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MASTER THESIS

Further Determinants of Private Equity

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Declaration of Authorship

The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

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Prague, January 17, 2012

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1 Introduction

Private equity is an alternative investment structure allowing investments into private companies. The private equity industry has become rather developed over the last several decades, however due to the limited public information on the subject, the research on the topic has been scarce. The goal of my thesis is to take advantage of the few public available commercial databases providing data on private equity to construct and research hypotheses that have not been yet subjected to academic research. The thesis examines determinants of two variables important in evaluating private equity investments. First of them is the price of companies acquired by private equity funds expressed as a multiple of a profit indicator (EBITDA) and the impact of primary and secondary buyouts. The second variable researched is the internal rate of return (IRR), a popular tool to measure profitability of private equity funds. The IRR is studied for different groups of private equity funds and is reflected in a post-crisis perspective.

The thesis is structured as follows: Section 2 describes the structure of private equity and explains different types of private equity investments. Section 3 introduces general data about the global and European private equity market. Section 4 describes the regulatory framework in the EU. Section 5 presents an overview of the existing academic literature dealing with the topic. Section 6 sets the hypotheses researched in the thesis followed by a dataset description, methodology overview and results discussed in sections 7 to 9. Finally, Section 10 concludes with the findings of the thesis.

2 About Private Equity

This section presents the basic characteristics of private equity, different categorization used in the industry and describes valuation techniques and value creation of private equity

2.1 Private Equity Structure

Private equity (PE) funds are alternative investments vehicles, committing medium-term investment (usually 3 – 10 years) into companies (hereinafter portfolio companies or targets) in different stages. The term PE is not always used in the same sense by all users. A definition published by the British Venture Capital Association should help to understand the problem: *"Private equity is medium to long-term finance provided in return for an equity stake in potentially high growth unquoted companies. Some commentators use the term "private equity" to refer only to the buy-out and buy-in investment sector. Some others, in Europe but not the USA, use the term "venture capital" to cover all stages, i.e. synonymous with "private equity". In the USA "venture capital" refers only to investments in early stage and expanding companies."* (BVCA (2010))

In this paper, if not mentioned otherwise, the term PE will be used in its broader sense, to encompass all kinds of company purchases such as venture capital, buy-outs, buy-ins etc.

The usual structure of PE funds takes place through a partnership. The general partner (GP) actively manages the investments, whereas the limited partners (LP) are the main source of the fund (Axelson et al. (2010)). The limited partner usually charges a management fee as a percentage of funds under management and a success fee as a percentage of realized profits. According to Kaplan & Stromberg (2008) a typical structure consists of a 2% management fee and a 20% success fee.

A typical PE fund follows the time structure in conducting its business described in Figure 1.

Figure 1: Time Structure of PE Funds

Source: Schmidt et al. 2007

In the fundraising phase, the fund promotes its activities and gains enough capital to be able to pursue its strategies. In the investment phase, potential investment targets are monitored, assessed and valued, deals are negotiated and transactions executed. The idea of the PE business is that the fund's management is able to govern the acquired company in such a way to be able to sell them at a profit. This process takes place in the value-adding phase, where value is added to the company via better risk monitoring (Masulis & Thomas (2008)) and capital structure, management incentives and corporate governance (Kaplan & Stromberg (2009)). During the whole process the PE fund management has to keep in mind the exit strategy, which determines a substantial part of the fund performance. In the divestment phase the fund has to choose the best exit option to sell the portfolio companies.

An important fact about the PE time structure is that one PE firm can manage several funds in different stages at one time. Thus it is quite common that it for example leads one of its funds through the value-adding phase while raising funds for a new fund.

2.2 Type of Deals

The acquisition of companies by PE funds can be divided into various categories based on several criteria such as the phase of the acquired company or the type and the purpose of the financing. Figure 2 describes the types of deals commonly conducted by PE funds.

Figure 2: Description of PE Deal Types

Name	Description
Seed	To allow a business concept to be developed, perhaps involving the production of a business plan, prototypes and additional research, prior to bringing a product to market and commencing large-scale manufacturing. Seed capital is usually conducted by specialized venture capital funds.
Start-up	To develop the company's products and fund their initial marketing. Companies may be in the process of being set up or may have been trading for a short time, but have not sold their product commercially.
Other early stage	To initiate commercial manufacturing and sales in companies that have completed the product development stage, but may not yet be generating profits.

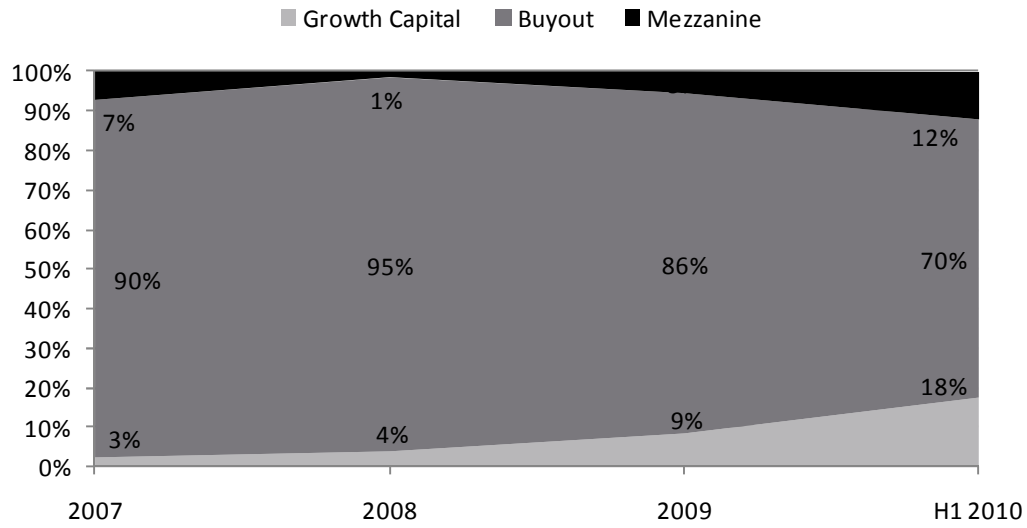
Expansion (or Development or Growth)	To grow and expand an established company. For example, to finance increased production capacity, product development, marketing and to provide additional working capital. Also known as “development” or “growth” capital.
Management buy-out (MBO)	To enable the current operating management and investors to acquire or to purchase a significant shareholding in the product line or business they manage. MBOs range from the acquisition of relatively small formerly family owned businesses to well over Ł100 million buy-outs. The amounts concerned tend to be larger than other types of financing, as they involve the acquisition of an entire business.
Management buy-in (MBI)	To enable a manager or group of managers from outside a company to buy into it.
Buy-in management buy-out (BIMBO)	To enable a company’s management to acquire the business they manage with the assistance of some incoming management.
Institutional buy-out (IBO)	To enable a private equity firm to acquire a company, following which the incumbent and/or incoming management will be given or acquire a stake in the business. This is a relatively new term and is an increasingly used method of buy-out. It is a method often preferred by vendors, as it reduces the number of parties with whom they have to negotiate.
Secondary buyout	When a private equity firm acquires existing shares in a company from another private equity firm or from another shareholder or shareholders.
Replacement equity	To allow existing non-private equity investors to buy back or redeem part, or all, of another investor’s shareholding.
Rescue/turnaround	To finance a company in difficulties or to rescue it from receivership.
Refinancing bank debt	To reduce a company’s level of gearing.
Bridge financing	Short-term private equity funding provided to a company generally planning to float within a year.
Mezzanine	To provide (generally subordinated debt to facilitate the financing of buyouts, frequently alongside a right to some of the equity upside

Source: BVCA, EVCA, Author

As mentioned in the opening part, the term venture capital is used for funds undertaking deals with a higher degree of risk, corresponding to the categories seed, start-up and other early stage in Figure 2.

To illustrate the breakdown of the deal types, Figure 3 describes the shares of funds raised by stage focus in Europe for the period 2007 – H1 2010. The European Private Equity & Venture Capital Association (EVCA) uses three categories to breakdown the funds by stage focus: growth capital, buy-out and mezzanine. It is clear that buy-outs are the most popular focus of funds reaching 95% of the raised funds in 2008. In H1 2010 the share of buy-out focused funds dropped to 70%, mezzanine focused funds stood for 12% and growth capital focused funds stood for 18%.

Figure 3: Funds Raised by Fund Stage Focus in Europe (2007 – 2010)



Source: EVCA

2.3 Types of Investors

The main source of raised capital for private equity funds are institutional investors. When looking on the breakdown of investors into PE in Europe (Figure 4). In 2009 the main sources of committed capital were pension funds (21%), banks (19%), funds-of-funds[1] (18%) and insurance companies (15%). Only marginal amounts of capital came from investors that are considered to be non-institutional (private individuals, corporate investors).

[1] funds-of-funds – Funds investing into other PE funds

Figure 4: Funds Raised by Type of Investor in Europe (2007-2009)

Type of investors	2007	2008	2009
Banks	15%	8%	19%
Capital markets	12%	1%	2%
Corporate investors	2%	1%	2%
Endowments and foundations	3%	6%	3%
Family offices	2%	5%	5%
Funds-of-funds	16%	18%	18%
Public sector, including SWFs	7%	6%	7%
Insurance companies	9%	8%	15%
Other asset managers	5%	5%	6%
Pension funds	24%	37%	21%
Private individuals	5%	5%	2%

Source: EVCA

In 2009, the country where the most of the capital from LPs to European GPs came from was the UK, followed by the USA, France, Italy and Germany.

2.4 Types of Exit

Exiting the portfolio companies is crucial for the PE funds as it is the point where it makes the key part of its revenue. The overview of European PE fund exits in 2009 is in Figure 5. The most popular means of exiting is a trade sale, which is a sale of the portfolio company to a strategic investor. This is quite logic, as one of the possible strategies for PE funds is to acquire companies and prepare them for strategic buyers, where synergies are most likely to occur, thus a higher price can be expected. An unusually high share of write-offs (17%) took place in 2009, as some portfolio companies went under as a result of the economic downturn. The third most popular exit was selling the company to its current management (MBO). An interesting means of exit is an initial public offering (IPO). Even though the share of IPOs as PE exits was close to zero in 2008 and 2009 (once again can be explained by the economic downturn and lower confidence into capital markets) according to Schmidt et al. (2007) usually only the best performing portfolio companies are exited via IPO.

Figure 5: Divestment by Exit Method (% of number of companies) in Europe (2007-2009)

Type of Exit	2007	2008	2009
Trade sale	26%	29%	22%
Write-offs	3%	7%	17%
Sale to management (MBO)	11%	11%	15%
Repayment of silent partnerships*	1%	7%	13%
Secondary sale	16%	21%	11%
Repayment of principal loans	18%	12%	9%
Unknown	10%	4%	5%
Sale of quoted equity	3%	2%	3%
Sale to financial institution	6%	4%	3%
Divestments by other means	3%	3%	2%
IPO	3%	0%	0%

*Note: A silent partnership belongs to the so-called mezzanine financing instruments. It is similar to a long-term bank loan, but in contrast to a loan, a silent partnership is subject to a subordination clause, so that, in the event of insolvency, all other creditors are paid preferentially to the silent partner. The company has to repay the partnership and has to pay interest and possibly a profit-related compensation. The subordination clause gives the capital the status of equity despite its loan character. This financing instrument is well known and often used in Germany.

Source: EVCA

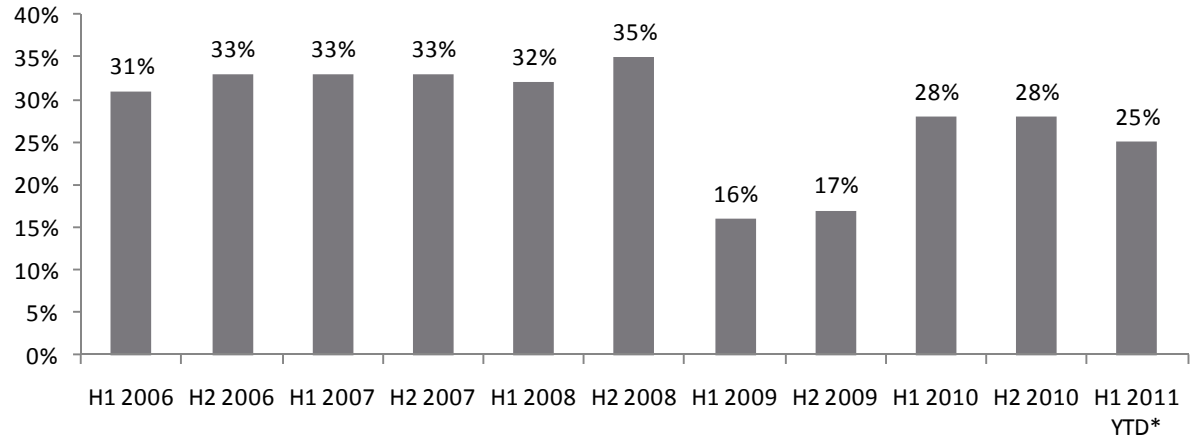
2.5 Secondary Buyouts

When looking at sections 2.2 Types of Deals and 2.4 Types of Exit we can find two related categories: Secondary buyouts and Secondary sales. Basically these are two names for one type of deal from two different perspectives, the buyer's and the seller's. A secondary buyout is a transaction when one private equity fund buys a company from a different PE fund. To make the definitions clear, for the purpose of this paper, we will use the term 'secondary buyout' for all transactions when a PE fund buys a company from another PE fund and 'primary buyout' for all transaction when a PE fund buys a company from any subject but a PE fund.

Secondary buyouts have started to become popular only after 2000 (Sousa, 2010). Therefore the availability of times series are rather limited. A good time series of secondary buyouts as a share of all private equity deals is presented by Preqin, a research firm focused on PE. Preqin's database (Figure 6) shows that secondary buyouts accounted for about a third of all

PE deals during years 2006 – 2008. After a drop in 2009 to slightly over 15% the share rose to 28% in 2010 and 25% in 2011. When looking at this figure, the question that comes up is why the share of secondary buyouts dropped to about a half during the economic crisis? The answer might be that PE funds in general decided to put their exits on hold. The only situation when they decided to sell is when a reasonable price was offered. It is logical to assume that only strategic investors were able to offer such price, as PE buyers were very uncertain about the future in 2009.

Figure 6: Share of Secondary Buyouts on Private Equity Deals



*Source: Preqin – Private Equity Spotlight;*Note: As of end of March 2011*

2.6 Value Creation

There are several factors that can create value in a PE structure, most of them related either to the financing structure of the target company, governance or the operational know-how of the PE managers. According to Kaplan & Stromberg (2009) the following elements may induce higher return of a target company after a PE acquisition:

- Management incentives – PE firms pay special attention to align interests of company managers with the performance of the company through management packages often setting a structure where managers own company shares or stock options on the company shares.
- Leverage effect - creates pressure on managers not to waste money, because they must make interest and principal payments

- Tax shield – tax deductibility of interest
- Governance engineering – PE firms create a smaller and more effective governance structures
- Industry and operational engineering – A trend especially popular in recent years, when PE firms hire industry experts that are able to step in targets' day to day operation.

2.7 Valuation Techniques

In order to assess and benchmark PE investments, certain financial tools have been developed. The two ultimate tools used in PE assessment are the internal rate of return (IRR) and transaction multiples.

The internal rate of return is a rate calculated in such a way to set the net present value of the given investment to zero (Ross, 2006). PE professionals and professional databases use the IRR as the ultimate measure of PE profitability (e.g. March 2011 Private Equity Spotlight). To analyze fund performance, two types of approaches can be used. Using the classical IRR measure, one can evaluate performance of particular funds since their point of inception with different vintage years. This way fund performance according to Net IRR[2]can be analyzed as of one point in time (Table 1). The top performing fund as of June 24, 2011 was the AMWIN Innovation Fund, with a net IRR of more than a thousand percent. The fund is an Australian government licensed Innovation Investment Fund, a program that encourages investment in high risk early stage companies.

[2] Net IRR is defined by Preqin as the IRR after fees and carry (costs of the GPs)

Table 1: Top 10 fund performers (all categories)

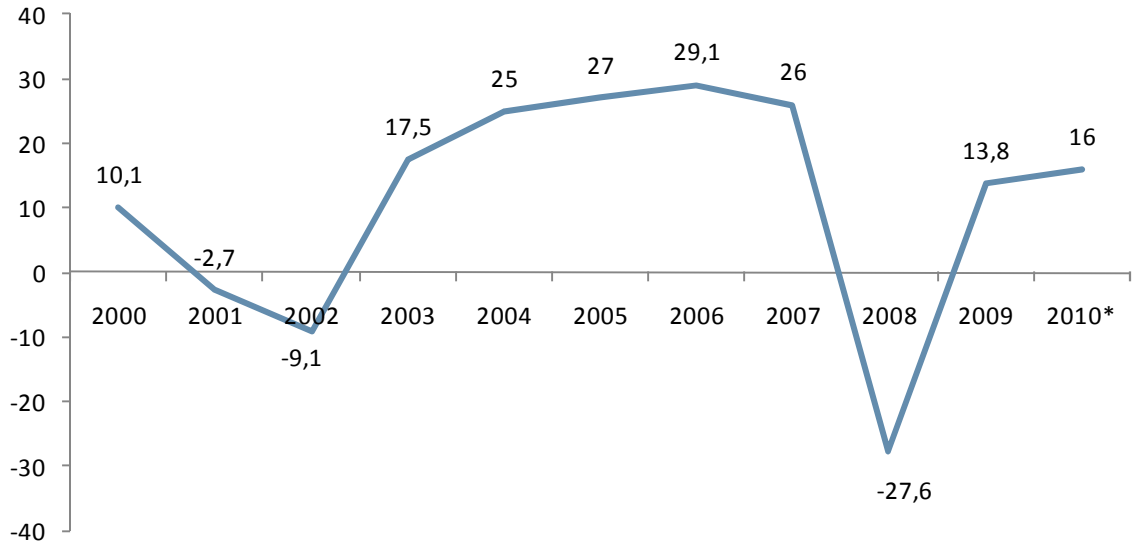
Rank	Fund	Vintage	Category Type	Net IRR (%)
1.	AMWIN Innovation Fund	1998	Early Stage	1025.10
2.	Matrix Partners V	1998	Venture (General)	514.30
3.	Crescendo I	1995	Venture (General)	447.40
4.	Clearstone Venture Partners I-A	1998	Early Stage	430.53
5.	Pittsford Ventures IVc (Maple Leaf)	1991	Venture (General)	346.40
6.	Benchmark Capital Partners II	1997	Venture (General)	267.80
7.	Matrix Partners IV	1995	Venture (General)	218.30
8.	Focus Ventures I	1997	Venture (General)	213.00
9.	Columbia Capital Equity Partners I-A	1989	Early Stage	198.50
10.	Columbia Capital Equity Partners I-B	1995	Early Stage	192.30

Alternatively, a horizon IRR can be used to evaluate the fund's performance in a selected period. The Preqin definition of a horizon IRR is:

"Horizon IRRs indicate how a private equity fund, manager or industry is performing during a defined period. Horizon IRRs are calculated using the fund's net asset value as a negative outflow at the beginning of the period, any cash paid or received during the period and the fund's residual value as a positive inflow at the end of the period."

Figure 7 shows the development of 1-year rolling horizon IRRs of PE funds drawn from the Preqin database. The figure clearly describes how the PE industry has copied the evolution of the global economy. The PE industry has suffered from the burst of the dot-com bubble in the early 2000's, reached values of high twenties in the period of 2004 – 2007 and experienced a great fall in 2008 reaching a negative IRR of 27.6%. In 2009 and 2010, the PE funds were able to get back on track and perform double digit 1-year rolling horizon IRRs.

Figure 7: 1-year Rolling Horizon IRRs of PE funds (%)



*Source: Preqin Database; *Note: 2010 figure is for the period January – September only*

The second very popular measure, assessing the price of entry or exit, are transaction multiples. The IRR is a tool that can measure the performance of an investment over a certain period of time. Transaction multiples are rather different, as they assess transactions of comparable companies at either their entry or exit. When one constructs a multiple, he or she looks at the transaction value[3] of comparable companies. To be able to transfer information from comparable transactions, one has to use an indicator that divides the prices to create a multiple and then multiply it by the same indicator of the valued company.

The most popular transaction multiples are EV[4]/Sales, EV/EBITDA[5], EV/EBIT[6] and P/E[7]. There is no single "best" transaction multiple, but arguably the most popular is the EV/EBITDA multiples, as for example Capital IQ uses it in its transaction evaluation in its report (Market Observations, 2011).

[3] Total consideration paid for the change of ownership

[4] Enterprise Value

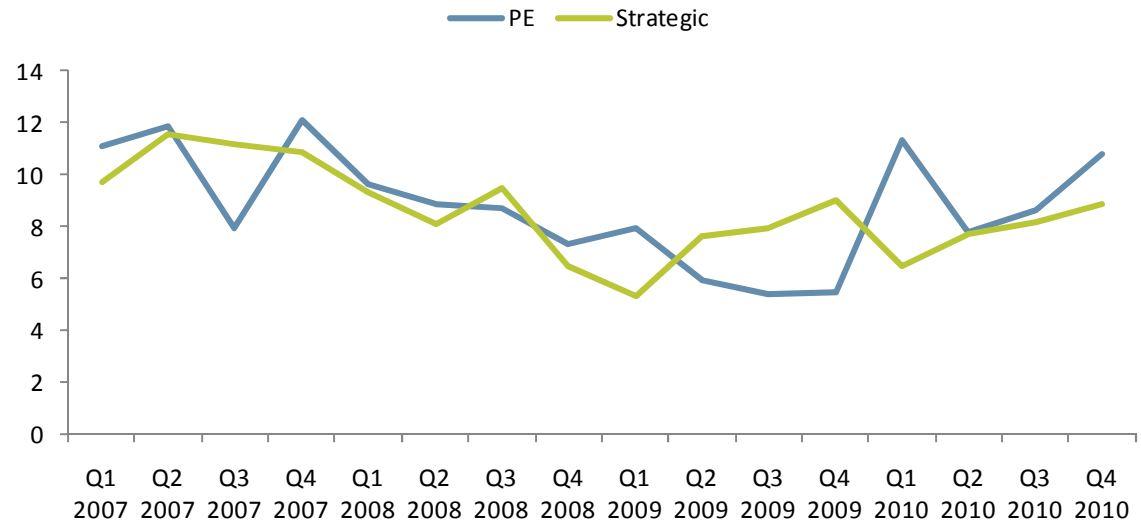
[5] Earnings Before Interests, Taxes, Depreciation and Amortization

[6] Earnings Before Interests and Taxes

[7] Price/Earnings

Figure 8 shows the development of the aggregate EV/EBITDA in Europe. Capital IQ breaks down transaction into two groups, transaction where PE firms are acquirers and transactions where strategic[8] companies are acquirers. This effectively creates two time series of transaction multiples. Both of them have followed a similar pattern in the period 2007 – 2010, dropping from double digit values in 2007 to a low of about 6 in 2009. 2010 shows an upswing in the multiples, as it increases back to the value of 10. The cause for the EV/EBITDA multiple decreases in the crisis year are twofold. First, investors, both strategic and financial needed to liquidate their investment as the credit crunch hit the global economy and were willing to accept conditions of fire sales. Second, as the market outlook was gloomy among all sectors and credit was tight, acquiring investors were willing to buy companies only at favorable prices.

Figure 8: EV/EBITDA Multiples - Europe



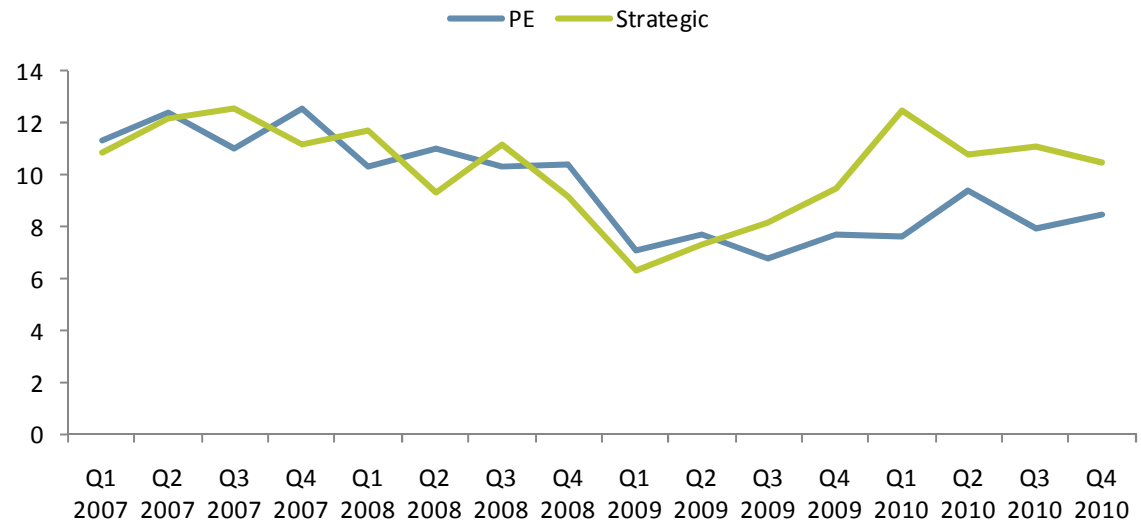
Source: Capital IQ – Market Observations 2011

Figure 9 shows the same data as the preceding figure, only for the region of Northern America. Once again there is a pattern of decreasing multiples in 2007 – 2009 and an increasing trend in 2009 – 2010. The difference is that as opposed to the period 2007 – 2009,

[8] Strategic, in this sense means basically all firms with the exceptions of PE firms and other financial sponsors

where the multiples for PE and strategic investors moved closely together, in the period 2009 – 2010 the transaction multiples of strategic acquirer grew faster than the multiple for PE firms. The explanation for this development might be that the US PE firms were exceptionally careful to pay high prices for acquired companies, as they were hit very badly by the financial crisis.

Figure 9: EV/EBITDA Multiples – Northern America



Source: Capital IQ – Market Observations 2011

2.8 Types of Funds

There are various types of PE funds and their categorization differs. The funds are distinguished by their investment focus with respect to the target industry, size of investments or company stage. For the purpose of this thesis, there are several important fund types that are described in this chapter. As this paper uses the Preqin database as one of its main data source, the categorization used by this research agency is depicted in Table 2. Those fund types that are key for this paper are further described an analyzed in this section.

Table 2: Fund Types

Fund types	
Balanced	Late Stage
Buyout	Mezzanine
Co-investment	Natural Resources
Co-Investment Multi-Manager	Real Estate
Direct Secondaries	Real Estate Co-Investment
Distressed Debt	Real Estate Fund of Funds
Early Stage	Real Estate Secondaries
Early Stage: Seed	Secondaries
Early Stage: Start-up	Timber
Fund of Funds	Turnaround
Growth	Venture (General)
Infrastructure	Venture Debt

Source: Preqin Database

Real Estate Funds

Real estate funds are those that invest their capital into real estate. The operation of these funds is different from classical PE funds as the nature of the real estate business is different from investing into classical companies. For instance real estate investors use a rather different approach to valuation. Rather than transaction multiples, these funds use net initial yield, which is an inverse value to a transaction multiple.

The top 10 real estate fund performers are listed in Table 3. The top performer as of end of June 2011was MSPA Acquisition, founded in 2004 with a net IRR of 75%.

Table 3: Global Top 10 Real Estate Fund Performers (as of end of June 2011)

Rank	Fund	Vintage	Category	Net IRR (%)
1	MSPA Acquisition	2004	Real Estate	75.00
2	STAG Investments I (SC P Green)	2004	Real Estate	63.30
3	Meridian	1996	Real Estate	63.12
4	Sveafastigheter Fund I	2003	Real Estate	58.51
5	Westbrook Real Estate Fund V	2005	Real Estate	44.90
6	Beacon C apital Strategic Partners III	2004	Real Estate	44.80
7	Beacon C apital Strategic Partners II	2001	Real Estate	42.50
8	Washington Equities	2004	Real Estate	42.10
9	EC M Income & Growth Fund	2002	Real Estate	40.00
10	Patria Brazil Real Estate Fund	2005	Real Estate	39.50

Source: Preqin Database

Distressed Debt Funds

The Preqin's definition of distressed debt funds is:

"Funds that buy corporate bonds of companies that have either filed for bankruptcy or appear likely to do so in the near future. As part of the company reorganizations, distressed debt firms often forgive the debt obligations of the company, in return for enough equity in the company to compensate."

The overview of top performing distressed debt funds is in Table 4. The top performer was WLR Recovery Fund II, founded in 2002 with a net IRR of 79.1%. The WLR Recovery Funds are led by Mr. Wilbur L. Ross Jr., a former successful bankruptcy investment banker.

Table 4: Top 10 Distressed Debt Fund Performers (as of end of June 2011)

Rank	Fund	Vintage	Category	Net IRR (%)
1	WLR Recovery Fund II	2002	Distressed Debt	79.10
2	OCM Opportunities Fund IV-B	2002	Distressed Debt	47.80
3	Foothill Partners I	1990	Distressed Debt	44.80
4	TCW Special Credits Fund IIb	1990	Distressed Debt	37.90
5	Carlyle Strategic Partners	2004	Distressed Debt	36.50
6	Foothill Capital	1983	Distressed Debt	36.50
7	WLR Recovery Fund	1997	Distressed Debt	35.20
8	Sapphire Special Opportunities Fund	2003	Distressed Debt	33.20
9	OCM Opportunities Fund IV	2001	Distressed Debt	30.41
10	AG Capital Recovery Partners III	2002	Distressed Debt	29.10

Source: Preqin Database

Turnaround Funds

Turnaround funds focus on investing in companies with poor performance and selling them after restructuring them with the hope of better results. This type of funds is rather rare as Preqin monitors only ten of them in its database. Therefore only the top 5 performers are presented in Table 5.

The top turnaround performer as of end of June 2011 was Strukturfonded, a fund focused on radical restructuring cases ran by the Swedish Catella Group, founded in 2001, with a net IRR of 70%.

Table 5: Top 5 Turnaround Fund Performers (as of end of June 2011)

Rank	Fund	Vintage	Category	Net IRR (%)
1	Strukturfonden	2001	Turnaround	70.00
2	Helmsman Capital Fund	2002	Turnaround	36.40
3	Insight Equity Partners	2005	Turnaround	28.00
4	Brookfield Special Situations Fund	2001	Turnaround	24.80
5	ComVest Investment Partners II	2003	Turnaround	20.67

Source: Preqin Database

Secondaries Funds and Funds of Funds

Secondaries[9] and funds of funds are rather special types of investment vehicles. They do not invest directly into companies but they commit capital to other PE partnerships. The difference between the two types is the situation at which they invest. Funds of funds constantly monitor the performance of PE managers and select the best funds to invest in during its fundraising period. On the other hand, secondaries are funds that acquire commitments from existing limited partners. The main reason why a limited partner wishes to exit the partnership prematurely are liquidity issues, therefore secondaries can be considered opportunity seekers. The definitions of both fund types are in Table 6.

Table 6: Definitions of Secondaries and Funds of Funds

Type	Definition
Secondaries	Private equity funds that acquire existing shares in a private equity fund from an existing limited partner. Secondary transactions may comprise a manager's entire fund of direct investments or a portfolio of interests in a number of different funds.
Funds of Funds	A financial instrument that invests in a number of private equity partnerships. Investing in fund of funds can help spread the risk of investing in private equity because they invest the capital in a variety of funds.

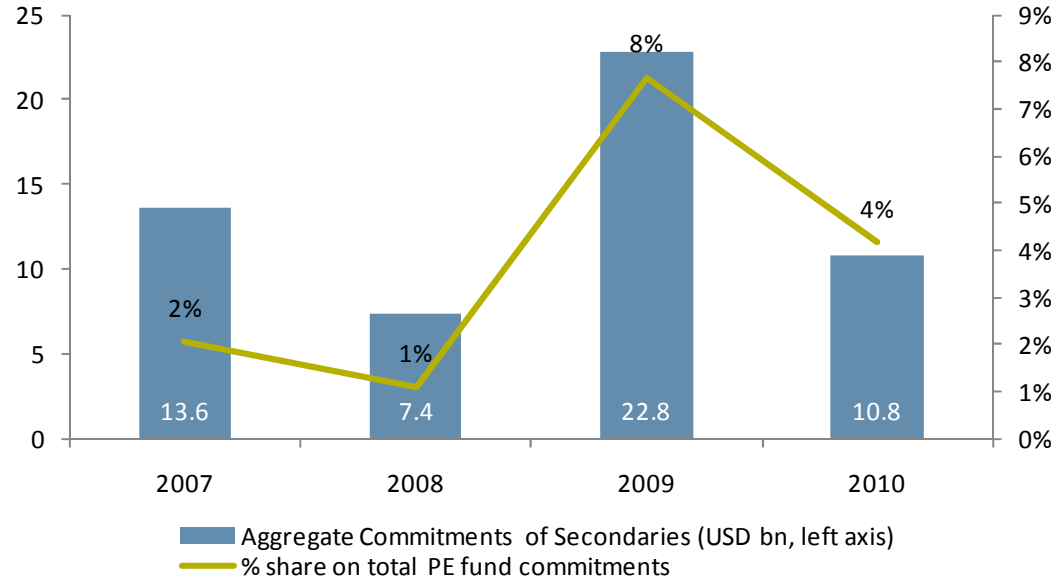
Source: Preqin Database

The annual secondaries fundraising and its share on total PE fundraising in the period 2007 - 2010 are depicted in Figure 10. During these four years the highest commitment from

[9] To avoid confusion in this paper, it is very important to distinguish the difference between secondary buyouts and secondaries funds. The former term refers to a transaction, when one PE fund sells a company to another PE fund. The latter refers to funds that seek to buy commitments from existing limited partners.

investors to secondaries was in 2009, when the total secondaries funds raised were USD 22.8 bn, effectively being 8% of the total funds raised. The high shares of secondaries funds in the years 2009 and 2010 are predictable as investors faced often liquidity issues and it was only natural to sell their commitment to a secondaries fund, once the opportunity appeared.

Figure 10: Secondaries – Global Fundraising and Share on Total PE Fundraising



Source: Preqin: Secondary Market Outlook

The list of the top performing secondaries fund is depicted in Table 7. The top performer among secondaries funds is the AXA Secondary Fund III, founded in 2004 with a net IRR of 47.5%. The AXA Secondary Fund III has begun its investments by investing in a mid-market Italian PE Sofipa Equity and a US buyout firm.

Table 7: Global Top 10 Secondaries Fund Performers (as of end of June 2011)

Rank	Fund	Vintage	Category Type	Net IRR (%)
1.	AXA Secondary Fund III	2004	Secondaries	47.50
2.	Private Equity Investment Fund	1993	Secondaries	45.10
3.	Capital Dynamics Global Secondaries 1992	1992	Secondaries	41.10
4.	Private Equity Investment Fund II	1995	Secondaries	40.80
5.	AXA Secondary Fund	1999	Secondaries	39.70
6.	Pomona Capital I	1994	Secondaries	38.00
7.	CS Strategic Partners II	2003	Secondaries	36.70
8.	Landmark Equity Partners III	1993	Secondaries	35.09
9.	JSPF Fund	2003	Secondaries	35.00
10.	NPEO - Dahlia Opportunities I	2003	Secondaries	32.67

Source: Preqin Database

Table 8 lists the Top 10 performers among funds of funds. The top performer as of end of June 2011 was the Endowment Venture Partners III, investing US college endowment into venture capital projects.

Table 8: Global Top 10 Funds of Funds Performers (as of end of June 2011)

Rank	Fund	Vintage	Category Type	Net IRR (%)
1	Endowment Venture Partners III	1996	Fund of Funds	77.10
2	Capital Dynamics Participation II	1993	Fund of Funds	69.40
3	Horsley Bridge Fund III	1992	Fund of Funds	69.00
4	Brinson Partnership Fund - 1997 Primary	1997	Fund of Funds	64.18
5	Capital Dynamics Participation IV	1993	Fund of Funds	62.00
6	Capital Dynamics Participation I	1992	Fund of Funds	53.60
7	Endowment Venture Partners II	1993	Fund of Funds	48.60
8	Capital Dynamics US Private Equity 1992	1992	Fund of Funds	48.60
9	Pantheon Europe 1994	1994	Fund of Funds	43.80
10	Knightsbridge Integrated Holdings III	1996	Fund of Funds	42.12

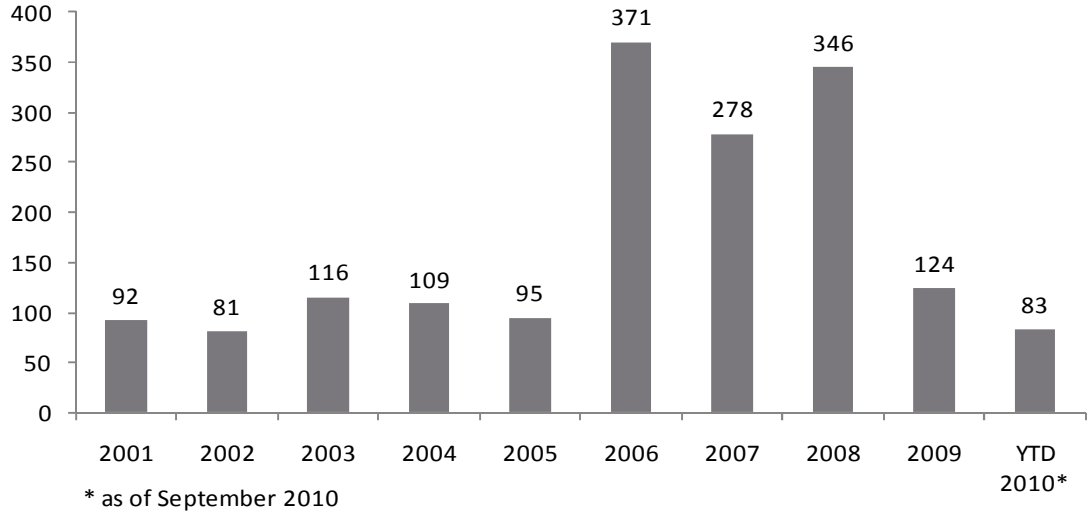
Source: Preqin Database

3 Private Equity Market

The private equity market section introduces data on both global and European private equity markets to shed light on elements such as market size, financing structure, geographical breakdown etc.

The global PE market (Figure 11) reached its peak in 2006 when volume of invested capital was USD 371 bn. The market dropped significantly in 2009 where the y-o-y change was 64%.

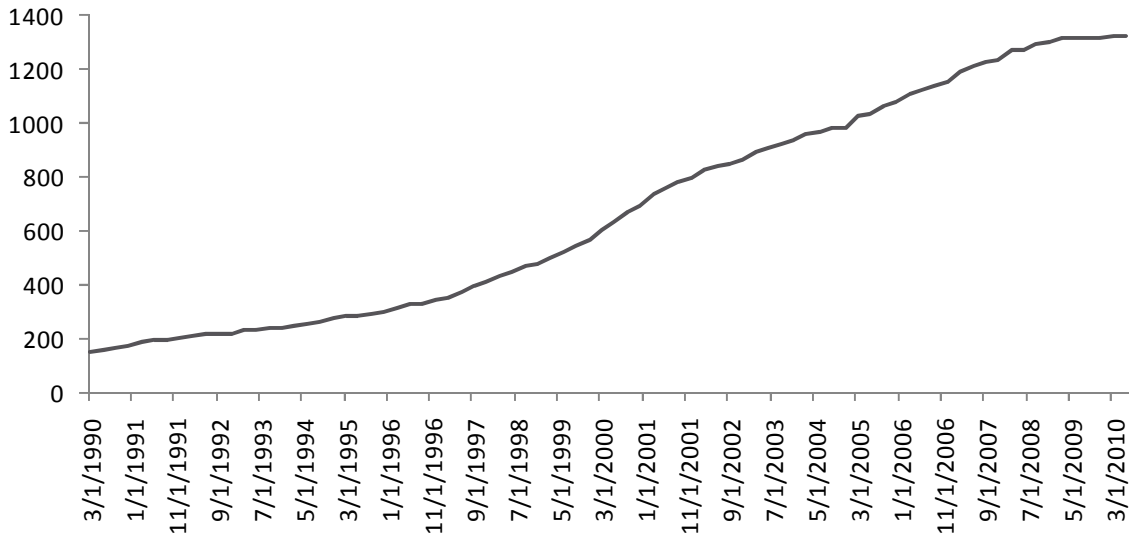
Figure 11: Global Private Equity Investment (USD bn)



Source: EMPEA

The number of PE funds in Europe (Figure 12) grew dramatically from 1990. From about 150 funds in 1990, the number grew more than 8 fold over the next 20 years to reach 1321 as of end of June 2010.

Figure 12: Number of PE funds in Europe



Source: Thomson Reuters

Figure 13 describes the location of fundraising of PE funds in Europe. In 2009, most capital was raised in UK & Ireland (43%), mainly thanks to the fact that London is the financial

center of Europe. This region was followed by Southern Europe (23%), DACH[10] region (11%) and Benelux (8%)

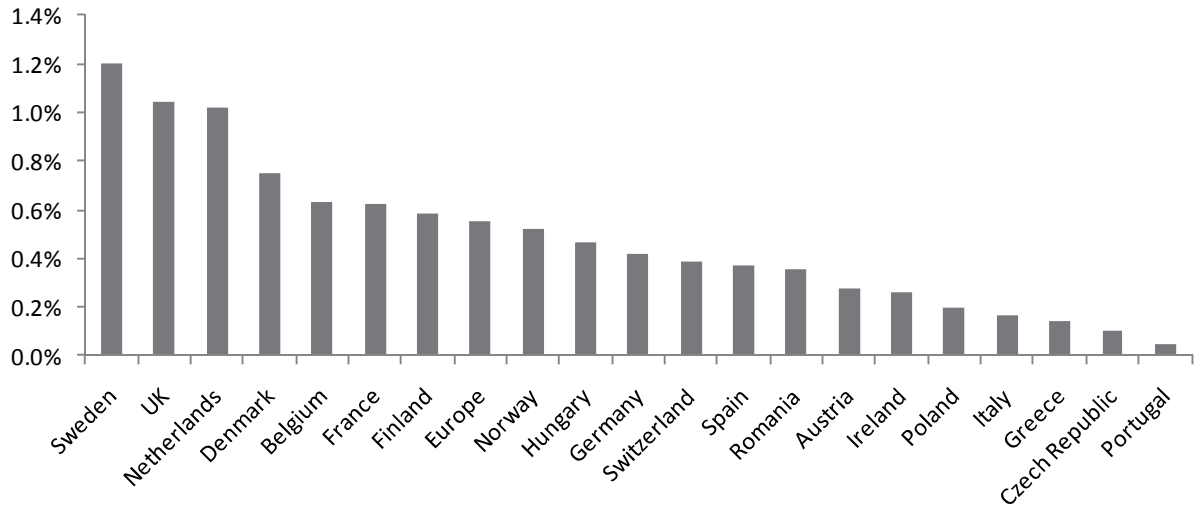
Figure 13: Regional Fundraising (% of European total, by location of advisory team)

	2007	2008	2009	H1 2010
Benelux region	4%	3%	8%	14%
CEE region	1%	2%	2%	1%
DACH region	7%	5%	11%	7%
France	8%	8%	8%	11%
Nordic region	8%	12%	5%	5%
Southern Europe	13%	3%	23%	4%
UK & Ireland	59%	67%	43%	58%

Source: EVCA

To further analyze the regional activity of PE in Europe, Figure 14 lists the percentage of GDP invested into companies by PE funds in EU countries. The highest shares are in well developed countries, such as Sweden, UK, Netherlands and Belgium. On the other hand, less developed countries such Greece, Czech Republic and Portugal have less than 0.2% of the GDP invested into companies by PE funds.

Figure 14: PE Investment as % of GDP (2007, by country of portfolio company) in Europe



Source: EVCA

[10] DACH = Germany, Austria and Switzerland

Figure 15 ranks the most active PE funds in Europe. In the mid-market space the top 3 funds were 3i Group, Barclays Private Equity and Intermediate Capital Group. In the higher end space the leading funds were CVC Capital Partners, Apax Partners Worldwide and Cinven.

Figure 15: Most Active Players in Europe (2007 – 2009 Ranking)

Mid-market space (EUR 15 mil - EUR 150 mil)		Higher-end space (> EUR 150 mil)	
	Private equity firm		Private equity firm
1	3i Group	1	CVC Capital Partners
2	Barclays Private Equity	2	Apax Partners Worldwide
3	Intermediate Capital Group	3	Cinven
4	European Capital Financial Services	4	Permira Advisers
5	Lloyds TSB Development Capital	5	Charterhouse Capital Partners
6	AXA Private Equity	6	Bridgepoint
7	Apax Partners Worldwide	7	Kohlberg Kravis Roberts & Co.
8	EQT Partners	8	EQT
9	IK Investment Partners	9	Candover Investments
10	HgCapital	10	Advent International

Source: EVCA

Figure 16 describes the breakdown of European PE deals by the source of buy-out. The most popular source of buy-outs in 2008 and 2009 were corporations, meaning the deals were company divestments. These deals were followed by buy-outs from other PE funds, that is secondary buy-outs, reaching 28% in 2008 and 21% in 2009. Following categories were family & private businesses and capital market buy-outs. In the first half of 2010 the situation quite changed, when almost half of the deals were secondary buy-outs from other PE funds, followed by family & private businesses with a 19% share.

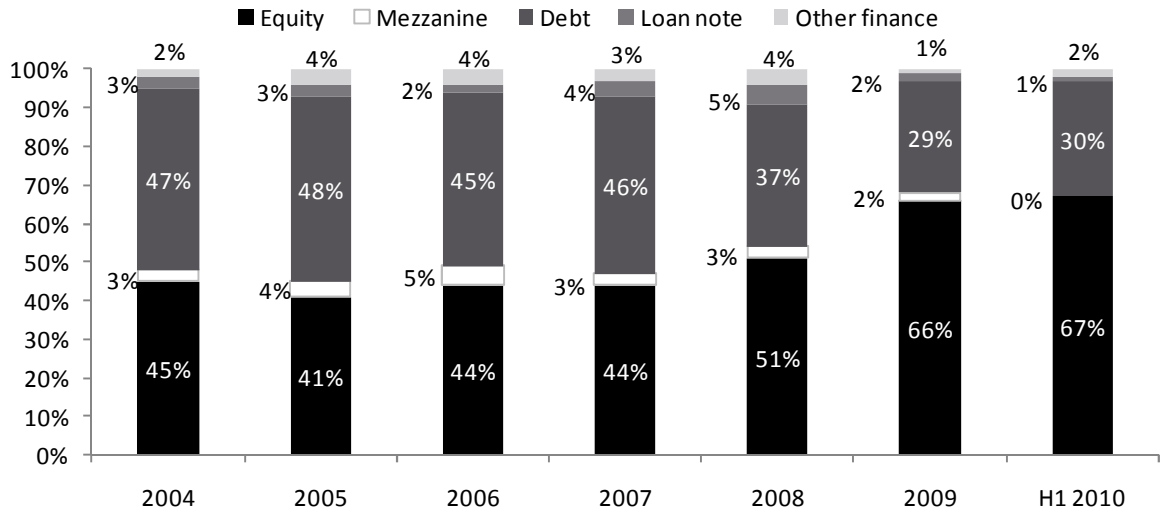
Figure 16: Sources of Buy-outs (% by invested amount) in Europe

Source of Buy-outs	2008	2009	H1 2010
Private equity firm	28%	21%	49%
Receivership	0%	0%	1%
Privatisation and state owned	0%	1%	1%
Institutional	7%	5%	5%
Family & private	15%	16%	19%
Corporate	29%	40%	11%
Capital market	21%	17%	14%

Source: EVCA

The average deal structure for PE deals under EUR 100 mil in Europe is described in Figure 17. In the period 2004 – 2007 the average structure of the deals was quite stable, the average equity stake in deals ranged from 41% - 45% and the average share of debt ranged from 45% - 47%. In 2008, with the first signals of the credit crunch, the leverage of deals started to drop. In 2009, only 29% of an average deal was financed by debt and 66% by equity.

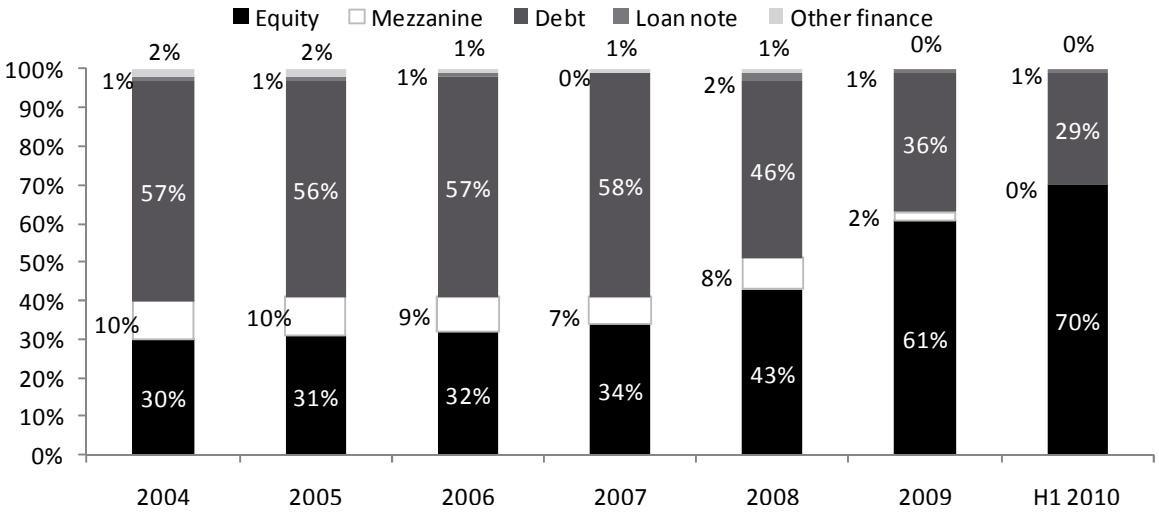
Figure 17: Average Deal Structures for European PE-backed buy-outs (Deals less then EUR 100 mil)



Source: EVCA

Figure 18 describes the same statistics as Figure 17, but for deals over EUR 100 mil. When comparing the two graphs, we see the same trend of lower leverage in time starting from 2008. The portion of debt is somewhat 10 percentage points higher for deals exceeding EUR 100 mil, with the exception of H1 2010 when the average debt share in a deal was actually 1 percentage point lower for deals over EUR 100 mil than for deals under 100 mil. A second differentiating point is a higher implementation of mezzanine finance. Whereas for deals under EUR 100 mil the share of mezzanine finance reached the highest value in 2006 with 5%, for the deals over EUR 100 mil, the share of mezzanine finance ranged from 7% - 10% in 2004 – 2008. The share dropped significantly in 2009 and it reached 0% in H1 2010.

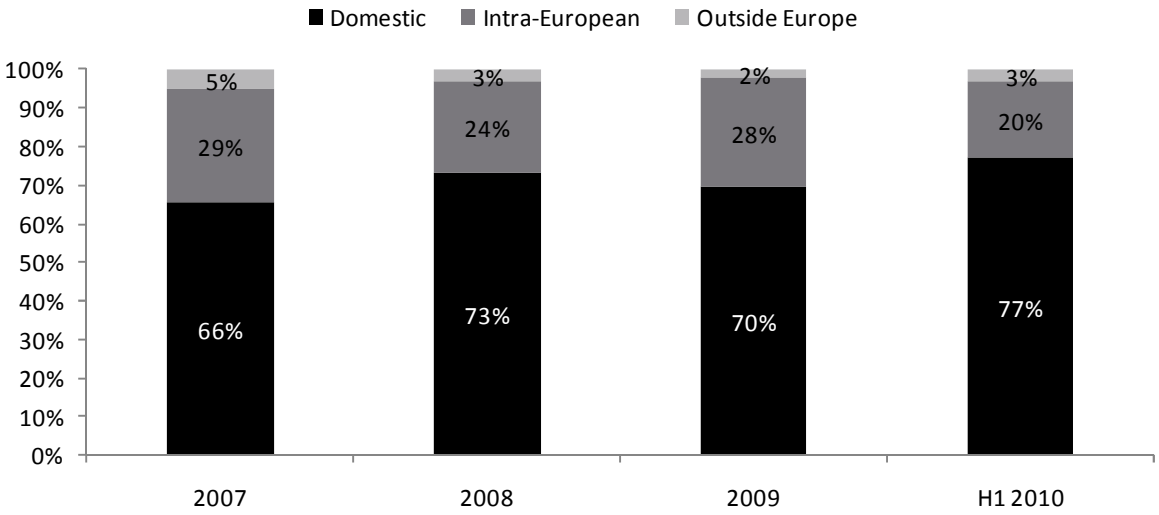
Figure 18: Average Deal Structures for European PE-backed buy-outs (Deals over EUR 100 mil)



Source: EVCA

Figure 19 shows to what extent do European PE funds engage in cross-border investment. Two thirds and more of the investments are local (This statistic is led by France and the UK, where 97% and 96% of the investment value respectively is executed by local PE firms). Less than a third of the investment value in Europe is done as an intra-European cross-border investment and only a marginal share (up to 5%) of the investments came from PE funds located outside Europe.

Figure 19: PE Cross-border Investment in Europe



Source: EVCA

To analyze pricing of PE buy-outs Figure 20 shows price/earnings[11] ratios for PE backed buy-outs for the period 2004 – H1 2010. From this table we can see that the prices of larger buy-outs are in general higher than the prices of smaller buy-outs. Also, for most deal ranges we can see a time pattern of a significant drop in the prices in 2009.

Figure 20: Deal Pricing (Price/Earnings Ratios) in Europe

Range (EUR mil)	2004	2005	2006	2007	2008	2009	H1 2010
0 - 10	6.6	8.0	7.0	9.3	6.2	7.0	3.9
10 - 25	9.1	10.3	9.7	9.6	9.6	8.1	7.4
25 - 50	11.9	10.5	11.2	11.4	12.0	8.9	12.2
50 - 100	12.8	15.3	9.8	12.4	14.8	16.2	17.6
100 - 250	14.3	14.5	14.9	16.4	15.7	12.0	16.5
more than 250	13.4	18.4	18.6	18.5	16.8	8.9	17.6

Source: EVCA

The breakdown of the capital invested by PE firms by sectors of the portfolio companies is in Figure 21. In 2009, the highest share of capital (15%) was invested into consumer goods and retail, followed by life sciences (12%), communication and business and industrial products (both 11%).

Figure 21: European PE investment by sectors

Sectoral focus	2007	2008	2009	H1 2010
Agriculture	1%	0%	0%	0%
Business and industrial products	15%	19%	11%	7%
Business and industrial services	13%	10%	10%	15%
Chemicals and materials	5%	5%	3%	2%
Communications	14%	10%	11%	11%
Computer and consumer electronics	3%	5%	6%	4%
Construction	5%	4%	2%	2%
Consumer goods and retail	14%	14%	15%	24%
Consumer services, other	11%	7%	9%	5%
Energy and environment	2%	9%	6%	3%
Financial services	5%	6%	9%	5%
Life sciences	8%	8%	12%	17%
Real estate	0%	0%	0%	0%
Transportation	5%	3%	3%	5%
Unknown	0%	1%	1%	0%

Source: EVCA

[11] price/earnings ratio = deal price divided by EBIT

4 PE Regulation in Europe

4.1 Current Situation

In the framework of the EU legal system, PE funds are considered Alternative Investment Funds (AIF). This stems from the idea that they are alternative to more common institutional investor funds, which have been regulated by the Undertakings for Collective Investments in Transferrable Securities (UCITS) directive since 1985. Except PE funds, other investment vehicles, such as hedge funds and infrastructure funds are being considered as AIF.

Before 2010 there was no common EU direct regulation of PE funds. This doesn't mean that PE funds were not regulated at all. All AIFs were subjected to the Market Abuse Directive[12] and the Anti-Money Laundering Directive[13]. PE funds investing into listed companies are regulated by the Transparency Directive. The distribution of the earnings from the AIF is subjected to the Markets in Financial Instruments Directive[14].

When it comes to the regulation of PE funds on a national level, the current situation varies from country to country. Table 9 overviews the regulatory regimes in selected countries. Some regulation is effective in all mentioned countries, such as the requirement of initial capital. Further on, France, Luxembourg, Ireland, Italy and Spain have an existing regulatory regime for PE funds, whereas the UK and Germany have not.

[12] DIRECTIVE 2003/6/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 28 January 2003 on insider dealing and market manipulation (market abuse)

[13] DIRECTIVE 2005/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 October 2005 on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing

[14] DIRECTIVE 2004/39/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 April 2004 on markets in financial instruments amending Council Directives 85/611/EEC and 93/6/EEC and Directive 2000/12/EC of the European Parliament and of the Council and repealing Council Directive 93/22/EE

Table 9: Overview of Regulatory Regimes in Selected EU Countries

Question	UK	France	Germany	Luxembourg	Ireland	Italy	Spain
Does a regulatory regime exist for PE?	No	Yes	No	Yes	Yes	Yes	Yes
Is public distribution of PE funds permitted?	No	Yes	n.a.	Yes	Yes	Yes	No
Are PE funds accessible to retail investors?	No	Yes (Subject to minimum subscription requirements)	No	Yes (Subject to minimum subscription requirements)	Yes (Subject to minimum subscription requirements)	Yes in principle, No in practice (only qualified investors)	No
Is private placement an alternative to distribute PE funds to retail investors?	Yes	No	Yes	Yes	Yes	Yes	No
Is the PE management company required to have initial capital?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are there specific requirements for the authorisation of PE	Yes	Yes	No	Yes	Yes	Yes	Only for some

Source: COMMISSION OF THE EUROPEAN COMMUNITIES: AIFMD Impact Assessment

4.2 Alternative Investment Fund Management Directive History

Currently, after the global financial crisis, the EU focuses on introducing tighter regulation on PE funds and other AIF. The trend concluded in the approval of the Alternative Investment Fund Management Directive (AIFMD) in 2010.

When looking at the history of the development of the AIF legislation, a good start would be to look at the foundation of the Expert Group on the Alternative Investment Funds by the European Commission in 2005, with the following goals:

- Identify shortcomings in the EU regulatory environment which prevent the EU fund industry from exploiting its full potential;
- Provide a relative ordering of avenues for realizing untapped efficiency gains based on reasoned commercial or economic analysis;
- Identify and describe policy barriers to realization of the most important sources of benefits and propose possible options for overcoming them

- Issue recommendations on cost-effective steps to realize any untapped efficiency improvements having regard to the need to sustain high levels of investor protection.

Basically, it is a watch guard of the European common market regulation, stemming from the Treaty establishing the European Community, with a goal to create an internal market characterized by the abolition of obstacles to the free movement of goods, persons, services and capital in the EU member states.

This group published two reports in 2006 assessing the situation of the market and regulation of hedge funds and private equity funds[15] [16]. The conclusions of these reports aren't in any way as strong as the conclusions drawn in the post-crisis period. For instance the private equity report states that the current set-up is quite efficient:

"This is not a call for legislative action to align national practices. The private equity industry has shown that it is a responsible participant in the financial system. It remains clearly focused on the needs of its essentially professional investor base. The current mix of self-regulation and nationally-based operating conditions remains appropriate. There is no need to superimpose European harmonizing measures on the industry. All that is needed is for national authorities to recognize that partner country private equity managers and arrangers operating in their territory are already subject to tax and regulatory regimes in their home country."

A major breakthrough in the common attitude of EU policymakers regarding AIFs came obviously with the global financial crisis. In February 2009 the EC organized a so-called "High-Level Conference on Private Equity and Hedge Funds". The shift in the position of the

[15] COMMISSION OF THE EUROPEAN COMMUNITIES: Report of the Alternative Investment Expert Group: Managing, Servicing and Marketing Hedge Funds in Europe, July 2006

[16] COMMISSION OF THE EUROPEAN COMMUNITIES: Report of the Alternative Investment Expert Group: Developing European Private Equity, July 2006

EU bodies is clearly palpable from the following statement of Charles McCreevy, the former European Commissioner for Internal Market and Services:

"The financial crisis had revealed that hedge funds could impact financial stability in ways that had not previously been expected. There is also widespread concern about the extent to which private equity portfolio companies are over-reliant on increasingly scarce bank debt, raising questions about their financial viability."[17]

The aforementioned pressure to regulate the alternative investment business resulted in the proposal Alternative Investment Fund Management Directive (AIFMD), published at the end of April 2009[18] accompanied by an impact assessment[19] to provide a detailed analysis of the Directive. A different impact analysis was published by the company Charles River Associates for the British financial services regulation authority Financial Services Authority (FSA)[20].

Finally, the proposal of the AIFMD was approved by the European Parliament in November 2010. The Directive has a 2-year period to be transposed into national legislation. For more details on the expected implementation of the Directive see Figure 22. The final text of the AIFMD creates new rules on the transparency and disclosure of the AIFs, the access to the market by non-EU AIFs, capital requirements and other issues.

[17] COMMISSION OF THE EUROPEAN COMMUNITIES: EU Commission Open Hearing on Hedge Funds and Private Equity, February 26th and 27th, 2009

[18] COMMISSION OF THE EUROPEAN COMMUNITIES: Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Alternative Investment Fund Managers and amending Directives 2004/39/EC and 2009/…/EC, 2009

[19] COMMISSION OF THE EUROPEAN COMMUNITIES: Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Alternative Investment Fund Managers and amending Directives 2004/39/EC and 2009/…/EC, IMPACT ASSESSMENT, 2009

[20] Charles River Associates: Impact of the proposed AIFM Directive across Europe, 2009

Figure 22: Expected Timeline of the AIFMD

11 November 2010	• AIFM Directive adopted
1 January 2011	• Entry of AIFM Directive into force
1 January 2013	• Deadline for transposition of AIFM Directive into national law
January 2013	• EU AIFM passport introduction
1 January 2014	• Deadline for authorisation of AIFMs
April 2015	• Non-EU AIFM passport introduction
July 2018	• End of national private placement

Source: Herberth Smith (2011)

To sum the evolution of AIF regulation, the financial crisis was the trigger to take action. Nevertheless, voices proposing AIF regulation were around even before. A good summary of opinions why to regulate hedge funds in particular is presented by Alexander (2009):

- Hedge fund collapse stories
- Hedge funds caused the crisis
- Hedge fund managers earn too much
- Hedge funds are secret and too complicated

4.3 The AIFMD

The AIFMD is a complex directive regulating different areas of the AIF business. Further in this chapter, the main areas of the AIFMD are presented.

Regulation Coverage

The Directive defines the covered subjects of the regulation as follows:

- All EU AIFM, which manage one or more AIF irrespective of whether the AIF is an EU AIF or a non-EU AIF
- All non-EU AIFM, which manage one or more EU AIF
- All non-EU AIFM, which market one or more AIF in the European Union, irrespective of whether the AIF is an EU AIF or a non-EU AIF

This means it's irrelevant whether the AIF is open or close ended, what law it is constituted under and what particular structure it takes. The Directive does not apply to holding

companies, pension funds, supranational institutions (World Bank, International Monetary Fund, European Central Bank, European Investment Bank etc.), central banks, employee saving schemes and securitization special purpose entities. Further on, minimal size clause applies, as funds with assets under management lower than EUR 100 mil (allowed to use leverage) and funds with assets under management lower than EUR 500 (no use of leverage) are exempted from the directive. The last mentioned exempted funds will have the option to opt in the regulation in order to receive the EU marketing passport (The EU Passport discussed further).

Capital Requirements

The basic capital requirement for an AIFM will be EUR 125 ths. Self-managed AIF will be required to keep EUR 300 ths. Further on, there is a requirement on own funds, when AIFM managing external AIF will maintain own funds as 25% of fixed annual overheads and 0.02% of the amount that exceeds the total value of a portfolio of EUR 250 mil, subject to a EUR 10 mil cap.

EU Passport

Non-EU AIFM will be able to market their funds in Europe using a so-called EU Passport. The passport will be received upon complying with regulation in one member state and is expected to be functioning by 2015.

Reporting

Regarding transparency reporting, the Directive obliges the AIFM to disclose for each AIF an annual report, strategy, objectives and management remuneration to investors and risk profile and main categories of assets in which invested to the competent authorities.

Depositary

The AIFM is obliged to appoint a single depositary, which will serve the following three core functions:

- Safekeeping the assets of the fund
- Day-to-day administration of the assets
- Controlling the fund's operations

5 Related Literature on Private Equity

The research activity in the area of private equity is to a certain degree determined by private equity investments evolution. So far, two big waves of private equity ownership took place: One in the mid 80's, followed by an even larger wave in the years 2003 – 2007 that has been suddenly stopped by the US mortgage crisis. The research is to a certain degree limited, when compared for example with the performance of public capital markets, due to the limited disclosure obligation in the PE business (Kaplan & Schoar, 2003).

In the 1980's it was believed that public corporation as a concept was losing its position and that private equity was a more efficient ownership structure, which would prevail (Jensen, 1989). In the last decade, again, superior performance of private equity funds was subject to abundant empirical research. Evidence of the existence of a positive "alpha", i.e., additional returns, for private equity compared to passive investment into market indices, the so called mimicking strategy, was often found (Gottschalg et al., 2010). On the other hand, other research findings suggest that private equity investment does not outperform passive investments (Morris, 2010). Even though the superior returns of private equity are often taken as premise in further research, a conclusive account of the private equity attractiveness in comparison to other types of equity investments is missing.

Several explanations were provided for the superior returns of private equity. Masulis & Thomas (2008) concluded that private equity investors are better risk monitors of firms with

derivative trading activity. Kaplan & Stromberg (2009) showed that private equity creates value on average through capital structure, management incentives, and corporate governance. Substantial part of the empirical research in the area of private equity investment has focused on the analysis of profitability determinants. Franzoni, Nowak & Phalippou (2009) show that private equity investments, whose returns are more sensitive to aggregate liquidity, have higher average returns. Schmidt, Steffen & Szabó (2007) prove that investments with a higher IRR are more likely to be sold via IPO than through a trade sale. Krohmer, Lauterbach & Calanog (2009) provide evidence that staging (sequential disbursement of capital from a private equity or venture capital fund) influences the IRR of private equity investments. In the earlier stage of investments, staging has a positive effect on the IRR. Krohmer (2007) analyzes the effect of the experience of private equity managers on the decision when to write-off money loosing investments with a conclusion that experience leads to better decisions. Axelson et al. (2010) show that the performance of a fund is negatively influenced by the amount of leverage used. Chen et al. (2009) prove the significance of location. Their research suggests that venture capital firms based in cities that are venture capital centers (Silicon Valley, Boston, New York) outperform others. Lauterbach, Welpe & Fertig (2006) study the determinants of venture capital performance and conclude that whereas losses are minimized by the use of convertible securities and by increasing the venture capital firms' accumulated experience, profits are increased by the potential of the fund's management to allocate resources (management surveillance) to portfolio companies. Lopez de Silanes et al. (2010) show that small investments outperform large ones, quick flips (investments bought and sold over a short period of time) are the most profitable and that investments held at time of a high number of investments in parallel underperform. Hege, Palomino & Schwienbacher (2008) prove that mature US venture capital markets generate higher returns compared to those in the relatively new European markets.

Secondary buyouts as a rather new phenomenon have been the subject of little academic research. Apart from business oriented reports published by Preqin, a thorough analysis of the economics of secondary buyouts is presented by Sousa (2010). Sousa answers the crucial question when it comes to secondary buyouts. Why should two (or more) PE funds be involved in the ownership of one company (that is one after another, not meaning various PE owners at the same time)?

The result of Sousa's paper is three hypotheses explaining such behavior on the PE market:

1) **Structure Hypothesis** – PE firms usually open new funds about every 4 years. In order to better raise capital for a new fund, the PE firm should close most of its investment from its previous funds. Therefore the goal isn't to maximize the profit of the LPs but the raise capital in new funds.
2) **'Window of Opportunity' Hypothesis –** This hypothesis explains secondary buyouts by the fact that changes in capital market conditions can create a good opportunity for a secondary buyout. For example, when cost of credit drops and the IPO market is cold, a secondary buy-out might be a reasonable option compared to other current opportunities.
3) **Specialization Hypothesis** – This hypothesis takes into consideration the fact that some of the PE firms are specialized on different stages of company life cycle. Thus when a PE firm focuses on the early stage of companies, whether another PE firm focuses on companies that are mature, it makes sense that the first would sell portfolio companies to the second.

The overview of related literature is summed up in Table 10.

Table 10: Overview of related literature:

Author(s)	Conclusion(s)
Jensen (1989)	- The publicly held corporation has outlived its usefulness in many sectors of the economy and is being eclipsed. New organizations (such as companies held by PE funds are emerging in its place)
Gottschalg et al. (2010)	- The buyout funds' returns are significantly higher than the relevant benchmarks which attempt to mimic the investment strategy of the buyout funds by investing in market indices
Morris (2010)	- Academic literature on The superior returns of PE over passive investments is inconclusive
Masulis & Thomas (2008)	- One of the reasons PE has reaped large rewards stems from its corporate governance advantages

Kaplan & Stromberg (2009)	- private equity activity creates economic value on average - private equity activity is subject to boom and bust cycles, which are driven by recent returns as well as by the level of interest rates relative to earnings and stock market values.
Franzoni, Nowak & Phalippou (2009)	- PE suffers from significant exposure to the same liquidity risk factor as public equity and other asset classes, including the liquidity risk premium into a four-factor model reduces PE's alpha to zero
Schmidt, Steffen & Szabó (2007)	- PE investors write-off investments that turn out to be non-performing early - Exits of buyout investments tend to be driven by market sentiment - Only the most profitable investments are exited via IPO
Krohmer, Lauterbach & Calanog (2009)	- Investment staging (dividing investment into multiple stages) has a positive effect on investment returns in the beginning of the investment relationship, however staging appear to be negatively associated with returns when used prior to the exit decision
Krohmer (2007)	- Young and inexperienced fund managers hold loss-making investments longer, invest a higher share of the fund's portfolio capital into these losers and provide relatively more financing rounds to these deals before exit
Axelson et al. (2010)	- Leverage in PE buyouts is determined in particular by the cost of borrowing - Credit conditions have a strong effect on prices paid in buyouts - Use of high leverage in transactions negatively affects fund performance
Chen et al. (2009)	- VC firms based in locations that are VC centers outperform the VC market, this outperformance arises from performance outside the VC firms' office locations
Lauterbach, Welpe & Fertig (2006)	- Whereas PE investment losses are minimized by the use of convertibles and by increasing the venture capital firms' accumulated experience, profits are increased by the potential of the fund's management to allocate resources to portfolio companies
Lopez de Silanes, Phalippou & Gottschalg (2010)	- Quick flips (investments exited in 2 years or less) are more profitable than longer investments
Hege, Palomino & Schwienbacher (2008)	- Venture capital investments in the US are more successful than in Europe - the gap is attributed to the poorer performance of European VC target companies
Sousa (2010)	- There are 3 hypotheses explaining PE secondary buyouts: 'Structure', 'Window of Opportunity' and 'Specialization' hypotheses

Source: Author

6 Hypotheses

As described in the section on the current state of the research in the area of private equity, the evidence of PE superiority in terms of the returns as compared to passive investing is not conclusive. One of the reasons is the limited data availability, as most PE managers do not disclose performance data. To tackle the topic of PE returns, researchers have to use commercial databases, which as well suffer from limited data availability, nevertheless are the

only relevant source available. For the purposes of this paper, two of the most comprehensive and most used databases were used, Capital IQ and Preqin.

Also, private equity returns have been scrutinized more often by investors being afraid of the negative impact of the current economic crisis on the private equity returns. The ability of the private equity industry to survive the current economic crisis without changing its fundamental structure has been questioned recently. Some argue that the trend will be that private equity funds will consolidate extensively or even that most private equity will go public in medium term (Smith, 2009). In other words, the outlook for the future private equity industry is unclear. In the light of the current perception of private equity type of investments by investors and researchers, it is important to understand thoroughly the factors underlying the private equity performance. The recent financial crisis has significantly hit the PE industry, as basically any other sector of the global economy. This brings up new academic challenges to deal with such as the behavior of the different economic phenomena in the PE industry before and after the financial crisis.

Even though the research in this respect has been abundant recently, I have developed a set of hypotheses, which, to my knowledge have not been tested elsewhere and which look at selected fund types and analyze their performance. My findings could contribute to the better understating of private equity source of value creation and to the overall discussion on which direction the private equity will take. The goal of this paper is to provide theoretical motivation for and to empirically test the following hypotheses:

Hypothesis I.

Transaction multiples in secondary buyouts are higher than in primary buyouts.

The idea supporting this hypothesis is that the PE fund that held the target in the first phase would be willing to sell to a second PE only under the condition that it is offered a higher price than acquired.

An argument against the Hypothesis I. would be that PE funds prefer to sell their portfolio companies to strategic investors, as that is the way to maximize the selling price. In this case a PE fund would be willing to sell to another PE fund only when found in a difficult situation having problems to offload the target company. Then, the PE fund would be looking at minimizing lost and would be willing to accept lower valuations.

The contribution of this paper should be to shed light on the two aforementioned forces and analyze which of them have a stronger impact on transaction multiples.

Hypothesis II.A

Running real estate PE funds show lower overall IRR than other PE funds.

As most of the current real estate funds have been found in 2007 or before, they must have dealt with the US house bubble burst.[21] The rationale of this hypothesis is that real estate funds have suffered more than other PE funds as the real estate sector has been hit first and severely during recent years.

Hypothesis II.B

Current distressed debt and turnaround funds reach higher IRR than other PE funds.

The rationale behind this hypothesis is that distressed debt and turnaround funds pose special know-how which allows them to radically boost the performance of the acquired target. Therefore the difference between the acquiring and selling price can be very high and such funds can outperform other PE funds. The categories distressed debt and turnaround funds are pooled together as their activity is related; they both deal with underperforming companies or companies in financial difficulties. Analyzing these fund types is especially interesting from a

[21] According to Levitin & Wachter (2010), the US housing bubble burst in 2007. When looking at the used dataset, only about 10% of the funds have been established after 2007.

post-crisis point of view, as it seems natural that more opportunities for these funds would emerge.

Hypothesis II.C

Current secondaries funds reach higher IRR than other PE funds

As mentioned in the introductory section, the secondaries funds are able to take the opportunity of a liquidity situation of a limited partner and take over its commitment in a partnership. The rationale of the hypothesis is that during the financial crisis, there were many such opportunities, therefore secondaries funds were able to prosper.

7 Dataset

An important characteristic of the PE industry that only limited data is available to the public via different databases. I believe I have access to arguably two of the best databases for the PE industry, as many other researchers use them as data sources in their papers. The limited data availability and reporting biases are features that have to be reflected in any conclusion based on the used data.

7.1 Capital IQ

Capital IQ, a subsidiary of Standard & Poor's, is a database used by finance professionals to gain information on markets and companies. The transaction screening tool was crucial for the purposes of this paper, as it offers to draw data on M&A transaction conducted by PE funds. To do this, I applied a research criteria of Merger/Acquisition Feature: 'Leveraged Buy-out (LBO)' or 'Secondary LBO' in order to obtain PE funded transactions where information on primary vs. secondary type of buyout was available.[22] The second criterion

[22] In a marginal number of cases, a transaction had both category labels. In that case, information about the transaction was searched in public press in order to determine the correct category

was the availability of the multiple (Enterprise Value/EBITDA) for the transaction. The majority of the transactions in the Capital IQ database don't include information on the transaction pricing. This information is very sensitive for interested parties and therefore only a part of them are willing to dispose them to the public. When looking at the available data, one has to consider that there will be a disclosure bias when it comes reporting the transaction detail. Probably only successful transaction will be reported, therefore one can assume that the available transaction multiples will be inflated. Despite this fact, for the purposes of this paper, financial details of transaction are crucial.

Based on the afore mentioned two search criteria, Capital IQ delivered data of 2135 transactions, out of which 1109 of them took place in the US, 698 in Europe, 260 in Asia/Pacific, 47 in Africa/Middle East and 21 in Latin America and Caribbean. The most active buyers by number of transactions were The Carlyle Group (43), KKR (41) and Goldman Sachs and Blackstone (both 39). For further information about the dataset aggregates see Appendix 1.

For each transaction, the following information was drawn: Date of transaction, seller, buyer, transaction status, total transaction value, merger/acquisition feature[23], implied enterprise value/EBITDA, primary sector[24] and the geographic region[25]. The Capital IQ database is used for many research purposes, for example by Aswath Damodaran in his company valuation on-line database "Damodaran Online".

[23] 2 categories: primary buyout, secondary buyout

[24] 10 categories: Consumer discretionary, consumer staples, energy, financials, healthcare, industrials, information technology, materials, telecommunication services, utilities

[25] 5 categories: United States and Canada, Europe, Asia / Pacific, Africa / Middle East, Latin America and Carribean

7.2 Preqin

Preqin is an independent database serving mainly institutional investors interested in investment into PE. The database covers data about particular PE funds and PE managers such as fund size, fund type, stage of fundraising and performance (IRR). The database covers four different areas: Private equity, real estate, hedge funds and infrastructure. The data set for this paper was sourced from the private equity part of Preqin. As of April 24, 2011, when the data were withdrawn for the purposes of this thesis, the database covered 5,317 funds. As the database is aimed at investors that are currently deciding about their fund allocation, the database provides data only about operating funds. This of course limits the research as one can't study funds that have been successfully closed down, once reaching the investment horizon.

Another limitation is that the database provides only an overall IRR of the fund since the year of inception. There is no option to obtain a rolling horizon IRR for particular funds for selected periods.

Apart from providing data about particular funds, the Preqin database enables its users to withdraw some simple aggregate data, such as the volume of funds raised according to fund type etc. Preqin also distributes regular reports where it uses its aggregate data to comment trends in PE.

When using the data from Preqin, one has to keep in mind that there is a strong reporting bias in the data set. Many PE managers prefer not to disclose their results. It is reasonable to assume that many of them do not disclose data because of unsatisfactory performance. This once again inflates the performance reported to the database as successful managers would be more likely to disclose information into the database.

The Preqin dataset contents 5318 data points. For the purpose of the analysis certain data points had to be excluded. Firstly, the database contains PE funds with vintage back to 1969.

As the usual lifetime of a PE fund is up to 10 years, it is reasonable to assume that significantly older funds will often be non functioning shells. Therefore the vintage year of 1998 seems to be a reasonable cut-off point to include currently operating funds. This measure excluded 1189 data points. Further, data points lacking IRR information were omitted, excluding further 1247 data points. Finally, funds lacking a type description were omitted, excluding another 28 data points, leaving 2854 data points for the analysis.

The majority of the funds in the analyzed data set (73%) are based in the United States, 17.7% in Europe and 9.4% from the rest of the world. The most common type of fund in the database is buyout (buyout meaning classical general PE funds) 24.7%, followed by real estate PE funds (16.9%) and general venture funds (13.7%). The full overview of the data set is in Appendix 4.

Several academics use the Preqin database to support their research such as Chung et al. (2010), Cumming et al. (2010) or Humphery-Jenner (2011).

8 Methodology

8.1 Methodology: Hypothesis I.

In Hypothesis I. my goal is to study transaction multiples with respect to the type of the transaction (primary vs. secondary buyout). The impact of different variables on transaction multiples from the Capital IQ database have been studied before. The most convenient methodology for the purposes of this paper is the one used by Axelson et. al (2010), using an ordinary least square (OLS) model, where the EV/EBITDA multiple was used as the explanatory variable and further variables, such as credit conditions, company leverage, region etc. used as explaining variable.

I use an OLS with the same explaining variable, that is the EV/EBITDA multiple. The studied explaining variable which significance I test is the dummy variable ‘type’, with “0” value for

primary buyouts and "1" value for secondary buyouts. Further, high yield spread is used as an explanatory variable. High yield spread is a variable used by Axelson et al (2010) to describe credit conditions as it reflects the spread between non-grade high yield US corporate bonds and the treasury bonds spot rate, therefore it is a good proxy for the cost of credit for buyouts. The particular high yield spread used both in Axelson et al (2010) and this paper is the US High Yield Master II Option-Adjusted Spread, an index constructed by Merrill Lynch/Bank of America, a variable widely used by institutional investors. The conclusion of Axelson et al (2010) is that credit conditions is one of the most important variable affecting transaction multiples in the sense the cheaper the credit, the higher the multiples, therefore employing it as a control in this paper is crucial.

The last explaining variable used in the model is the transaction size, in order to control for different pricing of transactions of different size. In addition to the basic model, further models will be constructed with further variables accounting for sectoral focus and geographical region of target companies. The equation for the basic models is as follows:

$$EV/EBITDA = \beta_1 TYPE + \beta_2 SPREAD + \beta_3 SIZE + \varepsilon$$

Before entering the data into the model, further adjustments were made. All transactions before January 1, 1997 were excluded, as the High Yield spread rate is available since that date (27 transactions excluded). Transactions with a transaction status 'Cancelled' were excluded as we cannot consider them as relevant data source, due to the fact the transaction hasn't taken place (375 transactions excluded). Transactions with missing values on transaction values were excluded (20 transactions excluded). Finally, there were various transaction with outlying values of the EV/EBITDA multiple. Appendix 2 shows the distribution of the EV/EBITDA multiple variable. It is not easy to set the benchmark for

excluding variables, but based on the distribution and the past values, one dataset has been created with EV/EBITDA multiple of less than 20 (109 transaction excluded) and one with less than 15 (further 127 transactions excluded). Therefore in the end, the first data set includes 1595 observations and the second 1469. For further reference, the dataset with EV/EBITDA multiple under 20 will be named Capital IQ Dataset 1 and the dataset with EV/EBITDA multiple under 15 will be named Capital IQ Dataset 2.

When using the Capital IQ datasets, a significant problem with data heteroscedasticity exists. The results of the appropriate tests (White test and Breusch-Pagan test) reach low p-values, thus the null hypothesis of data homoscedasticity is rejected for both datasets (For test results see Appendix 3). To overcome the heteroscedasticity problem, the OLS with robust standard errors model is used as suggested by MacKinnon & White (1985). MacKinnon & White suggest several heteroscedasticity-consistent estimators, with the conclusion that the so called HC3 estimators performs best. This exact technique was used in this paper. Gretl 1.9.4 software was used for all econometric analysis related to Hypothesis I.

8.2 Methodology: Hypotheses II.

Given the characteristics of the Preqin data, an approach similar to the one applied to Hypothesis I can't be used. Since the database shows only the overall IRR of funds as of one particular time point, the aspect of time can't be very well grasped. The only time-related information in a data point is the vintage year. When one puts together an OLS model with IRR as the explanatory variable and vintage, fund type, fund location and the number of sectors the fund is willing to invest in, the OLS model results in a very low R-squared, of about 3%, rather unacceptable for an econometric model.

For the abovementioned reasons a combination of statistical techniques will be used. For each hypothesis, a pivot table will be constructed, showing average IRRs for specific fund types in different regions. Based on the pivot tables, several statistical tests will be conducted on the

selected groups of funds, in order to assess the significance of the average difference. Finally, in the case of Hypothesis I.A, the analysis will be supported by aggregate time series data plotted together with the housing prices to put the data into broader context.

To compare the mean values of the data samples, the t-test for two independent samples is convenient. This test compares the mean values of two data samples and for samples larger than 30, the sample variances do not play a role (Tsokos & Ramchand, 2009). Further, nonparametric tests will be applied: Kolmogorov-Smirnov and the Mann-Whitney U test. The overview of the null hypotheses of the used test is in Table 11.

Table 11: Overview of Null Hypotheses

Test	Null hypothesis
T-Test	Mean values for the two samples are identical
Kolmogorov-Smirnov	Both samples are drawn from populations with the same distribution
Mann-Whitney	Two population have an identical median

Source: Everitt & Skrondal (2010)

A 95% level of significance will be used for all statistical tests. All statistical tests for Hypotheses II. will be executed in Statsoft's Statistica 10 software.

9 Results

9.1 Results: Hypothesis I.

In the result tables, each column represents one model with the explanatory variable at the top (the EV/EBITDA multiple for all models), followed by the explaining variables. For each variable, the p-value of the test that the particular variables is 0 is mentioned, followed by the coefficient estimate for the variable. For the purposes of this paper, 95% will be considered as a benchmark level of significance; therefore variables with p-values lower than 0.05 will be considered significant.

The results of Model 1 in Table 12 show the basic model with Type, High Yield Spread and Transaction Value as explanatory variables with the Capital IQ Dataset 1. P-values of all three of the variables are well below 0.05, thus all three of these variables are significant in the model. The coefficient estimate for the High Yield Spread is about -0.23. This is in line with the conclusion of Axelson et al. (2010), who conclude transaction multiples in PE transactions are strongly determined by credit conditions, thus lower spread causes a higher transaction multiple. According to the model, a one percentage point increase in spread causes a decrease in the EV/EBITDA multiple of 0.23.

The crucial variable for Hypothesis I. is Type (a dummy variable with 0 for primary buyouts and 1 for secondary buyouts). The coefficient estimate for this variable is about 1.6, therefore according to the model, secondary buyouts have a higher EV/EBITDA multiple by 1.6 compared to primary buyouts.

Models 2 and 3 add dummy variables[26] for regions and industries. As to the regional dummies, only the dummy variable for Asia / Pacific proved to be significant. As to the sectoral dummies, Financials, Healthcare, Industrials and Materials proved to be significant. As it is difficult to find a connection among the 4 significant industries and as the change in R-squared and the significance and coefficient estimates of the original variables after including region and industry dummies was only marginal, the conclusion is that adding region and industry dummies do not add value to Model 1. Therefore the results from Models 2 and 3 won't be used in the following discussions in the paper.

[26] In order to use dummy variables, one dummy has to always be omitted, in the region dummies the omitted variable was US and Canada, in the industry dummies it was Consumer Discretionary

Table 12: OLS Results – Capital IQ Dataset 1

Capital IQ Dataset 1			
Model number	1	2	3
Variable	EV/EBITDA multiple	EV/EBITDA multiple	EV/EBITDA multiple
Type	1.86e-09 ***	9.35e-09 ***	8.69e-012 ***
	1.62996	1.56733	1.85626
High Yield Spread	9.13e-010 ***	2.83e-09 ***	9.03e-010 ***
	-0.230647	-0.225247	-0.229218
Transaction Value	1.48e-05 ***	1.79e-05 ***	4.36e-05 ***
	1.24075e-05	1.22089e-05	1.17827e-05
Europe		0.8413	
		0.0437150	
Asia / Pacific		0.0293 **	
		-0.704982	
Africa / Middle East		0.4684	
		0.540544	
Latin America / Caribbean		0.6159	
		0.696496	
Consumer Staples			0.7724
			-0.122325
Energy			0.7541
			-0.185276
Financials			0.0014 ***
			1.68022
Healthcare			0.0020 ***
			1.26543
Industrials			0.0256 **
			-0.556779
Information Technology			0.2515
			0.409312
Materials			0.0012 ***
			-1.10432
Telecommunication			0.4184
			-0.630044
Utilities			0.7696
			0.388722
Constant	2.64e-225 ***	4.48e-214 ***	7.30e-192 ***
	9.23973	9.26889	9.20506
R-squared	0.085484	0.089450	0.114684
Adjusted R-squared	0.083760	0.085434	0.107969

Source: Author

Table 13 shows the same econometric analysis as the previous table, with the difference of using Capital IQ Dataset 2, effectively meaning those transactions with an EV/EBITDA multiple of less than 15. In Model 4, all three of the basic explaining variables remain significant. The coefficient estimate of Type rose from 1.6 to about 2.1, Spread's estimate increased from -0.23 to -0.19 and the Transaction Value estimate dropped from 1.24e-05 to

1.05e-05. These changes are rather marginal and do not affect the economic sense of the results from Model 1. The R-squared of Model 4 is 10.4%, about 2 percentage points higher than in Model 1. Therefore the conclusion is that Model 4 confirms the results of Model 1 and the simple fact whether transaction with EV/EBITDA under 20 or under 15 are included, do not change the economic sense of the model, only slightly shifts the values of the coefficient estimates. When looking at Model 5 and 6, we see a similar relationship as between Models 1, 2 and 3 therefore only Models 1 and 4 will be used in further discussions.

The R-squared of Model 1 is about 8.5% and Model 4 10.4%. When comparing these numbers to the results of Axelson et al., we see that when Axelson et al. implement dummy variables for countries and industries, the R-squared reaches 61%. This would include a dummy variable for each industry and country (Axelson et al. do not mention the breakdown of industry they used). In a following model, Axelson et al. omit the country and industry effects and then the R-squared of the model drops to 12% which is comparable to the result of this paper. Therefore assuming that the models in Axelson et al. have certain significance, we can also use the results of all the models in this section.Table 13

Table 13: OLS Results – Capital IQ Dataset 2

Capital IQ Dataset 2			
Model number	4	5	6
Variable	EV/EBITDA multiple	EV/EBITDA multiple	EV/EBITDA multiple
Type	2.48e-017 *** 2.08854	4.77e-012 *** 2.03807	2.53e-013 *** 2.15547
High Yield Spread	6.22e-09 *** -0.186155	4.75e-09 *** -0.177561	2.29e-010 *** -0.190848
Transaction Value	0.0001 *** 1.05342e-05	1.99e-012 *** 1.02562e-05	1.17e-012 *** 1.06201e-05
Europe		0.4534 -0.139832	
Asia / Pacific		0.0057 *** -0.759852	
Africa / Middle East		0.9396 0.0435348	
Latin America / Caribbean		0.8850 -0.135707	
Consumer Staples			0.7733 0.109321
Energy			0.9540 0.0305899
Financials			0.4378 0.303621
Healthcare			0.0153 ** 0.852424
Industrials			0.1243 -0.349603
Information Technology			0.5289 0.179217
Materials			0.0129 ** -0.823657
Telecommunication			0.1569 -0.827046
Utilities			0.6168 -0.416353
Constant	6.38e-239 *** 8.30076	1.22e-245 *** 8.40441	2.19e-213 *** 8.38629
R-squared	0.104136	0.108883	0.117554
Adjusted R-squared	0.102302	0.104613	0.110281

Source: Author

In order to reflect the financial crisis Model 4 was further developed. Model 4 was chosen because according to the abovementioned analysis it best describes the drivers of the EV/EBITDA multiple. The Capital IQ Dataset 2 was broken down into two groups: transactions before and after the beginning of the financial crisis. October 1, 2008 was

selected as the point of the beginning of the crisis[27]. The data set contains 1195 transactions prior to the beginning of the crisis and 274 transactions that took place after the beginning of the crisis. These two newly formed data sets were subjected to the same econometric analysis as the complete data set. The model using pre-crisis data is labeled Model 7 and the model using data after the beginning of the crisis is labeled Model 8. The results of these models are compared with Model 4 results in Table 14.

In order to interpret the two models, it is interesting to compare the R-squared. Model 7 reports a R-squared of 12.1%, about 1.7 percentage points higher than Model 4 and Model 8 reports a R-squared of 9.6% about 0.8 percentage points less than Model 4. This indicates a rather intuitive conclusion, that in the pre-crisis era, the pricing of transaction multiples was better explained by the traditional explaining variable, whereas since the crisis begun, the pricing had a higher share of random determination as many traditional rules were abandoned in the chaotic landscape. In Model 8, both the variables of Type and High Yield Spread are much less significant as the p-values of their coefficient estimate reach higher values.

An interesting result is the drop of the coefficient of Type that decreased from 2.08 in Model 4 to 1.34 in Model 8. The reason behind the phenomenon can be that as demand to buy companies dropped once the crisis begun, funds that were facing liquidity issues were pressed to exit their investments and they were obliged to accept a lower price than they would get in the pre-crisis era.

[27] As the first month after the Lehman Brothers bankruptcy announcement

Table 14: OLS Results – Capital IQ Dataset 2 – Before and After Crisis

Capital IQ Dataset 2			
Model number	4	7	8
Variable	EV/EBITDA multiple	EV/EBITDA multiple	EV/EBITDA multiple
Type	2.48e-017 ***	9.58e-016 ***	0.0581 *
	2.08854	2.13079	1.34268
High Yield Spread	6.22e-09 ***	4.32e-011 ***	0.0544 *
	-0.186155	-0.331014	-0.0879593
Transaction Value	0.0001 ***	0.0003 ***	0.0021 ***
	1.05342e-05	9.56E-06	2.96E-05
Constant	6.38e-239 ***	1.52e-171 ***	3.45e-046 ***
	8.30076	8.94019	7.66261
R-squared	0.104136	0.121387	0.09569
Adjusted R-squared	0.102302	0.119174	0.085643

Source: Author

9.2 Results: Hypotheses II.

Hypothesis II. A

Table 15 presents a pivot table dealing with Hypothesis II. A. At the top of each cell there is the average IRR for the particular region and fund type. At the bottom of each cell in parenthesis there is the number of funds in the particular group. The most significant type group in the table is general real estate, as the more focused types (real estate co-investment, funds of funds and secondaries) include together only 17 data points. The average IRR for real estate PE funds is -0.4% a rather lower performance when compared to the overall PE IRR average of 5.4%. The same pattern is visible when one compares the same figures among regions, the difference between average IRRs of real estate PE funds and all PE funds is 4.4 percentage points in Europe, 5.2 percentage points in the USA and 13 percentage points in the rest of the world. Finally, even the underrepresented focused real estate funds (co-investment, fund of funds, secondaries) all on average underperform both the general real estate funds and the PE average as all of them have an average IRR deep in red figures.

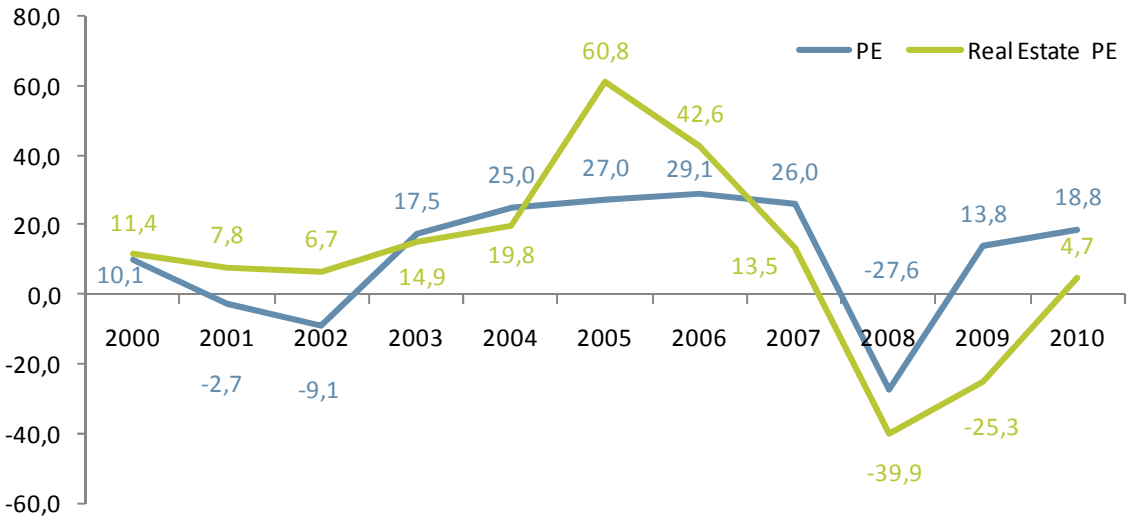
Table 15: Real Estate PE funds – Average IRRs

Type	Europe	ROW	USA	Total
Real Estate	3,6% *(75)*	-0,6% *(57)*	-1,3% *(351)*	**-0,4%** ***(483)***
Real Estate Co-Investment			-4,2% *(4)*	**-4,2%** ***(4)***
Real Estate Fund of Funds	-8,0% *(1)*	-30,3% *(1)*	-7,2% *(4)*	**-11,2%** ***(6)***
Real Estate Secondaries			-9,0% *(7)*	**-9,0%** ***(7)***
PE Average	**8,0%** ***(504)***	**12,4%** ***(268)***	**3,9%** ***(2 082)***	**5,4%** ***(2 854)***

Source: Author

The aforementioned Preqin database data can be supplemented by Preqin's aggregate data, describing the time series of 1 year rolling horizon IRR of real estate PE funds and all PE funds (Figure 23). Figure 24 compares the PE real estate performance with the US Home Price Index.[28]

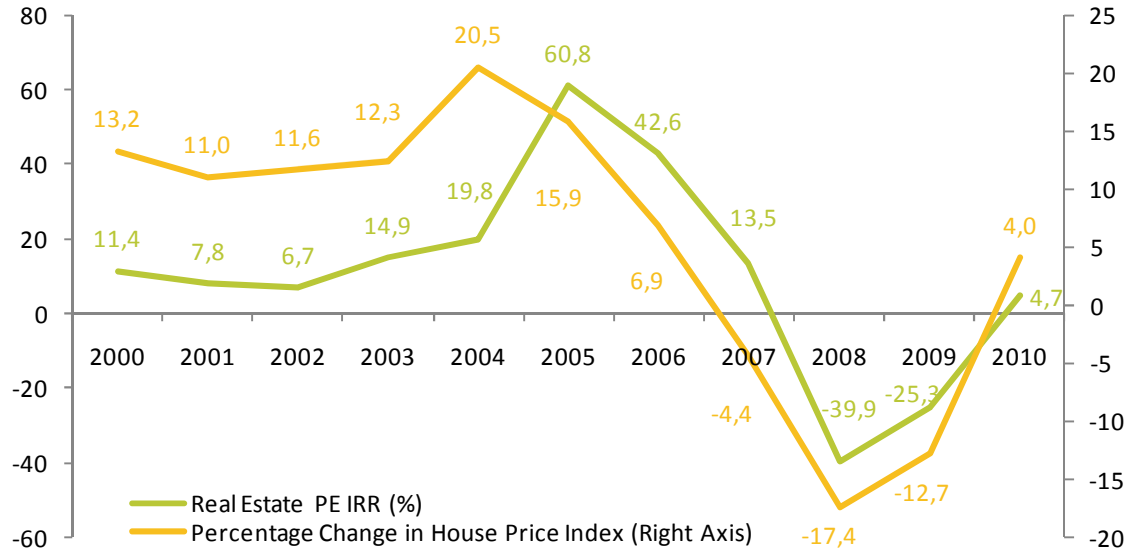
Figure 23: Real Estate Funds – 1 Year Rolling Horizon IRR (%)



Source: Preqin

[28] S&P/Case-Shiller 10 Composite Index is used. This index is used by Levitin & Wachter (2010),

Figure 24: Real Estate Funds – Comparison with US Home Price Index



Source: Preqin, S&P

The two above mentioned graphs add more information to the performance of PE real estate funds. The PE real estate funds outperformed all PE funds in periods 2000 – 2002 and 2005 – 2006. In the period 2003 – 2004 the PE real estate funds underperformed, but only by a limited margin of 2.6 and 5.2 percentage points respectively. In the 2000 – 2006 period, the US home prices were rising. In 2007, the US home prices fell for the first time in the post 2000 era and the real estate PE funds underperformed PE market severely by 12.5, 12.3, 39.1 and 14.1 percentage points in 2007, 2008, 2009 and 2010 respectively. To conclude, the underperformance of the PE real estate compared to the PE market appears to be triggered by the crash of the housing market in 2007.

In order to statistically test Hypothesis II.A, the data points are pooled into two groups. The first group consists of real estate PE funds, i.e. funds labeled Real Estate, Real Estate Co-Investments, Real Estate Funds of Funds and Real Estate Secondaries. The remaining funds are pooled into the second group. The first group contains 500 data points, the second group contains 2,354 data points. These two data samples are subjected to four statistical tests with

the results in Table 16. The full results are in Appendix 5 and the box and whiskers plot, showing the mean values and variances, is in Appendix 6.

Table 16: Hypothesis II.A – Statistical Results

Test	T-test	Kolmogorov-Smirnov	Mann-Whitney
P-Value	0,000000	p < .001	0,000333

Source: Author

The p-values of all three tests are lower than 5%, therefore the null hypotheses of sample similarity are rejected. This result confirms Hypothesis II.A that current real estate PE funds show lower IRR than other PE funds.

Hypothesis II.B

Table 17 shows a pivot table of average IRRs of distressed debt and turnaround funds. There are 86 distressed debt funds and 10 turnaround funds in the dataset. The average IRR of turnaround funds is 20.8% and the average IRR of distressed debt funds is 12.4%. Both groups outperform the PE average by 15 and 7 percentage points respectively.

Table 17: Distressed Debt and Turnaround Funds – Average IRRs

Type	Europe	ROW	USA	Total
Distressed Debt	-0,4%	9,0%	13,9%	12,4%
	(6)	*(10)*	*(70)*	*(86)*
Turnaround	70,0%	36,2%	12,7%	20,8%
	(1)	*(1)*	*(8)*	*(10)*
PE Average	**8,0%**	**12,4%**	**3,9%**	**5,4%**
	(504)	***(268)***	***(2 082)***	***(2 854)***

Source: Author

Table 18 shows the results of statistical tests for distressed debt and turnaround funds. These funds are pooled into one group, creating a sample of 96 funds, which is compared with a group consisting of the other funds. The data pooling of distressed debt and turnaround funds is defendable on the grounds that both types engage in similar operation, trying to improve operation poorly performing companies.

The p-values of all three tests is under 5%, therefore the null hypotheses of the sample similarities are rejected. This confirms Hypothesis II.B that current distressed debt and turnaround funds outperform in the PE market. The full statistical results and the box and whiskers plot of the two data samples are in Appendix 7 and Appendix 8.

Table 18: Hypothesis II.B – Statistical Results

Test	T-test	Kolmogorov-Smirnov	Mann-Whitney
P-Value	0,009555	p < .001	0,000000

Source: Author

Hypothesis II.C

The average IRRs of secondaries funds are in Table 19. Together there are 87 secondaries funds in the Preqin database, 78 of them labeled as secondaries and 9 labeled as direct secondaries. The average IRR of both groups outperform the PE average by 12.4 percentage points and 8.8 percentage points respectively.

Table 19: Secondaries Funds – Average IRRs

Type	Europe	ROW	USA	Total
Direct Secondaries	5,4% *(2)*		21,3% *(7)*	17,8% *(9)*
Secondaries	16,7% *(26)*	35,0% *(1)*	12,6% *(51)*	14,2% *(78)*
PE Average	**8,0%** ***(504)***	**12,4%** ***(268)***	**3,9%** ***(2 082)***	**5,4%** ***(2 854)***

Source: Author

The test result overview is in Table 20. All of the three applied tests have a p-value lower than 5%, effectively rejecting the null hypotheses of similar data samples. This confirms Hypothesis II.C that secondaries funds outperform the market of PE investments. The full results of statistical tests and the box and whiskers plot are in Appendix 9 and Appendix 10.

Table 20: Hypothesis II.C – Statistical Results

Test	T-test	Kolmogorov-Smirnov	Mann-Whitney
P-Value	0,003792	p < .001	0,000000

Source: Author

10 Conclusion

This paper brings partial findings that help to understand different trends in the private equity industry. The first conclusion stemming from the research in this paper is that the EV/EBITDA multiple in secondary buyouts is estimated to be higher compared to primary buyouts, showing that PE funds, after a primary buyout, are rather successful to negotiate a higher price for the exit to another PE fund. An interesting fact is that this is less true since the beginning of the 2008 crisis, which can be rationalized by lack of liquidity that motivates funds to sell their investments even for lower valuations. Our research related to the second group of hypotheses presents findings on the performance of different groups of PE funds. The first of them is underperformance of real estate funds, which is to a large extent caused by the crash of the US housing market in 2007. Further, distressed debt and turnaround funds outperform the PE market. Finally, secondaries funds outperform the PE market as well. Thanks to the data structure of the Preqin database (only currently operating funds are in the database), it is not possible to compare the data on pre-crisis and post-crisis basis. Nevertheless, there are some conclusions that can serve PE stakeholders. It is rather obvious that real estate PE funds have been a very complicated type of investment since the beginning of the financial crisis. Much more interesting are the empirical findings about turnaround, distressed debt and secondaries funds. All three groups are funds that can theoretically take advantage of an economic downturn. The results of this paper confirms that their business model has been successful, which can give limited partners in the future certain guidance when deciding into which funds to invest in.

Finally, a note about data availability and reporting bias has to be made. First of all, private equity funds are usually not obliged to report about their performance, thus only databases that are on a voluntary basis can be used. It is intuitive that those PE funds that executed favorable investments will be more motivated to disclose in such a database, therefore a

strong reporting positive reporting bias can be anticipated. This of course limits the contribution of the research substantially; on the other hand, it is the only way to gain at least a rough idea about the industry. When thinking about the reporting bias in the framework of this paper, we can suppose that the valuation difference between primary and secondary buyouts is overvalued, as those secondary buyouts that were unsuccessful are more likely not to be in the database. Further, the underperformance of real estate PE funds can be in reality even worse and the over performance of distressed debt, turnaround and secondaries funds might not be as high as reported.

To sum up the findings in this paper, it is likely that secondary buyouts will continue to be an important element in the PE industry, as the sellers are able to reach a higher valuation in a secondary buyout. Further, the real estate PE sector has suffered a very substantial hit, which may create future opportunities once an economic rebound arrives. Finally, distressed debt, turnaround and secondaries funds seem to be a profitable investment, especially once an economic downturn arrives.

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12 Appendix

Appendix 1: Capital IQ Screening Aggregates

Capital IQ

Screening Aggregates

Aggregates			
Number of Transactions by Status		**Number of Transactions by Type**	
Announced/Reg. Filed:	48	Shelf Registration	0
Closed/Reg. Effective:	1712	Buyback	0
Cancelled/Withdrawn:	375	Spin-Off/Split-Off	0
Other Bankruptcy Status:	0	Public Offering	0
Total Number of Transactions:	2135	Merger/Acquisition	2135
		Private Placement	0
		Bankruptcy	0
Number of Transactions by Sector		**Number of Transactions by Region**	
Energy	60	Africa / Middle East	47
Materials	155	Europe	698
Industrials	467	Asia / Pacific	260
Consumer Discretionary	661	Latin America and Caribbean	21
Consumer Staples	123	United States and Canada	1109
Healthcare	162		
Financials	159		
Information Technology	272		
Telecommunication Services	43		
Utilities	30		
No Primary Industry Assigned	3		

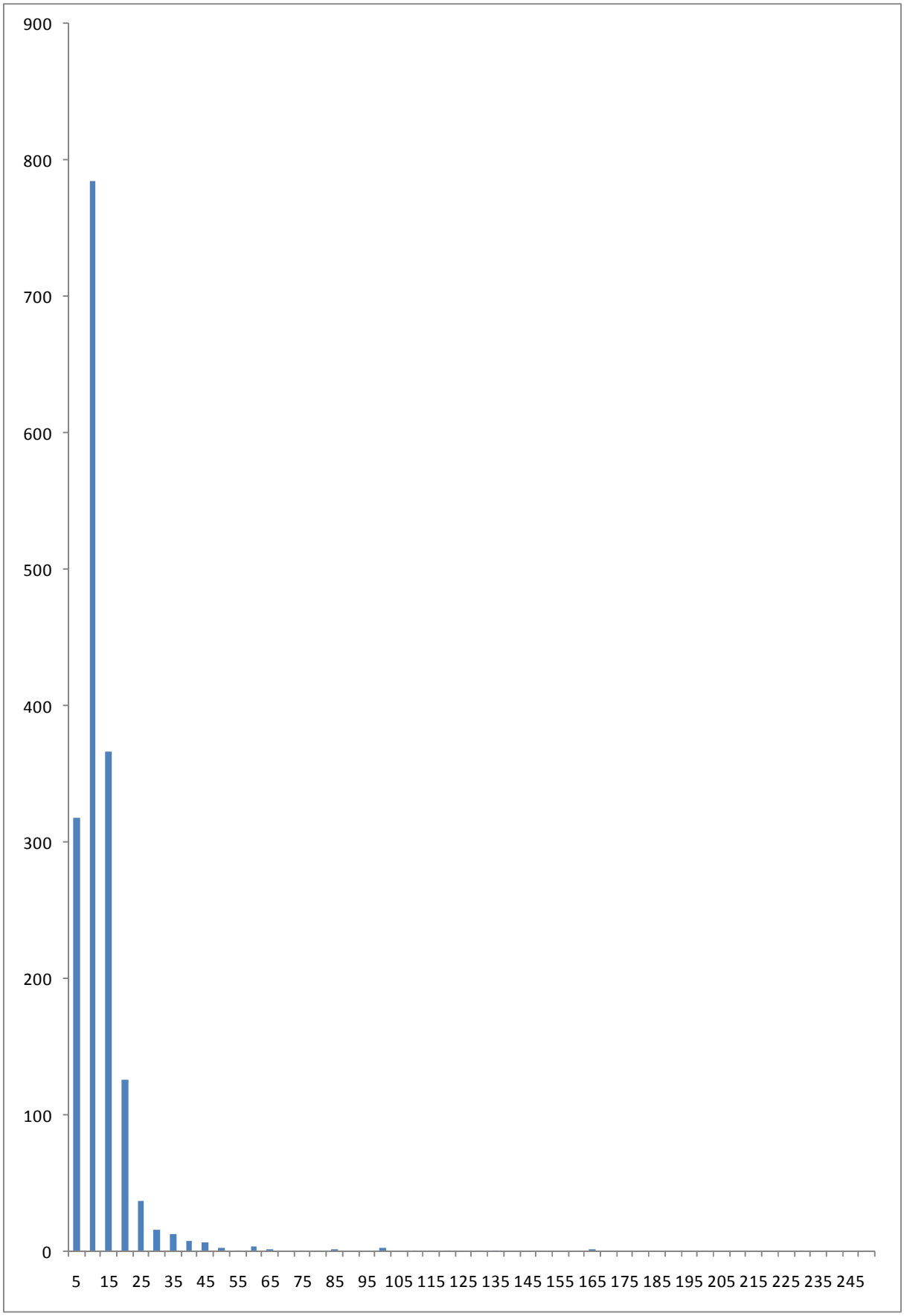
Most Active Buyers/Investors by Number of Transactions		**Most Active Buyers/Investors by Total Transaction Size**	
Company Name	**Number Of Transactions**	**Company Name**	**Total Transaction Size ($mm)**
The Carlyle Group	43	Kohlberg Kravis Roberts & Co. (NYSE:KKR)	260 185,2
Kohlberg Kravis Roberts & Co. (NYSE:KKR)	41	Goldman Sachs Group, Merchant Banking Division	246 078,39
Goldman Sachs Group, Merchant Banking Division	39	TPG Capital	238 001,45
The Blackstone Group, Private Equity Group	39	The Blackstone Group, Private Equity Group	181 959,32
TPG Capital	36	Bain Capital Private Equity	141 076,94
Bain Capital Private Equity	31	The Carlyle Group	131 229,2
Apollo Management, L.P. (NYSE:APO)	25	Madison Dearborn Partners, LLC	97 513,33
CVC Capital Partners Ltd.	25	Providence Equity Partners LLC	93 670,97
Apax Partners Worldwide LLP	22	Thomas H. Lee Partners, L.P.	91 388,78
Permira Advisers Ltd.	21	Apollo Management, L.P. (NYSE:APO)	86 272,48

Merger & Acquisition Statistics			
Valuation Summary		**Number of Deals by Transaction Ranges**	
Total Deal Value($mm):	2 214 770,13	Greater than $1 billion	448
Average Deal Value:	1 048,16	$500 - $999.9mm	270
Average TEV/Revenue:	1,98	$100 - $499.9mm	734
Average TEV/EBITDA:	10,99	Less than $100mm	661
Average Day Prior Premium(%):	46,53	Undisclosed	22
Average Week Prior Premium(%):	35,45		
Average Month Prior Premium(%):	39,32		

Canceled transactions may be included in these statistics.

Source: Author

Appendix 2: Distribution of the EV/EBITDA multiple in the Capital IQ dataset



Source: Author

Appendix 3: P-values of Homoscedasticity Tests for the Capital IQ Datasets

	White's Test	Breusch-Pagan Test
Capital IQ Dataset 1	0.000000	0.000019
Capital IQ Dataset 2	0.000000	0.001322

Source: Author

Appendix 4: Preqin Data Set Overview

Type	Europe	ROW*	USA	**Grand Total**	Percentage
Balanced	13	9	28	**50**	1,8%
Buyout	182	66	458	**706**	24,7%
Co-investment	5	5	16	**26**	0,9%
Co-Investment Multi-Manager	4		13	**17**	0,6%
Direct Secondaries	2		7	**9**	0,3%
Distressed Debt	6	10	70	**86**	3,0%
Early Stage	19	16	174	**209**	7,3%
Early Stage: Seed	4	4	23	**31**	1,1%
Early Stage: Start-up	5	4	18	**27**	0,9%
Fund of Funds	87	23	258	**368**	12,9%
Growth	12	25	40	**77**	2,7%
Infrastructure	8	6	21	**35**	1,2%
Late Stage	2	3	36	**41**	1,4%
Mezzanine	12		82	**94**	3,3%
Natural Resources		2	65	**67**	2,3%
Real Estate	75	57	351	**483**	16,9%
Real Estate Co-Investment			4	**4**	0,1%
Real Estate Fund of Funds	1	1	4	**6**	0,2%
Real Estate Secondaries			7	**7**	0,2%
Secondaries	26	1	51	**78**	2,7%
Timber		1	16	**17**	0,6%
Turnaround	1	1	8	**10**	0,4%
Venture (General)	40	34	317	**391**	13,7%
Venture Debt			15	**15**	0,5%
Grand Total	**504**	**268**	**2 082**	**2 854**	100,0%
Percentage	17,7%	9,4%	73,0%	100,0%	

**ROW = Rest of the World*

Source: Author, Preqin

Appendix 5: Hypothesis II.A Full Results

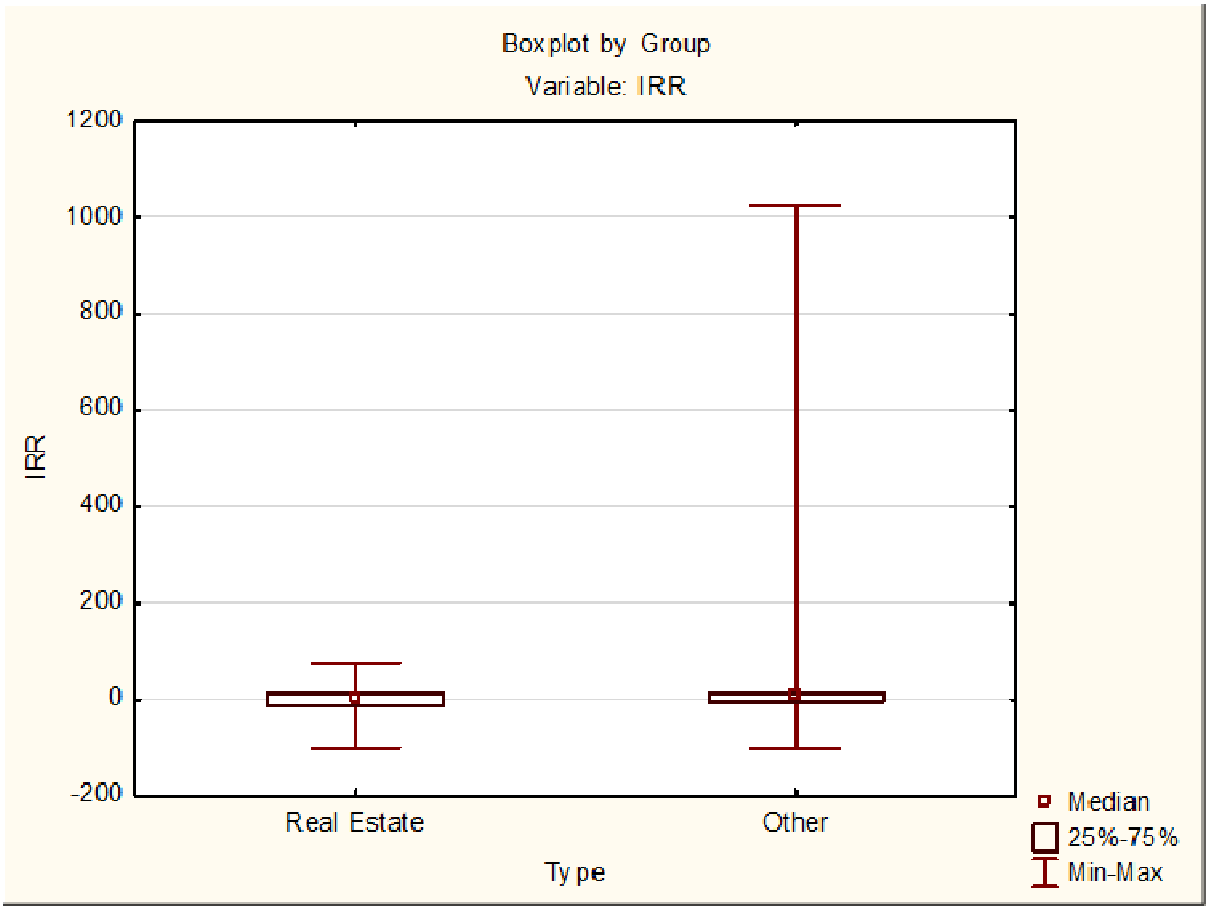
Kolmogorov-Smirnov Test								
Max Neg	Max Pos	p-value	Mean	Mean	Std.Dev.	Std.Dev.	Valid N	Valid N
-0,2	0,0	p < .001	-0,7	6,7	24,4	30,9	500,0	2354,0

Mann-Whitney U Test								
Rank Sum	Rank Sum	U	Z	p-value	Z	p-value	Valid N	Valid N
653709,0	3420376,0	528459,0	-3,6	0,0	-3,6	0,0	500,0	2354,0

T-tests										
Mean	Mean	t-value	df	p	Valid N	Valid N	Std.Dev.	Std.Dev.	F-ratio	p
-0,7	6,7	-5,1	2852,0	0,0	500,0	2354,0	24,4	30,9	1,6	0,0

Source: Author

Appendix 6: Hypothesis II.A Box and Whiskers Plot



Source: Author

Appendix 7: Hypothesis II.B Full Results

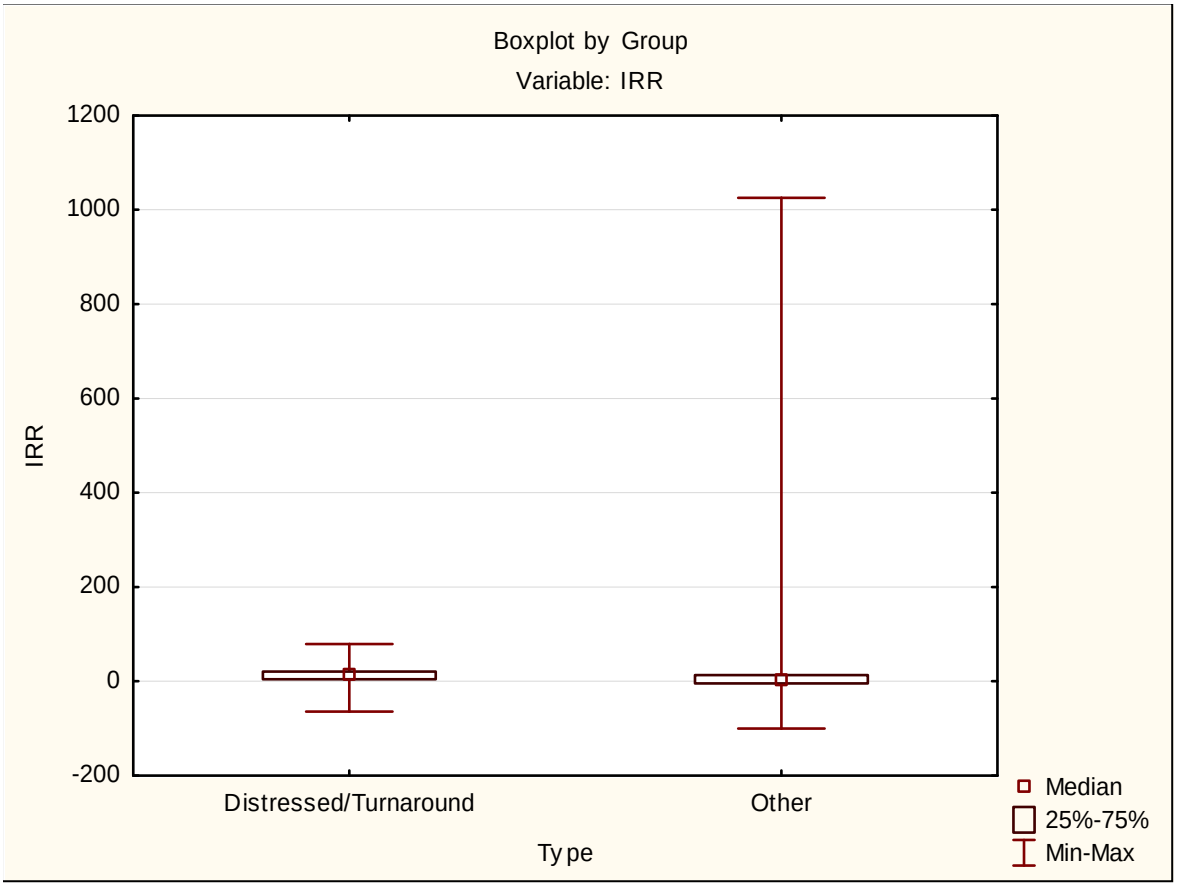
Kolmogorov-Smirnov Test								
Max Neg	Max Pos	p-value	Mean	Mean	Std.Dev.	Std.Dev.	Valid N	Valid N
0,0	0,3	p < .001	13,2	5,2	16,6	30,3	96,0	2758,0

Mann-Whitney U Test								
Rank Sum	Rank Sum	U	Z	p-value	Z	p-value	Valid N	Valid N
183427,5	3890657,5	85996,5	5,8	0,0	5,8	0,0	96,0	2758,0

T-tests										
Mean	Mean	t-value	df	p	Valid N	Valid N	Std.Dev.	Std.Dev.	F-ratio	p
13,2	5,2	2,6	2852,0	0,0	96,0	2758,0	16,6	30,3	3,3	0,0

Source: Author

Appendix 8: Hypothesis II.B Box and Whiskers Plot



Source: Author

Appendix 9: Hypothesis II.C Full Results

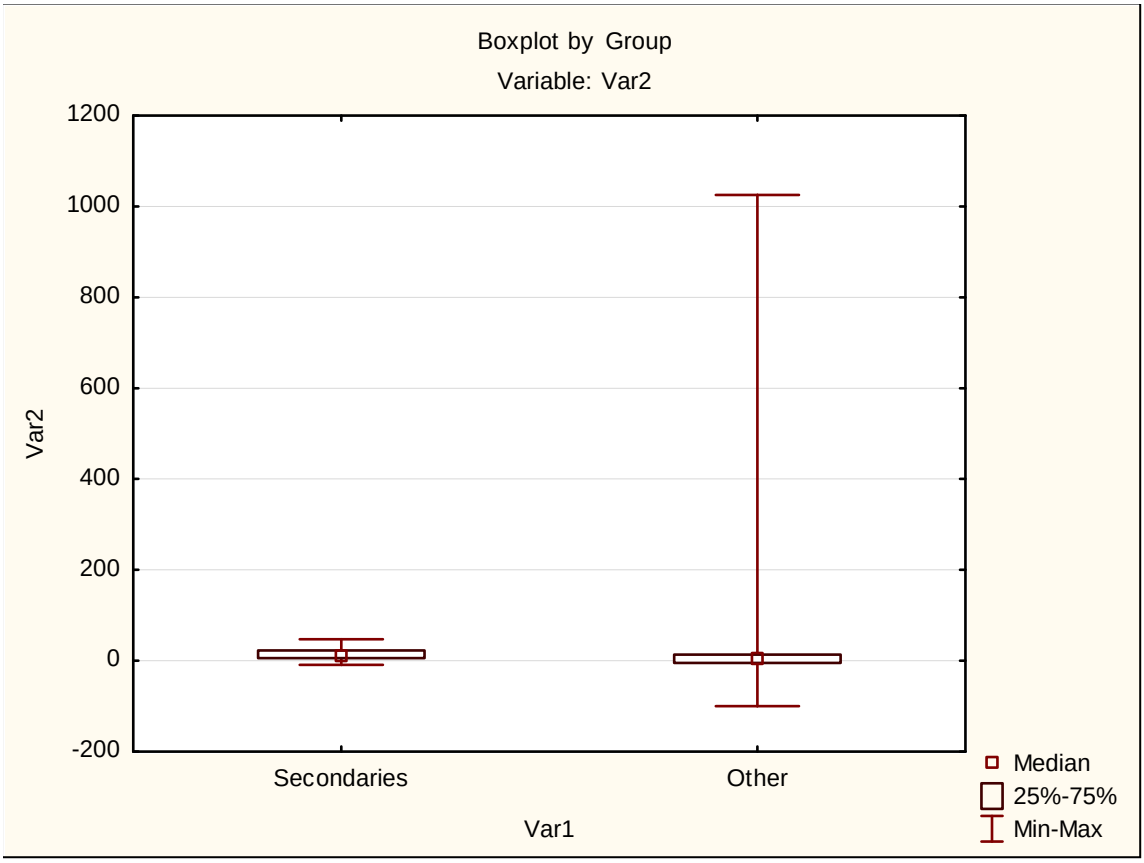
Kolmogorov-Smirnov Test								
Max Neg	Max Pos	p-value	Mean	Mean	Std.Dev.	Std.Dev.	Valid N	Valid N
0,0	0,3	p < .001	14,6	5,1	12,3	30,4	87,0	2767,0

Mann-Whitney U Test								
Rank Sum	Rank Sum	U	Z	p-value	Z	p-value	Valid N	Valid N
171223,5	3902861,5	73333,5	6,2	0,0	6,2	0,0	87,0	2767,0

T-tests										
Mean	Mean	t-value	df	p	Valid N	Valid N	Std.Dev.	Std.Dev.	F-ratio	p
14,6	5,1	2,9	2852,0	0,0	87,0	2767,0	12,3	30,4	6,1	0,0

Source: Author

Appendix 10: Hypothesis II.C Box and Whiskers Plot



Source: Author