Examining Economic Fluctuations and Agribusiness Strategies:

A Longitudinal Perspective on Economic Fluctuations, Western Agribusiness Strategies and Performance

Bas Groeneveld, March 2015

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Abstract

It is widely acknowledged that changes in economic growth have an impact on firms' performance (Rumelt, 1991; Mc Gahan & Porter, 1997). Consequently, one might, for managerial reasons, consider how firms strategize while being exposed to the impact of so called economic fluctuations. Strategic management literature lacks clarity on this topic. Therefore, the scope of this research is to provide some evidence regarding the link between economic fluctuations and firms' strategies by focussing on agribusiness firms' strategies. This research builds on, and advances prior work of academics. We developed a database, based on 22 global active agribusiness firms' (financial) annual reports in the period 1988-2012. Still, newness of research made a partially exploratory analysing approach on the data necessary. Nevertheless, the outcomes led to some clear results. While following Porters' (1980) strategy format, firms following a hybrid strategy outperform those following a pure cost leadership or differentiation strategy. Besides, firms' performances increase as the economic growth increases. Firms become on average (1) more differentiation oriented and (2) less cost leadership oriented as the economic growth increases. The individual variables show that as the economic growth changes firms cost efficiency orientation changes significantly, while there is no significant change in firms' differentiation orientation. Our main conclusion is that, in connection to the economic fluctuations, firms make adjustments in their cost efficiency orientation.

Keywords: economic fluctuation, agribusiness performance, cost leadership, differentiation, agribusiness strategies

Preface

This research is a proof of competence and is part of the master Management Economics and Consumer studies at the Wageningen University in Wageningen, The Netherlands. Bas Groeneveld performed this research project in The Netherlands and is supervised by the Wageningen University.

This document describes the research and it includes conclusions and recommendations. The report is addressed to each person interested in agribusiness strategies. Besides, the Wageningen University will use the document to evaluate the realization of the master thesis.

Although it is my name figuring on the cover, the realization of this project is certainly not a one-man show. In particular, I would like to express sincere gratitude to my supervisors. At first Dr. Emiel Wubben, Associate Professor in Strategic Management, for his original, valuable and professional support in selecting the subject and performing the research. You challenged me to the edge of knowledge to reach the unknown in the field of agribusiness strategies. A second word of gratitude goes to Dr. Stefano Pascucci, Assistant Professor in Innovation and Entrepreneurship in Agricultural Food Chains, for his enthusiastic support and guidance in the realization of this project. You were of great help when you made drawings that kept it easy and understandable. Besides, you introduced me to my third supervisor, Valentina Christiana Materia, PhD, Assistant Professor at Management Studies group, to whom I would also like to express my gratitude. I would like to thank you for your constructive support and knowledge while helping me with the challenging empirical analysis. Last I would like to thank Bartjan, Otto & Fia and Adinda for their help and support during the research.

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Executive summary

Changes in economic growth have substantial impact on firms' performance and their business environment (e.g. Rumelt, 1991; Mc Gahan & Porter, 1997). According to the literature, the performance of firms' follows similar patterns as the changes in economic grow (Schmitkey & Kramer, 2012; Morly & Piger, 2012). Knowing that the changes in economic growth, also called economic fluctuations, impact performance, firms are challenged to develop a strategic response. Given the importance to respond appropriately, it has not been further investigated what the influence is on business strategies. The lack of academic literature on firms' strategies in connection to the economic fluctuations provides a knowledge gap, which is the topic that has been analysed for this research. The scope of this research is therefore to provide some evidence regarding the link of economic fluctuations and firms' strategies by focussing on agribusiness firms' strategies. The objective of this exploratory research is: *"To contribute to strategic management literature, by obtaining knowledge on the link between economic fluctuations, strategies of agribusiness firms and their performance, by validating if economic fluctuations relate to the strategies of the agribusiness firms and their performance."*

To achieve the research objective a central research question is formulated: *"How are economic fluctuations and agribusiness firms' strategies linked?"* To achieve the objective and answer the central research question this research is divided in three parts: the literature study, the empirical research and the analysis. The literature study focused at obtaining knowledge on (1) recent global economic fluctuations, (2) the influence of economic fluctuation on firms' performance and (3) on how the economic fluctuations impact on and affect the strategies of the firms. Based on the literature findings propositions are formulated which are tested empirically. In the empirical part of the research we developed a database. Global active, publicly listed agribusiness firms' across three industries, i.e. processed food, beverage and meat, with head offices located in advanced, western economies were selected based on their sales; we investigated the giants of the industry by collecting firms' (financial) annual reports in the period 1988-2012. The data availability for the whole period yielded a sample of 22 different companies. The nearly complete dataset was strongly balanced. Newness of research on agribusiness firms' strategies in connection to the economic fluctuations made it necessary to do an exploratory approach in the analysing part. Therefore three different methods were used; the correlations matrix, the ordinary least squares regression, and the fixed effects regression.

The literature study identified economic fluctuations in the period 1988-2012. Periods of economic growth (1988-90, 1994-97, 1999-2000, 2003-07, 2010-13) and recession (1991-93, 1998, 2001-02 and 2008-09) are recognized. The periods served as a basis to investigate how the agribusiness firms' performance is influenced by the economic fluctuations. Overall periods of economic growth show decrease in interest rates, and increase in employment and investment, whereas periods of recession have exactly the opposite effect. Literature shows that the unemployment increased particularly in the recession period 1991-93 and 2008-09. Besides, business investments increased drastically just before 2001 and decreased in the period 2001-02. From the start of the period we analyse, we notice a shift; firms have improved their productivity by reducing staff and implementing computers and telecommunication. Based on the literature, we expected agribusiness firms to review their strategies due to the impact of the economic fluctuations. It was expected that the lower the economic growth, the higher firms cost leadership orientation, whereas the higher the economic growth, the higher firms differentiation orientation. Besides, it was expected that as the economic growth increases, firms increase capital and acquisitions spending.

The data analysis led to some clear results. We first looked at firms' performance, then to firms' strategies. Overall, American firms outperform European firms, and the meat industry underperforms compared to the processed food and beverage industry. While following Porters' (1980) strategy format, firms following a hybrid strategy outperform those following a pure cost leadership or differentiation strategy. We found support for the proposition that the higher the economic growth, the higher firms' performance. We conclude that firms' performances follow similar patterns as the economic fluctuations. Our selected three strategy variables (labor efficiency, capital efficiency, and differentiation) are positive relative

to firms' performance, indicating that the higher firms' score on the strategy variables, the more it is associated with higher firms' performance. Besides, we notice that in the year of spending, acquisition spending has a negative influence on firms' performance. While looking at firms' strategies we conclude that on average, firms differentiation orientation increases as the economic growth increases, where firms become more cost leadership orientated in periods of economic recession. The individual variables show that labor efficiency decreases and capital efficiency increases as the economic growth increases. We cannot support that differentiation increases as the economic growth increases. Based on the findings we concluded that the significant change of firms overall strategic orientation due to economic fluctuations is primarily caused by a shift in firms' cost efficiency orientation. An analysis of firms' capital and acquisition spending in connection to the economic fluctuations does not provide significant insight. We did not find support for the proposition that firms increase or decrease investments due to economic fluctuations.

When we represent the selected variables graphically, we see some remarkable developments in the period 1988-2012 that can, unfortunately, not be deduced from the models. Overall, we notice that firms have become more cost leadership oriented in the period that was analysed. It seems, in accordance to the literature, that firms have reduced staff and have invested in assets as their labour efficiency increased, and the capital efficiency decreased on average in the period under analysis. It is remarkable, and confirms the literature, that firms' investments increased in the economic growth period before 2001 and 2008 after which the spending decreased drastically in the subsequent years of economic recession.

Concluding, this research disclosed the influence of economic fluctuations on agribusiness firms' strategies. We found, that firms' way through this difficulty leads especially to a pattern in adjustments of firms' cost efficiency orientation. As this research had a partially exploratory focus, a number of questions for further research remain. How can one increase the managerial value of our findings, and what is the influence of an examination of lagged (delayed) strategies in connection to firms' performance as this study has solely focussed on the direct influence of the variables. We provided some guidelines for further research.

Contents

List of figures

List of tables

List of appendices

1   Introduction

This introductory chapter covers the research background and its design. The research outline is developed on the basis of Verschuren & Doorewaard (2010) and consists of two sections, the conceptual research design and the technical research design in section 1.1 and 1.2 respectively.

1.1   Conceptual research design

The conceptual research design focuses on clarifying the topic that has been analysed and why this research has been worth doing, in order to provide a clear and solid foundation for the research. Paragraph 1.1.1 describes the context of the research. The problem analysis is described in paragraph 1.1.2 in order to isolate a manageable issue from the context. The research objective is described in paragraph 1.1.3. The required steps to realize the research objective are provided in paragraph 1.1.4 by means of a research framework. Finally, paragraph 1.1.5 provides insight in the knowledge required to achieve the objective, by describing research questions.

1.1.1   Research context

Economic fluctuations[1], considered as macro-environmental influence, have an impact on agribusiness firms' performance and their business environment. For example, the global economy had a contraction from December 2007 to June 2009 (Eaton et al, 2011; Mian & Sufi, 2010; Giannone et al, 2011). The contraction caused a negative impact on U.S. agribusiness firms' trade value (Peters et al, 2009) and financial performance (Katchova & Enlow, 2013). Another study, focussed on the stock index performance of businesses, compared 21 global stock listed (hereafter: listed) agribusiness firms' with 500 general leading listed companies in almost eleven years, in the period January 2000 to November 2011. Despite the fact that on average agribusiness firms' index values exceeded those of the general firms', Schnitkey & Kramer (2012) highlight that the impact of economic fluctuations on firms' performance is roughly the same for agribusiness firms compared to general firms. Although the performance measures differ among studies, the studies conclude that the performance of agribusiness firms' is impacted by economic fluctuations. The same is concluded by Mc Gahan & Porter (1997) and OECD-FAO (2013).

Economic fluctuations have been categorised by the length of their cycle: 3-4 years (Kitchin), 7-9 years (Juglar), 15-25 years (Kuznets), and 45-60 years (Kondratieff) (Korotayev & Tsirel, 2010). Business performance is linked with these economic fluctuations. Various studies, e.g. Neftci (1984); Hamilton (1989;) and Morly & Piger (2012), have focussed on this topic from a different perspective in comparison to the studies mentioned in the previous section by focussing at unemployment rates in connection to economic fluctuations. The study results are similar, concluding that the performance of agribusiness firms follows similar patterns as the economic fluctuations.

Since literature highlights[2] that the performance of agribusiness firms is influenced by the economic fluctuations, we may consider whether the literature provides insight if firms react strategically while dealing with economic fluctuations. First of all, strategic management literature shows that for the development of strategy one may take an outside-in approach (market-based) and/or an inside-out approach (resource-based) (McKierman, 1997; Stonehouse & Snowdon 2007). The outside-in and inside-out approaches focus particularly on the meso-environment (transactional level), which consists of market forces e.g. supply and demand, suppliers, distribution, and competitors. It appears from strategic management literature that the approaches focus less on the macro-environmental (contextual level) influences, which consists of global forces e.g. economical developments, demographics, politics, technological and social developments (Harvard Business Review's must read on strategy, 2011). Besides, empirical studies that cover (agri-) business firms' strategies during

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[1] The upward and downward movements in levels of gross domestic product (GDP) (Madhani, 2010).
[2] e.g. Neftci (1984); Hamilton (1989); Morly & Piger (2012); Rumelt (1991); Mc Gahan & Porter (1997).

a longer period are scarce. Concluding on agribusiness firms' strategies seems therefore impossible. Overall, the literature highlights that agribusiness firms discover impact of economic fluctuations. But as it has not yet been further investigated what the macro-environmental influence of economic fluctuations is on (agri-) business firms' strategies there is a knowledge gap. This gap is the topic under analysis for this research.

1.1.2   Problem analysis

Strategic decisions focus on the direction and scope of an organisation to achieve advantages in a changing environment (Collis & Rukstad, 2008). The essence of a successful strategy is present in how a company conducts its activities. Companies must ask themselves how to perform different activities, and how one should perform the activities differently from other companies while taking the changing environment into account (Porter, 2008). The literature presents, as mentioned, at least two views on leading approaches for developing strategies. The outside-in view, supported by e.g. McGahan & Porter (1999); Slater et al (2011), is focussed on market influences as a basis for developing firms' strategy. The second view, the inside-out view, supported by most studies (e.g. Rumelt, 1991; Barney, 2001; Winter, 2003), is focussed on the internal organisation, i.e. asking what a company can do with existing resources in order to develop firms' strategy (Schiefer et al, 2013). Both strategy approaches differ fundamentally. It is not evident what strategy approach firms preferably follow. Besides, current theoretical and empirical studies on the performance of businesses have focussed particularly on meso-environmental influences. Little attention in research is given to explain the macro-environmental impact on business performance. Exceptions are Schmalensee (1985) and Rumelt (1991) (Mc Gahan & Porter 1997). Although these studies focussed on macro-environmental effects on business performance, it is not clear how macro-environmental effects are connected to business strategies.

Different views on strategy formation and scarce attention for (agri) business strategies leave space for further research on this topic. As mentioned, agribusiness firms discover macro-environmental influence of economic fluctuations since it impacts their business performance. The main issue this research tries to address is to provide some evidence regarding the connection of economic fluctuations and firms' strategies. This research therefore aims to contribute to knowledge on firms' strategies and focuses on agribusiness firms' strategies. By obtaining knowledge on agribusiness firms' strategies one may conclude whether firms react strategically while dealing with economic fluctuations.

1.1.3   Research objective

The objective of this exploratory research is: *"To contribute to strategic management literature, by obtaining knowledge on the link between economic fluctuations, strategies of agribusiness firms and their performance, by validating[3] if economic fluctuations relate to the strategies of the agribusiness firms and their performance."*

1.1.4   Research framework

The phenomenon (object) under study is agribusiness firms strategies. To study the phenomenon, four distinct research steps have been categorized. The first (I) step of the research contains a literature study. The literature study covers three aspects (1) defining economic fluctuations; (2) obtaining knowledge on the influence of economic fluctuations on agribusiness firms' performance; and (3) obtaining knowledge on the impact of macro-environment factors on agribusiness firms' strategies. The literature review is used to form propositions on expected agribusiness firms' strategies and performance indicators in connection to the economic fluctuations. During the second (II) step of the research the literature study is finalized. Empirical data is collected and to a less extend exploratory The overlap between the closing of the literature study, and the collection of the data has

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[3] Examination of how well a given measure relates to one or more criterions, based on empirical data collection, also mentioned as criterion-related validity (Anol, 2012).
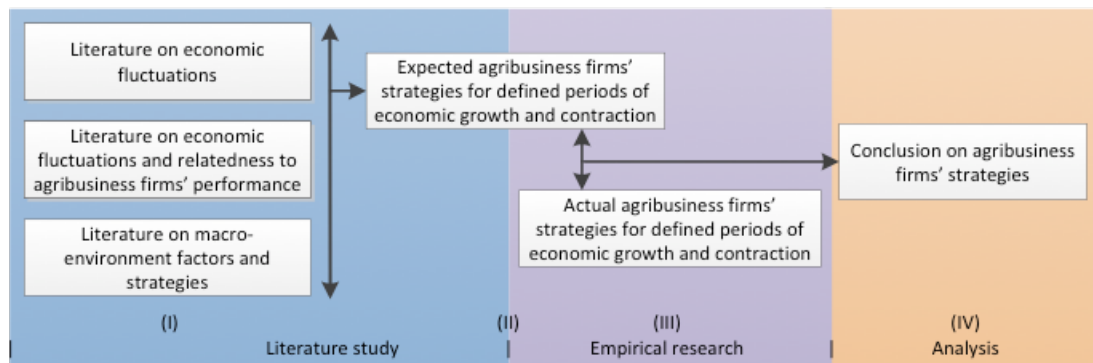
Figure 1.1 Research framework.

been to achieve a good connection between the propositions and the obtained data. The third step of the research contains the empirical research and focuses on analysing agribusiness firms' strategies and performance for defined periods of economic growth and contraction (III). Finally, step four contains the overall results and conclusion on the influence of economic fluctuations on agribusiness firms' strategies (IV). An overview of the consecutive steps of the research is represented in the research framework described in figure 1.1 from left to right.

1.1.5   Research questions

A central research question is described in order to achieve the research objective. The central research question is: *"How are economic fluctuations and agribusiness firms' strategies linked?"*

To answer the central research question five sub-questions are described. The sub-questions 1-4 cover the literature study, and form the theoretical foundation for the empirical analysis. Sub-question 5 covers the empirical analysis.

1   What recent economic fluctuations have been identified in the literature?

2   What are the prevalent literature insights on how agribusiness firms' performance is impacted by economic fluctuations?

3   What are the prevalent literature insights on how macro-environment factors impact on strategies?

4   Which agribusiness strategies can be expected in connection to the identified economic fluctuations?

5   Which strategies and performances can be established for identified economic fluctuations when analysing agribusiness firms' strategies and performances?

1.2   Technical research design

The technical research design focuses on clarifying how and what has to be done to achieve the research objective. Paragraph 1.2.1 describes the research strategy. Paragraph 1.2.2 describes the research material required for this research.

1.2.1   Research Strategy

To understand how the desk research will be carried out, this paragraph focuses on describing the research strategy for the literature study and empirical research.

For the literature study it is essential to gain deep understanding on (1) economic fluctuations; (2) the relatedness of economic fluctuations and agribusiness firms' performance; and (3) the impact of macro-environmental factors on agribusiness firms' strategies. Minimization of uncertainties on the literature topics is needed to provide a theoretical framework that is

reliable, convincing and a solid basis for the identified periods of economic growth and recession, the expected agribusiness firms' strategies and performance, and for the overall research.

Deep knowledge on the topic will be obtained through the analysis of recent scientific literature (articles and books) secondary data (empirical data) and official statistical material (data gathered periodically or continuously for a broader public). As the literature study proceeds, decisions are made on which strategy level (corporate and/or business) to focus, how many and what agribusiness firms' to analyse, and how many years, in a particular time period will be used for analysing the agribusiness firms' strategies.

Since there has been scarce attention in literature for (agri) business firms' strategies especially regarding the influence of macro-economic changes on strategies and little empirical research is found on agribusiness firms' strategies, an exploratory and rather quantitative approach is used for this research in order to provide some evidence regarding the influence of economic fluctuations on agribusiness firms' strategies.

1.2.2   Research Material

This paragraph provides understanding on what kind of material is needed and how and where to gather the data to provide insight on how the questions are answered. One can read the information in consecutive steps of the sub-research questions.

1. What recent global economic fluctuations have been identified in the literature?
   Scientific articles and secondary data on economic fluctuations and identified recent economic fluctuations are analysed to answer this question.
   Field of research: economics, econometrics and finance.

2. What are the prevalent literature insights on how agribusiness firms' performance is impacted by economic fluctuations?
   Scientific articles and secondary data on agribusiness firms' performance and economic fluctuations are analysed to answer this question.
   Field of research: business management and accounting, agricultural science and economics.

3. What are the prevalent literature insights on how macro-environment factors impact on strategies?
   Scientific articles and secondary data on macro-environmental factors and strategy are analysed to answer this question.
   Field of research: strategic management, strategic planning and business management.

4. Which agribusiness strategies can be expected in connection to the identified economic fluctuations?
   In addition to the already obtained literature knowledge, scientific articles and secondary data on macro-environmental factors and strategy are analysed to answer this question.
   Field of research: strategic management, strategic planning and business management.

5. Which strategies and performances can be established for identified economic fluctuations when analysing agribusiness firms' strategies and performance?
   The collected empirical data is used to test the expected strategies and performance in order to answer this question.

1.3   Report structure

The report is structured in this way: section 1 introduces the research project and covers the research design. Section 2 identifies economic fluctuations, describes the impact of economic fluctuation on firms' performance and profiles how macro-environmental factors impact firms' strategies. Lastly it describes expected strategies in connection to economic fluctuations. Section 3 presents the data and research methodology. Section 4 reports firms' strategies and performance. Lastly, section 5 draws conclusions and discusses the implications.

2 Literature review

This section covers the literature study and includes four sub-research questions. Paragraph 2.1 identifies economic fluctuations. Paragraph 2.2 describes the influences of economic fluctuations on firms' performance. Paragraph 2.3 describes the impact of macro-environmental factors on business strategies. Finally, paragraph 2.4 derives specific proposition from expected firms' strategies.

2.1 Identifying economic fluctuations

Periods of substantial economic growth are repeatedly interrupted by periods of contraction (Burns and Mitchel, 1946). This is of concern for companies and business players since periods of contraction bring considerable economic challenges (Morley & Piger, 2012). Identifying such economic fluctuations is a first step to understand how economic fluctuations influence agribusiness firms' strategies. This section covers the research question: *"What recent economic fluctuations have been identified in the literature?"* Paragraph 2.1.1 defines the term economic fluctuation. Paragraph 2.1.2 describes how to measure global economic fluctuations. Paragraph 2.1.3 identifies global economic fluctuations. Finally, paragraph 2.1.4 concludes on recent global economic fluctuations.

2.1.1 Defining economic fluctuation

To understand recent economic fluctuations we first need a definition of economic fluctuations. In general, the term economic fluctuation is used to describe periods of economic growth and contraction. The term is derived from classic business cycle theory, a branch of macroeconomics[4]. Different terms in literature are used to identify business cycles. An early work in business cycle research of Burns and Mitchel (1946) states that business cycles is a type of fluctuation that can be found in the aggregate economic activity of nations that organize their work mainly in business enterprises. A cycle consists of growth and expansion, occurring at the same time in different economic activities, followed by similarly general recession (contraction) and revivals, which merge into the expansion phase of the following cycle. This sequence of changes is recurrent but not periodic. Business cycles can vary in duration from more than one to twelve years (Burns and Mitchel, 1946).

The definition of Burns and Mitchel (1946) was at that time a milestone in business cycle research and remains of common use as definition on business cycles in today's literature (e.g. Durbin & Koopman, 2012; Kose, et al., 2012). To understand in which way they describe a business cycle we need to emphasize key points. The definition emphasizes according to Sørensen & Whitta-Jacobsen (2010, p.358) (1) aggregate economic activity (measured by gross domestic product (GDP) (Burns & Mitchell, 1946 p.72)); (2) organization in business enterprises (i.e. decentralized market economies); and (3) cycles don't have fixed durations. Though some studies adopt the definition of Burns & Mitchell (1946) of business cycle, other studies appoint a different definition of business cycle[5] (table 2.1).

Creator of definition	Definition on business cycle
Burns & Mitchell, 1946	The alternation between periods of expansion and recession in the level of economic activity (Harding & Pagan, 2002)
Harding & Pagan, 2002	Turning points in the level of aggregate economic activity (Harding & Pagan, 2002)
Madhani, 2010	The business cycle is the upward and downward movements of level of GDP and refers to the period of expansion and contractions in the level of economic activities around its long-term growth trend (Madhani, 2010)
Morley & Piger, 2012	A representation of transitory fluctuations in economic activity away from a permanent or 'trend' level (Morley & Piger, 2012)

Table 2.1 Definitions of business cycle.

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[4] Macroeconomics deals with analyzing the national and global economy to understand e.g. economic fluctuations and long-term growth.
[5] Harding & Pagan (2005) and Morley & Piger (2012) provide more definitions of business cycle.

The definitions have in common to express business cycles in terms of economic activity (GDP). Though differently emphasized, the definitions refer to, as in Burns & Mitchell (1946), the alternation of periods of expansion and recession. Besides, Madhani (2010) refers to the underlying long-term growth trend of economic activity. This distinguishes his definition from the other referenced definitions and makes the definition more complete for the purpose of identifying economic fluctuations.

While selecting a definition we need to emphasize that the expression "business cycle" is controversial in the literature. Although a business cycle is not defined in a fixed duration, the term 'cycle' has the connotation of regularity, suggesting a self-repeating type of fluctuation of fixed length and amplitude, around some trend (van Duijn, 2013, p.3). Business cycles do not exhibit clearly articulated phases through which the economy could be said to pass in a recurrent pattern (Hamilton, 2005). Cologni & Manera (2009) found that the average length of growth and recession periods, defined as time from through to peak (growth) and from peak to through (recession) differ. The connotation of regularity in the expression business cycle has therefore lead to the selection of the expression economic fluctuation for this study. This suits the aim of the study, namely to identify growth and recession phases without suggesting the existence of fixed lengths and amplitude of cycles.

To conclude, "economic fluctuations", can be classified in two categories (1) long-term growth; and (2) alternation between periods of growth and recession (Madhani, 2010). When talking about economic fluctuations, this study shall, in accordance with Madhani (2010), refer to an economic fluctuation as "the upward and downward movements of levels of GDP and refers to periods of growth and recession in the level of economic activities around its long-term growth trend". This definition suits our study for the purpose of identifying periods of growth and recession. Besides, it also includes the previous mentioned categories whereby the reference to long-term growth in the economic activity distinguishes the definition from others. Elaborating on the definition we can focus on how to measure the definition.

2.1.2 Measuring economic fluctuations

Macroeconomists develop models that explain the relationship between factors as GDP, output (i.e. goods or services produced by firms', industries or countries), consumption, investment (Crucini et al., 2011), oil shocks (Cologni & Manera, 2009), and credit shocks (Helbling et al., 2010), with the aim to better understand economic fluctuations, and the determinants of long-term economic growth (Korotayev & Tsirel, 2010). To measure economic fluctuations and the aggregate economic activity, various literature (e.g. Burns & Mitchell, 1946; van Duijn, 2013; Korotayev & Tsirel, 2010), and economic bureaus and organisations (e.g. National Bureau of Economic Research (NBER); Organisation for Economic Co-operation and Development (OECD); International Monetary Fund (IMF); World bank) often use the aggregate real GDP[6]. This study adopts this method and uses the aggregate real GDP to measure and identify economic fluctuations since it is appropriate, clear and verifiable by the literature.

After defining how to measure economic fluctuations, we need a definition of periods of economic growth and recession so that we can identify and establish economic fluctuations. The literature does not indicate an accurate definition on the terms growth and recession, but highlights that a definition on growth and recession needs to contain: duration, depth, and diffusion (Fiedler, 2002).

As previously mentioned, there is a lack of precise definitions. As an example, the NBER describes the term recession as follows: "a recession is a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production and wholesale-retail sales" (Hall, et al., 2003). The definition is not completely clear since it is not defined what "significant decline" and "more than a few months" means. The Center for Economic Policy Research (CEPR) operates to define euro area business cycles in a similar manner as the NBER. Their

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[6] GDP can be measured according to three different ways. The real GDP measures the aggregate expenditures.

definition on recession does not bring striking new insight or clearness. A more precise definition can be found in what Shiskin (1974) states: "a recession is a decline in the seasonally and calendar adjusted real GDP in at least two successive quarters" (Achuthan & Banerji, 2008). Shiskin defines duration and diffusion, but does not describe how to measure or define depth.

The aim of this paragraph is to put forward a definition that encompasses depth next to duration and diffusion. We therefore need a definition that can be reasonably and practically applied, while considering that the combined real GDP of developed and especially developing economies have increased on average continuously in the last four decades (Abberger & Nierhaus, 2008). The IMF defined a recession if the global GDP has declined below an average real GDP of 3% (IMF, 2008). Recent studies on defining recessions focus besides real GDP on at least one different macroeconomic indicator (e.g. unemployment, investment) (CEPR, 2012). The purpose of adding another macroeconomic indicator is to better control and avoid measurement error since forecasts are made based on data that need often reconsideration months and years after their original publication (CEPR, 2012). This study does not make forecasts and only looks backward to examine periods of economic growth and recession. It is therefore suitable to focus only at the real GDP to define periods of growth and recession. This study will therefore define periods of economic growth and recession similar to the IMF (2008). This implies that (1) as the real global GDP growth is above 3%, a period of growth will be defined; and (2) if the real global GDP is 3% or less a period of recession will be defined.

The definition of the IMF (2008) lacks information on the minimum duration of a period. For the establishment of economic fluctuations that are clearly perceived by businesses, it is essential to identify periods of economic growth and recession that meet a minimum duration. We therefore need to complement this definition. Periods of economic recession are generally shorter than periods of economic growth (NBER, 2010). We therefore first look at periods of economic recession to provide a definition that encompasses duration, diffusion and depth. Literature provides for different purposes various views on establishing minimum fluctuation durations (e.g. Shiskin, 1974; Hall, et al., 2003). For the purpose of establishing fluctuations that are clearly perceived by agribusiness firms' we shall consider fluctuations only if they last longer than one year. In conclusions, this study defines economic recessions as follows: "a economic recession can be defined when the global GDP growth is or has declined below an average real GDP growth of 3% (IMF, 2008) for at least one year". This definition differs from the IMF definition since it considers a recession only if the real GDP growth is or falls below 3% for at least one year. The IMF does not point out this time path, but for the purpose of this study it is suitable and necessary. A disadvantage of this definition can be that one may miss information on short-term dynamics. An advantage is that one is able to provide more reliable data of robust facts on the global real GDP, which is perceived as more important for this study.

After having defined economic recession we can define economic growth. At this point we can consider what general developments take place during a period of economic growth to establish an appropriate minimum duration for the growth definition. Consumer confidence usually increases during a growth phase, leading to an increase in borrowing and spending (Madhani, 2010). Firms increase output and build-up stock levels. Ultimately after a period of growth, spare capacity is exhausted, new investment occurs and unemployment falls. As a consequence, aggregate consumers' income rises; firms' performance increases and real GDP experiences an increase in growth (van Duijn, 2013; Madhani, 2010). One can understand that the definition of a period of economic growth also needs an appropriate minimum duration to define periods of economic growth that are clearly perceived by agribusiness firms. Note that the same applies for a periods of economic growth as for a period of economic recession; it is relative to long-term growth (Abberger & Nierhaus, 2008). This study will therefore define a period of economic growth as a period in which the global GDP growth is above an average real GDP growth of 3% (IMF, 2008) for at least one year. Table 2.2 summarises the economic fluctuations definitions that will be used for this study.

Term	Definition
Economic fluctuation	The upward and downward movements of levels of real global GDP. It refers to the period of growth and recession in the level of economic activities around its long-term growth trend (Madhani, 2010).
Economic recession	A period of recession can be defined when the global GDP growth is or has declined below an average real GDP growth of 3% (IMF, 2008) for at least one year.
Economic growth	A period of growth can be defined when the global GDP growth is above an average real GDP growth of 3% (IMF, 2008) for at least one year.

Table 2.2 Economic fluctuation definitions.

2.1.3   Identifying economic fluctuations

To identify and determine economic fluctuations one should first choose a scope and period for analysis. The scope of this study is at the real GDP fluctuations. The period of analysis of economic fluctuations will be defined on the basis of the important and major development of globalisation in the recent past.

The essential attribute of globalisation is an increase in the degree of market openness in most countries. Three important dimensions of globalisation, hereafter explained, are international trade, investment and finance (Nayyar, 2006). The international trade has almost exponentially increased in the last decades. International trade increased from $61bln in 1950 to $883bln in 1975 and to $6338bln in 2000. World foreign direct investment flows as proportion of the world gross fixed capital formation rose from 2.6% during 1981-85 to 3.6% during 1986-90, 4.7% in 1991-95, and to 12.3% during 1996-2000. International finance has achieved similar growth (Nayyar, 2006). One can conclude that since the early 1990s, markets have become more open and connected in most countries. If we look at globalisation indexes the trend is similar. The U.S index of globalisation[7], as an example, rose from 4,56 in 1975 to 4,61 in 1980, 4,53 in 1985, 4,50 in 1990, 6,09 in 1995, finally to 6,48 in 2000 (Dreher, 2006). The focus of this study is on global active, giant, agribusiness firms. This study therefore focuses, due to a more integrated globalized and open economy since the 1990s, on economic fluctuations since the late 1980s.

Using our scope and period of analysis, we identify four periods of recession since the late 1980s (table 2.2). The first recession documented was in the early 1990s. Second the 1998 recession. Third the 2001 recession, and finally there was the 2008 recession[8]. The appointed periods of economic recession are alternated, in accordance to our definition, with periods of economic growth.

These economic recessions have had a different cause, duration, depth and diffusion. As an example, it is assumed that the recession of the early 1990s is caused by a sharp fall in consumer trust. In contrast, the recession of 2001 started from businesses with a cut back in investment leading to decline in output (Stock & Watson, 2003). The 1998 recession hit in particular the economies of Asian countries (Chang et al., 2009). Literature does not provide insights whether the economies of European countries where also hit by a recession during 1998. Since duration, depth and diffusion of economic fluctuations are not unambiguously indicated in literature, we need to obtain additional data on real GDP growth rates. For information and data on economic fluctuations, one can use real GDP data. Instead of using real GDP data at country level, this study uses aggregate countries data on real GDP growth rates for the purpose of identifying aggregate economic fluctuations. Three aggregate

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[7] The indices range between 0 (not globalized) and 10 (globalized).
[8] Here there are some references for each recession: 1990 recession (e.g. Stock & Watson, 2003; Hall, 1993; Blanchard, 1993, Plunkett et al., 1993). 1998 recession (e.g. Chang et al., 2009; Bowden & Zhu, 2008; Langley, 2000; Coyle et al., 1998; Ito, 2007). 2001 recession (e.g. Mian & Sufi, 2010; Stock & Watson, 2003). 2008 recession (e.g. Eaton et al., 2011; Mian & Sufi, 2010; Giannone et al., 2011).
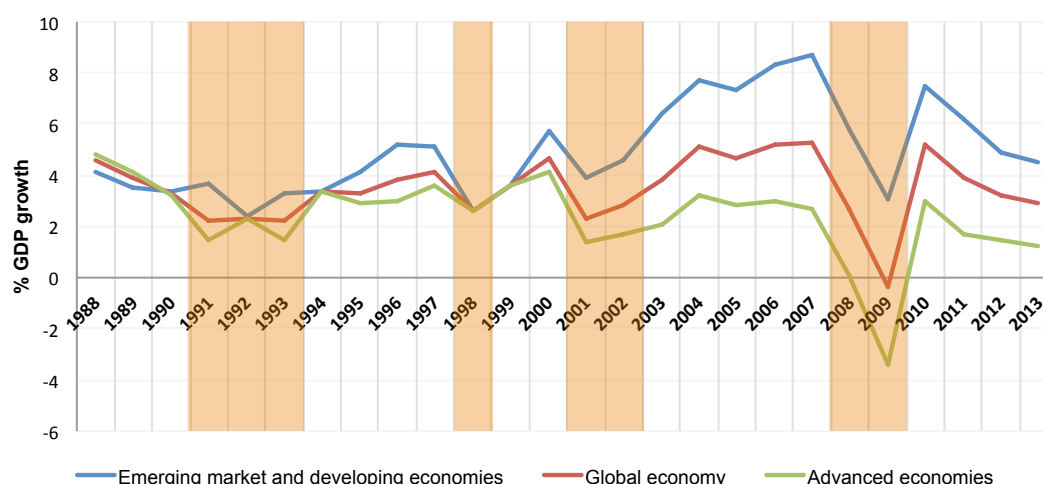
Figure 2.1 Real GDP fluctuations, data source: IMF, 2014.

country datasets, obtained from the IMF (2014) are used[9]. The first dataset contains real GDP growth data on emerging markets and developing economies. The second dataset contains data on real GDP growth of advanced economies. The third dataset on real GDP growth contains data on the global economy defined on the basis of (1) aggregate emerging market and developing economies; and on (2) advanced economies.

The economic fluctuations are represented in the real GDP fluctuations[10] (figure 2.1). The orange areas represent, according to our definition of recession, the recessions for the aggregate global economy in the period 1988-2013 (i.e. 1991-93, 1998, 2001-02 and 2008-09), whereas the white areas represent periods of growth (i.e. 1988-90, 1994-97, 1999-2000, 2003-07, 2010-13). The identified economic fluctuations confirm those found in literature.
Note that the global economy is an aggregated visualisation of the real GDP growth rate of approximately 260 countries. At country level there can be differences in the outcome of the real GDP. Besides, there is a clear difference between the real GDP growth rate of developing economies and advanced economies. We earlier conclude on the influence of globalization and see that it has influenced the real GDP growth rate of the developing economies. Although there are differences in real GDP growth rates, the results indicate that both developing economies and advanced economies face approximately the same fluctuations.

Verifying whether the periods of real GDP growth and recession are perceived similarly by the two largest (aggregate) economies, the United States and the European Union, is another interesting aspect we consider. As concluded previously, periods of recession are generally shorter than periods of growth. It is therefore useful to analyse whether the bureaus of economic research, i.e. the NBER and CEPR, define similar periods of recession (table 2.3).

The periods of recession identified for the both (aggregate) economies are not similar with respect to the earlier identified recessions. Explanation for this dissimilarity can be found in their different definition of 'recession'. An example, when analysing annual data (fig. 2.1)

US economic recessions	Euro area economic recessions
Jul 1990 - Mar 1991	Apr 1992 - Sep 1993
Mar 2001 - Nov 2001	
Dec 2007 - June 2009	Mar 2008 - Jun 2009
	Okt 2011 -

Table 2.3 US and Euro area economic recessions, data source: NBER (2010) and CEPR (2012).

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[9] Appendix two provides a detailed list of countries defined as emerging market and developing economies and countries defined as advanced economies.
[10] Appendix three provides the data that is used to form the aggregate economic fluctuations.

Economic fluctuations, Agribusiness Strategies and Performance

we identify a recession for the year 1998. The NBER and CEPR do not consider this recession (table 2.3). They recognize a recession only if it lasts longer than two quarters instead of being a short interruption of a growth period. To illustrate, the real GDP grows by 3,5% in one quarter, then declines by 2% in the second quarter, grows by 0,5% in the third quarter and declines by 1% in the fourth quarter. The annual growth is 2%, but essentially the NBER and CEPR do not identify this recession. From the NBER and CEPR's perspective one can appoint the recession period of 1998 as a precursor for the later recession in 2001-2002, a recession that is also not recognized by the CEPR, but we shall clarify this.

Another consideration that indicates the difference in definitions is that the NBER and CEPR use at least one macroeconomic indicator besides real GDP to define recessions. The 2001 recession is despite of a real GDP growth below 3% not observed as a Euro area recession since there was not (yet) a decline in employment (CEPR, 2012). Though some defined periods of recession are not recognised by the NBER and CEPR, we hold on to the earlier defined periods of recession, since it is expected to have considerable impact on agribusiness firms' performance.

2.1.4   Conclusion

This section identified economic fluctuations. After defining the terms "economic fluctuation", "recession" and "growth", this section focussed on how to measure economic fluctuations. The real global GDP is chosen for measuring economic fluctuations. Since globalisation has made major progresses since the early 1990s, the focus in this study is on global economic fluctuations between the late 1980s and 2012.

The established definitions on periods of global recession and growth provide the possibility to answer the first research question: *"What recent economic fluctuations have been identified in the literature?"* Economic fluctuations are identified and recognized by literature. Periods of economic growth (1988-90, 1994-97, 1999-2000, 2003-07, 2010-13) and recession (1991-93, 1998, 2001-02 and 2008-09) are identified. One should consider that the defined periods are not established to act as an indicator for periods from trough to peak or peak to trough. They function as an indicator and basis to investigate how agribusiness firms' performance is influenced by the economic fluctuations, and that is the subject of section 2.2.

2.2   Influence of economic fluctuations

Changes in the economy affect the performance of agribusiness firms. In section 2.1 we defined and identified periods of economic growth and recession. In this section we aim to understand the influence of economic fluctuations on agribusiness firms' performance. This section covers the research question: *"What are the prevalent literature insights on how agribusiness firms' performance is impacted by economic fluctuations?"* Paragraph 2.2.1 describes the general influences of economic fluctuations on agribusiness firms' performance. Paragraph 2.2.2 describes macro-level influences of economic fluctuations for defined periods of economic recession. Paragraph 2.2.3 describes meso-level influences of economic fluctuations. Finally paragraph 2.2.4 concludes on the influence of economic fluctuations on agribusiness firms' performance.

2.2.1   General Influences of economic fluctuations

Various studies have focussed on the performance of agribusiness firms and questioned whether firms' performance follows similar patterns as the economic fluctuations. Some studies conclude that the performance follows similar patterns as the economic fluctuations, e.g Neftci (1984); Hamilton, (1989) and Morly & Piger (2012). Other studies, e.g. Rumelt (1991) and Mc Gahan & Porter (1997) who also covered agriculture in their analysis as well, emphasise that year specific effects have less influence on firms' performance compared to industry or business specific effects. Though there are considerable differences in the outcomes of the studies, the appointed studies all conclude that year effects have influence on firms' performance and firms' performance follow similar patterns as the economic fluctuations.

	Economic Growth	Economic Recession	Emphasized by
Interest rates	Decrease	Increase	e.g. Hamilton, 2005; Detre et al., 2006; Crucini et al., 2011
Employment	Increase	Decrease	e.g. Hamilton, 2005; Madhani, 2010; Dave & Kelly, 2012
Investment	Increase	Decrease	e.g. Ahmed et al., 1993; Justiniano, 2010; Crucini et al., 2011

Table 2.4 Macro-economic influences of economic fluctuations.

As economic fluctuations influence general firms' performance, it is interesting to consider how agribusiness firms face economic fluctuations. Agribusiness firms, together with different industries in the general economy face due to economic fluctuations e.g. changes in taxes, exchange rates, and money supply (Stock & Watson, 2003; Hamilton, 2005). Besides, literature indicates that macro-economic changes impact agribusiness firms' performance while looking at interest rates, employment and investment during a period of economic growth and recession (table 2.4).

2.2.2 Macro-level influence of economic fluctuations

With the assumption that agribusiness performance is impacted in various ways by economic fluctuations, it is interesting to assess the economic fluctuations at macro level. Macro level perspective is about understanding the behaviour of the economy as a whole. Rather than focussing on particular agribusiness industries, this paragraph focuses on the influences of economic fluctuations on agribusiness firms' as whole. With the knowledge that economic recessions bring considerable decrease in business performance, this paragraph at first describes at macro-level how four recent recession periods 1991-93, 1998, 2001-02 and 2008-09, identified in section 2.1.4, influence agribusiness performance.

1991-93 recession   The global real GDP growth rate stagnated during 1991-93 at an average of 2,25% (IMF, 2014). It is assumed that the course of the recession was a sharp fall in consumption, a response by consumers to the uncertainty raised by Iraq's invasion of Kuwait, and the associated spike in oil prices (Blanchard, 1993). Though the U.S. experienced the stagnation earlier than the EU area[11], it affected many countries, resulting in growing unemployment, declining investment and currency market instability (Plunkett et al., 1993; Hall, 1993). Besides, the growing unemployment in agribusiness was partly due to the rationalizing production structure, i.e. streamlining, rather than expanding capacity and due to the key structural phenomenon that companies where improving productivity by reducing staff and implementing the use of computers and telecommunications. The higher unemployment caused a decrease in further consumer spending (Plunkett et al., 1993; Hall, 1993).

In conclusion, the 1991-93 recession is highlighted by various issues that caused the recession; (1) consumer confidence decline; (2) a decline in the real money supply; (3) a decline in fixed and inventory investment; (4) spikes in oil prices; and (5) structural need for developed countries to make adjustments due to increased global competition (Blanchard, 1993; Sinai, 1992; Stock & Watson, 2003; Hall, 1993; Helbling et al., 2011).

1998 recession   The international financial upheaval that began in Thailand in July 1997 and subsequently spread to different countries set back economic growth and trade worldwide (Ito, 2007; Chang et al., 2009; Langley, 2000). The global real GDP growth slipped from 4,1% in 1997 to 2,6% in 1998 (IMF, 2014). The recession led to depreciated currencies and higher interest rates in e.g. Thailand, Indonesia, South Korea, Russia Brazil, and other Latin American countries (Langley, 2000). The macro-economic shocks affected agricultural prices, production, consumption and trade (Coyle et al., 1998). Firms' in the countries affected by the recession benefitted from the currency depreciation, but the reduced imports of agricultural products from less crisis-affected countries, e.g. United Stated, Australia, European Union were a disadvantage for the consumers (Coyle et al., 1998).

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[11] U.S Economic recession: 1990-91 (Blanchard, 1993; NBER, 2010) EU area economic recession: 1992-93 (CEPR, 2012).

The financial 1997-99 crisis led to a trade value decline of 23% in real terms of U.S. agribusiness firms' export and other trade-dependent sectors (Langley, 2000). Due to increased export to North American Free Trade Agreement (NAFTA) members, the decline in U.S. export volume was partly offset (Langley, 2000). For the European Union (EU), the international trade was, especially to Asia and Russia, disrupted by a slow-down of growth of world demand for food, particularly expressed in a declining demand for high-value products (e.g. meat) (Commission of the European communities, 1999).

To conclude, the impact of the 1998 recession on agribusiness firms' performance was limited. Besides, the recession passed quickly. The recession was highlighted by (1) low oil prices and low inflation; (2) solid financial markets and banking systems; and (3) solid productivity and investment growth (Langley, 2000). One can understand that the economy receives a boost from low input prices, attractive financial markets and overall performance is increased by low interest rates. The recession of 1998 was therefore an incentive for high plant and equipment investment spending to increase productivity and profitability (Coyle et al., 1998; Commission of the European communities, 1999; Lanley, 2000).

2001-02 recession   The global real GDP growth declined during 2001 to an annual growth level of 2,3% compared to an annual growth level of 4,7% in 2000 (IMF, 2014). The U.S. experienced the 2001-02 recession earlier than the EU. The manufacturing and trade sales fell during the first quarter of 2001. Personal income reached a cyclical peak in November 2000 and declined by 1.5% over the next twelve months. This relative small decline in personal income reflected the unusual fact that productivity growth remained strong through this recession (Stock & Watson, 2003)

EU agribusiness firms experienced an abrupt decrease in global trade. The effect was particularly noticeable in the meat sector[12] and competition from third countries in the cereals sector increased. In 2002 the global trade of the EU improved slightly compared to 2001 levels, but a strengthening currency[13] during 2002 limited EU agribusiness firms' exports (Commission of the European communities, 2004).

Global real GDP recovery in 2002 was low. After 11 September 2001 an atmosphere of uncertainty brought about by the combined effect of geopolitical tensions especially in the Middle East, which led to higher oil prices, less attractive financial markets and uncertainty about the true state of the economy. This undermined confidence and led to on going weakness in recovery (Commission of the European communities, 2004).

In conclusion, the 2001-02 recession is characterised by (1) a sharp decline of stock markets; (2) a decline in business investment; (3) the impact was particular on manufacturing and production, but diffused only little to general employment, incomes and consumption; (4) a decline in global agribusiness firms' trade; and (5) slow initial global real GDP recovery (Stock & Watson, 2003; Commission of the European communities, 2004).

2008-09 recession   The global economic crisis, started in 2008, has led to a 2.6% decrease in real GDP growth rate during 2008 and an additional 3.1% decrease during 2009 (IMF, 2014). The crisis led to a sharp decline of international trade, including a short-term decline, of around 20%, in the value of global agricultural trade (Peters et al., 2009).

Agribusiness firms' trade was primarily affected by the realignment of real exchange rates and that realignment's effect on real income. The recession of 2008-09 led to a 15% appreciation of the U.S. dollar between July 2008 and March 2009 (Peters et al., 2009). The appreciation created a competitive advantage in global markets for the export activity of agribusiness firms' operating in e.g. EU, Australia and Brazil since their currency declined in value relatively to the U.S. dollar (Peters et al., 2009).

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[12] In addition to the recession did animal disease hit the meat sector in 2001. This causes lack of confidence in the European meat industry (Scott et al., 2004).
[13] A strengthening currency results in lower export earnings, lower agricultural commodity prices, decreased production and decreased agribusiness firms' income (Peters et al., 2009).

The crisis had an impact on emerging as well as developing economies. The economic prospects of developing countries are important for the determination of trade towards increased high-value products (Peters et al., 2009). Consumers in developing countries are more sensitive to changes in real GDP because of their low levels of per capita income (Peters et al., 2009). While real GDP growth in developing countries did slow down 2,9% during 2008 and 2,7% during 2009, the real GDP growth of developing countries was still 3.1% during 2009 (IMF, 2014). Trends in consumption that existed before the crisis in emerging and developing economies, such as the movement of diets toward increased meat consumption, continued, although at a slower rate (Peters et al., 2009).

To conclude, the 2008-09 recession is highlighted by (1) a shock in credit markets and real money supply; (2) the recession is mainly caused by financial sector problems; (3) a realignment of real exchange rates; (4) a decline in global agribusiness firms' trade; and (5) a decline in employment (Helbling et al., 2011; Peters et al., 2009; Dave & Kelly, 2012).

As the literature shows that periods of growth and recession often give the opposite result in firms' behaviour, we do not focus more in depth on how periods of economic growth influence agribusiness performance. To conclude on macro-level influences, the literature indicates that agribusiness firms' performance is impacted by the identified economic recession. Cause and effect of economic fluctuations are closely related. This study does not explicitly focus on the causes of economic fluctuations and therefore does not consider in detail what causes the economic fluctuations. Though the causes and effects differ per period of economic growth and recession, literature overall indicates that agribusiness firms' performance is impacted by economic fluctuations, expressed in e.g. changes in employment, investment and agribusiness firms' trade (figure 2.3).

Finally, literature indicates that changing consumer confidence, behaviour and expenditure as a consequence of economic fluctuations, influence agribusiness firms' performance (Commission of the European communities, 1999; Coyle et al., 1998). The changing behaviour and expenditure of consumers has a direct influence on the financial performance of agribusiness firms' active in various sectors (e.g. meat, dairy, processed foods). It is worth searching for literature that describes the influence of economic fluctuations on agribusiness firms at meso-level.
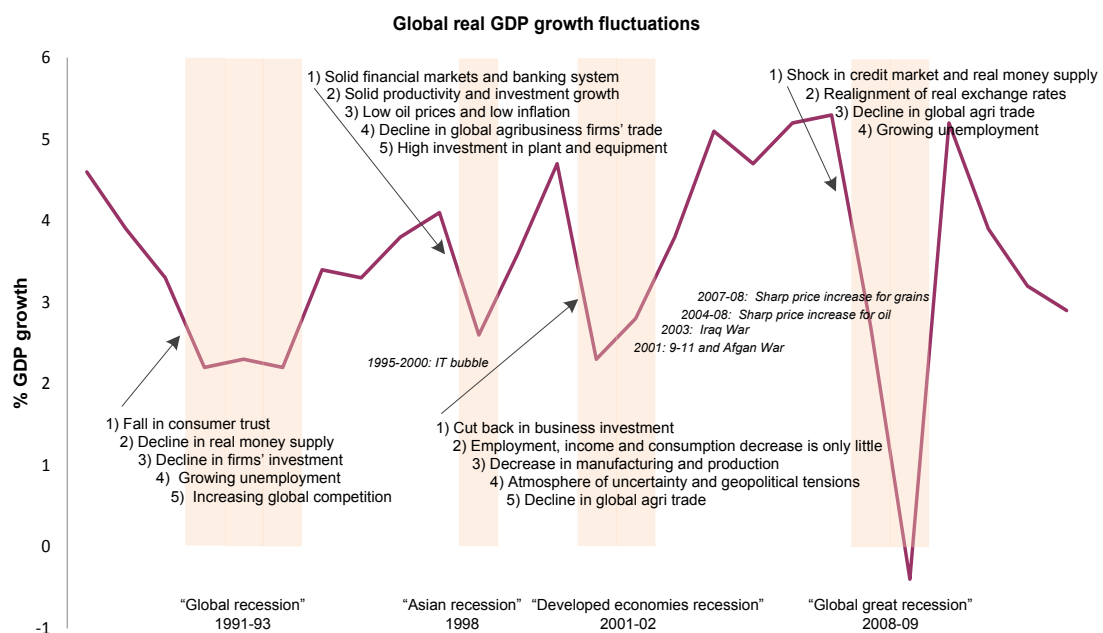

Figure 2.3 Influences of economic fluctuations, source: authors elaboration of appointed literature.

2.2.3 Meso-level influence of economic fluctuations

With the assumption that consumers change expenditure behaviour as a consequence of economic fluctuations, we assess in this section the meso-level influence of economic fluctuations. From an economic perspective, supply and demand is in equilibrium during the different phases of the economy. The equilibrium for agribusiness products differs with respect to periods of economic growth and recession since the marginal benefit and costs of the products differ per period. This study earlier concluded that consumers' general wages and employment in a period of recession decrease[14], we therefore conclude that the aggregate income is affected by recession periods. As the aggregate income changes so does the marginal benefit perceived from buying food products (Cramer et al., 2001; Dave & Kelly, 2012). We therefore expect changes in consumers' expenditure behaviour during periods of economic growth and recession.

Some economic literature suggests that during economic recessions consumers change behaviour and reduce their spending on food. This behavioural change comes in various forms. As an example, a higher unemployment rate is associated with a reduction in the consumption of fruits and vegetables and increased consumption of 'unhealthy' foods such as snacks and fast food (Ruhm, 2003; Dave & Kelly, 2012; Asgeirsdottir et al., 2012). While some studies suggest that health may increase during a period of economic growth, the majority of studies point that periods of economic growth are associated, though temporary, with increases in mortality, alcohol consumption, smoking, physical inactivity, and other outcomes related to health (Ruhm, 2005; Dave & Kelly, 2012).

A different aspect that indicates the change in consumers' behaviour during economic fluctuations is the growth of private label products during the 2007-08 recession. U.S sales of private label fresh meat products during the recession period experienced a growth of 27% compared to a 12% growth of branded fresh meat products in the period of October 2007-08 (Pruitt & Raper, 2010). Shifts in the consumption of meat products occur due to changes in household budget constraints and relative prices of the products themselves. The choices become more evident in economic downturns as consumers' budgets tighten and consumers modify their spending. These changes reflect a desire of consumers to provide food for their household as cost effectively as possible (Pruitt & Raper, 2010), a desire that is assumed to have consequence for agribusiness firms' performance.

Although literature on meso-level influences does not indicate the influence of economic fluctuations on the performance of agribusiness firms active in different sectors, it does provide some information on the influence of economic fluctuations on consumers' behaviour. Literature indicates that (1) consumers' aggregate income is affected by economic fluctuations, resulting in a changing equilibrium for agribusiness products during phases of economic growth and recession; (2) falling income in periods of recession change consumers' expenditure behaviour and creates pressure to purchase the foods with a lower cost price.

2.2.4 Conclusion

This section provided answer on the sub-question: *"What are the prevalent literature insights on how agribusiness firms' performance is impacted by economic fluctuations?"* Regarding interest rates firms' investment and firms' employment, literature indicates that agribusiness firms' performance is influenced by economic fluctuations (section 2.2.1). Besides, the performance follows similar patterns as the economic fluctuations. Periods of global economic growth manifest in an increase in financial performance, whereas periods of global economic recession manifest in a decrease in financial performance. Taken the reviewed literature, the following proposition can be tested:

Proposition 1. Economic growth is positively associated with agribusiness firms' performance.

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[14] E.g. during the global recession of 2008-2009 the U.S. unemployment rate doubled from 5% to 10% (Dave & Kelly, 2012).

Understanding the performance of agribusiness firms in connection to economic growth/recession is a start in understanding firms' strategy. Lack of evidence for the proposition may imply that periods of global economic growth do not significantly result in higher performance for agribusiness firms compared to periods of global economic recession. This would indicate that firms either respond adequate, or they do not have a financial incentive to revise their strategy due to economic fluctuations.

Literature on four recent recessions (i.e. 1991-93, 1998, 2001-02 and 2008-09) indicates that there is a difference in how the performance, e.g. expressed in trade and employment, of agribusiness firms is influenced by the various economic recessions. Besides, the causes of economic recessions differ per defined recession. During the recession period 1991-93, a sharp decline in consumer trust caused a period of economic recession. In contrast a cutback in business investments caused the recession of 2001-02. To conclude, the cause of recessions and the sequence of macro-level changes influence the performance of agribusiness firms in various ways, though there is no consistency in how agribusiness firms' performance is influenced by different periods of economic recession.

Although meso-level literature on how the performance of agribusiness is impacted by economic fluctuations is rather scarce, consumers' marginal benefit perceived from buying food changes during economic fluctuations. Literature does not indicate what this means for the performance of agribusiness firms active in different sectors. Nevertheless, we expect that periods of economic growth and recession impact agribusiness firms' performance and will influence firms' price and product policy. Agribusiness firms are expected to reduce costs in periods of global economic recession, whereas periods of global economic growth are expected to be incentive for increased expenses and investment. Advanced macro- and meso-level research of firms' strategies is needed to complement this topic, and that is the subject of section 2.3.

2.3 Macro-environment and strategy

Business strategy focuses on balancing organisations strengths and weaknesses with the opportunities and threats in the external environment. The external (macro) environment and firms' strategy is of concern in this section. Understanding the influence of macro-environmental factors on strategies is a third step in understanding how economic fluctuations influence agribusiness firms' strategies. This section covers the research question: *"What are the prevalent literature insights on how macro-environmental factors impact on strategies?"* Paragraph 2.3.1 defines strategy. Paragraph 2.3.2 describes how firms' strategies. Finally paragraph 2.3.3 concludes on the impact of macro-environmental factors on firms' strategies.

2.3.1 Defining strategy

Strategy is a key issues for the long-term programming of organisations. It is about what the competitive game plan will be (Collins & Rukstad, 2008). Two different frameworks of business strategy are the Miles and Snow, and Porter typologies (Slater et al., 2011). Miles and Snow (1978) distinguished four strategy approaches of how firms strategies in their product-market domains, i.e. prospectors, defenders, analysers and reactors, Porter (1980) on the other hand proposed that business strategy should be viewed as a product of how the firm creates competitive advantage, i.e. differentiation or low cost, and how it defines scope of market coverage, i.e. focused or market wide. The business strategy typology of Miles and Snow is reviewed by Slater et al. (2011) by means of empirically analysing the four different strategy approaches on the performance of firms. Though the sample size was somewhat limited (i.e. 217 samples), the study concluded that within-group performance variation was greater than between-group performance variation. The outcome suggests that a reason for achieving superior performance is not to have a particular strategy approach, i.e. prospector, defender, analyser or reactor. One should look at strategies as a product of how the firm creates competitive advantage. The stance that strategy is a product that helps firms creating competitive advantage allows one to review studies on strategy definitions before defining strategy for this study, see table 2.5.

Definition author	Definition
Chandler, 1963	The determination of the long-run goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources (Husted & Allen, 2000)
Mintzberg, 1978	An observable pattern in a stream of actions (Spanos et al., 2004)
Collis & Rukstad, 2008	The objective and scope of an organisation to achieve advantage (Collis & Rukstad, 2008)
Porter, 2008	Strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value (Porter, 2008)

Table 2.5 Definitions of strategy.

The aforementioned literature indicates important and distinct elements of a strategy. Chandler (1963) emphasises that strategy logically flows from the determination of goals and objectives to the allocation of resources. Mintzberg (2007) uses the word 'pattern' to allow for the fact that strategies not always follow a deliberately chosen and logical plan, but can emerge in more an ad hoc way. Porter (2008) focuses on deliberate choices, difference and competition. Although the definitions have differences, there are also similarities, i.e. a strategy should encompass a certain scope to work towards set objectives. A distinction between the definitions is that e.g. Mintzberg (2007) does not provide a clear path of what a strategy should encompass. It is rather a description of how one can recognize a strategy after some time. In contrast, Porter (2008) provides insight in what a strategy should encompass to provide a basis for people involved in strategy. According to the purpose (e.g. analysing strategy or developing strategy) one should choose a definition of strategy. The purpose of this study is to analyse strategies over a time path of three decades. The definition of Mintzberg (1978), "strategy is an observable pattern in a stream of actions" suits to categorically analyse strategies and therefore, will be used in this study as definition for strategy.

2.3.2   Strategy development

Next to the definition of strategy, one can study how firms' develop strategy, to gain knowledge on how macro-environmental factors impact on and drive changes in firms' strategies. People, especially executives, shape a firms' profile. They set the organizational climate, they influence the atmosphere in the organization and they determine the strategy of the company. Strengths, weaknesses, opportunities and threats (SWOT) in the internal- and external-environment are aspects of input for firms' strategy and policy (see Weihrich, 1982; Panagiotou, 2003; Helms & Nixon, 2010 for examples).

To obtain knowledge on how firms use the internal- and external-environmental influences for developing strategies one should look at strategic management literature. Private sector organizations tend to develop strategies in an attempt to meet the demands of a variety of stakeholder groups (Miles et al., 1997). These stakeholders include (1) society at large; (2) shareholders (3) local, regional, national and global communities; (4) employees of the firm; (5) trade and marketing associations; (6) suppliers and strategic partners; (7) government and inter-government agencies; (8) banks and other sources of capital; (9) various political groups (Schroder & Mavondo, 1994; Miles et al., 1997). To meet the demand of stakeholders and to deal with an uncertain external environment firms use strategic planning as a management tool (Nayga & Baga, 1995). Because firms differ with respect to their internal- and external-environments, different firms adopting widely different strategies may perform equally well (Schroder & Mavondo, 1994). The connotation of firms using different strategies reflects the conclusion of Slater et al. (2011): strategy is a product of how a firm creates competitive advantage. This connotation, important for this study, should be kept in mind. The connotation will be dealt with later, i.e. section 2.4.2, for defining expected agribusiness firms' strategies.

To conclude on the influences of macro-environmental factors on firms' strategies, we need to further review the literature on strategy development and obtain knowledge on whether and how firms use the opportunities and threats in the external environment. From the literature, one can obtain at least two, extensively discussed, different views on leading approaches for

developing strategy. The outside-in view, focussed on the external-environment and the inside-out view, focussed on the internal-environment. Examples of studies that support the outside-in view are: Waring (1996); McGahan & Porter (1999); Slater et al. (2011). Examples of studies that support the inside-out view are: Rumelt (1991); Barney (2001); Winter (2003); McNamara et al. (2005) (Schiefer et al., 2013). The outside-in and inside-out views, both supported by several authors, have major different consequences for how firms' strategies and what information firms use as strategy input. The inside-out view is more supported by (recent) literature compared to the outside-in view. However, we earlier conclude that economic fluctuations influence agribusiness firms' performance. It would therefore suit, contrary to most literature in this field, to assume that agribusiness firms' use macro-environmental factors as input for strategy. However, to understand the influence of macro-environmental factors we should assess them more in depth.

Various macro-environmental factors [15] can be considered, e.g. inflation, technological change, government actions and exchange rates (Pangiotou, 2003). One can appoint the macro-environmental factors by using for example the PESTEL-framework [16]. One can analyse the diverse factors, which can be either threats or opportunities, by making use of the SWOT method. There are no formulas to guide the choice of environmental factors to consider; the features of a firms' business will determine what factors are relevant (Walsh, 2005). Considering our earlier conclusion that e.g. changing exchange rates and inflation influences agribusiness firms' performance, we expect that agribusiness firms use environmental factors as input for strategy. Besides, a considerable number of studies [17] support the positive relationship between environmental change and firms' change of strategy (Walsh, 2005).

A second method, which firms can apply to on an ex ante basis to deal with macro-environmental factors, involves the use of scenarios to create a model of a possible environment (Walsh, 2005). Strategic advantage can be achieved from the process of scenario planning since it improves the understanding of decision outcomes resulting from analysis of various scenarios and their impact on firms' performance (Walsh, 2005). Scenario planning is a rationalistic approach, whereby firms believe that their dynamics are predictable (Heijden, 1996). Though the process of strategy formation is a dynamic one since it corresponds to the dynamic conditions of the internal- and external-environment, firms using macro-environmental factors as input for developing strategy can use scenario planning. Scenario planning can help to balance the opportunities and threats firms' face. Question arises how likely it is that listed agribusiness firms use scenario planning.

Shareholders of listed agribusiness firms' are interested in both a firms' strategy and a convincing plan to realize the strategy. Scenario planning can help understanding the risks firms take to achieve a strategy. While considering that this study focuses at listed firms, we expect that the agribusiness firms use besides the external,- and internal-analysis, scenario planning in order to strengthen their strategies. We expect firms to use scenario planning and foresee that firms' react on changing risks and opportunities due to macro-environmental changes.

With the assumption that firms react to a changing macro-environment, we can look at empirical work in the field of agribusiness strategy. Although business strategy is seen as being a high priority research area in agribusiness literature (Schroder & Mavondo, 1994), there is little in the way of empirical studies to support the findings. A study on different sized agricultural cooperatives support the suggestion that agribusiness, regardless of size, have adopted strategic planning as a source of achieving competitive advantage (Miles et al., 1997). Both co-operatives and corporations use formal methods to assess the (future) environment for the purpose of meeting the objectives and expectations of their stakeholders (Miles et al., 1997). Although few studies did research on macro-environmental factors and

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[15] Weihrich, 1982 provides an in depth explanation on the macro-environmental factors.

[16] PESTEL refers to political, economic, social, technological, environmental and legal factors (Walsh, 2005).

[17] e.g. Corsi et al., 1992; Smith & Grimm, 1987; Haveman 1992; Shortell & Zajac, 1990; Chwalowski, 1997.

the influence on strategies, the studies did not consider the influence of particular macro-environmental aspects. General findings of the studies indicate that firms make their strategy choice subject to the constraints and opportunities presented by the macro-environment (Mavondo 1999). In sum, we conclude, though limited supported, that agribusiness firms' strategies are interpretations of the challenges and opportunities presented by the broader environment. It is expected that agribusiness firms use the macro-environmental aspects as input for developing strategy, i.e. economic fluctuations are expected to be derivable from agribusiness firms' strategies.

2.3.3   Conclusion

This section provided answer on the sub-question: *"What are the prevalent literature insights on how macro-environmental factors impact on strategies?"* Literature indicates that firms' strategy, i.e. an observable pattern in a stream of actions (Mintzberg, 1978), is concerned with the 'fit' between firms' internal-environment (strengths and weaknesses) and firms' external environment (opportunities and threats). Because firms differ with respect to their internal- and external-environments, different firms adopt widely different strategies (Schroder & Mavondo, 1994).

Macro-environmental changes, perceived as risks and opportunities, encourage firms to undertake a review of their strategies. Specifically, firms must address the change in the context of key success factors involved in creating objective and scope to achieve competitive advantage. It is expected that listed agribusiness firms' use the macro-environmental changes as input for developing firms' strategy. Literature is contradictory on using the internal (inside-out) or external environment (outside-in) as basis for the formation of strategy. Assessing whether firms use economic fluctuations as input for strategy may contribute to the discussion. Little empirical research has been found on the impact of marco-environmental factors on agribusiness strategies. This section is therefore primarily supported with theoretical literature.

2.4   Expected firm strategies

So far, this study has aimed to answer three research questions by (1) identifying economic fluctuations; (2) describing the influence of economic fluctuations on agribusiness firms' performance; and by (3) describing how macro-environmental factors impact on agribusiness firms' strategies. This section aims to answer the fourth research question: *"Which agribusiness strategies can be expected in connection to the identified economic fluctuations?"* The purpose of this section is to complement the literature study and to form propositions on agribusiness firm strategies.

2.4.1   Effects of economic fluctuation on strategy

This study aims to understand the influence of global economic fluctuations on agribusiness firms' strategies. Strategy, defined as an observable pattern in a stream of actions (Mintzberg, 1978), follows a certain long-term direction. To obtain knowledge on (changing) agribusiness firms' strategies one can either analyze corporate- business- and/or operational-strategies. Strategy is concerned with long-term developments (e.g. new products, new methods of production, new markets to be developed for the future) rather than with the day to-day operations (e.g. current sale and production) (Sutton, 1980). Firms' corporate strategy may therefore keep the eye on the longer-term, while at business and operational level shorter-term challenges are taken care of. This study focuses on long-term developments and therefore mainly considers corporate strategy.

To recognize and establish agribusiness firms' strategy orientation one can use various strategy formats. Four formats that are more often used: (1) Treacy & Wiersema (1995); the authors identify three typologies based on strategy content and outcomes: operational excellence, product leadership and customer intimacy; (2) Miles & Snow (1978); the authors' identify four typologies based on observing and describing process differences among organizations: prospectors, defenders, analyzers and reactors; (3) March (1991); the author identifies two typologies based on observed differences in firms' learning processes:

exploitation and exploration (Thornhill & White, 2007); and (4) Porter (1980); Porter defined a general typology of strategy that firms may use to achieve competitive advantage as: cost leadership, product differentiation and focus. Generally the strategy formats show broad similarities (Campbell-Hunt, 2000). All formats include cost efficiency as a key strategy (Thornhill & White, 2007). Yet there are also differences among the strategy formats. Miles & Snow (1878) as well as March (1991) focus particular at firms' (learning) processes whereas Treacy & Wiersema (1995) and Porter (1980) are more focused at strategy content and on how firms' create competitive advantage. The two latter strategy formats therefore appear to be better suited for our purpose, i.e. analyzing strategies.

Before selecting a strategy format for this research we further specify the formats of Treacy & Wiersema (1995) and Porter (1980). As mentioned, Treacy and Wiersema (1995) present three generic types of strategies that firms' might use. While using Treacy & Wiersema's (1995) typology, Thornhill & White (2007), select two strategy dimensions: product leadership and operational excellence for the purpose of testing generic strategies. Treacy and Wiersema's third dimension, customer intimacy (creating loyal customers), was not included in the study. One can speculate that it is hard to quantify customer intimacy for research purposes. Besides, Thornhill & White (1995) recognize that there are divergent opinions in literature on key attributes of customer intimacy. The two selected dimensions, product leadership and operational excellence are rather similar to Porter's defined generic strategy types: cost leadership and product differentiation (Thornhill & White, 2007). Despite the similarities in strategy formats, we select Porters' format, the generic competitive strategy model, for analysing agribusiness firms' strategies. We assume that Porters' strategy format[18] is of more complete and practical use for this study. The strategy format is based on two generic strategies, which leads us back to the topic of strategies.

Various authors claim[19], counter to Porter (1980), that firms can follow in addition to the cost leadership and differentiation strategy, a strategic orientation that combines cost leadership and differentiation in order to achieve competitive advantage (Leitner & Güldenberg, 2010). Our study therefore allows space for the analysis and recognition of combined strategies by threating Porters' generic strategies in accordance with Spanos et al. (2004) as dimensions rather than 'either/or' mutually exclusive categories. This study uses the notation of 'hybrid strategies' for description on combined strategies and shall therefore use the following strategy dimensions in order to classify firms' generic strategic orientations; table 2.6.

Firms' choice for a generic strategy direction is a fundamental decision that will not often change (Leitner & Güldenberg, 2010). Though this statement can be true, Porters' (1980) generic strategic typology does not provide insight in the rational strategic execution of firms' strategies. As an example, firms can follow a certain strategic dimension but choose due to macro-level influences at a certain moment to change their executional behaviour. Firms' score on the strategy variable change consequently, which can be tested. While we focus

Dimensions	Description
Cost-leadership strategy	Becoming the lowest cost producer of a product or service so that above-average profits are earned even though the price charged is not above the industry average (Stonehouse & Snowdon, 2007)
Hybrid strategy	A strategy that combines low cost with differentiated products or services (Stonehouse & Snowdon, 2007)
Differentiation strategy	Creating a customer perception that a product or services is superior to that of other firms, based on brand, quality, and performance, so that a premium price can be charged to customers. (Stonehouse & Snowdon, 2007)

Table 2.6 Generic strategic orientations.

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[18] Published back in 1980, the model is still widely used in literature, e.g. Julien & Ramangalahy, 2003; Shrader & Siegel, 2007; Capelleras & Rabetino, 2008 (Leitner & Güldenberg, 2010).
[19] Examples of studies that argue for 'mixed' strategies are Miller and Dess, 1993; Spanos et al., 2004; Parnell, 2005; Thornhill & White, 2007.

mainly at strategy directions, the executional behaviour in connection to firms' performance is another interesting aspect we address. The following proposition will be tested:

Proposition 2. The higher firms' score on strategy, the more positive it is associated with firms' performance.

As noted, regarding agribusiness firms' strategies, empirical literature does not provide sufficient insight on how macro-environmental factors, in this case economic fluctuations, have an influence on agribusiness firms' strategies. However, since literature shows us that agribusiness firms' performance is impacted by economic fluctuations, we expect agribusiness firms' to revise their strategic orientation due to economic fluctuations, in order to achieve advantage in a changing environment. The following proposition will be tested:

Proposition 3. As the economic growth changes, agribusiness firms' strategic orientation changes.

This study concluded (i.e. section 2.2.4) that customers' marginal benefit perceived from buying food products change during economic fluctuations. We assume and expect to find empirical evidence supporting the statement that economic growth and recession results in differences in agribusiness firms' performance and firms' price and product policy. Therefore, we also expect considerable changes in the strategic orientation of agribusiness firms.

First we look at firms cost efficiency orientation. We expect to notice that firms' cost efficiency orientation decreases as the economic growth increases, resulting in a lower level of cost efficiency. Second, we expect an increase in firms' differentiation orientation as the economic growth increases, whereas lower economic growth shows a reduction of firms' differentiation orientation. Taken the reviewed literature the following proposition will be tested:

Proposition 4. (4a) As the economic growth increases, agribusiness firms' cost efficiency decreases **(4b)** As the economic growth increases, agribusiness firms' differentiation orientation increases.

While we focus on firms' strategies, investment behaviour is another interesting aspect we consider. Understanding agribusiness firms' investments, whether it is internal growth or through acquisitions, can help understanding how the firms' follow investment strategies in periods of economic growth and recession. We earlier conclude in section 2.2.1 that interest rates decrease during periods of economic growth and increase during periods of economic recession. Besides, empirical evidence on investment behaviour has been found: e.g. Ahmed et al., 1993; Justiniano, 2010; Crucini et al., 2011. Periods of economic growth are stimulus to increase investments whereas periods of economic recession are stimulus to decline investments. Taken the reviewed literature on interest rates and firms investment behaviour the following propositions can be tested:

Proposition 5. (5a) As the economic growth increases, agribusiness firms' capital spending increases **(5b)** As the economic growth increases, agribusiness firms' acquisitions spending increases.

Figure 2.4 represents the propositions that will be tested in a framework. Before testing the propositions, we need to elaborate on our methodology first, and that is the subject of Chapter 3.
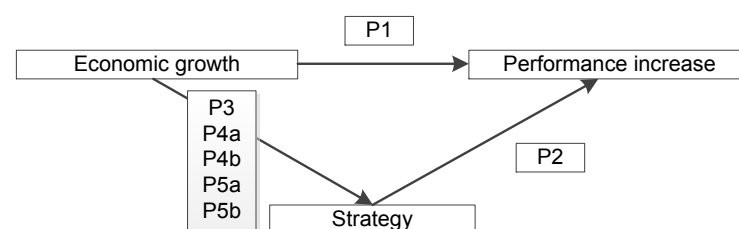

Figure 2.4 Propositions framework.

3 Research methodology

This section elaborates on the empirical research design. The structure of this chapter is as follows: paragraph 3.1 describes the sample and data that will be used. Paragraph 3.2 specifies the variables that will be used for analyzing the performance of the agribusiness firms.

3.1 Sample and Data

Although there is general agreement that context matters (Thornhill & White, 2007), the various approaches used in studies to categorize generic strategies all have different constraints (Leitner & Guldenberg, 2010). The selection of measurement, i.e. quantitative vs. qualitative, is therefore crucial when studying performance and generic strategies and can have great impact on the outcome. Various studies (e.g. Beal, 2000; Pelham, 2000; Thornhill and White, 2007 and Leitner, & Guldenberg, 2010) have determined strategy based on the answers provided by respondents, i.e. qualitative, whereas others (e.g. Spanos et al., 2004 and Wu et al., 2007) have used databases, i.e. quantitative. This study uses, in accordance to e.g. Spanos et al. (2004) and Wu et al. (2007), quantitative data rather than qualitative data for the purpose of exploring agribusiness firms' performance and strategies. It is expected that one is more able to indicate the developments and relationships over time between quantitative variables compared to qualitative variables. Besides, quantitative variables can explain the degree or percentage of influence on the dependent variable, which is more difficult for qualitative data.

The quantitative data used for this study were extracted from annual (financial) reports. The obtained annual reports, collected in 2014, provide comprehensive information, for the period 1988-2012, on listed agribusiness firms'. The sampling was based on annual sales. The selected firms are recognized by their sales as the giants (leaders), in the processed food, beverage and meat industry globally and their head offices are typically located in advanced economies of western economies[20]. The sample is composed based on availability of the annual reports via firms' websites and databases ABI/inform and Thomson Research. The data availability yielded a sample of 22 companies (appendix four provides company details) across three industries (55% in processed food industry, 22.5% in beverage industry and 22.5% in meat industry) with head offices located in advanced, western economies (59% in America and 41% in Europe). Although some data points are missing, the panel is strongly balanced[21]. This indicates that all firms have enough data to represent all years. Our sample shows in the period 1988-2012 median annual sales revenues of $22.2bln in processed food, $12.8bln in beverages, and $9.5bln in meat. The industries have in the period 1988-2012 a median of over 105,000 employees in processed food, over 44,000 in beverage and below 49,000 employees in meat. Before analysing the data we specify the variables of analysis.

3.2 Variables for the empirical model

The set of data considered allows us to define various variables for our analysis. In order to select variables for analysis we used our propositions as a guideline. The selected variables that will be used to test the propositions are explained in this section.

The first selected variable is return on capital employed (ROCE). The use of ROCE as an index of performance differs substantial from the known[22] use of return on sales (ROS). ROS represents the proportional difference between the output price per unit and the marginal cost of producing the unit. Martin (1993b) argued that ROS could be used to proxy performance provided that one controls for differences in capital intensity (Spanos et al., 2004). This latter argument should not be ignored. Appropriate data on capital intensity was not available for the studies of Spanos et al. (2004) and Wu et al. (2007). Although both authors recognized the limitations, they solely used ROS as a proxy for performance. In our view ROS indicates

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[20] The selection criteria have been used for the purpose of data availability. For a detailed list of countries that are recognized as advanced, western economies see appendix one.
[21] State13.0 has been used to handle the panel data.
[22] Studies that use ROS to proxy performance: e.g. Spanos et al. (2004) and Wu et al. (2007).

the ability to create buyer value so that firms can elevate prices above industry average, which can be associated, according to Porter (1991), with differentiation strategy.

ROCE can be seen as a more complete proxy. ROCE captures in the numerator the earnings of a company pre-interest expense and tax, and in the denominator the capital employed, calculated as shareholder funds plus reserves plus long-term debt (Andersson et al., 2006). The outcome is determined both by the profitability of sales, which can vary positively and negatively for either a cost leadership strategy or a differentiation strategy, and by the efficiency in the use of capital. The comparison is vital in assessing the effectiveness with which funds have been deployed. Agribusiness performance in the period 1988-2012 is measured as a one-year average of ROCE and is specified as:

$$Performance = \left(\frac{operating\ profit}{share\ capital + reserves + noncurrent\ liabilities} \right) \ (1)$$

While focusing also on performance, the purview of this study is on strategies. As mentioned, this study shall classify the strategic orientation into three dimensions: cost leadership, hybrid, and differentiation. To separate dimensions and provide answer on our propositions we use different measures. We approximate the executional dimension of cost leadership by using a measure of *labor efficiency*[23]. We approximated labor efficiency as average employee productivity, i.e. value added per employee. A higher ratio will normally suggest that the employees are being used more efficiently. It is specified as:

$$Labor\ efficiency = \left(\frac{sales\ revenue}{number\ of\ employees} \right) \ (2)$$

Besides, this research uses a second measure of efficiency by looking at the total asset turnover, expressed in terms of *capital efficiency*. Capital efficiency represents an additional element in Porter's typology, which together with labor efficiency defines a measure of overall efficiency and hence its emphasis towards lowering costs (Hambrick, 1983 according to Spanos et al., 2004). Capital efficiency, i.e. asset turnover, measures how effectively the capital of the business is being used to generate sales revenue. A higher ratio will normally suggest that the capital is being used more efficiently and productively in the generation of revenue and indicate orientation toward cost efficiency. Note that capital efficiency is in this study only used as a descriptive variable of efficiency and does not function like labor efficiency to express cost leadership. Capital efficiency is specified as:

$$Capital\ efficiency = \left(\frac{sales\ revenue}{total\ assets} \right) \ (3)$$

The *differentiation* dimension is gauged using return on sales (ROS) and operating expenses (OPE). This ratio expresses (1) the relationship between gross profit margin in connection to revenues and (2) operating expenses (expenses in e.g. R&D, branding and staff quality) in connection to revenues. High values on ROS indicate firms' above average ability to create a customer perception that a product or service is superior to that of others, so that a price premium and higher gross profit margin can be achieved. Differentiation allows higher prices, but usually comes at a cost (Porter, 1991). To create a point of valuable differentiation typically involves additional investments. The costs will be higher than those of the average competitor. Only differentiation that results in a price premium exceeding the extra costs of delivering it results is superior performance (Porter, 1991).

Earlier research, i.e. Spanos et al. (2004), and Wu et al. (2007) use marketing and research & development expenditures to proxy differentiation strategy. Because marketing and R&D expenditure figures were not available for the whole sample, OPE were used instead as a differentiation proxy. Besides, as supported by Porter (1991), creating added value might request additional investments in e.g. human resource management, firms' infrastructure,

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[23] Studies that used labor efficiency to proxy cost leadership are e.g. Spanos et al. (2004) and Wu et al. (2007).

service as well. We therefore use OPE, which covers, although not specified, these expenses, to partially determine the differentiation dimension. We approximate the executional dimension of differentiation by using both ROS and OPE. It is specified as:

$$Differentiation = \left(\frac{gross\ profit}{sales\ revenue}\right) * \left(\frac{operating\ expenses}{sales\ revenue}\right) \quad (4)$$

After defining the measures of firms' strategy dimensions cost leadership and differentiation we are able to identify firms' *strategic orientation*. Firms' strategic orientation can be defined as the ratio of a measure consistent with one strategy relative to the ratio of another measure, consistent with another strategy (Thornhill & White, 2007). The relative ratio of the strategic measures, i.e. cost leadership and differentiation, is our measure of the strategic orientation. To normalize firms' score on cost leadership and differentiation, we identify categories. The size of the categories is determined on the basis of overall firms' maximum value on cost leadership minus the minimum value divided by 24 categories. Consequently 24 cost leadership categories arose in which firms' individual score (1=low 24=high) relative to other firms' could be expressed. The executional dimension of differentiation is calculated in a similar manner by the coefficient of variation of firms' annual differentiation. By using firms' normalized score on differentiation and cost leadership we can calculate the composite or bi-dimensional strategic orientation of each agribusiness firm. Firms' strategic orientation can range from 0-90 and is specified as:

$$Strategic\ orientation = arctan\left(\frac{differentiation}{cost\ leadership}\right) \quad (5)$$

Built on the strategic orientation variable we identify a dummy variable. *Strategy 3_types dummy*, to report results by firms' generic strategy. Consistent with the literature we have labelled the strategic dimensions as: cost leadership, hybrid strategy and differentiation, as we report in figure 3.1. We use the polar coordinates of the strategic orientation variable to code 0 for firms' that occupy a cost leadership strategy, i.e. a strategic orientation value in the range 0-30, 1 for hybrid strategy (range: 30-60) and 2 for differentiation strategy (range: 60-90). This dummy variable has been added to identify solid results per strategy group.

While we focus mainly on strategies in connection to the economic fluctuations, there are several variables that might affect firms' strategies and performance. Therefore investment behavior is another aspect we consider and control. Understanding agribusiness investments, whether it is by internal growth or through acquisitions, can help understanding how the firms' follow investment strategies in periods of economic growth and recession. Although we shall only measure the direct influence of investments, we might be able to conclude how it influence performance and how the spending relates to the fluctuations in the economy. In order to test the influence we shall test two different measures of firms' investment behavior. At first, *capital spending* is controlled. Capital spending is used to improve operational
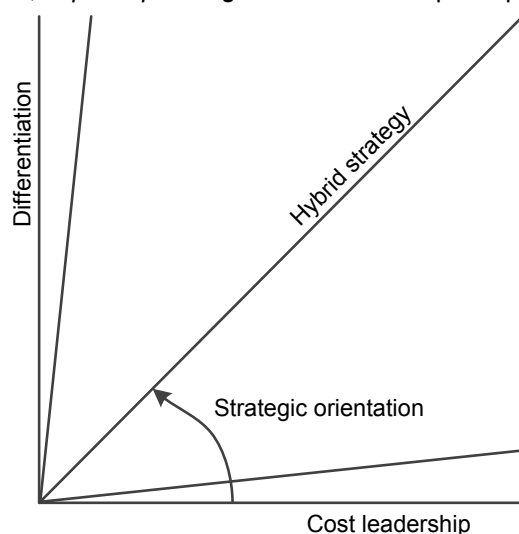

Figure 3.1 Generic strategy and execution form, source Thornhill & White, 2007.

effectiveness and requires the purchase or upgrade of physical assets (Porter, 2008). Capital spending is measured relative to firms' sales. It is specified as:

$$Capital\ spending = \left(\frac{capital\ expenditure}{sales\ revenue}\right)\ (6)$$

Our second measure of investment behavior is *acquisition spending*. Acquisitions spending is measured by the net acquisitions spending of the firms relative to their sales and is specified as:

$$Acquisition\ spending = \left(\frac{acquisition\ expenditure}{sales\ revenue}\right)\ (7)$$

Past sales growth is another interesting aspect we consider. Sales growth may affect the availability of funds and therefore the firms' risk-taking ability (Spanos et al., 2004). It is measured by obtaining the difference of firms' annual sales relative to the sales of previous year. *Firm size* is controlled, in accordance to Jianfei, Xiaorong (2012), by taking the logarithm of listed agribusiness' annual sales. The *Economic fluctuations* are controlled while using data on the advanced economy GDP. It enables us to control on the influence of *economic fluctuations* on firms' performance and strategies. The data for the economic fluctuation variable is obtained from the IMF website (2014), and is presented in appendix three.

Finally we use for our different equations two extra dummy variables to repeat equations by groups in order to identify and report differences. (1) *Industry*, to define group results by industries. Industry is coded 0 if a sample is part of the processed food industry, 1 for the beverage industry and 2 for the meat industry; (2) *Country*, to define group results by firms' head office location. Country is coded 0 if the head office location of the sample is in Europe and 1 when in America.

The use of these objective indicators (variables) allows us to assess (1) firms' performance and (2) the extent to which firms' exhibit observed, realized patterns of strategic behavior (Spanos et al., 2004). Note that we focus for this study on realized, not intended strategies. Table 3.2 presents the descriptive statistics of the defined variables. The next section will elaborate on the selected variables by specifying the empirical models.

Variable		Type	Obs	Mean	Std.Dev.	Min	Max
Performance	(PE)	Scale	529	0.176	0.097	-0.173	0.585
Strategy variables							
Labor efficiency	(LE)	Scale	482	0.258	0.127	0.055	0.797
Capital efficiency	(CE)	Scale	527	1.279	0.652	0.207	5.338
Differentiation	(DI)	Scale	522	0.113	0.078	-0.001	0.359
Strategic orientation	(SO)	Scale	487	47.005	21.706	0	86.424
Other variables							
Capital spending	(CS)	Scale	531	0.047	0.024	0.008	0.192
Acquisition spending	(AS)	Scale	495	0.031	0.136	-0.524	2.194
Past sales growth	(PG)	Scale	505	0.069	0.158	-0.663	1.251
Firm size	(FS)	Scale	528	4.044	0.425	2.820	5.041
Economic fluctuations	(EF)	Scale	550	2.416	1.573	-3.400	4.800
Dummies							
Industry	(IN)	Nominal	550	0.682	0.820	0	2
Country	(CO)	Nominal	550	0.636	0.481	0	1
Strategy 3_ types	(S3)	Nominal	487	1.072	0.770	0	2

Table 3.2 Descriptive statistics.

3.3 Empirical model equations

In order to test our propositions we estimate two different regression models and one pairwise correlations matrix. The first equation related to agribusiness firm i = 1,2,…,22 and time-series t = 1,2,…,25 can be written as follow:

$$PE_{it} = \beta 0 + \beta 1 IN_{it} + \beta 2 CO_{it} + \beta 3 S3_{it} + \varepsilon_{it} \quad (8)$$

where, PE_{it} is the value of performance for firm i at time t. $\beta 0$ represent the intercept, βi (i = 1,2,3) the regression coefficients, IN is the explanatory variable for industry, CO for country, $S3$ for firms' generic strategic orientation. Finally, ε is a vector of unobservable characteristics related to firm i at time t. The first regression model shall be used to mainly investigate time invariant causes of firms' performance.

The second model is another model to represent firms' performance and shall cover *proposition 1 and 2*. The equation can be written as follow:

$$PE_{it} = \beta 0 + \beta 1 LE_{it} + \beta 2 CE_{it} + \beta 3 DI_{it} + \beta 4 CS_{it} + \beta 5 AS_{it} + \beta 6 PG_{it} + \beta 7 FS_{it} + \beta 8 EF_{it} + \varepsilon_{it} \quad (9)$$

where, PE_{it} is the value of performance for firm i at time t. $\beta 0$ represent the intercept, βi (i = 1,2,…,8) the regression coefficients, LE is the explanatory variable for labor efficiency, CE for capital efficiency, DI for differentiation, CS for capital spending, AS for acquisition spending, PG for past sales growth, FS for firm size, EF for economic fluctuations, and finally ε is a vector of unobservable characteristics related to firm i at time t.

The pairwise correlation matrix represents the strategically behavior of firms' in connection to the economic fluctuations and shall cover *proposition 3, 4 and 5*. The equation can be written as follow:

$$r = \left(\frac{\text{cov}_{xy}}{s_x s_y} \right) = \left(\frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{(N-1)s_x s_y} \right) \quad (10)$$

where, r is the correlation coefficient, based on two variables. COV_{xy} represent the covariance of the two variables under analysis, S_x and S_y are the standard deviations for the first and second variable. We cannot simply divide by the standard deviations of the variables since there are different units of measurement. We therefore convert the covariance into a standard set of units: the equation (1) calculates the covariance of the two variables, then (2) it multiplies the standard deviations of the two variables and finally (3), the covariance is divided by the multiplied standard deviations. The outcome is a standardized correlation coefficient of two variables, ranging between -1 and +1. After specifying the models, we shall explain where necessary the models in more detail in the next section

3.4 Empirical model explanation

Two panel data linear regression models and one pairwise correlation matrix have been estimated for addressing agribusiness firms' performance and strategies. In this section we first focus at explaining the regression models, second on the pairwise correlation matrix.

In order to identify the techniques that best fits for analyzing the data we performed, with Stata13.0, different tests on the regression models: an F-test (F), Hausman-test (H) and Wald-test (W). Based on the results we select one of the three techniques to analyze the data in the model: (1) fixed effects (FE) regression; (2) random effects (RE) regression; or (3) ordinary least squares (OLS) regression. Let us first elaborate on the panel data and the analyzing techniques, before we select the techniques to analyze the panel data under analysis.

Panel data[24] is a set of data in which the behavior of entities, i.e. agribusiness firms', is observed across time. Panel data allows one to control for variables that change over time but not across the entities (e.g. economic fluctuations) (Torres-Reyna, 2007). FE regression explores the relationship between predictor and outcome variables within an entity. FE regression is useful whenever one is interested in analyzing the impact of variables that vary over time. An important assumption of the FE model is that each entity is different (Torres-Reyna, 2007). If one has reason to assume that differences across entities, i.e. time invariant variables, have some influence on your dependent variable then one should use a RE model. RE models allows one to generalize the inferences beyond the sample used in the model (Torres-Reyna, 2007). If there is no panel effect, i.e. no variance observed across entities and time a simple OLS regression is suitable for addressing the analysis (Torres-Reyna, 2007). As mentioned, we performed different tests to select the techniques that best fit for analyzing the data.

The first model, equation 8, didn't pass the F-test, $F_{(2,21)} = 1.13$, $p > .05$. As a consequence we have to reject the hypothesis that all coefficients in the model are different than zero. Therefore the OLS regression is more suitable for addressing the sample than the FE or RE model. As we select the OLS model there is no need to perform the Hausman-test, as will become clear in the next section. The Wald-test is used to test for heteroskedasticity in the model. The variables are heteroscedastic if the standard deviation of a variable is non-constant. Presence of heteroskedasticity, $W = 7376,24$, $p < .05$, is found in the model. Therefore the option 'robust' has been used to obtain heteroskedasticity robust standard errors for the OLS model.

The second model, equation 9, passed the F-test, $F_{(8,21)} = 11.05$, $p < .01$. We approve the hypothesis that all coefficients in the model are different than zero. Therefore, both fixed effects (FE) and random effects (RE) model are more suitable for addressing the sample than the model of ordinary least squares (OLS). To find the most robust model, we should use either the FE or RE model. To choose the appropriate model we run a Hausman-test. The Hausman-test basically tests whether the unique errors are correlated with the regressors. The model passed the Hausman-test, $H = 16.82$, $p < .05$, we can approve the hypothesis that there is systematic difference between the regressors. We concluded that the FE model is more suitable for the sample data than the random effect model. The Wald-test is used to test for heteroskedasticity in the FE model. Presence of heteroskedasticity, $W = 5407.18$, $p < .05$, is found in the model. Therefore the option 'robust' has been used to obtain heteroskedasticity robust standard errors for the FE model.

The pairwise correlation matrix, equation 10, represents firms' strategic behavior in connection to the economic fluctuations. Although it is uncommon to finalize the empirical part with a correlations matrix, we shall justify our choice. The pairwise correlation matrix is chosen to tackle the propositions on firms' strategies. The propositions are formulated in the order of the literature study. The literature study has followed a logical structure that builds on gained knowledge. It is necessary to follow this structure during the empirical part as well in order to conclude logically on our propositions and our main research question. A pairwise correlation matrix is chosen instead of a 'normal' correlation matrix due to how missing values are handled. A 'normal' correlation matrix should remove some complete data pairs if there are some data points in other pairs missing. When one performs a pairwise correlation, a pair of data points is deleted from the calculation only if one or both of the data points in that pair is missing. It means that each pair is analyzed, based on the data availability, as complete as possible. Before focusing at the results we shall first control on inter-correlations in the next section.

3.5   Model control

The inter-correlations of all explanatory variables were examined by using both bivariate correlations and variance inflation factors (VIF). The correlation coefficient, r, is a common measure of the size of an effect. An r-value of .10 can be interpreted as a small effect, whereas an r-value of .50 can be interpreted as a large effect (Field, 2009). R-values close to

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[24] Also known as longitudinal or cross-sectional time-series data (Torres-Reyna, 2007).

1.00 can be interpreted as multi-collinear, meaning that one variable can be linearly predicted from the other variable. In multiple regressions, multi-collinear predictors may influence the validity of the results as it can influence the results of the individual predictors in the model.

The inter-correlations per regression model for the explanatory variables are less than .50 (see appendix five), indicating the non-existence of multicollinearity. Nevertheless r-values close to 1.00 can be noticed in the correlation matrix. As an example, the r-values of the relationship between *Strategic orientation and* dummy variables *Strategy 3_types* and *Strategy 2_types* are close to 1.00, indicating multicollinearity. This observation is correct and fortunately observable as these dummy variables are based on the *Strategic orientation* variable. As mentioned, the inter-correlations for the two different regression models are less than .5, indicating that multi-collinear explanatory variables are not included in the same model. Before concluding on multicollinearity we also perform a VIF test.

The VIF value indicates whether a predictor has a strong linear relationship with the other predictors. The VIF values of the independent variables used for the different models range between a minimum of 1.08 and a maximum of 1.62, far below the value of 10, which is a value at which multicollinearity is of an issue (Field, 2009). To conclude, both multicollinearity tests suggest that the regression estimates are not degraded by the presence of multicollinearity.

After elaborating the sample, data and variables we defined three models to test our propositions. The models are explained and where necessary controlled, so that we can focus at the results. It is the subject of Chapter 4.

4 Results

This section elaborates on the empirical results and aims to answer the research question: *"Which strategies and performances can be established for identified economic fluctuations when analysing agribusiness firms' strategies and performances?"* The structure of this chapter is as follows: paragraph 4.1 reports on the results of firms' performance. Subsequently, paragraph 4.2 reports on the results of firms' strategies.

Note that for the empirical part we use different techniques and models to represent the data. In the OLS model, equation 8, the independent variables are represented using dummy coding. Note that in dummy coding each regression coefficient represents a contrast between the group in question and the reference group (Spanos et al., 2004). In other words, the regression coefficient βi of, for example, the meat industry dummy, shows how much higher or lower the mean performance is of the firms belonging in this industry group in comparison to the mean performance of firms belonging in the reference group, that is processed food industry. In the subsequent equation 9 we will contrast between the group in question and the entire set of groups. This is called effect coding. Effect coding is particularly appropriate when each group is compared with the entire set of groups, rather than with a single reference groups as is the case with dummy coding. It is a measure of the uniqueness of the specified group in comparison to an average value for the entire sample. (Spanos et al., 2004).

4.1 Firms performance

Two models have been estimated for addressing firms' performance: the OLS model, to provide some basic time-invariant information related to the performance of the sampled firms, and the FE model to study the causes of changes within firms' performance (equations 8 and 9 respectively).

Table 4.1 reports the OLS regression results of equation 8 and show that: (1) American firms' significant outperform European firms, r = .094, p <.01; (2) there is no significant difference in the performance of processed food and beverages firms, whereas meat firms underperform the processed food firms' significantly, r = -.078, p <.01; finally, (3) firms following a cost leadership strategy, significantly underperform those following a hybrid strategy, r = .065, p <.01, and differentiation strategy, r = .037, p <.01. Hybrid strategy outperforms the pure cost leadership and differentiation strategies.

Table 4.2, at the next page, reports the FE regression results of equation 9. Proposition 1 predicted that economic growth is positively associated with agribusiness firms' performance. The empirical results, i.e. table 4.2, do support this proposition, as economic fluctuations show a positive and significant coefficient with respect to agribusiness firms' performance, r = .004, p <.05. We can conclude that on average the higher the economic growth the higher firms' performance.

Dependent variable: performance 1988-2012				
	Coef.	Robust Std. Err.	P>t	Sig.
Country_1	0.094	0.009	0.000	***
Industry_1	0.008	0.010	0.423	
Industry_2	-0.078	0.010	0.000	***
Strategy 3 types_1	0.065	0.010	0.000	***
Strategy 3 types_2	0.037	0.010	0.000	***
n. observation	482			
F (5,476)	35.26			
Prob > F	0.000			
R-squared	0.320			

 * p < 0.10; ** p < 0.05; *** p < 0.01

Table 4.1 OLS regression model on firms' performance.

Dependent variable: performance 1988-2012				
	Coef.	Robust Std. Err.	P>t	Sig.
Economic fluctuations	0.004	0.001	0.048	**
strategy variables				
Labor efficiency	0.166	0.062	0.014	**
Capital efficiency	0.063	0.019	0.003	***
Differentiation	0.474	0.212	0.036	**
other variables				
Capital spending	0.325	0.174	0.077	*
Acquisition spending	-0.038	0.018	0.047	**
Past sales growth	0.008	0.020	0.685	
Firm size	-0.067	0.030	0.034	**
n. observation	434			
n. groups	22			
F (8,21)	11.05			
Prob > F	0.000			
rho	.549			
Hausman test	16.82	(Prob > chi2 = 0.032)		
Wald test	5407.18	(Prob > chi2 = 0.000)		

* p < 0.10; ** p < 0.05; *** p < 0.01

Table 4.2 FE, robust analysis on firms' performance.

Proposition 2 predicted that the higher firms' score on strategy, the more positive it is associated with firms' performance. We can support this proposition as the coefficients for the three strategy variables: (1) labor efficiency, r = .166, p <.05; (2) capital efficiency, r = .063, p <.01; and (3) differentiation, r = .474, p <.05, are all positive and significant, indicating that there impact on firms' performance is confirmed. Besides, if we draw conclusions on firms' strategies we can state that agribusiness firms' performance is influenced by their strategy.

Among the other variables, results show that more capital spending has positive impact on firms' performance although not significant at the p<.05 level. The results also show that the coefficient associated to the variable acquisition spending is negative and has significant impact on firms' performance. When we interpret the results we conclude that capital spending has no significant influence on agribusiness firms' performance, whereas acquisition spending has a negative significant influence on the performance. The coefficient associated to past growth in sales is not significant. Therefore, it is impossible to draw conclusions on the effect of this variable. When we evaluate firm size we conclude that it has a negative and significant impact on the performance of agribusiness firms'. Therefore, it seems that on average the smaller firms in the sample outperform the larger ones.

4.2   Firms strategies

A pairwise correlation matrix has been estimated for addressing firms' strategies (equation 10). Proposition 3 stated that as the economic growth changes, agribusiness firms' strategic orientation changes. Results, represented in table 4.3 at the next page, support this hypothesis. The coefficient for the strategic orientation is positive and significant, r = .139, p <.01; indicating that higher economic growth on average reflects that firms' are more differentiation orientated whereas lower economic growth reflects that firms' are more cost leadership oriented.

Proposition 4a and 4b predicted that as the economic growth increases (a) agribusiness firms' cost efficiency orientation decreases respectively, and (b) agribusiness firms' differentiation orientation increases. The results partially support these hypotheses. The coefficient of differentiation is positive but insignificant, r = .031, p >.05. Therefore we cannot draw conclusions on the effect of this variable, we reject proposition 4b.

Firms' cost efficiency orientation changes, as the economic growth increases. We notice that on average, firms' labor efficiency coefficient is negative and significant in connection to the economic fluctuations, r = -.159, p <.01. On the other hand, the coefficient for capital

Variables	1	2	3	4	5	6	7
1. Economic fluctuations	1.000						
2. Strategic orientation	**0.139** **	1.000					
3. Labor efficiency	**-0.159** **	**-0.457** **	1.000				
4. Capital efficiency	**0.117** **	**-0.448** **	**-0.178** **	1.000			
5. Differentiation	0.031	**0.714** **	**0.188** **	**-0.500** **	1.000		
6. Capital spending	0.059	**0.433** **	**-0.127** **	**-0.401** **	**0.317** **	1.000	
7. Acquisition spending	-0.012	**0.126** **	-0.053	**-0.168** **	**0.103** *	**0.175** **	1.000

* p < 0.05 and ** p < 0.01

Table 4.3 Pairwise correlation matrix.

efficiency is positive and significant, r = .117, p <.01. We therefore partially support proposition 4a: agribusiness firms' cost efficiency decreases as the economic growth increases. We conclude that as the economic growth increases (1) labor efficiency decreases and (2) capital efficiency increases. We earlier defined, based on the strategic orientation variable, that as the economic growth increases, agribusiness firms' differentiation orientation increases and cost leadership orientation decreases. We can add that on average this shift can mainly be attributed to firms' significant change in labor efficiency.

Proposition 5a and 5b predicted that as the economic growth increases (a) agribusiness firms' capital spending increases, and (b) agribusiness firms' acquisitions spending increases. We cannot support these propositions, as the variables capital and acquisitions spending are not significant in connection to the economic fluctuations (r = .059, p >.05 and r = -.012, p >.05, respectively).

Although we can overall partially support our propositions, to detail the findings, it is interesting to explore and obtain somewhat more understanding on firms' strategically behavior in the sampled period. Figure 4.1 represents, with the exception of the economic fluctuations variable, the plots of the mean changes of the variables used in the correlation matrix.

By means of figure 4.1 we are able to notice some similarities between the movements of the variables and the developments, derived from the literature study (see table 2.3, in section 2.2.2). Overall firms' have become more cost leadership oriented in the sampled period, as the overall trend of strategic orientation is towards cost leadership. This shift can be partly explained by the increase in labor efficiency, but certainly not entirely. As the mean labor efficiency in the period 1988-2000 increases, so does the differentiation orientation. Even though we notice a shift towards firms' become more cost leadership oriented. In conclusions, firms' have become less differentiation oriented and more cost leadership oriented.
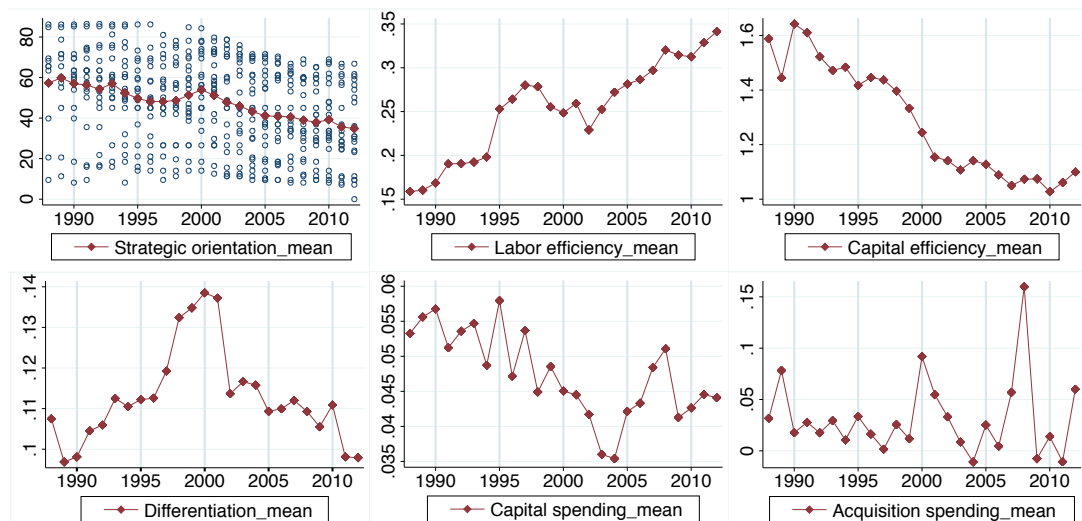

Figure 4.1 Mean changes in the period 1988-2012 for the strategic variables.

The labor efficiency variable is stagnating or even declining in the period 1991-94, 1999-2002 and 2008-10. One can speculate that it is partly consistent with the literature as we concluded that the unemployment increased in the period 1991-93 and 2008-09.

It seems, and corresponds with the literature findings, that from the perspective of labor efficiency and capital efficiency, on average, firms' have reduced staff and have invested in assets as their labor efficiency in the sampled period increased and the capital efficiency decreased. Unilever (1993) provides, in addition to our findings, some evidence that change in technology provides new possibilities: "A new program will deliver significant annual savings. It will lead to job reduction." Firms' differentiation orientation is more difficult to explain. It is interesting that on average firms have become until 2000 increasingly differentiation oriented, while after 2000 the reverse has happened.

Overall we cannot conclude that capital spending and acquisition spending relates to the economic fluctuations. Yet it is remarkable that firms capital and acquisition spending experience a large increase and peak in 2008 after which the spending declines drastically in the subsequent years[25]. Besides, based on the literature, we conclude that the period just before 2001 led to an increase in business investment, whereas the recession in 2001-02 led to a cutback in business investment, which is consistent with our literature findings on capital and acquisition spending in this period.

The results on firms' performance and strategies contribute the literature, but there are risks and questions related to the assumptions and speculations, one needs to analyze the results critically. That is the subject of Chapter 5.

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[25] The NBER (2010) and CEPR (2012) identified the global great recession as from December 2007 in the United States and from March 2008 in Europe.

5 Discussion and conclusion

In this study, we aimed to explore how economic fluctuations and agribusiness firms' strategies are linked. To achieve the aim different propositions regarding economic fluctuations, performance and strategies are tested. The propositions were based on the assumption that the performance of firms' follows similar patterns as the changes in the economic growth. The fluctuations in performance were perceived as an incentive for firms to change strategies. In testing the propositions different techniques have been employed: two regression models, establishing firms' performance and a correlation matrix, establishing firms' strategically behavior. In this chapter, paragraph 5.1 discuss the study results, and link them to existing literature. Paragraph 5.2 discusses theoretical and practical contributions and implications for managers and policy makers. Finally, paragraph 5.3 addresses the study's limitations and suggests for further research.

5.1 Results and contribution

This study is conducted in response to Porter (2008). A successful strategy is present in how a company performs different activities while taking the changing environment into account (Porter, 2008). Although the literature presents two extensively discussed views on leading approaches for developing a successful strategy[26], literature lacks clear results on how macro-environmental effects influence business strategies. The literature has mainly focused on how the two views relate to business performance, without asking if macro-environmental effects really influence business strategies, certainly not over a longer period. This study addresses the macro-environmental effects in a unique longitudinal way by focusing on how global economic fluctuations influence agribusiness strategies. Our results, which focus on both strategy and performance, have interesting implications for the question whether or not firms change their behavior due to macro-environmental effects, i.e. economic fluctuations.

Different variables were found to have different effects on performance. Overall, American firms outperform European firms, and firms active in the meat industry underperform those active in the beverage and processed food industry. The specific results support our proposition that agribusiness firms' performance is positively associated with economic growth. Our findings regarding the performance are in line with findings of others (e.g. Peters et al. (2009), Morly & Piger (2012), Schnitkey & Kramer (2012) and OECD-FAO (2013)). Firms' following a cost leadership strategy underperforms those following a hybrid and differentiation strategy. It appears that a combination of cost leadership and differentiation, i.e. hybrid strategy, is the most successful strategy in the agribusiness context. Besides, the higher firms' score on strategy, the more positive it is associated with firms' performance, i.e. strategies pay off. Our findings regarding preferred strategies relative to the performance are reflected in the literature. Spanos et al. (2004) and Wu et al. (2007) found that hybrid strategies are clearly preferable to cost leadership and differentiation.

Not all (strategy) variables appeared to be connected to the economic fluctuations. Firms' overall strategic orientation, capital efficiency and labor efficiency were found connected to the economic fluctuations. As the economic growth increases, on average, firms' strategic orientation becomes more differentiation oriented, where they become in periods of economic recession more cost leadership oriented. More specifically, the study indicates a significant influence of firms' labor and capital efficiency variables, whereas the differentiation variable is not significantly connected to the economic fluctuations. The labor and capital efficiency variables show that as the economic growth increases, labor efficiency decreases and capital efficiency increases. The literature shows that employment increases in periods of growth, and decreases in periods of recession (Hamilton, 2005; Madhani, 2010; Dave & Kelly, 2012). We can speculate that these findings are connected to our findings that labor efficiency decreases as the economic growth increases. It seems firms' reduce staff in periods of

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[26] The outside-in view, supported by e.g. McGahan & Porter (1999); Slater et al. (2011), is focussed on market influences as a basis for developing firms' strategy. The second view, the inside-out view, supported by most studies (e.g. Rumelt, 1991; Barney, 2001; Winter, 2003), is focussed on the internal organisation, i.e. asking what a company can do with existing resources in order to develop firms' strategy (Schiefer et al., 2013)

recession in order to increase efficiency. The effects of capital spending and acquisition spending were not found to be significant connected to the economic fluctuations. These findings do not correspond with literature. Investment increases in periods of growth, and decreases in periods of recession (Ahmed et al., 1993; Justiniano, 2010; Crucini et al., 2011). Although we cannot support these findings we will discuss the implications in more detail in section 5.3. In conclusion on our main findings, our study provides empirical support that (1) as the economic growth increases firms strategic orientation becomes more differentiation oriented, and (2) in periods of economic recession firms become more cost leadership oriented. Besides, as the economic growth increases, labor efficiency decreases and capital efficiency increases.

5.2   Implications for managers and policy makers

Strategy is defined as an observable pattern in a stream of actions (Mintzberg, 1978). It is an approach to achieve advantage in a changing environment (Collis & Rukstad, 2008). This study shows at corporate level that increases in labor efficiency capital efficiency and differentiation pays of in terms of firms' performance. Our study provides empirical support how firms deal with a changing environment, i.e. economic fluctuations. Firms' strategic orientation becomes in periods of economic growth more differentiation oriented, whereas in periods of recession it becomes more cost leadership oriented. Dealing with the economic fluctuations, firms' particularly make adjustments in their labor and capital efficiency strategies. Following a cost leadership, hybrid or differentiation strategy can provide firms' with advantages for their performance whereas hybrid strategy pays of best. Questions arise, what is behind these policies.

Although some policies seem vague and general, e.g. increase profits by reducing costs and raising margins (PepsiCo, 1989). Others seem to have proved beneficial, e.g. with an operation efficiency, target-oriented improvement program (MH97), Nestle achieved, in the periods 1997-2000, a 2% annual cost reductions in their factories (Nestle, 2000). Besides, firms seem continuously to adapt resiliently to changing consumer behavior. As appeared in the literature study, falling income in periods of recession change consumers' expenditure behaviour and creates pressure to purchase the foods with a lower cost price. Consumers turn to discount stores, and recessions fuelled the continued growth of lower-priced private label products (Heinz, 2009). This forces firms to focus at the core portfolio and focus at efficiency, which is reflected in our empirical findings, i.e. firms' shift from differentiation towards cost leadership. Managerial implications and questions arise. It can be questioned how adaptive, resiliently and focused the company is to respond on the influence of economic fluctuations.

It seems, although not significantly supported, that acquisitions are highly cyclical, with an increase in periods of economic growth, followed by a decrease in periods of recession. Managers seem to join the acquisition race in periods of growth, but as this study shows, firms' performance stays on average due to the acquisitions, significantly behind.

In conclusion, it can be supposed that consumer focus can improve firms' performance. Therefore, firms should use periods of economic growth and recession as input for formulating strategy. If firms failure to do so, they miss essential input for improving performance.

5.3   Limitations and further research

This research increases insight on firms' strategies and performance in connection to the economic fluctuations but should, however, be evaluated in the light of the limitations of the study. First, the selected public listed agribusiness firms do not allow us to generalize safely our findings to the whole agribusiness. So our findings primarily refer to the selected sample.

Secondly, the choice of variables used was dictated by the available data. The measures are consistent with those used in previous studies with the exception of return on sales and operating expenses as a measure of differentiation. The limitation with differentiation is that it

is a general estimate of differentiation, which cannot be used to specify whether firms' differentiated on e.g. technology or marketing.

Thirdly, the fact that our conclusions are based on three different models also creates some limitation to our conclusions. We can draw conclusions per model, but we cannot compare the outcomes. Future researchers might use one model to provide understanding on preferred strategies in periods of economic growth and recession relative to firms' performance. While this study mainly has focused at determining what the influence of economic fluctuations is on firms' strategies and performance separately, the previous suggested model would increase managerial knowledge.

Fourthly, future research can involve the examination of lagged strategies, lagged performance and lagged control variables. As noted, this study solely focused on the direct influence of the variables. It might be argued that the impact of firms' strategies, and the control variables requires a certain time lag before it affects firms' performance (Spanos et al., 2004). This study shows graphically that firms' investments increased in the economic growth period before 2001 and 2008 after which the spending decreased drastically in the subsequent years of economic recession. The year 2008 is identified as a year of economic recession, it therefore seems that companies response delayed. Future research can investigate if and how quickly firms respond to macro-environmental changes. The three horizons for strategy (Baghai et al., 2000) might help bounding the response time of strategy in such research.

Finally, our results indicate that in the period of analysis, firms have become more cost oriented. This transition, however, is shown only graphically and is not reflected in our models. Future research can extend the model with date and data, which would improve the examination of trends in the transition, and their impact on performance. Besides, future studies can validate our findings by focusing on different agribusiness industries and by including e.g. cooperatives and/or private firms.

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Appendix 1   Advanced and Western Economies countries

Appendix one provides a complete overview of the countries that qualify the selection of advanced and western economy. The list is obtained from the IMF website (IMF, 2014) and is part of the IMF world economic outlook 2014.

Austria, Belgium, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Iceland, Italy, Latvia, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States.

Appendix 2   Countries used to form GDP fluctuations

Appendix two provides a complete overview of the countries used to formulate global economic fluctuations. The list is obtained from the IMF website (IMF, 2014) and is part of the IMF world economic outlook 2014.

Emerging market and developing economies:
Afghanistan, Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Armenia, Azerbaijan, Bahamas, The, Bahrain, Bangladesh, Barbados, Belarus, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, China, People's Republic of, Colombia, Comoros, Congo, Dem. Rep. of the, Congo, Republic of, Costa Rica, Croatia, Curacao, Côte d'Ivoire, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, FYR Macedonia, Gabon, Gambia, The, Georgia, Ghana, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Iran, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kosovo, Kuwait, Kyrgyz Republic, Lao P.D.R., Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Madagascar, Malawi, Malaysia, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Mexico, Micronesia, Fed. States of, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nepal, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Qatar, Romania, Russian Federation, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Sint Maarten, Solomon Islands, South Africa, South Sudan, Republic of, Sri Lanka, Sudan, Suriname, Swaziland, Syria, São Tomé and Príncipe, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe.

Advanced economies:
Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong SAR, Iceland, Ireland, Israel, Italy, Japan, Korea, Republic of, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, San Marino, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Taiwan Province of China, United Kingdom, United States.

Appendix 3   Real GDP data

Appendix three provides the data used to define global economic fluctuations. The list is obtained from the IMF website (IMF, 2014).

Real GDP growth (annual % change)	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Advanced economies	4,8	4,1	3,2	1,5	2,3	1,5	3,4	2,9	3	3,6	2,6	3,6	4,1
Emerging market and developing economies	4,1	3,5	3,4	3,7	2,4	3,3	3,4	4,1	5,2	5,1	2,6	3,6	5,7
Global economy (world)	4,6	3,9	3,3	2,2	2,3	2,2	3,4	3,3	3,8	4,1	2,6	3,6	4,7

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
1,4	1,7	2,1	3,2	2,8	3	2,7	0,1	-3,4	3	1,7	1,5	1,2
3,9	4,6	6,4	7,7	7,3	8,3	8,7	5,8	3,1	7,5	6,2	4,9	4,5
2,3	2,8	3,8	5,1	4,7	5,2	5,3	2,7	-0,4	5,2	3,9	3,2	2,9

Appendix 4   Company details

Appendix four provides the company details. The order is based on firms' sales in 2012. Nestle tops the list.

	Firm	Head office	Industry
1.	Nestle	Europe	Processed food
2.	Pepsico	America	Processed food
3.	Kraft Foods	America	Processed food
4.	Coca-Cola company	America	Beverages
5.	Unilever	Europe	Processed food
6.	Anheuser-Busch InBev	Europe	Beverages
7.	Tyson Foods	America	Meat
8.	Heineken	Europe	Beverages
9.	Danone	Europe	Processed food
10.	SAB miller	Europe	Beverages
11.	General Mills	America	Processed food
12.	Kellogg's	America	Processed food
13.	Associated British Foods	Europe	Processed food
14.	ConAgraFoods	America	Meat
15.	Smithfield	America	Meat
16.	Heinz	America	Processed food
17.	Carlsberg	Europe	Beverages
18.	Orkla	Europe	Processed food
19.	Sara Lee	America	Processed food
20.	Pilgrims pride-JBS	America	Meat
21.	Hormel Foods	America	Meat
22.	Campbells	America	Processed food

Appendix 5   Correlation matrix

Appendix five provides the correlation matrix of the variables used in the empirical analysis.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Performance	1.000													
2. Strategic orientation	0.208	1.000												
3. Labor efficiency	0.349	-0.470	1.000											
4. Capital efficiency	0.043	-0.419	-0.172	1.000										
5. Differentiation	0.462	0.725	0.157	-0.468	1.000									
6. Capital spending	0.062	0.432	-0.107	-0.452	0.333	1.000								
7. Acquisition spending	-0.081	0.123	-0.051	-0.175	0.111	0.186	1.000							
8. Past sales growth	-0.095	-0.011	-0.147	0.091	-0.046	0.037	0.260	1.000						
9. Firm size	0.068	0.063	0.195	-0.172	0.261	-0.105	0.051	-0.032	1.000					
10. Economic fluctuations	0.157	0.124	-0.120	0.132	0.055	0.035	-0.022	0.038	-0.163	1.000				
11. Industry	-0.282	-0.570	0.002	0.485	-0.484	-0.187	0.011	0.157	-0.205	-0.008	1.000			
12. Country	0.281	-0.371	0.288	0.347	-0.162	-0.296	-0.037	-0.036	-0.012	0.010	0.245	1.000		
13. Strategy 3_ types	0.147	0.927	-0.455	-0.401	0.640	0.367	0.113	0.012	0.098	0.113	-0.555	-0.381	1.000	
14. Strategy 2_types	0.169	0.860	-0.392	-0.312	0.662	0.369	0.127	-0.016	0.102	0.102	-0.394	-0.371	0.771	1.000