Share Valuation and Evaluation of the Effect of the Use of Defense Mechanisms on Share Value in the case of ForFarmers B.V.

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Summary

ForFarmers, a former cooperative, is Europe's leading animal nutrition company with operations in the Netherlands, Germany, Belgium and the United Kingdom. Core activities of ForFarmers are the production and sales of compound feed as well as the sales of agricultural commodities. Besides the sales activities, ForFarmers gives advice and assistance in business development and provides information on production rights to its customers. In 2003 ForFarmers made a growth strategy of which one of the goals is to become a stock exchange listed company.

The aim of this research is to evaluate the effect of the transition from a cooperative into an stock-exchange listed Investor-Owned Firm on the value of shares in ForFarmers, to determine what defense mechanism are available to ForFarmers to protect the firm from a takeover and how these mechanisms affect the share value of ForFarmers. In order to do this, a study of literature and company reports is conducted to get a clear overview on which changes the cooperative has made to become a stock-exchange listed firm. For the evaluation of defense mechanisms, literature on the effect of the use of defense mechanisms on share value is studied. The Capital Asset Pricing Model (CAPM) and the Two-Stage Dividend Discount Model (Two-Stage DDM) are used to estimate the value of a share in ForFarmers. From the CAPM the required return on a share in ForFarmers is calculated which is used as the discount rate in the Two-Stage DDM. The Two-Stage Dividend Discount Model assumes a period of high growth of dividends after which a period of stable growth, the steady state, follows. Inputs for both models are obtained from literature, company reports, financial websites and an expert.
To capture the uncertainty of variables, a Monte Carlo simulation is performed in @Risk, an add-in of Microsoft Excel. Together with the Monte Carlo simulation, sensitivity analysis is performed, showing how sensitive share value is to stochastic variables in the model.

From the simulation which best reflects reality, a mean share value of €3.99 is reported. The range from the 5%-percentile to the 95%-percentile is from €2.4 till €6.2. Currently a depository receipt in ForFarmers is trading at a price of €3.08. The probability that the share value is higher than the current price of a depository receipt is 77.1% implicating that there is a high probability that the value of a share will increase when ForFarmers is listed on the stock market. From the sensitivity analyses it is shown that the share value is sensitive to changes in the risk premium, an external variable which ForFarmers cannot control. This means that share value is mainly affected by the attitude towards risk of investors, market conditions and market expectations. Defense mechanisms are used to protect a firm from a takeover or unwanted influence. The defense mechanism which is most suitable to ForFarmers is the use of share certificates, since it shareholders with certificates in ForFarmers have no voting rights. Literature shows that the introduction of share certificates affects share value negatively. Therefore, the introduction of defense measure required by the members council as a condition for an IPO is a fallacy.

1 Introduction

The first chapter includes background information on the history of the cooperative ForFarmers and its change into an Investor-Owned Firm. Further it includes the problem statement from which the research objective and research questions follow. The final subchapter concerns the outline of the report.

1.1 Background

These days, technological developments, power shifts in the supply chain, changing consumer behavior and globalization require intensified investments by the cooperatives' members in order to compete with non-cooperative firms (Van Bekkum & Bijman, 2006). Van Bekkum and Bijman (2006) identify two solutions for this investment problem. In this, the transaction relationship is separated from the investment relationship. In the first solution, a production delinked member capital instrument is introduced. The second solution contains the issue of shares to non-members, which generate performance based returns. Many large marketing cooperatives in the Netherlands have transferred their activities into limited liability company structures, while the cooperative has full ownership (Van Bekkum & Bijman, 2006).

ForFarmers is such a cooperative which transferred the activities of the cooperative to an Investor Owned Firm (IOF). ForFarmers is Europe's leading animal nutrition company with operations in the Netherlands, Germany, Belgium and the United Kingdom (Withagen, 2012). Core activities of ForFarmers are the production and sales of compound feed for pigs, poultry and cattle as well as the sales of agricultural commodities like fertilizers, crop protection agents, planting materials and seed. Besides the sales activities, ForFarmers gives advice and assistance in business development and provides information on production rights to its customers. It has 5 production plants in the Netherlands as well as 5 plants in Germany for the production of compound feed. From there, compound feed is transported to more than 10,000 customers all over the Netherlands and Germany (ForFarmers, 2010b).

ForFarmers originates from a merger of several local agricultural cooperatives at the beginning of the 20th century. These local cooperatives felt the need to acquire a larger regional position and merged in order to scale up. In 1995, Coöperatie ABC Gelderland B.A., Coöperatie Gelderland voor de Land- en Tuinbouw B.A. and Coöperatie ABC B.A. merged and was renamed Coöperatie ABC U.A (Withagen, 2012). In 2006 the name of the cooperative changed into Coöperatie ForFarmers U.A. (ForFarmers, 2010b). The cooperative ForFarmers changed its name in FromFarmers and transferred its activities to ForFarmers B.V., an IOF, in exchange for 100 million shares. This process is part of the growth strategy of ForFarmers, to 'become one of the leading providers of feed for agricultural animals in Europe' (ForFarmers, 2013b, p. 80). Normally, the transaction and investment incentives of the members are not altered by the change in organizational structure, but in the case of ForFarmers, the conversion does lead to de-linking between transactions with the firm and investment obligations of the members (Van Bekkum & Bijman, 2006).

1.2 Problem statement

Back in 2005, the cooperative ForFarmers U.A. started a large project in which in three phases and over 10 years of time, its collective capital is individualized, by putting the equity on name of the

cooperatives' members (ForFarmers, 2011b). The capital is individualized based on past and present purchases at the cooperative and the capital is issued to members in the form of depository receipts. At the start of the project, the firm 'explicitly mentioned the option of inviting external investors in the cooperatively owned limited liability company' (Van Bekkum & Bijman, 2006, p. 7). Aim of ForFarmers is to 'become a stock exchange listed company' (Withagen, 2012, p. 17), which means that the depository receipts will be converted into shares of ForFarmers B.V. After an internal discussion among members of the cooperative on becoming listed on the stock-exchange, the members council approved Initial Public Offering (IPO) on November 28, 2013 (Financieele Dagblad, 2013a). Among the members of the cooperative FromFarmers there are fears that when ForFarmers will be listed on the stock exchange, the interests of farmers become less important and the interests of new shareholders become of greater importance (Van der Heijden, 2013). Therefore, one of the conditions of the members council for an IPO is to take defensive measures against possible takeovers (Financieele Dagblad, 2013a). When ForFarmers is listed on the stock-exchange, then for the first time in the Netherlands, farmers, which were members of a cooperative, become shareholders of a large European company. An IPO raises questions regarding the expected value of a share in ForFarmers and the uncertainty involved in the share value. Since the members council requires defense measures to protect the firm from a takeover and unwanted influence of third parties, it is important for the cooperative FromFarmers U.A. and ForFarmers B.V. to know which defense mechanism are available to ForFarmers and what effect these mechanism have on the value of a share in ForFarmers.

1.3 Research objective and research questions

The objective of this research is to evaluate the effect of the transition from a cooperative into a stock-exchange listed Investor-Owned Firm on the value of shares in ForFarmers, to determine what defense mechanism are available to ForFarmers to protect the firm from a takeover and how these mechanisms affect the share value of ForFarmers.

Four questions are formulated to fulfil the research objective:

1. What changes in the organizational and financial structure of ForFarmers have been made to ensure the transition from cooperative to IOF?
2. What is the expected value of a share in ForFarmers when ForFarmers is listed on a stock exchange?
3. What is the variance of the expected share value?
4. What defense mechanisms are available to ForFarmers and how do these mechanisms affect the share value of ForFarmers?

1.4 Outline of the report

Chapter 2 is dedicated to the differences between a cooperative and an IOF, reasons and ways to convert from a cooperative into an IOF and this chapter includes a detailed description of the conversion of ForFarmers. Chapter 3 discusses the necessity of the use of defense mechanisms. Furthermore, it describes the most commonly used defense mechanism in the Netherlands and how these mechanisms affect share value. In chapter 4, the conceptual framework, the two models used in this research are presented and explained. Chapter 5 concerns the methodology; all the input variables of the two models are presented and discussed. In chapter 6 the results of this research are presented. Finally, chapter 7 provides the discussion and conclusion.

2 From members to shareholders

This chapter starts with explaining the differences between a cooperative and an Investor-Owned firm. For both business structures a clear description is given. Subchapter 2.2 provides an overview of reasons for conversions into an Investor-Owned firm and ways to convert. The last subchapter is 2.3 in which the entire process of conversion of ForFarmers is explained, supported by examples.

2.1 Differences between cooperative and Investor-Owned Firm

There are many different business structures to be found in the Netherlands. What they have all in common is that they organize economic activity of many individuals from which cash is generated. Most common legal forms are the sole proprietorship, the partnership and the corporation, also called an Investor-Owned firm (Hillier *et al.*, 2010). Besides these common legal forms of organizing economic activity there is the cooperative, which has a different base than an investor-owned firm. This and other differences will be discussed in the coming paragraph.

2.1.1 Description cooperative

Cooperatives are defined in many different ways, depending on the country and the type of cooperative. Galle (2010) identifies three characteristics that every one of these definitions has in common. First, a cooperative is an enterprise. Secondly, the cooperative operates primarily for the benefit of its members by providing specific economic needs for these members. And lastly, a cooperative has a similar (legal) structure as an association.

The basis of a cooperative is a collaboration to achieve a common goal, which individuals would not be able to achieve alone (Van Dijk & Klep). In this, the relationship of users' interests to ownership and control interests is the unique character of a cooperative (Dunn, 1988). 'Three principles are defined:

1. The User-Owner Principle: Those who own and finance the cooperative are those who use the cooperative.
2. The User-Control Principle: Those who control the cooperative are those who use the cooperative.
3. The User-Benefits Principle: The cooperative's sole purpose is to provide and distribute benefits to its users on the basis of their use' (Dunn, 1988, p.85)

From these three basic principles, one simple definition can be formulated: 'A cooperative is a user-owned and controlled business from which benefits are derived and distributed on the basis of use' (Dunn, 1988, p. 85).

Since the members of a cooperative are the owners, they are also the financiers of the cooperative. The capital provided by the members is in the ´dead hand´, which means that at the termination of the membership, members are not entitled to the money they have invested in the cooperative (Van Dijk & Klep, 2005).

2.1.2 Description Investor-Owned Firm

A public Investor-Owned Firm (IOF) is a firm which is registered at a stock exchange. It comprises four sets of distinct interests, that of the shareholders, which are the owners of the company, the

directors, the top management and the firm´s stakeholders, like employees, lenders and the local community. The board of directors is responsible for the accomplishment of the interest of the shareholders in the firm's decision-making (Hillier *et al.*, 2010). The main interest of a shareholder is a high return on capital, reflected in a high share price and dividend payments. The share price is reflecting the present value of expected dividend flows and the expected share price in the future (Schrader, 1989). Both the expectations towards dividends and share price are based to a large extent on the profit of the firm, the profit forecasts and the profit growth. This makes profit the main goal of an IOF. If the information on profit is not positive to the shareholder or "if the value of a share to the individual shareholder is less than other are willing to pay for it" (Schrader, 1989, p. 43), it will sell his shares in the firm. This makes a shareholder more a 'consumer' than an 'owner', since a shareholder will look for the firm which will maximizes the investor's returns on capital. A shareholder will not invest in a company just because he becomes an owner or likes the firm (Van Dijk & Klep, 2005).

2.2 Conversion of cooperatives into Investor-Owned Firms

Cooperatives can have different reasons for conversion into an IOF. There are large cooperatives which converted into IOFs to remain financially viable, or to obtain extra capital which cannot be provided by the cooperative's members (Fulton & Hueth, 2009; Schrader, 1989) Conversion happened also in order to reduce the production and price risk for members of the cooperative. In several cooperatives members wanted to have access to their equity and for this reason converted into an IOF. Examples are Dakota Growers Pasta Co. and Diamond Walnut Growers, two former cooperatives, they converted into IOFs because they wanted to provide access for older members to the accumulated equity. By so doing, current members of the cooperative realized a significant capital gain on the equity they had invested (Fulton & Hueth, 2009).

Collins (1991) examined four hypotheses for cooperative conversion. The first two hypotheses are related to equity capital; the problem of equity access and equity liquidation. "The equity liquidation hypothesis suggest that cooperative members have an economic motive for approving a sale or corporate reorganization when the market value of members' equity exceeds book value" (Collins, 1991, p. 327). The market value of equity can exceed book value because of inflation or other market forces. In this case the conversion into a corporate structure of a firm will create more value for members than in the case members liquidate their individual position (Collins, 1991). In the second hypothesis, the equity access hypothesis it is suggested that growth is essential for a firm's survival. Along with growth of a firm is the growth of debt or equity. The internal finance opportunities of a cooperative are limited and therefore a conversion to a publicly held corporation creates access to external equity (Collins, 1991). The third hypothesis that was identified is the corporate acquisition hypothesis. It implies that the impulse for conversion comes from the corporate sector rather than the cooperative itself. An example is a cooperative which fits in the plans for vertical integration of a corporation. The fourth hypothesis identified by Collins (1991) is the cost-of-equity hypothesis. It "suggests that perhaps the motive for conversion of cooperatives is not lack of access to equity financing but rather that the cooperative may have equity that is attractive to investors and, therefore, publicly held equity may be cheaper than member-provided equity" (Collins, 1991, p. 327). After study of a limited amount of converted cooperatives it was concluded that access to equity is not a reason to conversion. Little support was found for the corporate acquisition and equity liquidation hypotheses. "The only hypothesis that is consistent with all available data is the

hypothesis that cooperatives will find a way to issue public equity if their equity is extremely attractive to the investing public" (Collins, 1991, p. 329).

Van Bekkum & Bijman (2006) identify two categories of publicly listed cooperatives. The first are the Converted Listed Cooperatives (CLCs) which are cooperatives that converted into an inverstor-owned company. The shares of the company are publicly traded on the stock exchange. The second category are the Hybrid Listed Cooperatives (HLCs or hybrids). These companies retain much of their cooperative structure while listed on the stock exchange. Hybrids try "to combine their cooperative objectives with the benefits of access to external capital" (Van Bekkum & Bijman, 2006, p. 9).

Some cooperatives which became listed on the stock exchange, fell prey to takeovers by other firms in the industry. This leaves former members of the cooperatives bereft of any control over the firm. An example is Otago Farmers, listed on the stock exchange of New Zealand after which it received a hostile bid by a venture capitalist. The bid was rejected by the Board, but many former members of the cooperative sold their shares to the venture capitalist. Otago eventually merged with Kiwi cooperative Dairies. Dairy Vale Foods (Australia) was a cooperative which went public in 1995. Due to financial difficulties it was acquired by Dairy Farmers Group and de-listed from the stock exchange. Farmers Grazcos Cooperative, an Australian cooperative, went public in 1987, after selling 70% of their shares to Panfida Food ltd. In 1992 the mother company Panfida Foods plc went bankrupt, with the de-listing of the former cooperative as a result. Other examples of converted cooperatives which were taken over are American Rice (USA), Golden Vale (Ireland) and Affco (New Zealand) (Van Bekkem & Bijman, 2006).

There are several cooperatives which went public to give members the opportunity to liquidate their shareholdings at fair value. An incentive for members to liquidate their shareholdings is stronger "when market access for their products is not at risk because competition is sufficient to guarantee fair prices, when the member exit ratio is high, and when liquidity of internal share trade is low" (Van Bekkum & Bijman, 2006, p.8). As an example, Donegal (Ireland) became listed in 1997. The IPO itself raised firm's equity by 2.5 million Irish Pounds but provided the 1,100 member-shareholders to cash their shares. Firms like Dairy Crest (United Kingdom), Irish Agricultural Wholesale Society (Ireland) and Warrnambool Cheese and Butter Factory (Australia) went public for the same reason and enabled members to liquidate their shareholdings successfully (Van Bekkum & Bijman, 2006).

2.3 Process of changing into an IOF, the case of ForFarmers

The goal of the cooperative is to grow, for which ForFarmers made a growth strategy in 2003. Growth could mean that the number of members of the cooperative increases which will dilute the claims of current members. In order to prevent this dilution, the cooperative started a large project in which its collective capital is individualized, by putting equity on name of the members over a period of more than 10 years. Until that moment the equity of the cooperative belonged to all members and a member had no individual claim to a part of this equity (ForFarmers, 2013b). The process of individualizing the equity of the cooperative is called 'Equity on Name' and consists of three phases. An advantage of capital individualization is that is enables 'investments of others than members of the cooperative to finance the growth strategy of the company (Withagen, 2012, p.9). Figure 2.1 summarizes the project Equity on Name. Every phase will be discussed thoroughly.

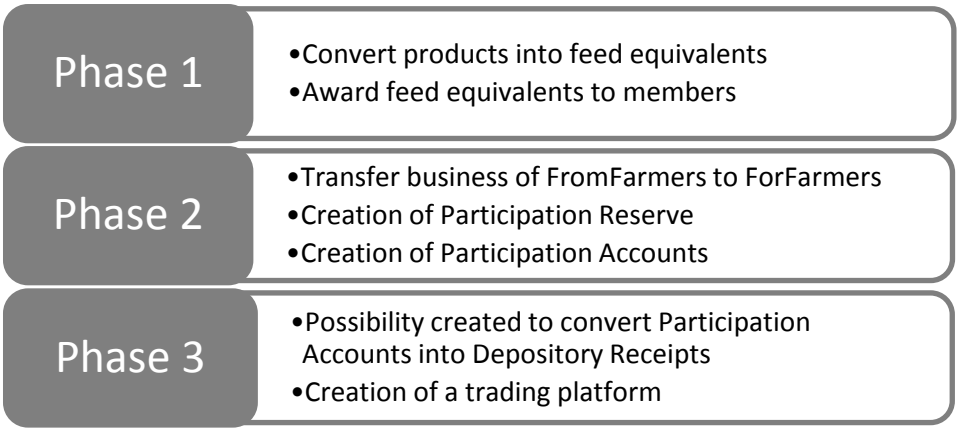


Figure 2.1: Summary of Equity on Name (Withagen, 2012, p. 8)

2.3.1 Phase 1

During the first phase of 'Equity on Name', management needed to devise a formula in which all products of the company could be translated into one common denominator. This common denominator has been called a Feed Equivalent, 'being the equivalent of one metric ton of compound feed. The calculation of feed equivalents was based on the financial contribution of each product group during the years 2001 up to and including 2006' (ForFarmers, 2013b, p.84). Table 2.1 shows the number of feed equivalents per product group.

Table 2.1: Feed equivalents per product group

Product group	**per**	**Feed equivalents**
Compound feed	ton	1.0000
Compound feed Denmark	ton	0.5000
Minerals/Artificial milk	ton	3.1400
Simple feed (such as wheat and corn)	ton	0.4563
Collection of corn	ton	0.3160
Calcium	ton	0.2375
Fertiliser other	ton	0.7908
Seed for sowing units	unit	0.8449
Seed for sowing other	ton	5.4586
Seeds (such as seed potatoes)	ton	1.4739
Crop protection agents	Euro 1000	5.7631
Crude feed / by-product	ton	0.0503
Sold brewed barley / coleseed	ton	0.3112

(Source: ForFarmers, 2013b, p.84)

For the division of feed equivalents, the purchases of agricultural products during the years 2001 up to and including 2006 of each member were converted into feed equivalents, based on the feed equivalents per product group, shown in Table 2.1. For each member, the total number of feed equivalents over these years were divided by six. The result of this calculation is the yearly average of purchases of products expressed in feed equivalents for one single member. These feed equivalents are awarded to and held by the member. Box 1 shows an example of the award of feed equivalents.

Box 1

A member bought in 2001 100 ton compound feed and for 6000 euros crop protection agents. This results in: 100*1.0000 + 6*5.7631= 100 + 34.5786 = 134.5786 feed equivalents for the year 2001. The same calculation holds for the years 2002, 2003, 2004, 2005 and 2006, resulting in for example 250, 300, 400, 350 and 375 feed equivalents respectively. Now the number of feed equivalents can be calculated: 134.5786+250+300+400+350+375 = 1809.5786 divided by 6 years: 1809.5786 / 6 = 301.5964333. This is the number of feed equivalents awarded to the member.

In total, the cooperative FromFarmers awarded 1,280,396 feed equivalents to its members in 2007. Members can trade their feed equivalents with other members of FromFarmers (ForFarmers, 2013b; Withagen, 2012). The purpose of the feed equivalents is to use it 'as a tool in order to co-determine the amount to be credited to a member's Participation Account' (ForFarmers, 2013b, p.85), part of the second phase of 'Equity on Name'.

2.3.2 Phase 2

In the second phase of 'Equity on Name', an Investor-Owned Firm was started, called ForFarmers B.V. At the same time the name of the cooperative changed into FromFarmers. All activities and assets of the cooperative, with an equity value of € 136,897,000, were transferred to ForFarmers in exchange for 100 million shares in the capital of ForFarmers. These shares have a nominal value of €1.00. The only activity the cooperative has nowadays is the management of the shares in ForFarmers (ForFarmers, 2013b; Withagen, 2012).

The cooperative FromFarmers created a so-called Participation Reserve. Each year since 2008, the Membership Council will determine to number of depository receipts that will be divided between eligible members. The maximum of depository receipts that can be divided each year is 10 million (ForFarmers, 2013b). 'The intrinsic value of these depository receipts will be credited to the participation reserve' (Withagen, 2012, p.9). Besides to creation of participation reserve, FromFarmers also created Participation Accounts for each member of the cooperative. Members will be credited a participation account when they hold feed equivalents and has bought products from ForFarmers. The equation below shows how the 'amount to be credited' to the participation account of an individual member is determined.

$$\text{Amount to be credited} = \#\text{ of depository receipts to be divided} \times \left(\frac{\text{Utilized feed equivalents}}{\text{Total utilized feed equivalents}}\right) \times \text{intrinsic value}$$

(Source: Withagen, 2012, p. 9)

Utilized feed equivalents for an individual member 'are the lower of 1) the number of feed equivalents held at the end of the year and 2) the purchases of agricultural products by the member

in the year' (Withagen, 2012, p. 9). The inputs of the equation change each year, so the calculation is done each year, until the intrinsic value of the 100 million depository receipts has been credited to the participation reserve (ForFarmers, 2013b). Just as the feed equivalents, participation accounts can be traded between members of FromFarmers. Besides that, it is possible to convert participation accounts into depository receipts.

Table 2.2 shows an example of how the amount credited is determined for an individual member over a period of 10 years. The first column shows the changes in the number of feed equivalents of the individual member. The member obtained at the start 1000 feed equivalents. In 2010 the member expands his number of feed equivalents by 400 in order to supplement the deficit relative to its actual purchases. In 2014 he sells 200 feed equivalents because of a lower level of purchases. In 2015 he sells everything, perhaps because he stopped in 2015. In column 2 the total number of feed equivalents of the member at the end of the financial year is displayed. Column 3 presents the purchases of agricultural products of the member at ForFarmers expressed in feed equivalents. The utilized feed equivalents are, as mentioned before, the lower of number of feed equivalents held by the member and the purchases expressed in feed equivalents. So, the lower of column 2 and 3 is the number of utilized feed equivalents. In column 5 the total number of utilized feed equivalents for all members is shown. Column 6 shows the number of shares or depository receipts of which the value will be divided among the members in that financial year. In total the value of 100 million shares is divided over 10 years. In column 7 the value a members gets awarded is expressed in shares or depository receipts. It is the utilized feed equivalents divided by the total utilized feed equivalents times the number of depository receipts to be divided. In column 8 the cumulative shares or depository receipts is displayed. Column 9 shows the intrinsic value of the shares or depository receipts. The last column presents the value of the accrued allocated equity for the individual member in Euros, which is the cumulative shares or depository receipts times its intrinsic value.

Table 2.2: Example allocation of equity

	Mut. FE	FE	Purchases expressed in FE	Utilized FE	Total utilized FE	Total s /d	Financial year CR in s /d	Cum. CR in s /d	IV per s /d	Participation Reserve
Column	1	2	3	4	5	6	7	8	9	10
Formula				Lowest 2 or 3			4 /5 x 6			8 x 9
Start	1,000	1,000								
2007		1,000	800	800	1,350,000	10,000,000	5,926	5,926	€ 1.41	€ 8,355.66
2008		1,000	1,100	1,000	1,400,000	10,000,000	7,143	13,069	€ 1.45	€ 18,950.05
2009		1,000	1,200	1,000	1,300,000	10,000,000	7,692	20,761	€ 1.49	€ 30,933.89
2010	400	1,400	1,400	1,400	1,320,000	10,000,000	10,606	31,367	€ 1.53	€ 47,991.51
2011		1,400	1,600	1,400	1,360,000	10,000,000	10,294	41,661	€ 1.58	€ 65,824.38
2012		1,400	1,450	1,400	1,300,000	10,000,000	10,769	52,430	€ 1.66	€ 87,033.80
2013		1,400	1,200	1,200	1,400,000	10,000,000	8,571	61,001	€ 1.74	€ 106,141.74
2014	-200	1,200	1,100	1,100	1,400,000	10,000,000	7,857	68,858	€ 1.83	€ 126,010.14
2015		1,200	-	-	1,390,000	10,000,000	-	68,858	€ 1.92	€ 132,207.36
2016	-1,200	-	-	-	1,390,000	10,000,000	-	68,858	€ 2.02	€ 139,093.16
FE = Feed Equivalents, s/d = shares or depository receipts, CR = Capital Rights, IV = Intrinsic Value										

(Source: ForFarmers, 2007, p. 6)

2.3.3 Phase 3

The third phase of Equity on Name has started at the end of 2010. In the last phase the firm made it possible for members to convert their participation accounts into depository receipts. The 'conversion of the participation accounts into depository receipts is based on the intrinsic value per share as per the last annual accounts, where the shareholders' equity per share is used to convert into one depository receipt' (Withagen, 2012, p. 10). Members can convert the entire amount credited to their participation account into depository receipts, but also a part of this amount credited. The minimum is a conversion of one depository receipt (ForFarmers, 2013b).

Besides the possibility of conversion, the third phase also consists of the creation of a Multilateral Trading Facility (MTF), in order to facilitate liquidity for the instruments created during the project 'Equity on Name'. At this trading facility members can trade both feed equivalents and participation accounts with other cooperative members, the depository receipts can be traded with third parties on the Multilateral Trading Facility (ForFarmers, 2013b; Withagen, 2012). "The MTF is a segregated part of the larger multilateral trading facility operated by F. Van Lanschot Bankiers N.V. in the Netherlands for financial instruments not admitted to trading on a regulated market" (ForFarmers, 2013b, p. 194). Because the instruments of FromFarmers, the feed equivalents, participation accounts and depository receipts, are not registered at a regulated market, the rules and regulations of such markets do not apply for the instruments. Van Lanschot only carries out and executes orders on the MTF and does not provide any services regarding investment advice, for both members and third parties. A member who wants to trade feed equivalents, participation accounts or depository receipts should be registered as a participant with Van Lanschot. When a participant places an order via the MTF, Van Lanschot will place the order in the order book which online is available for all participants. The order will remain in the order book until a match is found, orders that match will be executed by Van Lanschot. "Simultaneously with financial settlement, the relevant instruments will be registered in the name of the participant" (ForFarmers, 2013b, p. 196). The price of the transaction is based on supply and demand for that instrument on the MTF, and therefore fluctuates from day to day. Figure 2.2 shows the market value of depository receipts over the last year.

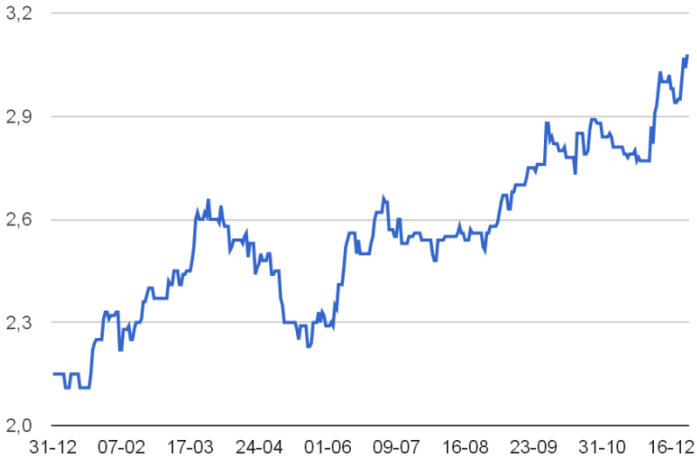


Figure 2.2: Market value of depository receipts for the period 31-12-2012 till 31-12-2013 (www.forfarmers.nl, 10-01-2014)

3 Defense Mechanisms

This chapter discusses defense mechanisms. The first subchapter gives a definition of defense mechanisms and several reasons to make use of these mechanisms. The second subchapter covers the necessity of ForFarmers to introduce defense mechanisms during an IPO. Subchapter 3.3 discusses different types of defense mechanisms. In the last subchapter the effect of different defense mechanisms on the value of shares is considered.

3.1 Defining defense mechanisms

Visser & Stegeman (2011) use the following definition of defense mechanisms in their research:

"Defense mechanisms are arrangements or actions which seek to prevent the interests of a stock-exchange listed firm and those involved, from unwanted influence of capital investors" (Visser & Stegeman, 2011, p. 10)

Defense mechanisms can be introduced for different purposes. It can be introduced to protect a firm from a hostile takeover. "In a 'hostile' takeover, a raider makes a tender offer directly to the shareholders of the target company, without consulting the incumbent management. Each shareholder decides individually whether or not to tender his shares. In contrast, a 'friendly' takeover has to be approved by shareholders and management" (Schnitzer, 1996, p. 37).

Defense mechanisms can also be introduced to protect the interests of the firm from unwanted influence of external investors or activists. Other reasons can be to assure the interests of several groups in the firm, like the position of the founders of the firm, certain families or other capital investors. A defense mechanism can prevent a decision taken by an 'accidental majority' when the level of attendance is low at a general meeting. Besides the protection from unwanted influence from investors or activists a defense mechanism can be introduced with the aim to guarantee the quality of the management and supervisory board (Visser & Stegeman, 2011).

3.2 Necessity of a defense mechanism for ForFarmers

As mentioned in the previous subchapter, there can be many reasons to implement defense mechanisms. The most common reason to introduce defense mechanisms is the probability of a takeover. Much research has focused on the relationship between financial characteristics of firms and the likelihood of being a takeover target. Hasbrouck (1985) found in his study covering the period of 1977-1982, that firms with a low Tobin's q Ratio have a higher likelihood of a takeover. The Tobin's q Ratio is reflected as the market value of the firm divided by the total asset value. A low Tobin's q Ratio (between 0 and 1) implies that the firm is undervalued, while a high Tobin's q ratio signifies that the firm is overvalued. The definition of Tobin's q is shown in formula 3.1.

$$\frac{\text{Equity Market Value} + \text{Liabilities Market Value}}{\text{Equity Book Value} + \text{Liabilities Book Value}} \tag{3.1}$$

Interpreting the results of Hasbrouck (1985), undervalued firms are more likely to be acquired than firms that are not undervalued. Related to the value of Tobin's q, is the underpricing of shares when

they are issued during an Initial Public Offering (IPO). In the research of Ragozzino and Reuer (2011) it is a premise that the underpricing of issued shares is an indicator in acquisitions involving newly public targets. North (2001) investigated the effect of governance structure on the likelihood a firm is acquired. His results indicate that the acquisition likelihood is decreasing if the firm is owned by insiders, like managers and affiliated blockholders. Several financial characteristics, which also have been taken into account, were not found to have a significant effect on the acquisition likelihood. Dickerson *et al.* (2002) analyzed the relationship between several firm characteristics and the probability of a takeover, both hostile and non-hostile. A large sample of listed firms in the UK during the 1970s and 1980s was used. It was found that the size of the firm, the level of tangible assets, profitability and the level of investments was negatively related to the likelihood of a takeover. Palepu (1986) found that the higher the level of leverage, the lower the likelihood of a takeover. This significant effect of the level of leverage decreasing the likelihood of a takeover was not found by Walter (1994) while using a similar sample as Palepu (1986). But leverage had a significant effect on the probability of being taken over by a private equity investor in the analysis of Achleitner *et al.* (2010). In both the research of Palepu (1986) and Thompson (1997) it was found that firms with high growth rates have a significantly lower probability of a takeover than firms with lower growth rates. Table 3.1 shows the market value, total asset value and derived from these figures the Tobin's q Ratio of ForFarmers. Since ForFarmers is not trading bonds, it is hard to calculate the market value of debt, therefore the book value of debt (total assets minus equity) is used as a proxy for the market value of debt (Grossman & Livingstone, 2009).

Table 3.1: Financial data ForFarmers, 2011 and 2012

	31-12-2011	**31-12-2012**
Tobin's q Ratio		
Number of shares issued	105,482,000	105,260,000
Closing price (in €)	2.09	2.15
Book value of debt (€)	370,465,000	392,034,000
Total assets (in €)	706,141,000	816,655,000
Tobin's q ratio	0.84	0.76
Debt/Equity ratio		
Level of (interest-bearing) debt (in €)	228,162,000	186,926,000
Level of Equity (in €)	321,458,000	327,103,000
D/E ratio	0.71	0.57
Growth figures		
Growth in turnover	25.5%	27%
Growth in sales	4%	51%

(Source: ForFarmers, 2013b)

As is shown in the Table 3.1, ForFarmers is little undervalued, indicated by the Tobin's q Ratio below 1. This low Tobin's q Ratio increases the likelihood of ForFarmers being a takeover target. The Debt/Equity of ForFarmers ratio is relatively low compared to Nutreco, an animal and fish feed producer and listed on the Amsterdam stock-exchange, reported a Debt/Equity ratio of 0.54 in 2012. Agrifirm, a Dutch-based cooperative producing compound feed and inputs for crop cultivation, had a Debt/Equity ratio of 0.56 in 2012. ForFarmers has similar Debt/Equity ratios as these two firms indicating that ForFarmers has an average Debt/Equity ratio which reduces the likelihood of being a takeover target. The growth figures of turnover and sales of ForFarmers are high. The high increase in sales in 2012 is mainly due to the acquisition of two large feed producing companies. According to Palepu (1986) and Thompson (1997) these high growth figures reduce the likelihood of being acquired, since they found a negative relationship between growth rates and likelihood of being a takeover target.
It is assumed that defense mechanisms reduce the likelihood of a takeover. Field and Karpoff (2002) found such a relationship. The introduction of defense mechanisms reduce the likelihood of being acquired within the coming five years. Holmén *et al.* (2012) reports that the use of dual class shares (a takeover defense) reduces the likelihood of a takeover. But defense mechanisms do not only exist to prevent a firm from a takeover, or to lower the likelihood of a takeover, but also to protect a firm from undesirable influence from large shareholders (Visser & Stegeman, 2011). Among the members of the cooperative FromFarmers there are fears that when ForFarmers will be listed on the stock exchange, the interests of farmers become less important and the interests of new shareholders become of greater importance. Cooperative's members are afraid that increasing shareholder value becomes more important than feed quality for a fair price (Van der Heijden, 2013). Defense mechanisms can protect the interests of the farmers against the influence of external investors.

A (hostile) takeover is unwanted since it is perceived to threaten some stakeholders in the target corporations (Schwert, 2000). In the case of ForFarmers this could be the management or the farmers which buy their feed at ForFarmers. One of the conditions of the members council for an IPO is the introduction of defense measures to protect the firm from an unwanted takeover (Financieele Dagblad, 2013a). There are different types of defense mechanisms which can protect ForFarmers from a hostile takeover as well as unwanted influence from shareholders other than the cooperative's members.

3.3 Types of defense mechanisms

Several defense mechanisms are used by exchange listed companies in the Netherlands to prevent the firm from a hostile takeover or unwanted influence of third parties. In this subchapter the most commonly used defense mechanisms in the Netherlands are discussed. Table 3.2 shows the most important defense mechanisms used in the Netherlands in the period 1992 to 2006. As can be seen, the use of almost all types of defense mechanisms has declined between 1992 and 2006.

This decline in use of defense mechanisms can be attributed to new legislation which stimulated the dismantling of defense mechanisms. The new legislation was introduced in the period from 2001 to 2006. Combined with accounting scandals, shareholders activism and globalization the dismantling of defense mechanisms has been stimulated (Visser & Stegeman, 2011).

Table 3.2: Use of defense mechanisms in the Netherlands from 1992-2006 (Source: Van der Elst et al. 2007)

	Priority shares	Preference shares	Share certificates	X%-rule	Voting cap	Structured regime (legally obliged)	Structured regime (Voluntary)
1992	42%	64%	39%	9%	7%	40%	12%
1993	41%	62%	40%	8%	7%	41%	12%
1994	41%	63%	41%	8%	7%	46%	12%
1995	39%	62%	40%	8%	6%	48%	12%
1996	36%	60%	38%	7%	6%	50%	13%
1997	34%	58%	36%	7%	4%	44%	17%
1998	33%	58%	33%	5%	4%	42%	14%
1999	35%	63%	27%	5%	3%	39%	13%
2000	35%	63%	26%	5%	3%	38%	12%
2001	34%	63%	23%	5%	3%	39%	12%
2002	33%	62%	22%	3%	3%	36%	9%
2003	33%	61%	22%	1%	3%	35%	9%
2004	31%	59%	18%	1%	3%	unknown	unknown
2005	28%	60%	16%	1%	0%	unknown	unknown
2006	20%	61%	15%	1%	0%	unknown	unknown

(Source: Van der Elst et al. 2007)

More recent figures for the three most often used defense mechanisms are shown in Table 3.3. The table shows that the level of use of these three defense mechanisms is stable or even a bit increasing. The majority of firms listed on the AEX and AMX use preference shares to protect the interests of the firm. Visser and Stegeman (2011) grant this stabilization or slight increase in the use of defense mechanisms to the economic crisis, the fear of shareholders activism (the takeover of ABN AMRO) and the sales of many large Dutch firms. Besides that, shareholders have a bad reputation since the start of the economic crisis. It are mainly social factors which influence the use of defense mechanisms in the Netherlands (Visser & Stegeman, 2011).

Table 3.3: Use of defense mechanisms of Dutch exchange listed companies, AEX & AMX, 2007-2010

	2007	**2008**	**2009**	**2010**
Preference shares	57%	59%	59.2%	60.5%
Priority shares	15%	19%	20%	20.7%
Share certificates	8%	11.5%	11.5%	11.7%

(Source: Visser & Stegeman, 2011)

The most important and commonly used defense mechanisms in the Netherlands are discussed below.

Priority shares

An option for a firm to hold control over its organization is to issue priority shares. Priority shares carry special control rights (Visser & Stegeman, 2011; Rooseboom & van der Goot, 2003). "In general, the holders of the firm's priority shares have the exclusive right to appoint or discharge members of

the management board as well as supervisory directors" (Rooseboom & van der Goot, 2003, p. 489). Also dividend payments for shareholders and large investments have to be approved by the owners of priority shares (Rooseboom & van der Goot, 2003). Priority shares are not traded on the stock exchange. A decision by the holders of priority shares can be overruled by the ordinary shareholders, if two thirds of the shareholders votes against at the shareholders' meeting. In this meeting more than half of the shares have to be represented (Rooseboom & van der Goot, 2005).

Preference shares

The issue of preference shares dilutes the power of a hostile acquirer or the undesirable exercise of voting rights of a single or couple of shareholders (Visser & Stegeman, 2011). The option of buying preference shares is granted by the management board to a friendly party. In most of the cases this is a foundation or befriended institutional investor (Rooseboom & van der Goot, 2003). Preference share are similar to ordinary shares with the same voting rights as the normal shares, but are sold at just 25 percent of nominal value. By so doing, "substantial voting power can be given to a friendly party at a relatively low cost" (Roosebeoom & van der Goot, 2003, p. 491). The issue of preference shares is somewhat similar to the poison pill defense mechanisms, which is mainly used in the United States. In this mechanisms securities carrying special rights are exercised when an undesirable event is coming up, usually a takeover attempt (Rooseboom & van der Goot, 2003). "The authorization to issue preference shares is typically a temporary measure that has to be renewed at the shareholders' meeting every five years" (Rooseboom & van der Goot, 2003, p. 499).

Share certificates

In this defense mechanism, share certificates are issued along with ordinary shares. The non-voting share certificates are distributed among by the shareholders, while the original voting shares are held by a foundation (Administratiekantoor) (Becht & Röell, 1999). The foundation issues for every deposited share a certificate of a common share. This certificate of a common share can be traded on the stock market. In this way, the shareholder is entitled to receive dividend payments (Visser & Stegeman, 2011; Rooseboom & van der Goot, 2003). The foundation is the owner of the shares, therefore the voting rights attached to the shares remain at the foundation. There are three types of share certificates. The first are depository receipts, which can be converted into shares at any time. Second, the restricted depository receipts, these certificates can be converted into shares if several conditions are met. The last are the non-depository receipts. These cannot be converted into shares without permission of the foundation (Visser & Stegeman, 2011). The share certificates, as we know them in the Netherlands, are comparable with the dual class shares that are used in other countries. The Dutch share certificates limit shareholders' rights more than dual class shares. In the dual class system, there are two classes of stock, in which one of the two has voting rights superior to the other (Rooseboom & van der Goot, 2003). In addition to the share certificates, the X%-rule is used. The X%-rule determines that an individual shareholder cannot have a certain percentage of shares in possession (Van der Elst, 2007).

Voting caps

The defense mechanism of a voting cap limits the number of voting rights that one shareholder can exercise at the general shareholders' meeting. The number of share the individual shareholders holds

is in this case irrelevant. This makes the firm protected against hostile takeovers. However, the defense mechanism of voting caps is not used very often, since the voting rights of well-disposed shareholders, holders of preference shares and the foundation are also limited (Rooseboom & van der Goot, 2003).

Structured regime

The structured regime was introduced in 1971, in which ownership and control was separated. The system consists of a management board (Raad van Bestuur, RvB) which comprises of executive directors with the task to control daily operations, and a supervisory board (Raad van Commisarissen, RvC). The supervisory board has to monitor the management board and is legally obliged to monitor the firm as a whole, not for specific interests of shareholders or other stakeholders. This structure is also known as the two-tier board structure (Rooseboom & van der Goot, 2003; Moerland, 2002). For large firms with more than 100 employees, a company council and "a book value of equity in excess of 25 million guilders"(Rooseboom & van der Goot, 2003, p. 491) over a period of three consecutive years, the structured regime is mandatory. A company council is required for every company with a minimum of thirty-five employees (Rooseboom & van der Goot, 2003; Moerland, 2002). In the structured regime some decision rights of the general shareholders meeting (Algemene vergadering van Aandeelhouders, AvA) are transferred to the supervisory board. For example, the board appoints board members themselves, called co-optation. They have the right to appoint and dismiss members of the management board and to adopt the annual accounts (De Jong & Röell, 2005; Rooseboom & van der Goot, 2003). In this way, the control of the shareholders is limited, they cannot control key positions, like the nomination and discharge of directors, since this is the exclusive right of the supervisory board. For this reason the structured regime can be seen as a disguised defense mechanism (Moerland, 2002). On the other hand, the general shareholders meeting can withdraw confidence in the supervisory board, which leads to the immediate dismissal of the members of the supervisory board (Visser & Stegeman, 2011).

Rooseboom & van der Goot (2003) argue that priority shares and the structured regime are substitutes. Because when a Dutch firm is obliged to install the structured regime, the firm "is no longer able to grant the holders of priority shares the right make binding nominations for board positions" (Rooseboom & van der Goot, 2003, p. 490).

Relevant defense mechanisms to ForFarmers

ForFarmers is legally obliged to exercise the structured regime, since it has a book value of equity of more than 25 million Dutch guilders, it has a company council and more than 100 employees in the Netherlands for more than three consecutive years. This would mean that the issue of priority shares is unnecessary because holders of priority shares cannot be granted the right to make binding nominations for board positions. It is questionable whether the structured regime gives the former members of the cooperative enough protection of their interest; high quality feed for a good price. The control of shareholders may be limited as it comes to the control of key positions, but shareholders can withdraw confidence in the supervisory board, with the dismissal of the members of the supervisory board immediately. For this reason, the structured regime may not be the protection that cooperative members require.

The issue of preference shares is typically a temporary measure, most often used to protect a firm from a hostile takeover. Since preference shares are a temporary measure it is not seen as a long-

term protection of the former cooperative members' interests. A more long-term defense mechanism is a voting cap, which limits the number of voting rights that one shareholder can exercise at the general shareholders' meeting. A drawback is that the voting rights of well-disposed shareholders or the foundation are also limited. Therefore a voting cap does not seem appropriate in the case of ForFarmers, since the voting power of cooperatives' members is limited as well. Looking at the concerns of a part of the members of the cooperative FromFarmers and at the current shareholders structure of ForFarmers, the issue of share certificates along with ordinary shares seems the most appropriate defense mechanism against unwanted influences from other shareholders than members of the cooperative. Non-voting shares can be distributed among shareholders, while the original voting shares can be held by the foundation so that the voting power remains at the foundation. Currently, the holders of depository receipts can demand voting rights up to 5% of the total groups share capital. The person or entity needs to hold the required economic interest. The voting rights can be increased to 15% if supervisory board of ForFarmers approves. The cooperative has no limitations regarding voting rights. The cooperative can request voting rights on certificates unlimitedly (Withagen, 2012). When ForFarmers would be listed on the stock exchange, a similar structure can be maintained. This gives members control over ForFarmers, through the cooperative FromFarmers.

3.4 Effect of the use of defense mechanisms on share value

"The right to control a corporation is valuable per se because it guarantees the owner of this right some unique benefits. Votes allocate control" (Zingales, 1994, p. 126). Much study has been done into the value of these voting rights. The results vary among countries. Lease *et al.* (1983) studied 26 American firms with common stock and common stock with superior voting rights. It was found that the stock with superior voting rights was traded at a premium relative to common stock. The average voting premium was 5.44 percent. Zingales (1995) studied the voting premium of American firms as well. In his study a voting premium of 10.5 percent. The difference in the level of voting premium is partly explained by the different time period analysed and the different definition of voting premium. Canada reports a voting premium of 23.3 percent (Zingales, 1994). Chung and Kim (1999) analysed the voting premium in an emerging market, Korea. The average voting premium found was 9.6 percent. Levy (1982) finds a high voting premium of 45.5 percent for 25 firms with two classes of stock, which are identical except for voting rights, listed on the Israeli stock exchange. Voting premiums in many European countries have been analysed. In Sweden a voting premium of 12 percent was found among 65 dual-class firms (Rydqvist, 1996). In Switzerland, most corporations have different types of shares outstanding which differ in the level of voting power. There are three types of shares that can be identified. First the non-voting shares, which has no voting rights at all. Second, bearer shares, these are shares with 'normal' voting rights. The last type of shares is the registered shares, which have high voting rights. On average the voting premium is 20% for Switzerland (Neumann, 2003; Zingales, 1994; Horner, 1988). A study among 152 British companies with two or more common shares classes with differential voting rights, showed that, on average, the market price of shares with superior voting were 13.3 percent higher than the restricted voting shares (Megginson, 1990). Neumann (2003) evaluated the voting premium for 34 firms listed on the Copenhagen Stock Exchange. All firms had more than one class of shares with different voting rights. The equal-weighted mean that was found was 12.3 percent, while the market-weighted mean was 3.6 percent. In Germany a voting premium of 26.3 percent was found for ordinary stock compared to non-voting preference shares among 84 listed companies (Hoffmann-Burchardi, 1999). The highest

voting premium was found in Italy. Voting shares with inferior dividend rights are traded at an average premium of 82 percent above the non-voting shares. The high price for voting rights can be attributed to the large value of control in Italy. A possible reason for the high value of control is that "whoever controls a company can dilute minority property rights to a greater extent in Italy than in other countries" (Zingales, 1994, p. 127). All voting premiums for the different countries are summarized in Table 3.4. The time period and the number of firms used in the analyses is included in this table.

Table 3.4: Voting premia for different countries, including time period and number of firms studied

Country	Voting premium	Time period studied	Number of firms studied
United States (1)	5.4%	1940-1978	26
United States (2)	10.5%	1984-1990	94
Canada	23.3%	Unknown	Unknown
Israel	45.5%	1974-1980	25
Korea	9.6%	1992-1993	119
Sweden	12%	1983-1990	65
Denmark	12.3%/3.6%	1991-1999	34
Germany	26.3%	1988-1997	84
Switzerland	20%	1973-1983	48
Italy	82%	1987-1990	64-84 (start-end)
Great-Britain	13.3%	1955-1982	152

Based on the research regarding voting premiums it can be stated that voting power comes at a cost. This implies that shares with no or less voting power trade at a discount. Which type of mechanism which is limiting voting power sells at what discount is not clear, since the defense mechanisms used in foreign countries are different from those used in the Netherlands.

Rooseboom & van der Goot (2003) studied the effect of the use of defense mechanisms on the value of an Initial Public Offering (IPO) firms in the Netherlands. A sample of 111 IPOs on Euronext Amsterdam was analyzed over the years 1984-1999. The five most commonly used defense mechanisms in the Netherlands were analyzed. These are priority shares, share certificates, voting caps, structured regime and preference shares, all discussed in the previous subchapter. In theory, the use of defense mechanisms influences the IPO firm value negatively. This negative relationship was found in their research; the market- to-book ratio and the offer price-to-book ratio decreased when the number of takeover defenses increased. The market-to-book ratio of a firm with no defense mechanisms was 10.82, while an IPO firm with 2 defense mechanisms had a market-to-book ratio of 5.38. The market-to-book ratio is even further decreasing when the number of defense mechanisms increases.
Regarding the five different types of defense mechanisms, it was found that the market-to-book ratio was significantly lower when certificates or the structured regime were introduced before the IPO (Table 3.5).

Table 3.5: Market-to-book ratio by the type of takeover defence

Type of takeover defence	With takeover defence	Without takeover defence	*t*-test for difference	*z*-test for difference
Priority shares	6.69	5.79	0.68	1.93
Certificates	2.32	7.77	3.98**	5.29**
Voting caps	5.49	6.23	0.23	0.82
Structured regime	4.12	7.19	2.21*	4.72**
Preference shares	5.43	7.03	1.21	0.07

***significant at the 1% level; *significant at the 5% level.*
Source: Rooseboom & van der Goot, 2003, p. 504

In the case of the certificates, the market-to-book ratio for firms with no certificates was 7.77 while IPO firms which used certificates had a market-to-book ratio of 2.32. "This is consistent with the expectations that a vote has value. The 32 IPO firms that adopted share certificates are value at a substantial discount compared to the 79 firms that do not adopt share certificates. The difference is statistically significant at the one-percent level" (Rooseboom & van der Goot, 2003, p. 503). The market-to-book ratio of firms with share certificates is on average 70% lower than firms that do not issue share certificates. Firms with no structured regime introduced before the IPO, had a market-to-book ratio of 7.19, firms with a structured regime found a market-to-book ratio of 4.12. The market-to-book ratio of a firm with the structured regime is 42% lower than firms with no structured regime. For the other three types of defense mechanisms there was no such a significant relationship found. Kabir *et al.* (1997) reported that with the authorization of preference shares the stock price increased with 1.2 percent in two days. The second step in the issue of preference shares, the granting of a purchase option to a friendly party, had hardly any effect on the share price. In the last step, the share price reacted negatively to the actual issuance of the preference shares, with 1.7 percent in two days. In conclusion, the number of takeover defenses and the use of certificates and the structured regime influence the IPO firm value negatively while the issuance of preference shares has different effects on share price during different phases of the issue of preference shares.

The introduction of defensive measures is mainly motivated by managerial entrenchment. By introducing defense mechanisms, the management prevents the firm from takeovers, but also wealth-creating takeovers, from which the management indulges "private benefits and entrench itself at shareholders' expense" (Rooseboom & van der Goot, 2003, p. 486). Non-management and pre-IPO owners do not gain from the use of defense mechanisms, because the share value is affected negatively, but these groups do not obtain any compensating benefits, unlike the management (Rooseboom & van der Goot, 2003).

4 Conceptual Framework

This fourth chapter describes the basis of this research. For the estimation of the share value, the Capital Asset Pricing Model and Two-Stage Dividend Discount Model are used and therefore are discussed thoroughly.

4.1 Share price valuation

Two models will be used the estimate the share price of a share in ForFarmers. In this subsection the two models will be described and parameters identified. The first model is the Capital Asset Pricing Model (CAPM). The outcome of the CAPM will be used as input for the Two-Stage Dividend Discount Model, the second model which will be used in the share price estimation. Just as the CAPM, for the Two-Stage Dividend Discount Model all parameters will be identified.

4.1.1 Capital Asset Pricing Model

In the Capital Asset Pricing Model, prices of capital assets in a competitive market are determined (Sharpe, 1990). The basic idea of the model is that "assets with the same risk should have the same expected rate of return" (Modigliani & Pogue, 1973, p. 30). This, combined with the pleasing predictions about how to measure risk, makes the CAPM an attractive tool to evaluate prices of capital assets (Fama & French, 2004). In the CAPM it is assumed that there are no transaction costs and that there is perfect information (Damodaran, 1999a). Also it is assumed that every investor can borrow and lent at a risk-free rate, independent of the amount borrowed or lent (Fama & French, 2004).

Below the equation for the CAPM is presented (Formula 4.1).

$$\bar{R} = R_F + \beta * (\bar{R}_M - R_F) \tag{4.1}$$

As seen above the CAPM consists of four elements. All elements will be described shortly and data or measurements used for the specific parameters will be presented.

R_F *(Risk-free rate)* – A risk-free asset is an asset where the expected return equals the actual return over the asset (Damodaran, 2008). There are two conditions under which the expected return is certain. The first condition is that here can be no default risk. The second is that there can be no reinvestment risk. If the expected return over a five-year period is estimated, a six-month government bond rate is not risk free because the coupons on the bond can be reinvested at rates which are unknown today (Damodaran, 2008). Government bonds are often referred to as risk-free assets (Hillier *et al.*, 2010), if it concerns a financially healthy government (AAA rated) (KPMG, 2013). So depending on the time horizon of the investment, an appropriate government bond has to be chosen. It is expected that the duration of dividend flows over the depository receipts/shares in ForFarmers will be high, even continue into perpetuity.

$\bar{R}_M - R_F$ *(Risk Premium)* – The equity risk premium is the difference between the expected return on the market and the risk-free rate. The risk premium is what investors demand to compensate for the extra risk they accept on the market instead of investing in risk-free assets. For this, the risk premium is presumed to be positive. The $\bar{R}_M$ is the expected return on the market, not the actual return, since the actual return on the market can be also be negative, which would give the equity risk premium a negative value (Hillier *et al.*, 2010). Four concepts of the risk premium are identified;

the historical risk premium, the expected risk premium, the required risk premium and the implied risk premium (Fernández *et al.,* 2011). The historical risk premium is determined by the historical observation methodology in which it is assumed that the expected risk premium is related to or can be derived by historical returns on equity. A drawback in this methodology is that it does not incorporate recent developments in the market. The implied risk premium is derived "by assessing current income, growth expectations and current prices" (KPMG, 2013, p. 5). The assessment of these variables gives a discount rate from which the risk-free rate is subtracted, resulting in an implied risk premium. In this case most recent market developments are incorporated in the equity risk premium (KPMG, 2013). Both the expected and required risk premiums are derived from surveys among users of the risk premium (f.e. professors, analysts and managers). The expected risk premium reflects the "expected differential return of the stock market over treasuries" (Fernández *et al.,* 2011, p. 9). The required risk premium is the "incremental return of a diversified portfolio (the market) over the risk-free rate required by an investor" (Fernández *et al.,* 2011, p. 9). It reflects how much additional return an investor requires for investing in a diversified portfolio over the risk-free rate (Fernández *et al.,* 2011).
The implied risk premium is mainly based on forecasts, the historical risk premium uses actual data and both the required and expected risk premium are obtained from surveys.

β (Beta) – An important component in the CAPM is the beta. Beta is a measure for the systematic risk; it reflects the sensitivity of the return on the stock compared to changes in the market (Modigliani & Pogue, 1973).

The beta of a firm is determined by three variables – (1) the cyclicality of revenues, (2) the degree of operating leverage in the firm and (3) the firm's financial leverage (Hillier *et al*., 2010; Damodaran, 1999b). The first variable of the beta refers to the type of business in which the firm operates. Some types of businesses are more sensitive to changes in the market than other businesses. The higher the sensitivity, the higher is its beta. This results in the assumptions that cyclical firms have a higher beta compared to non-cyclical firms. Also the type of product a firm is manufacturing influences the beta of the firm; during bad economic times, the purchases of luxury products will be postponed while f.e. food will still be bought (Hillier *et al*., 2010; Damodaran, 1999b).
The second variable is the degree of operating leverage, which refers to the fixed costs of production (Hillier *et al.*, 2010). "A firm that has high operating leverage, will also have higher variability in earnings before interest and taxes (EBIT) than would a firm producing a similar product with low operating leverage" (Damodaran, 1999b, p.24). This higher variance in the operating income will cause a higher beta for the firm (Damodaran, 1999b). The cyclical nature of revenues and the degree of operating leverage determine the asset beta or unlevered beta.
The last variable in the beta is the degree of financial leverage. Financial leverage refers to the fixed costs of finance (Hillier *et al.*, 2010). A firm with high financial leverage will also have a high equity beta. This because "the obliged payments on debt increase the variance in net income, with higher leverage increasing income during good times and decreasing income during economic downturns" (Damodaran, 1999b, p. 25). These three variables together determine the equity beta or levered beta.

Since ForFarmers is an Investor Owned Firm, but not listed on the stock market yet, a beta will not be available directly. For this reason another way of deriving a beta for ForFarmers is used.

Depository receipts in ForFarmers are internally tradable and therefore the daily closing price of the depository receipts can be linked to the closing price of the AEX. This can be done by regressing the closing price of the AEX (AEX_t) on the closing price of the depository receipts of ForFarmers ($DepR_t$) (formula 4.2):

$$DepR_t = a + b * AEX_t \tag{4.2}$$

The value of the b in this regression in the beta of ForFarmers. There are two downsides of this way of deriving the beta. First is the little amount of data used in the regression, since depository receipts are only traded for 3 years now. Second is the fact that the depository receipts are only internally tradable.

A relevant beta for ForFarmers can also be determined by taking a beta from a similar firm as ForFarmers, which is listed on the stock-exchange. This beta can be made 'unlevered' by using the following formula (4.3):

$$\beta_L = \beta_u \left(1 + (1 - t)\left({}^{D}/_{E}\right)\right) \tag{4.3}$$

This formula describes the relationship between the levered beta and the unlevered beta and the level of debt. From the unlevered beta, derived from the 'levered' beta of a stock-exchange listed company, the levered beta of ForFarmers can be calculated.

$\bar{R}$ *(Required return on a security)* – The $\bar{R}$ is the outcome of the CAPM, reflecting the required return by equity investors on a security in ForFarmers. The required return on a security is positively related to its beta. The riskier the firm, reflected in a high beta, the higher the required return on the security (Hillier *et al.*, 2010). This required return is an appropriate discount rate for equity and therefore can be used in the Two-Stage Dividend Discount Model as discount rate for dividend payments.

4.1.2 Two-Stage Dividend Discount Model

The Two-Stage Dividend Discount Model identifies the relation between the future dividend per share (DPS_t), the extraordinary growth rate for the first n years (g), the steady growth rate forever after year n (g_n), the required rate of return for equity investors is also assumed to have different levels during to stage of high and stable growth ($\bar{R}$, hg: high growth period; st: stable growth period) and the current value of a share (P_0) (Damodaran, 2012). When the growth rate during the period of high growth is unchanged over the n years, the relationship is as follows (Formula 4.4):

$$P_0 = \frac{DPS_0 * (1+g) * \left(1 - \frac{(1+g)^n}{(1+\bar{R}_{hg})^n}\right)}{\bar{R}_{hg} - g} + \frac{DPS_{n+1}}{(\bar{R}_{st} - g_n) * (1+\bar{R}_{hg})^n} \tag{4.4}$$

In which the DPS_{n+1} equals:

$$DPS_{n+1} = DPS_0 * (1+g)^n * (1+g_n) \tag{4.5}$$

In the Two-Stage Dividend Discount Model it is assumed that a firm is confronted with two stages of growth. In the initial phase the growth rate is not stable and can be either high or low, and in the subsequent steady state, the growth rate is stable and is assumed to remain for the long term. Further it is assumed that the required return on a security in the stable growth period $(\overline{\mathrm{R}}_{\mathrm{st}})$ is higher than the stable growth rate$(\mathrm{g}_{\mathrm{n}})$, otherwise the model reports a negative share value (Damodaran, 2012).

5 Methodology

The fifth chapter describes the materials and methods used in this research. The input and distributions for all parameters in both the Capital Asset Pricing Model and the Two-Stage Dividend Discount Model are presented.

5.1 Methods

The estimation of the price of a share in ForFarmers is based on the CAPM and Two-Stage Dividend Discount model. To evaluate the risks of the expected value of the shares, a Monte Carlo simulation is performed. During the Monte Carlo simulation process, random scenarios, based on certain assumptions about uncertainty of key variables, are constructed. "The simulation is controlled so that the random selection of values from the specified probability distributions does not violate the existence of known or suspected correlation relationships among the variables" (Savvides, 1994, p.3) As a result, Monte Carlo simulation provides a probability distribution of potential expected share values and gives an indication of the risk involved in the share price (Savvides, 1994). The Monte Carlo simulation is performed in @Risk an add-in of Microsoft Excel.

Although none of the variables in the Capital Asset Pricing Model and the Two-Stage Dividend Discount Model are deterministic, not all parameters in the models are given a probability distribution. Only those parameters which are more likely to fluctuate and parameters which are expected to have a large influence on the expected share value.

5.2 Capital Asset Pricing Model

The Capital Asset Pricing Model assumes the following relationship between the required return on a security and the beta of the firm, the risk-free rate and the equity market premium:

$$\bar{R} = R_F + \beta \times (\bar{R}_M - R_F) \tag{5.1}$$

R_F *(Risk-free rate)* – The risk-free rate of a thirty-year government bond in the Eurozone is used as a proxy for the risk-free rate. The value of this risk-free rate is obtained from the dataset of market data of the Financial Times (2013). The current value of a thirty-year government bond in the Eurozone is 2.66% (24-10-2013), and is used as risk-free rate in the valuation of shares in ForFarmers. In the Capital Asset Pricing Model the risk-free rate is assumed to be constant. The risk-free rate is not assumed to decrease or increase largely in the near future (Withagen, 2013). Therefore, the risk-free rate is assumed to be deterministic.

β *(Beta)* – The beta of ForFarmers will be determined for the period of high growth and for the period of stable growth. First the beta for the period of high growth is estimated.
In chapter four, the conceptual framework, two ways of determining the beta for ForFarmers are described. The first way is to derive a beta from a regression of the AEX closing price (AEX_t) on the closing price of the depository receipts in ForFarmers ($DepR_t$). For this regression the daily closing prices from 8-11-2010 till 15-11-2013 are used, resulting in a dataset of 778 observations. The beta resulting from this regression is 0.0082 significant at the one-percent level. This extremely low value can be explained by the fact that the depository receipts are only internally tradable and mainly held by members of FromFarmers, and not by institutional or private investors. Therefore, this beta does

not reflect the situation when ForFarmers is listed on the stock-exchange. Hence the beta of ForFarmers will be derived from a company which operates in the same business as ForFarmers and is listed on the stock-exchange.
A company operating in the feed industry, just as ForFarmers, is Nutreco, a Netherlands-based animal and fish feed producer and listed on the AMX, the Dutch stock-exchange for the Midcap. When looking at the three determinants of the beta, i.e. cyclicality of revenues, level of operating leverage and the financial leverage, Nutreco has similarities with ForFarmers. Both firms operate in the animal feed industry, which generate non-cyclical revenues. Regarding the degree of operating leverage, Nutreco had a degree of operating leverage of 5.17 in 2011 and 4.6 in 2012. In 2011, ForFarmers had a degree of operating leverage of 4.4 and 5.35 in 2012. The degree of operating leverage of Nutreco and ForFarmers are close to each other. Therefore, there is no reason to adjust the unlevered beta for the degree of operating leverage. The level of financial leverage is quite stable for Nutreco in the past years, while the financial leverage of ForFarmers increased in the past years, mainly because ForFarmers needed to finance its recent acquisitions (Table 5.1). The solvency of ForFarmers is decreasing and approaching the solvency level of Nutreco.

Table 5.1: Level of leverage for Nutreco and ForFarmers

Year	Solvency Nutreco	Solvency ForFarmers
2008	30.2%	75.9%
2009	34.4%	53.2%
2010	34.2%	48.0%
2011	34.3%	45.5%
2012	34.5%	40.1%

Source: http://beurs.fd.nl/noteringen/11747/nutreco/kerncijfers & ForFarmers, 2012

The levered beta of Nutreco is 0.52 (Financieele Dagblad, 2013b (03-12-2013)), which is the volatility of a share in Nutreco relative to the AEX, based on monthly closing prices of the past five years. This value of the levered beta of 0.52 is used as the base for computing the beta of ForFarmers in the share price valuation. From the levered beta of Nutreco, the unlevered beta can be derived by using the following formula (5.2):

$$\beta_L = \beta_u \left(1 + (1 - t)\left({}^{D}/_{E}\right)\right) \quad (5.2)$$

By taking the average Debt/Equity ratio of the last five years, the unlevered beta can be calculated. The average Debt/Equity ratio of Nutreco is 0.614 (Nutreco, 2013), with a corporate tax rate of 25% in the Netherlands, the unlevered beta becomes 0.356. By using the same formula, the levered beta of ForFarmers of 2012 can be calculated, based on the average Debt/Equity level of ForFarmers in the period 2009-2012. The reason to take only figures from 2009 onwards is because the firm started to grow since then and is therefore representing the expected growth during the period of high growth. For example, the level of debts to credit institutions has been low until 2009. For 2006, the debts to credit institutions (both short and long term) were €13.722.000, in 2007 €18.285.000 and in 2008 a debt of €9.422.000. In 2009, the debts to credit institutions increased to €95.687.000, mainly due to an increase of the short term debts to credit institutions (ForFarmers, 2008; ForFarmers 2010a). This caused a large decline in solvency from 2008 till 2009, after which the solvency decreased less rapidly (Table 5.1). Because of the consolidation of Cefetra, the turnover of

ForFarmers increased largely, mainly due to the sales of agricultural materials, which were not sold before 2009. The turnover increased from €741,362,000 in 2008 to €3,493,857,000 in 2009 (Pro Forma). The turnover of ForFarmers in the year 2010 was €4,165,844,000, indicating that the increase of turnover in 2009 was not an accidental increase (ForFarmers 2008; ForFarmers, 2010a; ForFarmers, 2011a). Furthermore, the value of tangible fixed assets (mainly land, buildings, plant and machinery) increased with approximately €18 million compared to 2008, due to the expansion of the scope of consolidation and investments. In 2010, the value of tangible fixed assets was similar as 2009 (ForFarmers, 2011a; ForFarmers 2010a).
The increase of liabilities, increase in turnover and the increase of tangible fixed assets are indicators that the firm started to grow from 2009 onwards, making figures from 2008 and before, less representative for the expected growth of ForFarmers on the short term. ForFarmers set itself targets to be reached in 2016. One of these targets is the production of ten million tonnes of compound feed. In 2012 ForFarmers sold 6.3 million tonnes of compound feed, which means that the sales volumes have to increase to reach the target of ten million tonnes in 2016 (ForFarmers, 2013a). This will mainly be done by acquiring compound feed producing companies (Withagen, 2012).

Based on figures from 2009 till 2012, the average Debt/Equity level over this period equals 0.525 (Table 5.2), resulting in a levered beta of 0.496.

Table 5.2: ROE and D/E for ForFarmers, 2009-2012

	2009	2010	2011	2012	Average	Standard deviation	Variance
Return on Equity	0.195	0.206	0.111	0.206	0.180	0.046	0.002
Debt/Equity	0.370	0.450	0.710	0.570	0.525	0.148	0.022

Source: ForFarmers, 2013a; ForFarmers, 2011a

There are two sources of the variation of the levered beta. The first source is the fluctuation in the Debt/Equity level of ForFarmers and the second is the fluctuation in the unlevered beta(β_u). Fluctuation in the unlevered beta is based on the variance in Return on Equity (ROE), since the unlevered beta reflects the beta of equity. The variance of the ROE in the past four years (Table 5.2) is used as the variance of the unlevered beta. The average ROE of ForFarmers was 17.95% in the last four years, with a standard deviation of 4.57.
The average Debt/Equity ratio of ForFarmers over the period of 2009-2012 is 0.525, with a standard deviation of 0.148. From the variances (squared standard deviation) of the ROE and the Debt/Equity ratio, the variance of the levered beta of ForFarmers is calculated, by means of the following formula (5.3):

$$Var\ \beta_{levered} = \begin{pmatrix} f'_{\beta_u} & f'_{D/E} \end{pmatrix}' * \begin{pmatrix} Var\ ROE & CoV_{ROE,D/E} \\ CoV_{ROE,D/E} & Var\ D/E \end{pmatrix} * \begin{pmatrix} f'_{\beta_u} \\ f'_{D/E} \end{pmatrix} \quad (5.3)$$

In which the $f'\left(\frac{df}{dx}\right)$ stands for the first derivative with respect to either β_u or D/E (Formula 2). The first derivative of the β_u is calculated by taking the average of the D/E over the period of 2009-2012.

The average D/E equals 0.525, t equals 0.250, resulting in a first derivative of 1.394 for the unlevered beta. The first derivative to D/E equals 0.75. The variance of the ROE equals 0.002 and the variance of the level of Debt to Equity 0.022 (Table 5.2). The covariance of the ROE and D/E is computed with excel over the period 2009-2012 (Table 5.2), resulting in a covariance of -0.005. By using formula 3, a variance of 0.005 for the levered beta of ForFarmers is computed. By taking the square root of this variance, the standard deviation of the levered beta is 0.074.

The beta for the period of stable growth is based on data on the Debt/Equity level of ForFarmers in the period 2006 till 2012, since the beta during the high growth period is likely to be higher due to higher D/E levels during high growth (Damodaran, 2012). The Debt/Equity level in the period before 2009 is much lower (see Table 5.3), resulting in a lower average beta. In Table 5.3 the levered betas for each year are shown. The levered betas are calculated based on the unlevered beta of Nutreco. On average ForFarmers has a beta of 0.45 in the period 2006-2012. In this period there are three years with low D/E levels and four years with higher D/E levels.

Table 5.3: Debt/Equity levels and levered betas of ForFarmers from 2006-2012

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**Average**
D/E	0.12	0.11	0.05	0.37	0.45	0.71	0.57	0.34
Levered beta	0.39	0.39	0.37	0.46	0.48	0.55	0.51	0.45

The distribution of the beta for the stable growth period is obtained from a distribution fitting tool in @Risk. The Pareto distribution is ranked first in the Akaike Information Criteria (AIC), the Bayesian Information Criteria (BIC) and the Chi-Squared. Therefore the Pareto distribution is used for the beta during stable growth period. @Risk reports a shape parameter of 5.542 and a location parameter of 0.369 for the Pareto distribution.

The two betas for the different periods of growth have two required rate of returns as a result. One for the period of high growth, the other for the period of stable growth.

$\bar{R}_M - R_F$ *(Risk Premium)* – As discussed in Chapter 4 there are four concepts of the risk premium identified. Dimson *et al.* (2011) investigated the historical risk premium in 19 countries over a period of 1900 to the end of 2010, including 111 years of financial market history. For the Netherlands a geometric average risk premium relative to bonds for the period 1900-2010 of 3.5 percent was found. The arithmetic average risk premium for the same period is 5.8 percent. In the literature there is an ongoing discussing whether to use the geometric or arithmetic average equity risk premium. The geometric average risk premium "assumes that the risk premium will be the same for each and every future time period" (Annin & Falaschetti, 1998, p. 9). In the arithmetic average the volatility of market returns is incorporated (Annin & Falaschetti, 1998). On the other hand, arithmetic averages ignore estimation errors and serial correlations in returns. Cooper (1996) derived unbiased discount factors that are corrected for these two effects. It seemed that the corrected discount rates were closer to the arithmetic average than the geometric average. For these two reasons, the arithmetic average risk premium is used in the share valuation of ForFarmers. Dimson *et al.* (2011) report, besides an average risk premium for the Netherlands, a standard deviation of the equity risk premium of 22.2%. The yearly equity risk premium for the period 1900 till 2010 is not presented and also the distribution of the data is not given, therefore it is assumed that the equity risk premium is normal distributed

with a mean of 0.058 and a standard deviation of 0.222. Since the equity risk premium should be positive, the distribution is truncated at the value 0, so only positive values will be drawn in the simulation.

The implied risk premium incorporates the assessment of current income, growth expectations and current prices. The implied risk premium for the last ten years is shown below in Figure 5.1.

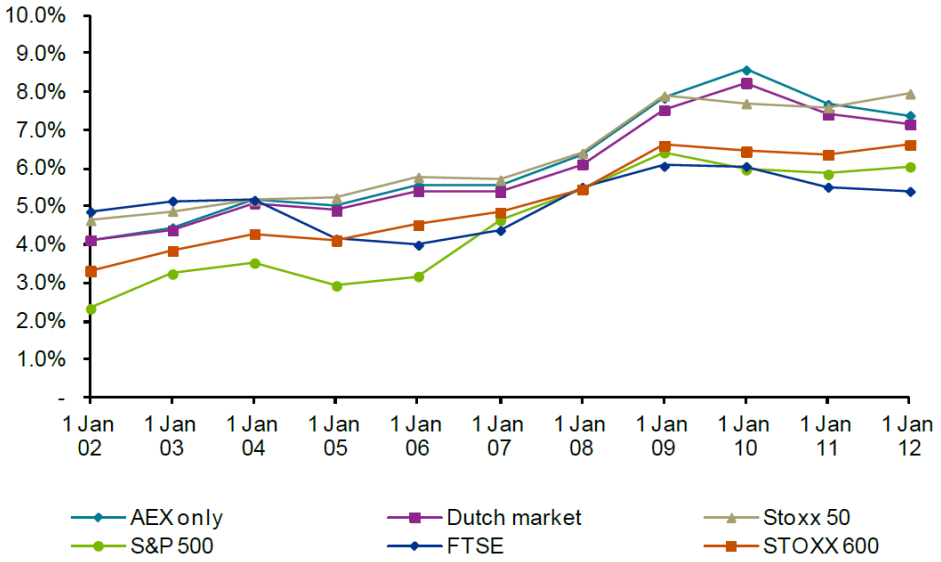


Figure 5.1: Implied Risk Premium 2002-2012 (Source: KPMG, 2013)

As can be seen in the figure, the highest implied risk premium was 8.6% in 2010.
Combining the long-term average risk premium based on historical data and the implied risk premium based on forecasts and current income and prices, and the fact that the risk premium should be positive, a triangular distribution with a lower limit of 0, a most likely value of 0.058 and an upper limit of 9% can be constructed. By doing so, the risk premium is not only based on actual data regarding market returns, but also on forecasts.

Fernández *et al.* (2011) presented the results of a survey in which professors in finance and economics, analysts and managers of companies were asked about "the Market Risk Premium (MRP) used to calculate the required return to equity in different countries" (Fernández *et al.*, 2011, p.2) used in 2011 (Fernández *et al.,* 2011). Figure 5.2 shows the results of the survey regarding the market risk premium for the Netherlands. The average market risk premium was 5.5% in the Netherlands with a standard deviation of 1.9%, with a minimum of 2.5% and a maximum of 12.5%. Figure 5.2 shows two outliers around the 12%, the rest of the observations are equal to or below 8% (Fernández *et al.,* 2011). From this data a triangular distribution for the risk premium is derived. With as the lower limit 2.5%, the most likely value 5.5% and an upper limit of 12.5%.

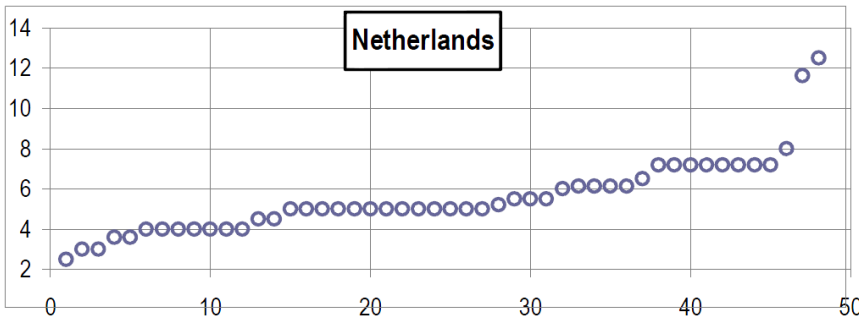


Figure 5.2: Market Risk Premium used in 2011 for the Netherlands (Source: Fernández et al., 2011)

Since the risk premium is hard to determine because it concerns expectation regarding the return on the market, four simulations are performed. First a simulation with a deterministic risk premium with the value 5.8%, based on the long-term average risk premium in the Netherlands (Dimson *et al.,* 2011). Second, a normally distributed risk premium with a mean of 5.8% and a standard deviation of 22.2% based on the research of Dimson *et al.* (2011). The third simulation concerns a triangular distribution with a lower limit of 0%, a most likely value of 5.8% and 9% as the upper limit, based on historical data of Dimson *et al.* (2011) and data of KPMG (2013). In the last simulation the risk premium is assumed to be triangularly distributed with a lower limit of 2.5%, a most likely value of 5.5% and an upper limit of 12.5% based on the results of the survey of Fernández *et al. (*2011).

5.3 Two-Stage Dividend Discount Model

The Two-Stage Dividend Discount Model assumes the following relationship between the share price and required return on a security, the growth rate of dividends and the current dividend payment:

$$P_0 = \frac{DPS_0 * (1+g) * \left(1 - \frac{(1+g)^n}{(1+\bar{R}_{hg})^n}\right)}{\bar{R}_{hg} - g} + \frac{DPS_{n+1}}{(\bar{R}_{st} - g_n) * (1+\bar{R}_{hg})^n} \quad (5.4)$$

This model applies to firms which first have a period of high growth and after that a period of stable growth. Therefore the formula knows two growth rates, a growth rate for the period of high growth (g) and a growth rate for the stable phase (g_n). Further explanation on the model can be found in chapter 4.

DPS_t (Dividend per share) – The dividend policy of ForFarmers is to make 30% of the results, after tax and corrected for extraordinary results, available to the shareholders of ForFarmers. For the year 2012 a dividend per share of €0.115 was made available to the shareholders (ForFarmers, 2013a). The dividend per share at t, n+1, is calculated by using the following formula:

$$DPS_{n+1} = DPS_0 * (1+g)^n * (1+g_n) \quad (5.5)$$

In which the DPS_0 is 0.115.

g (Growth rate of dividends for the first n years) – It is assumed that the growth rate of dividends for the first n years is higher than the growth rate in the stable phase in the case of ForFarmers. Since

2007 ForFarmers pays out dividends. The dividend per share over the period 2007-2012 is shown below in Table 5.4.

Table 5.4: Dividend per share (DPS) for the period 2007-2012

	2007	2008	2009	2010	2011	2012
DPS	0.067	0.081	0.096	0.09	0.061	0.115

(Source: ForFarmers, 2013a; ForFarmers, 2011a)

As can be seen the dividend per share is fluctuating over these years with an average growth of 17.9%. This high growth of the dividend per share is not expected to continue in the long-term, since the growth of dividends cannot exceed the growth of the economy (Damodaran, 2012). Back in 2006, ForFarmers set itself long-term targets to be reached in 2016. One of these targets is the sales of ten million tonnes of compound feed. In 2012 ForFarmers sold 6.3 million tonnes of compound feed, which means that the sales volumes have to increase by 59% to reach the target of ten million tonnes in 2016 (ForFarmers, 2013a). The year 2016 will be used as a starting point of the duration of the period of high growth. Since it concerns a starting point, the period of high growth can be longer or shorter than until 2016. Therefore the number of years of high growth is assumed to have a discrete distribution with an equal probability of 1/3 for 3, 4 or 5 years of high growth.

A common way to determine the growth rate of dividends is by using the Sustainable Growth Rate (SGR) as the growth rate of dividends (Damodaran, 2012; Hillier *et al.,* 2010). The Sustainable Growth Rate reflects the maximum growth rate a firm can sustain without having to increase financial leverage. The Sustainable Growth Rate (SGR) is given by:

$$\text{SGR} = \text{ROE} * (1 - \text{Dividend payout ratio}) \tag{5.6}$$

In which ROE stands for the Return on Equity. The ROE for ForFarmers is fluctuating in the past years (Table 5.2). The average ROE for the past four years counts 17.95%. This is above the target ForFarmers set for 2016; a return on normalised equity of at least 12%.
The dividend policy of ForFarmers sets a dividend payout ratio of 30% on normalised results after taxation.
Using the average return on normalised equity of the past four years (17.95%), a sustainable growth rate 12.57 percent is computed. The growth rate of dividends during high growth period is assumed to be stochastic, since the underlying ROE fluctuates. The distribution is assumed to be normal, since the ROE over the years fluctuates around the mean. The standard deviation of the Sustainable Growth Rate is determined by calculating the SGR for every year from 2009 till 2012 based on the ROE in that year, and then taking the standard deviation from this series of numbers. This results in a standard deviation of 0.0321721, used in the normal distribution in the Monte Carlo simulation.

g_n *(Stable growth rate of dividends)* – The growth rate of dividends in the 'stable' phase is assumed to be stable into perpetuity. Withagen (2012) is expecting a growth of sales of 1% in perpetuity. Since the payment of dividend is related to the sales of the firm, a 1% growth rate is assumed to be the most likely growth rate for dividends in perpetuity. Since it concerns a 'stable' growth rate, it should be noted that the growth rate should be less or equal to the growth of the economy the firm operates in. Firms can become smaller but not larger relative to the economy (Damodaran, 2012). To

capture the uncertainty of the stable growth rate of dividends a triangular distribution is used. A growth rate of 0.00% is used as the lower limit, the 1% growth of sales in perpetuity is used as the most likely value of the stable growth rate of dividends. As mentioned, a firm cannot grow faster than the economy. Based on data of Eurostat on GDP growth in the Netherlands in the period of 1970 till 2012, the average GDP growth was 2.253488%. This value of GDP growth will be used as the upper limit for the growth rate in perpetuity.

Below, in Table 5.5, all the inputs for the share price valuation and the Monte Carlo simulation are summarized.

Table 5.5: Summary of inputs share price valuation and Monte Carlo Simulation

Variable	**Notation**	**Type of distribution**	**Value**
Capital Asset Pricing Model			
Risk-free rate	R_F	Deterministic	2.66%
Beta (high growth)	β	Normal	Average: 0.496 σ: 0.0735 Truncate: 0
Beta (stable growth)	β	Pareto	Shape: 5.542 Location: 0.369
Risk Premium (Historical data)	$\bar{R}_M - R_F$	Deterministic	5.8%
Risk Premium (Historical data)	$\bar{R}_M - R_F$	Normal	Average: 5.8% σ: 22.2% Truncate: 0
Risk Premium (Historical and forecast data)	$\bar{R}_M - R_F$	Triangular	Lower limit: 0% Most likely: 5.8% Upper limit: 9%
Risk Premium (Experts)	$\bar{R}_M - R_F$	Triangular	Lower limit: 2.5% Most likely: 5.5% Upper limit: 12.5%
Two-Stage Dividend Discount Model			
Dividend payment per share	DPS_0	Deterministic	0.115
Growth rate of dividends during high growth period	g	Normal	Average: 12.565% σ: 3.217%
Number of years of high growth	n	Discrete	3: 1/3 4: 1/3 5: 1/3
Growth rate of dividends during steady state	g_n	Triangular	Lower limit: 0.0% Most likely: 1.0% Upper limit: 2.25%

6 Results

In this chapter the results of four Monte Carlo simulations are presented. First, the results of a simulation with a normally distributed risk premium are presented. Second the results of a simulation in which the risk premium is assumed to be deterministic. In the last simulation the risk premium is assumed to have a triangular distribution. At the end of the chapter, the results of the three simulations are compared with each other.

6.1 Results of simulation with deterministic Risk Premium

The value of the risk premium is extensively discussed in Chapter 5. The risk premium is hard to determine since it concerns the difference between the expected return on the market and the risk-free rate. Expectations regarding market returns differ among the users of the risk premium (Fernández *et al.,* 2011) which makes it difficult to obtain a homogeneous expected market return. Therefore several simulations with different risk premiums are performed. The first simulation assumes a deterministic risk premium with a value of 5.8%. In Table 6.1 the results of a Monte Carlo Simulation and information on the distributions of the share values are given. The simulation is performed with 5000 @Risk iterations. Figure 6.1 shows the distribution of the share value based on this Monte Carlo simulation.

Table 6.1: Summary statistics of simulation with deterministic Risk Premium

Summary Statistics	
Minimum	1.595
Maximum	10.002
Mean	4.266
Standard Deviation	0.856
Variance	0.732
Skewness	0.634
Kurtosis	4.111
Median	4.173
5%-percentile	3.028
95%-percentile	5.776
P(SV>3.08)	94.2%

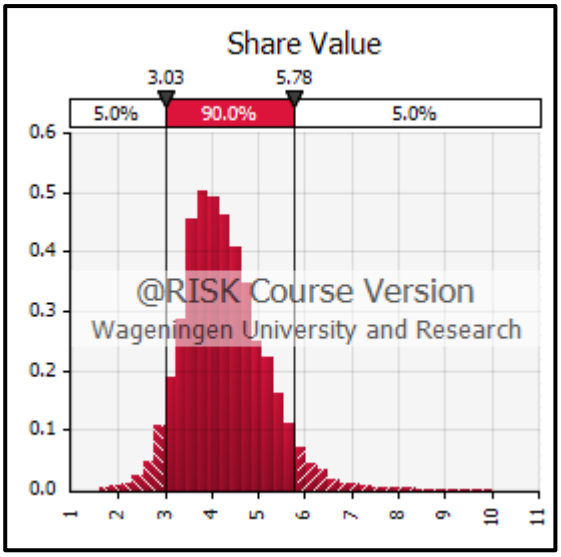


Figure 6.1: Distribution of simulation with deterministic Risk Premium

The minimum share value in this Monte Carlo simulation is 1.595 and a maximum share value of 10.002, with a mean of 4.266. More details on the distribution of the share value are given in Table 6.1. The value for Kurtosis, which is above the value 3, indicates a distribution a little higher peak than the normal distribution. As can be seen in Figure 6.1, the spread of the distribution is small, the lowest share value is 1.595 and the highest 10.002, a spread of 8.407. The current price of a depository receipt in ForFarmers is €3.08 (31-12-2013). The probability that the share value is above this share price during an IPO is 94.2%.

When the Risk Premium is assumed to be deterministic, the mean of the share value is most sensitive to the growth rates during both the high and stable growth period (Figure 6.2).

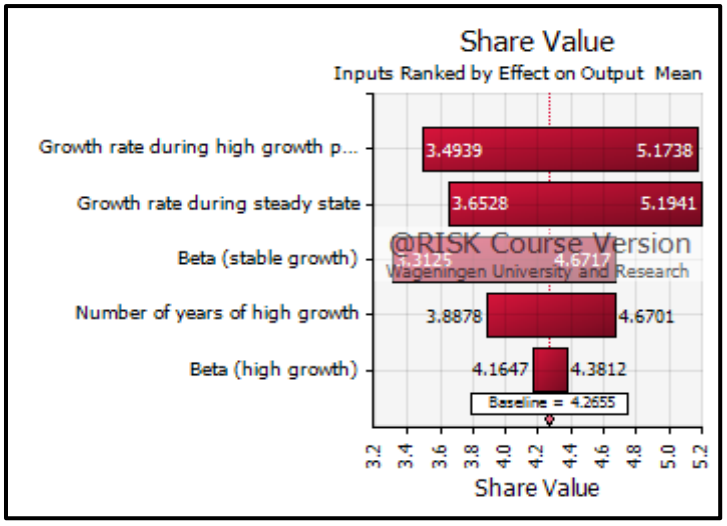


Figure 6.2: Results of sensitivity analysis of simulation with deterministic Risk Premium

6.2 Results of Monte Carlo simulation with a truncated normally distributed Risk Premium

In Table 6.2 the results of a Monte Carlo Simulation and information on the distributions of the share values are given. In this simulation the risk premium is normally distributed with a mean of 5.8%, a standard deviation of 22.2% and is truncated at the value zero, so only positive values of the risk premium are simulated. Figure 6.3 shows the distribution of the share value based on this Monte Carlo simulation.

Table 6.2: Summary statistics of simulation with a truncated normally distributed RP

Summary Statistics	
Minimum	0.346
Maximum	31.50
Mean	2.649
Standard Deviation	2.449
Variance	5.998
Skewness	2.732
Kurtosis	15.074
Median	1.792
5%-percentile	0.649
95%-percentile	7.542
P(SV>3.08)	26.9%

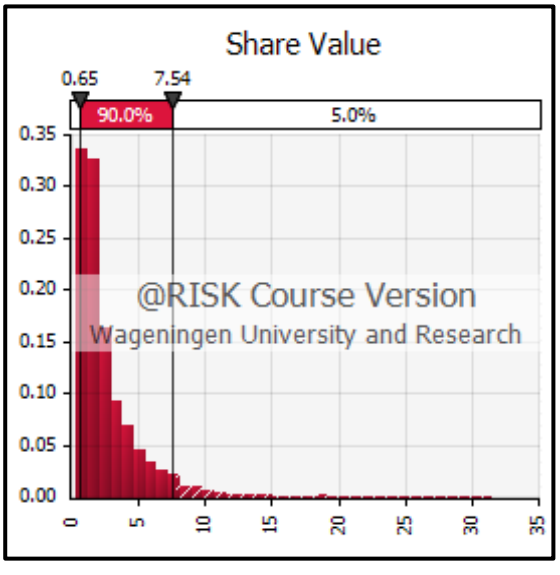


Figure 6.3: Distribution of simulation with a truncated normally distributed Risk Premium

The simulation presents a mean share value of 2.649 with a minimum value of 0.346 and a maximum value of 31.50. The positive value for skewness indicates a tail to the right, which is shown in figure

6.3. The high value for kurtosis indicates that the distribution of the share value has a high peak. This means that a large part of the variance is caused by rare extreme values.

Table 6.3 shows for all the stochastic input variables minimum, mean and maximum value and the 5%- and 95%-percentile. The mean of the beta (high growth, 0.4962) is almost to the mean in the normal distribution which had a value of 0.496234. The mean of the beta during the period of stable growth has a value of 0.4507 which is equal to the average beta over the period 2006-2012, on which the pareto distribution of the beta during stable growth is based. The growth rate during high growth period is 12.57% which is almost similar to the mean used in the normal distribution which is 12.565%. The mean of the variable 'number of years of high growth' is 4, equal to the average of 4 in the discrete distribution. Also the mean of the growth rate during steady state (1.09%) is close the most likely value in the triangular distribution, a most likely value of 1%. Only the mean value of the risk premium is not similar to the mean used in the normal distribution. This mean is 5.8%, while the mean of the risk premium resulting from the simulation is almost 20%.

Table 6.3: Input result of Monte Carlo simulation with a normally distributed Risk Premium

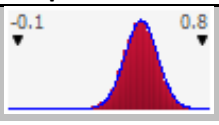
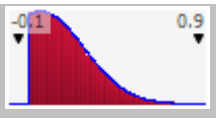
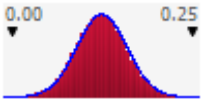
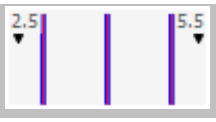
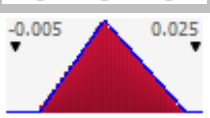
Name	Graph	Min	Mean	Max	5%	95%
Beta (high growth)		0.2258	0.4962	0.7665	0.3752	0.6170
Beta (stable growth)		0.3694	0.4507	1.7275	0.3728	06342
Risk Premium		1.086E-05	0.1999	0.8951	0.0172	0.4747
Growth rate during high growth period		0.0090	0.1257	0.2407	0.0727	0.1785
Number of years of high growth		3	4	5	3	5
Growth rate during steady state		0.0002	0.0109	0.0225	0.0034	0.0188

Table 6.4 and Figure 6.4 show the results of the sensitivity analysis performed together with the Monte Carlo simulation.

Table 6.4: Results of sensitivity analysis of simulation with a normally distributed Risk Premium

Rank	Name	Description	Share Value Range of Mean
#1	Risk Premium	RiskNormal(0.058, 0.222, RiskTruncate(0,))	7,50
#2	Growth rate during	RiskNormal(0.12565, 0.032172)	0,97

	high growth period		
#3	Growth rate during steady state	RiskTriang(0.0, 0.01, 0.0225349)	0,93
#4	Beta (stable growth)	RiskPareto(5.542, 0.369)	0,66
#5	Number of years of high growth	RiskDiscrete({3,4,5},{0.333,0.333,0.333})	0,61
#6	Beta (high growth)	RiskNormal(0.496234, 0.073486, RiskTruncate(0,))	0,40

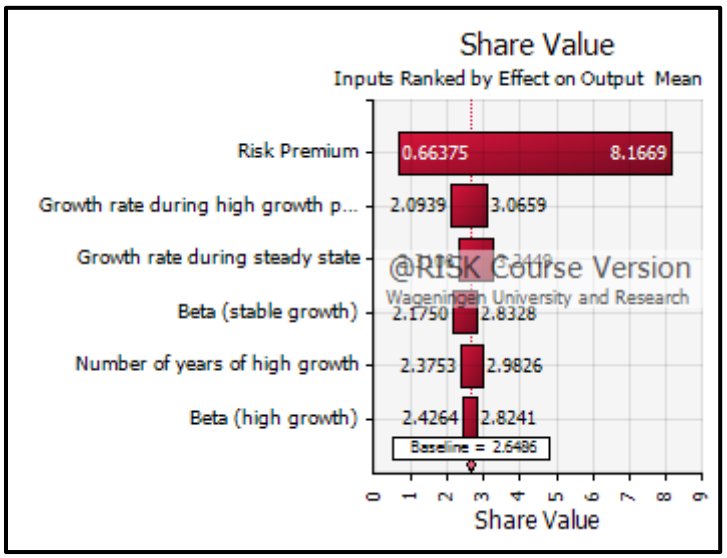


Figure 6.4: Results of sensitivity analysis of simulation with a normally distributed Risk Premium

From both the table and the figure it is seen that the risk premium has the largest effect on the mean of the share value. The range of mean is very high compared to the other stochastic variables in the model.

6.3 Results of simulations with a triangularly distributed Risk Premium

In this subchapter the results of two simulations will be presented. Both simulations assume a triangular distribution of the risk premium. In the first simulation the triangular distribution is based on forecasts of KPMG and historical data regarding the risk premium. This results in a triangular distribution with the value 0 as the lower limit, 0.058 as the most likely value and 0.09 as the upper limit. The results of the Monte Carlo simulation with a risk premium with this triangular distribution are given in Table 6.5. Figure 6.5 shows the distribution of the share value based on the simulation.

The simulation with the triangular distribution based on forecasts and historical data for the risk premium provides a mean for the share value of 5.049. The minimum share value is 1.431 and the maximum value is 24.841. Compared to the simulation where the risk premium was assumed to be deterministic, this simulation shows a larger spread of the share value. The positive value of for the skewness indicates a tail to the rights, which is shown in Figure 6.5. The value for Kurtosis is higher than in the simulation with the deterministic risk premium, but lower than the value for Kurtosis in the simulation with a normally distributed risk premium. The maximum share value is 24.841, while

the 95%-percentile has a value of 8.650, combined with the relatively high value for Kurtosis, the variance can mainly be explained by outliers.

Table 6.5: Summary statistics of simulation with a triangularly distributed Risk Premium based on forecast and historical data

Summary Statistics	
Minimum	1.431
Maximum	24.841
Mean	5.049
Standard Deviation	1.880
Variance	3.535
Skewness	1.855
Kurtosis	9.463
Median	4.610
5%-percentile	2.955
95%-percentile	8.650
P(SV>3.08)	93%

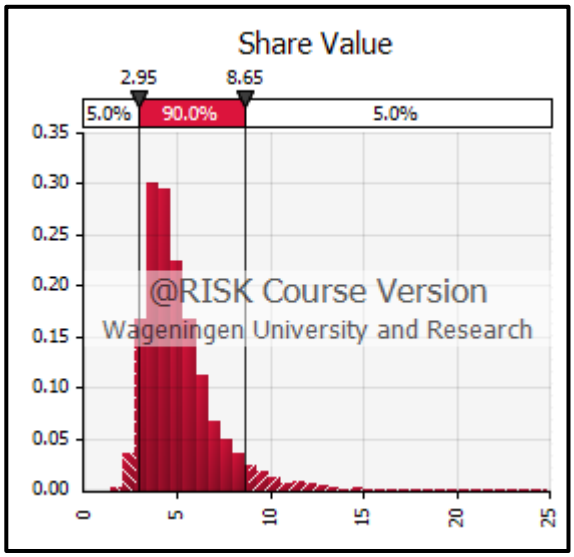


Figure 6.5: Distribution of simulation with a triangularly distributed Risk Premium based on forecast and historical data

Figure 6.6 shows the results of the sensitivity analysis of the simulation in which the risk premium is assumed to have a triangular distribution based on forecast and historical data. The figure shows that the mean of the share value is most sensitive to changes in the risk premium.

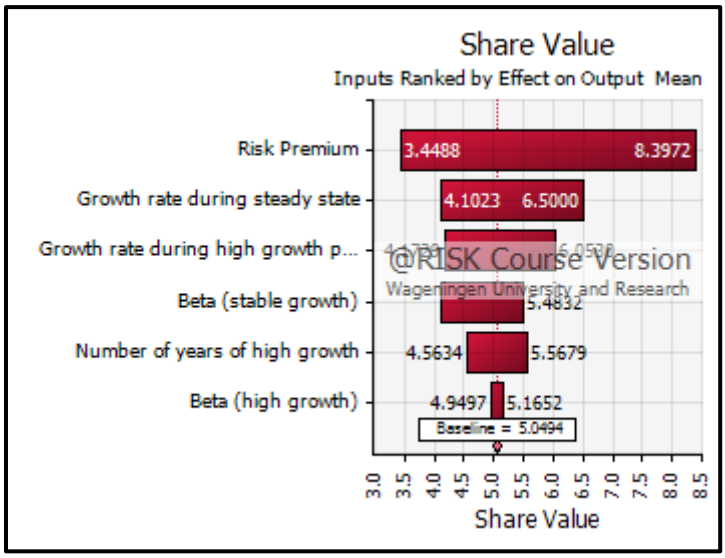


Figure 6.6: Results of sensitivity analysis of simulation with a triangularly distributed Risk Premium based on forecasts and historical data

The second triangular distribution for the risk premium is based on the results of a survey among professors, analysts and managers of companies. It concerns a triangularly distributed risk premium with the value 0.025 as the lower limit, 0.055 the most likely value and 0.125 the upper limit. The results of the simulation with the triangularly distributed risk premium based on experts is shown in Table 6.6 and the distribution of the share value is shown in Figure 6.7.

This simulation shows a mean for the share value of 3.992. The minimum share value is 0.684 and the maximum value is 11.63.

Table 6.6: Summary statistics of simulation with a triangularly distributed RP based on expert information

Summary Statistics	
Minimum	0.684
Maximum	11.63
Mean	3.992
Standard Deviation	1.195
Variance	1.429
Skewness	0.994
Kurtosis	4.578
Median	3.798
5%-percentile	2.431
95%-percentile	6.235
P(SV>3.08)	77.1%

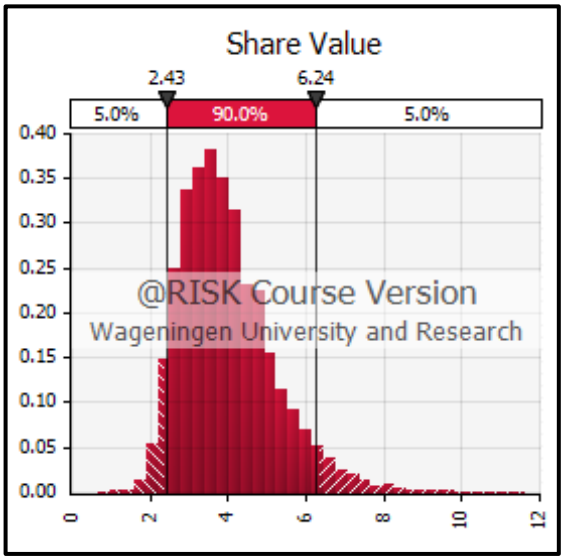


Figure 6.7: Distribution of simulation with a triangularly distributed Risk Premium based on expert information

The low positive value of for the skewness indicates a small tail to the right, which is shown in Figure 6.7. The value for Kurtosis, which is 4.6, indicates that the distribution has a little higher peak than a normal distribution. The probability that the share value is above the current price of a depository receipt in ForFarmers (31-12-2013) is 77.1%.

Figure 6.8 shows the results of the sensitivity analysis of the simulation in which the risk premium is assumed to have a triangular distribution based on expert information. The figure shows that the mean of the share value is most sensitive to changes in the risk premium.

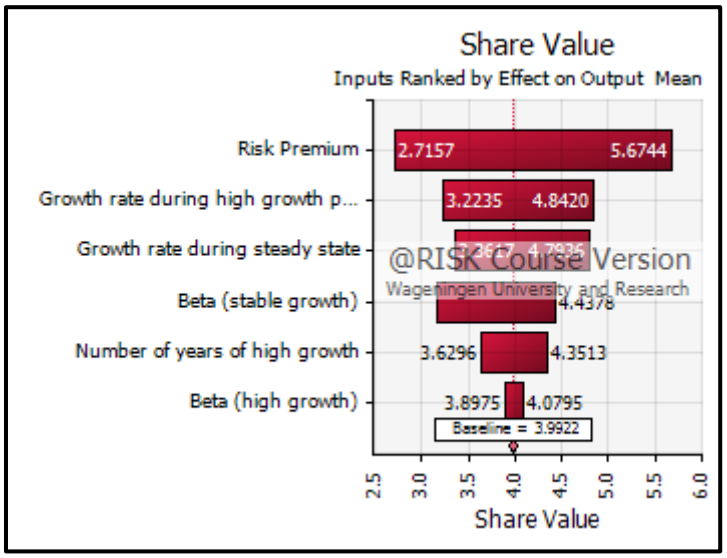


Figure 6.8: Results of sensitivity analysis of simulation with a triangularly distributed Risk Premium based on expert information

6.4 Comparison of the four simulations

In Table 6.7 the summary statistics of the four simulations are provided again which facilitates the comparison of different figures.

From the sensitivity analysis of the four simulations it is shown that, in this model, the share value is most sensitive to the risk premium required by equity investors. This is confirmed by the range from the 5%-percentile till the 95%-percentile. The simulation with a deterministic risk premium shows a 90%- confidence interval from 3.028 till 5.776, a range of 2.748. The 90%-confidence interval of the simulation in which the risk premium is normally distributed is much wider than that of the simulation with the deterministic risk premium, it reports a range of 6.893. The ranges of the 90%-confidence intervals of the simulation with triangularly distributed risk premiums are 5.695 and 3.804. The risk premium is a variable ForFarmers cannot control, which makes the share value mainly based on the attitude towards risk of investors, market conditions and market expectations.

Table 6.7: Summary statistics for the four simulations

	Deterministic RP	Truncated normally distributed RP	Triangularly distributed RP (Forecast and historical data)	Triangularly distributed RP (Experts)
Minimum	1.595	0.346	1.431	0.684
Maximum	10.002	31.50	24.841	11.628
Mean	4.266	2.649	5.049	3.992
Standard Deviation	0.856	2.449	1.880	1.195
Variance	0.732	5.998	3.535	1.429
Skewness	0.634	2.732	1.855	0.994
Kurtosis	4.111	15.074	9.463	4.578
Median	4.173	1.792	4.610	3.798
5%-percentile	3.028	0.649	2.955	2.431
95%-percentile	5.776	7.542	8.650	6.235
P(>3.08)	94.2%	26.9%	93%	77.1%

The distribution of the share value shows in all four simulations a tail to the right, which can be seen by the positive value for skewness. In the simulation in which the risk premium has a truncated normal distribution and the simulation in which the risk premium has a triangular distribution based on forecast and historical data, an uneven distribution of the share value is shown. The simulation with a deterministic risk premium and the simulation with a triangularly distributed risk premium based on expert information are only a little skewed. The distributions of the share value originating from the simulation with a deterministic risk premium and the simulation with a triangularly distributed risk premium based on expert information are close to a normal distribution, indicated by the relatively low value for skewness and the value for Kurtosis which is close to 3. The distributions originating from the two simulations with the truncated normal distributed risk premium and the risk premium with a triangular distribution based on forecast and historical data, have a tail to the right and show a sharper distribution than the normal distribution. This implies that the variance is mainly caused by rare extreme values and outliers.

In three of the four simulations, the one with a deterministic risk premium and the two with a triangular distribution, the probability that the share value is higher than the current price of a

depository receipt in ForFarmers is high. Only the simulation with a truncated normally distributed risk premium shows a low probability of a higher share value, a probability of 26.9%.

7 Discussion and Conclusion

The seventh chapter concerns the discussion of the results and conclusion of this research. In the discussion the results are compared with another valuation of the share in ForFarmers. It will discuss the other models used to value share and the model used in this research. Further this chapter will discuss the effects of the used of defense mechanism on share value in the case of ForFarmers. It gives business implications and suggestions for further research. In the conclusion answers to the research objective and research questions are given.

7.1 Discussion

The discussion starts with an evaluation of the results and which results of the four simulations are most relevant and best reflecting reality. The rest of the discussion is based on the results which are assumed to be most relevant.

7.1.1 Evaluation of the results

Chapter 6 presents the results of four simulations of the share value in which the risk premium differs among the four simulations. The results show that in the simulation where the risk premium is assumed to be stochastic, the share value is most sensitive to changes in the risk premium. The results of the survey of Fernández *et al. (*2011) show that it is not reasonable to assume that the risk premium is deterministic.

The distribution of the risk premium based on historical data provided by Dimson *et al.* (2011) allows to draw very high risk premiums, since the mean is 5.8% and a standard deviation of 22.2%. Such a high risk premium results in a high required return on equity by investors, which lowers the value of a share in this model. In the research of Fernández *et al.* (2011) an outlier of 30% was excluded. Besides that, historical data shows the actual risk premium (Actual market returns – risk-free rate), while the Capital Asset Pricing Model assumes a risk premium based on the difference between the expected market returns and the risk-free rate.

The distribution of the risk premium based on data of the KPMG, allows the risk premium to have the value zero, resulting in a required return on equity equal to the risk free rate. Besides that, the CAPM assumes that the expected risk premium is equal to the required risk premium are unique and equal to each other (Fernández, 2007). Therefore the results of the simulation with the required risk premium based on the survey of Fernández *et al.* (2011), are best reflecting reality.

In the research of Withagen (2012) the discounted cash flow valuation is used to value the depository receipts in ForFarmers. The result of the DCF is a DCF per share of EURO 4.4. The mean share value originating from the simulation with a risk premium based on the survey of Fernández *et al. (*2011), is a little lower than the DCF per share in the research of Withagen (2012), but the value per share of Withagen (2012) is in the range between the 5%- and 95%-percentile. In the research of Withagen (2012) many assumptions are made. For instance, the beta of ForFarmers is assumed to have the value of 1, which is used for every firm in a DCF valuation at SNS securities. Further the risk premium is assumed to be 4%, which is set as a risk premium the firm calculates with a couple of years ago (Withagen, 2013). In this research there are also assumptions made, mainly because of the limited amount of data available. For instance, the beta of ForFarmers is based on a Dutch-based feed producing firm which is listed on the stock-exchange. Further, for some stochastic variables the

distribution is assumed to be normal because there is too little data available to use a tool to fit the data to a distribution. For example, the beta of ForFarmers during high growth period and the growth rate during high growth period are assumed to be normally distributed, while evidence for such a distribution is lacking.

According to Deloof et al. (2009) the Discounted Free Cash Flow (DFCF) is considered to be the most reliable method to valuate shares. The Dividend Discount Model (DDM) tends to underestimate share value. An explanation for the underestimation of share value by the DDM is that the model does not take the value of non-operating assets into account. Moreover, firms do not pay out all their free cash flow as dividend to shareholders. "As a result, most of these companies are underlevered and overcapitalized. By consequence, if DDM is based on actual dividends paid out, it will on average produce lower valuations than DFCF, which assumes that all free cash flows are returned to the investors when they are available" (Deloof et al., 2009, p.149).
In this research a variant of the DDM is used; the Two-Stage Dividend Discount Model. Also this model will "underestimate the value of firms that accumulate cash and pay out too little in dividends" (Damodaran, 2012, p. 333). But the growth rate during the steady state is not based on the retention ratio, but the growth rate of the Dutch-Economy and the growth of sales in perpetuity provided by Withagen (2012) are used to estimate the growth rate of dividends during steady state. Therefore it is assumed that the value of a share is not underestimated because of the too little pay out of dividends. Another aspect of the Two-Stage DDM is that after a period of high growth, the growth rate drops by a large amount, while it is more realistic to assume that the growth rate of dividends will decrease gradually over time (Damodaran, 2012). This sudden drop causes that the share value could be underestimated. A Three-Stage DDM could be than more suitable, since it contains between the high growth phase and the stable growth phase a transitional phase. A drawback of this model that it is hard to estimate the length of the high growth and the transitional period.

7.1.2 Defense Mechanisms

As discussed in chapter 3, some defense mechanisms, to protect the firm from unwanted influence and takeovers, influence firm value, and thereby share value negatively. Withagen (2012) uses a discount on the DCF fair value because of three reasons. First is the lack of trading liquidity of the depository receipts. Second is that the current facility for the trade of depository receipts is a hurdle since it involves a lot of administrative procedures. The last reason to use a discount is that the depository receipts have no voting rights (Withagen, 2012). For these reasons Withagen (2012) uses a discount of 20% of the DCF fair value. When ForFarmers is listed on the stock-exchange, the issue of illiquidity is solved. But if ForFarmers decides to keep the structure of depository receipts, with no voting rights, and thereby leaving voting power at the cooperative, a discount to the share value is justified. By how much the share value is influenced negatively is hard to say.

7.1.3 Business implications

The probability that the share value will be above the current share (€3.08) is 77.1%. This indicates that the value of a share will increase when the firm is listed on the stock exchange.
The sensitivity analyses show that share value is most sensitive to changes in the risk premium, an external variable which ForFarmers cannot control. This means that share value is mainly affected by the attitude towards risk of investors, market conditions and market expectations.
When the management and the members of the cooperative FromFarmers decide to implement a

defense mechanism in which certificates with no voting rights are traded and voting power is at the cooperative, than this will affect the share value negatively. In that case the management of ForFarmers will gain private benefits from the protection of a defense measure. Members of the cooperative, which are shareholders after an IPO, will not benefit from the use of defense mechanism, since it will affect their share price negatively. So, the introduction of defense measure required by the members council as a condition for an IPO is a fallacy.

7.1.4 Further Research

It would be attractive to investigate the relationship between the risk premium and share value of stock-exchange listed companies. In the model used in this research the share value is very sensitive to the risk premium, it would be interesting to know if share value is mainly determined by the market conditions and overall market expectations or also by firm specific characteristics. Another point which would be interesting to investigate is at what discount a share is trading when a firm uses a specific defense mechanism. From this research a discount could be calculated which can be used as a rule of thumb by investment banks for valuing shares. Further it would be interesting to examine what the members of the cooperative will do with their shares when they can trade their shares with third parties on the stock market. For instance, one could study if the level of commitment of a former member is related to the decision whether to buy, sell or retain shares in ForFarmers. Such research would provide insights in the level of control of former members over ForFarmers.

7.2 Conclusion

The objective of this research was to evaluate the effect of the transition from a cooperative into an Investor-Owned Firm on the value of shares in ForFarmers B.V., to determine what defense mechanism are available to ForFarmers to protect the firm from a takeover and how these mechanisms affect the share value of ForFarmers. To fulfil the research objective, four questions were formulated. In the conclusion the answers to these four questions are presented, and by so doing, an answer to the research objective.

The first question asked about the changes in the organizational and financial structure of ForFarmers that have been made to ensure the transition from cooperative to an Investor-Owned Firm. ForFarmers individualized its collective equity by the project 'Equity on Name' in which members of the cooperative got entitled to a share of the collective capital based on past and current purchases at the cooperative. The capital is issued to members in the form of depository receipts which are internally tradable among members. Part of the process 'Equity on Name' was the transfer of the all activities and assets of the cooperative to ForFarmers B.V., an Investor-Owned Firm. The cooperative got 100 million shares in ForFarmers B.V. in exchange. Currently, the only activity of the cooperative FromFarmers is the management and division of shares in ForFarmers. It awards the depository receipts, which are a right to a share in ForFarmers, to its members.

The second and third research question investigate the expected share value and its variance in case ForFarmers is listed on the stock market and the shares are freely tradable. From the simulation an expected mean share value of €3.99 is deemed the most likely outcome. The interval of the 5%-percentile to the 95%-percentile ranges from €2.4 till €6.2. Currently a depository receipt in ForFarmers is trading at €3.08. The probability that the share value is higher than the current price of

a depository receipt is 77.1% implying that there is a high probability that the value of a share will increase when ForFarmers is listed on the stock market.
From both the sensitivity analyses and 90% confidence intervals it is shown that the share value is most sensitive to changes in the risk premium, an external variable which ForFarmers cannot control. This means that share value is mainly affected by the attitude towards risk of investors, market conditions and market expectations. After the risk premium, the share value is most sensitive to the growth rates during both the high growth period and the steady state.

The last research question concerns what defense mechanisms are available to ForFarmers and the impact of these mechanisms on the share value of ForFarmers. The question originates from concerns among the members council of the cooperative, since it wants the firm protected from a hostile takeover and unwanted influences. The defense mechanisms which is most suitable to ForFarmers is the use of share certificates, which is similar to the current construction with depository receipts and in which the cooperative has voting power. In this case the cooperative always keeps the majority of the votes. Literature shows that the introduction of share certificates lowers share value, thereby affecting members, which become shareholders, negatively. The introduction of defense measure required by the members council as a condition for an IPO is a fallacy.

8 References

Achleitner, A., Betzer, A., Goergen, M. and Hinterramskogler, B. (2010) Private Equity Acquisitions of Continental European Firms - The Impact of Ownership and Control on the Likelihood of Being Taken Private, European Financial Management, Forthcoming; Best Paper Prize, 7th International Conference on Corporate Governance, Birmingham Business School.

Annin, M. & Falaschetti, D. (1998) *Equity Risk Premium,* Ibbotson Associates, Chicago, IL.

Becht, M. & Röell, A. (1999) Blockholdings in Europe: An international comparison, *European Economic Review,* Vol. 43: 1049-1056.

Chung, K. & Kim, J.K. (1999) Corporate ownership and the value of a vote in an emerging market, *Journal of Corporate Finance,* Vol. 5: 35-54.

Collins, R.A. (1991) The Conversion of Cooperatives to Publicly Held Corporations: A Financial Analysis of Limited Evidence, *Western Journal of Agricultural Economics,* Vol. 16(2): 326-330.

Cooper, I. (1996) Arithmetic versus Geometric Mean Estimators: Setting Discount Rates for Capital Budgeting, *European Financial Management,* Vol. 2(2): 157-167.

Damodaran, A. (1999a) *Estimating Equity Risk Premiums,* Working Paper Series 99-021, Stern School of Business, New York University, New York.

Damodaran, A. (1999b) *Estimating Risk Parameters,* Working Paper Series 99-019, Stern School of Business, New York University, New York.

Damodaran, A. (2008) *What is the risk-free rate? A Search for the Basic Building Block,* Working Paper, Stern School of Business, New York University, New York.

Damodaran, A. (2012) *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset,* 3rd Edition, John Wiley and Sons Inc. Hoboden, New Jersey.

De Jong, A. & Röell, A. (2005) Financing and Control in The Netherlands: A Historical Perspective. In R.M. Morck (ed.) *A History of Corporate Governance around the World: Family Business Groups to Professional Managers* (pp. 467-516) Chicago and London: The University of Chicago Press.

Deloof, M., De Maeseneire, W. and Inghelbrecht, K. (2009) How Do Investment Banks Value Initial Public Offerings (IPOs)? *Journal of Business Finance & Accounting,* Vol. 36 (1&2): 130-160.

Dickerson, A.P., Gibson, H.D. And Tsakalotos, E. (2002) Takeover risk and the market for corporate control: the experience of British firms in the 1970s and 1980s , *International Journal of Industrial Organization,* Vol. 20: 1167-1195.

Dimson, E., Marsh, P. and Staunton, M. (2011) *Equity Premia Around the World,* London Business School.

Dunn, J.R. (1988) Basic Cooperative Principles and Their Relationship to Selected Practices, *Journal of Agricultural Cooperation,* Vol. 3: 83-93.

Fama, E.F. & French, K.R. (2004) The Capital Asset Pricing Model: Theory and Evidence, *The Journal of Economic Perspectives,* Vol. 18(3): 25-46.

Fernández, P. (2007) Equity Premium: Historical, Expected, Required and Implied, Working Paper, IESE Business School, http://ssrn.com/abstract =933070.

Fernández, P., Aquirreamalloa, J. and Corres, L. (2011) Market Risk Premium Used in 56 Countries in 2011: A Survey with 6,014 Answers, IESE Research Papers WP-920, IESE Business School.

Field, L.C. & Karpoff, J.M. (2002) Takeover Defenses of IPO Firms, *The Journal of Finance,* Vol. 57(5): 1857-1889.

Financial Times (2013) http://markets.ft.com/RESEARCH/Markets/Bonds Retrieved at 24-10-2013.

Financieele Dagblad (2013a) Nederlands grootste voerfabrikant ForFarmers mag naar de beurs, Financieele Dagblad: Amsterdam.

Financieele Dagblad (2013b) http://beurs.fd.nl/analyse/amsterdam/midkap/ Retrieved at 03-12-2013.

ForFarmers (2007) *Het vermogen te delen,* Release date: May 2007, Lochem.

ForFarmers (2008) *Annual Report 2007,* Release date: 11 March 2008, Lochem.

ForFarmers (2010a) *Annual Report 2009,* Release date: 9 March 2010, Lochem.

ForFarmers (2010b) *Prospectus,* Release date: 29 September 2010, Lochem.

ForFarmers (2011a) *Annual Report 2010,* Release date: 9 March 2011, Lochem.

ForFarmers (2011b) *Prospectus,* Release date: 6 May 2011, Lochem.

ForFarmers (2013a) *Annual Report 2012,* Release date: 12 March 2013, Lochem.

ForFarmers (2013b) *Prospectus*, Release date: 29 April 2013, Lochem.

Fulton, M.E. & Hueth, B. (2009) Cooperative Conversions, Failures and Restructurings: An Overview, *Journal of Cooperatives,* Vol. 23.

Galle, R.C.J. (2010) *Handboek Coöperatie.* Convoy Uitgevers bv, Dordrecht.

Grossman, T. & Livingstone, J.L. (2009) *The Portable MBD in Finance and Accounting,* John Wiley & Sons, Inc. New Jersey.

Hasbrouck, J. (1985) The Characteristics of Takeover Targets, q and Other Measures, *Journal of Banking and Finance,* Vol. 9: 351-362.

Hillier, D., Ross, S., Westerfield, R., Jaffe, J. & Jordan, B. (2010) *Corporate Finance,* McGraw-Hill Higher Education, London.

Hoffmann-Burchardi, U. (1999) Corporate Governance Rules and the Value of Control: a Study of German Dual-class Shares, FMG Discussion paper, London School of Economics.

Holmén, M., Nivorozhkin, E. and Rana, R. (2012) Do anti-takeover devices affect the takeover likelihood or the takeover premium?, *The European Journal of Finance*: 1-21.

Horner, M.R. (1988) The Value of the Corporate Voting Right: Evidence from Switzerland. *Journal of Banking and Finance,* Vol. 12: 69-83.

Kabir, R., Cantrijn, D. and Jeunink, A. (1997) Takeover defenses, ownership structure and stock returns in the Netherlands: an empirical analysis, *Strategic Management Journal,* Vol. 18: 97-109.

KPMG (2013) Equity Market Risk Premium – Research Summary, January 2013, KPMG Advisory N.V.

Lease, R. C., McConnell, J.J. and Mikkelson, W.H. (1983) The market value of control in publicly-traded corporations, *Journal of Financial Economics,* Vol. 11: 439-471.

Levy, H. (1982) Economic evaluation of voting power of common stock, *The Journal of Finance,* Vol. 38: 79-93.

Megginson, W. L. (1990) Restricted voting stock, acquisition premiums, and the market value of corporate control, *The Financial Review,* Vol. 25: 175-198.

Modigliani, F. & Pogue, G. A. (1973) *An introduction to risk and return concepts and evidence,* Working papers 646-73., Massachusetts Institute of Technology (MIT), Sloan School of Management.

Moerland, P. W., (2002) Complete Separation of Ownership and Control: The Structure-Regime and Other Defensive Mechanisms in the Netherlands. In L. Renneboog, J. McCahery, P. Moerland and T. Raaijmakers (eds.), *Corporate Governance Regimes, Convergence and Diversity* (pp. 287-296) Oxford: Oxford University Press.

Neumann, R. (2003) Price Differentials between Dual-class Stocks: Voting Premium or Liquidity Discount? *European Financial Management,* Vol. 9(3): 315-332.

North, D.S. (2001) The Role of Managerial Incentives in Corporate Acquisitions: the 1990s Evidence, *Journal of Corporate Finance,* Vol. 7: 125-149.

Nutreco (2013) *Integrated Report 2012,* Release date: 5 February 2013, Amersfoort.

Palepu, K.G. (1986) Predicting takeover targets: A Methodological and Empirical Analysis, *Journal of Accounting and Economics,* Vol. 8: 3-35.

Ragozzino, R. & Reuer, J.J. (2011) Geographic Distance and Corporate Acquisitions: Signals from IPO Firms, *Strategic Management Journal,* Vol. 32: 876-894.

Roosenboom, P. & van der Goot, T. (2003) Takeover Defenses and IPO Firm Value in the Netherlands. *European Financial Management*, Vol. 9: 485–511.

Rooseboom, P. & van der Goot, T. (2005) The Effect of Ownership and Control on Market Valuation: Evidence from Initial Public Offerings in the Netherlands, *International Review of Financial Analysis,* Vol. 14:43-59.

Rydqvist, K, (1996) Takeover bids and the relative prices of shares that differ in their voting rights, *Journal of Banking and Finance,* Vol. 20: 1407-1425.

Savvides, S.C. (1994) *Risk Analysis in Investment Appraisal,* MPRA Paper 10035, University Library of Munich, Germany, revised 14 Aug 2008.

Schnitzer, M. (1996) Hostile versus Friendly Takeovers, *Economica,* Vol. 63(249): 37-55.

Schrader, L.F. (1989) Equity Capital and Restructuring of Cooperatives as Investor-Oriented Firms, *Journal of Agricultural Cooperation,* Vol. 4: 41-53.

Schwert, G.W. (2000) Hostility in Takeovers: In the Eyes of the Beholder? *The Journal of Finance,* Vol. 55(6): 2599-2640.

Sharpe, W. F. (1990) *Capital Asset Prices With and Without Negative Holding,* Nobel Prize in Economics documents 1990-3, Nobel Prize Committee.

Thompson, S. (1997) Takeover activity among financial mutuals: An analysis of target characteristics, *Journal of Banking & Finance,* Vol. 21: 37-53.

Van Bekkum, O.F., & Bijman, J. (2006) Innovations in Cooperative Ownership: Converted and Hybrid Listed Cooperatives, Business paper presented at the 7th International Conference on Management in AgriFood Chains and Networks, Ede, The Netherlands, 31 May – 2 June, 2006

Van der Elst, C.F., de Jong, A. and Raaijmakers, M.J.G.C. (2007) Een overzicht van de juridische en economische dimensies van de kwetsbaarheid van Nederlandse beursvennootschappen, Onderzoeksrapport ten behoeve van de SER Commissie Evenwichtig Ondernemingsbestuur.

Van der Heijden, T. (2013) Deze boze boer wil niet naar de beurs, NRC Handelsblad: Amsterdam.

Van Dijk, G. & Klep, L.F.M. (2005) *Als de 'markt' faalt. Inleiding tot coöperatie.* Sdu Uitgevers bv, Den Haag.

Visser, P.A. & Stegeman, R.F.A. (2011) De Ontmanteling van Beschermingsconstructies: In Hoeverre Hangen Trends in Regelgeving, Jurisprudentie en Praktijk Samen? Nyenrode Research Paper no. 11-03.

Walter, R. (1994) The Usefulness of Current Cost Information for Identifying Takeover Targets and Earning Above-Average Stock Returns, *Journal of Accounting, Auditing and Finance,* Vol. 9: 349-380.

Withagen, R. (2012) *ForFarmers Company Report,* SNS Securities Research, Amsterdam.

Withagen, R. (2013) Personal communication (13-11-2013).

Zingales, L. (1994) The value of the voting right: a study of the Milan Stock Exchange experience. *Review of Financial Studies,* Vol. 7: 125–148.

Zingales, L. (1995) What determines the value of corporate votes? *The Quarterly Journal of Economics,* Vol. 110: 1047-1073.