



Marko Nokkala, Kaisa Finnilä, Jussi Rönty & Pekka Leviäkangas

## Financial performance of Finnish technical networks

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puh. vaihde 020 722 111, faksi 020 722 4374

VTT, Bergsmansvägen 5, PB 1000, 02044 VTT  
tel. växel 020 722 111, fax 020 722 4374

VTT Technical Research Centre of Finland, Vuorimiehentie 5, P.O. Box 1000, FI-02044 VTT, Finland  
phone internat. +358 20 722 111, fax +358 20 722 4374



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Title <b>Financial performance of Finnish technical networks</b>		
Abstract Finnish technical networks (roads/streets, ports, waterworks, rail, energy etc.) are mainly under public sector ownership and their financial performance has not previously been systematically analysed. This report performs a financial analysis for selected technical networks, utilities and operating companies deriving the most common financial performance indicators for each entity. The final focus is especially on the owners' financial returns.  The ownership and governance model of an entity plays a lesser role in their financial performance than anticipated. What really matters is the business model, for instance for ports the specialized port seems to outperform non-specialized ones. The best performing entities are from the energy sector and ports, but all sectors and ownership models generate surplus cash flow to their owners.  A challenge for most sectors has been the availability of data, since municipal departments do not issue separate financial statements.  The analyses reveal that most entities have both a steady cash flow and a secure financial position, but the potential maintenance and investment backlog is not taken into consideration. Municipalities have been able to use their technical networks and utilities as a source of revenue and this has taken place even at times when the overall financial performance of the entity has been less satisfactory.		
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## Preface

Financial analyses of listed companies are part of everyday business life for investors. However, there are hundreds of business entities in Finland that are not listed on the stock exchange yet manage huge assets and balance sheet volumes in the area of technical networks. In terms of ownership, these entities fall most often under the public sector, some national level entities under the state, but the majority under the municipalities. This is an area where analyses of financial performance have been limited, mainly because these industries have not been open to investors whose trade it is to screen investment opportunities.

Crunching numbers is not a simple task, even where the standards for financial statement contents have been well defined. Quite the contrary; by tackling a sample of 30-plus entities mainly from the public sector and representing six sectors (energy, ports, roads, rail, aviation, waterworks) we have come to appreciate the art of accounting from a fresh angle. Municipalities as owners of technical networks can benefit greatly from their infrastructure assets and operations on those infrastructures – particularly as they are in desperate need of injection of funds into their suffering economies. At times of economic downturn one can conclude that not only does asset ownership matter, but even more so the use of assets to generate cash flow is a top priority for municipalities.

Therein also lies a potential caveat. The networks can only generate revenue when they operate in good condition, and judging from the information available there is a great risk that the current level of investment and maintenance may not be sufficient to maintain the current service level. This represents a massive potential future liability, which needs to be financed through available resources. Very few entities have made reservations for such a situation and even less have already addressed the maintenance backlog adequately. Judging by the analyses carried out in this research, the regulated industries may well face tough(er) times ahead.

The report at hand summarises the results of an exceptionally detailed financial analysis of technical networks, utilities and operating companies. First and foremost it is meant to serve as reference material for further research and analysis. However, there is no doubt that this report contains a strong message on how to view our technical networks and the services they provide and facilitate.

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## List of abbreviations and symbols

DESTIA	Finnish infrastructure and construction service company
FCF	Free cash flow
FINAVIA	Finnish Aviation Authority
HSL	Helsingin seudun liikenne
MOC	Municipality-owned company
MOE	Municipality-owned enterprise
O&G	Ownership and governance
ROA	Return on assets
ROCIM	Return on capital invested by municipality
ROE	Return on equity
ROI	Return on investment
SOC	State-owned company
SOE	State-owned enterprise
TEKES	Finnish Funding Agency for Technology and Innovation
TRAFI	Finnish Transport Agency
VR	State Railway Company
WACC	Weighted average cost of capital
$R_f$	Risk-free rate of return
$R_m$	Market rate of return
$R_i$	Rate of return of $i$
$R_e$	Cost of equity

Rd	Cost of debt
T	Corporate tax rate
E	Equity capital
D	Debt capital
ICR	Interest coverage ratio
EBIT	Earnings before taxes and interest



# 1. Introduction

## 1.1 Background

Finland has a tradition of the public sector (the state and the municipalities) taking care of the infrastructure networks, both investments and maintenance. The C-Business project, financed by Tekes and other donors<sup>1</sup>, has focused on ownership and governance models of technical networks. These networks are mostly under public sector governance and therefore they have not been subject to a lot of financial performance analyses. However, as more and more entities have shifted from the traditional municipal departments to other governance and corporate management structures, financial data are becoming available and make analyses similar to those of listed companies possible.

The aim of this report is to analyse ownership and governance (O&G) models of infrastructure networks and their profitability from the viewpoint of owners and investors. The studied infrastructure networks (including utilities and operating companies) are ports, water and sewage, railway, airports, roads, and energy, and the O&G models are classified as municipal owned enterprises (MOE), municipal owned companies (MOC), state owned enterprises (SOE), state owned companies (SOC) and private companies (P).

The research results apply to the present situation, as there is a law initiative currently under discussion to move from SOE/MOEs to SOC/MOCs or to transfer their operations under the municipality's technical department. This process is driven by the European Union's competition law and the different taxation of MOEs compared to MOCs or private corporations.<sup>2</sup> The changes in legislation may apply only to those entities operating in competitive markets, excluding the waterworks operating as MOEs. However,

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<sup>1</sup> The C-Business project has received funding, alongside the Finnish Funding Agency for Technology and Innovation (Tekes), also from the Federation of Finnish Municipalities, Pension Fennia, the Finnish Transport Safety Agency (Trafi), the Ministry of Finance, the Ministry of Transport and Communications, Destia, the City of Oulu and Helsinki Region Transport (HSL).

<sup>2</sup> The principal difference is that MOEs, SOEs, and an entity operating as a municipal department do not pay taxes as MOCs, SOC and private entities do.

## 1. Introduction

with envisaged transition periods the process will effectively carry on for the better part of the next decade.

The fundamental difference between a state or municipality owned enterprise (SOE / MOE) and company (SOC / MOC) is that a company operates under specific legislation on limited liability or public companies. Financially, this means that equity investors are responsible for the performance of the company to the extent of their invested equity. Debt investors have priority access to cash and to assets in the case of default, but they might also lose their investment in a worst case scenario. In MOE and SOE, the enterprise has in theory all the municipality's or state's 'equity' as their backup. In other words, there is no possibility of bankruptcy for SOEs and MOEs.

In these analyses, publicly available financial information (income statements and balance sheets) is used as core data from which all the profitability and risk ratios are calculated.

There are three viewpoints to networks, which are reflected in the financial analysis. First, there is the operator of the network or node point of the infrastructure. Second, there are the service providers, such as maintenance operators, who carry out infrastructure related business operations ordered by their clients which are typically those belonging to the first mentioned category. Third, there are the owners – in these cases the municipalities, the state or private investors. These different roles, which are most distinct, must be kept in mind when drawing conclusions from the outcomes of financial calculus.

### 1.2 Coverage of analyses

The key instruments for examining profitability in the financial analyses of listed companies are cash flow statement (free cash flow), and key profitability ratios (beta (B), return on investment (ROI)), return on assets (ROA), return on equity (ROE), and return on capital invested by municipality (ROCIM)). With the exception of ROCIM, all the indicators apply to all types of entities, independent of their ownership model, provided that the accounting data is available. Those entities that operate under the municipality organisation, i.e. technical departments, were not analysed as they do not produce a separate income statement and balance sheet. We also examine the entities' cost of capital structure – that is cost of equity, cost of debt, and weighted average cost of capital (WACC). This terminology is explained in the following chapter. We apply the analysis to the entities listed in Table 1. It is worth noting that some entities perform services **on** the infrastructure and are not necessarily involved in the ownership of the network in any way.

Table 1. Studied entities, grouped by industry and ownership.

Industry	Ownership	Company	Number of cases
Ports	MOE	Port of Oulu	9
		Port of Kemi	
		Port of Helsinki	
		Port of Turku	
		Port of Kokkola	
		Port of Vaasa	
		Port of Hanko	
		Port of Pori	
		Port of Rauma	
	MOC	Port of Kotka	2
Port of Hamina			
P	Inkoo Shipping	1	
Waterworks	MOE	Haukipudas waterworks	5
		Oulu waterworks	
		Helsinki waterworks	
		Espoo waterworks	
		Vantaa waterworks	
	MOC	Kempele waterworks	4
		Lakeuden keskuspuhdistamo	
		Lahti Aqua	
		Hämeenlinna area waterworks	
	P	Ylivieska waterworks co-operative	2
Pudasjärvi waterworks co-operative			
Railway	SOC	VR-Group Ltd. (rail transport)	1
Airports	SOE/SOC	Finavia (airport infrastructure & services)	1
Roads	SOC	Destia Ltd. (road maintenance & construction)	1
Energy	MOE	Oulun energia	2
		Helsingin energia	
	MOC	Jyväskylän energia <sup>3</sup>	1
	SOC	Fortum Corp.	1
			Total 30

<sup>3</sup> Jyväskylä Energia's results are not presented separately in the report as per their request. State-owned enterprises are not covered in Chapter 3 analyses due to their specific financing model.

## 1. Introduction

As in many analyses the industry and ownership are used as grouping methods, Table 2 lists the case studies in Chapter 3 of this report by industry.

Table 2. Number of cases, grouped by industry.

<b>Industry</b>	<b>Number of cases</b>
Ports	12
Waterworks	11
Railway	1
Airports	1
Roads	1
Energy	4
Total 30	

As the project has focused on O&G models we use the grouping in Table 3 to analyse the impact of ownership on financial performance.

Table 3. Number of cases, grouped by ownership.

<b>Ownership</b>	<b>Number of cases</b>
MOE	16
MOC	7
SOE	1
SOC	3
P	3
Total 30	

### 1.3 Limitations to analyses

There are several limitations to the analysis that should be noted:

1. Some of the entities under “traditional model”<sup>4</sup> do not produce a separate financial statement.
2. Due to the small sample size, the analyses presented are not statistically significant for all sectors or industries; however, for certain segments, like railways and ports, the sample covers a good deal – actually 100% for railway operations and the lion’s share of port freight volumes in the country.

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<sup>4</sup> Traditional model here refers to production within the municipality, usually under the technical department.

3. For unlisted companies application of financial ratios may not always yield straightforward results.
4. Adjustments to income statements and balance sheets are kept to minimum, because not all studied companies have provided equally comprehensive information.
5. Analyses are presented as ex-post, and therefore do not automatically provide a picture of the future financial position of the company.
6. Some companies have not paid taxes or this information is omitted from their financial statements.

In those cases and years where no tax payment has taken place the tax rate has been adjusted to zero. This has made it impossible to use the real tax rate in the calculation of WACC. The leasing liabilities have not been included in the analysis because not all entities provided data on their leasing liabilities. This has a potential impact on the results of the financial analysis. Large leasing liabilities would lead to a lower WACC rate.

The principle of the smallest mutual denominator has been applied in analysing the data. The aim is to make the companies as comparable as possible, but at the same time, where applicable, make the same adjustments apply to all the companies. The adjustments that have been left out may have a minor effect on the result. The aim of the minor adjustments and simplifications was to render the results comparable and fair across all the entities. For the entities analysed, the main assumption is that the companies have made their income statements and balance sheets according to standard practices and that the information is reliable.

The following data are missing from the analysis:

- The Port of Hamina has been a municipality owned company (MOC) since 2002, so it does not have an income statement or balance sheet for 2001. Also it had not published its 2009 financial statements by the time data analysis began.
- Vantaa Waterworks has been a municipality owned enterprise (MOE) since 2002, but as its opening balance sheet for 2002 was available, it was used as a basis for 2001 information.
- Finavia's 2009 financial statements have been ignored, because Finavia changed from a state owned enterprise (SOE) to a state owned company (SOC) in 2010, and the 2009 financial statements include major depreciations and reductions.

The analysis covers the period 2002–2009, unless otherwise indicated, utilising financial statements from these years.

## 1.4 Organization of the report

As this report contains a large amount of information, its setup has key data in the main body of the text and additional information in the annexes. Following the introduction,

## 1. Introduction

Chapter 3 presents a comparative analysis using case study entities grouped by industry and ownership.

To get some more detailed information, we have selected some cases and industries for a more detailed and extensive review under Annex 2. We start with ports, where we have selected four case studies (Kotka, Hamina, Naantali and Hanko) that represent better-than-average and worse-than-average financial performance. We have also selected four waterworks (Tampere, Joensuu, Nokia and Vantaa) to examine some of the case studies in more detail. Of the four energy companies in the study, three are analysed in greater detail, with the exception of Jyväskylän Energia, which did not wish to have company-specific information released.

We have also carried out a small review of funds received by municipalities from the network industries. The results are presented in Chapter 4. Finally, we draw some conclusions from the research in Chapter 5.

This report has several annexes. Annex 1 presents the financial statement and balance sheet information in full detail. Annex 2 includes a more in-depth analysis of ports and waterworks. Annex 3 holds detailed yearly data for an enlarged sample. These additional case entities are not discussed in the body of this report.

## 2. Methodology

### 2.1 The income statement

The analyses in this work follow the basic methodology used for analysing listed companies in Finland. This section of the report presents the basic formulae used. Annex 2 includes a full presentation of income statement and balance sheet structure.

#### **Adjusted income statement**

Net sales (turnover)  
+ Other operating income  
**= TOTAL OPERATING INCOME**  
- Materials and supplies used  
- Outsourced services  
- Personnel expenses  
- Adjustment to entrepreneur's salary  
- Other operating expenses  
+/- Increase/Decrease in finished goods and work-in-progress inventories  
**= OPERATING MARGIN (EBITDA)**  
- Depreciation according to plan  
- Reductions in value of fixed and other non-current assets  
- Exceptional reductions in value of current assets  
**= OPERATING RESULT (EBIT)**  
+ Income on shares/similar rights of ownership and other investments  
+ Other interest and financial income  
- Interest and other financial expenses  
+/- Foreign exchange gains/losses  
- Reductions in value of investments in fixed and other non-current and current assets  
- Direct taxes  
**= NET RESULT**  
+ Extraordinary income  
- Extraordinary expenses  
**= TOTAL RESULT**  
-/+ Increase/Decrease in depreciation difference  
-/+ Increase/Decrease in voluntary provisions  
+ Adjustment to entrepreneur's salary  
+/- Changes in market value  
+/- Other adjustments to profit  
**= RESULT FOR THE FISCAL PERIOD**

## 2. Methodology

The following sections introduce the various indicators calculated from the income statement and balance sheet data.

### 2.2 Free cash flow, FCF

Free cash flow represents the amount of cash that a company has left over after it has paid all of its expenses, including investment repayments and depreciation according to plan. Free cash flow is important because it shows what opportunities there are to pursue opportunities to enhance shareholder value. In corporate finance, free cash flow is essentially the increase of shareholders' wealth. The presence of free cash flow indicates that a company has cash to expand, develop new products, buy back stock, pay dividends, or reduce its debt. High or rising free cash flow is often a sign of a healthy company that is thriving in its current environment.

Equation 1. FCF.

$$\begin{aligned} & \text{Operating profit (loss)} \\ & + \text{Shares/Similar rights of ownership in associated companies} \\ & - \text{Operating taxes} \\ & - \text{Tax effect of financial expenses}^5 \\ & + \text{Tax effect of financial income}^6 \\ & = \text{Operating cash flow} \\ & + \text{Depreciation} \\ & = \text{Gross cash flow} \\ & - \text{Change in working capital}^7 \\ & - \text{Gross investments}^8 \\ & = \text{Free operating cash flow} \\ & +/- \text{Other expenses (after taxes)} \\ & = \text{Free cash flow} \end{aligned}$$

---

<sup>5</sup> Tax effect of financial expenses = Financial expenses multiplied by tax rate.

<sup>6</sup> Tax effect of financial income = Financial income multiplied by tax rate.

<sup>7</sup> Change in working capital = Change in inventories and work-in-progress plus change in short-term trade receivables minus change in short-term trade payables

<sup>8</sup> If Statement of changes in the financial position is available, then Gross investments = Cash flow from investments.

If Statement of changes in the financial position is not available, then Gross investments = Depreciations and reductions in value plus change in fixed and other non-current.



## 2.3 Return on capital

### 2.3.1 Return on assets, ROA

ROA measures how profitable a company is relative to its total assets. The ROA figure gives investors an idea of how effectively the company is converting the money it has invested in assets into net income. The higher the ROA number, the better, because the company is earning more money on less investment.

Equation 2. ROA.

$$\text{ROA} = \frac{\text{Net result} + \text{Financial expenses} + \text{Taxes (12 mths)}}{\text{Average adjusted balance sheet total}} \times 100,$$

where

Financial expenses = interest and other financial expenses + foreign exchange losses.

ROA compares the operating result with the total capital that is used in the business operations. ROA is a profitability measure which is not affected by either the company's tax policy or the tax characteristics of the corporate form of the business. As shown in the adjusted income statement, ROA does not take taxes paid into consideration.

The ratio measures the company's ability to generate profits compared to the total capital tied up in the business operations. ROA is more useful than ROI, especially in cases where it is impossible to clarify the division between the interest-bearing and the non-interest-bearing external capital. According to the Committee for Corporate Analysis (2006), ROA can be given the following benchmark values:

**above 10% = good,**  
**5–10% = satisfactory,**  
**below 5% = poor.**

### 2.3.2 Return on investment, ROI

Return on Investment (ROI) measures how profitable a company is relative to its invested capital. ROI measures a company's profitability and its management's ability to generate profits from the funds investors have placed at its disposal.

Equation 3. ROI.

$$\text{ROI} = \frac{\text{Net result} + \text{Financial expenses} + \text{Taxes (12 mths)}}{\text{Average invested capital of the fiscal period}} \times 100$$

where

Average invested capital =

## 2. Methodology

- Adjusted shareholders' equity
- + Long-term liabilities
- + Short-term interest-bearing liabilities
- + Other short-term interest-bearing liabilities to corporate group companies.<sup>9</sup>

Comparing this ratio of different companies may be difficult if information from which to separate the interest-bearing liabilities (i.e. capital requiring return) from the non-interest-bearing liabilities is lacking. Substantial investments and revaluations of assets create difficulties in trend analysis.

ROI can be regarded as fairly good when it amounts to the average financial expense percentage of the interest-bearing liabilities.

$$\text{Required minimum} = \frac{\text{Financial expenses}}{\text{Average invested capital of the fiscal period}} \times 100$$

### 2.3.3 Return on equity, ROE

The amount of net income returned as a percentage of shareholders equity. Return on equity (ROE) measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

Equation 4. ROE.

$$\text{ROE} = \frac{\text{Net result (12 mths)}}{\text{Average adjusted shareholders' equity of the fiscal period}} \times 100$$

The required ROE depends on the return required by the owners. This required return ratio is essentially affected by the risks involved. The company must be able to generate profits in order to be able to service the external invested capital and the owner's investment. Of all the return on capital ratios, the ROE is the one affected most by revaluations of assets.

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<sup>9</sup> In business, a group, business group, corporate group, or (sometimes) alliance is most commonly a legal entity that is a type of conglomerate or holding company consisting of a parent company and subsidiaries. An associate company (or associate) in accounting and business valuation is a company in which another company owns a significant portion of voting shares, usually 20–50%. In this case, an owner does not consolidate the associate's financial statements. Ownership of over 50% creates a subsidiary, with its financial statements being consolidated into the parent's books. Associate value is reported in the balance sheet as an asset, and dividends from the ownership are reported in the income statement.

### 2.3.4 Return on capital invested by municipality, ROCIM

Return on capital invested by municipality (municipalities) (ROCIM) measures the amount of profit a company generates with the money that the municipality (municipalities) have invested (note: there can be multiple municipalities as shareholders).

Equation 5. ROCIM.

$$\text{ROCIM} = \frac{\text{To the municipality}}{\text{From the municipality}} \times 100$$

where

To the municipality

= Profit (loss) before closing entries and taxes

+ Compensation from share capital invested by the municipality

+ Interest paid to municipality,

and

From the municipality

= Support and aid from municipality

+ Shareholders' equity

+ Loans from municipality

+ Depreciation difference and voluntary provisions (for instance for future investments).

## 2.4 Risk, Market beta

In Finnish financial analysis, the market beta represents a share value's sensitivity to changes of the OMX Helsinki index.

The market beta (B) is the covariance of growth of a company's share value and market's profit growth divided by the variance of the market's profit growth. For unlisted companies ROI is used instead of the growth of a company's share value.

Equation 6. Beta.

$$B = \frac{\text{Cov}(R_i; R_m)}{\text{Var}(R_m)},$$

where

$R_i$  is the change in the company's share value (ROI for the unlisted companies), and  $R_m$  is market profit (change of the OMX index).

## 2. Methodology

The greater the market beta, the stronger the share value has reacted to changes of the OMX Helsinki index during the observation period. When the market beta is 1, the share value changes in the same proportion as the OMX Helsinki index. When the market beta is 2, the share value reacts doubly in the same direction as changes of the OMX Helsinki index. When the market beta is 0, there is no dependency between the share value and the OMX Helsinki index. When the market beta is negative, the share value has reacted in the opposite direction to changes of the OMX Helsinki index.

## 2.5 Cost of capital

### 2.5.1 Cost of equity, Re

Cost of equity (Re) is the return that equity investors require on their investment in the firm.

Equation 7. Re.

$$Re = Rf + |B| \times (Rm - Rf)$$

where

Rf = risk-free interest rate, B = company's market risk, Rm – Rf = market risk premium. Market risk premium is the expected rate of return above the risk-free interest rate.

Absolute value is taken from the beta, because the beta can have negative values, but cost of equity is always at least the risk-free rate. As a risk-free rate approximate we have used the state's 10-year bond annual yield for May 2010, which was 3.58%.

### 2.5.2 Cost of debt, Rd

Cost of debt (Rd) is the return that lenders require on the firm's debt. EBIT (earnings before taxes and interest) in the formula is that of the adjusted income statement operating result.

Equation 8. ICR.

$$\text{Interest coverage ratio, ICR} = \frac{\text{EBIT}}{\text{Interest expenses}}$$

The interest coverage ratio is also known as the debt service coverage ratio. The ratio should be over 1 to cover interest expenses. Rd can be read from Table 4 when ICR is known.

Table 4. Interest Coverage Ratio ICR and Rd.

Interest Coverage Ratio (ICR)	Rating	Typical default spread	Market interest rate on debt (Rd)
>8.5	AAA	0.35	3.93
6.5–8.5	AA	0.5	4.08
5.5–6.5	A+	0.7	4.28
4.25–5.5	A	0.85	4.43
3–4.25	A-	1	4.58
2.5–3	BBB	1.5	5.08
2.05–2.5	BB+	2	5.58
1.9–2	BB	2.5	6.08
1.75–1.9	B+	3.25	6.83
1.5–1.75	B	4	7.58
1.25–1.5	B-	6	9.58
0.8–1.25	CCC	8	11.58
0.65–0.8	CC	10	13.58
0.2–0.65	C	12	15.58
<0.2	D	20	23.58

### 2.5.3 Weighted average cost of capital, WACC

A firm's WACC is the overall required return on the firm as a whole.

Equation 9. WACC.

$$\text{WACC} = \frac{E}{E+D} \times Re + \frac{D}{E+D} \times Rd \times (1-T),$$

where

E = shareholders' equity

D = liabilities

Re = cost of equity

Rd = cost of debt

T = corporate tax rate.

### 3. Comparative analysis

#### 3.1 Free cash flow, FCF

##### FCF, grouped by companies

Figure 1 presents the average free cash flow for the companies for the period 2002 to 2009. Free cash flow shows the entities' available cash against its net sales. In our analysis, a free cash flow to net sales ratio above 20% is considered a good financial position, a cash flow of 0–20% is considered a satisfactory position, and a negative cash flow is considered a weak cash position. As the figure shows, in our sample of 30 companies six have a good cash flow position, whereas 12 have a poor cash flow position over the period.

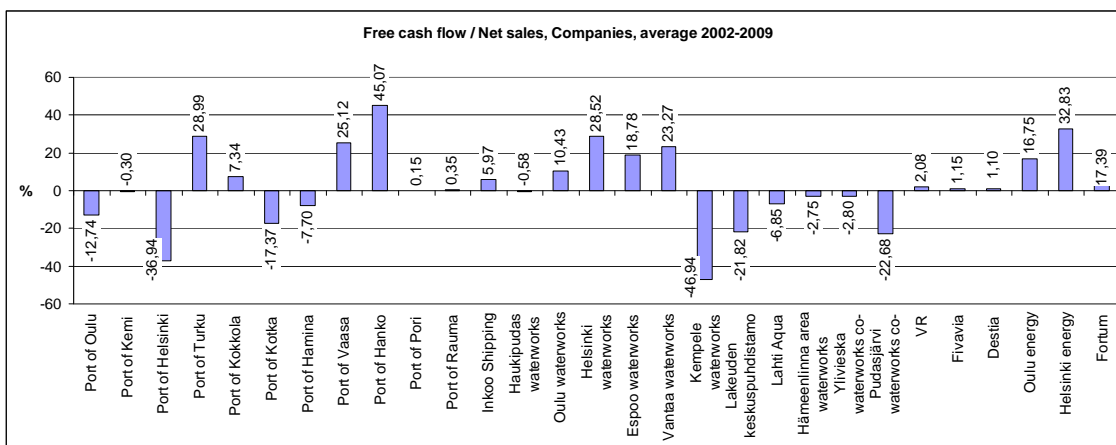


Figure 1. Free cash flow / Net sales, average 2002–2009, grouped by entities.

Some explanatory notes are needed to understand the information presented in Figure 1, given that the data is the average over 8 years. The negative cash flow of the port of Helsinki is mainly a result of port construction at Vuosaari over the period of analysis. The Kempele waterworks, Lakeuden keskuspuhdistamo and Pudasjärvi waterworks co-

operatives have a negative free cash flow over the period, which is explained by an increase in investments during the first half of the period of analysis. Obviously for each entity there have been fluctuations between years, but the average does provide a relatively representative picture of the entity's overall performance.

### FCF, grouped by industry

Figure 2, where our sample is grouped by industry, railway (VR), roads (Destia, a government owned construction and consulting company), and airports (Finavia), consists only one national level entity each. The best performing industry is energy, where all companies combined have a satisfactory level of cash flow.

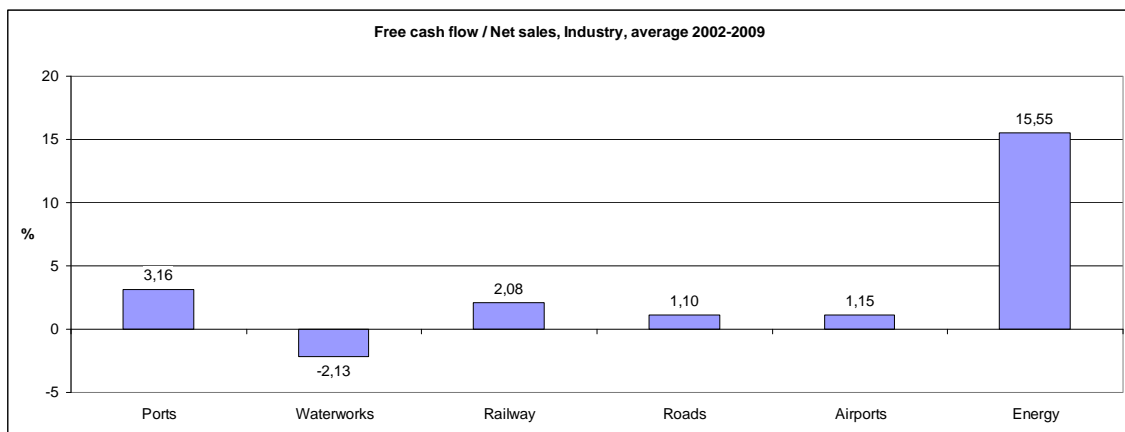


Figure 2. Free cash flow / Net sales, average 2002–2009, grouped by industry.

When contrasted with Figure 3, where data are presented with cumulative values covering all entities in an industry, the data shows that industry averages even out big positive or negative cash flows. This is in particular the case for ports and waterworks, in which individual companies over the period have fluctuated between good and poor free cash flow positions.

Figure 3 shows the overall financial position of the companies by industry, calculated as total free cash flow divided by total net sales over all the companies in the sample. This weights the individual company's performance relative to its size. It also shows the total surplus/deficit of a given industry in terms of cash flow over turnover. Vuosaari investment in Helsinki clearly has an impact on the weighted ratio of ports.

### 3. Comparative analysis

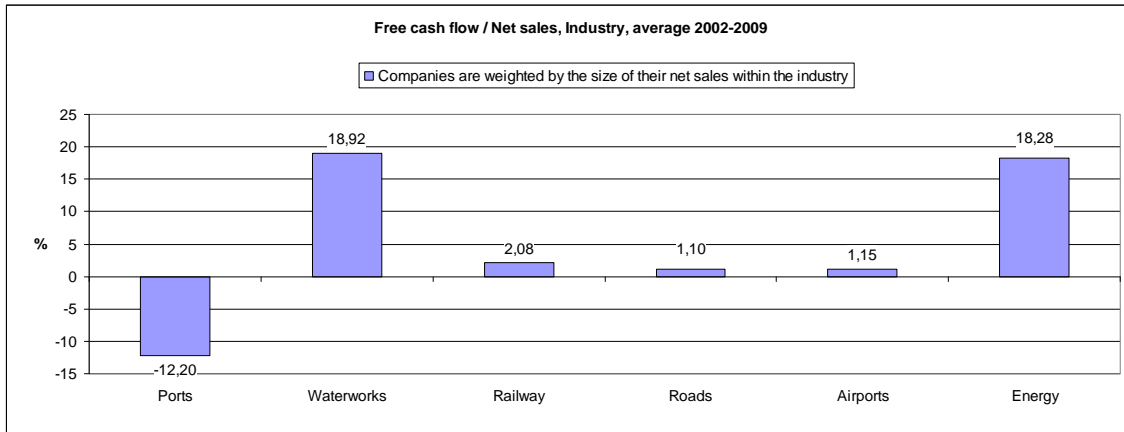


Figure 3. Free cash flow / Net sales, weighted, average 2002–2009, grouped by industry.

### Free Cash Flow, grouped by ownership

Figure 4 shows free cash flow grouped by ownership model. The MOE grouping consists of ports, waterworks, and energy companies, and most of them have positive free cash flows. The port of Helsinki has a large negative free cash flow due to the large investment as part of the Vuosaari port financing. MOCs consist of ports, waterworks, and one energy company, all of which have negative free cash flows. The private entities consist of two private waterworks co-operatives and one private port, a limited liability company. The latter did have a positive free cash flow, but the waterworks co-operatives had a negative one.

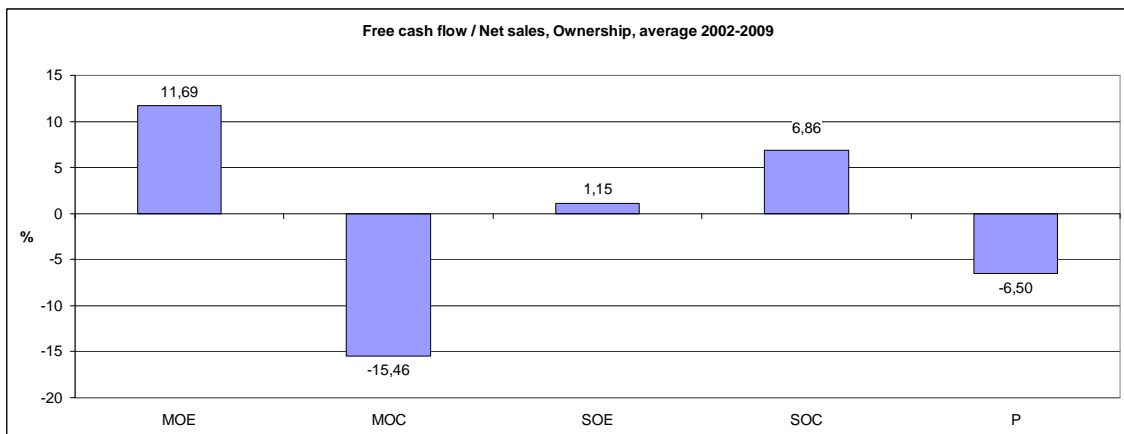


Figure 4. Free cash flow / Net sales, average 2002–2009, grouped by ownership.

In Figure 5, free cash flow is divided by net sales, grouped by ownership, and companies are weighted by the size of their net sales within the ownership model.



### 3. Comparative analysis

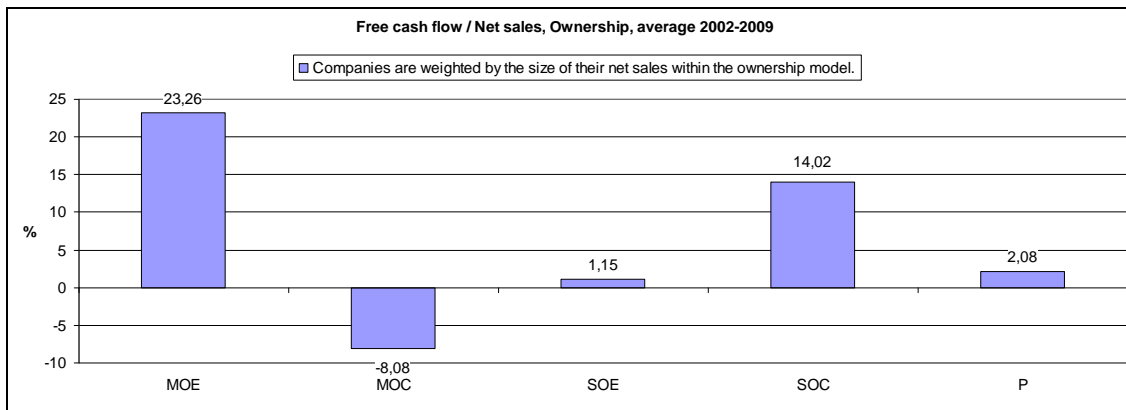


Figure 5. Free cash flow / Net sales, weighted, average 2002–2009, grouped by ownership.

The biggest change between Figures 4 and 5 is in the P group, when entities are weighted by the size of their net sales within the ownership model, the P group’s free cash flow rising from poor to satisfactory.

#### Free Cash Flow, grouped by industry and ownership

Figure 6 shows the performance of sample entities by industry and ownership. This depiction gives a good picture, with enough resolution in terms of ownership model differences and distinguishing industries. The best performers are energy MOEs. Poor performance is observed in port MOCs, waterworks MOCs, and private waterworks. The size of the sample means that groups have only a few entities each, so drawing any definite major conclusions is difficult, especially due to different tax treatment of various entities (MOEs vs. other corporate structures). In the cases where the MOE has made a large positive cash flow, non-taxation can lead to a substantial increase in the funds provided back to the shareholder(s).

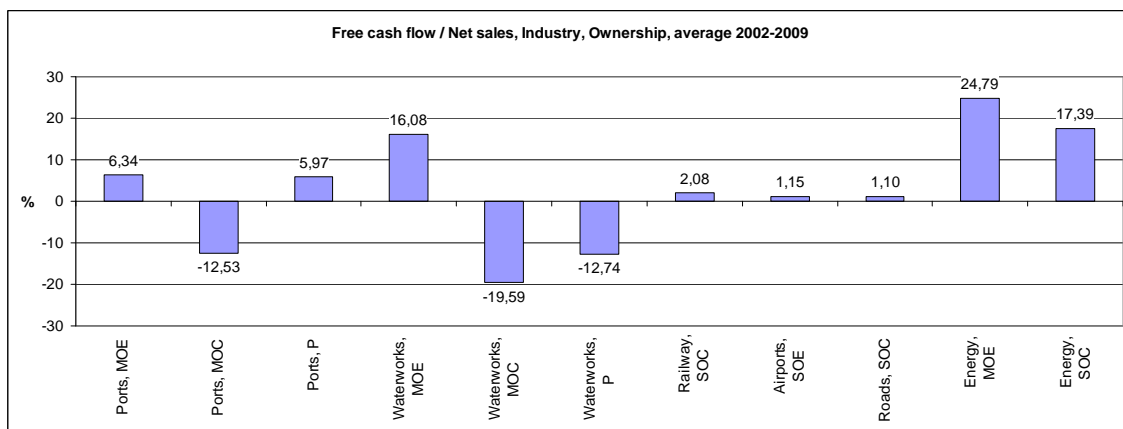


Figure 6. Free cash flow / Net sales, average 2002–2009, grouped by industry and ownership.

### 3. Comparative analysis

In Figure 7 free cash flow is divided by net sales, and grouped by industry and ownership. Companies are weighted by the size of their net sales within their industry and ownership model. Some groups consist of only one entity, so these groups' results are the same as in the previous analysis. The biggest change has occurred in ports (MOE) and waterworks (MOC). The changes result again from Vuosaari port investment and waterworks investments during the period.

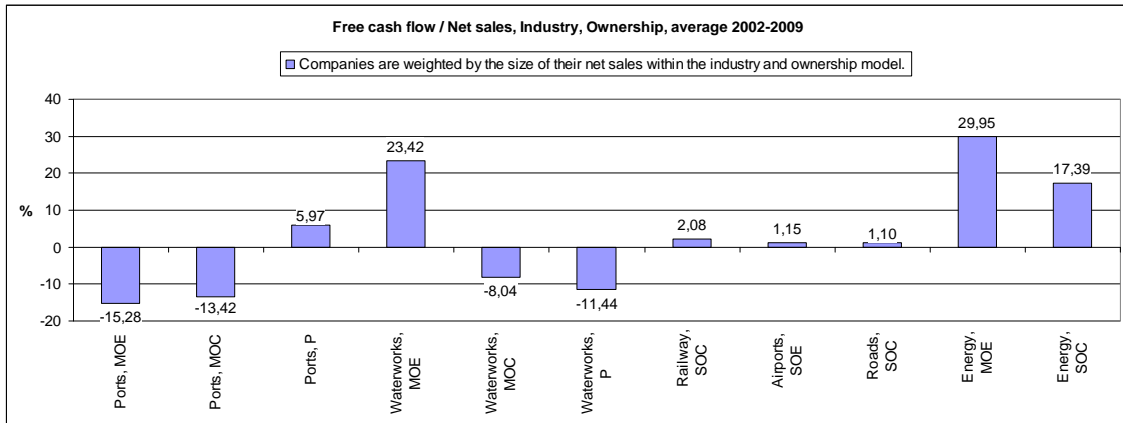


Figure 7. Free cash flow / Net sales, weighted average 2002–2009, grouped by industry and ownership.

## 3.2 Return on capital

### 3.2.1 Return on assets, ROA

Return on assets measures a company's ability to generate profits compared to the total capital tied up in the business operations. According to the Committee for Corporate Analysis (2006), a good ROA is above 10%, satisfactory is from 5% to 10%, and poor is below 5%.

#### ROA, grouped by companies

Figure 8 shows the return on assets for the case study companies. A good ROA is the result of a high net result compared to a low balance sheet total. The companies with a high ROA have made higher profits with fewer assets than companies with a low ROA. A poor ROA is mainly the result of a low or a negative net result.

### 3. Comparative analysis

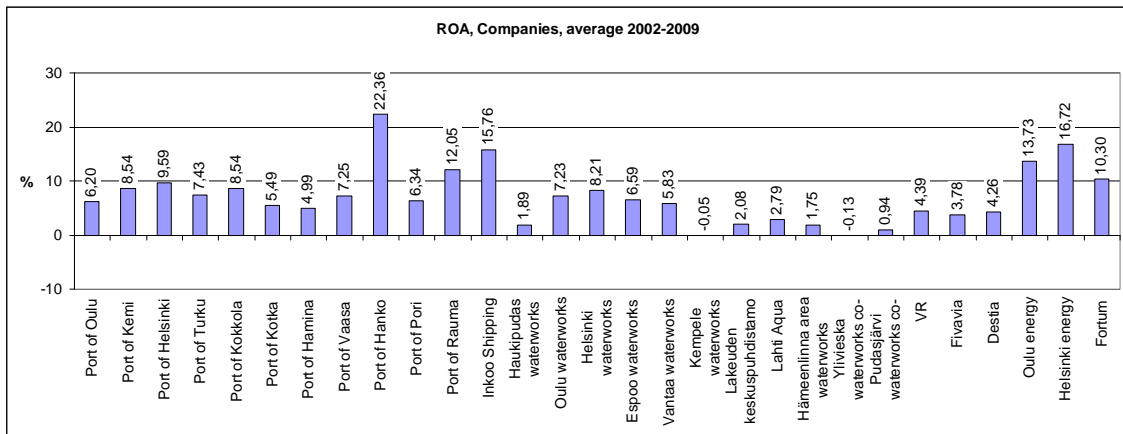


Figure 8. ROA, average 2002–2009, grouped by companies.

The port of Hanko has a high ROA, as a result of being a specialized port responsible for car imports to Finland and further to Russian markets. Kempele waterworks and the Ylivieska waterworks co-operative have small negative ROAs, which means that they have not made a profit for their owners. Private waterworks co-operatives pursue a zero-result.

#### ROA, grouped by industry

In Figure 9, ROA is grouped by industry. Energy companies have made good ROAs, ports have had satisfactory results, and other industries have had poor results.

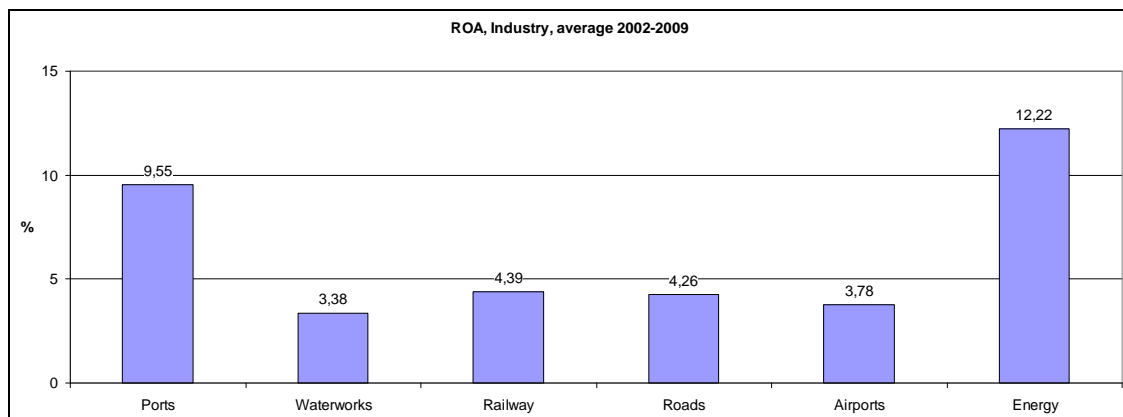


Figure 9. ROA, average 2002–2009, grouped by industry.

In Figure 10 the industry ROAs are weighted by the companies' size of net sales within the industry. The waterwork industry's ROA moves from a poor rating to a satisfactory rating when the companies' ROAs are weighted by the companies' net sales within the industry.

### 3. Comparative analysis

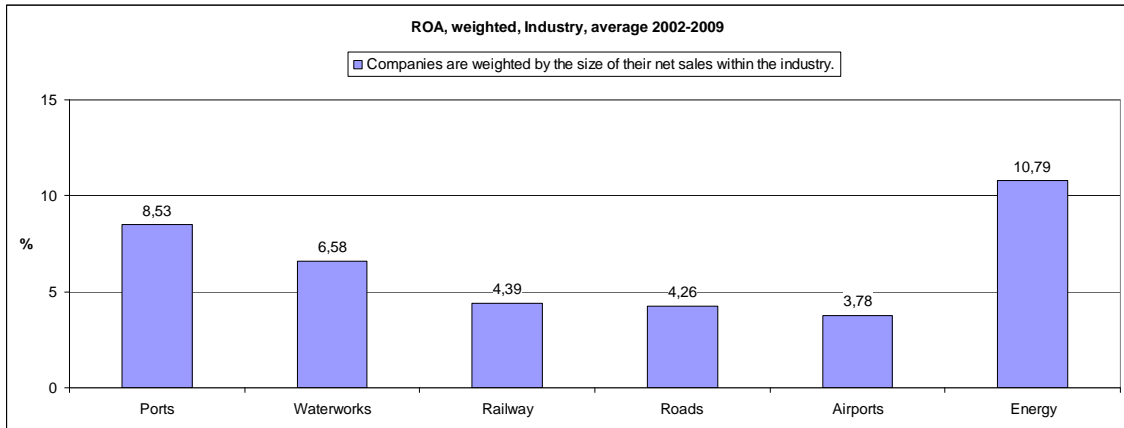


Figure 10. ROA, weighted average 2002–2009, grouped by industry.

#### ROA, grouped by ownership

In Figure 11, ROA is grouped by ownership.

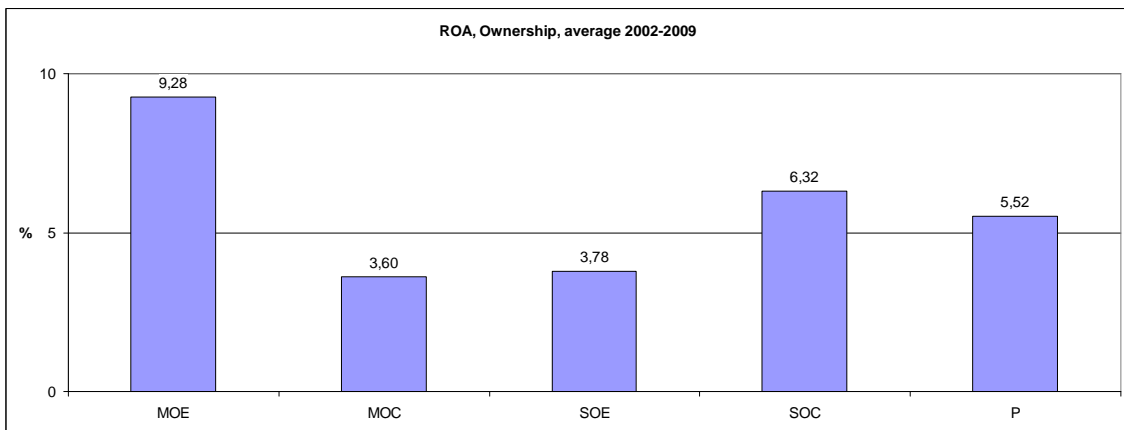


Figure 11. ROA, average 2002–2009, grouped by ownership.

MOEs and MOCs consist of ports, waterworks, and energy companies, which all have very different ROAs. MOEs have made better ROAs than MOCs. More details are provided in the next section.

#### ROA, grouped by industry and ownership

In Figure 12, ROA is grouped by both industry and ownership. The private port, municipality-owned energy enterprises, and the state-owned energy companies all have good ROAs.

### 3. Comparative analysis

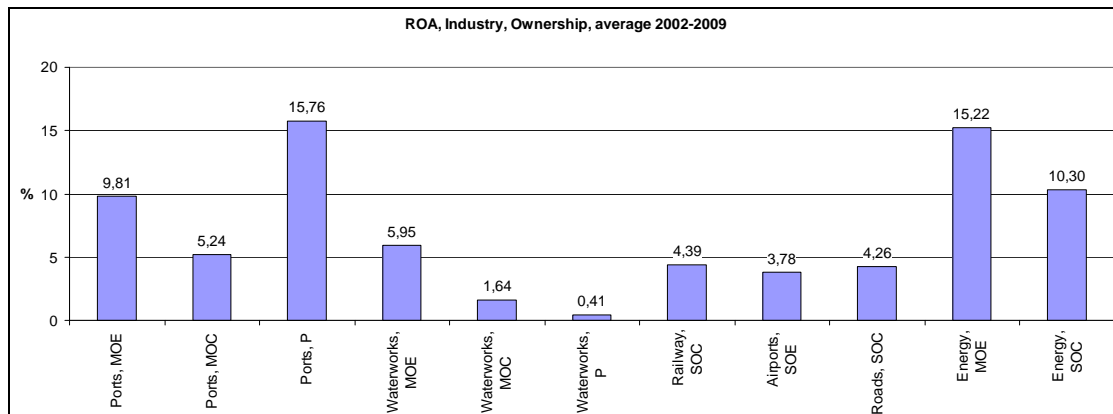


Figure 12. ROA, average 2002–2009, grouped by industry and ownership.

According to the industry and ownership grouping, municipality-owned waterworks and private waterworks companies have the poorest ROAs.

### 3.2.2 Return on investment, ROI

The ROI measures relative profitability, i.e. the yield, which has been generated on the invested capital, and which requires a return in the form of interest or equivalent. The ROI can be regarded as fairly good when it, at the minimum, amounts to the average financial expense percentage of the interest-bearing liabilities.

#### ROI, grouped by companies

Figure 13 shows the ROI and required minimum for all the studied entities. A good ROI is mainly due to a large net result and a poor ROI is due to a small or negative net result. The ports of Hanko, Rauma and Inkoo Shipping and all energy entities have made the highest ROIs.

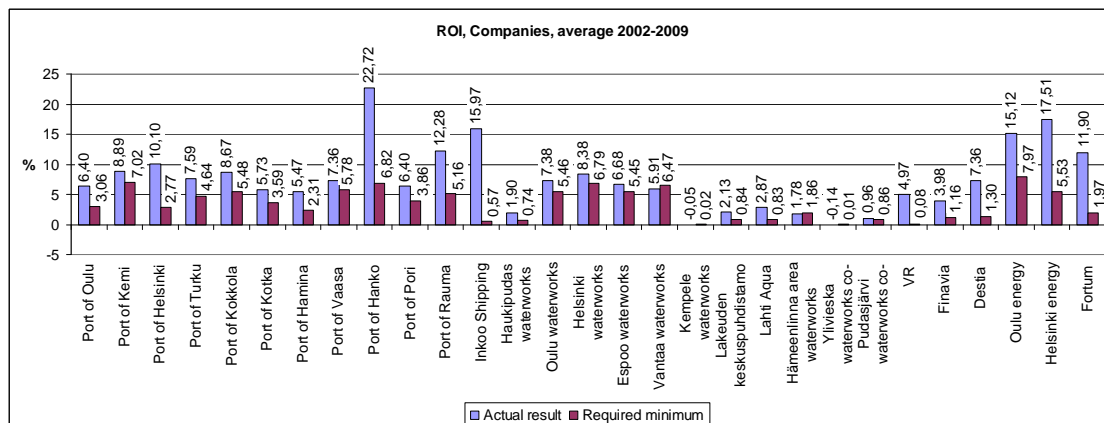


Figure 13. ROI, average 2002–2009, grouped by companies.

### 3. Comparative analysis

In Figure 14 the required minimum is subtracted from the ROI. The results show how much better (or worse) in percent units the studied entities have performed compared to their required minimum.

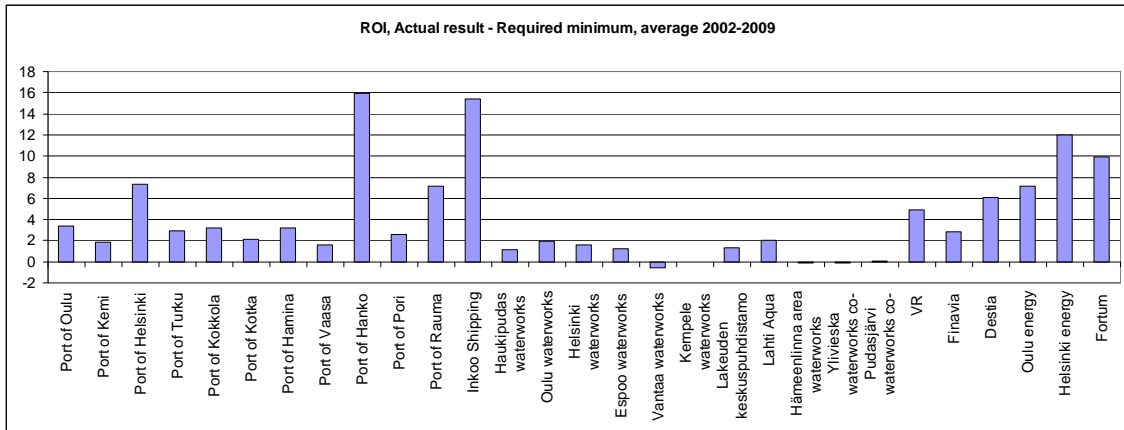


Figure 14. ROI, Actual result – Required minimum, average 2002–2009, grouped by companies.

The ports of Hanko and Inkoo Shipping have made the best ROIs compared to their required minimum. These are both specialised ports, which is likely to be the major explanatory factor behind the good performance. The port of Helsinki also has a good result; as the biggest port in Finland it has the volume of trade that provides a good turnover and business opportunities. Also the port of Rauma has made a good result compared to its required minimum. Helsinki Energy and Fortum performed best among the energy companies, again due to their large-size operations. The weakest results are observed for waterworks.

#### ROI, grouped by industry

In Figure 15 the grouping is done by industry. The railway, roads, and airports groups consist of only one entity each, and they have all made good results compared to their required minimum results. Waterworks have made a decent result, but at a level that is below the other industries.

### 3. Comparative analysis

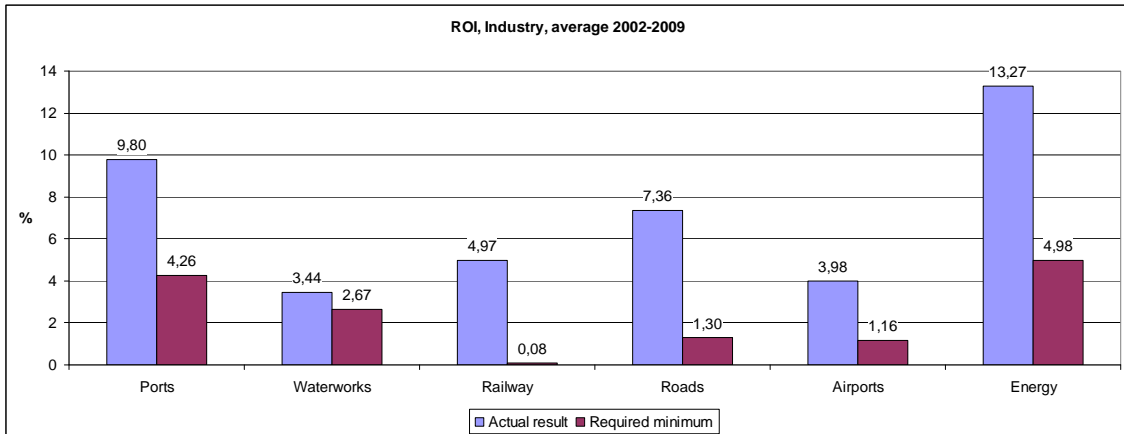


Figure 15. ROI, average 2002–2009, grouped by industry.

Energy companies perform well against their goals and requirements and the results of large entities like Fortum and Helsingin Energia dominate the overall result.

Energy companies and ports have fared well, but as there is fluctuation within the industry depending on the size of the company and turnover, the results should not be interpreted as if all ports and energy companies were equally good investment decisions.

#### ROI, grouped by ownership

In Figure 16 case studies are grouped by ownership. On average the MOE group has a better ROI than the MOC group, but the MOE has a higher required minimum than MOC. Again, MOEs do not pay taxes, which distorts the results.

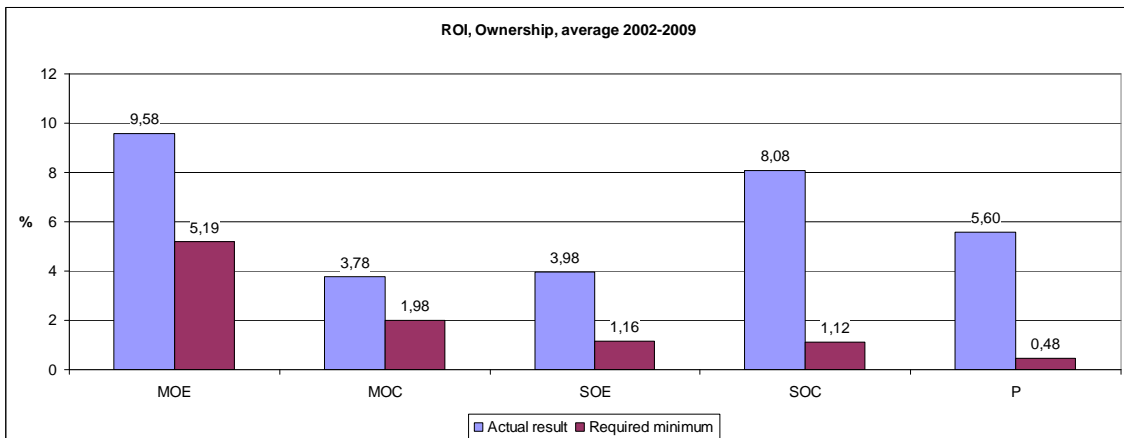


Figure 16. ROI, average 2002–2009, grouped by ownership.

### 3. Comparative analysis

Private companies (P) have the smallest required minimums and they have performed well compared to this minimum requirement. MOEs as a group have fared better than the MOCs.

#### ROI, grouped by industry and ownership

In Figure 17 companies are grouped by industry and ownership model. Some groups consist again of only one company (Ports (P), Railway (SOC), Airports (SOE), Roads (SOC), and Energy (SOC)).

The private port has made the best results compared to its required minimum. Municipality-owned energy enterprises also have produced good results, but the group consists of two large energy companies, so the result does not necessarily apply to smaller energy companies.

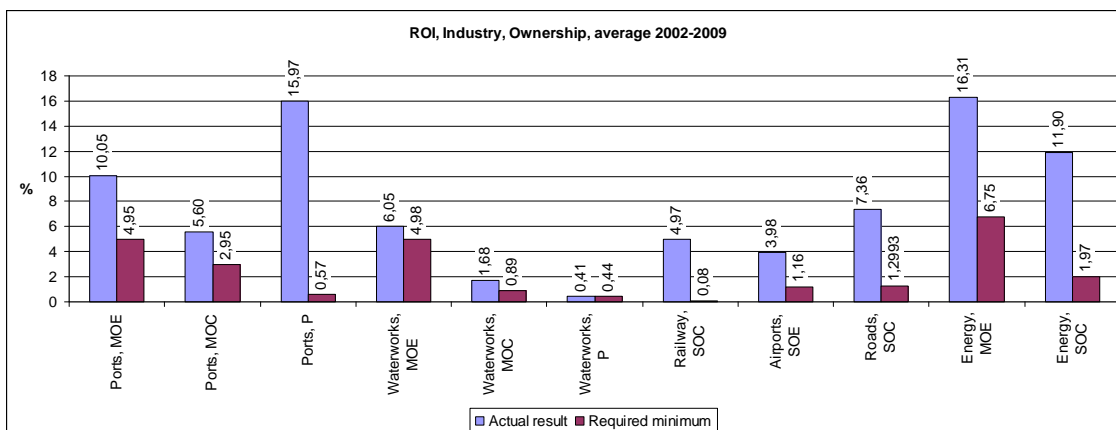


Figure 17. ROI, average 2002–2009, grouped by industry and ownership.

Waterworks performance has exceeded the required minimum by a small margin. The private waterworks have slightly underperformed compared to their targets. Of waterworks, the MOEs have performed better than the MOCs as a group both in absolute terms and in comparison with the required minimum. For ports the situation is the same. Again, the tax treatment of MOEs must be taken into consideration.

#### 3.2.3 Return on equity, ROE

The required ROE depends on the return required by the owners. This required return ratio is essentially affected by the risks involved.

Cost of equity  $Re = Rf + |B| \times (Rm - Rf)$  can be used as a required return ratio. It takes into account entities' risk-betas.



### ROE, grouped by companies

Figure 18 shows the case entities' average ROEs for the period 2002–2009. The ports of Hanko and Inkoo Shipping and all of the studied energy companies have made the best ROEs in general and compared to their required minimums.

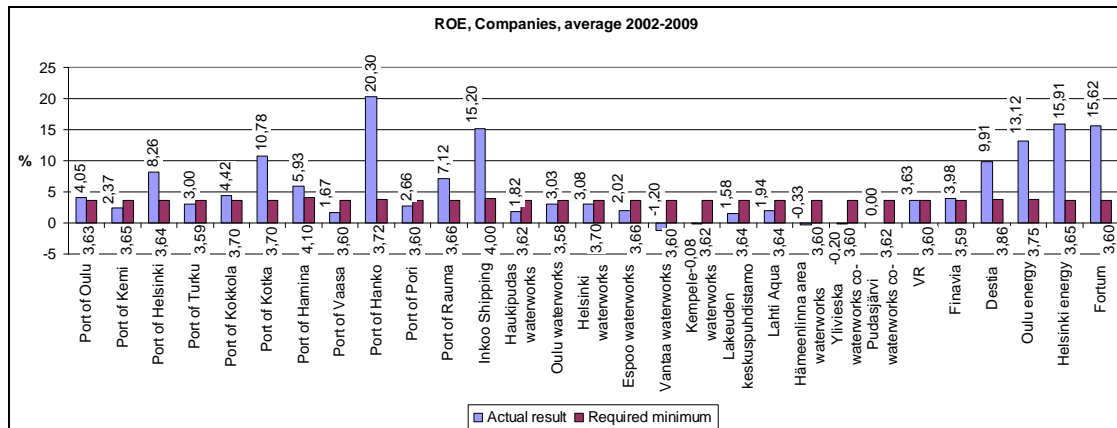


Figure 18. ROE, average 2002–2009, grouped by companies.

All of the waterworks have made poorer results than the required minimum, and a few have even made negative ROEs. A negative ROE means that the company has made a loss for its owners.

### ROE, grouped by industry

In Figure 19, companies are grouped by industry. Energy companies, roads and ports have made the best ROEs. Airports have had a slightly better result than the required minimum. Other industries have had worse results than was expected of them in the light of their required minimum.

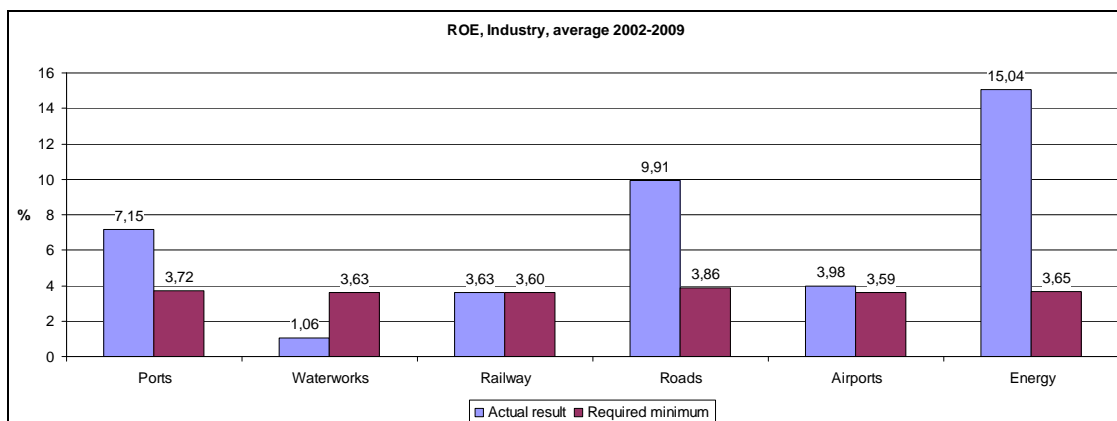


Figure 19. ROE, average 2002–2009, grouped by industry.

### 3. Comparative analysis

Waterworks have made positive ROEs, but they have not achieved their required minimums.

#### ROE, grouped by ownership

In Figure 20, companies are grouped by their ownership model. All ownership models have made better ROEs than the required minimum.

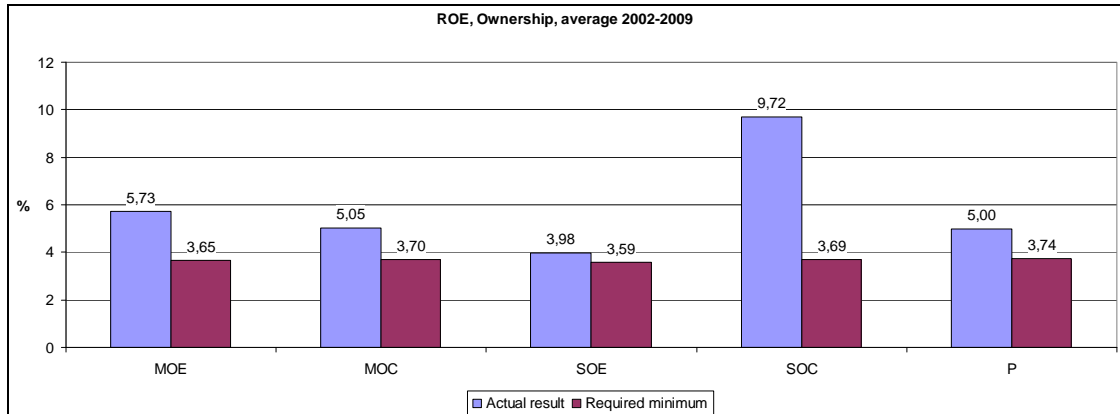


Figure 20. ROE, average 2002–2009, grouped by ownership.

In these analyses, MOEs have had a better result than MOCs. Again, the tax treatment of MOEs has to be taken into account.

#### ROE, grouped by industry and ownership

In Figure 21, companies are grouped by industry and ownership model. The private port and all energy companies have achieved the best ROEs. Ports, railway, airports, and roads have also produced better results than the required minimum. Waterworks have had poorer results than their required minimum, and private waterworks have made a loss for their owners.

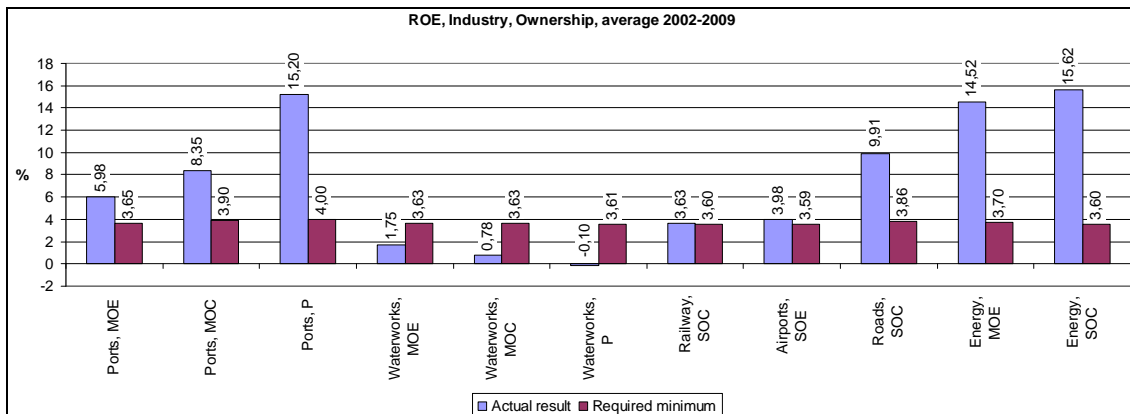


Figure 21. ROE, average 2002–2009, grouped by industry and ownership.

MOCs have achieved better results than MOEs in the port industry, but in the waterworks industry MOCs have performed worse in the light of their ROE than MOEs.

### 3.2.4 Return on capital invested by municipality, ROCIM

ROCIM shows how much profit (loss) a municipality-owned department, enterprise or company has made to the municipality. Hence only MOCs and MOEs are included.

A municipality should require a return equal to at least the cost of equity, which is the risk-free rate of return, added to a company’s risk-beta multiplied by the market risk premium,  $Re = Rf + |B| \times (Rm - Rf)$ . ROCIM can be applied only to a municipality-owned department, enterprise or company.

#### ROCIM, grouped by companies

Figure 22 shows case study ROCIMs. The port of Hanko has performed best, again most likely due to the fact that it is a specialized port. All municipality-owned ports and energy companies have given better returns to the municipality than the required minimum.

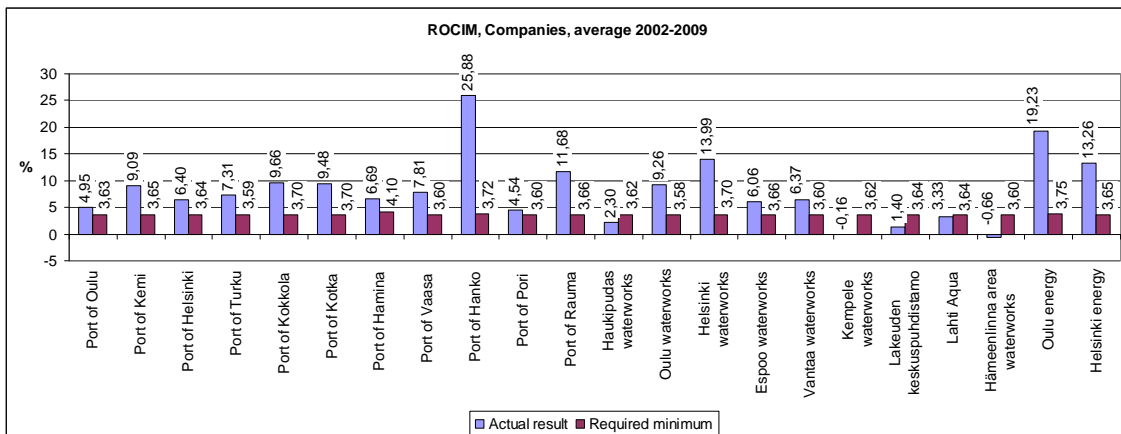


Figure 22. ROCIM, average 2002–2009, grouped by companies.

Waterworks have a mixed picture: some have made better results than required, some worse, and some have even made a loss for the municipality.

#### ROCIM, grouped by industry

In Figure 23 ROCIM is grouped by industry. Energy utilities and ports have produced the best returns on municipal investments. Waterworks have also made better results than required, but there is great variation in results within the industry.

### 3. Comparative analysis

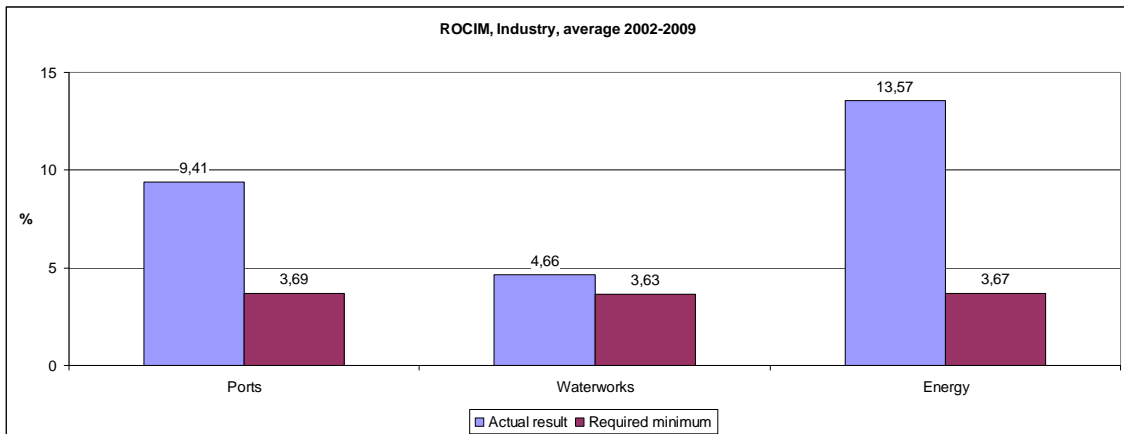


Figure 23. ROCIM, average 2002–2009, grouped by industry.

Waterworks are essential to municipalities. Their actual result is better than the required minimum, but not as much as for other industries. This can indicate pressures to maintain the service charges politically at low levels, resulting in less revenue for the municipality.

#### **ROCIM, grouped by ownership**

In Figure 24 ROCIM is grouped by ownership model.

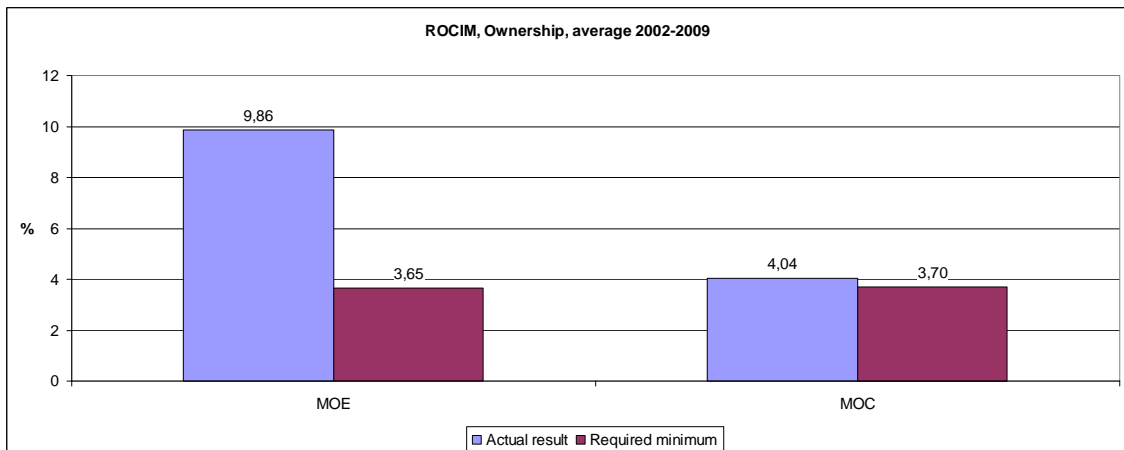


Figure 24. ROCIM, average 2002–2009, grouped by ownership.

Both ownership models have made better returns on municipalities' investments than required. MOEs have again had better results than MOCs, keeping in mind the tax treatment of MOEs.

### ROCIM, grouped by industry and ownership

In Figure 25 companies are grouped by industry and ownership model. Municipality-owned energy enterprises have made the best returns on the municipality's investments.

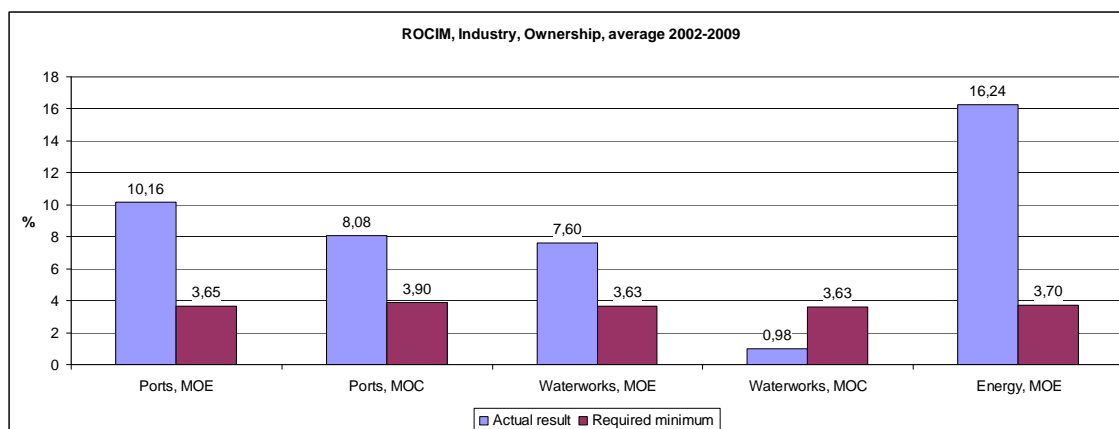


Figure 25. ROCIM, average 2002–2009, grouped by industry and ownership.

Municipality-owned waterworks have had poorer results than their required minimum. MOEs have performed better than MOCs in every industry. Again the preferential tax treatment of MOEs should be taken into account.

### 3.3 Market beta

The market beta represents a share value's (ROI for the unlisted companies) sensitivity to changes of the OMX Helsinki index. The greater the market beta, the stronger the entity's value reacted to the changes of the OMX Helsinki index during the observation period.

When the beta is zero, it means that the entities' result is independent of the market index. A negative beta can be a good thing, too, because non-systematic risks in the portfolio can be diversified with shares that have a negative beta.

#### Beta, grouped by companies

Figure 26 shows companies' risk-betas. All studied companies' betas are near zero, so they covariate only minimally along the market index.

### 3. Comparative analysis

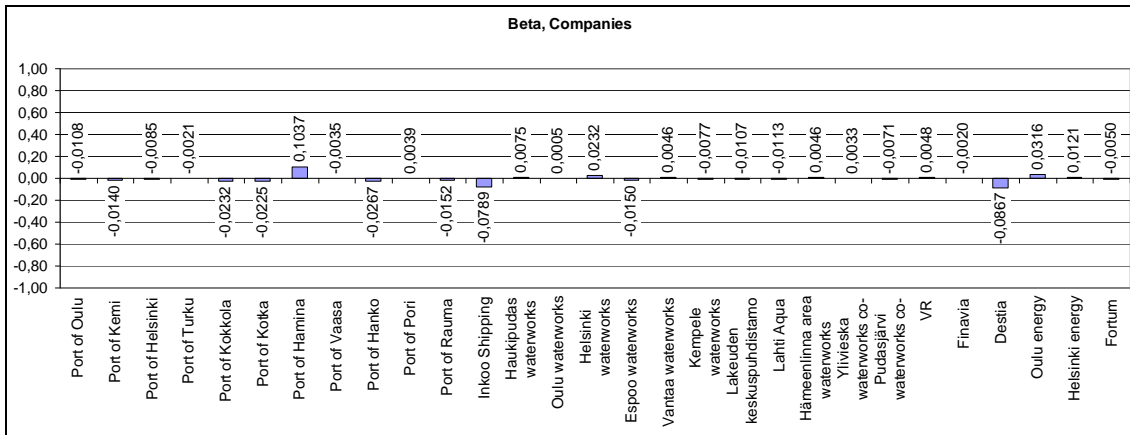


Figure 26. Beta, calculated using ROI, grouped by companies.

For example, the port of Hamina has a beta of 0.1, which means that when the market index has risen 1%, the Port of Hamina’s ROI has risen 0.1%. As all the betas are close to zero, additional groupings by industry and ownership do not bring added value to the analysis.

## 3.4 Cost of capital

### 3.4.1 Cost of equity

Cost of equity ( $R_e$ ) is the return that equity investors require on their investment in the firm.

#### $R_e$ , grouped by companies

Figure 27 shows the case study companies’ cost of equity. All the studied companies’ betas are near zero, which is why the companies’ costs of equity are near the risk-free rate of 3.58%.

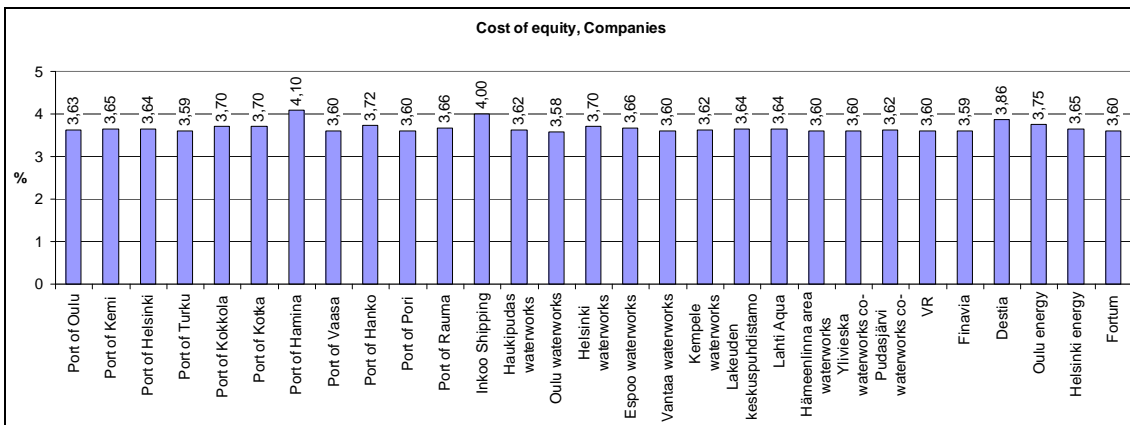


Figure 27. Cost of equity, grouped by companies.

The bigger the company's beta the bigger its cost of equity. In this case the biggest equity cost is met by the port of Hamina, Inkoo Shipping and Destia.

**Re, grouped by industry**

In Figure 28, cost of equity is grouped by industry. Roads have the biggest cost of equity and airports have the smallest. All industries' costs of equity are still near the risk-free rate.

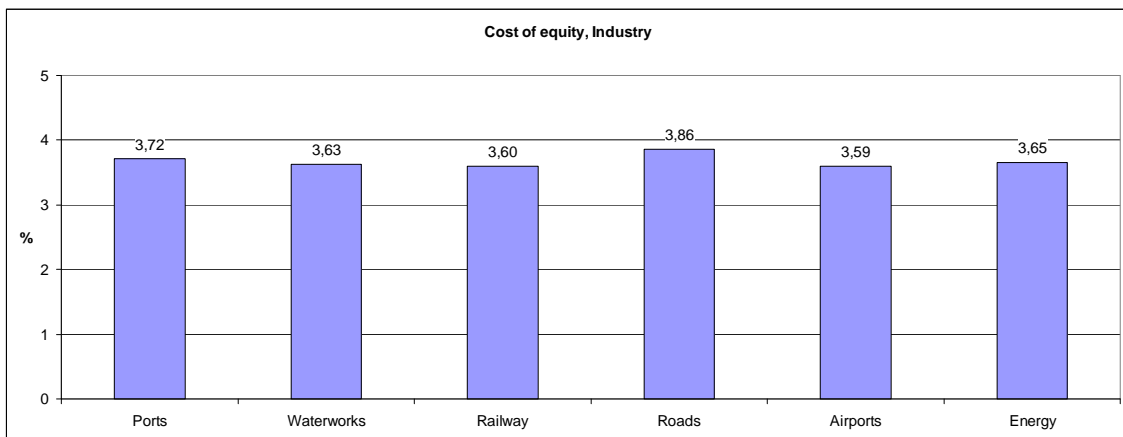


Figure 28. Cost of equity, grouped by industry.

**Re, grouped by ownership**

In Figure 29, cost of equity is grouped by ownership model. Private companies have the biggest cost of equity, but still all ownership models' cost of equity ratios are close to the risk-free rate.

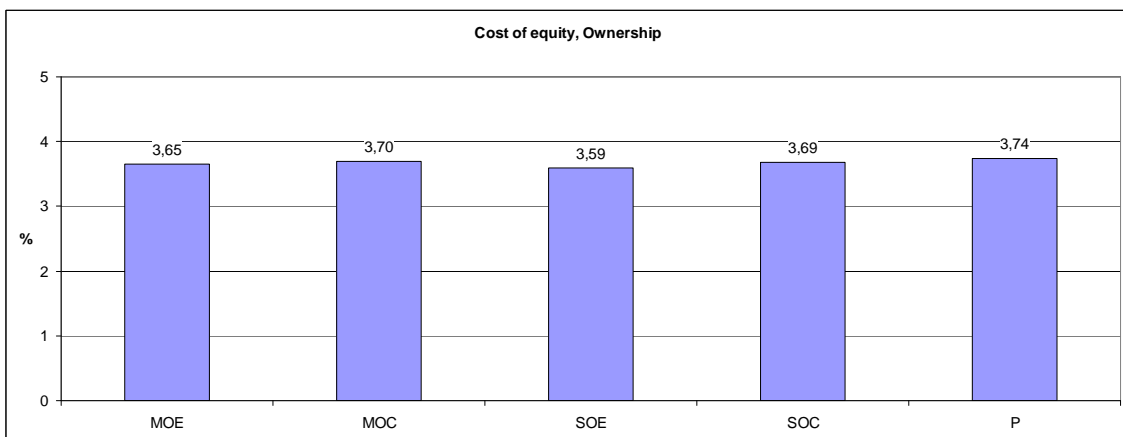


Figure 29. Cost of equity, grouped by ownership.

### 3. Comparative analysis

#### Re, grouped by industry and ownership

In Figure 30, companies are grouped by industry and ownership model. The private port has the biggest cost of equity. Every group's cost of equity is close to the risk-free rate (3.58%).

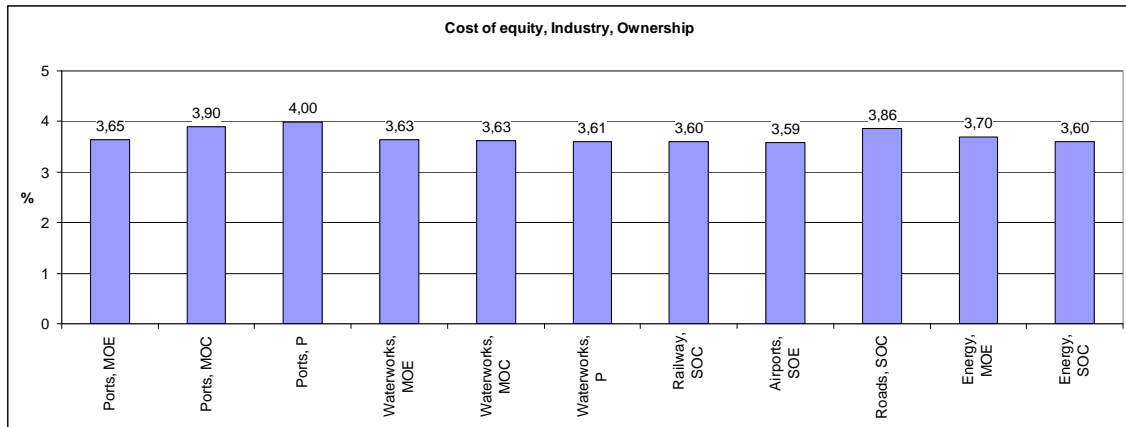


Figure 30. Cost of equity, grouped by industry and ownership.

#### 3.4.2 Cost of debt

Cost of debt ( $R_d$ ) is the return that lenders require on the firm's debt. Cost of debt is difficult to decipher from income statements and balance sheets only.

#### $R_d$ , grouped by companies

If companies' credit ratings are calculated from the interest coverage ratio, then many of the studied companies would be rated in the worst category and they would have to pay over 20% interest on their loans if they even qualified to receive loans. In reality, the case study companies have close ties to municipalities or the state, and with their guarantees the companies can have loans cheaper than without the backup of public partners. Three of the studied companies are private, and the private port has a good rating based on its financial statements. Private waterworks have poor ratings, and based on that they would have to pay a high interest on their loans. However, waterworks are considered essential infrastructures, owned by the municipalities, and because of this the loans have a lower interest rate.

On the assumption that all the studied companies have good ratings, and that they all get loans with the lowest interest premium over the riskless rate, the figure is  $3.58\% + 0.35\% = 3.93\%$ . This is still only an estimation, but it is probably closer to reality than the ratings based on interest coverage ratio.



### 3. Comparative analysis

Figure 31 shows the cost of debt in theory and in practice for all the studied companies. When examining the theoretical cost of debt, the results can be divided into good and poor results. Good ratings are between AAA and BBB (cost of debt 3.93–5.08), and poor ratings are from BB+ to D (cost of debt 5.08–23.58).

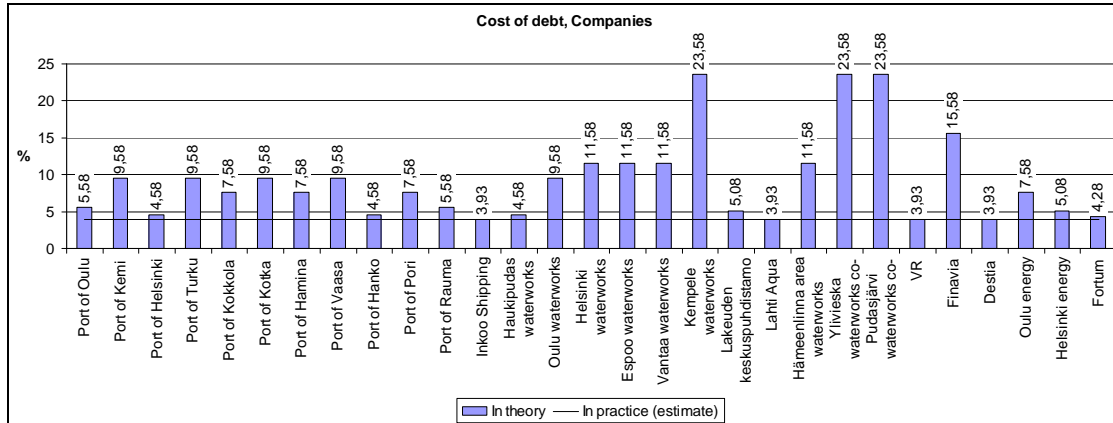


Figure 31. Cost of debt, companies.

Kempele waterworks, Ylivieska waterworks co-operative, and Pudasjärvi waterworks co-operative have the highest cost of debt. Without public partners' guarantees the companies would have to pay a high interest on their loans, were they even considered eligible.

Inkoo Shipping, Lahti Aqua, VR, and Destia have the lowest theoretical cost of debt. They are rated in the best category, and they get loans with the smallest interest.

#### Rd, grouped by industry

In Figure 32, cost of debt is grouped by industry. Airports and waterworks have the biggest theoretical cost of debt, and railways and roads have the smallest.

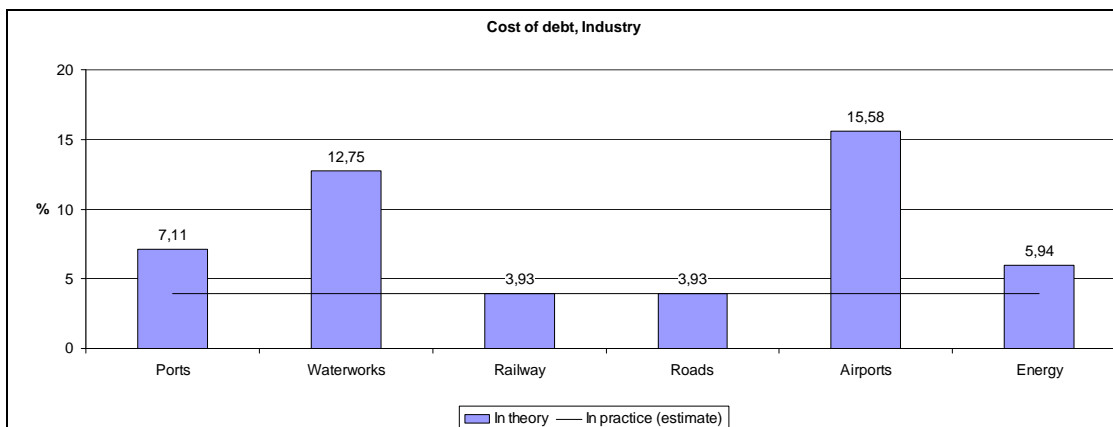


Figure 32. Cost of debt, grouped by industry.

### 3. Comparative analysis

#### Rd, grouped by ownership

In Figure 33, cost of debt is grouped by ownership model. Private companies and state-owned enterprises have the biggest theoretical cost of debt, and state-owned companies have the smallest.

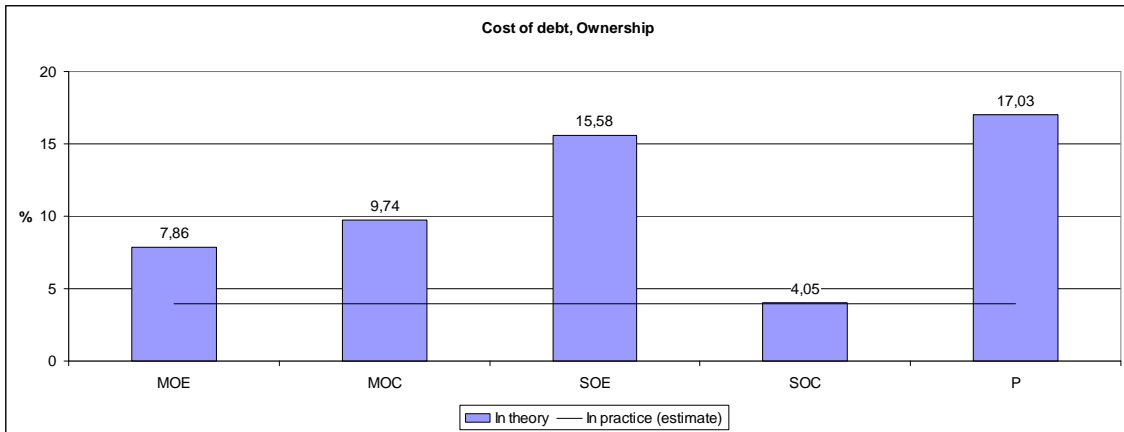


Figure 33. Cost of debt, grouped by ownership.

#### Rd, grouped by industry and ownership

In Figure 34, cost of debt is grouped by industry and ownership model. Private waterworks and state-owned airport enterprises have the highest theoretical cost of debt. Private ports, the state-owned rail company, and the state-owned road company have the lowest cost of debt.

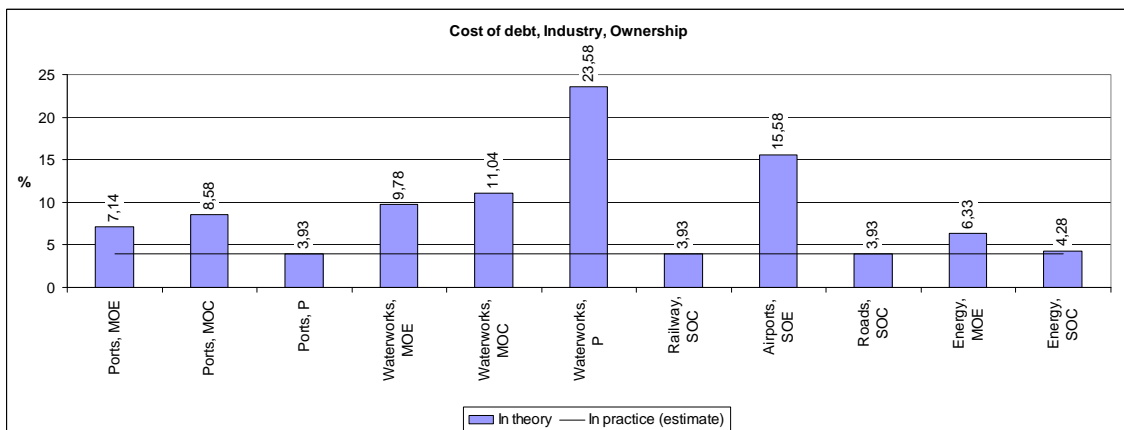


Figure 34. Cost of debt, grouped by industry and ownership.

In this comparison, MOEs have a lower cost of debt than MOCs. The private port has a low cost of debt, and private waterworks have a high cost of debt.

### 3.4.3 Weighted average cost of capital, WACC

Choosing between theoretical and real cost of debt is important, because cost of debt has a big impact on the WACC. MOCs and private companies pay taxes, so their cost of debt gets smaller with the tax rate.

#### WACC, grouped by companies

Figure 35 shows the weighted average cost of debt by company. Comparing theoretical WACCs, Hämeenlinna area waterworks, Ylivieska waterworks co-operative, and Pudasjärvi waterworks co-operative have the worst WACCs. These companies' real WACCs are at advantageous levels; they have the biggest difference between the theoretical and the real WACC.

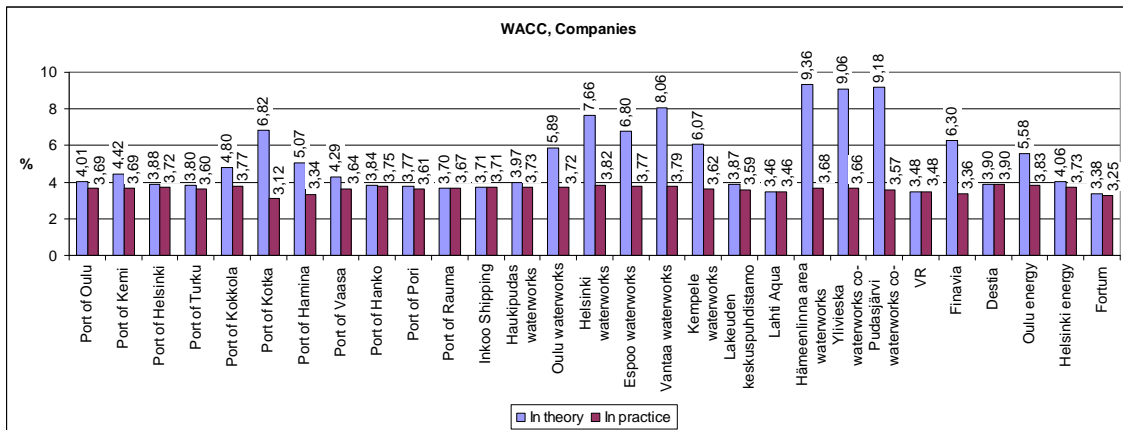


Figure 35. WACC, companies.

Fortum, VR, and Lahti Aqua have the best theoretical WACCs. Comparing the real WACCs, Destia has the poorest, and the port of Kotka and Jyväskylän energia have the most advantageous. All real WACCs are at a good level.

#### WACC, grouped by industry

In Figure 36, WACC is grouped by industry. Waterworks and airports have the worst theoretical WACCs, and the railway and roads have the best. Comparing the real WACCs, airports have the most advantageous result, and roads have the worst. Waterworks and airports have the biggest differences between the theoretical and real WACCs.

### 3. Comparative analysis

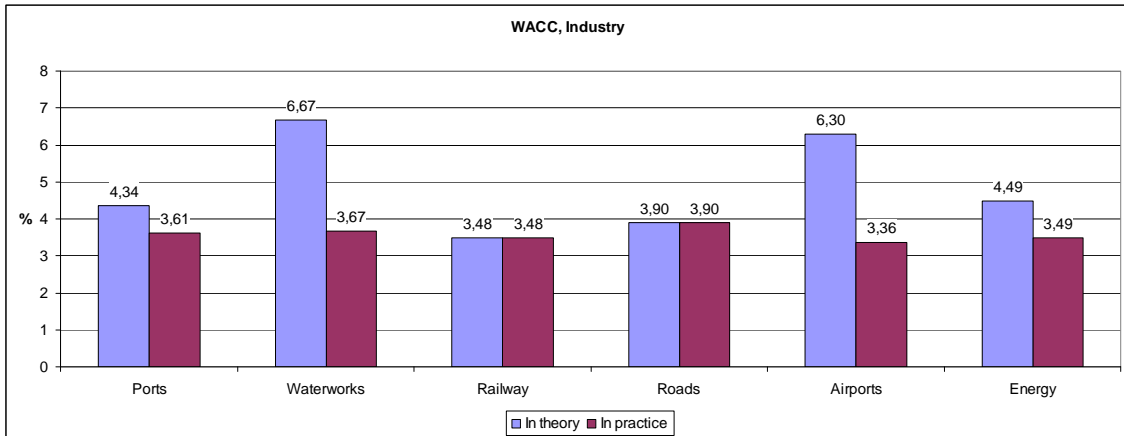


Figure 36. WACC, grouped by industry.

### WACC, grouped by ownership

In Figure 37, WACC is grouped by ownership model. Private companies have the worst theoretical WACC, and state owned companies have the best. Comparing the real WACCs, municipality-owned enterprises have the worst WACCs, and the state owned-enterprise has the most advantageous. Private companies have the biggest difference between theoretical and real WACCs.

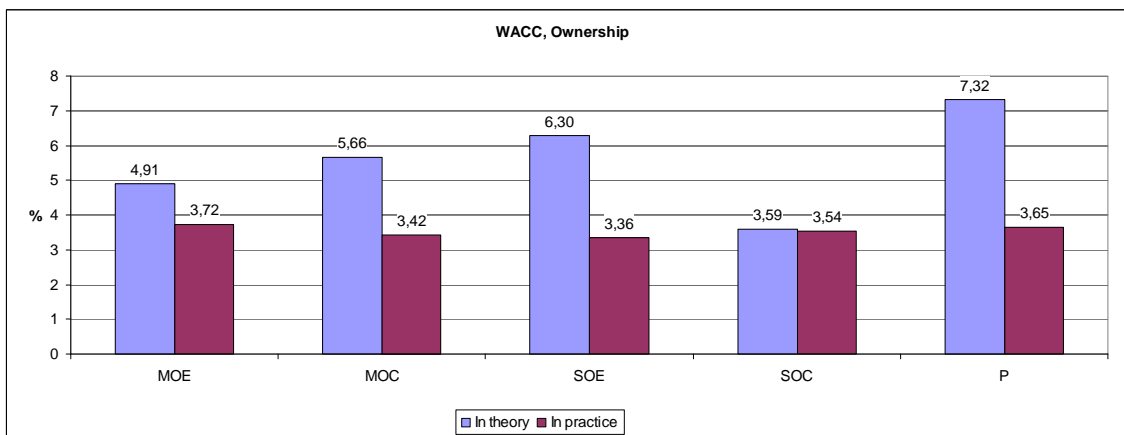


Figure 37. WACC, grouped by ownership.

### WACC, grouped by industry and ownership

In Figure 38, WACC is grouped by industry and ownership model. Private waterworks have the worst theoretical WACCs, and the state-owned energy company and state-owned rail company have the most advantageous WACCs. Comparing the real WACCs, state-owned road company has the poorest, and municipality-owned port companies and

3. Comparative analysis

the state-owned energy and airport companies have the most advantageous WACCs. Waterworks, municipality-owned port companies, and the state-owned airport enterprise have the biggest difference between theoretical and real WACCs.

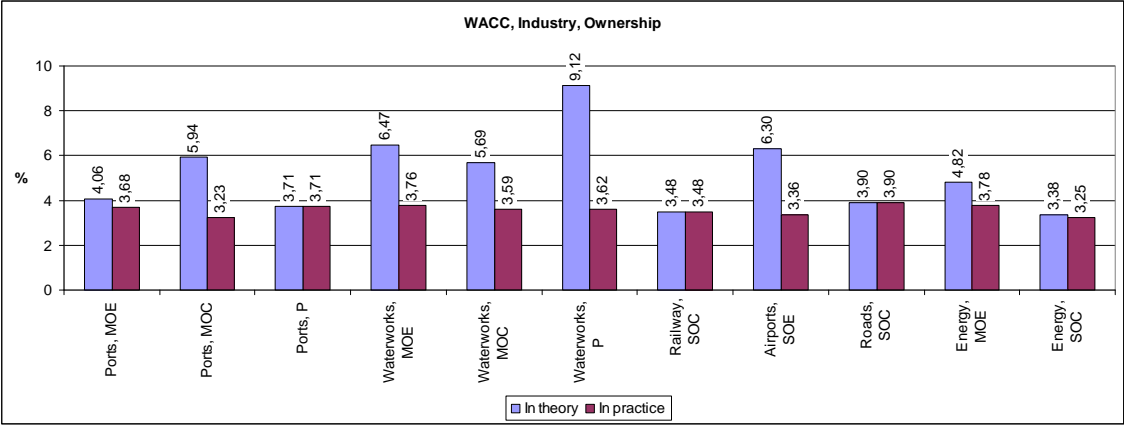


Figure 38. WACC, grouped by industry and ownership.

## 4. Conclusion

### 4.1 Limitation and scope

As discussed earlier, the financial analyses had limitations that need to be considered when evaluating the conclusions. These limitations were:

1. Some of the entities do not produce complete financial statements.
2. With respect to certain industries, the sample size is small. However, in many respects, the sample is sufficient – e.g. in the case of ports the chosen sample represents a clear majority of freight volumes in Finland. In-depth additional studies in Annex 2 bring a significant extension to the empirical material.
3. Adjustments to income statements and balance sheets are kept to a minimum.
4. Analyses are presented as ex-post, and therefore do not automatically provide a full picture of the future situation.
5. Some entities have not paid taxes or this information is omitted from their financial statements. Furthermore, some entities may receive indirect subsidies or are requested to provide unpaid social service. It is not difficult to identify these entities.

The intention of the financial analyses is to promote interest in viewing the management of infrastructure networks as an economic activity. By doing so, without ignoring the socioeconomic and public service dimensions on which studies are still in their infancy, citizens are the ultimate beneficiaries in terms of more efficient and less expensive services, in terms of better condition of the networks that guarantee reliable service and avoid a maintenance backlog for future users to pay off. Homogenization of the financial indicators and development of a better understanding of the external costs will benefit not only the sector management but also the users of essential services.

We conclude with a summary assessment and rating of the companies and sectors from the financial point of view.

## 4.2 Sum-up grouped by companies

We have tried to summarise the information from various analyses using a rough rating as follows:

- 1 = good**
- 2 = satisfactory**
- 3 = weak.**

For each individual indicator, we have made the following estimation of the rating shown in Table 5.

Table 5. Indicator ratings.

	<b>FCF</b>	<b>ROA</b>	<b>ROI-min</b>	<b>ROE-min</b>	<b>ROCIM-min</b>	<b> B </b>	<b>Re</b>	<b>Rd</b>	<b>WACC</b>
Good	>20	>10	>5	>5	>5	<0,2	<5	<5.08	<5
Satisfactory	0–20	5–10	0–5	0–5	0–5	0.2–1	5–10	5.08–9.58	5–10
Weak	<0	<5	<0	<0	<0	>1	>10	>9.58	>10

Table 6 shows the summary of all the studied entities and their performance in the indicators applied. Then the average of the results is calculated, and the entity's overall performance is obtained.

#### 4. Conclusion

Table 6. Performance order, grouped by companies.

Company	F C F	R O A	R O I	R O E	R O I M	R O C I M B	R e	R d	W A C C	Average	
Port of Oulu	3	2	2	2	2	1	1	2	1.5	1.83	Satisfactory
Port of Kemi	3	2	2	3	2	1	1	2	1.5	1.94	Satisfactory
Port of Helsinki	3	2	1	2	2	1	1	1	1	1.56	Satisfactory
Port of Turku	1	2	2	3	2	1	1	2	1	1.67	Satisfactory
Port of Kokkola	2	2	2	2	1	1	1	2	1.5	1.61	Satisfactory
Port of Vaasa	1	2	2	3	2	1	1	2	1.5	1.72	Satisfactory
Port of Hanko	1	1	1	1	1	1	1	1	1	1.0	Good
Port of Pori	2	2	2	3	2	1	1	2	1	1.78	Satisfactory
Port of Rauma	2	1	1	2	1	1	1	2	1	1.33	Good
Port of Kotka	3	2	2	1	1	1	1	2	2	1.67	Satisfactory
Port of Hamina	3	3	2	2	2	1	1	2	2	2.0	Satisfactory
Inkoo Shipping	2	1	1	1		1	1	1	1	1.13	Good
Haukipudas waterworks	3	3	2	3	3	1	1	1	1	2.0	Insufficient
Oulu waterworks	2	2	2	3	1	1	1	2	2	1.78	Satisfactory
Helsinki waterworks	1	2	2	3	1	1	1	3	2	1.78	Satisfactory
Espoo waterworks	2	2	2	3	2	1	1	3	2	2.0	Satisfactory
Vantaa waterworks	1	2	3	3	2	1	1	3	2	2.0	Satisfactory
Kempele waterworks	3	3	3	3	3	1	1	3	2	2.44	Poor
Lakeuden keskuspuhdistamo	3	3	2	3	3	1	1	1	1	2.0	Insufficient
Lahti Aqua	3	3	2	3	3	1	1	1	1	2.0	Insufficient
Hämeenlinna area waterworks	3	3	3	3	3	1	1	3	2	2.44	Insufficient
Ylivieska waterworks co-operative	3	3	3	3		1	1	3	2	2.38	Poor
Pudasjärvi waterworks co-operative	3	3	2	3		1	1	3	2	2.25	Insufficient
VR-Group Ltd.	2	3	2	2		1	1	1	1	1.63	Satisfactory
Finavia Corp.	2	3	2	2		1	1	3	2	2.0	Satisfactory
Destia Ltd.	2	3	1	1		1	1	1	1	1.38	Good
Oulun energia	2	1	1	1	1	1	1	2	2	1.33	Good
Helsingin energia	1	1	1	1	1	1	1	1	1.5	1.06	Good
Fortum Corp.	2	1	1	1		1	1	1	1	1.13	Good

	<b>Return under risk-free rate</b>
	<b>Negative return</b>

**Insufficient = company makes less profit than the risk-free rate**

**Poor = company makes a loss for investors and owners**



### 4.3 Sum-up grouped by industry

In Figure 39, the beta and ROI form a graph that shows industries' profit and risk compared to the security market line. Industries above the security market line (SML) are good investments, as they have made a good profit with a small risk.

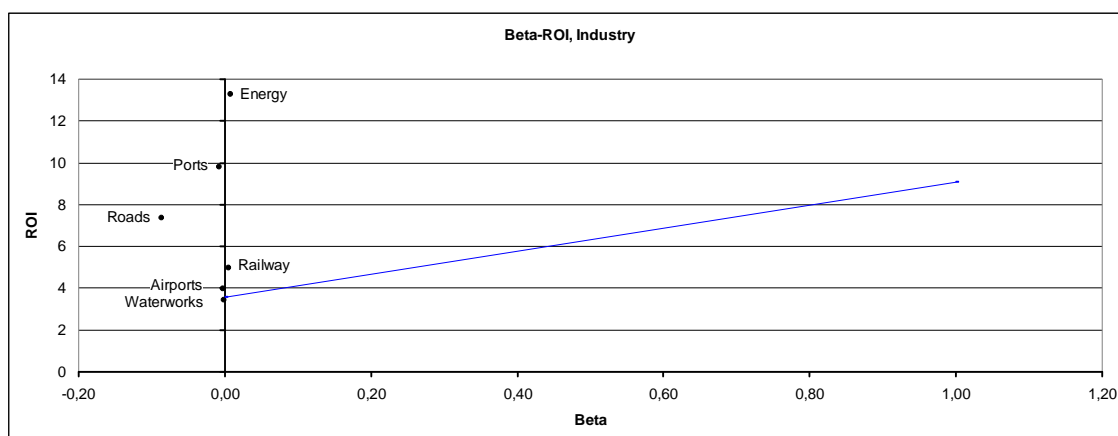


Figure 39. Beta-ROI, grouped by industry.

Every studied industry has a small risk, but most of them do not have an associated high profit. Waterworks and airports have almost the same profit and risk as the riskless rate. Ports and energy companies have small risks, but associated with the highest profits in the sampled industries.

In Table 7 ratios are grouped by industry. Waterworks have made smaller profits than the risk-free return.

Table 7. Performance order, grouped by industry.

Industry	Number of cases	F C F	R O A	R O I	R O E	R O I M	B	R e	R d	W A C C	Average	
Ports	12	2.5	2	1	2	1	1	1	2	1	1.50	Satisfactory
Waterworks	11	2.5	3	2	3	2	1	1	3	2	2.17	Insufficient
Railway	1	2	3	2	2		1	1	1	1	1.63	Satisfactory
Airports	1	3	3	2	3		1	1	3	1	2.13	Satisfactory
Roads	1	2	3	1	1		1	1	1	1	1.38	Good
Energy	4	2	1	1	1	1	1	1	2	1.5	1.28	Good

#### 4. Conclusion

### 4.4 Grouped by ownership

In Figure 40, the beta and ROI are grouped by ownership model. The risks of MOEs and MOCs are almost the same, but the profits of MOEs are better than those of MOCs.

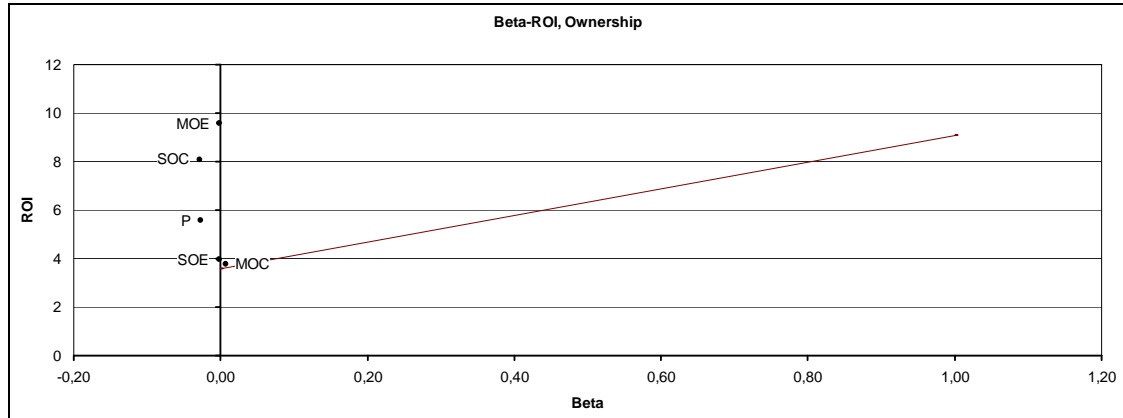


Figure 40. Beta-ROI, grouped by ownership.

MOCs and SOEs have almost the same profit and risk as the risk-free rate. All the other ownership models have made higher profits than the risk-free return, and their risks are small.

In Table 8 ratios are grouped by ownership model. Every ownership model has had at least satisfactory results.

Table 8. Performance order, grouped by ownership.

Ownership	Number of cases	F C F	R O A	R O I	R O E	R O C I M	R e B	R e d	W A C C	Average		
MOE	16	1.5	2	2	2	1	1	1	2	1	1.50	Satisfactory
MOC	7	3	3	2	2	2	1	1	3	2	2.11	Satisfactory
SOE	1	2	3	2	2		1	1	3	2	2.0	Satisfactory
SOC	3	2	2	1	1		1	1	1	1	1.25	Good
P	3	2,5	2	1	2		1	1	3	2	1.81	Satisfactory

One of the most interesting results of this study is that the MOEs outperform MOCs in almost all sectors and all measures. The reasons for this could be the following:

- Taxation differences
- Valuing of assets
- “Creative” accounting, different cost accounting practices
- MOEs could have easier access to equity capital.

MOE may be a good operational model for waterworks, as they operate as a natural monopoly within their area of operation without competition. This results in tax treatment being a neutral factor as there are no commercial/private service providers to compete with the MOEs. The industry is also heavily controlled by legislation so the market operations are regulated and do not allow for much room to deliberate. The waterworks face important risks when the owning municipalities demand higher returns or maintain lower prices at the expense of investments, both of which would increase the maintenance backlog. Municipalities have more control over the MOE than a MOC so the demands can also be tougher.

MOE (or a SOE) as a concept may not be possible in a situation where the market also has other operators.

#### 4.5 Grouped by industry and ownership

In Figure 41, the beta and ROI are grouped by industry and ownership model. All groups have small risks, but some have their ROI above the security market line (SML) and some have it below the SML. The private port and municipality-owned energy enterprises have made the highest profit. MOEs have made better profit than MOCs in every industry. Municipally owned waterworks companies and private waterworks have made a smaller profit than the risk-free rate.

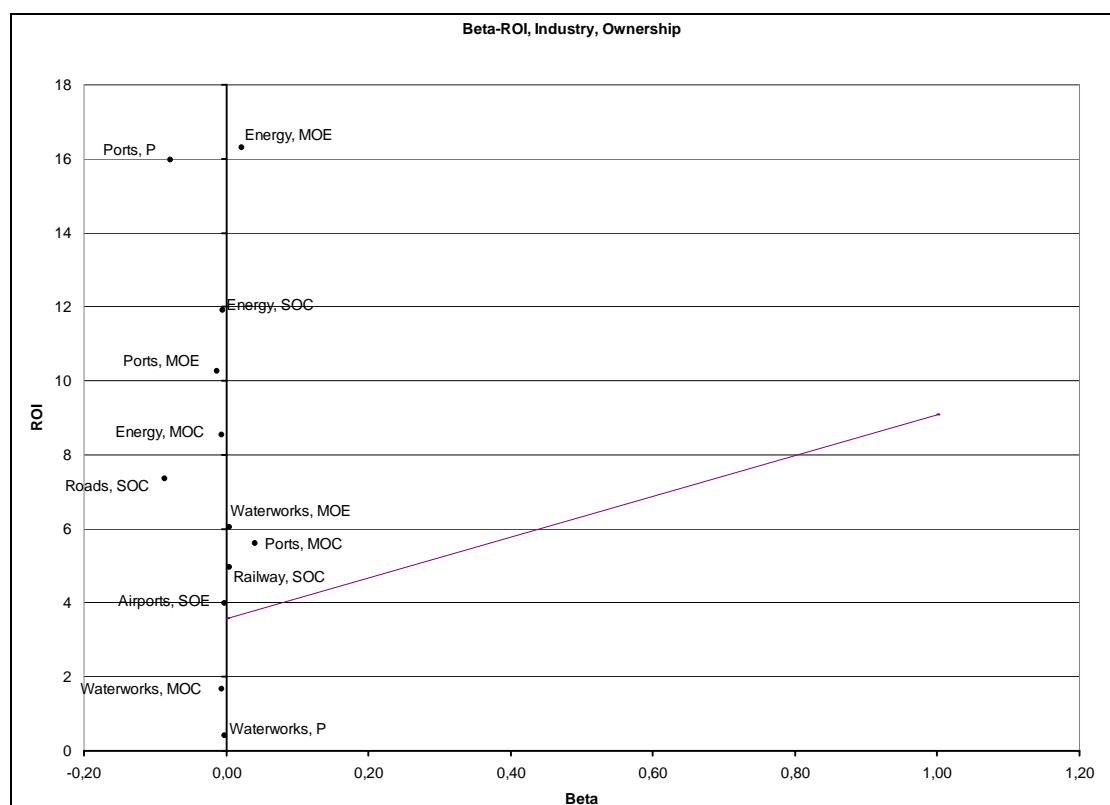


Figure 41. Beta-ROI, grouped by industry and ownership.

#### 4. Conclusion

In Table 9, ratios are grouped by industry and ownership model. Municipality-owned waterworks and private waterworks have made smaller profits than the risk-free rate would assume.

Table 9. Performance order, grouped by industry and ownership.

Industry	Ownership	Number of cases	F C F	R O A	R O I	R O E	R O C I M	B	R e	R d	W A C C	Average	
Ports	MOE	9	2.5	2	1	2	1	1	1	2	1	1.50	Satisfactory
	MOC	2	3	2	2	2	2	1	1	2	2	1.89	Satisfactory
	P	1	2	1	1	1		1	1	1	1	1.13	Good
Waterworks	MOE	5	1.5	2	2	3	2	1	1	3	2	1.94	Satisfactory
	MOC	4	3	3	2	3	3	1	1	3	2	2.33	Insufficient
	P	2	3	3	3	3		1	1	3	2	2.38	Insufficient
Railway	SOC	1	2	3	2	2		1	1	1	1	1.63	Satisfactory
Airports	SOE	1	2	3	2	2		1	1	3	2	2.0	Satisfactory
Roads	SOC	1	2	3	1	1		1	1	1	1	1.38	Good
Energy	MOE	2	1	1	1	1	1	1	1	2	1.5	1.17	Good
	SOC	1	2	1	1	1		1	1	1	1	1.13	Good

In the case of waterworks, the results can be biased as four of the five case studies are among Finland's biggest municipalities. Haukipudas, the only smaller-sized municipality, represents the majority of Finnish municipalities, which are small or medium-sized. The larger municipalities have opted for the MOE model, possibly due to the fact that this is a way to generate revenue for the municipality. Cooperatives are working on a much smaller scale of operations, which also explains their "modest" results.

#### 4.6 Final remarks

We stated in the preface that municipalities might have tougher times ahead. The analyses have shown that municipalities tend to benefit perhaps more than anticipated from the cash flows generated by networks and utilities. This has two potential implications: for those cases where the municipalities' returns are below average, revenues can be increased through more radical pricing. However, for those already receiving high returns, the question remains whether they have already reached the limit. More importantly, as some industries continue with restructuring from MOEs to MOCs, is the current setting sustainable in the near future?

We can conclude that the municipalities may use this information to evaluate the impact of corporatization on their revenues, also from the point of view of what could be dividend paid to shareholders. In those cases where the municipalities at present receive

fixed, non-result-based compensation, the question is how this arrangement should be formulated in the future. One of the observations of reviewing the financial data has been that the income statement can be more or less manipulated. It would be fair and just to increase the transparency of accounting information by publishing statements in standard format, as all limited liability companies do. There is nothing that hinders this.

Finally, if we consider the possibilities to involve the private sector in ownership of the infrastructure networks in the future, the current returns are attractive to investors, given that the industries are practically market risk neutral. If building jointly owned MOCs, for example, investors could be expected to lay down capital for these low-risk entities. This in turn could facilitate more rational behaviour to keep the networks and utilities in good technical and financial shape also in the future. What should be avoided is opportunistic investor behaviour with cash-in-and-run philosophy. The key word is long-term commitment that can always be enforced by shareholding contracts.

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# Annex 1: Income statement and balance sheet

Source: Committee for Corporate Analysis: The Guide to the Analysis of Financial Statements of Finnish Companies. Gaudeamus 2006. ISBN 951-662-990-3, ISBN13 978-951-662-990-5.

## Official income statement

### NET SALES (TURNOVER)

#### Change in finished goods and work-in-progress inventories

#### Production for own use

#### Other operating income

#### *Support and aid from municipality*

#### Materials and services

Materials, supplies and goods

Purchases during the fiscal period

Change in raw material inventories

Outsourced services

#### Personnel expenses

Salaries and wages

Social security expenses

Pension expenses

Other social security expenses

#### Depreciation and reductions in value

Depreciation according to plan

Reductions in value of fixed and other non-current assets

Exceptional reductions in value of current assets

#### Other operating expenses

### OPERATING PROFIT (LOSS)

#### Financial income and expenses

Income on investments in group companies

Income on investments in associated companies

Income on investments in other fixed assets

Other interest and financial income

Reductions in value of investments held as fixed and other non-current assets

Reductions in value of investments held as current assets

*Compensation to municipality from share capital*

*Interest paid to municipality*

Interest and other financial expenses

### PROFIT (LOSS) BEFORE EXTRAORDINARY ITEMS

#### Extraordinary items

Extraordinary income

Extraordinary expenses

### PROFIT (LOSS) BEFORE CLOSING ENTRIES AND TAXES

#### Closing entries

Change in depreciation difference

Change in voluntary provisions

#### Income taxes

#### Other direct taxes

### PROFIT (LOSS) FOR THE FISCAL PERIOD

## Adjusted income statement

	Net sales (turnover)
	+ Other operating income
=	<b>TOTAL OPERATING INCOME</b>
	- Materials and supplies used
	- Outsourced services
	- Personnel expenses
	- Adjustment to entrepreneur's salary
	- Other operating expenses
	+/- Increase/Decrease in finished goods and work-in-progress inventories
=	<b>OPERATING MARGIN (EBITDA)</b>
	- Depreciation according to plan
	- Reductions in value of fixed and other non-current assets
	- Exceptional reductions in value of current assets
=	<b>OPERATING RESULT (EBIT)</b>
	+ Income on shares/similar rights of ownership and other investments
	+ Other interest and financial income
	- Interest and other financial expenses
	+/- Foreign exchange gains/losses
	- Reductions in value of investments in fixed and other non-current and current assets
	- Direct taxes
=	<b>NET RESULT</b>
	+ Extraordinary income
	- Extraordinary expenses
=	<b>TOTAL RESULT</b>
	-/+ Increase/Decrease in depreciation difference
	-/+ Increase/Decrease in voluntary provisions
	+ Adjustment to entrepreneur's salary
	+/- Changes in market value
	+/- Other adjustments to profit
=	<b>RESULT FOR THE FISCAL PERIOD</b>

## Official balance sheet

### ASSETS

#### FIXED AND OTHER NON-CURRENT

##### Intangible assets

- Development expenses
- Intangible rights
- Goodwill
- Other capitalized expenses
- Advances paid

##### Tangible assets

- Land and water areas
- Buildings and constructions
- Machinery and equipment
- Other tangible assets
- Advances paid and fixed assets under construction

##### Investments

- Shares/Similar rights of ownership in group companies
- Receivables from group companies
- Shares/Similar rights of ownership in associated companies
- Receivables from associated companies
- Shares/Similar rights of ownership in other companies
- Other receivables

#### CURRENT ASSETS

##### Inventories and work-in-progress

- Materials and supplies
- Work-in-progress
- Finished goods
- Other inventories
- Advances paid

##### Receivables

###### Long-term receivables

- Trade receivables
- Receivables from group companies
- Receivables from associated companies
- Loan receivables
- Other receivables
- Unpaid shares/Similar rights of ownership
- Prepaid expenses and accrued income

###### Short-term receivables

- Trade receivables
- Receivables from group companies
- Receivables from associated companies
- Loan receivables
- Other receivables
- Unpaid shares/Similar rights of ownership
- Prepaid expenses and accrued income

##### Financial assets

- Shares/Similar rights of ownership in group companies
- Other shares/similar rights of ownership
- Other securities

##### Cash in hand and at bank

#### TOTAL ASSETS

**SHAREHOLDER'S EQUITY AND LIABILITIES**

**SHAREHOLDERS' EQUITY**

**Share capital, subscribed capital of a co-operative or other capital**

**Share premium**

**Revaluation reserve**

**Fair value reserve**

**Other reserves**

Contingency reserve

Reserves according to the articles of association or bylaws

Other reserves

**Retained earnings (losses)**

**Net profit (loss) for the fiscal period**

**Accumulated closing entries**

Depreciation difference

Voluntary provisions

**Compulsory provisions**

Pension provision

Tax provision

Other compulsory provision

**LIABILITIES**

**Long-term**

Bonds and notes

Convertible bonds

Capital loans

Loans from financial institutions

Loans from pension institutions

Advances received

Trade payables

Bills of exchange payable

Loans from and other liabilities to group companies

Loans from and other liabilities to associated companies

*Loans from municipality*

Other loans and liabilities

Deferred income and accrued expenses

**Short-term**

Bonds and notes

Convertible bonds

Capital loans

Loans from financial institutions

Loans from pension institutions

Advances received

Trade payables

Bills of exchange payable

Loans from and other liabilities to group companies

Loans from and other liabilities to associated companies

*Loans from municipality*

Other loans and liabilities

Deferred income and accrued expenses

**TOTAL SHAREHOLDERS' EQUITY AND LIABILITIES**

## **Adjusted balance sheet**

### **ASSETS**

#### **FIXED ASSETS**

##### **Intangible assets**

- Development expenses
- Goodwill
- Other intangible assets

##### **Tangible assets**

- Land and water areas
- Buildings and constructions
- Machinery and equipment
- Other tangible assets

##### **Long-term investments and receivables**

- Shares/Similar rights of ownership in group companies
- Shares/Similar rights of ownership in other companies
- Receivables from group companies
- Other investments and receivables

##### **Leasing commitments**

#### **CURRENT ASSETS**

##### **Inventories and work-in-progress**

- Materials and supplies
- Work-in-progress
- Finished goods
- Other inventories

##### **Short-term receivables**

- Trade receivables
- Trade receivables from group companies
- Other receivables from group companies
- Other receivables

##### **Cash and marketable securities**

#### **TOTAL ASSETS**

***SHAREHOLDERS' EQUITY AND LIABILITIES***

**SHAREHOLDERS' EQUITY**

**Shareholders' equity**

Share capital, subscribed capital of a co-operative or other capital  
Share premium and revaluation reserve  
Fair value reserve  
Other reserves  
Retained earnings (losses)  
Net profit (loss) for the fiscal period  
Capital loans

**Depreciation difference and voluntary provisions**

Depreciation difference  
Voluntary provisions

**Adjustments to shareholders' equity**

**Adjusted shareholders' equity**

**LIABILITIES**

**Long-term liabilities**

Capital loans  
Loans from financial institutions  
Loans from pension institutions  
Advances received  
Loans from and other liabilities to group companies  
Other long-term liabilities

**Deferred taxes**

**Compulsory provisions**

**Leasing commitments**

**Short-term liabilities**

Short-term interest-bearing liabilities  
Advances received  
Trade payables  
Trade payables to group companies  
Other interest-bearing liabilities to group companies  
Other non-interest-bearing liabilities to group companies  
Other short-term non-interest-bearing liabilities

**Adjusted liabilities**

**TOTAL SHAREHOLDERS' EQUITY AND LIABILITIES**

## Annex 2: Sector-specific in-depth studies

### Ports

This section of the report provides some more in-depth look into ports studies in the project. We have selected four ports for a more thorough analysis and we have added Naantali Port to the analyses, which was not included in the comparative analyses in Chapter 3. Four ports are analysed in greater detail. The selection criteria for the four ports has been to choose two better and two more poorly performing ports. Looking at the free cash flows, we can note that the Port of Helsinki result has been weakened by the Vuosaari Port investments. Figure 42 shows the free cash flow of ports.

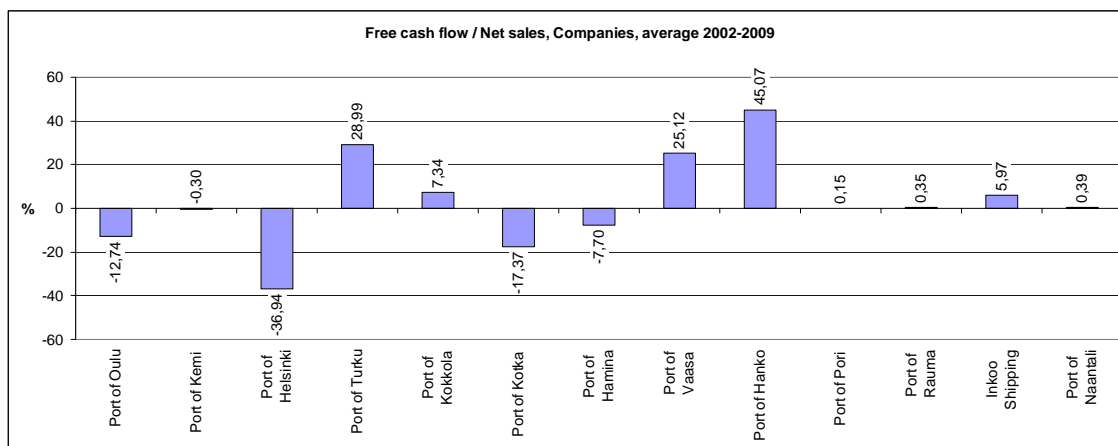


Figure 42. Ports, free cash flow, average 2002–2009.

Figures 43 and 44 show the ports grouped by ownership. The first figure represents the average free cash flow percentage over the period 2002–2009, and second the weighted free cash flow with respect to turnover. As there is only one private and one municipal port, the results remain the same for both groups. The free cash flow of ports in the MOE group becomes negative in the case of weighted average, due to the Port of Helsinki's influence through its large net sales.

Annex 2: Sector-specific in-depth studies

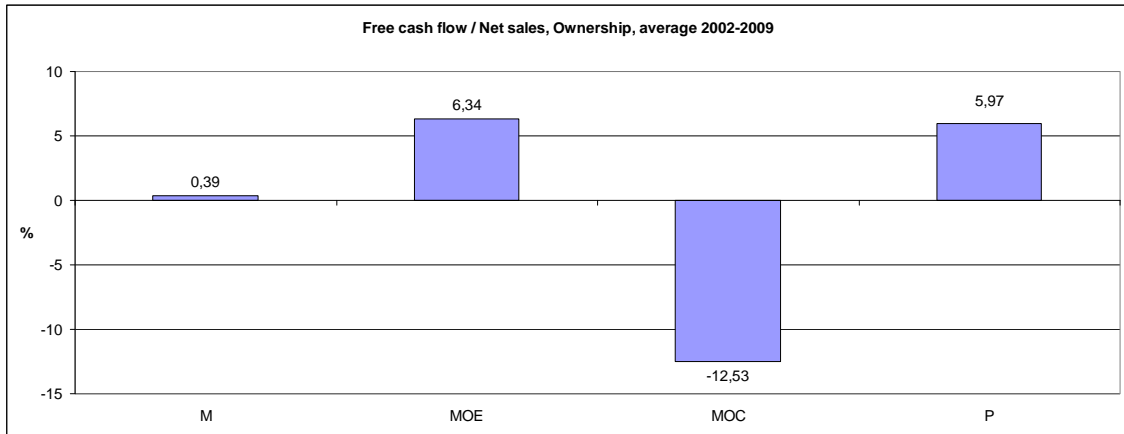


Figure 43. Average free cash flow of ports by ownership.

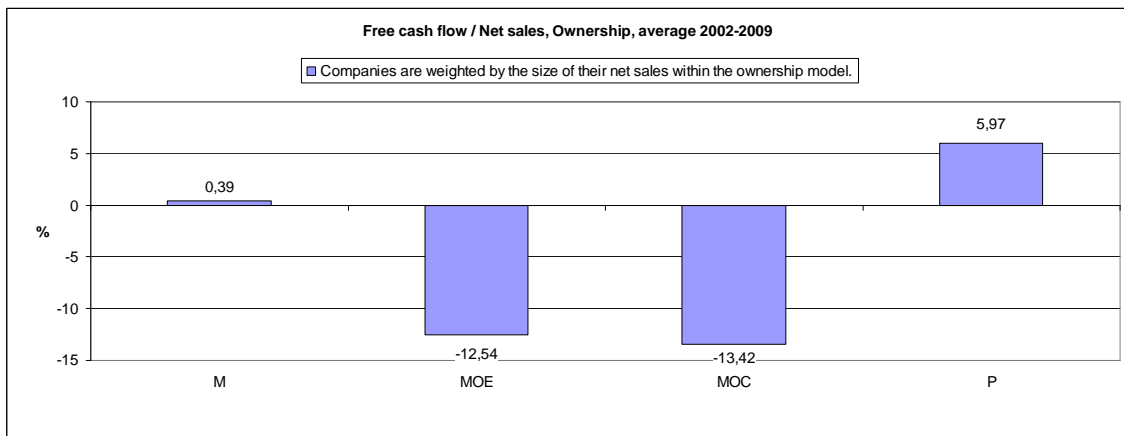


Figure 44. Weighted average free cash flow of ports by ownership.

The two specialised ports, Naantali and Hanko, had a better return on assets (ROA) than other ports. However, all the ports have performed at least satisfactorily. Figure 45 shows the average ROA for ports for 2002–2009.



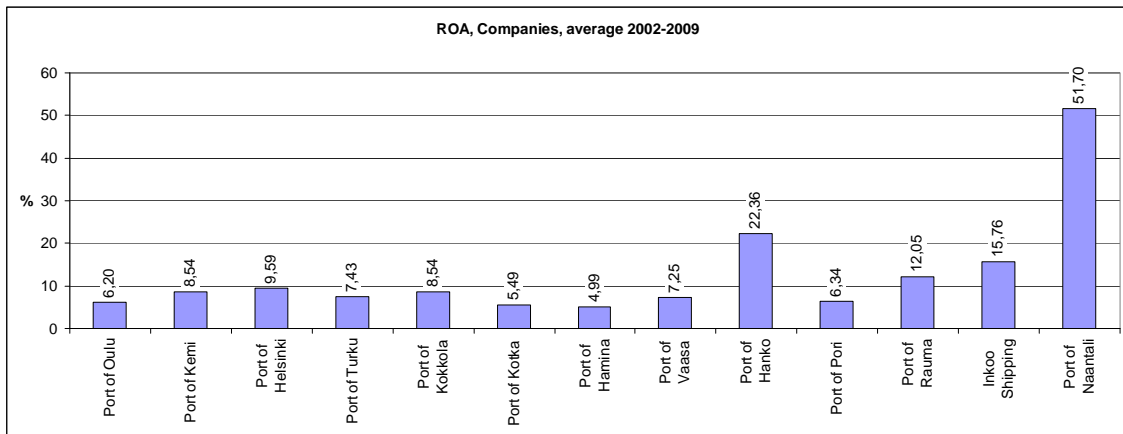


Figure 45. Port ROA, average 2002–2009.

In the grouping by ownership model, again groups M (Naantali) and P (Inkoo Shipping) consist of only a single entity. As a group the MOEs have performed better than MOCs. Again, all the groups have reached at least a satisfactory result.

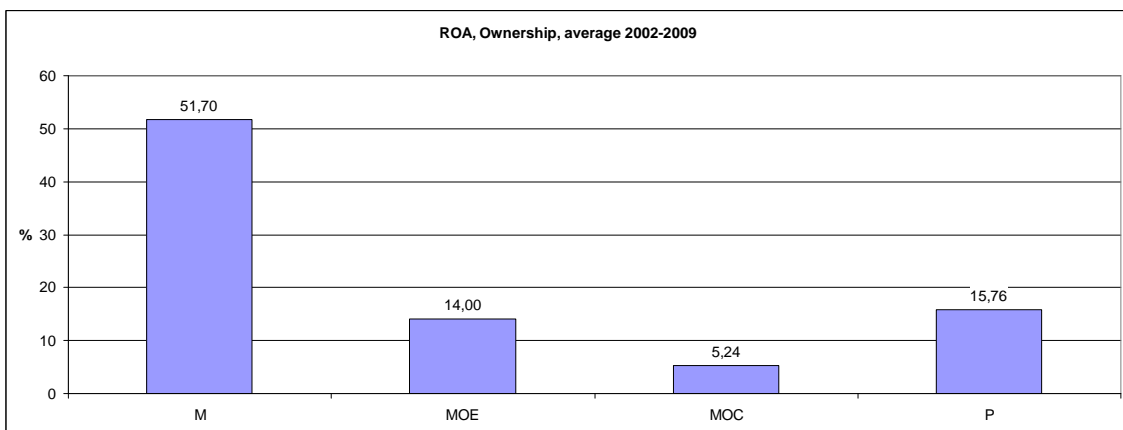


Figure 46. Port ROA grouped by ownership, average 2002–2009.

Return on investment (ROI) is better than the required minimum (calculated as the expected minimum return on investment) for all the ports, as shown in Figure 47. The Port of Naantali has the highest value of ROI but the required minimum has also been the highest. Naantali, Hanko and Inkoo Shipping have the best performance with respect to absolute and required minimum requirements.

Annex 2: Sector-specific in-depth studies

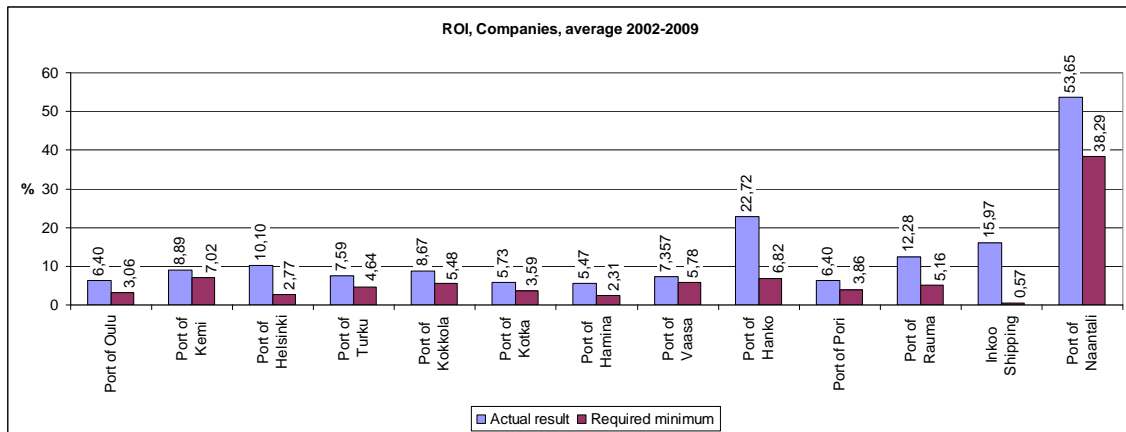


Figure 47. Port ROI, average 2002–2009.

When the ports are grouped by ownership, all groups have achieved a higher ROI than the required minimum, as shown in Figure 48. Again MOEs have exceeded MOCs with respect to both the absolute and required minimum.

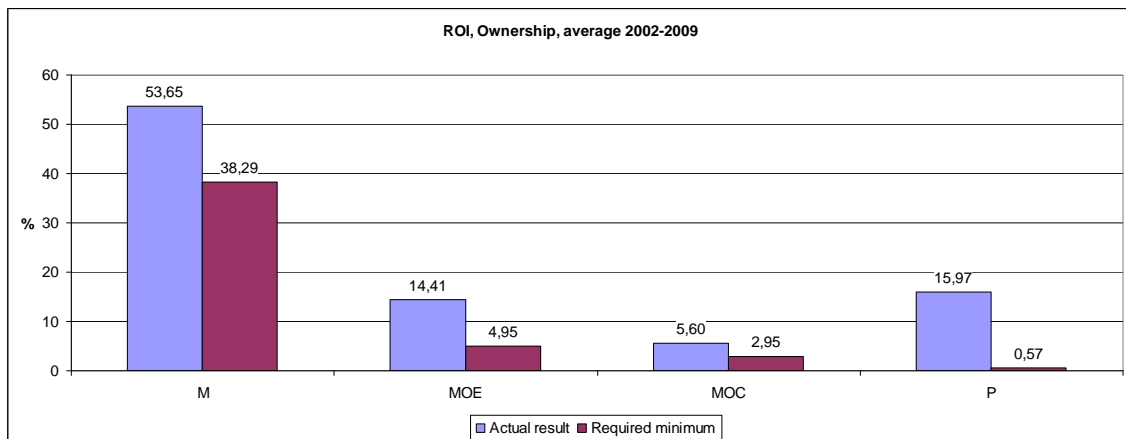


Figure 48. Port ROI grouped by ownership, average 2002–2009.

The ports of Hanko, Naantali and Inkoo Shipping have, as in the case of ROA, performed better than other ports for their revenue on equity (ROE). The ports of Kemi, Turku, Vaasa and Pori have performed worse than their required minimum, as seen in Figure 49. Their performance has also been lower than the risk-free revenue from government bonds (3.58%).

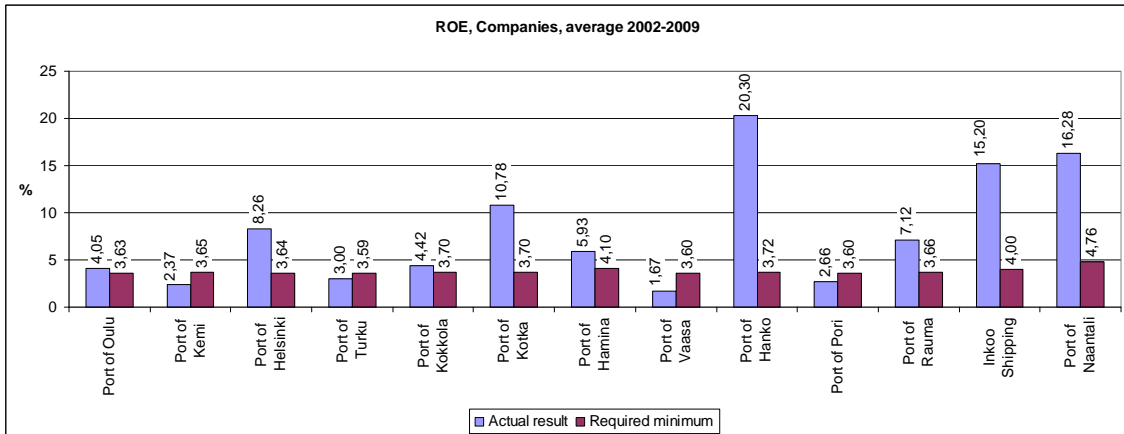


Figure 49. Port ROE, average 2002–2009 contrasted with required minimum.

Comparison of ROE grouped by industry in Figure 50 shows that MOCs have performed slightly better than MOEs. The other groups again have only one entity each.

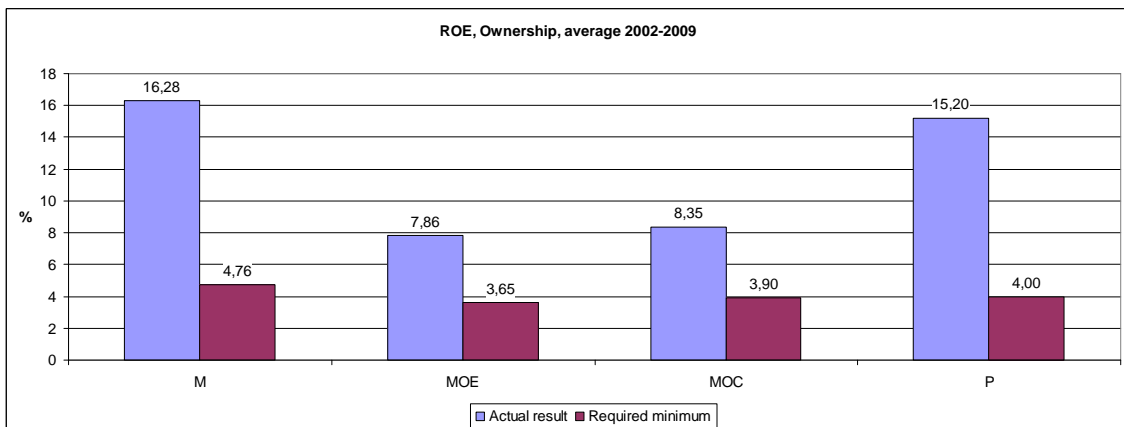


Figure 50. Port ROE grouped by ownership, average 2002–2009.

When revenue on capital invested by municipality (ROCIM) is calculated, we can see that all the ports have exceeded the required minimum level and the risk-free interest rate of government bonds. In this respect, investing the money in ports has been a good investment decision from the municipality. Figure 51 shows the results.

Annex 2: Sector-specific in-depth studies

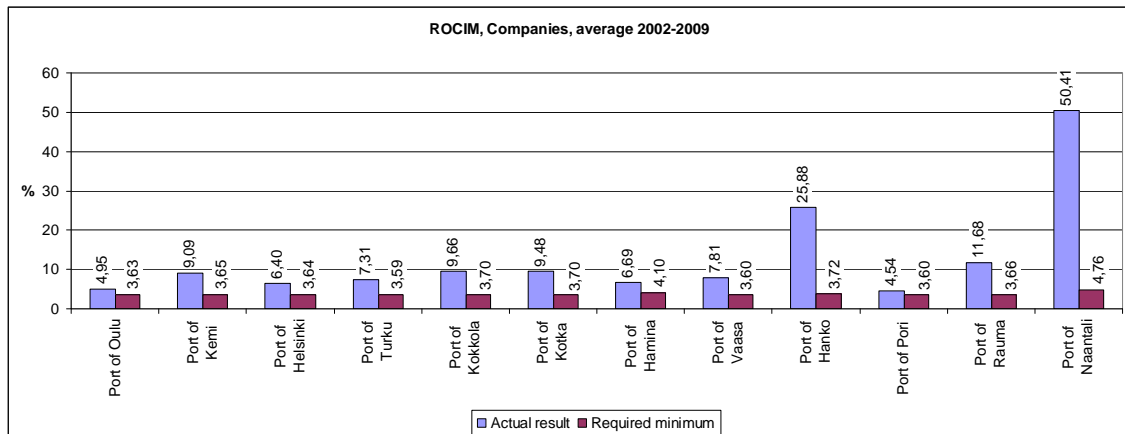


Figure 51. Port ROCIM, average 2002–2009.

Grouped again by ownership, MOEs have provided more returns for municipalities than MOCs. As municipal ports consist of the Port of Naantali only, the results of group “M” cannot be generalized, especially since Naantali is a specialized port.

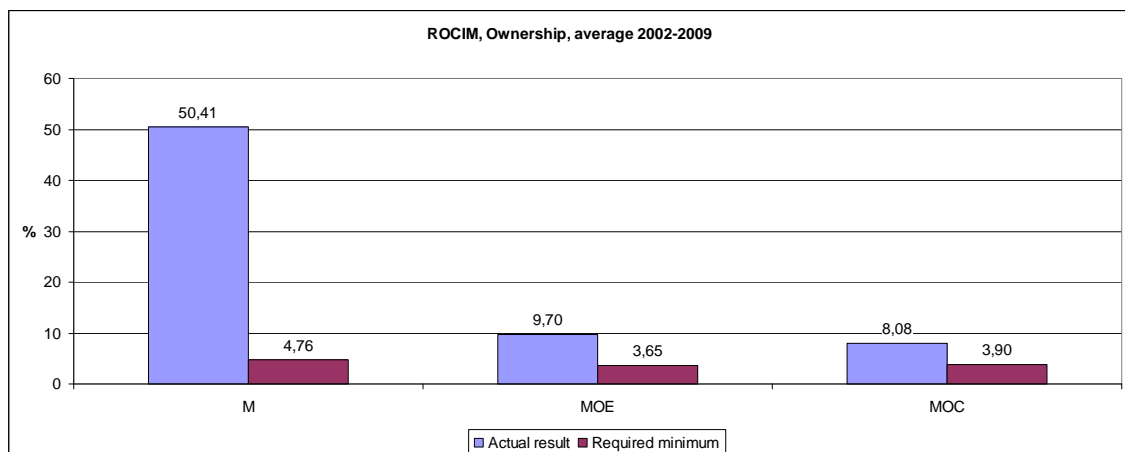


Figure 52. Port ROCIM, by ownership, average 2002–2009.

The beta values were also calculated for all ports. The results in Figure 53 show that the beta values are close to zero, which means that they have reacted only slightly to changes in the markets. When an individual year’s results are taken into consideration, the 2009 figures were weaker than other years for all the ports.

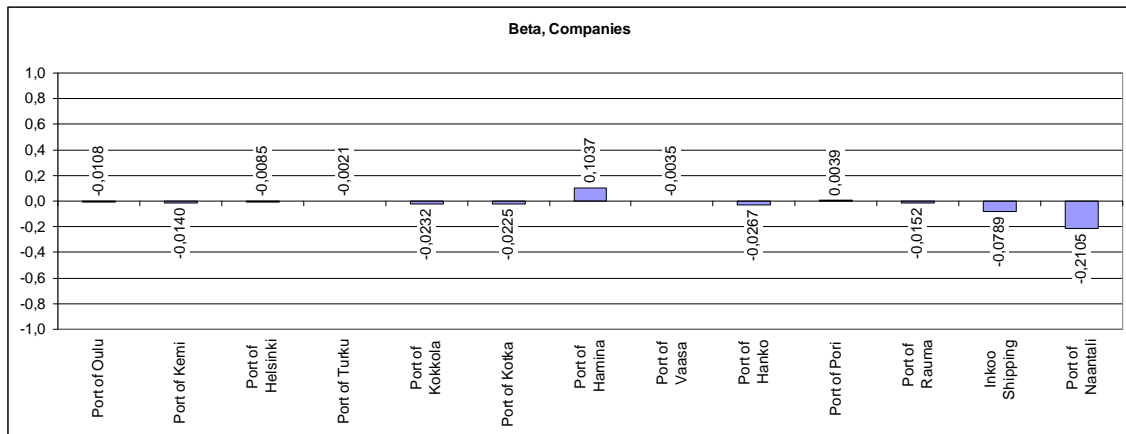


Figure 53. Beta values for ports.

As all the beta values are close to zero, the cost of equity for all the ports is close to the risk-free interest rate of 3.58% as shown in Figure 54.

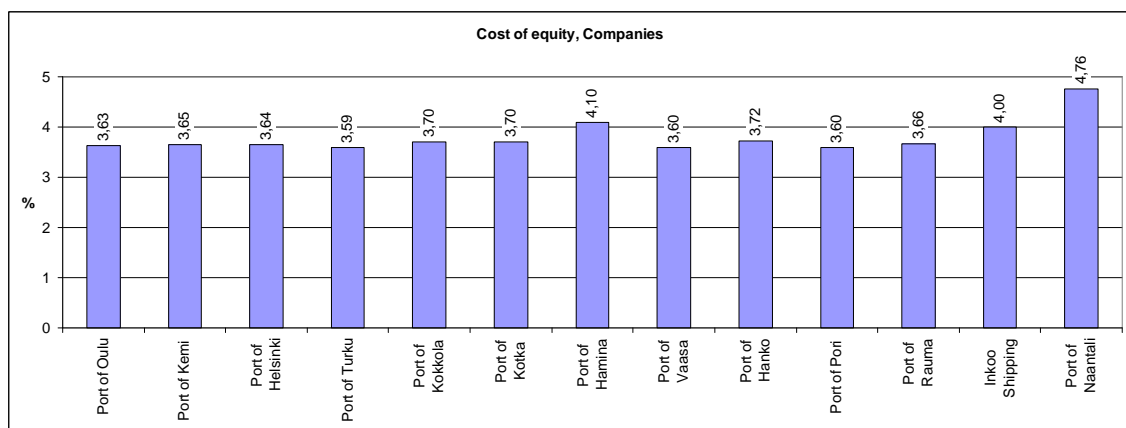


Figure 54. Ports, cost of equity.

Based on information from financial statements, none of the ports has performed badly; the worst rating would be B-. Inkoo Shipping would receive the best credit rating AAA. Because every other port is more closely connected to the municipality, they receive loans with better terms than their credit rating would suggest. The cost of debt is shown in Figure 55.

Annex 2: Sector-specific in-depth studies

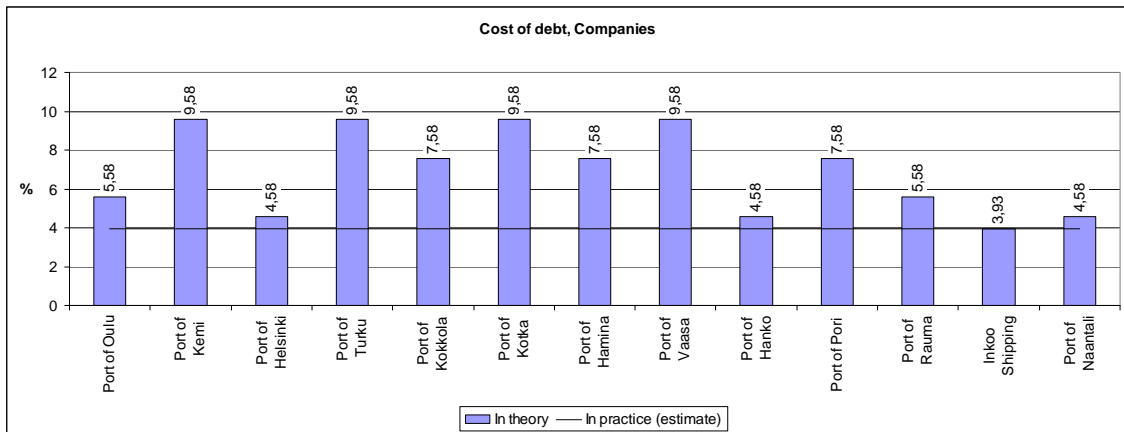


Figure 55. Ports, cost of debt in theory and in practice.

According to cost of debt figures (Figure 56), the financial statement information of MOCs would suggest they should pay a higher interest rate on their loans than MOEs. However, due to the municipality connections and access to finance, in reality the rates are likely to be identical.

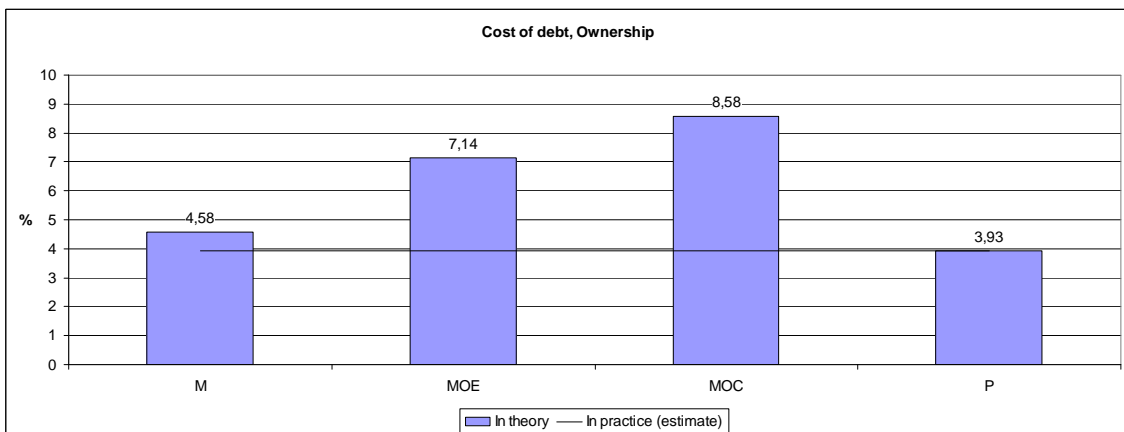


Figure 56. Ports, cost of debt by ownership.

Figure 57 shows the WACC for ports. The taxes paid by ports lower the WACC for Kotka, Hamina and Inkoo Shipping, which pay taxes. The Port of Kotka has the smallest WACC and the Port of Naantali the largest.

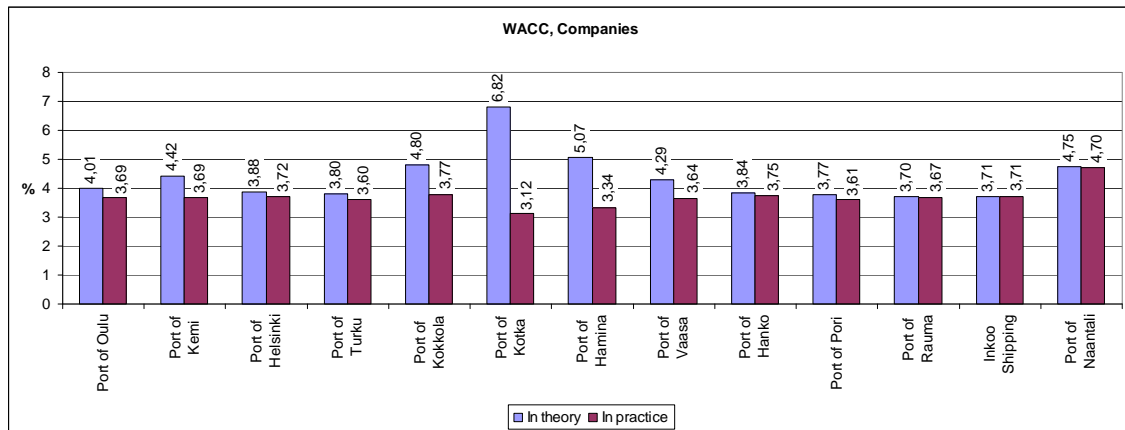


Figure 57. Ports, WACC in theory and in practice.

When organized by ownership, the theoretical WACC of MOCs is greater than that of MOEs, however in practice it is lower than MOEs. Again, the taxation of MOCs is the determining factor.

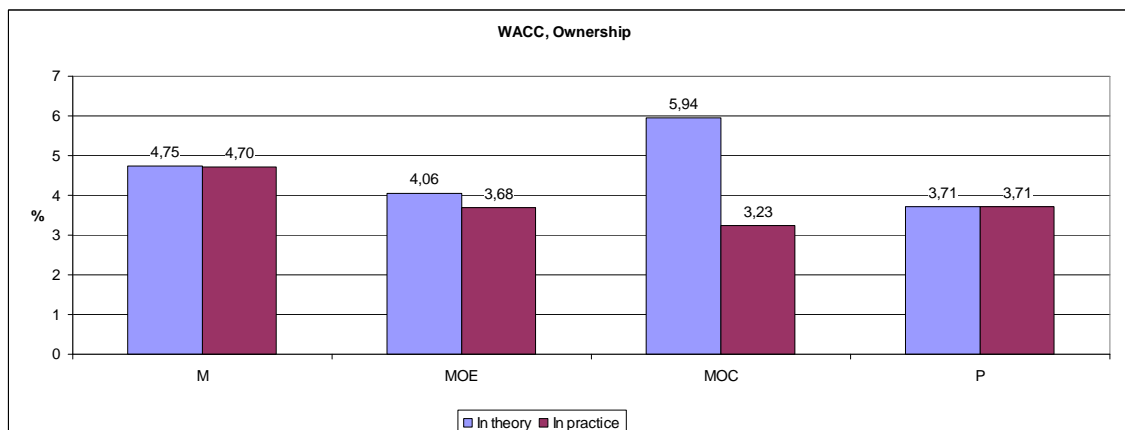


Figure 58. Ports, WACC by ownership, in theory and in practice.

Figures 59–66 take a more thorough look at the financial information of four ports (Kotka, Hamina, Naantali and Hanko). Naantali was not included in the comparative analyses in Chapter 3, as it had an exceptional financial performance, which could have altered the results of Naantali's ownership group significantly. This would have overshadowed the performance of the other entities in the group. We have included Naantali in this part of the analysis in order to better assess the reasons for good performance.

The net sales at the Port of Kotka have increased steadily with the exception of the decline in 2009. This decline is most likely the result of the worsening economy in Finland during the year. The amount of free cash flow correlates with gross investment

Annex 2: Sector-specific in-depth studies

fluctuations. Thus, the negative free cash flow is an indicator of investments rather than poor financial performance.

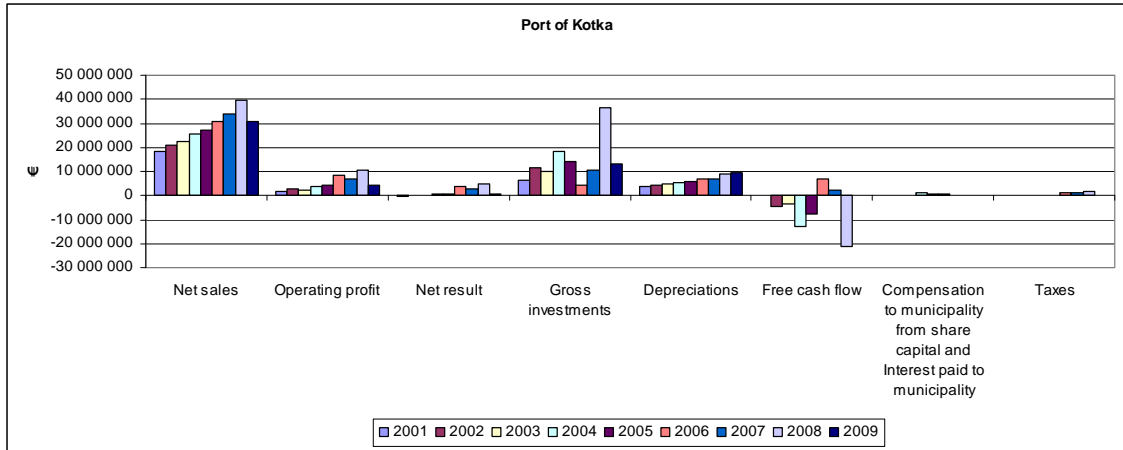


Figure 59. Port of Kotka financial data, 2002–2009.

Looking at the financial indicators in Figure 60, we can see that the Port of Kotka has generated positive returns every year. The returns are mostly affected by the fluctuations in net result. The municipality has received varying but positive returns every year. Interestingly, the return does not directly link to free cash flow or net sales.

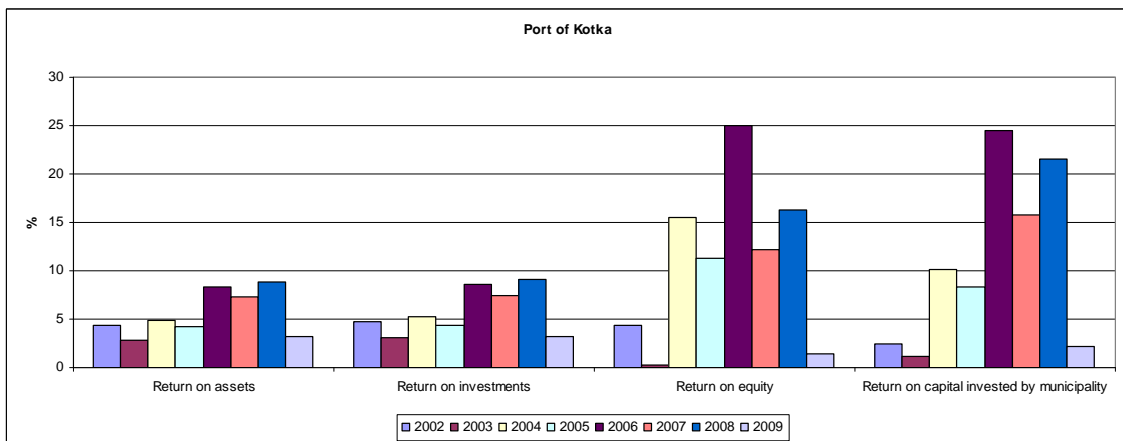


Figure 60. Port of Kotka financial indicators, 2002–2009.

The Port of Hamina does not have financial statements available for 2009. Until 2008 net sales had increased steadily. In 2008 the Port of Hamina sold its assets worth 11 million euro, which explains the positive free cash flow for the year.



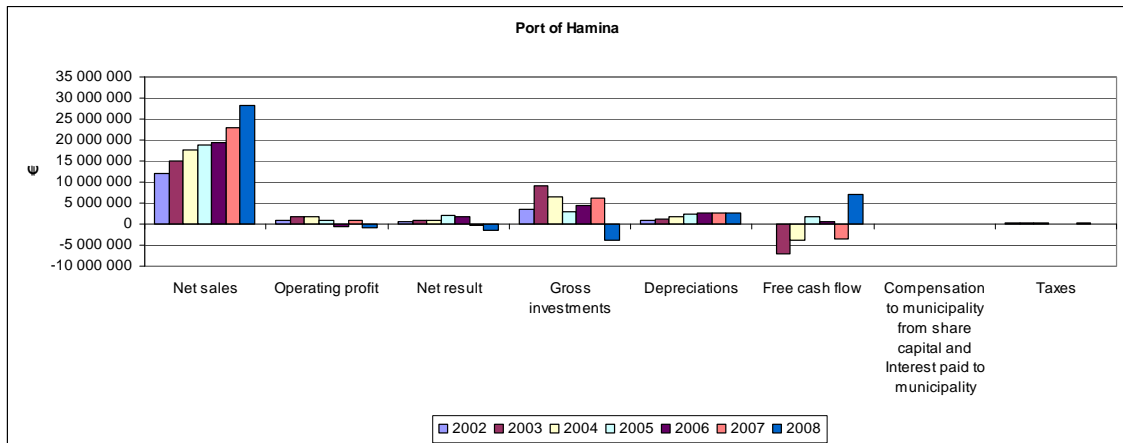


Figure 61. Port of Hamina financial information, 2002–2008.

Looking at the financial indicators in Figure 62, in 2007 the Port of Hamina caused a loss to the owners (return on equity) and in 2008 to both owners and investors (return on equity and ROCIM).

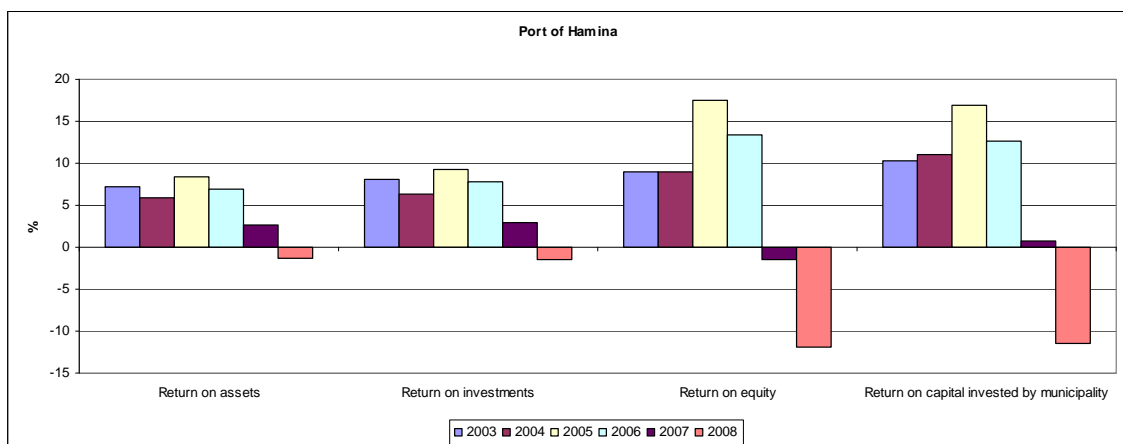


Figure 62. Port of Hamina financial indicators, 2002–2008.

The net sales of the Port of Hanko have varied from one year to another but the net result has remained positive. The free cash flow has also remained positive despite large gross investment volumes. The Port of Hanko has given the municipality a fixed transfer every year, leaving resources available for investments and savings. The Port of Hanko specializes in car exports and this has apparently been a good strategy.

Annex 2: Sector-specific in-depth studies

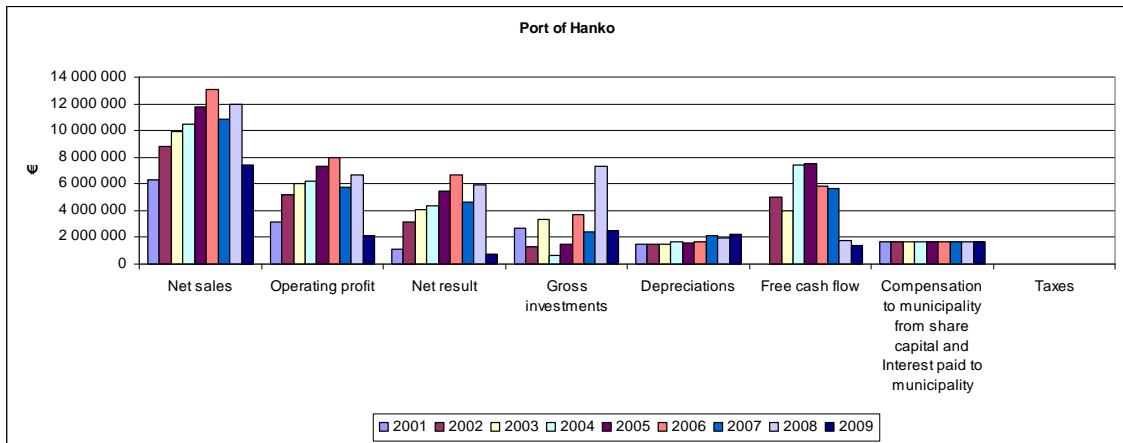


Figure 63. Port of Hanko, financial data, 2002–2009.

Looking at the Port of Hanko financial indicators in Figure 64, we note that the port has brought good returns to owners and investors, with the 2009 result being the exception. This again is the result of the overall economic situation in Finland.

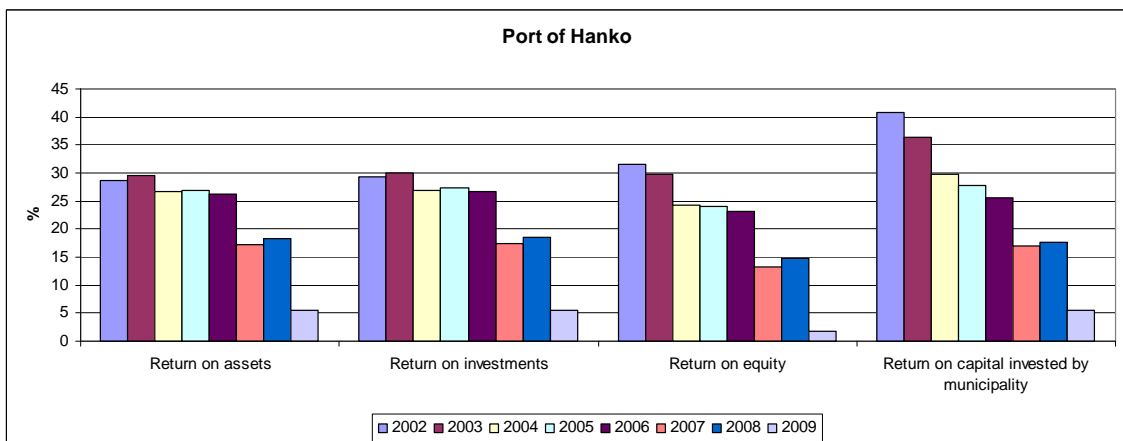


Figure 64. Port of Hanko financial indicators, 2002–2009.

The net sales (see Figure 65) of the Port of Naantali have increased steadily with the exception of 2009, which seems to have affected most ports. The net result has been positive every year and the free cash flow has been negative only when major investments took place. The compensation to municipality has varied but when contrasted with net sales the transfers have been relatively large.

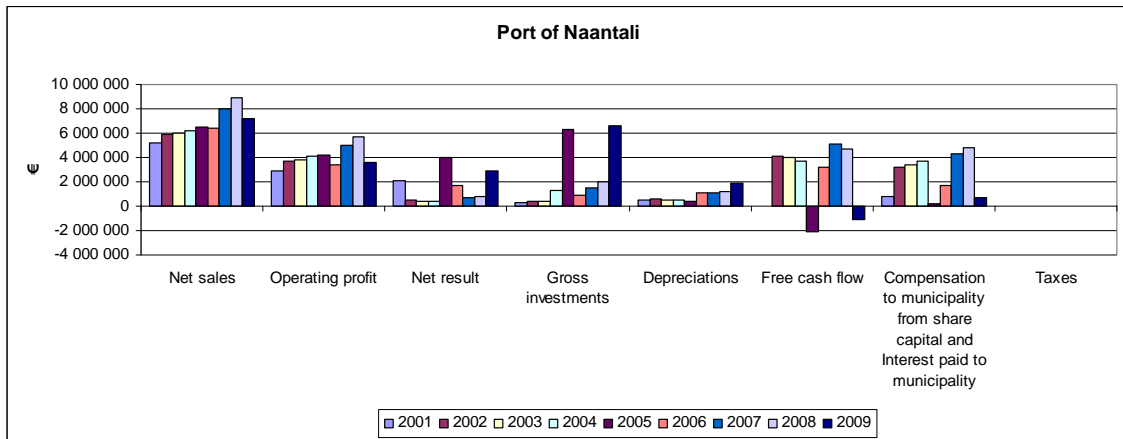


Figure 65. Port of Naantali basic financial data.

The net result has been positive every year, which has resulted in high returns. Particularly the ROA and ROI have been good, and the returns to municipality have also been high but varying from one year to another.

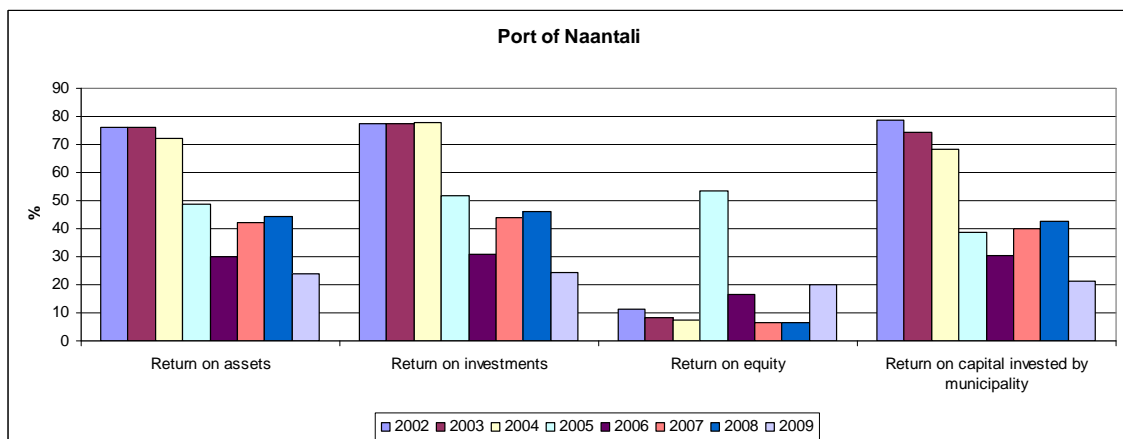


Figure 66. Port of Naantali financial indicators, 2002–2009.

## Waterworks

For most of the waterworks, data were available for only 2 years, typically covering 2007–2009, so this information was not used in the previous analyses covering the longer time period. The analyses presented here cover all the waterworks for the same shorter period to allow for comparisons. Our sample consists of 10 municipal departments, 12 municipality-owned enterprises, eight municipality-owned companies and three co-operatives. The sample presented covers 33 entities in total. For some water-

## Annex 2: Sector-specific in-depth studies

works, data from 2007 and 2008 was available: Mäntyharju (traditional model), Tampere (MOE), Kuopio (MOE), Keminmaa (MOE) and Raahe (MOE).

Among the waterworks analysed, there are some that have a substantial negative free cash flow over the period. For all of these waterworks the explanatory factor is large investment over the period. Thus, free cash flow indicates that these entities have been actively investing in their assets. This is relevant for the sector as there is a growing maintenance backlog, which can only be addressed through replacement investments.

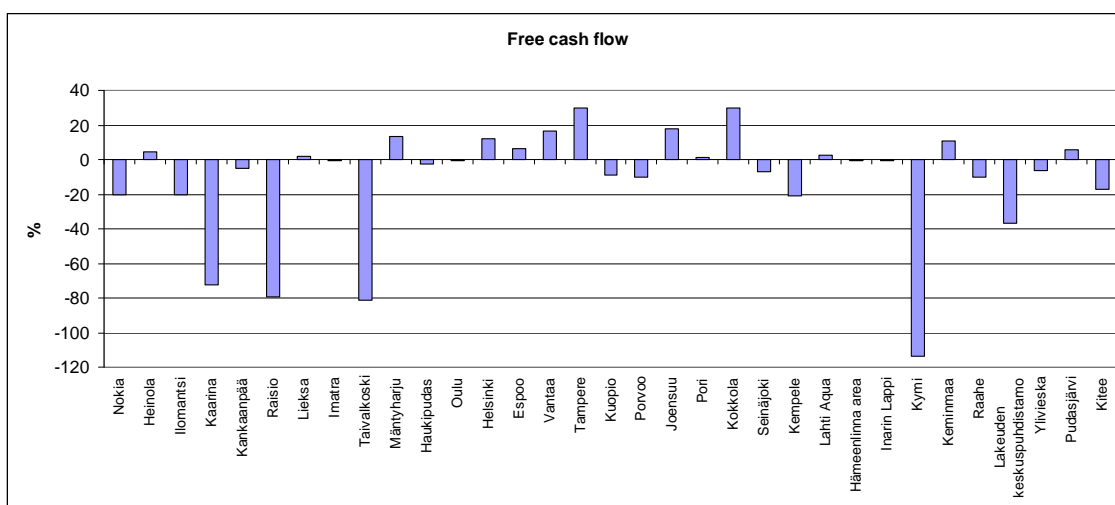


Figure 67. Free cash flow for waterworks, 2007–2009 average.

When grouped by the ownership model as in Figure 68, the MOE group is the only one which has an overall positive free cash flow. However, the investments made by this group are also smaller than those of the other groups. There can be several reasons for this, as major investments may still lie in the future or because the waterworks of major cities are in the MOE group and may benefit from servicing more clients with a similar network than smaller municipalities.

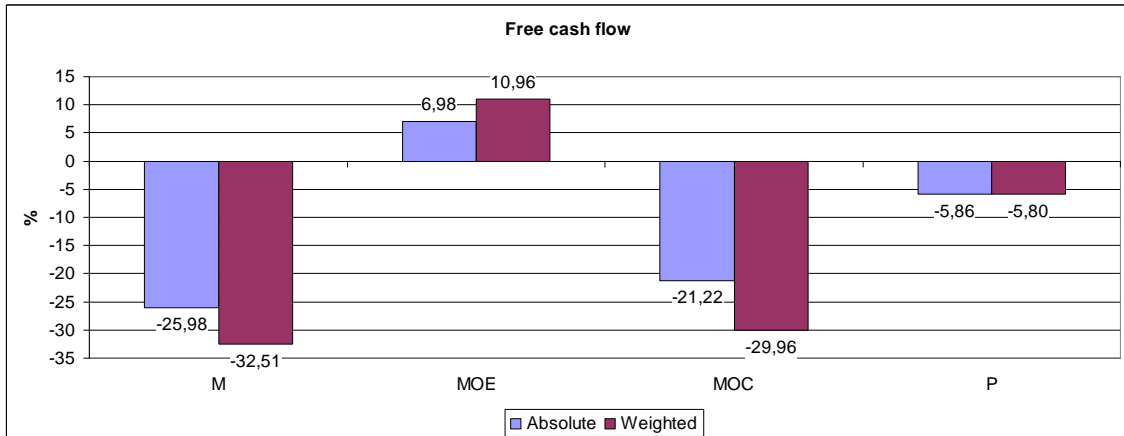


Figure 68. Waterworks free cash flow grouped by ownership model, absolute and weighted values.

For return on assets (ROA), only two waterworks (Kankaanpää and Tampere) have an ROA exceeding 10%, which was the limit for a good ROA value. Ten other waterworks reached a satisfactory level between 5% and 10%, 15 reached a poor result and six made a loss on their total assets.

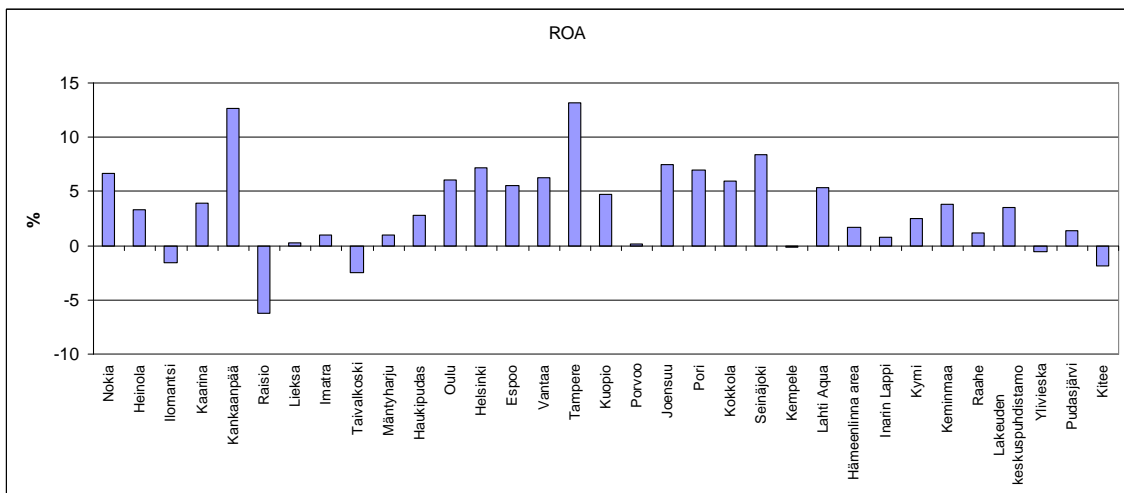


Figure 69. Waterworks ROA, 2007–2009 average.

Regarding the return on investment (ROI), according to the financial statements 13 waterworks were not able to cover their financing and interest payments. Their ROI is below the required level, as shown in Figure 70. As waterworks are essential operators from the municipality’s point of view, they are financially backed by the municipality, which ensures their eligibility to borrow despite poor financial performance.

## Annex 2: Sector-specific in-depth studies

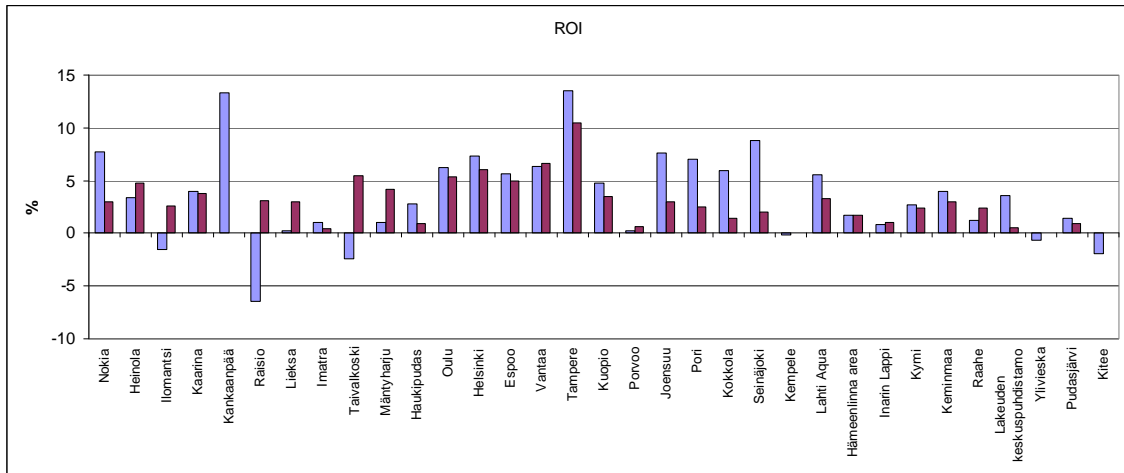


Figure 70. Waterworks ROI, average 2007–2009.

The return on equity (ROE) measures the return on shareholder equity. According to this measure 11 waterworks generated a loss for their owners as shown in Figure 71. The result for Raisio stands out as a particularly poor performance. The large increase in depreciation according to plan is the dominant factor, but the net result would have been negative even without the increase in depreciation.

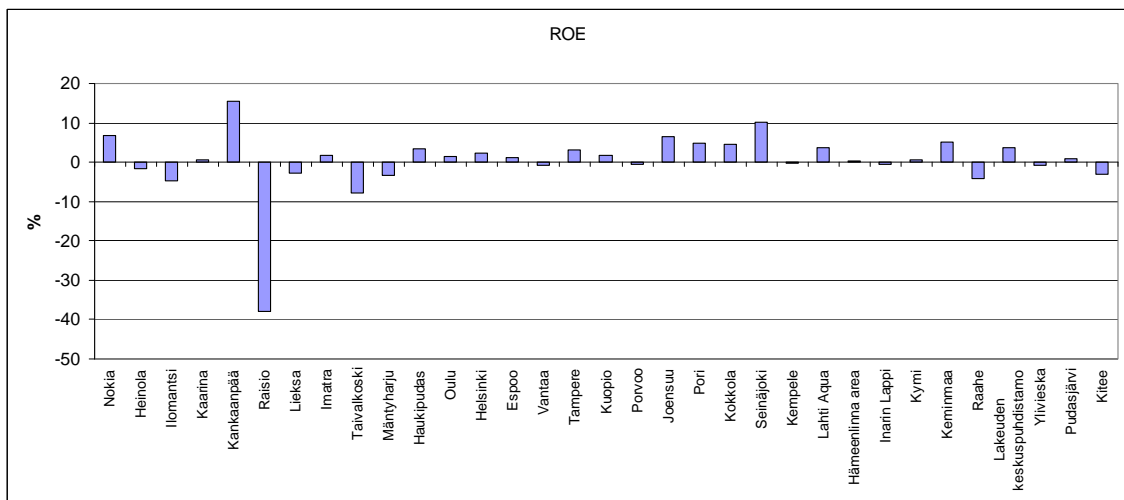


Figure 71. Waterworks ROE, average 2007–2009.

Return on capital invested by municipality (ROCIM) measures the return a municipality yields from the waterworks. Out of 33, four waterworks had a negative ROCIM, resulting from poor revenue. The best ROCIM values were noted for Kankaanpää, Tampere and Helsinki waterworks.

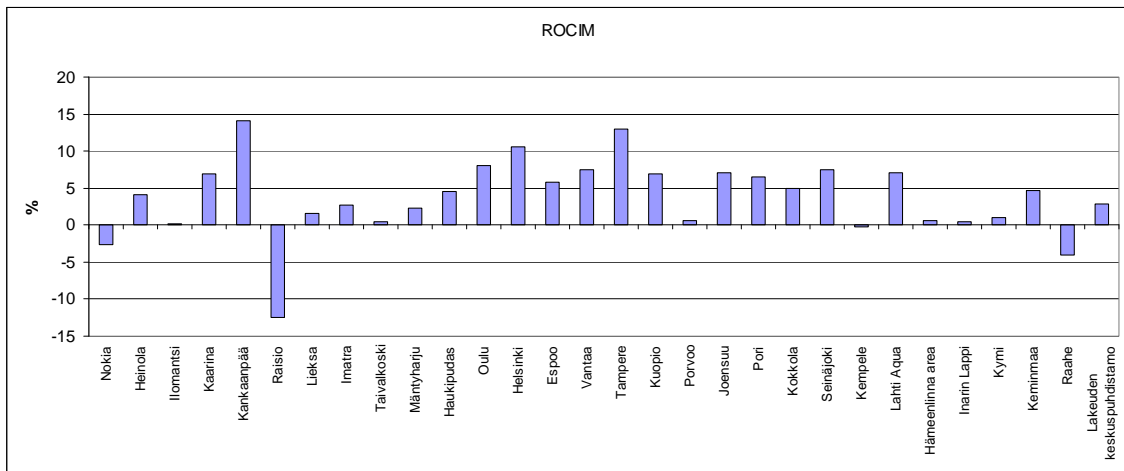


Figure 72. Waterworks ROCIM, 2007–2009 average.

In the comparison of waterworks by ownership model, MOEs produced the best results for ROA, ROI, ROE and ROCIM. This is shown in Figure 73. Cooperative waterworks made losses, but their business model is a non-profit service, which provides owners with the necessary water supply at the lowest cost. Due to the poor financial performance of Raisio (M), the overall performance of the group is much lower than if Raisio had been excluded. Municipal departments would most likely in that case outperform MOCs.

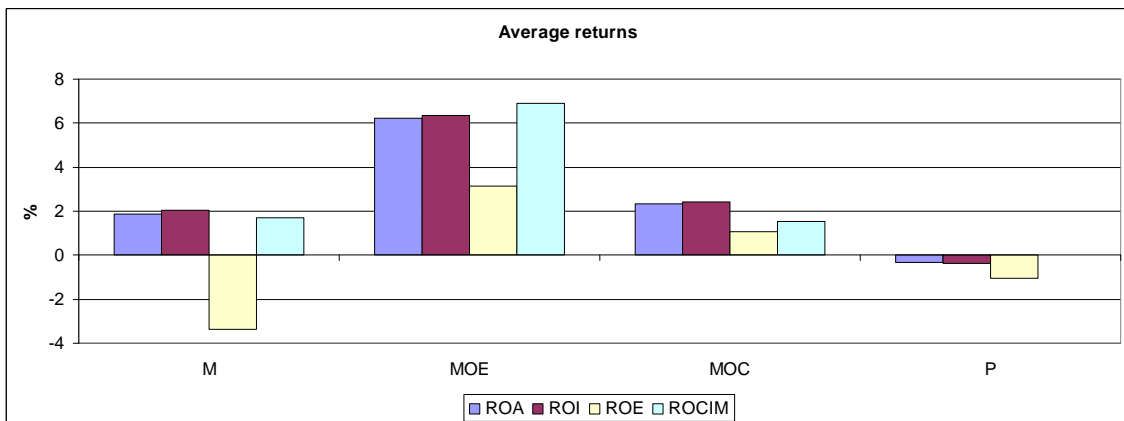


Figure 73. Waterworks returns by ownership, average 2007–2009.

As noted earlier in the general analyses, waterworks at the industry level do not correlate with market risk, as measured by the beta values. All values are almost insignificantly different from zero. This makes sense as water is a basic utility the demand for which does not respond to market fluctuations.

## Annex 2: Sector-specific in-depth studies

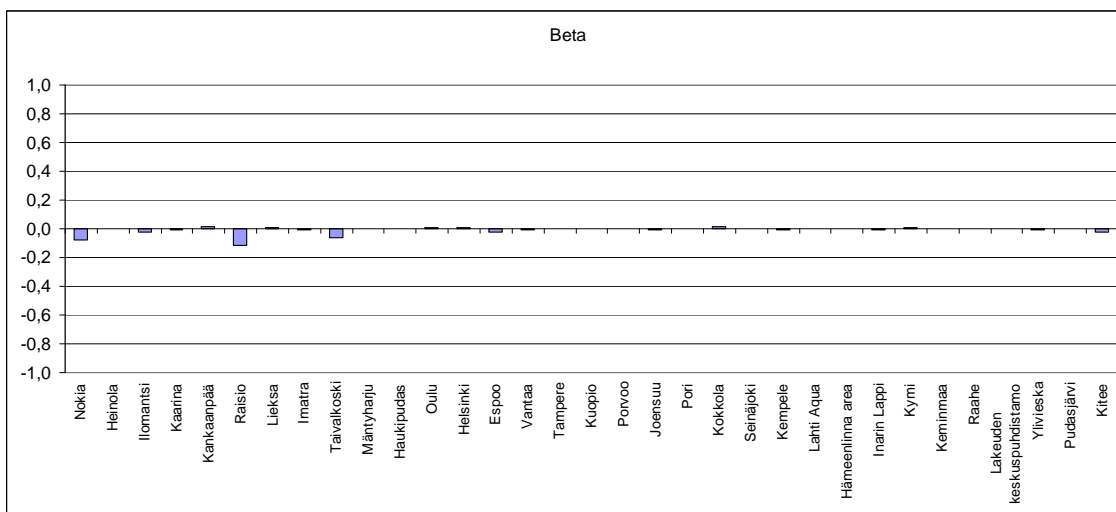


Figure 74. Waterworks beta values, average 2007–2009.

The cost of equity measures the requirements of revenue with respect to shareholder equity. Figure 75 shows that nearly all waterworks have a requirement for cost of equity close to the risk-free interest rate of 3.58%. The greater the beta value and the associated risk is, the greater the required revenue.

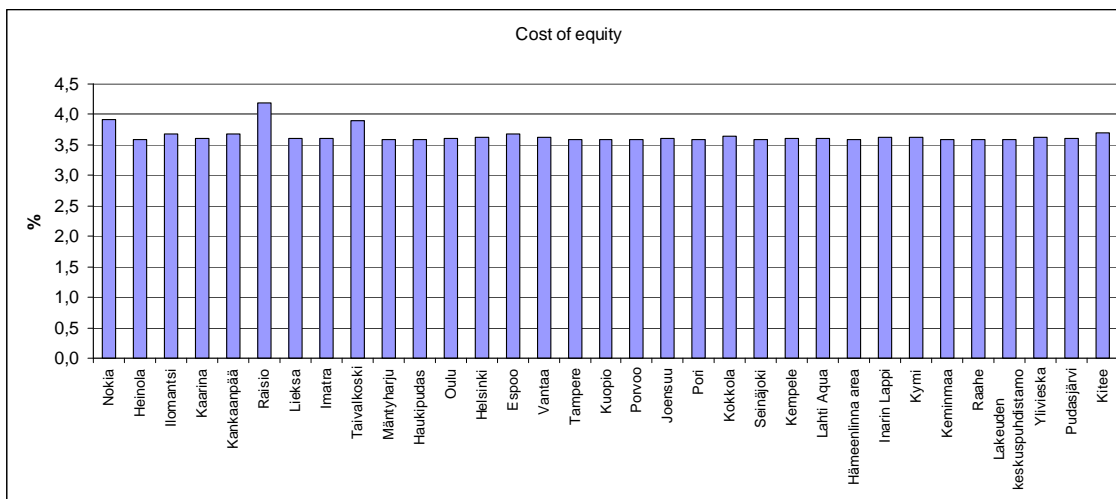


Figure 75. Waterworks cost of equity, average 2007–2009.

If waterworks entered the financial markets to borrow money on the basis of their financial statements and operating results, they would face interest rates above 20%, if they were even considered eligible. A good rating (interest rate below 5.08%) would only apply to eight waterworks and the best rating would be for the Kankaanpää waterworks and Lahti Aqua. In reality, however, the backing of municipalities enables these waterworks to meet the market interest for lending.



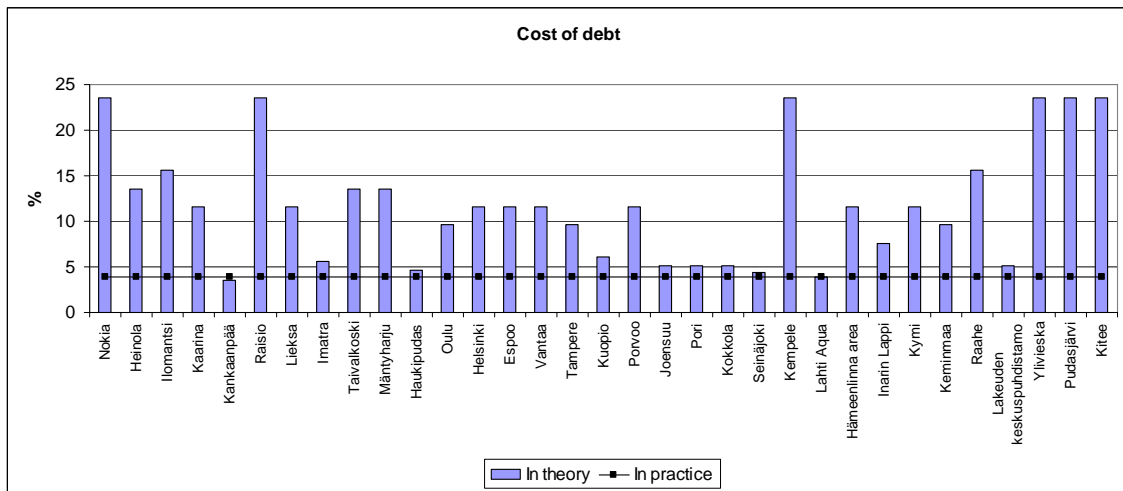


Figure 76. Waterworks cost of debt, average 2007–2009.

When analysed by ownership model, private waterworks would be classified in the worst credit rating based on their financial statements. They would face a high cost of debt. For MOEs the theoretical requirement for cost of capital is smallest for waterworks.

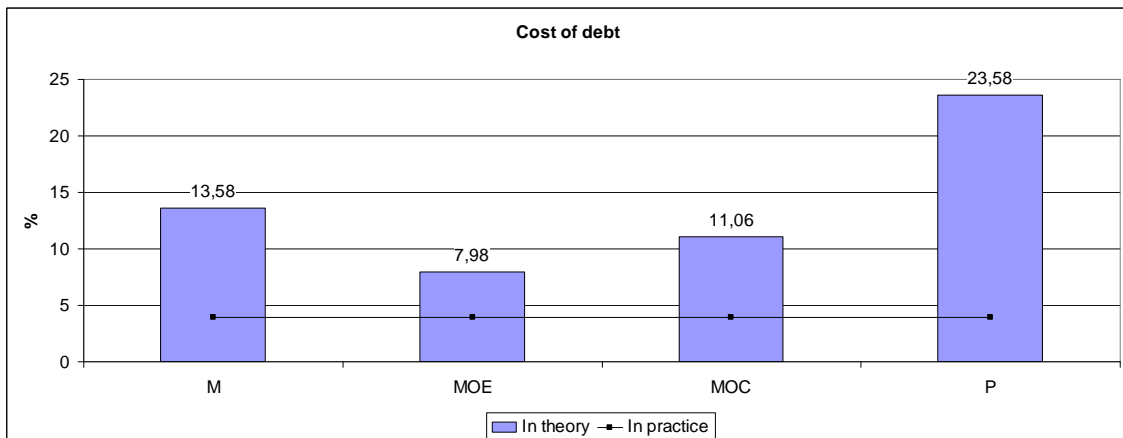


Figure 77. Waterworks cost of debt by ownership, average 2007–2009.

The weighted average cost of capital (WACC) is in some cases affected by the treatment of requirement of return on capital. For instance, the Raisio waterworks WACC would, if calculated theoretically, be above 18%, but in reality it has been closer to 4%. In practice, the expected value of WACC is relatively small, between 3.5% and 4.0%.

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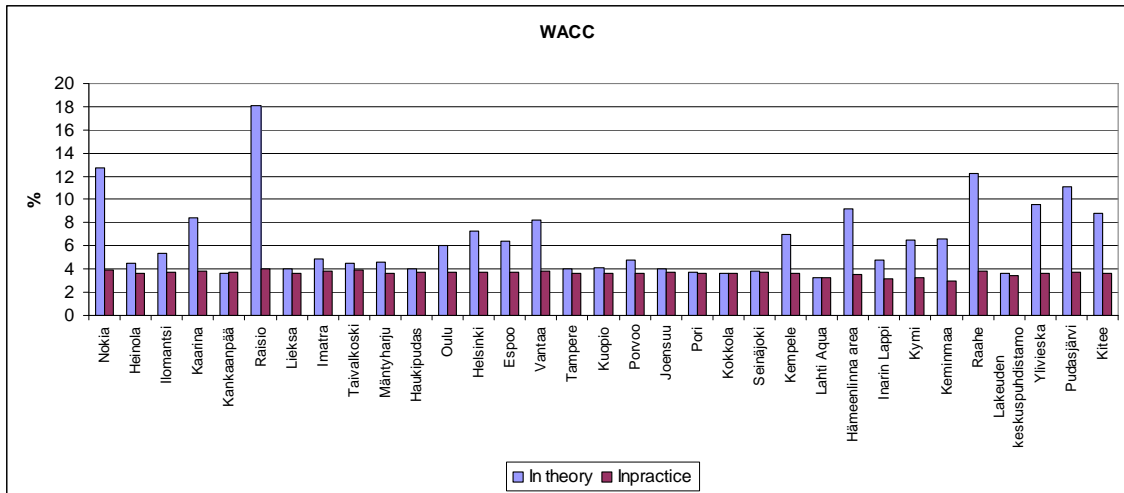


Figure 78. Waterworks weighted average cost of capital, WACC.

In theory the highest return expectations should be on private and municipal waterworks, but in practice there are no major differences between the returns. Due to taxes, MOCs have a lower requirement on return. This tax impact applies to cooperative waterworks as well, but in reality they had so few years of profit making that no taxes were paid. This has lowered the impact of taxation on returns.

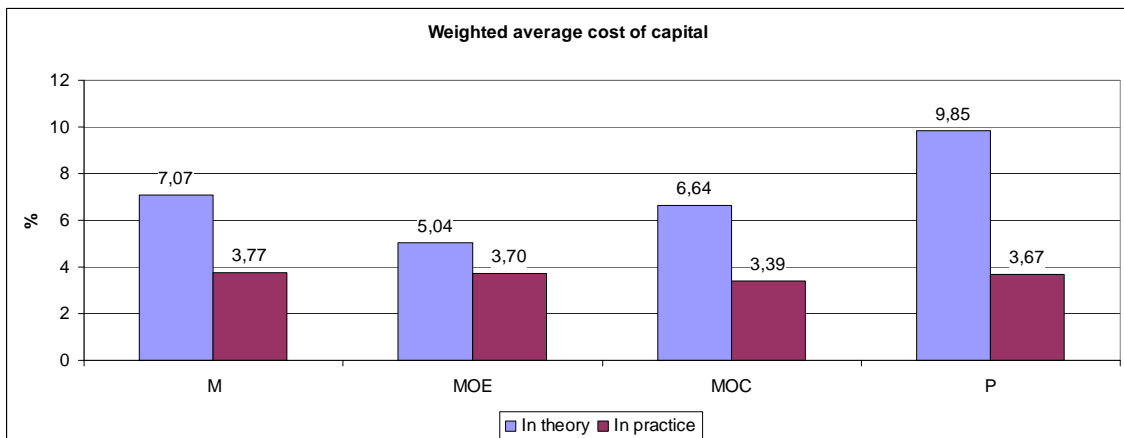


Figure 79. Waterworks weighted average cost of capital, WACC, grouped by ownership.

Regardless of ownership, waterworks are free from market risk as measured by the beta value. The only group that has produced returns above the risk-free interest rate is MOEs. Others have performed below the risk free investment in government bonds. Private cooperatives have produced a loss, as shown in Figure 80.

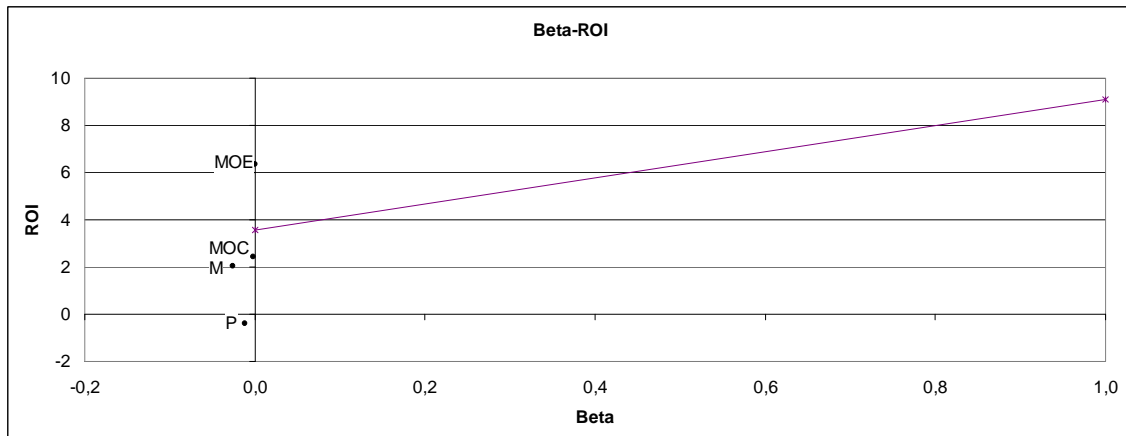


Figure 80. Beta-ROI relationships for waterworks.

We are looking at four waterworks in greater detail: Tampere, Nokia, Joensuu and Vantaa. These represent two good performers (Tampere and Joensuu) and two weak performers (Nokia and Vantaa). It is useful to see how their performance differs.

For Tampere, data for 2009 were not available. The information is based on financial data from 2005–2008. During the period the turnover grew steadily; the net result remained positive, as did the free cash flow. Investments were relatively moderate over the period and the City of Tampere received a fixed compensation over the period.

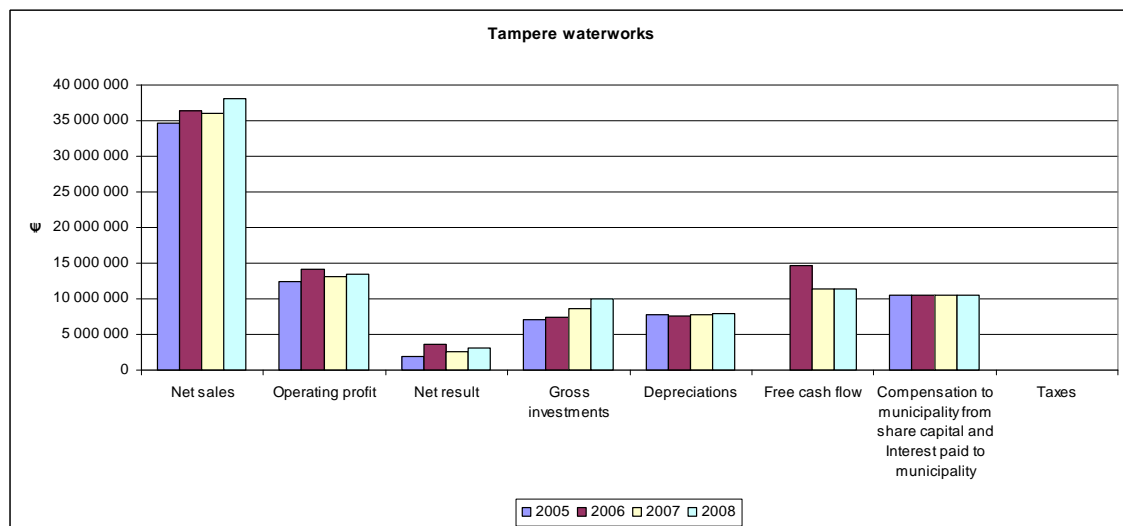


Figure 81. Tampere waterworks basic financial data 2005–2008.

Tampere waterworks has been a good investment opportunity for investors and the City of Tampere. It has provided a return for investors equal to the risk-free investment level.

This is shown by the financial indicators in Figure 82.

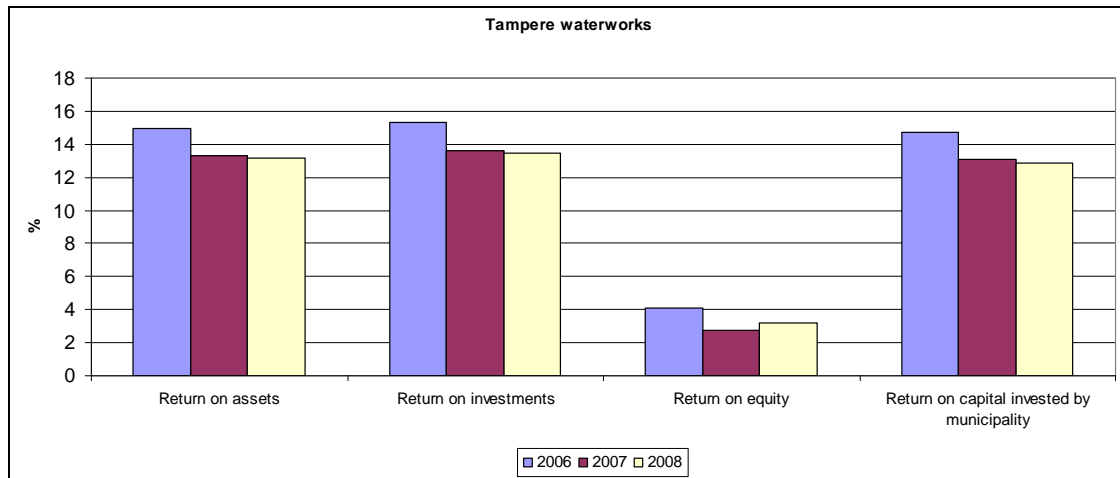


Figure 82. Tampere waterworks financial indicators, 2006–2008.

The striking difference is the Nokia waterworks results for 2007, resulting from the crisis caused by leakage of non-purified water into the pipelines. This example shows how sensitive waterworks are with respect to major disasters. However, the returns to the municipality remained the same even during the crisis.

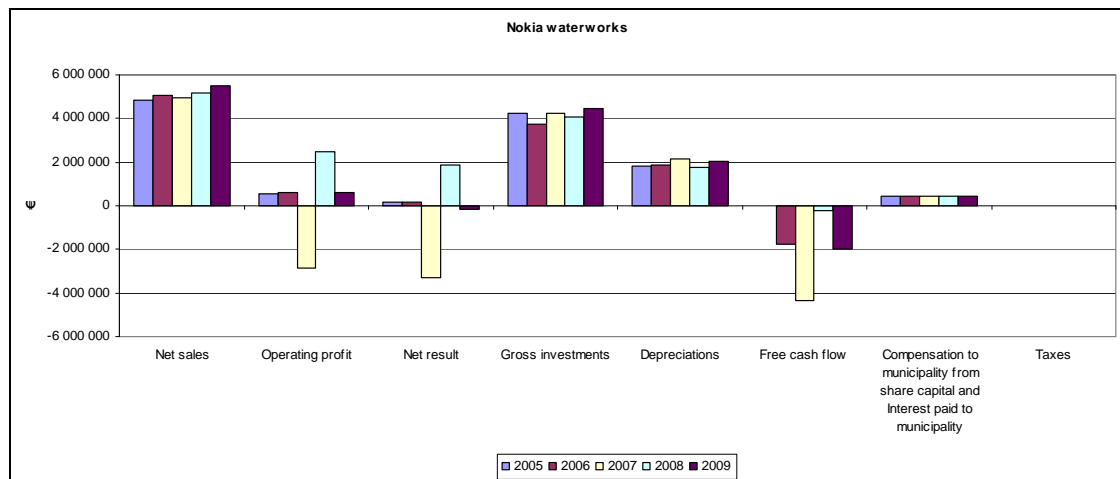


Figure 83. Tampere waterworks financial indicators, 2005–2009.

The impact of the 2007 crisis is also seen in the returns calculated in Figure 84. The crisis was not prolonged, and the 2008 result was above the pre-crisis level. The fact that water supply is a necessity helps the waterworks to provide good financial results despite temporary setbacks.

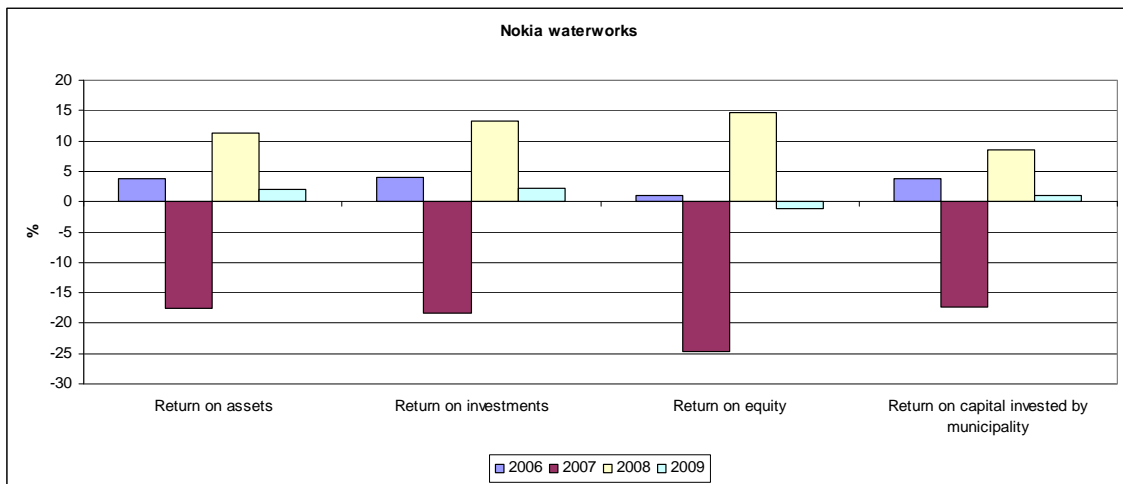


Figure 84. Nokia waterworks financial indicators, 2006–2008.

Joensuu waterworks has continued to improve its net sales, highlighted by the highest turnover in 2009. The entity has not been affected by the economic downturn. The net result and free cash flow are positive and the City of Joensuu has received a relatively stable compensation over the period of analysis, as shown in Figure 85.

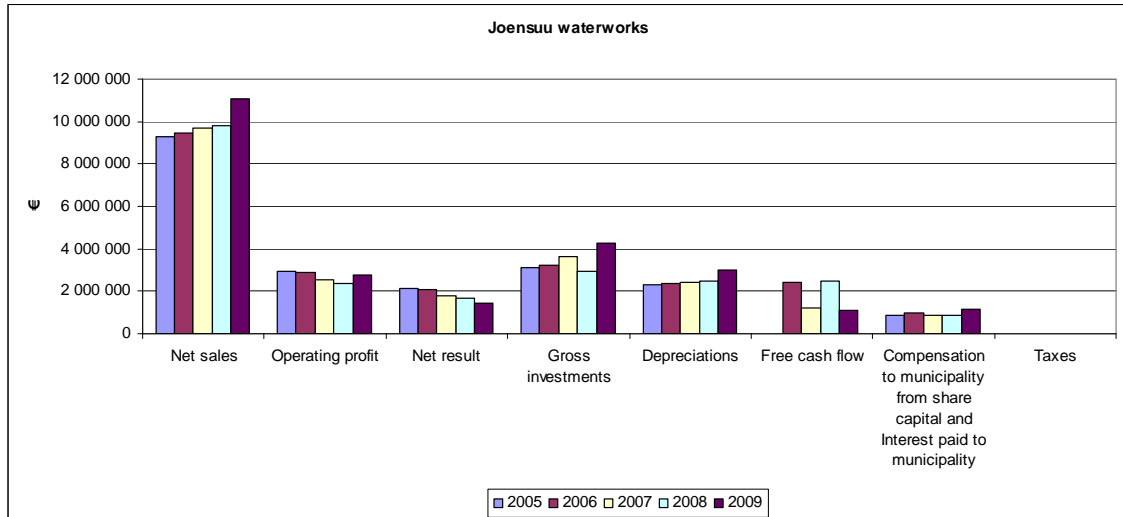


Figure 85. Joensuu waterworks financial information, 2005–2009.

Joensuu waterworks has provided good returns for its investors, owners and the municipality. The level of returns has declined but has been greater than the risk-free investment requirement.

Annex 2: Sector-specific in-depth studies

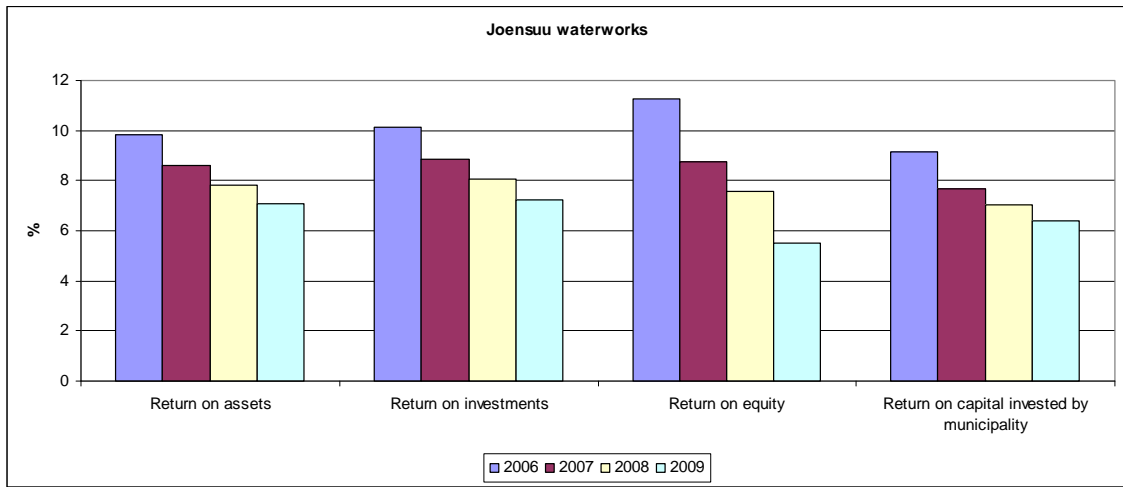


Figure 86. Joensuu waterworks financial indicators, 2006–2009.

Vantaa Waterworks has produced a negative net result, despite its large operational volume. The reason for this could be the competition set up in the Helsinki region. Free cash flow is positive and the City of Vantaa has received a steady revenue. Since the beginning of 2010 Vantaa Waterworks has been part of the Helsinki Region Environmental Services cluster (HSY) together with Helsinki, Kauniainen and Espoo Waterworks.

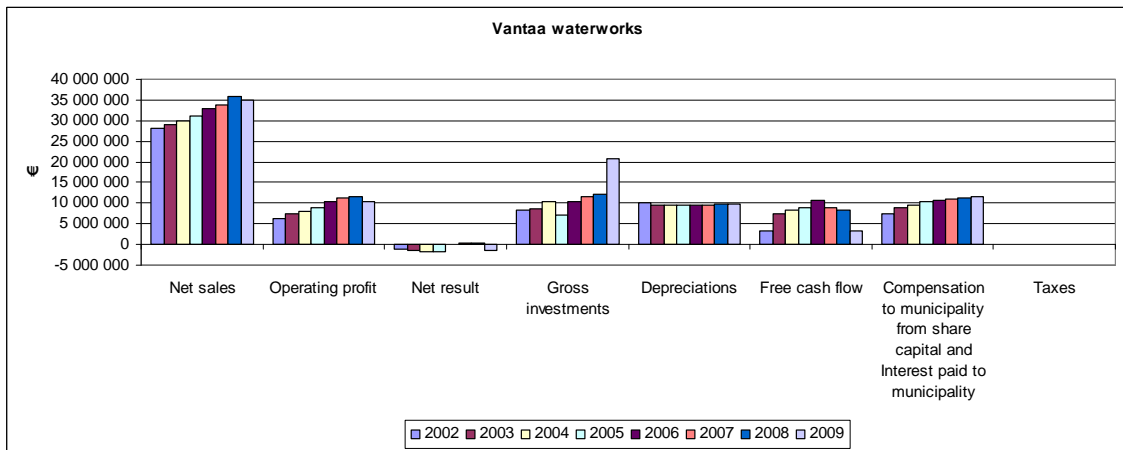


Figure 87. Vantaa waterworks basic financial data, 2002–2009.

Vantaa waterworks has provided a good return for the City of Vantaa and also good ROA and ROI values. However, return on equity (ROE) has been negative, meaning that owners have taken a loss. Other investors have received revenues exceeding the risk-free level. Key financial indicators for Vantaa waterworks are shown in Figure 88.

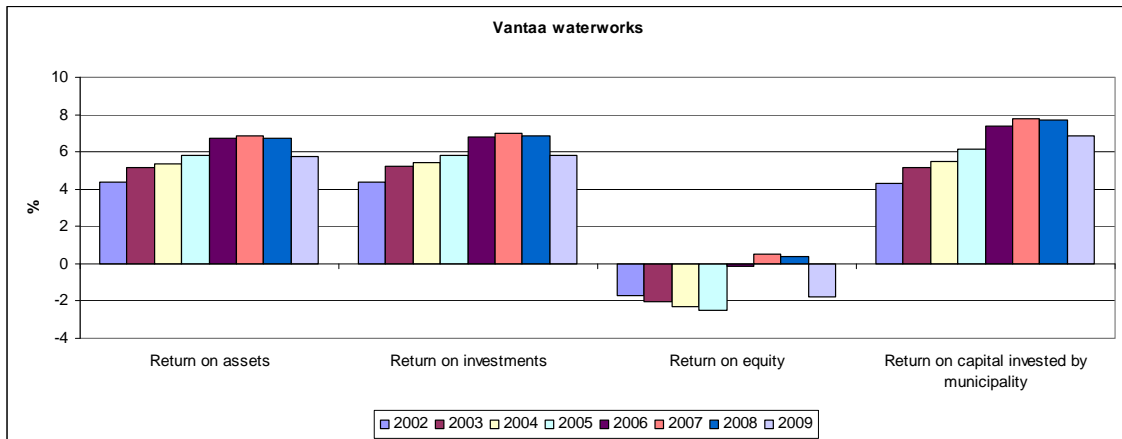


Figure 88. Vantaa waterworks key financial indicators, 2002–2009.

## Energy

For the energy sector we have analysed three of the four companies in our sample: Oulu energy, Helsinki energy and Fortum. Jyväskylä Energy requested that their data not be published separately so these were omitted from the analyses.

The turnover of Oulu energy has nearly doubled over the period of 9 years. The net result has remained positive but in 2009 the result halved compared to the previous year. The company has invested with a steady flow, the free cash flow has remained positive in all but one year. The compensation to municipality has been on roughly the same level for all the years of analysis.

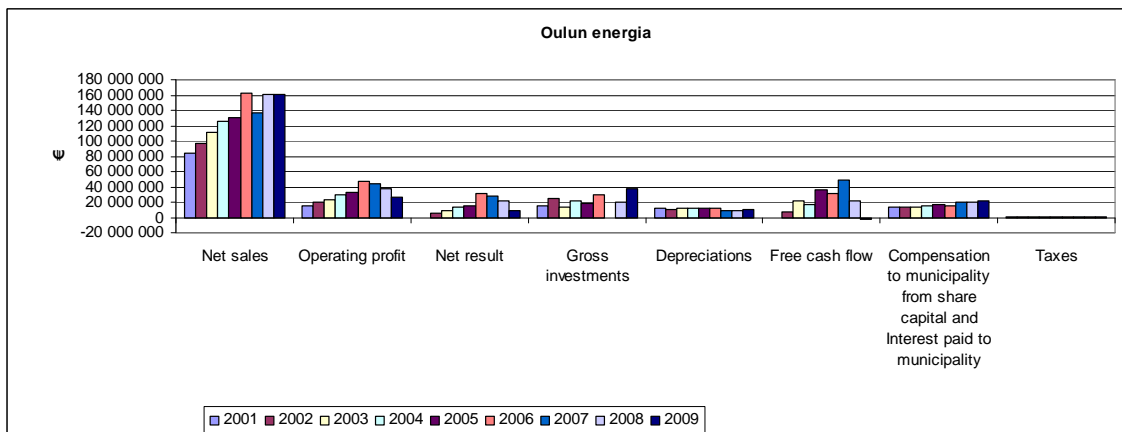


Figure 89. Oulu energy basic financial data.

Annex 2: Sector-specific in-depth studies

Looking at the basic financial indicators of Oulun energy in Figure 90, we can note that according to all indicators, Oulu energy generated for its investors a return of more than 10%. From 2006 onwards the return has declined substantially.

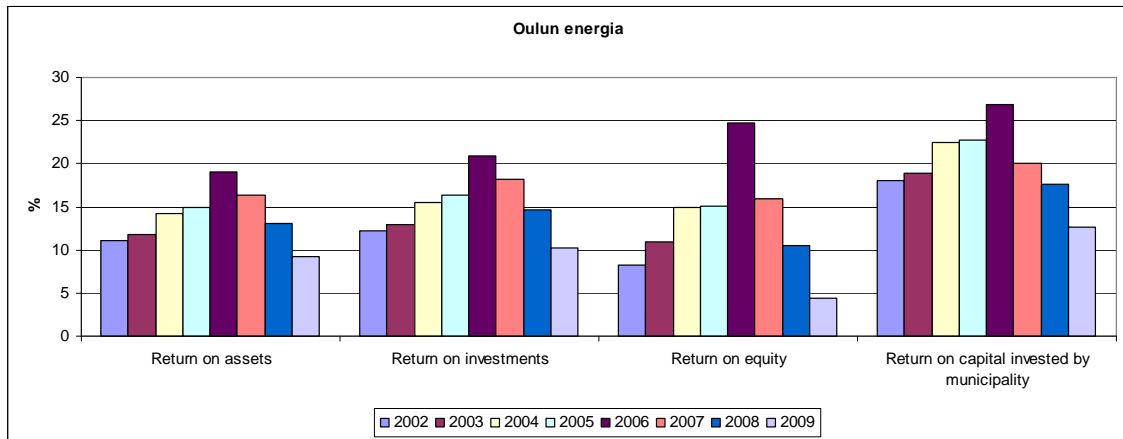


Figure 90. Oulu energy basic financial indicators.

For Helsinki energy, the net sales continued to increase over the period, including 2009 despite the worsening situation of the Finnish economy. The net result and free cash flow have remained positive and the company has compensated the City of Helsinki a fixed return every year as shown in Figure 91.

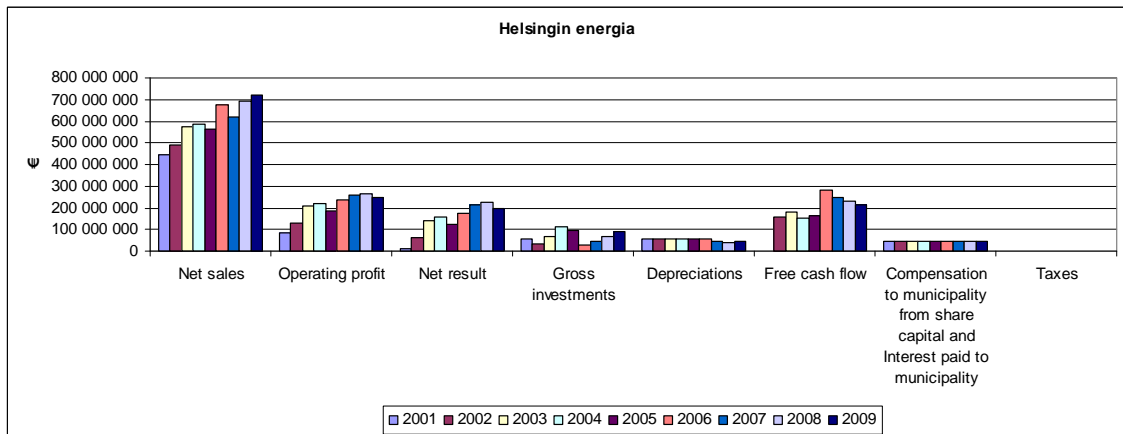


Figure 91. Helsinki energy basic financial information.

Helsinki Energy has been able to generate good revenue for the City of Helsinki and other stakeholders; in several years the returns exceeded 15%, as shown in Figure 92.



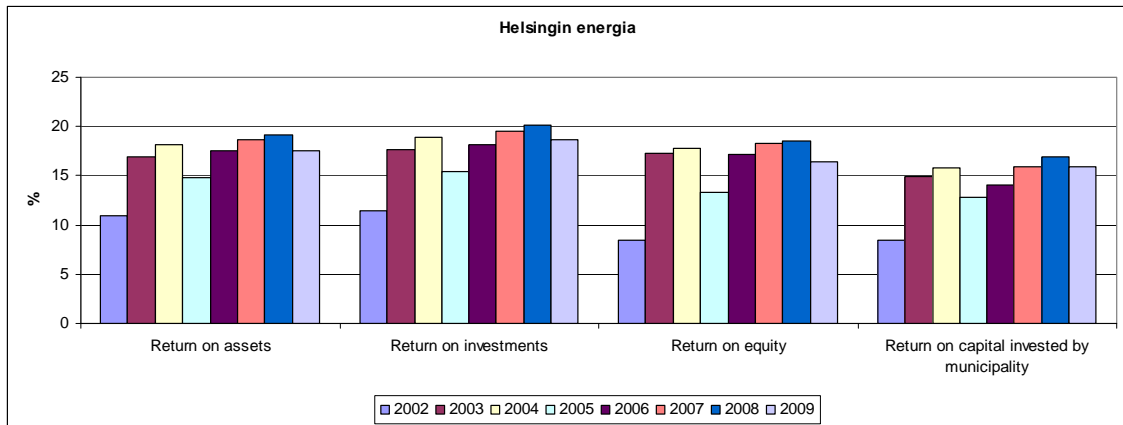


Figure 92. Helsinki Energy key financial indicators.

Despite the halving of Fortum’s net sales in 2005, the net result has remained positive. Free cash flow has responded to changes in gross investments. Fortum having sold off its assets in 2005 is one of the factors contributing to the decline in net sales. Figure 93 shows the basic financial data for Fortum.

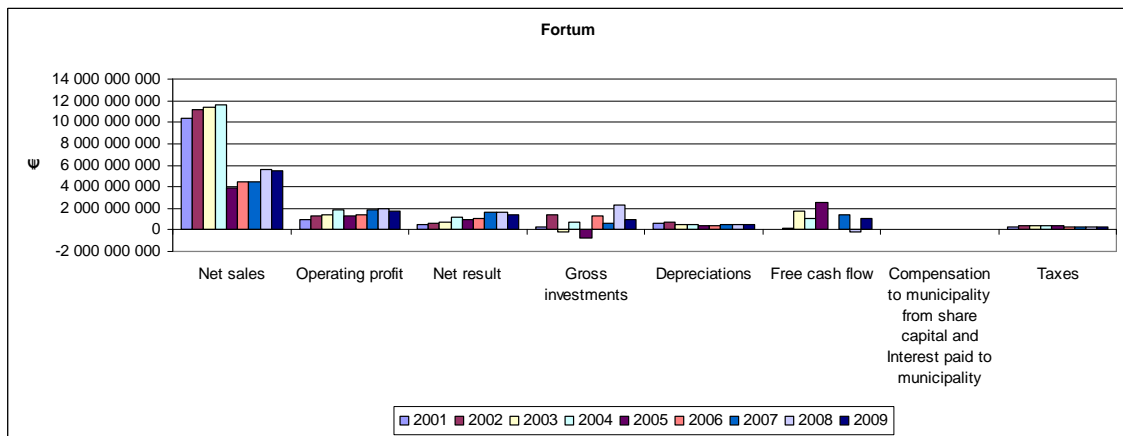


Figure 93. Fortum basic financial data.

As seen in Figure 94, Fortum has been able to provide a stream of revenue to the state and other stakeholders over the period of analysis. The only slight decline is observed in 2008–2009, when the indicators showed a modest drop in revenues received by investors.

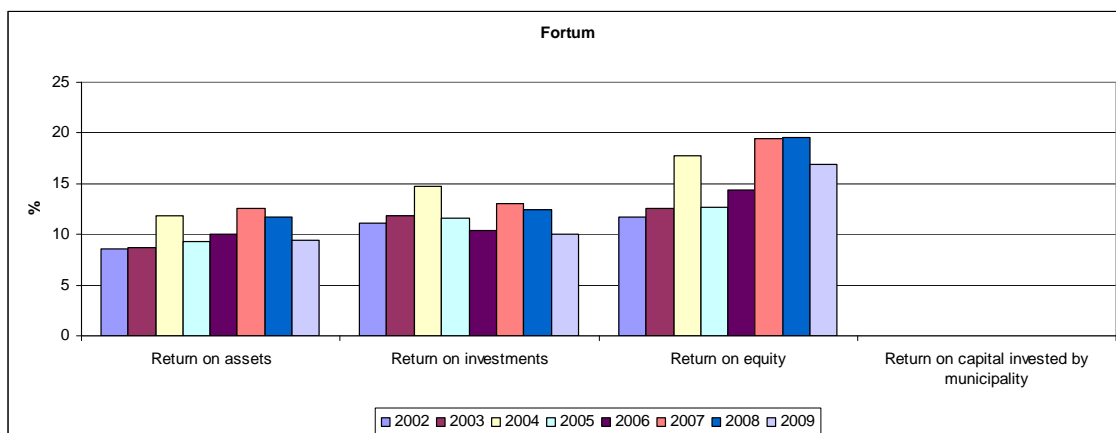


Figure 94. Fortum key financial indicators.

### Returns to municipality

One of the issues that have come up in the financial analyses is what the roles are of the MOCs and MOEs for the municipality in terms of the revenue they generate to the municipality. The first observation was that MOCs do not pay compensation to municipalities; the agreement between a MOC and the municipality on any compensation mechanism in these cases is not clear from the financial information. The second observation, highlighted in Table 5, is that municipalities tend to receive a relatively large proportion of the net sales as compensation from the MOEs. For instance, for ports the average compensation received by municipalities ranges between 5.7% and 27%. For waterworks, the big waterworks tend return a greater compensation to the municipalities than the small ones.

The ROCIM figures are also listed in Table 10 as the average of the period. With the exception of some waterworks, the entities have been good investments for municipalities. The ROCIM values show that municipalities have in most cases received a return exceeding the risk-free rate (3.58%). For both perspectives, the municipalities can view the industries as a potential for collecting revenues that are both stable and significant to the municipality’s economy.

Table 10.

	Compensation to municipality and interest paid to municipality/ Net sales, %										ROCIM, %
	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average	Average
Port of Naantali	15.6	53.6	56.5	60.4	3.7	26.3	53.7	54.4	9.7	<b>37.10</b>	50.41
Port of Oulu	14.0	13.0	12.6	12.5	13.2	12.1	17.4	21.5	20.6	<b>15.21</b>	4.95
Port of Kemi	14.1	12.0	10.6	18.1	21.3	25.8	24.6	27.5	18.5	<b>19.17</b>	9.09
Port of Helsinki	11.7	11.0	10.6	9.6	9.3	8.8	7.4	7.2	8.2	<b>9.30</b>	6.40
Port of Turku	22.3	21.9	21.4	21.1	21.3	20.2	19.5	20.0	21.0	<b>20.98</b>	7.31
Port of Kokkola	27.5	29.3	30.1	27.8	25.5	21.0	21.7	18.3	18.1	<b>24.38</b>	9.66
Port of Vaasa	30.2	24.5	32.6	32.7	29.3	32.3	32.5	14.5	14.9	<b>27.05</b>	7.81
Port of Hanko	26.5	19.1	17.0	16.1	14.2	12.8	15.5	14.0	22.7	<b>17.55</b>	25.88
Port of Pori	0.0	0.0	0.0	0.0	0.0	12.1	12.7	14.4	11.9	<b>5.69</b>	4.54
Port of Rauma	20.2	18.6	17.7	16.3	16.6	14.3	13.2	13.6	16.0	<b>16.28</b>	11.68
Port of Kotka	0.8	1.0	0.8	3.7	3.1	2.7	0.2	0.8	0.2	<b>1.49</b>	9.48
Port of Hamina		0.0	0.0	0.0	0.0	0.0	0.0	0.0		<b>0.00</b>	6.69
Nokia waterworks					9.0	8.6	8.7	8.4	7.9	<b>8.53</b>	-0.02
Heinola waterworks							19.7	20.2	20.0	<b>19.98</b>	4.08
Ilomantsi waterworks					10.0	8.7	8.7	8.5	9.0	<b>8.98</b>	1.41
Kaarina waterworks					25.0	24.1	23.1	22.1	23.2	<b>23.50</b>	6.16
Kankaanpää waterworks					0.0	0.0	0.0	0.0	0.0	<b>0.00</b>	13.37
Raisio waterworks					15.5	14.9	16.5	10.0	9.0	<b>13.19</b>	-8.30
Lieksa waterworks						7.9	8.6	9.2	9.2	<b>8.73</b>	2.58
Imatra waterworks				5.8	5.1	4.7	4.4	4.0	3.7	<b>4.62</b>	2.95
Taivalkoski waterworks			10.7	10.6	10.8	9.7	20.3	25.7	21.2	<b>15.57</b>	3.91
Mäntyharju waterworks							11.8	17.0		<b>14.41</b>	2.28
Haukipudas waterworks	0.0	0.0	0.5	3.4	5.2	5.4	5.1	4.9	5.0	<b>3.27</b>	2.30
Oulu waterworks	20.9	19.3	21.2	18.3	22.1	20.4	22.5	22.0	20.8	<b>20.83</b>	9.26
Helsinki waterworks	37.2	34.1	33.5	32.2	31.5	29.0	28.8	27.6	25.7	<b>31.08</b>	14.00
Espoo waterworks	29.0	27.5	25.3	21.8	21.1	20.9	17.6	17.2	20.1	<b>22.28</b>	6.06
Vantaa waterworks		26.5	30.8	32.2	33.8	32.5	32.2	31.6	33.1	<b>31.61</b>	6.37
Tampere waterworks					30.3	28.9	29.1	27.6		<b>28.98</b>	13.62
Kuopio waterworks					12.1	13.2	13.0	13.1		<b>12.85</b>	7.73
Porvoo waterworks							2.3	2.3	4.5	<b>3.02</b>	0.59
Joensuu waterworks					9.4	10.2	9.0	9.0	10.6	<b>9.66</b>	7.77
Pori waterworks							12.6	10.0	10.2	<b>10.92</b>	6.53
Kokkola waterworks					10.1	9.2	8.7	8.4	7.4	<b>8.76</b>	4.48
Seinäjoki waterworks							4.5	4.0	5.7	<b>4.73</b>	7.55
Kempele waterworks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.00</b>	-0.16
Lahti Aqua waterworks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.00</b>	3.33
Hämeenlinna area waterworks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.00</b>	-0.66
Inarin Lappi waterworks				0.0	0.0	0.0	0.0	0.0	0.0	<b>0.00</b>	1.90
Kymi waterworks							0.0	0.0	0.0	<b>0.00</b>	0.97
Keminmaa waterworks							13.0	12.3		<b>12.64</b>	4.70
Raahe waterworks							0.0	0.0		<b>0.00</b>	-4.11
Lakeuden keskuspuhdistamo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.00</b>	1.40
Oulu energy	15.8	13.4	11.8	12.3	13.0	9.5	14.4	12.3	13.0	<b>12.83</b>	19.23
Helsinki energy	10.7	9.7	8.3	8.1	8.4	7.0	7.6	6.8	6.6	<b>8.13</b>	13.26

Table 11 lists the compensation figures in euro. We can note that the averages are substantial for all ports, large waterworks and energy companies. The full data are shown in the table.

Annex 2: Sector-specific in-depth studies

Table 11.

	Compensation to municipality and interest paid to municipality, €									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average
Port of Naantali	802 002	3 182 677	3 372 781	3 719 786	239 959	1 697 089	4 306 047	4 841 651	702 444	<b>2 540 493</b>
Port of Oulu	504 564	505 000	524 706	547 731	549 036	664 279	1 019 089	1 242 021	1 096 841	<b>739 252</b>
Port of Kemi	756 846	738 700	646 000	1 066 250	1 324 038	1 697 956	1 745 875	1 658 299	920 548	<b>1 172 724</b>
Port of Helsinki	8 009 659	7 839 966	7 670 747	7 501 529	7 332 310	7 163 092	6 993 874	6 824 655	6 655 437	<b>7 332 363</b>
Port of Turku	5 027 322	4 962 406	4 944 092	4 918 359	4 892 590	4 866 786	4 841 089	4 817 608	4 813 355	<b>4 898 179</b>
Port of Kokkola	1 665 380	1 658 318	1 655 098	1 697 830	1 731 313	1 805 459	1 799 584	1 929 194	1 945 311	<b>1 765 276</b>
Port of Vaasa	821 611	637 664	786 661	745 218	611 018	770 200	825 364	370 579	360 621	<b>658 771</b>
Port of Hanko	1 681 879	1 681 879	1 681 879	1 681 879	1 681 879	1 681 900	1 681 879	1 682 037	1 682 011	<b>1 681 914</b>
Port of Pori	0	0	0	0	0	1 660 000	1 660 000	1 660 000	1 660 000	<b>737 778</b>
Port of Rauma	2 186 000	2 186 000	2 186 000	2 186 000	2 186 000	2 186 000	2 186 000	2 186 000	2 186 000	<b>2 186 000</b>
Port of Kotka	151 851	200 000	170 000	953 589	838 466	844 481	75 000	337 500	75 000	<b>405 099</b>
Port of Hamina		0	0	0	0	0	0	0	0	<b>0</b>
Nokia waterworks					435 190	435 190	435 190	435 190	435 190	<b>435 190</b>
Heinola waterworks							548 498	598 621	596 414	<b>581 178</b>
Iloantsi waterworks					50 194	47 926	48 071	46 315	46 144	<b>47 730</b>
Kaarina waterworks					833 975	833 975	857 481	784 229	1 017 628	<b>865 458</b>
Kankaanpää waterworks					0	0	0	0	0	<b>0</b>
Raisio waterworks					692 308	746 247	892 483	650 659	540 005	<b>704 340</b>
Liekka waterworks						117 327	123 609	129 512	135 316	<b>126 441</b>
Imatra waterworks				247 149	233 257	218 072	202 969	188 996	174 458	<b>210 817</b>
Taivalkoski waterworks			30 496	29 786	31 899	30 227	69 926	96 178	82 324	<b>52 977</b>
Mäntyharju waterworks							64 025	101 598	0	<b>55 208</b>
Haukipudas waterworks	0	0	8 460	53 907	87 400	100 000	100 000	100 000	110 000	<b>62 196</b>
Oulu waterworks	3 560 688	3 579 124	4 113 479	3 573 353	4 347 705	4 049 826	4 478 142	4 585 245	4 585 457	<b>4 097 002</b>
Helsinki waterworks	32 018 000	31 431 000	30 847 000	30 259 000	29 676 000	29 113 000	28 501 000	27 915 000	27 328 990	<b>29 676 554</b>
Espoo waterworks	9 787 717	9 659 584	9 531 433	8 493 648	8 409 344	8 325 040	8 240 735	8 156 431	8 853 116	<b>8 828 561</b>
Vantaa waterworks		7 463 892	9 000 000	9 615 000	10 527 000	10 685 000	10 845 000	11 302 000	11 602 000	<b>10 129 987</b>
Tampere waterworks					10 500 000	10 500 000	10 500 000	10 500 000	0	<b>8 400 000</b>
Kuopio waterworks					1 545 700	1 829 000	1 813 000	1 800 000	0	<b>1 397 540</b>
Porvoo waterworks							150 000	150 000	300 000	<b>200 000</b>
Joensuu waterworks					879 526	970 258	872 268	883 068	1 171 399	<b>955 304</b>
Pori waterworks							1 684 000	1 684 000	1 684 000	<b>1 684 000</b>
Kokkola waterworks					426 360	428 569	429 254	430 690	490 230	<b>441 021</b>
Seinäjoki waterworks							281 140	265 139	584 970	<b>377 083</b>
Kempele waterworks	0	0	0	0	0	0	0	0	0	<b>0</b>
Lahti Aqua waterworks	0	0	0	0	0	0	0	0	0	<b>0</b>
Hämeenlinna area waterworks	0	0	0	0	0	0	0	0	0	<b>0</b>
Inarin Lappi waterworks				0	0	0	0	0	0	<b>0</b>
Kymi waterworks							0	0	0	<b>0</b>
Keminmaa waterworks							184 097	184 097	0	<b>122 731</b>
Raahe waterworks							0	0	0	<b>0</b>
Lakeuden keskuspuhdistamo	0	0	0	0	0	0	0	0	0	<b>0</b>
Oulu energy	13 349 000	13 008 000	13 012 000	15 450 000	16 930 000	15 430 000	19 730 000	19 839 000	21 053 000	<b>16 422 333</b>
Helsinki energy	47 428 995	47 429 000	47 429 000	47 429 000	47 429 000	47 429 000	47 429 000	47 429 000	47 429 000	<b>47 428 999</b>

# Annex 3: Yearly data of studied entities

## Port of Oulu

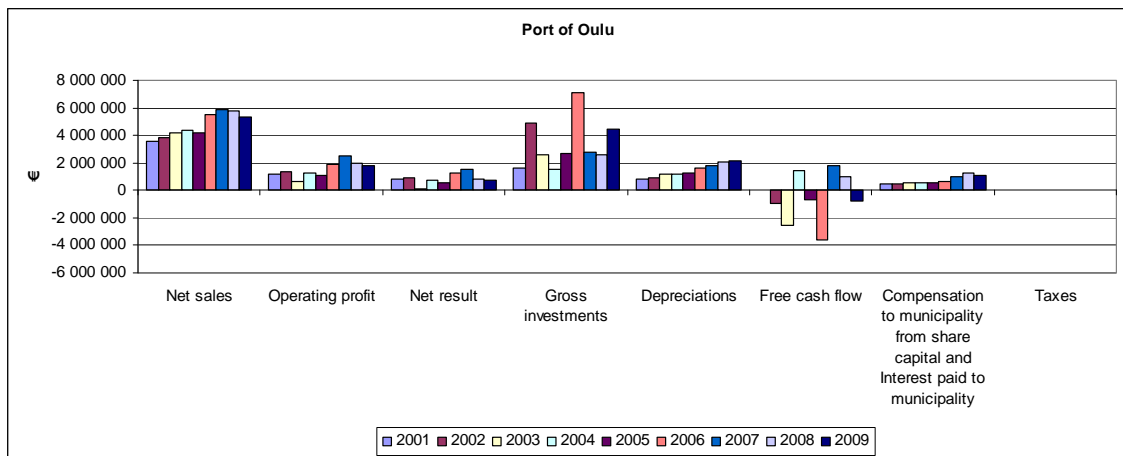


Figure 95. Port of Oulu, financial data, 2001–2009.

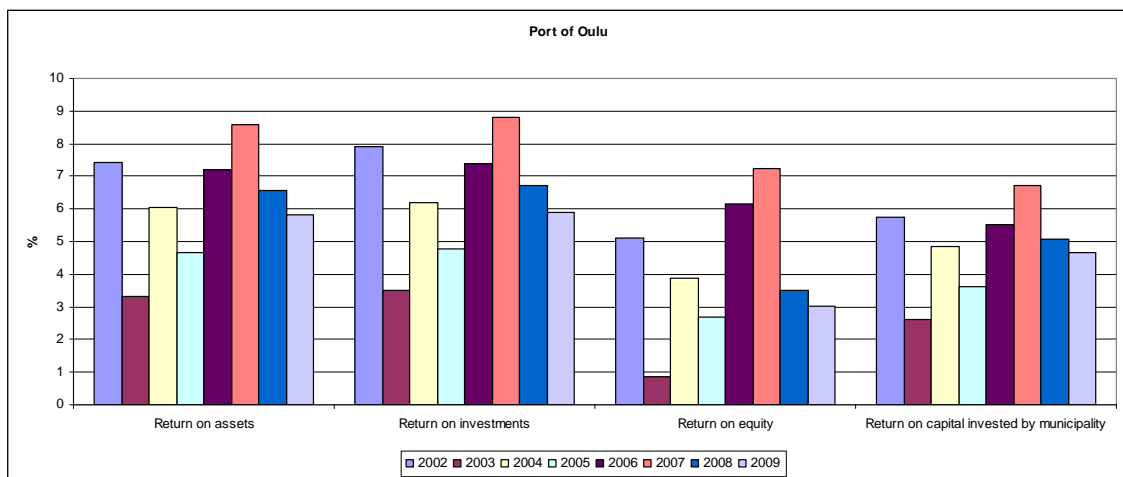


Figure 96. Port of Oulu, return ratios, 2002–2009.

### Port of Kemi

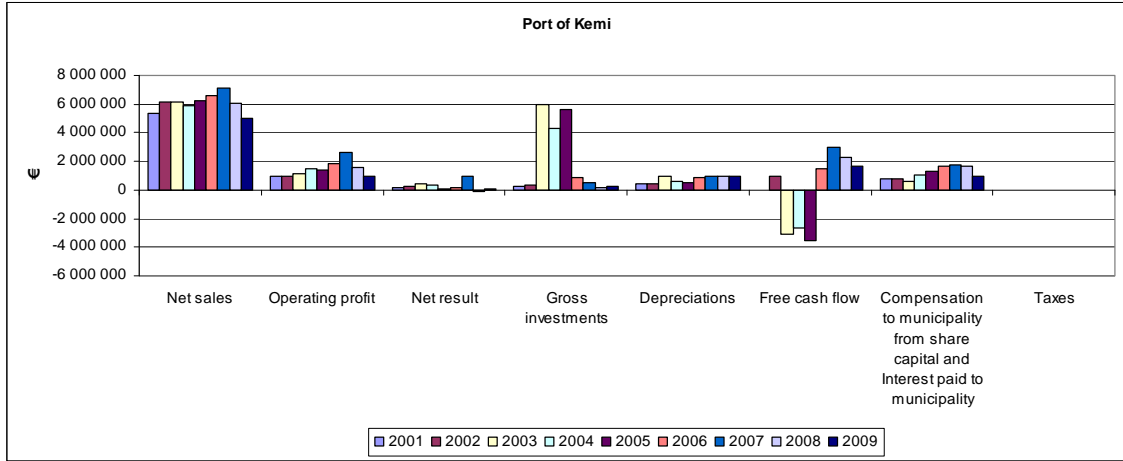


Figure 97. Port of Kemi, financial data, 2001–2009.

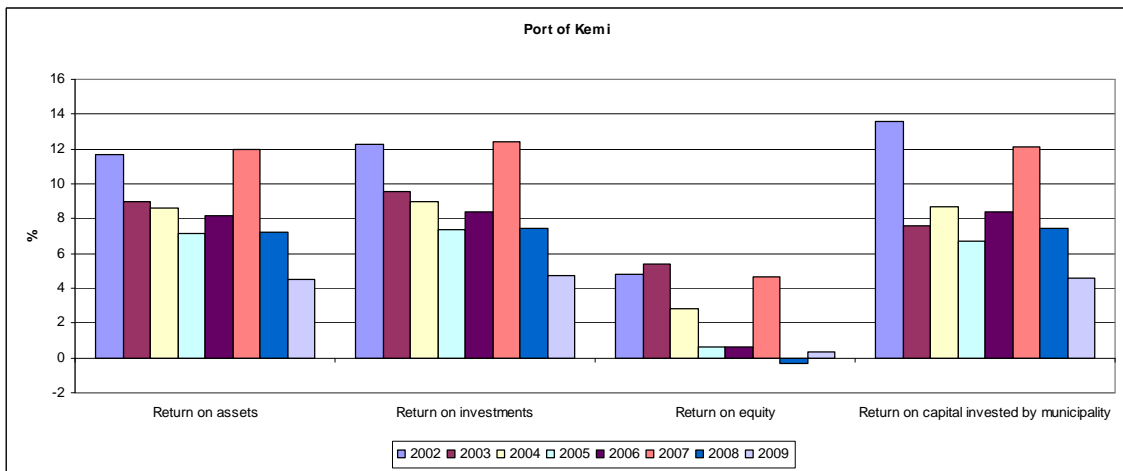


Figure 98. Port of Kemi, return ratios, 2002–2009.

## Port of Helsinki

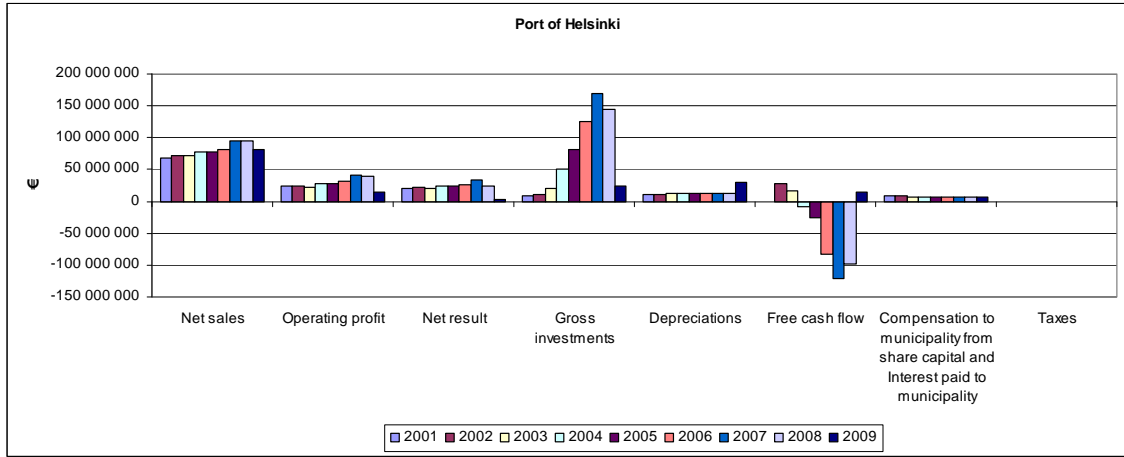


Figure 99. Port of Helsinki, financial data, 2001–2009.

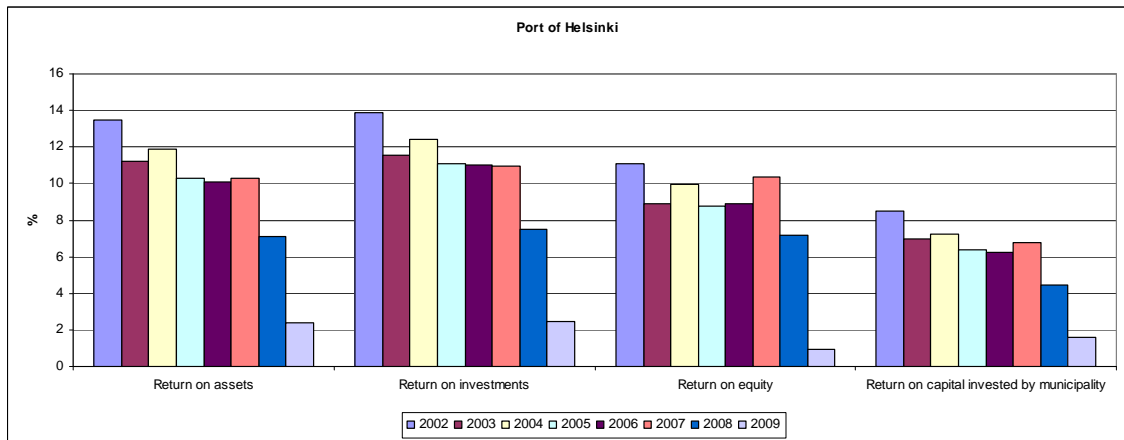


Figure 100. Port of Helsinki, return ratios, 2002–2009.

## Port of Turku

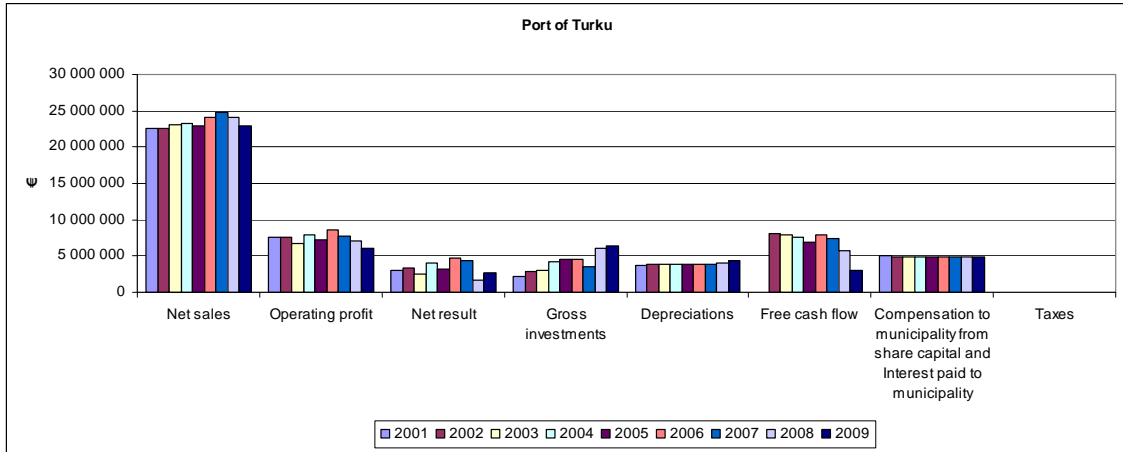


Figure 101. Port of Turku, financial data, 2001–2009.

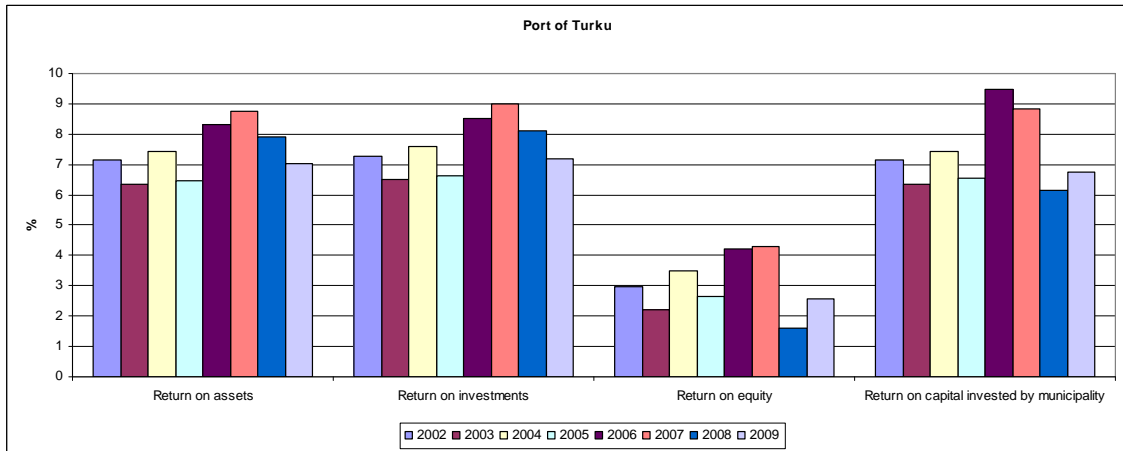


Figure 102. Port of Turku, return ratios, 2002–2009.



## Port of Kokkola

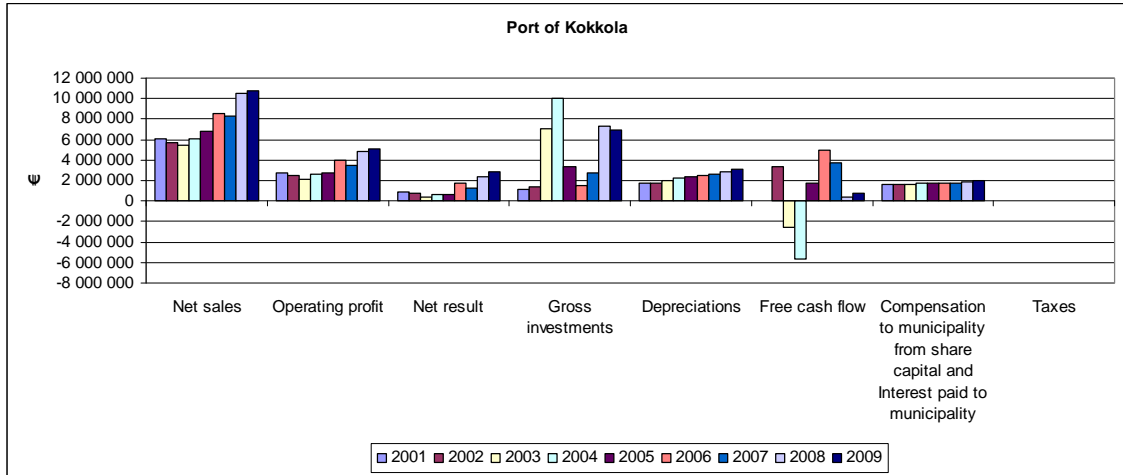


Figure 103. Port of Kokkola, financial data, 2001–2009.

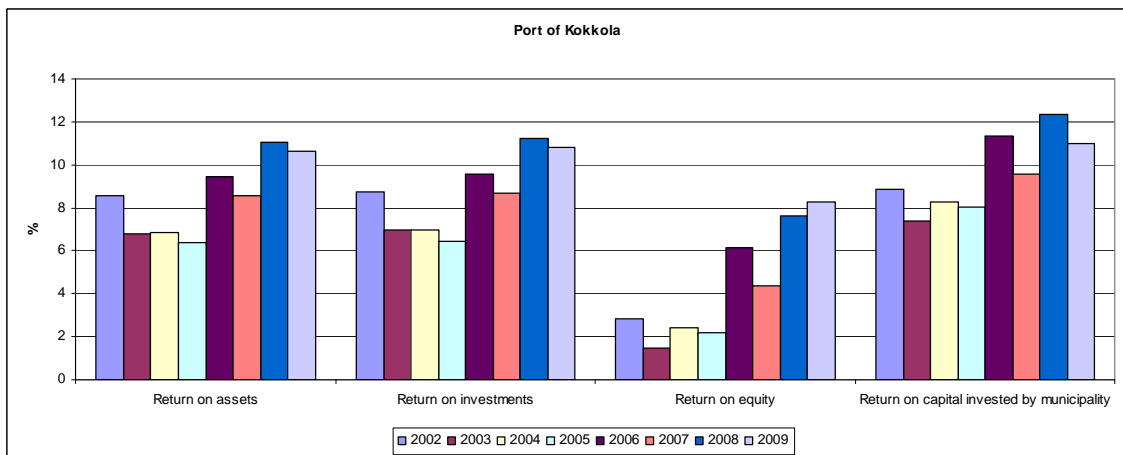


Figure 104. Port of Kokkola, return ratios, 2002–2009.

## Port of Kotka

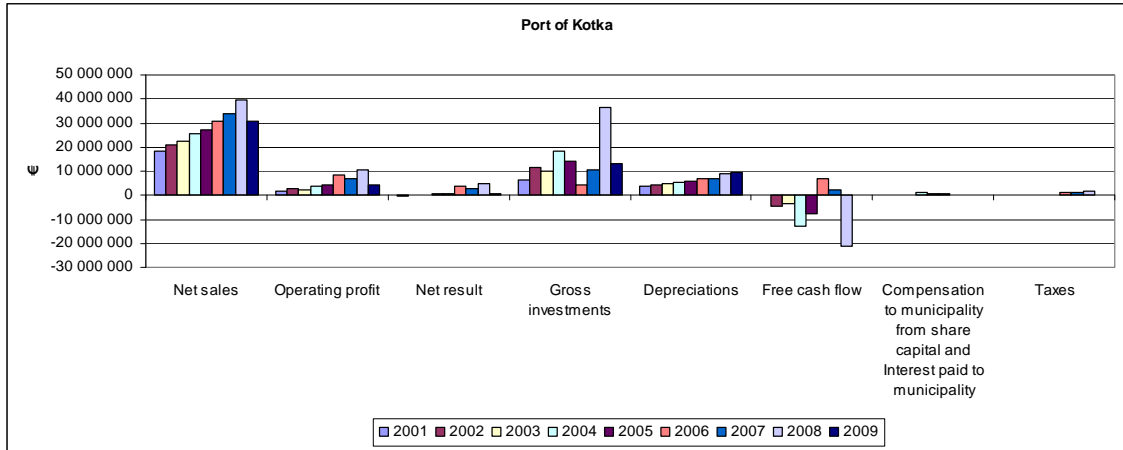


Figure 105. Port of Kotka, financial data, 2001–2009.

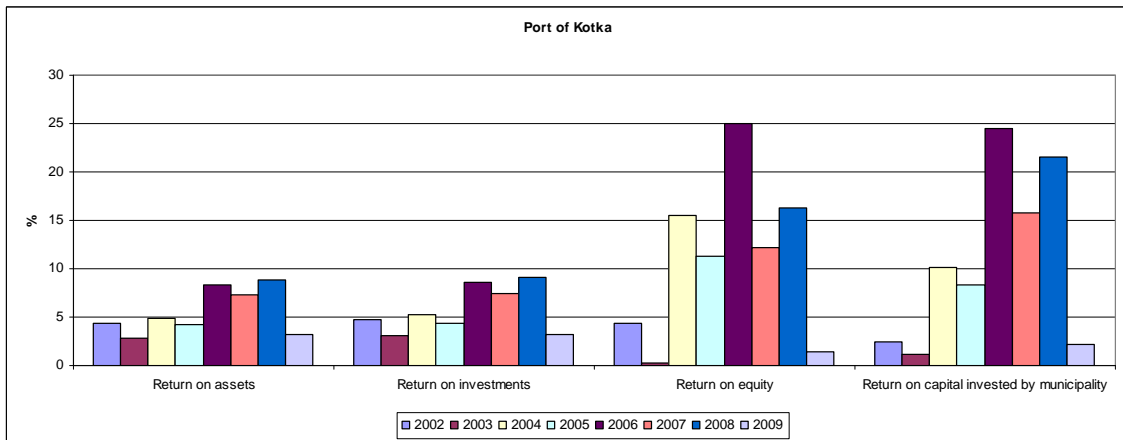


Figure 106. Port of Kotka, return ratios, 2002–2009.

## Port of Hamina

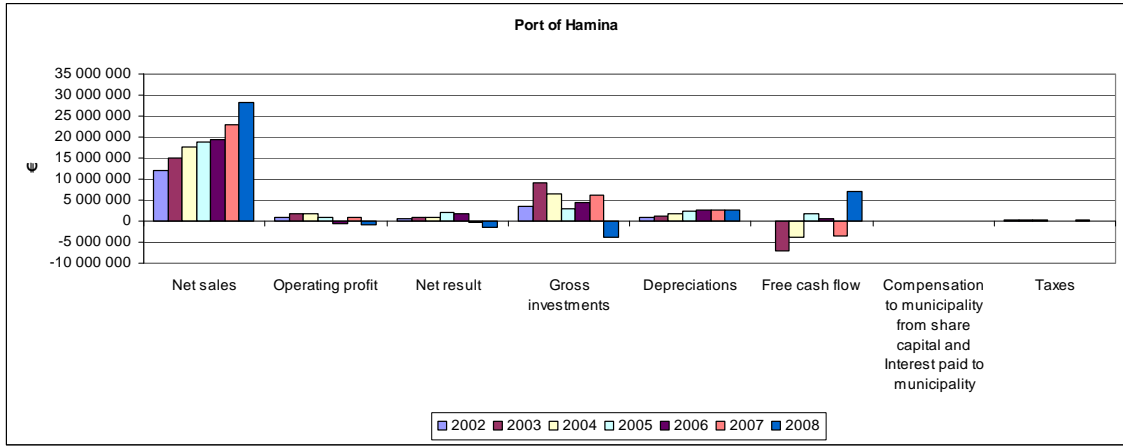


Figure 107. Port of Hamina, financial data, 2002–2008.

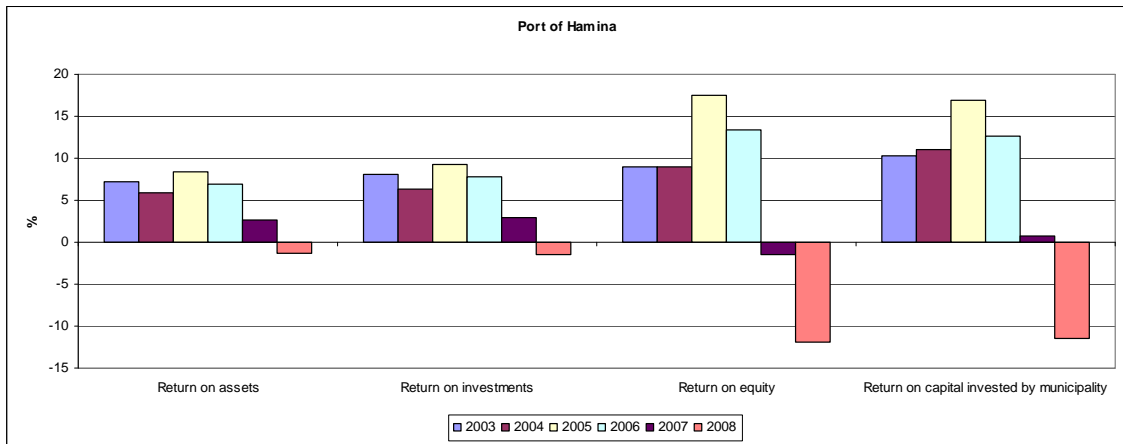


Figure 108. Port of Hamina, return ratios, 2003–2008.

## Port of Vaasa

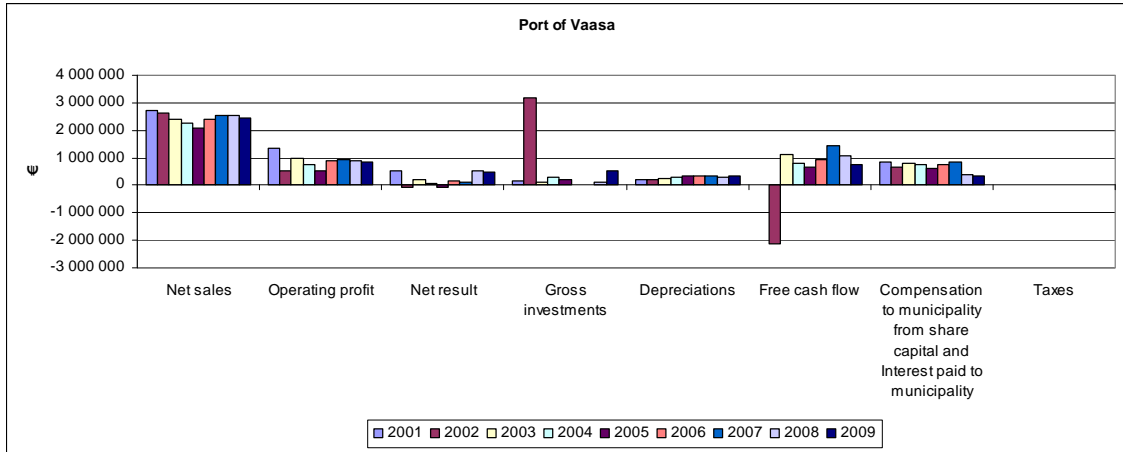


Figure 109. Port of Vaasa, financial data, 2001–2009.

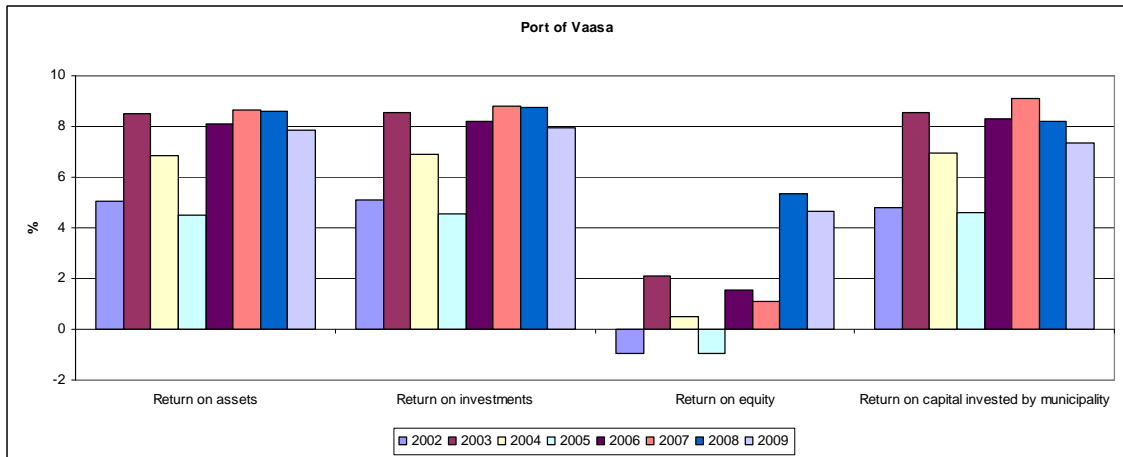


Figure 110. Port of Vaasa, return ratios, 2002–2009.

## Port of Hanko

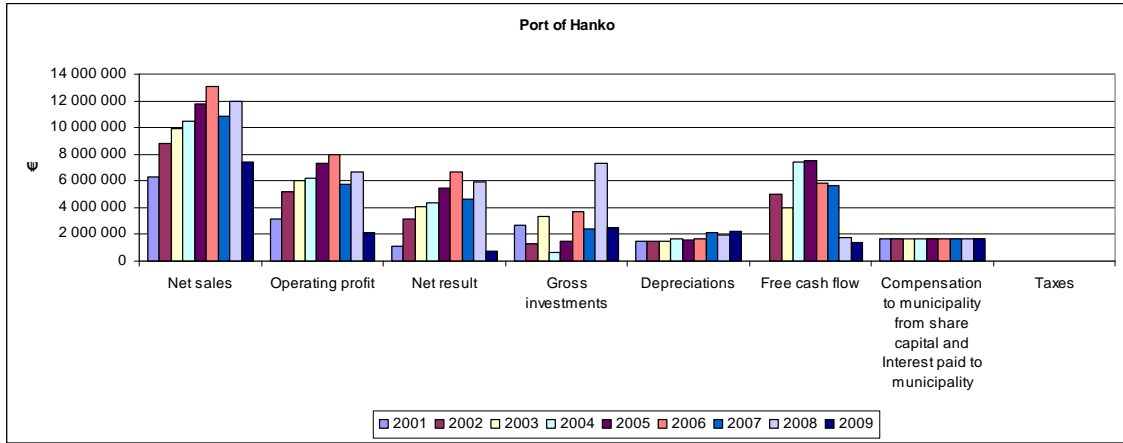


Figure 111. Port of Hanko, financial data, 2001–2009.

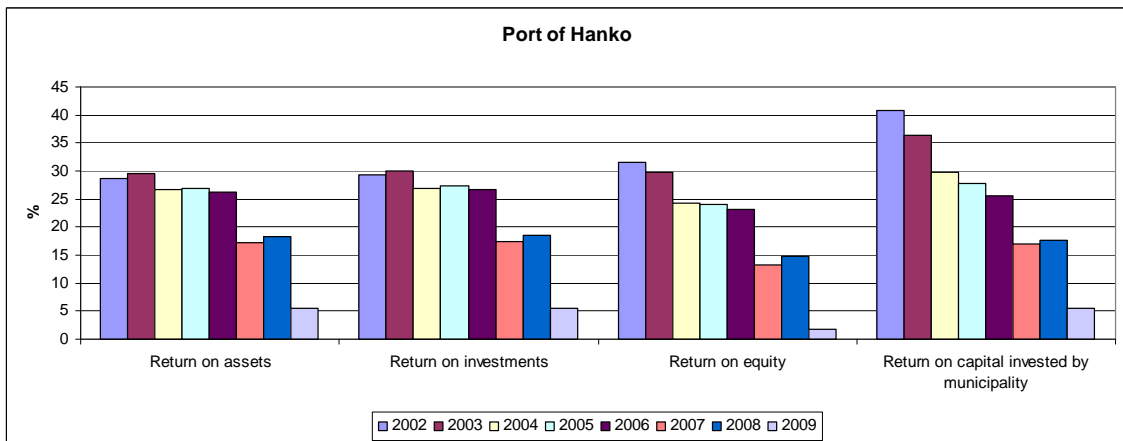


Figure 112. Port of Hanko, return ratios, 2002–2009.

## Port of Naantali

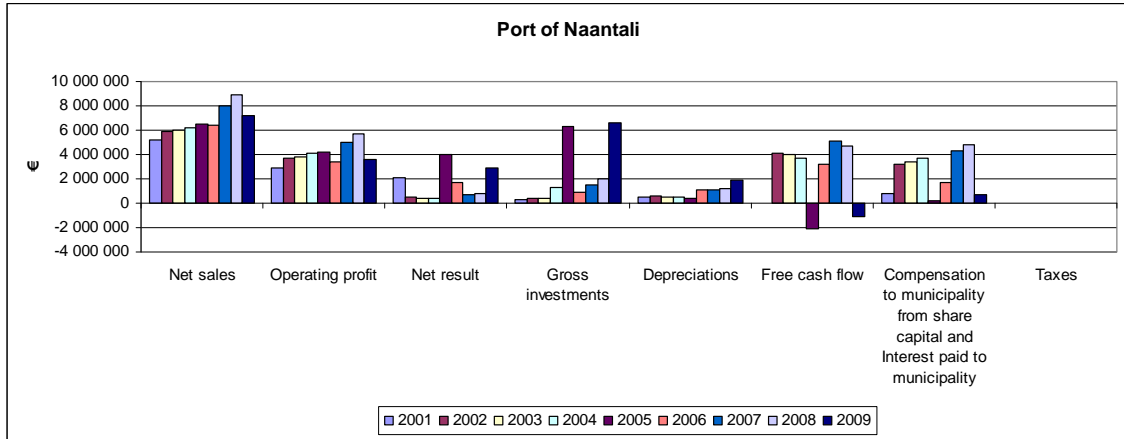


Figure 113. Port of Naantali, financial data, 2001–2009.

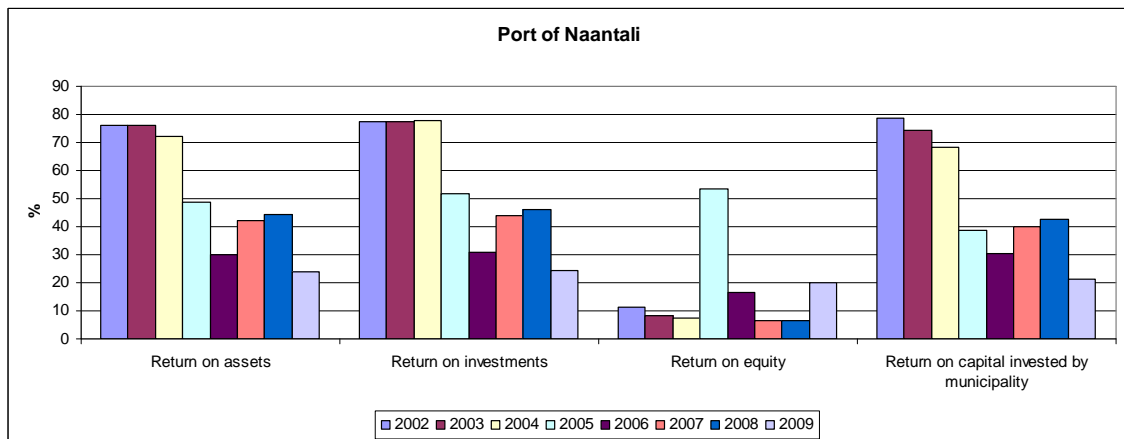


Figure 114. Port of Naantali, return ratios, 2002–2009.

## Inkoo Shipping

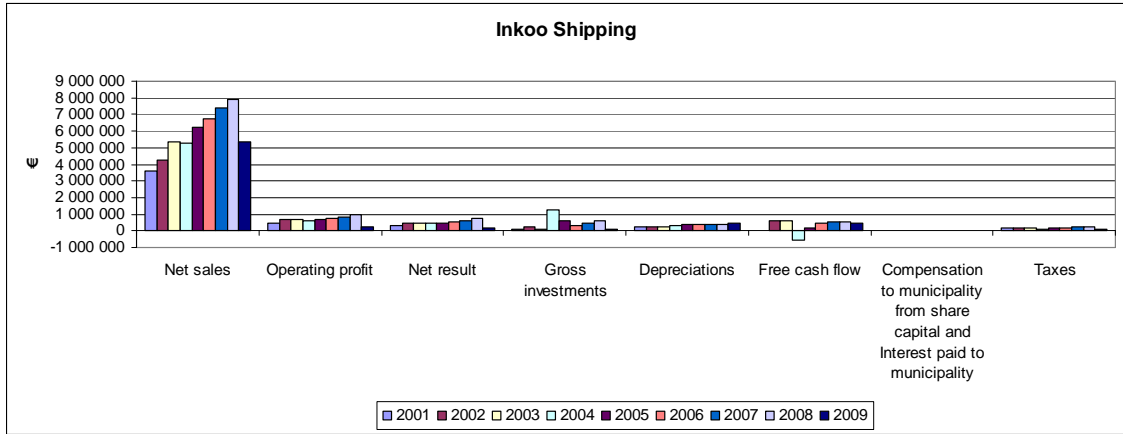


Figure 115. Inkoo Shipping, financial data, 2001–2009.

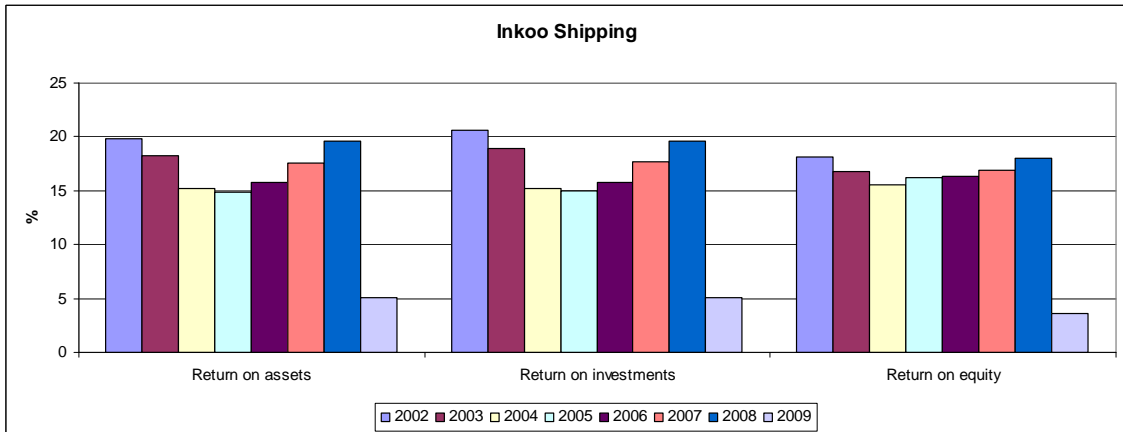


Figure 116. Inkoo Shipping, return ratios, 2002–2009.

## Port of Pori

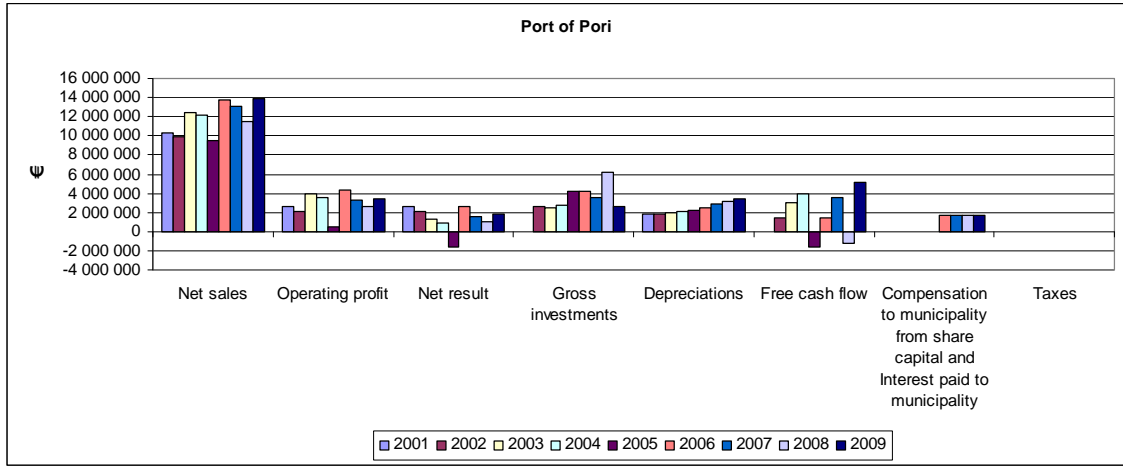


Figure 117. Port of Pori, financial data, 2001–2009.

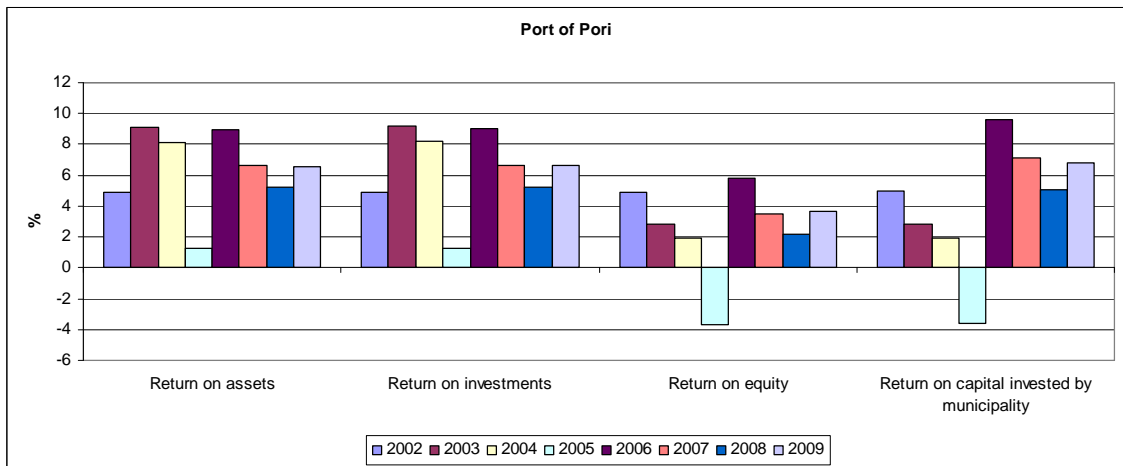


Figure 118. Port of Pori, return ratios, 2002–2009.



## Port of Rauma

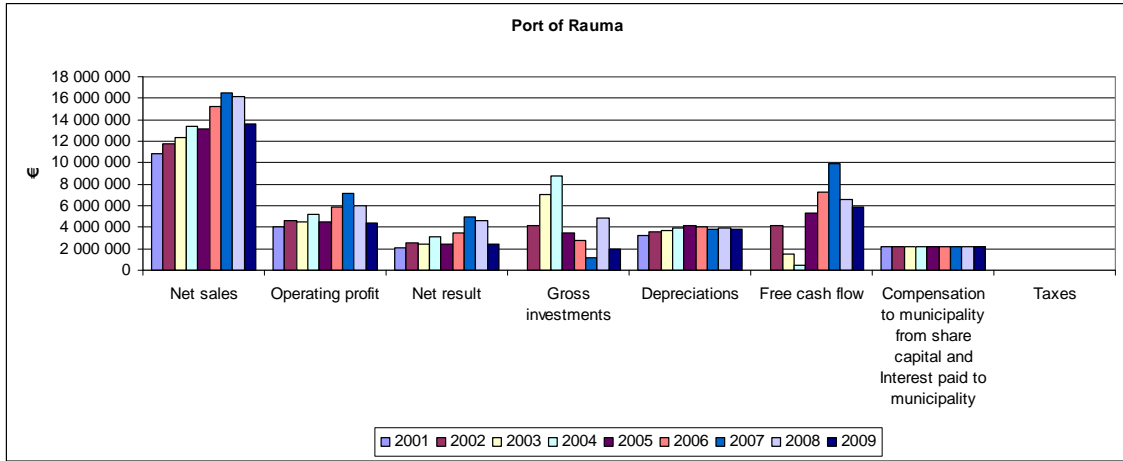


Figure 119. Port of Rauma, financial data, 2001–2009.

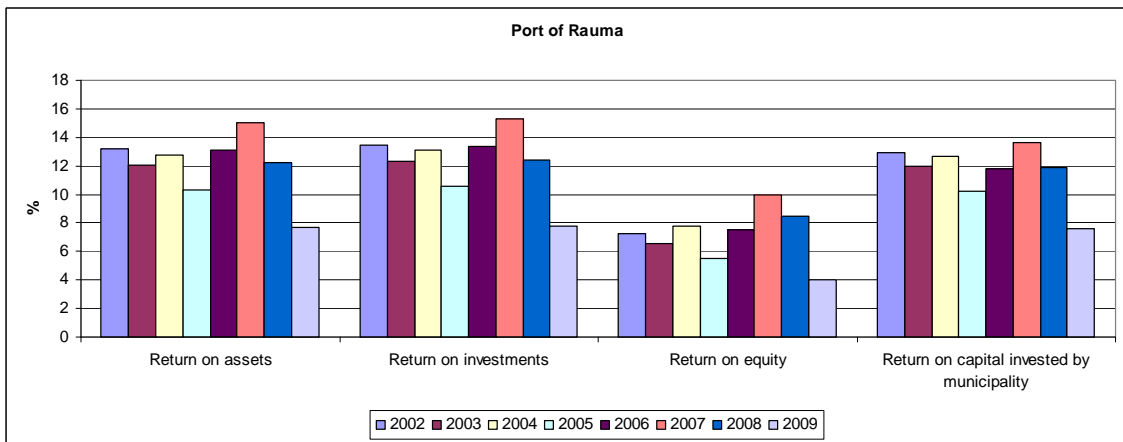


Figure 120. Port of Rauma, return ratios, 2002–2009.

## Nokia waterworks

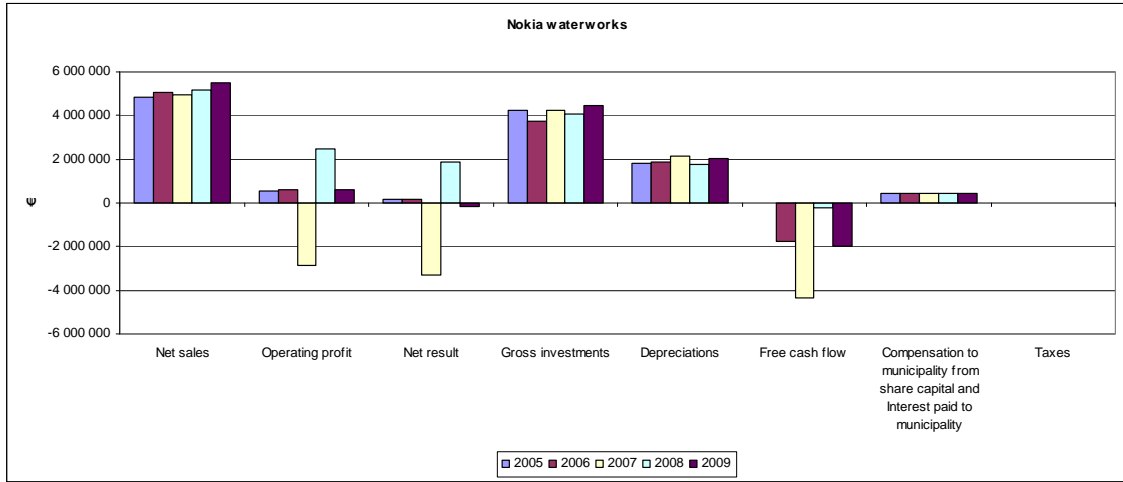


Figure 121. Nokia waterworks, financial data, 2005–2009.

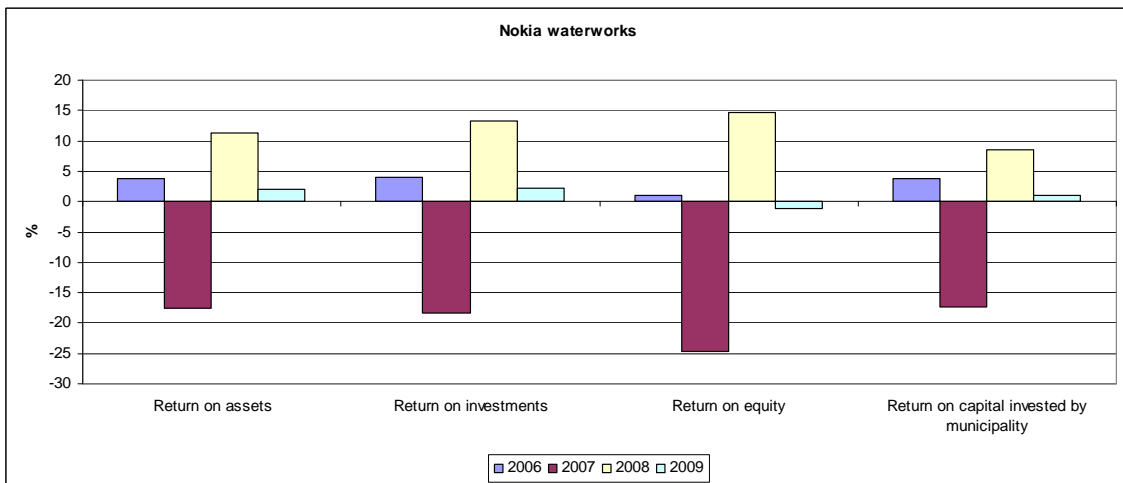


Figure 122. Nokia waterworks, return ratios, 2006–2009.

## Heinola waterworks

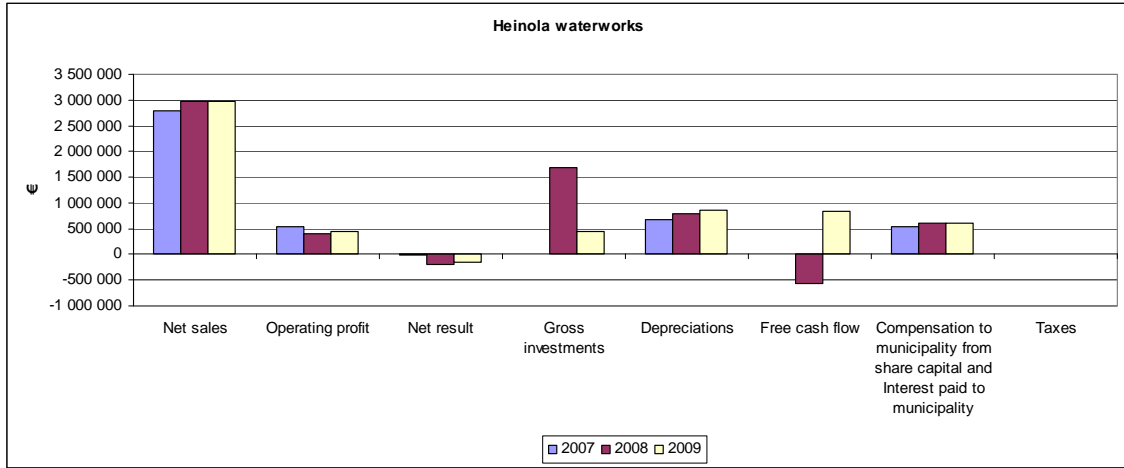


Figure 123. Heinola waterworks, financial data, 2007–2009.

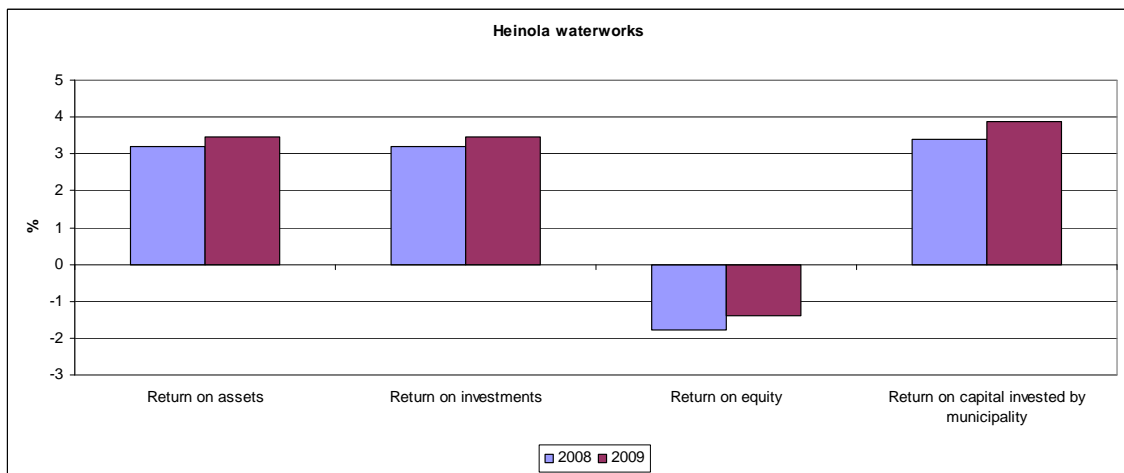


Figure 124. Heinola waterworks, return ratios, 2008–2009.

## Ilomantsi waterworks

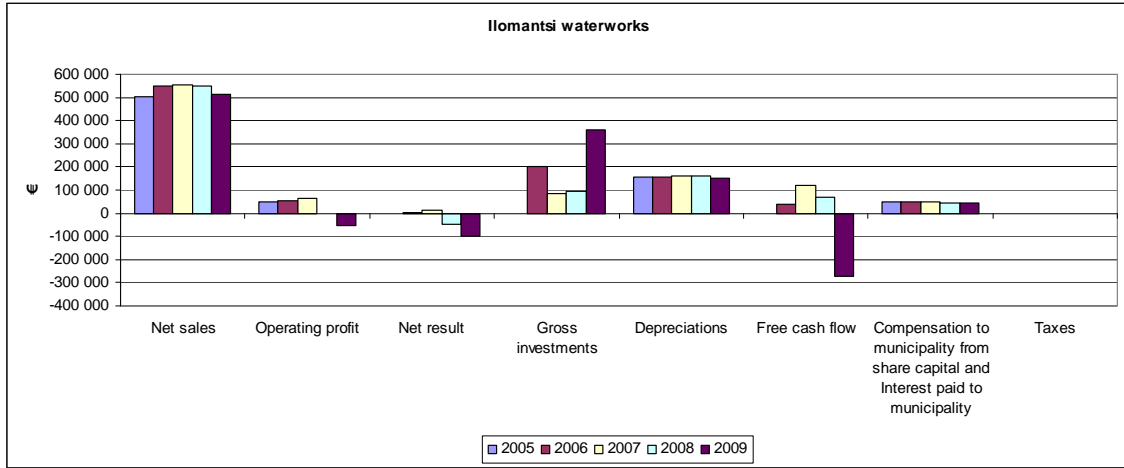


Figure 125. Ilomantsi waterworks, financial data, 2005–2009.

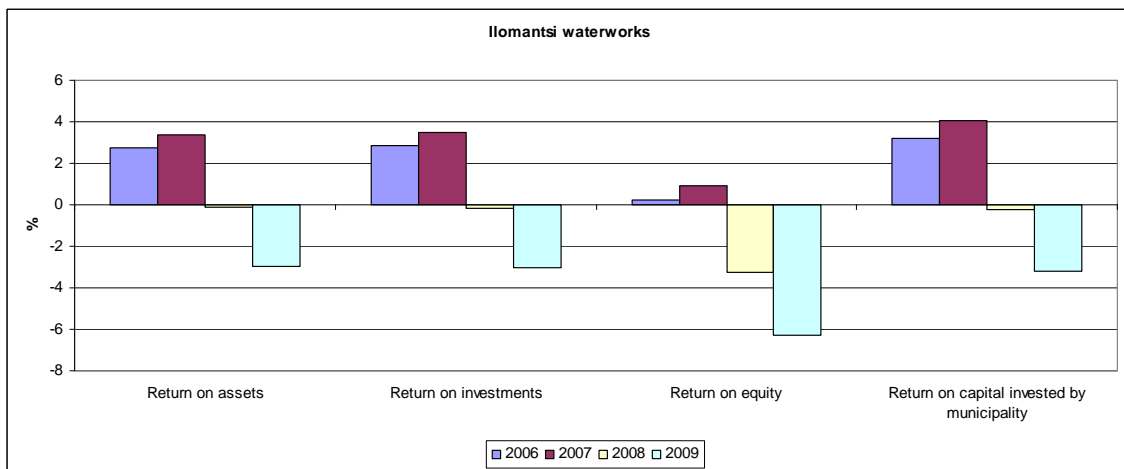


Figure 126. Ilomantsi waterworks, return ratios, 2006–2009.

### Kaarina waterworks

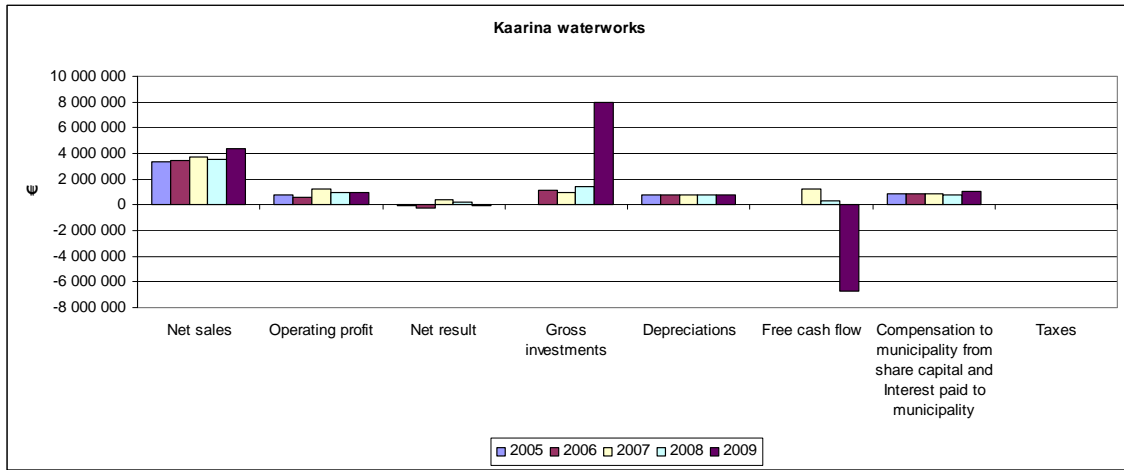


Figure 127. Kaarina waterworks, financial data, 2005–2009.

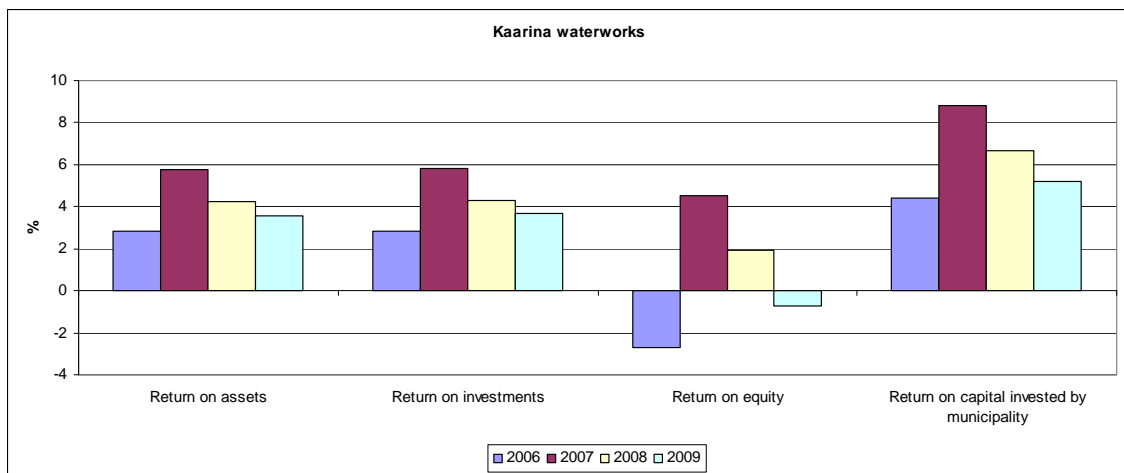


Figure 128. Kaarina waterworks, return ratios, 2006–2009.

## Kankaanpää waterworks

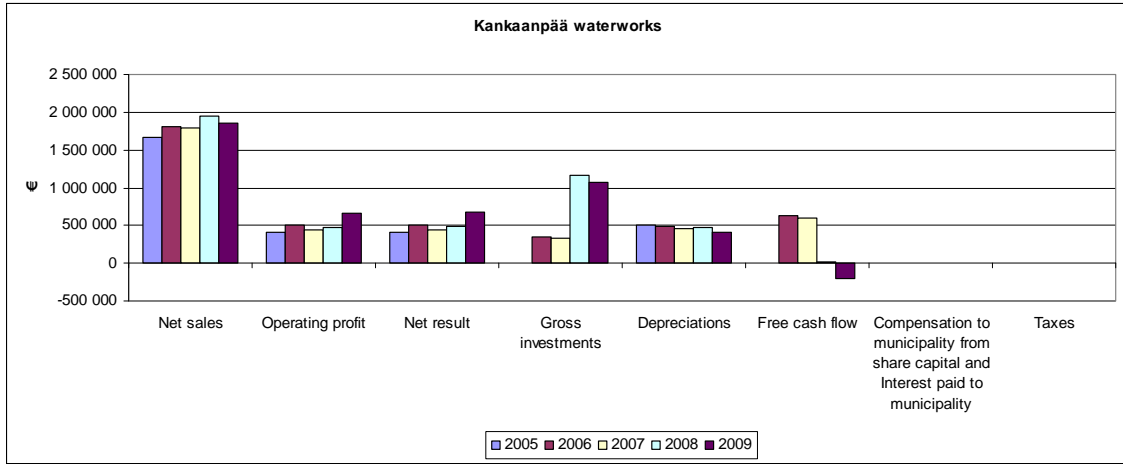


Figure 129. Kankaanpää waterworks, financial data, 2005–2009.

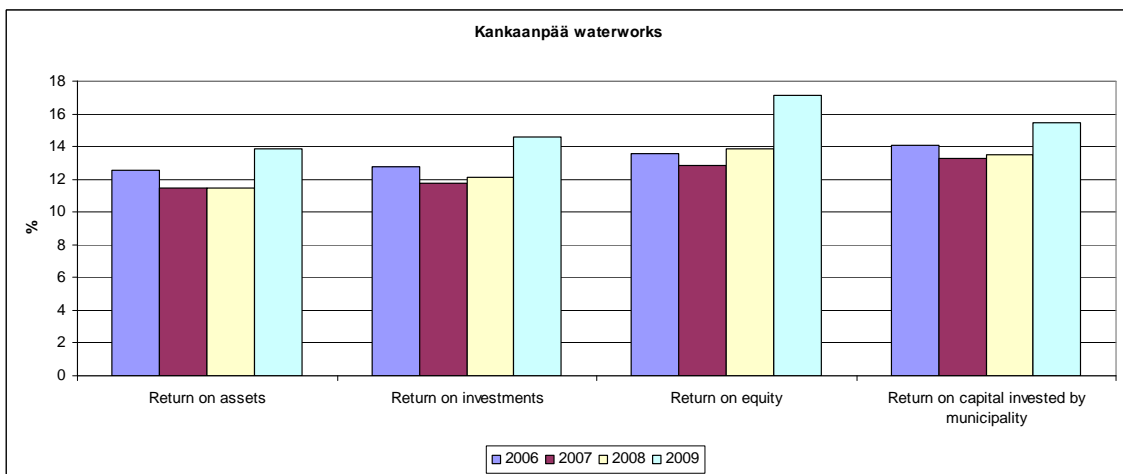


Figure 130. Kankaanpää waterworks, return ratios, 2006–2009.

## Raisio waterworks

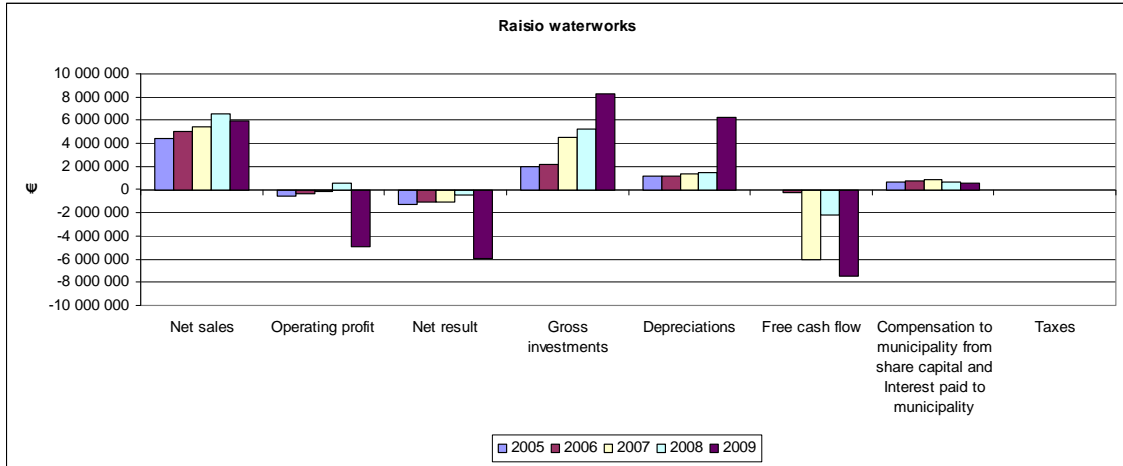


Figure 131. Raisio waterworks, financial data, 2005–2009.

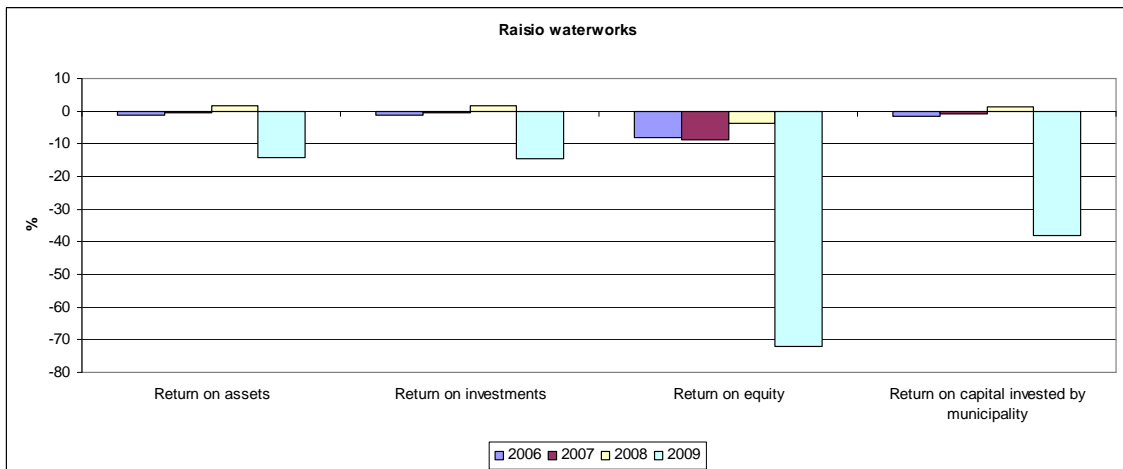


Figure 132. Raisio waterworks, return ratios, 2006–2009.

## Lieksa waterworks

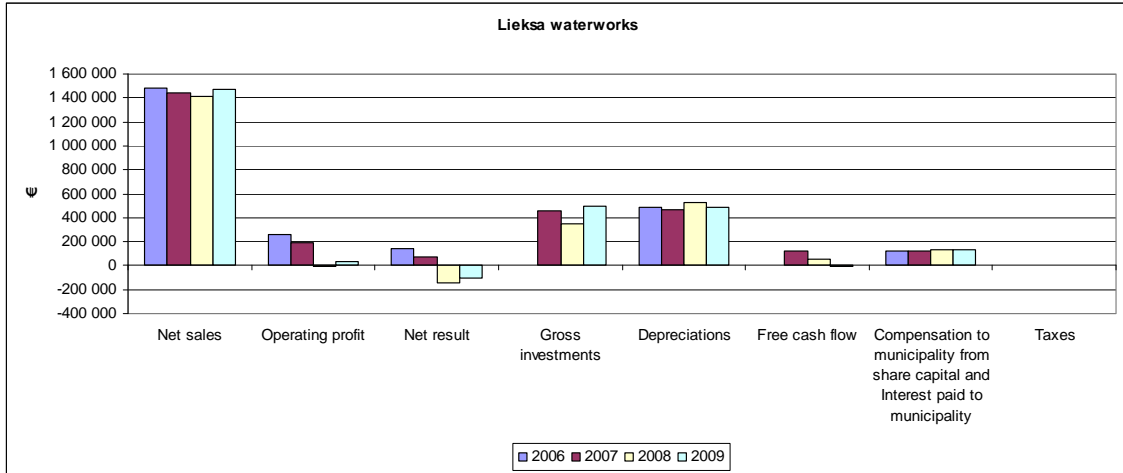


Figure 133. Lieksa waterworks, financial data, 2006–2009.

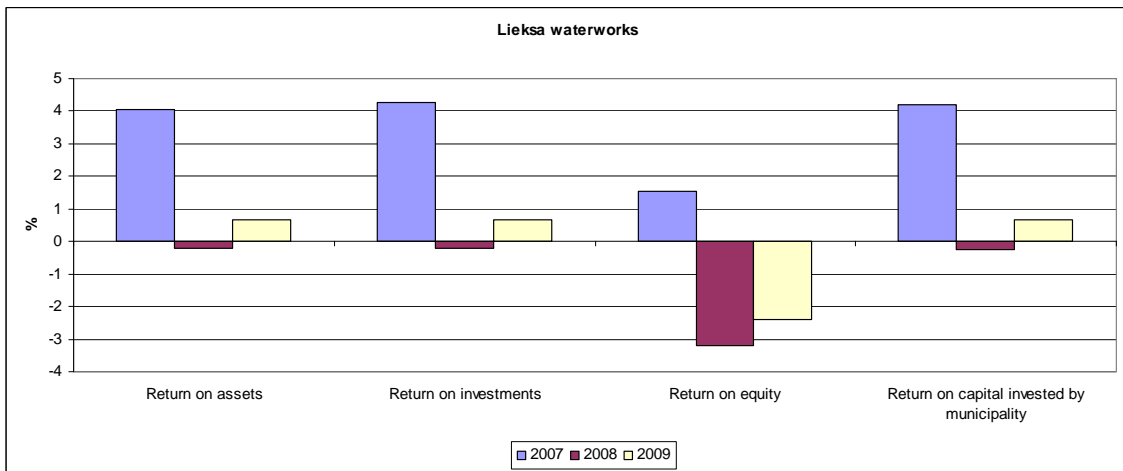


Figure 134. Lieksa waterworks, return ratios, 2007–2009.



## Imatra waterworks

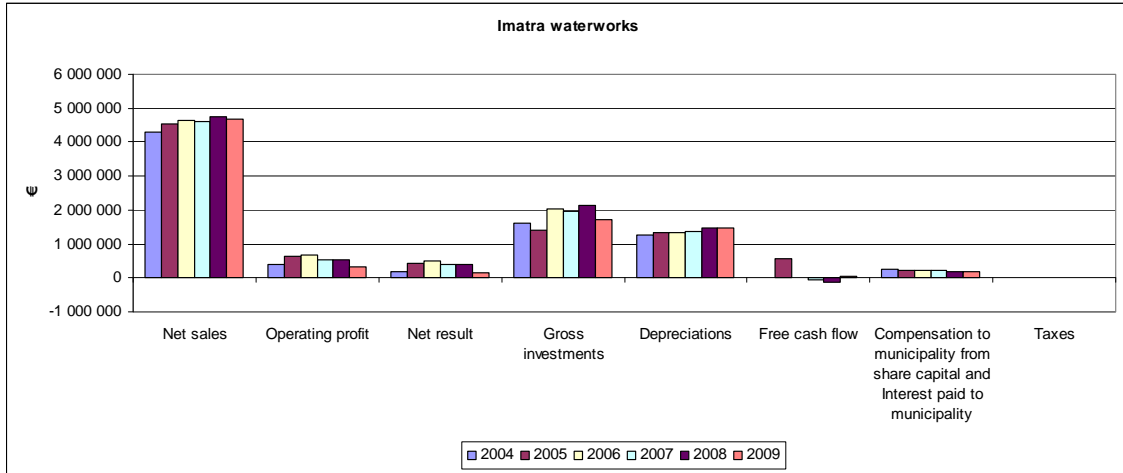


Figure 135. Imatra waterworks, financial data, 2004–2009.

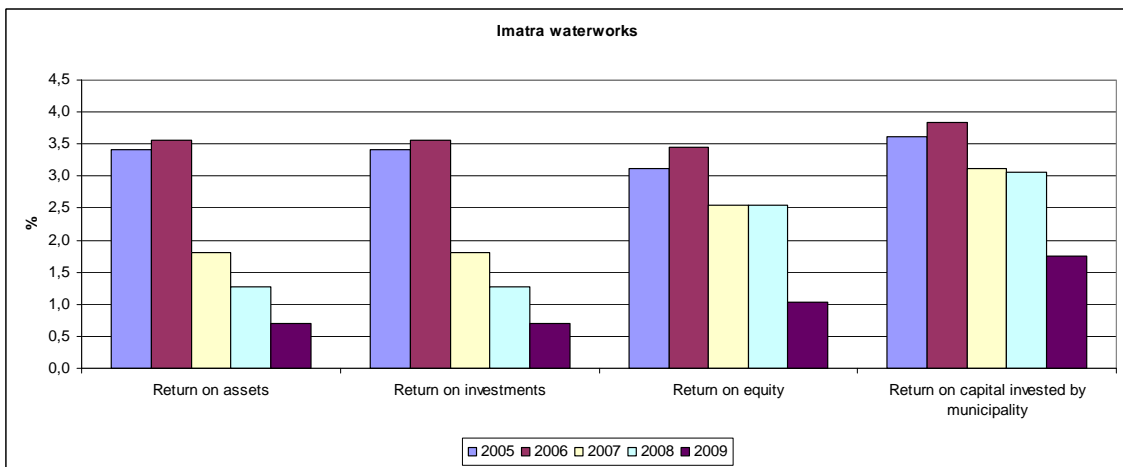


Figure 136. Imatra waterworks, return ratios, 2005–2009.

## Taivalkoski waterworks

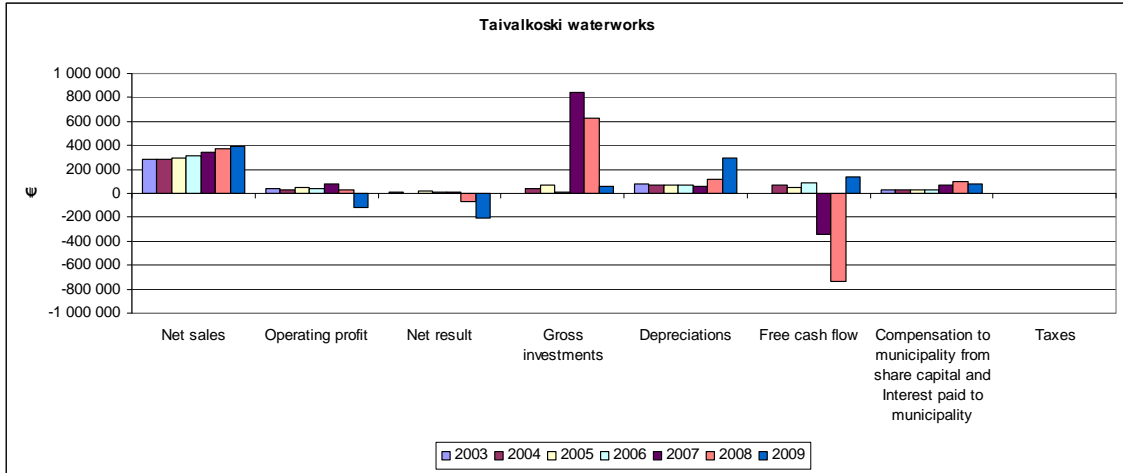


Figure 137. Taivalkoski waterworks, financial data, 2003–2009.

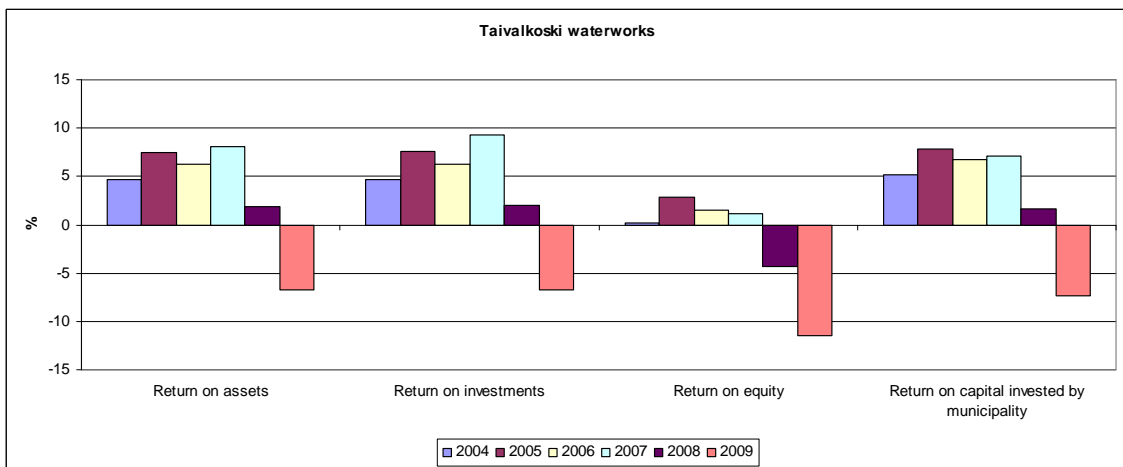


Figure 138. Taivalkoski waterworks, return ratios, 2004–2009.

## Mäntyharju waterworks

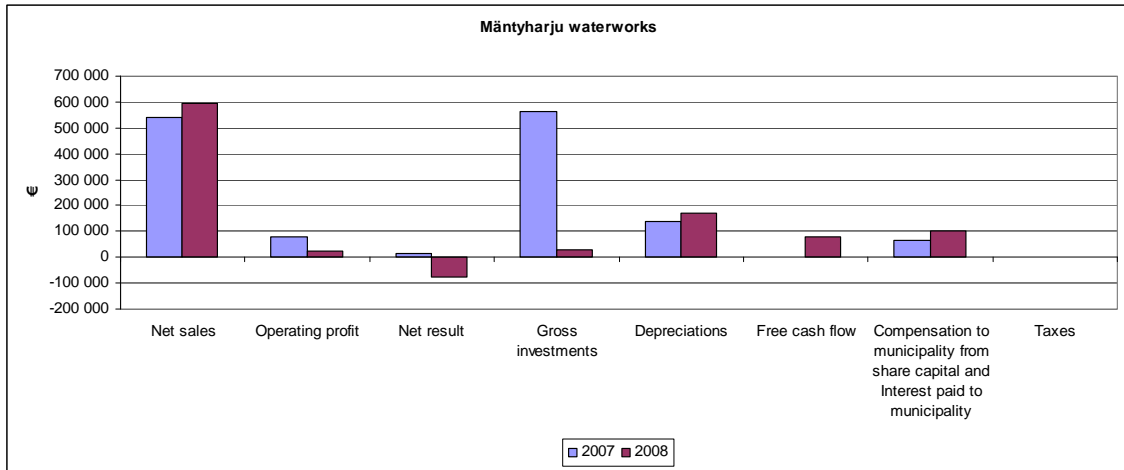


Figure 139. Mäntyharju waterworks, financial data, 2007–2008.

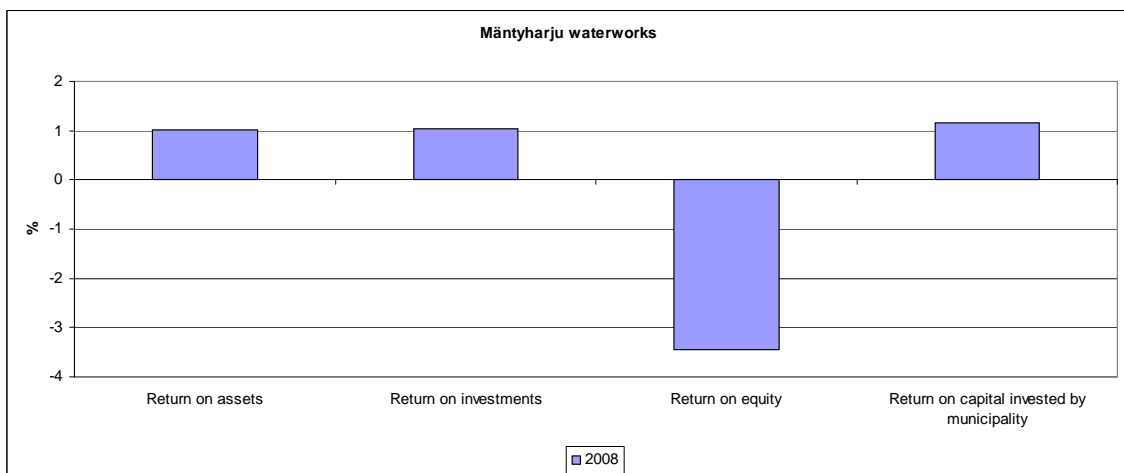


Figure 140. Mäntyharju waterworks, return ratios, 2008.

## Haukipudas waterworks

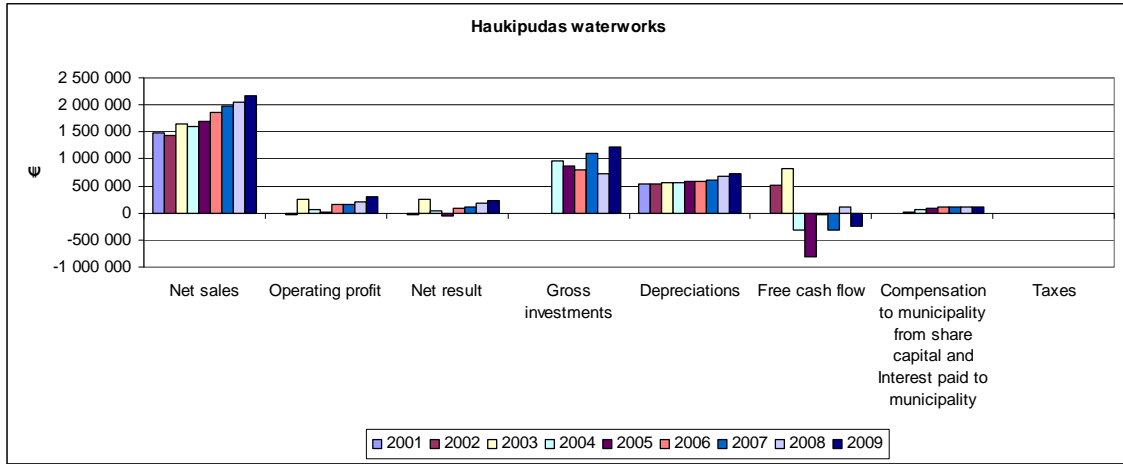


Figure 141. Haukipudas waterworks, financial data, 2001–2009.

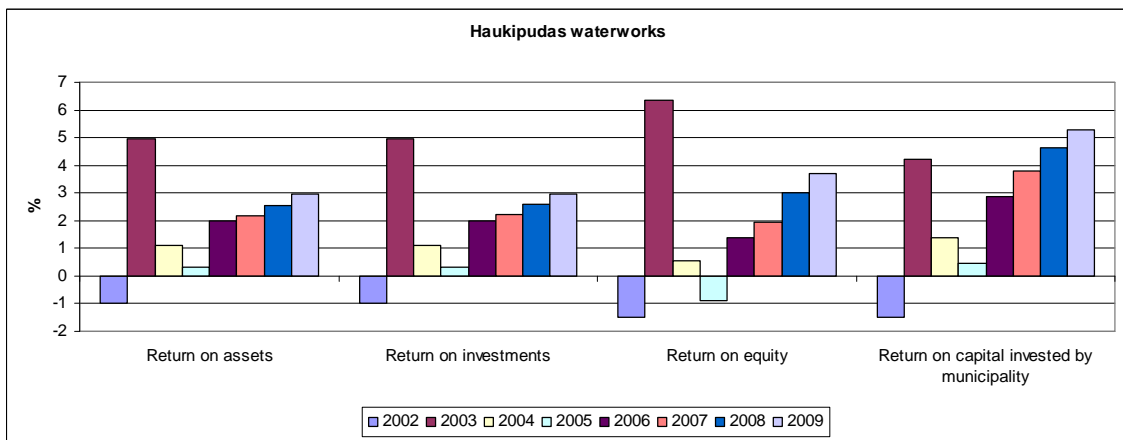


Figure 142. Haukipudas waterworks, return ratios, 2002–2009.

## Oulu waterworks

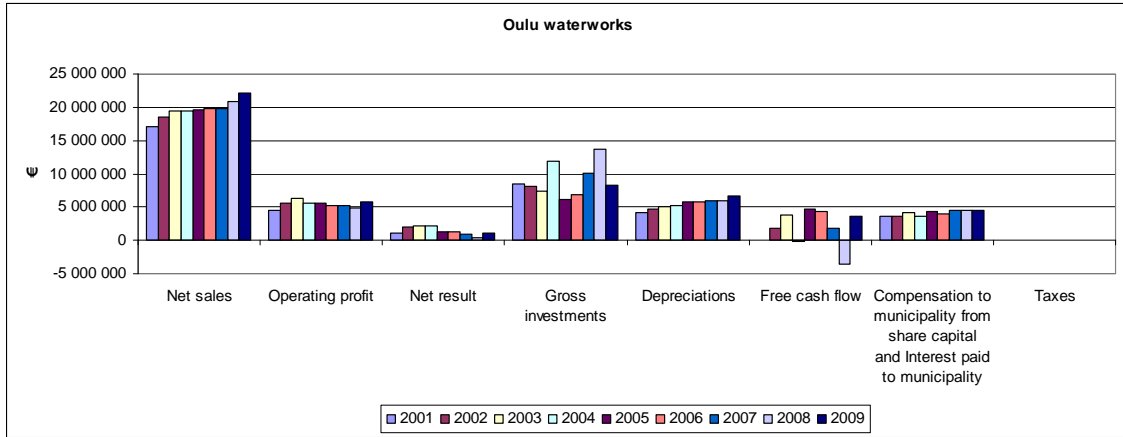


Figure 143. Oulu waterworks, financial data, 2001–2009.

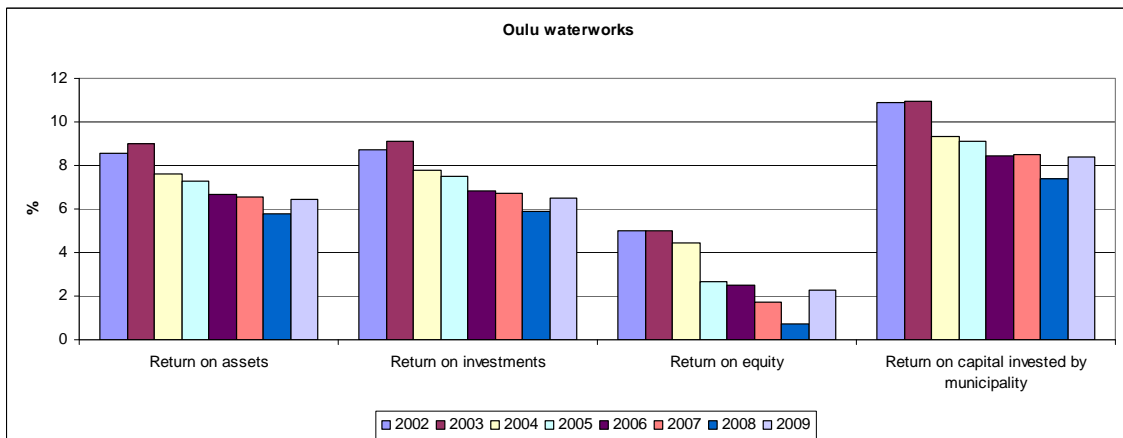


Figure 144. Oulu waterworks, return ratios, 2002–2009.

## Helsinki waterworks

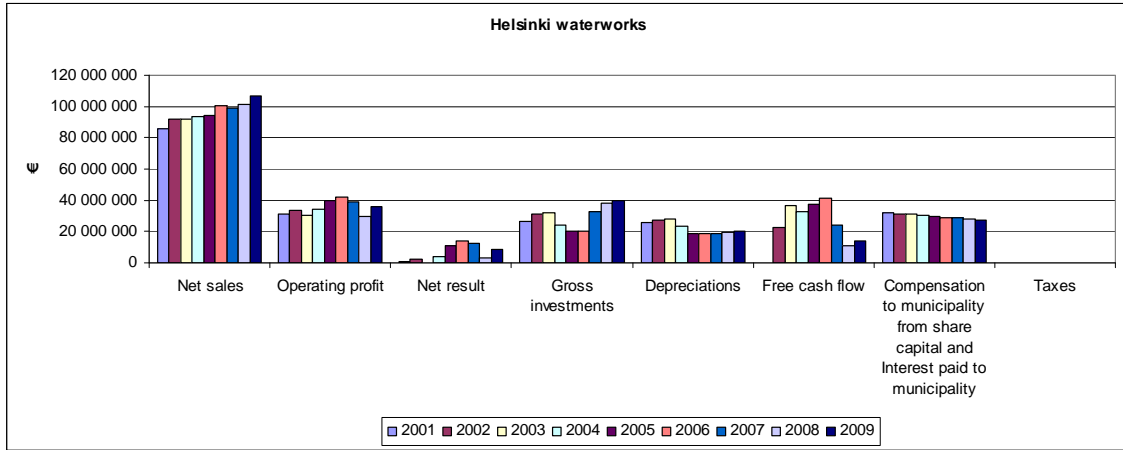


Figure 145. Helsinki waterworks, financial data, 2001–2009.

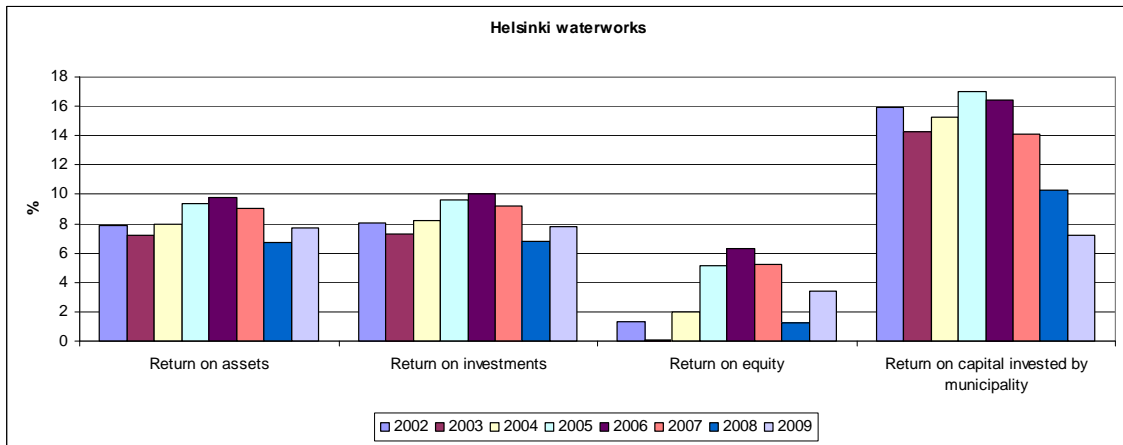


Figure 146. Helsinki waterworks, return ratios, 2002–2009.

## Espoo waterworks

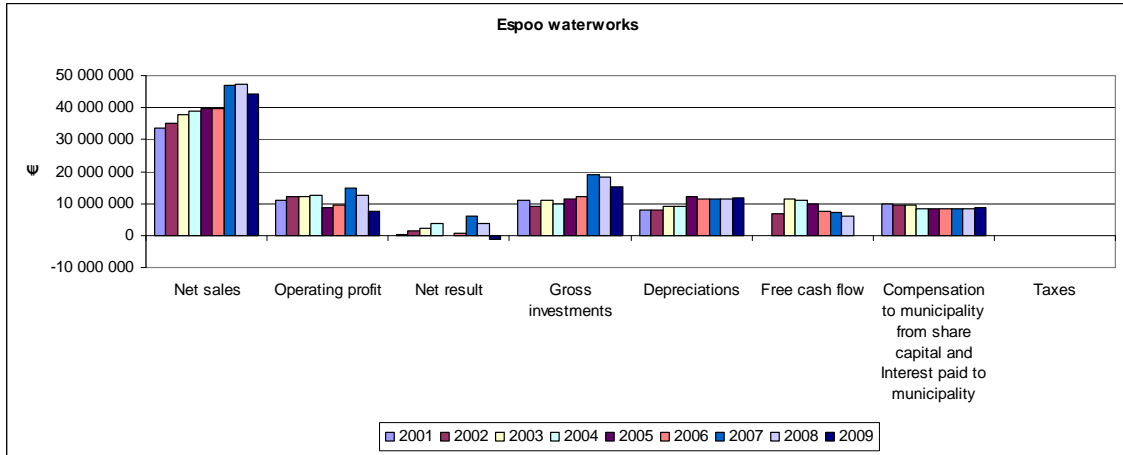


Figure 147. Espoo waterworks, financial data, 2001–2009.

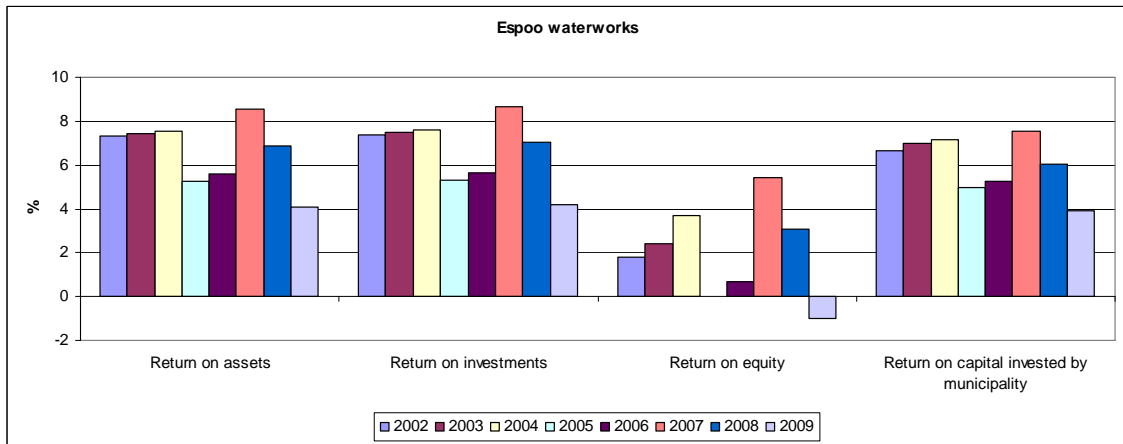


Figure 148. Espoo waterworks, return ratios, 2002–2009.

## Vantaa waterworks

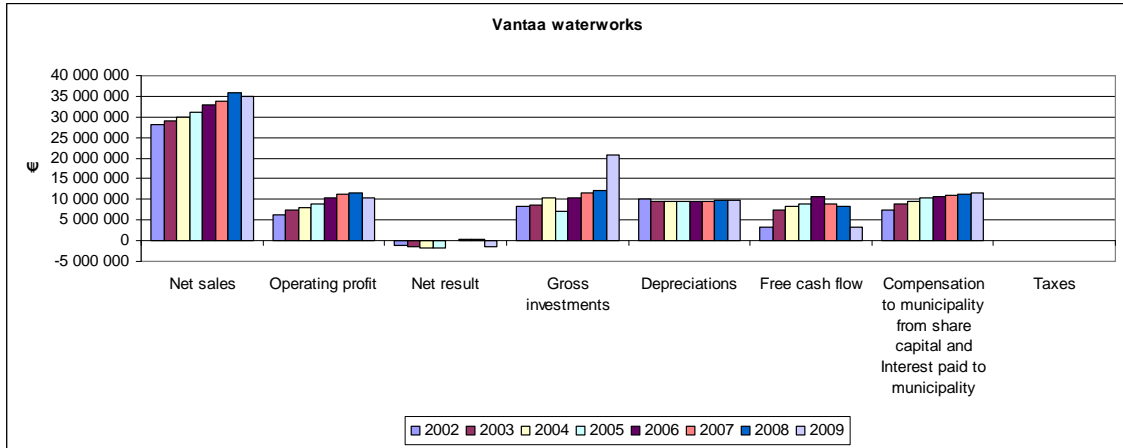


Figure 149. Vantaa waterworks, financial data, 2002–2009.

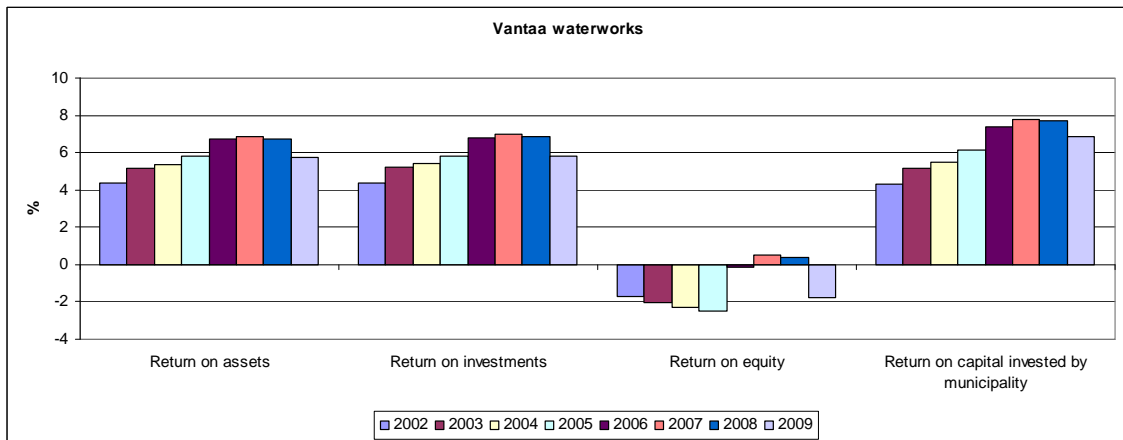


Figure 150. Vantaa waterworks, return ratios, 2002–2009.



## Kempele waterworks

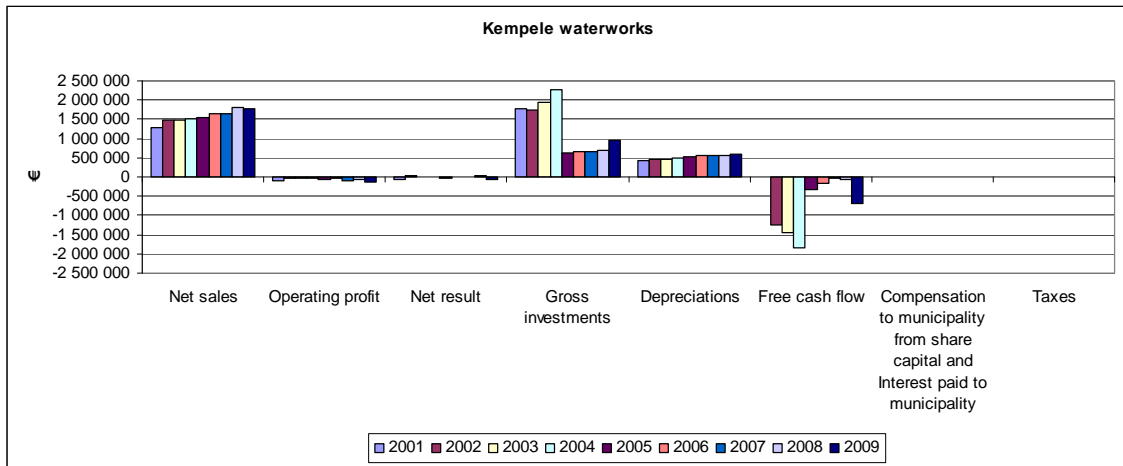


Figure 151. Kempele waterworks, financial data, 2001–2009.

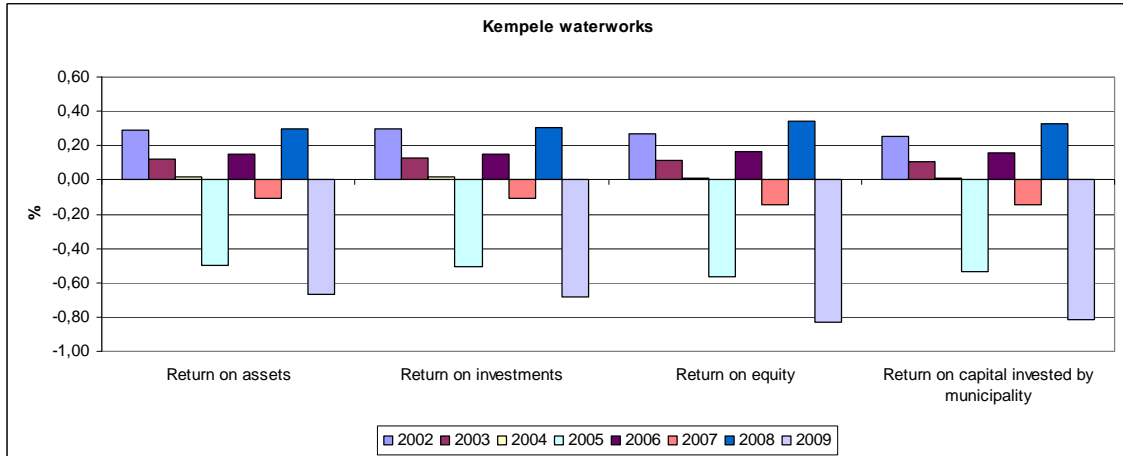


Figure 152. Kempele waterworks, return ratios, 2002–2009.

## Lakeuden keskuspuhdistamo

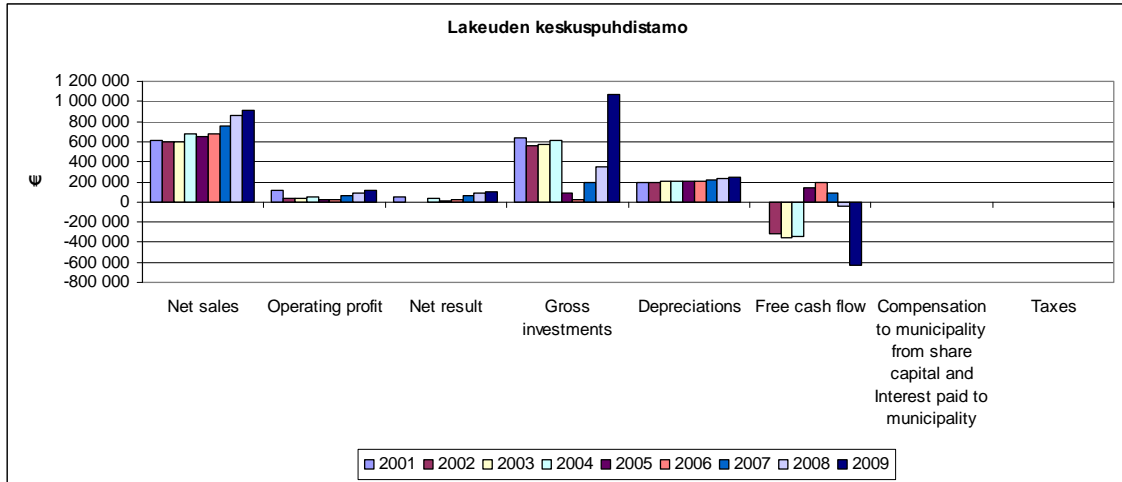


Figure 153. Lakeuden keskuspuhdistamo, financial data, 2001–2009.

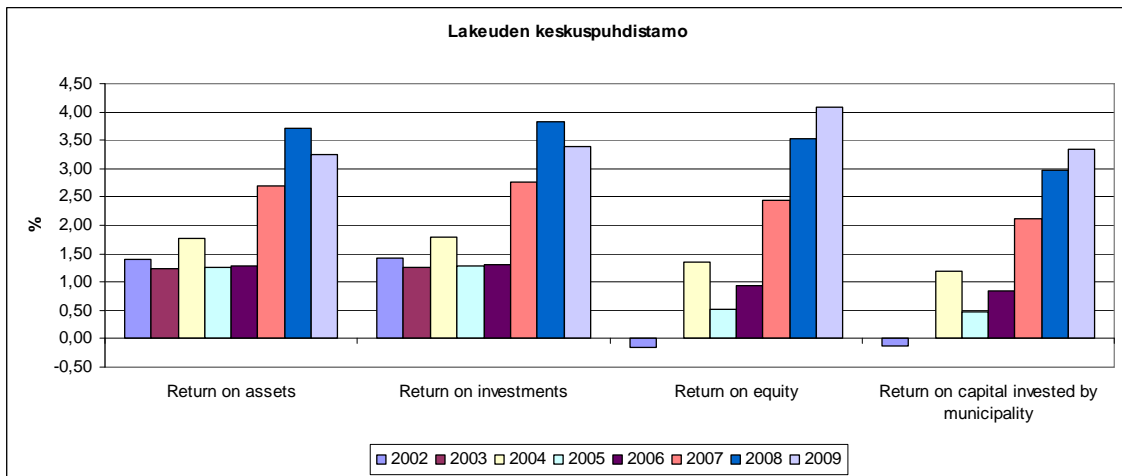


Figure 154. Lakeuden keskuspuhdistamo, return ratios, 2002–2009.

## Lahti Aqua

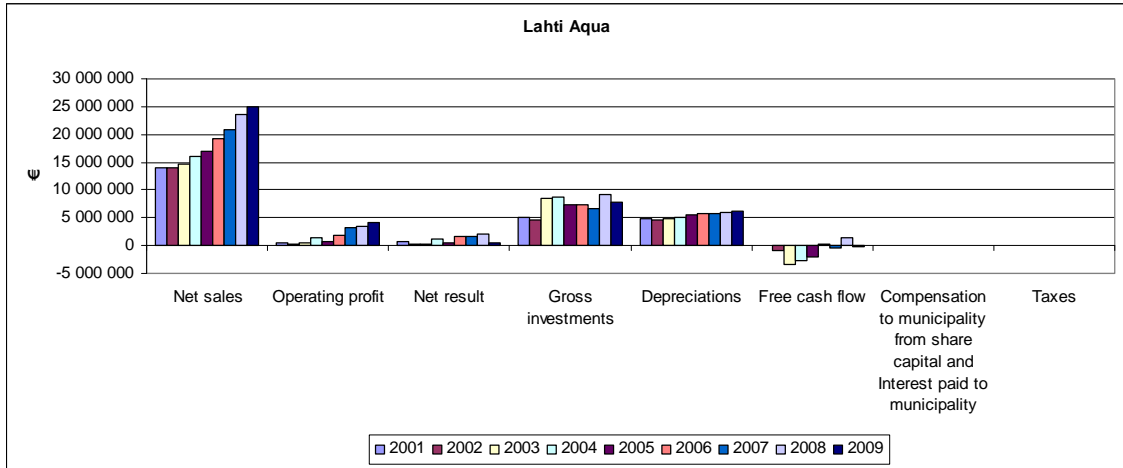


Figure 155. Lahti Aqua, financial data, 2001–2009.

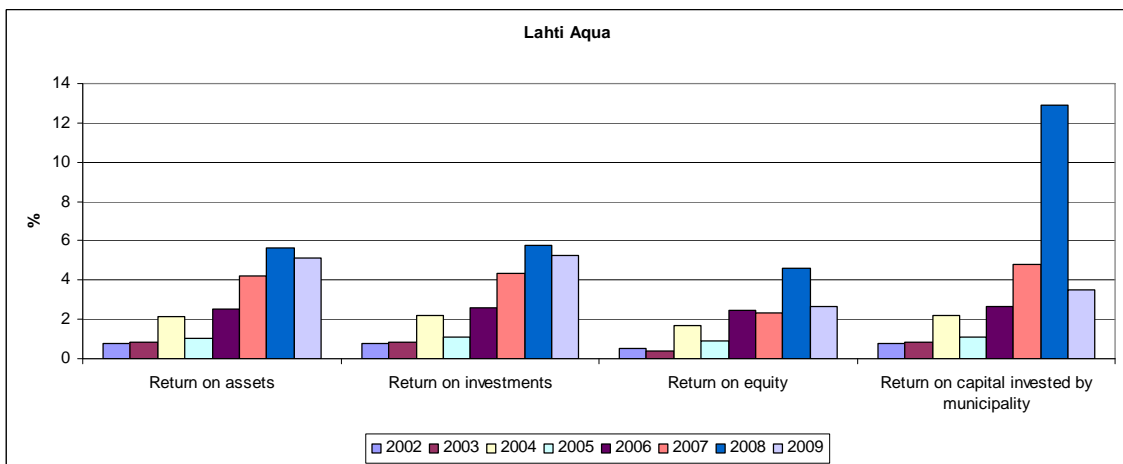


Figure 156. Lahti Aqua, return ratios, 2002–2009.

## Hämeenlinna area waterworks

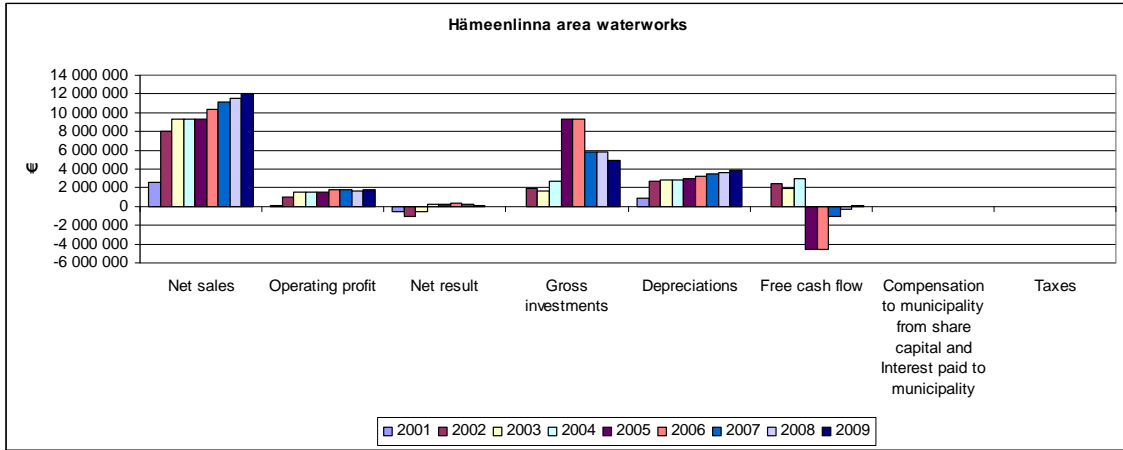


Figure 157. Hämeenlinna area waterworks, financial data, 2001–2009.

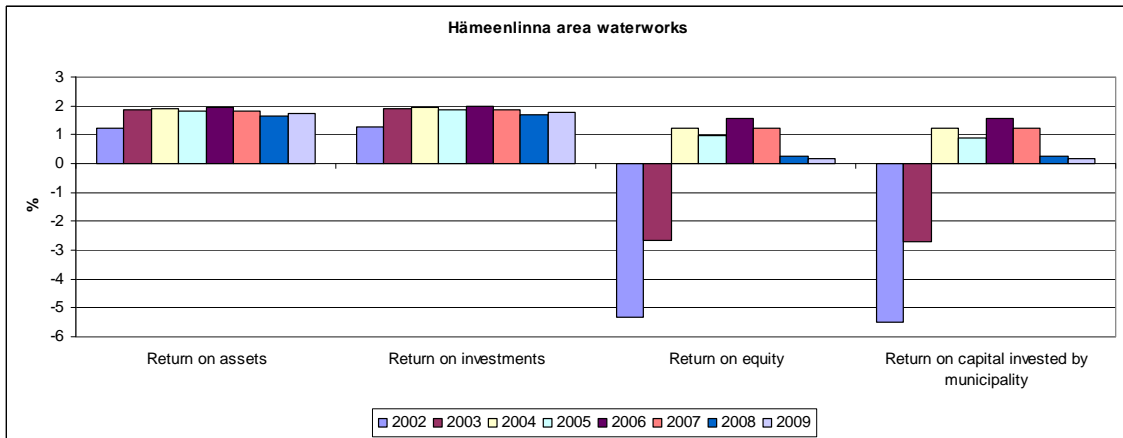


Figure 158. Hämeenlinna area waterworks, return ratios, 2002–2009.

## Tampere waterworks

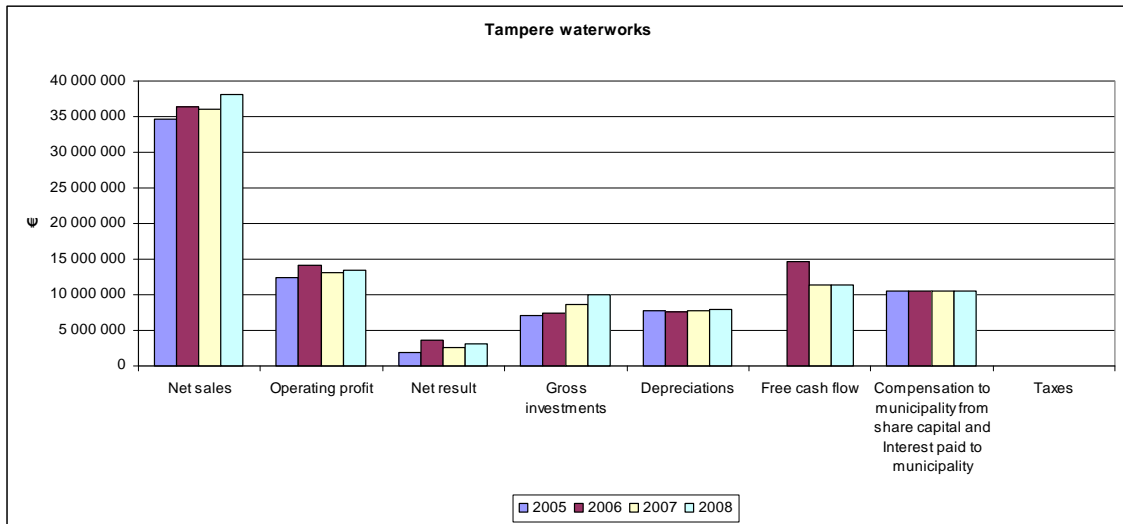


Figure 159. Tampere waterworks, financial data, 2005–2008.

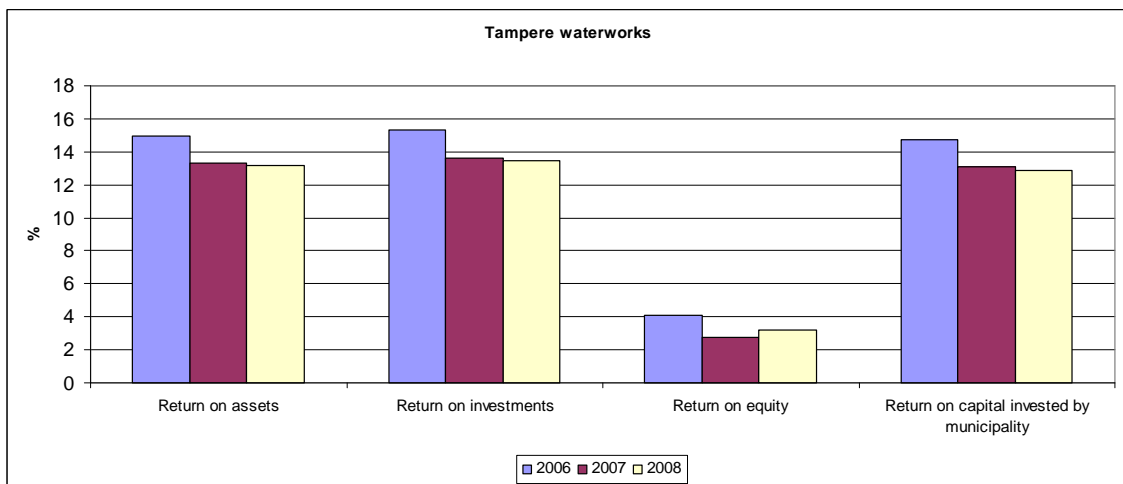


Figure 160. Tampere waterworks, return ratios, 2006–2008.

## Kuopio waterworks

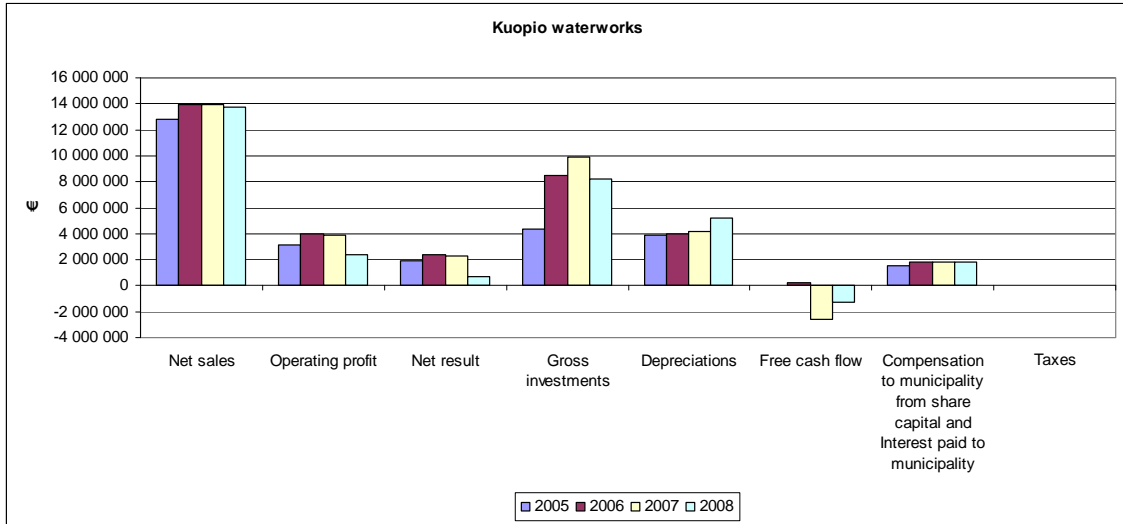


Figure 161. Kuopio waterworks, financial data, 2005–2008.

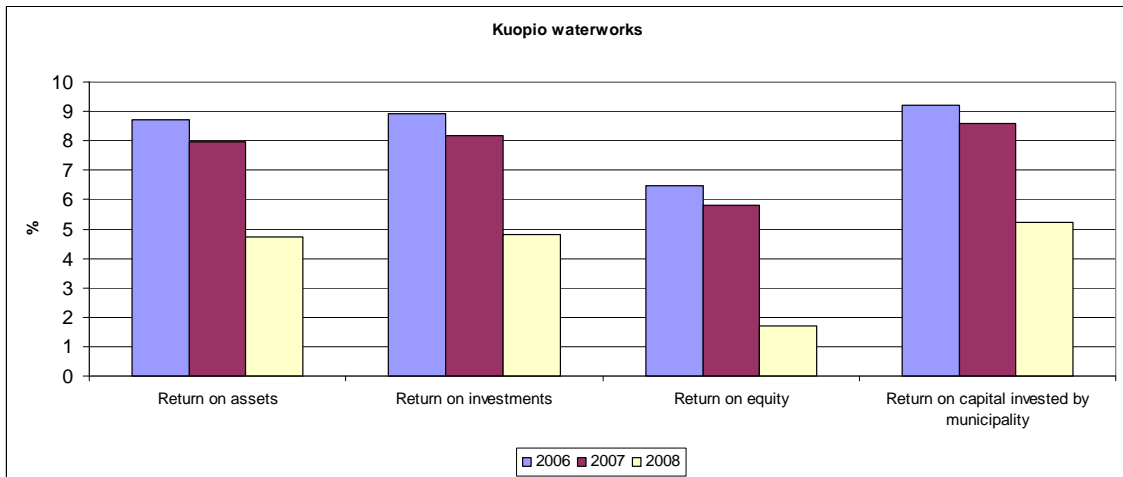


Figure 162. Kuopio waterworks, return ratios, 2006–2008.

## Porvoo waterworks

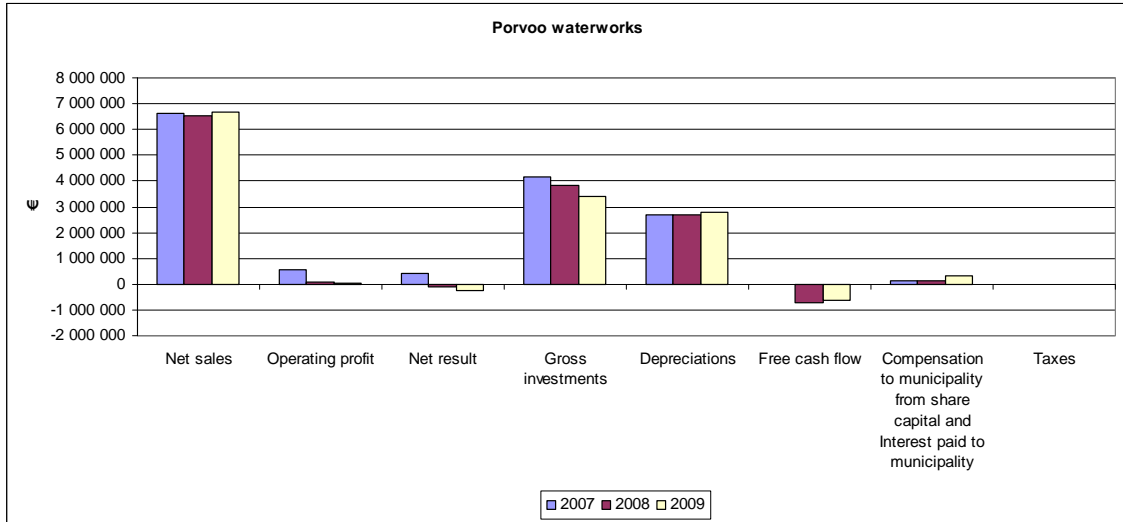


Figure 163. Porvoo waterworks, financial data, 2007–2009.

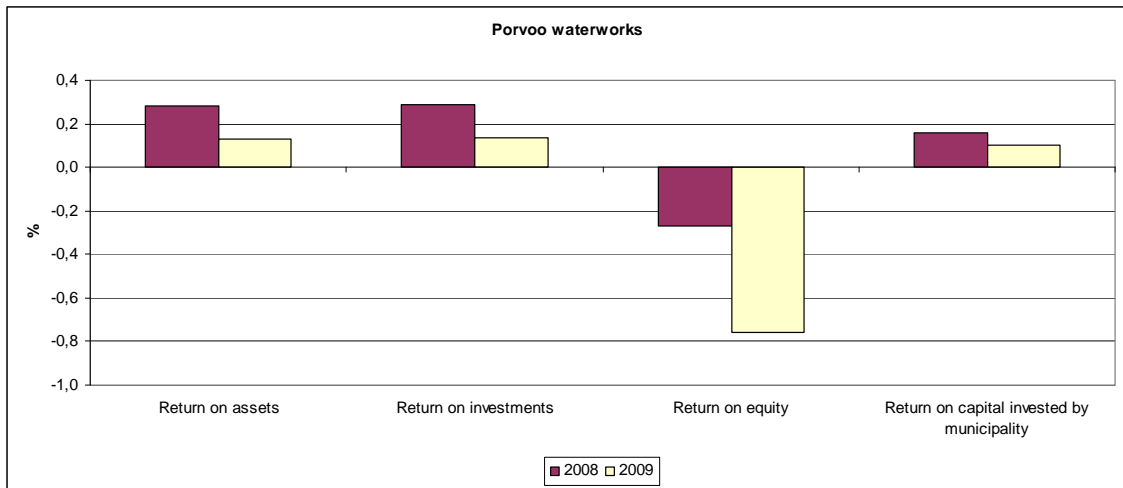


Figure 164. Porvoo waterworks, return ratios, 2008–2009.

## Joensuu waterworks

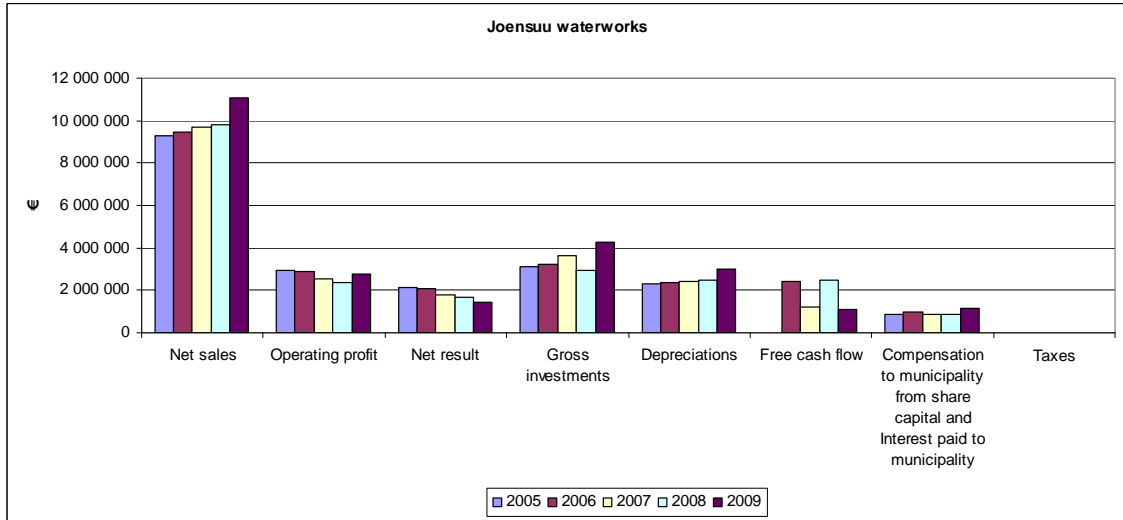


Figure 165. Joensuu waterworks, financial data, 2005–2009.

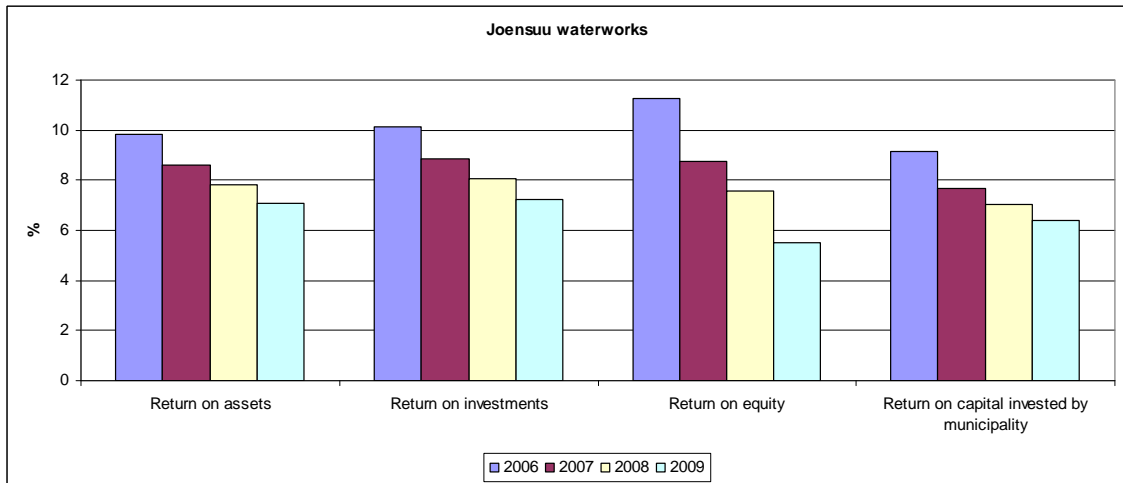


Figure 166. Joensuu waterworks, return ratios, 2006–2009.



## Pori waterworks

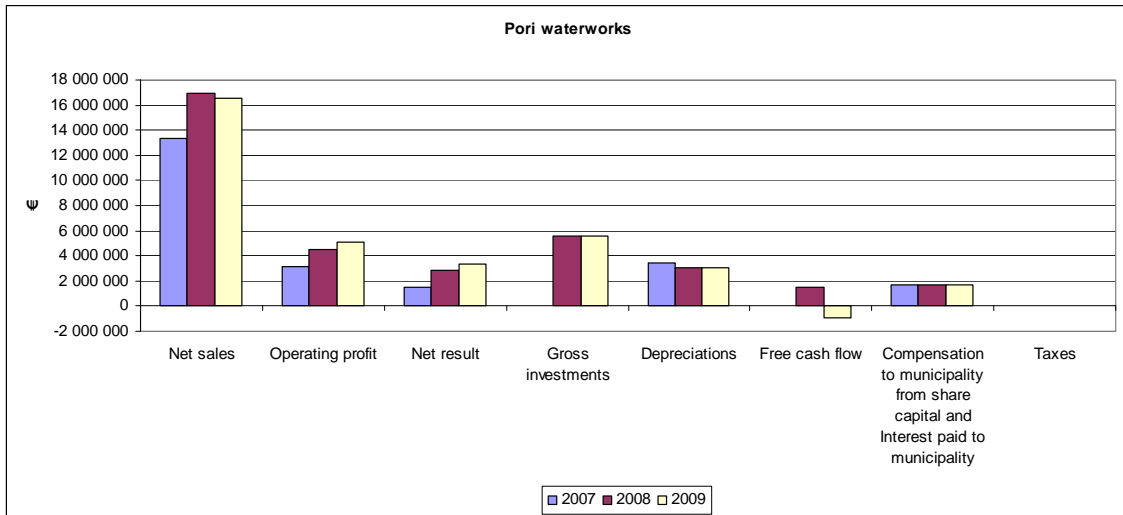


Figure 167. Pori waterworks, financial data, 2007–2009.

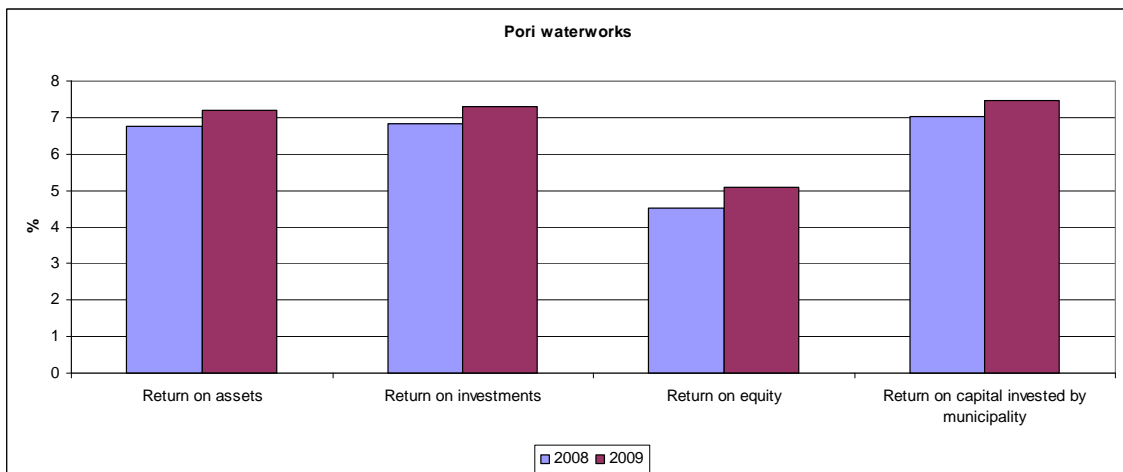


Figure 168. Pori waterworks, return ratios, 2008–2009.

## Kokkola waterworks

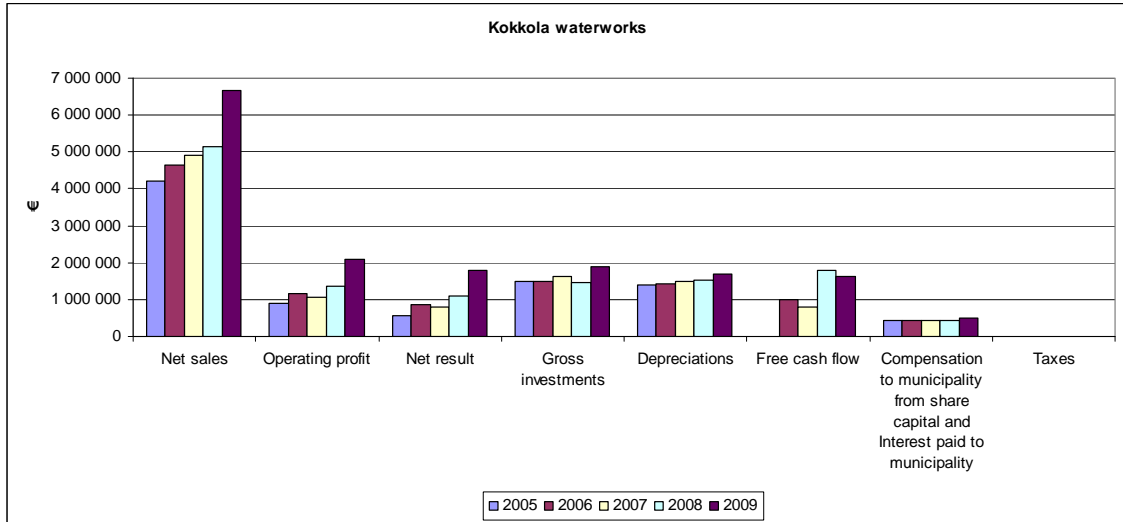


Figure 169. Kokkola waterworks, financial data, 2005–2009.

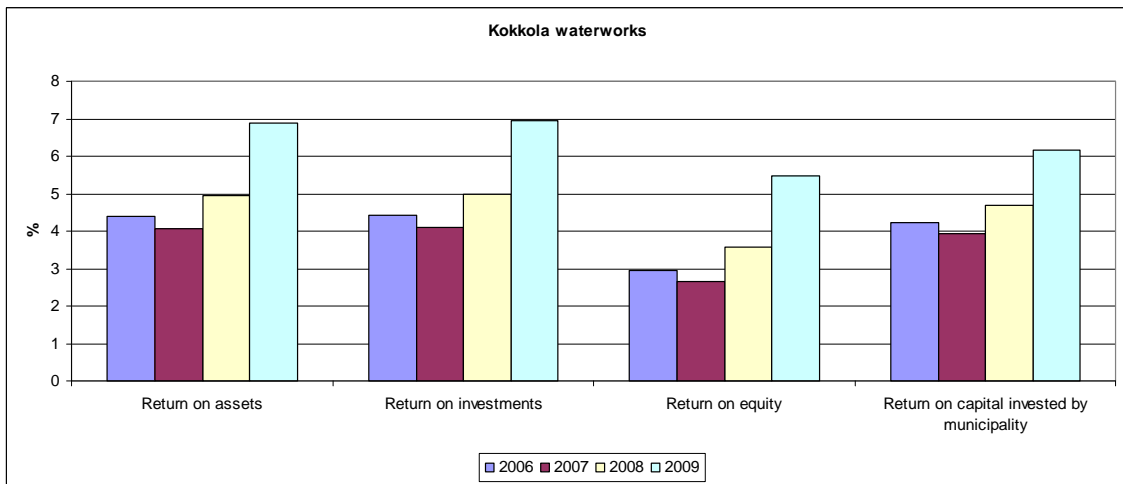


Figure 170. Kokkola waterworks, return ratios, 2006–2009.

## Seinäjoki waterworks

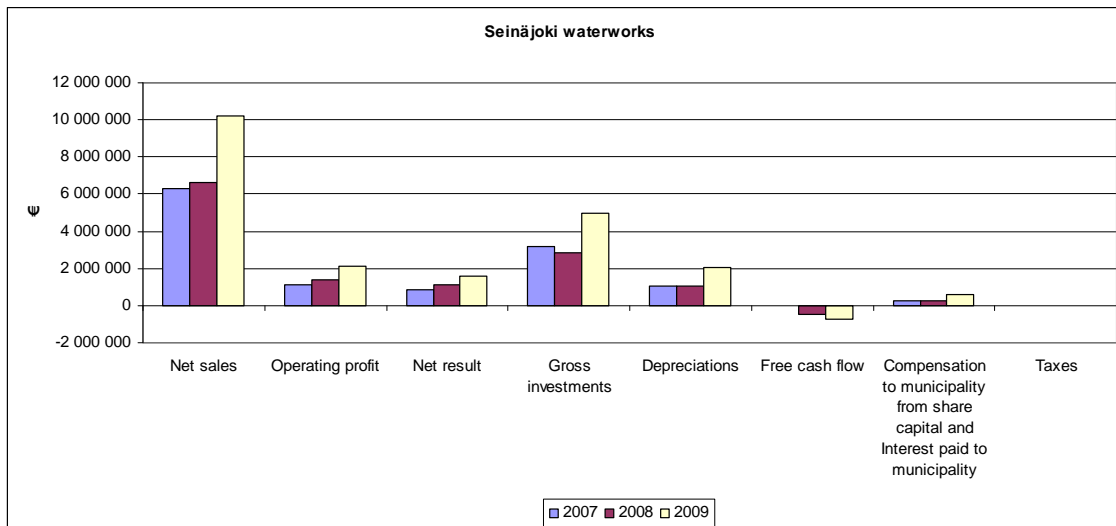


Figure 171. Seinäjoki waterworks, financial data, 2007–2009.

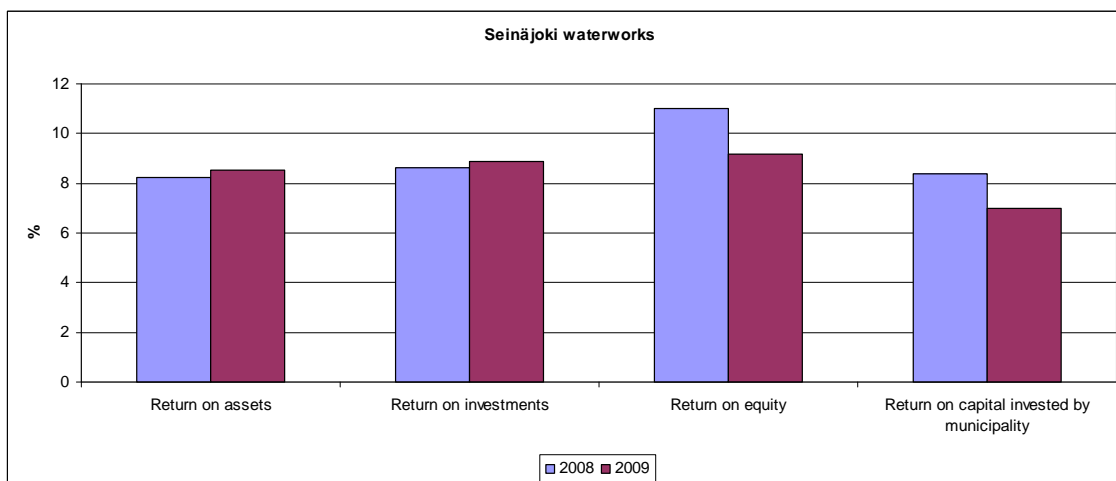


Figure 172. Seinäjoki waterworks, return ratios, 2008–2009.

## Inarin Lapin waterworks

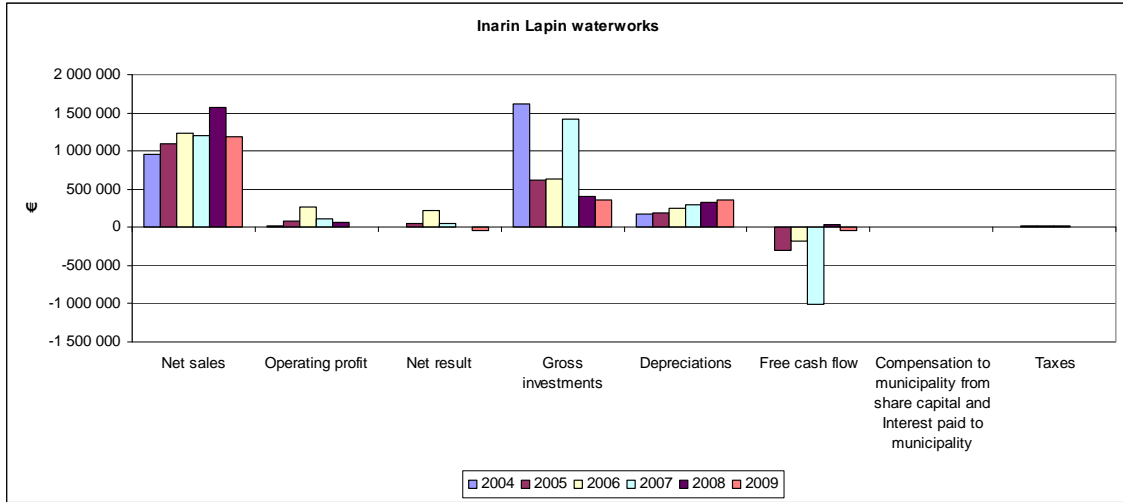


Figure 173. Inarin Lapin waterworks, financial data, 2004–2009.

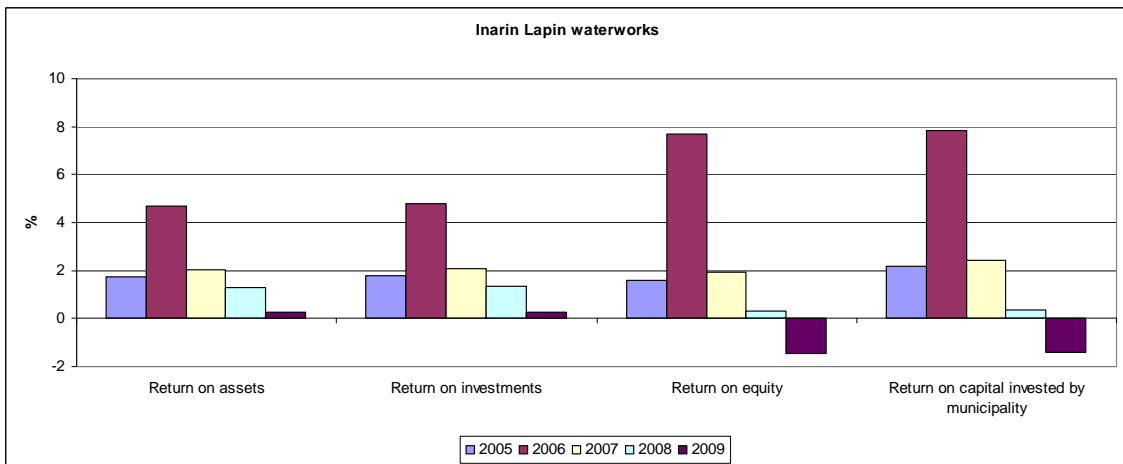


Figure 174. Inarin Lapin waterworks, return ratios, 2005–2009.

## Kymi waterworks

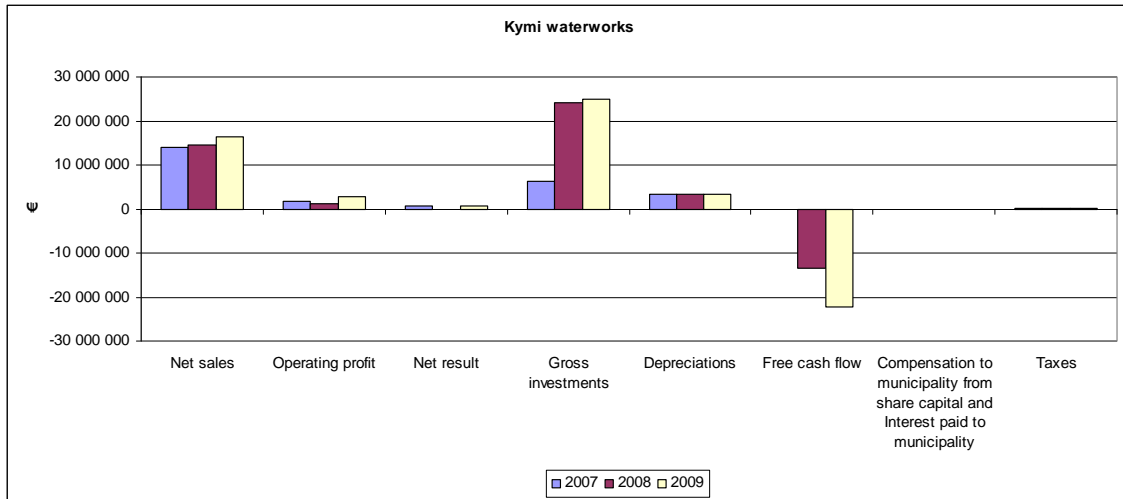


Figure 175. Kymi waterworks, financial data, 2007–2009.

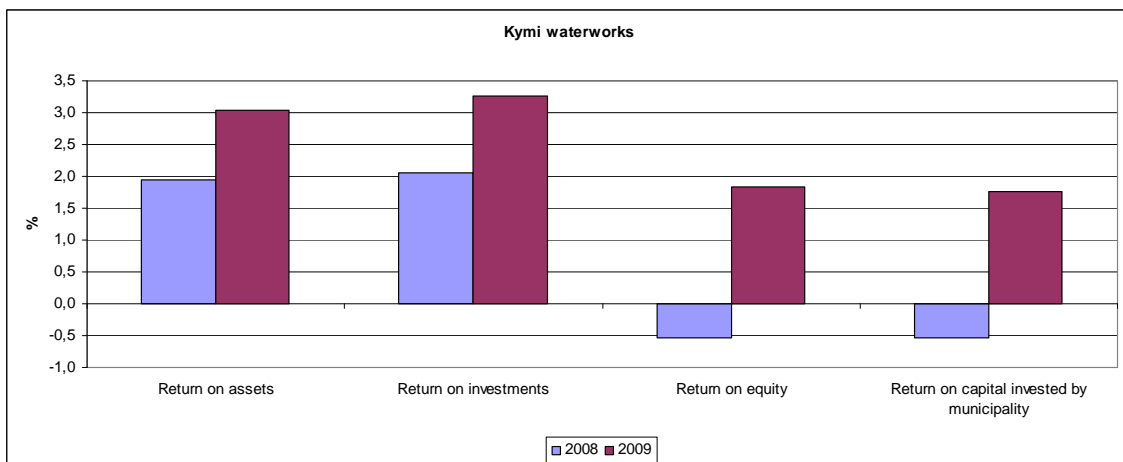


Figure 176. Kymi waterworks, return ratios, 2008–2009.

## Keminmaa waterworks

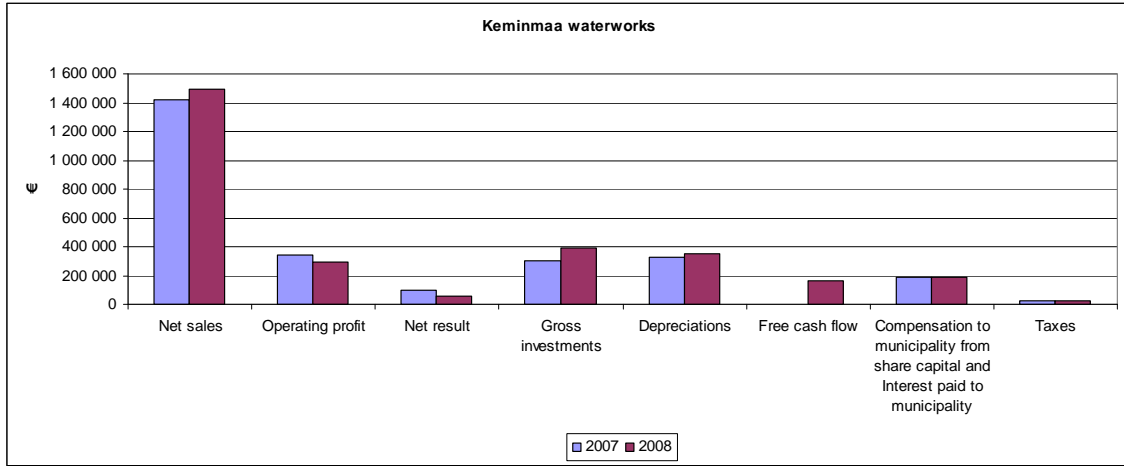


Figure 177. Keminmaa waterworks, financial data, 2007–2008.

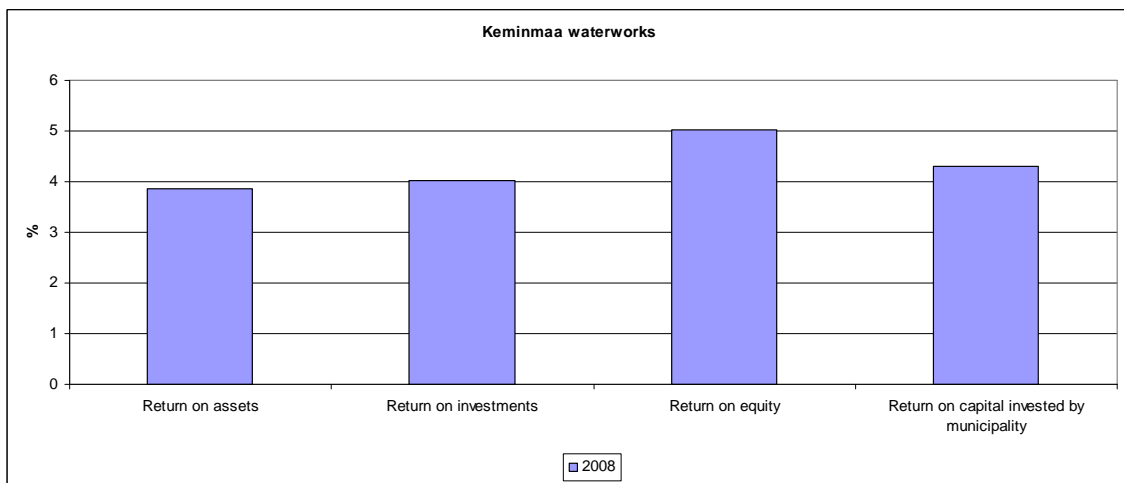


Figure 178. Keminmaa waterworks, return ratios, 2008.

## Raahe waterworks

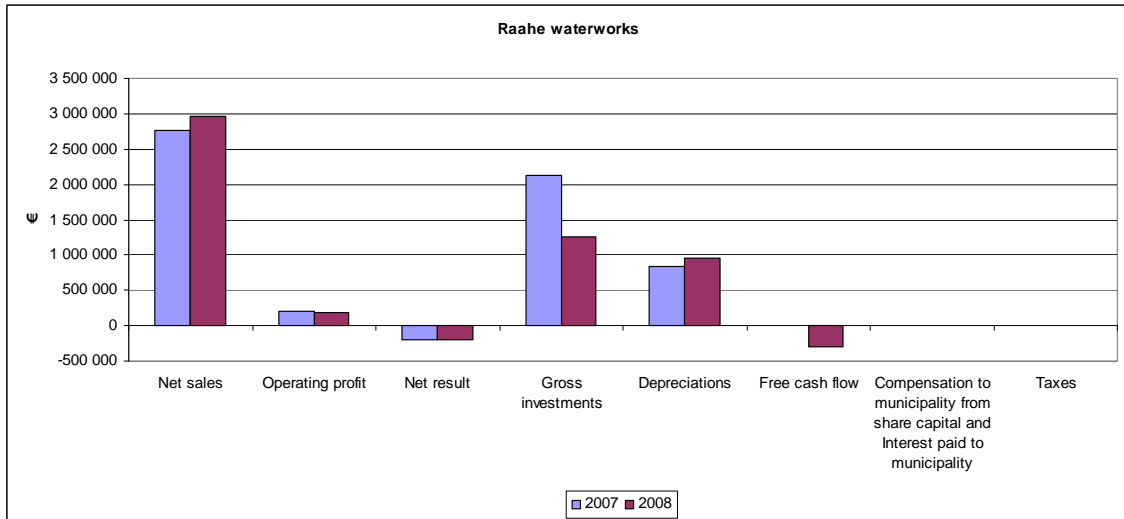


Figure 179. Raahe waterworks, financial data, 2007–2008.

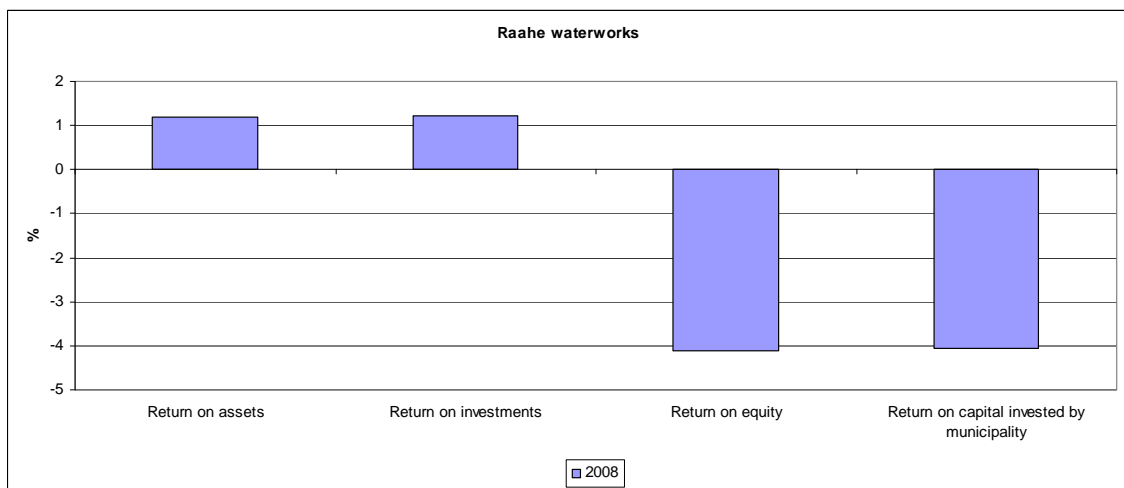


Figure 180. Raahe waterworks, return ratios, 2008.

## Ylivieska waterworks co-operative

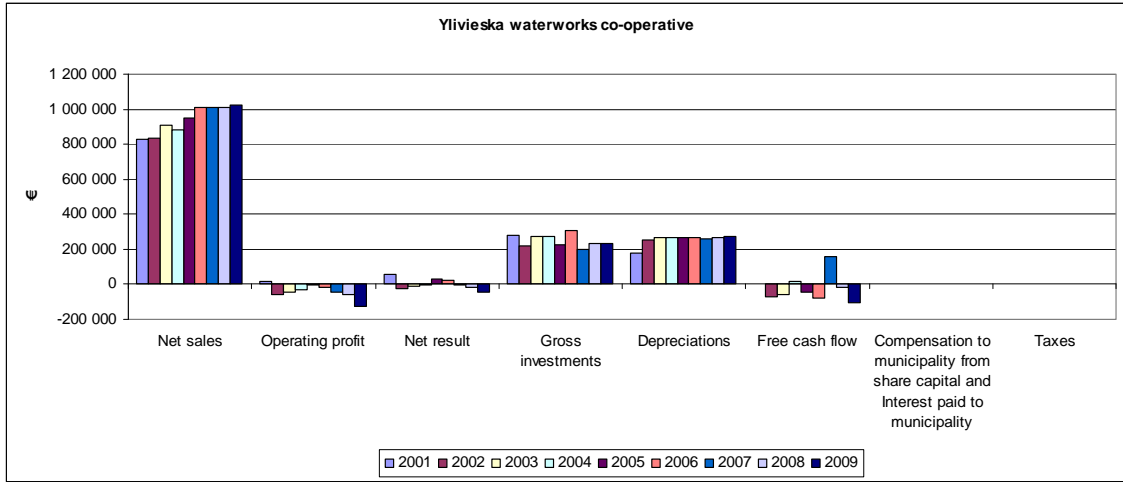


Figure 181. Ylivieska waterworks co-operative, financial data, 2001–2009.

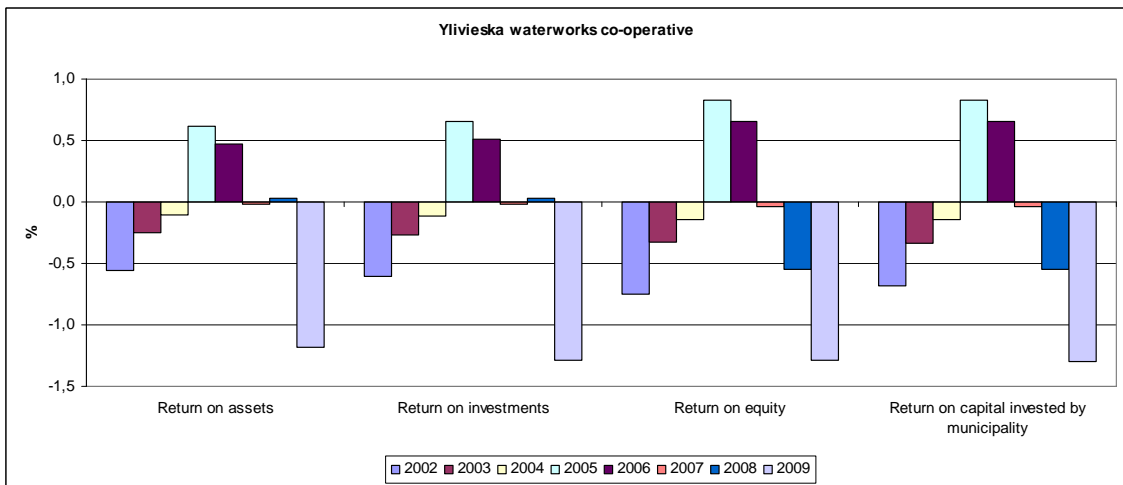


Figure 182. Ylivieska waterworks co-operative, return ratios, 2002–2009.



### Pudasjärvi waterworks co-operative

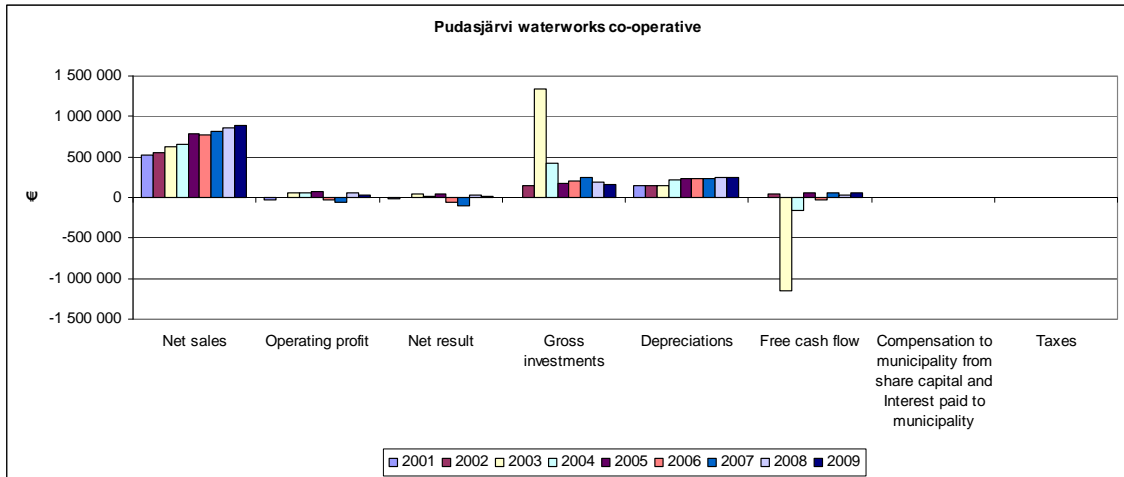


Figure 183. Pudasjärvi waterworks co-operative, financial data, 2001–2009.

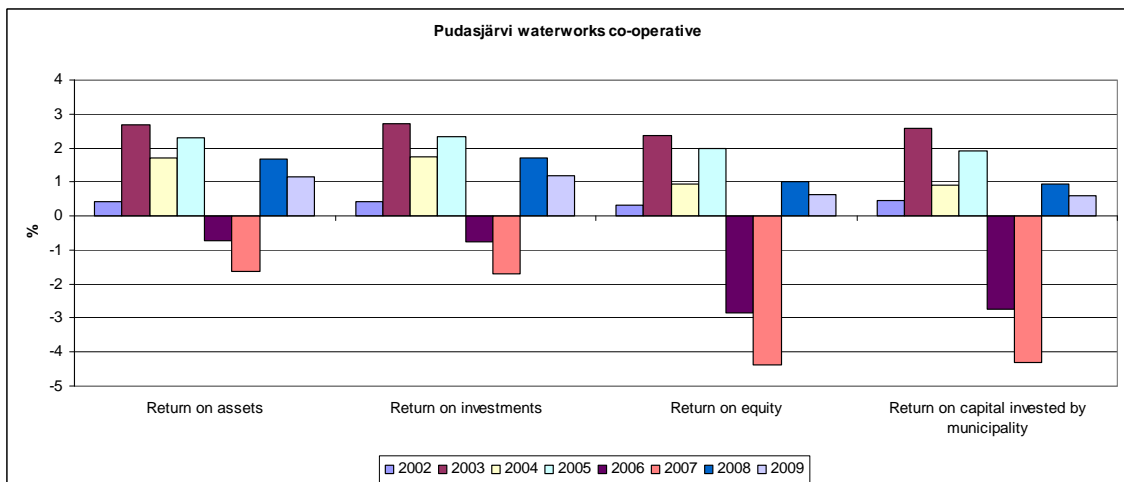


Figure 184. Pudasjärvi waterworks co-operative, return ratios, 2002–2009.

## Kitee waterworks co-operative

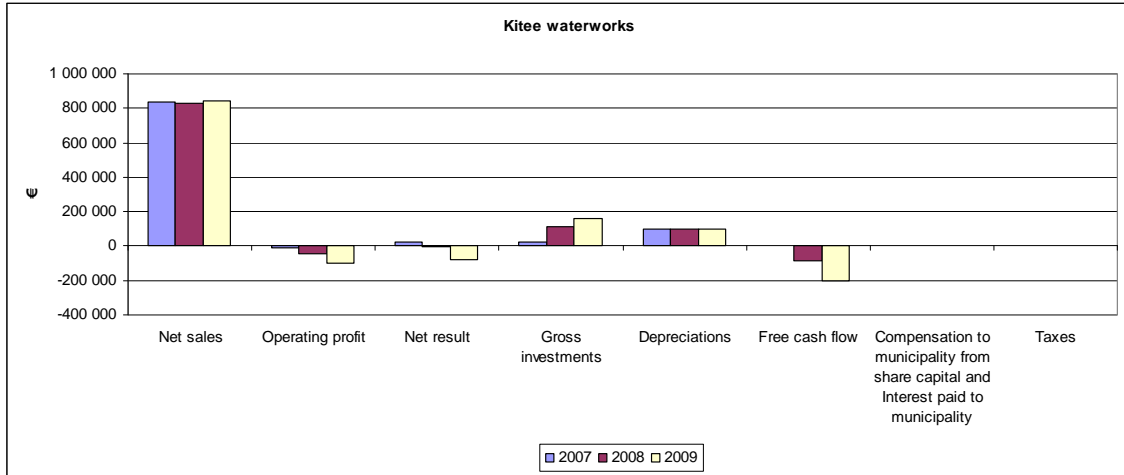


Figure 185. Kitee waterworks co-operative, financial data, 2007–2009.

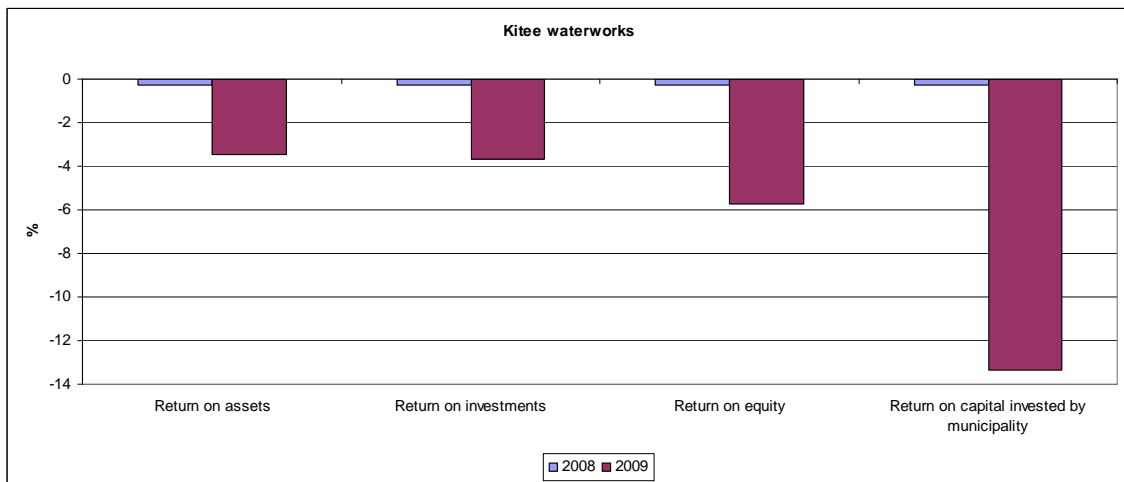


Figure 186. Kitee waterworks co-operative, return ratios, 2008–2009.

VR

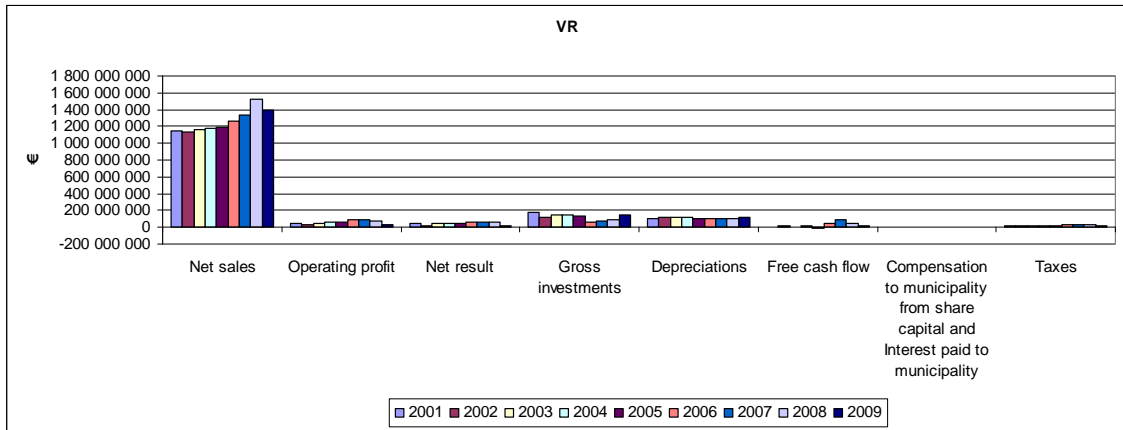


Figure 187. VR, financial data, 2001–2009.

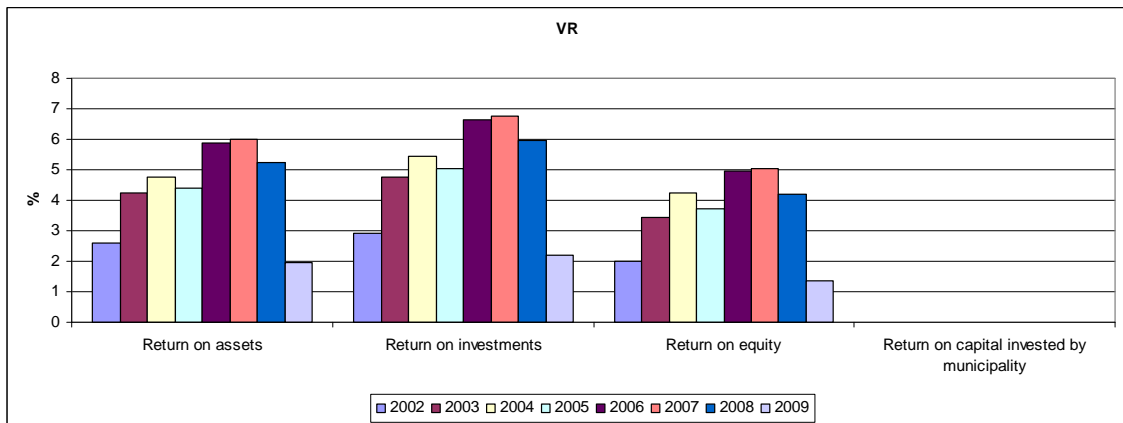


Figure 188. VR, return ratios, 2002–2009.

## Rail Department of the Finnish Transport Agency (formerly Finnish Rail Administration)

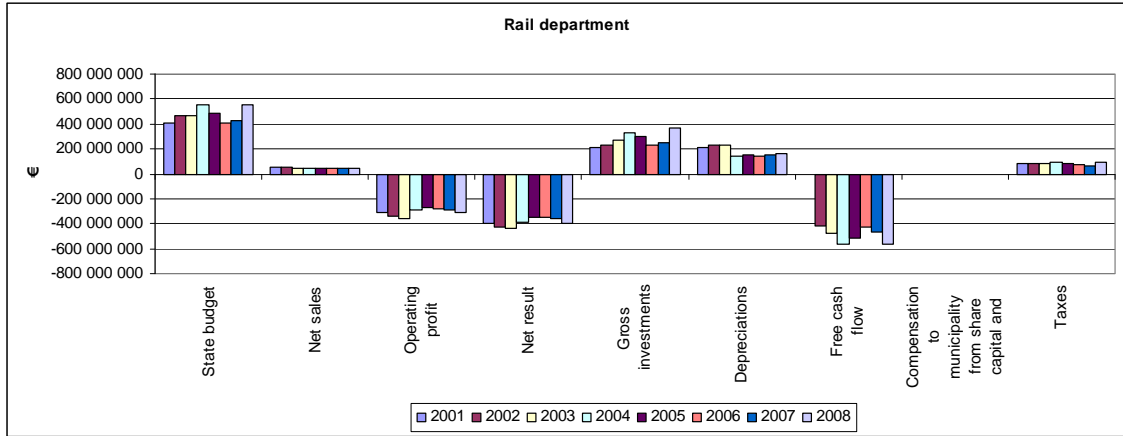


Figure 189. Rail Department, financial data, 2001–2008.

## Finavia

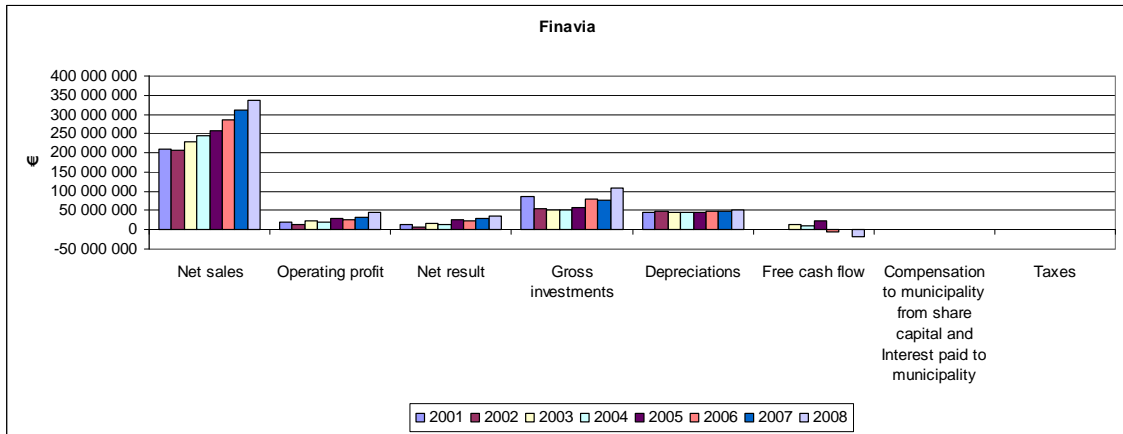


Figure 190. Finavia, financial data, 2001–2008.

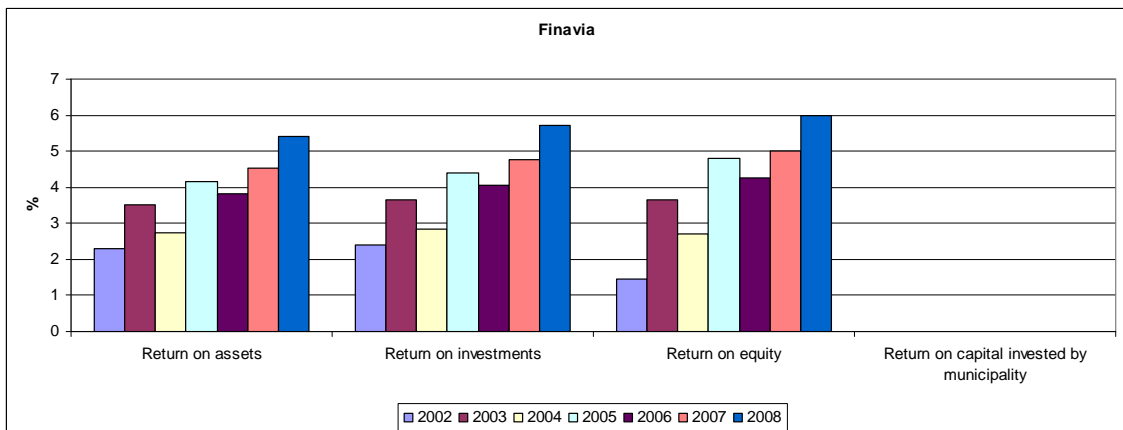


Figure 191. Finavia, return ratios, 2002–2008.

## Destia

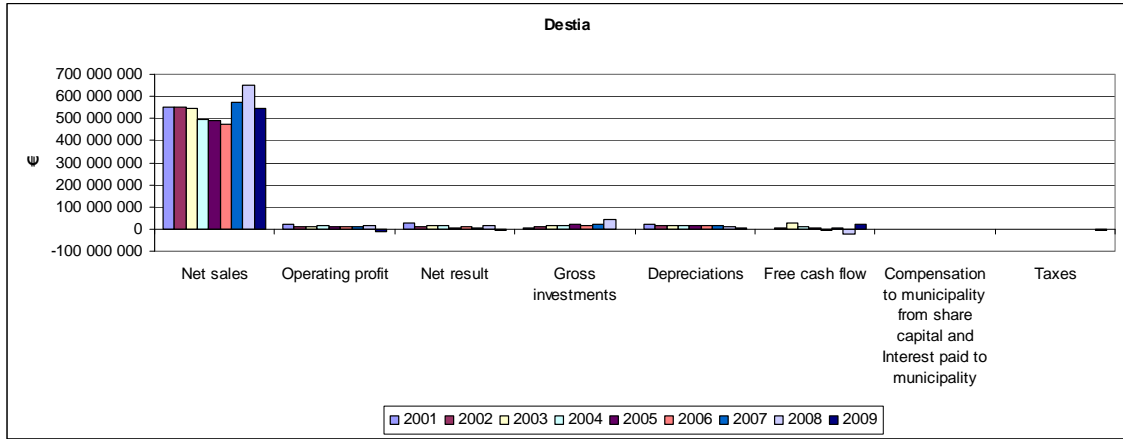


Figure 192. Destia, financial data, 2001–2009.

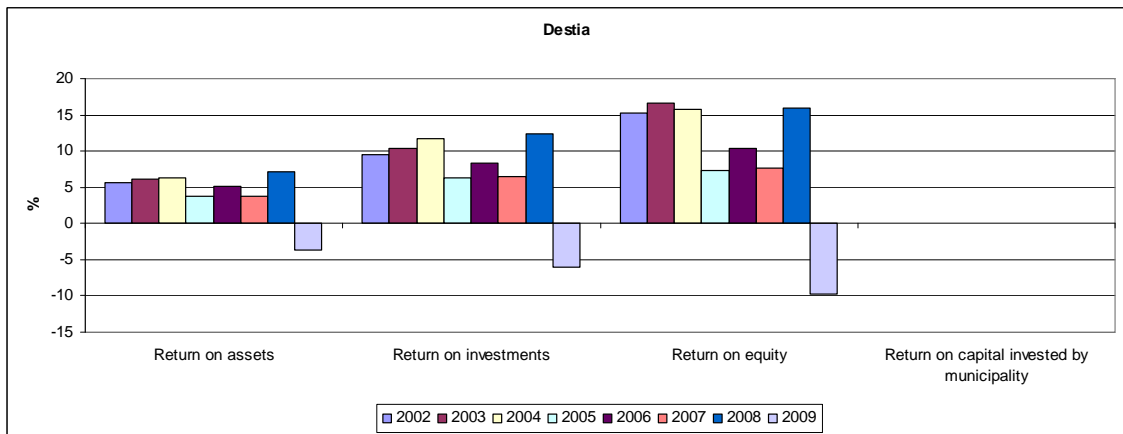


Figure 193. Destia, return ratios, 2002–2009.

## Road Department of the Finnish Transport Agency (formerly Finnish Road Administration)

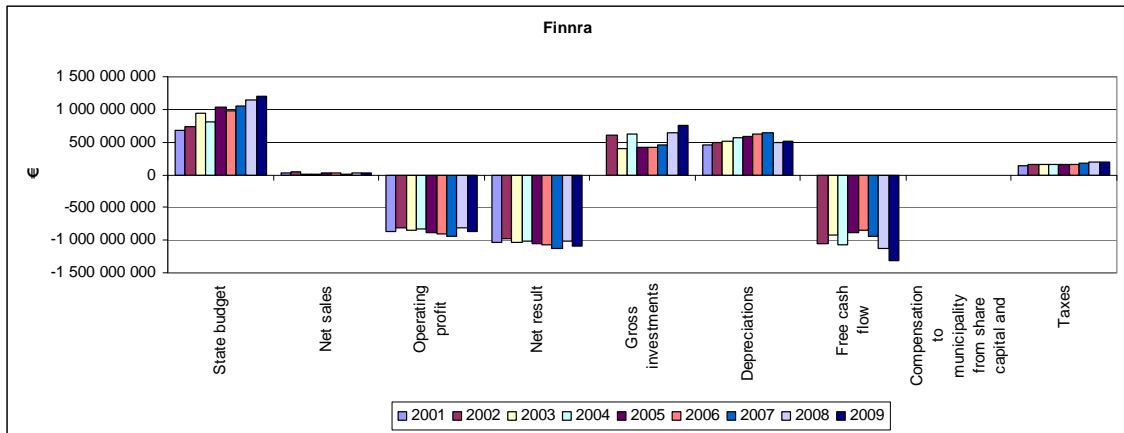


Figure 194. Finnish Road Administration, financial data, 2001–2009.

## Oulu Energy

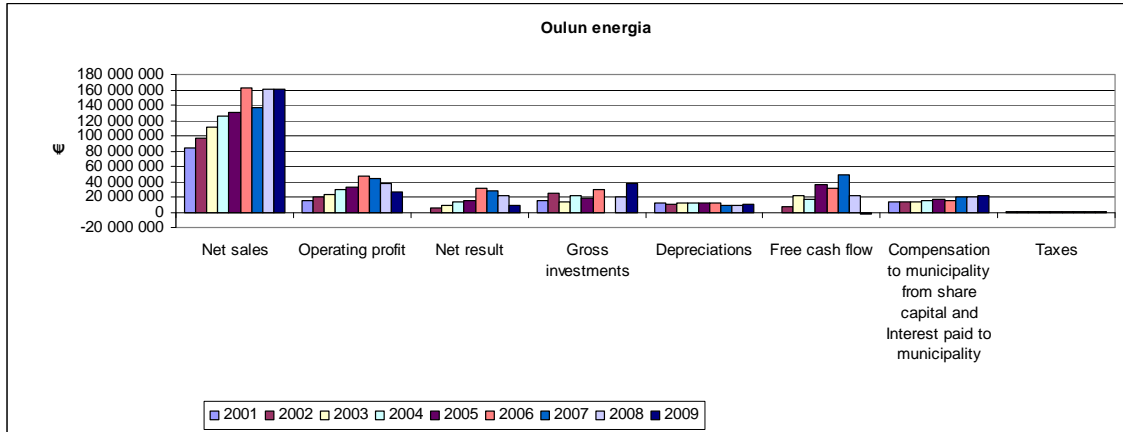


Figure 195. Oulu Energy, financial data, 2001–2009.

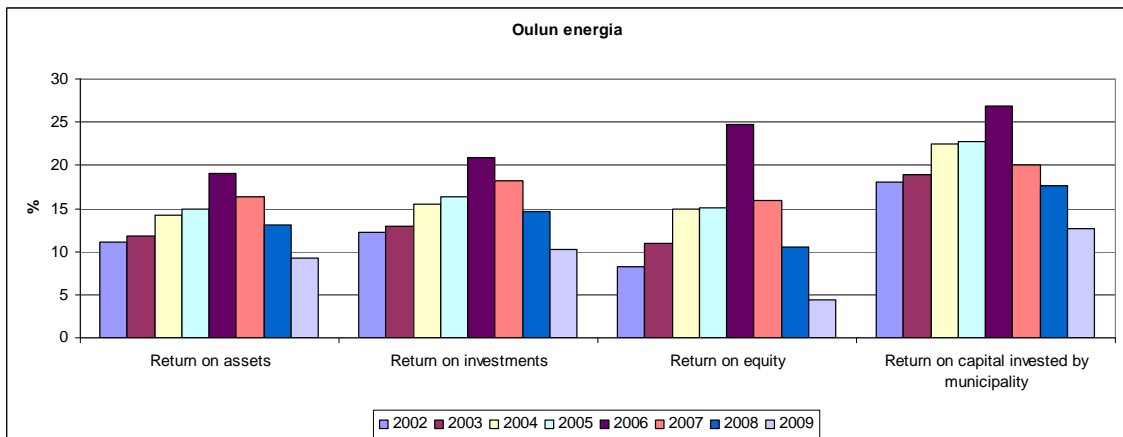


Figure 196. Oulu Energy, return ratios, 2002–2009.



## Helsinki Energy

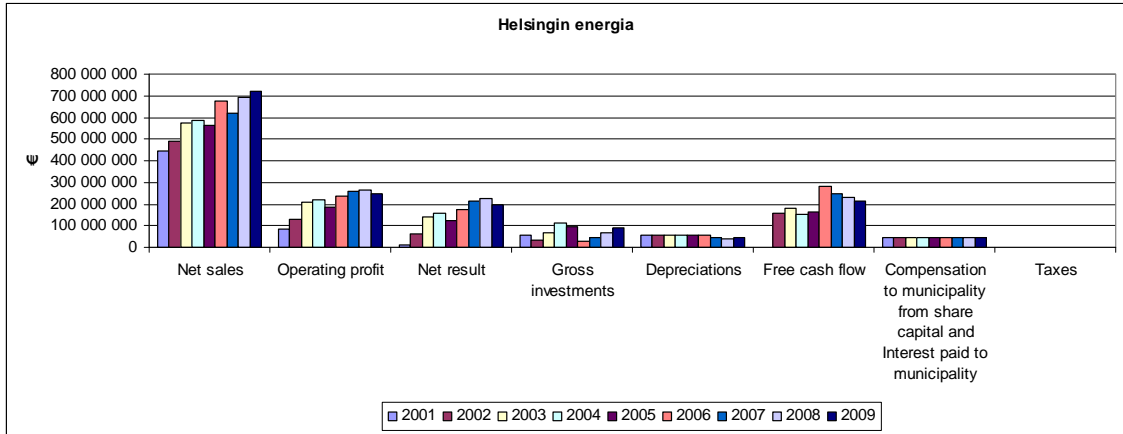


Figure 197. Helsinki Energy, financial data, 2001–2009.

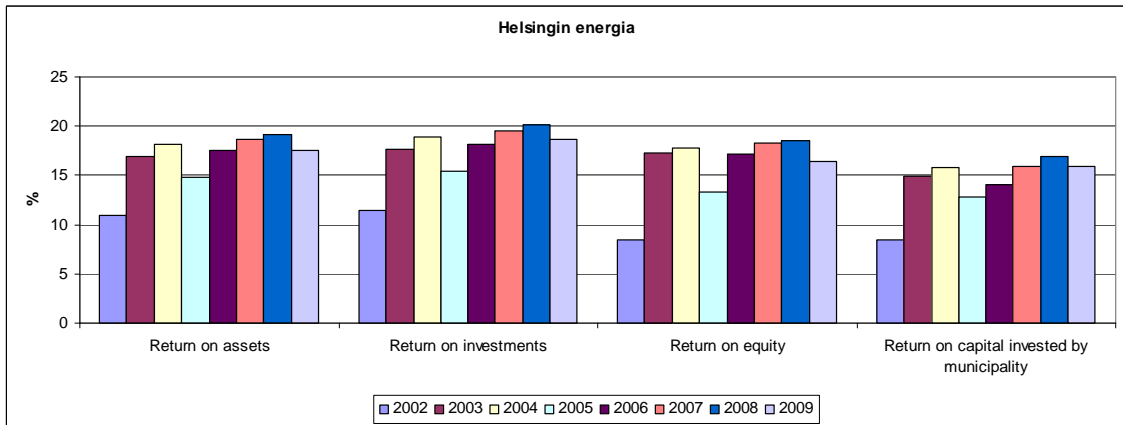


Figure 198. Helsinki Energy, return ratios, 2002–2009.

## Fortum

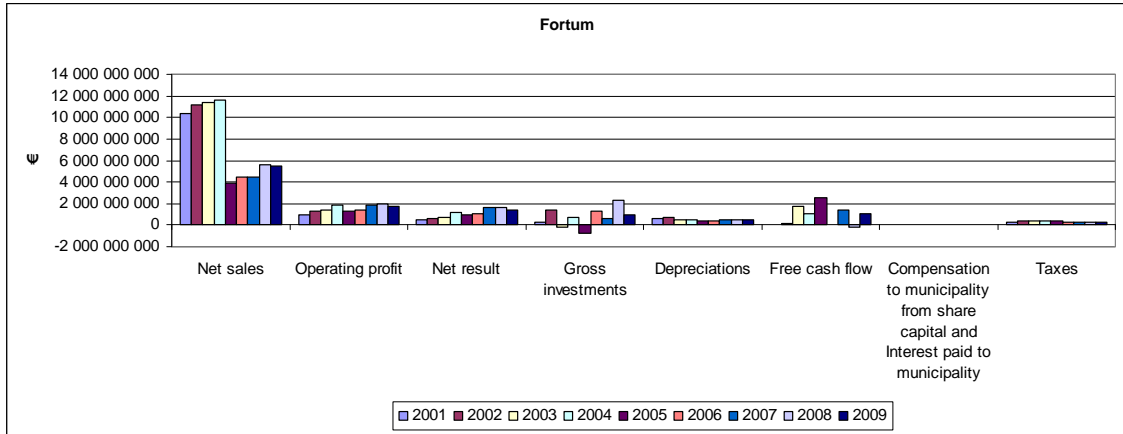


Figure 199. Fortum, financial data, 2001–2009.

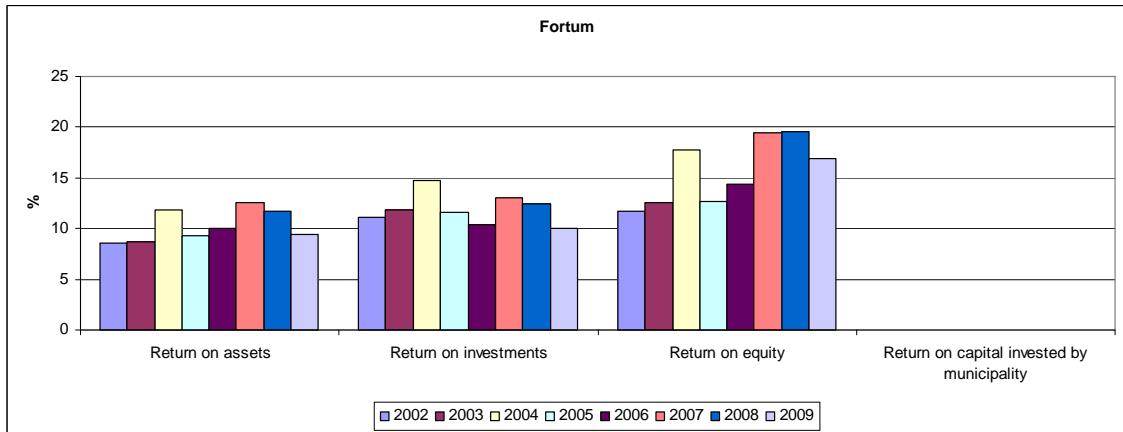


Figure 200. Fortum, return ratios, 2002–2009.

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