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# FAMOS

**A size-class based financial analysis model**



**SCALES**

SCientific AnalYsis of Entrepreneurship and SMEs

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## Summary

In this report the financial model **FAMOS** for non-financial sectors and size classes is presented as a supplement to existing macro economic and sectoral EIM models such as PRISMA and KTO. In this model all balance-sheet variables and the main financial indicators are modelled. Non-corporations are distinguished separately.

The model provides an insight into the effects of changes in turnover, financial costs (paid interest) and profitability on the financial items, in casu, the components of assets and capital presented on the balance sheet and the main financial indicators.

The financial situation of firms cannot be neglected, because of the considerable extent of financial bottlenecks. These actually slow down economic growth and may even endanger the continuity of the enterprise. Providers of capital are willing to invest in an enterprise only when they have faith in its financial situation and when profitability is sufficiently related to the capital invested.

The shape of the equations are based on an OLS estimation. For this purpose a data set of large-scale enterprises for the period 1984-1994 is used. The coefficients used in this model however could not be determined in this manner, because time series per size class are lacking. Only scale data of corporations are available for the period 1991-1994. A data set of non-corporations had to be constructed from various other data sets, so the coefficients have been obtained through trial and error in such a way that, on average, the residue of the entire period (1992-1994) is zero.

FAMOS makes it possible to make the balance sheet forecast one year or more in advance, and also to analyse the effects of changes in the economic situation. In this report the results of a forecast twelve months in advance and the implication of a rise in interest rates by 2 percentage points is analysed.

The main conclusion is that the financial structure changes only marginally for economic growth in general and more specifically for changes in paid interest and profits. The reaction within sectors and size classes however may differ considerably. The direction of the changes in the financial items is not identical for all size classes.



# 1 Introduction

Enterprises are marked by flows of goods and services that translate into monetary units. Flow entities entail investment, production, cost and profit. The volume of these flows depends on the time-span covered by an assessment. For shorter or longer periods, these flows take the form of stocks. Stock entities may thus be delineated as assets needed for production, i.e. means of production, accounts receivable, liquid assets and products or raw materials that are available or may be claimed at a given point of time. These stocks are defined as assets, and governance of these assets is defined as capital. Capital may be attracted via various sources and at varying conditions, including via proprietors, banks, (corporate) investors or suppliers.<sup>1</sup>

Macro economic and sectoral models emphasise the flows of goods and services, but pay hardly any attention to the assets and the governance of these assets. In these models profitability is related only to sales or value added, but never to the capital invested. This is curious as paid interest and profits are the compensation for placing (venture) capital at the disposal of enterprises. Many research reports show that financial bottlenecks may impede economic growth or even endanger the continuity of firms should capital suppliers no longer be willing to put money into enterprises any longer. Insight in the financial situation of enterprises by means of modelling the financial situation is therefore just as important as modelling the growth of turnover, costs and profits. Besides, a financial model also gives insight in the effects of changes in turnover, investments, profits and financial costs, such as paid interest on the composition of assets and capital in enterprises.

## Modelling of financial aspects of private enterprise

EIM has constructed a model which forecasts assets and capital, as expressed on the *balance sheet*, and derived from that, financial indicators for *non-financial private enterprise*. The model is named FAMOS, which stands for Financial Analysis Model of SMEs. FAMOS is a multi-sectoral model differentiating by size class. FAMOS comprises corporations and non-corporations, separately.

FAMOS should be regarded as a supplement to two already operational EIM models, PRISMA and KTO. Besides outlining the flows in the economic process in PRISMA and KTO, such as the development of production, costs, profitability, investments and employment, the financial model FAMOS allows for an outline of the financial impact

1 For an explanation of the financial terms, see annex V.

of these developments on sectors and size classes. In addition, combined with the profit-and-loss account, i.e. the result of the PRISMA and KTO models, (additional) financial indicators may be identified, such as return on equity, basic earning power, solvency and liquidity.

Sector classification in the financing model practically equals that of PRISMA, omitting only the sectors of finance (banking and insurance), real estate and the public sector (see annex I).<sup>1</sup> The sectors are subdivided into size classes ranging from 0-10 employees, 10-99 employees and 100 or more employees.

### **Set-up and background of the model**

The FAMOS model is based on the economic theory relating to the assets and capital structure of enterprises. The portfolio analysis plays an important role in this model (see chapter 2). The model estimates levels instead of changes. To construct this financial model, two steps have been made:

- determination of the form of the relationships of the endogenous variables of the model
- determination of the coefficients of these relationships.

The endogenous variables are the components of assets and capital on the balance sheet. Exogenous variables are variables of the profit-and-loss account: turnover, depreciation, interest rate, paid interest and profits, price of the investments and investment in (in)tangible assets. Financial indicators are also presented, these are derived from both endogenous and exogenous variables.

The model starts with the assets side of the balance sheet, while differentiating between (in)tangible fixed assets, financial fixed assets, inventories, short-term accounts receivable and liquid assets. The capital side comprises equity, such as shareholder-funds and retained earnings, (interest-bearing and non-interest-bearing) long-term debts and (interest-bearing and non-interest-bearing) short-term debts. Table 1 illustrates 1994's balance sheet of the three size classes and the non-corporations.<sup>2</sup>

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1 Since financial sectors represent capital supply, they are unsuitable for our model. The public sector claims a separate place in this respect. Adequate data for the real-estate sector are not available as yet.

2 Contrary to most EIM studies, agriculture is included in these data.



## **Method of determining relationships and valuation of the coefficients used**

The relationships presented in the underlying report are based on OLS estimates effected for only the entirety of large-scale private enterprise for the period 1984-1994. As regards the results estimated, t-values are denoted between parentheses. The underlying data are derived from the statistic 'Statistiek Financiën van Grote Ondernemingen' (SFO).<sup>1</sup> The minimum scale in this statistic is not based on persons employed (as is usual) but on the level of turnover. EIM has not enough data at its disposal to make estimations of small-scale, medium-scale and large-scale enterprises based on persons employed. Only data for the period 1991-1994 are available. For corporate enterprise use was made of the statistic 'Statistiek Financiën van Ondernemingen' (SFO).<sup>2</sup> The data set of non-corporations was constructed from various data sets from EIM, CBS and commercial banks covering various periods. Therefore all coefficients are not derived by estimation, but through trial and error for the various size classes in such a way that residues for the entire period 1992-1994 period are zero on average.

As the size of size classes differs considerably between successive years, all coefficients are based on averages per enterprise. The model generates values per enterprise. The total size of sectors and size classes can be obtained by multiplying the model results by the number of enterprises. Each variable is denoted by a three-character basic abbreviation, to which additional letters may be added to indicate levels or price indices, respectively. Annex II comprises a list of all variables.

## **Classification of sectors**

In the model 16 sectors are distinguished (see annex I). The classification used in FAMOS is SBI-74. Unfortunately, this is not the more recent classification (SBI-93/NACE Rev. I), as all data used in this model to value the coefficients were based on the classification SBI-74. As yet, no data are available in SBI-93/NACE Rev. I.

## **Limitations**

The underlying model maps non-financial entities only. No attention is paid to the financial sectors, the providers of outside capital. Moreover, only the behaviour of entrepreneurs is modelled. The consequence if this limitation is that this behaviour is not matched with the ceilings of bankers and other financial suppliers.

1 In English: Corporate Finance of Large Scale Enterprises.

2 In English: Corporate Finance of Enterprises.

Although both corporations and non-corporations are separate parts of this model, it should be noted that related EIM models like PRISMA and KTO, which should supply FAMOS with variables of the profit-and-loss account, have not made this distinction until now. Albeit that this distinction plays a role only for small enterprises, agriculture and health care. In medium-sized and large enterprises virtually only corporations are found.

### **Report set-up**

The underlying report is structured as follows.

Chapter 2 gives a survey of the economic theory of the asset and capital structure of a firm. Special attention is paid to the portfolio analysis. This chapter gives an impression which variables may be used in our financial model. Chapters 3 and 4 comprise the modelling of the assets side and the liabilities side of the balance sheet, respectively. Various basic financial indicators are defined in chapter 5. These indicators give an impression of the financial performance of enterprises. In chapter 6 the goodness of fit of the model is checked. With the help of our financial model, we want to make forecasts of the financial structure of enterprises. Therefore, in chapter 7 a one-year-ahead forecast of the balance sheets of four size classes is presented. In chapter 8, the results of a financial experiment are presented to illustrate the simulation properties of the FAMOS model. It involves an increase in the interest rate, both long- and short-term, of two percentage points compared to the interest rate in chapter 7. Based on SBI-74, annex I outlines the sector classification adopted; annex II comprises an explanation of abbreviations. Annexes III and IV present the sectoral results of the calculations made in chapters 7 and 8. Finally, annex V gives an explanation of the main financial terms used in this report.

Table 1 Balance sheet of non-financial private enterprise 1994 (x billion guilders)

assets	small	medium-sized	large	non- corporations	liabilities	small	medium-sized	large	non- corporations
fixed assets	27.4	95.9	435.1	90.5	equity	22.4	63.7	262.9	55.3
<i>(in) tangible</i>					<i>shareholders</i>				
<i>assets</i>	19.6	61.7	236.2	88.4	<i>funds</i>	-	-	65.5	-
<i>financial assets</i>	7.8	34.2	198.9	2.1	<i>retained</i>				
					<i>earnings</i>	-	-	197.4	-
current assets	39.0	96.3	241.8	39.1	liabilities	44.0	128.5	414.0	74.0
<i>inventories</i>	8.4	25.0	59.1	11.7	<i>long-term</i>				
<i>accounts</i>					<i>liabilities</i>	21.0	62.8	212.2	44.4
<i>receivable</i>	17.8	49.0	148.2	14.7	<i>short-term</i>				
<i>liquid assets</i>	12.8	22.3	34.5	12.7	<i>liabilities</i>	23.0	65.7	201.8	29.6
total assets	66.4	192.2	676.9	129.6	total capital	66.4	192.2	676.9	129.6

Source: Based on data sets from CBS, EIM and commercial banks.



## 2 The financial management of an enterprise

### 2.1 Introduction

This chapter gives a survey of the economic theory of the asset and capital structure of a firm. Special attention is paid to the portfolio analysis. This chapter gives an impression which variables may be used in our financial model.

We will therefore look to the financial management of an enterprise in more detail. When generating products and services an enterprise has to deal with various financial aspects.

An enterprise makes investments, builds inventories and liquid assets to have sufficient means available. The extent of such assets can be regulated. When determining this extent a balance has to be found between the benefits and costs linked to a certain limit of scope.

To obtain assets an enterprise must first obtain sufficient financial capital. The enterprise has a choice of various ways of doing this, e.g. owner's capital (equity) or credit and also a choice between short-term or long-term credit. The choice is determined mainly by comparing the cost of obtaining the various types of capital. And, in addition, certain requirements set by the suppliers as to the distribution of credit capital have to be considered.

The optimum composition of the assets and capital in an enterprise depends on a large number of factors. In this chapter the most important factors will be shown. The interest rate is certainly an important one. In the financing theory the influence of the interest rate on the composition of assets and capital is known as the portfolio analysis. Below, we will show how the interest rate affects the level of both assets and capital.

This chapter is compiled as follows: the next paragraph deals with the ideal extent of an enterprise's assets. Ideally, how high should stock levels be and what factors influence this level? The subsequent paragraph considers the question of financing. It explores how the need for capital is determined and the spread of the various types of capital.

## **2.2 The optimum extent of assets**

An enterprise's assets consist of fixed and current assets. The need for capital created by the level of the current assets is called the gross operating capital. This gross working capital is required to finance the daily operation of the enterprise.

Working capital management is of essential importance but, in practice, receives little attention. The lower the amount of money tied up in gross operating capital, the higher the sum that is available for investment in fixed assets. In other words, managing working capital means controlling the amount of the current assets.

To be able to manage the working capital it is necessary to be familiar with the in-coming and out-going cash flow of the enterprise. Managing the liquidity of an enterprise is considered to be one of the essential elements of financial management. When an enterprise is growing the liquidity is always under pressure. Stock increases and so does the number of debtors. Often it is necessary to find more space and more personnel. This has to be pre-financed by the enterprise. In spite of the enterprise doing well, bottlenecks can always occur in connection with financing, usually because the banks are taking greater risks.

It is not possible to state exactly how high the working capital should be, this must be balanced against various, contradictory interests. Low stock could mean, for example, loss of turnover, stagnation in production and late delivery. On the other hand it could also mean lower costs and less chance in out-of-date stock. Flexible debt management could result in more customers, but it could also result in a higher risk of bad debts.

The amount of the working capital influences not only the extent of financing required but also the return on invested capital. There are two reasons for this. In the first place when the turnover and profit remain at the same level and there is an increased need for capital, the return on that capital will be reduced. In the second place the increased demand for capital and stock management are accompanied by extra costs.

Working capital management can be divided in various components: cash management, accounts receivable management and inventory management. Below, we will discuss these components by making a good comparison between the benefits and the costs of holding a particular level of an asset.

## **Cash management**

Firms, as well as individuals, hold cash to conduct transactions, both for speculative and precautionary reasons. The transaction motive refers to payments in the ordinary course of business such as purchases, wages, taxes and dividends. The speculative motive means taking advantage of temporary opportunities, such as a sudden decline in the price of a raw material. The purpose of the precautionary motive is to maintain a safety buffer to meet unexpected cash demands. It is important to note that the firm's needs for cash may also be met by holding marketable securities (cash-equivalent assets).

Most firms establish a target level of holding cash, this is determined by comparing the benefits with the costs of maintaining that level.

The benefit of holding cash is the firm's *flexibility* of operation. Sufficient cash means that a firm can easily meet its obligations (see transaction motive).

On the other hand, firms do not want excess cash because interest can be earned when these funds are invested in marketable securities (the *opportunity costs*). The higher the interest rate available on marketable securities, of course, the higher the opportunity costs of holding cash.

Thus, to determine the optimum level of cash, a firm finds a good balance between flexibility (the benefits) and the opportunity costs (the costs).

## **Accounts receivable management**

The optimum level of accounts receivable involves a trade-off between profitability and risk. It is determined by comparing the benefits to be derived from a particular level of investment with the costs of maintaining that level. The main influences on the level of a firm's accounts receivable are economic conditions, product pricing, product quality and the firm's credit policy. Some influences are beyond the control of an individual firm, for example the economic conditions. On the other hand, other influences may be interpreted as policy variables, such as the firm's credit policy.

Credit policy may have a significant effect on sales. Credit is one of the many factors that influences the demand for a firm's product. Lowering credit standards may stimulate demand, which in turn, should lead to higher sales and profit.

However, by lowering the credit standards, the firm also takes some (financial) risks. Firstly, there is a greater risk of bad-debts. Liberalising a firm's credit may result in new customers with bad payment behaviour. Secondly, there are the opportunity costs of the extra investment in additional receivables instead of other investments. The additional receivables result from increased sales and a longer average credit period. If new customers are attracted by the relaxed credit standards, collecting from these less-creditworthy customers is likely to be slower than collecting from existing customers.

For an optimum credit policy, a firm should compare the possible gains from a change in its policy (extra sales and profit) with the cost of the change (extra bad-debt losses and opportunity costs).

### **Inventory management**

Just as for accounts receivable, the optimum level of the inventories involves a trade-off between profitability and risk. It is determined by weighing up the benefit to be derived from a particular level of investment against the costs of maintaining that level.

Inventories form a link between the production and sale of a product. A manufacturing company must maintain a certain amount of inventory during production, the inventory known as work-in-process. Other types of inventory such as raw-materials and end product inventories are not strictly necessary. What then are the possible gains from having a large inventory?

Inventory in transit, i.e. inventory between various stages of production or storage, permits efficient production scheduling and utilisation of resources. Without this type of inventory, each stage of production would have to wait for the preceding stage to complete a unit. The possibility of resultant delays and idle time give the firm an incentive to maintain an inventory, allowing the firm *flexibility* in its operations. A raw-material inventory gives the firm flexibility in purchasing, and an end product inventory allows the firm flexibility in its production scheduling and marketing. Thus, there is an incentive to maintain stocks of all types.

However, there are also disadvantages for firms having a large inventory. Firstly, there is the total *cost of holding* the inventory, including *storage and handling* costs, and the required return on capital tied up in inventory. Secondly, an additional disadvantage is the *danger of obsolescence*. Like accounts receivable, inventories should be increased as long as the resulting savings exceed the total cost of



holding the additional inventory. The balance finally reached depends on the estimate of actual savings, the cost of carrying additional inventory, and the efficiency of inventory control.

## 2.3 Credit requirements

Enterprise's financial points of attention consist of two components:

- determining the total amount of finance required
- selecting the most favourable means of financing.

The total finance requirements are determined by the total assets (fixed and current assets) of the enterprise. Part of the capital has to be available for a long period, to finance machines and buildings. Another part will be required for a short period only, for example cash and stock.

### **Credit requirements linked to current assets**

The capital requirement of the current assets is linked to the amount of stock and accounts receivable. Before production starts costs are incurred, for example: the cost of buying stocks of raw materials without any immediate return of expenditure. These costs are reimbursed only when the customer has paid. When production commences the stock of raw materials and the end products will increase in the course of the year and so, therefore, will the need for short-term credit. Once the customer has paid there will no longer be any need for credit, after which a new cycle will commence. This is just one theoretical example. In reality various production processes run concurrently so that the credit requirements will be spread more evenly throughout the year.

The current assets usually have a short-term character but also have a 'fixed core'. There will always need to be a minimum stock and the outstanding accounts will also have a minimum level, etc.

One general rule of financing theory is that the 'fixed core' of the current assets has to be financed with long-term credit. The other current assets should be financed with short-term credit.

### **Credit requirements linked to the current assets**

The fixed assets require long-term credit. Contrary to the increasing need for credit for the current assets there will be a decline in the demand for credit for the fixed assets.

At the moment that it is decided to purchase a large machine there will be a high peak in the credit requirements. However, with the

depreciation of the machine in the coming years the capital will become available again. By spreading the investment over time, as far as possible, a reasonably stable demand for credit can be achieved.

### **Short- or long-term capital financing**

Long-term credit has advantages and disadvantages. One great advantage is that long-term financing offers the enterprise more security. The cost of borrowing is fixed which allows the entrepreneur to take into account a fixed rate of interest and a certain level of instalments payments. In this way the entrepreneur will not be confronted by unpleasant surprises, and will also have limited his financial risks as far as possible. On the contrary, however, long-term borrowing leads to rigidity and inflexibility. Using redundant liquidity to pay off long-term loans is often not possible. Neither can an enterprise take advantage of a drop in interest on the capital market when long-term financing is involved.

Short-term financing also has its pros and cons and these are often the opposite of those applying to long-term credit. One extremely important advantage of short-term credit, for example, is its flexibility. It enables the entrepreneur to react more rapidly to the continuous changes in his capital requirements. Disadvantages are that the interest rate is often higher and the risks greater. The interest rate for short-term capital is often higher than for long-term credit. The financial risks show that sudden changes in interest rates can occur. The entrepreneur's financial burden is no longer a known quantity but can vary in the course of time. Of course, this could also be in his favour. At a time when the interest on the capital market drops it is worth while to consider taking out temporary short-term credit.

One of the basic principles of financing theory is that fixed assets must, at least, be covered by long-term credit and owner's equity.

### **Lender's requirements**

The final division of long- and short-term credit depends not only on the preference of the entrepreneur but also on those of the parties providing the credit. Such parties endeavour to limit their financial risks to a minimum.

When providing an entrepreneur with long-term credit the banks pay particular attention to the level of solvency and sufficient collateral (security). The solvency ratio indicates to what extent the enterprise can meet its long-term commitments. Generally speaking the solven-

cy ratio should be at least 20 to 35%. The bank also places great importance on sufficient collateral; should the enterprise go bankrupt the sale of the fixed assets will realise enough funds to recover the interest and instalment payments due. The credit-worthiness of an enterprise can be assessed from the market value of its fixed assets. This rating also fixes the total amount of long-term credit.

Liquidity is an important factor when providing short-term credit. The liquidity ratio indicates to what extent an enterprise is able to meet its short-term commitments. The liquidity should be 1,1-1,5. The banks will determine the short-term credit worthiness of the enterprise, depending on the quality of the collateral available (transfer of debtors and stock, personal securities, etc.).

The parties providing equity capital are more interested in the profit prognosis than in security. They pay more attention to the earning ability of the company i.e. the profit in relation to the capital investment. The profitability is strongly linked to the branch and the extent of the risk the enterprise takes, but it is expected be at least 10 to 25%.

### **Credit or equity capital**

The choice between credit capital or equity capital is influenced by the anticipated return on that capital. If the profitability of the total capital is higher than the cost of capital (the interest), extra financing through capital credit can increase the earnings of equity capital. This phenomenon is called the *leverage effect*.

The degree to which the leverage effect applies depends on the capital ratio. The smaller the equity capital in proportion to the total capital the greater the leverage effect.

It is therefore attractive, when there is a positive leverage effect, to work with a relatively small amount of equity capital. This advantage, however, becomes a disadvantage as soon as the profitability of the total capital drops below the interest level of the credit. There is a second advantage when working with credit and that is, if the cash value of assets rises due to inflation, the debt, in nominal guilders, will remain the same and drop in relative value.

## **2.4 Conclusion**

In this chapter we examined the level and the compilation of the assets and the liabilities. Several factors play an important role. One

important factor is certainly the interest rate; in the financing theory the influence of the interest rate on the assets and liabilities is better known as portfolio analysis. This can be explained as follows.

On the assets side, firms do not want excess cash for example because interest can be earned when these funds are invested in marketable securities (the opportunity costs). The higher the interest rate, the higher the opportunity costs of holding cash.

On the liabilities side, the interest rate is important when choosing between credit and equity capital, and between short- or long-term capital financing. For example, a disadvantage of short-term financing is that the interest rate is often higher than for long-term capital.

Besides the interest rate other factors influence the level and composition of the assets and liabilities. These factors may be flexibility or the lender's requirements. For each asset and liability a trade-off has to be made between profitability and risk.

### 3 The assets side of the balance sheet

This chapter comprises the modelling of the assets side of the balance sheet. The assets side of the balance sheet denotes capital used for the production of goods and services. Two main categories are identified, i.e. fixed assets and liquid assets:

$$(1) \quad \text{AST} \equiv \text{FIX} + \text{CUR} \text{ (definition),}$$

where:

AST	total assets
FIX	total fixed assets
CUR	total current assets.

#### Fixed assets

The model discerns two types of fixed assets, i.e. (in)tangible fixed assets and financial assets. These assets have in common that capital is fixed for a longer period.

$$(2) \quad \text{FIX} \equiv \text{TAS} + \text{FAS} \text{ (definition),}$$

where:

FIX	total fixed assets
TAS	(in)tangible assets
FAS	financial assets.

#### *(In)tangible fixed assets*

These entail the value of the capital stock required for the production of goods and services, and the value of such intangible entities as goodwill, patents and research and development (R&D).

The change in the capital stock equals investments in (in)tangible fixed assets minus depreciation. If enterprises estimate at replacement value, the present capital stock has to be re-valued. Approximately 7% of the larger enterprises (with at least 10 million guilders equity) base their estimate on replacement value. These enterprises account for a 22% share of fixed assets. Revaluation is effected on the basis of price development of investments. The equation thus reads:

$$(3) \quad \text{TAS}_t = \text{TAS}_{t-1} + 0,22 \times \text{INVPR} \times \text{TAS}_{t-1} + \text{INV} - \text{DEP},$$

where:

TAS	(in)tangible assets
INVPR	development of investment prices
INV	investment
DEP	depreciation.

#### *Financial assets*

Apart from (in)tangible fixed assets, enterprises tie up part of their capital in participations and long-term accounts receivable, for a longer period. The value of these financial investments will be determined primarily by the price of shares and bonds and dividends paid. Since stock-market prices of shares can hardly be modelled, we shall effect an approximation based on the capital-market interest-based bond rate:

$$(4) \quad \text{FAS} = \text{FAS}_{t-1} + \text{ICPR} \times \text{FAS}_{t-1},$$

where:

FAS	financial assets
ICPR	interest rate on the capital market.

#### **Current assets**

One common characteristic of liquid assets entails their (potentially rapid) liquidity. Closely related to turnover, current assets consist of inventories, short-term accounts receivable and liquid assets:

$$(5) \quad \text{CUR} = \text{IVO} + \text{DEB} + \text{LIQ (definition)},$$

where:

CUR	total current assets
IVO	inventory (selling) goods, raw and auxiliary materials
ACR	accounts receivable (debtors)
LIQ	liquid assets (cash).

### *Inventories*

According to economic theory, inventories are maintained because of the transaction motive, i.e. to ensure production and delivery. Inventories may also be maintained as an additional buffer, and for speculation purposes. On the other hand financing costs make maintaining inventories less attractive (see among others Van den Berg et al, 1993, pp. 38-40 and Bouma, 1971, pp. 106-134). Chapter 2 went into these motives in more depth.

The transaction motive results in enterprises maintaining, as standard, a fixed percentage of turnover that varies per sector. The SFO data set reveals that the volume of inventories varies per sector as well as per size class. Industrial sectors, in particular, maintain comparatively large inventories. In the 1991-1994 period, larger enterprises maintained more extensive inventories than SMEs did. This may, in part, be explained by the fact that rather than engaging in mass production, SMEs produce more customised goods. Besides, SMEs face higher financing costs than large enterprises do.

Furthermore, the buffer motive might play a more prominent role in large enterprises than in SMEs.

During the 1991-1994 period, the volume of inventories declined in large and medium-sized enterprises although they increased in small enterprises.<sup>1</sup> In larger enterprises, lower inventory volumes are not unusual because of logistics optimisation. ICT increasingly makes it possible for enterprises to postpone ordering new deliveries of products, raw materials and components as long as possible: a shift towards last minute delivery. The equation can be formulated as:

$$(6) \quad \text{IVO} = \mathbf{a} \times \mathbf{b} \times \text{TUR} - \mathbf{c} \times \text{INT},$$

where:

IVO	inventory (selling) goods, raw and auxiliary materials
TUR	turnover
INT	paid interest.

Coefficient **a** denotes the level of the inventories quote based on the transaction motive and the buffer motive. Coefficient **b** denotes the adjustment related to the declining inventories quote over time, while coefficient **c** denotes the impact of interest payments on inventories.

<sup>1</sup> The SFGO shows that enterprises with at least 10 million guilders total capital have maintained increasingly lower inventories since 1984.

For the sectors and size classes surveyed, coefficients **a** and **c** are derived from the estimated relationship, while the levels of **a** and **c** are selected in such a way that the residual value of IVO averages zero in the 1992-1994 period. Table 2 shows the values of the coefficients.<sup>1</sup>

Table 2 Coefficients of equation (6)

	non-corporations				non-corporations			
	small	medium-sized	large	small	medium-sized	large		
	<b>a</b>				<b>c</b>			
food & beverage industry	0,048	0,026	0,086	0,119	0,481	0,625	0,590	0,953
chemical industry	0,068	0,079	0,134	0,139	0,375	0,552	0,496	0,544
metal industry	0,113	0,097	0,144	0,169	0,866	0,953	1,220	0,923
other industry	0,083	0,094	0,132	0,116	0,693	0,693	0,807	0,429
oil industry	-	-	0,055	0,078	-	-	0,792	0,522
construction	0,076	0,068	0,062	0,052	0,798	0,798	1,206	0,605
wholesaling	0,067	0,090	0,099	0,114	1,166	1,166	1,040	0,716
retailing	0,158	0,192	0,130	0,093	1,693	1,693	1,497	1,008
hotel & catering	0,030	0,033	0,038	0,022	0,175	0,175	0,288	0,028
sale and repair of cars	0,148	0,159	0,123	0,132	1,376	1,376	1,268	1,028
transport/haulage	0,010	0,012	0,014	0,032	0,086	0,086	0,102	0,106
enterprise services	0,067	0,051	0,052	0,029	0,337	0,337	0,462	0,346
other services	0,050	0,026	0,031	0,053	0,125	0,175	0,228	0,200
agriculture	0,080	0,104	0,109	0,110	0,498	0,498	0,493	0,678
mining and quarrying	-	-	0,072	0,014	-	-	0,093	0,189
public utilities	-	-	0,022	0,016	-	-	0,046	0,042
<b>b</b>	0,997	0,997	0,997	0,997				

### Short-term accounts receivable

Similar to inventories, short-term accounts receivable are closely related to turnover and interest rate. High interest rates encourage customers to withhold payments for as long as possible. The ratio between the volume of accounts receivable and turnover denotes the

1 Based on SFGO's 1984-1994 data set, a regression was effected, while adopting turnover as an explanatory variable, to test the relationship with turnover. The estimated relationship reads:

$$IVO = 25.562 + 0,057 \times TUR \quad R^2 = 0,912; N=11$$

(7,3) (10,1).

Upon extending the equation by adjusting for the declining inventories quote and interest paid as an explanatory variable, the estimated equation reads:

$$IVO = 29.857 + 0,044 \times TUR + 0,22 \times INT \quad R^2 = 0,929; N=11$$

(3,7) (2,2) (0,8).

The latter term is, however, marked by an inaccurate symbol, and is not significant. Omitting the intercept, however, the equation is robust:

$$IVO = 0,114 \times 0,983 \times TUR - 0,719 \times INT \quad R^2 = 0,794; N=11$$

(23,1) (-3,9).

From a theoretical point of view, the latter equation proves to be the most attractive one.





### *Liquid assets*

Customary enterprise operations require liquid assets to effect, for example, payments for raw materials, general operating costs, interest, wages and salaries, investments planned, distribution of dividends and taxes. In addition, occasionally unforeseen expenses of a less routine nature is incurred. The cash balance virtually serves as a buffer between the influx of pecuniary flows the result of the delivery of goods and services and the efflux of pecuniary flows the consequence of obligations. Major factors affecting the cash-balance volume include the following (see Walker et al., 1970, pp. 152-155):

- *Nature of enterprise*  
If accounts receivable run parallel to accounts payable, and if sales are evenly distributed over time, cash-balance demand will be greatly reduced.
- *Turnover volume versus fixed investments*  
If fixed investments are high compared to turnover, cash-balance demand will also be lower than in the event of low fixed investments compared to turnover, due to the buffer function of cash balance.
- *Accounts payable and accounts receivable*  
To what extent an enterprise qualifies for loans plays a major role, too. The extent to which cash payments are demanded is strongly related to enterprise rating/reputation, while creditworthiness also plays a role. Simultaneous terms for accounts-payable and accounts-receivable will also considerably reduce cash-balance demand.
- *Volume of inventories*  
High inventory stocks ensure faster delivery without instantly incurring high purchase cost, and will reduce tying up liquid assets, but inventories of a less current nature or less predictable in terms of conversion into money or accounts receivable will tie up liquid assets.
- *Loan cost*  
Cash balances are interest-free. Cash-balance maintenance will be expensive in the event of high loan cost. Besides, overdue payments (effected too late), will result in discounts being forfeited, although loan costs may be charged.

Cash-balance amounts differ per sector. Compared to small enter-

prises, large enterprises maintain lower cash-balance amounts. The greater continuity of pecuniary flows, higher inventories and more favourable assessments of large enterprises by money lenders, as regards the former's creditworthiness, may play a role in this respect. After estimation, the accounts-receivable and the short-term liabilities appear to be insignificant. The general presentation of the equation thus reads:

$$(8) \quad \text{LIQ} = g \times \{\text{TUR} - (\text{INV} - \text{DEP})\} - h \times \text{INT} - i \times \text{IVO},$$

where:

LIQ	liquid assets (cash)
INV	investment
DEP	depreciation
TUR	turnover
INT	paid interest
IVO	inventory (selling) goods, raw and auxiliary materials.

Table 4 shows the values of the coefficients used in equation (8).<sup>1</sup>

<sup>1</sup> The estimated equation reads:  

$$\text{LIQ} = 0,063 \times \{\text{TUR} - (\text{INV} - \text{DEP})\} - 0,713 \times \text{INT} - 0,263 \times \text{IVO} \quad R^2 = 0,971; N=11$$


$$(6,4) \qquad \qquad \qquad (-3,2) \qquad \qquad \qquad (-2,5).$$

Table 4 Coefficients of equation (8)

	non-corporations				non-corporations				non-corporations			
	g	small	medium-sized	large	h	small	medium-sized	large	i	small	sized	large
food & beverage industry	0,040	0,067	0,062	0,052	0,631	1,263	0,432	0,686	0,186	0,232	0,055	0,051
chemical industry	0,019	0,073	0,089	0,060	0,138	0,241	0,417	0,372	0,064	0,064	0,069	0,051
metal industry	0,114	0,193	0,141	0,088	1,209	1,511	1,393	1,035	0,117	0,117	0,107	0,055
oil industry	0,119	0,170	0,116	0,082	1,766	1,177	1,074	0,487	0,118	0,118	0,089	0,077
chemical industry	-	-	0,055	0,023	-	-	0,346	0,481	-	-	0,166	0,032
construction	0,119	0,205	0,124	0,091	2,058	2,058	3,251	1,474	0,180	0,180	0,246	0,205
wholesaling	0,062	0,086	0,069	0,058	1,616	0,887	1,166	0,587	0,059	0,059	0,104	0,055
retailing	0,069	0,135	0,076	0,043	0,689	1,050	1,178	0,670	0,042	0,039	0,061	0,050
hotel & catering	0,097	0,169	0,150	0,307	0,654	0,595	0,557	0,445	0,142	0,284	0,436	1,111
sale and repair of cars	0,075	0,069	0,036	0,023	0,431	0,575	0,697	0,472	0,027	0,027	0,033	0,015
transport/haulage	0,135	0,151	0,147	0,104	1,235	0,867	1,049	0,422	0,765	0,765	1,047	0,288
enterprise services	0,254	0,318	0,203	0,118	1,272	2,120	2,807	1,560	0,436	0,436	0,520	0,506
other services	0,147	0,350	0,185	0,133	1,224	1,361	1,696	0,510	0,838	0,838	0,632	0,509
agriculture	0,159	0,207	0,117	0,066	0,987	0,823	0,923	0,718	0,122	0,122	0,118	0,088
mining and quarrying	-	-	0,272	0,012	-	-	0,662	0,207	-	-	0,726	0,092
public utilities	-	-	0,109	0,023	-	-	0,041	0,077	-	-	0,063	0,125

## 4 The capital side of the balance sheet

This chapter comprises the modelling of the capital side of the balance sheet. In the previous chapter the modelling of the assets side of the balance sheet is described. To finance assets capital is needed. Two main categories of capital may be distinguished:

- Equity (company capital)
- Liabilities (outside capital).

$$(9) \quad \mathbf{CAT} = \mathbf{EQT} + \mathbf{LIT} \text{ (definition),}$$

where:

CAT	total capital
EQT	equity
LIT	total liabilities,

and total assets equal total capital available:

$$(10) \quad \mathbf{CAT} = \mathbf{AST} \text{ (definition),}$$

where:

CAT	total capital
AST	total assets.

### Equity

Equity entails the risk-bearing part of equity, i.e. the part not affected by any (present or future) reimbursement obligations. Company capital symbolises enterprise property, and consists of shareholders funds (proprietors' common share capital stock) and retained earnings:

$$(11) \quad \mathbf{EQT} = \mathbf{SHF} + \mathbf{EAR},$$

where:

EQT	equity
SHF	(paid-up) shareholders fund
EAR	retained earnings.

### *Shareholders funds*

Shareholders funds are divided into shares. Partly, they comprise shares placed with proprietors, and partly (as yet) unissued shares in portfolio. For our model, the issued shares are of importance.

Generally, enterprises issue shares for internal expansion or acquisition. For this purpose profitability must be satisfactory. No estimated equation is used in this model.<sup>1</sup> Given the difficulty to model changes in shareholders funds, this item entails the closing entry in our model. To avoid over determination one variable on the balance sheet must always be determined as a balance of all other variables. As total assets and total capital are equal, the shareholders funds are the balance of total capital and the sum of retained earnings and total liabilities:

$$(12) \quad \text{SHF} = \text{CAT} - \text{EAR} - \text{LIT} \text{ (definition),}$$

where:

SHF	(paid-up) shareholders funds
CAT	total capital
EAR	retained earnings
LIT	total liabilities.

#### *Retained earnings*

Retained earning funds are established by means of exchange premiums in the event of share emissions, and through retained profits and assets revaluation. The model takes the two latter components into account.

There are several reasons underlying the retaining of profits. Some essential consideration include the stabilisation of dividends, the liquidity position of the enterprise and expansion (see Walker et al., 1970, pp. 205-219). For many enterprises, retaining profits is the only way to expand their enterprise (see Van der Wijst et al., 1996). Furthermore, the rate of taxation ( $l$ ) affects the volume of profits retained:

$$(13) \quad \Delta \text{EAR} = (1-l) \times m \times \text{PBT} + 0,22 \times \text{INVPR} \times \text{TAS}_{t-1},$$

where:

EAR	retained earnings
PBT	profit before tax
INVPR	change in investment prices
TAS	(in) tangible assets.

In the case of non-corporations the situation is slightly different. Instead of withholding a fixed share of net profits one must deduct a

1 The following equation was estimated, but correlation was too weak to guarantee acceptable results:

$$\Delta \text{SHF} = - 7.516 + 0,611 (\text{INV} - \text{DEP}) + 0,099 \text{PBT} \quad R^2 = 0,647; N = 11.$$

fictive income for the entrepreneur from PBT because he receives no salary. His consumable income is part of the profit. For such enterprises the equation reads:

$$(13a) \quad \Delta \text{EAR} = (1-l) \times (\text{PBT} - \text{FGI}) + 0,22 \times \text{INVPR} \times \text{TAS}_{t-1},$$

where:

EAR	retained earnings
PBT	profit before tax
FGI	fictive gross (consumable) income for the entrepreneur
INVPR	change in investment prices
TAS	(in)tangible assets.

Table 5 shows the values of the coefficients **l** and **m** for all sectors and size classes.

Table 5 Coefficients of equation (13)

	<b>l</b>				<b>m</b>			
	small	medium-sized	large	non-corporations	small	medium-sized	large	non-corporations
food & beverage industry	0,350	0,375	0,375	0,141	0,153	0,250	0,120	0,362
chemical industry	0,350	0,296	0,356	0,082	0,439	0,527	0,007	0,360
metal industry	0,350	0,431	0,307	0,141	0,227	0,454	0,710	0,616
other industry	0,350	0,398	0,256	0,237	0,180	0,036	0,800	0,398
oil industry	-	-	0,390	0,300	-	-	0,056	0,870
construction	0,350	0,314	0,325	0,239	0,197	0,708	0,567	0,312
wholesaling	0,350	0,335	0,301	0,271	0,099	0,395	0,203	0,635
retailing	0,350	0,344	0,380	0,206	0,114	0,228	0,137	0,326
hotel & catering	0,350	0,416	0,410	0,351	0,243	0,243	0,214	0,173
sale and repair of cars	0,350	0,074	0,344	0,206	0,215	0,996	0,190	0,288
transport/haulage	0,350	0,321	0,287	0,291	0,171	0,512	0,318	0,557
enterprise services	0,350	0,421	0,226	0,307	0,169	0,338	0,551	0,414
other services	0,350	0,398	0,196	0,203	0,228	0,228	0,747	0,874
agriculture	0,350	0,421	0,164	0,290	0,217	0,260	0,900	0,555
mining and quarrying	-	-	0,000	0,410	-	-	0,019	0,359
public utilities	-	-	0,000	0,010	-	-	0,138	0,335

### Liabilities

Apart from equity capital, most entrepreneurs make use of external capital to finance their enterprise. Liabilities are both long- and short-term liabilities:

$$(14) \quad \mathbf{LIT = LIL + LIS \text{ (definition),}}$$

where:

LIT	total liabilities
LIL	long-term liabilities
LIS	short-term liabilities.

*Long-term liabilities*

Terms to contract long-term liabilities cover at least one year, while loans may be granted on an interest-bearing or non-interest-bearing basis:

$$(15) \quad \mathbf{LIL = LLI + LLN \text{ (definition),}}$$

where:

LIL	long-term liabilities
LLI	interest-bearing long-term liabilities
LLN	contingencies (non-interest-bearing long-term liabilities).

Annual interest will be charged on interest-bearing long-term liabilities. Major types include bond loans, mortgage loans and private loans granted by corporate investors and syndicates.

Long-term liabilities are used mainly to finance fixed assets and inventories (buffer stocks). Financiers deem several factors important as regards granting these types of loans (see Walker et al., 1970, pp. 220-230):

- Experience with running an enterprise
- Volume and distribution of sales (market risk)
- Market position of the enterprise
- Quality of management
- Operating results
- Future financial needs
- Equity relations and collateral (financial risk)
- Structure and quality of assets
- Enterprise prospects.

Our model assumes dependency of an interest-bearing long-term loan on the volume of fixed assets and inventories, and on the (pre-tax) enterprise profit-level. High profits allow for a larger degree of financing through company capital.



The model equation thus reads:

$$(16) \quad \text{LLI} = n \times \text{FIX} + o \times \text{IVO} - p \times \text{PBT},$$

where:

LLI	interest-bearing long-term liabilities
FIX	total of fixed assets
IVO	inventories (selling) goods, raw and auxiliary materials
PBT	profit before tax.

Table 6 shows the values of the coefficients of equation (16).<sup>1</sup>

Non-interest-bearing long-term liabilities primarily consist of interest-free contingencies, i.e. reserves to safeguard being confronted with (potential) future risks and obligations. The most important risks are unmarketable inventories and questionable debtors; the most important future obligation is corporate tax. Factually, this entry bears the characteristics of both company capital and long-term liabilities.

The following equation is formulated for changes in non-interest-bearing liabilities:

$$(17) \quad \Delta \text{LLN} = 0,1 \times (\text{DIVO} + \text{DACR}) + l \times \text{PBT},$$

where:

LLN	non-interest-bearing long-term liabilities (contingencies)
IVO	inventory (selling) goods, raw and auxiliary materials
ACR	accounts receivable
PBT	profit before tax
l	marginal taxation quote (corporate tax).

It is assumed that 10% of the change in inventories and accounts receivable are safeguarded.

#### *Short-term liabilities*

This entry entails all debts/liabilities due within one year. These short-term debts may be interest-bearing or non-interest-bearing.

<sup>1</sup> The estimated equation thus reads:  

$$\text{LLI} = 0,384 \times \text{FIX} + 0,201 \times \text{IVO} - 0,5 \times \text{PBT} \quad R^2=0,99; N=11$$

(14,8)	(2,2)	(-2,0).
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Table 6 Coefficients of equation (16)

	non-corporations				non-corporations				non-corporations			
	n	small	medium-sized	large	o	small	medium-sized	large	p	small	sized	large
food & beverage industry	0,533	0,444	0,343	0,211	0,296	0,385	0,158	0,109	0,335	0,235	1,200	0,159
chemical industry	0,688	0,702	0,398	0,306	0,298	0,265	0,205	0,214	0,314	0,275	0,294	0,527
metal industry	0,505	0,381	0,383	0,325	0,165	0,127	0,159	0,147	0,277	0,326	0,492	0,617
other industry	0,492	0,473	0,435	0,333	0,185	0,168	0,123	0,291	0,342	0,410	0,449	0,547
oil industry	-	-	0,841	0,496	-	-	0,768	0,700	-	-	0,000	1,476
construction	0,564	0,413	0,354	0,368	0,213	0,142	0,137	0,178	0,245	0,521	0,321	0,396
wholesaling	0,586	0,504	0,372	0,453	0,124	0,131	0,143	0,159	0,247	0,290	0,367	0,709
retailing	0,654	0,523	0,500	0,308	0,165	0,066	0,087	0,106	0,269	0,555	0,460	0,260
hotel & catering	0,647	0,419	0,494	0,447	1,222	0,815	2,055	2,729	0,241	5,514	1,491	2,237
sale and repair of cars	0,473	0,459	0,562	0,530	0,100	0,074	0,065	0,133	0,218	-0,097	0,750	2,284
transport/haulage	0,622	0,508	0,454	0,402	1,982	1,982	1,902	1,627	0,723	0,904	0,667	1,017
enterprise services	0,695	0,336	0,396	0,335	0,479	0,355	0,528	0,699	0,252	0,280	0,301	0,313
other services	0,530	0,431	0,573	0,373	1,332	1,332	1,072	0,912	0,386	0,429	0,887	0,584
agriculture	0,526	0,428	0,505	0,325	0,400	0,296	0,208	0,136	0,843	1,054	1,700	0,555
mining and quarrying	-	-	0,592	0,513	-	-	0,932	0,959	-	-	2,312	0,684
public utilities	-	-	0,743	0,518	-	-	8,469	10,241	-	-	3,433	5,792

$$(18) \quad LIS = SLI + SLN,$$

where:

LIS	short-term liabilities
SLI	interest-bearing short-term liabilities
SLN	non-interest-bearing short-term liabilities.

Non-interest-bearing short-term liabilities pertain mainly to supplier credit granted by traders or investors, and entail unsettled invoices for goods or services supplied. The fact that this type of credit is not marked by any interest payment does not imply its free-of-charge nature, as cost will often be incurred. This cost cannot, however, always be expressed explicitly. The average redemption term covers 15 weeks approximately. The term does however increase over time. On average, the term is shorter for the sale and repair of cars (7 weeks), and longer in other services and the public sector (41 weeks).

According to the model estimates, this type of loan is mainly used to finance short-term accounts receivable, and to a lesser extent to finance inventories. The model specification thus reads:

$$(19) \quad SLN = q \times IVO + r \times ACR,$$

where:

SLN	non-interest-bearing short-term liabilities
IVO	inventories (selling) goods, raw and auxiliary materials
ACR	accounts receivable (debtors).

Table 7 shows the values of the coefficients of equation (19).<sup>1</sup>

1  $SLN = 0,415 \times IVO + 0,876 \times ACR$   
(6,6) (29,9).

$R^2 = 0,995$ ;  $N = 11$

Table 7 Coefficients of equation (19)

	Q				r			
	non-corporations	small	medium-sized	large	non-corporations	small	medium-sized	large
food & beverage industry	0,098	0,030	0,486	0,346	0,747	0,888	0,888	0,890
chemical industry	0,253	0,804	0,120	0,168	0,579	0,740	0,844	0,852
metal industry	0,215	0,329	0,295	0,314	0,592	0,794	0,718	0,868
other industry	0,181	0,543	0,628	0,741	0,485	0,676	0,697	0,849
oil industry	-	-	0,855	0,142	-	-	1,000	0,883
construction	0,228	0,455	0,578	0,987	0,560	0,879	0,895	0,914
wholesaling	0,189	0,240	0,151	0,136	0,601	0,860	0,865	0,865
retailing	0,276	0,399	0,599	0,716	0,583	0,987	0,944	0,963
hotel & catering	0,711	1,292	2,098	1,460	0,669	0,919	1,092	0,914
sale and repair of cars	0,208	0,191	0,180	0,332	0,562	0,773	0,910	0,924
transport/haulage	0,168	0,168	1,917	1,681	0,333	0,877	0,898	0,898
enterprise services	0,138	0,357	0,452	0,603	0,286	0,628	0,757	0,915
other services	0,148	0,330	1,396	1,639	0,550	0,786	0,798	0,790
agriculture	0,112	0,291	0,253	0,257	0,169	0,640	0,502	0,441
mining and quarrying	-	-	2,732	2,778	-	-	1,000	0,701
public utilities	-	-	8,192	3,163	-	-	1,057	0,961

Interest-bearing short-term liabilities entail mainly accounts payable (trade credits), loans obtained from parent companies and long-term debt redemption obligations. According to literature, interest-bearing short-term liabilities are used primarily to finance current expenditure and for the temporary funding of an expansion of the capital-goods inventory, in anticipation of long-term liabilities. The average redemption terms of this part of short-term external capital amounts to 17 weeks. The average term varies, ranging from 8 weeks in the chemical industry to 75 weeks for the sale and repair of cars.

According to the model estimates, interest-bearing short-term external capital is strongly related to the volume of accounts receivable, while the relationship with fixed assets is not significant. This holds for interest payments too.<sup>1</sup> For non-corporations the model gives a better result when inventories are added. The model equation thus reads:

$$(20) \quad \text{SLI} = s \times \text{ACR} + t \times \text{IVO},$$

where:

- SLI interest-bearing short-term liabilities
- ACR accounts receivable (debtors)
- IVO inventory (selling) goods, raw and auxiliary materials.

1 Due to inter-correlation, as accounts receivable (and inventories) depend a.o. on interest, among other things.

Table 8 shows the values of the coefficients used in equation (20).<sup>1</sup>

Table 8 Coefficients of equation (20)

	non-corporations				non-corporations			
	small	medium-sized	large		small	medium-sized	large	
	<b>s</b>				<b>t</b>			
food & beverage industry	0,613	0,233	0,292	0,274	0,766	0,000	0,000	0,000
chemical industry	0,521	0,346	0,203	0,201	0,664	0,000	0,000	0,000
metal industry	0,658	0,329	0,315	0,372	0,691	0,000	0,000	0,000
other industry	0,487	0,170	0,329	0,438	0,755	0,000	0,000	0,000
oil industry	-	-	0,253	0,210	-	-	0,000	0,000
construction	0,577	0,133	0,148	0,163	0,621	0,000	0,000	0,000
wholesaling	0,357	0,354	0,335	0,333	0,794	0,000	0,000	0,000
retailing	0,356	0,335	0,419	0,350	0,541	0,000	0,000	0,000
hotel & catering	1,075	0,721	0,955	0,575	3,977	0,000	0,000	0,000
sale and repair of cars	0,935	1,101	1,269	1,443	0,888	0,000	0,000	0,000
transport/haulage	0,863	0,248	0,279	0,312	3,322	0,000	0,000	0,000
enterprise services	0,854	0,340	0,364	0,345	1,921	0,000	0,000	0,000
other services	0,995	0,191	0,242	0,247	2,066	0,000	0,000	0,000
agriculture	1,022	0,646	0,550	0,486	1,354	0,000	0,000	0,000
mining and quarrying	-	-	0,499	0,381	-	-	0,000	0,000
public utilities	-	-	2,404	1,443	-	-	0,000	0,000

1 The estimated equation (without inventories) reads:  
**SLI = 0,333 ACR R2 = 0,963; N = 11**  
**(58,4).**



## 5 Financial indicators

In this chapter various basic financial indicators are defined. These indicators give an impression of the financial performance of enterprises.

Using PRISMA or KTO combined with FAMOS produces overall annual statements of accounts for the sectors surveyed. The underlying financial analysis covers the past, but may also be employed to estimate future benefits and dividends. The provision of financial indicators serves as an initial step of the analysis, and entails an analysis of ratios. When effecting financial analysis, these indicators are of higher significance than balance-sheet status developments. Ratio analysis provides a quick way to gain knowledge about financial status, while adopting the following customary division (see Brigham et al., 1991, pp. 874-884 and Bouma, 1971, pp. 414-425):

- Liquidity ratios
- Activity ratios
- Financial-leverage ratios
- Profitability ratios
- Market-value ratios.

The first four ratios will be elaborated below. Market-value ratios entail shares- and stock-market price analysis and will therefore be omitted.

### Liquidity ratios

One of the initial issues as regards financial ratio analysis entails the question whether an enterprise can meet its obligations. For this purpose, liquid assets will be compared to current liabilities/debts. Generally, two ratios are adopted to assess liquidity, i.e. the current ratio (CRA) and the quick ratio (QRA):

$$(21) \quad \text{CRA} = \text{CUR} / \text{LIS},$$

where:

CUR	total current assets
LIS	short-term liabilities.

As an alternative the working capital (WCA), may also be used for the same purpose:

$$(22) \quad \mathbf{WCA = CUR - LIS,}$$

where:

CUR     total current assets  
LIS     short-term liabilities.

Inventories are the least liquid of all current assets. Furthermore they are strongly affected by the assessment method adopted. Consequently inventories are occasionally omitted, leaving the quick ratio (QRA):

$$(23) \quad \mathbf{QRA = (CUR-IVO) / LIS,}$$

where:

IVO     inventory (selling) goods, raw and auxiliary materials  
CUR     total current assets  
LIS     short-term liabilities.

### **Activity ratios**

Activity ratios serve to provide knowledge about the efficiency and effectiveness of the use of assets within enterprises. Activity ratios relate assets to turnover, and thus measure the turnover ratio of these assets, i.e. the fixed asset turnover ratio (FTO) and the total asset turnover ratio (TTO):

$$(24) \quad \mathbf{FTO = TUR / FIX,}$$

where:

TUR     turnover  
FIX     total fixed assets.

$$(25) \quad \mathbf{TTO = TUR / AST,}$$

where:

TUR     turnover  
AST     total assets.

In addition to adopting the turnover ratio of assets, the average collection period (ACP), is also adopted. These basic data are used to effect estimates in respect of the duration (in days) of accounts receivable due:



$$(26) \quad \text{ACP} = \text{ACR} / \text{TUR} \times 365,$$

where:

ACR     accounts receivable  
TUR     turnover.

Comparable to ACP the inventories term (IVT) and creditor term can be formulated:

$$(27) \quad \text{IVT} = \text{IVO} / \text{TUR} \times 365,$$

where:

IVO     inventory (selling) goods, raw and auxiliary materials  
TUR     turnover.

$$(28) \quad \text{CRT} = \text{SLN} / \text{TUR} \times 365,$$

where:

SLN     short-term non-interest-bearing liabilities (creditors)  
TUR     turnover.

### Financial-leverage ratios

These ratios denote the degree to which an enterprise is financed by outside capital. The relation between company capital and outside capital has impact on expected value and stability of company-capital profitability. Three major factors are significant as regards the extent to which an enterprise contracts debt capital (see Brigham et al., 1991, p. 879):

1. By means of debt financing, proprietors are still in command having to fund less capital.
2. Creditors are likely to scrutinise the volume of company capital so as to create a safety margin.
3. Company-capital profitability may be increased (the leverage effect) if returns on investment are higher than the interest paid.

Within the above framework, four ratios are of significance, i.e. the debt ratio (DRA), the interest coverage ratio (INC), the cost rate of interest-bearing liabilities (INL) and the fixed charge coverage ratio (FCC). The latter ratio (denoting the degree to which available income and non-cash expenses (profits, depreciation, rental obligations) to meet fixed financial obligations are able to cover the total of financial burdens (interest paid, redemption and rental obligations))

cannot be calculated on the basis of PRISMA/KTO and FAMOS, since data on rental obligations and redemption are not available. Therefore, the FCC ratio will not be calculated.

$$(29) \quad \mathbf{DRA = LIT / CAT,}$$

where:

LIT      total liabilities  
CAT      total capital.

The accounts-receivable ratio denotes solvency, i.e. the extent to which an enterprise is able to meet its obligations versus creditors in the event of going into liquidation. This ratio is complementary to the solvency ratio (SOL):

$$(30) \quad \mathbf{SOL = EQT / CAT,}$$

where:

EQT      equity  
CAT      total capital.

The interest coverage ratio (INC) measures the degree to which interest payments can be ensured, and is therefore an indicator of enterprise resistance. In the event of increasing resistance guaranty, enterprises will have improved access to the equity market:

$$(31) \quad \mathbf{INC = (PBT + INT) / INT,}$$

where:

PBT      profit before tax  
INT      paid interest.

For non-corporations the fictive gross income for entrepreneurs (FGI) should be deducted from  $PBT_{nc}$ :

$$(31a) \quad \mathbf{PBT = PBT_{nc} - FGI,}$$

where:

$PBT_{nc}$     profits before tax of non-corporation incl. fictive gross income for entrepreneurs  
FGI      fictive gross (consumable) income for entrepreneurs.

The cost rate of interest-bearing outside capital (INL) denotes the percentage of factually paid interest, which will generally be higher than capital-market interest because money lenders add risk surcharges:

$$(32) \quad \text{INL} = \text{INT} / (\text{LLI} + \text{SLI}),$$

where:

LLI	long-term liabilities carrying interest
SLI	interest-bearing short-term liabilities
INT	paid interest.

### Profitability ratios

Profitability entails the net result of enterprise management, and is a general indicator of enterprise-management efficiency. Ratios in respect of liquidity, activities and financial-leverage effect are enterprise-operation indicators. The profitability ratios reveal the combined effect of the above three ratio types. Profits may be related to turnover both before and after tax (NPM and GPM), as well as to equity and total capital (ROE and BEP):

$$(33) \quad \text{NPM} = \text{PAT} / \text{TUR}$$

$$(34) \quad \text{GPM} = \text{PBT} / \text{TUR}$$

$$(35) \quad \text{ROE} = \text{PAT} / \text{EQT},$$

where:

PAT	profits after tax
PBT	profits before tax
TUR	turnover
EQT	equity (company capital).

Again, for non-corporations a fictitious income must be deducted from PBT and PAT:

$$(35a) \quad \text{PAT} = \text{PAT}_{\text{nc}} - \text{FNI},$$

where:

$\text{PAT}_{\text{nc}}$	profit after tax of non-corporation incl. fictive net income for entrepreneurs
FNI	fictive net consumable income for entrepreneurs.

Factually, company-capital profitability (return on equity) signifies the product of three ratios, i.e. the net profit margin, the turnover ratio of total capital and the reciprocity of solvency:

$$(36) \quad \mathbf{ROE = NPM \times TTO / SOL}$$

$$(37) \quad \mathbf{BEP = (PBT + INT) / CAT,}$$

where:

NPM    net profit margin  
TTO    total asset turnover ratio  
SOL    solvency.

Basic earning power (BEP) denotes the product of the gross profit margin and the turnover ratio of total assets:

$$(38) \quad \mathbf{BEP = GPM \times TTO,}$$

where:

GPM    gross profit margin  
TTO    total asset turnover ratio.

## 6 Goodness of fit

In this chapter the goodness of fit of the model is checked. In the model the coefficients are determined on data for the period 1992-1994 by minimising the residuals over the entire period. As already stated in chapter 1 the short period (only three years of development) makes it impossible to use a normal statistic method (like OLS) to estimate the coefficients (and minimise the residuals). By simulating these years and comparing the results with the actual values, derived from statistics, one gets an impression of the goodness of fit of the model. For each year the deviation from the official data set in terms of percentage is determined. Per sector the average deviation is zero. Because of changes in sectoral shares this is not necessarily the case for aggregation of sectors in size classes.

Simulations have been made for all sectors and three size classes (small, medium-sized and large enterprises) as far as corporations are concerned. No simulation has been made for the unincorporated firms. The data set of these non-corporations was constructed by EIM out of several (partial) data sets, like EIM-BSS, CBS and information supplied by commercial banks. Moreover, the data used refer to different periods, which makes it less significant to make simulations.

In tables 9-12 the aggregation of all sectors is presented for three size classes.

- Table 9 presents for each size class the values in millions of Dutch guilders of all variables on the balance sheet that are distinguished by the FAMOS model.
- Table 10 shows for each variable the deviation in terms of percentage from the values presented in the official data set of SFO.
- Table 11 gives the model simulation of the composition of the balance sheet, assets as well as capital in terms of a percentage.
- Finally, table 12 shows to what extent this structure deviates from the official statistic SFO.

As can be seen in tables 10 and 12, overall there are not many differences between the fit quality of small, medium-sized and large companies. The results can be said to be moderate. The differences in fit between the years can be distinguished as follows:

- For small firms the simulation for 1993 is best and for 1992 worst.
- Again 1993 gives the best simulation for medium-sized enterprises but now 1994 is worst.

- Finally, for large enterprises there is not much difference in the quality of the simulations for the separate years.

The moderate results can, in general, be partly imputed to the limited availability of official statistics considering size classes (only four years). It must be noted that the database used is not very stable concerning the balance-sheet structure and the number of enterprises belonging to size classes, if one compares between years. It is not inconceivable that one of these years could appear to be extreme. Often longer data series show a more stable structure.

More specifically, the results of financial assets and equity capital (both shareholders funds and retained earnings) stay clearly below average. This is not surprising considering the correlation of the estimated equations of financial assets and retained earnings as presented in chapters 3 and 4. The simulation of the shareholders funds as a balance of total capital and retained earnings and total liabilities comprises all errors of any other variable.

Table 9 Model simulation of balance values (NLG mill.), 1992-1994 based on values of the profit and loss account and the balance sheet of the previous year

		total assets							total capital									
		fixed assets			current assets				equity capital			long-term debts			short-term debts			
			(in) tangible assets	assets		inven- tories	receiv- able	liquid assets		share- holders fund	retain- ed ear- nings		contin- gencies	interest bearing loans		creditors	current account credits	
<i>small firms</i>																		
1992	56.063	22.880	17.993	4.888	33.183	7.312	14.356	11.515	56.063	19.518	6.889	12.629	17.863	7.919	9.943	18.683	13.982	4.701
1993	62.499	24.964	18.862	6.102	37.535	8.232	17.061	12.242	62.499	19.757	4.445	15.313	20.696	9.465	11.231	22.046	16.185	5.861
1994	65.836	24.606	18.214	6.392	41.231	8.246	20.004	12.980	65.836	19.338	3.682	15.655	21.464	10.545	10.918	25.035	18.418	6.617
<i>medium-sized firms</i>																		
1992	178.598	83.804	57.630	26.173	94.794	23.221	50.734	20.839	178.598	59.425	12.208	47.217	51.929	16.109	35.820	67.244	50.247	16.997
1993	193.357	96.035	62.026	34.009	97.322	25.095	49.610	22.618	193.357	64.132	15.520	48.612	62.860	17.895	44.965	66.365	50.024	16.341
1994	160.418	79.623	52.920	26.704	80.795	19.939	43.263	17.593	160.418	55.546	18.652	36.894	47.313	14.547	32.765	57.559	42.998	14.561
<i>large firms</i>																		
1992	652.083	410.480	231.683	178.797	241.604	59.612	147.801	34.191	652.083	248.423	57.863	190.560	200.257	50.190	150.067	203.403	153.328	50.075
1993	730.186	477.889	240.004	237.885	252.297	62.102	152.244	37.950	730.186	289.752	89.336	200.416	230.587	54.601	175.985	209.847	158.055	51.792
1994	668.244	429.889	242.914	186.975	238.356	61.449	144.208	32.698	668.244	267.391	64.644	202.747	199.813	54.207	145.606	201.040	151.593	49.447

Table 10 Deviation from the balance sheets of official statistics in 1992-1994 (in percentages)

	total assets								total capital									
	fixed assets				current assets				equity capital			long-term debts			short-term debts			
		(in) tangible assets		assets	inven- tories	accounts receiv- able	liquid assets		share- holders fund	retain- ed ear- nings		contin- gencies	interest bearing loans		creditors	current account credits		
<i>small firms</i>																		
1992	-10%	-8%	-1%	-28%	-11%	0%	-15%	-11%	-10%	-5%	55%	-21%	-11%	-14%	-8%	-14%	-14%	-13%
1993	0%	-5%	-1%	-16%	4%	4%	5%	2%	0%	-5%	1%	-6%	2%	-1%	5%	3%	1%	12%
1994	4%	5%	-1%	26%	3%	-9%	6%	8%	4%	16%	7%	18%	2%	8%	-4%	-2%	3%	-13%
<i>medium-sized firms</i>																		
1992	3%	5%	0%	17%	2%	-8%	5%	6%	3%	2%	-22%	11%	8%	2%	11%	1%	0%	2%
1993	0%	-2%	0%	-6%	2%	-3%	5%	-2%	0%	5%	7%	5%	-11%	-9%	-12%	5%	4%	6%
1994	-10%	-11%	0%	-27%	-8%	9%	-14%	-9%	-10%	-5%	33%	-17%	-10%	-3%	-13%	-13%	-12%	-18%
<i>large firms</i>																		
1992	5%	4%	6%	2%	7%	2%	8%	11%	5%	9%	-4%	13%	2%	7%	1%	4%	6%	-3%
1993	5%	8%	0%	17%	0%	0%	-2%	6%	5%	8%	32%	-1%	6%	1%	8%	0%	0%	-1%
1994	4%	3%	10%	-5%	7%	15%	6%	-4%	4%	2%	4%	1%	6%	9%	4%	6%	6%	6%



Table 11 Model simulation of the balance structure 1992-1994, based on statistic values of the profit and loss account and the balance sheet of the previous year

		total assets							total capital									
		fixed assets			current assets				equity capital			long-term debts			short-term debts			
			(in) tangible assets	assets		inven- tories	accounts receiv- able	liquid assets		share- holders fund	retain- ed ear- nings		contin- gencies	interest bearing loans		creditors	current account credits	
<i>small firms</i>																		
1992	100%	40%	29%	11%	60%	12%	27%	21%	100%	33%	7%	26%	32%	15%	17%	35%	26%	9%
1993	100%	42%	30%	12%	58%	13%	26%	19%	100%	33%	7%	26%	32%	15%	17%	34%	26%	8%
1994	100%	37%	29%	8%	63%	14%	30%	19%	100%	26%	5%	21%	33%	15%	18%	40%	28%	12%
<i>medium-sized firms</i>																		
1992	100%	47%	32%	15%	53%	13%	28%	12%	100%	33%	7%	26%	29%	9%	20%	38%	28%	10%
1993	100%	50%	32%	18%	50%	13%	26%	12%	100%	33%	8%	25%	33%	9%	23%	34%	26%	8%
1994	100%	50%	30%	21%	50%	10%	28%	11%	100%	33%	8%	25%	30%	8%	21%	37%	27%	10%
<i>large firms</i>																		
1992	100%	63%	35%	28%	37%	9%	22%	5%	100%	37%	10%	27%	32%	8%	24%	32%	23%	8%
1993	100%	64%	34%	29%	36%	9%	22%	5%	100%	39%	10%	29%	31%	8%	23%	30%	23%	8%
1994	100%	65%	34%	31%	35%	8%	21%	5%	100%	41%	10%	31%	30%	8%	22%	30%	22%	7%

Table 12 Deviation from the balance structure presented in the official statistics in 1992-1994 (in percentage points)

	total assets								total capital									
	fixed assets				current assets				equity capital			long-term debts			short-term debts			
		(in) tangible assets					accounts receiv- able	liquid assets		share- holders fund	retain- ed ear- nings		contin- gencies	interest bearing loans		cre- ditors	current account credits	
<i>small firms</i>																		
1992	0% pts.	1% pts.	3% pts.	-2% pts.	-1% pts.	1% pts.	-2% pts.	0% pts.	0% pts.	2% pts.	5% pts.	-3% pts.	-1% pts.	-1% pts.	0% pts.	-1% pts.	-1% pts.	0% pts.
1993	0% pts.	-2% pts.	0% pts.	-2% pts.	2% pts.	1% pts.	1% pts.	0% pts.	0% pts.	-2% pts.	0% pts.	-2% pts.	1% pts.	0% pts.	1% pts.	1% pts.	0% pts.	1% pts.
1994	0% pts.	1% pts.	-1% pts.	2% pts.	-1% pts.	-2% pts.	1% pts.	1% pts.	0% pts.	3% pts.	0% pts.	3% pts.	-1% pts.	1% pts.	-1% pts.	-2% pts.	0% pts.	-2% pts.
<i>medium-sized firms</i>																		
1992	0% pts.	1% pts.	-1% pts.	2% pts.	-1% pts.	-2% pts.	0% pts.	0% pts.	0% pts.	0% pts.	-2% pts.	2% pts.	1% pts.	0% pts.	1% pts.	-1% pts.	-1% pts.	0% pts.
1993	0% pts.	-1% pts.	0% pts.	-1% pts.	1% pts.	0% pts.	1% pts.	0% pts.	0% pts.	2% pts.	1% pts.	1% pts.	-4% pts.	-1% pts.	-3% pts.	2% pts.	1% pts.	1% pts.
1994	0% pts.	-1% pts.	3% pts.	-4% pts.	1% pts.	2% pts.	-2% pts.	0% pts.	0% pts.	2% pts.	4% pts.	-2% pts.	0% pts.	1% pts.	-1% pts.	-2% pts.	-1% pts.	-1% pts.
<i>large firms</i>																		
1992	0% pts.	0% pts.	0% pts.	-1% pts.	0% pts.	0% pts.	1% pts.	0% pts.	0% pts.	1% pts.	-1% pts.	2% pts.	-1% pts.	0% pts.	-1% pts.	0% pts.	0% pts.	-1% pts.
1993	0% pts.	2% pts.	-2% pts.	3% pts.	-2% pts.	0% pts.	-1% pts.	0% pts.	0% pts.	1% pts.	2% pts.	-2% pts.	0% pts.	0% pts.	1% pts.	-1% pts.	-1% pts.	0% pts.
1994	0% pts.	-1% pts.	2% pts.	-3% pts.	1% pts.	1% pts.	1% pts.	0% pts.	0% pts.	-1% pts.	0% pts.	-1% pts.	0% pts.	0% pts.	0% pts.	1% pts.	1% pts.	0% pts.

## 7 Forecasts one year ahead ( $t + 1$ )

With the help of our financial model, we want to make forecasts of the financial structure of enterprises. Therefore, in this chapter a one-year-ahead forecast of the balance sheets of four size classes is presented, by making assumptions as to the development of turnover, depreciation, gross investment, profit before and after taxation, price of investment goods and interest rates. For the sake of clarity no sectoral results are presented here. The sectoral results within the size classes can be found in annex III. The values of 1994, derived from official statistics, served as a start (year  $t$ ). In addition, the main financial indicators are presented, based on the basic assumptions around the profit-and-loss account and the estimated balance sheets. The assumptions made for  $t + 1$  are fictive and do not coincide with real developments in 1995.

### 7.1 Basic assumptions according to economic development and (financial) prices

In this section the basic assumptions are explained. In general terms the assumptions hold for all classes distinguished, although there are slight differences between both sectors and size classes.

It is assumed that in year  $t + 1$  the economy is recovering from recession. Turnover and, especially profits (before tax) are increasing in all sectors and size classes. Investments in tangibles are increasing too in most sectors, due to the improved economic situation and the declining interest rates. The net-investment (investment minus depreciation) however lags behind in the *small* and *non-corporations* size classes. In this situation it is assumed that the short-term interest rate drops, while the long-term interest rate remains unchanged. Of course, the level of changes in variables fluctuates between sectors and classes.

To illustrate the working of FAMOS the basic assumptions made for small firms (corporations) in year  $t + 1$  are presented in table 13. The basic assumptions made for the other classes (medium-sized enterprises, large enterprises and non-corporations) can be found in annex III.

Table 13 Basic assumptions for small firms in year t+1 (values, shares and developments)

values per enterprise (thds. NLG) and developments at current prices (%)											
sector	turnover (current prices)		depreciation		net interest paid		investments		profits b.t.		with- holding profits
	value	develm.	value	develm.	value	develm.	value	develm.	value	develm.	share
food & beverage industry	2807	1,3%	68	-20%	7	-7,6%	71	373,1%	57	15,5%	16%
chemical industry	4725	10,4%	210	-7%	17	-7,3%	240	11,6%	500	-186,2%*	37%
metal industry	1061	5,3%	29	-35%	1	-10,4%	30	3451,0%	55	16,6%	26%
other industry	1801	6,3%	140	79%	20	-5,1%	147	21,0%	193	13,9%	2%
oil industry	0	-	0	0%	-	-	0	-	0	0,0%	0%
construction	1012	2,8%	45	19%	1	-11,1%	47	-384,0%*	58	17,7%	49%
wholesale trade	3198	4,8%	34	-6%	16	-5,8%	36	84,1%	130	18,3%	26%
retail trade	1218	2,8%	37	-5%	13	-6,6%	38	-184,3%*	25	9,5%	15%
hotel & catering	579	6,8%	43	-6%	10	-4,9%	45	-1026,4%*	6	933,0%	14%
sale and repair of cars	2006	5,1%	19	-45%	17	-5,6%	20	-112,6%*	60	12,8%	92%
transport	1566	4,1%	91	19%	27	-6,0%	80	-19,0%	48	21,0%	35%
enterprise services	573	8,2%	26	-16%	-1	42,2%	27	220,6%*	35	7,5%	20%
other services	620	5,6%	55	-4%	1	-15,7%	58	-201,7%*	52	12,8%	14%
agriculture and fishery	1163	-0,8%	148	25%	34	-8,2%	142	-62,4%	63	11,7%	15%
mining and quarrying	-	-	-	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-	-	-	-
other inputs											
new investments	100,5	0,5%									
return on capital	5,1%	13,3%									
long-term interest rate	6,9%	0,0%									
short-term interest rate	4,4%	-15,4%									

\* Negative value in 1994.

## 7.2 Financial consequences of economic growth

### The assets side

The level of the net-investments in the size classes medium-sized and large improves considerably resulting in an increasing share of *tangible fixed assets for most sectors*. In the size classes small and non-corporations net-investment rises only slightly, which results in an decreasing share of tangibles for most sectors.

The *inventories* do not have an unequivocal development either. Inventories react positively to both changes in turnover and interest rates, but the sensitivity of inventories on changes in turnover diminishes. In most sectors the share of inventories react more strongly to both the turnover and the interest paid when size increases. Enterprises in the metal industry, wholesale trade, retail trade and sale and repair of cars react more strongly to the interest that must be paid than in other sectors. In transports and other services the interest paid is of no importance, explaining the share of inventories.

In small firms it results in a decreasing share of inventories (especially in agriculture, other industry and wholesale trade.) In the size classes medium-sized enterprises and non-corporations the development is the opposite: the share of inventories rises, although these remain more or less constant in the size classes large corporations and non-corporations. It must be stated that the change in the share is not unequivocal for all sectors within size classes.

*Accounts receivable* react positively to changes in turnover too, but negatively to a decline in interest rates. Low interest rates make it less attractive to postpone payments. There is a trend for the influence of turnover on accounts receivable to increase. Again, in most sectors the influence of turnover on the accounts receivable increases as firm size increases. In the case of the interest paid the picture is less clear.

In three out of four size classes the share of the accounts receivable decreases in year  $t + 1$ . Only in the size class small corporations does the share increase. Again, the development of sectors within size classes is not unequivocal (see table 14).

*Liquid assets* react positively to a high turnover compared with the volume of net-investment. Relatively low new fixed assets tie up cash (buffer). The interest paid has a negative influence on the share of

liquid assets, just as in the case of inventories. A high stock level implies a reduction of ready cash; but deliveries can be made directly from stock even when sales are high. The change in this item is again not unequivocal for all size classes. In small and large corporations the share increases, while it decreases for medium-sized corporations. The level remains unchanged for non-corporations.

### **The capital side**

The rise in profit makes it possible to increase the retained earnings by withholding profits, which made enterprises to finance the investment for a greater deal out of the improved cash flow position. Equity improves in all size classes except for non-corporations, where the share remains almost stable. Above all equity improves in comparison with *long-term liabilities*. Long-term debts react positively to fixed assets and inventories, but negatively to profits. The direct influence of the interest rates on the change of long-term debts, as the long-term rate remains stable and only the short-term rate declines. In small corporations long-term liabilities decreases due to a rise in profit and a decrease in the share of fixed assets and inventories. In all other size classes the share remains stable: the effect of increased profit is neutralised by the (slightly) increased shares of fixed assets and inventories.

*Short-term liabilities* are needed mainly to finance the inventories and the accounts receivable. In the size class small corporations the share of inventories decreases, while the share of accounts receivable increases. On balance the effect on the short-term liabilities is slightly negative. In the case of medium-sized corporations the share of inventories increases and the share of accounts receivable decreases considerably. The effect on the share of short-term liabilities is therefore strongly negative. In the large corporations size class we see an almost stable share of inventories and a slight decrease of accounts receivable. On balance the effect on the short-term liabilities is slightly negative. Finally, in the case of the non-corporations there is hardly any change in either inventories or accounts receivable, so it is not surprising to see the share of short-term liabilities unchanged.

Table 14 shows the balance sheets of the size classes that are distinguished for year  $t + 1$ , and the changes in the shares compared to year  $t$ . The extensive tables with sectoral results can be found in annex III.

Table 14 The balance sheet modelled for year t+1 and changes compared to year t

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term liabilities	short- term liabilities
<i>shares in t+1</i>								
<b>small corporations</b>	36%	64%	13%	31%	20%	30%	31%	39%
medium-sized corporations	53%	47%	12%	25%	10%	37%	30%	33%
large corporations	66%	34%	9%	20%	5%	41%	30%	28%
non-corporations	70%	30%	9%	12%	9%	42%	35%	23%
<i>changes compared to t</i>								
<b>small corporations</b>	-1% pts	1% pts	-1% pts	1% pts	1% pts	4% pts	-3% pts	-1% pts
medium-sized corporations	3% pts	-3% pts	1% pts	-4% pts	-1% pts	4% pts	0% pts	-5% pts
large corporations	1% pts	-1% pts	0% pts	-1% pts	-1% pts	1% pts	1% pts	-1% pts
non-corporations	0% pts	-0% pts	-1% pts	1% pts	-1% pts	-1% pts	0% pts	1% pts

### Financial indicators

The *current ratio* is an indicator to measure the extent to which an enterprise can meet its obligations. This ratio is highest for small corporations and lowest for large corporations. The ratio improves considerably for small and medium-sized enterprises. The main financial indicators for t + 1 are presented in table 15. The ratio improves only slightly for large corporations, and deteriorates slightly for non-corporations.

The *total asset ratio* provides information about the efficient use of capital. Large enterprises need more capital than smaller ones. The total assets ratio improves for small corporations and deteriorates for medium-sized enterprises. The ratio remains unchanged in the class large corporations and non-corporations.

The *inventories term* provides information about the average number of days inventories are in an enterprise. In the year t + 1 inventories are highest in large corporations, due to sectoral effects (importance of manufacturing). Compared to the year t the inventories term increases somewhat in three out of four classes. Only in small corporations does the inventory term decrease.

The average collection period measures the period it takes for debtors to pay their bills. This period is relatively short in non-corporations (due to sectoral effects of retail trade and hotel & catering) and long in large corporations. Model calculations show a rise in medium-sized corporations and a decline in all other size classes.

Table 15 Main financial indicators of small firms in t+1 (corporations)

	current ratio	tot asset turnover	inventory term (days)	debtor term (days)	solvency	paid interest rate	basic earning power	return on equity
<b>small corporations</b>	165%	156%	31	73	30%	8,3%	9,2%	15,0%
medium-sized corporations	142%	136%	31	66	37%	10,2%	9,0%	11,3%
large corporations	119%	93%	35	80	41%	7,3%	8,8%	13,1%
non-corporations	133%	124%	27	31	43%	7,7%	7,7%	7,0%

## 7.3 Conclusions

In spite of economic growth and decreasing interest rates in all size classes the composition of the balance sheets is rather stable. The changes in the shares range between +4% to -5%. The scope and direction of the changes vary by size class (and sector). The same holds for the financial indicators. So the main conclusion is that economic growth has a different impact on the financial situation of enterprises in size classes (and sectors).



## 8 The influence of interest rates

In this chapter results of a financial experiment are presented to illustrate the simulation properties of the FAMOS model. It involves an increase in the interest rate, both long- and short-term, of two percentage points compared to the interest rate in chapter 7. The effects on the balance sheet and the financial indicators are presented contrary to the situation in  $t + 1$  as presented in chapter 7.

FAMOS incorporates elements of the portfolio theory, which means that a change in the interest rate restores the equilibrium on the capital market by a reshuffling of the financial elements. Interest rates react to changes in the economic situation, especially to changes in the demand for capital. Besides, the short-term interest rate is strongly influenced by monetary policy.

### 8.1 Financial consequences of a change in paid interest

A change in interest rates has a different influence on both sectors and size classes. It is assumed that a change in the short-term interest rate has an effect of 100% on the change in the interest paid, but a change in the long-term interest rate has an effect of only one fifth on the change in the interest rate.<sup>1</sup> The rise in interest revenues is assumed to be equal in percentages to the change in interest paid. The effect on the balance-sheet structure and on main financial indicators is presented. In this simulation it is assumed that changes in interest rates influence profits only. No change in other prices and investment schemes due to changes in interest rates is apparent.<sup>2</sup>

#### Paid interest and profits before tax

Small corporations make more use of short-term loans and less of equity. About 56% of the total debts of small firms are short-term loans. A rise of 2 percentage points of both interest rates leads, on average, to a rise in paid interest of about 24-30%, dependent on the size class chosen. Results before corporation tax declines by 3.7-5.4%.

- 
- 1 A change in the long-term interest rate has its full effect on new loans, but only for a part on existing loans, only those loans that have to renew their interest rate. Assuming an average loan term of five years, 20% of existing loans are influenced by the new interest rate.
  - 2 In a complete endogenous model these effects will occur, which might enlarge the effects presented here.

### The influence of the change in paid interest on the balance-sheet structure

A higher interest rate makes it more attractive for debtors to postpone payment (cheap credit), while on the other hand it is more expensive to have large inventories and ready cash because of the loss of interest. These effects are found in all size classes. While current assets increase in importance, the share-fixed assets decrease, but only in a relative sense; in an absolute sense the fixed assets remain unchanged, and investment also remains stable.

Looking at the capital side, short-term debt increases in all size classes. Enterprises make more use of credits on current accounts and postpone their payments and they also have to find financial means to cover the longer average collection period of debts as well. Overall the share of equity declines due to lower retained earnings. The change in long-term debts is limited. This is due to the fact that no influence on investments is assumed. There is a slight negative influence from declining inventories and a positive influence from lower profit.

The change in the balance-sheet structure is presented in table 16. Detailed sectoral results are presented in annex IV.

Table 16 Deviation from the balance structure of the basic trend of year t+1

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term liabilities	short- term liabilities
small corporations	-0,4% pts	0,4% pts	-0,4% pts	1,2% pts	-0,4% pts	-1,2% pts	-0,1% pts	1,3% pts
medium-sized corporations	-0,3% pts	0,3% pts	-0,2% pts	0,9% pts	-0,4% pts	-1,1% pts	0,1% pts	1,0% pts
large corporations	-0,3% pts	0,3% pts	-0,1% pts	0,6% pts	-0,1% pts	-0,9% pts	0,2% pts	0,7% pts
non-corporations	0,2% pts	-0,2% pts	-0,7% pts	1,2% pts	-0,8% pts	-1,1% pts	0,5% pts	0,6% pts

### The influence on financial indicators

The liquidity position deteriorates for all size classes, because of the longer debtor's term (increases by 3 days). This might cause problems for the continuity of some firms. Solvency is worsened a little bit too. On the other hand the inventory term declines somewhat in small corporations and non-corporations. A rise in the interest rate hardly influences the total asset turnover ratio. The basic earning power remains almost unchanged. This is not strange as the sum of interest payments and profit before taxation (numerator)

Table 17 Changes in the main financial indicators

	current ratio	tot asset turnover	inventory term (days)	debtor term (days)	solvency	paid interest rate	basic earning power	return on equity
small corporations	-4% pts	-1% pts	-1	3	-1% pts	2,2% pts	0,3% pts	-0,2% pts
medium-sized corporations	-3% pts	-1% pts	0	3	-1% pts	2,6% pts	0,5% pts	-0,4% pts
large corporations	-2% pts	0% pts	0	3	-1% pts	2% pts	0,0% pts	0,0% pts
non-corporations	-5% pts	0% pts	-2	3	-1% pts	1,7% pts	0,0% pts	-1,2% pts

remain unchanged. In sectors with a high level of interest revenues this key variable even improves. As profitability decreases the return on equity deteriorates, especially in non-corporations.

## 8.2 Conclusions

A change in the interest rate of 2 percentage points does not lead to extensive adjustments in the structure of the balance sheet of the size classes. The direction and the scope of the changes in the asset and capital structure are not identical for all size classes, so the impact of monetary policy on the balance sheet of size classes differs.

The direction of the changes in the main financial indicators are more or less identical. A higher interest rate has an adverse effect on liquidity and solvency. The impact on the return on equity is also negative.



## **Annex I: Sector classification (based on SBI-74)**

In FAMOS 16 sectors are distinguished. The sectors are listed below. The classification number (based on SBI-74) is given between brackets.

### **Sectors**

- Food & beverage industry (SBI 20/21)
- Chemical industry (29-31)
- Metal industry (33-39)
- Other industry (22-27, 32)
- Oil industry (28)
- Construction (5)
- Wholesale trade (61-64)
- Retail trade (65/66)
- Hotel & catering (67)
- Sale and repair of cars (68)
- Transports (7)
- Enterprise services (84/85)
- Other services (98)
- Agriculture and fishery (0)
- Mining and quarrying (1)
- Public utility (4)



## Annex II: Explanation of abbreviations

### Values

AST	total assets
CAT	total capital
CUR	total current assets
DEB	accounts receivable (debtors)
DEP	depreciation
EAR	retained earnings
EQT	equity (company capital)
FAS	financial assets
FGI	fictive gross (consumable) income for the entrepreneur
FIX	total fixed assets
FIX	total fixed assets
INT	paid interest
INV	investments
IVO	inventory (selling) goods, raw and auxiliary materials
LIL	long-term liabilities
LIQ	liquid assets (cash)
LIS	short-term liabilities
LIT	total liabilities
LLI	interest-bearing long-term liabilities
LLN	contingencies (non-interest-bearing long-term liabilities)
PBT	profits before tax
TUR	turnover
SHF	(paid-up) shareholders fund
SLI	interest-bearing short-term liabilities
SLN	non-interest-bearing short-term liabilities
TAS	(in)tangible assets

### Developments in percentages

ICPR	interest rate on the capital market
INVPR	development of investment prices

### Financial indicators

BEP	basic earning power
CRA	current ratio
CRT	creditor term

*Explanation of abbreviations*

DET	debtor term
DRA	debt ratio
FCC	fixed charge coverage ratio
FTO	fixed asset turnover ratio
GPM	gross profit margin
INC	interest coverage ratio
INL	interest-bearing liabilities
IVT	inventory term
NPM	net profit margin
QRA	quick ratio
ROE	return on equity
SOL	solvency
TTO	total asset turnover ratio
WCA	working capital



## Annex III: Detailed tables: forecasts one year ahead

### Small corporations

Table 18 The balance sheet per sector for small corporations modelled for t+1

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term debts	short- term debts
food & beverage industry	48%	52%	9%	22%	22%	35%	40%	25%
chemical industry	54%	46%	16%	16%	14%	21%	49%	30%
metal industry	39%	61%	12%	26%	23%	29%	38%	33%
other industry	35%	65%	11%	35%	19%	35%	29%	36%
oil industry	-	-	-	-	-	-	-	-
Construction	32%	68%	10%	30%	28%	35%	31%	35%
wholesale trade	21%	79%	21%	38%	19%	28%	21%	52%
retail trade	35%	65%	28%	17%	19%	32%	34%	34%
hotel & catering	69%	31%	3%	14%	14%	23%	50%	26%
sale and repair of cars	40%	60%	31%	15%	13%	29%	37%	34%
transport	54%	46%	1%	31%	14%	30%	35%	35%
enterprise services	34%	66%	4%	37%	25%	31%	32%	37%
other services	49%	51%	2%	27%	22%	30%	43%	27%
agriculture and fishery	64%	36%	6%	19%	11%	37%	38%	26%
mining and quarrying	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-
<b>small corporations</b>	<b>36%</b>	<b>64%</b>	<b>13%</b>	<b>31%</b>	<b>20%</b>	<b>30%</b>	<b>31%</b>	<b>39%</b>

Table 19 Deviation per sector from the balance structure of year t, small corporations

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term debts	short- term debts
food & beverage industry	3% pts	-3% pts	0% pts	-2% pts	0% pts	-5% pts	4% pts	0% pts
chemical industry	4% pts	-4% pts	4% pts	-10% pts	2% pts	1% pts	4% pts	-6% pts
metal industry	1% pts	-1% pts	0% pts	-4% pts	3% pts	0% pts	-2% pts	2% pts
other industry	-3% pts	3% pts	-1% pts	3% pts	1% pts	13% pts	-10% pts	-3% pts
oil industry	-	-	-	-	-	-	-	-
construction	-1% pts	1% pts	0% pts	0% pts	0% pts	-1% pts	0% pts	1% pts
wholesale trade	0% pts	0% pts	-2% pts	0% pts	3% pts	7% pts	-3% pts	-4% pts
retail trade	-1% pts	1% pts	-1% pts	2% pts	0% pts	4% pts	-1% pts	-2% pts
hotel & catering	-1% pts	1% pts	0% pts	1% pts	0% pts	-2% pts	4% pts	-3% pts
sale and repair of cars	2% pts	-2% pts	5% pts	-4% pts	-4% pts	-3% pts	3% pts	0% pts
transport	1% pts	-1% pts	0% pts	1% pts	-3% pts	6% pts	-5% pts	0% pts
enterprise services	-4% pts	4% pts	0% pts	2% pts	2% pts	2% pts	-3% pts	1% pts
other services	-1% pts	1% pts	0% pts	4% pts	-3% pts	0% pts	-1% pts	1% pts
agriculture and fishery	2% pts	-2% pts	-4% pts	2% pts	0% pts	3% pts	-2% pts	-2% pts
mining and quarrying	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-
<b>all sectors</b>	<b>-1% pts</b>	<b>1% pts</b>	<b>-1% pts</b>	<b>1% pts</b>	<b>1% pts</b>	<b>4% pts</b>	<b>-3% pts</b>	<b>-1% pts</b>

Table 20 Main financial indicators per sector for small corporations in t+1

	current ratio	tot asset turnover	inventory term (days)	debtor term (days)	solvency	paid interest rate	basic earning power	return on equity
food & beverage industry	212%	370%	9	21	35%	6,6%	9,4%	13,5%
chemical industry	152%	216%	26	27	21%	11,2%	11,0%	23,4%
metal industry	183%	128%	35	75	29%	8,2%	8,5%	13,0%
other industry	181%	128%	31	100	35%	11,2%	15,8%	23,4%
oil industry	-	-	-	-	-	-	-	-
construction	196%	148%	24	73	35%	11,0%	10,0%	16,6%
wholesale trade	153%	252%	31	56	28%	9,1%	12,4%	24,4%
retail trade	189%	163%	64	39	32%	10,1%	5,8%	6,8%
hotel & catering	117%	94%	11	54	23%	7,2%	3,3%	1,3%
sale and repair of cars	173%	214%	54	26	29%	6,7%	9,0%	20,6%
transports	132%	115%	4	98	30%	8,8%	6,5%	7,9%
enterprise services	176%	83%	19	163	31%	6,4%	6,7%	9,6%
other services	189%	69%	9	144	30%	7,4%	7,7%	11,8%
agriculture and fishery	140%	67%	32	102	37%	7,7%	6,5%	5,7%
mining and quarrying	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-
<b>all sectors</b>	165%	156%	31	73	30%	8,3%	9,2%	15,0%

Table 21 Basic assumptions per sector for medium-sized corporations in year t+1

values per enterprise (thds. NLG) and developments at current prices (%)											
sector	turnover (current prices)		depreciation		net interest paid		investments		profits b.t.		with- holding profits
	value	develm.	value	develm.	value	develm.	value	develm.	value	develm.	share
food & beverage industry	11662	2,3%	-402	3,9%	112	-7,0%	250	8,0%	63	7,5%	7%
chemical industry	13977	10,4%	-562	1,1%	85	-4,7%	535	-151,5% *	2781	12,5%	0%
metal industry	6938	5,3%	-284	5,6%	23	-7,0%	262	12,0%	416	9,0%	49%
other industry	8277	6,3%	-451	9,0%	129	-5,0%	525	7,0%	484	5,0%	60%
oil industry	114199	1,7%	-17780	-35,1%	6031	-7,0%	10106	-70,0%	21112	4,0%	3%
construction	5068	2,8%	-136	0,6%	15	-7,5%	74	5,0%	167	7,0%	38%
wholesale trade	22194	4,8%	-266	2,3%	109	-8,1%	-136	8,0%	773	9,5%	14%
retail trade	7005	2,8%	-186	3,0%	48	-6,7%	41	3,0%	140	-0,5%	9%
hotel & catering	3293	6,8%	-364	9,0%	130	-4,7%	1834	6,0%	99	5,0%	13%
sale and repair of cars	12858	5,1%	-214	1,0%	100	-5,5%	274	2,0%	243	2,5%	12%
transports	12917	4,1%	-1020	4,8%	221	-5,9%	3789	-3,0%	1038	0,0%	23%
enterprise services	5150	8,2%	-352	4,2%	32	-4,7%	611	9,0%	364	12,5%	43%
other services	4294	5,6%	-227	-5,7%	64	-5,5%	-445	3,0%	169	4,5%	60%
agriculture and fishery	5383	-0,8%	-474	5,6%	113	-8,1%	439	3,0%	4	-175,0% *	75%
mining and quarrying	16727	5,1%	-3256	7,8%	905	-5,6%	4640	10,0%	180	7,5%	2%
public utility	56205	5,4%	-5395	4,1%	5369	-5,2%	13192	3,0%	4054	7,5%	14%
<i>other inputs</i>											
investments	100,5	0,5%									
return on capital	5,1%	13,3%									
long-term interest rate	6,9%	0,0%									
short-term interest rate	4,4%	-15,4%									

\* Negative value in 1994.

Table 22 The balance sheet per sector for medium-sized corporations, modelled for year t+1

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term debts	short- term debts
food & beverage industry	64%	36%	11%	18%	7%	41%	32%	27%
chemical industry	64%	36%	10%	20%	6%	51%	27%	22%
metal industry	48%	52%	15%	23%	14%	45%	27%	28%
other industry	47%	53%	16%	25%	12%	36%	28%	36%
oil industry	79%	21%	2%	13%	6%	6%	76%	18%
construction	37%	63%	11%	34%	19%	31%	28%	41%
wholesale trade	47%	53%	14%	30%	9%	39%	23%	38%
retail trade	43%	57%	29%	14%	15%	29%	35%	36%
hotel & catering	88%	12%	2%	8%	3%	33%	48%	19%
sale and repair of cars	46%	54%	32%	14%	8%	31%	33%	36%
transport	71%	29%	1%	20%	8%	35%	40%	25%
enterprise services	52%	48%	5%	28%	15%	41%	26%	33%
other services	53%	47%	3%	24%	20%	27%	44%	29%
agriculture and fishery	59%	41%	10%	22%	9%	32%	42%	26%
mining and quarrying	66%	34%	3%	23%	7%	7%	50%	43%
public utility	91%	9%	1%	4%	4%	15%	65%	20%
<b>all sectors</b>	<b>53%</b>	<b>47%</b>	<b>12%</b>	<b>25%</b>	<b>10%</b>	<b>37%</b>	<b>30%</b>	<b>33%</b>

Table 23 Deviation per sector from the balance structure in year t, medium-sized corporations

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term debts	short- term debts
food & beverage industry	4% pts	-4% pts	1% pts	-2% pts	-1% pts	-6% pts	6% pts	0% pts
chemical industry	-5% pts	5% pts	2% pts	3% pts	0% pts	1% pts	-3% pts	2% pts
metal industry	-1% pts	1% pts	2% pts	-1% pts	0% pts	-4% pts	3% pts	1% pts
other industry	0% pts	0% pts	0% pts	-1% pts	1% pts	5% pts	-3% pts	-2% pts
oil industry	-2% pts	2% pts	0% pts	1% pts	1% pts	12% pts	-14% pts	2% pts
construction	-1% pts	1% pts	-1% pts	0% pts	2% pts	-1% pts	1% pts	0% pts
wholesale trade	3% pts	-3% pts	3% pts	-6% pts	0% pts	9% pts	-1% pts	-8% pts
retail trade	-3% pts	3% pts	5% pts	-2% pts	0% pts	2% pts	-5% pts	3% pts
hotel & catering	2% pts	-2% pts	0% pts	-1% pts	-1% pts	9% pts	1% pts	-10% pts
sale and repair of cars	0% pts	0% pts	5% pts	-2% pts	-2% pts	1% pts	3% pts	-5% pts
transport	9% pts	-9% pts	0% pts	-5% pts	-4% pts	4% pts	1% pts	-5% pts
enterprise services	3% pts	-3% pts	0% pts	-2% pts	-1% pts	0% pts	5% pts	-5% pts
other services	-7% pts	7% pts	0% pts	0% pts	7% pts	0% pts	-6% pts	7% pts
agriculture and fishery	1% pts	-1% pts	0% pts	-2% pts	1% pts	-1% pts	-1% pts	2% pts
mining and quarrying	-4% pts	4% pts	-1% pts	8% pts	-3% pts	-3% pts	-9% pts	12% pts
public utility	0% pts	0% pts	0% pts	0% pts	-1% pts	2% pts	3% pts	-4% pts
<b>all sectors</b>	<b>3% pts</b>	<b>-3% pts</b>	<b>1% pts</b>	<b>-4% pts</b>	<b>-1% pts</b>	<b>4% pts</b>	<b>0% pts</b>	<b>-5% pts</b>

Table 24 Main financial indicators per sector for medium-sized corporations in t+1

	current ratio	tot asset turnover	inventory term (days)	debtor term (days)	solvency	paid interest rate	basic earning power	return on equity
food & beverage industry	135%	135%	29	50	41%	8,4%	3,1%	1,1%
chemical industry	160%	75%	47	98	51%	10,7%	17,8%	18,8%
metal industry	184%	112%	50	75	45%	6,4%	8,3%	10,3%
other industry	147%	135%	43	69	36%	10,0%	10,5%	16,5%
oil industry	117%	157%	4	29	6%	15,4%	40,0%	280,4%
construction	152%	181%	21	68	31%	8,7%	7,5%	13,1%
wholesale trade	139%	156%	34	70	39%	16,7%	10,0%	9,8%
retail trade	161%	242%	43	20	29%	9,6%	7,5%	10,4%
hotel & catering	64%	58%	10	48	33%	4,9%	4,3%	3,1%
sale and repair of cars	150%	289%	41	17	31%	6,8%	8,2%	11,6%
transports	114%	94%	4	76	35%	6,2%	9,7%	15,5%
enterprise services	143%	100%	18	101	41%	5,1%	8,7%	13,5%
other services	162%	117%	10	74	27%	8,0%	7,4%	13,9%
agriculture and fishery	160%	105%	35	77	32%	6,3%	2,8%	0,2%
mining and quarrying	78%	45%	24	191	7%	6,4%	3,8%	6,7%
public utility	45%	48%	6	29	15%	6,7%	8,2%	23,7%
<b>all sectors</b>	142%	136%	31	66	37%	10,2%	9,0%	11,3%

Table 25 Basic assumptions per sector for large corporations in year t+1

sector	values per enterprise (thds. NLG) and developments at current prices (%)										
	turnover (current prices)		depreciation		net interest paid		investments		profits b.t.		with- holding profits
	value	develm.	value	develm.	value	develm.	value	develm.	value	develm.	share
food & beverage industry	11662	2,3%	-402	3,9%	112	-7,0%	250	8,0%	63	7,5%	7%
food & beverage industry	431522	1,3%	-13829	7,5%	-1242	-10,1%	20293	6,0%	56793	5,0%	31%
chemical industry	298516	10,4%	-14484	-16,0%	-3027	-3,6%	370	3,0%	37028	9,5%	33%
metal industry	266139	5,3%	-9003	-1,6%	-1918	-6,4%	12866	12,0%	12812	6,0%	53%
other industry	172268	6,3%	-10326	17,7%	-2165	-5,7%	15930	7,0%	16388	3,5%	30%
oil industry	2518891	1,7%	-266733	47,7%	-5405	-11,2%	285657	-48,5%	397763	10,0%	61%
construction	131553	2,8%	-3276	-5,8%	-194	-9,6%	2459	5,0%	4493	7,0%	24%
wholesale trade	321824	4,8%	-5952	5,6%	-1517	-6,7%	7725	8,0%	17596	7,5%	46%
retail trade	307553	2,8%	-7131	1,6%	-872	-8,1%	-8844	3,0%	16006	-0,5%	26%
hotel & catering	46541	6,8%	-6761	49,3%	-2899	-5,2%	33836	6,0%	3359	5,0%	11%
sale and repair of cars	124910	5,1%	-4407	-10,8%	-1389	-5,4%	2005	-125,5%*	2985	2,5%	23%
transport	268128	4,1%	-34693	28,5%	-6906	-6,0%	98970	-3,0%	19140	0,0%	40%
enterprise services	72834	8,2%	-12471	95,8%	-412	-6,9%	22214	9,0%	7440	7,5%	29%
other services	42593	5,6%	-3025	-18,5%	-368	-6,9%	-2717	3,0%	2769	2,5%	70%
agriculture and fishery	23824	-0,8%	-894	-50,2%	-207	-8,5%	17529	-203,0%*	1733	1,5%	39%
mining and quarrying	2038245	5,1%	-68361	12,5%	-14168	-5,6%	23256	10,0%	51044	3,5%	21%
public utility	814802	5,4%	-70042	8,9%	-36133	-5,3%	146494	3,0%	25772	5,0%	33%
<i>other inputs</i>											
new investments	100,5	0,5%									
return on capital	5,1%	13,3%									
long-term interest rate	6,9%	0,0%									
short-term interest rate	4,4%	-15,4%									

\* Negative value in 1994.

Large corporations

Detailed tables: forecasts one year ahead

Table 26 The balance sheet per sector for large corporations, modelled for year t+1

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term debts	short- term debts
food & beverage industry	48%	52%	9%	22%	22%	35%	40%	25%
food & beverage industry	65%	35%	11%	20%	4%	51%	22%	27%
chemical industry	61%	39%	9%	27%	4%	48%	23%	30%
metal industry	59%	41%	13%	22%	6%	44%	25%	32%
other industry	71%	29%	7%	18%	4%	43%	28%	28%
oil industry	75%	25%	6%	17%	2%	54%	27%	20%
construction	39%	61%	9%	37%	15%	28%	23%	49%
wholesale trade	51%	49%	14%	29%	6%	37%	27%	37%
retail trade	53%	47%	21%	17%	9%	39%	24%	37%
hotel & catering	91%	9%	0%	7%	2%	47%	42%	11%
sale and repair of cars	50%	50%	30%	15%	4%	24%	30%	47%
transports	83%	17%	2%	12%	3%	37%	45%	18%
enterprise services	73%	27%	2%	19%	6%	48%	27%	25%
other services	62%	38%	4%	25%	9%	37%	31%	32%
agriculture and fishery	77%	23%	7%	16%	0%	56%	28%	17%
mining and quarrying	56%	44%	3%	39%	2%	17%	33%	50%
public utility	91%	9%	1%	6%	1%	30%	51%	19%
<b>all sectors</b>	<b>66%</b>	<b>34%</b>	<b>9%</b>	<b>20%</b>	<b>5%</b>	<b>41%</b>	<b>30%</b>	<b>28%</b>

Table 27 Deviation from the balance structure in year t, large corporations

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term debts	short- term debts
food & beverage industry	2% pts	-2% pts	0% pts	-1% pts	-1% pts	2% pts	-1% pts	-1% pts
chemical industry	-4% pts	4% pts	1% pts	3% pts	0% pts	-2% pts	-1% pts	3% pts
metal industry	0% pts	0% pts	1% pts	0% pts	-1% pts	-2% pts	2% pts	0% pts
other industry	1% pts	-1% pts	0% pts	-2% pts	0% pts	0% pts	0% pts	0% pts
oil industry	1% pts	-1% pts	1% pts	-1% pts	-1% pts	3% pts	1% pts	-4% pts
construction	0% pts	0% pts	1% pts	-2% pts	1% pts	0% pts	2% pts	-2% pts
wholesale trade	-1% pts	1% pts	0% pts	1% pts	0% pts	-1% pts	1% pts	0% pts
retail trade	-4% pts	4% pts	3% pts	0% pts	1% pts	-3% pts	-1% pts	5% pts
hotel & catering	7% pts	-7% pts	0% pts	-5% pts	-1% pts	1% pts	11% pts	-12% pts
sale and repair of cars	-3% pts	3% pts	2% pts	1% pts	-1% pts	-1% pts	-8% pts	9% pts
transports	5% pts	-5% pts	0% pts	-3% pts	-2% pts	1% pts	1% pts	-2% pts
enterprise services	11% pts	-11% pts	0% pts	-11% pts	-1% pts	20% pts	3% pts	-24% pts
other services	-11% pts	11% pts	1% pts	7% pts	2% pts	-2% pts	-7% pts	8% pts
agriculture and fishery	23% pts	-23% pts	-3% pts	-15% pts	-6% pts	8% pts	4% pts	-13% pts
mining and quarrying	-1% pts	1% pts	-2% pts	3% pts	1% pts	-6% pts	-1% pts	6% pts
public utility	0% pts	0% pts	0% pts	0% pts	0% pts	4% pts	-2% pts	-2% pts
<b>all sectors</b>	<b>1% pts</b>	<b>-1% pts</b>	<b>0% pts</b>	<b>-1% pts</b>	<b>-1% pts</b>	<b>1% pts</b>	<b>1% pts</b>	<b>-1% pts</b>

Table 28 Main financial indicators per sector for large corporations in t+1

	current ratio	tot asset turnover	inventory term (days)	debtor term (days)	solvency	paid interest rate	basic earning power	return on equity
food & beverage industry	132%	99%	42	73	51%	8,9%	1,6%	22,1%
chemical industry	133%	69%	48	140	48%	9,1%	1,9%	16,3%
metal industry	131%	83%	59	97	44%	7,2%	1,9%	7,9%
other industry	103%	63%	40	103	43%	7,3%	2,2%	10,7%
oil industry	127%	83%	28	76	54%	5,5%	1,4%	16,6%
construction	125%	187%	19	72	28%	9,1%	1,8%	16,7%
wholesale trade	133%	125%	40	86	37%	6,7%	2,0%	14,7%
retail trade	125%	229%	33	27	39%	12,2%	2,6%	24,5%
hotel & catering	82%	22%	8	123	47%	6,9%	2,9%	2,5%
sale and repair of cars	107%	250%	44	23	24%	8,4%	3,3%	18,7%
transports	99%	59%	11	75	37%	5,7%	2,0%	8,0%
enterprise services	107%	74%	10	94	48%	11,5%	3,5%	12,4%
other services	118%	75%	19	122	37%	9,9%	2,9%	10,3%
agriculture and fishery	139%	65%	38	90	56%	3,4%	1,0%	6,4%
mining and quarrying	88%	219%	5	65	17%	5,3%	2,2%	15,7%
public utility	46%	77%	5	30	30%	7,3%	3,9%	8,0%
<b>all sectors</b>	119%	93%	35	80	41%	7,3%	8,8%	13,1%



Table 29 Basic assumptions per sector for non-corporations in year t+1

values per enterprise (thds. NLG) and developments at current prices (%)											
sector	turnover (current prices)		depreciation		net interest paid		investments		profits b.t.		with- holding profits
	value	develm.	value	develm.	value	develm.	value	develm.	value	develm.	share
food & beverage industry	790	1,3%	34	-5%	20	-6,9%	52	22,7%	208	15,5%	40
chemical industry	510	10,4%	42	3%	32	-3,1%	49	1,3%	85	-6,8%	48
metal industry	439	5,3%	29	-1%	14	-5,3%	40	13,0%	78	16,6%	45
other industry	311	6,3%	22	17%	7	-4,8%	24	6,9%	59	13,9%	31
oil industry	-	-	-	-	-	-	-	-	-	-	-
construction	396	2,8%	18	16%	6	-6,3%	19	1,8%	88	17,7%	38
wholesale trade	701	4,8%	15	12%	6	-5,4%	19	16,2%	61	18,3%	39
retail trade	603	2,8%	17	5%	12	-6,3%	20	1,2%	36	9,5%	31
hotel & catering	329	6,8%	20	5%	13	-4,6%	25	8,4%	61	21,3%	31
sale and repair of cars	384	5,1%	14	22%	9	-5,3%	16	16,5%	50	12,8%	29
transports	355	4,1%	39	35%	10	-5,8%	41	18,0%	65	21,0%	36
enterprise services	187	8,2%	13	18%	3	-4,0%	17	26,9%	65	7,5%	37
other services	138	5,6%	9	15%	4	-5,1%	11	19,3%	31	12,8%	25
agriculture and fishery	314	-0,8%	38	-2%	21	-7,9%	46	-1,9%	55	11,7%	22
mining and quarrying	-	-	-	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-	-	-	-
<i>other inputs</i>											
new investments	100,5	0,5%									
return on capital	5,1%	13,3%									
long-term interest rate	6,9%	0,0%									
short-term interest rate	4,4%	-15,4%									

Table 30 The balance sheet per sector for non-corporations, modelled for year t+1

	fixed assets	current assets	inventories	accounts receivable	liquid assets	equity	long-term debts	short-term debts
food & beverage industry	73%	27%	7%	16%	3%	38%	34%	28%
chemical industry	71%	29%	12%	14%	3%	30%	44%	26%
metal industry	63%	37%	10%	19%	8%	37%	30%	33%
other industry	58%	42%	9%	22%	10%	48%	22%	30%
oil industry	-	-	-	-	-	-	-	-
construction	41%	59%	12%	33%	14%	35%	18%	47%
wholesale trade	44%	56%	18%	24%	14%	39%	21%	40%
retail trade	47%	53%	30%	11%	13%	33%	32%	35%
hotel & catering	80%	20%	3%	7%	10%	23%	51%	27%
sale and repair of cars	55%	45%	20%	12%	12%	34%	25%	41%
transports	62%	38%	1%	25%	13%	39%	28%	33%
enterprise services	38%	62%	8%	24%	30%	35%	21%	45%
other services	65%	35%	8%	15%	13%	32%	28%	40%
agriculture and fishery	85%	15%	2%	7%	5%	49%	39%	12%
mining and quarrying								
public utility								
<b>all sectors</b>	<b>70%</b>	<b>30%</b>	<b>9%</b>	<b>12%</b>	<b>9%</b>	<b>42%</b>	<b>35%</b>	<b>23%</b>

Table 31 Deviation per sector from the balance structure in year t, non-corporations

	fixed assets	current assets	inventories	accounts receivable	liquid assets	equity	long-term debts	short-term debts
food & beverage industry	-0,3% pts	0,3% pts	-0,7% pts	1,7% pts	-0,7% pts	-1,9% pts	0,2% pts	1,7% pts
chemical industry	-0,1% pts	0,1% pts	-0,6% pts	0,9% pts	-0,2% pts	-0,7% pts	0,3% pts	0,4% pts
metal industry	0,0% pts	0,0% pts	-0,9% pts	2,0% pts	-1,1% pts	-0,4% pts	-1,3% pts	1,7% pts
other industry	0,3% pts	-0,3% pts	-0,5% pts	1,4% pts	-1,2% pts	-1,2% pts	0,3% pts	0,9% pts
oil industry	-	-	-	-	-	-	-	-
construction	-0,3% pts	0,3% pts	-0,7% pts	2,5% pts	-1,5% pts	-2,4% pts	0,1% pts	2,3% pts
wholesale trade	0,0% pts	0,0% pts	-0,7% pts	1,7% pts	-1,0% pts	-1,1% pts	0,2% pts	0,9% pts
retail trade	0,5% pts	-0,5% pts	-1,6% pts	1,7% pts	-0,6% pts	-0,5% pts	0,3% pts	0,2% pts
hotel & catering	0,1% pts	-0,1% pts	-0,2% pts	1,1% pts	-0,9% pts	-0,8% pts	0,1% pts	0,7% pts
sale and repair of cars	0,4% pts	-0,4% pts	-1,4% pts	1,4% pts	-0,4% pts	-0,8% pts	0,2% pts	0,6% pts
transports	0,1% pts	-0,1% pts	-0,1% pts	0,9% pts	-1,0% pts	-1,5% pts	0,6% pts	0,9% pts
enterprise services	-0,4% pts	0,4% pts	-0,2% pts	1,5% pts	-0,8% pts	-1,2% pts	0,0% pts	1,2% pts
other services	0,2% pts	-0,2% pts	-0,1% pts	1,0% pts	-1,1% pts	-1,7% pts	0,4% pts	1,3% pts
agriculture and fishery	0,3% pts	-0,3% pts	-0,4% pts	0,9% pts	-0,8% pts	-1,1% pts	0,7% pts	0,4% pts
mining and quarrying	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-
<b>all sectors</b>	<b>0,2% pts</b>	<b>-0,2% pts</b>	<b>-0,7% pts</b>	<b>1,2% pts</b>	<b>-0,8% pts</b>	<b>-1,1% pts</b>	<b>0,5% pts</b>	<b>0,6% pts</b>

Table 32 Main financial indicators per sector for non-corporations in t+1

	current ratio	tot asset turnover	inventory term (days)	debtor term (days)	solvency	paid interest rate	basic earning power	return on equity
food & beverage industry	99%	217%	13	25	39%	11,5%	12,6%	13,7%
Chemical industry	111%	228%	20	20	31%	12,2%	5,4%	7,4%
Metal industry	120%	130%	31	48	38%	9,1%	6,5%	5,0%
other industry	143%	143%	25	53	49%	8,2%	8,8%	8,1%
oil industry	-	-	-	-	-	-	-	-
Construction	130%	196%	23	56	37%	7,6%	17,8%	26,7%
Wholesale trade	141%	322%	21	25	40%	6,4%	6,9%	8,0%
retail trade	156%	252%	46	14	34%	9,4%	-0,1%	-8,3%
hotel & catering	77%	146%	8	15	23%	8,7%	11,4%	17,2%
sale and repair of cars	112%	192%	41	20	35%	9,1%	7,7%	6,7%
transports	121%	127%	3	68	41%	7,5%	7,0%	7,3%
enterprise services	142%	135%	23	62	36%	3,5%	8,3%	12,8%
other services	92%	167%	17	31	34%	7,7%	2,6%	-1,4%
agriculture and fishery	129%	55%	17	44	50%	7,6%	7,2%	5,7%
mining and quarrying	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-
<b>all sectors</b>	133%	124%	27	31	43%	7,7%	7,7%	7,0%



## Annex IV: Detailed tables: the influence of interest rates

### Small corporations

Table 33 Deviation of the balance structure from the basic path (t+1) for small firms (corporations)

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term debts	short- term debts
food & beverage industry	-0,1% pts	0,1% pts	-0,2% pts	0,5% pts	-0,3% pts	-0,5% pts	-0,1% pts	0,6% pts
chemical industry	-1,4% pts	1,4% pts	-0,7% pts	2,5% pts	-0,4% pts	-1,0% pts	-1,2% pts	2,2% pts
metal industry	-0,1% pts	0,1% pts	-0,1% pts	0,3% pts	-0,1% pts	-0,2% pts	-0,1% pts	0,3% pts
other industry	-0,7% pts	0,7% pts	-0,5% pts	1,9% pts	-0,8% pts	-1,0% pts	-0,3% pts	1,4% pts
oil industry	-	-	-	-	-	-	-	-
construction	-0,2% pts	0,2% pts	-0,1% pts	0,3% pts	-0,1% pts	-0,3% pts	0,0% pts	0,3% pts
wholesale trade	-0,4% pts	0,4% pts	-0,8% pts	1,8% pts	-0,6% pts	-1,7% pts	-0,2% pts	2,0% pts
retail trade	-0,1% pts	0,1% pts	-0,9% pts	1,5% pts	-0,5% pts	-1,6% pts	0,1% pts	1,6% pts
hotel & catering	-0,6% pts	0,6% pts	-0,1% pts	1,1% pts	-0,4% pts	-3,7% pts	2,1% pts	1,6% pts
sale and repair of cars	-0,1% pts	0,1% pts	-0,8% pts	1,2% pts	-0,3% pts	-2,0% pts	-0,2% pts	2,2% pts
transports	-1,1% pts	1,1% pts	-0,1% pts	1,9% pts	-0,7% pts	-1,9% pts	-0,2% pts	2,1% pts
enterprise services	-0,2% pts	0,2% pts	0,0% pts	0,0% pts	0,1% pts	0,0% pts	0,0% pts	0,0% pts
other services	-0,2% pts	0,2% pts	0,0% pts	0,2% pts	0,0% pts	-0,1% pts	0,0% pts	0,1% pts
agriculture and fishery	-0,6% pts	0,6% pts	-0,3% pts	1,5% pts	-0,5% pts	-1,9% pts	0,1% pts	1,9% pts
mining and quarrying	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-
<b>all sectors</b>	<b>-0,4% pts</b>	<b>0,4% pts</b>	<b>-0,4% pts</b>	<b>1,2% pts</b>	<b>-0,4% pts</b>	<b>-1,2% pts</b>	<b>-0,1% pts</b>	<b>1,3% pts</b>

Table 34 Changes in the main financial indicators for small firms (corporations)

	current ratio	tot asset turnover	inventory term (days)	debtor term (days)	solvency	paid interest rate	basic earning power	return on equity
food & beverage industry	-5% pts	0% pts	0	1	-1% pts	1,9%	0,3%	-0,3%
chemical industry	-6% pts	-4% pts	-1	5	-1% pts	0,0%	0,2%	-1,9%
metal industry	-1% pts	0% pts	0	1	0% pts	2,4%	0,5%	0,0%
other industry	-5% pts	-2% pts	-1	7	-1% pts	2,9%	-0,1%	-0,4%
oil industry	-	-	-	-	-	-	-	-
construction	-1% pts	0% pts	0	1	0% pts	3,3%	0,4%	0,0%
wholesale trade	-5% pts	-4% pts	-1	4	-2% pts	2,3%	0,1%	0,3%
retail trade	-8% pts	0% pts	-2	3	-2% pts	2,7%	0,2%	-0,7%
hotel & catering	-5% pts	-1% pts	0	5	-4% pts	1,4%	0,3%	-1,2%
sale and repair of cars	-10% pts	0% pts	-1	2	-2% pts	1,7%	0,2%	-0,4%
transports	-5% pts	-2% pts	0	8	-2% pts	2,3%	0,2%	-1,0%
enterprise services	0% pts	0% pts	0	-1	0% pts	1,9%	0,5%	0,1%
other services	0% pts	0% pts	0	1	0% pts	2,2%	0,6%	0,0%
agriculture and fishery	-7% pts	-1% pts	-2	9	-2% pts	1,9%	0,2%	-0,7%
mining and quarrying	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-
<b>all sectors</b>	<b>-4% pts</b>	<b>-1% pts</b>	<b>-1</b>	<b>3</b>	<b>-1% pts</b>	<b>2,2%</b>	<b>0,3%</b>	<b>-0,2%</b>

## Medium-sized enterprises (corporations)

Table 35 Deviation of the balance structure from the basic path (t+1) for medium-sized enterprises (corporations)

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term debts	short- term debts
food & beverage industry	-0,6% pts	0,6% pts	-0,3% pts	1,2% pts	-0,2% pts	-1,5% pts	0,3% pts	1,2% pts
chemical industry	-0,2% pts	0,2% pts	0,0% pts	0,3% pts	-0,1% pts	-0,3% pts	0,0% pts	0,3% pts
metal industry	-0,1% pts	0,1% pts	0,0% pts	0,3% pts	-0,2% pts	-0,3% pts	0,0% pts	0,3% pts
other industry	-0,5% pts	0,5% pts	-0,5% pts	1,7% pts	-0,7% pts	-1,5% pts	0,1% pts	1,4% pts
oil industry	0,0% pts	0,0% pts	-1,8% pts	2,4% pts	-0,5% pts	-0,1% pts	-1,3% pts	1,4% pts
construction	0,0% pts	0,0% pts	-0,1% pts	0,6% pts	-0,5% pts	-0,6% pts	0,1% pts	0,6% pts
wholesale trade	-0,3% pts	0,3% pts	-0,2% pts	0,8% pts	-0,3% pts	-0,9% pts	0,0% pts	0,9% pts
retail trade	0,2% pts	-0,2% pts	-0,3% pts	0,6% pts	-0,5% pts	-0,9% pts	0,3% pts	0,6% pts
hotel & catering	-0,4% pts	0,4% pts	-0,2% pts	0,9% pts	-0,3% pts	-1,9% pts	0,5% pts	1,4% pts
sale and repair of cars	-0,2% pts	0,2% pts	-0,6% pts	1,3% pts	-0,5% pts	-3,1% pts	0,4% pts	2,7% pts
transport	-0,4% pts	0,4% pts	0,0% pts	0,9% pts	-0,5% pts	-1,1% pts	0,1% pts	1,0% pts
enterprise services	-0,1% pts	0,1% pts	0,0% pts	0,7% pts	-0,5% pts	-0,8% pts	0,0% pts	0,8% pts
other services	-0,3% pts	0,3% pts	-0,1% pts	1,3% pts	-0,9% pts	-1,5% pts	0,2% pts	1,2% pts
agriculture and fishery	-0,6% pts	0,6% pts	-0,3% pts	1,5% pts	-0,6% pts	-2,3% pts	0,7% pts	1,6% pts
mining and quarrying	-1,4% pts	1,4% pts	-0,1% pts	2,0% pts	-0,6% pts	-3,6% pts	0,7% pts	2,8% pts
public utility	-0,8% pts	0,8% pts	-0,1% pts	1,0% pts	-0,1% pts	-6,4% pts	3,5% pts	2,9% pts
<b>all sectors</b>	-0,3% pts	0,3% pts	-0,2% pts	0,9% pts	-0,4% pts	-1,1% pts	0,1% pts	1,0% pts

Table 36 Changes in the main financial indicators for medium-sized enterprises (corporations)

	current ratio	tot asset turnover	inventory term (days)	debtor term (days)	solvency	paid interest rate	basic earning power	return on equity
food & beverage industry	-4% pts	-1% pts	-1	4	-1% pts	2,1% pts	0,3% pts	-0,5% pts
chemical industry	-1% pts	0% pts	0	2	0% pts	3,0% pts	0,7% pts	-0,1% pts
metal industry	-2% pts	0% pts	0	1	0% pts	1,8% pts	0,3% pts	-0,1% pts
other industry	-4% pts	-1% pts	-1	5	-2% pts	2,4% pts	0,2% pts	-0,7% pts
oil industry	-9% pts	0% pts	-4	5	0% pts	4,6% pts	0,8% pts	-19,4% pts
construction	-2% pts	0% pts	0	1	-1% pts	2,4% pts	0,3% pts	-0,1% pts
wholesale trade	-3% pts	-1% pts	0	2	-1% pts	4,4% pts	1,1% pts	-0,2% pts
retail trade	-3% pts	1% pts	-1	1	-1% pts	2,5% pts	0,3% pts	-0,6% pts
hotel & catering	-3% pts	0% pts	-1	6	-2% pts	1,2% pts	0,1% pts	-1,1% pts
sale and repair of cars	-10% pts	-1% pts	-1	2	-3% pts	1,5% pts	0,2% pts	-0,3% pts
transport	-3% pts	0% pts	0	4	-1% pts	1,6% pts	0,2% pts	-0,5% pts
enterprise services	-3% pts	0% pts	0	3	-1% pts	1,4% pts	0,3% pts	-0,1% pts
other services	-6% pts	-1% pts	0	5	-1% pts	2,1% pts	0,3% pts	-0,8% pts
agriculture and fishery	-7% pts	-1% pts	-1	6	-2% pts	1,4% pts	0,2% pts	-1,7% pts
mining and quarrying	-2% pts	-1% pts	0	21	-4% pts	1,4% pts	0,3% pts	-12,2% pts
public utility	-2% pts	0% pts	0	8	-6% pts	1,2% pts	0,1% pts	2,4% pts
<b>all sectors</b>	-3% pts	-1% pts	0	3	-1% pts	2,6% pts	0,5% pts	-0,4% pts

## Large enterprises (corporations)

Table 37 Deviation of the balance structure from the basic path (t+1) for large enterprises (corporations)

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term debts	short- term debts
food & beverage industry	-0,2% pts	0,2% pts	-0,1% pts	0,3% pts	-0,1% pts	-0,9% pts	0,5% pts	0,3% pts
chemical industry	-0,4% pts	0,4% pts	-0,2% pts	0,7% pts	-0,1% pts	-0,6% pts	-0,1% pts	0,7% pts
metal industry	-0,2% pts	0,2% pts	-0,2% pts	0,6% pts	-0,2% pts	-0,8% pts	0,2% pts	0,7% pts
other industry	-0,4% pts	0,4% pts	-0,1% pts	0,6% pts	-0,1% pts	0,5% pts	-1,2% pts	0,7% pts
oil industry	-0,2% pts	0,2% pts	0,0% pts	0,2% pts	0,0% pts	-0,7% pts	0,4% pts	0,3% pts
construction	-0,2% pts	0,2% pts	-0,1% pts	0,4% pts	-0,2% pts	0,1% pts	-0,4% pts	0,4% pts
wholesale trade	-0,3% pts	0,3% pts	-0,2% pts	0,6% pts	-0,1% pts	-0,4% pts	-0,2% pts	0,7% pts
retail trade	-0,1% pts	0,1% pts	-0,2% pts	0,4% pts	-0,1% pts	0,0% pts	-0,4% pts	0,4% pts
hotel & catering	-0,2% pts	0,2% pts	0,0% pts	0,4% pts	-0,2% pts	-0,9% pts	0,3% pts	0,6% pts
sale and repair of cars	0,0% pts	0,0% pts	-0,8% pts	1,2% pts	-0,3% pts	-2,0% pts	-0,5% pts	2,5% pts
transports	-0,6% pts	0,6% pts	-0,1% pts	0,9% pts	-0,2% pts	-1,4% pts	0,4% pts	1,0% pts
enterprise services	-0,1% pts	0,1% pts	0,0% pts	0,3% pts	-0,2% pts	0,0% pts	-0,4% pts	0,4% pts
other services	-0,3% pts	0,3% pts	-0,1% pts	0,5% pts	-0,1% pts	-1,0% pts	0,5% pts	0,4% pts
agriculture and fishery	-0,4% pts	0,4% pts	-0,1% pts	0,7% pts	-0,1% pts	-1,0% pts	0,4% pts	0,6% pts
mining and quarrying	-1,5% pts	1,5% pts	-0,2% pts	1,8% pts	-0,1% pts	-0,9% pts	-0,6% pts	1,5% pts
public utility	-0,6% pts	0,6% pts	0,0% pts	0,7% pts	-0,1% pts	-4,4% pts	2,8% pts	1,5% pts
<b>all sectors</b>	-0,3% pts	0,3% pts	-0,1% pts	0,6% pts	-0,1% pts	-0,9% pts	0,2% pts	0,7% pts

Table 38 Changes in the main financial indicators for large enterprises (corporations)

	current ratio	tot asset turnover	inventory term (days)	debtor term (days)	solvency	paid interest rate	basic earning power	return on equity
food & beverage industry	-1% pts	0% pts	0	1	-1% pts	2% pts	0% pts	0% pts
chemical industry	-2% pts	0% pts	-1	5	-1% pts	2% pts	0% pts	0% pts
metal industry	-2% pts	0% pts	-1	3	-1% pts	2% pts	0% pts	0% pts
other industry	-1% pts	0% pts	-1	4	0% pts	2% pts	0% pts	-1% pts
oil industry	-1% pts	0% pts	0	1	-1% pts	1% pts	0% pts	0% pts
construction	-1% pts	-1% pts	0	1	0% pts	3% pts	0% pts	0% pts
wholesale trade	-2% pts	-1% pts	0	2	0% pts	2% pts	0% pts	0% pts
retail trade	-1% pts	0% pts	0	1	0% pts	3% pts	1% pts	0% pts
hotel & catering	-2% pts	0% pts	0	7	-1% pts	2% pts	0% pts	-1% pts
sale and repair of cars	-5% pts	0% pts	-1	2	-2% pts	2% pts	0% pts	-1% pts
transports	-2% pts	0% pts	0	6	-1% pts	1% pts	0% pts	-1% pts
enterprise services	-1% pts	0% pts	0	2	0% pts	3% pts	1% pts	0% pts
other services	-1% pts	0% pts	0	3	-1% pts	2% pts	1% pts	0% pts
agriculture and fishery	-2% pts	0% pts	-1	4	-1% pts	1% pts	0% pts	0% pts
mining and quarrying	0% pts	-6% pts	0	5	-1% pts	1% pts	0% pts	-1% pts
public utility	-1% pts	0% pts	0	3	-4% pts	1% pts	0% pts	-2% pts
<b>all sectors</b>	-2% pts	0% pts	0	3	-1% pts	2% pts	0% pts	0% pts



## Non-corporations

Table 39 Deviation of the balance structure from the basic path (t+1) for non-corporations

	fixed assets	current assets	inven- tories	accounts receiv- able	liquid assets	equity	long- term debts	short- term debts
food & beverage industry	-0,3% pts	0,3% pts	-0,7% pts	1,7% pts	-0,7% pts	-1,9% pts	0,2% pts	1,7% pts
chemical industry	-0,1% pts	0,1% pts	-0,6% pts	0,9% pts	-0,2% pts	-0,7% pts	0,3% pts	0,4% pts
metal industry	0,0% pts	0,0% pts	-0,9% pts	2,0% pts	-1,1% pts	-0,4% pts	-1,3% pts	1,7% pts
other industry	0,3% pts	-0,3% pts	-0,5% pts	1,4% pts	-1,2% pts	-1,2% pts	0,3% pts	0,9% pts
oil industry	-	-	-	-	-	-	-	-
construction	-0,3% pts	0,3% pts	-0,7% pts	2,5% pts	-1,5% pts	-2,4% pts	0,1% pts	2,3% pts
wholesale trade	0,0% pts	0,0% pts	-0,7% pts	1,7% pts	-1,0% pts	-1,1% pts	0,2% pts	0,9% pts
retail trade	0,5% pts	-0,5% pts	-1,6% pts	1,7% pts	-0,6% pts	-0,5% pts	0,3% pts	0,2% pts
hotel & catering	0,1% pts	-0,1% pts	-0,2% pts	1,1% pts	-0,9% pts	-0,8% pts	0,1% pts	0,7% pts
sale and repair of cars	0,4% pts	-0,4% pts	-1,4% pts	1,4% pts	-0,4% pts	-0,8% pts	0,2% pts	0,6% pts
transports	0,1% pts	-0,1% pts	-0,1% pts	0,9% pts	-1,0% pts	-1,5% pts	0,6% pts	0,9% pts
enterprise services	-0,4% pts	0,4% pts	-0,2% pts	1,5% pts	-0,8% pts	-1,2% pts	0,0% pts	1,2% pts
other services	0,2% pts	-0,2% pts	-0,1% pts	1,0% pts	-1,1% pts	-1,7% pts	0,4% pts	1,3% pts
agriculture and fishery	0,3% pts	-0,3% pts	-0,4% pts	0,9% pts	-0,8% pts	-1,1% pts	0,7% pts	0,4% pts
mining and quarrying	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-
<b>all sectors</b>	0,2% pts	-0,2% pts	-0,7% pts	1,2% pts	-0,8% pts	-1,1% pts	0,5% pts	0,6% pts

Table 40 Changes in the main financial indicators for large enterprises (corporations)

	current ratio	tot asset turnover	inventory term (days)	debtor term (days)	solvency	paid interest rate	basic earning power	return on equity
food & beverage industry	-5% pts	-1% pts	-1	3	-2% pts	2,5% pts	0,0% pts	-1,7% pts
chemical industry	-1% pts	0% pts	-1	1	-1% pts	2,8% pts	0,0% pts	-3,5% pts
metal industry	-6% pts	0% pts	-2	6	0% pts	2,0% pts	0,0% pts	-1,7% pts
other industry	-5% pts	1% pts	-1	3	-1% pts	1,9% pts	0,0% pts	-0,8% pts
oil industry	-	-	-	-	-	-	-	-
construction	-6% pts	-1% pts	-1	5	-2% pts	1,5% pts	-0,1% pts	0,2% pts
wholesale trade	-3% pts	0% pts	-1	2	-1% pts	1,5% pts	0,0% pts	-0,9% pts
retail trade	-3% pts	3% pts	-3	2	-1% pts	2,4% pts	0,0% pts	-2,5% pts
hotel & catering	-2% pts	0% pts	-1	3	-1% pts	2,1% pts	0,0% pts	-3,5% pts
sale and repair of cars	-2% pts	1% pts	-3	3	-1% pts	2,2% pts	0,1% pts	-2,0% pts
transports	-4% pts	0% pts	0	3	-1% pts	1,6% pts	0,0% pts	-1,1% pts
enterprise services	-3% pts	-1% pts	0	5	-1% pts	0,7% pts	-0,1% pts	-0,6% pts
other services	-4% pts	1% pts	0	2	-2% pts	1,7% pts	0,0% pts	-2,3% pts
agriculture and fishery	-7% pts	0% pts	-3	6	-1% pts	1,7% pts	0,0% pts	-1,0% pts
mining and quarrying	-	-	-	-	-	-	-	-
public utility	-	-	-	-	-	-	-	-
<b>all sectors</b>	-5% pts	0% pts	-2	3	-1% pts	1,7% pts	0,0% pts	-1,2% pts



## Annex V: Explanation of financial terms

accounts payable	amounts of money indebted to the firm to suppliers of goods and services (also called trade credits)
accounts receivable	amounts of money owed to a firm by customers who have bought goods or services on credit
activity ratio	a ratio that measures how effectively the firm is using its assets
assets	the left-hand side of the balance sheet. The total assets must be equal to the liabilities plus the shareholder's equity
average collection period	duration in days of accounts receivable
balance sheet	a summary of a firm's financial position on a given date that shows assets and capital
basic earning power (bep)	earnings before taxes and interest related to total capital
capital	the right-hand side of the balance sheet; consists of equity and liabilities. Total capital must be equal to the total assets
collateral	an asset pledged by a borrower until a loan is repaid. If the borrower defaults, the lender may sell the security to pay off the loan
contingencies	relates to safeguarding future risks and obligations
current assets	assets which are convertible to cash within one year

*Explanation of financial terms*

current ratio	current assets divided by current liabilities. Shows a firm's ability to cover its short-term liabilities with its current assets
depreciation	the systematic allocation of the cost of a capital asset over a period of time for financial reporting purposes, tax purposes or both
equity	total capital minus total liabilities. Alternatively, the book value of a company's common stock plus additional paid-in capital and retained earnings
financial assets	amounts invested in long-term accounts receivable, bonds and shares (including minority interests)
financial leverage	the use of fixed financing costs by the firm
financial leverage ratio	a ratio that shows the extent to which the firm is financed by debt. Also known by as the debt ratio
fixed assets	amount paid for land, buildings and equipment
intangible assets	the value of money of intangible assets such as goodwill, patents and research and development (R&D)
interest	money paid (earned) for the use of money
inventories	the stocks of raw materials, work-in-process and finished goods
inventories term	duration in days of the inventories
liabilities	debt of the firm
liquid assets	cash and bank balances

liquidity	the extent to which an enterprise is able to meet its short-term liabilities
liquidity ratio	a ratio that measures a firm's ability to meet short-term obligations
long-term debts	debts that need not be paid until after one year
profitability ratio	a ratio that relates profits to sales and investment. This ratio indicates the firm's overall effectiveness of operation
retained earnings	earnings retained (i.e. reinvested) in the enterprise
return on investment (roe)	profits after taxes related to equity
shareholders funds	nominal value of outstanding shares
short-term debts	debts payable within one year
solvency	the extent to which an enterprise is able to meet its obligations against creditors
tangible assets	physical assets such as plant, machinery, equipment and vehicles
quick ratio	current assets minus inventories divided by short-term liabilities
total asset turnover ratio	turnover per asset $\frac{\text{working capital total current assets}}{\text{minus the short-term liabilities}}$



## References

- Berg, P.J.C.M. van den, F.J.H. Don en J. Sandee, *Kwartaalmodel voor prognose, analyse en simulatie*, CPB, monografie 26, Den Haag, 1993
- Brigham, Eugene F. and Louis C. Gapenski, *Financial Management, theory and practice*, Fort Worth, 1991
- Boorman, J.T. and M. Havrilesky, *Money Supply, Money Demand and Macroeconomic Models*, Boston, 1973
- Bouma, J.L., *Leerboek der bedrijfseconomie, deel II: De theorie van de financiering van de onderneming*, Wassenaar, 1971
- Cools, C., *Capital structure choice: confronting (meta)theory, empirical tests and executive opinion*, Tilburg, 1993
- Horne, C. van, J.M. Wachowicz, *Fundamentals of Financial management*, New Jersey, 1992
- Jonkheer, K.R., E.A. van Noort, G.A. Pfann, W.H.J. Verhoeven. *Internationale vergelijking van externe financieringsmogelijkheden voor het MKB en beleidsmaatregelen*, EIM, commissioned by the Ministry of Economic Affairs, Zoetermeer, 1997
- Walker, E.W., W.H. Bagn en W.C. Blom, *De financiële functie in de onderneming (Financial planning and policy)*, Alphen a/d Rijn, 1970
- Verhoeven, W.H.J., *De effectiviteit van monetaire politiek; de werking van het monetaire transmissie mechanisme, afstudeerwerkstuk*, Tilburg, 1977
- Vermeulen, Eric M., *Over de toepassing van de financieringstheorie in het midden- en kleinbedrijf*, EIM Research Report 9501/N, Zoetermeer, 1995
- Wijst, D. van der, *Financial structure in small business; Theory, Tests and Applications*, Berlin, 1989
- Wijst, D. van der, W.H.J. Verhoeven, *Financial aspects of firm growth*, EIM, Zoetermeer, 1996