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MAGISTERARBEIT

Titel der Magisterarbeit

“Initial Public Offerings under information asymmetry.
The failed IPO of Hochtief Concessions“

Verfasserin

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angestrebter akademischer Grad

Magistra der Sozial- und Wirtschaftswissenschaften
(Mag. rer. soc. oec.)

Wien, im Juni 2010

Studienkennzahl lt. Studienblatt:

A 066 915

Studienrichtung lt. Studienblatt:

Magisterstudium Betriebswirtschaft

Betreuerin:

Univ.-Prof. Dr. Gyöngyi Lóránth

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1. Introduction

1.1. Research objectives

Systematic underpricing and cyclicity¹ are perhaps the most intriguing empirical regularities about Initial Public Offerings (IPOs). A vast body of literature has been dedicated to explaining these phenomena that, at a first glance, seem to contradict market efficiency principles and even the rationality of economic actors.

The present thesis is intended as an empirical study on how information asymmetries affect the timing and the pricing of an IPO.

Setting out from the last-moment decision of the German infrastructure company Hochtief to pull the IPO of its Concessions subsidiary in November 2009, the current thesis explores the underlying facts and attempts to provide possible explanations for the IPO failure by drawing upon existing theories. Concretely, the thesis builds on the following key questions:

- Did the cold IPO market and overall investor sentiment lead to the failure of the IPO?
- Did Hochtief sufficiently underprice its new equity issue to spark investor interest?
- Were the signals that the company conveyed to the markets convincing enough in respect to the value of the firm?

The paper is structured in 6 main chapters. The introduction outlines the background and the research objectives of the paper. The second chapter shortly reviews some key empirical findings and theories on IPO pricing and timing to the market. The third chapter features a valuation of Hochtief Concessions' equity meant to provide an estimate of the fair value of the company and to make inferences about the extent of underpricing possible. The event study analysis in chapter four is designed to capture the market reactions to the IPO announcements. Chapter five aims at providing answers to the afore-mentioned questions based on the results of the valuation and the event study analysis. Chapter six concludes.

¹ Cyclicity: alternating periods of high and low activity of the Initial Public Offering markets, also referred to as waves

1.2. Background to the IPO call-off of Hochtief Concessions

The German construction company Hochtief officially announced on the 5th of November 2009 that it strived for a stock market floatation of its subsidiary Hochtief Concessions AG; the transaction would have increased transparency towards investors and eased the access to external funds to fuel future growth.²

Shortly thereafter, on the 19th of November, the details of the IPO became public: the company planned a capital increase of up to EUR 600 mil. and a sale of a fraction of the existing equity valued at EUR 282 mil. to 405 mil. that would allow Hochtief to maintain a 51% majority stake in the new company. The price range for the book-building was set at EUR 24 to EUR 29.³

The book-building process coordinated by Citigroup, Deutsche Bank, Goldman Sachs and Barclays Capital was bound to end two weeks later, before the first floatation day. Although initially the price was fluctuating within the upper half of the price range, close to the expiration term it converged to the minimum value of 24 EUR, as rumors about a low demand spread through the grey markets.⁴ On the late evening of the 3rd of December, after the market close, Hochtief announced the call-off of the Initial Public Offering,⁵ alleging that the financial market turbulences in the wake of the Dubai crisis had led to insufficient demand for the its equity.

Through its significant issue volume, the floatation of Hochtief Concessions would have marked the beginning of the long sought recovery of the German IPO markets after the financial crisis;⁶ hence the causes behind its failure attracted public attention, giving way to a lot of speculation.

² Hochtief Corporate Communications (5.11.2009)

³ Maug, Ernst (SS 2010) 7

⁴ Maug, Ernst (SS 2010) 7

⁵ "Equity market unfazed by Hochtief's late call to pull unit's Eu1bn IPO" (4.12.2009)

⁶ „Studie - IPO-Boom geht 2009 an Deutschland vorbei“ (9.12.2009)

2. Initial Public Offerings. Theory and empirical evidence

Although much of the early IPO literature focused on the US market, its empirical findings seem to be extensively supported by recent research on various markets around the world. The most documented stylized fact about IPOs is without question the pervasive tendency to underpricing: almost invariantly, the first day trading price is systematically reported to exceed the one at which the shares were initially sold to investors. The second empirical regularity that attracted the attention of academics is the cyclicity of IPO markets: most firms go public in times of buoyant stock markets and overall auspicious macroeconomic conditions (so-called “hot markets”) and avoid to raise new equity during economic downturns (so-called “cold markets”).⁷

In a recent study, Brau and Fawcett (2006) confront these empirical findings inferred mostly using mathematical models with real managerial decision making in the IPO process.⁸ Pursuing this endeavor, they conduct a survey among CFOs centered on key questions on IPOs, among which the timing, underpricing and signaling. The paragraph below summarizes their findings, showing that the managerial intuition is to a wide extent in-line with the theories advanced by the classical IPO literature.

“CFOs base IPO timing on overall market conditions, are well informed about expected underpricing and feel that underpricing compensates investors for taking risk.[...] The most important positive signal is past historical earnings, followed by underwriter selection.”⁹

The current chapter gives an outline of these stylized facts about Initial Public Offerings, preparing the discourse on their relevance in explaining Hochtief Concessions’ IPO failure.

⁷ Jenkinson and Ljungqvist (2001) 37

⁸ CFO: Acronym for Chief Financial Officers

⁹ Brau and Fawcett (2006) 1

2.1. IPO underpricing under asymmetric information

Systematic IPO underpricing is certainly a puzzling phenomenon, since we would expect that, in efficient markets, rationally acting agents would not be willing to sell assets at below their worth. However, firms going public are reported to be priced by markets on the first trading day above the initial price offered during subscription. The first day premium was approximated at 15% in industrialized countries and at around 60% in emerging markets.¹⁰

In Germany, Ljungqvist (1997) finds on a sample of 180 IPOs in the time interval 1970 to 1993 an average initial return of 9.2%. Similar studies report a first trading day premium of 15.3% in the US (Ibbotson et al. 1994) and 10.7% in the UK (Jenkinson and Mayer 1988).¹¹

The money that companies leave on the table in the IPO process represents, on the one hand, a profit for the investors who have placed shares in the IPO and on the other a wealth transfer from the existing shareholders to the new.¹² Even if they don't sell their shares in the course of the IPO, the initial shareholders still incur costs arising from the dilution of their stakes.¹³

Thus, since underpricing is always to the detriment of the original owners of the company, what induces them to go along despite of the wealth losses?

Whereas in emerging markets underpricing is largely explained by the political intermingling and side payments to the parties involved in the transaction, this cannot be the case for countries in Western Europe and US. In the attempt to explain underpricing across countries, researchers have advanced several theories mostly based on asymmetric information and agency models.

*“Depending on the approach, underpricing induces underwriters to exert an optimal selling effort, becomes a form of compensation for investors” or translates to a way of signaling to the markets the quality of the firm.*¹⁴

¹⁰ Jenkinson and Ljungqvist (2001) 37

¹¹ Jenkinson and Ljungqvist (2001) 38

¹² Lóránth (2005)

¹³ Jenkinson and Ljungqvist (2001) 40

¹⁴ Jenkinson and Ljungqvist (2001) 41

We shortly outline here some of the theories thought to have the highest explanatory power:

Winner's curse

This asymmetric information model firstly introduced by Rock (1986) can be regarded as a variation of Akerlof's "lemons"¹⁵ problem:

*"Uninformed buyers will withdraw from a market if their informational disadvantage results in their adverse selection from the quality distribution of goods."*¹⁶

Analogously, by dividing investors in two broad categories, informed and uninformed, Rock contends that while the informed are able to correctly price equity offers, the uninformed investors would tend to overbid ("winner's curse"). Hence, in order to retain the uninformed investors and assure sufficient demand on equity markets, the uninformed bidders must be aided to break even on average by an ex-ante underpricing of every offering.¹⁷

Ljungqvist asserts that there are some loose ends to this story. For instance, there is an alternative solution in assisting uninformed investors to avoid overpaying; informed investors (e.g. investment funds) can act as intermediaries for uninformed investors against a fee charge.¹⁸

Informational cascade

This theory predicts that investors do not decide upon investing in an IPO solely based on their own value judgments on the equity on offer; their decision also depends on what other market participants do; therefore, if the demand for a new equity is low, they too withdraw from investing; this effect is referred to as a "bandwagon effect" or "informational cascade". In order to attract first investors that will guarantee sufficient demand, firms underprice their stock.¹⁹

¹⁵ Colloquial term for a defective old car. Source: "<http://nobelprize.org>"

¹⁶ Jenkinson and Ljungqvist (2001) 64

¹⁷ Jenkinson and Ljungqvist (2001) 64

¹⁸ Jenkinson and Ljungqvist (2001) 73

¹⁹ Lóránth (2005)

Signaling hypothesis

Signaling models postulate that, under information asymmetry, IPO underpricing can be used as a credible instrument by good firms to demonstrate their asset quality to investors.²⁰ There are two essential assumptions associated with this model: first, issuing firms have superior information about their own future cash distribution than potential investors and underwriters do. Secondly, firms organize their equity sale to outside investors in two stages: after the initial public offering they return to the markets for a second time to place the remaining equity fraction.²¹

But what is the concrete role of underpricing given this framework? Grinblatt and Yang (1989) offer the following explanation:

“Many investment professionals typically state that the investor interest generated by a low-priced new issue tends to subsequently result in higher-priced shares than would not have been possible without the underpricing. [...] This belief] is also consistent with Ibbotson's (1975) conjecture that new issues may be underpriced in order to «leave a good taste in investors' mouths.»”

Thus, the benefit of underpricing is getting a higher price in the second stage of the sale. Additionally, assuming a sufficiently high possibility that the quality of the firm is learned after the first issue, it must hold that bad firms will not engage in underpricing, since they might not be able to enjoy the proceeds of the second stage sale.²²

Ljungqvist's criticism to the model builds primarily on the fact that, in practice, firms do not necessarily “*follow two-staged selling strategies*”. Furthermore, the way in which the second stage is organized does make a difference. Provided that shareholders enjoy pre-emptive rights²³, signaling will bring no benefit, since the prices offered to the current stockholders are typically lower than the market prices.

²⁰ Grinblatt and Yang (1989) 3

²¹ Jenkinson and Ljungqvist (2001) 78

²² Jenkinson and Ljungqvist (2001) 78

²³ The right of ordinary shareholders to maintain their percentage stake in a company by being able to buy enough shares in any new issue to maintain that percentage. Source: "<http://glossary.reuters.com> "

Information revelation models

In the model of Benveniste-Spindt (1989) on information revelation, underwriters take center stage, mitigating between investors and owners in the IPO process. Both the demand and supply side have private information: while owners know more about the quality of the company going public, outside investors have superior knowledge on the average market prices for similar assets. Underwriters help to overcome the conflicts of interest between the two through book-building, which becomes a mechanism of incentivizing the outside investors to tell the truth: if they misrepresent the true value, they might be rationed out from the deal or get just very few shares in the aftermath; if they tell the truth, they get a disproportionately high allocation of shares. The compensation for truthfully revealing their information is the underpricing of the deal- their gain will thus amount to the overall discount that accrues to them.²⁴

Labeling underpricing simply as a “necessary evil” would be wrong, since there are also a series of potential benefits associated with underpricing that need to be carefully assessed. Firstly, heavy underpricing leads to excess demand for the respective stock; this is perceived by practitioners to indicate the IPO’s success; moreover, it creates great publicity for the firm and assures a diversified pool of investors with conveniently low voting rights in the IPO aftermath. Secondly, in some countries, “*underpricing might serve as a tax-efficient way of remunerating employees*”, if the tax on capital gains lies well below the employee income tax.²⁵

The richness of models on IPO underpricing put forward in the dedicated literature is quite overwhelming. The set of theories provided in this chapter is not exhaustive; however, it represents the main lines of thought. Opinions among academics on which model possesses the higher explanatory power seems to widely differ. Ljungqvist argues that the winner’s curse and signaling theories, although intuitively appealing, apply only under very specific assumptions. He credits the Beneveniste-Spindt model of information production as very well supported by the empirical evidence and robust to a variety of frameworks and assumptions. In their study, Michaely and Shaw (1994) bring proof for the winner’s curse

²⁴ Jenkinson and Ljungqvist (2001) 90

²⁵ Jenkinson and Ljungqvist (2001) 43

hypothesis, however they invalidate the signaling theory, showing that *"firms that underprice more return to the reissue market less frequently"*.²⁶

Coming to Brau and Fawcett's (2006) study on the actual perceptions of decision makers in IPO firms, we find that CFOs having participated in the survey attribute underpricing mostly to *"market uncertainty and the lack of perfect information"*; underpricing *"serves to compensate investors for taking the risk of the IPO."* CFOs also see underpricing as a way *"of achieving a wider base of owners"* and *"a desire of underwriters to favor institutional investors."* The mean and median underpricing CFOs indicated is 14.9% respectively 10%. Brau and Fawcett (2006) test several signaling mechanisms proposed by the IPO literature and find that the most important positive signal is a *"strong history of earnings"*, whereas the negative signals are *"selling a large portion of the firm in the IPO, as well as selling insider shares in an IPO."*²⁷

2.2. IPO timing under asymmetric information

When observing the historical IPO activity across international markets, it becomes obvious that IPO timing is not random; the number of companies tapping the equity markets seems to rise and fall in a pattern fairly synchronized across different countries. Increasing funding needs as a result of entering a new business cycle does not provide sufficient evidence for the high variations in IPO volume and activity. A further important determinant is thought to be the willingness of the market to supply capital. Firms seem to be able to recognize favorable times for going public and use these windows of opportunities in order to fully reap the benefits.²⁸

*"Ljungqvist provides evidence that, in Germany, the number of floatations changes over time in line with the business cycles, stock market conditions and the gradual increase in competitiveness of the underwriter market."*²⁹

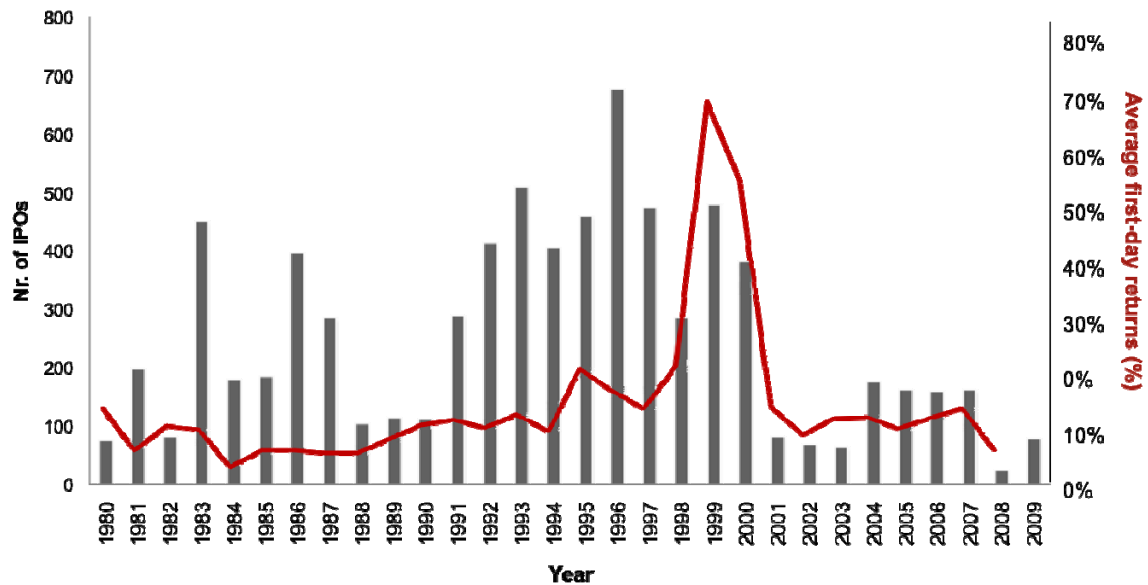
²⁶ Michaely and Shaw (1994)

²⁷ Brau and Fawcett (2006) 414

²⁸ Jenkinson and Ljungqvist (2001) 46

²⁹ Jenkinson and Ljungqvist (2001) 48

Interestingly, hot issue markets are not characterized just by high issue volumes, but also by a higher degree of underpricing. The table below illustrates the cycles in the IPO activity as well as the first day returns that were registered in the period 1980-2009 on the US markets.



Source: Jay Ritter Website; Some factoids about the 2009 IPO Market

Figure 1 Number of Offerings and First Day Returns on the US IPO markets in the period 1980-2009³⁰

“In Germany, IPOs are more heavily underpriced not only when the market is performing well, but also in macroeconomic upswings, when already-listed firms issue [...] large amounts of seasoned equity and when stock market volatility is low.”³¹

On the flipside, when overall conditions worsen, the IPO markets do not adjust through lower prices, rather more the IPO volume seems to dry up.³²

There are two theories that have been put forward by academics to explain the “hot-cold markets” phenomenon. The first one sets out from market efficiency and postulates that the good times are characterized by great investment opportunities, guaranteeing handsome profits to investors placing their funds in stock issues. On the contrary, cold markets lack

³⁰ Ritter (2009)

³¹ Jenkinson and Ljungqvist (2001) 51

³² Lóránth (2005)

such investment opportunities and companies issuing equity at these times are believed to be of poor quality, since they must be in desperate need of funds.³³

The second theory assumes that markets are acting irrationally and the shifting from a hot to a cold market is determined by a change in investor sentiment: When optimism dominates, i.e. in bull markets, investors will indiscriminately buy newly issued stock. In bear markets, their willingness to invest in IPOs is considerably lower.³⁴

As a concluding note, both theories attempting to explain IPO waves implicitly assume the presence of asymmetric information. Winding back to the Myers and Majluf model of 1984, we can argue that, in order to reduce their cost of capital, companies need to correctly identify times of low information asymmetry and use them to raise external funds. Under high asymmetric information, however, the decision to go to the equity markets is reduced to weighing the incurred dilution costs against the benefits of investing in new projects with the freshly raised capital.³⁵ In the context of an IPO, however, underpricing is not just a cost to the company's owners. As we have seen in the previous section, underpricing also has upsides, which need to be considered when making the decision of undergoing an IPO.

3. The valuation of Hochtief Concessions

The focus of the current chapter is the valuation of the Concessions subsidiary of Hochtief at the time of the IPO announcement. Upon sketching the company's profile and creating a basic understanding for its business model, I introduce the views on the assets quality of the company of Hochtief itself and of further external analysts. The overview on the theoretical framework in subsection 3.1. is to be closely linked with the explicit description of the valuation steps and outcome in subsection 3.2.. I conclude by taking a critical standpoint towards the methodology and results of the valuation performed.

³³ Lóránth (2005)

³⁴ Lóránth (2009)

³⁵ Lóránth (2009)

3.1. Understanding Hochtief Concessions' business model

Understanding the business model of a company is essential to performing a valuation. The industry and the markets in which a firm operates as well as their internal organization and business setup are decisive in assessing financial and operating risk and allow for an accurate modeling of the future cash flows.

The current section shortly depicts the company profile of Hochtief Concessions with particular focus on the industry, firm age and underlying business logic and succinctly defines infrastructure concessions, the business model of interest for the current valuation.

3.1.1. Company profile

Hochtief Concessions defines itself as “an (...) infrastructure provider with operations in several markets worldwide”, acting “both an investor and a manager”. Hochtief offers

*“one-stop shopping for project development, financing and capital raising, construction and project management as well as operation and asset management for airports, toll roads, Public-Private-Partnership-based building and renewable energy projects.”*³⁶

In other words, the company covers the entire value chain of services related to complex infrastructure projects, ranging from aerial and terrestrial transportation to social facilities.

Hochtief Concessions emerged as an independent division of Hochtief as recently as 2008 by combining the Airport and Private-Public-Partnership divisions. In an official statement, Hochtief management declared the decision strategic, as it symbolized the group's “recognition of the growing importance of the concessions business.”

*“The new structure would allow for closer cooperation and the reaping of synergies in market development, business planning, special operator responsibilities and other technical areas”.*³⁷

The internal reorganization anticipated to a certain extent the upcoming spin-off of Hochtief Concessions; one year later, Hochtief Concessions was incorporated as a German stock corporation (“Aktiengesellschaft”) and intentions to list the company were made public. The

³⁶ Hochtief (2009) 92

³⁷ Hochtief (2009) 27

stock market flotation would further facilitate the access of the company to external funding and increase transparency about the value of the firm's assets.

As per Hochtief, the portfolio of the Concessions subsidiary comprised to the time of the announced IPO

- *“6 holdings in international airports in Europe and Australia*
- *7 roads, including 2 tunnels, in Europe and Chile*
- *18 projects featuring 95 public sector facilities in Europe in the social infrastructure segment and additionally two geothermal energy projects in Germany.”*³⁸

3.1.2. The concessions business model of Hochtief

A thorough analysis of the concessions business model is not in scope of the current thesis. The current subsection aims to provide an insight in the source of Hochtief Concessions' earnings and the risks associated with its business model..

The concessions model has been experiencing increasing popularity in the past decades in the construction and engineering sector. The distinctive element from a conventional construction project lies in the transfer of ownership to the service providers over a predefined period of time or sometimes even open-end. The desired effect is, without doubt, to incentivize the service company to maximize the value of the project by directly linking the remuneration of the infrastructure operators to the project cash flows as well as by eliminating short-termism.

Frank Bousquet and Alain Fayard given in their study dedicated to European concessions a general definition of the concession business:

“An infrastructure concession is defined as a contract under the terms of which a public authority accords specific rights to a company to construct, maintain and/or operate a network for a given period. The following types of contracts [come into question]:

- *“BOT (Build, Operate and Transfer): a company funds, constructs, owns and operates an infrastructure for a limited period (approximately 30 years), at the end of which the infrastructure is transferred at no charge to the concession authority.*

³⁸ Hochtief (2009) 92

- *BTO (Build, Transfer and Operate): a company funds and constructs an infrastructure, but transfers ownership to the concession authority immediately after completion of the construction phase. Then the infrastructure is put at the company's disposal by the government and is operated for a limited period, at the end of which all rights are restored to the concession authority.*
- *BOO (Build, Own and Operate): a company funds and constructs an infrastructure, which it owns and operates for an unlimited period.*³⁹

Hochtief Concessions applies in its business a mix of these models; as a concessions operator, it typically holds minority stakes – less than 50% of equity - in the project company, either for a contractually fixed period of time or open-end, deriving *“dividends, interest from shareholder loans as well as transaction and management fees, plus any gains on market placement or disposals of ownership stakes.”*⁴⁰

The sources of income are thus *“projects, stakes, long-term asset management contracts and consultancy, as well as earnings contributions from airport investments and timed sales of shares held in road projects.”*⁴¹

It is useful at this point to note that the risk implied by the concessions business model has an additional component to the one stemming from classical construction activities; acting as an equity investor in the project companies, it also bears the risk arising from its holdings. However, the long term character of concession contracts assures stable, less volatile cash flows than a typical construction contract would.

3.1.3. Appraisals of Hochtief's asset portfolio

The current subsection introduces the company's own appraisal of its assets and briefly reviews analyst coverage on Hochtief Concessions at the announced floatation date. The rationale behind is to familiarize the reader with the grounds based on which Hochtief priced the IPO of its concessions subsidiary and what it considers to be key value drivers. The review of the methodology applied by Hochtief to compute the value of its assets was considered necessary, as it might explain potential differences between the pricing made by Hochtief and the result of the valuation performed in the context of this thesis.

³⁹ Bousquet and Fayard (2001) 2

⁴⁰ Hochtief (2009) 26

⁴¹ Hochtief (2010)

- **Hochtief's self-appraisal of asset quality**

In its first press release on the IPO plans, Hochtief sought to make a case about the attractiveness of the assets of its concessions subsidiary. The arguments presented included some financial information considered conclusive, such as past and expected earnings, project portfolio structure and net present value of assets. Hochtief provided the following snapshot of Hochtief Concessions' historical performance:

Key figures (EUR mil)	Q1-Q3 2009	Q1-Q3 2008	2008	2007	2006
Adjusted operating cash flow	80.1	150.1	173.3	51.9	46.7
Profit before taxes/ EBT	51.3	91.4	106.2	168.6	29.5
Combined net profit	28.4	56.4	63.9	102.4	9.9

Table 1 Snapshot of Hochtief Concessions' historical performance⁴²

In the same press release, Hochtief's management also clearly stated its beliefs respective of the assets quality and future growth fueled by a sound investment policy:

«Hochtief Concessions has very attractive assets. We have generated positive results for years. The fact that even in the first nine months of the crisis year 2009 we were able to achieve significantly positive after-tax income shows the quality of our assets. In the face of volatile markets our ability to do so very much suits investor demand» explains Peter Noé, a member of the Hochtief Executive Board and the future CEO of Hochtief Concessions AG. [...]

The outlook for the industry's further development is good: various market studies expect continued growth in air and road traffic over the coming years. «We want to exploit these opportunities actively and are ready for the IPO», Noé underlines. Over the course of the next five years, HOCHTIEF Concessions plans to invest up to EUR

⁴² Hochtief Corporate Communications (5.11.2009)

*500 mil. into existing projects — of which EUR 321 mil. are earmarked for Budapest airport. It also plans to invest up to EUR 100 mil. in projects for which the company already has preferred bidder status.”*⁴³

In respect of the earnings, Hochtief also defends the latest decreasing trend in reported earnings, asserting that the years prior to 2009 were affected by “*extraordinary items*” which inflated the overall figures. Corrected for these effects, the resulting year-on-year earnings should be at comparable levels.

Furthermore, Hochtief evaluates its portfolio of infrastructure projects at EUR 1.54 bil. per year-end 2009, of which airports EUR 1,282 mil., roads EUR 208 mil. and social infrastructure EUR 53 mil.⁴⁴ Out of the total value of the concessions portfolio of EUR 1.54 bil., Hochtief declares EUR 888.9 mil. to represent the investment per year end 2009.⁴⁵ It is important to document what methods and assumptions stand behind these figures in order to interpret them correctly:⁴⁶

- The valuation method used is the discounted cash flow method, applied to the company and its subsidiaries
- The relevant cash flows used in the valuation are those “*between project companies and Hochtief, [...]comprising capital paid in and withdrawn such as dividends, interest and fees*”
- Considered for the valuation are only projects that Hochtief estimates to win with a very high degree of probability; Hochtief designates these as “*having reached financial close*”
- The risk-adjusted discount rate is derived by adding on top of the basic risk-free interest rate some predefined risk mark-ups contingent on project type and completion stage. “*As projects move toward completion, risk and hence the mark-up drops and the value of “Hochtief’s assets rises.* “ As of December 31, 2009, the applied discount rate for its airport holdings was an average rate of 13%, which it considers to be aligned with market prices and which is reportedly kept stable over time; for roads and social infrastructure projects, Hochtief applies a risk-adjusted

⁴³ Hochtief Corporate Communications (5.11.2009)

⁴⁴ Hochtief (2010)

⁴⁵ Hochtief (2009) 28

⁴⁶ Hochtief (2009) 28

discount rate “*determined with reference to secondary market transactions.*” Hochtief derives a weighted discount rate of 12.1% for the entire project portfolio of airports, roads and social infrastructure. It is important to keep in mind that these discount rates are the project related discount rates. For the entire concessions company, Hochtief indicates a different weighted average cost of capital (see Table 2 Value Added Generation reported by Hochtief).

Project phases	Development	Construction	Ramp-up	Growth	Maturity
Risk markup for the project phase (%)		3	2		
Risk markup for the project type (%)		2-4	2-4	2-4	2-4
Risk free base rate (%)		6	6	6	6
Discount rate (%)		11-13	10-12	8-10	8-10

Figure 2 Matrix used by Hochtief to calculate project discount rates ⁴⁷

Hochtief additionally assesses the added value generation for each of its business segments by contrasting the calculated return on net assets⁴⁸ against the weighted average cost of capital. According to the 2009 annual report, HC generated a return on net assets of 12.1% (in 2008: 14%), whereas its weighted average cost of capital was indicated at 10.1%. The Airport subsidiary produced a RONA⁴⁹ of 13.3% (2008: 14.2 percent), above the cost of capital. ⁵⁰

However, the computation method used deviates from the classical approach. E.g. Damodaran gives a basic definition of the return on capital as the “*return earned on the existing assets or projects of a firm, calculated as*

⁴⁷ Hochtief (2009) 28

⁴⁸ The return on net assets is equal to the return on invested capital

⁴⁹ Acronym for Return on Net Assets (equal to the Return on Invested Capital)

⁵⁰ Hochtief (2009) 60

$$\frac{(1 - t)EBIT}{BV \text{ of Debt} + BV \text{ of Equity} - \text{Cash}}$$

where the **operating income after tax** is usually from the most recent time period and the numbers in the denominator are either from the start of that period or an average value.⁵¹

Hochtief derives the return on net assets using

- The **operating earnings before tax and amortization** (EBITA) plus interest income from the group's financial assets
- The net assets figure, which is computed by "adding interest- bearing liabilities items on the published balance sheet: shareholders' equity, pension provisions, and financial liabilities. As RONA is calculated on a pretax basis, deferred taxes are eliminated from the net assets figure to remove tax effects."⁵²

The cost of capital is calculated on "a weighted average basis" by plugging the required parameters into the cost of capital equation.

Divisions	Return 2009 (EUR mil)	Net assets 2009 (EUR mil.)	RONA 2009 (%)	WACC ⁵³ 2009 (%)	Value created 2009 (EUR mil.)	Value created 2008** (EUR mil.)
HOCHTIEF Concessions of which:	155.1	1,283.0	12.1	10.1	25.7	48.8
HOCHTIEF Airport	145.0	1,093.5	13.3	10.2	33.9	41.0
HOCHTIEF PPP Solutions	16.6	191.5	8.7	9.6	-1.7	7.7

Table 2 Value Added Generation reported by Hochtief ⁵⁴

A useful observation in relation to Hochtief's approach to computing its return on capital is that the incorporation of pre-tax operating income before amortization in the returns leads to

⁵¹ Damodaran Online (2010)

⁵² Hochtief (2009) 60

⁵³ Acronym for Weighted Average Cost of Capital

⁵⁴ Hochtief (2009) 62

reporting a higher figure and thereby a better performance than the common method would produce. Thus the question whether the earnings considered by Hochtief for the calculation actually accrue to the investors and if they allow for an accurate estimation of the earned returns.

3.1.4. An analyst's view on the value of Hochtief's assets

Shortly after the call-off of the IPO, the analysts of Bankhaus Lampe made a brief clinical analysis of the case, putting forward some possible causes for the IPO failure and giving judgments regarding the IPO pricing.

They argued that the price perceptions of institutional investors were rather more at the lower end of the book-building range of EUR 24 to 29. According to the analysts, however, Hochtief was not at all willing to sell below its own price expectations and also saw itself under no pressure to get the deal through. This expectations mismatch led to the low demand for the new equity.

They further present some facts to underpin their hypothesis: In the stock exchange prospectus Hochtief declared the "net" present value of assets at 30.9.2009 of EUR 1.54 bil, net debt amounting to EUR 781.9 mil. and the equity minority stakes EUR 385.6 mil. Hochtief specified the equity value at EUR 543.8 mil. Bankhaus Lampe cross-checked these values with a multiple based valuation; they measure for the group of peers a post-notation market-to-book value of 1.7 for the reference year 2010, so that a price of about EUR 26 for Hochtief Concessions' shares would have been a fair one according to their calculations.⁵⁵

⁵⁵ Bankhaus Lampe Research (2009)

3.2. Theoretical framework

With the aim of deriving an estimate for Hochtief Concessions' equity value, I performed a three-staged discounted cash flow (DCF) valuation with pretax free cash flows to firm as well as a relative valuation based on an EBIT⁵⁶ multiple. The comparative company valuation was intended as a cross-checking of the results yielded by the DCF valuation.

The current subsection lays the theoretical foundation required to perform the valuation by briefly outlining the variants of the DCF and multiples methods relevant for the current thesis, as well as some general considerations concerning the selection and preparation of the valuation input data.

3.2.1. The Discounted Cash Flow Valuation

The DCF method is perhaps the approach to valuation most commonly used by practitioners. Damodaran gives a brief, but very suggestive definition of the idea that lies at the core of the discounted cash flow method:

“The value of any asset should be a function of three variables: how much it generates in cash flows, when these cash flows are expected to occur and the uncertainty associated with these cash flows.”⁵⁷

Thus, the free cash flows are the compensation to investors for the opportunity cost they incur by putting their funds in the firm; the expected cash flows need to be discounted according to the inherent systematic risk borne by investors, reflecting the uncertainty about the cash flows materializing.⁵⁸

With the aim of arriving at the market value of the firm's equity, one can choose between two DCF variants, which, if performed correctly, should yield the same results: the firm valuation and the equity valuation. The firm valuation uses cash flows to both creditors and shareholders and discounts these by a weighted average cost of capital. The equity valuation implies the discounting of cash flows to equity-holders with the appropriate

⁵⁶ Acronym for Earnings Before Interest and Tax

⁵⁷ Damodaran (1999) 439

⁵⁸ Copeland, Koller and Murrin (2000) 201

discount rate, i.e. the opportunity cost of equity. The firm valuation is at the margin preferred by practitioners to the equity valuation since it does not require an explicit forecasting of the firm's debt payments⁵⁹. This firm valuation was also used in the context of the thesis for deriving Hochtief Concessions' equity.

According to Koller (2005), a DCF valuation of a firm comprises three main steps:

1. the valuation of the company's operations, entailing the "*discounting of the cash flows at the weighted average cost of capital*" ⁶⁰
2. the valuation of the company's non-operational assets, such as excess cash, "*marketable securities, nonconsolidated subsidiaries and other equity investments*" ⁶¹
3. identifying and valuing all "*non-equity financial claims*" on the assets in place, including "*fixed and floating rate debt, pension shortfalls, employee options and preferred stock*" ⁶²

The value of the operating and non-operating assets add up to the total firm value; Damodaran designates the value of operating assets as "enterprise value"; the equity value can be derived by subtracting further the non-equity financial claims from the enterprise value, as depicted in the figure below.

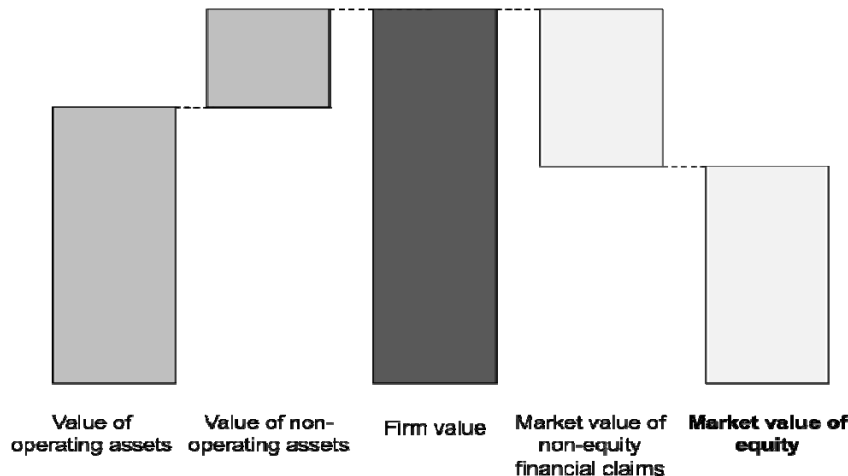


Figure 3 Deriving the market value of equity ⁶³

⁵⁹ Gemeinböck (1999) 44

⁶⁰ Koller (2005) 104

⁶¹ Koller (2005) 104

⁶² Koller (2005) 104

⁶³ Damodaran (2006) 241

3.2.1.1. Estimating the Free Cash Flows

Computing the cash flows that are generated by operating the assets in place and projecting these into the future is the starting point of each evaluation. Essential at this stage is to strictly differentiate between the cash flows produced by operating the left-hand side of the balance sheet and those that arise from the company's financing activity. In a world with perfect markets and no taxes, the capital structure has no impact on firm value. However, when setting out from real markets, one should separate the cash in- and outflows induced by the financing decisions, such as equity or debt issues, dividends or interest payments.⁶⁴

Being the output of the firm under an all-equity-finance fiction, the operating cash flows can also be referred to as "unlevered".⁶⁵ The firm leverage will nonetheless be accounted for by selecting an appropriate discount rate for the cash flows.

When using accounting data to derive the unlevered cash flows, one needs to take into consideration that income and cash flow statements are inconsistent with the cash flow separation rule described above, furthermore the terms used in accounting for the three components can be misleading. E.g. the accounting based operating profit entails interest payments and corporate taxes while ignoring the investments in the company's assets.

The following table summarizes some basic differences between the accounting treatment of such items and the interpretation they are given in the context of a valuation:

Valuation Input	Accounting Treatment	Valuation Definition
Capital Expenditures	Internal investments in tangible assets	Investment in long term assets, includes <ul style="list-style-type: none">• R&D expenses for tech firms• Acquisitions of other firms (cash as well as stock)• Increases in operating lease commitments
Depreciation and Amortization	Follows accounting rules	Tax-deductible depreciation in tax books (not reporting books)
Working Capital	Current assets – Current liabilities	Non-cash current assets – Non-debt current liabilities

Table 3 Potentially misleading accounting terminology in the context of a valuation⁶⁶

⁶⁴ Grinblatt and Titman (2002) 303

⁶⁵ Grinblatt and Titman (2002) 303

⁶⁶ Damodaran (n.a.) 7

Grinblatt suggests that the following adjustments be carried out in order to obtain the free cash flows from the EBIT (earnings before interest and tax):

EBIT* (1-tax rate)
+ depreciation and amortization
- change in working capital
- capital expenditures
+ sales of capital assets
+ realized capital gains
- realized capital losses
<hr/>
Free cash flow

Figure 4 Deriving the Free Cash Flows from the EBIT⁶⁷

This calculation scheme will thus be applied to derive for each year in the reference period the arising free cash flows.

3.2.1.2. *The treatment of equity holdings*

In his paper “*Dealing with Cash, Cross Holdings and Other Non-Operating Assets: Approaches and Implications*”, Damodaran discusses the accounting treatment and effects on firm value of equity holdings. Depending on the portion of firm value held, he defines three categories of holdings, each entailing a different accounting approach.

- If the holdings exceed 50% of overall ownership of the firm, the investment represents a majority active investment and is to be fully consolidated in the balance sheet of the investing firm.
- Otherwise, the investment falls under one of the categories
 - passive minority investment (holding represents less than 20% of overall firm ownership) or

⁶⁷ Grinblatt and Titman (2002) 305

- active minority investment (holding represents between 20% and 50% of the overall firm ownership).⁶⁸

As Hochtief only has minority investments in its portfolio, we will focus on the latter two categories, i.e. minority stakes.

Minority passive investments have an “*acquisition value, [that is] what the firm initially paid for.*” Depending on the purpose of the holding, Damodaran describes the possible reporting of the respective holding

- *“For investments held to maturity, the valuation is at historical cost or book value. Interest or dividends from this investment are shown in the income statement.*
- *For investments available for sale, the valuation is the market value, but the unrealized gains or losses are shown as part of the equity in the income sheet and not in the income statement.*
- *For trading investments, the valuation is at market value and the unrealized gains are shown in the income statement.”*⁶⁹

For the valuation of Hochtief’s project portfolio only investments held to maturity are actually relevant, as this represents an inherent characteristic of the concession model: the concessionaire “owns” stakes in the project company for a predefined period of time covering the construction phase, but typically extended well beyond the project delivery. The purpose of Hochtief’s holdings are neither trading them nor making them available for sale.

Damodaran suggests as a first hand solution for the valuation of companies with holdings to separately consider each holding and the stand-alone firm according to a sum-of-the-parts logic. A significant advantage in doing so arises when the “*parent and the subsidiaries have very different characteristics [in terms of] cost of capital, growth rates and reinvestment rates*”.⁷⁰ This is not the case for Hochtief Concessions, where the infrastructure projects are integrated in the business model.

Furthermore, Damodaran recommends the approach of a direct valuation of the consolidated firm in case of insufficient information or numerous holdings. Both criteria apply

⁶⁸ Damodaran (2005) 38

⁶⁹ Damodaran (2005) 38

⁷⁰ Damodaran (2005) 41

to Hochtief Concessions' portfolio containing over 30 projects, each organized as an independent private company.

In the context of a relative valuation, Damodaran recommends to use multiples based on earnings in order to estimate the value of a firm with cross-holdings. However, he maintains that firm value multiples based on revenues, operating income, EBITDA⁷¹ etc. do not function *"if all adjustments for minority investments occur below the operating income line"*.⁷²

Hochtief Concessions includes the net income from minority investments in the operating income, which speaks for the adequacy of using multiples calculated for industry peers.

The excerpt below from the annual report of Hochtief describes the underlying calculation of the operating earnings (EBITA):

Earnings from operating activities
+ Net income from participating interests
- Non-operating earnings
+ Interest credited
<hr/>
Operating earnings (EBITA)

Figure 5 Hochtief's calculation scheme for the operating earnings⁷³

The rationale of including the net income of minority investments in the EBIT of the firm is explained by Hochtief: *"the net income from participating interests contains all income and expense from equity stakes held for operational purposes and is thus an integral part of operating earnings"*.⁷⁴

⁷¹ Acronym for Earnings before Interest, Tax, Depreciation and Amortization

⁷² Damodaran (2005) 47

⁷³ Hochtief (2009) 188

⁷⁴ Hochtief (2009) 188

3.2.1.3. *Choosing the tax rate*

Damodaran makes a few suggestions concerning the choice of the tax rate to be applied when calculating and projecting the free cash flows to the firm. While advising against the use of the actually paid taxes, he points out that the choice needs to be made between effective tax rates and marginal tax rates. One possibility is to use the effective tax rate for the early forecast years and move towards a marginal tax rate in the later years. Grinblatt and Titman also propose the use of the marginal tax rate when interest is fully tax deductible.⁷⁵

According to P+P Pöllath + Partners, the headline tax rate on corporate income in Germany has three components

- An aggregate tax burden of 15%, introduced through a reform in 2008 and in force as of 2008
- The solidarity surcharge of 5.5% levied on the amount of corporate income tax
- A basic trade tax rate of 3.5% as of 2008, supplemented by the application of a multiplier fixed by the respective municipality that varies from a minimum rate of 200% (prescribed by the federal law) up to around 500%. Consequently, the effective trade tax rate ranges from 7% to around 17.5%.

The overall corporate income tax in Germany lies thus in the interval of 22.825% to 33.325%.⁷⁶

3.2.1.4. *Forecasting the FCF*

Making sensible future-looking assumptions is critical to valuing businesses; even slight variations of the growth rates in earnings and cash flows can have considerable impact on the outcome of a valuation. Thus the prerequisite to projecting growth is to identify its drivers, thoroughly analyze how their movements affect value and anticipate future development. We build on this topic with particular focus on earnings growth and its relation to the expected free cash flows.

⁷⁵ Grinblatt and Titman (2002) 464

⁷⁶ Global Legal Group (2009) 4

One starting point that comes to mind when modeling future growth is historical growth, provided that one can observe a certain “persistence” therein. In the search for empirical evidence of growth “persistence”, Damodaran reviews the results of relevant literature: most studies show that firms experiencing high growth over a five-year period are not more likely to carry on at the same pace over the next period than other firms⁷⁷; furthermore, firms with high growth tend to be the exception, the “*median of the earnings growth corresponding closely to the growth in the domestic product.*”⁷⁸

In the same line of argument, Damodaran uses empirical data of net income growth among publicly traded US firms to examine signs of sustained growth for two consecutive five-year periods. The results represented in the table below show no significant correlation between two different periods.

		2002- 2007					
1997- 2002	Growth Class	Lowest	2	3	4	5	Highest
	Lowest	13.73%	7.19%	7.52%	9.80%	13.07%	48.69%
	2	27.27%	6.74%	12.61%	15.84%	17.01%	20.53%
	3	15.23%	14.09%	27.27%	20.45%	11.14%	11.82%
	4	10.03%	14.09%	34.15%	21.14%	11.38%	9.21%
	5	9.09%	12.63%	24.24%	28.79%	12.12%	13.13%
	Highest	16.32%	10.88%	19.67%	22.18%	13.81%	17.15%

Table 4 Net Income Growth Persistence⁷⁹

Furthermore, Damodaran also maps correlations between two-five year growth rates for a variety of metrics for several firm size groups:

⁷⁷ Little (1962) in: Damodaran (2008) 17

⁷⁸ Chan, Karceski and Lakonishok (2003) in: Damodaran 17

⁷⁹ Damodaran (2008) 18

Growth Classes	Revenues	EBITDA	EBIT	Net income	EPS ⁸⁰
Smallest	0.078	-0.071	-0.018	0.000	-0.068
2	-0.063	0.117	-0.265	-0.314	-0.338
3	0.034	-0.257	-0.233	-0.200	-0.325
4	-0.022	-0.182	-0.302	-0.271	-0.355

Table 5 Correlations in growth for two consecutive five year periods⁸¹

The conclusion that arises by examining the table above is that accelerated growth will most probably not be sustained long-term as growth rates between two consecutive periods display very low correlations. Thus historical growth is rarely indicative of future firm growth; there must be other driving forces behind future growth.

Damodaran contends that earnings growth can be traced back to two factors: **investment in new assets**, which he coins as “*sustainable growth*” and **improving efficiency on existing assets**, termed as “*efficiency growth*”. In the context of a DCF enterprise valuation, these translate to the reinvestment rate and the growth rate of the after-tax operating income.⁸²

We set out from the basic equation for the value of the firm as the present value of the cash flows of the firm discounted at the cost of capital:⁸³

$$Value\ of\ firm = \sum_{t=1}^{\infty} \frac{E(FCFF_t)}{(1+k_c)^t}, \text{ with}$$

k_c - the average cost of capital

$FCFF$ - the free cash flows to the firm.

Rewriting the free cash flows in the reference period as

$$FCFF = After - tax\ Operating\ income_{current} - (Cap.Ex. - Depreciation) - \Delta Working\ capital$$

and the current reinvestment rate as

⁸⁰ Acronym for Earnings-per-Share

⁸¹ Damodaran (2008) 18

⁸² Damodaran (2008) 6

⁸³ Damodaran (2008) 7

$$\text{Reinvestment rate} = \frac{(\text{Cap. Ex.} - \text{Depreciation}) - \Delta \text{Working capital}}{\text{After - tax operating income}}$$

the first equation becomes:

$$\text{Value of firm} = \sum_{t=1}^{\infty} \frac{\text{After - tax Operating income}_{\text{current}} (1 - \text{Reinvestment rate}) (1 + g_{\text{at OI}})^t}{(1 + k_c)^t}$$

where $g_{\text{at OI}}$ represents the growth rate of the after - tax operating income.

Damodaran gives the following interpretation to the derived identity:

“A higher expected growth in after-tax operating income will also increase the value of a business, if you hold the reinvestment rate and cost of capital fixed. However, increasing growth by increasing reinvestment and/or raising the cost of capital may decrease the value of the firm.”⁸⁴

By defining as E_t the earnings, I_t as the investment at the start of period t and ROI_t as the return on that investment, the following identities hold

$$E_t = I_t ROI_t,$$

$$\Delta E = I_t ROI_t - I_{t-1} ROI_{t-1}.$$

Thus, the growth rate is

$$g = \frac{\Delta E}{E_{t-1}} = \frac{I_t ROI_t - I_{t-1} ROI_{t-1}}{E_{t-1}}.$$

Considering the scenario of constant ROI ($ROI_t = ROI_{t-1}$), the expression can be reduced to

$$g = ROI \frac{\Delta I}{E_{t-1}}$$

In other words, the growth in earnings will depend on the return on the investment earned by the firm and the “*proportion of the earnings*” that are channeled into new investments.⁸⁵

⁸⁴ Damodaran (2008) 7

⁸⁵ Damodaran (2008) 28

Departing from the simplifying assumption of constant return on investment, provided that the return on new investments does not differ from the return on existing investments in the same period, one can derive the identity

$$g = ROI \frac{\Delta I}{E_{t-1}} + \frac{ROI_t - ROI_{t-1}}{ROI_{t-1}}$$

In this case, the growth rate has an additional component given by the year-on-year increase of the return on investment.

The equations above hold true for both growth in operating income and in equity earnings. Hence, one can replace the generically defined “change in investment” $\frac{\Delta I}{E_{t-1}}$ and “return on investment” ROI with the corresponding metric. For operating income, the change in investment will translate to the reinvestment rate and return on investment to return on invested capital.⁸⁶

These equations will be used in Hochtief Concessions’ DCF valuation to derive the growth rate based on the forecasted reinvestment rates and returns on capital.

Growth perpetuities

Up until now the focus fell on assumptions and empirical facts documenting growth rates over the explicit forecast intervals. Further we look at possible approaches to quantify the growth and further key determinants beyond the clear-cut forecast periods.

When considering in the earnings forecasting a terminal stage characterized by a constant growth rate in perpetuity, the following equation can be applied to derive the present value of the free cash flows:

$$PV_t = \frac{FCF_{t+1}}{WACC - g_{stable}}$$

Where FCF_{t+1} are the expected free cash flows for the upcoming year and WACC the weighted average cost of capital.⁸⁷

⁸⁶ Damodaran (2008) 29

⁸⁷ Damodaran (2006) 182

The resulting present value of the cash flows is also referred to as the continuing value.⁸⁸ The period is set in the continuation of the explicit forecast periods, for which the growth pattern is specified on a detailed level, year-on-year.

There are two important considerations when computing the continuing value:⁸⁹

- First, the growth rate used in the model has to be less than or equal to the growth rate in the economy
- Second, the reinvestment rate and profitability levels used to estimate the free cash flows to the firm should be consistent with the stable growth rate chosen. The best way of enforcing this consistency is to derive the reinvestment rate from the stable growth rate and the return on capital that the firm can maintain in perpetuity, as it has been previously shown.

3.2.1.5. *Estimating the cost of capital*

While the cash flows to the firm used in the DCF valuation remain unaffected by the financing mix of debt and equity, the cost of capital depends on the capital structure choices the firm makes. When varying the debt-equity proportions and thereby the cost of capital, the company can create additional value. When the cost of capital drops, firm value rises and vice versa.

There are three basic inputs required to compute the cost of capital: the opportunity cost of equity, the after-tax opportunity cost of debt and the proportions of market value based debt and equity. As with increasing leverage the riskiness of the equity increases and the probability of default as well, both costs of equity and debt can be regarded as functions of the debt-equity ratio⁹⁰ – thus they need to be valued in tandem.

Copeland and Koller define a set of rules for a correct estimation of the weighted average cost of capital:⁹¹

- All sources of funds need to be considered, regardless of their nature – common stock, preferred stock, straight debt, subsidized debt, leases etc.

⁸⁸ Copeland, Koller and Murrin (2000) 267

⁸⁹ Damodaran (2006) 247

⁹⁰ Damodaran (2006) 277

⁹¹ Copeland, Koller and Murrin (2000) 203

- For consistency with the cash flow computation, it is necessary to use the after-tax cost of capital; by doing so, the tax shield effects are taken into account
- Looking at opportunity costs is a must, since each investor expects to be compensated for foregone investment opportunities
- Also market values and not book values have to be used, since market values are the better approximate of the underlying claim for each type of financing

Considering only two sources of capital, non-callable, non-convertible debt and equity, the weighted average cost of capital is given by the equation

$$WACC = k_d(1 - T_c)\frac{D}{V} + k_e\frac{E}{V}, \text{ with}$$

k_d the expected pre-tax market-based yield to maturity on non-callable, non-convertible debt,

T_c the marginal tax rate of the valued firm,

k_e the market-determined opportunity cost of equity capital,

D the market value of the non-callable, non-convertible debt and

E the market value of the firm's equity.⁹²

Theoretically, the correct approach is to use a different WACC for each year, reflecting the fluctuations of the factors determining it. It is however common practice to use one WACC for the entire forecast,⁹³ which is also applied in the DCF valuation of Hochtief Concessions.

3.2.1.6. *Setting the capital structure*

The required inputs for deriving the capital structure represent the market based values of the firm's financing mix. Copeland, Koller and Murrin (2000) suggest the use of target capital structures instead of current ones for the following reasons:

- At any point in time, the capital structure may not be the desired capital structure, but a temporary result of financing decisions

⁹² Copeland, Koller and Murrin (2000) 203

⁹³ Copeland, Koller and Murrin (2000) 203

- The fluctuations of market values of securities can also affect the leverage level, thus the observable capital structures might deviate from the intended capital mix
- Using a target capital structure eliminates the circularity dilemma in determining the weighted average cost of capital. The circularity is given by the fact that both the debt-equity ratio and the market value of equity are required inputs in the estimation of the other one's value.⁹⁴

Two factors need to be taken into account when determining the target capital structure:

- the leverage of similar companies and
- the current market based leverage as a result of management's policy towards financing the business.⁹⁵

Looking at the leverage of similar companies when deriving the capital structure of a firm serves two purposes:

- First, one can conclude whether the firm's leverage nears the industry averages or if it is an outlier, the product of a rather unusual financial policy.
- Second, it might be the case that there is not sufficient information available to enable a direct estimation of the company's financing mix, e.g. for privately held firms, thinly traded firms, subsidiaries of a publicly held company. The way out is to use comparables to assess the target capital structure.⁹⁶

In determining the current weights of the different types of financing, one should employ, where possible, the current prices at which they trade on the market. In case the respective claims are not traded, the best estimates need to be developed. E.g. for debt, the market value can be neared by considering all debt contracts, assessing for each the credit quality based on ratings, deriving the yield to maturity for which it would trade by referencing securities with equivalent coupons, maturities and ratings and finally computing the "*present value of the stream of financing payments, using the yield to maturity as the discount rate.*"⁹⁷

⁹⁴ Copeland, Koller and Murrin (2000) 249

⁹⁵ Copeland, Koller and Murrin (2000) 205

⁹⁶ Copeland, Koller and Murrin (2000) 209

⁹⁷ Copeland, Koller and Murrin (2000)

3.2.1.7. Computing the cost of equity

There are several possibilities of deriving the cost of equity of the firm, among which the CAPM⁹⁸, “a model of the relation of risk to expected return”:

$$k_e = r_f + \beta_{levered} \cdot \text{risk premium}$$

where r_f is the risk-free rate, k_e the cost of equity and $\beta_{levered}$ the levered equity beta.⁹⁹ We detail in the next subsections how to estimate each parameter required for this equation.

3.2.1.8. Deriving the equity betas

When assuming a constant level of debt over time and a sustained profitability and creditworthiness, the levered beta or equity beta can be further derived by unlevering the asset beta as follows

$$\beta_{levered} = \beta_{unlevered} \cdot \left[1 + (1 - t) \frac{D}{E}\right]$$

Thus the levered beta is equal to the unlevered beta plus a markup directly proportional to the debt-equity ratio and inversely proportional to the corporate tax rate.¹⁰⁰

The unlevered beta reflects the business risk and the operating leverage applied, thus can be derived by looking at industry peers of the company in question.¹⁰¹ In choosing the beta of subsidiaries, as in our case, one needs to be cautious and extend the search for comparables beyond the parent company to potential lookalikes within the industry. Using a firm's beta (cost of capital) to evaluate certain subsidiaries is usually not a good choice mainly for 3 reasons: different business risk, different firm age and different growth opportunities as perceived by the markets. If all firm subsidiaries are identical, borrowing the beta of the parent could work well, in most cases, however, using it could bias the entire valuation, especially if the company is diversified across several industries. Furthermore, differences could arise from the fact that newly created divisions might have a higher operational risk than other mature divisions of the firm - this could be reflected in higher investment levels, different mix of fixed and variable costs or “*more options associated with*

⁹⁸ Acronym for the Capital Asset Pricing Model, developed by W. Sharpe (1964) and John Lintner (1965)

⁹⁹ Grinblatt and Titman (2002) 131

¹⁰⁰ Grinblatt and Titman (2002) 465

¹⁰¹ Damodaran (2006) 284

it than the firm as a whole." ¹⁰² It might also be that a subsidiary carries less business risk than the parent company or it might be more highly leveraged. This would automatically require that a lower cost of capital be applied to the subsidiary than to the entire group.

An essential argument to be made in conjunction with this topic is that a firm's market value is determined not only by its existing assets, but also its future growth prospects as assumed by the markets, even if concrete growth opportunities are not yet "on the drawing board." Grinblatt and Titman (2002) explain that these growth opportunities, other said a "firm's perceived ability to develop new profitable projects" are linked with high betas. When choosing comparison firms in the context of a valuation, the growth options should be an important decision factor alongside with the nature of the business.

*"There is no good rule of thumb for adjusting the risk of comparison firms for growth options. Usually, but not always, growing franchises like Starbucks, promising biotech and internet firms [...]—which have high price-earnings ratios—or firms with high ratios of market value of equity to book value of equity have valuable growth options. However, the systematic risk of these growth options, which is the risk that is relevant for discounting, depends on how strongly the growth is tied to the health of the economy. The stronger the tie to the health of the economy, the riskier the growth option."*¹⁰³

It is a known fact that the construction industry is cyclical. This transpires also from the relatively high equity betas of the firms active in this sector. The concessions business, however, shows a considerably lower sensitivity to market movements, at relatively similar leverages. In the light of the arguments above, it might be more adequate to use the concessions sector as a reference sector for the business risk of Hochtief's subsidiary.

¹⁰² Grinblatt and Titman (2002) 391

¹⁰³ Grinblatt and Titman (2002) 392

3.2.1.9. Choosing the riskfree rate

The building block in estimating the returns of risky assets is the riskfree rate.¹⁰⁴ Copeland and Koller define it as

*“the return on a security or portfolio of securities that has no default risk whatsoever and is completely uncorrelated with returns on anything else in the economy.”*¹⁰⁵

Damodaran formulates two prerequisites for an asset to qualify as riskfree:

- *“No default risk, which generally implies that the security has to be issued by a government.”*
- *There can be no uncertainty about reinvestment rates, which implies that there are no intermediate cash flows.”*¹⁰⁶

For short-term Treasury bill rates, Damodaran shows that even if they have virtually zero default risk, the second condition does not hold, since the return of a treasury bill is unknown. For a long term horizon, the same reinvestment uncertainty issue arises if the bond pays a coupon.

A second aspect is the necessity to match the duration of the riskfree rate to that of the cash flows. As cash flow forecasting periods are long term, Damodaran recommends the use of the 10-year default free government bond as a proxy for the riskfree rate.¹⁰⁷

3.2.1.10. Finding the market risk premium

It is general consensus and also intuition that riskier assets should earn a premium over the riskfree rate in order to compensate the holders for the risk they expose themselves to.¹⁰⁸

The risk premium attached to an investment in the market portfolio is determined by several factors:

- **Investor risk aversion:** with rising risk aversion, the premium required for channeling funds away from the riskfree asset into the risky one should increase too.

¹⁰⁴ Damodaran (2006) 35

¹⁰⁵ Copeland, Koller and Murrin (2000) 266 f

¹⁰⁶ Damodaran (2006) 45

¹⁰⁷ Damodaran (2006) 45 f

¹⁰⁸ Damodaran (Sept 2008) 2

To a certain extent, this risk aversion is inborn. However a certain portion is induced by the macroeconomic environment. It has been observed that investors have a higher risk appetite when the economies are thriving and on the contrary, they require higher risk premiums in recessions, after large market drops.¹⁰⁹

- **Perceptions of macroeconomic risk:** the health and stability of the economy in terms of inflation and volatility of economic growth also influences how much risk is attributed to investing in the equity markets.
- **Information uncertainty:** there is evidence that investors might demand larger risk premiums in markets dominated by imprecise and also insufficient information
- **Liquidity:** market illiquidity generates additional risk to investors, who become forced to pay large transaction costs *“to liquidate equity positions”*. Researchers have shown that the illiquidity effect accounts for a high portion of the equity risk premium and varies not only across markets but also through time, being connected to economic cycles.¹¹⁰

There are three basic approaches to estimating equity risk premiums:¹¹¹

- *“the survey approach, where investors or managers are asked to provide estimates of the equity risk premium for the future*
- *the implied approach, where future cash flows or observed bond default spreads are used to estimate the current equity risk premium.”*¹¹² In other words current equity prices or risk premiums are estimated by looking at the behavior of non-equity markets
- *“the historical return approach, where the premium is based upon how well equities have done in the past.”* This represents also the most common approach to estimating equity risk premiums.

As the results yielded by each approach vary considerably, the question arises on which one of the models provides the best estimate. Damodaran argues that *“the choice will depend*

¹⁰⁹ Damodaran (Sept 2008) 72

¹¹⁰ Damodaran (Feb 2010) 11

¹¹¹ Damodaran (Feb 2010) 85

¹¹² Damodaran (Feb 2010) 85

upon the forecast period, whether you believe markets are efficient and whether you are required to be market neutral in your analysis.”¹¹³

Accordingly, he attributes the highest explanatory power to the implied approach. If one believes in the efficiency of markets, the choice needs to be made between the historical return and the implied premium approach. Conversely, non-believers should resort to the numbers delivered by the survey approach.

3.2.1.11. *Estimating the cost of debt*

The cost of debt for a firm is a function of the firm's bankruptcy costs and probability of defaulting. The higher the leverage of a firm, the higher the default risk and the return that the debt-holders require as compensation for their investment.¹¹⁴

One approach to measuring the default risk is by using the credit rating. For investment-grade debt, the risk of bankruptcy is low and the yield to maturity might be a good estimate of the opportunity cost. However, for less than investment-grade debt, the promised yield to maturity is no longer a good proxy for the firm's cost of debt. It is necessary to use instead the expected yield to maturity.¹¹⁵

Grinblatt and Titman reiterate this idea:

“Using the promised yield times one minus the corporate tax rate as the cost of debt might work for relatively risk-free debt. However, this after-tax yield is generally not the cost of debt capital for highly levered firms. For firms with risky debt, the promised return on debt is larger than the debt's expected return due to the possibility of default. Therefore expected rather than promised returns should be input for the WACC.”¹¹⁶

Damodaran proposes three steps in estimating the cost of debt based on credit ratings.

- First, estimate “a firm's dollar debt” and interest expenses at a given leverage

¹¹³ Damodaran (Feb 2010) 85

¹¹⁴ Damodaran (2006) 255

¹¹⁵ Copeland, Koller and Murrin (2000) 210

¹¹⁶ Grinblatt and Titman (2002) 477

- “Second, derive the financial ratio that measures default risk and use the ratio to estimate a rating for the firm; again, as firms borrow more, this rating will decline.”¹¹⁷
- Third, add to the risk free rate a default spread corresponding to the determined rating and obtain as a result the pre-tax cost of debt. Apply the marginal tax rate to the pre-tax cost to arrive at the after-tax cost of debt.¹¹⁸

3.2.1.12. Getting from Firm Value to Equity Value

It was mentioned in the first subsection of the current chapter that the value of the firm can be broken down into equity and non-equity claims. Before proceeding to disentangling the two in order to arrive at the value of equity, it is necessary to incorporate the value of the non-operating assets in the total firm value.

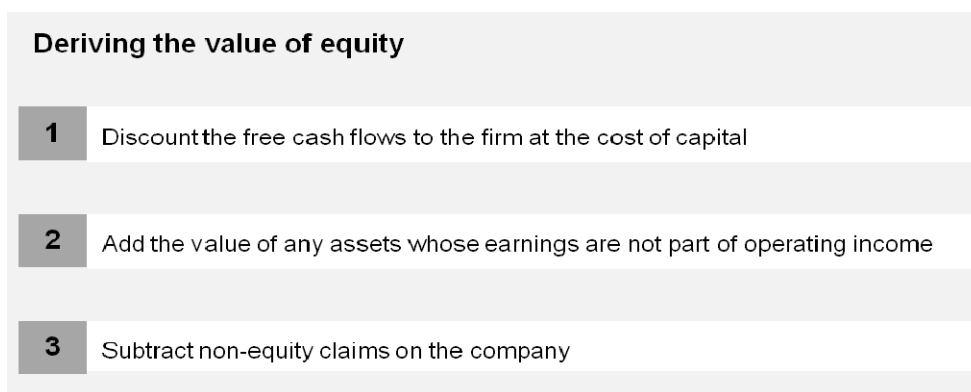


Figure 6 Steps to deriving the value of equity¹¹⁹

By non-operating assets we understand all assets of a firm that are not considered as a constituent of operating income, e.g. cash and marketable securities, operating income from minority holdings or own unutilized assets. As they are excluded from the earnings and free cash flow computations, these assets need to be added on top of the value of the operating assets.

The next step is then to consider the non-equity claims against the company, ranging from interest bearing debt to unfunded pension plans, health care obligations to lawsuits that might result in large payouts. These should all be netted out against firm value to arrive at

¹¹⁷ Damodaran (2006) 273

¹¹⁸ Damodaran (2006) 273

¹¹⁹ Damodaran (2006) 241

equity value. In summary, the computations required to get from operating asset value to equity value are presented in the table above.¹²⁰

3.2.2. The Relative Valuation

The relative valuation method has become increasingly popular in practice, largely due to its fairly simple structure, making it is less time-consuming and easier to communicate to external stakeholders than a fundamental valuation. The idea behind relative valuation or “*ratio comparison*”, as Grinblatt and Titman coin the approach, is to infer the value of an asset based on how other similar ones are priced by the markets.¹²¹ The implicit assumption is that the markets attach “*similar prices to similar assets*”.¹²²

The first step in a relative company valuation is to identify the comparable traded firms – the selection needs to be made carefully; it does not suffice that the comparables are within the same industry as the firm subject to the valuation; one needs to consider all factors that affect firm value: underlying cash flows, risk and growth opportunities.¹²³

Secondly one needs to decide upon a variable that is considered to be indicative of the asset quality - practitioners frequently use cash flows, earnings (EBITDA, EBIT), book values, replacement values or other sector-specific variables.¹²⁴

The third step entails scaling the values of the comparables to the variable chosen and deriving a mean value – the result is a market value multiple which Damodaran refers to as a “*standardized price*”.¹²⁵

Finally, the value of the firm in scope is determined by applying the multiple to the company’s figure for the given variable.

Damodaran makes four recommendations in respect to performing a relative valuation:

¹²⁰ Damodaran (2006) 241

¹²¹ Damodaran (2006) 283

¹²² Cornell (1993) in: Gemeinböck (1999) 56

¹²³ Damodaran (2006) 309

¹²⁴ Grinblatt and Titman (2002) 443

¹²⁵ Gemeinböck (1999) 52

- controlling for differences that may persist across the comparable firms; there are several techniques serving this purpose which Damodaran illustrates, ranging from subjective adjustments to modifying multiples or statistical techniques.¹²⁶
- *“ensuring that the multiple is defined consistently and that it is measured uniformly across the firms being compared*
- *examining the cross sectional distribution of the multiple, not only across firms in the sector being analyzed but also across the entire market..”¹²⁷*

3.3. Outline of the valuation approach and results

3.3.1. The Discounted Cash Flow Valuation

Following the guidelines described in the previous sections, I performed a discounted cash flow valuation with the aim of deriving the fair value of Hochtief Concession’s equity.

- **The free cash flow calculation and projection**

Using the financial and accounting data mainly contained in Hochtief’s annual reports respectively published by the German Federal Ministry of Justice, I computed in a first step the free cash flows for the reference year 2009.

I start by adjusting the reported earnings before interest, tax and amortization for 2009 in order to obtain the clean EBIT figure. The EBIT derived also includes the net income from participating interests, as this is to be regarded in the case of Hochtief as a main component of the operating income (see chapter 3.2.1.2 *The treatment of equity holdings*).

By applying in the reference year the effective tax rate and moving on to a marginal tax rate starting with the first forecast year,¹²⁸ I arrived at the after-tax operating income (NOPLAT), which I further adjusted by adding back depreciation and amortization as well as the yearly change in working capital.

¹²⁶ Damodaran (2006) 309

¹²⁷ Damodaran (2006) 302

¹²⁸ Details on the German corporate income tax were provided in section 3.2.1.3 *Choosing the tax rate*.

As a last step I subtracted the gross capital expenditure in order to obtain the Free Cash Flows to the Firm (see Figure 4 Deriving the Free Cash Flows from the EBIT).

As their accounting treatment substantially differs from the interpretation they are given in the context of a valuation, R&D expenses and operating leases require further corrections of the earning structure. For operating leases, it is necessary to add back the interest paid on the lease and subtract the yearly depreciation, whereas R&D expenses are to be added back, capitalized and deducted from the earnings in the form of a the yearly amortization. These actions are however not applicable in this context, since Hochtief reports no operating leases for its concessions subsidiary and the R&D expenses are not quantified on the income statement.

The resulting free cash flow for the reference year 2009 is summarized in the table below:

Free Cash Flow Calculation	2009
EBIT (Mil EUR)	113.9
Marginal tax rate (%)	33.325%
NOPLAT=EBIT(1-tax rate)	75.943
+Depreciation and amortization (Mil EUR)	1.038
- Change in Working Capital (Mil EUR)	5.304
- Gross Investment (Mil EUR)	49.00
- Adjustments (R&D, operating leases)	0
Free Cash Flows	22.676

Table 6 Free Cash Flow Calculation for the reference year

I also computed the current reinvestment rates and the return on capital employed¹²⁹ using the after-tax operating income as described in the previous sections.

¹²⁹ The return on invested capital is equal to the return on net assets

Key figures	2009
Growth rate	15.17%
Reinvestment rate	25.20%
Return on capital employed	6.04%
Growth rate NOPLAT	-20.01%
Sales (Mil EUR)	378.9
WC (Mil EUR)	40.277

Table 7 Historical key figures for the reference year

- **The cash flow forecast**

Based on the considerations on growth drivers presented in chapter 3.2.1.4, I constructed the cash flow forecast (see Table 6 Free Cash Flow Calculation for the reference year) using three growth stages, respectively two 5-year periods and a growth perpetuity, as follows:

- A five year period of accelerated growth**, characterized by both profitability enhancements and reinvestment increases, bringing the firm in the final year to reach the industry average return on capital employed; as the largest portion of the earnings is represented by the net income from minority equity holdings in the airport project companies, I considered the return on capital employed of airport companies as a reference value, which I compared against the returns of comparable companies in the construction and engineering sector.
- A five year period of stable profitability at industry average**; the reinvestment rate and the return on capital are maintained at constant levels throughout this 5 year stage.
- A cash flow perpetuity** starting in the eleventh year of the forecasting timeframe, defined by a conservative growth rate, in line with the average growth rates in the relevant industries and with the expected GDP¹³⁰ nominal growth for Germany. The

¹³⁰ Acronym for Gross Domestic Product

relevant macroeconomic indicators - the real GDP growth rate and the inflation forecasted for Germany - were obtained from the *EIU countrydata* database.¹³¹

I maintained a stable marginal tax rate, with the implicit assumption that the level of profitability will also be sustained throughout the period.

Depreciation and amortization was increased year on year as well in order to be consistent with the reinvestment policy. The depreciation and amortization is assumed to be fully tax deductible.

Considering the working capital as a stable ratio of the generated revenues,¹³² I estimated the yearly change in working capital. I defined the growth pattern of the revenues by taking into account three aspects: the historical revenue growth, the average expected revenue growth in the airport and construction & engineering sectors and the development of EBIT.

The gross capital expenditure was computed using the relation described in chapter 3.2.1.4 between gross investment, depreciation and amortization and the change in working capital. As Damodaran shows, this hinders a disconnection between the assumed reinvestment rate and the forecasted level of investment.¹³³

- **The weighted average cost of capital**

I further moved on to determining Hochtief's weighted average cost of capital (see Table 9 Computation of the present value of the free cash flows).

As Hochtief Concessions is not a public company, the information on the market value based debt and equity as well as their expected returns is absent.

Hence the target capital structure was set by looking at comparable firms in the construction and engineering industry that adopted the concessions model as well;¹³⁴ the selected market-debt-to-enterprise-value ratio of 52.12% represents the observed capital structure of Hochtief's competitor Vinci, which through its portfolio structure (airports minority holdings) is

¹³¹ Data obtained from the "EIU countrydata" Database for macroeconomic indicators and forecasts

¹³² The average Working-Capital-to-Sales Ratios per industry obtained from Prof. Damodaran's Website (Damodaran Online)

¹³³ The calculation steps obtained from Prof. Damodaran's Website (Damodaran Online)

¹³⁴ Detailed 2009 company information for European firms obtained from Prof. Damodaran's Website (Damodaran Online)

perceived to draw nearest to Hochtief Concessions. Further comparable firms (Bilfinger Berger, ACS, Bouygues) also are characterized by similar debt/equity ratios, while Damodaran estimates the industry average at 52.158% for construction and engineering firms. The current leverage ratio of Hochtief is indicated at 46.17%. The airport providers seem to have a lower leverage, ranging from 8% to 54.6% (Fraport AG), whereas the leverage of the road concessions companies fall in the interval 27.2% to 64.5%.

In estimating the equity beta, I started from the assumption that the business risk of Hochtief Concessions is best reflected by the airport sector - since the airport holdings make up the largest portion of Hochtief Concessions' income, the incoming cash flows are strictly interlinked with the performance of the airport companies in which it invested. Hochtief makes use of this approach too, as it resorts to expected developments in the airport traffic to forecast its future growth.

As the construction sector is highly cyclical, for the companies active in this sector we observe high betas, which might not apply to their concessions subsidiaries as well. These most probably have less volatile earnings due to the long-term nature of the concessions commitments and the reliance mainly on the health of other sectors.

I thus selected a listed airport company similar to the ones in Hochtief's portfolio (Fraport AG¹³⁵) and unlevered its beta to arrive at the asset beta of Hochtief Concessions. Using the target capital structure set as described above, I performed the relevering operation in order to arrive at the equity beta.

Equity beta comparable (Fraport AG)	1.12
Unlevered beta	0.701
Equity Beta Hochtief Concessions	1.066

Figure 7 Estimation of the levered beta of Hochtief Concessions

¹³⁵ Fraport AG "operates and manages the Frankfurt hub and is active on four continents through investments and subsidiaries. Operates airports as concessionaire." Source: "<http://www.fraport.com>"

Using the implied equity premium as per Q4 2009 ¹³⁶ and the yield of the long term government bond in Germany as the riskfree rate,¹³⁷ I plugged in the numbers in the CAPM equation to obtain the cost of equity.

Given the stable level of profitability and creditworthiness, the debt was assumed to be riskfree. Thus the expected yield was conservatively chosen as the upper bound of the borrowing costs indicated by Hochtief of 8.10%¹³⁸. Damodaran estimates the expected yield per industry by adding a default spread to the riskfree rate. He estimates a cost of debt of 8% for the air transport companies and 7% for the heavy construction sector.

As all components are expected to remain fairly stable, the weighted average cost of capital computed by using the formula introduced in chapter 3.2.1.5 was also kept constant year on year.

- **Computation of the equity value**

The present value of the enterprise¹³⁹ results by adding to the continuing value the cash flows discounted over the 10 year period at the weighted average cost of capital.

By subtracting the net financial debt¹⁴⁰ I arrived at the market value of equity of EUR 702.97 mil. (see Table 10 Deriving the share price for Hochtief Concessions)

The number of shares by which to divide the value of equity was inferred from the information made public by the company during the IPO preparation and crosschecked against the data published by the German Federal Ministry of Justice on its online publication platform for companies (Elektronischer Bundesanzeiger). Accounting also for the fact that Hochtief announced to convert debt claims in value of EUR 722 Mil in equity effective with the IPO, the share price obtained is of **EUR 28.50**, which falls close to the upper bound of the price interval set by Hochtief for the IPO (EUR 24 to 29).

¹³⁶ Implied equity premium provided on Prof. Damodaran's Website (Damodaran Online)

¹³⁷ Long-term government bonds obtained from Bloomberg. "<http://www.bloomberg.com>"

¹³⁸ Hochtief (2009) 156

¹³⁹ "Enterprise value" refers to the value of operating assets. "Firm value" includes additionally the non-operating assets, in our case, excess cash

¹⁴⁰ Market value of debt netted of excess cash and marketable securities

Free Cash Flow Projection	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	TV
	Reference Year	High Growth	High Growth	High Growth	High Growth	High Growth	Moderate Stable Growth	Moderate Stable Growth	Moderate Stable Growth	Moderate Stable Growth	Moderate Stable Growth	Growth in perpetuity
Sales growth rate	15.17%	15.00%	15.00%	15.00%	15.00%	15.00%	12.00%	12.00%	12.00%	12.00%	12.00%	6.00%
Reinvestment rate	25.20%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%
ROC	6.04%	6.83%	7.62%	8.42%	9.21%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	5.00%
Growth rate NOPLAT	-20.01%	17.22%	16.18%	15.44%	14.94%	14.61%	6.00%	6.00%	6.00%	6.00%	6.00%	3.00%
Sales (Mil. EUR)	378.900	435.735	501.095	576.260	662.698	762.103	853.556	955.982	1070.700	1199.184	1343.086	1423.671
Working Capital (Mil. EUR)	40.277	46.319	53.266	61.256	70.445	81.012	90.733	101.621	113.815	127.473	142.770	151.336
EBIT (Mil. EUR)	113.900	136.170	158.197	182.630	209.918	240.579	255.014	270.315	286.534	303.726	321.949	331.608
Marginal tax rate	32.000%	33.325%	33.325%	33.325%	33.325%	33.325%	33.325%	33.325%	33.325%	33.325%	33.325%	33.325%
NOPLAT (Mil. EUR)	77.452	90.792	105.478	121.769	139.963	160.406	170.031	180.232	191.046	202.509	214.660	221.100
Depr. & amortiz. (Mil. EUR)	1.038	1.194	1.387	1.601	1.840	2.109	2.236	2.370	2.512	2.663	2.822	2.907
Change i Working Capital (Mil. EUR)	5.304	6.042	6.948	7.990	9.188	10.567	9.721	10.888	12.195	13.658	15.297	8.566
Gross Investment (Mil. EUR)	49.000	61.710	71.621	82.652	95.006	108.919	113.975	121.397	129.334	137.826	146.915	144.133
FCF	24.186	36.317	42.191	48.707	55.985	64.163	68.012	72.093	76.419	81.004	85.864	88.440

Table 8 Free Cash Flow Projection for Hochtief Concessions

Present value of cash flows	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
FCF (EUR mil)	36.317	42.191	48.707	55.985	64.163	68.012	72.093	76.419	81.004	85.864	88.440
Target capital structure (MV(D)/MV(D+E))	52.12%	52.12%	52.12%	52.12%	52.12%	52.12%	52.12%	52.12%	52.12%	52.12%	52.12%
Equity Beta	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066	1.066
Riskfree rate	3.41%	3.41%	3.41%	3.41%	3.41%	3.41%	3.41%	3.41%	3.41%	3.41%	3.41%
Market risk premium	5.30%	5.30%	5.30%	5.30%	5.30%	5.30%	5.30%	5.30%	5.30%	5.30%	5.30%
Cost of equity	9.0623%	9.0623%	9.0623%	9.0623%	9.0623%	9.0623%	9.0623%	9.0623%	9.0623%	9.0623%	9.0623%
Cost of debt	8.10%	8.10%	8.10%	8.10%	8.10%	8.10%	8.10%	8.10%	8.10%	8.10%	8.10%
WACC	7.15%	7.15%	7.15%	7.15%	7.15%	7.15%	7.15%	7.15%	7.15%	7.15%	7.15%
Disc. cash flows (EUR mil)	33.892	36.746	39.589	42.466	45.420	44.930	44.447	43.968	43.495	43.026	
Terminal Value (EUR mil)											1066.888

Table 9 Computation of the present value of the free cash flows

Present value of Enterprise (EUR mil)	1484.866
-Net Market Value of Debt (EUR mil)	781.9
= Current equity value (EUR mil)	702.966
+Loans to be converted in equity at IPO (EUR mil)	722
/Number of shares (mil.)	50
=Share price (EUR)	28.50

Table 10 Deriving the share price for Hochtief Concessions

3.3.2. The Relative Valuation

Grinblatt and Titman note that

“since earnings are often smoothed proxies for long-run cash flows [... practitioners] consider a multiple of [...]annual earnings observed at comparison firms when valuing the initial public offering of a company’s common stock.”¹⁴¹

Consistent with Grinblatt and Titman’s suggestion, I opt for an EBIT based relative valuation. EBIT was preferred to the net income as it is not affected by taxation and financing policies.

In screening the relevant industries (construction and engineering, airport operators and transportation concession sector) for similar companies, I considered the three main criteria as defined by Damodaran (see section 3.2.2):

- **cash flows:** equity minority holdings and project development need to be an important source of cash flows
- **risk:** the firm needs to operate under a concessions contractual form; the portfolio needs to contain airport and infrastructure holdings; the financial leverage needs to be similar to the one of Hochtief Concessions
- **growth opportunities:** expected growth rates in earnings need to be comparable

¹⁴¹ Grinblatt and Titman (2002) 443

Out of the entire pool of firms available in the 3 industries, I selected 4 firms that best fit the above described criteria.

Company Name	Industry Group	Market Cap (in US \$)	Firm Value (in US \$)	Market Debt to capital	Beta	EV/EBIT	Expected growth rate EPS (5 years)	Return on Capital
Strabag SE (WBAG:STR)	Engineering	\$3,373.30	\$5,775.10	41.59%	1.82	12.21	15.00%	6.28%
Vinci SA (ENXTPA:DG)	Engineering	\$28,280.00	\$59,076.10	52.13%	1.19	11.65	2.37%	12.78%
Actividades de Construcción y Servicios, S.A. (CATS:ACS)	Engineering	\$15,657.70	\$35,967.70	56.47%	0.68	18.19	4.30%	8.70%
Fomento de Construcciones y Contratas, S.A. (CATS:FCC)	Engineering	\$5,119.60	\$18,515.50	72.35%	0.88	13.14	10.00%	6.73%
Median				54.30%	1.04	12.67	7.15%	7.71%
Standard deviation						2.99		

Table 11 Comparables selected for the relative valuation¹⁴²

The median of the Enterprise-Value-to-EBIT ratio for the comparable firms lies at 12.67. Interestingly, the mean across all industries¹⁴³ (see table below) is of 12.53, whereas the mean of the engineering firms lies at 12.21.

By applying the multiple of the comparables class to the EBIT of Hochtief Concessions, I derived an enterprise value of EUR mil. 1444.38. After subtracting the net financial debt, we arrive at a share price of **EUR 27.69**.

¹⁴² Detailed 2009 company information for European firms obtained from Prof. Damodaran's Website (Damodaran Online)

¹⁴³ Detailed 2009 company information for European firms obtained from Prof. Damodaran's Website (Damodaran Online)

Relative Valuation		
	Enterprise value to EBIT multiples 2009	
	Std	Mean
All Industries (3166 firms)	452.34	12.53
Engineering (113 firms)	50.22	12.21
Class of comparables	2.99	12.67
EBIT in 2009 (EUR mil.)	113.9	
Enterprise value (EUR mil.)	1444.38	
- Debt outstanding (EUR mil.)	781.90	
=Value of Equity (EUR mil.)	662.48	
/ Nr of shares (mil)	50.00	
Value per share (EUR)	27.69	

Table 12 EBIT based relative valuation of Hochtief Concessions¹⁴⁴

3.3.3.A critical standpoint to the valuation performed

One of the main difficulties in performing a valuation of Hochtief Concessions resided in the scarcity of information available to the public about the company and its financial performance. Being a subsidiary of Hochtief AG, the financial results of Hochtief Concessions are not reported separately, but are reflected only in a consolidated form on group level. Nevertheless, in its annual reports, Hochtief gives an overview of each segment's performance and sector-related financial indicators which provided the basis for further analysis. Additional sources of information constituted the financial statements made available by the Federal Ministry of Justice (elektronischer bundesanzeiger) on Hochtief's main subsidiary (Hochtief Airport GmbH), as well as public releases and analyst coverage

¹⁴⁴ Calculation scheme adapted from Prof. Damodaran's Website (Damodaran Online)

surrounding the initial public offering plans, which disclosed the estimated value of the assets in place and the terms of the desired IPO.

As Hochtief Concessions is not a traded company, further key characteristics that serve as input to a market based valuation - such as the equity beta, the capital structure or the market value of debt – were unavailable. One workaround was to observe other similar companies in terms of business model, growth opportunities and financing mix and make sensible assumptions on how these relate to the firm in scope of the valuation.

Furthermore, the business model of Hochtief Concessions displays a high level of complexity due to the numerous project companies in which it holds minority stakes. Ideally, each of the equity holdings in Hochtief's portfolio and the stand-alone firm should have been separately valued and added up, according to a sum-of-the-parts logic. Given the insufficient information on the project companies and the very large number of stakes (31 as per November 2009), this approach was not considered feasible in the context of the current thesis. Instead, the company was valued as a whole, which must be a rational assumption since the asset portfolio is not diversified: consists mainly of airport and road infrastructure holdings.

Additionally, it is necessary to note that the applied model, just like any other discounted cash flow models, is very sensitive to variations in the parameters used as inputs - such as the macroeconomic conditions, the return on capital or the opportunity cost of capital.

For comparison purposes, I present how changing some of these numbers affects the share price:

- By increasing the return on capital with one percentage point to 11%, we derive a share price of EUR 32.46, which translates to an increase of 13.9% from the initial price of EUR 28.5
- Using an equity beta of 1.2 instead of 1.066 we arrive at a price of EUR 26.13, which lies 8.3% below the initial estimation
- If applying a riskfree rate of 4% instead of 3.41%, the prices decreases by EUR 2 to EUR 26.5

As a final point, the accuracy of the relative valuation is contingent on how well the selected comparables proxy for the firm to be valued. Clearly there can be no identical companies on the market, but understanding the differences and controlling for them might help to

considerably reduce the bias they feed into the valuation. Also the “fact that multiples reflect the market mood”¹⁴⁵ of the moment might translate to an implicit mispricing of all assets.

The overall message of the current subsection is that the results of the performed valuation are to be consumed with caution. Inferences and interpretations are possible only with strict reference to the valuation framework applied - in other words by keeping in mind that the input data and methodology used as well as the assumptions formulated are decisive for a valuation.

¹⁴⁵ Damodaran (2006) 287

4. Event study analysis

The focus of the current chapter is the event study conceived to measure the variations in Hochtief's stock returns triggered by the IPO announcements of its concessions subsidiary. Following a very brief theoretical introduction on event studies and their employment in the area of corporate finance, I describe the methodology used in the event study and the results obtained. By building on the output of a test statistics, I subsequently give an interpretation of the outcome of the analysis and shortly discuss possible biases.

4.1. Introduction

Event studies have been extensively used in corporate finance to establish how various corporate decisions or events affect the market value of the firms' equity. Setting out from the assumption that markets are rational and current asset prices reflect all public available information, event study analysis attempts to quantify the "firm specific" idiosyncratic stock price reaction induced by announcements containing information relevant to the future development of the firm.¹⁴⁶

An event study involves in a first step the estimation of the expected return around the event of interest – also referred to as a normal return - followed by the computation of the abnormal return, defined as the difference between the observed returns and the expected returns. The abnormal returns are typically aggregated over a time period considered sufficient and necessary to capture the full effect of the announcement - varying from 1 day (the announcement date) to 3, 5 or 41 days centered on the announcement date. As a final step, it is necessary to show that the abnormal returns are statistically significant. If one considers that stock returns are "*jointly multivariate normal and independently and identically distributed through time*"; rejecting the null hypothesis that the given event has no impact on the behavior of security returns translates to showing "*that there is either a mean effect or a variance effect*"¹⁴⁷

¹⁴⁶ Campbell (1997) 152

¹⁴⁷ Campbell (1997) 149

Initially introduced by Dolley in 1933 to study the effect of stock splits on equity value, the basic framework for the event study analysis was developed to the form that is essentially in use today by Ball and Brown (1968) and Fama, Fisher, Jensen and Roll (1969).¹⁴⁸ Currently event studies dominate the empirical research in the area of corporate finance, one particular field of interest being the price effects of financing decisions - as the case of the event study described in this paper is. In this regard, researchers have found that firms tapping the equity markets for funds typically experience a drop in the stock price; the two—day average abnormal returns of equity issue announcements have been quantified to different orders of magnitude, e.g. Asquith and Mullins (1986) find a mean of -2.7%, whereas Mikkelsen and Partch (1986) report abnormal returns of -3.56%. Such stylized facts have motivated the development of new theories attempting to explain market reactions and the signaling effect of financing decisions in the presence of asymmetric information, such as Ross (1977), Myers and Majluf (1984) and Miller and Rock (1985).¹⁴⁹ These predict that firms willing to raise equity will try to time the market for low levels of information asymmetry, when stock prices are nearing the fair value.¹⁵⁰

Another strand of research postulated, by observing the abnormal returns around the announcement dates, that spin-offs generate excess value for investors. Cusatis, Miles, and Woolridge (1993) come across large positive excess returns following spin-offs over the period 1965-1988 for both parent companies and subsidiaries, proving that a strategy of investing in firms undergoing or emerging from spin-offs provides superior investment performance.¹⁵¹ Miles and Rosenfeld (1983) investigate the effect of a voluntary spin-off¹⁵² announcement on shareholder wealth. Their findings confirm that “*spin-off announcements have a positive influence on stock prices and that the relative increase in share price is greater for large spin-offs than for small ones*”.¹⁵³

¹⁴⁸ Campbell (1997) 150

¹⁴⁹ Dierkens (1991) 181

¹⁵⁰ Dierkens (1991) 197

¹⁵¹ McConnell, Ozbilgin, Wahal (2010) 1

¹⁵² Miles, Rosenfeld (1983) define spin-off as “*the transaction through which a company distributes all of the common shares it owns in a controlled subsidiary to its existing shareholders, thereby creating a separate public company*”.

¹⁵³ Miles and Rosenfeld (1983) 1

4.2. Overview on the applied event study methodology

4.2.1. Definition of the events of interest

The scope of the event study performed is to infer how the markets reacted to the decisions concerning the IPO of the Concessions subsidiary. For this purpose, the three events that conveyed information regarding

- the intention to stock list the Hochtief subsidiary
- the price range set for the IPO and
- the call-off of the IPO before the intended first trading day

have been selected for the event study analysis. The official announcement dates as per Hochtief, respecting the same order of events as above, were the 5th of November, the 19th of November and the 3rd of December 2009.



Figure 8 Timeline of the IPO related announcements

For each of these events a separate analysis is performed in order to derive the abnormal returns.

4.2.2. Definition of the event and estimation window

Although the exact dates of the 3 announcements selected for the event study are known, it is not fully certain whether the new information reached the investors on the same day before the market close or perhaps the trading on the new information was delayed to the next day. In contrast, the possibility that investors had private information on the IPO intentions before the official announcements cannot be excluded.

In an attempt to account for possible information leakages before the announcement as well as gradual adjustments of the stock prices in incorporating the new information, the event window used to infer the abnormal returns was extended to 3 days centered on the announcement date.

Extending the event window beyond 3 days was not considered suitable due to the very short distance in time between the events (10 trading days) and also due to the increasing possibility of capturing other effects or diluting the cumulative abnormal returns.

The data subset used to determine the parameters of the regression model – also referred to as the estimation window- contained 126 trading days¹⁵⁴, corresponding to half of a trading year. According to Benninga, “*the estimation window is supposedly a period free of any problems- that is, a period that reflects the stock’s price normal movements.*”¹⁵⁵ It is thus a widely accepted practice to avoid the inclusion of the event window in the estimation window. The figure below illustrates the timeline of the event study; the event window of length $L_1 = T_2 - T_1$ centered on the event of interest (of notation 0) lies in the continuation of the estimation window of length $L_0 = T_1 - T_0$. The interval notation in the figure indicates that there is no overlapping between the defined windows.

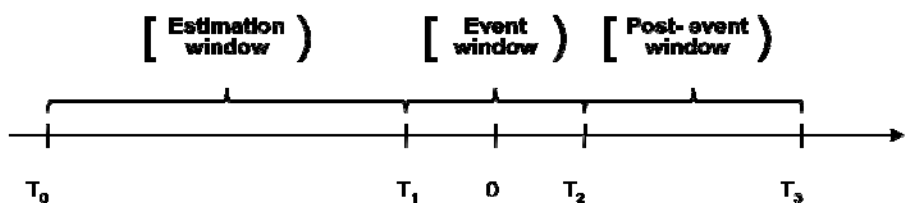


Figure 9 Timeline of the event study¹⁵⁶

¹⁵⁴ Campbell (1997) 151

¹⁵⁵ Benninga (2008) 372

¹⁵⁶ Campbell (1997) 159

4.2.3. *Data collection and computation*

To correctly measure the announcement effects on equity, it is necessary to control for external factors.¹⁵⁷ The selection of the benchmark in the event study therefore plays a key role in capturing overall market and industry effects. Striving for the better proxy of the market portfolio that would permit the better isolation of exogenous factors, I carried out the current event study with the DAX 30 Xetra performance index. The DAX 30 is commonly used as a proxy for the German market portfolio.

The data on the prices was collected from Datastream and Yahoo Finance and features Hochtief's daily adjusted closing prices registered on the Xetra trading platform and the daily closing values of the performance index DAX 30 Xetra.

The daily returns were calculated as continuous returns, using the natural logarithm function:

$$R_t = \ln(P_t) - \ln(P_{t-1})$$

where R_t designates the daily returns and P_t the security price respectively the price index at time t .

A quick test showed that for the data available, the discrete returns $R_t = \frac{P_t}{P_{t-1}} - 1$ differ only slightly from the continuous ones.

¹⁵⁷ Serra (2002) 3

4.2.4. *Measuring the abnormal returns*

The expected or normal returns are derived from the historical stock prices of the respective firm typically over a period prior to the event by applying one of the several regression models available. Depending on the assumptions made in respect to the behavior of the asset returns¹⁵⁸, the regression models roughly fit into two categories: statistical models and economic models. Both feature statistical assumptions; however the latter category introduces additionally certain economic restrictions. Campbell explains that the

*“potential advantage of economic models is not the absence of statistical assumptions, but the opportunity to calculate more precise measures of the normal return using economic restrictions.”*¹⁵⁹

The simplest statistical model that can be used for measuring the expected returns is the **constant-mean-return model**, which assumes that mean stock returns tend towards a constant value. Despite of its simplicity, Brown and Warner (1980, 1985) find that *“it often yields results similar to other more sophisticated models.”*¹⁶⁰

The most widely accepted statistical model is the **market model**, which relates the stock returns of a firm to the returns of the market portfolio. It introduces an improvement to the constant-mean-return model since it eliminates the portion of the abnormal return caused by market movements and thereby reduces the variance of the abnormal return. The **CAPM based economic model** has a similar structure to the market model, but imposes additional restrictions on the regression equation to be used, e.g. assigning fixed values to the intercept. The CAPM based model has to-date little practical relevance - as the underlying equilibrium theory was proven to not always hold in real markets, it has lost ground to models with more lax assumptions. The **APT¹⁶¹ based economic model** in contrast *“does not impose false restrictions on the returns”*. However its use *“complicates the implementation of an event study with little practical advantage to the unrestricted market model.”*¹⁶²

¹⁵⁸ Campbell (1997) 153

¹⁵⁹ Campbell (1997) 155

¹⁶⁰ Campbell (1997) 154

¹⁶¹ Acronym for the Arbitrage Pricing Theory

¹⁶² Campbell (1997) 156

In light of its relative superiority from a robustness and complexity point of view, the market model has been chosen for the event study conducted in this paper.

The equation implied by the market based model for the expected returns is

$$R_t^{HOT} = \alpha + \beta R_t^{benchmark} + \varepsilon_t$$

“with $E[\varepsilon_t] = 0$ and $Var[\varepsilon_t] = \sigma_{\varepsilon_t}^2$ and R_t^{HOT} and $R_t^{benchmark}$ the period- t returns of the security respectively the market portfolio and ε_t the zero-mean disturbance term, α , β and $\sigma_{\varepsilon_t}^2$ the regression parameters.”¹⁶³

The abnormal returns within the estimation window were computed as

$$\hat{\varepsilon}_t^* = R_t^* - \hat{\alpha} - \hat{\beta} R_m^*$$

Where R_t^* is the observed window return, $\hat{\alpha}$ and $\hat{\beta}$ are the regression output values.¹⁶⁴

The table below shows the regression parameters obtained for each of the events of interest. For all 3 events, the standard error ranges from 1.8% to 2%, whereas R^2 from 0.5069 to 0.5236.

Event	Estimation window (trading days)	Event window (trading days)	Regression parameters			
			$\hat{\alpha}$	$\hat{\beta}$	Standard error	R^2
1 (IPO intentions)	126	3	1.3228	0.0018	2.00%	0.5069
2 (IPO details)	126	3	1.3045	0.0019	1.90%	0.5056
3 (IPO call-off)	126	3	1.2671	0.0019	1.80%	0.5236

Table 13 Event study: Output parameters of the regression equations

The following table summarizes the daily abnormal returns within the event window calculated with the previously derived regression parameters:

¹⁶³ Campbell (1997) 155

¹⁶⁴ Campbell (1997) 155

Event	Abnormal Day 1	Return	Abnormal Day 2	Return	Abnormal Day 3	Return
1 (IPO intentions)	2.12%		1.92%		2.48%	
2 (IPO details)	-1.61%		-0.49%		-0.50%	
3 (IPO call-off)	-1.02%		0.35%		0.45%	

Table 14 The daily abnormal returns for the 3 events of interest

4.2.5. Time series aggregation

The abnormal returns must be aggregated over the event window in order to draw overall inferences about the market reaction.¹⁶⁵ The aggregation of the abnormal returns over the event window can be performed using the cumulative average residual method (CAR). CAR “tests the null hypothesis that the mean abnormal returns measured are equal to zero.”¹⁶⁶ The cumulative average residual method (CAR) uses as the abnormal performance measure the sum of each abnormal performance. The CAR starting at time t_1 through time t_2 is defined as:

$$CAR(t_1, t_2) = \sum_{t=t_1}^{t_2} \hat{\epsilon}_t^*$$

where $T_1 \leq t_1 \leq t_2 < T_2$

CARs thus reflect in a consolidated form the shareholder wealth changes around an event of interest.¹⁶⁷

¹⁶⁵ Campbell (1997) 160

¹⁶⁶ Kothari and Warner (2006) 11

¹⁶⁷ Kothari and Warner (2006) 54

4.2.6. Test statistics

Prior to interpreting the results of an event study it is necessary to verify whether the abnormal returns are significant. For this purpose, it is sufficient to perform a test statistic of the CAR and compare it to the assumed distribution under the null hypothesis. The null hypothesis is thus rejected if the test statistic exceeds a critical value, typically corresponding to the 5% or 1% in the tail region (i.e. the test level or size of the test is 0.05 or 0.01).¹⁶⁸

“For the CAR shown in the previous equation, a standard test statistic is the CAR divided by an estimate of its standard deviation. The test statistic is in consequence given by:

$$\widehat{SCAR}(t_1, t_2) = \frac{\widehat{CAR}(t_1, t_2)}{\hat{\sigma}(t_1, t_2)}$$

*where \widehat{SCAR} represents the standardized cumulative abnormal return*¹⁶⁹

The alternative solution to estimating the standard deviation of the cumulative abnormal returns put forward by Campbell, Lo, and MacKinlay is

$$\hat{\sigma}^2(t_1, t_2) = \frac{1}{(L_1 - 2)} \sum_{t=T_0}^{T_1-1} \hat{\epsilon}_t^{*2}$$

with L_1 , the length of the estimation window.¹⁷⁰

Under the H_0 hypothesis

$$\widehat{CAR}(t_1, t_2) \sim N(0, \hat{\sigma}^2(t_1, t_2))$$

And the distribution of $\widehat{SCAR}(t_1, t_2)$ is Student t with $L_1 - 2$ degrees of freedom. From the properties of the Student t distribution, the expectation of $\widehat{SCAR}(t_1, t_2)$ is 0 and the variance is $\frac{L_1 - 2}{L_1 - 4}$. For a large estimation window, e.g. if L_1 is greater than 30 days, the distribution of $\widehat{SCAR}(t_1, t_2)$ is well approximated by the standard normal.¹⁷¹

¹⁶⁸ Kothari and Warner (2006) 13

¹⁶⁹ Kothari and Warner (2006) 13

¹⁷⁰ Campbell (1997) 160

¹⁷¹ Campbell (1997) 161

The results of the test statistics are shown in the table below:

Event	Abnormal returns				\widehat{SCAR}	Test Statistics - Rejection of H_0
	$\widehat{AR1}$	$\widehat{AR2}$	$\widehat{AR3}$	3day \widehat{CAR}		
Event 1 (IPO intentions)	2.12%	1.92%	2.48%	6.52%	3.2742	Yes, at a confidence level of 99%
Event 2 (IPO details)	-1.61%	-0.49%	-0.50%	-2.60%	-1.3678	Yes, at a confidence level of 90%
Event 3 (IPO call-off)	-1.02%	1.36%	0.45%	0.80%	0.4448	No, insignificant

Table 15 Cumulative abnormal returns and test statistics results for the events of interest

To summarize

- the announcement of the IPO intentions generated cumulative abnormal returns of **6.52%** within the 3 day event window; the test statistics supports the rejection of the null hypothesis; the abnormal returns are significant at a 99% confidence level
- the announcement of the IPO details led to cumulative abnormal returns of **-2.60%** within the 3 day event window; the test statistics supports the rejection of the H_0 hypothesis at a 90% confidence level
- the announcement of the IPO call-off generated cumulative abnormal returns of **0.80%** within the 3 day event window; the abnormal returns are insignificant and the H_0 hypothesis cannot be rejected

4.2.7. Model robustness check

With the intention of checking the robustness of the obtained results in respect to the regression model chosen, I reiterated the event study by substituting the market model with two further regression models: the constant-mean-return and the CAPM based models described in subsection 4.1.

The results are shown in the following table:

Event	Abnormal returns				\widehat{SCAR}	Test Statistics - Rejection of H_0
	$\widehat{AR1}$	$\widehat{AR2}$	$\widehat{AR3}$	3day \widehat{CAR}		
Event 1 (IPO intentions)	4.29%	2.70%	2.55%	9.54%	3.371	Yes, at a confidence level of 99%
Event 2 (IPO details)	-1.41%	-2.38%	-1.40%	-5.19%	-1.923	Yes, at a confidence level of 95%
Event 3 (IPO call-off)	-1.51%	2.20%	-0.46%	0.24%	0.091	No, insignificant

Table 16 Cumulative abnormal returns and test statistics computed with the CAPM based model

Event	Abnormal returns				\widehat{SCAR}	Test Statistics - Rejection of H_0
	$\widehat{AR1}$	$\widehat{AR2}$	$\widehat{AR3}$	3day \widehat{CAR}		
Event 1 (IPO intentions)	4.25%	2.71%	2.55%	9.51%	3.361	yes, at a confidence level of 99%
Event 2 (IPO details)	-1.60%	-2.62%	-1.58%	-5.80%	-2.144	yes, at a confidence level of 95%
Event 3 (IPO call-off)	-1.40%	2.27%	-0.4%	0.47%	0.181	no, insignificant

Table 17 Cumulative abnormal returns and test statistics computed with the constant-mean-return model

Both regression models yield fairly similar results; furthermore, the abnormal returns estimated for each of the first two events are higher (in module) than those generated by the market model. For the third event, both the constant-mean-model and the CAPM based model lead to lower abnormal returns than the market model.

Nonetheless, all 3 models yield consistent results in terms of the significance of the abnormal returns for events studied:

- the first event's abnormal returns are significant at a confidence level of 99%
- the second event's abnormal returns are significant at a confidence level of at least 90%
- the third event is insignificant. The null hypothesis cannot be rejected.

4.3. Findings

4.3.1. *Event 1 - The announcement of the IPO intentions*

I found that the announcement of Hochtief's intentions to undergo an IPO of the concessions subsidiary was very well received by the markets. The 6.52% positive cumulative abnormal returns proved significant at a confidence level of 99%. I measured the highest daily abnormal returns at 2.48% on the day after the official announcement.

The findings seem to be consistent with the spin-off hypothesis of Miles and Rosenfeld (1983), which predicts that spin-off announcements have a positive influence on stock prices. Miles and Rosenfeld claim by quoting Hakansson that in case of incomplete financial markets, a spin-off might expand the opportunity set available to investors. Even if there are no synergies to be clearly attained through the transaction, spin-offs might provide investors in imperfect markets with more flexibility in their choice of dividends versus capital gains.¹⁷²

The results also would support a line of argument of shareholder value added due to the increased liquidity of the stock. The Pecking Order theory of financing has little explanatory power in this case; following its logic equity issues are typically bad news, so one would expect a negative price reaction to the announcements of equity issues unless the markets are peaking;¹⁷³ this is however not the case: although the IPO market showed signs of recovery towards the end of 2009, the lingering effects of the global financial crisis and the deterioration of investor sentiment in the wake of the Dubai crisis were still leaving their mark.

4.3.2. *Event 2 - The announcement of the IPO details*

Two weeks after the announcement of the desired floatation for Hochtief Concessions, the details of the IPO were made public; on this occasion, information such as the price range for the book-building, desired future capital structure and total issue volume were communicated to investors.

¹⁷² Miles and Rosenfeld (1983)

¹⁷³ Lóránth (2009)

The results of the event study suggest that the investors perceived the new information as bad news; stock prices steadily dropped over the 3 day event window with abnormal returns totaling to -2.60%.

A possible explanation could lie in the prevalence of information asymmetry, in other words investor uncertainty about the company's worth. If markets are less informed than the company's management about the value of the assets in place, they draw overall inferences from the new information that the company disseminates. The new pricing details communicated by Hochtief might have signaled a slight overpricing to the markets, which triggered a corresponding adjustment in the share price.

4.3.3.Event 3 – The announcement of the IPO call-off

Out of the 3 events in scope of the current analysis, the announcement of the IPO call-off is the most puzzling. In contrast to the other 2 events, the reactions around the IPO cancellation notice are mixed and no clear trend becomes apparent over the 3 event window. The abnormal returns computed amount to -1.02% on the day before the announcement, then jump to 1.36% on the announcement date and settle to 0.45% on the following day. The estimated cumulative abnormal return of 0.8% does not support the rejection of the null hypothesis.

One possible interpretation of this outcome is that the call-off was already anticipated by the investors and the information was already impounded in the stock price at the time of the event. Inferring that the announcement was perceived by investors to not affect their wealth can easily be discarded if taking into account the positive significant reaction to the announcement of the IPO intentions, which conveyed the exact opposite signal.

As a final word, the interpretation of the event study results is to be closely interlinked with the valuation outcome of the thesis – when an estimate of the fair value of the concessions subsidiary is available, we can better understand and analyze the market reactions. Chapter 5 explores this topic thoroughly.

4.4. Possible biases

4.4.1. *Uncertainty regarding the event date*

The event study used the issue dates of Hochtief's press releases published on the company website as reference dates for the announcements. These were crosschecked against the announcement dates indicated in the press, using as sources several newspapers articles from the popular press, e.g. Financial Times Deutschland and The Wall Street Journal.

Furthermore, as previously mentioned, it is possible that the announcement occurred after the close of the market and thus the trading on the new information was possible only on the next day.

I addressed this issue of uncertainty by expanding the event window to one additional day; however this action comes at a cost - that of distorting the abnormal returns on the actual announcement date. By making reference to existing studies on this matter, Campbell contends that the losses of explanatory power due to the increased length of the event window are clearly set off by the risk of missing the event.¹⁷⁴

4.4.2. *Pre-announcement trading*

A factor that could have potentially distorted the observable abnormal returns within the event window is the availability of private information to certain investors before the official announcement date. Depending on its order of magnitude (number of better informed investors, days lead time), the trading on new information prior to its being made public can considerably bias the results of the event study anchored on the official announcement date or even lead to insignificant abnormal returns.

In their paper "*Why does the reaction to news announcements vary across countries?*" Griffin, Hershey and Kelly (2008) examine the differences in stock reactions to corporate announcements across different countries. Using as a proxy for announcement reaction the

¹⁷⁴ Campbell (1997) 176

abnormal returns scaled by the average non-event daily volatility, Griffin, Hershey and Kelly show that the German market is characterized by a moderate reaction to announcements. They attempt to trace the cross-country variations in stock market response back to five possible factors: poor accounting quality, inattentive investors, poor news dissemination, public pre-announcement trading and insider trading.¹⁷⁵ They find evidence of preannouncement trading due to early news dissemination either through public or private information sources.

A study of Bhattacharya et al. on international insider trading regulations underpins the fact that even though developed countries among which Germany have introduced insider trading laws, the enforcement of these laws have been timid.¹⁷⁶ Dymke and Walter (2008) focus in a recent paper on German corporate insiders trading on private information and show that members of supervisory boards have the tendency *“to be most active in exploiting inside information, since they realize exceptionally high profits with their frequent front-running transactions.”*¹⁷⁷

In conclusion, although Germany is characterized by mature capital markets subject to strict regulations, the empirical evidence on market prices behavior around corporate announcements does not allow us to rule out the possibility of insider trading. Furthermore, browsing through the articles dedicated to Hochtief's IPO, it became evident that rumors about the IPO intentions were spreading already before the official announcement in November 2009, which would imply that public trading on the respective information might have started much earlier.

¹⁷⁵ Griffin, Hirschey and Kelly (2008) 1

¹⁷⁶ Bhattacharya and Daouk (2002) 2

¹⁷⁷ Dymke and Walter (2008) 1

4.4.3. Nonsynchronous trading

Non-synchronous trading can constitute a further potential source of bias to the event study. Campbell defines non-synchronous trading as the effect arising when “*prices are taken to be recorded at time intervals of one length, when in fact they are recorded at time intervals of other possibly irregular lengths.*”¹⁷⁸

When drawing upon closing prices in an event study, one implicitly assumes that these prices arose at the exact same time each day, i.e. the closing time; but closing prices are in fact the prices at which the latest transaction is performed on the respective trading day, meaning that especially for securities not so intensively traded, the deviations from the closing time can be substantial.

The non-synchronous trading effect consequently produces a bias in the estimation of the market model parameters by altering the variances and covariances of the individual stocks and portfolios; however the higher the trading volumes, the lower the impact and dimensions of the bias.

¹⁷⁸ Campbell (1997) 177

5. Interpretation of the results

In view of the results yielded by the valuation and the event study analysis, the current chapter attempts to offer possible explanations for the IPO failure of Hochtief Concessions by answer the three key questions introduced at the beginning of the thesis.

5.1. Did the cold IPO market and overall investor sentiment lead to the failure of the IPO transaction?

Hochtief decision to cancel the IPO of its subsidiary in the last minute was clearly based on the very low demand for its stock. Citing a Financial Times article, right before the call-off only 60% of the book was filled, mainly due to a low demand from non-domestic investors.¹⁷⁹

Whereas Hochtief argued that the low demand was a direct consequence of the Dubai crisis deteriorating the market conditions and shattering investor optimism, there is insubstantial evidence to support its statement. Indeed, the timing of its IPO was not advantageous: by the end of 2009, the economies of the industrialized countries had only timidly started to show signs of recovery after the financial crisis of the previous years. If drawing upon the hot-cold IPO markets hypothesis, we could label this as a bad time to issue equity given the less favorable macroeconomic environment and high investor uncertainty. However, the fact that an increasing number of economic entities announced intentions to launch initial public offerings around the same time as Hochtief suggests that the IPO markets were already picking up. I mention a few suggestive examples:

- The IPO of the Chinese engineering company Vtion was carried out in Frankfurt in Oct 2009, shortly before Hochtief Concessions' planned floatation on the 4th of December 2009.
- The Danish renewable energy company ScanEnergy also planned to quote in Frankfurt in December 2009.
- The biotech company Movetis completed its IPO on Euronext in December 2009.

¹⁷⁹ "Investors say high price sank Hochtief unit IPO" (5.12.2009)

- The UK fund manager Gartmore organized its first floatation in London in December 2009.
- Fashion retailer Yoox went live on the Milan stock exchange at the end of November 2009.
- The luxury goods retailer CFAO went public in December with books more than twice covered.¹⁸⁰
- Hochtief's competitor Bilfinger Berger had also announced in December 2009 its intentions to carry out an IPO for one of its subsidiaries in the first quarter of 2010.¹⁸¹

Without doubt, the fear of a possible default of Dubai World on its debt shortly stirred up the markets to the time of Hochtief Concessions' planned IPO and numerous articles in the popular press underpin this argument. Quite surprisingly, however, in the time period of November-December 2009, the German DAX attained a year-record performance, suggesting that the German markets reacted little to the Dubai debacle (see figure below). Also, the Eurostoxx composite index for Construction and Materials companies, which includes Hochtief and some of its key competitors, was on an increasing trend during 2009, which it picked up for the last two months of the year after the drop on the 30th of October.

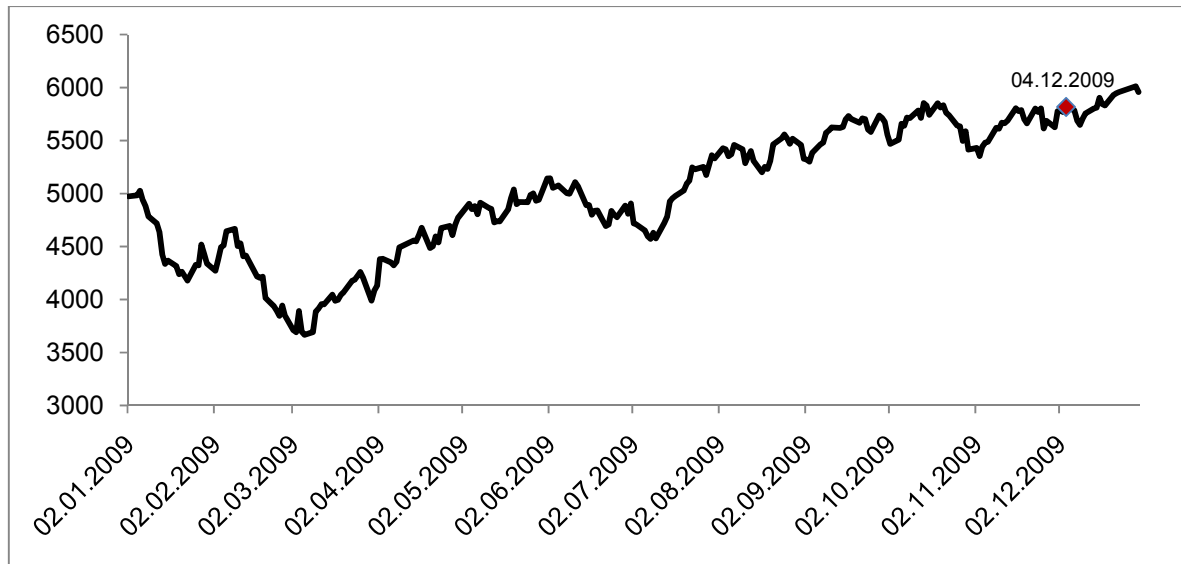


Figure 10 DAX performance 2009¹⁸²

¹⁸⁰ "Equity market unfazed by Hochtief's late call to pull unit's Eu1bn IPO" (4.12.2009)

¹⁸¹ „Bilfinger hält an Börsenplänen fest“ (7.12.2009)

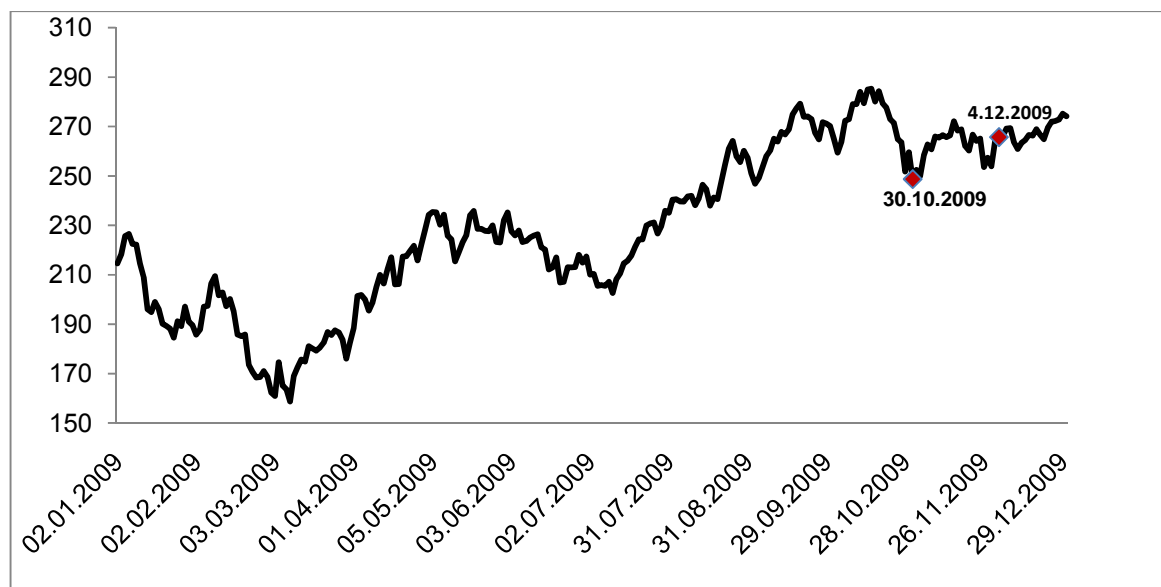


Figure 11 EuroStoxx Construction and Materials performance 2009¹⁸³

Most journalists covering the story of the failed IPO also expressed skepticism towards the credibility of the unfavorable market conditions compromising its success. They introduce an additional convincing argument: in the week Hochtief Concessions planned its IPO, the Bank of America was able to raise USD 19.3 bn in equity, despite the Dubai turmoil.¹⁸⁴

The event study analysis showed that the markets hardly reacted to Hochtief's IPO cancellation notice, rendering no significant abnormal returns. This implies that this outcome might have been already anticipated by the markets and the information was already impounded in the stock price at the time of the event. In other words, investors seemed to have had a clear picture early in the process about how the IPO would turn out, suggesting that perhaps there was a knock-out criterion which the deal failed to meet in the first place. Since the timing does not seem to be as inopportune as Hochtief insinuated, we further analyze the possibility of a mispricing.

¹⁸² Source: Yahoo Finance

¹⁸³ Source: Stoxx Indices

¹⁸⁴ "Investors say high price sank Hochtief unit IPO" (5.12.2009)

5.2. Did Hochtief sufficiently underprice its new equity issue to spark investor interest?

The Discounted Cash Flow valuation performed in chapter 3 rendered a share price of EUR 28.50 for Hochtief Concessions. The relative valuation yielded a slightly lower value of EUR 27.69 per share. Both prices are close to the upper bound of the interval set by Hochtief of EUR 24 to EUR 29, suggesting a fair offering price. In addition, the maximum underpricing that Hochtief was willing to accept was approx. 15% of its estimated fair value.

Reviewing the empirical findings on the underpricing presented in chapter 2, we find that the level of underpricing chosen by Hochtief is generally in line with historical average values. For Germany, Ljungqvist (1997) reports on a sample of 180 IPOs between 1970 and 1993 an average initial return of 9.2%.¹⁸⁵ When analyzing the German New Market during the hot issue period 1997 to 2000, Goergen and Khurshed observe an underpricing of about 53%, approx 5 times higher than the one reported by Ljungqvist.¹⁸⁶ However, as we have seen in chapter 2, hot IPO markets are characterized by excessive underpricing, therefore not suitable to draw overall inferences. Finally, the mean (median) underpricing that the CFOs participating in the 2003 survey of Brau and Fawcett expect in an IPO is 14.9% (10%).

The underpricing assumed to be required on average by the German markets explains why the price of Hochtief Concessions' stock converged in the grey market to the lower end of the offer price range during the bookbuilding process. Still, the demand for the stock was considerably below expectations, making way for speculations that Hochtief should have underpriced more aggressively to attract investors.

*"The banks made a wrong move when they announced expectations that the price per share would range from EUR 24 to EUR 29, Christian Kirchner, Financial Times Deutschland editor-in-chief, wrote. Such pricing corresponded to a deduction of between 6% and 22% against the intrinsic value of Hochtief's subsidiary. This is a way short of the between 25% and 45% discounts at which other infrastructure construction companies are currently trading, Kirchner wrote further."*¹⁸⁷

¹⁸⁵ Jenkinson and Ljungqvist (2001) 38

¹⁸⁶ Goergen, Khurshed and Renneboog (2006) 2

¹⁸⁷ "Banks to blame for cancelled Hochtief IPO" (2009)

Arguably, the market's negative reaction to the price range announcement might support the hypothesis that at this point in time investors already discounted back the initially estimated added value that the IPO would have generated, since they anticipated that the IPO would not go through with such an ambitious offer price.

But what are the factors that explain the higher underpricing required by the markets? One possible answer lies in the information asymmetries between the company and the outside investors regarding the quality of the assets in place aggravated by the complex business model of Hochtief Concessions and its intransparent portfolio of minority shareholdings in more than 30 project companies. Investors seem to have expected to be compensated for the risk of investing in a company with such a complex and difficult to grasp business model, consisting mainly of projects in early low-cash-flow stages. As proof to the prevalence of information asymmetry in respect of the concessions business value, the Bankhaus Lampe analysts make reference to Hochtief's past actions of selling some fractions of their stakes in order to signal the value of their holdings to the markets.¹⁸⁸

5.3. Were the signals that the company conveyed to the markets convincing enough in respect to the value of the firm?

In their survey among CFOs, Brau and Fawcett (2006) test several signaling mechanisms proposed by the IPO literature and find that the most important positive signal to CFOs are a "*strong history of earnings*" and "*underwriter certification*", whereas the negative signals are "*selling a large portion of the firm in the IPO, as well as selling insider shares in an IPO*".¹⁸⁹

When applying the same framework of signaling mechanisms to Hochtief Concessions' IPO, we find that both positive and negative signals got across to the markets:

- **Volatile historical earnings.** Hochtief provided a short history of earnings of its young concessions subsidiary in its first press release about the IPO and in the stock exchange prospectus. A striking feature about the reported earnings was the

¹⁸⁸ Bankhaus Lampe Research (2009)

¹⁸⁹ Brau and Fawcett (2006) 1

very high volatility, which made it difficult to observe a trend in its performance over the reported 4 years.

- **Well-reputed underwriters.** In their press release, Hochtief announced that the IPO process was accompanied by Citi, Deutsche Bank and Goldman Sachs as Global Coordinators, Barclays Capital, Citi, Deutsche Bank and Goldman Sachs as Joint Bookrunners and Abn Amro, Calyon, Commerzbank and HSBC Trinkaus as Co-Lead Managers.¹⁹⁰ In choosing its underwriters and coordinators for the deal, Hochtief seems thus to have made no compromises, as all partners from the deal are among the best reputed and successful in their industry.
- **Desire to maintain a controlling stake.** Although the fraction of existing equity that was on sale was evaluated at between 60% and 65% of the initial equity value, Hochtief clearly stated that it intended to hold a majority stake of 51% in its subsidiary in the IPO aftermath¹⁹¹.

Furthermore, if we consider underpricing itself as a signal of firm quality and assume that there would have been a second equity sale stage planned, in consistence with Grinblatt and Ibbotson's theories, then we can conclude that Hochtief wouldn't have conveyed a convincing message to the markets through its low underpricing: had the deal gone through, the returns on the first day of trading would have reached a maximum of 15%.

¹⁹⁰ Hochtief Corporate Communications (5.11.2009)

¹⁹¹ The figure includes also the proceeds from the capital increase

6. Conclusion

The present thesis explored how information asymmetries affect the timing and the pricing of an Initial Public Offering by examining the failed attempt of the construction company Hochtief to list its Concessions subsidiary on the Frankfurt Stock Exchange in November 2009.

Upon inferring about the fair equity value of Hochtief Concessions and deriving the market reactions to the IPO, I attempted to answer three key questions:

- Did the cold IPO market and overall investor sentiment lead to the failure of the IPO transaction?
- Did Hochtief sufficiently underprice its new equity issue to spark investor interest?
- Were the signals that the company conveyed to the markets convincing enough in respect to the value of the firm?

Below I summarize the main findings.

The Discounted Cash Flow valuation of chapter three revealed a share price for Hochtief Concessions of EUR 28.5. I crosschecked this result by looking at how a selection of comparable companies is priced by the markets in respect to its earnings. I found that the equity value derived with the DCF method is in line with the prevailing value judgments of the markets in the year of the planned IPO.

Chapter four gave an overview of the event study conceived to capture the market reactions to the announcements concerning the IPO; I found that the markets perceived the IPO as a value increasing transaction, as the abnormal returns triggered by the official announcement amounted to 6.52%. Further, as the IPO details including the offer price range were made public, a negative price adjustment occurred, with abnormal returns reaching -2.60%. Finally, the IPO call-off notice seemed to hardly come as a surprise to investors, since the abnormal returns rendered by the event study are insignificant.

Chapter five brought all the pieces of the puzzle together in order to answer the aforementioned key questions. I postulated that, although market conditions deteriorated in the wake of the Dubai crisis, the German markets and the construction industry remained largely unaffected, maintaining their ascending trend visible throughout 2009; secondly, the

success of further IPOs carried out in the same time corridor as Hochtief counters the company's allegations that the poor market conditions led to a low demand for new equities.

Hochtief's too ambitious price expectations seem to better explain why the books were only to 60% full at the end of the bookbuilding process. Whereas the IPO literature predicts an average underpricing of 10%-15%, the price range set by Hochtief corresponded to a discount of 0% to a maximum of 15% from the fair price. Investors, however, seemed to have required an additional premium which Hochtief failed to provide; by underpricing the offer more aggressively, the company could have compensated investors for the higher risk they would have exposed themselves to by investing in a company with such a complex and intransparent business model.

Finally, I found that the signals conveyed by the announcements were mixed: whereas Hochtief's underwriter selection and desire to detain a controlling stake in the emerging public company must have been received well by the markets, the volatile historical earnings might have reduced investor confidence in the financial robustness of the Concessions subsidiary.

References

Bankhaus Lampe Research (2009): „Hochtief AG“. Source: Thompson Reuters. Accessed 21 May 2009

Bhattacharya, Utpal and Hazem Daouk (2002): “*The World Price of Insider Trading*”. In: *The Journal of Finance*, Vol. 57, No. 1, p. 75-108. Blackwell Publishing for the American Finance Association. <http://www.jstor.org/stable/2697834>. Accessed 26 May 2010

”Bilfinger hält an Börsenplänen fest“ (7.12.2009): In: *Financial Times Deutschland*. Author: Michael Gassmann. Hamburg. Source: Factiva Database

Benninga, Simon (2008): “*Financial Modeling*”. MIT Press, 3rd Edition. Cambridge, Mass.

Bousquet, Franck and Alain Fayard (2001): “*Road and infrastructure concession practice in Europe*”. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=632743. Accessed 13 May 2010

Brau, James C. and Stanley E. Fawcett (2006): “*Initial Public Offerings: An Analysis of Theory and Practice*”. In: *The Journal of Finance*, Vol. LXI No 1. Source: JSTOR

Campbell, J. Y., A. W. Lo and A. C. MacKinlay (1997): “*The Econometrics of Financial Markets*”. Princeton University Press. Princeton

Chan, Louis K. C., Jason Karceski and Josef Lakonishok (2003): “*The Level and Persistence of Growth Rates*”. In: *The Journal of Finance*, Vol. 58, No. 2 (Apr., 2003), p. 643-684

Copeland, Tom, Tim Koller and Jack Murrin (2000): "*Valuation - Measuring and Managing the Value of Companies*", 3rd ed. John Wiley and Sons

Cornell, Bradford (1993): "*Corporate Valuation. Tools for Effective Appraisal and Decision Making*". Irwin Professional Publishing. Chicago

Global Legal Group (2009): "*The International Comparative Legal Guide to Corporate Tax: A practical insight to cross-border Corporate Tax work*". www.ICLG.co.uk. Accessed 3 June 2010

Damodaran, Aswath (n.a.): "*The valuation inferno. Dante meets DCF*". Aswath Damodaran Website. <http://pages.stern.nyu.edu/~adamodar/pdfiles/country/dantemeetsdcf.pdf>. Accessed 20 April 2009

Damodaran, Aswath (1999): "*Applied Corporate Finance. A User's manual*". John Wiley and Sons Inc New York

Damodaran, Aswath (2005): "*Dealing with Cash, Cross Holdings and Other Non-Operating Assets. Approaches and implications*". Stern School of Business

Damodaran, Aswath (2006): "*Damodaran on Valuation: Security Analysis for Investment and Corporate Finance*". John Wiley and Sons, 2nd Edition

Damodaran, Aswath (2008): "*Growth and Value: Past growth, predicted growth and fundamental growth*". Stern School of Business.

Damodaran, Aswath (Sept 2008): "*Equity Risk Premiums (ERP): Determinants, Estimation and Implications*". Stern School of Business.

Damodaran, Aswath (Feb 2010): *“Equity Risk Premiums (ERP): Determinants, Estimation and Implications - The 2010 Edition”*. Stern School of Business, NYU

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1556382. Accessed 15 May 2010

Damodaran Online (2010): *„Financial Ratios and Measures“*, Aswath Damodaran Website. http://pages.stern.nyu.edu/~adamodar/New_Home_Page/definitions.html. Accessed 15 March 2010

Dymke, Björn M. and Andreas Walter (2008): *“Insider Trading in Germany - Do Corporate Insiders Exploit Inside Information?”*. In: *BuR - Business Research*, Official Open Access Journal of VHB. <http://ssrn.com/abstract=956066>. Accessed 26 May 2010

Elektronischer Bundesanzeiger. <https://www.ebundesanzeiger.de/ebanzwww/wexsservlet>. Accessed 10 May 2010

“Equity market unfazed by Hochtief’s late call to pull unit’s Eu1bn IPO” (4.12.2009). In: *Euroweek, English Euromoney Institutional Investor plc*. Source: Factiva Database

Dierkens, Nathalie (1991): *“Information Asymmetry and Equity Issues”*. In: *The Journal of Financial and Quantitative Analysis*, Vol. 26, No. 2, p. 181 -199. University of Washington, School of Business Administration. <http://www.jstor.org/stable/2331264>. Accessed 24 May 2010

“Banks to blame for cancelled Hochtief IPO” (2009): Financial Times Deutschland. Factiva Database

Gemeinböck, Karin (1999): *“Company valuation in theory and practice”*. Diplomarbeiten Wirtschaftsuniversität Wien

Goergen, Marc, Arif Khurshed and Luc Renneboog (2006): *“Why are the French so different from the Germans? Underpricing of IPOs on the Euro New Markets”*. Discussion Paper No. 2006–24. Tilburg University

Griffin, John M., Nicholas H. Hirschey and Patrick J. Kelly (2008): "*Why does the Reaction to News Announcements Vary across Countries?*" University of Texas at Austin and University of South Florida, Tampa, USA. <http://www.jgriffin.info/Research/GHKReactMay2308.pdf>. Accessed 26 May 2010

Grinblatt, Mark and Chuan Yang (1989): "*Signalling and the Pricing of New Issues*". In: *The Journal of Finance*, Vol. 44, No. 2, p. 393-420. Blackwell Publishing for the American Finance Association. <http://www.jstor.org/stable/2328596>. Accessed 12 June 2010

Grinblatt, Mark and Sheridan Titman (2002): "*Financial Markets and Corporate Strategy*". Irwin/McGraw-Hill. Boston and others. 2nd edition

Hochtief (2008): "*Annual Report 2009*". <http://www.berichte.hochtief.de/index.html>. Accessed 3 March 2010

Hochtief (2009): "*Annual Report 2009*". <http://www.berichte.hochtief.de/index.html>. Accessed 2 April 2010

Hochtief (2010): "*HOCHTIEF Concessions AG—Growth Needs Experts*". http://www.hochtief-concessions.com/concessions_en/20.jhtml. Accessed 3 March 2010

Hochtief Corporate Communications (5.11.2009): "*IPO of Hochtief Concessions planned*". Press Release

Hochtief Corporate Communications (19.11.2009): "*IPO of Hochtief Concessions planned*". Ad hoc Information

Hochtief Corporate Communications (3.12.2009): "*IPO HOCHTIEF Aktiengesellschaft: HOCHTIEF ends IPO plans for HOCHTIEF Concessions*". Ad hoc Information

"Investors say high price sank Hochtief unit IPO" (5.12.2009): In: *Financial Times*. Authors: Daniel Schäfer, James Wilson. Frankfurt. Source: Factiva Database

Jenkinson, Tim and Alexander Ljungqvist (2001): "*Going Public. The Theory and Evidence on How Companies raise equity finance*". Oxford University Press, 2nd edition. New York

Koller, Tim (2005): "*Valuation. Measuring and managing the value of companies*". Wiley & Sons. 4th edition. Hoboken, NJ

Khotari, S. P. and Jerold B. Warner (2006): "*Econometrics of Event Studies*". In: B. Espen Eckbo (ed.), *Handbook of Corporate Finance: Empirical Corporate Finance, Volume A* (Handbooks in Finance Series, Elsevier/North-Holland), Ch. 1

Little, I.M.D. (1962): "*Higgledy Piggledy Growth*". In: *Bulletin of the Oxford University Institute of Economics and Statistics*.

Lóránth, Gyöngyi (2005): "*Issuing Equity: IPOs and SEOs*". Lecture notes Advanced Finance Program. University of Cambridge

Lóránth, Gyöngyi (2009): "*Information Asymmetry and the Pecking Order of Finance*". Lecture notes Financial Policy. University of Vienna

Maug, Ernst (SS 2010): "*Themen für Diplomarbeiten SS 2010*", Chair of Corporate Finance, Fakultät für Betriebswirtschaftslehre, Universität Mannheim. http://cf.bwl.uni-mannheim.de/fileadmin/files/downloads/Lehre/Diplomarbeiten/2010_FSS_Diplomarbeitsthemen.pdf. Accessed 2 March 2010

Michaeli, Roni and Wayne H. Shaw (1994): "*The Pricing of Initial Public Offerings: Tests of Adverse-Selection and Signaling Theories*". In: *The Review of Financial Studies*, Vol. 7, No. 2, p. 279-319. Oxford University Press. <http://www.jstor.org/stable/2962357>. Accessed 11 June 2010

McConnell, John J., Mehmet Ozbilgin and Sunil Wahal (2010): “*Spin-Offs, Ex Ante*”. In: *The Journal of Business*, Vol. 74, No. 2, p. 245-280. The University of Chicago Press. <http://www.jstor.org/stable/2668621>. Accessed 24 May 2010

Miles, James A. and James D. Rosenfeld (1983): “*The Effect of Voluntary Spin-off Announcements on Shareholder Wealth*”. In: *The Journal of Finance*, Vol. 38, No. 5, p. 1597-1606. Blackwell Publishing for the American Finance Association. <http://www.jstor.org/stable/2327589>. Accessed 24 May 2010

Ritter, Jay R. (2009): “*Some factoids about the 2009 IPO Market*”. Jay Ritter Website. <http://bear.warrington.ufl.edu/ritter/IPOs2009Factoids.pdf>

Serra, Ana Paula (2002): “Event study tests. A brief survey”. Faculty of Economics, University of Porto. Investigação - Trabalhos em curso - no 117. <http://www.fep.up.pt>. Accessed 28.03.2010

Stoxx Indices. http://www.stoxx.com/indices/index_information.html?symbol= SXOT. Accessed 31.03.2010

“Studie - IPO-Boom geht 2009 an Deutschland vorbei” (9.12.2009). *Reuters - Nachrichten auf Deutsch 2009 Reuters Limited*. Factiva Database

Yahoo Finance. <http://finance.yahoo.com>.

Appendix

Abstract (Engl.)

Systematic underpricing and cyclicity¹⁹² are perhaps the most intriguing empirical regularities about Initial Public Offerings (IPOs). A vast body of literature has been dedicated to explaining these phenomena that, at a first glance, seem to contradict market efficiency principles and even the rationality of economic actors.

The present thesis is intended as an empirical study on how information asymmetries affect the timing and the pricing of an IPO.

Setting out from the last-moment decision of the German infrastructure company Hochtief to pull the IPO of its Concessions subsidiary in November 2009, the current thesis explores the underlying facts and attempts to provide possible explanations for the IPO failure by drawing upon existing theories. Concretely, the thesis builds on the following key questions:

- Did the cold IPO market and overall investor sentiment lead to the failure of the IPO?
- Did Hochtief sufficiently underprice its new equity issue to spark investor interest?
- Were the signals that the company conveyed to the markets convincing enough in respect to the value of the firm?

The paper is structured in 6 main chapters. The introduction outlines the background and the research objectives of the paper. The second chapter shortly reviews some key empirical findings and theories on IPO pricing and timing to the market. The third chapter features a valuation of Hochtief Concessions' equity meant to provide an estimate of the fair value of the company and to make inferences about the extent of underpricing possible. The event study analysis in chapter four is designed to capture the market reactions to the IPO announcements. Chapter five aims at providing answers to the afore-mentioned questions based on the results of the valuation and the event study analysis. Chapter six concludes.

Abstract (Deutsch)

Das Ansetzen des Emissionskurses unter dem fairen Unternehmenswert und die Marktzyklizität sind wohl die faszinierendsten empirischen Befunde rund um Börseneinführungen. Wissenschaftler haben diesen zwei Phänomenen, die auf den ersten Blick Markteffizienzprinzipien und der Rationalität der Investoren widersprechen besondere Achtung geschenkt: denn erstens unterstellen die Grundtheorien der Finanzwirtschaft, dass Börsengänge kapitalwertneutrale Transaktionen sind, ergo ihr Timing zum Markt sollte überhaupt keinen Einfluss auf das Emissionsvolumen oder auf den Preis haben. Zweitens ist es zu erwarten, dass rationale Anteilseigner nicht freiwillig ihre Vermögensteile im Zuge eines Börsenganges unter ihrem wahren Wert verkaufen wollen.

Im Kontext der gescheiterten Neuemission von Hochtief Concessions an der Frankfurter Börse in November 2009, untersucht die vorliegende Arbeit wie sich Informationsasymmetrien auf die Preissetzung und auf das Timing eines Börsenganges auswirken können. Es wird versucht die möglichen Ursachen der gescheiterten Transaktion aufzudecken und Antworten zu den folgenden Fragen zu formulieren:

- War das Scheitern des Börsenganges auf der negativen Grundstimmung der Investoren zurückzuführen?
- War die implizierte Emissionsrendite groß genug, um das Interesse der Investoren für den Börsengang zu wecken?
- Konnten die von Hochtief übermittelten Signale wie z.B. die historische Finanzleistung die Investoren von einem hohen Unternehmenswert überzeugen?

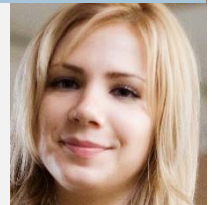
Die Arbeit ist in 6 Kapitel gegliedert. Im ersten Kapitel werden die Fragestellung sowie die Forschungsziele der Arbeit vorgestellt. Im zweiten Kapitel werden die wesentlichen empirischen Erkenntnisse und Theorien zur Preissetzung und Timing von Börsennotierungen erörtert. Das dritte Kapitel beinhaltet eine Bewertung des Eigenkapitals von Hochtief Concessions, die weitere Rückschlüsse über den fairen Wert des Unternehmens ermöglicht. Die Ereignisstudie in Kapitel vier erfasst die Reaktionen der Märkte auf Hochtiefs Ankündigungen über den Börsengang. Angesichts der Ergebnisse der Eigenkapitalbewertung und der Ereignisstudie, wird im fünften Kapitel versucht, die oben erwähnten Fragen zu beantworten. Das sechste Kapitel dient als Zusammenfassung der Arbeit.

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Curriculum Vitae

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Arbeitserfahrung ¹

Zeitraum	01/2005 - 07/2008
Arbeitgeber	Capgemini Consulting Services
Standort	Bukarest
Branche	Management und IT Beratung
Funktion	Consultant ² im Bereich „Finance and Employee Transformation“
• Projekt	<i>Post Merger Integration für Erdölkonzern. Restrukturierung der Finanzsparte der rumänischen Tochter</i>
Rolle	Intern
Aufgaben	„As Is“ Datenerhebung; Konsolidierung und Interpretation der Ergebnisse von Focus Interviews mit dem Management des Auftraggebers Unterstützung der Projektteams zur Entwicklung des Konzeptes und Rollout von „Project Management“ Trainings
• Projekt	<i>Aufbau eines Financial Shared Service Center. Implementierung von SAP FI</i>
Rolle	Teammitglied „Accounts Receivable“ Stream
Aufgaben	Prozessanalyse und -design Gestaltung der Organisationsstruktur Entwicklung und Implementierung von Key Performance Indicators Coaching des Lower Managements bzgl. Management Tools Post - SAP GoLive Unterstützung
• Projekt	<i>Optimierung der Finanzprozesse des Shared Service Centers</i>
Rolle	Projektlead „Accounts Receivable“
Aufgaben	Prozessverbesserung und Ressourcenoptimierung für die Accounts Receivable Abteilung Verbesserung der Fakturierungs-, Zahlungsausgleichs- und Mahnungsprozesse
Zeitraum	08/2008 - jetzt
Arbeitgeber	Capgemini Consulting Österreich AG
Standort	Wien
Branche	Management und IT Beratung
Funktion	Project Controller (20 Std/ Woche, parallel zum Studium; Vollzeit in den Ferien)
Wichtigste	Analyse, Kontrolle und Berichterstattung über den finanziellen Status von Projekten
Tätigkeiten und	Leitung des Auslagerungsprojektes für „Project Accounting“, Coaching und Koordination des Teams im
Zuständigkeiten	Outsourcing Center

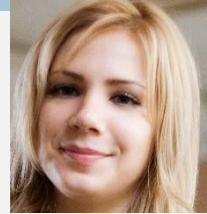
¹ In chronologischer Reihenfolge
² Letzte Funktion

Andra-Olivia Pleş

Curriculum Vitae

Ausbildung ¹

Zeitraum	09/1998 – 07/2002
Bildungseinrichtung	Nationalgymnasium „Colegiul National Cantemir-Voda“ Bukarest
Schwerpunkte	Mathematik und Informatik
Qualifikation	Abitur; Abschußnote 9,52 ²
Zeitraum	10/2002 – 07/2007
Bildungseinrichtung	Technische Universität “Politehnica” Bukarest Fakultät für Ingenieurwissenschaften in Fremdsprachen (Deutsche Abteilung) Wirtschaftsingenieurwesen
Qualifikation	Diplomwirtschaftsingenieurwesen; Abschlussnote: 8,63 ² Diplomarbeit : Fallstudie über die Erfolgsfaktoren einer Post Merger Integration
Zeitraum	10/2008 – 07/2010
Bildungseinrichtung	Universität Wien, Fakultät für Wirtschaftswissenschaften
Qualifikation	Magistra der Betriebswirtschaft; Voraussichtliche Abschußnote: 1.2
Schwerpunkte	Corporate Finance; Controlling



Trainings ¹

Zeitraum	02/2007 – 02/2008
Bildungseinrichtung	Capgemini (Interne Trainings und Workshops)
Kursbezeichnung	Consulting Skills Workshop (Les Fontaines, Frankreich), Structured Thinking and Communication, Exploring Phase I (Strategic) Projects, Business Case, Financial Analysis
Zeitraum	06/2008
Bildungseinrichtung	BPP Romania
Kursbezeichnung	Business Planning and Budgeting

Weitere persönliche Kompetenzen

Muttersprache	Rumänisch				
Fremdsprachen	Deutsch fließend	Englisch fließend (CPE ³)	Spanisch sehr gut	Französisch befriedigend	Arabisch Grundkenntnisse
IT Kenntnisse	Microsoft Office Sehr Gut	C++ Gut	Oracle NOP PA⁴ Gut	Oracle NOP BO⁵ Gut	SAP FI/CO Grundkenntnisse
Weitere Aktivitäten	Mitglied des Vereins Deutscher Wirtschaftsingenieure „VWI“ an der TU Bukarest (2003-2007) Projekte: Veranstaltung von Jobbörsen, Case-Study Wettbewerben sowie Seminaren für Studenten Aufenthalt zur Verbesserung der deutschen Sprachkenntnisse: Sommerjob Bayern 2003, 2004				
Interessen	Kunst (Malerei), Sprachen, Feng Shui, Schwimmen, Aerobic, Reisen				

¹ In chronologischer Reihenfolge
² Benotungsskala Rumänien: 1-10 ; 5 bis 10: positive Beurteilung; 10 = sehr gut
³ Cambridge Certificate of Proficiency in English
⁴ Project Accounting
⁵ Business Objects



Equity market unfazed by Hochtief's late call to pull unit's Eu1bn IPO

1,545 words

4 December 2009

Euroweek

EURMCM

English

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"[The withdrawal is] unfortunate but it's not going to colour the picture for other deals," said the head of syndicate at one of Hochtief Concessions' bookrunners. "Each issue is judged on its merits and when new floats start to appear in January no one will be looking back at this deal."

The fate of Hochtief Concessions' IPO looked sealed on Thursday morning when bookrunners confirmed that only half the book was covered (largely by domestic investors) and parent company Hochtief indicated it was not prepared to compromise on the price range.

Late on Thursday night the company said the termination was a result of "the most recent disturbances in the international capital markets", referring to the heavy sell-offs triggered by the Dubai debt standstill a week ago.

"Under these circumstances the target value cannot be realised," it added.

All four of the IPOs pricing this week were the first big flotations in their national markets since the financial crisis began. In the cases of Germany and France, they are the first since June 2007 and October 2007. Consequently, the deals were seen by many as having a symbolic importance.

Scan Energy, which is raising Eu193m via HSBC Trinkaus next week, and UK fund manager Gartmore, which announced a 250bp-300bp range this week to raise about £400m via Bank of AmericaMerrill Lynch, Citigroup, Morgan Stanley and UBS, remain in the market. On Thursday, EuroWeek was told that Gartmore was already half covered.

One banker described the end of year flurry of European IPOs as a "dress rehearsal" for what is expected to be a huge new issuance volume in 2009. "The big if," said the banker, "is whether markets will remain stable enough to get deals out."

He added: "The volatility that we've seen from the Dubai World experience has reminded everyone that the markets can still lose ground quickly. In the case of Dubai, the damage appears to have been contained for now. But there are plenty of other, largely sovereign, risks still out there – many closer to home."

Nevertheless, the list of potential floats for the first quarter grew further this week with British electronic whiteboard firm Promethean appointing Goldman Sachs, which has worked on almost every European float since the market re-opened earlier this year, and JPMorgan as global coordinators for its £400m-£500m listing.

There was also speculation about listings for UK companies Hyperion Insurance Group and Cooper Gay, which is thought to have appointed UBS to manage the deal, and regional airline Flybe.

Five oil companies — Caithness Petroleum, Canamens, Exillon Energy, Fairfield Energy and Kuwait Energy — are also reported to be considering IPOs.

Other names already in the frame for a first quarter listing include retailers New Look, which selected Credit Suisse, Deutsche Bank and JPMorgan Cazenove to manage its IPO this week, Pets at Home and theme park operator Merlin Entertainment.

Spanish travel reservations group Amadeus and Travelport, another travel reservations company, are also planning floats before March. French care-home group Medica and French frozen food manufacturer Picard Surgeles are also preparing deals.

"In the latter part of 2009, the IPO market has returned with private equity-backed companies, in particular, looking for an exit," said Tom Troubridge, partner at PricewaterhouseCoopers.

"The real question is how much institutional cash there will be for these deals [during a period when] we're still going to see rights issues because there's a big refinancing obligation in 2010 and 2011 and

some of that will have to come from equity markets."

Yoox and CFAO set the tone

All this week's IPOs had to battle against extreme conditions during their marketing periods: last Thursday the FTSE100 fell 3.2% and Germany's DAX by the same percentage as fears mounted over Dubai World.

On Monday, Goldman Sachs and Mediobanca completed a Eu98.5m deal for online fashion retailer Yoox — the first main board listing on the Italian exchange since March 2008 and the first technology IPO since the financial crisis escalated in September 2008.

A total of 18m existing shares and 6.24m new shares were sold at Eu4.30 — towards the top of the Eu3.60-Eu4.50 range — giving Yoox a market capitalisation on listing of Eu216m. It achieved a premium to other online retailers such as the UK's ASOS, partly due to Yoox's more upmarket product base.

The company, which was founded during the internet boom in 2000, made a pre-tax profit of Eu4.2m on revenues of Eu68.3m in the first half of 2009. In addition to operating its own Yoox website selling fashion by numerous designers, Yoox also operates individual websites for brands such as Diesel, Emporio Armani, Marni, Pucci and Valentino.

The stock debuted on Thursday and closed at Eu4.66 — up 8.37% compared to a gain of 0.19% for the broader Italian FTSE MIB index.

"It's the classic IPO debut," said a banker familiar with the deal. "The issuer could have got Eu4.50 and still been multiple times covered but it wanted to ensure a good aftermarket."

On Wednesday, BNP Paribas, Calyon, Goldman Sachs and Société Générale completed one of the more unusual IPOs of recent years when the Eu806m listing of CFAO, which distributes autos and pharmaceutical products in Africa, closed more than twice covered. CFAO also produces some consumer goods and has IT interests.

In contrast with Yoox, there was some price sensitivity in the book for CFAO, which meant the bookrunners set a price at Eu26 a share from a range of Eu24.80-Eu29 despite the strong level of oversubscription.

"There was always strong support from the domestic investor base but the second Dubai World happened momentum players fled because of the emerging markets angle on CFAO's story — it was just too close to home," said the head of syndicate at one of the bookrunners.

As with Yoox, CFAO, which is a spinoff from French luxury good conglomerate PPR, reopened its national IPO market. The deal is the first big listing on Euronext Paris since Bureau Veritas in October 2007. CFAO closed at Eu27.05 following its debut on Thursday — up 4% compared with a rise of 0.08% for the CAC40.

Movetis gets Eu85m

On Thursday, the Eu85m IPO of Belgium's Movetis, the first sizeable deal to list on Euronext Amsterdam since Ablynx in November 2007 and the also the first biotech IPO in Europe for two years, was completed 1.5 times subscribed.

Credit Suisse and KBC were the bookrunners for the deal, which has a greenshoe that would take the total raised to Eu97.75m. Piper Jaffray was the co-manager.

The IPO was priced just below the middle of the Eu11.25-Eu14.25 range at Eu12.25. Retail investors were allocated 10% of the total number of shares — 92% of their requested shares. Based on the IPO price, Movetis has a market capitalisation of Eu244.9m.

A banker involved in the deal said that it had been critical to get early momentum.

"It meant that the book was solid even when Dubai blew up," he said. "Similarly, it was important to have a retail tranche which gave us another source of demand to draw on."

But the main event on Thursday was the spin-off of Hochtief Concessions from its parent company.

The deal was originally pitched as a perfect IPO for current conditions given its steady, highly visible cash flow from toll roads and its direct exposure to the economic recovery through its airports business.

In the event, investors proved to be a tougher sell than expected. By Thursday, just half of the deal was covered.

Certainly, the company did not make it easy for bookrunners and global coordinators Citi, Deutsche Bank and Goldman Sachs and joint bookrunner Barclays Capital.

Herbert Luetkestratkoetter, CEO of Hochtief, the German industrial group spinning off the Concessions business, told local media at the weekend that the IPO could be pulled if markets continued to fall following the Dubai World revelations and similar comments emerged in the media on Thursday morning.

Luetkestratkoetter's candour turned out a sensible damage limitation exercise. The deal, which was marketed with a Eu24-Eu29 range, was pulled late on Thursday evening — the only major casualty of 2009's limited European IPO run. The withdrawal of the deal means engine supplier Tognum's Eu2.01bn IPO in June 2007 remains the last sizeable IPO from Germany.

The offering comprised up to 25m new shares and 9.44m existing shares held by Hochtief, which also planned to provide the 4.79m shares for the greenshoe option. Hochtief aimed to maintain a stake of at least 51% following the IPO.

On Monday, HSBC Trinkaus will price the Eu158m-Eu228m IPO of Danish company Scan Energy, which will list in Frankfurt.

On Monday this week, the bank announced a price range of Eu9-Eu13 for the deal, which was executed using a decoupled process with roadshows in advance of price information being made available.

The range was lower than originally mooted: it was previously expected that the deal would raise Eu228m-Eu280m.

Laurence Neville

Document EURMCM0020091229e5c400052

COMPANIES - INTERNATIONAL

Investors say high price sank Hochtief unit IPO

By Daniel Schäfer and James Wilson in Frankfurt

436 words

5 December 2009

Financial Times

FTFT

Asia Ed1

09

English

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construction

Hochtief's failed attempt to push through the flotation of its infrastructure unit this week was a stark reminder of investors' price-sensitivity in the nascent recovery of the European market for initial public offerings.

While Hochtief blamed the Dubai debt crisis for its decision to pull the plug, bankers said the problems surrounding the deal should not have a broader impact on the outlook for what is expected to be a strong pipeline of European IPOs next year.

The German construction group abandoned yesterday's planned €1bn (\$1.5bn) IPO of Hochtief Concessions after it failed to attract enough investors.

Several people close to the situation said the order book had been filled by only about 60 per cent, mainly because of a lack of demand from investors outside Germany.

Hochtief blamed the debt crisis at Dubai World, one of Dubai's flagship companies. One person close to the company said some investors cancelled their orders after the recent market turmoil in Dubai.

But investors and investment bankers involved in the deal said the main reason had been management's insistence on a far too ambitious valuation of €24 to €29 a share.

One senior investment banker said the events in Dubai were no excuse in a week when Bank of America was able to raise \$19.3bn in equity.

A manager at one of Germany's largest institutional investors said: "The investment banks have got the pricing completely wrong."

One banker outside the consortium - led by Citigroup, Deutsche Bank, Goldman Sachs and Barclays Capital - reckoned the unit had been overpriced by 10 to 20 per cent.

"It was clear to us from the start that the company had very ambitious price expectations," an investment banker from the IPO consortium said.

Hochtief does not dispute this. Herbert Lütkestratkötter, Hochtief's chief executive, said in a statement: "Our aspiration as active portfolio managers has always been not to sell below our value expectations."

Another senior manager added: "We have nothing to give away and we did not have to do the IPO."

Several investors said that Hochtief Concessions' opaque company structure also contributed to the reluctance to buy shares. "Investors were struggling to see through this complex ragbag of airport stakes," one German investor said.

The group is one of the biggest privately owned airport operators in the world.

One German equity capital markets banker said Hochtief Concession's failure would not block the torrent of IPO's expected early next year.

ftnewspaper_20091205.xml|20091205A109.301

Document FTFT000020091205e5c50001b

Financial Times Deutschland: Banks to blame for cancelled Hochtief IPO

257 words

7 December 2009

Financial Times Deutschland

FTDEFT

English

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The initial public offering (IPO) of Hochtief Concessions failed because of the greediness of the banks mandated to arrange it, according to a commentary of daily Financial Times Deutschland (FTD).

The banks made a wrong move when they announced expectations that the price per share would range from EUR 24 to EUR 29, Christian Kirchner, FTD financial editor-in-chief, wrote. Such pricing corresponded to a deduction of between 6% and 22% against the intrinsic value of Hochtief's subsidiary. This is a way short of the between 25% and 45% discounts at which other infrastructure construction companies are currently trading, Kirchner wrote further.

Parent construction company Hochtief justified putting the flotation on hold with the Dubai financial crisis which had spoiled the capital market environment. A sale of the unit at a price below its value is not on the agenda, Hochtief said. According to Kirchner, those are not valid arguments because the situation on the global capital markets was much more favourable than Hochtief claimed.

Furthermore, Hochtief's banks of choice wasted the opportunity to use the flotation of Hochtief Concessions as an icebreaker for future IPOs on the German stock market, Kirchner wrote. While the USA and emerging markets already kicked flotation into high gear again, in Germany there was only the micro-IPO of Chinese wireless data card provider Vtion Wireless Technology.

Abstracted from an original article in Financial Times Deutschland (Hochtiefs Banken haben sich verzockt) by Christian Kirchner.

Source: (SI/RV/SI)

Document FTDEFT0020091207e5c700001

Finanzen

Bilfinger hält an Börsenplänen fest

Michael Gassmann

253 words

7 December 2009

Financial Times Deutschland

FTD

17

German

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Der gescheiterte Börsengang von Hochtief Concessions schreckt den Rivalen Bilfinger Berger nicht ab, ähnliche Pläne für seine australische Tochter BBA zu verfolgen. "Unsere Überlegungen werden dadurch nicht beeinflusst", sagte ein Sprecher. Im Januar will Bilfinger über einen Börsengang von BBA oder einen Verkauf an einen Investor entscheiden. Allerdings trennt sich der Bilfinger ganz von seiner Tochterfirma, während Hochtief nur eine Minderheit zum Verkauf gestellt hatte.

Die meisten Analysten gehen davon aus, dass das operative Geschäft von Concessions nicht unmittelbar beeinträchtigt ist. "Unsere Finanzierungslinien stehen auch ohne Börsengang", unterstrich Concessions-Chef Peter Noé am Freitag. Der Konzern muss allerdings auf Erlöse von mindestens 882 Mio. Euro verzichten, die der abgeblasene Aktienverkauf einbringen sollte. Die Analysten von Credit Suisse spekulierten bereits über einen Verkauf von Concessions an einen institutionellen Investor. Hochtief schloss auch einen erneuten Anlauf nicht aus, die Flughafen-Tochter an die Börse zu bringen.

Ein Hauptziel hat Hochtief-Konzernchef Herbert Lütkestratkötter vorerst verfehlt: Der Börsengang von Concessions sollte zweifelsfrei dokumentieren, welche Werte in Hochtief neben der Ertragsperle - einer 55-prozentigen Beteiligungen an der australischen Leighton Holdings - noch stecken. Deren Börsenwert ist allein mit 3,72 Mrd. Euro bereits exakt so hoch wie der gesamte Börsenwert der Hochtief-Aktie.

Die Anleger messen somit dem Rest von Hochtief also keinerlei Wert bei. "Auch der Kursanstieg der Hochtief-Aktie seit März ist ausschließlich durch den Kurs der Leighton-Aktie und des australischen Dollar getrieben", schreiben die Analysten von Bank of America Merrill Lynch in einem Bericht. Michael Gassmann

Document FTD0000020091207e5c70002a

Studie - IPO-Boom geht 2009 an Deutschland vorbei

389 words

9 December 2009

13:24

Reuters - Nachrichten auf Deutsch

FDG

German

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Frankfurt, 09. Dez (Reuters) - Nach einem sehr schwachen IPO-Jahrgang 2009 richten die Experten der Unternehmensberatung Ernst & Young ihre Hoffnungen auf 2010. Die Perspektiven für den Aktienmarkt seien nach wie vor gut, "daher werden wir im ersten Halbjahr 2010 mit großer Wahrscheinlichkeit auch wieder mehr Börsengänge sehen", sagte Heinrich Lind, Partner bei der Unternehmensberatung, am Mittwoch. Gerade in Europa gebe es nach dem Ende der Rezession einen erheblichen Rückstau an Unternehmen, die einen Sprung an die Börse wagen könnten. "Die Pipeline ist mehr als voll. Was jetzt fehlt, ist ein erfolgreicher Eisbrecher", sagte Lind.

Diese Hoffnung ruhte zuletzt auf Hochtief Concessions. Die Aktien der Hochtief-Tochter sollten eigentlich vergangene Woche auf dem Kurszettel auftauchen, doch in letzter Minute wurde das möglicherweise milliardenschwere Initial Public Offering (IPO) abgeblasen. Damit hat in Deutschland dieses Jahr bisher nur ein einziges Unternehmen einen Börsengang im streng regulierten Prime Standard gewagt: Am 1. Oktober startete der chinesische Mobilfunkzulieferer Vtion, konnte mit einem Volumen von 56 Millionen Euro aber nicht als Eisbrecher dienen.

SCHWELLENLÄNDER HÄNGEN EUROPA AB

Dabei tauchten im laufenden zweiten Halbjahr weltweit mehr als doppelt so viele Unternehmen an den internationalen Aktienmärkten auf als im Jahr zuvor und sammelten bei den Investoren 83 (12) Milliarden Dollar ein, wie aus einer Studie von Ernst & Young hervorgeht. Allein im Oktober und November wurden in China bislang 84 IPOs gezählt, nach 52 im gesamten dritten Quartal. Acht der zehn größten Börsengänge des laufenden Jahres fanden in Schwellenländern statt. Auch der bisher größte IPO des Jahres war im Oktober in Brasilien, als die spanische Banco Santander beim Börsengang ihrer brasilianischen Tochter Banco Santander Brasil umgerechnet 7,5 Milliarden Dollar einnahm.

Europa und vor allem Deutschland hinken hinterher. Im bisherigen Verlauf 2009 fand nur noch jeder zehnte IPO in Europa statt. "Im IPO-Geschäft spielt die Musik zunehmend in den Schwellenländern, die sich überraschend schnell von der Wirtschaftskrise erholen und wo die Investoren noch echte Wachstumsstories sehen", sagte Lind. Zudem treibe die Privatisierung ehemaliger Staatsbetriebe. "Europa verliert als IPO-Markt zunehmend an Bedeutung - das ist eine beunruhigende Entwicklung", sagte Lind. "Ein Börsengang ist eine wichtige potenzielle Kapitalquelle wachsender Unternehmen. Wenn diese versiegt, ist das eine Wachstumsbremse für die Volkswirtschaft".

(Reporter: Kerstin Leitel; redigiert von Kathrin Schich)

DEUTSCHLAND/IPO|LANGDE|GERT|GEA|GEM|OE|SWI|DNP

Document FDG0000020091209e5c90002p