Stress test for a Dutch municipality

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'The ability to weather storms depends on how seriously executives take risk management when the sun is shining and no clouds are on the horizon'

(Kaplan & Mikes, 2012)

Summary

Municipalities are currently facing major financial challenges and uncertainties. The retrenchment of the central government and the related decline in revenues for the municipalities, the large and comprehensive decentralizations and the stagnated labor- and house markets have a significant impact on the financial position of municipalities. The municipality X is no exception to these trends and encounters these developments in their businesses. In order to deal with these developments, the municipality outlined control mechanisms in their corporate strategy. The stress test is one of those mechanisms. The municipality is not called by name because of the political sensitivity. That is why the name of the municipality is replaced by a random letter; X.

The first chapter provides an overview of the thesis and describes the research conducted. First, the occasion of the subject, the research and the municipality X will be introduced, followed by an explanation of a stress test. The purpose of the stress test is to examine how stress resistant the financial position of the municipality X is and present which room for maneuver in policy and budget there is, now and in the coming years. The central research question in this thesis is based on the definition and purpose of a stress test and is defined as:

- How to develop a financial stress test to measure the financial position of a municipality and its ability to coop with stress?

A research model is illustrated to outline the steps that are important to answer the research question and the illustrated sub questions.

The second chapter gives an overview of the existing literature. Even though the research for financial stress in the public sector is rare, there are some scientific perspectives, which will be presented and illustrated. The two kinds of stress testing emerged out of these perspectives will be further explained in the second chapter.

An effort was made to collect all the possible indicators and their variables with the literature research. In chapter three these indicators and variables are defined and emphasized. The actual operationalization is presented in the appendices two and three. The collection of data and the explanation of how to guarantee the reliability and validity of this stress test is described in the remainder of chapter three.

The results are presented in chapter four and are based on the financial statements of the municipality X for the years 2008 to 2012. The numbers for het years 2013 to 2016 are forecasted and based on the multi-year budget and other relevant information. These numbers are only a forecast based on expectations and assumptions and therefore not definitive. The results of the stress test show that the financial position of the municipality X is under pressure through a number of important issues. The most important findings are:

- The municipality has a relatively high debt position and this will increase in the coming years to a ‘dangerous’ level;
- Interest expenses increased due to the increased long-term loans;

- The exploitation has fallen sharply in recent years and it is expected that it still fall slightly;
- The municipality has a relatively high local tax burden;
- The reserves would be markedly reduced in the coming years;
- Investment in land development and assets are extensive and financed with long-term loans;
- There are major risks related to the land development projects;
- There are major risks in scenarios such as the real estate crisis, the decentralizations and the government retrenchments.

There are some recommendations made to deal with the mentioned issues.

The final chapter critically reviews the results of this study and indicates to what extent the empirical investigations can be conducted to other municipalities and over time. Further investigation and continue improvements are necessary to coop with the developments and changing conditions for municipalities.

This study not only proposes a conceptual model for measuring performance in financial terms but also exemplifies its usefulness for both researchers and practitioners. The stress test can serve as a useful tool for controlling the financial position and thereby reducing the risks. It should not only be carried out during crisis years, but as well in prosperous years and become a structural tool to map the financial position.

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1. Introduction

This chapter provides an overview of the thesis and describes the research conducted. First, the occasion of the subject and the research will be explained. This is followed by an introduction of the municipality X in paragraph 1.2. The essence and principles of a financial stress test is made clear in paragraph 1.3. The central research question is presented in paragraph 1.4, which is supported by a number of sub questions. The research model is illustrated to outline the steps that are important to answer the research question and the sub questions.

1.1 Occasion

Municipalities are currently facing major financial challenges and uncertainties. The retrenchment of the central government and the related decline in revenues for the municipalities, the large and comprehensive decentralizations and the stagnated labor- and house markets have a significant impact on the financial position of municipalities. The municipality X is no exception to these trends and encounters these developments in their businesses. In order to deal with these developments, the municipality outlined control mechanisms in their corporate strategy. These are incorporated in the business plan 2012.

In this business plan 2012 of the municipality X, which was adopted by the board of Mayor and Aldermen on 07-02-2012, is written that the memorandum risk management should be increased by a financial stress test in 2012. The purpose of this stress test is to examine how stress resistant the financial position of the municipality X is, and what space there is in policy and budget for them.

1.2 Municipality X

The municipality is not called by name because of the political sensitivity. That is why the name of the municipality is replaced by a random letter; X. Projects and other characteristics are abbreviated or made unrecognizable.

The municipality has experienced a very high population growth over the last decade, in comparison with the Netherlands (see figure 1). The population has increased more than 40% from 2003 to 2012 (Central Bureau of Statistics, CBS, 2012).

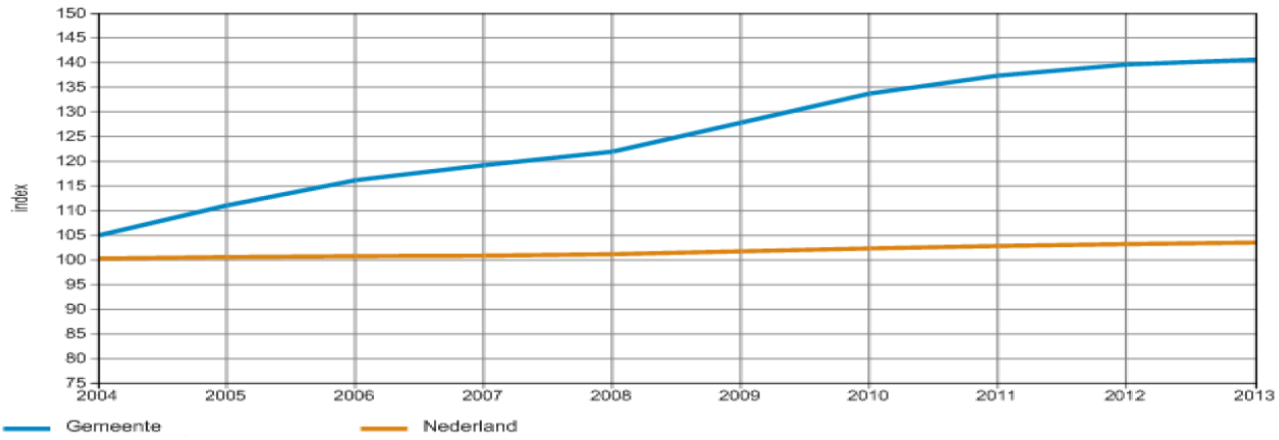

Figure 1: Development of the population in the municipality X vs. Netherlands

1.3 Financial Stress test

The stress test is since a several years an increasingly common topic in the Netherlands. The technical engineering sector was with the stress test for ICT companies, power plants and other (nuclear) installations the first sector that made use of a so-called stress test. Through the impact of the credit crisis in 2008 and the subsequent financial and economic crisis, there was reason for the development of a stress test for the financial sector; banks and insurance companies. In particular the stress tests for banks have frequently been in the public interest.

Subsequently there were also stress test designed for housing corporations and the government. Following these developments, there were recently also developed stress tests for other government organizations, including municipalities.

1.3.1 What is a stress test?

A single, unequivocal definition of a stress test isn't there. There are, among others, the following definitions compiled:

- Quagliariello (2009); 'An art which requires quantitative techniques, humane judgment and a series of discretionary assumptions'.
- The IMF (2002): 'A key element of macro prudential analysis that helps to monitor and anticipate potential vulnerabilities in the system'.
- Bouman & Gosselink (2012): 'A test that indicates the maximum load of ICT hardware, software, or an entire organization (financial)'.

Concluded can be stated that s stress test is seen by many scientist as a kind of test, whereby the stability of a whole is tested. The whole is tested through quantitative techniques, estimates and assumptions with a heavier load than usual. It is also tested what the maximum load on the system is and when the system fails.

Although all stress tests measure the stability of a whole, financial stress tests differ somewhat form the 'original' stress test by focusing just on the financial stability and not the stability of the whole. As the stress tests at municipalities nowadays are focused to the financial stability, is in the remainder of this study, when speaking of a stress test, referred to a 'financial stress test for municipalities'. This is in line with the desires of the municipality X.

1.3.2 Purpose stress test

A number of stress tests for municipalities are developed by different consultancy firms. Purposes of these stress tests are:

- 'To map the structural vulnerabilities of a system of financial position and to utilize the resilience' (SEO, 2012);
- 'Analyze the future-oriented fiancial stability and flexibility of a municipality in bad weather scenarios' (Ernst & Young, 2012);
- 'To gain insight into the financial flexibility and resilience of the municipality' (Deloitte, 2012);

- ‘Show how stress resistence the financial position of a municipality is and what room for maneuver there is in fiscal policy and budget’ (Bouman en Gosselink, 2012);
- ‘The municipalities undergoing the test to convince to take actions, that either reduce the impact of the crisis or reduce the likelihood of the outbreak of the crisis’ (Quagliariello, 2009);
- ‘A test of the flexibility to improve the structural budget and to test the level of reserves for absorbing the risks’ (BMC, 2012);
- ‘To map the financial position of the municipality based on a number of indicators‘ (Own tests of the municipalities Uithoorn en Heerlen, both 2012).

The objectives are all very similar; mapping the financial position, the flexibility of this position and describing possible actions to improve the financial position. The purpose of this stress test for the municipality X is not different:

Examine how stress resistant the financial position of the municipality X is and present which room for maneuver in policy and budget there is, now and in the coming years.

1.3.3 Opponents of the stress test

About the usefulness and the need for a stress test for municipalities is differently judged. Some consider it unnecessary novelties and point out that there is already an arsenal of tools and indicators available to map the financial position of municipalities. ‘The council could better use the existing sources to get grip on the municipal finances, than add yet another tool’ says Knaack (2011). Existing sources are:

- The planning and control cycle and related documents;
- Program budget with mandatory sections, including resistivity, ground policy and funding;
- Reports from the provincial supervisor;
- Periodic management reports;
- Management letter and memos;
- Financial statements, including the aforementioned paragraphs;
- Audit reporting on the fairness and legality;
- Account commissions and audit committee’s;
- The Audit;
- The question- and the research right (Knaack, 2011).

Opponents also argue that such an instrument does not add value if nothing is done with the results. In many cases, too little action taken on the basis of the available instruments and are underused. Therefore they don’t want to perform a stress test if no strategic actions will be taken on the basis of the results.

Finally, they claim that there are costs associated with the performing of a stress test. Although there are relatively few related costs (several thousand of Euro’s), is the investment in the opinion of opponents of the test and many civilians, a useless investment.

1.3.4 Proponents of the stress test

However, there are also a large number of proponents for the test. The 'Raad voor de financiële verhoudingen' (Rfv; the advisory Board for the Department of Home affairs) wants to oblige the test, as it is for banks. 'If the test shows that the budget and multi-year estimates don't give a true picture of the financial position, should that be a reason to place municipalities under guardianship of the province' says Bekkers (2012).

The financial position is closely related to the resistivity of a municipality; the risks where the municipality is exposed to in relation to their equity. After all, the risks can provide the necessary financial instability. Reporting the resistivity and risk management is mandatory since 2004, but is in many municipalities qualitatively not in order: 'Despite of the legal obligation, does only 30 to 40 percent of the municipalities meet the BBV-rules about the resistivity' (Mohanlal, 2012). Risk management is therefore particularly instrumental in nature and does not provide enough contribution to the management and control. Through a stress test, with a forward-looking assessment of risk and resistivity, risk management should be transparent and thereby improve the guidance of the council.

Other arguments and advantages mentioned by proponents of the stress test are:

- It is a tool to increase understanding and knowledge of financial stability and room for maneuver so that councilors have a decision support model in making choices in the long-term policy;
- It is a tool for administrators to create urgency;
- It is a tool to keep the long-term financial planning in control;
- It is a tool to increase understanding and knowledge of the agents of the various relevant departments so that they begin to see the big picture;
- It is a transparent control model;
- It provides a benchmark with other municipalities;
- There can be made a historical comparison by repeating the test. Lines and patterns become clearer and the financial position can be better controlled. (Binnenlands bestuur, 2012).

Municipalities have important social functions for its citizens and companies and make its expenditures with civil money. Therefore it should be expected from governmental organizations to control their risks and have their financial planning in order. A stress test can serve as a useful tool, upon condition that the results should lead to actions.

1.4 Research Questions and Research Framework

The objective of a stress test is, as already mentioned; examining how stress resistant the financial position of a municipality is and what room for maneuver there is in fiscal policy and budget. But what is *the financial position*? At a company will be paid attention to the earnings, the equity and the expected results. But just at a municipality are the equity, earnings and results less important.

The financial position has a few alternative definitions in the literature, such as financial condition, financial health and financial stress: 'this shows the existence of alternative names that correspond to

different methodological approaches on a common reality' (Casal, Buch Goméz & Liste, 2012). The following definitions of the financial position are found in the literature:

- 'The financial position is the ability of a municipality in relation to their operations, taking risks into account' (Mortel & Schormans, 2004);
- 'The financial position is the ability of a government to provide services and to meet its future obligations' (Governmental Accounting Standards Board [GASB], 1987);
- Financial condition is the ability of an institution to meet its obligations as they come due and to finance the services its constituency requires' (Mead, 2001);
- 'Financial condition is likely to meet the financial obligations due to creditors, employees, taxpayers, and other stakeholders, as well as obligations to serve their constituents in both the present and the future' (Berne, 1992);
- 'The financial position is the ability of an organization to meet its financial obligations on time' (Wang, Dennis & Tu, 2007);
- 'If the institution is capable of meeting its debts and in turn providing acceptable levels of services, we may say that it is in good financial health' (Zafra-Gomez, López-Hernández & Hernández-Bastida, 2008).

With a healthy financial position or condition is meant in this thesis: The structural ability to do all expenditures that are needed to meet the proposed level of provisions, even if there are certain setbacks. To the proposed level op provisions will be returned later and will be explained in more detail.

1.4.1 Research Question

The following research question is drawn, based on the definition and purpose of a stress test:

- How to develop a financial stress test to measure the financial position of a municipality (/the municipality X) and its ability to coop with stress?

1.4.2 Sub-Questions

To support this research question, a few sub questions are formulated:

Sub Question 1

What are important financial indicators to determine the financial position of the municipality X?

Sub Question 2

Which scenarios should be tested to indicate financial stress problems in the municipality X?

Sub Question 3

How developed the financial indicators in the past years?

Sub Question 4

How should the impact of the different stress scenarios be measured for the municipality X?

Sub Question 5

How should the financial flexibility in the budget of the municipality X be determined?

1.4.3. Research Framework

There are a number of stress tests for municipalities developed in the last years, each one with its own research model. The research model presented in figure 2 is compound out of the different models. It contains elements of multiple studies. It is the intention to analyze the financial position of a municipality at a detailed level and to present it in a clear and convenient manner.

The municipal financial position will be accessed in the model from a retrospective and a prospective manner, using the research question and sub questions.

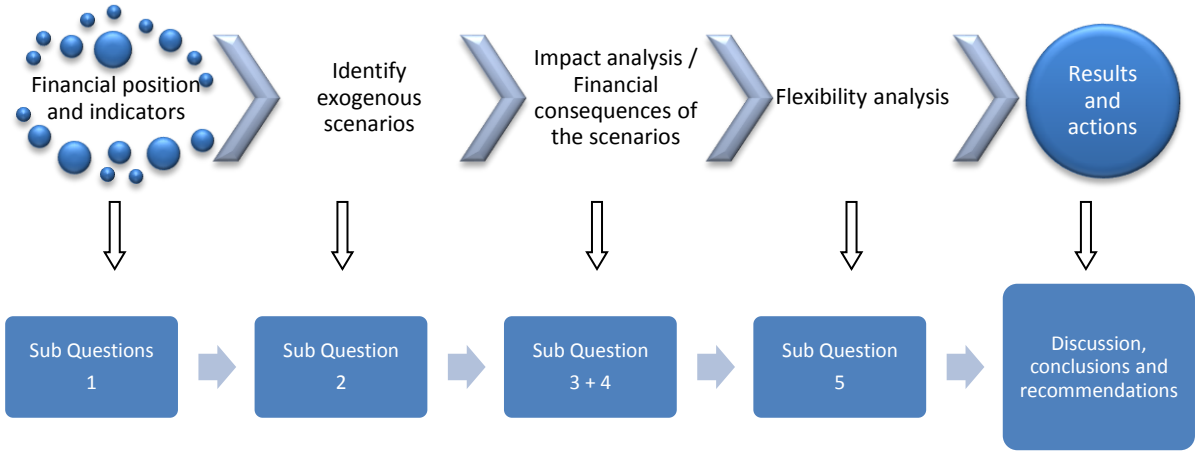

Figure 2: Research Framework

1.4.5 Principles and assumptions

- There is a legal framework for municipal finances. The Act funding local authorities (Fido), the 'Gemeentewet', the Authorities Budget and Accountability (GAP/BBV) and the Conditions evictions derivatives local governments (Ruddo) be considered as a given;
- A retrospective time scope of five years will be used, namely 2008 to 2012
- A prospective time scope of four years will be used, namely 2013 to 2016;
- The financial statement of the previous years (2008 to 2012) and the multiannual budget 2013-2016 are the basis of the test;
- For the benefit of the test is discussed with various specialist employees within and outside the municipality. The principles, accountings and outcomes are aligned with stakeholders and discussed with the concern controllers;
- The interdependence of various indicators is on main lines taken into account;
- The stress test is a relatively new instrument. It should therefore be seen as a model that can be further developed in the coming years.

2. Theoretical Framework

'Even though there are a number of models that predict financial distress in the private sector, such models are rare in the public sector' (Cohen, Doumpos, Neofytou, & Zopounidis, 2012). The application of the private sector financial stress models in the public sector is unsuitable because of the differences in interpretation of the financial ratios. A high ROA (return on assets) or ROCE (return on capital employed) for example, is a desired outcome for corporations but it isn't for municipalities.

However, even though the research for financial stress in the public sector is rare, there are some scientific perspectives. They will be presented and explained in the next paragraph. The two kinds of stress testing emerged out of these perspectives will be further explained in the following paragraphs.

2.1 Theoretical perspectives on financial condition in municipality's

Among the various studies that are used to determine the financial position of a local authority (fiscal crisis, fiscal stress, fiscal distress, fiscal emergency, financial situation, or financial condition; Honadle, 2004), there is some debate in the literature which variables should be addressed, besides the financial variables, which are used in all the studied literature. 'As financial condition is a concept that is not directly observable, the problem that arises is what the most appropriate instruments to measure it are' (Casal et al., 2012). There are a few proposals to assess financial position and they are influenced by the conceptual approach as the information available in each particular environment. 'The literature suggests a variety of indicators to use. There has not been consensus on what dimensions and specific indicators represent their status or value' (Wang et al., 2007).

In general, there are two major approaches for measuring the financial position of municipalities. One approach argues that the variables should measure the financial position in terms of financial variables. Diverse ratios and benchmarks have been used to evaluate governments' financial condition, but there is no consistency in their selection, use, and application (Copeland & Ingram, 1983; Berne, 1992; Clark, 1994; Helden, 2000; Carmeli, 2002; Groves et al., 2003; Kloha et al., 2005(1); Kloha et al., 2005 (2); Wang et al., 2007; Cohen et al., 2012; Casal, Gomez and Liste, 2012).

There is valid criticism that financial data do not always tell us the complete story in regard to other factors like policy, service programs, quality and availability. That's why the other approach suggests that other variables, beside the financial variables, should be taken into account in the determination of the financial position. These authors believe that, in particular, social and economic variables should be included (CICA, 1997; Greenberg and Hillier, 1995; Groves, Godsey, and Shulman, 2003; Murray and Dollery, 2005; Jones and Walker, 2007; Sohl et al., 2009; Hendrick, 2009; Zafra-Gómez et al., 2009;).

Wang, Dennis & Sen (2007) summarize this different points of view: 'Some authors consider that the socioeconomic environment is just another factor to be taken into account within the financial condition, whereas others are of the opinion that the latter is only constituted of the financial variables affecting the local authority and that socioeconomic factors affect local finances but should not be included as an additional factor within the financial condition'.

Financial variables

'A common refrain in the fiscal indicator literature is that no single indicator can paint the whole picture of a government's fiscal position' (Kloha, 2005). In the following section are authors highlighted which have researched the concept of financial condition on the basis of specific financial indicators.

Kloha et al. (2005) developed a 10-point scale of fiscal distress where nine specific variables are created that directly measure a concept from the public finance literature; (1) Population growth, (2) real taxable value growth, (3) large real taxable value decrease, (4) general fund expenditures as a percentage of taxable value, (5) general fund operating deficit, (6) prior general fund operating deficits, (7) size of general fund balance, (8) fund deficits in the current or previous year and (9) general long-term debt as a percentage of taxable value. A standard is set to distinguish the performance and give a score on each variable. Finally, the scores are counted and classified to a fiscal category; healthy, watch, warning of emergency.

Cohen et al. (2012) build an operational model for evaluating the financial viability of municipalities, using information retrieved by accrual financial statements. They distinguished six financial variables; (1) Total liabilities/total assets (2) Own revenues/total liabilities (3) Short term liabilities/own revenues (4) Operating expenses/own revenues (5) Subsidies/population (6) Own revenues/population. These variables were rated to importance (respectively 13%; 24,6%; 16,2%; 14,4%; 17,2%; 14,6%) using a formula. This model is easy to apply for benchmark purposes.

Helden (2000) described a framework for describing the municipal financial position. He only used the financial variables (1) Reserve fund, (2) Provision fund, (3) Sum of these, (4) Necessary budget cut and the (5) Tax potential. He took other financial variables into consideration but disregarded them because of the relatively small influences.

Honadle and Lloyd-Jones (1998) compared three methodologies; *Brown's ten-point test of financial condition*, *Alter's Ten-Year Trends* and *ICMA's financial Trend Monitoring System.* Brown's ten-point test consists of ten financial ratio's to measure four aspects of financial condition; Revenues, expenditures, operating position and debt structure. Ted Alter's ten-year trends are used to forecast revenues and expenditures. The Internation City Management Association (ICMA) has developed a set of thirty-six indicators for evaluating the financial condition of cities. These cover aspects such as revenues, expenditures, operating position and debt structure, and are plotted over a five-year period to show warning trends. They conclude that these are useful and small rural jurisdictions need tools like these to monitor their financial condition on a regular basis.

Carmeli (2002) made a framework of performance measurement in financial terms and divided variables into two categories short-term variables and two categories long-term variables. Short-term variables are current ration, self-income ratio, surplus ratio in the ordinary budget and surplus per resident ratio. Long-term variables are collecting (tax and fees) efficiency ratio, collecting per resident ratio, extraordinary budget income to loans load ratio, municipal development expense per resident, local service expense per resident. These last two variables already have a more socio-economic base, but are operationalized in financial terms.

Wang et al. (2007) developed a measure of financial condition based on the government-wide reporting framework, established by GASB Statement No. 34 (U.S.A.). They define the financial condition as the level of financial solvency, which includes the dimensions of cash, budget, long-run and service-solvency. They use 11 financial indicators: Cash-, Quick- and Current-ratio to measure the cash solvency; Operating ratio and Surplus (deficit) per capita for measuring budget solvency; Net asset ratio, Long-term liability ratio and Long-term liability per capita for long-run solvency; Tax per capita, Revenue per capita and Expenses per capita for measuring for service solvency. 'The results show that the financial condition measure is relatively reliable and valid in measuring financial condition, and that it provides a useful reporting framework to evaluate the financial condition of a government' (Wang et al., 2007).

Casal, Gómez and Liste (2012) analyzed whether the multiple indicators of the financial realities of local municipalities in Spain reflect the dimensions of analysis of financial condition. They took the approaches of CICA (1997, 2009) and ICMA (2003) into account and developed a battery of 33 financial indicators. They tested these indicators with information of 5823 Spanish municipalities.

In general, it can be concluded that using financial data in performance measurement may benefit the management of local government, as well as the public (Carmeli, 2002).

Socioeconomic variables

Jones and Walker (2007) developed a model to explain sources of distress in local government. Distress is interpreted as an inability to maintain pre-existing levels of services to the community. In their research, 161 Australian municipalities were compared, based on their data regarding service levels. Service delivery was the dependent variable, as council characteristics, local service delivery variables, infrastructure variables and financial variables are the explanatory variables. Their main finding was that higher road program costs were associated with higher level of financial distress.

Groves, Godsey, and Shulman (2003) developed a concept that assumed that social, economic, and demographic factors influence the financial position of a municipality. They state that the financial situation of a municipality can be measured through the concepts of short-term solvency and budgetary solvency. Solvency can be considered using a series of indicators related to sustainability, flexibility, and vulnerability (CICA, 1997; Greenberg and Hillier, 1995). Sustainability is defined as an entity's ability to maintain, promote, and preserve its citizens' welfare by means of available resources. Flexibility is its capability of responding to changes in economic and financial circumstances, within the limits of its fiscal powers. Vulnerability reflects an entity's level of dependence on the external financing received, that is, from transfers and subsidies.

Zafra-Gómez et al. (2009) build further on this concept that the socioeconomic factor should be taken into account. They developed a system for monitoring the financial condition of municipalities, providing an evaluation of all the elements that make up the financial condition, including an assessment of the quality of the services provided as a means of measuring service-level solvency. The financial variables, are measured for influence from (1) service variables like the quality of roads, surface of public parks, street lighting and waste collection and (2) socioeconomic variables like domestic income per capita, registered unemployment, industry, commerce, tourism, population aged less than 14 years, population

aged more than 65 years, net migration rate and dwellings per capita. They find that the financial position of local authorities depend to a large extent on the characteristics of the social and economic environment. After investigating 475 local authorities in Spain they conclude that 'a local authority's capacity to improve its financial position depends in part on the income levels of its population and on the level of economic activity in the region'.

Sohl, Peddle, Thurmaier, Wood, and Kuhn (2009) reviewed the literature on financial position and condition, and then developed a methodological approach that created a cohort of similar cities for benchmarking financial position and forming a basis for assessing financial condition. They claim that financial position is a relative position for financial indicators, and financial condition is the objective measure for financial indicators. They defined a lot of socioeconomic indicators to generate a cohort group for benchmarking. For further research they suggest 24 financial indicators for determining the financial condition.

Murray and Dollery (2005) evaluate the process of performance monitoring in New South Wales, Australia. Local governments are assessed by the NSW department of Local Government (DLG) to either be 'at risk' or 'not at risk', on the basis of a range of 30 key performance indicators, including financial results, infrastructure status, employment information etc. Murray and Dollery analyzed those councils that have been identified as 'at risk' with 10 financial variables. They conclude that the existing monitoring lists cannot provide an accurate representation of 'at risk' councils, and may in fact not be in a parlous financial state at all.

Exclusion of Socioeconomic variables

When we look to the purpose of a financial stress test, it is mostly concerned with the internal financial position of the municipality. Although I think socioeconomic and demographic variables affect the financial position in a certain way, the inclusion of nonfinancial socioeconomic and demographic factors in measuring financial condition is questionable;

- Socioeconomic factors may affect financial condition, but they are not financial condition itself. Additionally, exactly how socioeconomic factors affect financial condition is mostly unknown; therefor, the use of these factors in measuring financial condition can be arbitrary and sometimes erroneous. For example, *population growth* and *high personal income* are nonfinancial socioeconomic factors, which are believed to positively influence financial condition in existing literature. However, these indicators may also demand greater public spending in certain areas which may eventually worsen the government's financial condition.
- 'Financial reports vary from country to country, which makes the possibility of conducting international comparative studies difficult' (Carmeli, 2002). There's a very other policy in the Netherlands, compared to many other countries. The Dutch government collects the taxes (excluding OZB and some local taxes) from all Dutch citizens. A large part of these taxes are put in a fund for all municipalities. The distribution of the fund is arranged so, that it should reduce the differences in socioeconomic variables between municipalities. Municipalities which have 'poorer' socioeconomic factors (based on 62 socioeconomic indicators) are compensated with

relative more money of the fund. That's why the share of the municipality fund is already reflecting a lot of socioeconomic factors.

- The 'needs' aspect of the financial position is 'very difficult to operationalize for oversight purposes because there are widely varying estimates of what a community needs, even within the same state' (Kloha et al., 2005, p. 314).

That's why socioeconomic factors should not be included as an additional factor in the financial condition of municipalities, and therefore aren't included in the stress test.

The use of mostly financial data may yield some essential benefits. First, and perhaps most important, it can inform us as to the real financial situation of the local authority. A local authority with an inferior financial position lacks the resources to supply services at the appropriate volume and quality, not to mention to develop short- and long-range services and infrastructure programs. Second, although it is somewhat difficult to evaluate policy through financial data, a careful analysis may yield some benefits, mainly in exploring the extent of the direct inputs made by the local authority. This concept is reflected by the call for benchmarking the level of municipal development (Carmeli, 2002).

Overview financial variables

As already stated in the previous paragraphs, there is little agreement on what financial variables, indicators and dimensions definitively represent the concept of financial condition. That's why the existing financial condition literature is used to guide the selection of financial indicators employed in this stress test. An effort was made to present financial indicators that are commonly used and considered valid by both researchers and financial statement users. Appendix 1 presents a comparison between all the used financial dimensions and their indicators. This comparison is used, together with the comparison presented in the next paragraph, to select the most important indicators and variables.

2.2 Different kinds of stress tests

Since the beginning of the financial and economic crisis in 2008, a few consultancy firms introduced the financial stress test for municipalities, which are testing the financial position of municipalities. They can be classified in two kinds of stress tests:

1. Tests that analyze the financial position according to financial indicators, examples are:
    - Deloitte (Indicator testing; ten-to-sixteen indicators including benchmark)
    - BMC (Indicator testing; six indicators)
    - JE Consultancy (Indicator testing; Fourteen indicators and Retrenchment scan)

2. Tests that analyze the financial position according to the impact of different scenarios, examples are:
    - SEO (Scenario testing; Five emergency scenarios)
    - Ernst & Young (Scenario testing; Two bad weather scenarios)
    - Berenschot (Scenario testing; Scenarios in three domains)

The municipalities of Uithoorn (seventeen indicators), Hilversum (five scenarios), Heerlen (fourteen indicators) and Haarlem (seven indicators) have developed their own stress test in addition to the existing stress test from the consultancy firms..

2.2.1 Indicator-testing

The most popular and commonly used stress test by municipalities is the indicator-testing test. This test attempts to declare the financial position of municipalities on the base of predetermined financial indicators. The indicators are selected by the consultancy firm or municipality, or can be adjusted by the municipality concerned.

There are six different indicator-testing stress tests designed. These tests are compared to each other to find similarities and differences between the tests. The six stress tests distinguish 26 financial indicators to determine the financial position. Most of these indicators are used by multiple tests: seventeen indicators are used by three or more tests. Six indicators are only used once; Income dependency, loss of property tax, reserves/assets, debt/ground exploitation, replacement investments and EMU-balance. The results of this comparison are presented in table 1.

Nr.	Indicator	Deloitte	BMC	JE Cons.	Uithoorn	Heerlen	Haarlem
1	Income dependency		x				
2	Local charges	x	x	x	x	x	x
3	Unused tax capacity	x	x			x	
4	Loss of property tax through vacancy rate					x	
5	Resistance power	x		x	x	x	x
6	Reserve position	x	x	x	x	x	
7	Reserves / Assets	x					
8	Debt ratio	x	x	x	x	x	
9	Debt /Citizen	x	x	x	x	x	
10	Debt /Exploitation	x	x	x	x	x	x
11	Debt/Ground exploitation	x					
12	Interest expenses	x	x	x	x		
13	Interest of own financing resources	x	x	x			
14	Interest allocated to investments & GREX	x	x		x		
15	Rent-risk-norm					x	x
16	Provisions	x		x	x		
17	Savings for maintenance	x		x	x	x	x
18	Replacement investments				x		
19	Ground exploitations	x	x	x	x	x	x
20	Not into exploitation taken grounds	x		x	x	x	
21	EMU-balance				x		
22	Related parties			x	x		
23	Guarantees	x	x	x	x	x	
24	Budget 2013-2016	x	x	x	x	x	x
25	Budget flexibility		x		x	x	
26	Incidental gains and losses	x				x	

Table 1: Comparison between different kinds of indicator stress testing

2.2.2 Scenario-testing

The scenario-testing stress test was introduced in 2012 and is therefore a relative new kind of test. This test attempts to analyze the impact of simulated exogenous stress scenarios on the financial position of municipalities. The most relevant parameters, based on the specific nature, are chosen to predict each scenario and analyze their consequences.

There are four different scenario-testing tests designed. These tests are compared to each other to find similarities and differences between them. The four tests distinguish seven comparable scenarios, to analyze their potential impact on the financial position.

The test of SEO and Berenschot determines a base path for future years to subsequently calculate the impact of the stress scenarios as deviation of this path. The test of Ernst & Young and the municipality Hilversum analyze the impact of two stress scenarios, a light and a heavy one, to determine the impact on the current financial position.

Nr.	Scenario area	SEO	Ernst & Young	Berenschot	Hilversum
1	Financial crisis (Interest, inflation)	x	x	x	x
2	Social-Economic crisis (Unemployment)	x	x	x	x
3	Real estate crisis (House market)	x	x	x	x
4	Government Retrenchment	x	x	x	x
5	Humanitarian disaster	x			
6	Decentralizations		x		
7	Citizens (#)		x		

Table 2: Comparison between different kinds of scenario stress testing

In practice, it is possible that multiple scenarios or shocks simultaneously occur. Indeed, given the financial-economic character of a number of these scenarios, it is very likely that if one of these scenarios occurs, some other will too. It is therefore important to take into account the interdependence between the scenarios and the possibility that their effect cumulate.

2.2.3 Differences and Similarities between the different kinds of stress tests

The stress test for indicator testing gives a baseline (a zero-measure) for the current financial position on the basis of current financial indicators. One indicator stress test is also using historic data, to see the development of the indicators over time. They are only using hard numbers. The stress test for scenario testing on the other hand, gives a future measurement of the current and expected financial position, based on budgeted and projected financial scenarios. To approximate the projected financial scenarios, some indicators are used. Roughly approximated, both stress tests are using the same indicators.

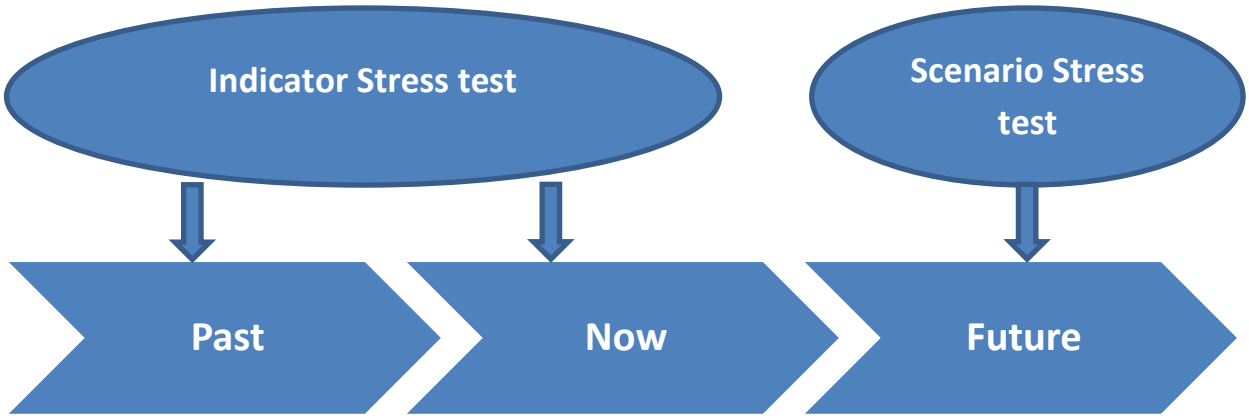

Figure 3: Impact stress test in schedule

Because both stress test focus on different points in time (history, present, future), and largely use the same indicators they can complement each other, by integrating both tests into one bigger test.

2.2.4 Comparison stress tests with literature

When we look to the existing stress tests for Dutch municipalities and the literature to determine the financial condition of municipalities, there are some striking facts. First, the literature as well as the stress tests suggesting a variety of indicators to use. So the conclusion of Wang et al. (2007) was true; 'there has not been consensus on what specific indicators represent their status or value'.

Second, although there were a lot of differences in the composition of the indicators, almost all the indictors mentioned in the literature came back in the stress tests (except the rent-risk-norm and the resistance power, which are typically Dutch expressions).

Third, all indicators which were used three times or more in the stress tests, are strongly expressed in the literature. Except for the resistance power, all these indicators were mentioned by multiple researchers in the literature to have a specific relation to financial condition. So there is a strong relation between the indicators used in the literature and the indicators used in the stress tests.

2.3 Model financial position

In the previous paragraph we identified a number of indicators to get a better insight in the financial position. These indicators will be explained in more detail in the next chapter. The schematic representation of the financial position is presented in figure 4, with the financial indicators and the exogenous scenarios of the various stress tests.

This model and the classification of the financial indicators emerged out of different models, like the financial position model of Deloitte (2010), the resistance power model of Gerritsen (2003), Series financial function from the municipality Apeldoorn (2008). It outlines that the financial position of a municipality not only depends on internal risk-indicators but also on possible external risks. As Carmeli and Cohen (2002) already stated: 'The financial situation of a local authority is a result of internal as well as external factors' (p.894).

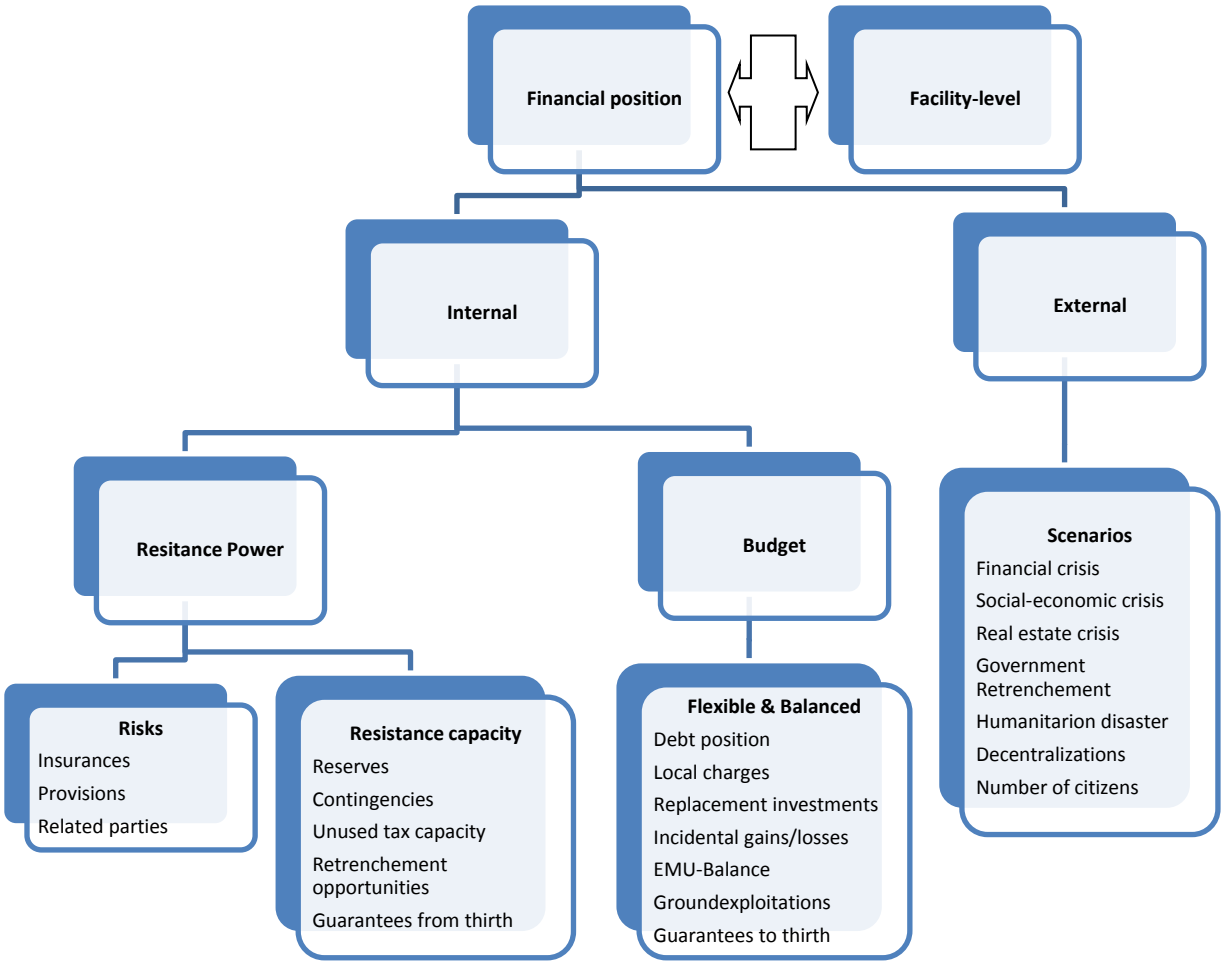

Figure 4: Financial position of a municipality

Facility-level

As already stated in previous chapters, it's very dependent on the proposed quality of facility-level of the municipality. That's why the facility-level is the most important indicator of the financial position. It is the quality of the products and services received by the population, their 'customers', to meet the needs of the citizens. The facility level can always be better, and therefore more expensive. But what is an acceptable quality level of facilities for a municipality? Because needs are hard to operationalize and widely varying, they are therefore hardly to achieve. So it should be as high as possible.

The facility-level is determined by the council and can be adjusted to a higher or lower level. In this research, however, is assumed that the given, current level of facilities won't be adjusted.

3. Research Method

An effort was made to collect all possible indicators and their measures with literature research. After defining and emphasizing all these indicators, which is described in the next paragraph, the indicators are tested, on the municipality X in particular. The collection of the data will be explained in the second paragraph. The result of the data will be explained in chapter 4; Results.

3.1 Measures

Given all the dimensions, indicators and specific variables from the literature, as well as the recent developed stress tests, I sought a new measure of financial condition that would avoid the problems, mentioned in the literature, and meet eight key criteria:

- Measurement validity, so that components operationalize concepts from theories of financial condition
- Measurement reliability, so that measures are free from random measurement error
- Predictive ability, so that preventive action can recognize distress before it becomes a financial emergency
- Relevance to the municipalities interest
- Use uniform, and frequently collected data (mostly public available)
- Historical sense
- Accessible and easily understood by local officials and those who are interested
- Resistant to manipulation

3.1.1 Financial indicators

A lot of different financial indicators are used in stress tests and in the literature, as already stated in the previous chapter. The indicators are classified, substantiated, supported by more specific literature and operationalized with measures for using the indicators. The extensive and detailed description of all these financial indicators is attached in appendix 2. The indicators and variables are selected on the base of the literature review and the comparison of the stress tests.

3.1.2 Financial Scenarios

This paragraph describes the development of financial scenarios to test the financial position of the municipality. A flow diagram is presented to describe the principles and structure of each scenario:

Flow diagram

1 The first step is the identification of the different scenarios. In the existing stress tests, the literature and within current developments in the area of municipalities can several possible scenarios be identified.

2 The second step is the explanation of the scenario according two principles, ‘Heavy’ and ‘Extreme’. These scenarios should be plausible; the recognized variables should be close to the reality. In consultation with specialists should be aligned if all related variables are taken into account.

3 The third step is to determine how these scenarios affect the municipality. It is necessary to operationalize and determine the relationship between the scenario and the effects on the

financial statements of the municipality. Possible is to map all 'automatic' responses in policy. These responses in policy are not the cause of the scenario, but are inextricably linked to the scenario.
Explanations of the results can be found in the individual indicators, which are described above.

4 The fourth step is to decide if the determined results of the financial scenarios are acceptable. If not, policy should be made or be adjusted to make the financial statements acceptable.

5 The fifth step is to calculate the impact of this new or adjusted policy, with the help of the financial scenarios.

6 The sixth en final step is to determine the social impact on society of the changing financial situation.

The fourth, fifth and sixth steps are not part of this thesis.

Each scenario is specifically developed for four years, even as the calculated effects. It is assumed that the policy of the government is constant, so no effects of changing government policy are expected, except for the government retrenchment as modeled in the fourth scenario.

The description and operationalization of each scenario is attached in appendix 3. For each scenario is defined which influences the scenario has on the financial statements of the municipality.

3.2 Data

First, to picture the historical financial position from the municipality X, data was collected using the annual reports from 2007, 2008, 2009, 2010 and 2011. Some indicators were already explained in the annual reports, others had to be calculated or figured out with other information files.

Second, to figure out the current financial position from the municipality X, much more data was collected; the annual report of 2012, COELO-rank, tax information, maintenance schedules, ground exploitation information and more specific information from departments in the municipality.

Third, to project the future financial position from the municipality X, data was collected from the multi-year budget, the investment planning and also more specific information from departments in the municipality. For a better understanding of the data, there was a lot of dialogue with employees with a good understanding of the specific variables and mechanisms. The data is used for the calculation of the financial indicators as well as the financial scenarios.

3.3 Measurement reliability and validity

There are two main test properties when making a good instrument: The reliability and the validity of the measuring instrument. It is important that there is a good understanding of these properties, so the quality of the measuring instrument should be optimized.

Measurement validity

When making a test instrument like a stress test, it is important to oversee the design validity. In this study, three attributes will be examined to assess the level of measurement validity (Babbie, 2007):

- Face validity
- Content validity
- Criterion validity

Face validity

This is also seen as the validity itself. The question that is central is: Does the test measure what the test is intended to measure? The face validity requires that the financial condition measures consist of indicators that make intuitive sense in measuring financial condition. Previous literature and previously designed stress tests have confirmed that the use of these indicators will measure financial condition.

Content validity

The content validity examines whether the test measures the entire concept. Many concepts have a wide domain. A test has to measure all aspects of it, if it wants to be representative reflection of the concept. The completeness of the test plays a role.

By studying all the published stress tests and taken all variables and indicators into account, it can be said that this test does measure the entire concept, and not only parts of it. In addition to the studied stress tests, there was a large literature study, with literature about the financial condition. The observation was not only in national literature, but consists of a lot of national as international articles and books. The measure of the concept of financial condition should therefore be improved and the content validity thereby to.

Criterion validity

The criterion validity means: To what extent does the test have a predictive value? If the predictive validity is high, the test is a good predictor to predict future behavior. The use of the government-wide information, required by the BBV satisfies this attribute largely. The use of the multiannual budget for instance, improves the predictive value. The budget is namely estimated by specialist in the municipality. Calculations, estimations and assumptions of the plausible scenarios give even a better predictive value of the financial condition. A bandwidth of the financial condition is made, based on the possible international, national and local movements.

Measurement reliability

This is widely known as the degree to which measure is free from random measurement error (Babbie, 2007). In cases where a measure consists of multiple indicators, a method to estimate random measurement errors is to assess a measure's internal consistency based on the idea that random measurement errors vary from one indicator to another within the same measure. Large variation (or lack of correlation) among indicators indicates large random errors.

In the case of financial condition of municipalities there are multiple indicators with multiple measures for each indicator. An estimation of reliability is to assess whether these different measures or variables fit into an indicator. In other words, the variables should be grouped to indicators. These indicators should measure the financial condition of a municipality.

Two criteria are used in this study to assess the reliability of the overall measure of financial condition. First, the variables used to measure each indicator of financial condition should be related. Some indicators however only use one measure. Second, the indicators assessing financial condition should be associated with each other based on the idea that though these indicators, different aspects of financial condition will be measured. In the end, they all assess the same concept, namely; financial condition.

4. Results

The presented results in this chapter are based on the financial statements of the municipality X for the years 2008 to 2012. The numbers for het years 2013 to 2016 are forecasted and based on the multi-year budget and other relevant information. These numbers are only a forecast based on expectations and are not definitive.

4.1 Indicator-Testing

Income dependency

The distribution of the total income of the municipality X in the recent years and the expected income for the coming years is displayed in table 3. The total income has experienced some fluctuations in the recent years, from € 103,7 million at maximum in 2008 to at least € 92,5 million in 2010.

*€1000	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
Municipal fund	29.971	34.085	37.193	38.720	38.824	37.620	38.719	38.403	40.091	10.120
Other government contributions	11.328	10.200	10.079	10.115	7.883	7.574	7.574	7.574	7.574	-3.754
Lands Exploitation	20.700	28.600	20.200	24.700	20.500	25.951	28.573	26.538	27.726	7.026
OZB	5.576	6.949	7.201	6.903	6.876	7.789	8.045	7.862	8.136	2.560
Other taxes and charges	11.024	9.051	10.185	10.564	10.910	11.749	12.125	12.521	12.935	1.911
Dividend & profit distributions	9.435	9.574	2.000	1.611	2.206	2.206	2.206	2.206	2.206	-7.229
Remaining	11.914	5.290	5.606	5.245	5.700	5.922	5.050	5.174	4.714	-7.200
Total income	99.948	103.749	92.464	97.858	92.899	98.811	102.292	100.278	103.382	3.434

Table 3: Income per income category

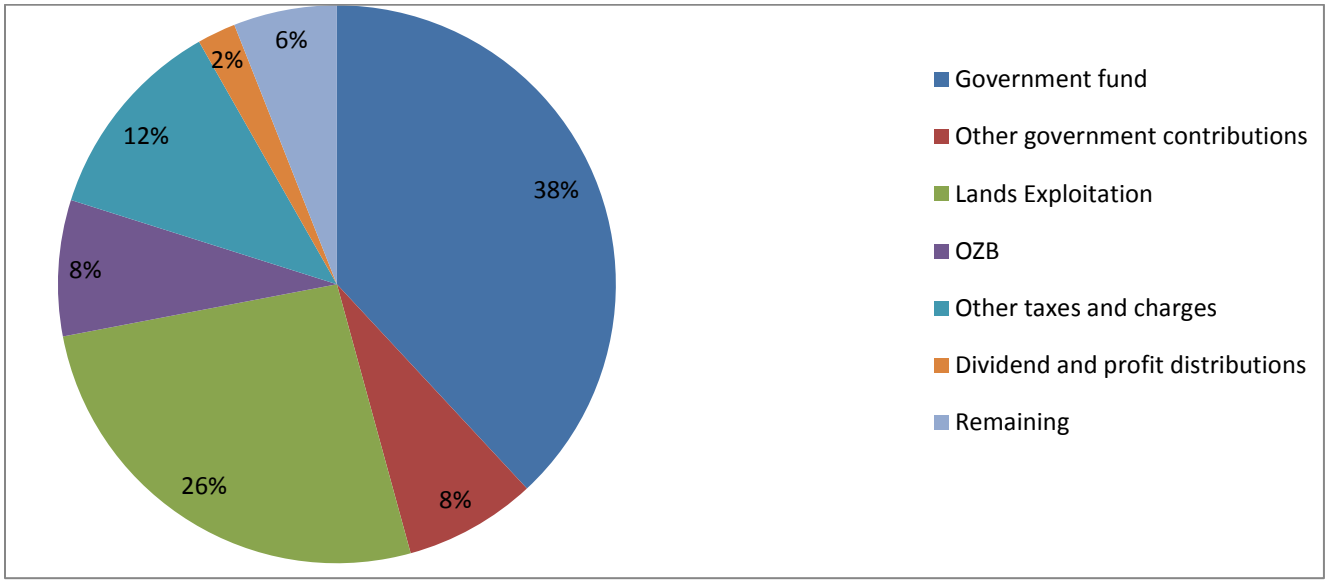

Figure 5: Income distribution 2013

Through a significant increase of the municipal fund in the past five years is the income dependency of the municipal fund in 2012 with 41,8% relative high. The average dependency in the Netherlands is 36% for all municipalities (Allers, 2011). The expectation is that the dependency will decrease to 38% and subsequently will stabilize at 39%. This is slightly above the average.

The dependence of the total government contributions has increased in recent years to 50,3% of the total revenues. This is a relative low dependence of the total government contributions when we look at all municipalities: on average 54% (36% municipal fund and 18% specific contributions). It is striking to see that the specific benefits in the municipality X fall far short on national average, only 8%. The total government contributions are expected to stabilize around the 46%, which is relatively low.

The 'Atlas Rijksuitkeringen aan gemeenten' (2012) shows that the municipality X received 44% less government contributions per inhabitant, in comparison to the national average. This is explained by the amount of decentralization and integration contributions, and the specific contributions per inhabitant of the municipality; respectively 67% an 69% below the national average per inhabitant. The municipal fund per inhabitant is also 25% lower for X than the average payment per inhabitant (Coelo, 2012). This explains the low dependence of the total government contributions compared to the slightly above average dependency of the municipal fund.

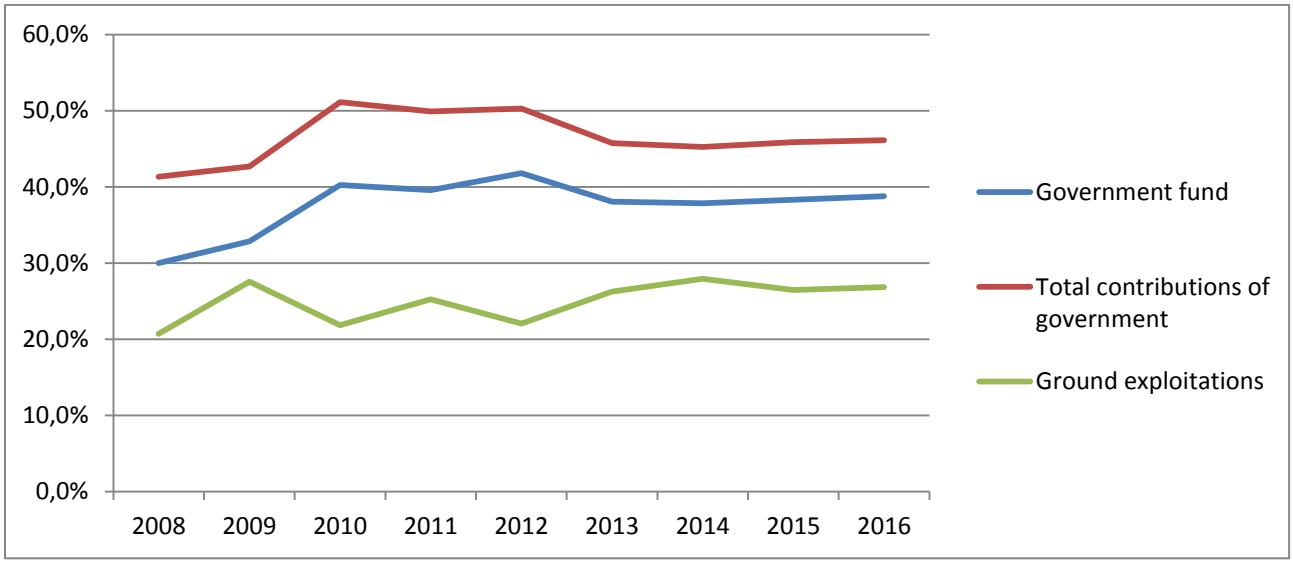

Figure 6: Income dependency

The 'Raad voor financiële verhoudingen' (RFV) calculated that the average share of the ground exploitation in Dutch municipalities is about 20% of the total income (Van der Lei, 2011). The share of the ground exploitation at the municipality X is the last four year on average 25%. The proportion of ground sales from the total income was always relatively high, compared to other Dutch municipalities. It is expected that the income from ground exploitations will stabilize at a more than average level of 27% in the coming years.

Local charges

The local tax burden for citizens is recorded by COELO (2012). This research company examines the local tax burden on citizens and compares municipalities based on the local charges for a multi-person household. They produce a ranking based on this data; rank 1 represents the lowest charges. Table 6 shows the data relating to the tax burden for the inhabitants of the municipality X in comparison to all Dutch municipalities.

	2008	2009	2010	2011	2012	Difference
Local tax-burden X	€ 727	€ 722	€ 715	€ 740	€ 752	€ 25
Mean in NL	€ 629	€ 649	€ 659	€ 671	€ 683	€ 54
Deviation	15,6%	11,2%	8,5%	10,3%	10,1%	-53,7%
Rank on COELO-list	391	356	320	335	324	-67
Number of municipalities	465	457	447	444	437	-28

Table 4: Local burden

The municipality X has a relatively high tax burden, with € 69 more than the average per person in the Netherlands. This is more than 10% higher than the average level of taxes. That is why the municipality is at a relative low position on the COELO rank for the local taxes: 324 of the 437 (part) municipalities.

The local taxes for multi-person households in X increased with € 25 in the past five years. The average increase in the Netherlands is € 54, so the increase in X is lower than the average in the Netherlands. So the deviation is decreased with € 29 over the past five years.

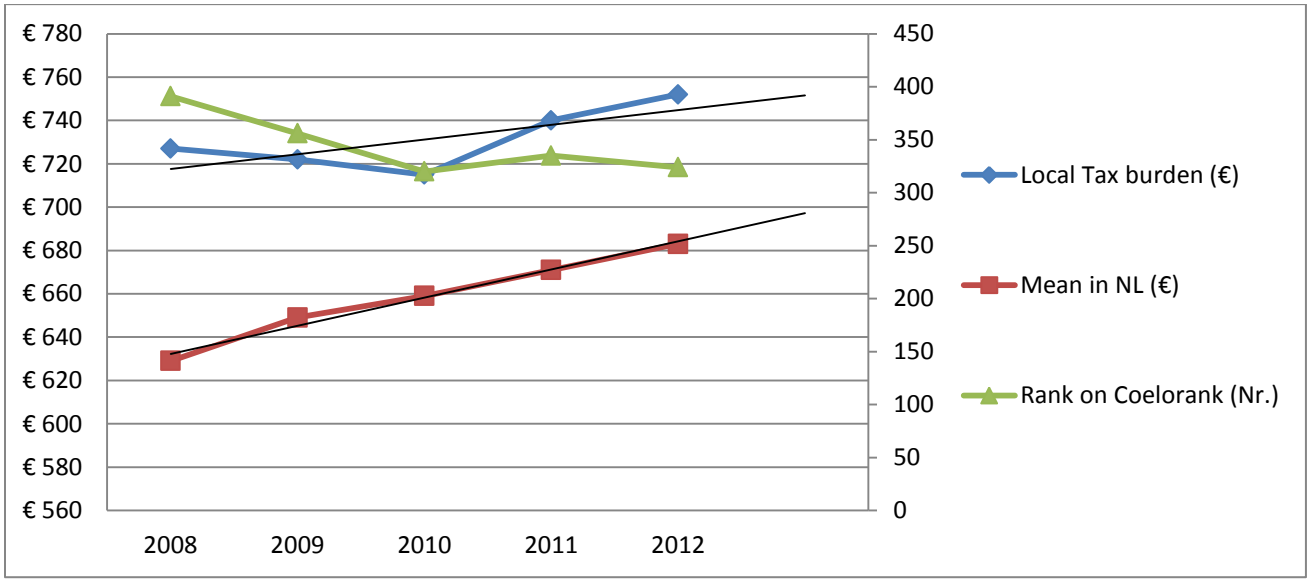

Figure 7: Local tax burden

The difference in trend lines of the tax burdens is clearly narrowed in recent years, as figure 7 shows. This is partly the reason that the municipality has raised 67 places in the ranking of COELO (from place 391 to 324). The other reason is that in 2012 there are 28 municipalities less than in 2008. This is the consequence of a number of mergers between municipalities.

According to the stress test of Heerlen is the score on the variable determined by the deviation of the average tax burden in the Netherlands. A deviation of five percent above or below the mean is the standard. The municipality X has a burden which is 10,1 percent higher than the average tax burden in the Netherlands. This score is insufficient. However, the difference decreased in the recent years, so the trend line is positive.

Unused tax capacity

The property tax revenues may show a limited annual increase for all municipalities nationwide (macro standard). This standard is set for 2013 on 3% and includes acreage expansion. The increase in revenues is decisive, and not the increase in tariff. There is a possibility in difficult financial times to use the part of the tax capacity that is not exploited yet.

The council of X has determined in the administrative agenda 2010-2014 that only an increase in property tax may be made on the basis of inflation rates. Additional increases are therefore excluded. The property tax annually by 2% in recent years and 2,5% in 2013, which is equal to the inflation rates.

The property tax revenues of the municipality X will increase from 2013 (€ 7,79 million) to 2014 (8,05 million) by 3,3%, which is including the acreage expansion. Since this is already above the macro standard of 3%, it is assumed that a further increase in property tax revenues is not possible. The municipality has therefore no unused tax capacity. If the acreage expansion will be excluded and only the increase in tariff is determinative, then could the municipality enter an additional property tax increase of 0,5%. This would amount to an additional income of €38.945, which is only 0,034% of the total income. The unused tax capacity is thus very low.

Loss of property tax due to vacancy

A high vacancy rate can cost the municipality money; because there is a loss in the property tax revenues. At the moment there is a loss of revenues, the score is unfavorable. There is a direct relationship between property tax revenues from non-residential and the vacancy rate.

There is currently an investigation going to the vacancy in the municipality and the effects of this vacancy rate for the miss of property tax. The results will have to wait, due to some problems in the numbers of the tax-department of the municipality.

Cost covering of charges and fees

This variable shows the extent to which the costs are covered by the benefits. Certain tariffs are maximized to 100% cost recovery and the benefits may not exceed the costs. If the cost-effectiveness is lower, there may be room to raise more benefits.

The sewer charges didn't succeed to be cost-effective; the costs exceeded the benefits by € 0,6 million. The sewer charges are therefore an opportunity to increase the revenues. There are also opportunities in the municipality X to increase the revenues from fees. These have an average cost recovery of 72%. The total additional space for the municipality to increase this income is € 0,85 million. The possible

revenues of these increases is 1,3% of the total operations, which means relatively much additional revenues.

Resistance power

The systematics of the BBV was used in calculating the resistance power in the municipality X. This implies that destination reserves are not involved in the consideration of the resistance capacity. Some municipalities are interpreting these rules differently.

In figure 8 is to see that the first risk assessment was established in 2009, since structural risk management was only recently introduced in 2008. The resistance capacity has made a small increase in recent years. This is due to the slightly increase of the general reserve. The year 2010 was due to the high operating result an outliner in terms of the resistance capacity. The expectation is that the resistance capacity will decrease the coming years. Assumed is that the assessed risks, either the required resistance power, after the 2012 remain on the same level. This assumption is made because we have no prospective ideas of possible changes in the risk-level.

The resistivity, or resistance power, has a large fluctuation, arising from the outliner in resistance capacity, mentioned above. The resistance power remains structurally, until 2015, above the 1,0. This means that the resistivity of the municipality is sufficient according to the standard table that the VNG has developed in collaboration with the University of Twente (Appendix 1). It is expected that the resistance power will decrease in from 1,21 in 2013 to 0,84 in 2016. This would mean that the resistance power become moderate.

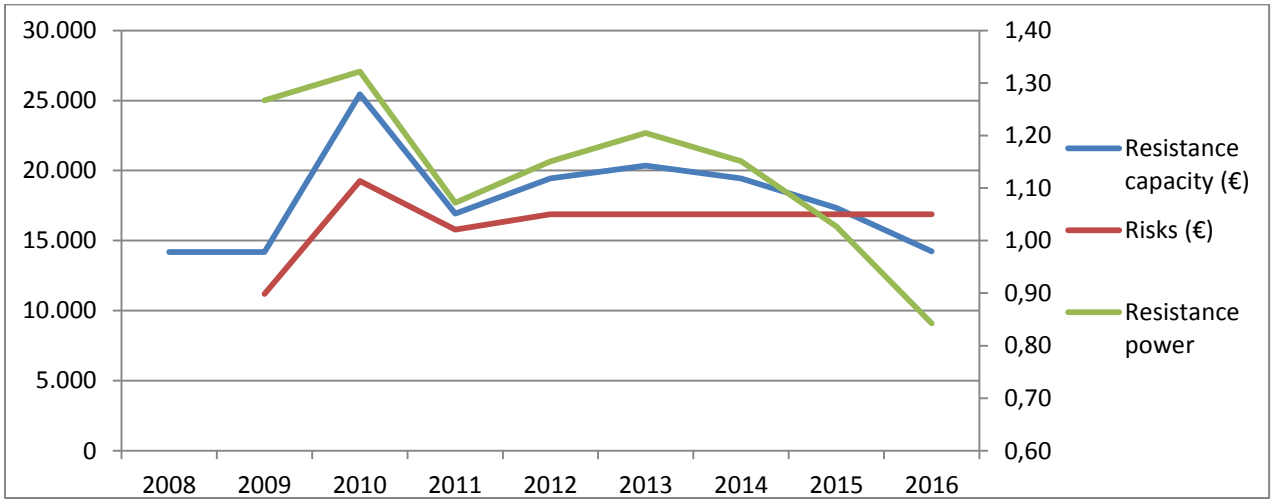

Figure 8: Resistance power

As stated previously, the resistance power is a product of multiple dimensions and indicators. These different dimensions and indicators will detailed be addressed in the remainder of this chapter.

Reserve position

A distinction is made in the municipality X between the following components of equity:

- General reserve: This reserve isn't given any destination and is therefore in principle freely to deploy. The general reserve is completely included in the resistance capacity.
- Operating result: The annual result after destination is included in the equity
- Destination reserves serving investments: Structural funds are extracted for these reserves to cover structural costs. This concerns the reserves which serve to cover the capital costs of investments. Examples are the reserves for the 'S-school', the Municipal accommodation and sport complex 'G.W.'. Characteristic for these reserves is that the amount of the reserve is equal to the carrying amount of the investment and that the accrued interest is as high as the rate for the capital costs. The saved interest of the reserve is equal to the fixed interest cover for the allocation of capital costs and is entirely added to these reserves.
- Destination reserve BOVO: These reserves have been established for financing district facilities that fall beyond the borders of zoning plans. The reserve is fund by multiple ground complexes. Examples are the reserves for the 'K-street' and the 'T-street'.
- Other destination reserves: These reserves have been established with a specific purpose. The utilization has by definition an occasional nature. Examples are the reserves official residence, sustainable safeness and business operations.
- Provisions for maintenance: As described in the operationalization of the indicators (appendix 1), the provision for facilities have the nature of a reserve and are therefore included in the equity. Examples of maintenance provisions are the provisions for maintenance of buildings and roads.

The development of these components of equity is schematically and graphically presented in table 5 and figure 9.

*€1000	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
General reserve	11.242	11.275	20.294	15.736	15.800	19.757	19.051	17.917	15.451	4.209
Operating result	2.569	2.531	6.528	1.634	3.482	426	59	-1.078	-1.893	-4.462
Destination reserves for historic investments	25.236	25.365	25.006	25.144	24.745	23.306	22.389	21.570	20.760	-4.476
Destination reserves BoVo	9.398	9.337	10.568	18.083	18.453	9.186	7.054	5.543	5.172	-4.226
Other destination reserves	19.765	17.568	15.078	7.555	8.847	6.914	6.388	5.897	5.291	-14.474
Total Destination reserves	54.399	52.270	50.652	50.782	52.045	39.406	35.831	33.010	31.223	-23.176
Maintenance provisions	6.482	6.959	8.359	8.687	5.215	5.009	5.018	6.434	7.145	663
Equity	74.692	73.035	85.833	76.839	76.542	64.598	59.959	56.283	51.926	-22.766

Table 5: Components equity

The absolute equity of the municipality X has remained constant in the recent years, with a positive peak in 2010. It is expected that the downward trend from then, continues in the coming years. The downward trend becomes even more obvious. This is caused by the negative movements of all items of

the equity, see figure 9. Both the total destination reserves as the operating result will show a downward trend.

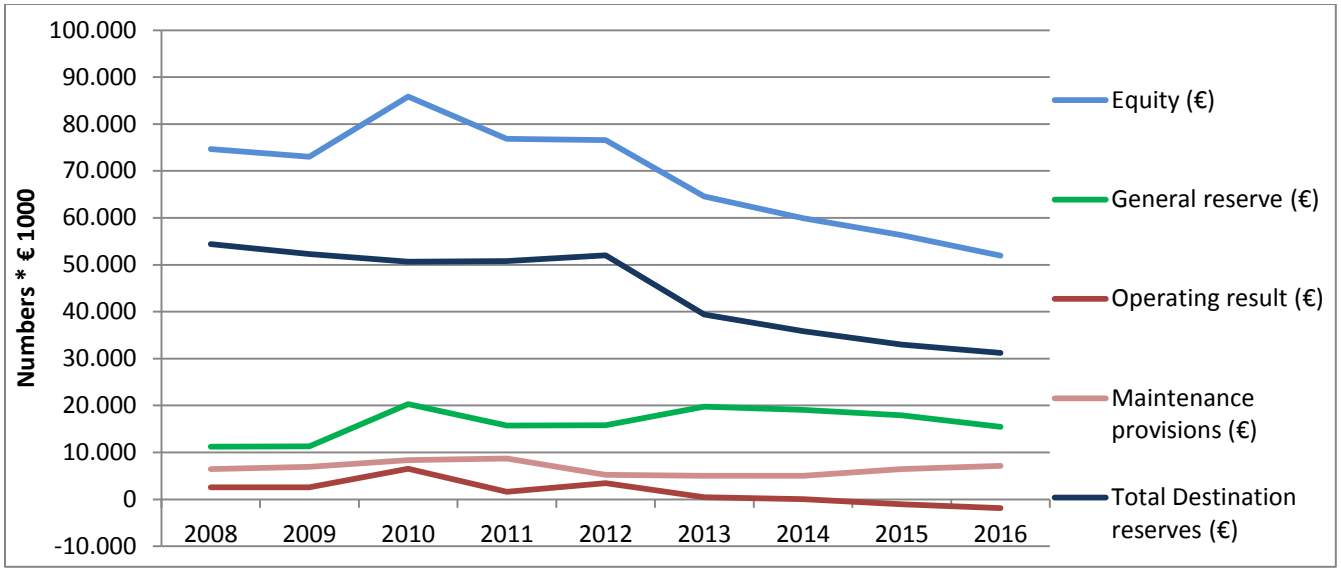

Figure 9: Components equity

The operating result was positive in all previous years, with a positive peak in 2010 of € 6,5 million. This outlier explains, along with the increase in the general reserve, the increase of the equity in 2010. For the coming years is a nil result expected and for the years 2015 and 2016 even a negative result. This will be explained in more detail by the indicator budget.

Solvency rate

The relative equity of the municipality X, also known as the solvency rate, has decreased in recent years (see figure 10). This decrease in proportion equity of the total assets is explained by an increase in total assets. The rate of 35% in 2008 fell to 29% in 2012.

The expected decrease in equity for the coming years will also affect the solvency rate. It is expected that the ratio will fall further to 20,8% in 2016. The slight decrease in total assets still has some mitigating effect on the decrease of the ratio.

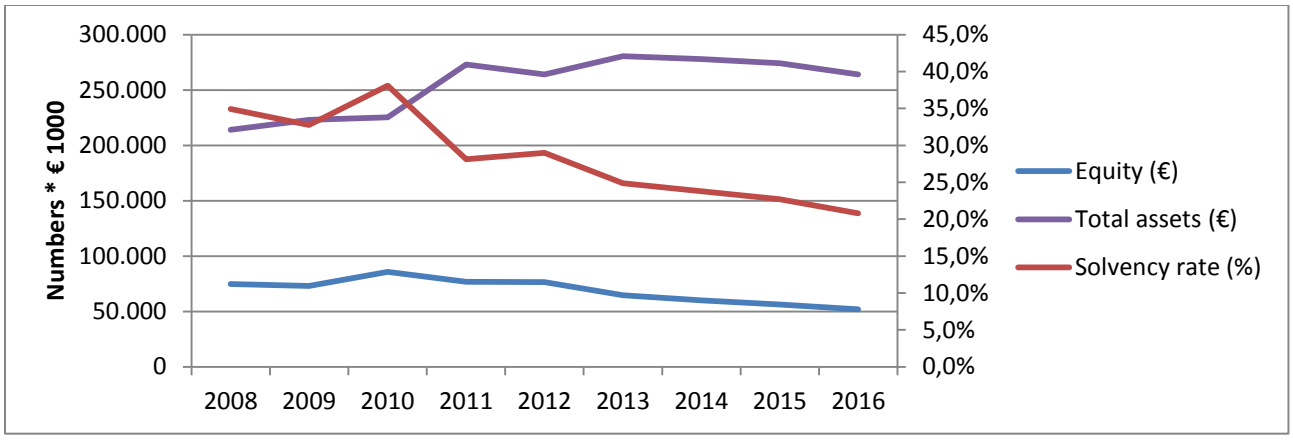

Figure 10: Solvency rate

According to Gerritsen and Allers (2002) is a solvency rate of 30% healthy for municipalities. When the equity is lower than 30% of the total assets, caution is advised. This is in line with the VNG and Zandvoort (2012). They quantify a solvency rate of 20% or less as a low degree of equity financing.

The municipality X still remains above the standard of the VNG and around the standard of Gerritsen and Allers with 29%. So they have a healthy solvency rate. However, the expectation is that the solvency rate of the municipality in 2016 is slightly above the 20% and thus has a low degree of equity financing.

Equity position in relation to exploitation

The development of the equity in relation to the exploitation has a number of strong fluctuations as can be seen in figure 11. This can be explained by the strong variations in the exploitation. The high exploitation in 2011 is obvious to see. In 2008 the equity in relation to the exploitation was approximately 54%, in 2012 69% and it will decline to 47% in 2013. This is the buffer ratio. The higher this ratio, the better it is. However, the equity in relation to assets and inhabitants gives a better reflection.

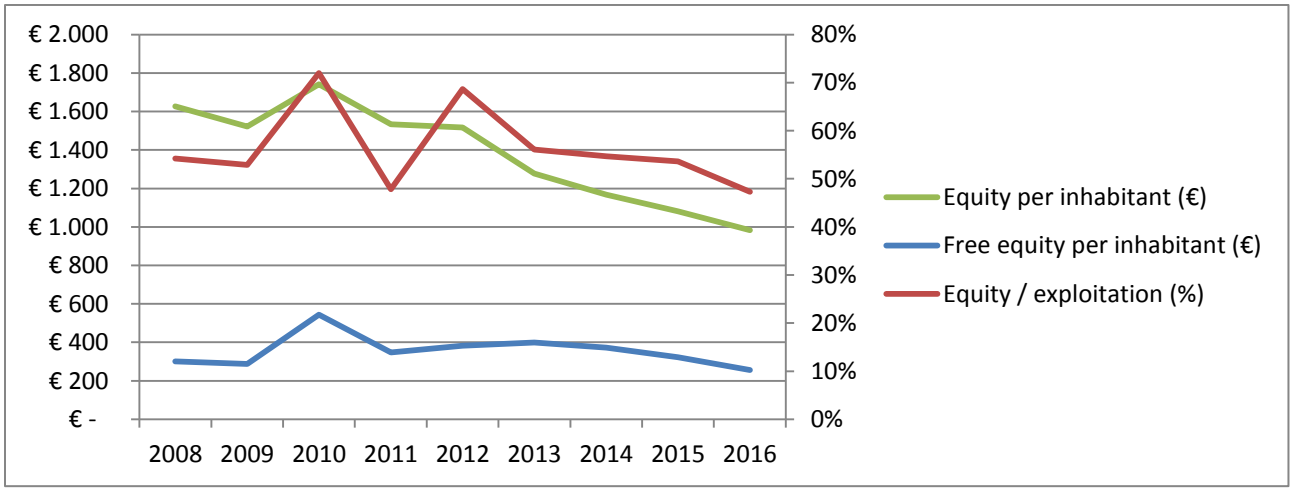

Figure 11: Equity

Equity position in relation to inhabitants

The equity per inhabitant dropped already since 2010 trough declining reserves and an increasing population dropped. End 2010 the equity was per inhabitant € 1.742 and in 2012 it was € 1.517. It is expected that the equity will drop further to less than € 1.000 per inhabitant in 2016: only € 983.

A remark should be made to the oppressive nature of the destination reserves and the maintenance provisions. For these 'reserves' is already made a specific destination. The proportion that is really available as buffer capacity is much lower; the general reserve only. The province of South Holland recommends a minimum general reserve of ± 4% of the total budget, which is over € 4 million for the municipality X. The province Utrecht recommends a non-mandatory reserve of € 150 per capita as necessary. In 2012 there was € 19,3 million and thus € 382 in reserves available per inhabitant. This goes back to € 13,5 million and € 256 per inhabitant in 2016. The municipality is thus comfortably above the standard of the two provinces.

Hidden reserves

When an asset is lower than the market value or is still salable when it's written off, then it's called a hidden reserve. The sale of these assets generates profits, which can be freely deployed. Municipalities can have two types of hidden reserves: Hidden reserves in material possessions or in financial assets.

Municipalities should be extremely careful in determining the hidden reserves because the salability of property and assets is in many cases questionable. Especially in times like these with a difficult property market. There is currently an research being held to hidden reserves in the property sector, so the hidden reserves are not known. Because of these difficulties is provisionally no hidden reserve taken into account. In an future stress test should the results of the research included.

Outstanding loans

Table 6 shows the outstanding loans in both absolute as relative terms has declined sharply in the last years. The municipality virtually doesn't borrow to third parties anymore to limit the risks. The proportion of outstanding loans is with 2% of the attracted long-term loans relatively low compared to other municipalities.

The municipality is going to provide an amount of maximum €1 million next year for loans to starters on the housing market. This will increase the total of outstanding loans a little.

*€1000	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
Outstanding loans	8.924	6.129	5.016	4.801	3.310	3.275	3.252	3.228	3.205	-5.719
Attracted long-term loans	108.747	123.640	122.334	170.694	168.758	175.189	171.703	171.418	177.132	68.385
Outstanding loans as % of long-term loans	8%	5%	4%	3%	2%	2%	2%	2%	2%	-6%

Table 6: Outstanding loans

Debt position

According to Van der Lei (2010, 2011), Smits (2012) and Elsenaar (2012) is the debt position one of the key indicators to determine the financial position of a municipality. The debt position is therefore measured by multiple variables, namely: D*ebt ratio, net debt per inhabitant, net debt in relation to the exploitation* and the *debt quote*.

Debt ratio

Figure 12 shows the various components of the gross debt.

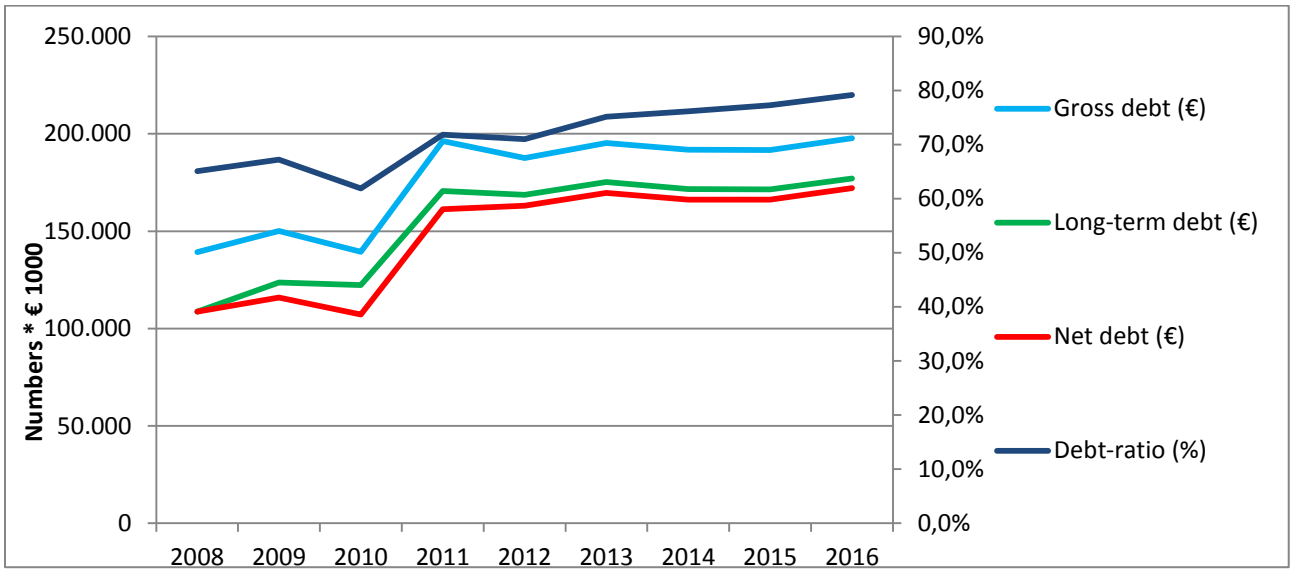

Figure 12: Development debt position

The gross debt has increased sharply over the last years. The long-term debt largely determines the gross debt. The other components (short-term debt, other provisions and accrued liabilities) provide only a small augmentation in the total gross debt.

The gross debt of € 139 million in 2008 has increased to € 188 million in 2012. This increase is due to the increase in long-term debt of € 109 million in 2008 to € 171 million in 2012. This rise in long-term debt was necessary to adopt the total book value of the ground project A.W. from the partnership A.W. BV/CV in 2011. The cooperation with two other parties in an PPS-constructions is terminated due to financial problems. The municipality has therefore taken the total ground development program upon them.

The gross debt as a share of total assets, also known as the debt ratio, has therefore increased from 62% in 2010 to 71% in 2012. This means that the assets of the municipality are for a very large extent financed with debt. According to the VNG and Zandvoort (2012) is a factor of 80% a very high degree of debt finance. Currently, the ratio is high with 71%, but it expected that ratio will be about 80% in 2016.

Net debt

The net debt is the gross debt with an adjustment for the financial current assets and outstanding loans. That is why the net debt is somewhat lower than the gross debt (see figure 12).

Table 7 and figure 9 show the net debt per inhabitant. This variable is very suitable for making a comparison with other municipalities. The net debt per inhabitant rises from € 2.367 in 2008 to € 3.234 in 2012. The strong increase in 2011, as a result of the acquisition of A.W., can be very well seen in both figures. The net debt per inhabitant will, through an increasing population, stabilize around € 3.200 per inhabitant after 2012.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
Net debt (*€ 1000)	108.661	115.838	107.263	161.350	163.159	169.703	166.289	166.146	172.190	63.529
Inhabitants	45.900	48.013	49.286	50.087	50.457	50.568	51.318	52.068	52.818	6.918
Net debt per inhabitant (€)	2.367	2.413	2.176	3.221	3.234	3.356	3.240	3.191	3.260	893
Gross debt / Exploitation (%)	101%	109%	117%	122%	168%	169%	175%	183%	180%	79%
Net debt / Exploitation (%)	79%	84%	90%	100%	146%	147%	152%	158%	157%	78%

Table 7: Debt per inhabitant and pertaining to exploitation

The average net debt per inhabitant of all municipalities in the Netherlands was €2.357 in 2009 and € 2.188 in 2010. The net debt per inhabitant in the municipality X was about average in these years. As a result of the increased net debt per inhabitant (up to € 1.045 per inhabitant in one year) it is expected that the net debt per inhabitant for X is shifted significantly above the average in the Netherlands. This average for 2011 is not yet known.

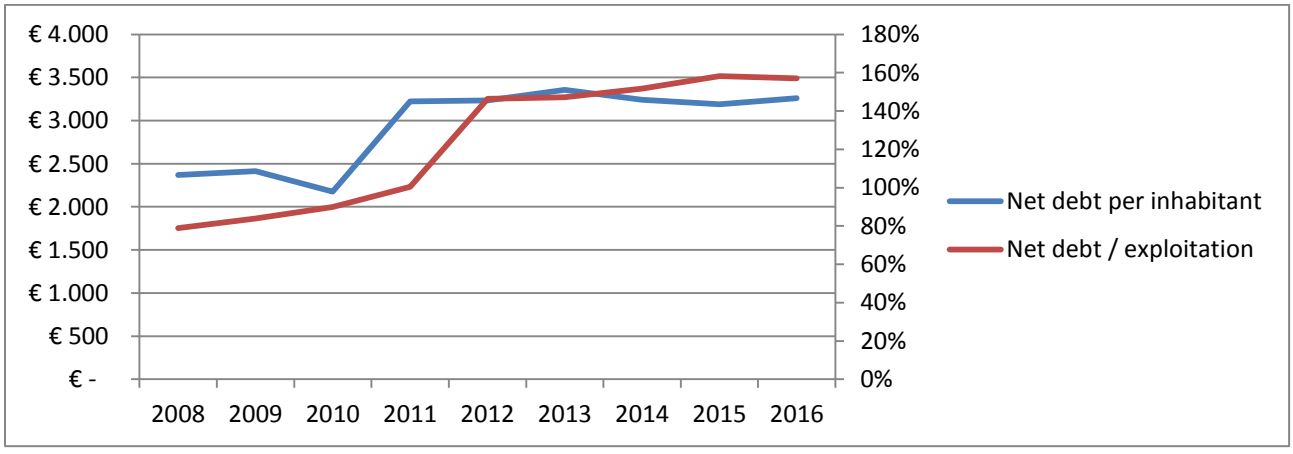

Figure 13: Development net debt position

Debt in relation to exploitation

The debt in relation to the exploitation, also known as the debt quote, gives a good indication of the debt pressure on the exploitation. Research by Van der Lei (2011) concluded that the average gross debt as a share of the exploitation for all Dutch municipalities was 86% on December 31, 2009. The gross debt of X was a lot higher with 109%. Thereafter the percentage increased significantly to 168% in 2012. Since the average gross debt for Dutch municipality's end 2012 is not known, there is no comparison possible. However, it may be stated that it is way above the expected average.

In order to get a better picture, I'll use the net debt in relation to the exploitation, to circumvent possible differences in accounting rules (regarding working capital). Van der Lei (2011) and VNG (2010) emphasize that a net debt of less than 50% of the exploitation is good. A net debt over 100% means a vulnerable financial position and where caution is advised. However, a net debt of more than 150% of the exploitation is too high and dangerous.

The net debt in relation to the exploitation is since 2008 increased from 79% to 146%. This means that the municipality has a high or even a very high debt pressure. It is expected that the net debt still slightly increases in the coming years together with a stabilization of the total income, resulting in a net debt up to 157%. This represents a dangerous financial position.

The municipality has experienced a sharp decline of the total income in recent years, and is therefore seen as a 'shrinking municipality'. When a municipalities have declining revenues, additional repayments are needed to retain a constant debt quote. But since the debt has risen sharply in recent years and thus no additional payments have been made, the debt quote has increased. This is explained by the shift from structural growth in income (until 2011) to a decrease in income (from 2012). The municipality should have switched from a structural borrowing behavior to structural surpluses, to maintain a constant debt quote. However, this has not been the case, whereby the debt quote is exploded between 2010 and 2012, from 90% to 146%.

Loans used for ground exploitations

Table 8 shows to what extent the loans are used to finance the ground exploitations. Approximately 90% of the loans are used to finance the ground exploitations in 2012. The table shows that this percentage will strongly decline after 2012. This movement is mainly due to the declining ground exploitations. The loans are more used for financing the assets after 2012. These assets, especially the tangible assets, will increase substantially (see appendix 6).

* € 1000	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
Loans (Long and short)	139.281	150.044	139.428	196.267	187.534	195.318	191.904	191.761	197.805	58.524
Ground exploitation (stock and provision)	96.387	101.003	115.255	168.266	168.550	128.941	125.126	119.906	106.829	10.442
Ground exploitation in % of loans	69%	67%	83%	86%	90%	66%	65%	63%	54%	-15%
Loans not for ground exploitation	31%	33%	17%	14%	10%	34%	35%	37%	46%	15%
Loans -/- Ground exploitation	42.894	49.041	24.173	28.001	18.984	66.377	66.778	71.855	90.976	48.082
Loans -/- Ground exploitation in % of exploitation	31%	36%	20%	17%	17%	58%	61%	68%	83%	52%

Table 8: Loans and destination

Finance structure and explanations

Figure 14 shows the finance structure of the municipality. As we saw the individual movements in equity and debt, we see how they adhere to each other. It is clear and striking to see that the gross debt and the equity are moving away from one another. The derived solvency rate and debt ratio make thereafter the same movement. It should be noted that is assumed that the financial current assets, current liabilities and accrued expenses remain the same after 2012.

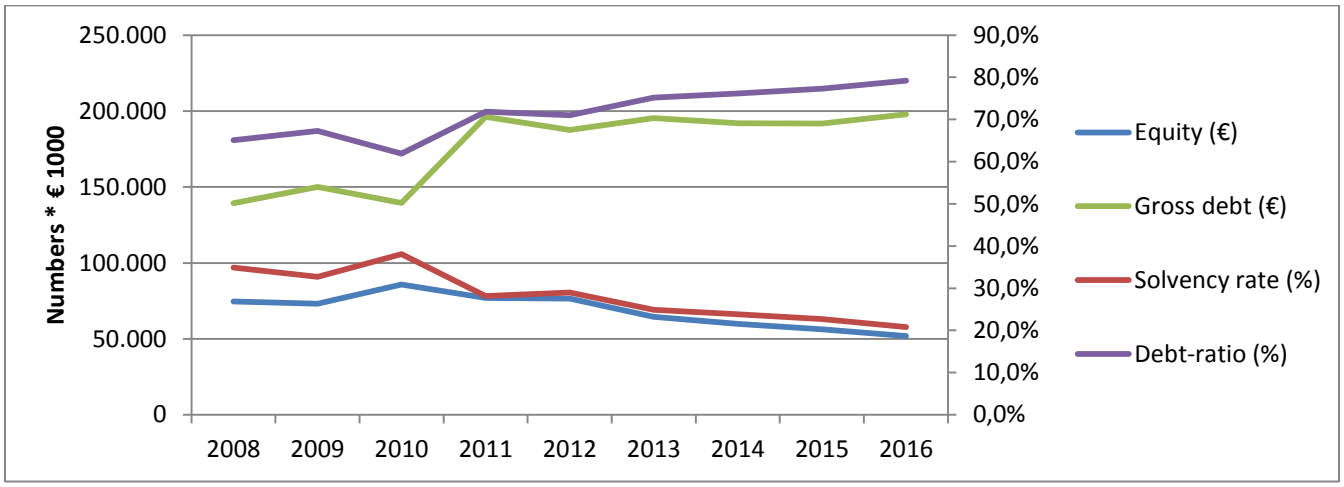

Figure 14: Finance structure

Interest expenses

The interest- expenses and benefits of the municipality X consist of the following components:

- Interest for attracted long-term loans;
- Interest for attracted short-term loans;
- Saved interest through reserves and provisions. For the destination reserves for investments, and the provisions for alderman pensions and negative ground complexes is 5% interest calculated and added to the relevant reserve or provisions;
- On the remaining reserves is calculated 1% interest. One third is added to the general reserve and two third is for the benefit of the operations;
- Interest for outstanding loans.

The total interest expenses are reducing, as a solid component, the flexibility of the total budget. The total capital costs are the sum of interest expenses and the depreciations. The depreciations are the decreases in book value of the assets. In a municipality this are the fixed assets with economic utilities. The capital costs are mapped in table 9.

*€1000	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
Interest expenses long-term loans	4.708	4.966	4.867	4.426	6.565	6.736	7.030	6.614	6.784	2.076
Interest expenses short-term loans	73	109	30	86	0	101	98	47	49	-24
Interest expenses own funding	3.312	3.620	2.972	1.281	1.257	1.339	1.289	1.192	1.150	-2.162
Interest income	-828	-57	-39	-25	-445	0	0	0	0	828
Total interest	7.265	8.638	7.830	5.768	7.377	8.176	8.417	7.853	7.983	718
Depreciation	7.639	8.017	4.219	10.829	7.595	14.251	9.513	9.051	8.024	385
Capital costs	14.904	16.655	12.049	16.597	14.972	22.427	17.930	16.904	16.007	1.103

Table 9: Capital costs

What stands out in the table above is that the interest for the long term loans has increased. Since the interest rate has decreased in recent years, it is obviously due to the increased loan portfolio. The total depreciations show a large increase in 2013. This is caused by a high amount of (social) investments that are planned for this year. Social investments are depreciated in one year. Economic investments differ from 2 to 45 years, depended on the kind of investment.

*€1000	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
Total interest	7.265	8.638	7.830	5.768	7.377	8.176	8.417	7.853	7.983	718
Exploitation	137.764	138.024	119.190	160.661	111.534	115.246	109.654	104.980	109.699	-28.065
Interest in % of exploitation	5,27%	6,26%	6,57%	3,59%	6,61%	7,09%	7,68%	7,48%	7,28%	2,0%
Capital costs in % of exploitation	10,82%	12,07%	10,11%	10,33%	13,42%	19,46%	16,35%	16,10%	14,59%	3,8%

Table 10: Interest and capital costs pertaining to exploitation

The interest expenses as a percentage of the exploitation remained constant in recent years. The interest expenses were relatively low in 2011, which can be explained by the high exploitation in that year. The interest expenses as a percentage of the exploitation are rising after 2011. The interest expenses are in 2014, with 7,68% relative high. Interest expenses of 8% from the exploitation are seen as a high interest pressure.

The total capital costs as share of the exploitation emphasizes which part of the exploitation is used for the capital costs. It is interesting to see that this share has increased in recent years and will further increase the coming years. The peak is largely explained by the high depreciation in that year.

Interest result

A fixed interest rate is calculated upon the book value of the investments (5%) and the ground exploitations (4%). This is charged to the various products and programs. The difference between the interest expenses and the charged interest rate is expressed in the interest result. This result will come fully in favor of the operations.

*€1000	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
General services	12.851	14.144	10.224	16.788	13.743	21.145	16.893	16.550	15.651	2.800
Ground exploitation	3.844	4.181	4.459	3.773	5.672	5.796	4.728	4.268	3.848	4
Total allocated	16.695	18.325	14.683	20.561	19.415	26.941	21.621	20.818	19.499	2.804
Interest result	1.791	1.670	2.634	3.964	4.443	4.514	3.691	3.914	3.492	1.701

Table 11: Interest result

A striking feature in table 11 is the increasing interest result. This is explained by the allocated interest (5% for the general services and 4% for the ground exploitations) is much higher than the actual market rate and thus the average interest rate of the long-term loans. The allocation of the interest rate is determined annually in the policy document (Kadernota). The relative high interest- and capital costs are somewhat mitigated by the high interest result in the last years and the coming years.

Rent-risk-standard

The rent-risk-standard is not exceeded in all previous years. This means th at the municipality X scores good on this indicator. However, it is expected that it will be exceeded in the years 2013 and 2014. This is due to the extremely high repayment in those years; € 43,5 million and € 35,5 million respectively. The municipality assumed that repayment funds were generated in 2013 from the ground projects. This will not be the case in 2013, and probably also not in 2014 (see figure 12). That is why the municipality anticipated in 2011 for the risk of refinance, with the attraction of € 32 million in long-term loans with deferred payment in 2013.

*€1000	2008	2009	2010	2011	2012	2013	2014	2015	2016
Repayments on long-term loans	4.697	32.107	21.307	16.340	12.936	43.568	35.486	16.286	10.286
Standard (20%)	35.918	40.083	41.886	34.614	23.782	26.066	24.226	22.502	23.913
Room (+) / Exceeding(-)	31.221	7.976	20.579	18.274	10.846	-17.502	-11.260	6.216	13.627

Table 12: Rent-risk-standard

The cash limit is not exceeded for many years in the municipality X. This specifies that the municipality belongs to the 61% of the municipalities that didn't exceed the cash limit (Snelle berichtgeving, 27-9-2012).

Provisions

Provisions are intended to cover future obligations. They are formed by contributions that are charged to the programs. This results in an even distribution of expenses over several years or the covering of expected losses. As described in the operationalization of indicators (appendix 2), the provisions have all a different nature. All provisions are disaggregated by nature in table 13. Following the BBV, the provision for doubtful debtors are included in the balance sheet item (BSI) other receivables (see appendix 5) and the provision for negative complexes is accounted under the BSI ground stock.

*€1000	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
Pr. liabilities and risks	4.015	2.233	2.954	4.494	4.656	5.129	5.201	5.343	5.673	1.658
Pr. maintenance	6.482	6.959	8.359	8.687	5.215	5.009	5.018	6.434	7.145	663
Pr. Doubtful Debtors	1.641	3.541	580	2.496	2.120	1.764	1.764	1.764	1.764	123
Total provisions (excl. negative grounds)	12.138	12.733	11.893	15.677	11.991	11.902	11.983	13.541	14.582	2.444
Pr. negative grounds	17.919	19.024	20.931	26.476	27.662	10.339	10.815	11.248	10.781	-7.138
Total provisions	30.057	31.757	32.824	42.153	39.653	22.241	22.798	24.789	25.363	-4.694

Table 13: Provisions

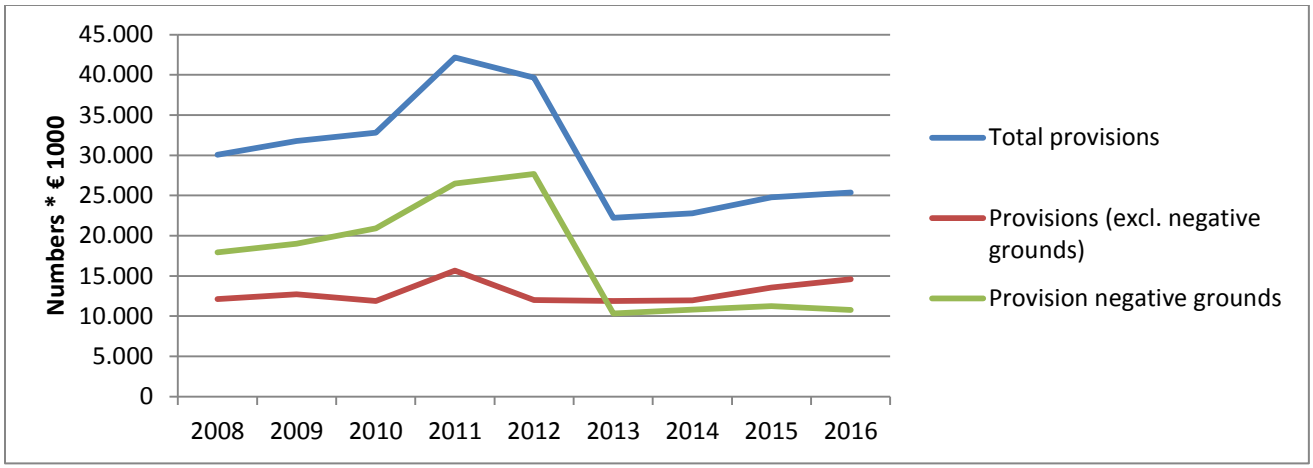

Figure 15: Provisions

For all the provisions must be determined whether the provisions are adequate, or that they need additional deposits.

The provision for doubtful debtors is created to provide for the recoverability of all receivables. The level of the provision was € 1,7 million at 1 January 2012 and € 2.1 million at the end of the year. The provision was heightened for any uncollectible (tax) receivables. All old claims are therefore largely equipped. The provision is therefore considered as sufficient. This is also confirmed by the auditor.

The provision alderman pensions have been formed for the pensions of former aldermen. An amount of € 317.000 has been deposited in the provision. This concerns a non-budgeted deposit to hold the provision adequate.

The provision for temporary school accommodation is formed, as the name suggest, for temporary school accommodations. This provision is currently sufficient.

The provision for negative ground complexes is by far the largest provision. The decrease in figure 15 is declared by the closure of the large negative ground exploitation 'X - Centrum'. This provision will be further explained in the section ground exploitations.

Maintenance

The municipality X has a number of maintenance provisions. These provisions are set for the purpose of spreading the cost of maintenance over several years. Maintenance plans are at the base of these provisions. The regular and periodic maintenance are established in these plans. Only the cost of periodic maintenance is covered by the provision. The cost for regular maintenance is covered by the exploitation. The management plans will be updated once every four years, as regulated in Article 18 of the Financial Regulation of the municipality X (2004).

There is a connection made with the management- and maintenance plans to test whether the maintenance provisions are adequate. The provisions maintenance roads and public lighting are not well connected to these plans. Moreover, it is found that the provision maintenance roads shows a negative

state in accordance the maintenance plan. Additional deposits from the operation result or reserves will probably be needed, as a provision must be positive according to the BBV (Article 44).

These finding are also supposed by the auditor during the audit for the financial statements of 2012. They argue that the negative state 'is a result of the systematics of the municipality, which is also common to equalize costs'. For the management- and maintenance plans for public lighting has already been made a new concept.

There were some under spending's at the other maintenance provisions; the actual expenditure of the provision civil works, the provision sewerage and the provision dredging works were less than 50% of the estimated expenditures. However, the provisions are all sufficient, which is the main requirement.

Ground exploitations

The ground policy has significant financial impact on the overall financial position of the municipality, because of very large amounts and risks associated with these exploitations. The current economic situation will determine the ground exploitations. The result of all exploitations is depending on estimation of the future development of costs and revenues, based on indicators. If reality differs from these assumptions, it will lead to an adjustment of the profit expectations.

When the budget accounts for profits out of the exploitations, there is a certain pressure on the exploitations to actually realize them. After all; when budgeted profits are not realized, there is a direct coverage problem in the budget. Lower sales of grounds than have a direct effect on the regular operation. Applying the precautionary principle in the valuation of the ground exploitations is therefore essential.

A second note Land Policy is accepted by the council of X on 19 February 2009. The framework, principles and strategy are described in this document for the current ground policy. This document states that expected losses are recognized when they are foreseeable and inevitable. Profits are only taken after realization of them. In the long-term budget of the municipality X are such gains therefore not been booked.

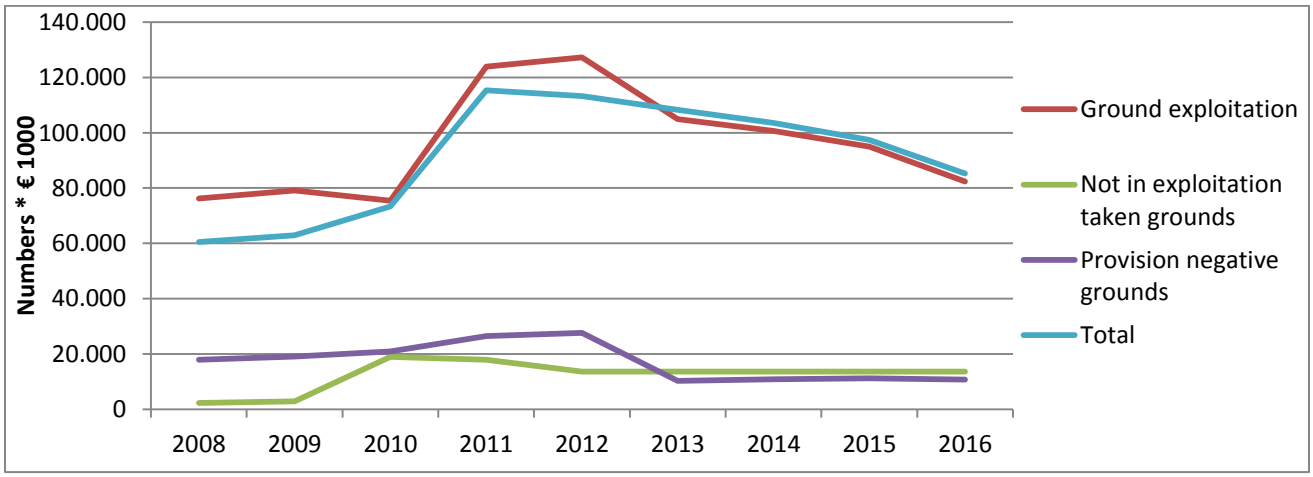

Figure 16: Development ground stock

Grounds in exploitation

The trends of the ground stock on the base of previous mentioned components are displayed in figure 16. It is clear to see that the ground project A.W. have been retained in 2011; the book value of the ground exploitation have risen strongly that year. The total book value of the grounds in exploitation is currently €127,2 million. The ground exploitation A.W. is almost half (47%) of the total book value of the grounds that are in exploitation at the end of 2012. The pace of exploitation is of crucial importance because of the high book value. Not realizing the expected pace of exploitation has huge risks. The high book value is largely due to the high acquisition costs.

Figure 16 shows that the total book value of the ground stock will decline after 2012. The ground exploitation have been updated early in 2013. The municipality expects to sell the grounds at a moderate pace. Previously was a faster sales forecast taken into account. However, this forecast is adjusted through the current economic crises. The financial scenarios will come back extensively on the sale of the ground exploitations.

Ground exploitation (*€1000)	2012
A.W.	59.582
Business Park H.	15.985
B-II	25.793
X - Centre	19.636
Other exploitations	6.232
Total	127.228

Table 14: Book value ground exploitations

Not taken into exploitation grounds

The total book value of the not taken into exploitation grounds is currently € 13,7 million. The valuation of these grounds should, in accordance to the BBV, at maximum be equal to the market value. The municipality carried out a taxation in December 2012, for about ten potential development locations. This taxation confirmed that the book value of these grounds is equal to this appraised value, which means that the municipality acts in accordance with the BBV.

Grounds N.T.I.E. (*€1000)	2012
O.P.	4.309
O.W.	2.693
N.R.S.	1.443
Other not taken into exploitation taken grounds	5.215
Total	13.660

Table 15: Book value of not into exploitation taken grounds

Provisions for negative complexes

The expected results for negative ground exploitations are made on the base of the actualization of the ground exploitations on the first of January 2013. In this actualization is an overview displayed on the development of the earnings per ground project. The increase of the negative results is largely due to the adjustments of the revenues-parameter and the reduction of the ground prices. The increase of revenues for the period 2013-2017 is set from 1% to 0%. In addition, a number of risks are included in the ground exploitations, so the result has deteriorated.

*€1000	2012
Balance per 31-12-2011	26.476
Complement 2012	5.558
Settlement of closed complexes	-4.372
Balance per 31-12-2012	27.662

Table 16: Book value of provisions negative ground exploitations

The provision for negative ground exploitations has increased considerably in recent years. While the provision was € 18 million in 2008, it increased with 54% to almost € 28 million in 2012 in a period of four years. However, it is expected that this provision will fall sharply in 2013. This is due to the completion of the ground exploitation X Centre. For this ground exploitation was a provision of € 18,4 million created. This provision will expire to offset the negative ground exploitation.

For four other exploitations is also made a provision, namely: Boezem II (€ 5,6 million), Vrijenban (€ 0,8 million), Lint Oude Leede (€ 0,7 million) en A.W. (€ 2,9 million). For the remaining € 107 million of ground exploitation is a provision of € 10 million. The question is whether these provisions are sufficient. Therefore it is important to keep in mind that the pace of exploitation is of crucial importance and the risks are very high.

Development of Ground exploitation

As said, the forecasts for the ground exploitations are recently revised and delayed sales are considered. The original and the revised forecast of the number of house sales are shown in table 16.

Year	Original forecast	Revised forecast
2013	300	100
2014	300	150
2015	300	150
2016	300	200

Table 17: Sales forecast housing

The forecasts connect through this revision better to the current situation on the housing market, which is very poor. The figures give therefore a better picture of the ground exploitations.

Stockquote

Figure 17 shows that the stock relative to the exploitation has increased significantly in recent years. The municipality has a higher stock than the total income in 2012; a stock quote of 104%. It is expected, as already stated above, that the ground stock will decline to 2016. This will result in a stock ratio of 81%.

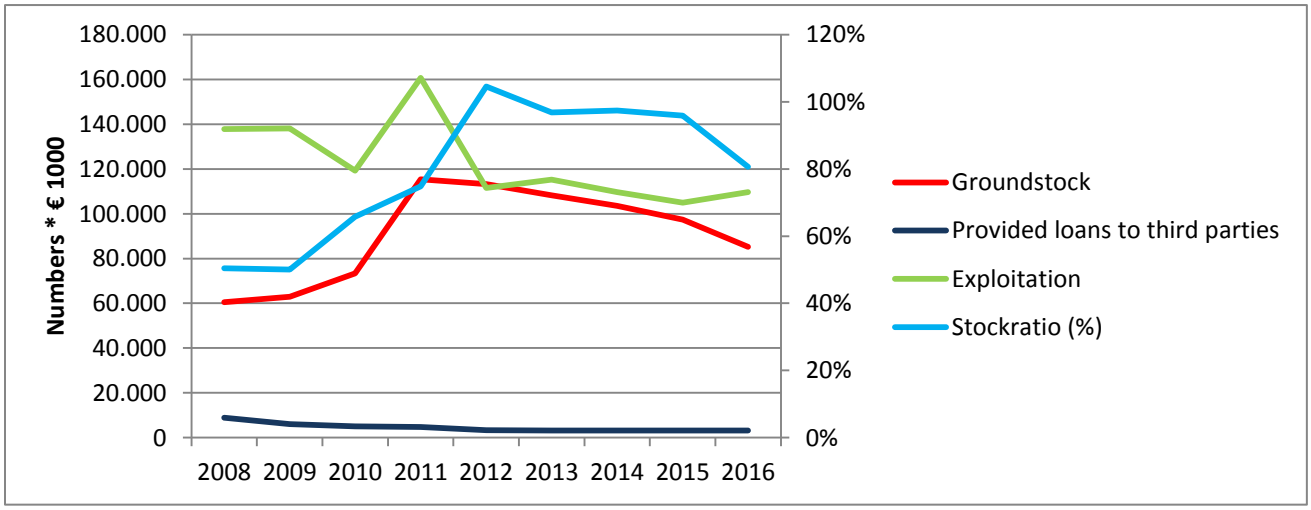

Figure 17: Development stockquote

Debtquote - Stockquote

As was stated earlier at the debt indicator: 'a high net debt is in principle not that bad for a municipality, if there are high inventories in the form of ground stock and loans to third parties in return' (van der Lei, 2011). When the stock quote of the municipality X is compared to the debt quote, there is a striking phenomenon to see. The debt quote, as well as the stock quote, have increased from 2008 to 2012. This trend, together with the conclusion of table 8, that showed that a large part of the debt is used to finance the stocks, show that the high debt quote is explained by the high inventories that are in return (especially the stock of grounds). That is why the debt, although it's very high, is not necessarily problematic.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
Debtquote	50%	50%	66%	75%	104%	97%	97%	96%	81%	30%
Stockquote	79%	84%	90%	100%	146%	147%	152%	158%	157%	78%
Debtquote-stockquote	28%	34%	24%	26%	42%	50%	54%	62%	76%	48%

Table 18: Ratio debtquote-stockquote

However, the debt quote increases slightly after 2012 to 157% in 2016, while the stock quote id decreasing sharply to only 81%. So we will see that after 2012 the ratio between the debt and the stock quote will seriously be disrupted. This is reflected in the relation between ground exploitation and loans, as was shown in table 8; In 2012 was 90% of the loans used for ground exploitation, but in 2016 this is only 54% (table 8). The proportion of (in)tangible fixed assets therefore increased from 10% to 46% of the loans.

The debt is thus increasingly used to finance (in)tangible assets. So in 2016 there are no high inventories in return to the debt, which certainly makes the high debt problematic. These developments are shown in figure 18.

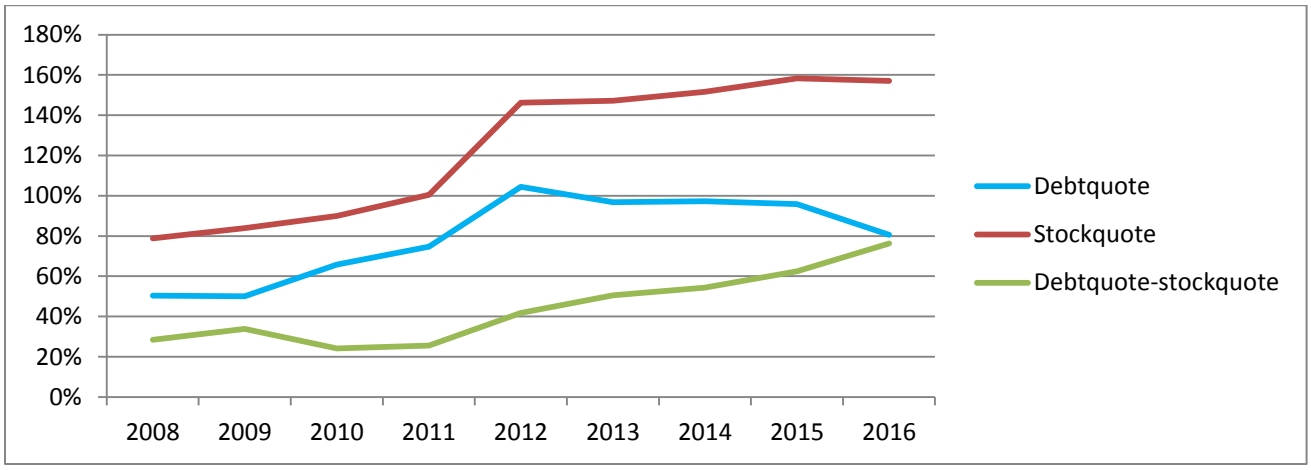

Figure 18: Debtquote in relation to stockquote

Related parties

The municipality X have included an expose of the related parties as a section in the annual report. As part of the risk management has the municipality X implemented an internal inventory of the extent and degree of exposure to financial risks arising from the related parties. The vision on related parties are included in the Note related parties. One of the policy principles is that the municipality does not proceed to establish or participate in a private legal entity, except when a public interest can't be charged through a different manner. In addition, the activities of the related party should fit within the program-frameworks that are defined by the council.

The related parties are presented in appendix 6, together with the related interest and risks. The municipality X assesses the (financial) risks regarding their related parties, based on interim information and information from representatives of the municipality in the general and daily management from the related parties.

The GGD and the waste collection firm (A.) ask for specific attention. The GGD has obtained a negative result in 2011 and 2012. It is expected that this will continue in the coming years. External research shows that the waste collection firm 'A.' is not 'in control'. Changes in the management of A. have occurred on the base of these findings. Besides, a professor has been appointed to investigate the governance within A.. Given these developments at A. and the GGD, the portfolio holders of Finance from different municipalities (located in the region) initiated a regional audit for all related parties. The first audit is at the GGD and the report of findings will be ready in mid-2013.

There are some considerable risks in terms of related parties within the municipality X. These risks are well-known and the municipality have anticipated on these risks. The majority of the risks are in addition included in the section resistance power, so that these risks are taken into account within the resistivity of the municipality.

Guarantees

Table 19 shows which loans are guaranteed by the municipality X. The total amount of guaranteed loans is € 157 million. Of these loans is the municipality for nearly € 17 million for 100% guarantee. A guarantee of € 11,7 million, which is issued to ABB Realty, is by far the largest full guaranteed loan. The municipality has embedded sufficient (financial) collateral for this guarantee; a bank guarantee, a claim against the ABB and in the worst case is appealed to the municipality as a bail. The municipality owns that the unsold shops and houses. The value of these shops and houses is high enough to cover the loan. In addition, it is highly likely that this guarantee is no longer applicable in 2013.

A tertiary backstop agreement through guarantee of housing (WSW-guarantee) applies to the remaining € 140 million in loans. This security structure consists of three layers:

- Primary security: the financial resources of the corporation. The liquidity position and the equity of a corporation. The WSW sets requirements for the creditworthiness.
- Secondary security: The guaranteed reserves of the WSW. If corporations can't comply their interest- and repayment obligations, then the lender may appeal to the WSW. They possess a guarantee reserve of more than € 3,7 billion (end of 2011).
- Tertiary security: Government and the municipalities. If these securities prove to be insufficient for the obligations, the municipalities provide interest-free loans (WSW, 2012).

The risk that municipalities take for this security structure is theoretical: It consists of providing a relatively small interest-free loan, which the WSW will repay in time. This only occurs when a corporation can't meet its obligations and the capital of the WSW appears inadequate. If it comes to a claim, the collective municipalities are standing guarantee for 25% of the liquidity deficit. The government support 50% and the other remaining 25% will be charged to the concerning municipalities (WSW, 2012).

*€1000	2008	2009	2010	2011	2012	Diff.
Institutions and associations	1.462	1.232	626	626	743	-719
WSW	183.367	220.073	217.919	169.818	156.337	-27.030
Other guarantees	0	348	348	268	184	184
Total	184.829	221.653	218.893	170.712	157.264	-27.565

Table 19: Guarantees

We see that the total of guaranteed loans by the municipality has decreased in recent years. Additionally, the majority of the loans consists of the security structure of the WSW. The € 17 million where the municipality stands full guarantee, is 88% of the general reserve. This indicates a relatively high percentage of guarantees. It should be noted that the guaranteed loan to the ABB, which is well in control, deteriorated the score seriously. If the guarantee in 2013 doesn't apply anymore, it will greatly improve the score to about 30%. This is an average guarantee rate.

Budget 2013-2016

As stated earlier in this thesis, all previous mentioned indicators are important to assess the financial position of the municipality, but a balanced budget is the most important indicator. Within the municipality X the budget is therefore strongly directed and controlled.

Balance for appropriation

Table 20 and figure 19 show the results of recent years and the budget for the coming years.

*€1000	2008	2009	2010	2011	2012	2013	2014	2015	2016
Income for appropriation	137.764	138.024	119.190	160.661	111.534	115.246	109.654	104.980	109.699
Expenses for appropriation	131.511	140.159	107.793	169.981	108.359	124.250	114.293	110.065	114.759
Balance/ Result for appropriation	6.253	-2.135	11.397	-9.320	3.175	-9.004	-4.639	-5.085	-5.060
Withdrawals out reserves	13.395	13.176	12.077	70.734	19.208	15.508	11.537	6.454	7.975
Deposits in reserves	17.079	8.510	16.946	59.780	18.902	6.079	6.838	2.446	4.808
Changes in reserves	3.684	-4.666	4.869	-10.954	-306	-9.429	-4.699	-4.008	-3.167
Balance / Result after appropriation	2.569	2.531	6.528	1.634	3.481	425	60	-1.077	-1.893

Table 20: Balance before and after appropriation

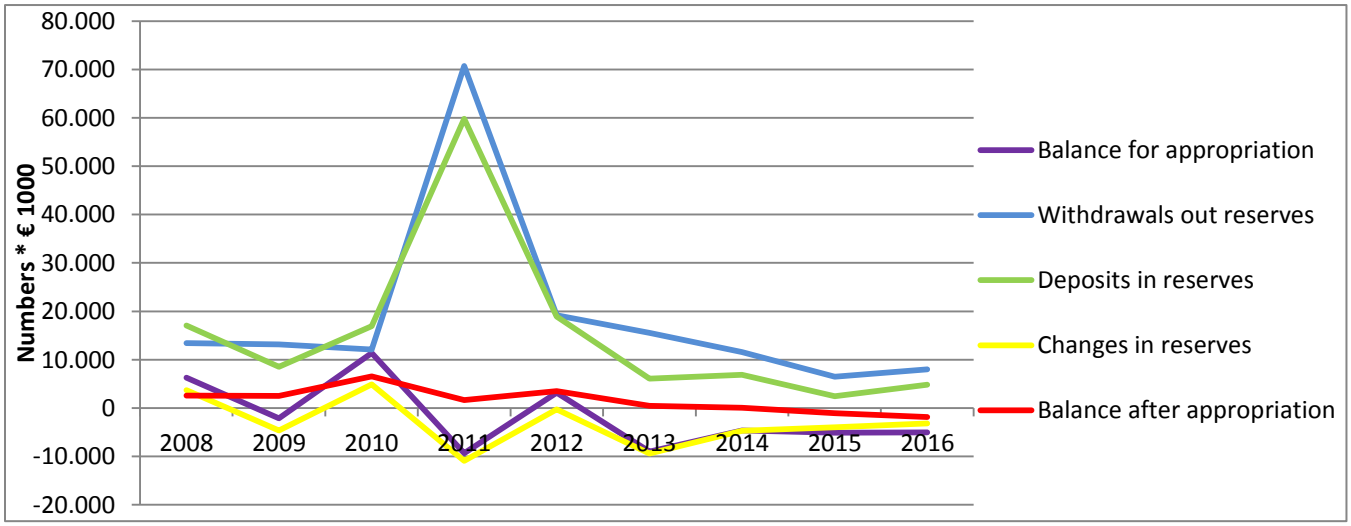

Figure 19: Balance before and after appropriation

The balance for appropriation has major fluctuations in recent years. However, the average balance for appropriation was positive. The movements in reserves also exhibit large fluctuations, where should be noted that more is withdrawn from the reserves than is deposited. The high deposits and withdrawals in 2011 are explained by the acceptance of a new note reserves and provisions. These large peaks are mainly caused by shifts between from a reserve to another reserve.

We see a different and worrisome picture after 2012. The budgeted balance before appreciation is negative in all years. The reserves are therefore addressed to get the result after appreciation in balance. The budget for 2015 and 2016 however, is still not balanced after appropriation.

The conclusion from these figures is that the municipality X has a negative balance for appropriation for all years, are significantly utilizing the reserves and the multiannual budget is not balanced. These are worrying findings. There are currently cutbacks planned to get the multiannual budget still in balance. This will be a hard cutback operation, because the deficits are relative large (almost € 2 million structural after 2016).

Structural income and expenses

Structural expenses should be covered with structural income. This is the case for the years 2008 to 2012, when the structural income transcend the structural expenses. The expenses are on average, covered by 102% of the structural income. The expectation however, is that this percentage will drop to only 95% of the structural income. The structural benefits don't cover the structural expenses in that case, which is not justified for the long-term.

Golden balance rule

The ratio of the sum of total fixed funding and fixed assets is shown in table 21. The golden balance rule suggest that the fixed assets (including the ground stock) should be entirely financed with long-term liabilities (reserves, provisions and long-term debt).

*€1000	2008	2009	2010	2011	2012	2013	2014	2015	2016	Diff.
Equity (incl. operating result)	68.210	66.076	77.474	68.152	71.327	59.589	54.941	49.849	44.781	-23.429
Provisions	30.057	31.757	32.824	42.153	39.653	22.241	22.798	24.789	25.363	-4.694
Long-term debt	108.747	123.640	122.334	170.694	168.758	175.189	171.703	171.418	177.132	68.385
Long-term available	207.014	221.473	232.632	280.999	279.738	257.019	249.442	246.056	247.276	40.262
Fixed assets	123.420	126.533	120.318	123.490	127.094	147.236	149.389	151.758	153.905	30.485
Stock	78.468	81.979	94.324	141.790	140.888	118.602	114.311	108.658	96.048	17.580
Long-term established	201.888	208.512	214.642	265.280	267.982	265.838	263.700	260.416	249.953	48.065
Financing surplus/deficit	-5.126	-12.961	-17.990	-15.719	-11.756	8.819	14.258	14.360	2.677	7.803
Finance structure	103%	106%	108%	106%	104%	97%	95%	94%	99%	-4%

Table 21: Financing

The municipality X adheres strictly to the golden balance rule according to table 21. In all years, from 2008 to 2012, there was more than sufficient long-term liabilities held for the financing of long-term assets. There was always a financing surplus of at least 3%. It is expected that there will be a funding gap in the coming years, that even will increase to € 14,3 million in 2015. Not all fixed and ground stock are then financed with long-term liabilities, but partly by short-term financing.

This is not a problem, as long as the previous mentioned cash limit will not be exceeded.

Incidental income and expenses

Structural income should be covered by structural benefits. At the other hand may incidental expenses be covered by incidental incomes, but this isn't necessarily. The incidental benefits in X exceed the incidental expenses in almost all years; this is also shown in figure 20. This is why the balance of incidental incomes and expenses is generally positive.

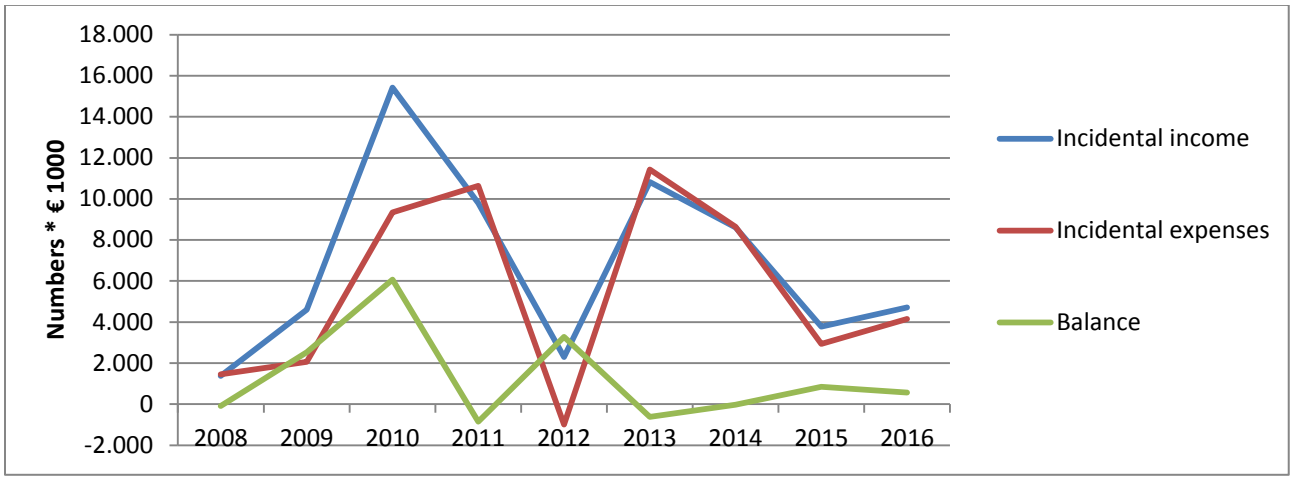

Figure 20: Incidental income and expenses

The incidental income exceed the incidental expenses with almost 50% on average over the last five years. This is 1,9% of the total income. It is expected that the incidental income and expenses would be in balance.

Budget flexibility

The results of a calculation of the budget flexibility are shown in the table below. This calculation is made on the base of a few assumptions, which are specified and explained at each task-field. The total budget flexibility in X is € 45.25 million.

Task-field	Incidental / Structural	Flexibility (* € 1000)
Multi-annual budget and space	I/S	-2.485
Reserves	I	34.407
Additional policy	I/S	-
Investments projects	I	6.840
Cost covering of fees and charges	S	1.450
Local charges	S	4.106
Personnel	S	932
Subsidies and expenditures for culture	S	-
Maintenance level	S	-
Total		**45.250**

Table 22: Flexibility in budget

Multiannual budget and room for maneuver

The multiannual budget 2013-2016 is the basis and starting point of this stress test. This multiannual shows a small surplus for the years 2013 and 2014. For 2015 and 2016 however, the result represents a (structural) deficit. The deficit in the multiannual budget is seen as 'room for maneuver'. Hence the result is negative, the room for maneuver is negative in table 22.

Reserves

When the municipality is in a stressful financial position, it will seek to all possible resources that can be made available. That's why all the free and deployable reserves and deployable destination reserves are taken into account. For the actual deployment of destination reserves is still a change in policy by the council required. The flexibility with regard to the reserves is in the:

- General reserve ultimo 2012 (incl. operating result): €19,3 million;
- The destination reserves for the capital costs of historical investments are not available for deployment;
- The destination reserves BOVO can partly be accounted to the potential flexibility. Part of the reserve however is reserved for contributions and investment projects. These projects are often established with other parties and therefore are fixed. It is assumed that half of the BOVO reserves can be allocated as flexible; € 9,2 million.
- The other destination reserves are analyzed on availability for occasional coverage in case of a stressful situation. This analysis is made with a specialized official and is made on the degree of availability, nature and strictness of the destination reserves. The analysis show that € 5,9 million can be made available.

Additional policy

At most municipalities it is normal to map the space for additional policy in the multiannual budget. However, there is no room for additional policy in the municipality X for the coming years. Hence, there are no resources that can be deployed as flexible room.

Investment projects

The municipality is executing a large number of investment projects in 2013 and 2014. Those investment will be charged incidental or structural to the budget. There are some major projects (the MFA K., the Eastern Ring and the K-street), but also many smaller projects.

The municipality can choose to delay or even to quit some projects in order to be able to cushion with a stressful situation. Flexibility will be created in the budget and in the released reserves by taken these measures. Regarding the projects could be mapped which resources can be made available by changing the policy. These calculations prove that about € 1 million in 2013 and € 5,8 million in 2014 can be made available.

Cost recovery fees & charges

Earlier in this thesis was explained that additional resources can be made through the recovery rate of fees and charges. Because a lot of services are not cost-effective, structural funds may be imposed to recover all the services-costs.

Local charges

The room for maneuver or to increase revenues is limited within the local charges. In addition to the above mentioned fees and charges, the municipality has room to increase the property tax revenues. The room in table 22 is calculated by taken the difference between the most expensive municipality in terms of property tax (a so called 'art. 12-municipality') and the municipality X.

A strong increase in property tax is undesirable, since the municipality X already has a relative high tax burden compared to the average in the Netherlands.

Personnel

The budgeted annual cost for personnel of the municipality X is approximately € 19 million. Much of these costs are fixed through the permanent contracts. The flexibility is primarily focused on the flexible layer, since here are possibilities to create space on the short term. The natural turnover is not included in the calculation for flexibility. The calculated room comprises:

- The temporary contracts that should not be renewed. Based on the annual costs in recent years and the forecasts for the coming years is assumed that by not renewing the temporary contracts, € 0,83 million can be saved.
- External hiring and the hiring of specialists will largely be stopped. Only the replacement with prolonged diseases and hiring for peak-pressure will continue. The budget for hiring has been greatly reduced in the long-term budget, so only € 0,1 million could be saved with these measures.

Subsidies and expenditures for culture

Since the subsidies and spending's on culture recently have been reduced in the municipality, it is assumed that no significant flexibility can be found in this task field.

Maintenance level

A reduction of the maintenance level is currently not included in the calculation for the flexibility. This should be included in a future stress test. Based on calculations at other municipalities, it is expected that little flexibility can be found in this task field.

4.2 Scenario Testing

1 Financial crisis

The first financial scenario involves a financial crisis. This crisis is formulated through rising interest rates (short- and long-term interest) and a rising inflation. The interest, according to the base path of the CPB is increased by a surcharge rate. For the heavy scenario a surcharge of 1% per year will be calculated and for the extreme scenario 1,5% per year. The rising interest rate shall be calculated for newly concluded loans. In addition, it is assumed that the total short-term loans will remain at the same average level of € 10 million.

The consequences for the municipality are shown in table 23. The municipality is facing additional interest expenses of € 6,264 million over four years in the heavy scenario. The effect is even € 9,396 million over four years in the extreme scenario.

Rising interest is often a response to rising inflation. Hence, the rising inflation is also included in the model. Because the interest income, the interest expenses and the depreciation become net worth less in real terms, this has a positive effect on municipal finances. It is assumed that all other charges and income grow with the inflation rate. The adjustment for inflation in a heavy scenario is consequently € 2,338 million and € 3,506 million in an extreme scenario.

Variable	Scenario	Year 1	Year 2	Year 3	Year 4	Total	Mean
Long-term interest	Heavy	-436.000	-1.146.000	-1.635.000	-2.047.000	-5.264.000	-1.316.000
	Extreme	-654.000	-1.719.000	-2.452.500	-3.070.500	-7.896.000	-1.974.000
Short-term interest	Heavy	-100.000	-200.000	-300.000	-400.000	-1.000.000	-250.000
	Extreme	-150.000	-300.000	-450.000	-600.000	-1.500.000	-375.000
Inflation	Heavy	269.410	485.620	693.800	888.790	2.337.620	584.405
	Extreme	404.115	728.430	1.040.700	1.333.185	3.506.430	876.608

Table 23: Results scenario financial crisis per variable

The negative effect of a financial crisis that is accompanied by a rising inflation is in a heavy scenario € 3,926 million, which represents an average of approximately € 1 million a year. The negative effect of an extreme financial crisis amounts to € 5,89 million, which equates to almost € 1,5 million on average per year.

Variable	Scenario	Year 1	Year 2	Year 3	Year 4	Total	Mean
Rising interest	Heavy	-536.000	-1.346.000	-1.935.000	-2.447.000	**-6.264.000**	**-1.566.000**
	Extreme	-804.000	-2.019.000	-2.902.500	-3.670.500	**-9.396.000**	**-2.349.000**
Including inflation	Heavy	-266.590	-860.380	-1.241.200	-1.558.210	**-3.926.380**	**-981.595**
	Extreme	-399.885	-1.290.570	-1.861.800	-2.337.315	**-5.889.570**	**-1.472.393**

Table 24: Results scenario Financial crisis

2 Social-economic crisis

The second scenario, a socio-economic crisis, is characterized by lower economic growth and rising unemployment. The results are shown in table 25. It is expected that the income of market funds, taxes, fees (except construction fees, which are treated in the scenario of a real estate crisis) and dividends decline with the assumed percentages, mentioned in table 3. It is expected that the expenditures on WMO and education subsidies increase. This results in € 0,409 million for additional expenses and losses of income in the heavy scenario and € 0,825 million in the extreme scenario.

Variable	Scenario	Year 1	Year 2	Year 3	Year 4	Total	Mean
Economic growth	Heavy	-150.535	-75.485	-86.430	-97.335	-409.785	-102.446
	Extreme	-241.540	-172.490	-172.860	-237.780	-824.670	-206.168
Unemployment	Heavy	-47.200	-71.656	-106.396	-155.758	-381.011	-95.253
Social assistance	Extreme	-90.062	-138.685	-299.465	-445.220	-973.432	-243.358
Total	Heavy	-197.735	-147.141	-192.826	-253.093	-790.796	-197.699
	Extreme	-331.602	-311.175	-472.325	-683.000	-1.798.102	-449.525

Table 25: Results scenario Social-economic crisis

It is expected that the number of social assistance receivers increases during a crisis by 3% in the heavy and 5% in the extreme scenario. That's why the own risk of the municipality, which is 7,5% of all additional costs, increases. In addition, the municipal fund is calculated and paid on the information known at the beginning of each year. As the number of receivers increased during a year in relation to the national average, the municipality receives no compensation for these new receivers. These two developments result in additional costs of € 0,381 million in the heavy scenario and € 0,973 million in the extreme scenario.

The total effects of a socio-economic crisis in an extreme scenario reach up to € 1,798 million for four years. The overall effect is limited to € 0,791 million in a heavy scenario.

3 Real estate crisis

The forecast for future results of the ground exploitations are revised to assess the appreciation of inventories at the end of 2012.This revision is included in the new exploitation plans by January 1, 2013. Two important measures are made to control the results of the ground exploitation; (1) the phasing of the ground exploitation and (2) the adjustment of the estimated revenues increase from 1% to 0% for the period 2013-2018. The financial effects of these adjustments are incorporated in the financial statements of 2012. These current forecasts are considered by the municipality to be the most likely scenario.

The development department has developed alternative scenarios that may arise in the parameters or the planning. These scenarios were made at the request of the council due to the uncertain economic conditions. These scenarios are used to generate a heavy and extreme scenario for the real estate crisis in this stress test. The variables for the scenarios are:

- Heavy: Revenue increase of 0% to the end of all projects and a three years delay of sales for the most important projects.
- Extreme: Revenue increase of -1% for the years 2014 to 2018 and 0% thereafter and a five years delay of sales for the most important projects.

The scenarios of the municipality make clear that, depending on the development in the housing market, the results can still be (significantly) worse than the revised forecasts. The municipality indicates these scenarios as less likely. However, the effect of the scenarios have a large negative bandwidth, as can be seen in table, 26.

Variable	Scenario	Total
Decline of revenues	Heavy (-0,5%)	-3.183.000
	Extreme (-1%)	-9.620.000
Delay	Heavy (3 year)	-10.760.000
	Extreme (5 year)	-18.309.000
Total	Heavy	-13.943.000
	Extreme	-27.929.000

Table 26: Results scenario Real estate crisis

The total negative effects of a real estate crisis in an extreme scenario are large, approximately € 27,9 million. In the heavy scenario is a negative effect assumed of almost € 14 million. Thus the deterioration from the most likely scenario has a large impact on the financial position of the municipality.

4 Number of citizens

The number of citizens has a high dependence with the sales of grounds and the housing forecast. As the effect of a decline in ground sales on the number of citizens has already been taken into account, it won't be included in this scenario. A delay in growth of the population has also effects on the height of the municipal fund and the tax-income.

Because there is a constant growth of the population in the recent decades (see figure 1) and there is also a growth expected for the coming years, a stabilization of the current population is an extreme scenario. A slight increase of the current population is seen as a heavy scenario. The number of citizens is yet adjusted downwards, when drafting the framework document 2013 (kadernota 2013), due to the housing forecasts.

The decline in the municipal fund is calculated on the basis of a program that projects the income from the municipal fund. An adjustment for the expected number of citizens provides the effects in table 27. The effects on the property tax revenues are calculated by reducing the forecasted property tax with the same percentage as the decline of the population.

Variable	Scenario	Year 1	Year 2	Year 3	Year 4	Total	Mean
Decline of Municipal fund	Heavy	0	-57.295	-77.793	-121.731	-256.820	-64.205
	Extreme	0	-116.289	-157.162	-245.345	-518.796	-129.699
Decline of OZB	Heavy	0	-43.444	-60.769	-90.808	-195.021	-48.755
	Extreme	0	-86.888	-121.538	-181.617	-390.043	-97.511
Total decline	Heavy	0	-100.740	-138.562	-212.540	-451.841	-112.960
	Extreme	0	-203.177	-278.699	-426.962	-908.838	-227.210

Table 27: Results scenario Number of citizens

The overall effect of a constant population, the extreme scenario, is more than € 0,9 million. The negative effect in the heavy scenario is € 0,45 million.

5 Government Retrenchment

The table below shows the effect of a cut in the government spending's. The deferred coalition agreement, which is deferred through the social agreement, is the base of this scenario. It is namely very likely that these cuts will still take place when the economic developments are disappointed and lower than expected. The retrenchments regarding the decentralizations are not included in this scenario, but will be addressed in the scenario 'decentralizations'. The other government retrenchments that have been included are: Accres, the skimming of school housing, abolishing the VAT compensation fund, reversing reducing political officials, reversing polarization correction and intensifying poverty policy.

In addition to the deferred retrenchments is an estimated additional retrenchment of € 4 billion in the heavy scenario and € 10 billion in the extreme scenario. It is assumed that these additional retrenchments will occur in 2015 and 2016.

The last effect is from the revision of the allocation model for the municipal fund. The heavy scenario assumes that the share of the municipality X remains the same, while the proportion in the extreme scenario will decline with 0,5%. This revision of the allocation model has a result of more than € 0,57 million.

Scenario	Year 1	Year 2	Year 3	Year 4	Total	Mean
Heavy	114.000	-541.875	-2.532.219	-2.906.219	-5.866.313	-1.466.578
Extreme	114.000	-730.676	-3.305.861	-3.674.534	-7.597.071	-1.899.268

Table 28: Results scenario Government Retrenchment

The total impact of a government retrenchment on the financial position of the municipality is large: In the effect is almost € 6 million in the heavy scenario, while the effect is more than € 7,5 million in the extreme scenario.

6 Decentralizations

About the size and distribution of the decentralizing budgets (WMO, Youth Care and Participation act) is currently a discussion and there are therefore still many uncertainties. There should, in principle, transfer only one budget for the sum of the decentralized budgets. The scenarios are defined, based on the present calculations of the decentralization. It is assumed that the municipality will achieve little or no savings of costs through the decentralizations. The expected reduction of the government is therefore the negative effect in the heavy scenario, so no costs savings are made. An extra discount is calculated in the extreme scenario.

Variable	Scenario	Year 1	Year 2	Year 3	Year 4	Total	Mean
WMO	Heavy (0,158%)	-623.001	-4.017.820	-3.234.902	-3.179.371	-11.055.095	-2.763.774
	Extreme (0,21%)	-827.400	-5.334.000	-4.304.126	-4.231.156	-14.696.682	-3.674.171
Youth care	Heavy (0,34%)	-108.458	-169.466	-779.544	-1.287.943	-2.345.411	-586.353
	Extreme (0,50%)	-159.498	-249.215	-1.146.389	-1.894.033	-3.449.134	-862.284
Total	Heavy	-731.459	-4.187.287	-4.014.447	-4.467.314	-13.400.506	-3.350.127
	Extreme	-986.898	-5.583.215	-5.450.514	-6.125.190	-18.145.817	-4.536.454

Table 29: Results scenario Decentralizations

WMO

There was always a national budget for the WMO (before the EMEA) of € 6,8 billion. The expected reduction on the decentralized budget will be € 1,58 billion. The reduction consists of the cutbacks on domestic help, the recycling of scoot mobiles and several other small cutbacks on EMEA tasks. The customization of income support mitigates the negative effects of the cutbacks somewhat.

The current share of the municipality X is 0,158% of the total national WMO budget. This share in budget is also the starting point for the calculation of the expected budget and the expected reductions in the heavy scenario. The extreme scenario is calculated on the base of the share in the municipal fund. This is also the share in the cutbacks. These assumption result in a negative impact over four years of € 11 million in the heavy scenario and € 14,7 million in the extreme scenario.

Youth care

The budget for youth care is approximately € 3 billion. There will probably be a reduction carried out of € 380 million on the total budget. This reduction consists of an efficiency discount, a reduction in the coalition agreement and through the removing of barriers in the youth care.

The current share of the municipality X is 0,34% of the total national budget for youth care. This share in budget is also the starting point for the calculation of the expected budget and the expected reductions in the heavy scenario. This will result in a negative effect of € 2,3 million over four years. The extreme scenario is calculated through an increased share of 0,5% of the total cutback. This results in a negative impact of € 3,5 million over four years.

Participation Act

The replacement for the Work Capacity Act, the Participation Act, shall be introduced with a certain delay. The introduction of the new act will probably not be entered until 2015. There should be € 1,8 billion savings in costs for the whole budget, but the discount is not entered directly. This is mainly spread out to later years. Hence it is expected that the decentralization of the Participation Act has little effect until 2017 and there it is excluded from this scenario. The movements and effects of the Participation Act are outlined in figure 21.

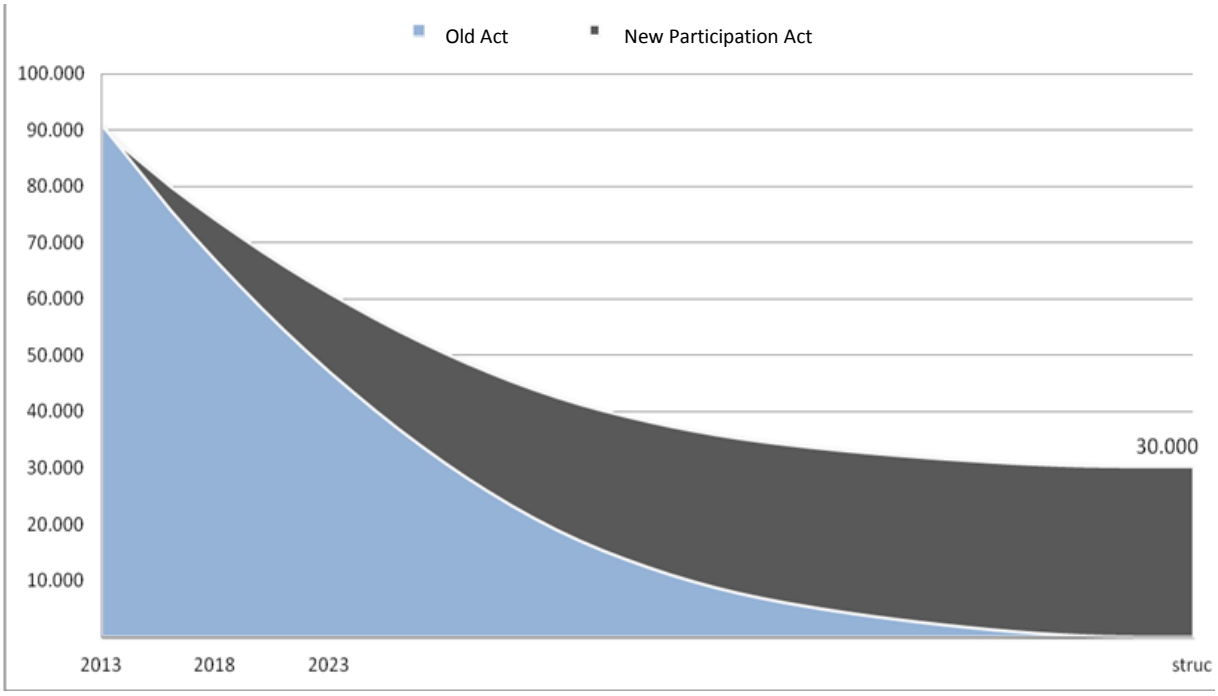

Figure 21: Effects of the Participation Act

Combination of scenario's

It is very realistic that several scenarios will occur simultaneously. The current economic conditions and developments make a combination of government retrenchment, the decentralizations, a financial crisis, a real estate crisis, a social-economic crisis and a decline in the population growth even plausible and likely. Table 30 illustrates the cumulative effects of all the scenarios.

Scenario	Financial crisis	Social-economic crisis	Number of Citizens	Decentra-lizations	Real Estate crisis	Government Retrenchment	Total
Heavy	-3.926.380	-790.796	-451.841	-13.400.506	-13.943.000	-5.866.313	**-38.378.836**
Extreme	-5.889.570	-1.798.102	-908.838	-18.145.817	-27.929.000	-7.597.071	**-62.268.398**

Table 30: Combination of scenarios

The cumulative negative effect of all scenarios over four years is in the extreme scenario € 66,3 million. This equates a negative impact of € 16,5 million per year when the current policy is being followed and no actions are taken. In outline, the scenarios take relations between the various crises and their effect on the municipal financial position into account. The effect of the decentralization and the real estate crisis emerged to have the largest impact on the financial position of the municipality X.

5. Discussion

This thesis attempted to develop a reliable and valid stress test for Dutch municipalities. The test was in particular designed for the municipality X, where the test was also administered to. However, the test can easily be conducted at another municipality through the general indicators and scenarios. The purpose of a stress test is to examine how stress resistant the financial condition of a municipality is and what room for maneuver there is for them. The financial condition is defined as the structural ability to do all expenditures that are needed to meet the proposed level of provisions, even if there are certain setbacks. Opponents and proponents have differences in opinion about the need for a stress test. They agree that, when a stress test is carried out, the results should lead to actions, and the report shouldn't disappear into a tray.

This test attempts to measure the financial position through indicators as well as scenarios. Previous stress tests from the consultancy firms only use one kind of measuring. They argue that measuring only indicators or only scenario's provides a good overview of the financial position. Merging both kinds of stress testing into one stress test gives even a better overview of the financial position in my opinion, because the strong points from both tests are taken into account. The scenario test for instance, doesn't give a good view on the debt position, which is a strong point in the indicator stress test. In contrast, the indicator test doesn't take the decentralizations, retrenchments and other social developments like the crisis into account, although these developments can have a great impact on the financial position of a municipality. The integration of both test into one test gives a better overview of the complete financial position, and not only a great extent of it. However, the test has therefore become a lot more extensive than the individual stress tests.

A literature study, in addition to the study of existing stress tests, provided a lot of financial variables to measure the financial position. There were 82 unique variables identified in total. These variables were considered and together with the variables out the stress tests grouped into twenty-six different indicators. These are the most important financial indicators to determine the financial position of a municipality, which is the answer to the first sub question. An important comment should be made with regard to the provisions. I've chosen to label provisions for maintenance as equity instead of debt, which is common in Dutch accounting. However, in the international accounting provisions for maintenance are seen as reserves and equity. This is also defensible for Dutch accounting, because the provisions for maintenance are set by the council even as the desired level of facilities. So there is no hard obligation. This is also stated by several authors.

The drafting of financial scenarios was also done with the use of the existing stress test. Four different scenario testing stress tests identified seven scenarios. Six scenarios were chosen to perform in this thesis. The seventh, the humanitarian disaster, was excluded because of the irrelevance for the municipality. A disaster of that size and impact (the fireworks disaster in Enschede) was not conceivable through the lack dangerous factories or other major risks. The only possible disaster could be a dike breach and a correspondingly flood. However, calculations show that the worst flood scenario still has little impact on the financial condition of the municipality. Besides, the high risks are taken into account

in the risk management program. The six scenarios were operationalized and calculated, on the basis of alignment with specialists in the municipality X. This answers the second sub question.

The other sub questions are related to the results and should be discussed in this section. The twenty-six indicators were examined and eighteen were selected for the test. Eight indicators weren't performed or were included in a coherent indicator. So were the unused tax capacity and the loss of property tax included in the local charges. The four indicators of the debt position were pooled to two larger indicators of debt: 'Debt position' and 'Debt development'. This was done to match the similarities in the indicators; they had largely the same outcomes because of the same input variables. The indicators for interest were also grouped with this reason. The last indicator which isn't included, the EMU balance, was totally excluded out of the test. This was done because the EMU balance has not yet been introduced in the Netherlands and the question remains whether it will be introduced. The indicator can still be included in the test when it does become mandatory in the coming years.

The results of the indicator test show that the financial position of the municipality X is under pressure because of a number of issues. These conclusions are graphically displayed in the scorecard, shown in figure 22. The arrows indicate the direction of movement of the indicator.

Nr.	Indicator	Very good	Good	Sufficient	Moderate	Insufficient
1	Income dependency					
2	Local charges					
3	Resistance power					
4	Equity position					
5	Equity development					
6	Debt position					
7	Debt development					
8	Interest expenses					
9	Rent-risk-standard					
10	Provisions					
11	Maintenance provisions					
12	Ground exploitations					
13	Not into exploitation taken grounds					
14	Related parties					
15	Guarantees					
16	Budget					
17	Incidental income and expenses					
18	Budget flexibility					

Figure 22: Scorecard

The results of the scenario test show that the scenarios can have major consequences for the financial position of the municipality X. In particular the real estate crisis and the decentralizations can have big impacts. These results match the predictions about the current financial position of municipalities; the real estate and the decentralizations are currently the most important topics and considered to have the most impact. This is also underlined by most literature.

Scenario	Financial crisis	Social-economic crisis	Number of Citizens	Decentra-lizations	Real Estate crisis	Government Retrenchment	Total
Heavy	-3.926.380	-790.796	-451.841	-13.400.506	-13.943.000	-5.866.313	**-38.378.836**
Extreme	-5.889.570	-1.798.102	-908.838	-18.145.817	-27.929.000	-7.597.071	**-62.268.398**

Table 31: Combination of scenarios

The results of the complete stress test show that the financial position of the municipality X is under pressure. There is also little room for maneuver; the budget flexibility is relative low. This is the answer to the research question and is in line with the expectations of the municipality; that's why the stress test is been entered. That is why there is currently an austerity operation in working. The results of this stress test confirm the importance of this operation.

But as already stated in the beginning of this thesis; normally there is room for improvement when a new instrument is developed. The stress test is such a relative new instrument and should therefore be developed further. A few points for improvement of this test could are summarized below.

Some indicators, like the provisions, maintenance provisions and guarantees, consist of only one variable. These indicators could be expand with more related variables so that the content validity of the indicators would be improved.

The indicator related parties, and even more important, the indicator flexibility, are estimated on assumptions and judgments and don't have real criterion. The indicator flexibility consists of nine variables which are all based on assumptions and judgments of multiple actors; managers, specialists and other employees. These variables are not based on hard measurements. These actors can manipulate any undesirable results. Real criteria and standards for the determining of the flexibility could be an improvement for the test.

The scenario of the real estate crisis was already developed by the department of development. The scenario was determined for a delay of the biggest projects and a reduced increase of revenues. However, the scenario doesn't take interest, inflation or a decline of sales volume into account. The computation and alignment of these variables in the scenario was very laborious. That's why is decided to disregard these variables for this test, but should it be settled in a following test.

A benchmark with neighboring and/or similar municipalities could also be a valuable addition. Insights through comparing with a few municipalities can be more appealing and therefore create more a sense of urgency when the position is far worse than the benchmark municipalities.

Further investigation and continue improvements are also necessary through the developments and changing conditions for municipalities. Indicators could become old an invalid and new indicators could emerge out of new laws or social developments. The EMU-debt explained in the law HOF is an example of a new indicator that could be added to test in the coming years, when the law actually takes effect. That's why future investigation should be helpful for the test.

6. Conclusion

The results of the stress test show that the financial position of the municipality X is under pressure through a number of issues:

- The municipality has a relatively high debt position and this will increase in the coming years;
- The net debt as a share of total income is currently at a very high level and should urgently be seen as 'dangerous';
- By subtracting the stock quote with the debt quote, we see that the debt of the municipality is getting out of balance and will deteriorate further;
- Interest expenses increased due to the increased long-term loans;
- The exploitation has fallen sharply in recent years and it is expected that it still fall slightly;
- The dependence of the municipal fund and total governmental funding has increased, but is still relatively low;
- The municipality has a relatively high local tax burden;
- There is markedly reduced on its own reserves;
- The resistance power has remained equal in recent years, but will decline in the coming years;
- Investment in land development and assets are extensive and financed with long-term loans;
- Although the (tangible) assets have increased and will increase further in the coming years, the total assets will decline in the coming years. This is explained by a decreasing land stock;
- There are major risks related to the land development (in particular A.W.).

This is in line with the expectations of the municipality; that's why the stress test is been entered. There is currently an austerity operation in working, to restrain the financial position. The results of this stress test underline the importance of this operation.

The following recommendations are made to deal with mentioned issues:

- Set a maximum debt level;
- Reduce the ground stock;
- Phase the investments;
- Only finance the facilities with public duties;
- Sale municipal property and assets;
- Increase the revenues.

The test can be carried out by every municipality; it is a concept that is suitable for every municipality, irrespective of the size or features. This study not only proposes a conceptual model for measuring performance in financial terms but also exemplifies its usefulness for both researchers and practitioners. The stress test can serve as a useful tool for controlling the financial position and thereby reducing the risks. It should not only be carried out during crisis years, but as well in good years and become a structural tool to map the financial position. This is also underlined by Kaplan & Mikes (2012):

'The ability to weather storms depends on how seriously executives take risk management when the sun is shining and no clouds are on the horizon'

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Appendix

Appendix 1: Overview financial indicators in literature

Dimension	Nr.	Financial Indicator	Honadle e.a. (1998)	Helden (2000)	Carmeli (2002)	Hendrick (2004)	Kloha et al. (2005)	Murray & Dollery (2005)	Wang e.a. (2007)	Jones & Walker (2007)	Zafra-Gomez et al. (2008)	Sohl e.a. (2009)	Cohen e.a. (2012)	Casal et al. (2012)	Total
Debt	1	Long-term debt / total revenues	x									x		x	3
	2	Long-term debt / net budgetary revenues (NBR) from non-financial operations.												x	1
	3	Long-term debt / net budgetary revenues from current operations.												x	1
	4	Long-term debt / inhabitants	x			x			x		x	x		x	6
	5	Long-term debt / taxable value					x								1
	6	Long-term debt / Total assets							x	x					2
	7	Short term liabilities / Revenues								x		x	x		3
	8	Total liabilities / total assets								x			x		2
	9	Total debt / inhabitants				x						x			2
	10	Debt service (interest and principal) / Revenues	x			x				x		x		x	5
	11	Debt service / Total expenses						x							1
	12	Long-term debt service / total assets								x					1
	13	Debt service / inhabitants									x			x	2
	14	Debt interest / inhabitants												x	1
	15	Interest cover								x					1
	16	Debt to operating cash flow								x					1
Reserves	17	Reserve fund		x											1
	18	Net savings / inhabitants												x	1
	19	Revenues / Total Liabilities											x		1
	20	Bonds / inhabitants										x			1
	21	Bonds rating										x			1
Revenues	22	Revenue / inhabitants	x			x		x	x			x	x	x	7
	23	Revenue change / inhabitants				x									1
	24	Revenues / grants				x								x	2
	25	Revenues (-grants) / net budget obligations (NBO) 1 to 4				x								x	1
	26	Revenues (-transfer received) / NBO	x		x	x					x	x		x	6
	27	Ordinary revenue (less waste and sewerage charges) to total assets								x					1
	28	Capital transfers received / inhabitants										x		x	2
	29	Current and capital transfers received / inhabitants									x			x	2
	30	General Fund Revenues / inhabitants									x	x			2
	31	General Fund Revenues / Revenues	x				x				x				3

	32	Unreserved Fund Balance/Total General Fund Revenues	x			x						x			3
	33	Taxes and fees / obligations from net expenditure of personnel, services and debt interest.				x								x	2
	34	Direct and indirect taxes and fees / net budget obligations from current expenditures.				x								x	2
	35	Taxes / inhabitants			x				x	x				x	4
	36	Tax Potential		x	x	x	x			x					5
	37	General fund Expenditures / Taxable value					x			x					2
	38	Revenues / Bonds of Governmental Activity										x			1
	39	Net current budgetary revenues / net budget obligations (NBO) from current expenditures			x									x	2
	40	Net current budgetary revenues / budget obligations from non-financial current expenditures, minus debt service.												x	1
	41	Percentage movement in rates and annual charges revenue from previous year						x							1
	42	Percentage movement in user charges and fees from previous year						x							1
	43	Subsidies / Inhabitants											x		1
Expenditures	44	Total expenditures / Inhabitants			x	x		x	x			x			5
	45	Municipal development expense / inhabitants			x										1
	46	Operating expenditures / inhabitants										x			1
	47	Operating expenditures / Total Expenditures	x			x					x				3
	48	Operating expenditures / Revenues											x		1
	49	Total ordinary expenditure								x					1
	50	Expenditures (Expend.) on civil protection and public safety (CP and PS) / inhabitants			x			x				x		x	4
	51	Expenditures on social- security, protection and promotion (SS, SP and SPR) / inhabitants						x				x		x	3
	52	Expenditures on education / inhabitants						x				x		x	3
	53	Expenditures on housing and urban development (H and UD) / inhabitants						x				x		x	3
	54	Expenditures on welfare (CW) / inhabitants						x				x		x	3
	55	Expenditures on culture (C) / inhabitants						x				x		x	3
	56	Expenditures on other community and social services (OCS and OSS) / inhabitants						x				x		x	3
	57	Expenditures on basic infrastructure and transport (BI and T) / inhabitants						x		x		x		x	4
	58	Total expenditures /Total assets								x					1
Invest-ments	59	Investments / inhabitants				x								x	2
	60	Investments effort (Investments / Net budget obligations)				x		x						x	3
	61	Capital projects fund revenues / inhabitants										x			1
	62	Capital projects fund expenses / inhabitants										x			1
	63	Two year growth											x		1
	64	Medium-term Plan		x											1

Result	65	Operating ratio (Revenues / Expenses)							x						1
	66	Current operating deficits	x			x	x					x			4
	67	Prior operating deficits				x	x								2
	68	Surplus (deficit) / inhabitants			x		x		x			x		x	5
	69	Surplus (deficit) / total assets								x					1
	70	Surplus (deficit) / revenues			x					x		x			3
	71	Nonfinancial Budgetary Result index									x				1
	72	Expenditures Execution Index (Actual / budgetary expenditures)									x				1
	73	Revenues Execution Index (Actual / budgetary revenues)									x				1
Other ratio's	74	Cash Ratio				x		x	x	x	x	x		x	7
	75	Quick Ratio / Liquidity ratio							x		x	x		x	4
	76	Current Ratio			x			x	x	x					4
	77	Provision fund		x											1
	78	Necessary budget cut		x											1
	79	Total assets								x					1
	80	Current assets / current liabilities								x					1
	81	Net asset ratio (Net assets / Total Assets)							x	x					2
	82	Depreciation								x					1
			9	5	10	18	7	16	11	22	12	30	7	32	179

Appendix 2: Description and operationalization of financial indicators

Income dependency (1)

The income of municipalities consists of the local charges, other gains and funds of the government. A distinction should been made between the general funds and specific funds of the government.

When the dependency on municipal funds (national transfer) gets higher, the municipality gets more sensitive for governmental retrenchments and so the budget is less flexible. Flexibility will be more on the expenditure site of the budget and less on the income site. So, according to BMC, municipalities could best minimize their dependence on municipal funds and maximize their own incomes to increase flexibility.

Local charges (2+3)

The local charges are the pressure burden of municipalities on citizens. It is the levy of all local taxes like the sewer taxes, waste taxes and property taxes (OZB). Coelo (2006) determines every year a rank for municipalities, to compare the local charges for citizens in all municipalities.

The unused tax capacity is the difference between the current tax rates and the maximum tax rates. The maximum tax rate for almost all these taxes is cost coverage. There could be a situation when there are too many/few costs allocated than permitted. Only the maximum of property taxes is decided by the government.

When a lot of houses are tenantless in a municipality, it will miss property taxes. Measuring the missed property taxes, could give insight if action is necessary to reduce the tenantless.

Capital structure (4 - 10)

There has been little attention in the (international) literature for the capital structure of local governments. There are some articles published about how much equity public institutions or nonprofit organizations minimal need: Tuckman and Chang (1991) and the Charity Commision (1997, 2002 and 2003) come to the conclusion that there must be sufficient capital present to coop with potential setbacks. This conclusion is in line with the definition of resistance capacity.

Although several articles point on the importance of equity, none of the articles have a good theoretical foundation for the desired amount of equity or the optimal capital structure for municipalities. There are only two various theoretical perspectives on the capital structure of local governments. First, there are theories that the size of government debt link to the (future) income. These theories try to determine the effect of debt on the (future) prosperity. Other theories assume that there exists an optimal structure between equity and debt. The concept of resistance power, to determine the required equity for Dutch municipalities, is a result of these theories.

Equity is not a physical pot of money, which a municipality can feely dispose. It is a residual item on the balance sheet, bringing the total of the liabilities is made equal to the total assets. The major bottleneck in determining the equity lies in the determining the value of assets. Goods of municipalities are largely

not or difficult to trade. Determining the value of roads, public parks or other public goods is almost impossible.

Besides the determination of these goods, it's hard to decide which part of the assets should be valued for calculating the resistance capacity. The assets that providers of debt capital will consider important are the assets that are salable with a bankruptcy of the municipality. These include the most movable property, land and buildings. These value does not correspond with the total equity. Hidden reserves also belong to the resistance capacity, as long as the assets are salable.

Resistance power (4)

According to the BBV (2003), article eleven, municipalities must provide insight in their resistance power (Dutch: weerstandsvermogen). This involves the relationship between the resistance capacity and the risks which are of material significance in relation to the financial position. The resistance capacity is, according to the BBV, the resources and capabilities which are available to cover costs that aren't budgeted. The risks are quantified by the risk managers and a 'monte carlo analyse' calculate the necessary resistance capacity on the base of these risks, with a 90% certainty.

In formula:

Resistance power = Resistance capacity / Risks (or necessary capacity)

The VNG and the University Twente developed a norm standard to classify the calculated resistance ratio (appendix 4). A norm of 1.0 is hereby the critical norm; above the 1.0 norm the resistance power is sufficient or good, below the norm it is insufficient. These norms remain valid, unless the municipality environment will change. This could happen to changes in law or legislation. The new EMU-debt, regulated in the law HOF, could be such a change. Through such major changes should be considered if the old standards are still plausible. This is not only for the resistance table, but also for other standards.

The reporting of the resistance power is already a kind of stress test. It's the product of several important financial indicators. Later stress tests and even this test is building and relying on several indicators of the resistance power. Where the resistance power only gives an overview of risks in relation to the reserves, contingencies, result of operations and retrenchment opportunities (figure 4), goes the stress test further by involving more financial indicators and several exogenous scenarios.

Equity & Reserve position (5+6)

The reserve position of a municipality is to a very large extent, the equity. The only other part of the equity is the result of operations, which will be handled in the indicator budget. The reserve position consists of:

- The general reserves: the available financial resources to accommodate setbacks in order to ensure its continuity.
- The designated reserves: Reserves which a specific destination is given with the aim to finance future investments.

- The hidden reserves: Reserves that arise when te actual value of an asset is greater than the value shown in the accounting system.

According to Gerritsen (2007) the equity of municipalities have four functions:

- Buffer function; Available financial resources to accommodate setbacks in order to ensure its continuity
- Utilization function; Money-box; Resources can be saved for a later period
- Financing function; Financing of assets;
- Income function; Don't have to pay compensation on equity, so they save interestexpenses (See for a better explanation Gerritsen (2007).

Gerritsen concluded, that the holding of equity for the utilization function and the income function is undesirable. The use of reserves to generate revenue or to finance expenditure leads to a lack of transparency of the costs of the public services, which results in a suboptimal balance between public services and their costs. In addition, an municipality that has *excess* reserves, without risk to the continuity, spend money on unprofitable projects and/or projects that are not the primary mission. This is also underlined by de Kam, professor of public finance; 'a municipality with less own equity looks more critical to new expenditures'. Finally, reserves lead to a weaker relationship between deciding, pay and enjoy (poor value line), that brings the quality of the tradeoff between public goods and cost in danger.

Solvency-ratio

The solvency-ratio is the equity divided by total assets. It indicates what portion of municipal property is financed with equity or in other terms; is already paid off. A solvency ratio below the 20% is seen as a low degree of financing with equity.

Development of reserve position

The development of the reserve position in relation to the total exploitation over the past three years gives insight into the development of the reserve (own resources) relative to the total power.

But as already stated; equity isn't real money. It is the residual item on the balance sheet. At one million euro in equity may stand five million euro in debt, but also 100 million euro. Equity alone, doesn't say a lot. Therefore, the debt position is more important in the capital structure of municipalities.

Hidden reserves

Besides these reserves, it's important to find out if the municipality has large hidden reserves. These hidden reserves could hide in the undervaluation of the buildings and bonds. The existence of hidden reserves could influence the resistance power, equity position and therefor the capital structure.

Debt position (7+8+9+10)

The debt position of municipalities is one of the most important indicators for the financial position of municipalities according to van der Lei (2010), Smits (2012) and Elsenaar (2012). A common statement therefor is the higher the debt, the higher the interest and the lower the flexibility in the budget because of the fixed component.

Three coherent variables are provided in many articles about the debt position of municipalities; Debt-ratio, Net-debt per citizen and Net-debt in relation to the exploitation.

Debt-ratio

The debt-ratio tells what proportion of the assets is charged with debts. This ratio is according to Hillier, Ross, Westerfield, Jaffe, & Jordan (2010):

Debt ratio = Short-term liabilities + Long-term liabilities + Provisions / Total assets.

Or

Debt ratio = Total assets – Total equity / Total assets

It is also known as the previous mentioned solvency rate, but conversely:

Debt ratio = 1 – solvency ratio.

But for municipalities, this quote has an issue with the provisions. A provision is part of the debt and is formed by taking a load. This is in contrast to (destination) reserves, which is part of the equity and is set through a decision of the council. A reserve is freely disposable and its destination can be changed. A provision isn't freely disposable and the destination can't change.

So 'when the provisions, mentioned in this formula, are for losses or risks this is defensible. Provisions for the maintenance of facilities however are not. These features have actually the character of a reserve which is quantified by the BBV as provision' (Lei, 2012). Most municipalities use provisions mainly/only for the maintenance or replacement of facilities, so this should be taken into account.

That's why VNG (2012) and CBS (2012) defined the debt ratio for municipalities as:

Debt ratio = Long-term liabilities excl. Provisions + Short-term liabilities / Total assets

The lower the result, the more favorable it is; more assets are financed with equity. A factor of 80% or higher is seen as a high degree of financing with debt, according to the VNG and Zandvoort (2012).

Lei (2010): 'The usefulness of the debt-ratio for comparing positions of municipalities depends on the tightness of accounting rules for activating and appreciation of the property on the balance of municipalities'. A correction for the working capital, through comparing the net-debt position, removes these differences in accounting rules.

Net-debt per citizen

The net-debt is defined by the VNG (2012) and CBS (2012) as the sum of: (1) short-term liabilities, (2) long-term liabilities, (3) accruals -/- (4) total financial current assets -/- (5) long-term expulsions.

De net-debt is expressed per citizen to compare the net-debt of municipalities. The average net-debt per citizen for all municipalities was in 2009 approximately € 2.357,- and in 2010 approximately € 2.188,-. The VNG produces annually an ranking of all municipalities, with respect to the net-debt per citizen.

However, van der Lei (2010) state that 'for a comparison of the debt position of municipalities the net-debt per citizen is unsuitable. There are great differences in income per citizen between municipalities'. For example, municipalities with a central function may have more income per citizen as rural municipalities. A municipality with a higher income per citizen may have a higher net-debt per citizen than the municipalities with lower income per citizen, without having cause for concern.

Although these indicators aren't suitable for comparison, it is useful to track the development of these debt-indicators to see for certain movements.

Net-debt in relation to exploitation

To make a better comparison, we must see the debt position in relation to the exploitation. The formula for the net-debt is stated above and the exploitation is defined by VNG and CBS as the total income of municipalities, before mutations and destination of reserves.

Smits (2012): 'Although Van der Lei rightly stated that net-debt per citizen is not a good measure, we can use the number of citizens as a way to get all the data literally under one denominator. And if we analyze both the net debt per citizen as the exploitation per citizen, we can still make statement about the net debt as a share of the exploitation since:

$$\frac{\text{Net Debt}}{\text{Exploitation}} = \frac{\text{(Net-debt/citizens)}}{\text{(Exploitation/citizens)}}$$

The debt in relation to the exploitation (or total income) gives an good indication of the pressure of interest expenses on the exploitation.

Van der Lei (2011) and the VNG indicate that a net debt of more than 150% of exploitation is too high and dangerous. They also indicate that a score of more than 100% is a vulnerable financial position and caution is advised. A score of less than 50% is good. It is expected that this norm will strictly be tightened, due to European standards, in the coming years.

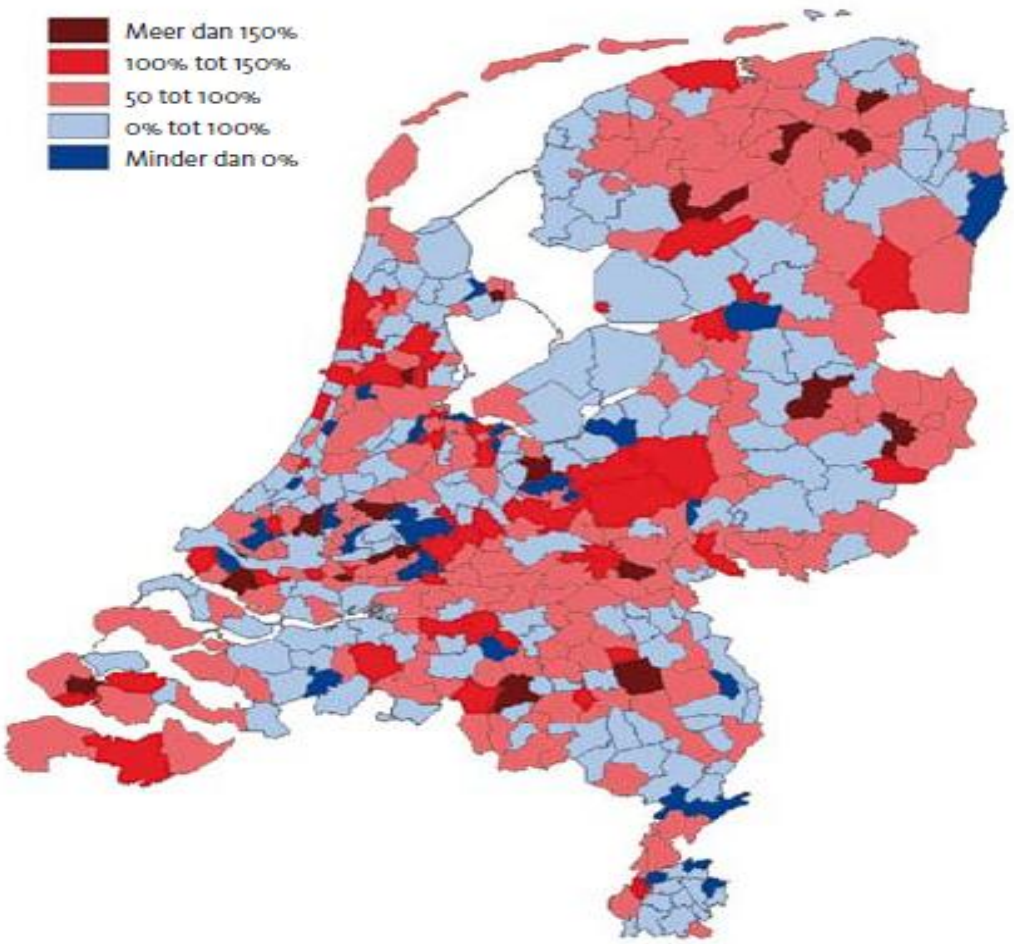

Figure 23: The net debt position of Dutch municipalities, 31-12-2009 (Lei, 2011)

Smits (2012) suggest that the net-debt position of municipalities is strong related to certain characteristics. So do municipalities with the following characteristics generally have a higher net-debt in relation to exploitation:

- Relatively high stock of ground;
- Relatively few inhabitants per square meter;
- Relatively small houses or stacked constructions, mainly in the centers;
- Relatively more low-incomes;
- Relatively many young people;
- Relatively few immigrants or people who receive social assistance.

On the other hand, characteristics for a relative low net-debt in relation to exploitation are:

- Relatively low ground stock (construction);
- Relatively many houses with a larger footprint and less stacked construction, especially in the centers. This will attract higher incomes and less starters (young people);
- Relatively many non-western migrants and their positive impact on the community income.

Smits also stated that the indicator stock of ground is most important: 'Other characteristics don't matter that much when the grounds stock is high or very high. These other characteristics start to matter when the municipality succeeds to drop the ground stock. This is also underlined by van der Lei (2011): 'The conclusion is that municipalities with a high net-debt often have an above average of goundsstock' (p.25) and 'a high net-debt is for municipalities not that bad, if there are high groundsstocks and loans to third parties' (p.24). However, high groundsstocks and loans to third parties can entail certain undesirable risks, which we will discuss later.

Growing and shrinking municipalities

Inflation and real income growth should lead to a decline of the different debt ratios. Debt financing then constitutes income. By shrinking municipalities, income will fall whereby debt ratios will increase. Besides interest repayments, principals also impose demand on the income. That's why the legal standard for municipal budget (the budget must balance), for shrinking municipalities is too broad and for most other municipalities too oppressive.

Golden balance rule

The extent to which long-term assets (incl. inventories) are financed with long-term capital is an indicator that provides insight into the permanent financing of long-term assets, the financing capacity and the liquidity position. The 'golden balance rule' suggests that long-term assets (including inventories) should entirely be financed with long-term capital.

Many municipalities however, have chosen to differ from this rule, by financing long-term assets with a portion short-term capital. This is because the interest rate for short-term money is significantly lower than for long-term money. Risks arise when the interest rate rises.

Interest-expenses (11+12+13+14)

As already suggest by the debt position: the higher the debt, the higher the interest, the lower the flexibility in the budget because of the fixed component. These interest expenses are the result of the debt multiplied with the interest-percentage of the loans.

Two ministerial regulations are in the Netherlands from effect: the cash limit (short-term) and the Interest-risk standard (long-term). The cash limit proposes a maximum cash limit of 8,5% of the total budget. The interest-risk standard states that the maximum amount of long-term financing is linked to the standard interest rate. This gives the maximum loan amount that may be subject to an interest change per year. The maximum loan amount is 20% of the total budget.

The cost of own funds should also be taken into account, because of the loss of possible interest income.

Provisions (15)

The total post provisions are not included in the net- as well as the gross debt concept. This was done, first, to get a better alignment with the net debt concept of cash flows in municipalities. Secondly, it is done with the gross debt concept to get a better alignment with the EMU debt understanding of the European Monetary Union. A third consideration is the subjectivity of the post provisions; the provisions

in municipalities are mainly for great maintenance, which is on the base of a council decision. When the maintenance level is also set by the council, then these provisions are a sort of obligations, but aren't necessarily required. 'So actual, provisions for (large) maintenance can be seen as equity' according to van der Lei (2012).

That's why the provisions should be separated in the light of the financial condition. Provisions for maintenance are normally the greatest part of the provisions. These will be discussed in the next section. For other provisions should be tracked if the provisions are sufficient, or need extra funds. Provisions for negative ground exploitations and doubtful receivables are processed in the balance post ground stock and accounts receivables.

Maintenance plans & Replacement investments (16+ 17)

There should be addressed whether the budgets for maintenance are adequate to meet the desirable, standard level of facilities (buildings, green, roads etc.), defined by the council. Are the desirable levels uniform, or is there differentiation possible? Replacement investments are usually also included in the maintenance plans.

'The maintenance of state assets is difficult to express in financial terms' (Heerlen, 2012). But differences in maintenance do affect the actual value of those assets. Good and timely maintenance extends the useful life of the asset and thus their value. To reduce the risks of destruction of capital (with long-term additional costs) it is important that the municipality observe and monitor the maintenance condition of its assets. The 'draft-decision budget and accountability provinces and municipalities' obligated municipalities to include a section on maintenance in their reports (Coelo, 2011).

Ground exploitation (18+19)

Future results on the development of ground exploitations should reflect what the municipality expects to gains and/or losses on the issue of land plots. Risks management and careful estimations are very important. The Dutch municipalities are the last decade characterized by too optimistic estimates gains from the ground exploitation. This has result, that the total recognized losses from ground exploitations of all municipalities have increased to €2,9 billion in 2011 (Deloitte, 2012). Municipalities are expected to take even another €1 to €1,5 billion approximately in 2012.

Research company Fakton goes even further with their calculations. They conclude that municipalities have lost €5,7 billion on their ground exploitations between 2008 and 2011.

The provisions for negative ground exploitations are processed in the ground exploitations. Research has shown that the average provisions for negative ground exploitation by municipalities have increased with 27% in 2011 (Deloitte, 2012).

An indicator to measure the stock ground exploitation and give a good view of trends and relations is the stock quote. This indicator is defined as:

Sum of stock ground exploitations, grounds exploitations in progress and loans to third parties divided by the income (in percentage).

This indicator has the advantage that it is directly computable to the net debt (ratios). The net debt quote minus the stock quote is the net debt after deduction of the sale of stocks. So this ratio explains where the debt is used for, in particular; if it is used for ground exploitations or not.

An similar indicator to test this relation is 'ground exploitations in percentage of the loans'. This ratio also explains where the loans are used for.

As described by the debt position of municipalities, relatively high stock of ground generally leads to a higher net-debt. This is also confirmed by van der Lei (2011): 'The conclusion is that municipalities with a high net debt often have an above average stock of ground or portfolio of loans to third parties'. So a high net-debt isn't that bad, as long as there are high stocks (mostly ground exploitations) in return.

EMU–balance (20)

The new law HOF sets a maximum amount for investments made by municipalities. The maximum amount is defined in terms of the European EMU deficit criterion for national states. The Minister of Finance may impose a fine when municipalities cross this EMU-limit. Too much optimism in the investment planning should be restricted by these measures.

Municipalities should overview there EMU-limit for the past and future years to see if they meet this criterion.

Related parties (21)

This indicator will sketch an overview of third (related) parties, by which the municipality has a managerial and financial relationship. The financial relation consists of the resources that have been made available to the related parties and aren't recoverable if the related party goes bankrupt. This can arise from the provision of capital in the form of risk capital, loans or a surety, grant, structural assignments or a combination of these options. The administrative relation refers to either the control by representation in the board either by voting rights.

Related parties could be a holding in a partnerships, joint arrangements, foundations or association if the municipality has a seat on the board and runs a financial risk (with legal enforceability).

For municipalities it's important to have insights in the achievement of objectives, operations, finances and management responsibilities of these parties. Because as Bekkers (2012) stated: 'You run a great risk as municipality when things go wrong at related parties, for example the sheltered employment'.

Guarantees (22)

Most municipalities give guarantees to other parties, mostly housing corporations. These guarantees are provided to give the society and corporations the security so they can implement the social purposes. Normally these guarantees are in the form of a back-up commitment. Important is to see which securities (collateral) are provided and what position the municipality occupies in case the borrower defaults. If no collateral has been provided, the risk is higher (no claims can be made).

This indicator can be measured through the ratio of total guarantees in percentage of the equity. There should be a distinction between direct guarantees (for example sport associations) and back-up guarantees, like the housing corporations. So there is consideration for the size and the carrying of risks.

Budget flexibility (23+24+25)

Elsenaar (2012): 'Although debt is very important, the comprehensiveness of the budget remains the most important assessment criterion'. Budget flexibility is the underlying concept to reach comprehensiveness of the budget. The following questions are important to evaluate the flexibility of the budget:

- relationship between structural and incidental income and charges
- What is the extent of incidental income and charges in the total budget?
- How fast can financial old policy be phased?
- Can policies be strengthened and new policy be implemented?
- Is the budget substantially burdened by many fixed costs, such as capital costs?
- How is the management of cash flows?
- Are deficits of surpluses incidental or an annual trend?
- Structural expenses should not be covered with incidental income (Vugt van & Elsenaar, 2012)

The comprehensiveness is the most important indicator in testing the financial scenarios, the second part of the stress test. It will be treated in more detail in the next section.

Appendix 3: Description and operationalization of financial scenarios

Scenario 1: Financial crisis

The first scenario is the financial crisis. This scenario assumes that the debts of Dutch government and municipalities have risen so high, that they have to pay higher interest rates on the capital market. This crisis is identified as a rising interest rate, with influences of the inflation rate and the wage development.

Rising interest rates may be a reaction to rising inflation, but does not necessarily have to be the case. That's why this scenario is split into two variants; A scenario with only an increase of the interest rate and a combined increase of interest rate and inflation. In the combined scenario is assumed that the real price level of 2012 is maintained.

At the time of this study, the long-term interest is approximately 2,4 percent and the short-term interest is approximately 0,5 percent (CPB, 2012). The long-term interest rate for the period 2013-2017 is on average 3,6 percent, according to the prediction of the CPB in the 'Economische Verkenningen 2013-2017' (November 2012).

Time series data of the Central Bureau for Statistics (CBS) illustrate that in the past, strong increases in interest rates during a short period have occurred in the Netherlands. The long-term interest was for example, in 1974, 1981 and 1991 increased to a maximum of 9 percent (see also figure 24). Therefore, in the extreme scenario is assumed that the long-term interest rate rises to 9 percent. This represents an annual increase of 1,5 percent. The heavy scenario present an annual increase of 1,0 percent.

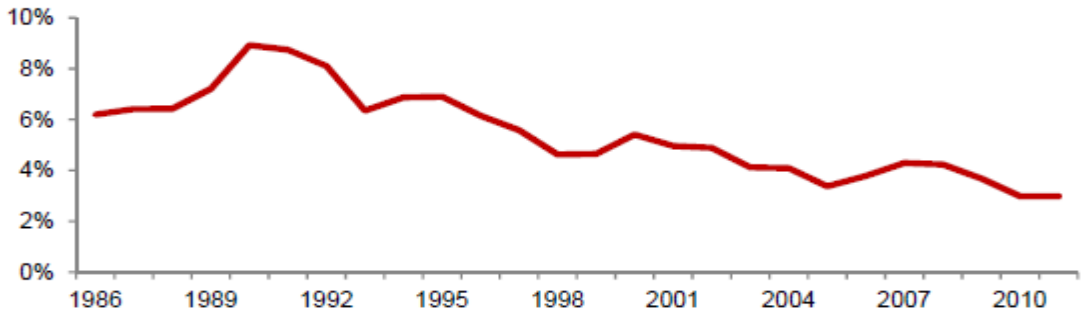

Figure 24: Development long-term rent, 1986-2011. Source: DNB (2012)

In the period 2013-2017 the average inflation rate is, approximately, just above the 1,9% (CPB, 2012, p.34). That's why this test is counting with a fixed inflation rate of 2%. For the determination of the extreme scenario, a surcharge of 1,5% will be used. Historically seen, this is not an 'extreme' scenario. However, in comparison to the predictions of the CPB, it is. For the heavy scenario, a surcharge of 1% will be used.

The third component in the financial crisis scenario is the development of wages. There is a baseline in the public sector: CAO-wages in the public sector are frozen for two years (2012-2013). The last developments in the politics gave insight that the baseline will maintain for the coming years. That's why the results of this component will also not be included in 2014 and thereafter.

Scenario 2: Social-economic crisis

The second scenario, a social-economic crisis, is defined as the combination of a decline in the economic growth and rising unemployment. On the base of the report 'Shockproof government finances' that the Ministry of Finance has published in September 2011 to simulate the effect of such a crisis. An economic contraction is attached to be a very likely consequence. The scenarios used in the report will be corrected for the expectations of the CPB, with respect to economic growth. The current economic growth is estimated on approximately 1,5 percent per year (CPB, 2012, p.12).

The starting point for the funding of social assistance is that the government provides an adequate macro budget. An increase in the volume of social assistance for one municipality will be compensated. The proportion of a municipality in the macro budget is determined by an allocation model.

However, there can incurred stress for a municipality when the expenditures to social assistance are growing faster than the national average. Because the number of social assistance receivers is a measure of the municipal fund, gets a municipality in that year a relative low benefit. The following year is through a higher share in the fund, the increase in social assistance volume corrected. The increase in the number of social assistance receivers is simulated compared to the national average.

Variable	Scenario	Year 1	Year 2	Year 3	Year 4
Economic growth (CPB)	Baseline	1,5%	1,5%	1,5%	1,5%
	Extreme	-5,0%	-1,5%	-1,0%	-0,7%
	Heavy	-3,5%	-1,0%	-0,5%	0,0%
Unemployment (CPB)	Baseline	6,00%	6,25%	6,0%	5,75%
Social assistance	Extreme	4,80%	4,80%	4,80%	4,80%
	Heavy	3,00%	3,00%	3,00%	3,00%

Table 32: Economic growth and unemployment

Scenario 3: Real estate crisis

The third scenario is a simulation of a real estate crisis and its impact on the municipal ground exploitations. The ground exploitations consist of plots for houses as well as business grounds. The stock of ground is an important component in the assessment of the financial position, as we already saw by the indicators. The valuation of the exploitations is based on assumptions and forecasts. Changes in these parameters can also have a major impact on the valuation of the total ground stock.

The most likely scenario is currently considered and set, which is translated into the ground exploitations. At the request of the council and management, the department ground development had already drafted a number of scenarios that may arise in the coming years in the real estate market. These scenarios will be taken as the base for this test. The drafted scenarios cover two possible effects:

- Slowing the issue of the four major ground project with three and five years;
- Reducing the yield increase to 0% or 1%.

Because the ground developments are long-term projects and are calculated with the net present value, the effects of these scenarios are calculated until the end of the projects. Currently, there are examinations if more variables, like falling prices, interest and declining sales, should be included.

Scenario: 4 Number of Citizens

The sixth scenario is the number of citizens. The determinant factor in the growth of citizens is the realization of the housing programs. The development of the population is indirect in line with the issue of ground exploitations. That's why it is strongly related to the third scenario, the real estate crisis. The number of citizens is also related to the municipal fund and the (local) tax income of the municipality.

The determination of the extreme and heavy scenario is strongly dependable on the municipality. Municipalities with a growing number of citizens should have other scenario-variables than those with declining number of citizens.

For growing municipalities should the extreme scenario be a constant number of citizens, the heavy scenario a small increase. For declining municipalities should the extreme scenario be an double decline, while the heavy scenario should be between the predicted decline and the double decline. For municipalities with a constant number of citizens a decline of 0,75 and 0,5 percent should be plausible.

Municipality	Scenario	Number of citizens / year
Growing	Extreme	Constant
	Heavy	Small increase
Constant	Extreme	-0,75% * Total population
	Heavy	-0,50% * Total population
Declining	Extreme	200% * predicted decline
	Heavy	150% * predicted decline

Table 33: Number of citizens

Because there is a constant growth in recent decades (see figure 1), and there is also an increase expected for the coming years, a stabilization of the population is an extreme scenario. In the heavy scenario shall a slight increase of the current population be assumed (see table 32 and 33).

Scenario 5: Decline of municipal Fund (Government Retrenchment)

The third scenario is a decline in the municipal fund, which can be caused in different ways:

- First, the size of a municipality fund is dependable on the total size of the fund. The size of the fund is related to the total budget of the central government, through the 'stairs up - stairs down principle'. When the government is cutting in their budget ('stairs down'), the total fund is also declining. So the current government retrenchment creates a negative trend in the total fund of municipalities.
- Second, it is dependent on the allocation model of the fund. A new allocation model is in development at this point, so there is a possibility that a municipality will get less money than they get now.

The retrenchment plans are currently postpones with the closure of the social agreement (11-4-2013). The chance exists that these retrenchment-plans will still be implemented, if the social agreement hasn't achieved the desired effects.

In addition, it is assumed that additional cuts of the government are needed, besides the postponed retrenchment-package. In the heavy scenario will be assumed that an additional cutback of € 4 billion will be needed, and in the extreme scenario additional savings of € 10 billion. These cuts will only have partly impact on the national budget. The VNG calculated that 'in recent years of all expenditure-reducing measures that a government takes, about 50% will lower the national budget'. Subsequently, there is an impact on the total municipal fund of about 18% (VNG, 2012).

The renewal of the allocation model can affect each municipality. Because the municipality X has already a very low percentage of the total fund per inhabitant (44% less than the average), a further decline won't be expected. An increase of the fund is also possible. That's why the heavy scenario is defined as a constant share of the municipal fund. The extreme scenario will be characterized by a decrease of 0,5% in the municipal fund

Scenario 6: Decentralizations

The central government is currently transferring statutory tasks to the municipalities. These tasks, youth care, WMO (formerly AWBZ or EMEA) and the participation law (formerly WWNV), are well known as the decentralizations. The municipalities will have substantial amounts to implement and perform these tasks. About the size and distribution of decentralizations budgets are many uncertainties. The idea of the government is that municipalities work together (or merge) in order to share and reduce the financial risks.

The scenarios are defined, based on the latest calculations of the decentralizations. These calculations are made based on the forecasted budgets. The heavy scenario is defined as the budgets with the expected reductions for municipalities (AWBZ will be reduced with 5% and the youth care with 10%). In the extreme scenario is an extra discount charged to the municipality. The municipalities will face major challenges by the discounts.

Scenario 7: Humanitarian disaster

The seventh and last scenario is a humanitarian disaster. One can think of scenarios as the fireworks disaster in Enschede, the Bijlmer disaster or Project X Haren. There should be calculated what the effect is of a substantial threat of such a scenario for the financial position of the municipality. The effects of two disasters in the past, the fireworks disaster in Enschede and the dike breach in Wilnis, are examined for this thesis. The breach in Wilnis is chosen as starting point of the scenario for this test, because the municipality X has also plenty of water and some dikes in their surface.

However, the impact of a dike breach in the municipality is rather small in the calculations. The total cost come around the € 2 - € 3 million and the municipality is covered by insurance for € 2,5 million. In an extreme scenario, when the National service LASER, of the ministry of Agriculture, Nature and Food Quality, doesn't compensate the municipality for any costs, the impact is still not that high. That is why the scenario of an humanitarian disaster is disregarded.

Appendix 4: Mark table Resistance power

Resistance Power		
Rate mark	**Ratio**	**Meaning**
A	>2.0	Excellent
B	1.4-2.0	Good
C	1.0-1.4	Sufficient
D	0.8-1.0	Moderate
E	0.6-0.8	Insufficient
F	<0.6	Very Insufficient

Source: VNG en Universiteit Twente (2008)

Appendix 5: Balance

BALANCE per ultimo 2012 (x € 1.000)					
Assets	**2012**	**2011**	**Liabilities**	**2012**	**2011**
FIXED ASSETS			**FIXED LIABILITIES**		
Tangible fixed assets			*Equity*		
Economic benefit	119.919	114.834	General reserve	15.800	15.736
Social benefit	3.249	3.240	Destination reserves	52.047	50.783
			Operating result	3.482	1.634
			Provisions		
			Provisions	9.872	13.181
Financial fixed assets			*Long-term debt*		
Providing capital investments	570	570	Long-term loans	168.758	170.694
Capital investment common arrangements	45	45			
Loans to housing corporations	69	73			
Other loans to related parties	-	-			
Other long-term loans	3.241	4.728			
Total fixed assets	**127.093**	**123.490**	**Total fixed liabilities**	**249.959**	**252.028**
CURRENT ASSETS			**CURRENT LIABILITIES**		
Stock					
Work in progress (grounds in exploitation)	99.566	97.429			
Not taken into exploitation taken grounds	13.660	17.886			
Short-term exposures			*Short-term debt*		
Receivables public bodies	4.684	6.230	Other loans	9.794	15.046
Other receivables	5.033	3.417			
Other loans	6.076	11.734			
Cash	6.104	8.065			
Accruals			*Accrued liabilities*		
Prepayments	135	153	Prepaid advances	2.109	2.193
Amounts to be received	1.728	4.703	Other accrued liabilities	2.840	3.840
Total current assets	**136.986**	**149.617**	**Total current liabilities**	**14.743**	**21.079**
TOTAL	**264.079**	**273.107**	**TOTAL**	**264.079**	**273.107**
			Guaranteed loans	**157.264**	**170.712**