Hogeschool-Universiteit Brussel

Campus Stormstraat – Stormstraat 2– 1000 Brussel

Faculty of Economics & Management
Commercial Sciences & Management Field of Study
Master of Business Administration Degree Programme

Product and market diversification among Japanese multinational enterprises

Master Thesis by

Ken STEENLANDT

Submitted for the Degree of

Master of Business Administration

Graduation Subject: International Business Management

Supervisor: Annabel SELS

Academic Year 2010 - 2011

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Summary

1. Problem definition and research question

Problem definition: The goal of this research is to test the effect of product and market diversification, with market diversification being defined as international diversification. We want to know what kind of companies successfully pursuit this course of action.

Research question: How do Japanese firms successfully diversify?

2. Research method

The empirical part of the analysis is mainly testing the effects of product diversification. During the research we take into account previous research and a framework generated from previous research. This empirical research will be supplemented by a rigorous literature study that aims to solve some supporting questions.

a. Justification of the research method

The intuitive calculations that were made are logical, but not standard with the current paradigm. The lack of variables is a good enough reason for the lack of a thorough regression analysis. As a result, this makes comparison with previous research a bit harder.

However, a detailed analysis of previous research, looking at the subject at different angles is the foundation for a framework used as a reference throughout the thesis.

b. Collection and processing of the data

Data was acquired from Bureau Van Dijk its Orbis database and used as basis for the various calculations present in this thesis.

3. Findings and conclusions

Whether or not there is value creation because of diversification. The increase of EBITDA is dramatically higher than the minor decrease of operating revenue. A status quo of performance of the last decade would possibly support the hypothesis of value creation by diversification. Because of the turbulent end of the last decade e.g. the financial crisis, a decrease would be expected.

If ultimately profit or EBITDA is taken as a measure than there is value creation because of diversification. There may be single events per company that influenced this figure, but the chances that it would determine the conclusion is improbable. This result is also limited to the timeframe of the last

decade, but in this last decade the value increased of these firms. That, for one, is certain.

The difference among keiretsu is less ambiguous. There are keiretsu outperforming the general curve and other laggards that underperform. The impact of these differences on the general outcome is value weighted to give an accurate account on whether or not there is value creation. The reason why some keiretsu are performing better than others is hard to answer.

All data acquired, is from unrelated companies put together in their various keiretsu. Each keiretsu has a portfolio that has a similar selection of different sectors and each has a certain size being part of the top 250 Japanese firms based on operating revenue. The difference among these keiretsu may point to a hidden variable that could be interesting to look for in further research.

When compared to industry average however, the performance of keiretsu is less exemplary. The keiretsu companies are consequently underperforming the market. There is the possibility that the keiretsu are in underperforming industries, but this seems unlikely. The keiretsu weighted average is positive. It could have been tested with a regression analysis based on SIC code but that would have given a whole list of dummy variables making the analysis irrelevant.

There was a comparison made for every SIC code with at least two participating firms. The outcome was ambiguous except for one thing was clear: in sectors where both keiretsu and market firms were present, market firms did better. In sectors where there was only one kind, the results were mixed. This may reaffirm the conclusion that market firms perform better than their peers, the keiretsu firms.

To summarize the keiretsu have been studied on a different level than previous research. It has provided the situation of the current economical climate in Japan and how it translates into diversification. It has also tried to show whether or not it creates value. Finally it also demystified a lot on the keiretsu structure in general and made a lot of information available in a cohesive way.

Acknowledgements

First, I want to thank my supervisor for her guidance and advice in order to create this master thesis.

Secondly, I want to thank the staff of this school that provided me the necessary skills and support to hopefully acquire this degree.

Furthermore, I want to thank Bureau Van Dijk for its invaluable database Orbis, it being the backbone that made my empirical research possible.

Finally, I want to thank my loving parents and sister who made all of this possible.

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List of Japanese words

- Kaisha = popular name for Japanese firms in the 70's – 80's
- Keiretsu = Japanese post war conglomerates
- Kyousei = group coordination philosophy
- Sogo Shosha = Japanese trading companies
- Zaibatsu = Japanese pre war conglomerates

1 INTRODUCTION

Japan knew a prominent rise in the 70's – 80's and after the Asian crisis (1997) it remained for a long time the second most important industrial country. It has a distinct cultural background, different from what is known in Western countries. This thesis will take this into account. It will look at the keiretsu: a Japanese specific type of conglomerate.

How does this keiretsu structure influence the current Japanese economy? It may lead for example to an increased performance that boosts the Japanese economy. Is the performance of the Japanese companies related to diversification? If so, which kind of diversification, e.g. related or unrelated. Different research situated in the last few decades based on either resource based view, transaction cost theory or prospect theory has been consulted for answering these questions. Also, an estimation is undertaken of the value of Japanese less or more diversified firms with data from the Orbis database of Bureau Van Dijk .

This research tries to fill a niche. Most research on diversification is Anglo Saxon, with recent research using share value as unit of observation where the focus is on shareholder value. This research is based on Japanese data of a different culture, and for this reason not based on shares as measure, but on stakeholder value. This is an important difference from previous research. Share value could also be used to calculate the value of Japanese firms, but in a culture where share value maximization is not one of the most important goals, hidden variables like stakeholders may influence the results. Research done by *Figge, F.T. 2004* and *Charreaux, G., & Desbrières, P. 2001* provide insight on the matter, but this would be beyond the scope of this thesis.

The combination of new measures, a different culture and an unique business structure – autonomous firms that are linked in a network centered on a bank – sets the stage for interesting research. First theory, literature review and an insight in Japanese culture will be presented before the empirical evidence to support whether or not diversification leads to value creation or destruction.

Even more than that, it allows further research on the value effects of diversification. Previous results have been ambiguous and now there is the option to test it using a different cultural background with the keiretsu as a specific form of diversification.

An important question to answer is in which way keiretsu membership influences a company. Does membership of keiretsu have an effect on the company? This is the same for diversification in general: do companies diversify to become successful or do successful companies diversify? There are very successful companies like Toyota that are part of a keiretsu. Is this the exception that proves the rule? If there is any diversification (related – unrelated) : which type is successful? These are questions within the scope of this research.

1.1 RESEARCH GOALS

The goal of this research is to test the effect of product and market diversification, with market diversification being defined as international diversification. We want to know what kind of companies successfully pursuit this course of action. There has been research on the subject. For instance *Nicolaou, C. A., & Spencer, B. J. 1975* argue that conventional economics are inadequate in the analysis of the diversified firm. Whereas *Montgomery, C. A. 1985* argues that diversified firms in terms of products and markets have less market power than its less diversified peers. In yet another study *Lunsford, D. W., & LaForge, R. W. 1992* argue that the stage of firm development is associated with its diversification path.

Diversification gathered a lot of research attention in the 70's and 80's, partly because of the merger waves surrounding these decades. The result of diversification, however, remains unclear. More recent research like that of *Capar, N. 2009* that argues there are interrelationships and causal linkages between product diversification and market diversification. *Kumar, M. V. S. 2009* argues that a firm is constrained in the short term in taking advantage of the opportunities that a diversification strategy offers. This shows that it might be beneficial to dig deeper in on the subject and try to find out whether there is a difference between short en long term effects of diversification on value creation. The Japanese informal network of keiretsu companies serves as a great unit of analysis. They are a geographic distinct group of companies that are a highly visible indication of product and market diversification. *Geringer, J. M., & Tallman, S., & Olsen, D. M 2000* have done similar research with the same unit of analysis: the keiretsu. This research, however, differs in the dataset used, methods of testing empirical findings and time period taken in account. The units of observation are operating revenue and EBITDA. Good indicators of firm performance and their evolution in a decade time period, we argue, will show whether or not diversification strategies created value for their firms.

1.2 RESEARCH QUESTIONS

How do Japanese firms successfully diversify? This is the question we wish to answer. Using the Orbis database provided by Bureau Van Dijk. To find an answer to this question we have four research objectives: testing the performance of keiretsu compared:

1. with its peers that are not affiliated with a keiretsu
2. within the keiretsu, if there is an improvement and if it knows a similar pace
3. keiretsu among each other and the influence of the sectors chosen
4. in general, if there has been an improvement in terms of either operating revenue or EBITDA or both for the keiretsu companies

This to give an as detailed account as possible on whether or not there is value creation through diversification. The empirical part of the analysis is mainly testing the effects of product diversification. During the research we take into account a framework generated from previous research on the effect of diversification strategies.

This empirical research will be supplemented by a literature study that aims to answer some supporting questions. Are subsidiaries required for local knowledge? The first internationalization activities of Japanese firms were through green-fields. Later on partners – either joint ventures or acquisitions – were involved according to *Whitley, R., & Kelly, W., & Sharpe, D. 2003*. This leads to the question: is a partner required for going international? These are questions related to the internationalization aspect of diversification, defined in this thesis as market diversification.

2 THEORETICAL BACKGROUND

2.1 KEIRETSU

The Japanese keiretsu is different from the Anglo Saxon known conglomerate. It is a group of companies, but more like a network than a mother company with a list of business units. Its relationships are of the tacit kind and not always visible to outsiders. It is something entirely unique and there is nothing really to compare it with *(Douthett, E.B., & Jung, K., & Kwak, W. (2004)*.

The Japanese business history has had a few important differences with American or European markets. In a traditional sense, the market was fragmented when consolidation waves were plenty in American and European markets. There is, however, an important nuance: Japanese firms were already part of conglomerates of sorts. There are some characteristics that make it distinctly Japanese.

There are two major eras: pre- and post-second world war . Before the end of the war the most Japanese industries were part of family monopoly businesses called Zaibatsu. After the war, thanks to the 'Wirtschaftswunder' and Western influences, there was a break with tradition and the formation of conglomerates within its core a bank: the keiretsu *(Anonymous, 2004)*.

The bank's finance was the fuel for acquisitions and in time a few major players emerged. They differ in mainly vertical- and/or horizontal integration. Main characteristics are unrelated diversification to spread risks and being solely of Japanese composition.

An Important difference with their Western counterparts is that it is not a relationship of mother and daughter company, but more of a network. The relationships are not legal frameworks. This is something distinctly Japanese where an agreement not always has to be explicitly written out on paper so both parties would respect it.

There is a general consensus in the academic world about the keiretsu, with a few deviant opinions. Some argue that the keiretsu is mainly networking and the keiretsu have average results, but cannot either prove or disprove if it is really a sort of conglomerate type of structure. *(Miwa, Y., & Ramseyer, J. M. 2002)*. The most prevalent opinion is that the keiretsu is rooted in implicit contracts and a long term orientation *(Masahiko, A., & Gustafsson, B., & Williamson, O. E., 1990)*.

As Hofstede's research has pointed out, long term orientation being something distinctly Asian. This leaves out the need for contracts. Every short term gain at the cost of a partner will be penalized in the long run. A key cultural variable that plays a role in the very existence of the structure, Which stresses the distinct Japanese component of this structure: an emphasis on the stakeholders.

This distinct keiretsu structure makes an interesting phenomenon to study. It is also an ideal unit of analysis to test for the value effects of diversification. The empirical research will try to unravel all of this, but a literature study needs to provide the necessary background.

In the following charts, I will show the different keiretsu and a detailed account on one of the keiretsu. The others are added in the appendices.

Figure 1: Graphic display of different Keiretsu with their banking activities and a † to mark the end of the specific configuration to be succeeded by the bank below. Information publicly available online, including Wikipedia.

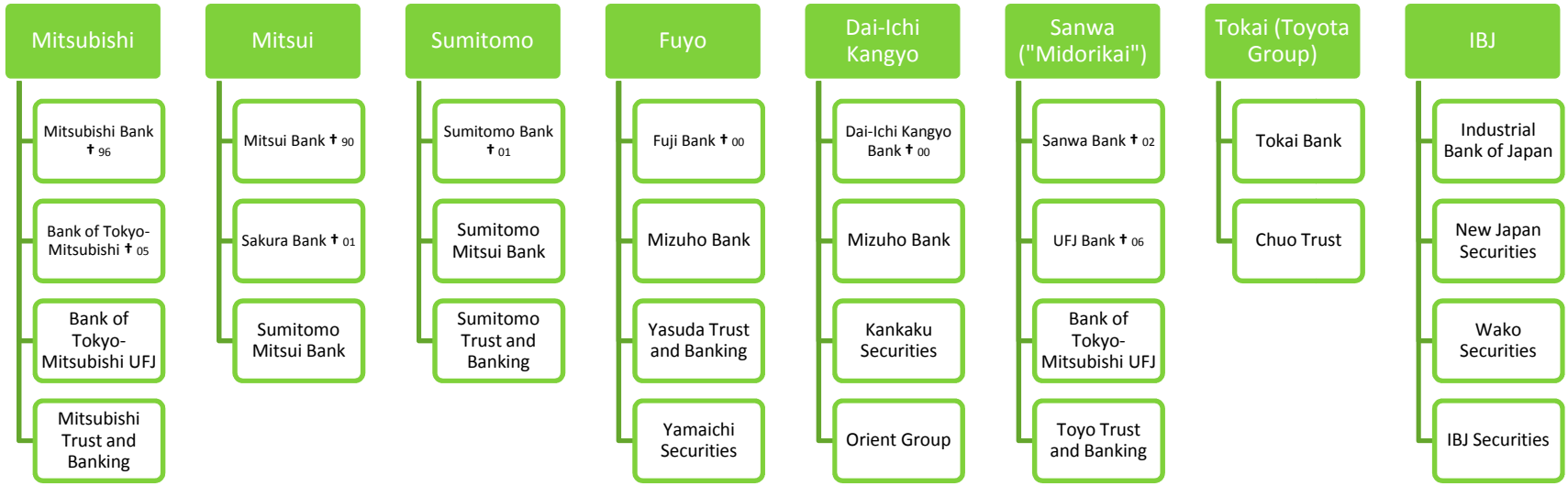
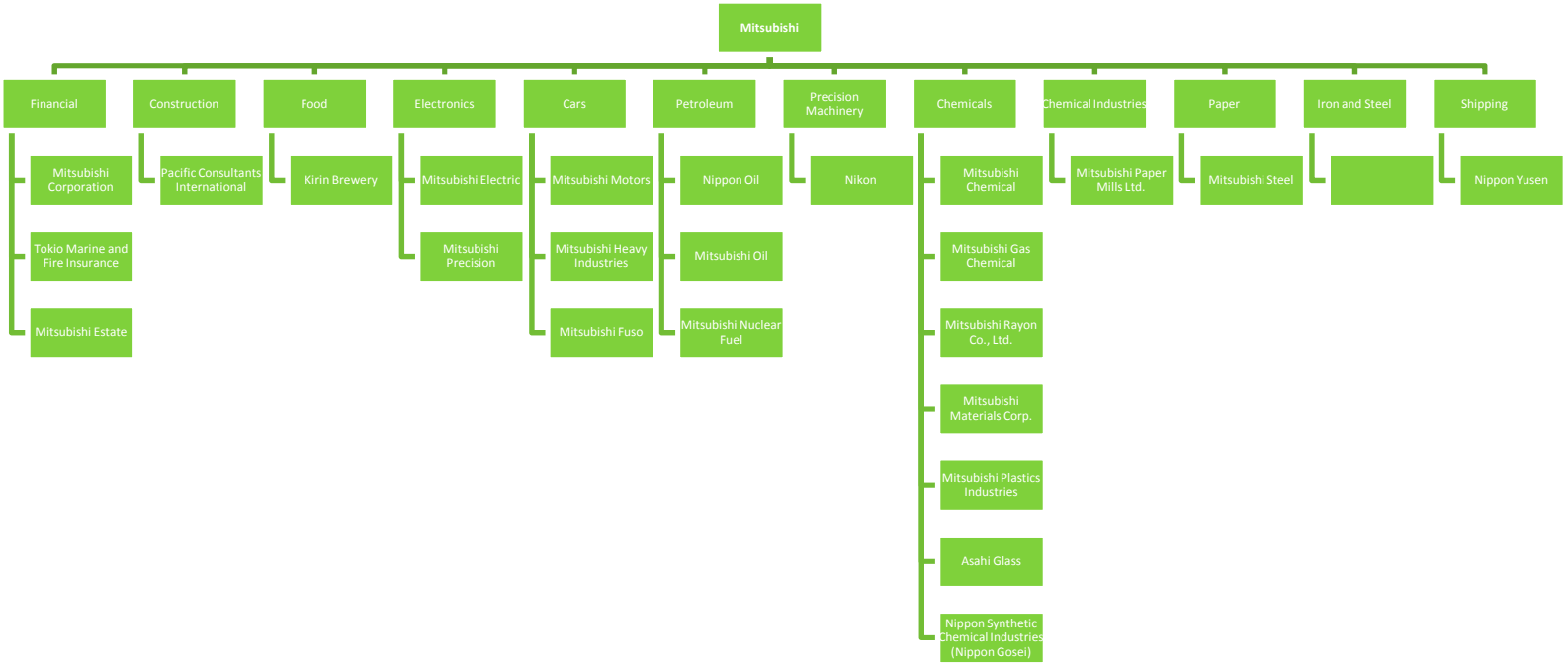


Figure 2: Example of the Mitsubushi Keiretsu, others are added as appendix. Information publicly available online, including Wikipedia.



2.2 DIVERSIFICATION

This chapter is a brief summary on diversification. In the rest of this thesis we will focus on the most common aspect of diversification and how it was employed by the Japanese.

Rumelt's landmark study introduced seven diversification strategies according to the impact of related activities to the company's core business. This is far from perfect considering the lack of detail and transparency of company data. Still relevant as an alternative for the Herfindahl index through its obvious limitations with the SIC classes that have the possibility of being ambiguous. (*Rumelt, R.P. 1982)*

Twenty-five years ago Porter has given a definition on diversification. A quarter of a century is a long time in the fastest changing period of our time. The Internet and subsequent evolutions have disrupted the status quo of economic theory. An update on diversification is warranted. Current articles related to diversification are used as a framework to base this thesis.

Which kind of diversification is successful for which kind of Japanese firm?

Porter argued that there are two ways to gain a competitive advantage: cost leadership or diversification. We will stress the importance on the latter, because this is the part I focus on in my thesis. Not that costs are irrelevant when talking about diversification, nothing could be further from the truth.

Both cost and diversification can be a key to competitive advantage. When doing either one, the other shouldn't be neglected. Diversification requires a premium price. Customers must be willing to pay that price and it should not attract competitors.

What is diversification exactly: It is the offering of something different within a market or creating a whole new market. That offering should create value for a customer, enough value that he or she is willing to pay a premium for it. That premium should take in account costs and competitors.

Diversification is usually a more mature strategy. The Japanese found a niche to enter a Western market. They aggressively gained market share, expanded their operations, improved effectiveness and efficiency. When that was all in place they had room to start with diversification.

Loosely based on *(Porter, M.E. 1985)* & *(Abegglen, J. C., & Stalk JR., G. 1988)*.

2.2.1 RELATED DIVERSIFICATION

Diversification can happen in the same or a new industry/market. The former is related diversification. This gives distinct advantages and disadvantages. It reduces the risk for a company because it is already familiar with the industry. There are possibly positive linkages. On operational level there are possible economies of scale if the new product shares components with existing products. The new product or service also benefits from the brand of the company, lowering a possible barrier for the customer. It also has the knowledge of the market and relationships with suppliers and customers alike. *(Besanko, D. & Dranove, D. & Shanley, M., Schaefer, S. 2010)*

2.2.2 UNRELATED DIVERSIFICATION

Unrelated diversification is when the company releases an entire new product or enters an entire new market. This can be a risky venture if there are already powerful incumbents present. This tactic is usually chosen if the company has a product or service that will shake up the status quo or if it's entering a new frontier. It can also

hurt the company's position in its existing business if it is not careful. This can be the case when a manufacturer of an item with a perceived high quality offers a budget line.

In the table below the different paradigm in diversification theory will be presented as its major contributors and a practical example for each.

2.2.3 MODELS

Table 1: Different diversification theory

Resource based view	Transaction Cost Theory	Prospect Theory
Organizational or implicit knowledge gained in one business area of the firm can be transferred to another, this is a core competency of the firm.	Increasing levels of diversification will increase the cost of controlling the firm. Related diversification, needs close communication among various internal or external functions of a firm, will increase management costs more quickly than unrelated diversification, which requires fewer communications.	People value gains and losses differently and, as such, will base decisions on perceived gains rather than perceived losses. Thus, if a person were given two equal choices, one expressed in terms of possible gains and the other in possible losses, people would choose the former.
(Prahalad, C.K, & Hamel, G. 1990)	*(Conner K.R. 1991)* *(Jones, G.R., & Hill, C.W.L. 1988)*	*(Kahneman, D., & Tversky, A. 1979)*
Using knowledge of existing products or markets a firm can diversify into a new product or market. e.g. Apple used its experience gained with its iPod music player to diversify in the mobile phone market with its iPhone.	The more products or markets that has been diversified into, the more resources shared amongst these products and markets are taxed. e.g. Microsoft eager to launch its Xbox 360 system all over the world neglected its Xbox system and lost a lot of possible additional sales whereas Sony after its worldwide release of its Playstation 3 system, it continued support for its Playstation 2 system and kept it as an important source of revenue.	The presentation of information influences the decision to diversify. e.g. EBITDA that is positive sounds more interesting than EBITDA that has been decreasing for the last five years, even though it may possible be the same figures that are analyzed.

2.2.4 SCOPE

Diversification means something else for different economic fields, it may be interesting to make a comparison to avoid any confusion afterwards.

Table 2: Horizontal & vertical diversification

Diversification	Horizontal	Vertical
Industry	Acquiring competitors.	Acquiring parts of the supply chain.
Finance	Investing in different companies.	Investing in different classes of assets.

Source: (Ehling, P., & Ramos, S. B. 2005) & *(Manganelli, S., & Popov, A. 2010)*

Table 3: Diversification in marketing

Diversification	Concentric	Horizontal	Lateral
Marketing	Existing products to new customers.	New products to existing customers.	New products to new customers.

(Corsi, A., & Borsotto, P., & Borri, I., & Strom, S. 2009) & Information publicly available online, including Wikipedia.

These different disciplines come with their own specific interpretation, to avoid confusion and keep an uniform definition this thesis will use related and unrelated diversification. This is the viewpoint of Porter and the majority of sources used to make this thesis. If there are any anomalies they will be referenced to this chapter. This chapter was mainly used to flesh out the diversification background.

There is the chance that even with these careful boundaries and explanation that there are problems. The problem is that there is no consensus on diversification. Different researchers work in a different context, so it's not only different by discipline but it depends on person to person. This makes it difficult to paint a cohesive picture on so many different viewpoints.

Most literature is based on either the industry or theory of industrial organization (used in strategic management) or finance definition of diversification. Considering we will use operating revenue and EBITDA as measurements of performance and not share value, we will choose the industry paradigm. The finance theory focuses on financial market transactions available to investors and companies alike pertaining the spread of risk. Strategic management theory deals with the analysis of value creation through diversification.

There are different levels at which a company can diversify. Before explaining the different types of diversification, however, there are different variables to take into account that may limit the firm's possibilities. 1. Size: bigger firms may have more resources to diversify, but their company structure (e.g. bureaucracy) might not allow it. Considering many of these variables can be hidden variables or variables that are hard to test, there is an added difficulty. See the research of *Morck, R., & Yeung, B. 1997*. 2. Industry: it also depends on the kind of industry whether a firm is able to diversify and in which manner. These however are not rules carved in stone, sometimes a firm of rubber can successfully diversify into mobile phones, for instance Nokia. See the research of *Schclarek, A. 2006*.

Each level brings a host of difficulties for the diversifying firm to overcome. Each also brings a level of opportunities that a company can benefit from. There are two main possibilities diversifying on the level of the product: vertical or horizontal diversification. Both offer a lot of possibilities but both require the same basis to be successful and are a measure of the success itself they have to create value, namely increase the firm's competitive advantage.

Expanding in the supply chain (vertical integration) or going into new industries (horizontal integration), both are part of the product level. This kind of diversification requires specific knowhow and can't be rushed. There

are possible drawbacks with this strategy, the main being the loss of human capital when expanding to suppliers or competitors when the culture of both firms clash and the personnel of the target decides to leave.

An interesting matter to take in account is that the market is not already saturated or there is an innovation that creates whole new market when it comes to this kind of diversification. It also requires a good functioning market and financial system to allow these diversification moves. Related and unrelated diversification form an integral part of this kind of setup.

Whereas market or international diversification tries to expand or create new businesses abroad. It is similar in that new challenges await the company, but the difference of market situation makes it an essential difference. It can be either used to fuel growth, cross subsidize ventures in the home market or a pre-emptive strike to discourage new entrants *(Wiersema, M.F., & Bowen, H.P. 2005).*

2.3 REASONS FOR DIVERSIFICATION

There are reasons that warrant diversification. These are external events that are beyond the firm's control. They can influence to a certain extent, but diversification is the best course of action. The list below consists of the most frequent reasons to diversify: to enhance competitiveness, value neutral or managerial reasons, but it is not exhaustive. Whether the outcome, is positive or not, is determined by whether the motives are correct and how the effect of the strategy on the company's performance.

2.3.1 TO ENHANCE COMPETITIVENESS

Economies of scale or scope. *Brush, T. H. 1996* mergers are associated with operational synenergies, the combined market share increases after the merger, thus creating economies of scale or scope. *Nathanson, D., & Cassano, J. 1982*, however, argue that diversification for economies of scale only happens occasionally, there were large scale economies companies in their sample that were diversified, others were not. *Penrose, E. 1995* rooted in the resource based view argues that economies of scope are possible using unutilized company resources. *Prahalad, C. K., & Bettis, R. A. 1986* corroborate this, management can use its skills in a certain subject to manage seemingly unrelated businesses.

Market power motives. *Teece, D. J. 1982* argue that economies of scale are not possible for independent firms when the transaction costs are too high because of specialized assets such as proprietary knowledge and its more beneficial to vertically integrate. Another motive being that as an incumbent of a market you can be threatened by a whole host of newcomers, even some with superior resources (e.g. global market leaders) and diversifying into new businesses can subsidize the battle for the market.

Financial economies motives. *Stein, J. C. 2003* shows that the merger of a cash constrained firm that has profitable investment opportunities with a cash rich firm that lacks them can increase overall value. Transactions in financial markets may suffer incomplete information, firms with existing debt may have difficulties securing new debt and external finance consumes monitoring resources. This makes a merger a worthwhile alternative. *Shleifer, A., & Vishny, R. W. 1986* a company may want to diversify its portfolio to avoid large swings of value, the individual shareholder can do it himself, however, unless it has large ownership blocks in a firm. There is also the possibility of undervaluation, where management sees an opportunity in a firm trading below its value. This is unlikely with a whole list of people and businesses that solely focus on the stock exchange, if a merger is announced, bidding wars diminish the possible profits and *Bazerman, M., & Samuelson, W. 1983* point out that the winner of the auction has usually lost at the end.

2.3.2 VALUE-NEUTRAL

Policy measures. Government may take actions that are not beneficial for your industry (e.g. restriction of alcohol to underage drinkers) that you have to take measures to attract clients to your business (e.g. alcohol-free beverages) compliant with the new policy. This is a cost for all undiversified businesses in the sector, but first movers or already diversified businesses may have a competitive advantage here.

The most frequent policy measure that warrants diversification is anti-trust. Too big to fail, but what if you are too big to grow in your industry and anti-trust agencies like the DG Competition of the European Commission doesn't allow you to grow within your field of expertise? Then you diversify as a firm. This is one of the reasons that fueled the unrelated diversification wave of the 60's that was generally not so successful and lead to a list of divestures the following years.

Possible tax incentives are often a motivation to diversify. The notional interest deduction makes it interesting for a firm to diversify to the Belgian market. This deduction with a list of subsidies gives a certain financial compensation for investing in this market and helps alleviate the uncertainty concerning a possible diversification.

Uncertainty avoidance. Some businesses are cyclical or sensitive to the market. To reduce risk and allow cross subsidization when the core business would require it, some companies diversify. Businesses also diversify to overcome low performance, for the possibility to create a stable source of revenue. These are things an individual shareholder can do himself, but some industries require cross subsidization to survive market shocks.

Exploitation of (in)tangible resources. *Marber, A. S., & Kooros, S. K. 1997* tangible features are things that can be compared and measured, for instance the engine of a car. Intangible features is the value that is appointed by a customer and is entirely open for discussion, for instance the feeling of a luxury product. Companies have to take both into account when diversifying and it was key to the success of the big three in the luxury car segment: Honda, Toyota and Nissan.

Reilly, R. F., & Schweihs, R. P. 1998 argue that a company with a certain brand name can diversify in a related market to create additional value. This may be a complementary good or even a substitute as long it doesn't hurt the perception of the core business e.g. a luxury product that releases a budget line is unlikely to have any success and it may hurt the business of its core product.

Change of customer preferences. If you are in a mature industry (e.g. book publishing) and there is an innovation (e.g. eBooks) you have to diversify your business. This in order to keep your current customers satisfied and use your experience to gain a foothold in the new market. There is the chance customers might change to the new industry (e.g. ice industry < refrigerators) and you are left behind without customers.

Cultural reasons. One of the reasons for diversification is distinctly Japanese. It is based on the concept of lifelong employment: to avoid layoffs Japanese firms also diversify to keep people employed. This is seen as an expensive measure by Westerners, but it's part of the business culture of Japan. It's also one of the reasons why social policy in industry is rather stable compared to the West.

2.3.3 MANAGERIAL REASONS

Growth. *Jensen, M. C. 1989* management values growth whether or not it is profitable. Management will take in account personal value when making decisions and if this is positive e.g. prestige it will even go through with transactions that are possibly harmful for the company. *Avery, C., & Chevalier, J. C., & Schaefer, S. 1998* management who undertake acquisitions are likely to become part of the target's board of directors.

Compensation. *Reich, R. 1983* argue that management's main drive of expansion is the increase of its remuneration. *Rosen, S. 1992* and *Murphy, K. J. 2000* found no link between an increase size of a company and

an increase of pay. *Avery, C., & Chevalier, J. C., & Schaefer, S. 1998* found no evidence between the remuneration of a company's management that grown organically and one through acquisitions. *Bliss, R. & Rosen, R. 2001*, however, did find increases of pay for management in the financial sector that undertook acquisitions.

Security. Amihud, Y., & Lev, B. 1981 suggest that management will diversify for job security. Management is unlikely to be replaced unless it underperforms against the overall economy. A well diversified firm approximates the general economic situation, making it unlikely that management will get fired. This is similar with the uncertainty avoidance discussed above.

2.3.4 CRITICSM ON DIVERSIFICATION

Meyer, et al. (1992) argue that divesting may be the best option after an unsuccessful diversification strategy. If the business unit is in distress it may try to lobby for resources needed elsewhere and to some extent destroy value. To keep corporate management of diversified firms in check, costly mechanisms linking pay to division performance are needed whereas undiversified firms' management is rewarded or punished mainly by the capital markets alone. *Lamont, O. 1997* found evidence that internal capital markets may not work very well, companies were either investing too much in their unrelated subsidiaries before there was stress on their core activities or too little afterwards.

Managerial reasons for diversification rely on a failure of corporate governance: if shareholders could value diversification worthwhile pursuing and make management follow only that then there would be no managerial motives. This is unlikely, the only option is control through the board of directors. *Hermalin, B. E., & Weisbach, M S. 1998* argue that management has a lot of influence in selecting who becomes part of the board of directors, rendering it ineffective. Monitoring the company itself is for the individual shareholder seldom worth the effort.

Manne, H. 1965, however, argues that there is an important restraint on the actions of management. Unsuccessful diversification makes a company a prime target to be acquired itself and thus threatening management's very job. A powerful incentive to keep on track. *Jensen, M. C. 1989* contributes Manne's reasoning to the leveraged buyout wave of the 80's: unsuccessful acquirers were acquired themselves, with these acquisitions by corporate raiders there were high amounts of debt involved and shares greatly induced. New management had great incentive to perform better to avoid the risk of default and losing a lot of money in terms of shares owned.

Shleifer, A., & Summers, L. H. 1988 criticize the effects of leveraged buyout on the stakeholders of the company involved. They argue that it transfers value from the stakeholders to the new shareholders and make stakeholders like the employees unwilling to invest in company related assets hurting the economic efficiency in the long run. This not only for stakeholders directly involved, but also for any that fear a leveraged buyout. *Kaplan, S. 1989* and *Kaplan, S., & Stein, J. 1993*, however, argue that there were efficiency gains related to leveraged buyouts. *Holmstrom, B., & Kaplan, S. 2001* second that with that even companies failed, failed not because of efficiency reasons but because of high debt burdens and increased competition during the peak of the leveraged buyout wave.

Mitchell, M., & Lehn, K. 1990 their research showed that acquirers that divested parts of an unsuccessful diversified target gained value. The leveraged buyout merger waved ended rather sudden, *Holmstrom, B., & Kaplan, S. 2001* link it to changes in corporate governance linking management remuneration to shares, new performance measures like economic value added and the rise of big institutional investors like pension funds.

Research supported by *Shleifer, A., & Summers, L. H. 1988*, conclude that *Manne, H. 1965* market for corporate control is expensive.

Based on *(Reasons for Diversification)* & *(Besanko, D. & Dranove, D. & Shanley, M., Schaefer, S. 2010)*

2.4 HOW DO JAPANESE ENTREPRISES DIVERSIFY

Japan and its relation with diversification has been briefly discussed. However there are still important questions to be asked: the modus operandi, experiences and performance of diversification. These questions will be solved based on the research of leading lights in the research of Japanese companies, diversification and conglomerates. Therefore the secondary data gathered seems reliable and useable for analysis.

2.4.1 MODUS OPERANDI

There are many strategic alliance possibilities at any firm's disposal: cooperation agreement, patent licensing, franchising, cross licensing, R & D consortia, Co-production/Buyback, Joint Venture (equity participation). The use of a certain strategy can be linked at the level of industrialization of a specific country. It comes then to no surprise that Japanese firms switched strategies in rapid succession during their 'revolution', which is illustrated in the historical background section of the Kaisha.

Two major alliance methods were popular among Japanese firms in the 80's. A First type of alliance was the use of patent licensing. American firms eager to chip in some extra cash from investments that were already written off put their technology available to Japanese firms. This made it possible for Japanese firms to fast forward their technological evolution, learn from the West and become eventually better.

To the American their defense, while they grossly underestimated the vigor of Japanese companies there were two important obstacles in their way to rush to the Japanese market themselves: it was an alien market with few similarities and government legislation that impeded foreign entities to come to the local market. Some firms like Coca Cola persevered by first allowing Japanese dominance of its plant, gradually gaining more input and eventually became a success over time *(Abegglen, J.C., & Stalk JR., G. 1988)*.

The other and still used form is a joint venture. This is in line with the Kyousei or group thinking philosophy of the Japanese. There are a number of advantages: Japanese knowledge is tacit, their partners easy transferable; Japanese focus on learning while in a partnership, their partners do not and Japanese personnel are loyal to their firm, not their profession (in contrast to e.g. Western engineers proud of their knowledge) *Bartlett, C. & Ghoshal, S. & Beamish, P. (2008)*.

Joint ventures are still by far the dominant way of working for Japanese firms when going abroad. There is strong empirical support for it: The general preference lies in joint ventures *(Hennart, J. F., & Reddy, S 1997)*. This is in line with the group thinking mentality of Japanese firms and an important feature to take into account when looking at their actions in the international entry mode perspective.

For the foreign entry mode we use the Uppsala model *Johanson, J., & Wiedersheim-Paul, F. 1975* and *Driscoll, A. 1995* foreign market entry mode choice framework as framework for our analysis. The Uppsala model identifies four stages of the internationalization process: no regular export, export via independent representation, sales subsidiary and production/manufacturing. This mirrors the situation described of Japan by *Abegglen, J.C., & Stalk JR., G. 1988*. The Uppsala model was made more dynamic by *Johanson, J., & Vahle, J. E. 1977*: a firm will first target an international market with a similar market environment. Japan first expanded in geographic proximity to its home market.

Figure 3: The Uppsala model - Johanson, J., & Wiedersheim-Paul, F. 1975

Both models show internalization (operate within the firm, not with external partners) occurs according to different stages. *Turnbull, P. W. 1987*, however, argues that the models can't explain internalization for many firms. *Andersen, O. 1993* shows discrepancies in the models that make it flawed. *Bell, J. 1995* fails to see the relevance of the theory in the light of the internationalization of high tech firms. *Gurau, C. 2002*, however, finds empirical evidence supporting the model.

Driscoll, A. 1995 on the other hand introduced a foreign market entry decision framework: export, contractual and investment being the main entry modes. Japan using export as main international modus operandi since its inception; contractual elements like licensing, technical know-how or co-production being the basis of the rise of the Kaisha; the investment being kept rather limited to joint ventures. The analysis of *Driscoll, A. 1995* also took into account the characteristics of the main entry modes: control, dissemination risk, resource commitment, flexibility and ownership.

The entry was controlled by the involvement of government. In the case of Japan it was that the Ministry of International Trade and Industry that became part of Ministry of Economy, Trade and Industry. According to *Abegglen, J.C., & Stalk JR., G. 1988* the department had an important hand in shaping the Kaisha and making Japan what it is today. Next is dissemination risk, the risk that the partner will extract valuable knowhow, according to *Bartlett, C. & Ghoshal, S. & Beamish, P. 2008* Japanese companies learned more from their partners than they from then, because Japanese knowledge was more tacit and they were more eager to learn.

Resource commitment, which the Japanese tended to avoid through joint ventures. It had to start to, however, after regulatory pressure, because of its success in industries like the automobile sector with policy makers demanding factories in their respectively countries *Bartlett, C. & Ghoshal, S. & Beamish, P. 2008*. Flexibility being the ability to switch through entry modes. With Japanese companies this has decreased overtime, with the increase of investment abroad: their sunk investments of their foreign plants. Finally ownership: the extent of equity participation, where the evidence is mixed, *Hennart, J. F., & Reddy, S 1997* argue some Japanese firms increase their equity participation in joint ventures, some decrease it.

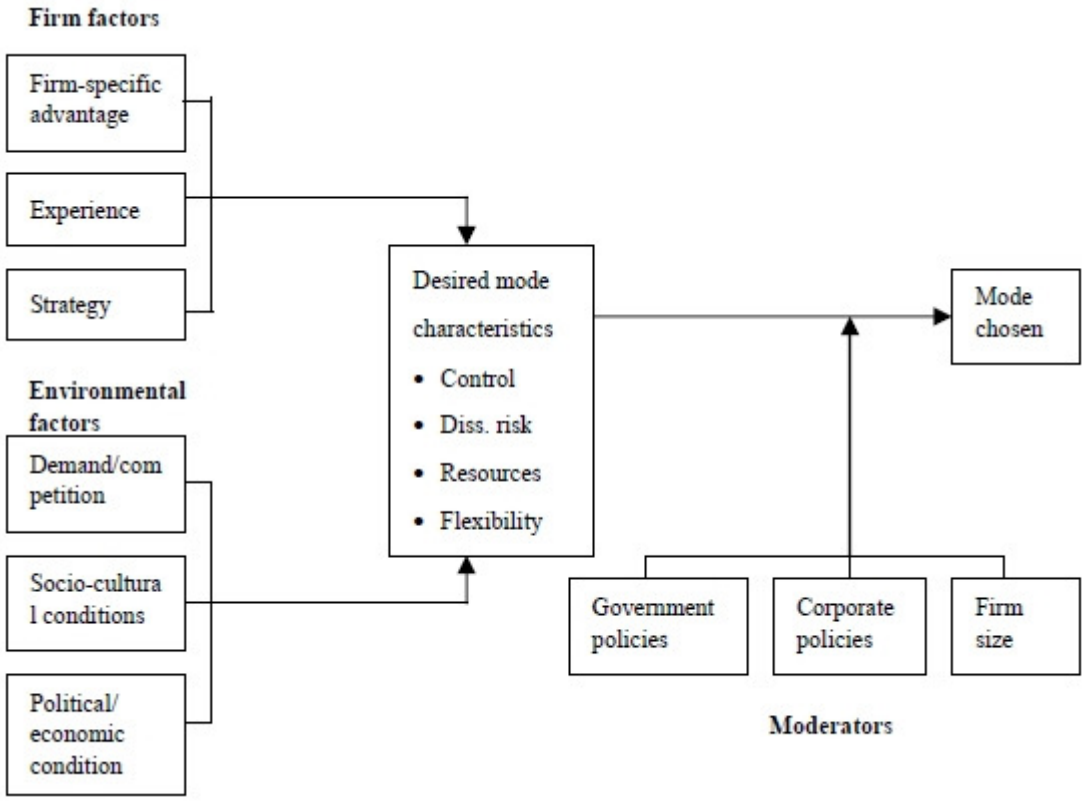
Erramilli, M. K., & Rao, C. P. 1993 suggest that in the choice of the characteristics, the modes shouldn't be taken in account, this not to limit the possibilities to one entry mode. *Driscoll, A. 1995* took this into account and saw the possibility of situational influences:

Table 4: Dynamic mode choice framework: case Japan

Firm factors	Firm specific advantages	The Japanese steel industry had an advantage with its new continuous casting technology according to *Adams, W. & Mueller, H. 1988*, see also *Mizoguchi, S., & Ohashi, T., & Saeki, T. 1981* and *Miyazawa, K. 2001*
	Experience	Nintendo's experience spanning more than a century in the entertainment business, had a dominant position in the electronic entertainment business according to *Maruyama, M., & Ohkita, K. 2011* which still contributes to its success today
	Strategic considerations	*Odagiri, H. 1994* argues that key to Japanese growth strategy is internal growth opposed to growth through acquisitions
Environmental factors	Demand and competitive conditions	*Baron, D. P. 1997* shows that alleged trade barriers influenced the Kodak Fujifilm competition
	Political and economic conditions	*Cargill, T. F., & Sakamoto, T. 2008* argue that the lack of effective policy led to the disparity between past performance and current performance of the Japanese economy
	Socio-cultural conditions	*Lobo, B. J., & Henley, J. A. 2004* argue that systems like the keiretsu have led to the economic problems of Japan today
Moderators	Government policies and regulations	*Paprzycki, R. 2007* argues that Japanese government is finally opening its country for foreign direct investment
	Corporate policies	*Nakamura, M. 2011* shows that Japanese corporate policy is changing after the tarnished reputation of banks in the aftermath of the past bubble
	Firm size	*Fukuda, S., & Munehisa, K., & Kentaro, A. 2006* argue that small and medium size companies were more vulnerable during the banking crisis in Japan

These factors that influence the entry mode are taken into account in the analysis presented by this thesis.

Figure 4: Dynamic mode choice framework - Driscoll, A. 1995



All this combined forms *Driscoll, A. 1995* dynamic mode choice framework. *Driscoll, A. 1995* argues that there is no optimal foreign market entry mode. A firm has to consider the characteristics and factors. This framework is a means to analyze diversification strategies followed by Japanese companies.

This is all to sketch a general situation. The unit of analysis of this research will be the keiretsu. This is something distinctly Japanese that represents diversification. It gives a consolidated representation of diversified firms that are in a network with other diversified firms. This makes it interesting to study and compare with market firms that are less diversified.

Based on *(Wu, D., & Zhao, F. 2007*), also see *(Madhok, A. 1997)*, *(Agarwal, S., & Ramaswami, S. N. 1992)* and *(Kogut, B., & Singh, H. 1988)*.

2.4.2 EVIDENCE OF THE EXTENT TO WHICH JAPANESE FIRMS DEVELOP NEW PRODUCTS / NEW MARKETS

Where the next part of this thesis looks at the effect of diversification strategies pursued by Japanese firms, this chapter looks at general experience. This sounds ambiguous but it is rather simple. Experiences by Japanese firms that are not directly linked to diversification, diversification not immediately related to performance or diversification implemented by individuals e.g. visionary CEO. It may sound as outside the scope of the research question, but it may prove interesting background information.

Product diversification

How do Japanese firms compare in the cutting edge technology market? There are a lot of stories that report Japanese entrepreneurship in science, but they don't have the reputation of being creative. Statistics tell a

different story: the amount of patents requested by Japanese companies is staggering. This means that a lot of new technology is developed in Japan and its capable of innovation *(Leten, et al, 2007)*.

Market diversification

Diversification is a common strategy to spread risks, but is this a national or international affair? *Eun, C. S., & Resnick, B. G. 1991* point out that Japanese investors have little to gain from international diversification. This may prove to be a link why Japanese firms tend to stick to their knitting and stay local when diversifying.

If a Japanese firm founds a subsidiary, is it better to trust the local team for diversification strategies or should it better follow the mother company's guidelines to the letter? Some of the most successful ways of international positioning is setting up subsidiaries that learn more from themselves than the nutriment of the Japanese mother *(Belderbos, R., & Banri, I., & Wakasugi, R. 2008)*. A personal example being Mutoh Europe nv that engineered new patented technology locally.

How did the Japanese acquire a foothold in a congested American luxury car market was a question often asked with the rise of the Kaisha. The answer: by differentiating themselves on tangible features same performance for a lower price and increasing price as intangible features as luxury status came available to them. This is the typical Japanese policy of getting a beachhead and improving from there. It proved very successful with Toyota becoming market leader *(Marber, A. S., & Kooros, S. K. 1997)*.

This paragraph: in the analysis part: It would be interesting to represent the situation on who owns whom and make a structure analysis. In the sample the accounts, however, are consolidated. It contains the majority of keiretsu companies and within its accounts are those of many of the activities it's diversified in. The effect of this is limited, because whether or not diversification leads to value creation is the main question of this thesis.

2.4.3 PERFORMANCE

First there are different ways how performance can be measured or defined, these questions are left to be answered by the secondary sources used in this thesis, the general consensus seems that good performance lies in profitable companies to companies that perform better than their peers. These are acceptable definitions to work with, considering the large quantity and diverse research data used.

We look at the effect of diversification on performance. Our sources however are at odds with each other. Some research claims the merits for related diversification whereas other supports unrelated diversification. There is the possibility that there is a hidden variable that isn't taken into account and may explain the different outcomes of this various research.

Support found for related diversification is found in a study which points out that the success of diversification is determined by the proximity of the technology to the company's core competence (Leten, B., & Belderbos, R., & Van Looy, B. 2007). Leten, B., & Belderbos, R., & Van Looy, B. 2007 research, however, begs an important question, what if the core competence is used for an entirely new purpose, the line between related and unrelated diversification would be very ambiguous.

A study on the centralized public utility companies of Japan has shown little influence of relatedness of diversification on success for Japanese industry (Yokoyama, H. 2007). This is a harsh contra for unrelated diversification?. However, there is an important issue distinctly Japanese to be considered, Japanese electric companies are very consolidated and energy is very expensive, thus giving Japanese companies a distinct competitive disadvantage and a possible peril to their diversification strategies, but it is a question if this is relevant towards the outcome of the research.

On the other hand there is a very strong argument for unrelated diversification: research on the long-term performance following mergers of Japanese companies points out that diversifying mergers show superior performance (Kruse, T. A., & Park, H. Y., & Park K., & Suzuki, K. 2007). This study based on long term data (40 years) is a strong support for unrelated diversification.

The results are not clear-cut, maybe common for a social science. Looking from different angles there is support for both related and unrelated diversification. If we disregard the study on public utilities because it narrowed down a very specific industry we find no disagreement with unrelated diversification. So both methods warrant superior performance.

Measurement was done by either using stock data or financial records. Whereas stock data is a convenient way to analyze groups of companies, the emphasis of the shareholder model in Japan discounts the usability of relying solely on stock data like previously mentioned in this thesis. Financial records prove an excellent way to analyze individual companies, but are hard to come by and may prove hard to compare to different sectors.

In our own analysis: units of observation for performance used in are operating revenue and EBITDA. These are the two measures that are used in the empirical research. Both give a good representation of the value creation by the company. This allows for measures that go beyond the traditional literature review and add a certain value to this master thesis.

An important way of judging performance is not just accountancy, it are the corporate governance practices that take in account all stakeholders. A closer analysis on this subject allows to look at the impact of a firm in its entirety. Whether or not there is value creation and not just a value transfer. According to *Ammann, M., & Oesch, D., & Schmid, M. M. 2011* corporate governance is also crucial in the valuation of a company.

2.4.4 CORPORATE GOVERNANCE

In this part we will describe the features of the Japanese stakeholder model

There are six main features of Japanese corporate governance: steady payments of dividends, mainly using banks for debt financing, internal labor markets for management, management turns in pay to protect the jobs of their employees and a stakeholder ethos that takes employees in account. The usage of banks is key for the keiretsu companies, they are centered around them.

Some of the keiretsu companies like Toshiba put the traditional lifelong employment paradigm under pressure with natural layoffs, not yet mass firings. This means that the global turmoil puts traditional Japanese business structure under pressure too and that companies have to make changes that contradict important stakeholder values.

The merger and acquisition story is also different, instead of contest of control through means like hostile bids, there is a sort of contest for being the best manager. This allows for the best managers reaching the highest business echelons and through their way to the top, they make invaluable contacts with the long term stakeholders of the company: banks, customers, suppliers and employees.

Japan lacks the venture capital mechanisms like fluid labor markets, legal expertise and equity-related compensation that are needed for the system. Instead they rely on corporate spin-offs and big company funding for their innovation. This different way of doing business is another reason why operating revenue and EBITDA are more interesting units of observation than share value.

Japan focuses more on relationships based on personal ties, trust and reputation than ironclad contracts. That is why there is less vertical integration in Japanese firms. This leads to think that diversification happens in the

horizontal region. There may be a bias that the major firms of Japanese industry are automobile manufacturers and they are keen on relationships with their suppliers instead of owning them.

The personal ties may also be a result of lifelong employment and the business relations are enforced by cross-share holding, which in fact is part of the keiretsu structure. Minority stakes in each other's company as a token of good will. The important role of the banks is another, they may protect a productive firm that is experiencing financial woes.

This gives all an interesting view why Japan is so different from the West and why to work with only a literature review of mainly Anglo Saxon research would be risky. It gives also a background to help interpret the results that the empirical analysis my reveal. This is all interesting to take in account when looking at a like a whole, a nexus of the Japanese economical spirit.

(Jacoby, S. M. 2001)

2.4.5 HISTORICAL BACKGROUND: KAISHA

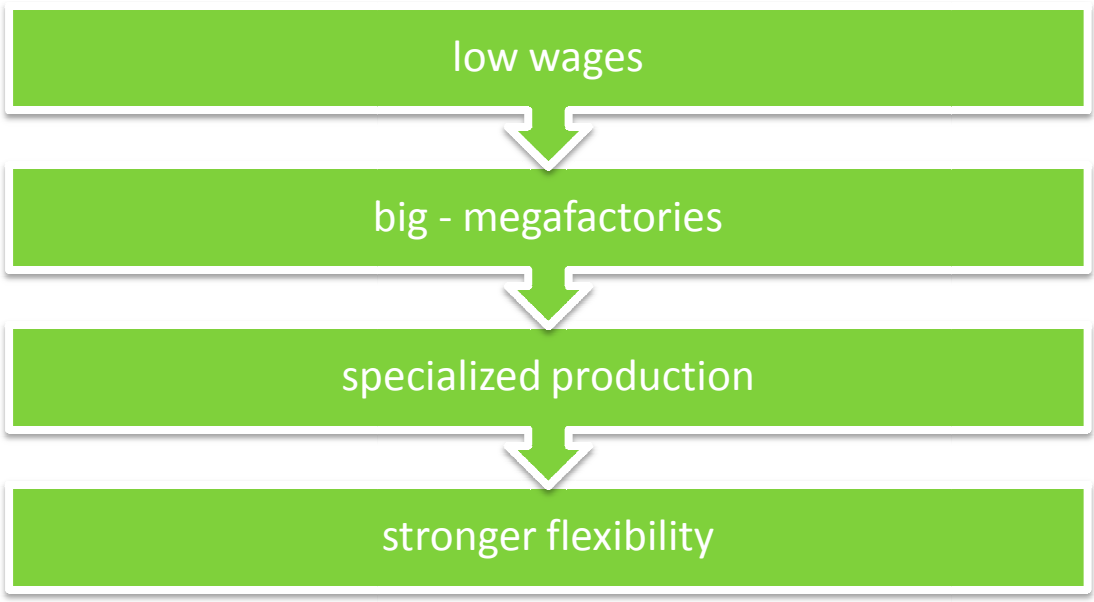
It may be interesting to shed some light on how Japan became so big in so little time. This is just to reinforce the motive of giving a as complete picture as possible. In it may lay the seeds of tomorrow and help explain and interpret the results given by the empirical research. The pure economical relevance of today may be limited at first sight, but after reading the entire thesis this background may prove invaluable.

The post second world war era for Japan is crucial to put things in perspective. Whereas differentiation and Keiretsu are part of the story, it's more than just that. To tell the entire the story would go beyond the scope of this thesis. A brief summary however can shed some light to how Japan rode the tidal wave that wiped out friend & foe alike. This is the story of how Japan changed the world.

The first few steps were distinctly Western, namely American. It was America that after its victory wanted to reshape the country. A lot of cultural, political and economical changes took shape. One of the most important things was the emulation of American business strategy of the 19th century. Getting technology abroad and creative adaption of it. Japan took it a step further, more on this later.

A strong government arm, namely the MITI (Ministry of International Trade and Industry) – that became part of the METI (Ministry of Economic, Trade and Industry) in 2001 – decided which industries to support and which to fade out. Japan's industry evolved at a rapid pace with the replacement of labor for capital. These advantages were not obsolete when a new possibility became available, they could be combined.

Figure 5: Evolution of Japanese advantages loosely based on (Abegglen, J.C., & Stalk JR., G. 1988).



A lot more is to be said, but it is either not relevant for this thesis or part of other chapters. The essential truth is that at the root lies American influence, fostered by a strong government and various strategies that resulted in superior performance for Japanese firms. This streak ended rather abruptly but lessons learned from this story are timeless and invaluable.

2.4.6 CULTURAL BACKGROUND

Japan is more relevant than it has ever been. It's all around us, everywhere we go. We use it to call our friends, to watch television, to go to work, to eat when we get hungry. The name has just changed. Made in Taiwan, South Korea, China, etc..

It may be true that the situation isn't entirely beneficial for Japan. However it is the architect for the rejuvenation of Asia as technological innovator and economic powerhouse. When Japan was growing to become the revelation of the 80's it traded with its neighbors, which was beneficial for both parties.

The trade was expanded with technology. This has proven to be a crucial step. Be it an error or a grand design, is up for debate, but fundamental it was. Japan repeated the same thing America did to fuel Japan's economic spur, give them the technological means that allow them to grow faster than they could have done on their own.

For America it was a way to gain money from investments that they already had written off and for Japan it enabled growth. It was opportune for both parties. Not really. It was one of the key features for Japan to improve their industry and grow from low skilled labor to high skilled industries. By investing in growth, not only by companies but by government as well. This led to the birth of the Kaisha in the 70's. *Yoshiro, M. 1998*

Japan learned, copied and eventually took the lead in terms of technology. They gave the same means to their neighbors and they quickly replied. South Korea took the shipping industry from Japan thanks to the technological means it got from Japan to improve their productivity and the cheap labor costs from a lower industrialized country.

So Japan got a taste of its own medicine. It was given the means to do so and it was a source of inspiration how to do so for its neighbors. Inspired by its practice and the fact an Asian country could do so well. Its trade and success empowered the entire region and laid the fundamentals for the Asian future success.

Japan also made the ancient error of hubris. America never thought Japan would topple them in what they do best: technology. Japan made the same mistake with its neighbors. However Japan remained competitive and even the errors it had made were not big enough to seriously threaten them in the short term. This to the impressive lead it had built during its rise. *Ozawa, T. 1995*

A common disease for a fast growing economy is a bubble. Japan was hit by a bubble and when it burst a financial crisis ensued, a financial crisis the country has still been unable to tackle as to date. The financial crisis of 2008 didn't help either, but it had a smaller impact on the ever-growing Asian powerhouses. *Ueda, K. 2010*

Japan's sudden halt gave a window of opportunity for the other Asian players. A lot of them profited from it, not only South Korea and China, let's focus however on them. They are currently widely discussed in newspaper and television. China is for the media the new Japan: it is now, what Japan was in the eighties.

The public image and perception of China and the visible impact is very similar with what Japan was at its breakthrough. South Korea however is a few steps closer to what Japan was as a technological juggernaught, it is leader of several popular technological industries like consumer electronics with firms like LG and Samsung.

It also suffers from some of the maturity diseases that Japan had. Some of these measures were beneficial in a not fully developed economy but tend to become malignant when time goes by. One of these issues is lifelong employment. Japan has it, South Korea has it as well. It is one of the things that is predominately Asian in terms of cultural dimension.

Lifelong employment decreases flexibility, combined with numeration according seniority and an increasing average age of the workforce leads to a high labor cost and a competitive disadvantage. The cost advantage in labor costs they used to growth has turned against them in the long run.

This is the evolution of every mature economy. Japan found a way to deal with that. They improved the technology, processes (e.g. Toyota Total Quality Management), phased out industries that were too reliant on labor and increased general efficiency & effectiveness. This was successfully copied by its Asian neighbors.

One of the things about labor that is harder to change is the people. Of course the labor populace is the people. There is however a part of the mindset of the people that can't be streamlined by education and/or processes. Business takes in account culture, but to lesser extent social processes.

There is an emphasis on the corporate social responsibility, social patterns amongst customers and in a lesser extent what lives amongst the workforce with the creation of human resources and investing in human capital. The latter proved mainly an empty promise on the part of the Western companies.

Asian companies tend to take human capital more in account but there is a social evolution that is harder for them to fight. It's a global evolution amongst developed economies. The great economic boons were fueled by the desire to expand the quality of living. People came from nothing to wealth management.

People are seeing time more and more as a luxury. They want to enjoy it. They are less willing to spend all their time at work. A trend shared with the West where there the working hours keep on decreasing. This could lead to more work for other people or an obligation to be more productive.

There is also the tendency to forego menial labor. Where Japan and other Asian countries are following the West in lesser hours, it had a strong dislike for menial labor from the beginning. In Japan it's considered beneath someone. But menial labor needed is as well, thus some people ought to do it.

With a lower birth rate than ever their own population won't suffice, especially in the case of Japan and South Korea. Immigration is another possibility, but it goes directly against the culture of the respective countries. They have some of the lowest immigration rates and are generally not friendly towards foreigners.

There is the cultural barrier of language amongst others, the social barrier of the "Gaijin" (foreigner) and the governmental lack of stimulus. This is leads to a challenge to find willing foreigners to risk their future in Japan and likeminded Asian countries. It works both ways, foreigners are not at ease with the natives and vice versa.

This leads to some kind of paradox. Shift happens. Asia is becoming the economic power leading the world to the 21st century. It's the hub of international economic activity, it tries to involve all the major economic players, all but the human resources that could enrich their economies and the key to a continuous success.

Japan has shown that there is no recipe for unrivaled growth, it was on its way to become the champion of Asia until it was hit by economic setbacks and it never fully recovered. China is on its way now to become the king, there is a chance that between now and 2050 there will be the story of the king is dead, long live the king.

The important thing to remember is that there is no certain way to determine which country will take the lead. That the Asian region will dominate this century is more clear, if it is prepared to tackle the social, economic and other issues that tend to come with economic success and maturity.

Loosely based on publicly available information.

3 THEORETICAL MODEL

It's possible to make a framework of previous research in the last decade on the success of diversification. This to summarize briefly what previous research did, how it did it and what the conclusion was. This is ideal to summarize before starting with the empirical research that will test diversification effects using the keiretsu as unit of analysis. Albeit this may look like repetition, this is to focus on recent research and highlight its empirical aspects, this to use as a frame of mind before starting with the empirical part of this thesis.

Table 5: Theoretical model on diversification

Authors	Definition	Measurement	Conclusion
Fukui, Y., & Ushijima, T. (2006)	Stress on related diversification based on the Input–Output (IO) table describing inter-industry commodity flows to measure relatedness.	Relatedness: Japanese IO Table & Performance: Tobin's Q.	Diversification has a negative impact.
Gemba, K., & Kodama, F. (2001)	R&D diversification related with core competence or not.	Entropy value & Herfindahl index	Diversification has a positive impact if related with core competence.
Rawley, E. (2009)	Impact of coordination costs and organizational rigidity on diversification.	SIC code & statistical analysis.	Diversification is limited by organizational rigidity.
Narasimhan, R., & Kim, S. W. (2002)	Effect of Supply Chain Integration on Product & International Market diversification.	Level of SCI by questionnaire, two entropy measures for level of PD & IMD.	Related and unrelated diversification have positive effects depended on the level of SCI.
Laeven, L., & Levine, R. (2007)	Performance of related diversification in the financial sector.	Asset and income diversity.	Value destroying because of increasing agency costs.
Qian, G., & Li, J. (2002)	Geographic diversification and its performance.	Financial data for scale, entropy measures for scope.	Diversification is positive if distributed moderate scale, equally scope.
Qian, G., & Khoury, T. A., & Peng, M. W., & Qian, Z. (2010)	Interregional and intraregional diversification.	Entropy measures for level of inter- and intraregional.	Benefits of intraregional outweigh those of interregional, pursuing both has not its merits.
Piscitello, L. (2000)	Multidimensional concept of related diversification.	Econometrics of in which sectors participating.	Started with product diversification, but switched to technology diversification.

3.1 HYPOTHESES

Contrary to traditional financial theory of the diversification discount with conglomerates *(Laeven, L., & Levine, R. 2007)*. the opinion has been voiced that an interplay of Japanese culture and the distinct structure of the Japanese conglomerate or Keiretsu led to superior returns *(Abegglen, J.C., & Stalk JR., G. 1988)*. The lack on general consensus on diversification warrants further research.

No empirical nor theoretical transparency exists on the subject of diversification. There is research that supports the traditional financial paradigm that diversification done by firms has a negative effect *(Fukui, Y., & Ushijima, T. 2006)*. Some research arguments that only related diversification has its merits *(Gemba, K., & Kodama, F. 2001)*. Which leads to inevitable question how to measure that relatedness, some research does it on basis of the SIC code *(Rawley, E. 2009)*.

Research by *(Rawley, E. 2009)* have done an excellent job to link diversification on the structure of the organization, which can be extrapolated to this research where organizational structure is important. The level of diversification also matters, there seems to be a golden rule based on scale and scope *(Qian, G., & Li, J. 2002)*. There seems enough evidence to warrant additional research. For the first hypothesis we compare keiretsu firms to the other firms in our sample that are not affiliated with any keiretsu. It is of course difficult to know what the performance of a separate firm would have been if it was not part of the keiretsu it belongs to, but considering it is the top 250 companies of Japan, most companies know a certain maturity and may show insight how companies have evolved as a keiretsu or as an individual and which effect it has had on their performance.

Hypothesis 1 (H1): Membership of a Keiretsu leads to superior returns compared to industry peers.

Is the importance of the firms participating in the Keiretsu structure equal or are there some firms that are more important than others? Are some activities better performing? Are some firms consistently underperforming or having superior returns? This is to clarify whether possible advantages of the Keiretsu structure are because of the structure and not outliers. This in the line of thinking of *Philips, G. M, & Maksimovic, V. 1998* who argue that that there is a focus in segmentation according to performance within a conglomerate (there are groups of different performance within a conglomerate). Likewise with *Godrej, A. 2004* who argues that the correct ties within a diversified company lead to performance. The second hypothesis may sound like a rhetorical question, yet it tries to find outliers, companies that are visually distinctly different than the keiretsu average.

Hypothesis 2 (H2): Performance within a Keiretsu is unequally distributed.

Is the possible advantage related to the Keiretsu structure in general or are there some Keiretsu that perform better than others? There are industries among some Keiretsu that are more outspoken which may result in an ambiguous result. That is why there may lay merit in verifying if some Keiretsu are better than others. The result may or may not be support for the advantages of the Keiretsu structure. *Maksimovic, V., & Philips, G. M. 2008* argue the importance of the lifecycle and sector a group of companies experience within its individual firms, thus reflecting on the results on the group as a whole. Whereas *Wu, XP., & Sercu, P., & Chen, C. 2000* argue that it is hard to get a good read on the inner workings within the keiretsu.

Hypothesis 3 (H3): The choice of sectors influences Keiretsu performance.

Does the keiretsu structure create value? Have its members improved over the last decade or has the situation worsened? This is an interesting question to ask, especially based on company data: operating revenue and EBITDA and not the traditional stock market data. This gives a representation of actual facts and not

speculation. If the study of *Philips, G. M, & Maksimovic, V. 1999* is any indication, then the group of keiretsu will have improved over the last decade growing generally according to optimal behavior. Whereas *Lyandres, E. 2007* warns of suboptimal financing, combine this with Japans fickle financial climate and it may prove a treacherous impediment for the future of the keiretsu.

Hypothesis 4 (H4): Keiretsu companies have improved performance over the last decade.

3.2 METHODOLOGY

3.2.1 SAMPLE

Our sample consists of the top 250 Japanese companies with the highest earnings with data collected for the nine-year period of 2001-2009 (inclusive) resulting in sample size of 2250 firm-years. Data is collected from Bureau Van Dijk's x database. They are the leading company in data collection and are used by industry captains and academics alike as one of the most reliable sources of secondary data.

There have been two selections in the data. Not every single company was among the top 250 companies based on operating revenue. This is not a problem, there has still been a satisfactory amount of companies per keiretsu represented in the list and calculations have a weighted value depending on the size of either operating revenue or EBITDA making small companies insignificant.

Among the company data available there were omissions of either operating revenue or EBITDA. Considering the extent of Bureau Van Dijk's database a logical conclusion is that data for these companies is not publicly available. This again is a small minority and the effect on calculations will be a bare minimum. Companies that were withdrawn for lack of data are listed in subsequent chapters.

3.2.2 METHOD

It is interesting to see the evolution of the keiretsu in the last decade. Previous studies were generally negative about diversification and that it was considered value destroying. The aim is to illustrate whether the keiretsu structure proved to be beneficial or not to its companies. The result will be an indication whether diversification for Japanese multinational enterprises is value destroying or not.

Footnote: I am a master student with a moderate mathematical and statistical background. The information available is too limited to perform the analysis that is required. We developed an intuitive set of calculations to test the evolution of the keiretsu. To check the validity of my calculations we consulted academic people with mathematical or statistical backgrounds.

The data available has a timeframe of nine years. If we take the oldest available data as a basis year (2001) we can check for every year the evolution to the base year. The data available is both operating revenue and EBITDA. When we have the evolution for every single year we can make an average of these figures to give an average evolution of the individual company in the last decade.

When we have the evolution of every firm in the keiretsu we can begin to calculate whether the condition of the keiretsu has improved or worsened. Before we can do that we need to value weight the previous figures. Bigger companies based on either operating revenue or EBITDA have a bigger influence to determine whether there has been improved or not in the keiretsu.

First an average of either the operating revenue or EBITDA is compiled. Then this average is multiplied by the average evolution of the firm's operating revenue or EBITDA. Then all these results are combined and divided

by the sum of the averages of either the operating revenue or EBITDA. This is explained in more detail in the appendices. This essentially gives the companies the weight of their turnover or EBITDA in the total turnover or EBITDA of the keiretsu. This allows for that bigger firms have a higher influence on whether the evolution of the keiretsu is improved or worsened over the decade.

The availability of operating revenue and EBITDA data. These are two measurements of performance and will lead to sometimes different conclusions. These conclusions can be influenced by the availability of the measurement.

2001 is the base year. Foremost this choice is a logical one. We wanted a time evolution of a decade, the data starts from 2001 till 2009, so 2001 is the logical choice. It may have been that 2001 was a year in which there was a boost or not, but this would show in the results as an unexplainable trend. In this past decade a lot of economical turbulence has transpired, including the bubble that has caught Japan in a negative spiral and the financial crisis that had an impact on the whole world.

Considering the origin of the bubble burst in the 90's, it's safe to assume that the grunt of the effect has dissipated. The financial crisis however should have a bigger impact on the data used. If the outcome of diversification has had a positive effect (assuming 2001 had a better economical climate than 2008 – 2009), than diversification really creates a surplus value.

This the grunt of the calculations. Deviations are possible and will be reported in the results section. The method described above is the basis for most calculations. However in its state it's not ideal for every single analysis to be performed, that is why sometimes extra calculations will be made and this will be reported accordingly. We want to estimate the effect of diversification on performance, so in part use descriptive statistics: the comparison of average performances.

3.2.3 INTERMEDIARY VARIABLES THAT HAVE AN IMPACT ON THE KEIRETSU'S PERFORMANCE

There are possible variables that may help explain the situation of Japan at present. Normally these come forward in a regression analysis. This however as explained above and in next chapters is not possible. It is of importance that they are mentioned and briefly explained. Possible causes of influence on the results provided below.

3.2.3.1 COMPANY LEVEL (STRATEGY)

The company strategy may play an important role in explaining performance, is it a: leader of follower, incumbent or new entrant, aggressive or passive, .. Some of these things are harder to measure than others, most firms represented will be incumbents considering there is data available of them spanning a decade in their respectively sector. It is quite possible that some of these factors are hidden variables influencing the results.

3.2.3.2 SECTOR LEVEL

The sector may play an important role, it is however quite impossible to test using regression. The size of dummy variables for every different present SIC (Standard Industrial Classification) code would be enormous and making any result insignificant. Instead a graphical analysis based on the SIC code which gives a standard for every sector and allows future research based on this.

3.2.3.3 HIGHER LEVEL (JAPANESE)

A country rooted in stakeholder theory, with an unique business construct keiretsu and an interesting economical and political climate will definitely contribute to current economical events in its country. This may influence the results and is something ambiguous that is hard to unravel. It may be something unique to operating in Japan that can't be emulated elsewhere.

3.2.4 CULTURAL DISTANCE

Following Hofstede's cultural dimensions there is a difference among Asian and Western countries. These differences extent also to different countries, making these difference not distinctly Japanese like the variable above. It will however have an important influence on the results and if further research will be done with other Asian countries the results can be extrapolated.

3.2.5 CORRELATION

If it were a regression analysis a correlation would be easy to find. Now there is only the option of correlation between what previous research has found and the added value of the results of this research. Does it lay in line with what previous researchers have found and are there noteworthy deviations? These will be the things to look for in the results.

3.2.6 MODEL

Normally statistical analysis could spawn a regression model or something of the like. Here this is not the case. A set of intuitive calculations mentioned above and in following chapters are used instead. This is what all calculations are based on and gives a whole set of statistical and graphical analysis to test the different hypotheses. In some way the evolution of both operating revenue and EBITDA could be seen as the blueprint or model for this thesis.

3.3 CALCULATIONS

The calculations below are the abridged version for the Mitsubishi keiretsu. The first two pages calculate the evolution of operating revenue, the last two pages calculate the evolution of EBITDA. OR AV is the average operating revenue for the last decade, OR EV is the evolution of the operating revenue against the base year 2001. OR EVS is the average of evolution of the operating revenue the last decade.

OR WS is the average operating revenue (OR AV) multiplied by the average evolution of the operating revenue (OR EVS), creating the operating revenue weighted sum. RS is the sum of the entire operating revenue weighted sum (OR WS) divided by the entire average operating revenue (OR AV), giving the result whether or not the keiretsu has improved the last decade in terms of operating revenue.

EB AV is the average EBITDA for the last decade, EB EV is the evolution of the EBITDA against the base year 2001. EB EVS is the average of evolution of the EBITDA the last decade. EB WS is the average EBITDA (EB AV) multiplied by the average evolution of the EBITDA (EB EVS), creating the EBITDA weighted sum. RS is the sum of the entire EBITDA weighted sum (EB WS) divided by the entire average EBITDA (EB AV), giving the result whether or not the keiretsu has improved the last decade in terms of EBITDA.

Table 6: Evolution operating revenue calculations part 1

	Company name	2009	2008	2007	2006	2005	2004	2003	2002	2001	OR AV	OR WS
18	MITSUBISHI CORPORATION	3613207 6,60	4708034 2,18	3810258 4,11	3234964 7,94	3396828 2,15	2979050 3,41	11903839 6,94	1123651 6,03	11385730 8,75	5128396 2,01	1957642 1,07
23	Mitsubishi UFJ Financial Group Inc	2864231 8,39	2506674 9,54	2218057 4,54	2376594 6,79	2538467 1,41	2443234 5,36	26431259 ,77	2551722 3,10	28500739 ,44	2554686 9,82	2256817 9,09
28	MITSUBISHI ELECTRIC CORPORATION	2667876 6,97	2807413 9,04	2558671 7,76	2460804 2,99	2536345 4,19	2450768 5,97	25958706 ,59	2779959 4,82	31401551 ,74	2666429 5,56	2213888 0,70
34	MITSUBISHI HEAVY INDUSTRIES LTD	2339763 3,90	2585704 3,45	2023706 5,43	1958373 8,80	1964869 4,14	1861587 0,65	18615696 ,50	1981527 7,64	24646182 ,03	2115746 6,95	1778822 6,20
47	Tokio Marine Holdings Inc	1934334 6,79	1762139 2,57	1544936 0,59	1507342 3,15	1550863 2,42	1546260 9,25	18453802 ,19	1766794 4,07	14181955 ,56	1652916 2,95	1960680 9,41
48	Bank of Tokyo - Mitsubishi UFJ Ltd (The)	1913333 2,82	1831538 7,27	1780599 6,88	1853830 6,47	2016164 4,38	2038543 7,26	22576259 ,87	2166248 2,27	21251419 ,44	1998114 0,74	1863749 7,80
54	KIRIN HOLDINGS CO., LTD.	1718024 5,77	1522508 3,14	8345928 ,21	8066166 ,14	8869796 ,19	8630039 ,52	8618242, 72	9045005 ,71	9523072, 29	1038928 6,63	1145241 7,04
74	NIPPON YUSEN KABUSHIKI KAISHA	1350401 6,55	1861314 7,31	1632964 6,41	1381281 5,76	1357692 8,73	1154071 5,55	10967494 ,34	9543210 ,73	9835582, 03	1308039 5,27	1793510 2,34
94	MITSUBISHI MOTORS CORPORATION	1150128 9,89	1511719 9,40	1694550 5,32	1405909 7,54	1491939 1,65	1525225 9,13	19761670 ,71	2967860 9,09	27543793 ,06	1830875 7,31	1140276 2,86
134	MITSUBISHI MATERIALS CORPORATION	8906304 ,28	1090845 1,93	1048335 5,69	9267608 ,75	8048472 ,14	7076175 ,45	7437349, 74	7369735 ,82	9008355, 79	8722867 ,73	8411872 ,14
142	ASAHI GLASS COMPANY LIMITED	8657694 ,79	1143590 3,06	1001814 3,30	1034448 7,44	1096698 9,24	1040549 1,11	9188945, 51	9892849 ,32	10870503 ,36	1019788 9,68	9488019 ,60
155	MITSUBISHI ESTATE CO LTD	8062708 ,00	7220342 ,20	4976379 ,04	6048011 ,60	5940943 ,43	5571547 ,67	5332825, 69	5207841 ,94	5434959, 09	5977284 ,30	6648280 ,32
199	NIKON CORPORATION	6249405 ,24	6738486 ,12	6038686 ,22	5251337 ,34	5143816 ,05	4587750 ,92	3971693, 07	3582472 ,06	4156268, 19	5079990 ,58	6350135 ,67

Table 7: Evolution operating revenue calculations part 2

18	MITSUBISHI CORPORATION	31,7%	41,4%	33,5%	28,4%	29,8%	26,2%	104,6%	9,9%	100,0%	38,2%	82,4%
23	Mitsubishi UFJ Financial Group Inc	100,5%	88,0%	77,8%	83,4%	89,1%	85,7%	92,7%	89,5%	100,0%	88,3%	
28	MITSUBISHI ELECTRIC CORPORATION	85,0%	89,4%	81,5%	78,4%	80,8%	78,0%	82,7%	88,5%	100,0%	83,0%	
34	MITSUBISHI HEAVY INDUSTRIES LTD	94,9%	104,9%	82,1%	79,5%	79,7%	75,5%	75,5%	80,4%	100,0%	84,1%	
47	Tokio Marine Holdings Inc	136,4%	124,3%	108,9%	106,3%	109,4%	109,0%	130,1%	124,6%	100,0%	118,6%	
48	Bank of Tokyo - Mitsubishi UFJ Ltd (The)	90,0%	86,2%	83,8%	87,2%	94,9%	95,9%	106,2%	101,9%	100,0%	93,3%	
54	KIRIN HOLDINGS CO., LTD.	180,4%	159,9%	87,6%	84,7%	93,1%	90,6%	90,5%	95,0%	100,0%	110,2%	
74	NIPPON YUSEN KABUSHIKI KAISHA	137,3%	189,2%	166,0%	140,4%	138,0%	117,3%	111,5%	97,0%	100,0%	137,1%	
94	MITSUBISHI MOTORS CORPORATION	41,8%	54,9%	61,5%	51,0%	54,2%	55,4%	71,7%	107,8%	100,0%	62,3%	
134	MITSUBISHI MATERIALS CORPORATION	98,9%	121,1%	116,4%	102,9%	89,3%	78,6%	82,6%	81,8%	100,0%	96,4%	
142	ASAHI GLASS COMPANY LIMITED	79,6%	105,2%	92,2%	95,2%	100,9%	95,7%	84,5%	91,0%	100,0%	93,0%	
155	MITSUBISHI ESTATE CO LTD	148,3%	132,8%	91,6%	111,3%	109,3%	102,5%	98,1%	95,8%	100,0%	111,2%	
199	NIKON CORPORATION	150,4%	162,1%	145,3%	126,3%	123,8%	110,4%	95,6%	86,2%	100,0%	125,0%	

OR EV OR EVS RS

Table 8: Evolution EBITDA calculations part 1

	Company name	2009	2008	2007	2006	2005	2004	2003	2002	2001	EB AV	EB WS
18	MITSUBISHI CORPORATION	2.586.139	5.723.882	3.193.574	3.492.537	3.389.612	2.284.757	2.020.420	1.728.614	1.647.060	2.896.288	5.367.595
28	MITSUBISHI ELECTRIC CORPORATION	1.837.879	2.439.560	2.549.234	2.317.572	1.997.776	1.623.922	1.655.752	2.078.046	1.398.325	1.988.674	2.933.206
34	MITSUBISHI HEAVY INDUSTRIES LTD	1.620.681	1.982.728	1.669.788	1.375.487	1.208.453	818.838	1.305.500	1.621.986	1.502.676	1.456.237	1.405.608
54	KIRIN HOLDINGS CO., LTD.	1.766.747	2.092.707	1.191.573	1.230.902	1.337.724	1.316.799	1.351.044	-2.234.297	1.286.221	1.037.713	812.157
74	NIPPON YUSEN KABUSHIKI KAISHA	635.882	1.876.954	1.860.522	1.183.447	1.508.042	1.639.666	1.236.290	1.033.080	1.143.326	1.346.356	1.615.327
94	MITSUBISHI MOTORS CORPORATION	682.543	676.630	1.058.434	737.569	531.324	-233.653	322.040	2.101.919	1.788.226	851.670	349.865
134	MITSUBISHI MATERIALS CORPORATION	659.415	799.647	999.923	818.035	821.005	732.963	727.391	638.737	679.288	764.045	871.294
142	ASAHI GLASS COMPANY LIMITED	1.684.144	2.306.489	1.993.221	1.726.410	1.786.091	1.973.792	1.376.342	1.363.269	1.498.305	1.745.340	2.069.077
155	MITSUBISHI ESTATE CO LTD	1.795.927	1.523.775	1.483.787	1.406.785	1.346.010	1.248.700	1.220.988	1.166.980	1.178.539	1.374.610	1.631.886
199	NIKON CORPORATION	169.041	621.027	1.015.409	794.855	614.047	360.507	186.632	187.573	345.565	477.184	681.653

Table 9: Evolution EBITDA calculations part 2

		157,0	347,5	193,9	212,0	205,8	138,7	122,7		100,0	185,3	127,3
18	MITSUBISHI CORPORATION	%	%	%	%	%	%	%	105,0%	%	%	%
	MITSUBISHI ELECTRIC	131,4	174,5	182,3	165,7	142,9	116,1	118,4		100,0	147,5	
28	CORPORATION	%	%	%	%	%	%	%	148,6%	%	%	
		107,9	131,9	111,1						100,0		
34	MITSUBISHI HEAVY INDUSTRIES LTD	%	%	%	91,5%	80,4%	54,5%	86,9%	107,9%	%	96,5%	
		137,4	162,7			104,0	102,4	105,0	-	100,0		
54	KIRIN HOLDINGS CO., LTD.	%	%	92,6%	95,7%	%	%	%	173,7%	%	78,3%	
			164,2	162,7	103,5	131,9	143,4	108,1		100,0	120,0	
74	NIPPON YUSEN KABUSHIKI KAISHA	55,6%	%	%	%	%	%	%	90,4%	%	%	
	MITSUBISHI MOTORS									100,0		
94	CORPORATION	38,2%	37,8%	59,2%	41,2%	29,7%	-13,1%	18,0%	117,5%	%	41,1%	
	MITSUBISHI MATERIALS		117,7	147,2	120,4	120,9	107,9	107,1		100,0	114,0	
134	CORPORATION	97,1%	%	%	%	%	%	%	94,0%	%	%	
		112,4	153,9	133,0	115,2	119,2	131,7			100,0	118,5	
142	ASAHI GLASS COMPANY LIMITED	%	%	%	%	%	%	91,9%	91,0%	%	%	
		152,4	129,3	125,9	119,4	114,2	106,0	103,6		100,0	118,7	
155	MITSUBISHI ESTATE CO LTD	%	%	%	%	%	%	%	99,0%	%	%	
			179,7	293,8	230,0	177,7	104,3			100,0	142,8	
199	NIKON CORPORATION	48,9%	%	%	%	%	%	54,0%	54,3%	%	%	
										EB EV	EB EVS	RS

3.4 LIMITATIONS

There is an evolution of performance, but no evolution of the level of diversification. Did all of the keiretsu have the same products and/or had the same presence in markets during the course of the timeline researched? It is true that an evolution over time ought to be contrasted with the product and market entries. There is an impediment to fulfilling this condition: data given by Bureau Van Dijk is consolidated.

A lot of the information is the individual account of the company, which was not accessible during the course of this research. Even if it were available, the question would be how to measure it in such a way that it can give room to meaningful interpretations. This leads to another limitation, to show which keiretsu are more diversified than others and whether or not there lies a possible explanation to its results.

Given the state of consolidated data, it is not possible to give a detailed account on the level of diversity within a keiretsu. There is given a basic anatomy in the format of figures, there has been done a research on the sectors available to discern, yet to give a report on diversity based on consolidated data would leave it open to bias: the big keiretsu have more larger blocks of enterprises or some keiretsu have chosen to consolidate more than others.

Looking at the portfolio of the different keiretsu, the set-up is more or less the same, the data behind is more different. The Mitsubishi keiretsu has an impressive list of different companies available to research individually, whereas the Tokai keiretsu with the biggest Japanese company Toyota has far less companies to individually research. The sheer size of the Toyota company might imply that there is a lot of consolidated accounts within the Toyota account.

The uncertainty of the diversity within the keiretsu lead to the assumption that each keiretsu is more or less the same in terms of diversification. If a detailed account were available, it would be a question of how to mold it into meaningful research. The starting point would be the same, using keiretsu as an indicator of diversified companies against the less diversified market firms.

Only at the end with the interpretation of the results, a level of diversity of the keiretsu would matter. This makes us confident that the integrity of this research is not hurt by these two omissions. If future research would focus on either of these two factors or both, this thesis is still relevant considering these two questions are to be asked in the final stage of the research.

4 APPLICATION

4.1 TESTING OF THE HYPOTHESES

The hypotheses will be tested using the six traditional keiretsu and the two new ones. Some call the Sony corporation the ninth keiretsu, but it only consists of the consolidated data of the Sony Corporation and there is no consensus among academics whether or not it is a keiretsu or a just a multinational enterprise with different subsidiaries. For starters keiretsu per keiretsu will be tested.

In the Bureau Van Dijk database we found data for all companies within the **Mitsubishi** keiretsu with the omission of: Pacific Consultants International, Mitsubishi Electric, Mitsubishi Fuso, Nippon Oil, Mitsubishi Nuclear Fuel, Mitsubishi Gas Chemical, Mitsubishi Rayon Co., Ltd., Mitsubishi Plastics Industries, Nippon Synthetic Chemical Industries (Nippon Gosei), Mitsubishi Paper Mills Ltd. and Mitsubishi Steel.

For the **Mitsui** keiretsu all but: Mitsui Real Estate, Nippon Flour Mills, Mitsui Sugar, Suntory, Mitsui Petrochemical Industries, Toagosei Chemical Industries, Denki Kagaku Kogyo, Daicel Chemical Industries, Mitsui Pharmaceuticals, Mitsui Toatsu Fertilizers, Mitsui Toatsu Dyes, Kyokuto Petroleum Industries, Yaussa Corporation and Ibiden Company.

For the **Sumitomo** keiretsu all but: Sumitomo Trust and Banking, Keihan Railway, Nankai Railway and Nippon Koei. For the **Fuyo** keiretsu all but: Yasuda Trust and Banking, Yamaichi Securities, Nisshin Flour Milling, Sapporo Breweries, NOF Corporation, Kureha Chemical Industries, Nippon Sanso, Hitachi Chemical, Tobu Railway and Matsuya.

For the **Dai-Ichi Kangyo** keiretsu all but: Kankaku Securities, Orient Group, Yaskawa Electric, Nippon Columbia, Asahi Optical, Kawasaki Steel, Japan Metals, Denki Kagaku Kogyo-Mitsui Group, Nippon Zeon, Asahi Denka Kogyo, Lion Corporation, Kyowa Hakko Kogyo and Asahi Chemical Industries.

For the **Sanwa** keiretsu all but: Toyo Trust and Banking, Itoham Foods, Suntory, Keisei Railway, Hoya Corporation, Iwatsu Electric, Takashiama, Ube Industries, Tokuyama Corp, Hitachi Chemical, Kansai Paint, Tanabe Seiyaku, Fujisawa Pharmaceutical, Daiso Co., Unitika Fukusure, Hitachi Zosen Corp., Toho and Shin-Maywa.

For the **Tokai** keiretsu all but: Tokai Bank, Chuo Trust, Kagome, Daido Steel, Ushio Industries, Matsuzakaya. For the **IBJ** keiretsu all but: Industrial Bank of Japan, New Japan Securities, Wako Securities, IBJ Securities, Ikegai, Riken, Nippon Soda, Chisso Corporation, Nissan Chemical, Hodogaya Chemical, Plas-Tech, Taihei Chemical, Japan Organo and Kuraray.

The omissions above can be discounted: to either they are consolidated in companies of the keiretsu that are part of the top 250 or they are too small to be counted among the top 250 Japanese companies based on operating revenue. Since calculations were done on a value weighted basis, their effect would be in the latter case negligible and if present in consolidated accounts they are part of the calculations.

Some companies are shared among the different keiretsu, they can be found in the diagrams of the different keiretsu and are the following: Bank of Tokyo - Mitsubishi UFJ Ltd (The) shared by both **Mitsubishi** and **Sanwa**, Sumitomo Mitsui Financial Group, Inc shared by both **Mitsui** and **Sumitomo**, Sumitomo Mitsui Banking Corporation shared both by **Mitsui** and **Sumitomo**, HANKYU HANSHIN HOLDINGS INC. shared by both

Sumitomo and **Sanwa**, HITACHI LTD shared by **Fuyo**, **Dai-Ichi Kangyo** and **Sanwa**, RICOH CO LTD shared by both **Fuyo** and **Tokai**, Mizuho Bank shared by both **Fuyo** and **Dai-Ichi Kangyo**.

A brief repetition to illustrate the choice of work method: judgment is based on operating revenue and not on shares, shareholder theory is dominantly Anglo Saxon. Japan like Europe focuses more on stakeholders. Without the incentive as maximizing shareholder value, I fail to see how this can be a definitive criteria to judge the performance of a group of firms. Furthermore previous research that used it as the criteria proved to provide ambiguous results.

Using operating revenue and EBITDA as two criteria of performance tells a far more interesting story. This is the actual performance of the firm on paper. This is not the value analysts and the market wish to credit them. It gives the situation without the noise of interference and can be used whether or not diversification has its merits.

Not all data was publicly available or incomplete, so per keiretsu there are omissions of data. For operating revenue per keiretsu: **Mitsubishi** – MITSUBISHI CHEMICAL HOLDINGS CORPORATION; **Mitsui** – Sumitomo Mitsui Financial Group, Inc, ISETAN MITSUKOSHI HOLDINGS LTD, FUJIFILM CORPORATION; **Sumitomo** – Sumitomo Mitsui Financial Group, Inc; **Fuyo** – YAMAHA MOTOR CO LTD, Mizuho Bank; **Dai-Ichi Kangyo** – DAIICHI SANKYO CO., LTD., Mizuho Bank, SOGO & SEIBU CO.,LTD.; **Sanwa** – Orix Corporation; **Tokai** – IDEMITSU KOSAN CO., LTD.

For EBITDA per keiretsu: **Mitsubishi** – MITSUBISHI CHEMICAL HOLDINGS CORPORATION, Tokio Marine Holdings Inc, Bank of Tokyo - Mitsubishi UFJ Ltd (The); **Mitsui** – Sumitomo Mitsui Financial Group, Inc, Sumitomo Mitsui Banking Corporation, ISETAN MITSUKOSHI HOLDINGS LTD, FUJIFILM CORPORATION; **Sumitomo** – Sumitomo Mitsui Financial Group, Inc, Sumitomo Mitsui Banking Corporation, HANKYU HANSHIN HOLDINGS INC.; **Fuyo** – YAMAHA MOTOR CO LTD, Mizuho Bank; **Dai-Ichi Kangyo** – DAIICHI SANKYO CO., LTD., Mizuho Bank, SOGO & SEIBU CO.,LTD.; **Sanwa** – Bank of Tokyo - Mitsubishi UFJ Ltd (The), Orix Corporation, HANKYU HANSHIN HOLDINGS INC., **Tokai** – IDEMITSU KOSAN CO., LTD.

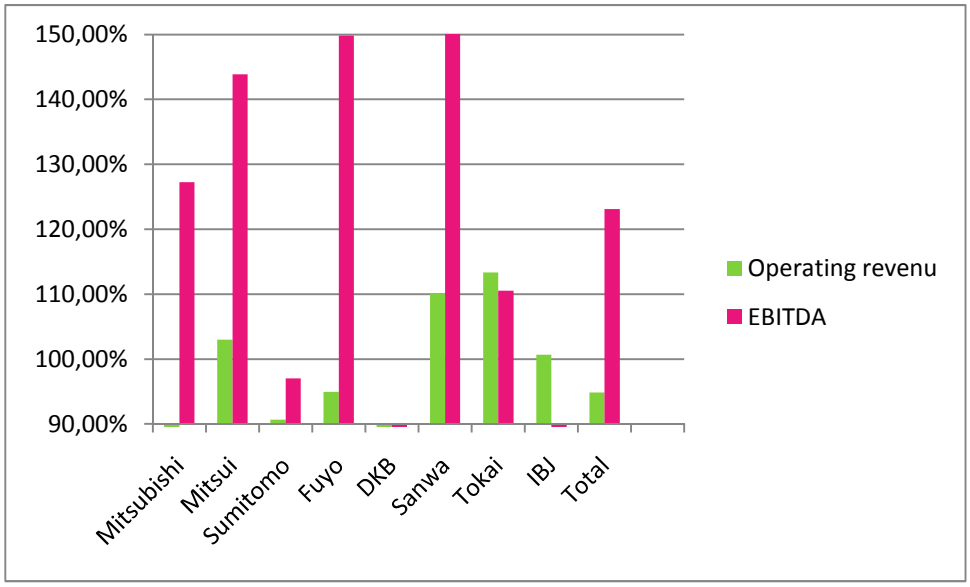
Using the remaining companies we calculate the evolution of the keiretsu described in previous chapters. This allows for how did the keiretsu evolve in a decade and in what way does this explain the success or lack thereof of diversification. This is all done on a value weighted basis that the size of the companies has an impact in the result of the grand total.

4.2 RESULTS

4.2.1 GRAPHICAL ANALYSIS OF EVOLUTION OR AND EBITDA IN KEIRETSU STRUCTURE

First the result to the hypothesis whether or not the keiretsu structure or diversification leads to value creation (hypothesis x). Value measured in either operating revenue or EBITDA.

Figure 6: Evolution of operating revenue and EBITDA for the different keiretsu - own output based on Bureau Van Dijk database



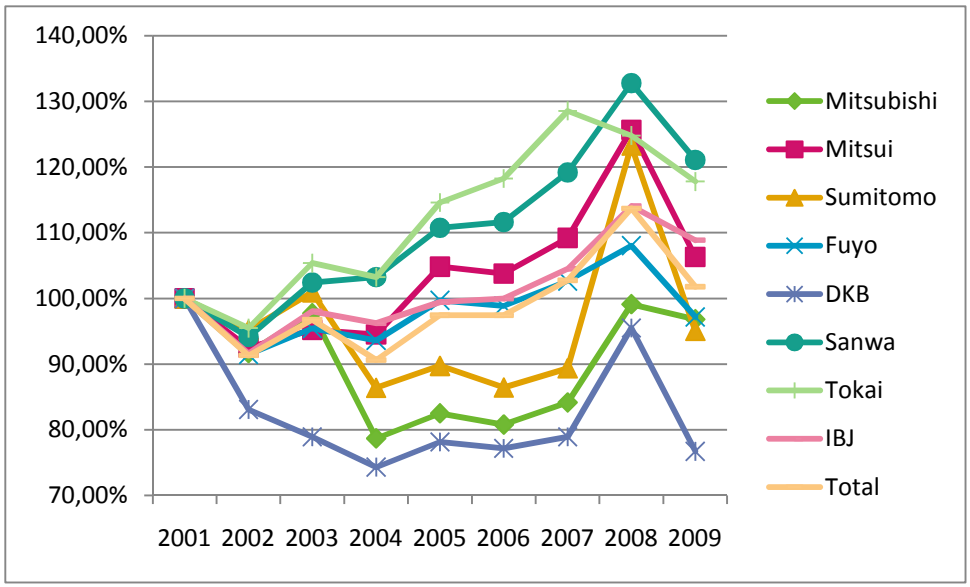
The results is inconclusive. There is an improvement of EBITDA in the last decade, but a slight decline of operating revenue.

Calculations of this analysis and others are added as appendices.

4.2.2 GRAPHICAL ANALYSIS OF EVOLUTION OF THE DIFFERENT KEIRETSU

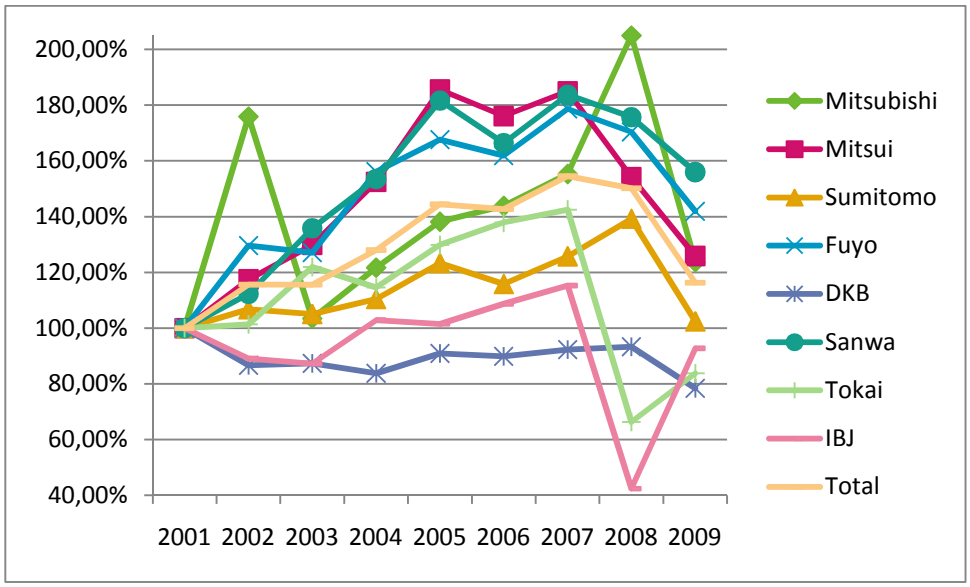
The result to the hypotheses whether or not performance between the keiretsu is unequally distributed and whether or not some keiretsu perform better than others. Both hypotheses are tested with both operating revenue and EBITDA as measure.

Figure 7: Evolution operating revenue keiretsu – own output based on Bureau Van Dijk database



The result is conclusive. Based on operating revenue some keiretsu have a bigger influence on whether or not there is value creation among keiretsu and some keiretsu perform better than others. The evolution shows a visible significant difference.

Figure 8: Evolution EBITDA keiretsu – own output based on Bureau Van Dijk database



The result is conclusive. Based on EBITDA some keiretsu have a bigger influence on whether or not there is value creation among keiretsu and some keiretsu perform better than others. The evolution shows a visible significant difference.

4.2.3 STATISTICAL ANALYSIS OF EVOLUTION OF THE DIFFERENT KEIRETSU

We will follow up testing of previous hypotheses with a statistical analysis: analysis of variance (ANOVA).

Assumptions:

- Independence of cases (assumption)
- Normality (test + graphic)
- Equality (test)

Cut of point: 0.05

Tests of Normality hypotheses:

H0: there is no difference between the distribution of the data set and a normal one
HA: there is a difference between the distribution of the data set and normal

Table 10: Tests of Normality operating revenue

Tests of Normality

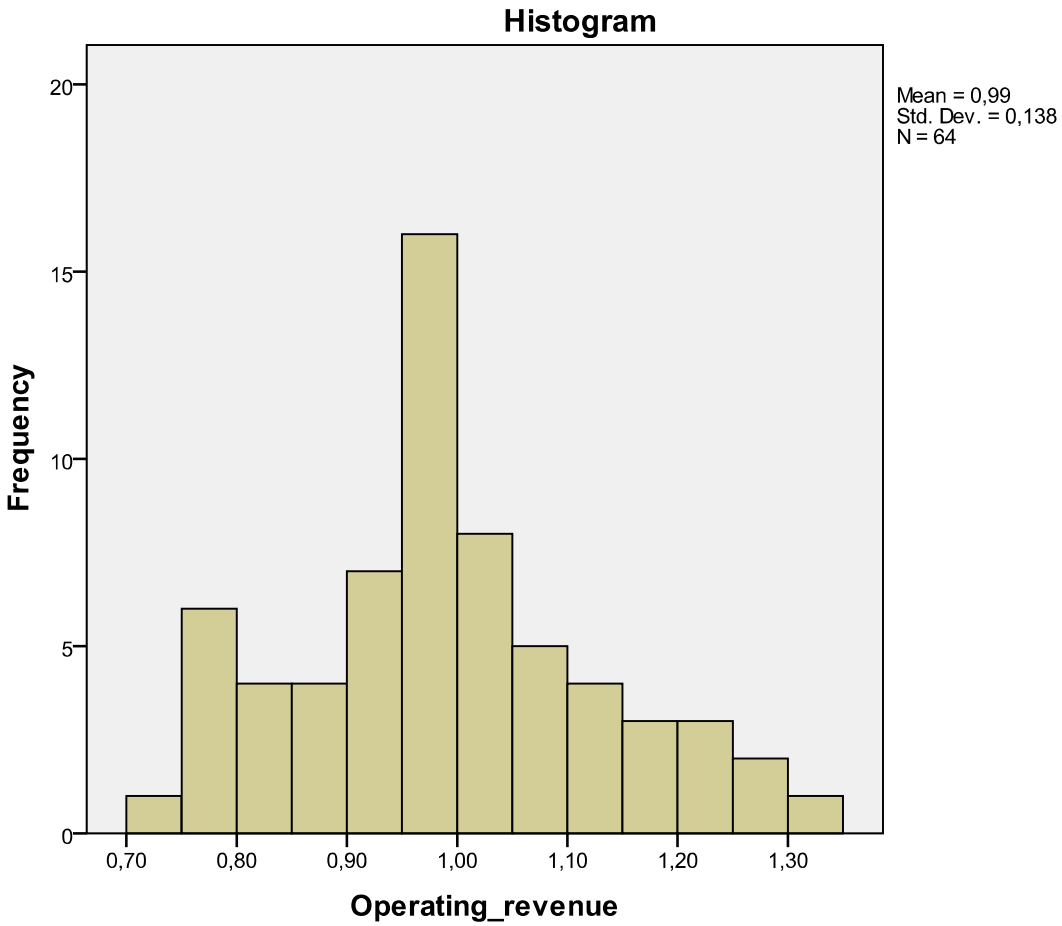
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Operating_revenue	,075	64	,200*	,974	64	,204

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

For both the Kolmogorov-Smirnov and Shapiro-Wilk test the null hypothesis is not rejected and as such there is a normal distribution. This is confirmed in the graphic analysis below.

Figure 9: Histogram operating revenue



Test of Equality hypotheses:

H0: there is no difference between the variances
HA: there is a difference between the variances

Table 11: Test of Homogeneity of Variances operating revenue

Test of Homogeneity of Variances

Operating_revenue

Levene Statistic	df1	df2	Sig.
1,027	7	56	,423

For the Levene test the null hypothesis is not rejected and as such there is no difference between variances.

With all assumptions checked the analysis of variance can be checked:

H0: there is not a significant effect of the difference of keiretsu on the operating revenue
HA: there is a significant effect of the difference of keiretsu on the operating revenue

Table 12: Descriptives operating revenue

Descriptives

Operating_revenue

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Mitsubishi	8	,8893	,08329	,02945	,8197	,9589	,79	,99
Mitsui	8	1,0400	,10697	,03782	,9506	1,1294	,93	1,26
Sumitomo	8	,9580	,12168	,04302	,8562	1,0597	,86	1,23
Fuyo	8	,9836	,05264	,01861	,9396	1,0276	,91	1,08
DKB	8	,8035	,06606	,02336	,7483	,8587	,74	,95
Sanwa	8	1,1190	,12270	,04338	1,0164	1,2216	,94	1,33
Tokai	8	1,1351	,11292	,03992	1,0406	1,2295	,95	1,29
IBJ	8	1,0159	,07222	,02553	,9556	1,0763	,92	1,14
Total	64	,9930	,13844	,01731	,9585	1,0276	,74	1,33

The means seem to indicate that some keiretsu perform better than others. Notably, the DKB keiretsu has relatively a lower operating revenue whereas the Sanwa keiretsu has relatively a high operating revenue.

Table 13: ANOVA operating revenue

ANOVA

Operating_revenue

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,694	7	,099	10,814	,000
Within Groups	,513	56	,009		
Total	1,207	63			

The null hypothesis can be rejected, there is a significant effect of the difference of keiretsu on the operating revenue. Some keiretsu do perform better than others.

Analysis of variance (ANOVA) for EBITDA:

Tests of Normality hypotheses:

H0: there is no difference between the distribution of the data set and a normal one
HA: there is a difference between the distribution of the data set and normal

Table 14: Tests of Normality EBITDA

Tests of Normality

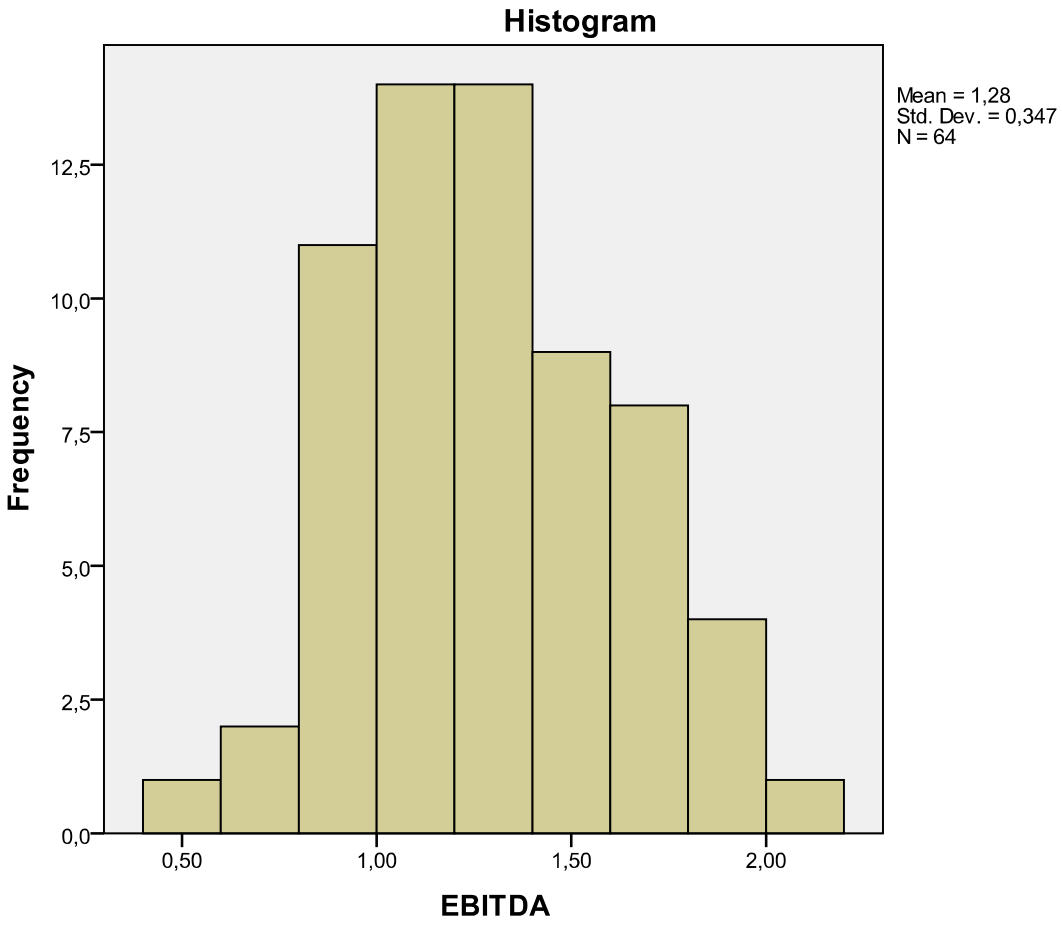
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
EBITDA	,067	64	,200*	,980	64	,384

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

For both the Kolmogorov-Smirnov and Shapiro-Wilk test the null hypothesis is not rejected and as such there is a normal distribution. This is confirmed in the graphic analysis below.

Figure 10: Histogram EBITDA



Test of Equality hypotheses:

H0: there is no difference between the variances
HA: there is a difference between the variances

Table 15: Test of Homogeneity of Variances EBITDA

Test of Homogeneity of Variances

EBITDA

Levene Statistic	df1	df2	Sig.
2,260	7	56	,042

For the Levene test the null hypothesis is rejected and as such there is a difference between variances.

With all assumptions checked, equality doesn't hold, but the analysis of variance can be checked:

H0: there is not a significant effect of the difference of keiretsu on the operating revenue
HA: there is a significant effect of the difference of keiretsu on the operating revenue

Table 16: Descriptives EBITDA

Descriptives

EBITDA

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Mitsubishi	8	1,4588	,32566	,11514	1,1865	1,7310	1,03	2,05
Mitsui	8	1,5330	,27119	,09588	1,3063	1,7597	1,17	1,86
Sumitomo	8	1,1608	,12577	,04447	1,0556	1,2659	1,02	1,39
Fuyo	8	1,5416	,19244	,06804	1,3807	1,7025	1,27	1,79
DKB	8	,8782	,04945	,01748	,8369	,9196	,78	,93
Sanwa	8	1,5812	,24505	,08664	1,3764	1,7861	1,12	1,84
Tokai	8	1,1227	,26767	,09464	,8989	1,3465	,66	1,43
IBJ	8	,9248	,22415	,07925	,7374	1,1122	,42	1,15
Total	64	1,2751	,34664	,04333	1,1885	1,3617	,42	2,05

The means seem to indicate that some keiretsu perform better than others. Notably, the IBJ keiretsu has relatively a lower EBITDA whereas the Mitsubishi keiretsu has relatively a high EBITDA. This different from when operating revenue is used as a measure, so there is distinct difference between both measures.

Table 17: ANOVA EBITDA

ANOVA

EBITDA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4,652	7	,665	12,755	,000
Within Groups	2,918	56	,052		
Total	7,570	63			

The null hypothesis can be rejected, there is a significant effect of the difference of keiretsu on the EBITDA. Some keiretsu do perform better than others.

The assumption of equality didn't hold, so another test is required:

Table 18: Robust Tests of Equality of Means EBITDA

Robust Tests of Equality of Means

EBITDA

	Statistic[a]	df1	df2	Sig.
Welch	26,582	7	22,519	,000
Brown-Forsythe	12,755	7	41,163	,000

a. Asymptotically F distributed.

Test that takes in account that the assumption of equality didn't hold. The null hypothesis can be again rejected, there is a significant effect of the difference of keiretsu on the EBITDA. Some keiretsu do perform better than others.

4.2.4 STATISTICAL ANALYSIS OF COMPARISON OF KEIRETSU AND MARKET (FIRST HYPOTHESIS)

To test whether keiretsu companies perform better than their peers a regression analysis seems plausible. There are however some impediments. A classification on SIC code would result in a list of many dummy variables making any regression either not significant or not really useful. A definition on size would be ambiguous, the companies selected are the top 250 firms based on operating revenue.

Making a distinction between big and small in this list would be arbitrary and not really useful. It would not be relevant either considering we want to measure the operating revenue of a firm within a keiretsu and those that are not part of a keiretsu and compare them. At the end there was the choice of a linear regression based on 151 companies that had both data available on operating revenue and EBITDA. There were 49 keiretsu companies and 102 market companies. Whether or not they were part of a keiretsu was made a dummy variable (is NOT the only the independent variable).

The normal average of either operating revenue or EBITDA was made the dependent variable. A linear regression was performed on both measures with following results:

Table 19: Model Summary operating revenue

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,139[a]	,019	,013	,35833

a. Predictors: (Constant), Keiretsu

Table 20: ANOVA operating revenue

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,372	1	,372	2,899	,091[a]
	Residual	19,003	148	,128		
	Total	19,375	149			

a. Predictors: (Constant), Keiretsu

b. Dependent Variable: AV_OR

Table 21: Model Summary EBITDA

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,025[a]	,001	-,006	1,13492

a. Predictors: (Constant), Keiretsu

Table 22: ANOVA EBITDA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,121	1	,121	,094	,759[a]
	Residual	190,632	148	1,288		
	Total	190,753	149			

a. Predictors: (Constant), Keiretsu

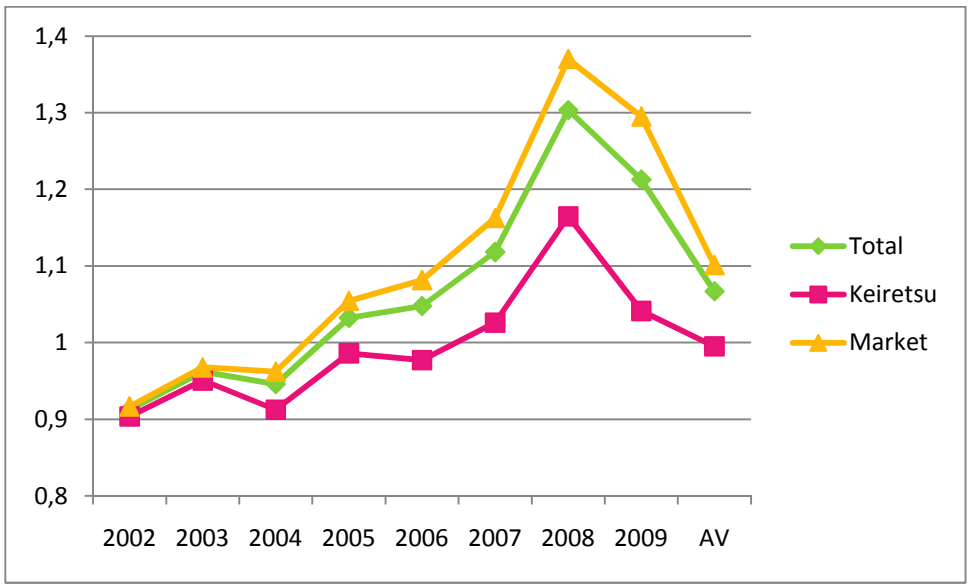
b. Dependent Variable: AV_EBITDA

The result for both operating revenue and EBITDA is an explanatory power that is negligible and a relation of statistical insignificance. This would indicate that participation in a keiretsu or not has no impact on the performance of a company. So even though there seems to be a basis of value creation among keiretsu, it also seems the case for the market since it doesn't matter whether or not the firm is part of a keiretsu.

4.2.5 GRAPHICAL ANALYSIS OF COMPARISON OF KEIRETSU AND MARKET

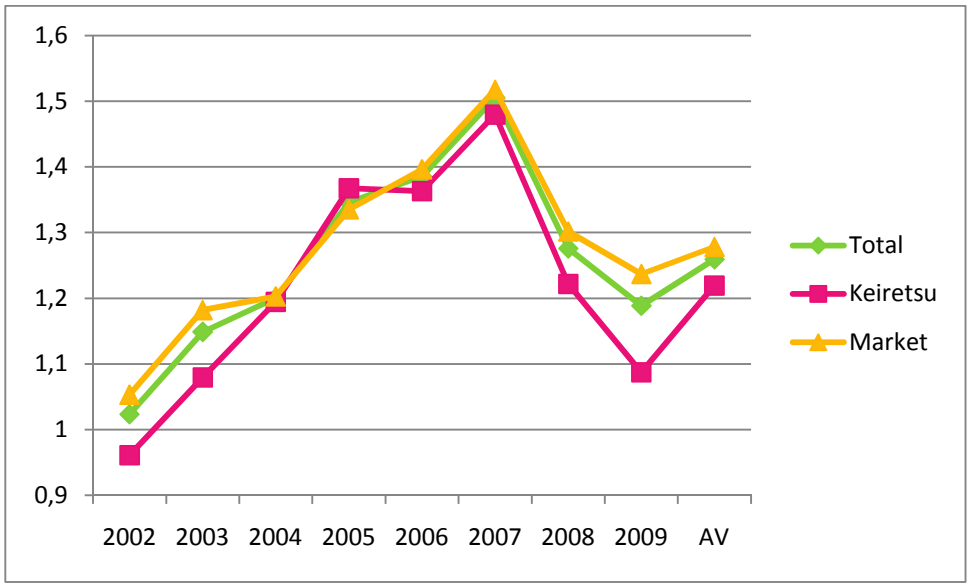
This is an interesting question to dig deeper. With a graphical analysis of the data collected in the sample there will searched whether or not keiretsu firms perform better or worse than market firms. This will be an analysis over the years and an average of those eight years whether or not the keiretsu underperformed than the market. This like above is yet again with the evolution of the two measures against the base year 2001.

Figure 11: Comparison keiretsu and market in terms of operating revenue



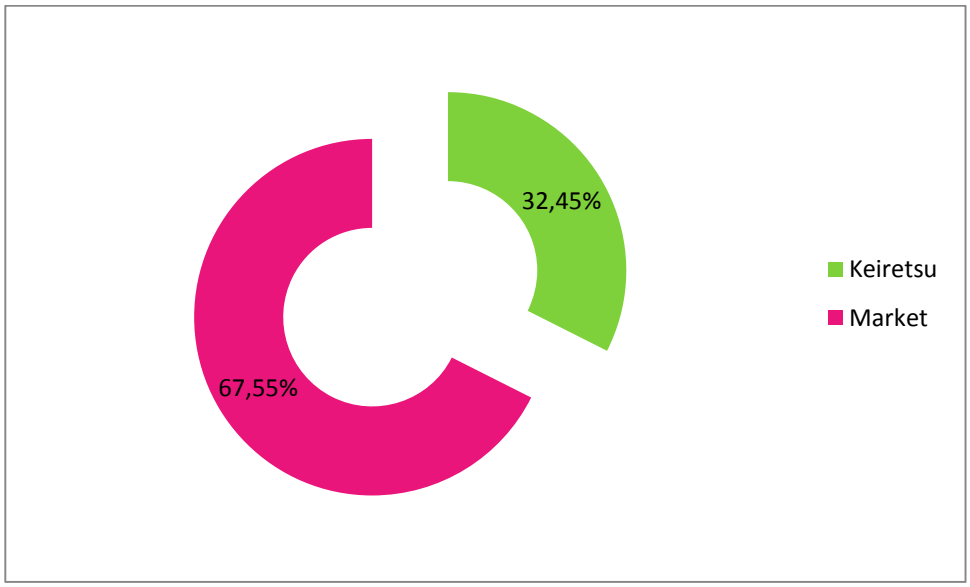
We made the sum of the operating revenues of all loose firms and all firms that were part of a keiretsu. The question is how to interpret the sum of operating revenues of firms of different industries. If we take in account that the keiretsu are groups of different industries and that we make a comparison on industry level, we might make an analysis like this. We should be well aware, that this is a comparison of evolution against a base year and not actual data, therefore rendering the hardship in comparison of different industries mute.

Figure 12: Comparison keiretsu and market in terms of EBITDA



Based on the graphs above the keiretsu firms underperformed against the market for the last decade. So while there is value creation for the keiretsu, they underperform against the market. This at odds with whether or not they really create value, when the market does better than them. This seems to suggest the contrary. One important factor however has to be taken in account:

Figure 13: percentage keiretsu and market companies



In this sample the market firms are overrepresented. Whether or not this has an influence on the results is unclear. It's however an important remark to be made.

4.2.6 GRAPHICAL ANALYSIS OF COMPARISON ON SECTOR LEVEL

When compared to the market, keiretsu companies underperform. Is this underperformance related to the choice of sectors of the keiretsu companies or do they underperform in the same sectors as the market companies? Doing this with regression analysis would give a list of dummy variables that would make any model insignificant.

That is why an evolution of both operating revenue and EBITDA against a base year is taken for every sector (based on SIC code) that has at least two firms in them. This data is the same data used to calculate the performance of the keiretsu firms against the market firms and in every graph these graphs will be included to compare to the market average, keiretsu average and total average.

Excluded from the list are the following SIC codes because they consist of only one company: 4813, 3629, 3751, 3639, 3651, 3669, 2111, 5411, 4812, 4899, 3699, 5113, 3325, 3011, 7311, 3663, 1542, 1531, 2731, 2759, 3645, 3944, 1611, 4512, 2841, 3799, 2099, 2621, 7371, 2611, 3211, 5172, 3585, 3713, 3442, 1522, 2013, 3523, 2821, 2051, 4424, 5171, 3562, 3731, 7359, 2893, 3241, 3331, 5039, 6552, 3411, 7381, 5044, 5734, 2844, 3531.

This choice was partly arbitrary because of the high quantity of graphs that had to be included and also because they could cloud the found results. When only one company lies to the basis of these results it could be an outlier and without no average to compare this could give a bad representation of the results. The omissions are not relevant but are added for being complete, a total of 56 companies of the previous 151 used above were not included.

Below six graphs of the three most heavily populated sectors can be found, all the others can be found as appendices, but all graphs will be used to form a conclusion. It will give the situation of the keiretsu and/or market firm in the sector and compared to keiretsu, market and total average. Indicating the performance, rank in the market relative to each other.

3711: Motor vehicles and passenger car bodies

Figure 14: Comparison keiretsu and market in terms of operating revenue

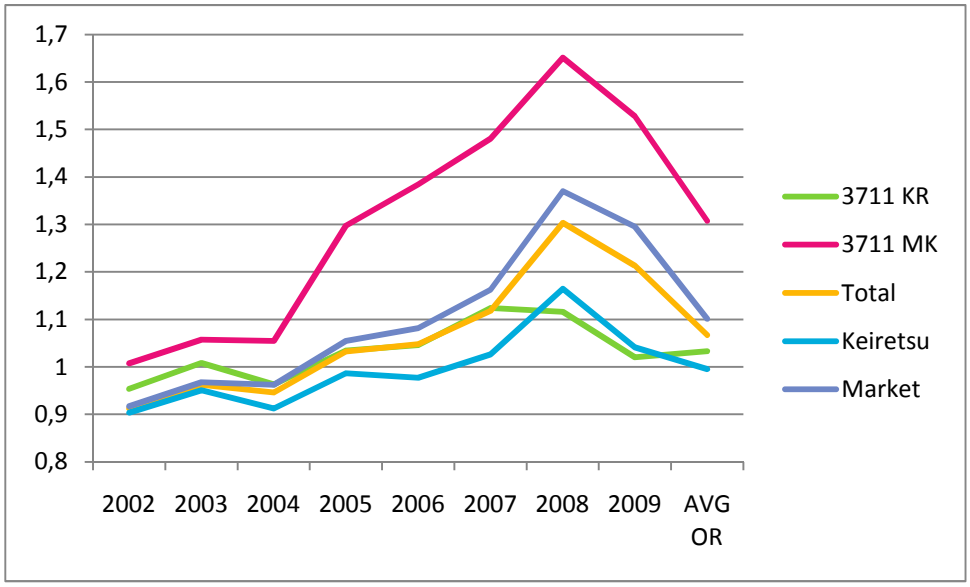
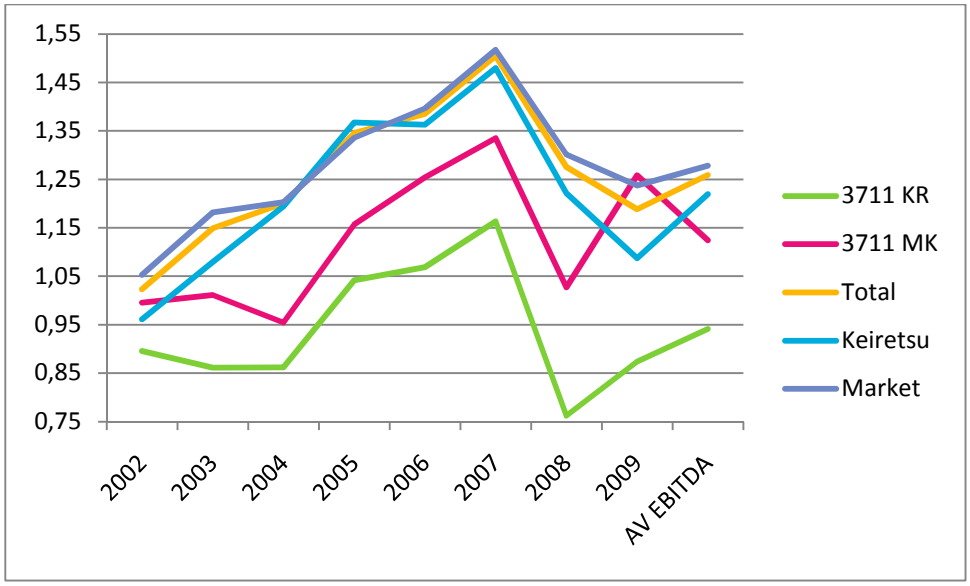


Figure 15: Comparison keiretsu and market in terms of EBITDA



Situation of market firms has known a much higher improvement than keiretsu firms. Very interesting if you take in account that Toyota, the largest car manufacturer in the world is part of a keiretsu. When selecting the data, the keiretsu firms however were placed higher in the ranking based on operating revenue and it has to be taken in account that the general keiretsu firm is larger than its market competitor. This could be problematic if actual data was used, because it is logical that a you could get higher profits with a higher number of companies, but evolution against a base year is used, so it takes this factor in account.

5051: Metals service centers and offices wholesale dealing in

Figure 16: Comparison market in terms of operating revenue

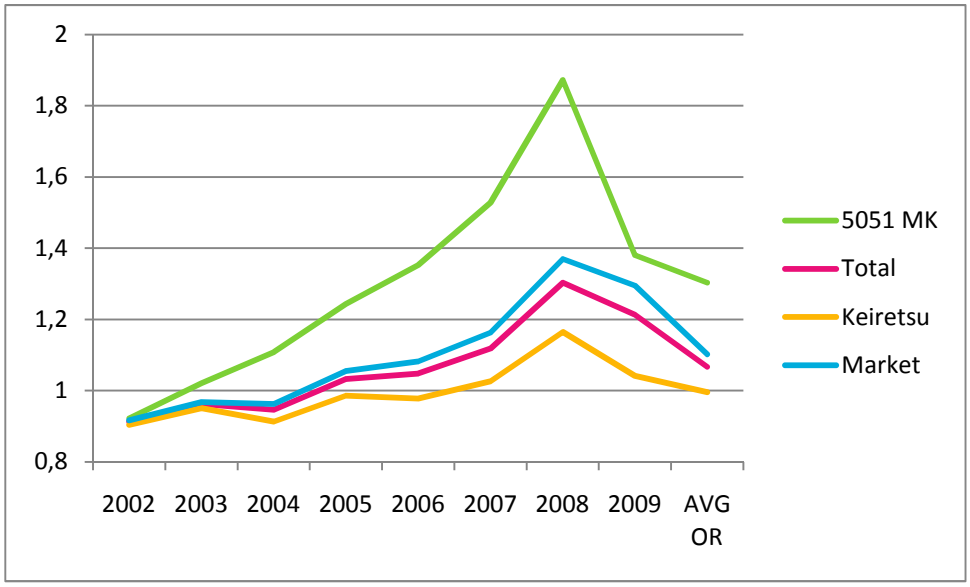
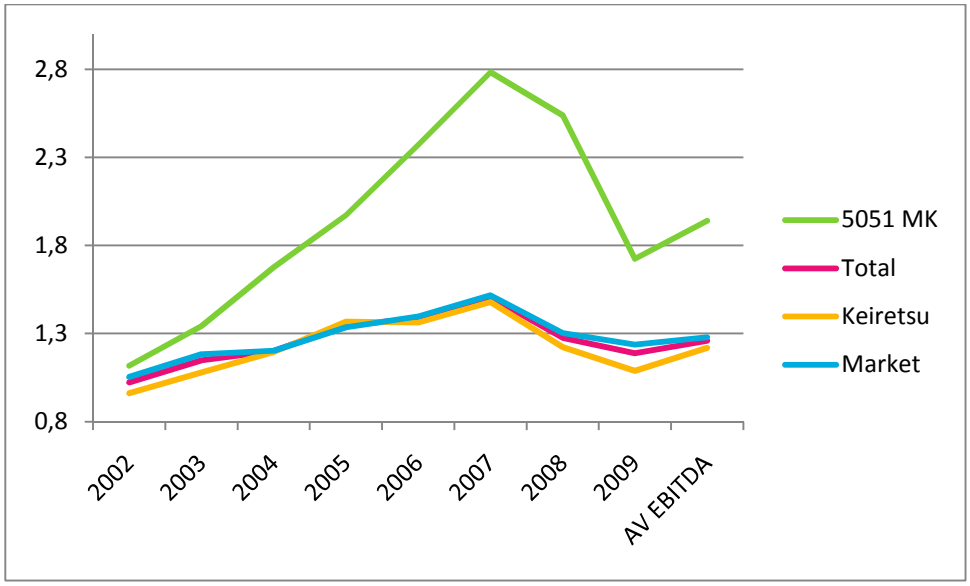


Figure 17: Comparison market in terms of EBITDA



A seemingly very lucrative sector with no keiretsu company in it. The market firms here above the averages of keiretsu, market or total for both measures whereas in the previous case it was only for operating revenue. This may be one of the sectors that credits the market firms for superior performance. It is one apparent booming market with no keiretsu presence.

2899: Chemicals and chemical preparations, not elsewhere specified manufacturing

Figure 18: Comparison keiretsu and market in terms of operating revenue

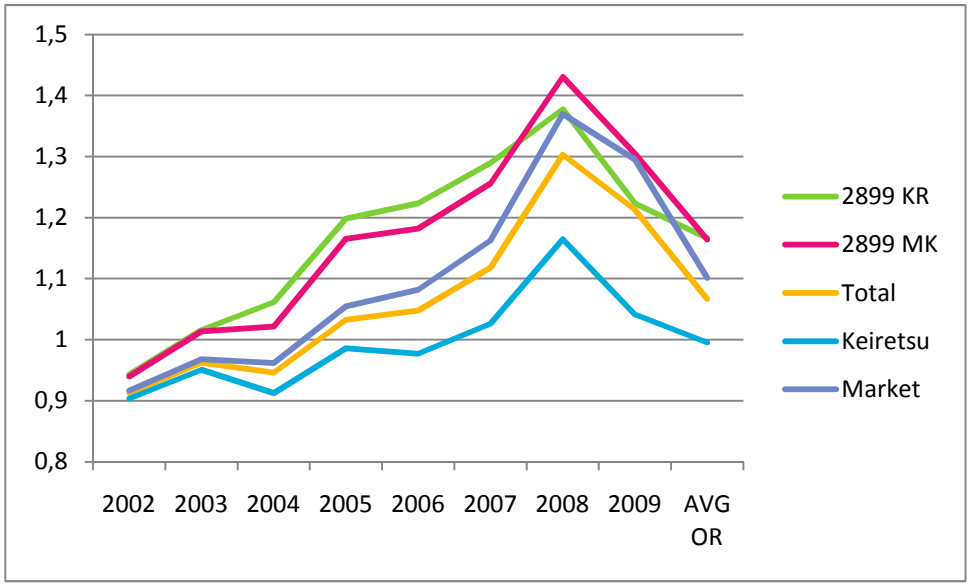
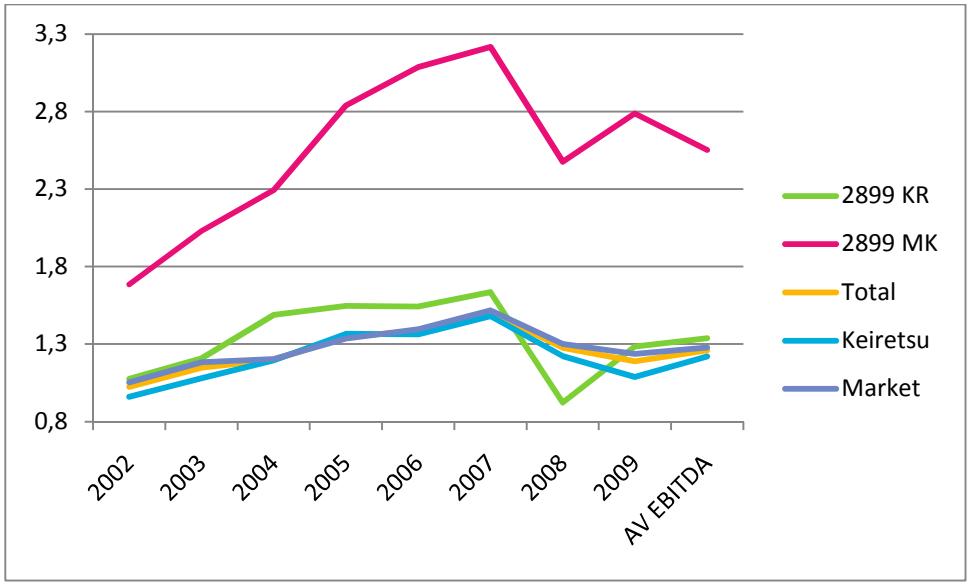


Figure 19: Comparison keiretsu and market in terms of EBITDA



In terms of operating revenue everything lies among averages, an apparent normal situation. When looking at EBITDA however we seem that market firms are way more profitable. They have drastically improved and keep performing better than keiretsu companies. The reason is unclear, is it because keiretsu companies tend to bigger and there is more room for others improve or an other hidden variable?

When making the comparison for all different sectors the result is ambiguous. Previous tests have shown that keiretsu firms have improved in the last decade but compared to market firms have underperformed. This made it interesting to check in which sectors the cause may possible lie and that is why every sector with at least two firms in it has been checked.

Looking at the different sectors there are some similarities. In sectors where there are both keiretsu firms and market firms, the keiretsu firms underperform but are generally bigger based on the size of the operating revenue. A possible hidden variable may be that the keiretsu firms are more mature and have less options to grow, but that contradicts the growth of the market firms. An in depth analysis could prove interesting.

In sectors where keiretsu are not present, market firms underperform compared to the averages of both keiretsu and market. There are some exceptions like the chemical industry segment, but in most of the cases the presence of the market firms lowers its average in general. This may lead to the hypothesis that keiretsu firms are better at avoiding unprofitable sectors.

In sectors that only keiretsu firms are present, it's a situation of extremes. They either underperform the average of have superior improvements. This may lead to the hypothesis that these variances can be contributed to the cyclicality of the different industries but this is a big if to be contributed to randomness. Again it's unclear what hidden variable influences these opposite outcomes.

When looking purely at situations where there are both keiretsu and market firms, market firms do better. In situations where there is only one sort of firm, it's more ambiguous. It's hard to make a conclusion purely based on these tests. These tests however reaffirm the result of previous tests and literature that keiretsu firms do worse compared to the market.

4.2.7 ANALYSIS OF THE IMPORTANCE OF SECTOR

The analysis above was based on evolution against an arbitrary index, this part will focus on absolute data. I have chosen for data in the European currency 'Euro', this currency feels most natural to the reader of this thesis than the Japanese 'Yen'. It could be argued that American 'Dollar' would allow for a comparison with previous Anglo Saxon research, yet we remain adamant that the 'Euro' will present the clearest picture of the three currencies available to the intended reader.

To be taken into account: profitability is partly explained by the sector the company belongs to. But profitability differences are higher within industries than between industries.

We will first start off with a ranking based on importance of sector. This will illustrate which sectors are the most important. Then we will describe the evolution in actual data rather than an index like in the analysis above. When this analysis is completed, we will look at the importance of which sectors for which keiretsu and whether or not this has had an influence on their performance. During this entire analysis results will be compared with previous research performed in this thesis.

Table 23: Sectors sorted by operating revenue - KR indication: 1 = Mitsubishi, 2 = Mitsui, 3 = Sumitomo, 4 = Fuyo, 5 = DKB, 6 = Sanwa, 7 = Tokai and 8 = IBJ

Sorted by Operating Revenu	AVG OR		KR IND.
4911: Electric services	€ 37.780.286,38	KR	5
3711: Motor vehicles and passenger car bodies	€ 36.961.252,14	KR	1, 3, 4, 5, 6, 7, 8
5099: Durable goods, not elsewhere classified wholesale dealing in	€ 34.969.258,24	KR	1, 5
3571: Electronic computers	€ 33.929.303,81	KR	3, 5
5099: Durable goods, not elsewhere classified wholesale dealing in	€ 28.164.475,09	MK	
Keiretsu average	€ 21.067.283,65		
3559: Special industry machinery, not elsewhere specified	€ 20.721.377,56	KR	1
3579: Office machines, not elsewhere specified	€ 20.084.256,81	KR	4
2911: Petroleum refining	€ 18.066.993,78	KR	5, 6, 7
3312: Steel works, blast furnaces (including coke ovens) and rolling mills	€ 16.588.070,68	KR	3, 6, 7

Table 24: Sectors sorted by EBITDA - KR indication: 1 = Mitsubishi, 2 = Mitsui, 3 = Sumitomo, 4 = Fuyo, 5 = DKB, 6 = Sanwa, 7 = Tokai and 8 = IBJ

Sorted by EBITDA	AV EBITDA		KR IND.
4911: Electric services	€ 8.816.254,58	KR	5
3711: Motor vehicles and passenger car bodies	€ 4.056.121,79	KR	1, 3, 4, 5, 6, 7, 8
3579: Office machines, not elsewhere specified	€ 3.472.418,96	KR	4
4911: Electric services	€ 3.218.449,58	MK	
3312: Steel works, blast furnaces (including coke ovens) and rolling mills	€ 2.584.851,31	KR	3, 6, 7
4011: Railroads, line-haul operating	€ 2.576.382,42	MK	
3571: Electronic computers	€ 2.529.673,91	KR	3, 5
5099: Durable goods, not elsewhere classified wholesale dealing in	€ 2.417.531,21	KR	1, 5
5099: Durable goods, not elsewhere classified wholesale dealing in	€ 2.246.116,97	MK	
Keiretsu average	€ 2.101.094,37		

For practical reasons only the top 10 based on operating revenue and the top 10 based on EBITDA are presented above, the entire sample, however, was used as basis of analysis. Two striking observations at first glance: both on basis of operating revenue and EBITDA keiretsu companies are the most dominant in the top echelons. The other being that electric services, motor vehicles and durable goods are the most dominant of sectors based both on operating revenue and EBITDA.

The general trend is that high tech industry is most important, consistent with research done by *Yamada, T., & Liu, G. G. 1997* and *Nadiri, M. I., & Prucha, I. R. 1991*. The membership of big industries coincides with the worst performing keiretsu against their index. This sounds a bit baffling at first, however, it confirms the main hypothesis supported in this part of the thesis, keiretsu companies are bigger (research using absolute data) but are in decline (research using index).

It may be interesting to directly compare the graphs of the analysis of a sector based on absolute data and an index. This way it may be possible to analyze where the differences lie. As a means of illustration the graphs of one of the most prominent sectors will be given with the highest keiretsu participation: the motor vehicles industry.

3711: Motor vehicles and passenger car bodies

Figure 20: Comparison keiretsu and market in terms of operating revenue [actual data] in euro

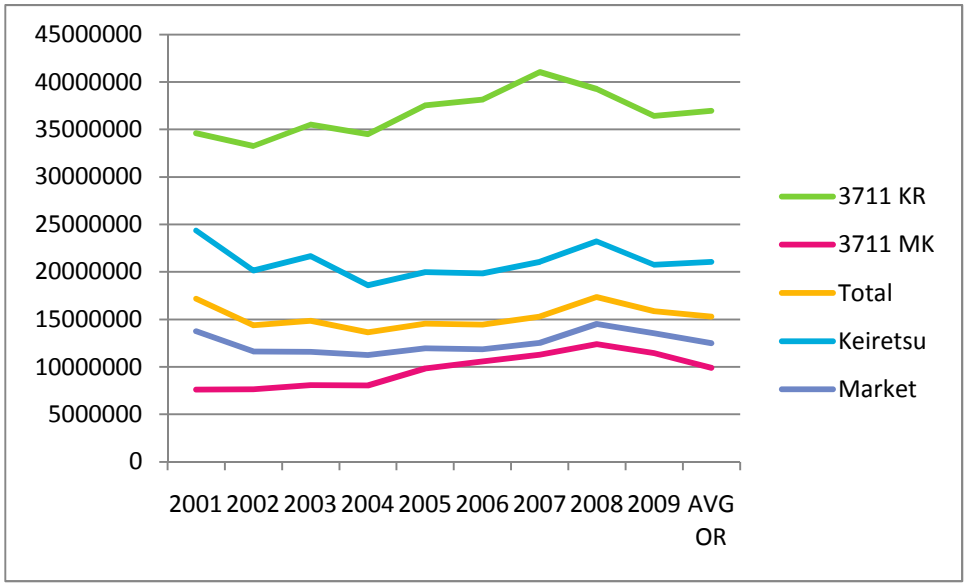
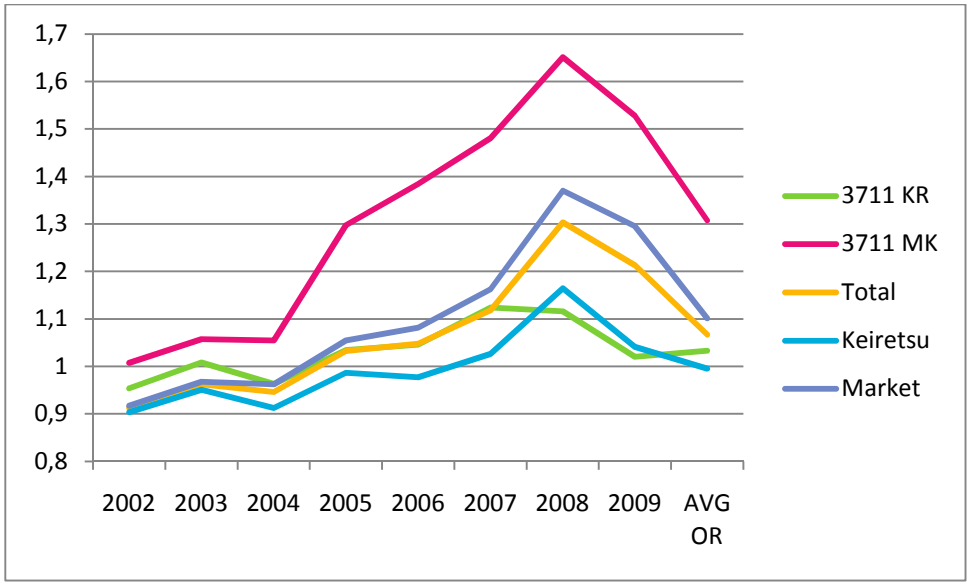


Figure 21: Comparison keiretsu and market in terms of operating revenue [evolution]



Based on operating revenue it clearly shows that keiretsu companies are bigger, but market firms are increasing at a rapid pace. They could have a competitive advantage against the incumbents, found a niche worth exploiting or just have more room to grow, however, Carpenter, R. E., & Petersen, B. C. (2002) argue that lack of internal finance is an impediment to small firms growth. The two earlier stated reasons aren't airtight either. We can see there is an evolution, but the reason behind it warrants more research not idle speculation.

Figure 22: Comparison keiretsu and market in terms of EBITDA [actual data] in euro

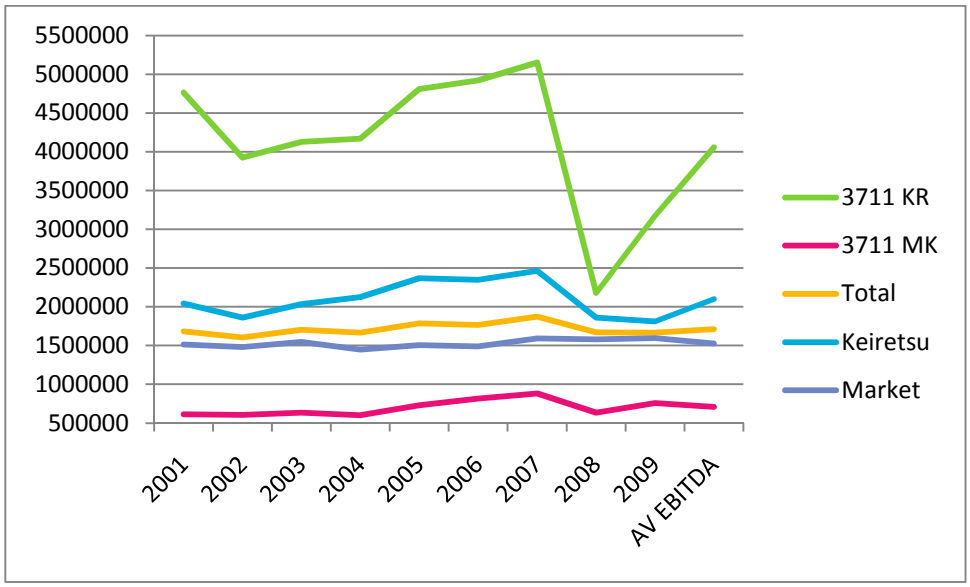
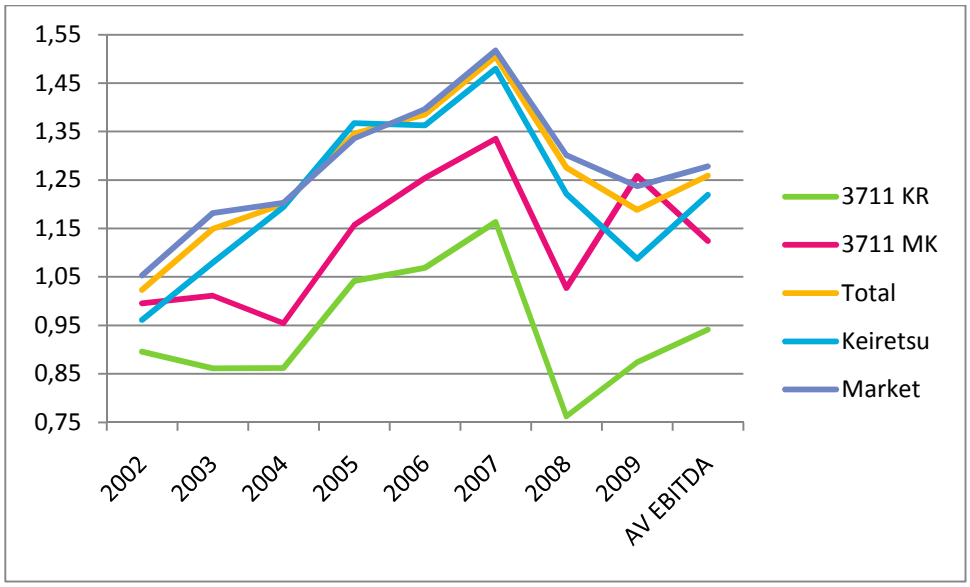


Figure 23: Comparison keiretsu and market in terms of EBITDA [evolution]



Same story based on EBITDA, keiretsu companies are bigger but market firms are improving, keiretsu companies are even a bit in decline. There is a small dip that coincides with the aftermath of the financial crisis.

4.2.8 ANALYSIS OF KEIRETSU PERFORMANCE IN ACTUAL DATA

Because of the different vantage point working with actual data gives, it may be interesting to compare the different keiretsu in terms of actual data.

Figure 24: different keiretsu companies compared on operating revenue in actual data in euro

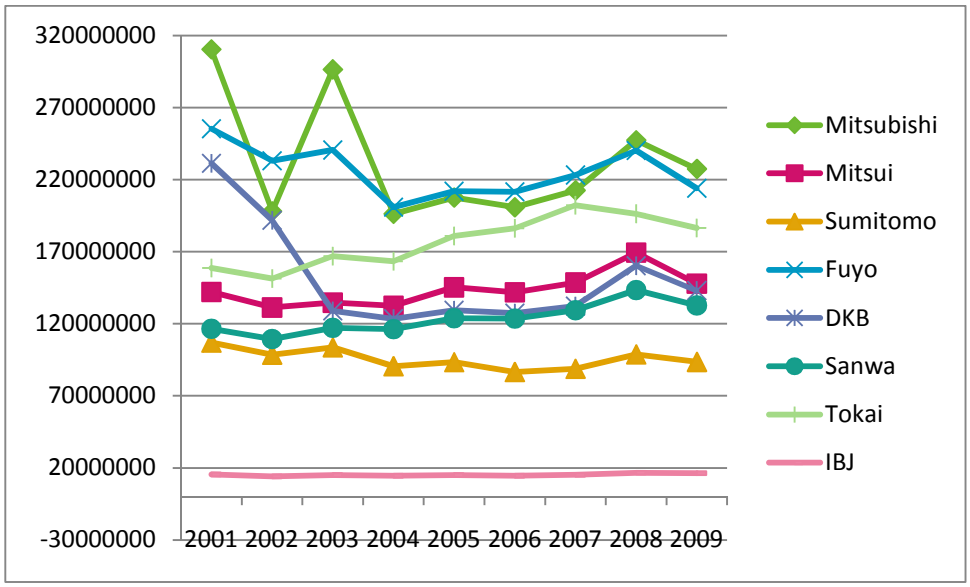
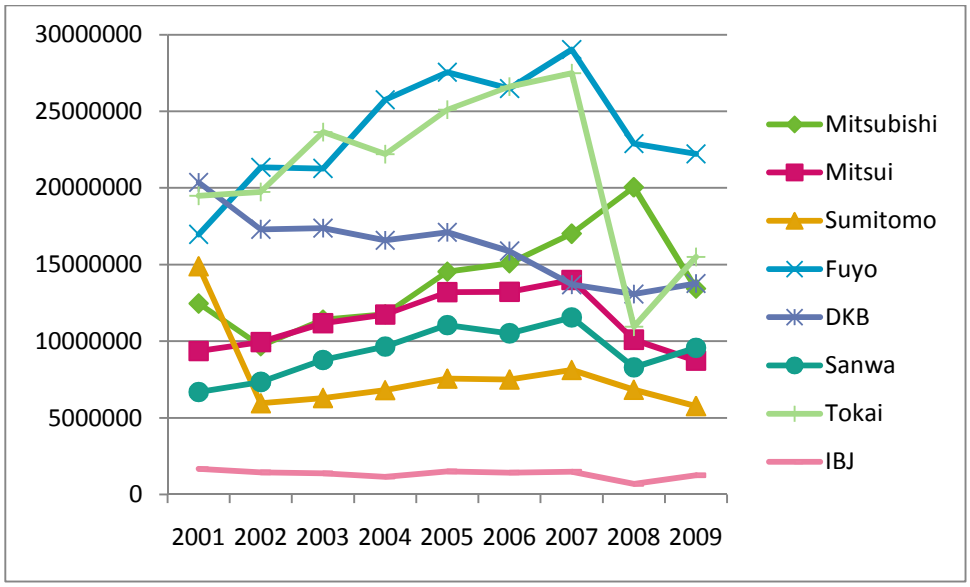


Figure 25: Figure : different keiretsu companies compared on EBITDA in actual data in euro



There are some discrepancies when compared to output received from working with evolution against a base year. Whereas Mitsubishi previously had the best prospects, it is now trumped by Fuyo. Fuyo that is in both accounts the largest enterprise. Yet Fuyo is only limited exposed to the best performing sector according to the previous chapter. It extends to the other top performing keiretsu companies as well, there seems no apparent relation with top performing sectors and top performing keiretsu companies. A matter of fact, DKB most exposed to high performing sectors is average compared to other keiretsu companies.

We have to bear in mind that our major research question is making a judgment about the impact of diversification on performance. Yet an analysis whether or not the choice of sectors may influence the results of the keiretsu's performance is crucial to avoid any bias.

4.3 DISCUSSION

4.3.1 DISCUSSION OF THE RESULTS

All data is from unrelated companies put together in their various keiretsu. Each keiretsu has a portfolio that has a similar selection of different sectors and each has a certain size being part of the top 250 Japanese firms based on operating revenue. The difference among these keiretsu may point to a hidden variable that could be interesting to look for in further research.

The purpose was to find out whether or not there is value creation because of diversification. The increase of EBITDA is dramatically higher than the minor decrease of operating revenue. A status quo of performance of the last decade would support the hypothesis of value creation by diversification, ecause of the turbulent end of the last decade e.g. the financial crisis

The difference among keiretsus is less ambiguous. There are keiretsu outperforming the general curve and other laggards that underperform. The impact of these differences on the general outcome is value weighted to give an accurate account on whether or not there is value creation. The reason why some keiretsu are performing better than others is hard to answer.

When compared to industry average however, the performance of keiretsu is less exemplary. The keiretsu companies are consequently underperforming the market. There is the possibility that the keiretsu are in underperforming industries, but this seems unlikely. The keiretsu weighted average is positive.

To summarize: the keiretsu companies had a higher performance than the market companies in terms of actual data, yet it was lower in terms of evolution against a base year.

4.3.2 DISCUSSION OF THE METHODOLOGY

There was a comparison made for every SIC code with at least two participating firms. The outcome was ambiguous except one thing was clear, in sectors where both keiretsu and market firms were present, market firms did better. In sectors where there was only one kind, the results were mixed. This may reaffirm the conclusion that market firms perform better than their peers, the keiretsu firms.

4.4 CRITICISM METHODOLOGY & RESULTS

An apparent criticism could be the apparent lack of full statistical analysis. There are a few tests, but nothing like a model. The lack of variables is a reason for the lack of a thorough regression analysis. The intuitive calculations made are logical, but not standard with the current paradigm. This makes comparison with previous research a bit harder.

The choice for operating revenue and EBITDA as measures and not share value can contribute to the lack of transparent comparability. It are also ideal tools to measure the health of a company and two different measures are used to avoid any possible bias. Correlation between operating revenue and EBITDA is low (0,41) and not significant (0,27), but due to the low N (9) correlation between the two measures is hard to measure to give any valuable insight into the matter. The choice of 2001 as a base year can be questioned, but this was an arbitrary choice. This is similar with previous research that use a time series data (source mentioned).

One of the most important aspects, the reliability of the data is unquestionable. t's from the Bureau Van Dijk's Orbis database that is leader in providing reliable data to be used for economic and academic purposes. The

starting point is valid, analysis using this data is in a logical and transparent way. This reaffirms the validity of the research. The merit of it is that it gives a update of the current economicsituation of Japan.

An important thing to note is that a lot of this data is consolidated data. Meaning that some companies are listed separately and others are consolidated into one account. The choice of this lies with the provider of the data and we haven't had any input on the matter. This is why there are graphs with a limited set of companies to analyze, because it is not certain that this list of companies was limited, there is a chance it holds a set of companies.

Whenever averages are given within a graph or the like, those averages are an average of nine years to discount any possible outliers. It is also meant to give a general picture whether or not the situation has improved or not. When a weighted average is mentioned, it is to give a proportional influence in the evolution data e.g. a bigger firm has a bigger impact on the keiretsu than a smaller firm, thus it should have a bigger influence in determining whether or not the keiretsu has improved over the last decade.

There is a fine line between the second and third hypothesis, yet there is an important difference. The second hypothesis tries to find out what creates possible differences within the keiretsu, where the third hypothesis puts a difference in sectors at its basis. There is an important nuance here. The second hypothesis leaves the options, whereas the third hypothesis looks at the sectors because it is plausible and the data given provide a means to actually test it.

The literature given in the literature review and used along the empirical analysis is founded in different disciplines including marketing, finance and strategy, conglomerate and diversification, where it is possible that is not all 100% relevant the broad base lines give it the necessary support to be of an importance to this thesis. Some theory explained explicit like the market entry mode may be of lesser importance to the subject matter, yet it is a vital part of the analysis of how these firms operate and thus is given significance in this work.

Finally it focuses on a framework so distinctly different from Western business. Yet it supports the traditional Western business paradigm that diversification lead to value destruction. Keiretsu firms did improve, but did it less than market firms. This has been tested even to the lengths of per sector and when both measures were present, keiretsu did worse than its peers in the market.

4.5 CONCLUSION

Hypothesis 1 (H1): Membership of a Keiretsu leads to superior returns compared to industry peers.

The first hypothesis may be rejected, when compared to less diversified market firms keiretsu firms underperform. This has been for the average and almost every sector compared. The reason behind this is not clear, it doesn't depend on the sector because when both type of firms are present, keiretsu firms also underperform. There seems to be a hidden variable. Research done by *Aoyama, Y. 2000* may be part of the solution of unraveling the reason behind this outcome: this research shows that the effect of keiretsu shows on a global level rather than a local level and thus comparison with local peers may fall short to show the full picture, yet it is not feasible to compare keiretsu companies with every single major competitor. Yet this previous research contradicts a study of *Morita, H. 2004* that argues that the close-knit relationships characterizing some keiretsu are a definitive advantage in this day and age. Meaning there is certain ambiguity concerning this issue.

Hypothesis 2 (H2): Performance within Keiretsu is unequally distributed.

There is support for this hypothesis. Some firms do better than others within the keiretsu. This using both units of observation for analysis. This may because of a better sector compared to the maturity of other sectors. This may because of another variable. Interesting for further research but not within the scope of this research. But it might just be differences in sector because most keiretsu are essentially unrelated diversification. Yet *Yaginuma, H. 1993* provides an argument for related diversification, so future research on this topic may take into account the relatedness of the diversification and its impact on a groups as a whole. *Lincoln, J.R., & Guillot, D. 2011* provide another perspective with the possibility that growing companies may look outside the keiretsu and thus disrupt the performance of the whole.

Hypothesis 3 (H3): The choice of sectors influence Keiretsu performance.

There is support for this hypothesis as well. If compared during the last sector some keiretsu have outperformed others. This could because some are in more profitable sectors, but considering the very similar structure among the different keiretsu this seems less plausible. It could just be that some more competitive firms have a bigger role in some keiretsu than others. Yet a research by *Isobe, T., & Makino, S., & Goerzen, A. 2005* argues that the keiretsu has an effect on the performance of the sectors its present and not vice versa, no apparent sign was revealed within this research but important to keep in mind never-the-less. This is supported by *Chen, C.R., & Guo, W., & Tay, N.S.P. 2010* who argue that the affiliation of a keiretsu structure increases market risk to the detriment of the sectors it partakes in.

Hypothesis 4 (H4): Keiretsu companies have improved performance over the last decade Keiretsu do create value in the sense that their situation has improved over the last decade both on operating revenue side and EBITDA side. Compared to market firms however they have improved less. In limited sense they create value, but in broader sense they destroy value. This ambiguous result is in line with previous diversification research. If keiretsu were to be in decline, *Wako, T., & Ohta, H. 2005* argue that its individual companies may prosper if the keiretsu structure were to dissolve. Whereas *Peng, M.W., & Lee, S-H, & Tan, J.J. 2001* make a case for the keiretsu structure and how if copied can prove a source of competitive advantage.

To summarize the keiretsu have been studied on a different level than previous research. It has provided the situation of the current economic climate in Japan and how it translates into diversification. It has also tried to show whether or not it creates value. Finally it also demystified a lot on the keiretsu structure in general and made a lot of information available in a cohesive way.

5 REFERENCES

Abegglen, J. C., & Stalk JR., G. (1988). *Kaisha. De Grote Japanse Onderneming*. A.W. Sijthoff's Uitgeversmaatschappij bv.

Adams, W., & Mueller, H. (1988). The Steel Industry. In Adams, W. (Ed.). *The Structure of American Industry* (p. 90). New York: Macmillan.

Agarwal, S., & Ramaswami, S. N. (1992). Choice of foreign market entry mode: Impact of ownership, location and internationalization factors. *Journal of International Business Studies, 23 (1), 1-27*.

Ammann, M., & Oesch, D., & Schmid, M. M. (2011). Corporate governance and firm value: International evidence. *Journal of Empirical Finance, 18 (1), 36-55*.

Amihud, Y., & Lev, B. (1981). Risk reduction as a managerial motive for conglomerate mergers. *Bell Journal of Economics, 12 (2), 605-617*.

Andersen, O. (1993). On the internationalization process of firms: A critical analysis. *Journal of International Business Studies, 24 (2), 209-231*.

Anonymous, A. (2010, November 13). China buys up the world. *The Economist*, 11.

Anonymous, C. (2009). How To Write A Problem Statement. Retrieved from http://www.ceptara.com/blog/how-to-write-problem-statement

Anonymous, (2009). Keiretsu. Retrieved from http://en.wikipedia.org/wiki/Keiretsu

Anonymous, (2004). Zaibatsu and keiretsu – Understanding Japanese enterprise groups. Retrieved from http://instruct.uwo.ca/economics/317b-570/Zaibatsu%20Summary.doc

Aoyama, Y. (2000). Networks, keiretsu, and locations of the Japanese electronics industry in Asia. *Environment and Planning A, 32 (2), 223-244*.

Avery, C., & Chevalier, J. C., & Schaefer, S. (1998). Why do managers undertake acquisitions? An analysis of internal and external rewards for acquisitiveness. *Journal of Law, Economics & Organization, 14 (1), 22-43*.

Banga, R. (2003). The Export-Diversifying Impact of Japanese and U.S. Foreign Direct Investments in Indian Manufacturing Sector. Retrieved from http://www.icrier.org/pdf/110.pdf

Baron, D. P. (1997). Integrated strategy and international trade disputes: The Kodak-Fujifilm case. *Journal of Economics & Management Strategy, (6) 1, 291-346*.

Bartlett, C. & Ghoshal, S. & Beamish, P. (2008). Transnational Management. Singapore: McGraw-Hill Education (Asia).

Bazerman, M., & Samuelson, W. (1983). I won the auction but don't want the prize. *Journal of Conflict Resolution, 27 (4), 618-634*.

Belderbos, R., & Banri, I., & Wakasugi, R. (2008). Intra-firm Technology Transfer and R&D in Foreign Affiliates: Substitutes or Complements? Evidence from Japanese Multinational Firms. Retrieved from http://www.merit.unu.edu/publications/wppdf/2008/wp2008-045.pdf

Bell, J. (1995). The internationalization of small computer software firms: A further challenge to stage theories. *European Journal of Marketing, 29 (8), 66-75*.

Besanko, D. & Dranove, D. & Shanley, M., Schaefer, S. (2010). *Economics of Strategy International Student Version*. Hoboken: John Wiley & Sons.

Bettis, R. A. (1981). Performance differences in related and unrelated diversifiers. *Strategic Management Journal, 2 (4), 327 – 343*.

Bliss, R., & Rosen, R. (2001). CEO compensation and bank mergers. *Journal of Financial Economics, 61 (1), 107-138*.

Bowman, R. G., & Chan, K. F., & Comer, M. R. (2010). Diversification, Rationality and the Asian Economic Crisis. *Pacific-Basin Finance Journal*, *18 (1), 1-23.*

Brush, T. H. (1996). Predicted change in operational synenergy and post-acquisition performance of acquired businesses. *Strategic Management Journal, 17 (1), 1-24*.

Capar, N. (2009). An analysis of the relationships between international diversification, product diversification, firm resources and performance. *Academy of Management Annual Meeting Proceedings, 1-6*.

Capon, N.,& Hulbert, J. M., & Farley, J. U., & Martin, L. E. (1988). Corporate diversity and economic performance: The impact of market specialization. *Strategic Management Journal, 9 (1), 61 – 74.*

Cargill, T. F., & Sakamoto, T. (2008). *Japan since 1980*. Cambridge: Cambridge University Press.

Carpenter, R. E., & Petersen, B. C. (2002). Is the growth of small firms constrained by internal finance? *The Review of Economics and Statistics, 84 (2), 298-309*.

Charreaux, G., & Desbrières, P. (2001). Corporate governance: Stakeholder value versus shareholder value. *Journal of Management and Governance, 5 (2), 107-128*.

Chen, C.R., & Guo, W., & Tay, N.S.P. (2010). Are member firms of corporate groups less risky? *Financial Management, 39 (1), 59-82*.

Conner, K.R. (1991). A historical comparison of resource-based theory and five schools of thought within industrial organization economics: do we have a new theory of the firm? *Journal of Management, 17 (1), 121–154.*

Corsi, A., & Borsotto, P., & Borri, I., & Strom, S. (2009). Diversification of the marketing chains among organic producers. Retrieved from http://ageconsearch.umn.edu/bitstream/51422/2/Diversification%20IAAE.pdf

Christensen, H. K., & Montgomery, C. A. (1981). Corporate economic performance: Diversification strategy versus market structure. *Strategic Management Journal, 2 (4), 327 – 343*.

Douthett, E.B., & Jung, K., & Kwak, W. (2004). Japanese corporate groupings (keiretsu) and the characteristics of analyst's forecasts. *Review of Quantitative Finance and Accounting, 23 (2), 79-98*.

Driscoll, A. (1995). Foreign market entry methods: A mode choice framework. In Paliwoda, S. J., & Ryans, J. K. (Eds.). *International Marketing Reader*. London: Routledge.

Drucker, P.F. (2001). *The Essential Drucker*. New York: HarperCollins Publishers Inc.

Eun, C. S., & Resnick, B. G. (1991). International diversification of investment portfolios: U.S. & Japanese perspectives. Retrieved from http://epublications.bond.edu.au/cgi/viewcontent.cgi?article=1019&context=discussion_papers

Ehling, P., & Ramos, S. B. (2005). Geographic versus industry diversification: Constraints matter. Retrieved from http://www.ecb.int/pub/pdf/scpwps/ecbwp425.pdf

Erramilli, M. K., & Rao, C. P. (1993). Service firms international entry-mode choice: A modified transaction-cost analysis approach. *Journal of Marketing, 57 (3), 19-38*.

Figge, F.T. (2004). Stakeholder value matrix – Die Verbindung zwischen Shareholder Value and Stakeholder Value. Retrieved from http://129.3.20.41/eps/othr/papers/0408/0408010.pdf

Fukuda, S., & Munehisa, K., & Kentaro, A. (2006). The role of trade credit for small firms: An implication from Japan's banking crisis. Retrieved from http://hermes-ir.lib.hit-u.ac.jp/rs/bitstream/10086/13515/1/wp2006-9a.pdf

Fukui, Y., & Ushijima, T. (2006). Corporate Diversification, Performance, and Restructuring in the Largest Japanese Manufacturers. *Journal of the Japanese and International Economies*, *21 (3), 303-323.*

Hayashi, Y. (2010, November 8). Japanese leader launches trade push. *The Wall Street Journal*, p. 8.

Gemba, K., & Kodama, F. (2001). Diversification Dynamics of the Japanese Industry. *Research Policy*, *30 (8), 1165-1184.*

Geringer, J. M., & Tallman, S., & Olsen, D. M. (2000). Product and international diversification among Japanese multinational firms. *Strategic Management Journal, 21 (1), 51-80*.

Geroski, P.A., (1991). *Market Dynamics and Entry*. Oxford: Basil Blackwell Ltd.

Godrej, A. (2004). Creating value at a conglomerate: the case of the Godrej group. *Journal of Applied Corporate Finance, 16 (1), 77-82*.

Goold, M., & Luchs, K. (1993). Why diversify? Four decades of management thinking. *Academy of Management Executive, 7 (3), 7 – 25*.

Gurau, C. (2002). The internationalization process of UK biopharmaceutical SME's. *Journal of American Academy of Business, 2 (1), 241-247*.

Hennart, J. F., & Reddy, S. (1997). The Choice Between Mergers/Acquisitions and Joint Ventures: The Case Of Japanese Investors in The United States. Retrieved from http://arno.uvt.nl/show.cgi?fid=44952

Hermalin, B. E., & Weisbach, M. S. (1998). Endogeneously chosen boards of directors and their monitoring of the CEO. *American Economic Review, 88 (1), 96-118*.

Hirao, T. (2007). Diversification and Labour Strategy of a Japanese Textile Maker: A Case Study of Practical Use of Human Resources as Intellectual Skills. Retrieved from http://www.cm.hit-u.ac.jp/coe/seika/WP/HJBS_WP_040.pdf

Holmstrom, B., & Kaplan, S. (2001). Corporate governance and merger activity in the U.S.: Making sense of the 1980s and 1990s. *Journal of Economic Perspectives, 15 (2), 121-144*.

Horie, S. (2010). Does diversification still make sense for Japanese equity fund managers? Retrieved from www.nri.co.jp/english/opinion/lakyara/2010/pdf/lkr201088.pdf

Isobe, T., & Makino, S., & Goerzen, A. (2005). Falling down together? Japanese keiretsu and the performance impacts of affiliation. Retrieved from: http://econpapers.repec.org/RePEc:kob:dpaper:171

Jacoby, S. M. (2001). Corporate Governance in Comparative Perspective: Prospects for Convergence. Retrieved from http://econ161.berkeley.edu/Teaching_Folder/Econ_210c_spring_2002/Readings/Sanford_Jacoby.pdf

Jensen, M. C. (1989). The eclipse of the public corporation. *Harvard Business Review, September-October, 61-74*.

Johanson, J., & Vahlne, J. E. (1977). The internationalization process of the firm: A model of knowledge development and increasing foreign market commitments. *Journal of International Business Studies, 8 (1), 23-32*.

Johanson, J., & Wiedersheim-Paul, F. (1975). The internationalization process of the firm: Four Swedish cases. *Journal of Management Studies, 12, 305-322*.

Jones, G. (1996). Diversification Strategies and Corporate Governance in Trading Companies: Anglo-Japanese Comparisons since the Late Nineteenth Century. Retrieved from http://www.h-net.org/~business/bhcweb/publications/BEHprint/v025n2/p0103-p0118.pdf

Jones, G.R., & Hill, C.W.L., (1988). Transaction cost analysis of strategy-structure choice. *Strategic Management Journal, 9 (2), 159–172.*

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47 (2), 263-292*.

Kaplan, S. (1989). The effects of management buyouts on operations and value. *Journal of Financial Economics, 24 (2), 217-254*.

Kaplan, S., & Stein, J. (1993). The evolution of buyout pricing and financial structure in the 1980s. *Quarterly Journal of Economics, 108 (2), 313-358*.

Kogut, B., & Singh, H. (1988). The effect of national culture on the choice of entry mode. *Journal of International Business Studies, 19 (3), 411 – 432*.

Kumar, M. V. S. (2009). The relationship between product and international diversification: the effects of short-run constraints and endogeneity. *Strategic Management Journal, 30 (1), 99-116*.

Kruse, T. A., & Park, H. Y., & Park K., & Suzuki, K. (2007). Long-term performance following mergers of Japanese companies: The effect of diversification and affiliation. Retrieved from http://kgsmweb.kaist.ac.kr/bcgl/paper/KruseHYParkKWParkSuzukiPBFJ07.pdf

Laeven, L., & Levine, R. (2007). Is there a diversification discount in financial conglomerates? *Journal of Financial Economics*, *85 (2), 331-367.*

Lamont, O. (1997). Cash flow and investment: Evidence from internal capital markets. *Journal of Finance, 52 (1), 83-109*.

Leten, B., & Belderbos, R., & Van Looy, B. (2007). Technological Diversification, Coherence and Performance of Firms. Retrieved from http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID1102024_code444941.pdf?abstractid=1102024&mirid=3

Lincoln, J.R., & Guillot, D. (2011). Business groups, networks, and embeddedness: innovation and implementation alliances in Japanese electronics, 1985-1998. Retrieved from: http://www.escholarship.org/uc/item/35g695gn

Lobo, B. J., & Henley, J. A. (2004). Can socio-cultural factors aid in the understanding of economic problems? The case of Japan. *Global Business and Economics Review, 6 (2), 230-238*.

Lunsford, D. A., & LaForge, R. W. (1992). Product Diversification and Firm Development: an Empirical Examination of Contingency Relationships. *Journal of Marketing Management, 2 (1), 13-26*.

Lyandres, E. (2007). Strategic Cost of Diversification. *Review of Financial Studies, 20 (6), 1901-1940*.

Madhok, A. (1997). Cost, value and foreign market entry mode: the transaction and the firm. *Strategic Management Journal, 18 (1), 39-61*.

Maksimovic, V., & Philips, G. M. (2008). The industry life cycle: acquisitions and investment: does firm organization matter? *Journal of Finance, 63 (2), 673-708*.

Manganelli, S., & Popov, A. (2010). Finance and diversification. Retrieved from: http://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1259.pdf

Manne, H. (1965). Mergers and the market for corporate control. *Journal of Political Economy, 73 (2), 110-120*.

Marber, A. S., & Kooros, S. K. (1997). The Japanese Multi-Staged Diversification And Pricing Strategies, Relevant To The Luxury Car Market. Retrieved from http://www.sbaer.uca.edu/Research/sma/1997/PDF/31.pdf

Maruyama, M., & Ohkita, K. (2011). Platform strategy of video game software in Japan, 1984–1994: theory and evidence. *Managerial and Decision Economics, 32 (2), 105-118*.

Masahiko, A., & Gustafsson, B., & Williamson, O. E., (1990). *The Firms as a Nexus of Treaties (Advanced Studies in the Social Sciences)*. California: SAGE Publications.

Meyer, M., & Milgrom, P., & Roberts, J. (1992). Organizational prospects, influence costs and ownership. *Journal of Economics and Management Strategy, 1 (1), 9-35*.

Mitchell, M., & Lehn, K. (1990). Do bad bidders become good targets? *Journal of Political Economy, 98 (2), 372-392*.

Miwa, Y., & Ramseyer, J. M. (2002). The Fable of Keiretsu. *Journal of Economics and Management Strategy, 11 (2), 169-224.*

Miyazawa, K. (2001). Continuous casting of steels in Japan. *Science and Technology of Advanced Materials, 2, 59-65*.

Mizoguchi, S., & Ohashi, T., & Saeki, T. (1981). Continuous casting of steel. *Annual Review of Materials Science, 11, 151-169*.

Montgomery, C. A. (1982). The measurement of firm diversification: Some new empirical evidence. *Academy of Management Journal, 25 (2), 299 – 307.*

Montgomery, C. A., (1985). Product - Market Diversification and Market Power. *Academy of Management Journal, 28 (4), 789-798*.

Morck, R., & Yeung, B. (1997). Why investors sometimes value size and diversification: the internalization theory of synergy. Retrieved from http://econpapers.repec.org/RePEc:mie:wpaper:411

Morita, H. (2004). Impacts of the information-technology revolution on Japanese manufacturer-supplier relationships. Retrieved from http://129.3.20.41/eps/io/papers/0207/0207009.pdf

Murphy, K. J. (2000). Executive compensation. In Ashenfelter, O., & Card, D. (Eds.). *The Handbook of Labor Economics*. Amsterdam: North-Holland.

Nakamura, M. (2011). Adaption and policy implications of Japan's new corporate governance practices after the reform. *Asia Pacific Journal of Management, 28 (1), 187-213*.

Narasimhan, R., & Kim, S. W. (2002). Effect of Supply Chain Integration on the Relationship Between Diversification and Performance: evidence from Japanese and Korean firms. *Journal of Operations Management*, *20 (3), 303-323.*

Nadiri, M. I., & Prucha, I. R. (1991). Comparison and analysis of productivity growth and R&D investment in the electrical machinery industries of the United States and Japan. In Hulten, C. R. (Ed.). Productivity growth in Japan and the United States. Chicago: University of Chicago Press.

Nathanson, D., & Cassano, J. (1982). Organization, diversity, and performance. *The Wharton Magazine, 6 (4), 19-26*.

Nicolaou, C. A., & Spencer, B. J. (1975). Product Diversification and the Multiproduct Firm. *Southern Economic Journal, 42 (1), 1-10.*

Odagiri, H. (1994). *Growth through competition, competition through growth: Strategic management and the economy in Japan*. Oxford: Oxford University Press.

Ozawa, T. (1995). Dynamic industrial policy and flexible production: toward a technostructural-evolutionary paradigm of MITI's role. *Revue d'Economie Industrielle, 71 (1), 39-59*.

Palich, L., & Cardinal, L., & Miller, C. (2000). Curvilinearity in the diversification-performance linkage: An examination of over three decades of research. *Strategic Management Journal, 21 (2), 155 – 174.*

Paprzycki, R. (2007). The determinants of and prospects for foreign direct investment in Japan. Retrieved from http://hi-stat.ier.hit-u.ac.jp/research/discussion/2007/pdf/D07-211.pdf

Peng, M.W., & Lee, S-H, & Tan, J.J. (2001). The keiretsu in Asia: implications for multilevel theories of competitive advantage. *Journal of International Management, 7 (4), 253-276*.

Penrose, E. (1995). *The theory of the growth of the firm*. Oxford: Oxford University Press.

Philips, G. M, & Maksimovic, V. (1998). Optimal firm size and the growth of conglomerate and single-industry firms. Retrieved from http://econpapers.repec.org/RePEc:cen:wpaper:98-14

Philips, G. M, & Maksimovic, V. (1999). Do conglomerate firms allocate resources inefficiently? Retrieved from http://econpapers.repec.org/RePEc:cen:wpaper:99-11

Piscitello, L. (2000). Relatedness and Coherence in Technological and Product Diversification of the World's Largest firms. *Structural Change and Economic Dynamics*, *11 (3), 295-315.*

Porter, M.E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. London: Collier Macmillan Publishers

Prahlad, C. K., & Bettis, R. A. (1986). The dominant logic: A new linkage between diversity and performance. *Strategic Management Journal, 7 (6), 485-501*.

Prahalad, C. K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review 68 (3), 79–91.*

Qian, G., & Li, J. (2002). Multinationality, Global Market Diversification and Profitability Among the Largest US Firms. *Journal of Business Research*, *55 (4), 325-335.*

Qian, G., & Khoury, T. A., & Peng, M. W., & Qian, Z. (2010). The Performance Implications of Intra- and Inter-Regional Geographic Diversification. Retrieved from http://www.utdallas.edu/~mikepeng/documents/Peng10SMJQianKhouryQian.pdf

Ueda, K. (2010). Japan's bubble, America's bubble and China's bubble. Retrieved from http://www.cirje.e.u-tokyo.ac.jp/research/dp/2010/2010cf774.pdf

Rawley, E. (2009). Diversification, Coordination Costs and Organizational Rigidity: Evidence from Microdata. Retrieved from http://www-management.wharton.upenn.edu/rawley/docs/Diversification-Coordination-and-Org-Rigidity-28MAY09.pdf

Reasons for Diversification. Retrieved from http://www.openlearningworld.com/olw/courses/books/Corporate%20Strategies/Diversification%20Strategies/Reasons%20for%20Diversification.html

Reich, R. (1983). *The Next American Frontier*. New York: Times Books.

Reilly, R. F., & Schweihs, R. P. (1998). *Valuing intangible assets*. New York: R.R. Donnelley & Sons Company.

Rosen, S. (1992). Contracts and the market for executives. In Werin, L., & Wijkander, H. (Eds.). *Contract Economics*. Cambridge: Blackwell.

Rumelt, R. P. (1982). Diversification Strategy and Profitability. *Strategic Management Journal, 3 (4), 359-369.*

Saunders, M., & Lewis, P., & Thornhill, A. (2008). *Methoden en technieken van onderzoek*. Amsterdam: Pearson Education Benelux.

Schclarek, A. (2006). Industry diversification, financial development and productivity enhancing investments. Retrieved from http://www.nek.lu.se/publications/workpap/Papers/WP06_19.pdf

Schoar, A. (2002). Effects of corporate diversification on productivity. *Journal of finance, 57 (6), 2379 – 2493.*

Shleifer, A., & Summers, L. H. (1988). Breach of trust in hostile takeovers. In Auerbach, A. J. (Ed.). *Corporate Takeovers: Causes and Consequences (pp. 33-68)*. Chicago: University of Chicago Press.

Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy, 94 (3), 461-468*.

Stein, J. C. (2003). Agency, information and corporate investment. In Constantinides, G., & Harris, M., & Stultz, R. M. (Eds.). *Handbook of the Economics of Finance* (pp. 111-153). Amsterdam: North-Holland.

Teece, D. J. (1982). Toward an economic theory of the multiproduct firm. *Journal of Economic Behavior and Organization, 3 (1), 39-63*.

Turnbull, P. W. (1987). A challenge to the stages theory of the internationalization process. In Rosson, P. J., & Reid, S. D. (Eds.). *Managing Export Entry and Expansion (pp. 21-40)*. New York: Praeger.

Wako, T., & Ohta, H. (2005). Who benefits from corroding keiretsu? *Pacific Economic Review, 10 (4), 539-556*.

Weir, M. (2010, November 8). Honda puts power fears out to grass. *The Wall Street Journal*, p. 3.

Whitley, R., & Kelly, W., & Sharpe, D. (2003). The changing Japanese multinational: Application, adaption and learning in car manufacturing and financial services. *Journal of Management Studies, 40 (3), 643-672*.

Wiersema, M.F., & Bowen, H.P. (2005). Corporate diversification: the impact of foreign competition, industry globalization and product diversification. Retrieved from http://www.vlerick.be/en/2620-VLK/version/default/... /vlgms-wp-2005-6.pdf

Wu, D., & Zhao, F. (2007). Entry modes for international markets: Case study of Huawei, a Chinese technology enterprise. *International Review of Business Research Papers, 3 (1), 183-196*.

Wu, XP., & Sercu, P., & Chen, C. (2000). Keiretsu membership, firm size and corporate returns on value and cost. Retrieved from https://lirias.kuleuven.be/bitstream/123456789/102913/1/OR_0042.pdf

Xiang, C. (2007). Diversification Cones, Trade Costs and Factor Market Linkages. *Journal of International Economics*, *71 (2), 448-466.*

Yaginuma, H. (1993). The Keiretsu Issue. *Japanese Economy, 21 (3), 3-48*.

Yamada, T., & Liu, G. G. (1997). Value-added productivity of manufacturing industries in Japan. *Applied Economics, 29 (10), 1317-1324*.

Yamashita, M. (2005). Japanese Labor-management Relations in an Era of Diversification of Employment Types: Diversifying Workers and the Role of Labor Unions. Retrieved from http://www.jil.go.jp/english/JLR/documents/2005/JLR05_yamashita.pdf

Yokoyama, H. (2007). Business Diversification Strategies in U.S. and Japanese Electric Utilities. Retrieved from http://www.wcfia.harvard.edu/us-japan/research/pdf/07-16.Yokoyama.pdf

Yoshimaru, T. (2007). New diversification strategies for the Japanese alcohol industry. Retrieved from http://hdl.handle.net/1721.1/39536

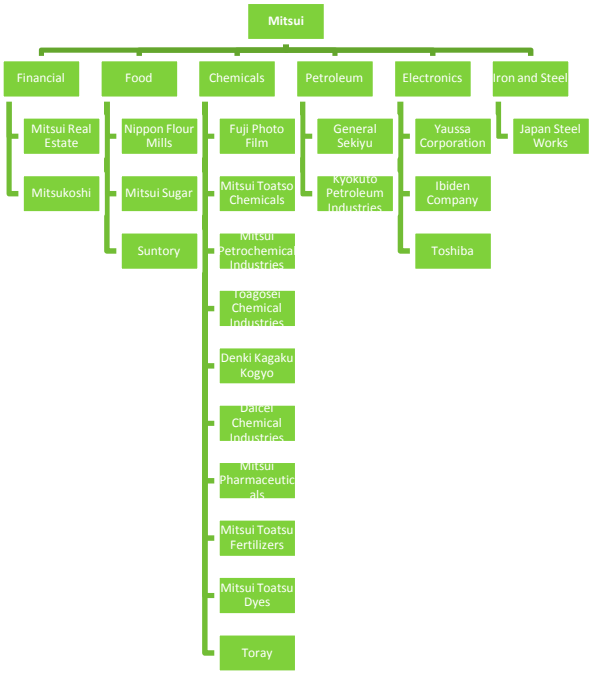
Yoshiro, M. (1998). Market and marketization: from the Japanese experience. Retrieved from http://www.cirje.e.u-tokyo.ac.jp/research/dp/98/cf1/contents.htm

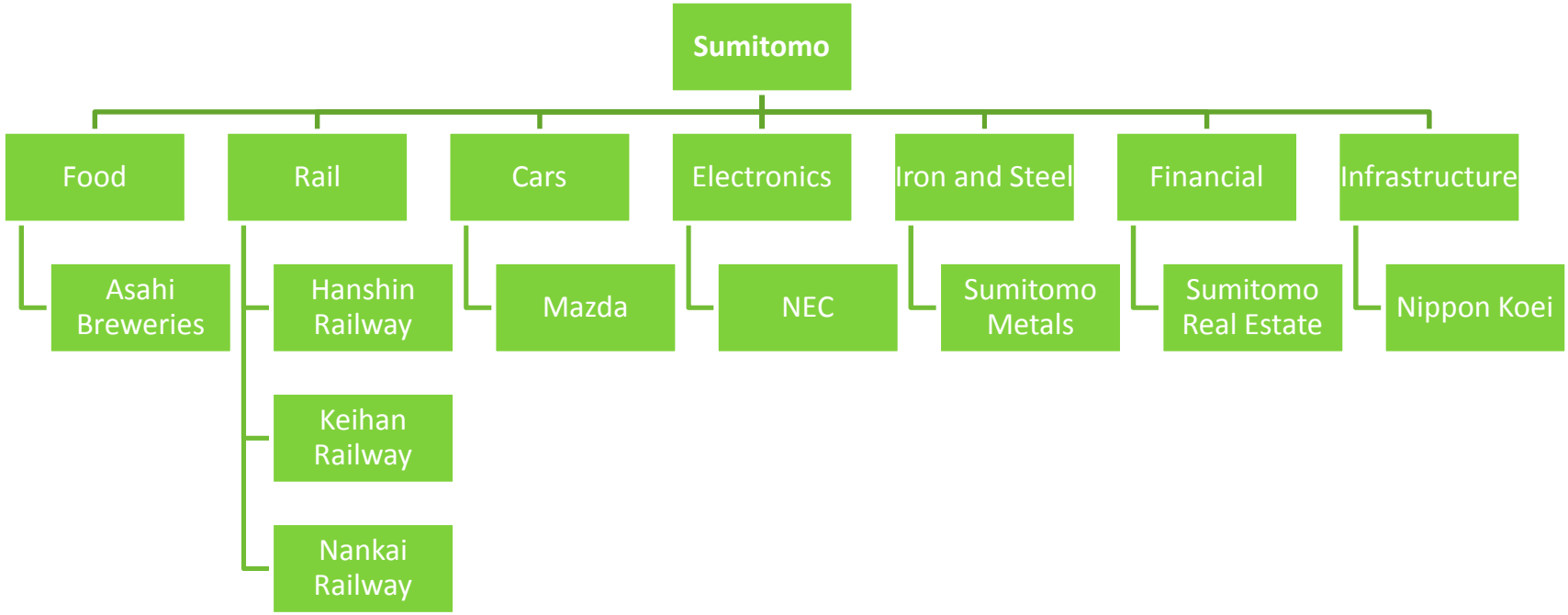
6 APPENDICES

6.1 ANATOMY OF 7 OF THE 8 KEIRETSU

- Mitsui
- Sumitomo
- Fuyo
- Dai-Ichi Kangyo
- Sanwa (“Midorikai”)
- Tokai (Toyota Group)
- IBJ

Information publicly available online, including Wikipedia


Mitsui
Financial
Food
Chemicals
Petroleum
Electronics
Iron and Steel
Mitsui Real Estate
Mitsukoshi
Nippon Flour Mills
Mitsui Sugar
Suntory
Fuji Photo Film
Mitsui Toatsu Chemicals
Mitsui Petrochemical Industries
Toagosei Chemical Industries
Denki Kagaku Kogyo
Daicel Chemical Industries
Mitsui Pharmaceuticals
Mitsui Toatsu Fertilizers
Mitsui Toatsu Dyes
Toray
General Sekiyu
Kyokuto Petroleum Industries
Yaussa Corporation
Ibiden Company
Toshiba
Japan Steel Works


Sumitomo
Food
Rail
Cars
Electronics
Iron and Steel
Financial
Infrastructure
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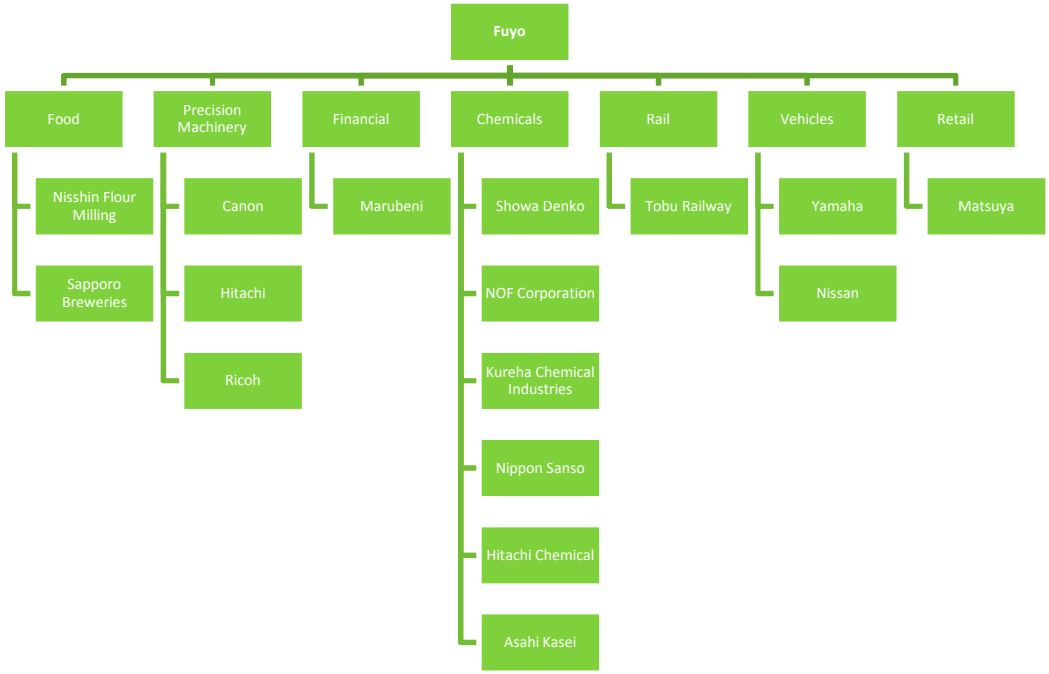
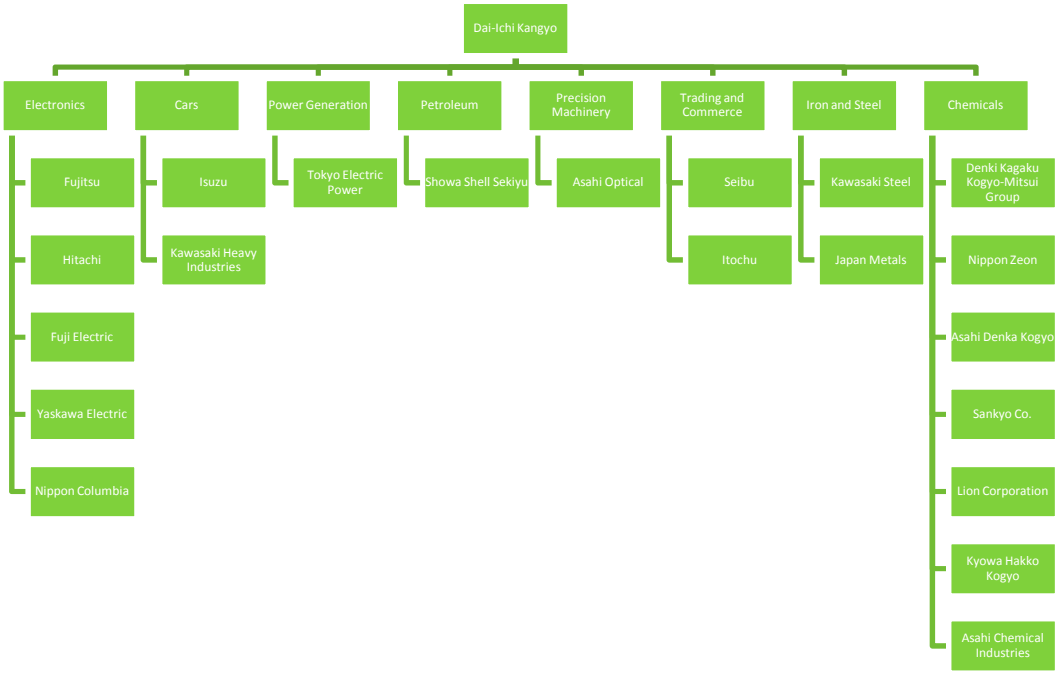
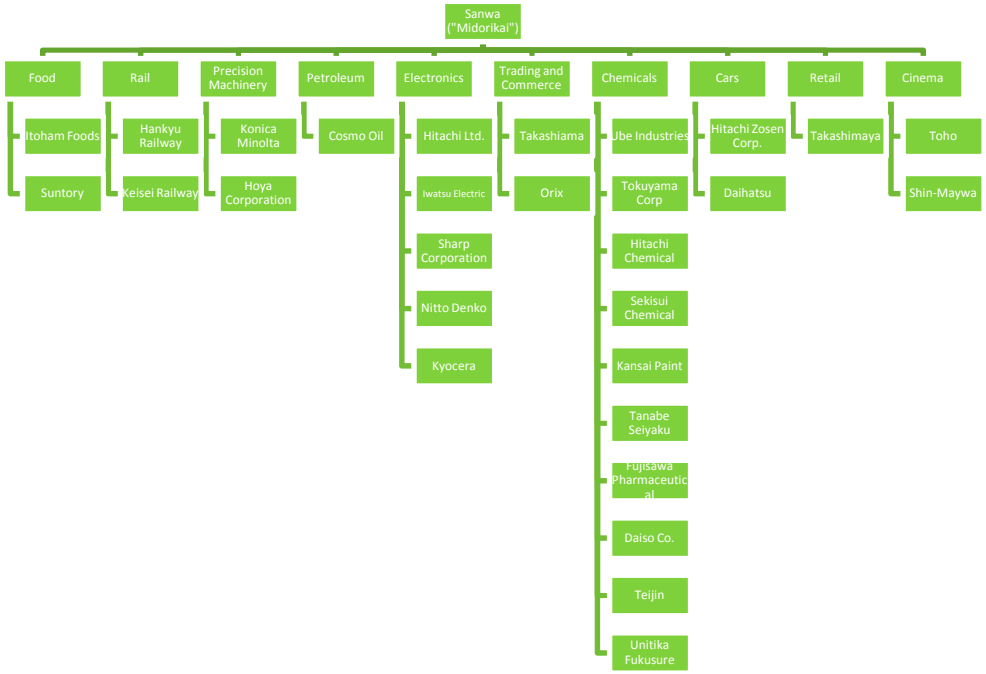
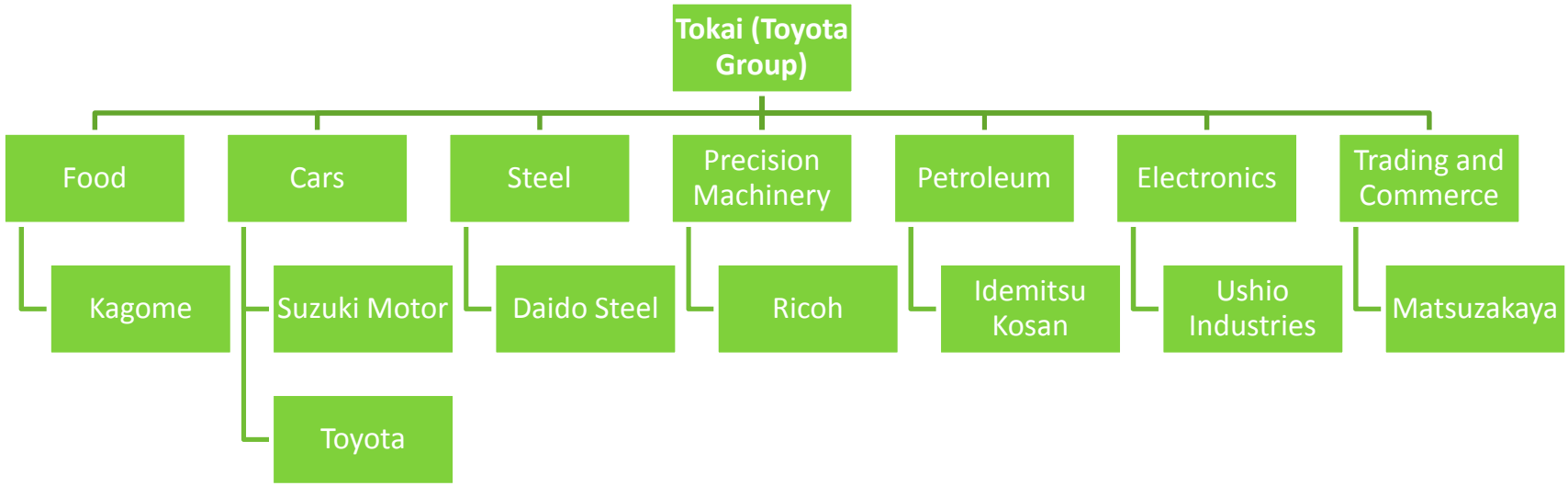
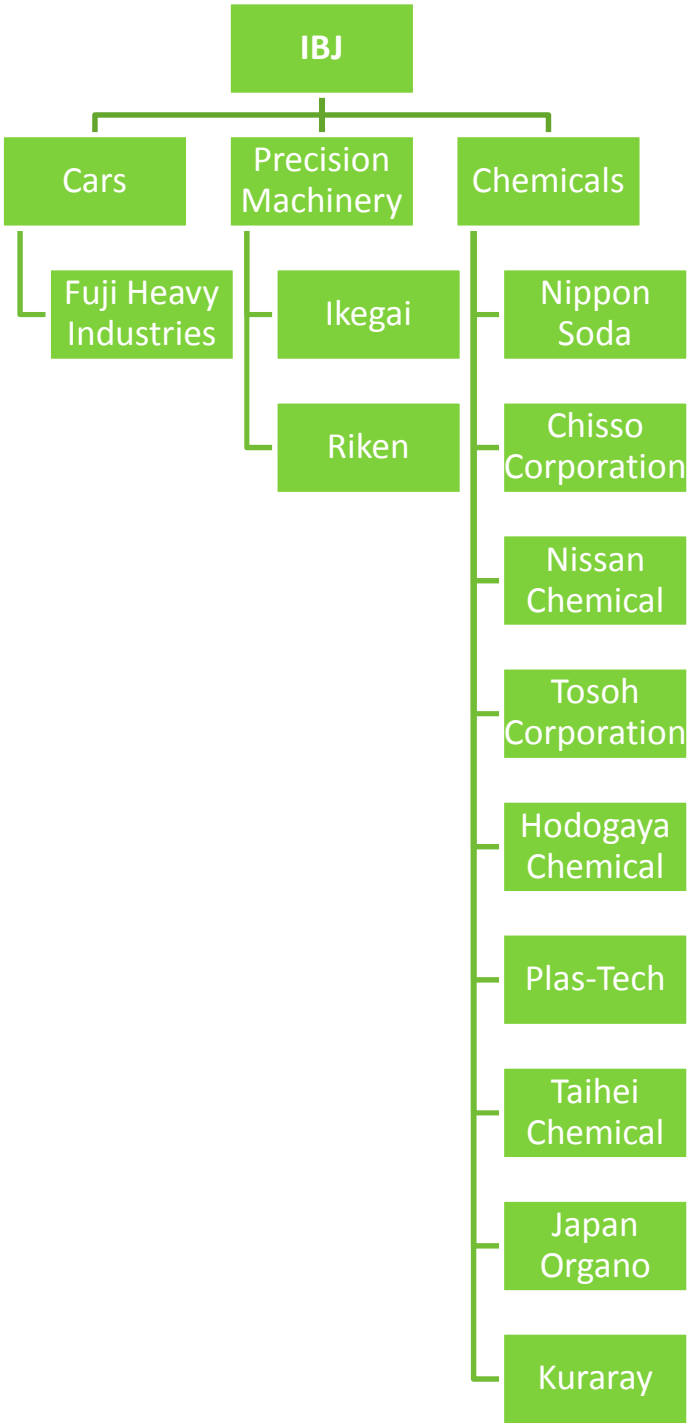
Hanshin Railway
Keihan Railway
Nankai Railway
Mazda
NEC
Sumitomo Metals
Sumitomo Real Estate
Nippon Koei


Fuyo
Food
Precision Machinery
Financial
Chemicals
Rail
Vehicles
Retail
Nisshin Flour Milling
Sapporo Breweries
Canon
Hitachi
Ricoh
Marubeni
Showa Denko
NOF Corporation
Kureha Chemical Industries
Nippon Sanso
Hitachi Chemical
Asahi Kasei
Tobu Railway
Yamaha
Nissan
Matsuya


Dai-Ichi Kangyo
Electronics
Cars
Power Generation
Petroleum
Precision Machinery
Trading and Commerce
Iron and Steel
Chemicals
Fujitsu
Hitachi
Fuji Electric
Yaskawa Electric
Nippon Columbia
Isuzu
Kawasaki Heavy Industries
Tokyo Electric Power
Showa Shell Sekiyu
Asahi Optical
Seibu
Itochu
Kawasaki Steel
Japan Metals
Denki Kagaku Kogyo-Mitsui Group
Nippon Zeon
Asahi Denka Kogyo
Sankyo Co.
Lion Corporation
Kyowa Hakko Kogyo
Asahi Chemical Industries


Sanwa ("Midorikai")
Food
Itoham Foods
Suntory
Rail
Hankyu Railway
Keisei Railway
Precision Machinery
Konica Minolta
Hoya Corporation
Petroleum
Cosmo Oil
Electronics
Hitachi Ltd.
Iwatsu Electric
Sharp Corporation
Nitto Denko
Kyocera
Trading and Commerce
Takashiama
Orix
Chemicals
Ube Industries
Tokuyama Corp
Hitachi Chemical
Sekisui Chemical
Kansai Paint
Tanabe Seiyaku
Fujisawa Pharmaceutical
Daiso Co.
Teijin
Unitika Fukusure
Cars
Hitachi Zosen Corp.
Daihatsu
Retail
Takashimaya
Cinema
Toho
Shin-Maywa


Tokai (Toyota Group)
Food
Cars
Steel
Precision Machinery
Petroleum
Electronics
Trading and Commerce
Kagome
Suzuki Motor
Toyota
Daido Steel
Ricoh
Idemitsu Kosan
Ushio Industries
Matsuzakaya


IBJ
Cars
Precision Machinery
Chemicals
Fuji Heavy Industries
Ikegai
Riken
Nippon Soda
Chisso Corporation
Nissan Chemical
Tosoh Corporation
Hodogaya Chemical
Plas-Tech
Taihei Chemical
Japan Organo
Kuraray

6.2 CALCULATION GRAPHICAL ANALYSIS OF EVOLUTION OR AND EBITDA IN KEIRETSU STRUCTURE

	Operating revenu	EBITDA	AV SUM OR	AV SUM EBITDA	VW SUM OR	VW SUM EBITDA
Mitsubishi	82,43%	127,26 %	232.919.370	13.938.119	192.004.604	17.737.668
Mitsui	103,00%	143,84 %	143.690.797	11.213.297	147.997.612	16.129.601
Sumitomo	90,66%	97,04%	95.681.361	7.748.994	86.749.364	7.519.344
Fuyo	94,93%	149,82 %	225.614.928	23.721.683	214.180.798	35.539.447
DKB	74,10%	81,78%	151.965.622	16.127.633	112.601.170	13.189.201
Sanwa	110,11%	150,88 %	123.591.825	9.274.351	136.091.109	13.992.789
Tokai	113,37%	110,54 %	176.926.720	21.186.834	200.576.168	23.420.399
IBJ	100,69%	88,27%	15.212.053	1.339.552	15.317.625	1.182.459
Total	95%	123%	1.165.602.675	104.550.464	1.105.518.449	128.710.908

OR is the sum of the entire operating revenue weighted sum (OR WS) divided by the entire average operating revenue (OR AV), giving the result whether or not the keiretsu has improved the last decade in terms of operating revenue. EB is the sum of the entire EBITDA weighted sum (EB WS) divided by the entire average EBITDA (EB AV), giving the result whether or not the keiretsu has improved the last decade in terms of EBITDA.

AV SUM OR is the sum of average operating revenue of all companies within the keiretsu to give a weight. AV SUM EBITDA is the sum of average EBITDA of all companies within the keiretsu to give a weight. VW SUM OR is the sum of average operating revenue as weight for the performance of the keiretsu. VW SUM EBITDA is the sum of average EBITDA as weight for the performance of the keiretsu.

The OR for the total group of keiretsu is the total VW SUM OR divided by AV SUM OR. The EB for the total group of keiretsu is the total VW SUM EBITDA divided by the AV SUM EBITDA. This gives each keiretsu a part in terms of its size tot whether or not the situation of all keiretsu have improved using both units of observation.

6.3 CALCULATION GRAPHICAL ANALYSIS OF EVOLUTION OF THE DIFFERENT KEIRETSU

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Mitsubishi	100,00%	91,67%	97,73%	78,69%	82,50%	80,79%	84,16%	99,10%	96,81%
Mitsui	100,00%	92,51%	95,19%	94,52%	104,83%	103,78%	109,21%	125,64%	106,31%
Sumitomo	100,00%	95,18%	100,93%	86,39%	89,73%	86,44%	89,37%	123,28%	95,06%
Fuyo	100,00%	91,46%	95,42%	93,62%	99,71%	98,84%	102,63%	108,03%	97,18%
DKB	100,00%	83,10%	78,92%	74,32%	78,14%	77,19%	78,92%	95,50%	76,72%
Sanwa	100,00%	94,14%	102,40%	103,25%	110,75%	111,62%	119,17%	132,76%	121,08%
Tokai	100,00%	95,47%	105,37%	103,24%	114,59%	118,24%	128,55%	124,79%	117,79%
IBJ	100,00%	91,61%	98,05%	96,24%	99,45%	99,97%	104,51%	114,07%	108,87%
Total	100,00%	91,32%	96,76%	90,62%	97,45%	97,42%	102,76%	113,70%	101,78%
Mitsubishi	310.211.691	198.018.763	296.352.344	196.258.431	207.501.716	200.768.631	212.499.943	247.273.667	227.389.140
Mitsui	142.056.166	131.293.810	134.627.159	132.475.637	145.278.789	141.783.769	148.564.894	169.337.328	147.799.623
Sumitomo	106.957.507	98.617.253	103.666.318	90.632.256	93.433.297	86.623.629	88.805.747	98.843.563	93.552.676
Fuyo	255.294.201	233.058.282	240.517.712	200.911.817	211.874.906	211.507.132	223.186.883	240.167.625	214.015.790
DKB	231.346.887	191.794.982	128.897.172	123.488.100	129.361.337	127.399.895	132.207.652	160.186.877	143.007.695
Sanwa	116.562.828	109.335.425	117.096.193	116.299.232	123.819.697	123.581.941	129.442.952	143.423.101	132.765.054
Tokai	158.745.720	151.316.965	166.859.071	163.336.466	180.845.742	186.236.266	202.249.336	196.291.638	186.459.281
IBJ	15.403.772	14.088.658	15.089.325	14.621.345	14.955.352	14.526.879	15.161.544	16.693.000	16.368.598
Total	1.336.578.772	1.127.524.137	1.203.105.293	1.038.023.284	1.107.070.837	1.092.428.141	1.152.118.953	1.272.216.799	1.161.357.858
Mitsubishi	310211690,8	181529104,5	289626518,9	154443765,11	171180800,3	162196986,74	178841279,4	245040539,2	220134945,9
Mitsui	142056166	121464148	128151981,9	125210451,9	152300889,9	147138864,9	162247679,1	212753713,3	157122800,9
Sumitomo	106957507	93864352,83	104628689,1	78301627,21	83837327,64	74879044,52	79365704,54	121852406,1	88929391,15
Fuyo	255294201,3	213154786,2	229511095	188092674,8	211260172,9	209058434,3	229065625,9	259461872,9	207978712,5
DKB	231346886,9	159372588,7	101720172,1	91777144,79	101078036,9	98344501,75	104341696,9	152976409,7	109713851,5
Sanwa	116562827,8	102928591,7	119911955,4	120083405,9	137130321,3	137946428,2	154254909,1	190410418,4	160745792,6
Tokai	158745719,5	144465564,3	175813023,2	168625122,7	207229623,1	220210108,5	259993026,5	244961073,7	219629823,3
IBJ	15403772,33	12906463,41	14794953,32	14071897,14	14872937,89	14522119,29	15844861,91	19041117,64	17820321,39
Total	1336578772	1029685600	1164158389	940606089,4	1078890110	1064296488	1183954783	1446497551	1182075639

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Mitsubishi	100,00%	175,89%	103,45%	121,72%	138,17%	143,83%	155,32%	204,98%	123,66%
Mitsui	100,00%	117,48%	129,84%	152,47%	185,58%	176,08%	184,92%	154,14%	125,87%
Sumitomo	100,00%	106,73%	105,03%	110,44%	123,28%	115,82%	125,72%	139,19%	102,41%
Fuyo	100,00%	129,62%	127,10%	156,11%	167,64%	161,90%	178,65%	170,35%	141,88%
DKB	100,00%	86,65%	87,34%	83,80%	90,89%	89,86%	92,32%	93,35%	78,39%
Sanwa	100,00%	112,32%	135,82%	153,51%	181,66%	166,36%	183,64%	175,69%	155,98%
Tokai	100,00%	101,39%	121,91%	114,59%	129,80%	137,83%	142,53%	66,30%	83,82%
IBJ	100,00%	89,12%	87,22%	102,83%	101,53%	108,74%	115,22%	42,41%	92,74%
Total	100,00%	115,66%	115,55%	128,04%	144,39%	142,67%	154,54%	150,18%	116,25%
Mitsubishi	12.467.532	9.685.905	11.402.398	11.766.291	14.540.084	15.083.600	17.015.466	20.043.398	13.438.397
Mitsui	9.355.853	9.952.192	11.179.236	11.741.336	13.208.385	13.225.652	13.999.816	10.099.464	8.731.313
Sumitomo	14.890.808	5.948.877	6.301.555	6.807.652	7.557.356	7.503.859	8.123.469	6.836.895	5.770.473
Fuyo	16.971.138	21.341.412	21.272.140	25.747.979	27.541.396	26.480.705	29.025.868	22.888.558	22.225.953
DKB	20.361.563	17.304.016	17.372.141	16.580.125	17.102.612	15.885.700	13.694.192	13.079.517	13.768.835
Sanwa	6.687.094	7.344.845	8.780.124	9.657.719	11.056.603	10.516.683	11.548.765	8.301.235	9.576.093
Tokai	19.483.821	19.736.792	23.641.275	22.195.344	25.097.412	26.601.541	27.482.058	10.943.128	15.500.132
IBJ	1.669.495	1.445.581	1.380.670	1.162.940	1.513.320	1.436.066	1.488.355	701.187	1.258.357
Total	101.887.302	92.759.621	101.329.539	105.659.384	117.617.168	116.733.806	122.377.990	92.893.382	90.269.553
Mitsubishi	12467531,59	17036810,54	11796090,06	14321766,22	20089889,41	21695048,84	26428364,17	41084338,45	16617746,95
Mitsui	9355852,934	11691784,57	14514730,43	17901555,67	24512365,25	23287715,64	25888759,44	15567662,35	10990505,56
Sumitomo	14890807,69	6349330,338	6618517,326	7518301,543	9316560,596	8690741,219	10212747,23	9516508,239	5909517,407
Fuyo	16971138,02	27662972,69	27036704,68	40195660,65	46170291,38	42873022,41	51853748,69	38990795,69	31534466,56
DKB	20361562,54	14993614,92	15172344,22	13893532,25	15543775,62	14274552	12643062,87	12209400,85	10792725,88
Sanwa	6687093,503	8249464,563	11925088,08	14826012,2	20085516,57	17495666,38	21208493,11	14584669,97	14936934,47
Tokai	19483821,12	20011748,75	28819963,74	25433723,5	32575684,82	36665641,93	39169326,12	7255125,661	12992342,86
IBJ	1669494,989	1288315,453	1204236,639	1195867,732	1536410,445	1561633,587	1714902,564	297354,5032	1167008,966
Total	101887302,4	107284041,8	117087675,2	135286419,8	169830494,1	166544022	189119404,2	139505855,6	104941248,7

First total: evolution OR/EB of all keiretsu based on weight, second total: evolution all OR/EB within the keiretsu, third total: sum of all OR/EB weighted down.

6.4 CALCULATION GRAPHICAL ANALYSIS OF COMPARISON OF KEIRETSU AND MARKET

		2002	2003	2004	2005	2006	2007	2008	2009	**AV**
O		0,9124	0,96227	0,94598	1,03236	1,04779	1,11817	1,30326	1,21273	1,06688
R	Total	59	8	7	6	4	3	8	2	2
		0,9035	0,95069	0,91250	0,98615	0,97725	1,02606	1,16460	1,04130	0,99526
	Keiretsu	62	2	3	5	5	6	8	2	8
		0,9167	0,96784	0,96207	1,05456	1,08168		1,36987	1,29508	1,10128
	Market	33	3	2	6	1	1,16242	9	6	5

		2002	2003	2004	2005	2006	2007	2008	2009	**AV**
E		1,0233	1,14869	1,20009	1,34574	1,38543	1,50508	1,27562	1,18840	
B	Total	23	2	4	8	5	3	6	2	1,25905
		0,9610	1,07934	1,19446	1,36727	1,36301	1,47946	1,22166	1,08721	1,21918
	Keiretsu	75	3	5	8	1	4	2	6	9
		1,0532	1,18200	1,20279	1,33540	1,39620	1,51738		1,23701	1,27819
	Market	27	6	7	5	7	9	1,30155	1	9

Total: evolution of all 151 companies OR/EB against the base year with the AV being the average evolution of the decade and whether or not the situation has improved or not. Keiretsu: : evolution of all 49 keiretsu companies OR/EB against the base year with the AV being the average evolution of the decade and whether or not the situation has improved or not. Market: evolution of all 102 market companies OR/EB against the base year with the AV being the average evolution of the decade and whether or not the situation has improved or not.

6.5 CALCULATION GRAPHICAL ANALYSIS OF COMPARISON ON SECTOR LEVEL

Company name		2002	2003	2004	2005	2006	2007	2008	2009	AVOR	2001	OR 2001
TOYOTA MOTOR		0,94	1,04	1,02	1,13	1,17	1,27	1,20	1,15	1,12		1,3E+
CORPORATION	1	3414	3466	5424	8797	5717	7674	9654	9814	1745	1	08
NISSAN MOTOR CO		0,97	1,09	1,15	1,24	1,25	1,28	1,21	1,12	1,16		5332
LTD	1	8299	279	5719	4306	2995	2535	1987	1623	7532	1	2096
SUZUKI MOTOR		1,07	1,20	1,18	1,34	1,40	1,54	1,60	1,36	1,34		1435
CORPORATION	1	2381	1387	4013	6273	6434	137	3269	8313	043	1	6227
MAZDA MOTOR		1,00	1,26	1,07	1,13	1,14	1,21	1,07	0,95	1,11		1802
CORPORATION	1	1946	8711	4398	9758	9664	8112	7471	4983	063	1	7899
DAIHATSU MOTOR		0,91	0,95	1,04	1,16	1,28	1,32	1,53	1,54	1,22		8118
CO LTD	1	2365	997	1113	8481	7033	5048	9278	3257	2068	1	214
MITSUBISHI MOTORS		1,07	0,71	0,55	0,54	0,51	0,61	0,54	0,41	0,62		2754
CORPORATION	1	7506	7464	3746	1661	0427	522	8842	7564	2804	1	3793
FUJI HEAVY												
INDUSTRIES		0,89	0,96	0,88	0,88	0,81	0,84	0,94	0,96	0,90		1172
LIMITED	1	4119	2907	6468	61	3661	7255	4518	9434	0558	1	5009
ISUZU MOTORS		0,74	0,81	0,78	0,80	0,77	0,88	0,79	0,62	0,77		1374
LIMITED	1	9773	5954	0568	9644	1911	45	3725	5484	8945	1	9105
TOYOTA AUTO BODY		1,04	1,03	1,05	1,33	1,34	1,46	1,86	1,75	1,36		6787
CO LTD	0	6383	1217	0826	8369	7203	2775	3421	6417	2076	1	675
TOYOTA INDUSTRIES		0,96	1,08	1,05	1,25	1,42	1,49	1,43	1,29	1,25		8434
CORPORATION	0	8361	2725	7654	6424	1278	8471	8684	9549	2893	1	847

	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**AVG OR**
3711 KR	0,95 3725	1,00 7831	0,96 2681	1,03 4378	1,04 598	1,12 3964	1,11 6093	1,02 0059	1,03 3089
3711 MK	1,00 7372	1,05 6971	1,05 424	1,29 7397	1,38 4241	1,48 0623	1,65 1052	1,52 7983	1,30 7485
Total	0,91 2459	0,96 2278	0,94 5987	1,03 2366	1,04 7794	1,11 8173	1,30 3268	1,21 2732	1,06 6882
Keiretsu	0,90 3562	0,95 0692	0,91 2503	0,98 6155	0,97 7255	1,02 6066	1,16 4608	1,04 1302	0,99 5268
Market	0,91 6733	0,96 7843	0,96 2072	1,05 4566	1,08 1681	1,16 242	1,36 9879	1,29 5086	1,10 1285

Company name		2002	2003	2004	2005	2006	2007	2008	2009	AV EB	2001	EB 2001
TOYOTA MOTOR		1,02	1,24	1,15	1,31	1,39	1,43	0,47	0,74	1,098		1658
CORPORATION	1	0482	7093	6852	1035	3646	3056	767	9411	656	1	3568
NISSAN MOTOR CO		1,43	1,27	1,68	1,81	1,66	1,73	0,81	1,30	1,465		5920
LTD	1	0125	0753	3493	5334	8908	5768	3074	7029	561	1	424
SUZUKI MOTOR		1,05	1,08	1,28	1,47	1,57	1,70	1,45	1,53	1,394		1149
CORPORATION	1	0937	3347	3487	1998	0581	9791	388	145	434	1	220
MAZDA MOTOR		0,06	0,08	0,08	0,11	0,13	0,14	0,03	0,06	0,091		1007
CORPORATION	1	6466	4149	7726	823	0247	3382	5617	7833	706	1	3379
DAIHATSU MOTOR		1,04	1,15	1,29	1,51	1,61	1,80	1,92	1,86	1,526		5086
CO LTD	1	5371	0251	4069	373	5618	3188	8596	4346	896	1	48,6
MITSUBISHI MOTORS		1,17	0,18	-0,13	0,29	0,41	0,59	0,37	0,38	0,410		1788
CORPORATION	1	5421	0089	066	7124	2458	1891	8381	1687	799	1	226
FUJI HEAVY INDUSTRIES		0,78	0,72	0,44	0,74	0,62	0,63	0,39	0,56	0,616		1311
LIMITED	1	8555	6038	5594	2482	9332	9782	8404	4829	877	1	865
ISUZU MOTORS		0,58	1,14	1,07	1,06	1,12	1,24	0,61	0,52	0,923		7638
LIMITED	1	8534	8895	6004	2525	7132	8076	4168	6386	965	1	63,5
TOYOTA AUTO BODY		1,01	0,96	0,89	1,09	1,07	1,10	1,01	1,31	1,058		3564
CO LTD	0	4573	2606	3831	3918	5578	2567	1853	3089	502	1	67,9
TOYOTA INDUSTRIES		0,97	1,05	1,01	1,21	1,43	1,56	1,04	1,20	1,189		8734
CORPORATION	0	628	9396	456	9154	2189	7834	2842	3382	455	1	98,3

	2002	2003	2004	2005	2006	2007	2008	2009	AV EBITDA
3711 KR	0,895736	0,861327	0,86207	1,041557	1,06849	1,163117	0,762474	0,874122	0,941112
3711 MK	0,995427	1,011001	0,954196	1,156536	1,253884	1,3352	1,027347	1,258235	1,123978
Total	1,023323	1,148692	1,200094	1,345748	1,385435	1,505083	1,275626	1,188402	1,259 05
Keiretsu	0,961075	1,079343	1,194465	1,367278	1,363011	1,479464	1,221662	1,087216	1,219189
Market	1,053227	1,182006	1,202797	1,335405	1,396207	1,517389	1,30155	1,237011	1,278199

KR: average evolution of keiretsu in sector OR/EB against base year, with AV being the average of the last decade. MK: average evolution of market in sector OR/EB against base year, with AV being the average of the last decade. The three other figures are the averages described in the previous chapter.