. Such a system operates without a

[32] The banquet talk "The Beginning of System Dynamics" held by Jay W. Forrester at the international meeting of the System Dynamics Society of Stuttgart, Germany July 13, l989 published in 1995.

governor. A feedback system (sometimes called a closed system), is influenced by its own past behaviour, and pursues a goal. A feedback system – adding a governor – controls actions based on the results from previous actions. One class of feedback system seeks a goal and responds as a consequence of failing to achieve the goal, that is negative feedback. Another class generates growth processes wherein action builds a result that generates still greater action, which is positive feedback (Forrester, 1968: 1-5). It is in the positive feedback form of system structure that one finds the forces of growth. It is in negative feedback, or goal-seeking, structure of systems that one finds the causes of fluctuation and instability. Whether a system should be classified as an open system or a feedback system is not intrinsic to the particular assembly of parts but depends on the observer's viewpoint in defining the purpose of the system. A broad purpose may imply a feedback system with many components, but each component can itself be a feedback system in terms of some subordinate purpose. One must then recognise a hierarchy of feedback structures where the broadest purpose of interest determines the scope of the pertinent system.

A feedback system has a closed loop structure that brings results from the past action of the system back to control future action. The feedback loop is a closed path connecting in sequence a decision that controls action, the level (namely the state or condition of the system) of the system, and information about the level of the system, the latter returning to the decision-making point (Forrester, 1968: 1-7). A negative-feedback loop is a loop in which the control decision attempts to adjust some system level to a value given by a goal introduced from outside the loop (Forrester, 1968: 2-9). A positive-feedback loop does not seek an externally determined goal as does the negative-feedback loop. Instead, the positive-feedback loop diverges or moves away from the "goal" (Forrester, 1968: 2-16).

SD is a method for studying and managing complex information feedback systems (Forrester, 1961; Sterman, 2000).

When studying the structure and behaviour of a complex system, it is necessary to engage in an iterative process of developing and refining a computer model and, at the same time, updating one's mental image of the system under study (Wheat, 2010). There is also a strong connection between the real world and the world of mathematics (Forrester, 1968: 6-11). Representing a system in terms of integral equations gives a more immediate and evident equivalence between the model and the real system. Such an emphasis on integration is plausible when one notes that all the processes of nature are the processes of integrations (Forrester, 1968: 6-12).

To show relationships between the parts and to accentuate the loop structure of a system, a flow diagram is best. The flow diagram helps most when it provides new insights. It need not repeat the detail that lies within each equation, but it should give a broader perspective. The flow diagram should show how levels and rates are interconnected to produce the feedback loops, and how the feedback loops interlink to create the system. The flow diagram should show the level, rate and auxiliary equations, and how they are interconnected.

Levels (Integrations). All level equations, and any special functions that also involve integration, will be represented by a rectangle. The simple level equation, as in figure 7 is identified by the rectangle, the rates in and out that are being integrated, the symbol group representing the variable, the full name of the variable for easy communication, and the equation number as a cross reference to the formal definition of the model in the equation set (Forrester, 1968: 7-1). The solution interval DT appears only in the level equation. The proper length of the solution interval is related to the shortest delays that are represented in the model. As a practical rule-of-thumb, the solution interval should be half or less of the shortest first-order delay in the system (Forrester, 1968: 6-3).

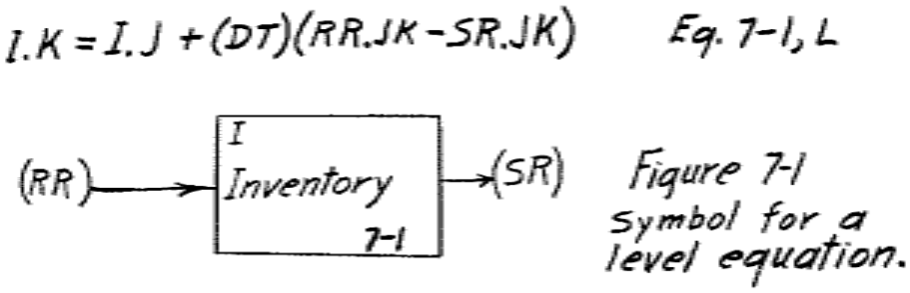


Figure 7: Symbol for a level equation (Forrester, 1968: 7-2).

Rates (policies): Rate equations are the policy statements that define the flow streams in a system. A rate equation receives only information as its input and controls a rate flow. As such, it serves as a valve in a hydraulic system, and a symbolic valve is used to represent a rate. The rate is identified as in figure 8, which shows an equation and its valve symbol in the flow diagram. The symbol should show the letter group representing the variable and its full name, the equation number, and the information input on which the rate depends (Forrester, 1968: 7-2).

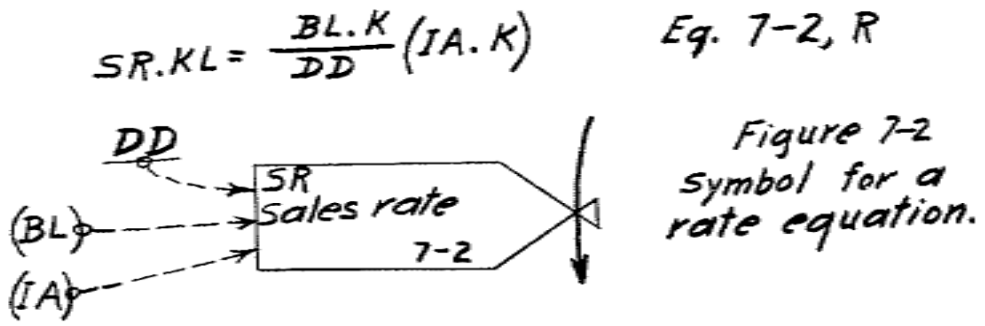


Figure 8: Symbol for a rate equation (Forrester, 1968: 7-2).

Auxiliary Variables. The auxiliary variables lie in the information channels between the level variables and the rates. They are parts of the rate equations, subdivided and separated because they express concepts that have independent meaning. Figure 8 shows an auxiliary equation and corresponding flow diagram symbol. The symbol shows an auxiliary with a circle, the abbreviation of the variable and its name, the equation number, and the input and output

information streams. (Forrester, 1968: 7-2, 7-3).

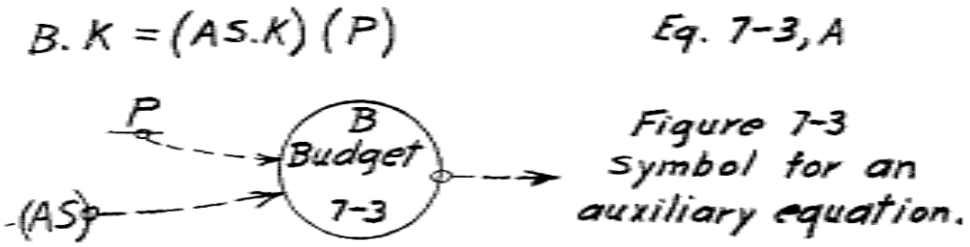


Figure 9: Symbol for an auxiliary equation (Forrester, 1968, 7-3).

Flow Lines. A variety of flow lines clarify a diagram by distinguishing between classes of variables. Flows occur in subsystems representing the different "conserved" variables showing quantities that are moved from place to place in the system. Information connections occur in a "non-conserved" subsystem in which information can be used without depleting the source. The six flow lines in figure 10 are useful to represent many classifications of real-system variables. The information network has a unique status, but the other five are arbitrary subdivisions into which actual management-system variables usually fit conveniently and which may need redefining for other kinds of systems (Forrester, 1968: 7-3).

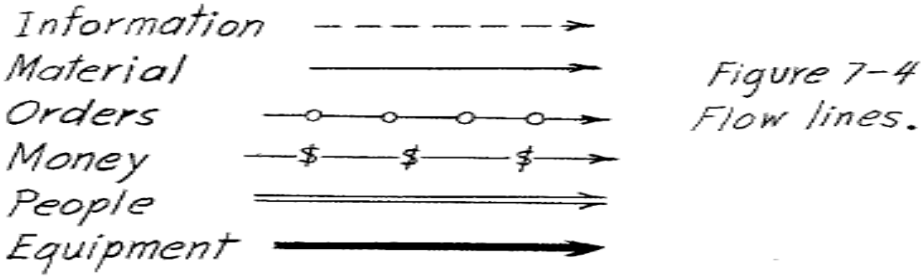


Figure 10: Flow lines (Forrester, 1968: 7-3).

Information take-off. Lines that indicate information transfer from a level should be distinguished from lines that represent the flow of the content of the level. A flow connection moves a quantity from one location to another and is controlled by a rate equation, but information about a variable can be taken without affecting or depleting that variable. Figure 11 shows a small circle at the information take-off. This small circle represents not removal of

the content of the symbol, but only the transfer of information about the magnitude of the content. Although the information take-off indicator will be used at the beginning of all information lines, it is critical only where information is being taken about a level variable that is itself a part of the information network. Otherwise, the information take-off indicator is redundant. No depletion type of flow could occur from a rate or auxiliary variable, so only information connections are possible. No information flow, only information take-off, could exist at a level which is not itself information. For example, an information line leaving an inventory can only be an information take-off because the transport flow would be shown by a material-flow line (Forrester, 1968: 7-4).

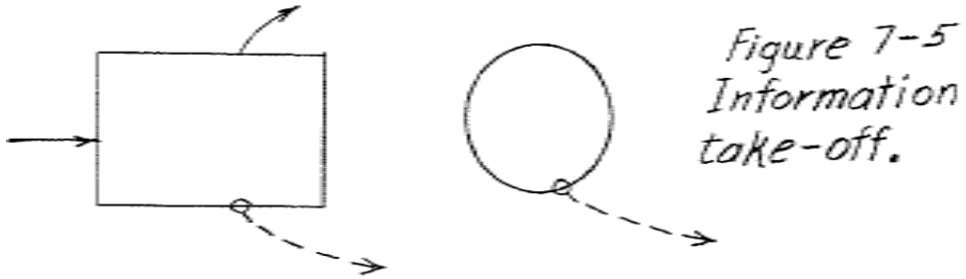


Figure 11: Information take-off (Forrester, 1968: 7-4).

Parameters (Constants). Parameters are those values which are constant throughout a simulation run. They can, of course, be changed between successive simulations. As in figure 12, the parameter is shown with an underline or overline with an information take-off. The name of the parameter should appear beside its abbreviation. Parameters are always information input for rates, either directly or by way of auxiliary equations (Forrester, 1968: 7-4).

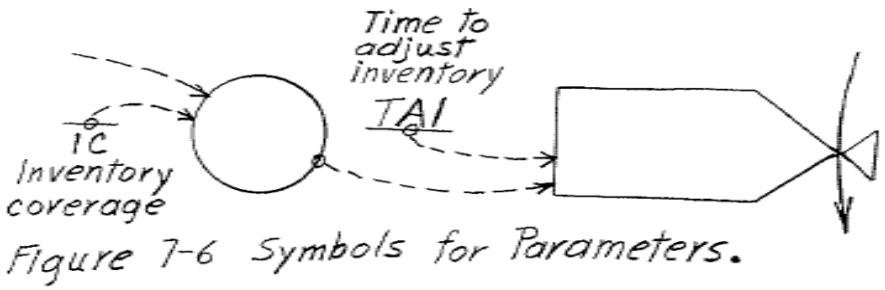


Figure 12: Symbols for parameters (Forrester, 1968: 7-5).

Sources and Sinks. When the source of a flow exerts no influence on the system, the flow is shown as coming from an "infinite" source. An infinite source cannot be exhausted. For the purposes of the particular model, it will yield any flow that the model equations demand. Figure 13 shows such a non-active source and the converse sink for terminating flow lines when they cross the model boundary (Forrester, 1968: 7-5).

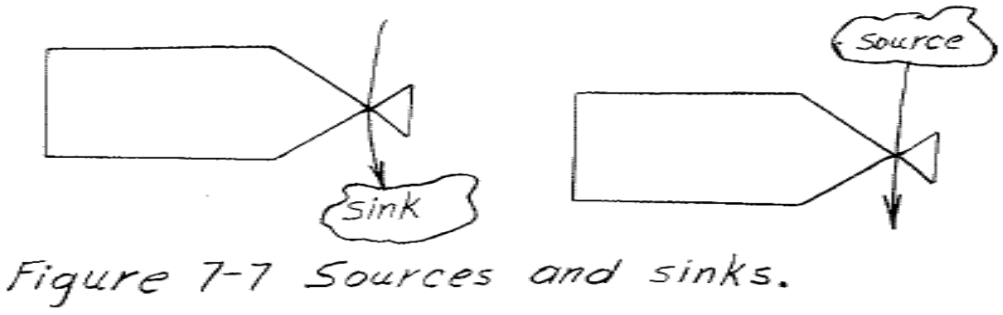


Figure 13: Sources and sinks (Forrester, 1968: 7-5).

Variables from Other Diagrams. The flow diagrams of a system may extend over several pages. The flow lines and information transfers that cross from one page to another should be identified, as in figure 14, by origin and destination, giving name, abbreviation, equation number, and type of equation (Forrester, 1968: 7-6).

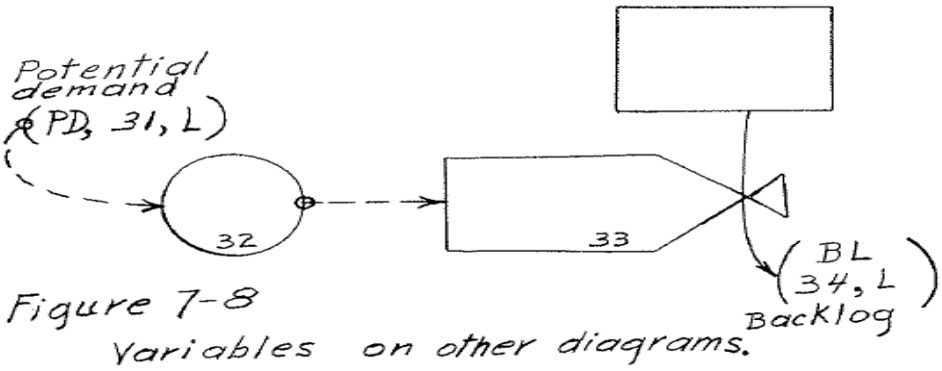


Figure 14: Variables in other diagrams (Forrester, 1968: 7-6).

In an equation, all terms must be measured in the same dimensions. Terms having different units of measure within an equation indicate a faulty equation formulation (Forrester, 1968: 6-2).

Forrester, defined the symbols and equations of SD methodology, and started to run his models on a computer, by means of a computer program called Dynamo. The Dynamo compiler accepts the equations for the model of a dynamic feedback system and produces the requested simulation results as numerical tables and graphical plots. Dynamo has been designed to execute models that follow the structure and equation conventions of SD. The Dynamo compiler accepts a model written in the form of level, rate, and associated equations, using the time postscript conventions as described above (Forrester, 1968: 8-1).

Forrester (1968: 8-6) also explains that Dynamo by itself guarantees neither. Dynamo is only a tool for handling SD models. By itself, it is ineffective unless the model formulation is soundly conceived and properly related to the real-world system that the model represents so that other computer compilers can be used to implement the same model concepts.

More recently, various modern computer compilers are used to implement the same model concepts. These modern versions of Dynamo contain front end packages that allow users to interact more easily and directly with a simulation model once it has been created (Vennix *et al.*, 1992). The most relevant and commonly used worldwide are the Isee System, Powersim

Studio, and Vensim. Their website home pages shows the following messages:

1. ISEE SYSTEM:

Isee Systems is dedicated to increasing our understanding of the world through modelling and simulation software. Isee Systems is a leading developer and manufacturer of systems thinking and dynamic modelling software. Founded in 1985 by renowned systems thinking practitioner Barry Richmond, Isee Systems has grown to be a thriving company with substantial global reach in a variety of markets.

2. POWERSIM STUDIO:

Powersim Studio 10 Simulation Tools:

- Build models using the system dynamics approach
- Run what-if scenarios and undertake policy design
- Quickly assemble a flexible user interface
- Connect to MS Excel or different databases.

3. VENSIM:

Industrial strength simulation software for improving the performance of real systems. Vensim's rich feature set emphasises model quality, connections to data, flexible distribution, and advanced algorithms. Configurations for everyone from students to professionals.

The common contents of these software presentations emphasise the basic idea of the SD founder: the ability of a model to stand for real phenomena in order to better understand and improve the world.

The following table portrays the development of SD iconography:

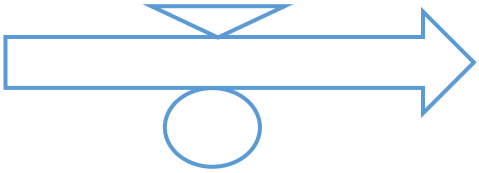
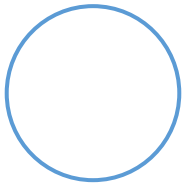
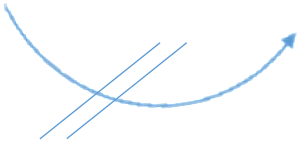
System Dynamics Iconography	Description
	A stock (or level) is a given quantity of material or immaterial accumulation in a certain moment in time. A stock depends on its own past value, it represents the accumulations in a system.
	A flow is a stream of material or immaterial quantity which increases or decreases a stock over a period of time. A flow transports a quantity from one level to another (or to or from a source or sink).
	An auxiliary variable is a subdivision of a rate equation and must lie in an information link that connects a level to the rate. Auxiliary equations are subdivided parts of the rate equations and can only exist in the information links.
	The arrow indicates causal relationships. The arrow represents information links. Information links are input for rate equations.
	Time delay in causal relationships.

Table 2: System dynamics iconography.

Due to the complexity, the dynamism, and the heterogeneity of the daily lives experienced by organisations (i.e., family, business, public institution, and so on), scholars see SD as a suitable and powerful tool that is able to cope with many relationships, feedbacks, delays, and trade-offs (see, *ex multis*, Forrester 1961, 1968; Meadows *et al.* 1974; Morecroft 1985, 1998; Senge 1990; Sterman, 1994, 2000, 2001).

According to Sterman (2001), dynamic complexity arises because systems are:

1. Constantly Changing: Heraclitus said, "All is change." What appears to be

unchanging is, over a longer time horizon, seen to vary. Change in systems occurs at many time scales, and these different scales sometimes interact. A star evolves over billions of years as it burns its hydrogen fuel, then can explode as a supernova in seconds. Bull markets can go on for years, then crash in a matter of hours.

2. Tightly Coupled: The actors in a system interact strongly with one another and with the natural world. Everything is connected to everything else. As a famous bumper sticker from the 1960s proclaimed, "You can't do just one thing."

3. Governed by Feedback: Because of the tight couplings among actors, our actions feedback on themselves. Our decisions alter the state of the world, causing changes in nature and triggering others to act, thus giving rise to a new situation which then influences our next decisions. Dynamics arise from this feedback.

4. Nonlinear: Effect is rarely proportional to cause, and what happens locally in a system (near the current operating point) often does not apply in distant regions (other states of the system). Nonlinearity often arises from the basic physics of systems: insufficient inventory may cause you to boost production, but production can never fall below zero no matter how much excess inventory you have. Nonlinearity also arises as multiple factors interact in decision making: pressure from the boss for greater achievement increases your motivation and effort — up to the point where you perceive the goal to be impossible. Frustration then dominates motivation — and you give up or get a new boss.

5. History-Dependent: Taking one road often precludes taking others and determines where you end up (path dependence). Many actions are irreversible: you can't unscramble an egg (the second law of thermodynamics). Stocks and flows (accumulations) and long time delays often mean that doing and undoing have fundamentally different time constants: during the 50 years of the Cold War arms

race, the nuclear nations created more than 250 tons of weapons-grade plutonium (239Pu). The half-life of 239Pu is about 24,000 years.

6. Self-Organising: The dynamics of systems arise spontaneously from their internal structure. Often, small, random perturbations are amplified and moulded by the feedback structure, generating patterns in space and time and creating path dependence. The pattern of stripes on a zebra, the rhythmic contraction of your heart, the persistent cycles in the real estate market, and structures such as sea shells and markets all emerge spontaneously from the feedback among the agents and elements of the system.

7. Adaptive: The capabilities and decision rules of the agents in complex systems change over time. Evolution leads to selection and the proliferation of some agents, while others become extinct. Adaptation also occurs as people learn from experience, especially as they learn new ways to achieve their goals in the face of obstacles. Learning is not always beneficial, however.

8. Characterised by Trade-Offs: Time delays in feedback channels mean the long-term response of a system to an intervention is often different from its short-term response. High leverage policies often cause worse-before-better behaviour, while low leverage policies often generate transitory improvement before the problem grows worse.

9. Counterintuitive: In complex systems, cause and effect are distant in time and space, and we tend to look for causes near the events we seek to explain. Our attention is drawn to the symptoms of difficulty rather than the underlying cause. High leverage policies are often not obvious.

10. Policy Resistant: The complexity of the systems in which we are embedded overwhelms our ability to understand them. The result is that many apparently

obvious solutions to problems fail or actually worsen the situation.

The experiences of daily routines also show how hard it is to recognise just one of these features affecting our choices. Frequently, people identify the effects of phenomena; rarely, are people able to link them to the *aitia*, that is, the remote causes. Sometimes, people fail to recognise the cause of an event because it is an effect of some still earlier cause. Consequently, in order to study the structure and behaviour of a complex system, it is necessary to engage in an iterative process of developing and refining a computer model and, at the same time, updating one's mental image of the system under study. The computer modelling and all the associated tasks, including feedback loop diagramming, are merely means to an end to improve abilities to correctly envision, describe, and explain a process (Wheat, 2010).

This first phase of SD approach allows decision-makers to review and (re-)shape their own mental models, their own perceptions of reality, their own awareness, and their own reactions to complexity dynamic. In fact, the mental image of the world around us that we carry in our heads is a model. No one has a city or a government, or a country in their head. They have only selected concepts and relationships, which they use to represent the real system (Forrester, 1971: 3). Each person carries in their head a mental model, an abstraction of all their perceptions and experiences in the world, which they use to guide their decisions (Meadows *et al.*, 1974: 3).

Managers used to make decisions based on past behaviour from series data and historical records (Forrester, 1980; Saeed, 1992), as well as other sources or events which they consider credible and reliable. Such an assessment process is often based on their own experience, bias, and culture without a basic critical examination.

To that extent, human affairs are conducted primarily from the mental database. Information in people's heads is far more extensive than other stores of information. Anyone who doubts the dominant scope of remembered information should imagine what would happen to an

industrial society if it were deprived of all the knowledge in people's heads and if actions were guided only by written policies and numerical information. If the mental database is so important for the conduct of human systems, then a model of such systems must reflect the knowledge of policies and the structure that resides only in the mental data. Effective model building must draw on the mental database. With a framework into which facts can be placed, learning becomes more relevant and meaningful (Forrester, 1992). When studying a complex phenomenon in a dynamic environment such as a (private or public) organisation, therefore, SD methodology becomes itself a method with which to develop a relevant phase of learning (see *ex multis*, Sterman, 1994). Specifically, we shall assume that a learning environment that integrates system dynamics models and simulations can facilitate learning (Davidson *et al.*, 1999).

Sterman (2000) notes that modelling is not a simple activity that reveals the answer, but an ongoing process of continually cycling between the virtual world of the model and the real world of action.

In order to build and calibrate a proper model structure, SD thus needs to use multiple streams of information, including quantitative data, written records, and information contained in the mental models of both individuals and groups. Gummesson (1991) explains that in case study analysis, a researcher's ability is to access and get close to the object of study in order to truly find out what is happening, but points out how business executives try to limit the access of external people and try to hide what is really taking place, usually for self-serving reasons. Vennix *et al.* (1992) identify five factors that help the modeler to select appropriate knowledge elicitation techniques:

1. the phase in the model-building process and the type of task being performed,
2. the number of persons involved in the process,
3. the purpose of the modelling effort,

4. the time available for participants,

5. the costs involved in using various techniques.

Vennix (1996: 3) argues that SD can be used as a method to systematically elicit and share mental models in teams, since the process of building a model starts from the different perceptions of the participants. Based on the idea that people's mental models are limited by human information processing capabilities, SD can be helpful to elicit and integrate mental models into a more holistic view of the problem and to explore the dynamics of this holistic view. In that sense, Vennix (1996: 3) explains that the primary goal is not to build a model of the system, but rather to get a group engaged in building a SD model. He defines such an approach as group model-building, that is, a process in which team members exchange their perceptions in order to identify the specific problem, determine the origins of the problematic situations, understand the underlying causes, and explore how the problems can be effectively tackled. Group model building enables getting to know people, the organisation and how such a structure works.

SD methodology (and the group model building approach) relies on open and forthright discussion with a full exchange of information, in face-to-face and group meetings, to identify the structure of an organisation, how it works, the internal relationships, and the potential influences on decision making. Sometimes there are little evidence of the hidden conflicts which are influencing behaviour. SD can often bring to light such internal fights, rivalry, imbalances among sectors or departments, misrepresentation, wrong use of human resources, lack of planning, and financial shortages.

SD uses this stream of withholding information in order to improve organisation behaviour and foster a proactive management. SD thus seems ideally suited to introducing the concept of reflective practice to the teaching of management and planning (Saeed, 1989).

In particular, Forrester (1992) notes that management is the process of converting information

into action. We call this conversion process decision making. Decision making is controlled by various explicit and implicit policies through which available information is interpreted. The input to a decision-making process is the available information, the output is the action. Management success depends primarily on what information is chosen and how the conversion is executed. SD thus creates a close interaction with policy makers or managers, both private and public. In fact, by means of SD models, decision-makers can elicit their mental models, test their conversion processes (i.e. policies), and evaluate their "performance in accomplishing its objectives" (Ridley and Simon, 1938: 2).

Performance (of management) is the measure of a system, such as its profitability, employment stability, market penetration, product cost, company growth, price fluctuation, investment required, and cash position variations, which are those characteristics that indicate the "desirability" of system operation (Forrester, 1961: 116). SD is able to frame dynamic complexity in the case of trade-offs and delays, as well as support performance-based management in the phases of measurement of input, output and outcome.

From the perspective described, SD modelling can support the planning process and performance management, since it allows policy makers to track outcome measures, and conversely to identify the output and intermediate results affecting them. Their identification allows policy makers to further proceed backwards, by outlining: (1) the resources affecting performance targets, (2) policy levers, (3) constraints, and (4) decisions (Bianchi, 2016: 25-26).

The next section explains a dynamic performance management approach combining SD modelling and performance management.

3.5 Applying system dynamics to performance management: a dynamic performance management

SD modelling can play a crucial role in enriching performance management, and fostering a common shared view of a system's structure and behaviour among stakeholders in local strategic planning and execution (Bianchi, 2016: 20). This methodology offers important insights regarding identification of the scope of the problem, and simulations of plotter charts of how stocks and flows have changed over time, and might change in future.

In SD, several existing procedures, offered by key sources (Lane, 1994; Vennix, 1996; Sterman, 2000; Morecroft, 2007; Pruyt, 2013), demonstrate considerable similarity regarding how system dynamics models should be developed, even in the field of management studies. Bianchi (2012, 2016) combines SD methodology with performance management[33], that is dynamics performance management (DPM), in order to support decision-makers.

The DPM approach enables organization decision makers to frame the causal mechanisms affecting organisational results over time (Bianchi, 2016: 71). The goal of DPM is to: (1) perceive the current state of the organisational system, (2) sketch — through system mapping — a model that may explain the hidden feedback structure underlying detected behaviour, (3) outline — through planning — a desired system state, and (4) implement the plan and undertake corrective action through feedback and feedforward control.

A DPM approach supports decision-makers when it comes to handling strategic resources in a sustainable way, and coordinating all sectors of the organisation to attain long-term goals. SD modelling is thus used to support an understanding of: (1) how end-results can be affected by performance drivers; (2) how performance drivers can, in turn, be affected by the use of policy

[33] Performance measurement documents whether an organization is reaching its goals and facilitates accountability and transparency. Performance measurement ought to be connected to the decisonmaking. Data should lead to questions about what drivers performance and an understanding of the value of measurement for organizational learning. Results from hypothesis testing ought to alter managerial operations and improve performance. Thus, performance management should be promoted by culture of performence measurement and best practice (Sanger 2012, 3).

levers aiming to influence strategic resource accumulation and depletion processes; and (3) how the flows of strategic resources are affected by end-results (Bianchi, 2016: 72). End-results should include both output and outcome measures. Since both kinds of indicators are flow variables, their units of measurement are defined as a ratio between: (1) the measure of the affected strategic resource (stock), and (2) time. Although the metrics for measuring them are the same, there are strong differences between the two of them (Bianchi, 2016: 75). As noted by Ammons (2013), output measures focus only on the question of "how many" or "how much". For city governments such measures come in the form of raw counts of tasks or activities (for instance, applications processed, incidents handled, potholes patched, arrests made, and clients served). Outcome, instead, addresses questions of "how well," "how efficiently," and "to what effect". Outcome measures demonstrate the aptitude of the recorded output to: provide users with the desired service levels (e.g. quality, time, scope, and price), or to generate a change in the endowment of strategic resources shared by different institutions in a region. Though both types of performance indicators are end-results for an organisation, outcome measures imply that a longer time horizon and broader system boundaries have been adopted to measure and manage them, with respect to output indicators (Bianchi, 2016: 76).

In their statement about public governance, Bovaird and Loffler (2003: 316) incidentally confer the same wide scope on the significance of outcome. They define public governance as the ways in which stakeholders interact with each other in order to influence the outcomes of public policies. Thus, "good governance" is considered to be negotiation by all the stakeholders on an issue (or area) of improved public policy outcomes and agreed governance principles, which are both implemented and regularly evaluated by all stakeholders. As a consequence, outcome measures become more important in the public sector than in the private sector, especially at local level. Bovaird (2009: 75) lists the key differences that arise from the political context in which public sector organisations work:

1. the roles of politicians, who often openly clash on major strategic issues;
2. the interaction between politicians and other stakeholders, e.g. the media;
3. the pressure for "short-termist" decision-making arising from regular elections.

Bianchi and Tomaselli (2015) use SD modelling to enrich performance management in local government, and to foster a common shared view of the system's structure and behaviour among stakeholders in local strategic planning. As shown in their case study, a DPM approach can be helpful to change the mental models of the key-actors in an area, to perceive long-term performance not only assessed on financial terms or bounded to output measures, but also in relation to the outcomes that public services will generate, in terms of the value transferred to their own geographic areas. This helps the key players in an area to overcome possible barriers to collaboration, and therefore to adopt a combined "institutional and inter-institutional" perspective of performance. In fact, it can enable each institution in a geographic area to identify how pursuing the sustainable development of the area may impact on its growth sustainability.

Bianchi (2010) analyses the benefits justifying a tailored approach to SD modelling in the public sector, to improve its performance and foster the accountability of decision makers. He highlights how public sector performance has a major impact on the quality of life and may constitute either an acceleration factor or a constraint to the growth of the socio-economic sectors profiling a given territory. Such a perspective combines an "external" with an "internal" view of SD modelling in the public sector.

At local level, a DPM approach can thus improve internal coordination among different departments and external dialogue between public institutions and private subjects operating in the local area.

To do that, an objective view, an instrumental view, and a subjective view must be analysed (Bianchi, 2010).

The objective view implies that the "products" (i.e. public services) generated by administrative tasks are made explicit (figure 15). Products are not the output of a production function, which is transferred to external clients as the object and goal of commercial transactions, rather, products are the output of administrative tasks, aiming to deliver a value to either external or internal "clients", with respect to the player that is taken into account.

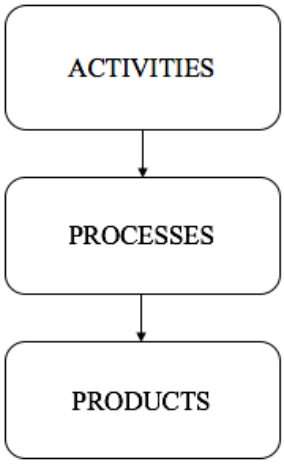


Figure 15: Dynamic performance management objectives view (from Bianchi 2010)

Related to the above objective view, the instrumental view (figure 16) implies that alternative means to improve performance, in relation to a specific product, are made explicit. In this regard, it is necessary to identify performance measures related to both end-results and the respective drivers.

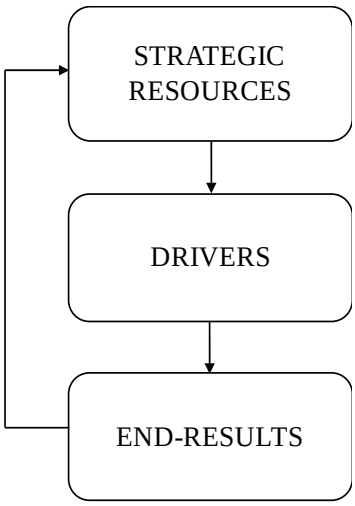


Figure 16: Dynamic Performance Management Instrumental View (from Bianchi 2010)

In order to affect such drivers, each responsibility area is expected to build up, preserve and deploy a proper endowment of strategic resources, systemically linked to each other. Managing strategic resources to affect the performance drivers and end-results related to a given responsibility area is a dynamic and complex task. In fact, intangible resources are difficult to identify and measure. The accumulation and draining processes affecting the dynamics of strategic resources are inertial, since delays underlying them are difficult for decision makers to perceive, and effects generated by actions taken (or not taken) in a recent or remote past are intertwined with each other, and single causes cannot be easily matched to related effects (Warren, 2008).

Finally, the subjective view (figure 17) provides a synthesis of the previous two views, since it makes explicit, as a function of the pursued results, the activities to undertake, and the related objectives (and performance targets) to include in the plans and budgets for each decision area. This view requires that the performance measures associated with the delivery of organisation products are made explicit, and then linked to the goals and objectives of decision makers operating in different areas of responsibility.

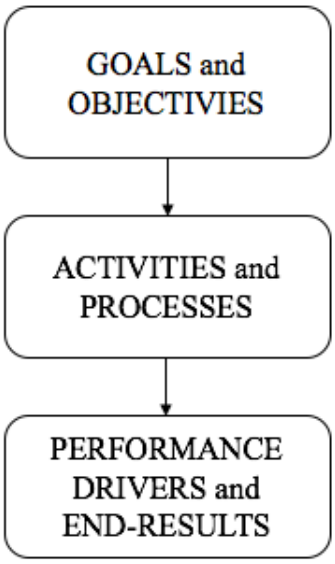


Figure 17: Dynamic Performance Management Subject View (from Bianchi 2010)

Performance measures can be first expressed in terms of outcomes and related drivers. While outcome performance indicators are a synthetic measure of final results, performance drivers are a measure of the intermediate results which affect the corresponding outcome indicators in a longer time horizon (Kaplan and Norton, 1996).

These three standpoints are totally in line with SD methodology, which can be applied to any social and economic phenomenon by taking into account every internal element and relationship but without omitting its connections to the external environment.

Chapter 4

Catania local government case study

4.1 Catania city

Catania is a wonderful city, famous the world over for the Etna volcano that looms over the city like a maternal menace. Etna has been both the cause of Catania's destruction and the vital source of the construction of the city, as much of the black volcanic rock characterises Catania's beautiful Baroque architecture. The volcano Etna is known to many as the "good volcano". Catania is a bustling town, with an ancient university and many businesses. The city's symbol is an elephant, as it is said that Pigmy elephants lived there in ancient times and chased away enemies of the city's inhabitants. Catania is Sicily's second largest locale, the table below shows the trend of the population and local public employees during the years under study:

Year	**2013**	**2014**	**2015**
Population	323,282	319,971	319,439
City employees	3163	3029	2901
City employees expenditure	92,416,875	81,456,894	75,586,258

Table 3: Population and employees of Catania local government (Source: Ministry of Interior and Catania city website).

At the end of October 2016, 2844 people were employed in the Catania local authority; such a number points out a decline in employees (over 100 employees per year) due to retirement. Consequently, the steady number of population will be a major problem for providing the same level and quantity of services.

Fieldwork was carried out, following two different but convergent paths:

1. meetings and interviews;
2. examination of the Catania Recovery Plan, laws, judgments, and other official reports.

The chapter follows such a setting in order to foster the comparison of the findings from the different research activities, the SD model building and, later, the formulation of remarks, suggestions, and final conclusions.

4.2 The fieldwork

Analysing the financial recovery plan under this dialectic and dialogic profile, presents, in the initial phase, various anomalies, which are confirmed in different ways by two interviews that demonstrate the different roles of the key players, their respective origins and the non-synchronic temporal arrangement (2014 and 2016): in fact, the mood, the tones and the presentation of reality do not converge.

A particular emphasis emerges from the first interview (and, above all, from the initial part), stemming from approval of the recovery plan, which is a necessary prerequisite to accede to the rotating fund and avoid a declaration of bankruptcy for the municipal administration. The first interviewee emphasised that the recovery plan designing was handled by implementing a direct relationship between managers and employees, with a view to overcoming the bureaucratic approach based on respect for formal paradigms. The interviewee also stated that this methodological aspect was of paramount concern, able to transform the dangerous situation into an unmissable opportunity for relaunch the local government management. Such a methodology enabled managers and employees to adopt the measure as a virtuous course towards rendering spending in their authority more efficient, to quantify it annually and consequently to merge it into the three-year performance plan to which the intermediate objectives of the ten-year recovery plan pertain. On the basis of these dynamics, according to the first interviewee, the measure would no longer be perceived as something imposed from

above, but as a realistic and attainable objective generated by individual employees.

In the case of the present study, in the opinion of the interviewee, the role carried out by the task force (comprising the Mayor, the Cabinet Member for the Budget, the General Manager and the Accountant General) was fundamental, as was the influence of the component with managerial experience. He added that the strength of the recovery plan for the city of Catania would seem to reside in the following factors: its capacity to involve all those responsible for the various sectors, capacity to work out an overview of imbalance factors, and its capacity to grasp the criteria (for the structural lay-out of the plan) acceptable to the controlling body (i.e. the Court of Auditors) responsible for granting approval. To this end, the interviewee expressed the conviction that this controlling body would never go as far as rejecting the recovery plan of a large city such as Catania.

This is coherent with what is to be found in the literature on the subject, according to Wildasin (1997) incentives for bailouts can be especially strong when local governments are considered "too big to fail". In research conducted in four OCSE countries – including Italy – Bordignon *et al.* (2000) also highlight the predominant role of political favouritism for the bailouts of subnational governments in explaining recourse to rescue plans in local enterprises.

From the second interview, on the other hand, it emerged that the actual involvement of the departments and their managers was minimal, generic and hasty, both in the analysis phase of the real situation in their sphere of competence, and in the propositional phase of corrective measures. Discussions with external stakeholders also seem to be lacking; these would serve to evaluate the local area's possibilities and potential for development, to individuate the main institutional interlocutors, either private or from the tertiary sector, and also to co-ordinate initiatives geared towards socio-economic and cultural promotion. There seems to be confirmation for the praxis whereby rather than looking outward and focusing on organisational change, long-range planning has tended to be an extension of the annual

operational planning process (Eadie, 1983). On the other hand, the authors responsible for the drafting of the recovery plan were in the two senior positions in the corporation's administrative apparatus (the General Manager and Accountant General); as their privileged and almost excusive interlocutors they had two political figures (specifically, the Mayor and the Cabinet Member for the Budget), from whom, in this case, being subjects external to the administration, they had received their managerial duties.

This context generated an anomalous and subjectively rather limited process; the plan was geared mainly towards making good the financial exposure over a ten-year time-span, in accordance with a vision coinciding with that of the local city council, where, as noted previously, the principal value of planning does not lie in the plans that it produces but in the process of producing them. Process is the most important product of managers: effective planning cannot be done to, or for an organisation, it must be done by the managers responsible (Ackoff, 1970: 15).

In this sense, there is an evident non-observance of the principle of distinguishing[34] between the functions of political-administrative orientation/control and the functions of management an administration; this is in the hands of the management, which should ensure the coherent application of guidelines. The afore-mentioned political-administrative orientation and control functions are in the hands of government bodies, which define the objectives and programmes to be implemented and verify whether the results of administrative activity and management correspond to the designated guidelines. This results in countless violations of normative obligations by the managerial class and its wholesale exclusion from the nerve-centres of administrative activity; moreover, these violations are generally proven by a complete absence of assessment and evaluation of the managers' results, at least over the last five years, in direct opposition to what is peremptorily laid down by law.

[34] Article No. 4, Legislative Decree No. 165 of 30 March 2001, legal provisions of public employees.

Confirming such evidence, scholars demonstrate the blurring of the ordinary boundaries between politicians and civil servants (Aberbach *et al.*, 1981), due to their own role in policy-making and their influence on the choices and their implementation (Christensen and Lægreid, 1999; Ridder *et al.*, 2006). These decision-makers are somewhat disconnected from processes at lower levels in the organisations, and due also to issues of lack of involvement, this approach is bound to provide unsuccessful policies, worse outcomes, and a biased image of the municipality.

Apart from the initial triumphalism of the person who designed and became the protagonist of the rescue operation that prevented the descent into a serious and chronic condition of financial imbalance, confirmation emerged of the cyclical trend of Italian local finances; this consists of the concession of periodic financing to make good the inevitable deficit in local authority accounts, constantly hovering over the abyss of bankruptcy. In fact, it is a well-known fact that only in 2008 did Catania City Council overcome its most dramatic moment, announced to the general public by the striking gesture of a citizen who provocatively proposed selling the elephant ("Liotru") that stands in the Town Hall Square ("Piazza del Municipio"), and is the symbol of the city of Catania (figure 16). In this case too, the CIPE, *Comitato Interministeriale per la Programmazione Economica* (Inter-ministerial Committee for Economic Programming), arranged financing for the municipality of Catania, enabling it also to make good its deficit in current expenditure.

Figure 18: *Liotru* for selling (source: http:// www.corriere.it/ Primo_Piano/Cronache/2008/09/20/pop_ dissesto.shtml).

The perception deriving from this factual image demonstrates the introduction of the recovery plan to be an ulterior attempt at financial rehabilitation, in accordance with a traditional top-down model (Mazzara, 2006). This imposes policies of overall and widespread cuts in local public spending rather than the adoption of managerial practices geared towards ensuring an improvement in the effectiveness and efficiency of administrative action, linking together, via a relationship of dialectic circularity, strategic planning, the performance management and the budgeting process, giving fundamental importance to the evaluation of activity and assessment of results achieved, with the aim of preserving the predicted benefits.

Italian financial recovery plans are implanted in a system of rehabilitation remedies, as already codified in the Legislative Decree No. 267/2000. Because of the reduced time-span for their drafting, they must trigger an extraordinary procedure aimed at avoiding the exceptional situation of bankruptcy.

Such a remedy is a part of the so-called "national spending review" aimed to limit public

expenditure and excessively uneconomical local public policies. Therefore, it inevitably determines a squeeze on the authority's autonomy[35] and a reduction in its capacity for cyclical intervention, which is typical of the phases of recession.

4.3 Documentary survey

Given its main purpose of the rescue in extremis (lending-of-last-resort) of LGs (and their officials) from the procedure of bankruptcy and its consequences[36], although Legislative decree 174 entered into force on 11th October 2012 towards the end of the financial year, two provinces and sixteen municipalities acceded to the new procedure of financial stability (see table 4). Of the five municipalities that were in Sicily, Catania[37] was the largest to obtain approval from the Regional Audit Chamber of the Court of Auditors[38].

[35] According to the established jurisprudence of the Constitutional Court, State interventions on spending autonomy of the regions and local authorities are only allowed, as principle of coordination of public finances, provisionally. Otherwise, such interventions would not correspond to the need to ensure a balance of public accounts in a given period of time (see Judgments No. 36/2004, No. 417/2005, No. 449/2005 and No. 88/2006).
[36] See the Article No. 6 of Legislative Decree No. 149/2011 which has introduced the ten-year ineligibility for mayors, provincial presidents and regional government held responsible for the collapse of the administered entities.
[37] Resolution No. 53 of use of the rebalancing procedure adopted by the Catania Municipal Council on 6 December 2012.
[38] See Decision No. 269/2013 of the Regional Audit Chamber of the Court of Auditors.

Italian Recovery Plans in 2012				
N.	**Region**	**Local government**	**Province**	**Time span**
1	Abruzzo		Chieti	10 years
2	Basilicata		Potenza	8 years
3	Calabria	Castrovillari		10 years
4	Calabria	Cosenza		10 years
5	Calabria	Reggio di Calabria		10 years
6	Campania	Battipaglia		10 years
7	Campania	Casamicciola Terme		10 years
8	Campania	Eboli		10 years
9	Campania	Napoli		10 years
10	Lazio	Arpino		10 years
11	Puglia	Foggia		10 years
12	**Sicilia**	**Catania**		**10 years**
13	Sicilia	Giarre		10 years
14	Sicilia	Modica		10 years
15	Sicilia	Monreale		10 years
16	Sicilia	Racalmuto		5 years

Table 4: Italian local authorities in budget re-balancing procedure (Source: Ministry of Interior).

In fact, the Court of Auditors found that the financial recovery plan for 2013-2022[39] was complete as regards formal (peremptory respect for terms) and substantial requisites (documentation attesting the factors and causes of the imbalance as reported in table 5, with a description of the relative remedies as listed in table 6). With regard to the latter element, the plan comprised several sections devoted to the factors of imbalance, municipal agencies, measures aimed to refurbish the budget's structural balance, reduction of certain categories of current expenditure, performance plan, and plan of operational objectives.

[39] Resolution No. 14 of the recovery plan 2013-2022 adopted by the city council of Catania on 12 February 2013.

Legislative Decree No. 267/2000, Article No. 243-*bis*, paragraph 6, letter b	
Prior year budget loss (deficit)	140,106,096.00
Debts of off-balance-sheet accounting[40]	61,008,812.00
Debts of off-balance-sheet accounting from local agencies	25,496,053.00
Debts of off-balance-sheet accounting from legal disputes	8,318,387.00
Subtotal 1	**234,929,348.00**
Allowance for bad debts	62,265,373.00
Minor state transfers	139,107,109.00
Uncollected taxes	90,500,000.00
Subtotal 2	**291,872,481,00**
Total debt	**526,801,830.00**

Table 5: Total amount of debts to re-balance from 2013 to 2022 through Recovery Plan (Source: Regional Audit Chamber of the Corte in Sicily Decision No. 269/2012).

The Regional Audit Chamber of the Corte in Sicily did approve Catania's ten-year financial recovery plan, since it fully complies with the legislation provisions and possessed seemingly adequate coverage of liabilities, as well as guaranteeing the structural refurbishment of the budget. Notwithstanding, the Regional Audit Chamber emphasised that this rehabilitation programme might only be able to produce the expected results if the Catania local government rigorously initiated the decreed procedure without delay and with total accuracy.

[40] It must be noted that in Italy budgetary accounting fulfils the so-called authorisation function. As a consequence, a debt of off-balance-sheet accounting is a legal obligation with third parties for the payment of a specified sum of money which burdens the institution and can not be remedied during the fiscal year in which the obligation arises, as assumed in the violation of *gius*-accounting rules governing the spending processes of local authorities (see more operational provisions Guidelines No. 21/1993 by the Ministry of the Interior).

Main policies of recovery plan	Estimated amount
1. Maximum increase of surtax on national personal income (in accordance with Article No. art. 243-*bis*, paragraph 8 letter. *a)* of Legislative Decree No. 267/2000)	127,220,820.00
2. Total cover for costs of delivery services for individual demand (in accordance with Article No. art. 243-*bis*, paragraph 8 letter. *b)* of Legislative Decree No. 267/2000)	12,798,000.00
3. Total cover for waste collection system costs (in accordance with Article No. art. 243-*bis*, paragraph 8 letter. *c)* of Legislative Decree No. 267/2000)	embedded in policy 2
4. Saving on personnel costs (in accordance with Article No. 243-*bis*, paragraph 8 letter. *d)* and paragraph 9, of Legislative Decree No. 267/2000)	181,103,567.00
5. Periodic reviews and assessments of receivables and payables (in accordance with Article No. 243-*bis*, paragraph 8 letter. *e)* of Legislative Decree No. 267/2000)	20,414,318.00
6. Retrenchment strategy of administrative expenditures, rent costs, politicians wage, and agencies transfers. (in accordance with Article No. 243-*bis*, paragraph 8 letter. *f)* of Legislative Decree No. 267/2000)	133,172,725.00
7. Municipal agencies	not scheduled
8. Debt reduction	52,336,985.00
9. Estate management improvement	21,000,000.00
TOTAL	**548,046,415.00**

Table 6: Total amount of debts to re-balance from 2013 to 2022 through Recovery Plan (Source: Regional Audit Chamber of the Corte in Sicily Decision No. 269/2012).

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
USES	Allowance for bad debts	9,436,599	9,385,004	9,000,000	9,000,000	9,000,000	8,443,770	8,000,000				62,265,373
	Minor state transfers	13,910,711	13,910,711	13,910,711	13,910,711	13,910,711	13,910,711	13,910,711	13,910,711	13,910,711	13,910,711	139,107,110
	Debts of off-balance-sheet accounting	10,726,345	10,136,098	11,120,669	9,959,803	9,813,447	4,700,925	1,684,151	1,684,151	496,539	686,684	61,008,812
	Debts of off-balance-sheet accounting from local agencies	1,274,803	2,549,605	4,736,670	4,736,670	4,736,670	1,356,661	1,356,661	1,356,661	1,356,661	2,034,992	25,496,054
	Debts of off-balance-sheet accounting from legal disputes	233,018	1,415,041	1,495,041	835,041	465,041	465,041	415,041	715,041	515,041	1,765,041	8,318,387
	Deficit					3,000,000	14,000,000	20,000,000	33,000,000	35,000,000	35,106,096	140,106,096
	Uncollected taxes		1,000,000	4,000,000	8,000,000	8,000,000	9,500,000	12,000,000	12,000,000	16,000,000	20,000,000	90,500,000
	TOTAL LIABILITIES											**526,801,830**
RESOURCES	**Policy 1.** Maximum increase of surtax on the national personal income	12,637,082	12,537,082	12,537,082	12,787,082	12,787,082	12,787,082	12,787,082	12,787,082	12,787,082	12,787,082	127,220,820,00
	Policy 2. Total cover of costs of delivery services to individual demand	1,062,000	1,304,000	1,304,000	1,304,000	1,304,000	1,304,000	1,304,000	1,304,000	1,304,000	1,304,000	12,798,000,00
	Policy 3. Total cover of waste collection system costs											embedded in policy 22
	Policy 4. Saving on personnel costs	7,274,987	8,779,891	10,736,293	11,844,951	14,161,960	18,401,406	21,093,211	25,399,208	29,665,535	33,746,125	181,103,567,00
	Policy 5. Periodic reviews and assessments of receivables and payables	3,519,710	3,519,710	3,519,710	2,111,826	2,111,826	1,407,884	1,407,884	1,407,884	703,942	703,942	20,414,318,00
	Policy 6. Retrenchment strategy of administrative expenditures, rent costs, politicians wage, and agencies transfers	7,857,621	10,688,246	14,214,994	14,344,552	14,344,552	14,344,552	14,344,552	14,344,552	14,344,552	14,344,552	133,172,725,00
	Policy 7. Municipal agencies											not scheduled
	Policy 8. Debts reduction	1,688,723	1,585,896	1,957,155	4,052,270	4,247,093	4,699,801	7,452,760	7,463,679	8,513,168	10,676,440	52,336,985,00
	Policy 9. Estate management improvement											not scheduled
	TOTAL RESOURCES	**34,040,123**	**38,414,825**	**44,269,234**	**46,444,681**	**48,956,513**	**52,944,725**	**58,389,489**	**62,706,405**	**67,318,279**	**73,562,141**	**527,046,415,00**

Table 7: Composition of the budgetary adjustment (Source: Regional Audit Chamber of the Corte in Sicily Decision No. 269/2012).

In fact, it can be seen from analysis of the approval decision that the Regional Audit Chamber of the Court had already pinpointed serious criticality and recurring irregularities, both while monitoring the budgets[41] and during assessment of the Catania municipality's financial management[42]. Difficulty in collecting revenue was one of the main problems highlighted, along with chronic recourse to cash advances as a result of liquidity crises, the age and, consequently, the dubious collectability of receivables, the erroneous computation accounting of certain items, the considerable and uncertain amount of debts off-balance-sheet and, generally speaking, of liabilities.

During the first phase of vigilance in the execution of the recovery plan[43], the Regional Audit Chamber of the Court signalled a negative financial behaviour over the fiscal year 2013, fundamentally due to cuts in regional transfers and, minimally, to cuts in state transfers. Since few transfers were compensated by other resources, the Regional Audit Chamber of the Court deemed that the incidence[44] of this financial behaviour might be justified and not constitute, in itself, a value demonstrating a significant shift, nor in consideration of the reasons for it.

Similarly, in the subsequent audit of the first semester of 2014[45], the Regional Audit Chamber, while highlighting a few signs of ulterior criticality, did not detect significant gaps that would affect intermediate targets. The court carried out its own assessments, whilst also taking into account legislative news passed by Parliament, through which LGs subjected to procedures of rebalancing were given the opportunity to propose a reshaping of their plan on a longer timescale.

[41] See Decision No. 205/2012 adopted in accordance with Article No. 1, paragraph 166 and 167, Law No. 266 of 23 December 2005 (Financial Law for the fiscal year 2006).
[42] See Decision No. 356/2012 approving the "Report financial and economic management assessment of the fiscal years 2007-2010".
[43] Article No. 3, paragraph 1, letter r) of Law Decree No. 174/2012 (adding the Article No. 243-*quater* to the Legislative Decree No. 267/2000).
[44] See Decision No. 154/2014 adopted in accordance with Article No. 243-*quater*, paragraph 3 of Legislative Decree No. 267/2000.
[45] See Decision No. 8/2015 adopted in accordance with Article No. 243-*quater*, paragraph 3 of Legislative Decree No. 267/2000.

The audit of the second half of 2014[46], instead, showed a considerably altered accounts situation, when the Regional Audit Chamber contextualised the data of budget 2013 (approved only on October 8th, 2014 by Catania City Council). It pointed out criticalities linked to debt exposure, relationships with municipal agencies, a greater deficit, an increase of interest due to cash advances. The Court of Auditors also underlined the need to upgrade the bad debts fund, operations to verify liabilities, the achievement of set objectives to cover the costs of services on individual demand[47], full coverage of costs of managing services for the disposal of solid urban waste and the water system[48], a reduction of at least 10% of expenses for services rendered[49], and a reduction of at least 25% of local transfers[50].

Against this factual background of the fiscal year 2014, the Court clarified that the judgement regarding approval of the recovery plan was based on data and reports provided by the LG, and on information from the preliminary investigation carried out by the Ministerial Commission. Any further instances of additional liabilities or criticality may produce effects prejudicing the evaluation of the sustainability of the plan and the possibility of arriving at an effective financial rebalancing.

The Court of Auditors integrated the monitoring activity of fiscal year 2014[51] an analysis of the report compiled by the Vigilance Committee of Catania municipality on the budget 2014 (approved only on December 28th, 2015 by Catania City Council).

Although the delayed approval of the accounting documents, as noted by the Vigilance Committee, could be comprehensible in consideration of the numerous legal constrains and tight deadlines, such delays hamper programming activity, from a financial-economic

[46] See Decision No. 200/2015 adopted in accordance with Article No. 243-*quater*, paragraph 3 of Legislative Decree No. 267/2000.
[47] Article No. 243-*bis*, paragraph 8, letter b) of Legislative Decree No. 267/2000.
[48] Article No. 243-*bis*, paragraph 8, letter c) of Legislative Decree No. 267/2000.
[49] Article No. 243-*bis*, paragraph 9, letter b) of Legislative Decree No. 267/2000.
[50] Article No. 243-*bis*, paragraph 9, letter c) of Legislative Decree No. 267/2000.
[51] See Decision No. 154/2016 of Regional Audit Chamber of the Court of Auditors adopted in accordance with Article No. 1, paragraph 166 and 167, Law No. 266 of 23 December 2005 (Financial Law for the fiscal year 2006).

viewpoint. This activity constitutes the basis for the subsequent phases through which the budget cycle is organised, up to the time of the budget for the concluded fiscal year.

The report on the budget 2014 highlights a large number of infringements, as regards accounting principles, the norms of the Legislative Decree No. 267/2000, and the most elementary rules of management; these cause a considerable increase in the budget deficit, a worrying increase in recognised and yet-to-be-recognised off-balance sheet debts, a continuing situation of non-liquidity, frequent recourse to cash advances with a growing incidence of interest expense, a huge quantity of payables and liabilities, and a worrying rise in large debt exposure.

The increasing deterioration of budget balances shows the difficulties of the municipal administration in implementing the interventions envisaged in the recovery plan.

On the other hand, no audit was carried out for the first and second semesters of 2015 because of the delay with which the Catania municipality approved its budgets.

In a subsequent decision[52], filed on October 5th, 2016, the auditing judges denounced the gravity and the continuing lack of observance of the intermediate objectives, also found in 2015, and pointed out the following pejorative trends:

1. increase in deficit;
2. unreliable quantification of debt exposure;
3. accentuation of liquidity crisis;
4. progressive rise in payables and liabilities;
5. increase in incidental expenses and interest charges.

This framework is confirmed by the economic-financial situation of the municipality of Catania, summarised by Court of Auditors as below:

[52] See Decision No. 185/2016 adopted in accordance with Article No. 243-*quater*, paragraph 3 of Legislative Decree No. 267/2000.

Main end-results of recovery plan							
	Initial Value 2012	**2013**		**2014**		**2015**	
	Budget	**Target Recovery Plan**	**Budget**	**Target Recovery Plan**	**Budget**	**Target Recovery Plan**	**Budget**
Deficit	**139,899,752**		**143,400,000**		**169,706,813**		**456,734,651**[53]
Surplus (expected)		**13,467**		**26,211**		**36,958**	
Debts of off-balance-sheet accounting	86,504,865		127,891,853		131,114,683		140,449,661
Debts of off-balance-sheet accounting by legal disputes							712,647,281
Payables	742,994,619		812,253,060		951,291,755		907,913,394
Long-term financing					182,599,056		
Short-term financing	49,000,000		42,000,000		95,250,925		
Receivables	680,039,711		787,525,558		939,327,496		905,570,288
Annual interest payable on long-term financing (Euro 68.101.153 in a time-period of 30 years)					2,270,038		2,270,038
Annual interest payable on short-term financing					3,339,169		3,339,169

Table 8: Budget deficit in comparison to expected surplus of recovery plan and trend of main data accounting.

It is worth noting that the quantification of the data in table 8 does not take into account the extraordinary re-assessment of payables and liabilities referred to Legislative Decree No. 118/2011[54], as updated by the most recent integrations and amendments. In the light of these

[53] This amount of deficit 2015 was calculated by Budget Office of Catania City but it no appears in official documentation. I required and received such an additional information by email.

[54] The legal provisions of Legislative Decree n. 118/2011 related to the budget of local authorities came into force in 2015.

legal provisions the budget deficit 2015 deteriorates further to EUR 537,016,092[55].

The Regional Audit Chamber of the Court of Auditors therefore deemed that the representation of the economic-financial situation of the municipality of Catania (at the time of approval of the recovery plan) was characterised by an evident underestimation of the actual extent of liabilities to be covered. This is demonstrated by the subsequent assessment activities that constituted a more reliable estimate of overall amount off-balance sheet debts, the total amount of legal disputes, and the quantification of debts from local agencies.

The issues highlighted above caused the Regional Audit Chamber to judge that the premises for a declaration of bankruptcy did exist.

The accounting framework depicted by the Vigilance Committee confirms the results of the fieldwork. In fact, when the decision-making process is adversely conditioned by the procedural inadequacies previously highlighted, the phase of implementation will not be able to trigger virtuous processes.

Next chapter moves beyond the descriptive analysis of the fieldwork and provides useful suggestions to build up a recovery plan through a dynamic performance management approach. A model of system dynamic frames the Nursey School Service of Education Department of Catania Municipality and simulates alternative policies to test their sustainability.

[55] Resolution No. 37 to approve of budget 2015 adopted by the city council of Catania on 3 August 2016.

Chapter 5

The System Dynamic Model of Catania Local Government

5.1 Brief overview of the Italian education system

In Italy, the national education system is structured in compliance with Article No. 33 of Constitution of the Italian Republic which claims "the Republic shall lay down general rules for education and shall establish state schools for all branches and grades. Public and private entities have the right to establish schools and educational institutions at no cost to the state. The law, when setting out the rights and obligations for non-state schools requesting equal status with state schools, shall ensure that they enjoy full liberty and offer their pupils educational conditions equivalent to those afforded to pupils in state schools."

In a recent study[56], the European Commission provided information on the structure of mainstream education in European countries from pre-primary to tertiary level for the 2016/17 school and academic year. It included national schematic diagrams, an explanatory guide and maps showing the main organisational models of pre-primary and compulsory education.

National educational programmes have been provided in the official national language(s) of the country. The Italian education system encompasses:

1) *Asilo nido*

2) *Scuola dell'infanzia*

3) *Scuola primaria*

4) *Scuola secondaria di primo grado*

5) *Liceo, Istituto tecnico/professionale, Istruzione e formazione professionale*

6) *Università, Alta formazione artistica/musicale/coreutica, Istituto tecnico superioure.*

[56] See the European Commission/EACEA/Eurydice, 2016: The Structure of the European Education System 2016/2017 report at website http://ec.europa.eu/eurydice.

Table 9 offers an overview of the Italian education system for students from 1 to 18 years of age.

Structure of the Italian Education System from 1 to 18 years of age					
Student age		**Levels and types of education**			**Legal education standard**
		Italian language	English language		
1		*Asilo nido*	Nursery	Early childhood education and care (for which the Ministry of Education is not responsible)	
2					
3		*Scuola dell'infanzia*	Childhood school	Early childhood education and care (for which the Ministry of Education is responsible)	Programmes at this level involve early childhood programmes that have an intentional education component. Such programmes are typically designed with a holistic approach to support children's early cognitive, physical, social and emotional development, and introduce young children to organised instruction outside the family context.
4					
5					
6	**Compulsory Education**	*Scuola primaria*	Primary school	Primary education	Programmes at this level are typically designed to provide students with fundamental skills in reading, writing and mathematics (i.e. literacy and numeracy) and establish a solid foundation for learning and understanding core areas of knowledge, personal and social development, in preparation for lower secondary education. Age is typically the only entry requirement at this level.
7					
8					
9					
10					
11		*Scuola secondaria di primo grado*	Middle school	Secondary general education	Programmes at this level are typically designed to build on the learning outcomes from previous level. Students enter Level 2 typically between ages 10 and 12.
12					
13					
14		*Liceo, Istituto tecnico, Istituto professionale, Istruzione e formazione professionale*	Secondary school	Secondary general education	Programmes at this level are typically designed to complete secondary education in preparation for tertiary education or provide skills to employment, or both. Pupils enter this level typically between ages 13 and 15.
15					
16					
17					
18					

Table 9: The structure of the Italian education system from 1 to 18 years of age.

5.2 The department of education in Catania municipality

The Department of Public Education is responsible for delivering a childhood school service (even full-time). Since 2013, there have been sixteen school complexes in which the activities are carried out, and all are owned by the City of Catania; one of the main goals of the recovery plan is to cease all passive lease contracts of other buildings used for institutional activities. Each school receives from 50 to 300 children, so the Childhood School Service is delivered to a total of 1600 children.

In order to put things into context, it is worthwhile noting that in Italy the current legislative provisions for the education sector are characterised by high complexity, because they have been enacted from the early 1970s until recent years. In accordance with such legislative provisions[57], the Childhood School Service rules might be framed as summarised below.

The Childhood School Service is not a mandatory function for LGs, but they must provide the buildings and their maintenance, service contracts (water, electricity, and heating), and a cleaning service. The school equipment and teaching staff are the charge of the state; thus, central government must pay for their costs, however, when such a service is entirely provided by the Municipal Education Department, as in Catania city, the central government ensures funds to cover about 20% of teacher costs per classroom of 15 pupils; the remaining part is paid by the municipality. Other parameters are fixed by the legislative provisions and involve the internal and external space of the school. Table 10 summarises the minimum requirements to gain public funds and the maximum threshold:

[57] See, *ex multis*, Decree of the President of Italian Republic No. 417/1974; Decree of Ministry of Education enacted on 18 December 1975; Decree of Ministry of Interior enacted on 26 August 1992; Legislative Decree No. 297/94; Decree of the President of Italian Republic No. 81/2009.

Classroom	M^2	Children	Teachers
1	27	15	1
1	54	30	1

Table 10: Classroom legal parameters.

A meeting was held in the Educational Department to gather information about service organisation, the main service resources, the legal provisions of the service, and to elicit the underlying mental models governing the organisation processes. According to the executive interviewed, the Municipal Education Department of Catania delivers a good service. The strength of the municipal childhood school is the quality of the delivery service and, in particular, its free access. In Catania city, families do not bear any cost for the use of this service; they do not pay any tax at all or any registration fee.

The overall expenditure for local public education is 6 million EUR per year, and 1 million EUR are government funds. The overall human resources amount to around 300 units; 170 are administrative employees, 130 are teaching staff. It also emerged from the interview that the cleaning service is outsourced and the maintenance costs of the school buildings are not the responsibility of the Education Department, since they are charged to the overheads of the LG. The ten-year recovery plan assigned the Childhood School Service a target of 6 million EUR of savings to be made by 2022, as a part of the total amount of debt to cover, 526,801,830 million EUR (as seen in the previous chapter).

Other relevant elements emerging from the interview concern the performance management system which is not still working in Catania and the providing of Nursery Service. Such a service is not an institutional task either LGs, or the State. In the drafting phase of recovery plan, the executive interviewed proposed to entirely cut expenditure for it and to close the service. He also proposed to provide a subsidy to families under a given income threshold. To do so, he demonstrated that this policy would allow huge public savings, since the Nursery

Service shows a total cost of 4 million EUR, while an amount of selective subsidies is of 1 million. In response to that proposal, in 2013 the Nursery Service was moved to "social policies department, " and it is still in existence.

In this case, it seems that the political level has encroached upon the prerogatives of the Education Department Manager, so that the new measures are not based on mutual consent.

5.3 Purpose of the model

This chapter is meant to detail the building of an SD model to frame the Nursery School Service, of the Education Department of Catania Municipality, during the ten-year budget.

The purpose of the model is (1) to assess the sustainability of current policy in meeting citizen needs while pursuing the budget consolidation, and (2) to test alternative policies that aim to improve the service quality without compromising the recovery plan targets. The research deals with the problem of creating a recovery plan in Catania local government which is experiencing severe budget difficulties. In this respect, the fundamental issue is how the recovery plan has been built in terms of process and the perspective adopted. Such a ten-year recovery plan needs to encompass a set of policies which should lead to the budget rebalancing in a sustainable way.

In accordance with the legislative procedure mentioned in Chapter 1, LGs should start with the identification of crisis causes, they should then elaborate proper measures to cope with them, and finally put accurate implementation in place. As mentioned in Chapters 2 and 3, scholars also suggest involving internal and external stakeholders in planning activities.

The basis hypothesis is that cutback budgeting across the board is not sustainable, and thus, does not ensure success of the recovery plan goals. When an LG decides to exercise the option of adopting a recovery plan, it must handle the problem as an event involving the entire organisation. Previous studies explain that during retrenchment, ad hoc decision making, which

is responsive only to crises and pressures, not an overall plan, is dangerous (see *ex multis* Behn, 1980: 617). Local decision-makers must be aware of available resources (stock) and how they can manage them in order to improve performance over time (flow).

By means of an in-depth analysis of the context, it appears that a recovery plan built up under pressure and in a short time could aim only to avoid the extreme condition: a forthcoming bankruptcy. A dynamic approach, instead, can be useful in order to better understand the quantity and quality of strategic resources, the internal and external environment, and the choice of policies. With a view to rebalancing the budget, scientific support could help decision-makers to draft suitable policies.

In this regard, SD methodology makes explicit the complexity of the LG activities and allows handle it. SD is able to connect the requirements of different departments through a wide, holistic, and dynamic perspective. A DPM approach provides a method to explore the stocks of strategic resources, material and immaterial, so that decision-makers are able to co-ordinate them by selecting the appropriate drivers which, in turn, generate the end-results. The latter represent the performance of a department (or organisation), and are the flows influencing the strategic resources, modifying their size. SD also takes information and material delays into account, which matter in any decision-making process.

As shown in the figure 19, the DPM may also support the strategic planning process, since the measurement and evaluation of final results (coming from the performance measurement system) are compared with the strategic goals. The discrepancies, along with the variation in strategic resources, determine a review of the strategic plan, which, in turn, modifies the strategic actions. These actions, while are modifying the goals, affect the performance drivers as well; at the same time, these are revalued mainly on the basis of stock variations in strategic resources, which are modified by the flow of end-results. In short, figure 19 shows that final performance alters the strategic resources and affects the strategic planning cycle.

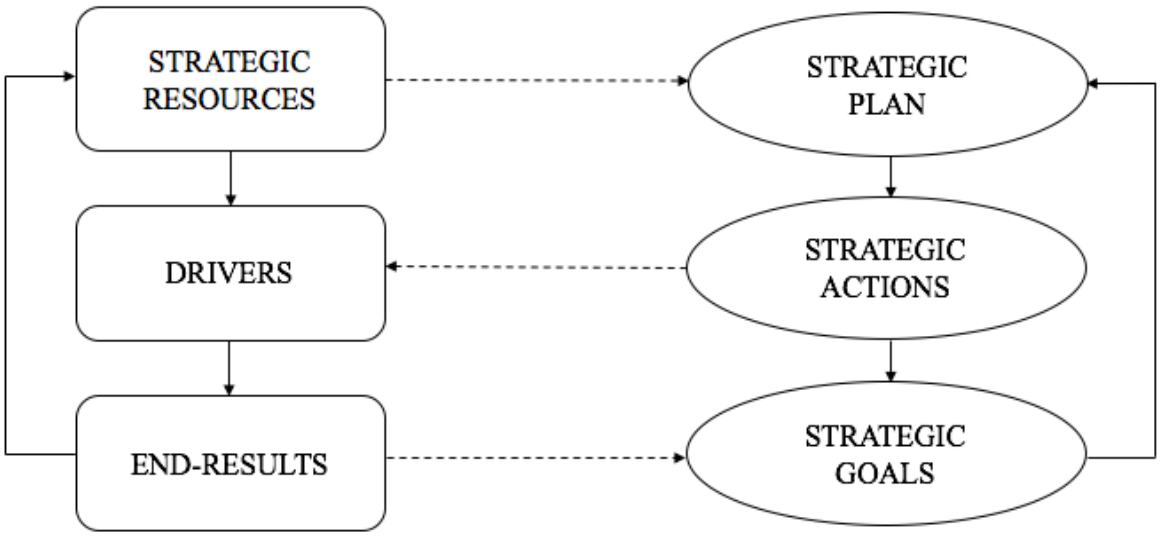


Figure 19: Dynamic performance management approach and strategic planning process.

Finally, implications for LGs management are relevant because they continually address issues that affect the local area and citizens in many aspects of their daily life.

SD modelling can provide useful tools to simulate policies, evaluate their end-results, and involve internal and external stakeholders.

In the case of Catania Municipality, the current policy could not ensure the reduction target, despite the good quality of the service provided. Alternative policies are therefore tested through SD simulations in order to verify different implications, such as reduction targets, service quality, annual costs, and number of pupil enrolments.

5.4 Dynamic performance management analysis

The DPM approach enables the creation of a shared insight into how combining strategic resources, through performance drivers, and affecting end-results.

The DPM analysis focuses on two main end-results, the “Reduction Rate” and “Change in Service Quality”. It then identifies the performance drivers “AVG Child per Classroom”, “Surface Ratio”, “Teacher Coverage”, “Demand Coverage”, and “Service Quality Ratio”.

flow measures the annual savings of the Childhood School Service.

For the aim of fostering the “Reduction Rate”, decision-makers may intervene in the upstream strategic resources. In fact, acting on the policy lever “AVG Surface per Classroom” they change the current endowment of the resource “Teaching Staff”. As the DPM chart in figure 16 shows, changing the resource “Teaching Staff” will affect either the “Reduction Rate” through “Current Spending”, or the “Change in Service Quality”.

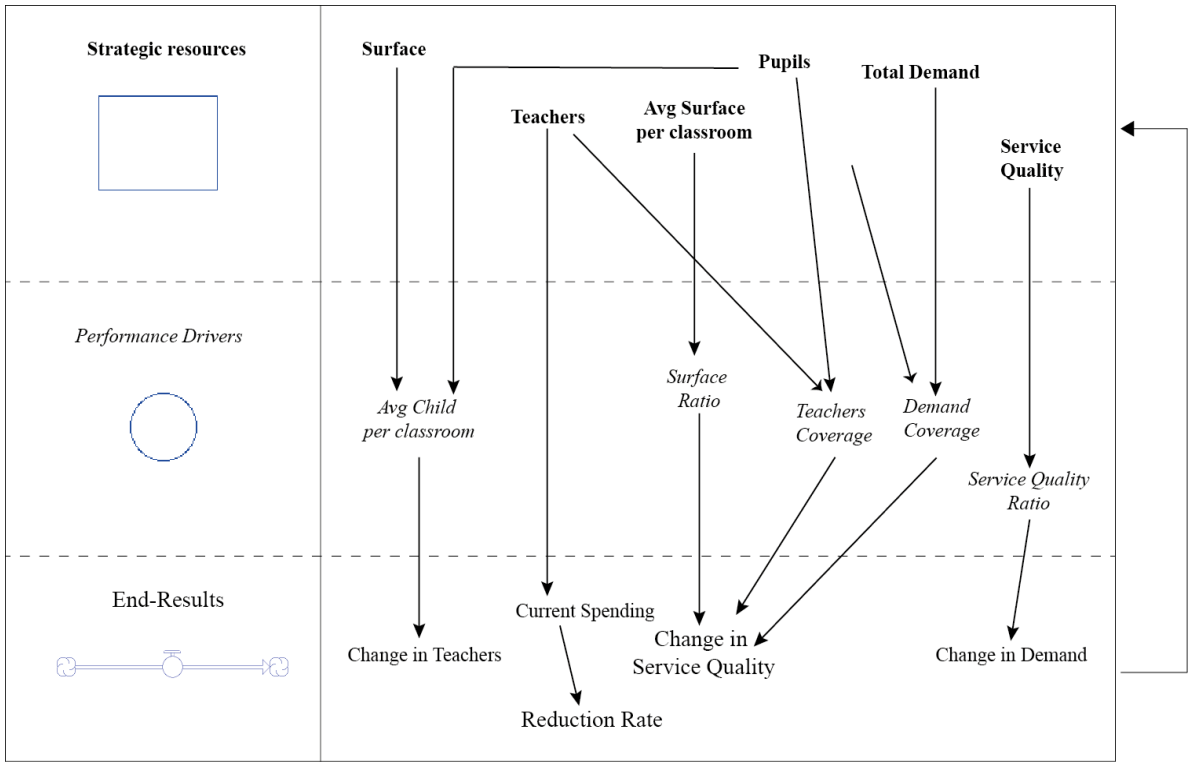


Figure 20: The dynamic performance management chart.

As noted by Bianchi (2010, 2016), applying SD to foster performance management and to support effective decision-making in the public sector implies a number of challenges, which are related to the specific complexity of the environment where the organisation interacts. The

model is built applying a DPM approach to foster an interdepartmental perspective of performance during the retrenchment of the municipality. DPM simulation can thus support scenario analysis (Bianchi, 2016: 153) since equilibrium and optimality should not be assumed; they are convenient ideals but are not characteristic of the normal way organisations operate. Growth, fluctuation, stagnation, decline and overshoot are all disequilibrium phenomena and there is no guarantee that the various functions and sectors of an organisation that create such dynamics are optimally coordinated.

A modeller who presumes optimal use of strategic resources or the existence of an efficient equilibrium is like a driving instructor who assumes that Michael Schumacher is representative of typical motorists. Perfection in timing, action and reaction is an interesting benchmark, but it is not a realistic way to think about normally competent drivers or normally competent organisations. The ideals of optimality and equilibrium require a great deal of coordinating information, much more than decision makers typically use, and also fast reaction times (Morecroft, 2007: 200).

5.5 The system dynamics model

The modelling activity aims to portray, by means of stock-and-flow diagrams, a simple dynamic map of the Childhood School Service for pupils from 3 to 5 years of age.

The rebalancing process of the municipality of Catania began in early 2013. The ten-year recovery plan envisaged two broad measures: tax increases and spending cuts.

The Recovery Plan involved a 10% reduction of the costs of individual services provided to citizens, and increasing the individual fees paid for access to the services (see Chapter 5, page 49 of the plan).

The Childhood School Service is entirely provided by the municipality, and in 2012 its costs exceeded 7 million EUR. In early 2013, in order to implement the plan measures, responsible

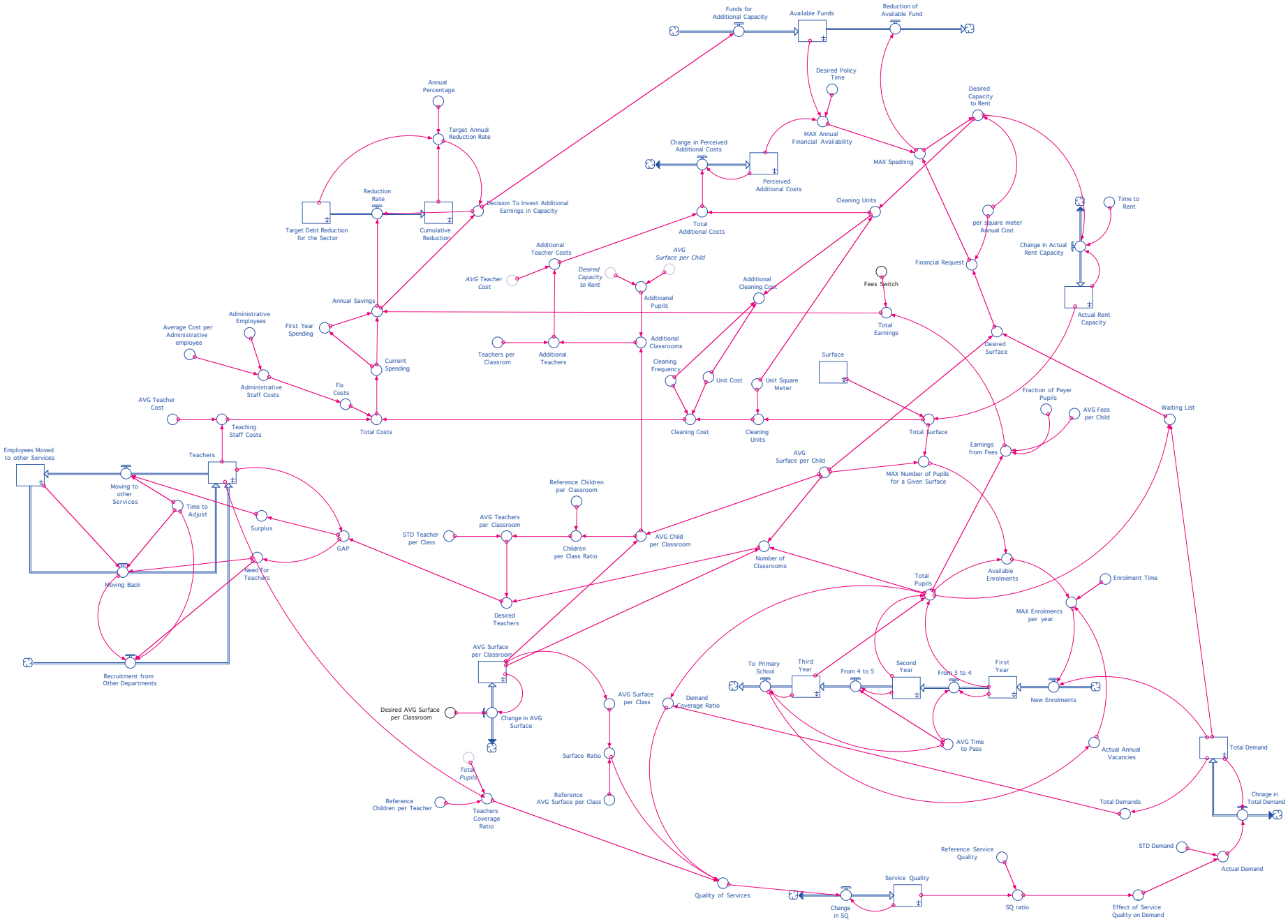
managers moved classrooms into the buildings that were local government property and cut the rental contracts for schools. As a consequence, the Childhood School Service saved about 1.5 million EUR in the following years.

The model aims to explain the dynamics of the Childhood School Service by focusing on the policies which allow the department to accomplish the ten-year rebalancing goal.

This model frames the Childhood School Service of the Municipality of Catania. It reproduces the dynamic behaviour of the Childhood School Service while the service is trying to reach its ten-year rebalancing goal.

The dynamic model focuses on the main elements of the Childhood School Service:

1. the capacity, modelled as a stock of the surface available to run the service;
2. the teachers, modelled as a stock of key human resources to deliver the service;
3. the costs, modelled as a flow of annual expenses;
4. the pupils, modelled as a supply chain of users from 3 to 5 years;
5. the legal parameters, modelled as fixed input.


Funds for Additional Capacity
Available Funds
Reduction of Available Fund
Desired Policy Time
Annual Percentage
Target Annual Reduction Rate
MAX Annual Financial Availability
Desired Capacity to Rent
Change in Perceived Additional Costs
Perceived Additional Costs
MAX Spedning
Reduction Rate
Target Debt Reduction for the Sector
Cumulative Reduction
Decision To Invest Additional Earnings in Capacity
Cleaning Units
Total Additional Costs
per square meter Annual Cost
Time to Rent
Change in Actual Rent Capacity
Financial Request
Additional Teacher Costs
AVG Surface per Child
AVG Teacher Cost
Desired Capacity to Rent
Addtioanal Pupils
Additional Cleaning Cost
Fees Switch
Annual Savings
Total Earnings
Actual Rent Capacity
Desired Surface
Administrative Employees
Average Cost per Administrative employee
First Year Spending
Teachers per Classroom
Additional Teachers
Additional Classrooms
Surface
Current Spending
Cleaning Frequency
Unit Cost
Unit Square Meter
Administrative Staff Costs
Fix Costs
Fraction of Payer Pupils
AVG Fees per Child
Waiting List
AVG Teacher Cost
Teaching Staff Costs
Total Costs
Cleaning Cost
Cleaning Units
Total Surface
Earnings from Fees
Employees Moved to other Services
Teachers
AVG Surface per Child
MAX Number of Pupils for a Given Surface
Moving to other Services
Reference Children per Classroom
Time to Adjust
AVG Teachers per Classroom
STD Teacher per Class
Children per Class Ratio
AVG Child per Classroom
Surplus
GAP
Number of Classrooms
Available Enrolments
Enrolment Time
Total Pupils
Moving Back
Need For Teachers
MAX Enrolments per year
Desired Teachers
AVG Surface per Classroom
To Primary School
Third Year
From 4 to 5
Second Year
From 3 to 4
First Year
New Enrolments
Recruitment from Other Departments
Desired AVG Surface per Classroom
Change in AVG Surface
AVG Surface per Class
Demand Coverage Ratio
AVG Time to Pass
Actual Annual Vacancies
Total Demand
Surface Ratio
Total Pupils
Reference Children per Teacher
Reference AVG Surface per Class
Teachers Coverage Ratio
Total Demands
Chnage in Total Demand
Reference Service Quality
STD Demand
Quality of Services
Service Quality
Actual Demand
Change in SQ
SQ ratio
Effect of Service Quality on Demand

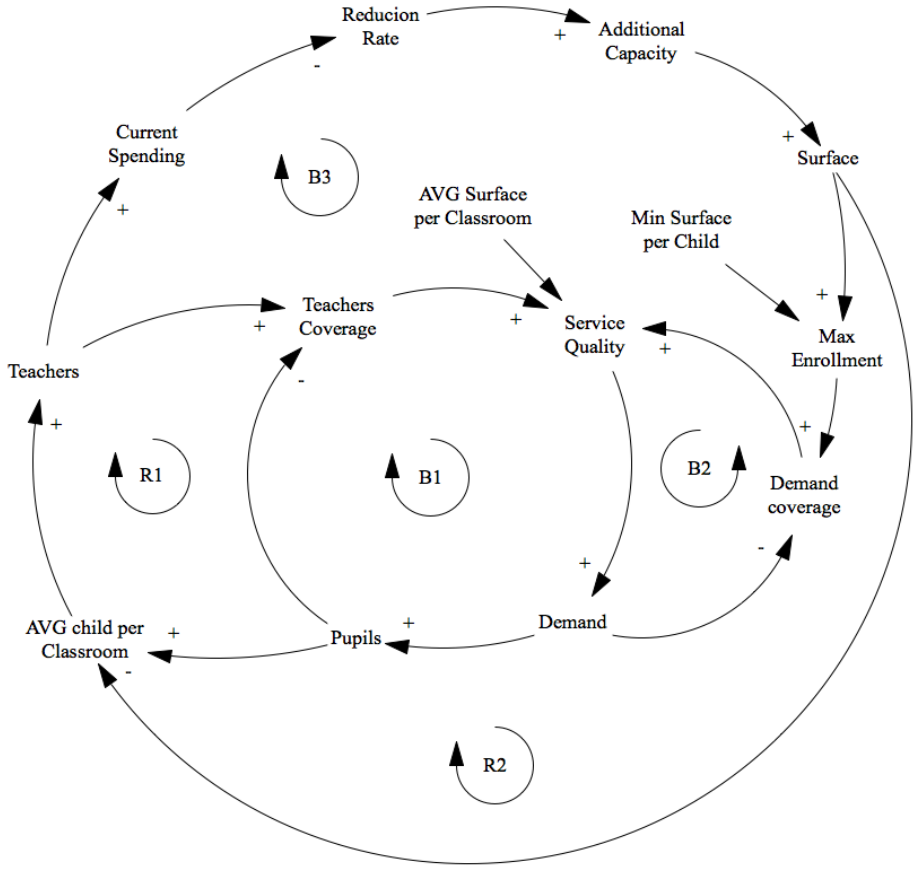


Figure 22: Causal loop diagram of Childhood School Service's model.

Figure 18 shows the feedback structure of Childhood School Service's model. The model is characterized by five feedback loops:

1. R1 is a reinforcing loop linking "Teacher", "Service Quality", "Demand", and "Pupils", it represents the dynamic growth of the service;
2. B1 is a balancing loop limiting the dynamic growth due to "Teacher Coverage" of the service; when "Pupils" increase, "Teachers" can go up later, with a delay "Time to adjust" on the basis of legal constrain "Reference teacher per children";
3. R2 is another reinforcing loop involving both "Teachers" and "Surface", the main strategic resources;
4. B2 is the balancing loop limiting the growth when "Demand" goes up;

5. B3 is the balancing loop decreasing the “Reduction Rate” whenever the “Additional Capacity” increases with a view to extending the “Surface” and “Teachers” which, in turn, raise the “Current Spending”.

This section goes through the model by analysing each part one at a time. This analysis starts by illustrating the “Reduction Rate” structure and moves backwards to the other structures of the model.

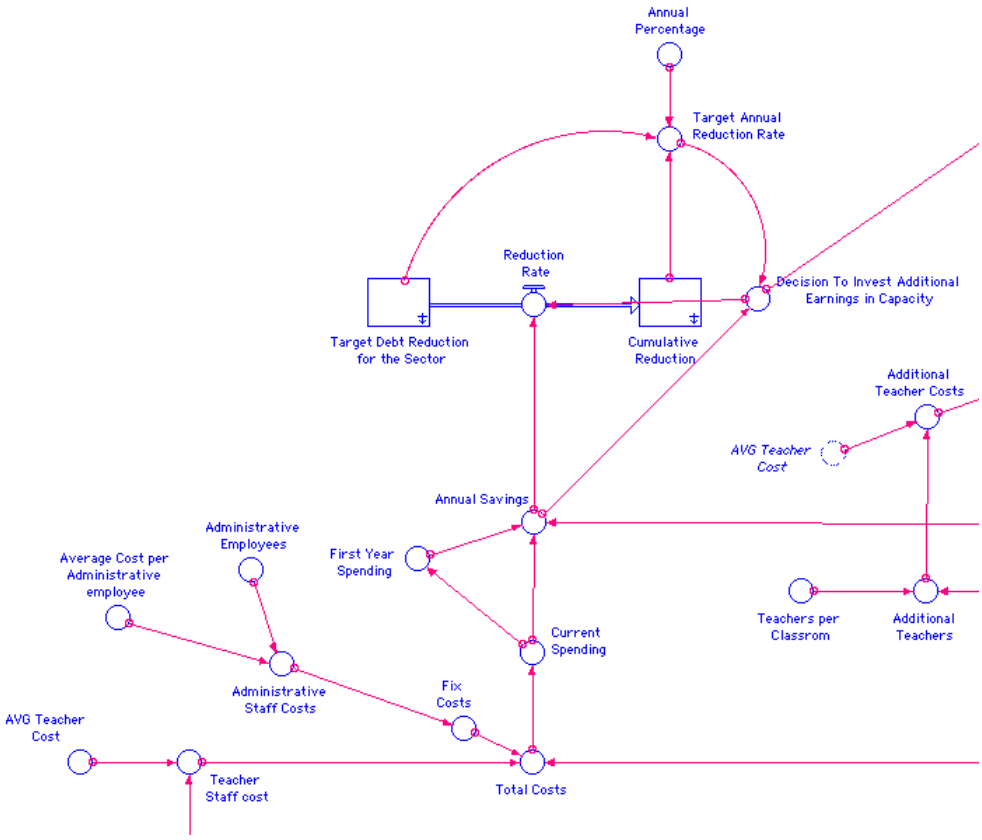


Figure 23: The Reduction Rate determinants.

Figure 23 shows the Reduction Rate determinants. The two stocks, “Target Debt Reduction for the Sector” and “Cumulative Reduction”, are not strategic resources since they indicate the state of the goal; their value changes over time through the out-inflow “Reduction Rate”.

The “Reduction Rate” is modelled as a flow which measures the amount of financial “Annual Saving”. The latter is the difference between the “Current Spending” to provide the service and

the “First Year Spending”. In this way, the model accounts for the financial element as caused by a change in the policy. “Current Spending” represents the annual “Total Costs” as a result of “Teaching Staff Costs”, “Fix Costs”, and “Cleaning Costs”.

Table of Equations of Figure 23		
Variable	**Equation**	**Unit of measure**
 Target Debt Reduction for the Sector	Target_Debt_Reduction_for_the_Sector(t) = Target_Debt_Reduction_for_the_Sector(t - dt) + (-Reduction__Rate) * dt INIT Target_Debt_Reduction_for_the_Sector = 6000000	EUR
 Cumulative Reduction	Cumulative__Reduction(t) = Cumulative__Reduction(t - dt) + (Reduction__Rate) * dt INIT Cumulative__Reduction = 0	EUR
 Reduction Rate	Reduction__Rate = Annual_Savings-Decision_To_Invest_Additional_Earnings_in_Capacity	EUR/year
 Annual Savings	Annual_Savings = (First_Year__Spending-Current__Spending)+Total__Earnings	EUR/year
 Current Spending	Current__Spending = Total_Costs	EUR/year
 First Year Spending	First_Year__Spending = HISTORY(Current__Spending,0)	EUR/year
 Total Costs	Total_Costs = Teacher__Staff_Costs+Cleaning_Costs+Fix__Costs	EUR/year
 Teaching Staff Costs	Teacher__Staff_Costs = Teachers*AVG_Teacher__Cost	EUR/year
 Fix Costs	Fix_Costs = 500000+Administrative__Staff_Costs	EUR/year
 Cleaning Costs	Cleaning_Costs = Cleaning__units*Unit_cost*Cleaning__frequency	EUR/year

Table 11: Main equations of figure 23.

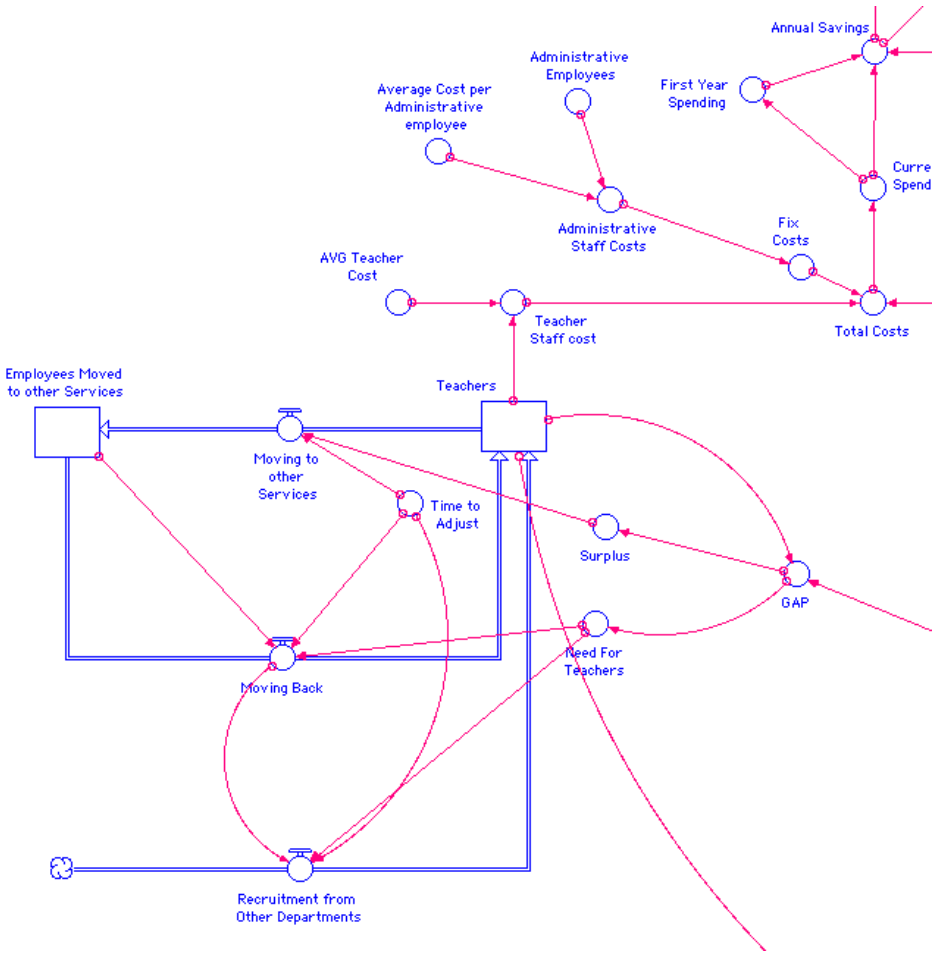


Figure 24: The Teachers Structure.

Figure 24 shows the Teachers Structure. The Teachers Structure comprises two stocks and three flows. The strategic resource of "Teachers" includes the number of employees assigned to the service. The "Moving to Other Service" transfers the employees exceeding the desired level to other services. Conversely, the "Moving Back" flow does the opposite. The stock "Moved to Other Services" comprise these moves. The inflow "Recruitment from Other Departments" increases the "Teachers" stock only when the desired level of teachers is higher than the total number of teachers. This latter flow adjusts the stock with a "Time to Adjust" delay, of one year because an *ad hoc* training course is required. This structure does not consider any external hiring since Catania Municipality has a legal ban on recruitment due to its (long-term) budget crisis.

In order for variations in this structure to occur, the variable “GAP” should be positive as a result of a change in the variable “Desired Teachers”.

Table of Equations of Figure 24		
Variable	**Equation**	**Unit of measure**
 Teachers	Teachers (t) = Teachers (t - dt) + (Moving_Back + Recruitment_from_other_Departments - Moving_to__other__Services) * dt INIT Teachers= 90	People
 Employees Moved to Other Services	Employees_Moved_to_other_Services(t) = Employees_Moved_to_other_Services(t - dt) + (Moving_to__other__Services - Moving_Back) * dt INIT Employees_Moved_to_other_Services = 0	People
 Moved to Other Services	Moved_to__other__Services = Surplus/Time_to__adjust	People/year
 Recruitment from Other Departments	Recruitment_from_other_Departments = IF(Moving_Back)<Need_For_Teachers/Time_to__adjust THEN((Need_For_Teachers/Time_to__adjust)-Moving_Back) ELSE(0)	People/year
 Moving Back	Moving_Back = IF(Need_For_Teachers)>Employees_Moved_to_other_Services THEN(Employees_Moved_to_other_Services/Time_to__adjust) ELSE(Need_For_Teachers/Time_to__adjust)	People/year
 Time to Adjust	Time_to__Adjust = 1	Year
 GAP	GAP = desired__teachers-Teachers_Staff	People
 Desired Teachers	Desired__Teachers = Number_of_Classrooms*AVG_Teachers_per_Classroom	People

Table 12: Main equations of figure 24.

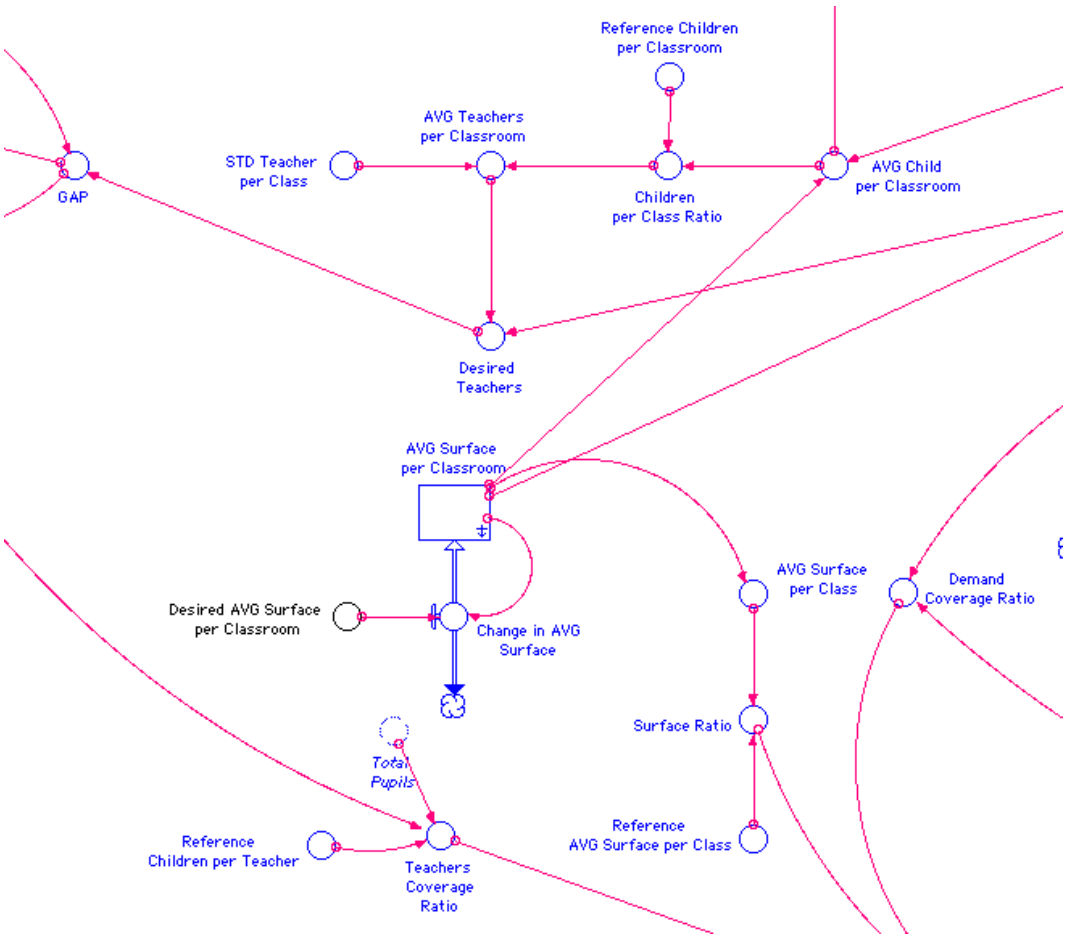


Figure 25: The need for teachers.

Figure 25 shows the need for teachers. The need for teachers, namely, "Desired Teachers", depends on the "Number of Classrooms" and "AVG Teachers per Classroom". Proceeding backwards, these variables are affected by the legal parameters (framed in table 10) and, on the other side, by the total number of "Total Pupils" enrolled yearly.

In designing the service, the department must observe the legal prescriptions concerning the "AVG Surface per Child". This constraint determines the "MAX Number of Pupils for a Given Surface" and affects the "AVG Child per Classroom" and the "Number of Classrooms". This latter variable determines the "Desired Teachers".

Table of Equations of Figure 25		
Variable	**Equation**	**Unit of measure**
 Number of Classrooms	Number_of_Classrooms =(Total__Pupils*AVG__Surface_per_child)/Avg_surface__per_ classroom	People-room/People
 AVG Teachers per Classroom	AVG_Teachers_per_Classroom = IF(Children__per_class_ratio>1) Then(STD_teacher__per_class*2) ELSE(STD_teacher__per_class)	People
 Desired Teachers	Desired__Teachers = Number_of_Classrooms*AVG_Teachers_per_Classroom	People
 AVG Surface per Child	AVG__Surface_per_Child = 1.8	M^2/People
 AVG Child per Classroom	AVG_Child__per_Classroom = Avg_surface__per_classroom/AVG__Surface_per_child	People/room
 MAX Number of Pupils for a Given Surface	MAX_Number_of_Pupils_for_a_given_Surface = Total_Surface/AVG__Surface_per_child	People

Table 13: Main equations of figure 25.

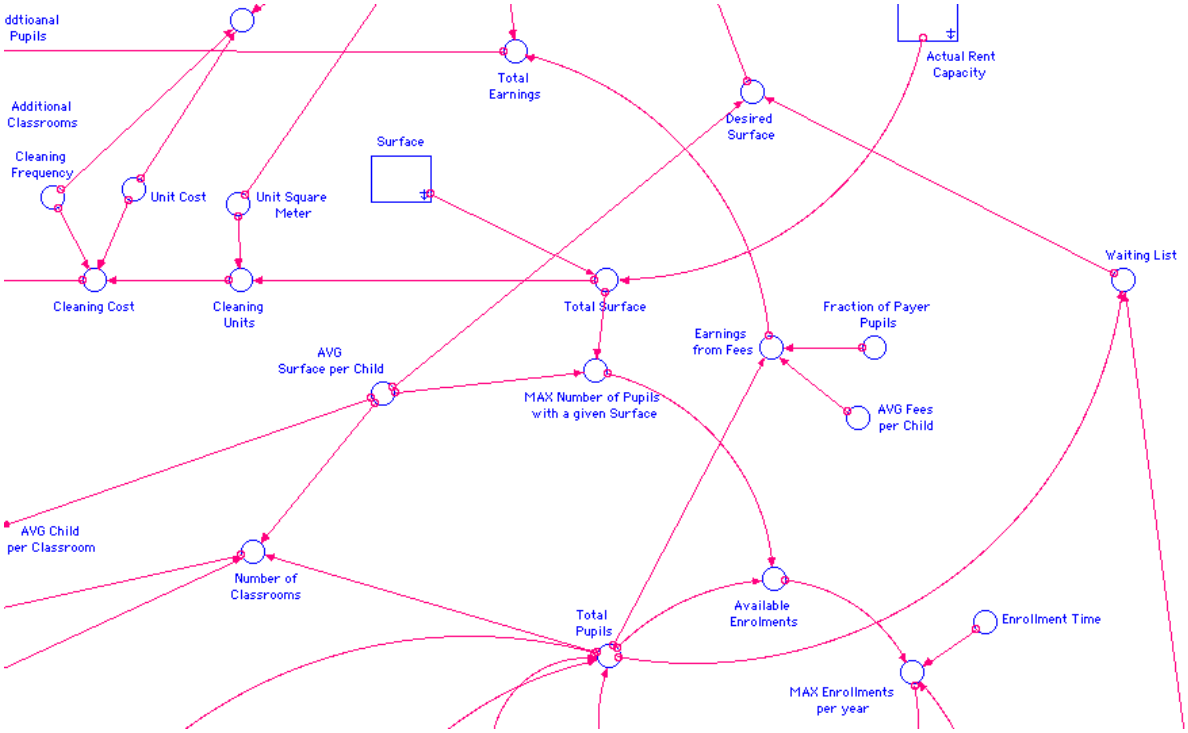


Figure 26: Service capacity.

Figure 26 shows the Service Capacity. The capacity is a structural constraint because it allows the Childhood School Service to be provide for a given maximum number of pupils. For this reason, the stock “Surface” is modelled without in-and-outflow; it is a fixed strategic resource which represents the measure, in terms of square meters, of the surface of school buildings in municipal ownership.

Table of Equations of Figure 26		
Variable	**Equation**	**Unit of measure**
Surface	Surface(t) = Surface(t - dt) INIT Surface = 1600*AVG__Surface_per_child	Square meters

Table 14: Main equation of figure 26.

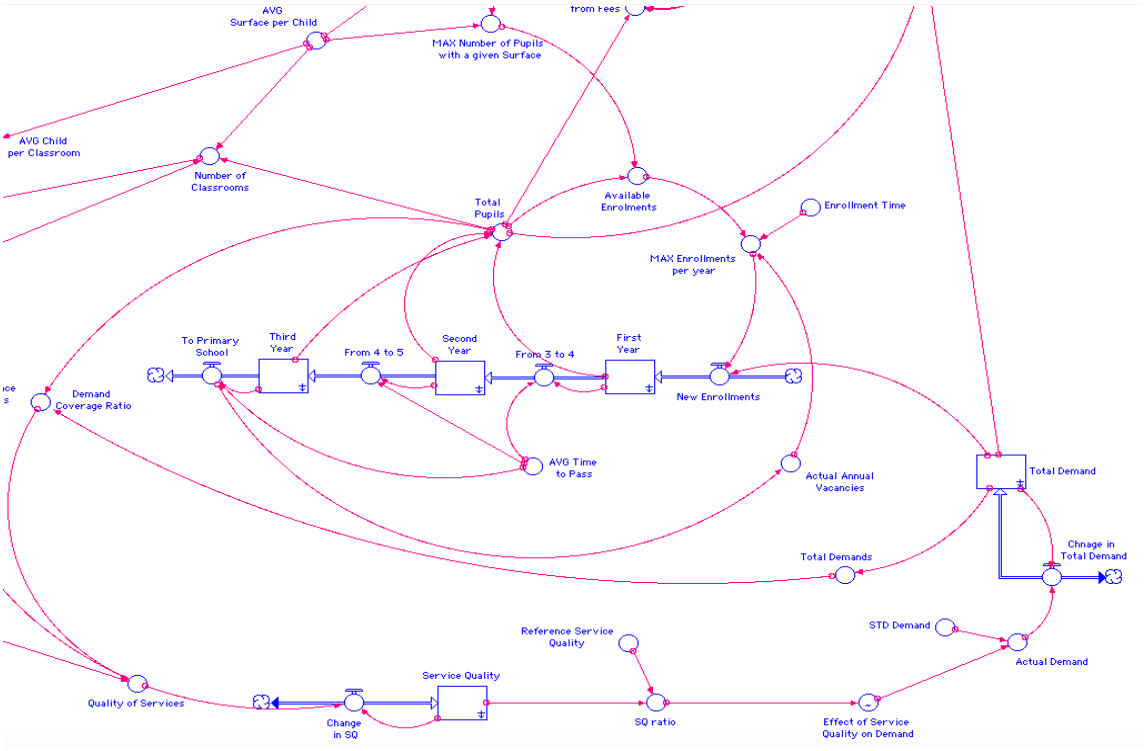


Figure 27: Service users and service quality.

Figure 27 shows the service users and service quality. At the top, the figure shows the education chain for pupils from 3 to 5 years. The variable "Available Enrolments" is the difference between the "Max Number of Pupils for a Given Surface" and the "Total Pupils". This constraint is calculated based on the legal parameter of 1.8 M^2 per child.

Decision-makers may intervene in the "Average Surface per Classroom" with a view to affecting the "Number of Classrooms", the "Desired Teachers", and, finally, the number of "Teachers".

The "Total Demand" affects the "New Enrolments", the "Waiting List", and when compared to the "Total Pupils", determines the "Demand Coverage Ratio". This latter variable together with the "Average Surface per Classroom" and "Teacher Coverage Ratio", conveys the "Service Quality" which, in turn, will feedback to the "Total Demand". The "Service Quality" is a perception stock and represents the reliability of the service, and it is modelled as a stock depending on some qualitative features of the service.

Table of Equations of Figure 27		
Variable	**Equation**	**Unit of measure**
 Teachers	Teachers (t) = Teachers(t - dt) + (Moving_Back + Recruitment_from_other_Departments - Moving_to__other__Services) * dt INIT Teachers = 90	People
 AVG Surface per Classroom	AVG_Surface__per_Classroom(t) = AVG_Surface__per_Classroom(t - dt) + (Change_in_AVG_Surface) * dt INIT AVG_Surface__per_Classroom = Desired_AVG_Surface_per_Classroom	M^2/room
 Total Demand	Total_Demand(t) = Total_Demand(t - dt) + (Chnage_in__Total_Demand) * dt INIT Total_Demand = STD_Demand	People
 New Enrollements	New_Enrollments = MIN(MAX_Enrollments__per_year,Total_demand)	People/year
 Available Enrolments	Available__Enrolments = MAX_numbsr_of_Pupils_with_a_given_surface-Total__Pupils	People
 MAX Number of Pupils with a Given Surface	MAX_Number_of_Pupils_with_a_given_Surface = Total_Surface/AVG__Surface_per_child	People
 Desired Teachers	Desired__Teachers = Number_of_Classrooms*AVG_Teachers_per_Classroom	People
 Number of Classrooms	Number_of_Classrooms = (Total__Pupils*AVG__Surface_per_child)/Avg_surface_ _per_classroom	People-room/People
 Waiting List	Waiting_List = MAX(Total_demand-Total__Pupils,0)	People
 Total pupils	Total__Pupils = Third_Year+Second_Year+First_Year	People
 Demand Coverage Ratio	Demand__Coverage_Ratio = Total__Pupils/Total_Demands	Unitless

 Quality of Service	Service_Quality(t) = Service_Quality(t - dt) + (Change__in_SQ) * dt INIT Service_Quality = Quality_of_services	Unitless
 Teacher Coverage Ratio	Teachers__Coverage_Ratio = Reference___children_per_teacher/(Total__Pupils/teachers)	Unitless

Table 15: Main equations of figure 27.

5.4 Model simulations

Having described the model structure, this section discusses the model simulations. It is important to remember that the purpose of simulations in SD is not to predict the future (De Geus, 1994), rather to share the decision-making process, to test alternative policies, and to evaluate their outcomes over time. The simulations cover a ten-year period from 2013 to 2022, which is consistent with the time horizon of the recovery plan.

Before comparing the simulations of four alternative policies, the table 18 provides the key information to properly understand the alternatives policies and the different results.

Policies	Assumptions
Policy 1 – Totally free service (current policy)	Maximum capacity of 1600 pupils allocated into 67 classrooms. Average pupils per classroom 23,8. Average classrooms side 43.2 m^2
Policy 2 – Fees for canteen service	Payment, *ceteris paribus*, of canteen service for a fraction of pupils from high-income families in order to better reach the target reduction. In the event of target reduction being achieved, the additional revenue can be allocated to increasing the number of classrooms (for rent) and, thus, the pupil enrolments
Policy 3 – Teacher reduction through legal parameter optimisation	Maximum capacity of 1600 pupils allocated, in compliance with the maximum legal parameters: 53 classrooms of 54 M^2 with 30 pupils.
Policy 4 – Quitting the service, providing the structure	Total number of teachers moved to other services, ensuring the current school complexes for public service run by the central government

Table 16: Alternative policies and their assumptions.

The tables below show the behaviour over time of the main results of the model "Reduction Rate", of "Target Annual Reduction Rate", and of "Service Quality".

Policy 1 – Totally free service. Figure 28 shows the charts of the current policy simulation. At moment, the "Average Surface per Classroom" is 41 square meters, with 24 children in each of the 67 classrooms. The variable "Target Annual Reduction Rate" (line 2) is the threshold value assigned to Childhood School Service. "Reduction Rate" (line 1 in the upper chart) and "Service Quality" (line 1, lower chart) represent two key end-results of the model. The simulation shows that the current policy does not achieve the goal assigned to the Childhood School Service.

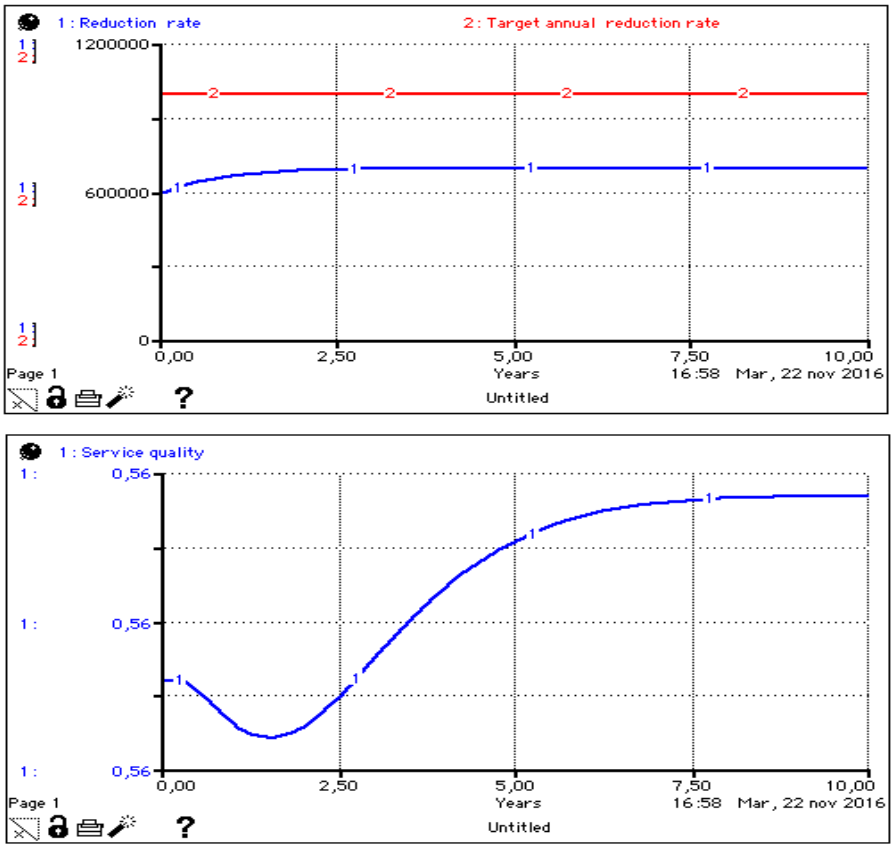


Figure 28: Policy 1 - Totally free service (current policy).

Policy 2 – Fees for canteen service. In addition to the previous conditions, this policy considers that 25% of pupils pay a fees of 300 EUR per year for the canteen service.

Figure 29 shows the behaviour of such a policy over time. The line "Reduction Rate" (line 1) reaches the "Target Annual Reduction Rate" (line 2) and only overcomes it after two years. By applying this policy, the Childhood School Service can afford to rent additional school buildings to increase the number of classrooms (for rent) and, thus, pupil enrolments. Of course, along a path of financial recovery, rent of buildings can not leave aside from a revenue increase.

The lower part of figure 29 demonstrates a slight oscillation in "Service Quality" (line 1), because of an initial reduction in "Teachers", however it stabilises after five years.

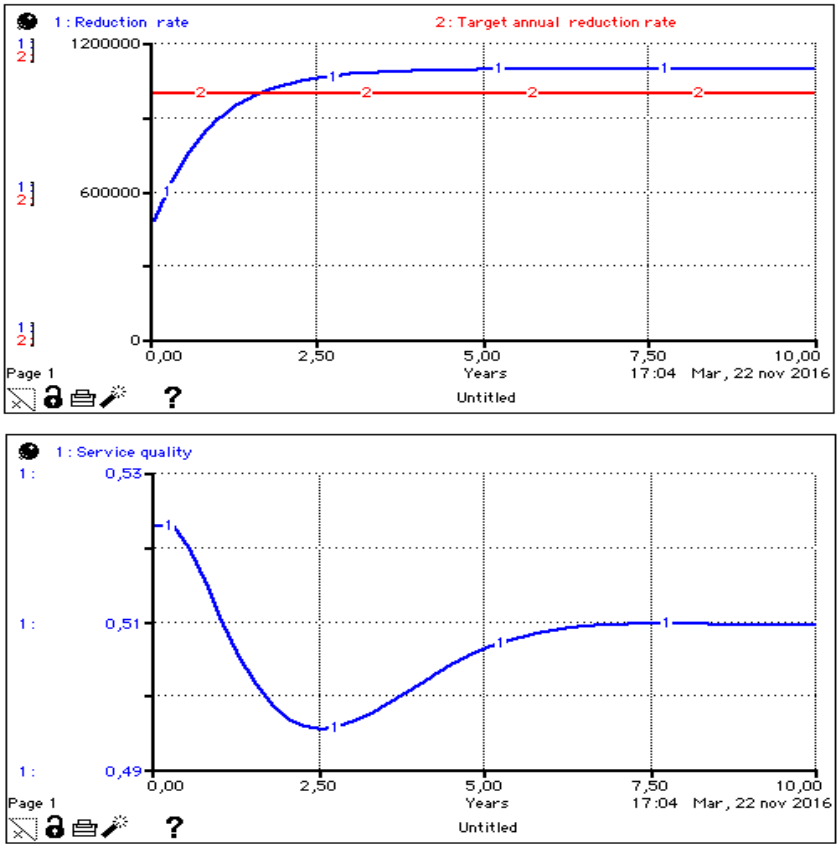


Figure 29: Policy 2 - Fees for canteen service.

Figure 30 shows the additional financial capacity. This structure allows the system to rent additional capacity when there is a positive difference between “Annual Savings” and the "Current Spending". The additional capacity is financed through service fees.

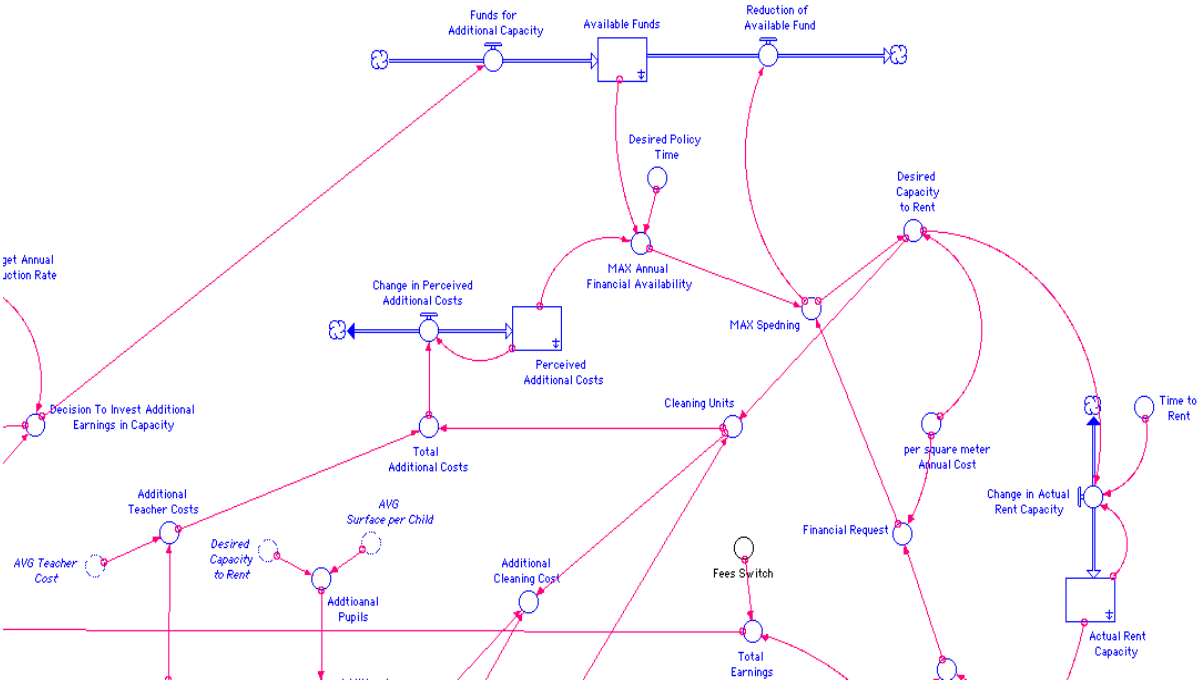


Figure 30: Additional financial capacity.

Table of Equations of Figure 30		
Variable	**Equation**	**Unit of measure**
Available Funds	Available_Funds(t) = Available_Funds(t - dt) + (Funds_for__Additional_Capacity - Reduction_of__Available_Fund) * dt INIT Available_Funds = 0	EUR
Actual Rent Capacity	Actual_Rent_Capacity(t) = Actual_Rent_Capacity(t - dt) + (Change_in_Actual__Rent_Capacity) * dt INIT Actual_Rent_Capacity = 0	EUR
Funds for Additional Capacity	Funds_for__Additional_Capacity = Decision_To_Invest_Additional_Earnings_in_Capacity	EUR/year
Annual Savings	Annual_Savings = (First_Year__Spending-Current__Spending)+Total__Earnings	EUR/year

 Current Spending	Current__Spending = total_costs	EUR/year
 First Year Spending	First_Year__Spending = HISTORY(Current__Spending,0)	EUR/year
 Total Costs	Total_Costs = Teacher__Staff_Costs+Cleaning_Costs+Fix__Costs	EUR/year
 Teaching Staff Costs	Teacher__Staff_Costs = Teachers*AVG_Teacher__Cost	EUR/year
 Fix Costs	Fix_Costs = 500000+Administrative__Staff_Costs	EUR/year
 Cleaning Costs	Cleaning_Costs = Cleaning__units*Unit_cost*Cleaning__frequency	EUR/year

Table 17: Main equations of figure 30.

Policy 3 – Teacher reduction through legal parameter optimisation. The Childhood School Service provides a service to 1600 pupils in 67 classrooms, with an average of 24 children per classroom, well within the legal parameter of 30 pupils per classroom of 54 M^2.

The density of children per classroom can be optimised until it reaches the above threshold. The charts (figure 31) show that, in this case, the "Reduction Rate" (line 1) increases and achieves the goal, the "Target Annual Reduction Rate" (line 2) by the second year. The "Total Pupils" enrolled increases by 10%, the number goes up to around 1760 and, later, stabilises at 1700 in the long term; however "Service Quality" shows a slight oscillation because of the reduction in "Teachers".

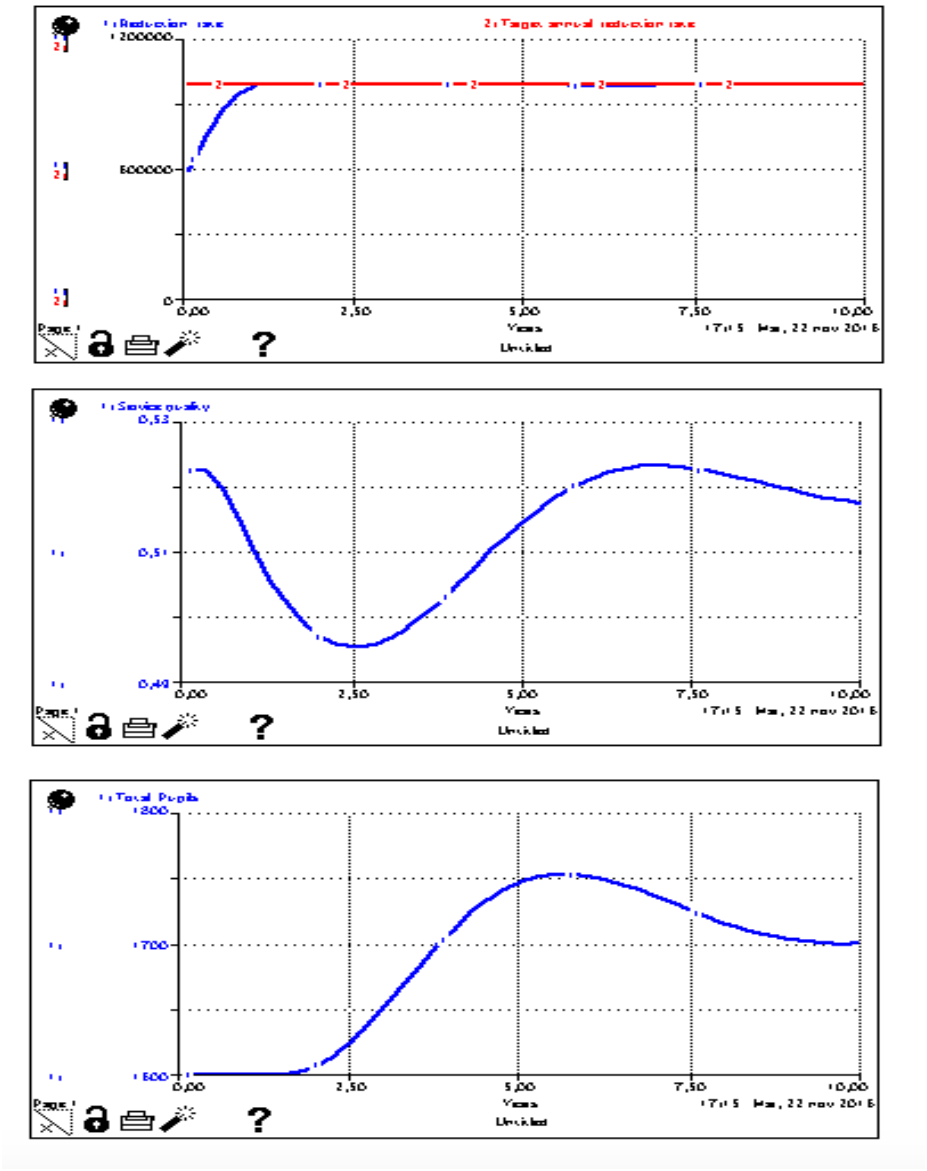


Figure 31: Policy 3 – Teacher reduction through legal parameter optimisation.

Policy 4 – Quitting the service, providing the structure. The challenge is to adopt a policy that is outcome-oriented even in a period of severe financial distress. When decision-makers plan a path to financial recovery in a LG, they must rebalance the budget for the entire organisation. Fundamentally, this means that the increasing attention on the issues common to all departments is the groundwork of the rebalancing process. In this event, a long-term and interdepartmental perspective should support the decision-makers in terms of performance enhancement.

The human resources management of a municipality is a key issue due to the high cost, especially when it comes to dealing with a retrenchment period. The municipality of Catania also has a ban on hiring across the recovery period.

Based on the information gathered during the meeting with the manager of the Education Department, between 2018 and 2022, 23 teachers will be at retirement age. Quitting the service and providing the structure is a policy with a view to re-establishing sound financial conditions and to restoring the LG's capacity to finance their own mandatory institutional activities.

Quitting the service means to move “Teachears” to other departments (interdepartmental perspective) and cutting the “Teaching Staff Costs” (from a departmental perspective). It allows the department to increase the "Annual Saving" to contribute to the goal of the recovery plan (long-term perspective), without compromising the service for pupils. When the municipality quits the service, the central state must provide the service through its own teachers by using complexes school of municipality.

The charts below show simulations of the main results of such a policy. The first chart shows the behaviour over time of the “Reduction Rate” (line 1) that overcomes the “Target Annual Service Rate” (line 2) at the beginning of the time horizon of the recovery plan.

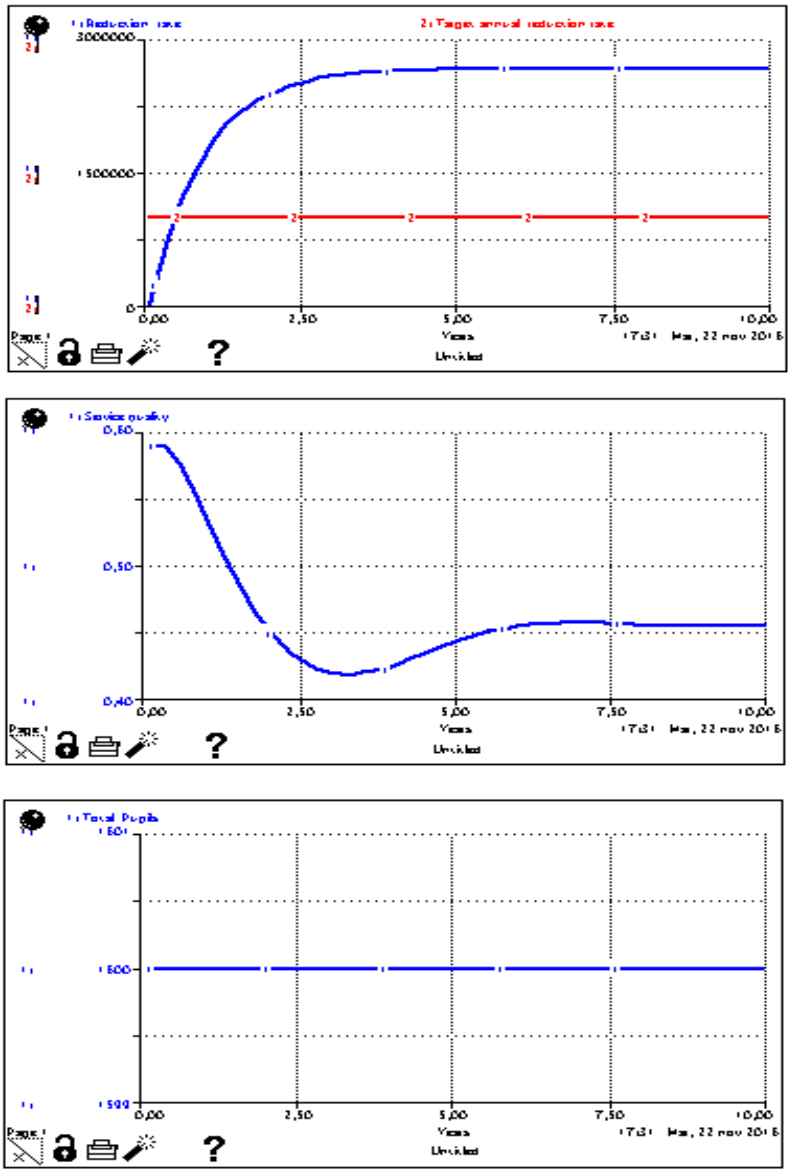


Figure 32: Policy 4 – Quitting the service, providing the structure.

In light of the end-results portrayed in figure 32, "quitting the service and providing the structure" policy could also be integrated with a school vouchers system able to stimulate the private market of schools and support equity in access to private schools. When the "Reduction Rate" reaches and overcomes the "Target Annual Service Rate" a portion of the additional savings (difference between "Reduction Rate" and "Target Annual Service Rate") may be allocated to directly support families.

As a consequence, the LG makes decisions from an inter-institutional perspective, involving private subjects, parents, non-governmental organisations, and commercial enterprises (i.e. external stakeholders). School vouchers can help to maintain the savings policy, expand the local market of schools, promote competition among schools, and improve social cohesion[58].

[58] For more information, see the OECD's Programme for International Student Assessment (PISA) published in 2012, http://dx.doi.org/10.1787/9789264175006-en.

Discussion and final remarks

The choice of the present research topic arises from a personal interest in the field of public management, in particular, at the local level, since municipalities have always played the pivotal role in the Italian administration system, both with regard to political representation and because they must produce a number of services which are of the utmost importance to the citizenry (Caperchione, 2003). The observation of the plentiful (and sometimes even chaotic) legislative production of the last decade in the field of local public management has given, then, further stimuli, especially, when the central government enacted Law Decree No. 174 in October 2012. This Law Decree sets up a long-term financial assistance facility, with a view to preserving the sustainability of local finances and restoring the capacity to carry out their own institutional tasks. In order to address this exceptional phase, an LG must plan an adjustment programme able to rebalance its budget in a coordinated and effective manner. To this end, an LG seeking state financial support shall submit to the Ministry of Interior and Court of Auditors a recovery plan for a maximum of ten-year. The Court of Auditors also has the task of biannual assessments throughout the entire implementation phase.

Whereas previous studies offer a theoretical analysis of the legal provisions regarding LGs experiencing a strong deterioration in their financial stability, the present research tries to fill the gap in the literature by focusing on the decision-making process and the implementation phase of such a recovery plan. To do this, the research has been carried out through an analysis of a case study: the recovery plan for Catania municipality.

The recovery plan should provide a blueprint for a quick return to budget sustainability; however, the findings of the present study show several operational and legal problems.

The operational problems involve the drafting process of the recovery plan and they have been grasped through the interviews. The most bottlenecks concern decision-making and, specifically, the planning activity, stakeholder involvement, and the adopted perspectives in

designing policies. As the research findings confirm, the Catania recovery plan seems to focus more on:

1. cost-cutting, savings and debts blurring-oriented rather than on services improvement;
2. ensuring space for window-dressing choices rather than outcome-oriented policies;
3. increasing the local tax-rate to maximum level rather than reducing waste and inefficiency at minimum levels.

The present research found that the recovery plan for Catania city was drafted by a small group of decision-makers: the Mayor of the city, the Cabinet Member for Budget, and the two top managers of the municipality. As a result, the centralisation of the recovery plan process has generated a large influence of political level in policy making throughout the departments. In Catania, elected officers still possess too much influence over the decision-making process. These habits hinder managerial levels in making appropriate decisions about where to cut, and impede long-term planning in the era of retrenchment. Moreover, it has been recommended that employees be involved in the preparation of cutbacks and in the organisational long-term planning process (Chadwick et al., 2004; Levine, 1984).

This centralisation marks a sort of alliance between top civil servants and politicians based on an exchange of high job salary and wide political power. Consequently, public managers renounce their own autonomous proactive roles in decision-making processes, and politicians promote executive bureaucratic careers and make wider decisions (Cassese, 1999; Hood and Lodge, 2006; Ongaro, 2009).

The legal problems, on the other hand, emerge from the assessment process of the Regional Audit Chamber of the Court of Auditors' decisions. In 2014, 2015 and 2016, the assessment activities carried out by the Court of Auditors revealed a misleading description of the recovery plan composition, poor readability and truthfulness of accounting information, low levying

taxes, an immoderate resort to borrowing, and several calculation mistakes. The Court also describes the unreliability of the recovery plan in implementation phase and, consequently, proposed a declaration of bankruptcy in Catania municipality to Ministry of Interior.

Through analysis of the case study it emerges that an instrument of this kind (considered reductively as the only way to avoid an inevitable situation of bankruptcy) cannot, on its own, bring about concrete change.

Such a change should come not only from modifications in the conceptual models of analysis to which reference is made, and the cognitive-decision-making instruments and other operational mechanisms, but also from a change in the culture of the individual person and the whole corporation; there also needs to be institutional reorganisation, which often constitutes a necessary premise-and-consequence of cultural change (Bianchi, 2004: 25). The law alone is not enough, it is necessary to influence (that is, to change) the mental models inside the public sector, to spread out sense of institutions, and to promote the respect of res publica.

The absence of real repentance on the part of local administrators who have, in the case under study, concealed other financial breaches, shows that management that is chronically incapable of cost reduction, is out of line with the principles of accounting and in clear non-compliance with the laws of reference, and can only achieve financial and transitory relief from a rescue-plan; it cannot restore the permanent balance-sheet equilibration, which presupposes sound management implemented with dedication, professionality and innovation (Coda, 2015). Indiscriminate and sudden reductions in local public spending themselves hamper anticyclical policies, emphasising social inequality, and feeding dissatisfaction in the citizen and mistrust of the public administration; in the final analysis they nourish a low-intensity democracy (Toso, 2014).

Several authors (Bovaird et al., 2003; Bobbio, 2004; Borgonovi, 2005; Cristofoli and Valotti, 2005; Ricci, 2007) highlight the importance of involving internal and external stakeholders in

the planning process. The benefits of this wide-scale participation emerge in the enhancement of available human resources, in the contribution of fresh skills, in the increase in an area's attractiveness, in the broadening of consensus, in the increase in accountability, in the certainty of its launching and the prestige that the final product (i.e. the plan) provides. For this purpose, the collaboration with academic institutions in the sphere of what is known as the "Third Mission of the University", which may mark a true development pact between the university and the city, might prove significant. This collaboration is geared towards training and research, but also the transfer of knowledge and proposed strategies for the economic development of the area, which is capable of maintaining and looking after its past, but also being a vector for social and cultural growth. Obviously, establishing a relationship of institutional collaboration with offers of know-how and university-level innovation has to have a corresponding opening-up on the part of local authorities, with a concrete wish to achieve total transparency in the management of res publica, together with a desire to learn what is necessary for facing up to new challenges as dictated by change and complexity.

In the case of the present research, a DPM approach has been proposed in order to support decision-makers who try to design proper policies to ensure budget sustainability. The SD simulations have shown that even in an era of retrenchment, decision-makers might design policies that are outcome-oriented in a sustainable way. In the light of the simulations, a cautious and inter-departmental management strategy is to be recommended in order to achieve the desired financial equilibrium and stabilise quality in delivery services in the long-term. If a recovery plan is the result of a cosmetic process with a view to achieving a formal rebalance purpose, it merely becomes a paper cut (Dunsire and Hood, 1989: 145) that exclusively produces immediate satisfaction in access to the rebalancing procedure, but no long-term choices for the future.

Planning effective long-term decisions means sacrificing short-term benefits for larger long-term ones. The planning process in cutbacks management also needs a deeper understanding and learning about the underlying problem, takes a long time to formulate policies, requires a relatively large and tests managerial patience. All this is in the face of pressures from many angles that demand that managers fix problems promptly and move on.

As an illustration of possible responses to the recent development of Italian local government history, we could say that the trend towards more efficient public management reforms still has a partial impact. NPM, decentralisation, and performance management reforms have been introduced, but sometimes without increasing accountability, efficiency, and effectiveness. Such a complex task in public management requires skills in coordinating a plethora of organisations (both within and outside government) and the ability to balance competing interests and values and to understand the consequences of today's actions for future generations (Rodriguez and Bijotat, 2003).

In 1938, Ridley and Simon began their seminal book by writing that "a generation ago a municipal government was considered commendable if it was honest. Today we demand a great deal of our public service. It must not only be honest but efficient as well". Now, to consider commendable a municipal government, it needs to be both honest and efficient.

The findings of the present study show that Catania municipality is still far to be considered commendable.

Research limitations

Ultimately, the limitations of this research arise mainly from the brief recovery plan implementation phase investigated and from the study of a single entity. First and foremost, although the research findings show a clear deterioration of the budget equilibrium and herald

a compromised sustainability of the Catania recovery plan, the study needs to be extended to subsequent fiscal years in order to better understand how the recovery plan acts. Finally, since the analysis of a (single) case-study limits a comprehensive understanding of the effectiveness of the recovery plan, comparative research with other local governments of similar size that made use of this tool would be desirable.

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APPENDIX A

List of System Dynamics model's equations

Actual_Rent_Capacity(t) = Actual_Rent_Capacity(t - dt) +

(Change_in_Actual__Rent_Capacity) * dt

INIT Actual_Rent_Capacity = 0

INFLOWS:

Change_in_Actual__Rent_Capacity = (Desired__capacity_to_Rent-

Actual_rent_Capacity)/Time_to__rent

Available_Funds(t) = Available_Funds(t - dt) + (Funds_for__Additional_Capacity -

Reduction_of__Available_Fund) * dt

INIT Available_Funds = 0

INFLOWS:

Funds_for__Additional_Capacity = Decision_To_Invest_Additional_Earnings_in_Capacity

OUTFLOWS:

Reduction_of__Available_Fund = MAX_Spedning

AVG_Surface__per_Classroom(t) = AVG_Surface__per_Classroom(t - dt) +

(Change_in_AVG_Surface) * dt

INIT AVG_Surface__per_Classroom = Desired_AVG_Surface_per_Classroom

INFLOWS:

Change_in_AVG_Surface = (Desired_AVG_Surface_per_Classroom-

Avg_surface__per_classroom)/1

Cumulative__Reduction(t) = Cumulative__Reduction(t - dt) + (Reduction__Rate) * dt

INIT Cumulative__Reduction = 0

INFLOWS:

Reduction__Rate = Annual_Savings-Decision_To_Invest_Additional_Earnings_in_Capacity

Employees_Moved_to_other_Services(t) = Employees_Moved_to_other_Services(t - dt) +

(Moving_to__other__Services - Moving_Back) * dt

INIT Employees_Moved_to_other_Services = 0

INFLOWS:

Moving_to__other__Services = Surplus/Time_to__adjust

OUTFLOWS:

Moving_Back = IF(Need_For_Teachers)>Employees_Moved_to_other_Services

THEN(Employees_Moved_to_other_Services/Time_to__adjust)

ELSE(Need_For_Teachers/Time_to__adjust)

First_Year(t) = First_Year(t - dt) + (New_Enrolments - From_3_to_4) * dt

INIT First_Year = 500

INFLOWS:

New_Enrolments = MIN(MAX_Enrolments__per_year,Total_demand)

OUTFLOWS:

From_3_to_4 = First_Year/AVG_Time__to_Pass

Perceived__Additional_Costs(t) = Perceived__Additional_Costs(t - dt) +

(Change_in_Perceived_Additional_Costs) * dt

INIT Perceived__Additional_Costs = 0

INFLOWS:

Change_in_Perceived_Additional_Costs = (Total__additional_costs-

Perceived__additional_costs)/1

Second_Year(t) = Second_Year(t - dt) + (From_3_to_4 - From_4_to_5) * dt

INIT Second_Year = 500

INFLOWS:

From_3_to_4 = First_Year/AVG_Time__to_Pass

OUTFLOWS:

From_4_to_5 = Second_Year/AVG_Time__to_Pass

Service_Quality(t) = Service_Quality(t - dt) + (Change__in_SQ) * dt

INIT Service_Quality = Quality_of_services

INFLOWS:

Change__in_SQ = (Quality_of_services-Service_quality)/1

Surface(t) = Surface(t - dt)

INIT Surface = 1600*AVG__Surface_per_child

Target_Debt_Reduction_for_the_Sector(t) = Target_Debt_Reduction_for_the_Sector(t - dt)

+ (-Reduction__Rate) * dt

INIT Target_Debt_Reduction_for_the_Sector = 6000000

OUTFLOWS:

Reduction__Rate = Annual_Savings-Decision_To_Invest_Additional_Earnings_in_Capacity

Teachers(t) = Teachers(t - dt) + (Moving_Back + Recruitment_from_Other_Departments -

Moving_to__other__Services) * dt

INIT Teachers = 90

INFLOWS:

Moving_Back = IF(Need_For_Teachers)>Employees_Moved_to_other_Services

THEN(Employees_Moved_to_other_Services/Time_to__adjust)

ELSE(Need_For_Teachers/Time_to__adjust)

Recruitment_from_Other_Departments =

IF(Moving_Back)<Need_For_Teachers/Time_to__adjust

THEN((Need_For_Teachers/Time_to__adjust)-Moving_Back)

ELSE(0)

OUTFLOWS:

Moving_to__other__Services = Surplus/Time_to__adjust

Third_Year(t) = Third_Year(t - dt) + (From_4_to_5 - To_Primary__School) * dt

INIT Third_Year = 600

INFLOWS:

From_4_to_5 = Second_Year/AVG_Time__to_Pass

OUTFLOWS:

To_Primary__School = Third_Year/AVG_Time__to_Pass

Total_Demand(t) = Total_Demand(t - dt) + (Chnage_in__Total_Demand) * dt

INIT Total_Demand = STD_Demand

INFLOWS:

Chnage_in__Total_Demand = (Actual_demand-Total_demand)/2

Actual_Annual__Vacancies = To_Primary__School

Actual_Demand = STD_Demand*Effect_of_service_quality_on_demand

Additional__Classrooms = Addtioanal__Pupils/AVG_Child__per_Classroom

Additional__Cleaning_Cost = Cleaning_Units*Cleaning__frequency*Unit_cost

Additional__Teachers = Additional__classrooms*Teachers_per__Classrom

Additional__Teacher_Costs = Additional__Teachers*AVG_teacher__cost

Addtioanal__Pupils = Desired__capacity_to_Rent/AVG__Surface_per_child

Administrative__Employees = 50

Administrative__Staff_Costs =

Average_Cost_per__Administrative__employee*Administrative__Employees

Annual_Savings = (First_Year__Spending-Current__Spending)+total__earnings

Annual__Percentage = 0.1

Available__Enrolments = MAX_Number_of_Pupils_for_a_Given_Surface-Total__Pupils

Average_Cost_per__Administrative__employee = 24000

AVG_Child__per_Classroom = Avg_surface__per_classroom/AVG__Surface_per_child

AVG_Fees__per_Child = 300

AVG_Surface__per_Class = Avg_surface__per_classroom

AVG_Teachers_per_Classroom = IF(Children__per_class_ratio>1)

Then(STD_teacher__per_class*2)

ELSE(STD_teacher__per_class)

AVG_Teacher__Cost = 30000

AVG_Time__to_Pass = 1

AVG__Surface_per_Child = 1.8

Benchmark__cost = 0

Children__per_Class_Ratio =

AVG_Child__per_Classroom/Reference_Children_per_Classroom

Cleaning_Cost = Cleaning__units*Unit_cost*Cleaning__frequency

Cleaning_Units = Desired__capacity_to_Rent/Unit_Square__Meter

Cleaning__Frequency = 200

Cleaning__Units = Total_Surface/Unit_Square__Meter

Current__Spending = total_costs

Decision_To_Invest_Additional_Earnings_in_Capacity =

IF(Annual_Savings>Target_annual__reduction_rate)

THEN(Annual_Savings-Target_annual__reduction_rate)

ELSE(0)

Demand__Coverage_Ratio = Total__Pupils/Total_Demands

Desired_AVG_Surface_per_Classroom = 25

Desired_Policy__Time = 1

Desired__Capacity_to_Rent = MAX_Spedning/per_square_meter_Annual_cost

Desired__Surface = Waiting_list*AVG__Surface_per_child

Desired__Teachers = Number_of_Classrooms*AVG_Teachers_per_Classroom

Earnings__from_Fees = Total__Pupils*Fraction_of_payer__pupils*AVG_fees__per_child

Effect_of_Service_Quality_on_Demand = GRAPH(SQ_ratio)

(0.00, 0.00), (0.1, 0.0201), (0.2, 0.0482), (0.3, 0.125), (0.4, 0.229), (0.5, 0.382), (0.6, 0.643), (0.7, 0.916), (0.8, 1.10), (0.9, 1.21), (1.00, 1.25)

Enrolment_Time = 1

Fees_Switch = 0

Financial_Request = Desired__Surface*per_square_meter_Annual_cost

First_Year__Spending = HISTORY(Current__Spending,0)

Fix__Costs = 500000+Administrative__Staff_Costs

Fraction_of_Payer__Pupils = 0.25

GAP = desired__teachers-Teachers

MAX_Annual__Financial_Availability = (Available_funds/desired_policy__time)-Perceived__additional_costs

MAX_Enrolments__per_year = (Available__Enrolments/Enrolment_Time)+Actual_Annual__Vacancies

MAX_Number_of_Pupils_for_a_Given_Surface = Total_Surface/AVG__Surface_per_child

MAX_Spedning = MAX(MIN(financial_request,MAX_Annual__Financial_Availability),0)

Minumun_annual_Square_meters_rent = 54

Need_For_Teachers = IF(GAP)>0

THEN(GAP)

ELSE(0)

Number_of_Classrooms =

(Total__Pupils*AVG__Surface_per_child)/Avg_surface__per_classroom

operating__cost = 0

per_square_meter_Annual_Cost = 200

Quality_of_Services = Teachers__coverage_ratio*0.3 +

Surface_ratio*0.3+Demand__Coverage_ratio*0.4

Reference_AVG_Surface_per_Class = 28

Reference_Children_per_Classroom = 30

Reference_Service_Quality = 0.8

Reference___Children_per_Teacher = 14

SQ_ratio = Service_quality/Reference_service_Quality

STD_Demand = 5000

STD_Teacher__per_Class = 1

Surface_Ratio = Reference_Avg_surface_per_class/AVG_Surface__per_Class

Surplus = IF(GAP)<0

THEN(GAP*-1)

ELSE(0)

switch = 1

Target_Annual__Reduction_Rate =

(Target_Debt_reduction_for_the_sector+Cumulative__reduction)*Annual__percentage

Teachers_per__Classrom = 1

Teachers__Coverage_Ratio = Reference___children_per_teacher/(Total__Pupils/Teachers)

Teaching__Staff_Costs = Teachers*AVG_teacher__cost

Time_to__Adjust = 1

Time_to__Rent = 1

Total_Costs = Teaching__Staff_Costs+Cleaning_cost+Fix__Costs

Total_Demands = Total_demand

Total_Surface = Surface+Actual_rent_Capacity

Total__Additional_Costs = Cleaning_Units+Additional__Teacher_Costs

Total__Earnings = Earnings__from_fees*fees_switch

Total__Pupils = Third_Year+Second_Year+First_Year

Unit_Cost = 100

Unit_Square__Meter = 50

Waiting_List = MAX(Total_demand-Total__Pupils,0)