NORGES HANDELSHØYSKOLE

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Company Valuation in Emerging Market

The case of Bulgarian Telecommuncations Company

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Executive Summary

Telecommunication companies often catch investors' attention as a promising growth investment. How should the value of such a company be estimated, given the deficiencies of emerging market economy? This is the question that provoked my interest for the Bulgarian incumbent telecom. This paper exhibits my attempt to work through its financial data and to get familiar with the industry developments in Europe and Bulgaria. Three different valuation models are used in order to address the uncertainties of emerging market environment. The detailed fundamental analysis of the company, based on publicly available information as of April 2006, allows me to arrive at an investment recommendation that could be useful for strategic or financial investors interested in adding a Bulgarian company to their portfolios.

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1. Introduction

Four words sum up today's telecommunication market:

private, competitive, mobile and global.[1]

The transition of telecommunication industry from monopoly to ever increasing competitiveness during the last twenty years resulted in much better financial results, which fuelled telecoms' attractiveness on the stock market. Moreover, incumbent telecoms were on the forefront of investors' preferences when privatization process started in many emerging market economies. What is the fair price for those companies is the question that quite often drew a separation line between the sellers and the potential buyers. The sellers, usually governments of countries in transition with serious strategic problems to solve, had high demands towards investors, whom on the other hand were struggling to see the value due to information asymmetries and more practical concerns. Sound financial analysis was deemed a necessity that gave the parties bargaining power and possibly led to a successful deal. A number of publications address the various problems of valuation in emerging markets, however academics and practitioners have not yet agreed on a single best practice. Thus, performing a company valuation under those circumstances is often a challenge that requires a good knowledge of the local market specifics, an eye for details, but also a strategic viewpoint.

The company in focus of this thesis is the incumbent telecom in Bulgaria. After a long privatization process, Viva Ventures GmbH acquired 65% of the company in a direct sale finalized in June 2004. The acquiring company is a just privatization vehicle, owned by Advent International Corp – global private equity fund. In the end of 2005 Bulgarian media announced that Advent International has sold an

[1] International Telecommunication Union (2002)

option on its stake in Viva Ventures and thus in BTC, to the largest foreign direct investor in Bulgaria, who is also a strategic investor in telecommunication industry in Finland, Greece, Poland and the Czech Republic.

The objective of this thesis is to estimate the value of BTC, which recently lost its monopoly status and also went public, offering 35% of its shares on the Bulgarian Stock Exchange since January 27 2005. The paper follows the same path that future strategic investors will have to walk if they consider acquiring part of or the company as a whole. Since the paper assumes the international investor's point of view, it can be also useful to investors seeking portfolio diversification in Bulgaria.

The puzzles of the company's future performance and the applicable level of risk are compiled from publicly available information about the company, the sector and the macroeconomic development of Bulgaria as of April 2006 from various sources. A thorough search of the company databases on hand to international investors like Amadeus, Factiva, etc proved that the company is only partially covered and that the financial data varies significantly based on the source. In order to avoid building up on others' assumptions, the financial analysis in this paper is based upon the audited consolidated financial statements, published on BTC's web-page. When it comes to industry trends and market analysis, the recommendations of renowned specialists are adopted where necessary. The missing links are substituted with reasonable assumptions explicitly mentioned in the text.

The intention was to keep this paper as practical and focused as possible. The applicable theory is incorporated in the text where necessary to explain certain developments that are important from the company point of view or to justify the analytical decisions taken.

The rest of the thesis is structured as follows: in Chapter 2 a detailed company presentation is given, including strategic analysis of its current market position and a short SWOT analysis. Chapter 3 focuses on telecom industry review and in

particular the trends for the Bulgarian market for telecommunication services. In Chapter 4 a discussion is presented about the choice of valuation model and how the estimates for the discount factor were reached. Chapter 5 contains the rest of the building blocks of the actual valuation – short historical analysis, pro-forma statement assumptions and value calculations. The conclusion compares the findings of the different methods used to arrive at an investment recommendation. Reference list and appendices with the detailed valuation spreadsheets and other important inputs complete this paper.

2. Bulgarian Telecommunications Company

2.1 Activities and Organization

Bulgarian Telecommunications Company AD[2] (BTC) is the main telecom operator in Bulgaria with 2.5 million fixed-line subscribers as of April 2006[3].

The company was incorporated on February 2 1993 as a single person joint stock company, owned by the Republic of Bulgaria. It is a successor of Bulgarian Post and Telecommunications, the state monopoly in telecommunications during the communist regime. Nowadays it is registered as public joint stock company with capital as of January 1 2006 of BGN 288,764,840 (EUR 147,643,118), distributed in 288,764,840 personal shares with face value of BGN 1.00 (EUR 0.51129[4]). BTC's main activities include development, operation and maintenance of the national fixed telecommunication network for voice and data transfer.

According to the data provided to the Bulgarian Enterprise Information System (Table 1), as of January 10 2006 the company shareholders are:

Table 1 Major shareholders

Shareholders	***Share***	***Amount***
Viva Ventures (AT)	65.00%	187,697,160.00 BGN
Deutsche Bank AG - London (UK)	9.84%	28,414,460.00 BGN
Barclays Bank (Suisse) S.A. (CH)	9.26%	26,739,625.00 BGN
Bulbrokers JSC – Sofia	4.97%	14,345,550.00 BGN
Economic and Investment Bank JSC - Sofia	0.83%	2,393,125.00 BGN
Ministry of Transport and Communications	n.d.	35.00 BGN

Source: Bulgarian Enterprises Information System

[2] See Appendix 1 for a note on legal entities in Bulgaria

[3] Bulgarian Telecommunications Company, <http://www.btc.bg/en/aboutus.php> (February 2006)

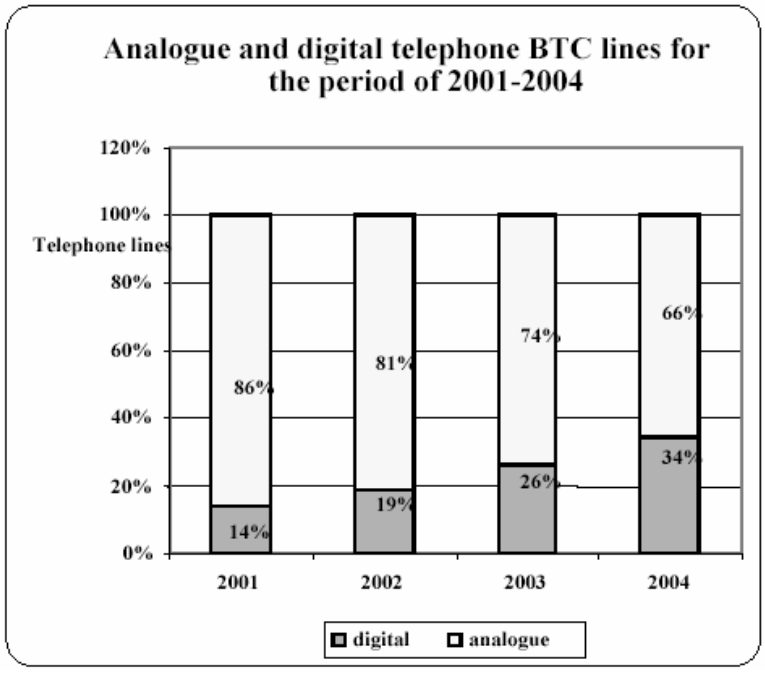
[4] The exchange rate used is 1 EUR = 1.95583 BGN

BTC owns a license to develop and operate a telecommunication network on the territory of Republic of Bulgaria and to offer telecommunication services. The license was issued on February 15 1999 and is valid for 20 years. It could be renewed following the procedure provided in the Law of the telecommunications.

In order to perform its operations, the company owns and operates technological equipment including advanced digital equipment, switching, transmission equipment, radio and TV transmitters, and earth satellite station. The systems applied are using:

- Built fiber optical network with length of 2,900 km;
- Digital microwave Lines with length 1,500 km;
- Countrywide Internet and data transmission networks;
- Connections to over 45 foreign telecommunications operators, including to 28 European countries.

Figure 1 BTC analogue and digital telephone lines 2001-2004



Source: Communications Regulation Commission (CRC), 2004

The network however has a low level of digitalization (Fig. 1). The company is currently bound to an investment program in order to improve the quality of the infrastructure. The process of modernization resulted in 45.6 per cent of BTC network being digital as of December 2005, including 67.42 per cent of the network of 27 big cities in the country[5].

As of January 10 2006 BTC owns shares in a number of companies (Table 2).

Table 2 BTC's Major Shareholdings

Shareholdings	***Share***	***Amount***
BTC Mobile SPLTD – Sofia	100.00%	5,000.00 BGN
BTC Security SPLTD – Sofia	100.00%	5,000.00 BGN
BTC-Net SPLTD – Sofia	100.00%	2,297,000.00 BGN
Bulfon JSC – Sofia	100.00%	5,400,000.00 BGN
Radio-telecommunication company Mobikom SPLTD – Sofia	100.00%	7,650,000.00 BGN
New Bulgarian communications (BG)	10.00%	500.00 BGN
Sofia Commodity Exchange JSC – Sofia	5.00%	13,500.00 BGN
Bulgarian Post Bank JSC – Sofia	0.65%	716,775.00 BGN

Source: Bulgarian Enterprises Information System

BTC Mobile SPLTD was incorporated on November 25 2004. Its main activity is to develop, operate and maintain mobile cellular digital network and the related telecommunication services. In June 2005 the GSM license, which the mother company BTC obtained one year earlier, was transferred to BTC Mobile, following the approval of the regulatory authorities. The license is valid for a period of 20 year for development, operation and maintenance of a mobile cellular telecommunication network under the GSM standard with national coverage using 900 and 1800 MHz radio frequencies. BTC Mobile is effectively offering mobile communication services since November 5th, 2005 using Vivatel as a network brand-name and is the third mobile operator in the country after Mobiltel (brand of Mobiltel AD) and Globul (brand of Cosmo Bulgaria Mobile).

[5] BTC News review, from PARI Daily, 16.12.2005, Bulgarian Enterprise Information system (Jan 2006)

BTC Security SPLTD was incorporated on October 27 2004 with main activities to offer security service to BTC JSC and its daughter companies.

BTC-Net SPLTD was incorporated as Global One Communications and Informational Services with 60% owned by Global One and 40% owned by BTC. In June 2001 BTC bought out Global One's share and became the sole owner of BTC Net. BTC Net's main activities include the development and operation of data transfer networks for the provision of domestic and international value added services and sales of equipment for such services, participation in the development and operation of other telecommunication network facilities and provision of other telecommunication services. Currently BTC has been merging the operational functionality of BTC Net into BTC. As a result BTC Net is providing mainly VoIP services.

Initially BTC owned a minority share in **Bulfon JSC** (34%) and **Radio-telecommunication company Mobikom SPLTD** (39%). In February 2005 BTC acquired full control over RTC Mobikom, first generation mobile system operator, buying the shares of Cable and Wireless (UK) (49%) and RES (12%). The company strategy regarding the operations of the first mobile operator Mobikom that constantly reduces its profitability due to strong competitors is focused on gradually transferring the client base to BTC mobile and then closing Mobikom operations until the end of 2006.

In May 2005 BTC completed the acquisition of Bulfon, pay phone operator, from Intracom and currently holds 100% of the shares.

In June 2005 BTC sold its shareholding in Eutelsat SA, France to SatBirds2 SAS, France for EUR 2,912,000 and acquired newly issued shares in the mother company Satbirds 2 SAS worth EUR 344 000[6].

[6] BTC Consolidated financial statements 2005

2.2 Company history

BTC was the only provider of communication services in the country after its incorporation as a separate company in 1993 until 2003. The company development during the last 5 years was influenced by the process of sector liberalization and the regulatory changes following the decision of Bulgarian authorities to join EU.

2.2.1 Privatization

The privatization of major monopolies was a major step for the transition process in Bulgaria towards a market economy. However this process was not always smooth and straightforward despite the support of both politicians and general public.

The first official decision to start a procedure for privatization of BTC dates back to June 14 1996. The first tender for 51% of the company was won by a consortium between OTE, Greek telecom operator and KPN, Dutch telecom operator. The deal is registered with three entries in ZEPHYR database (Table 3):

Table 3 Acquisitions with target company – BTC

Date announced	***Deal value***
18/03/1999	n.a.
02/06/1999	490,384.60 EUR
28/03/2000	625,000.00 EUR

Source: Zephyr Database

However none of those deals has been completed. After a year and a half of negotiations with the prospective buyers a final agreement was not reached[7].

[7] BTC News review, from PARI Daily, 02.08.2000, Bulgarian Enterprise Information system (Jan 2006)

A second attempt to partially privatize the company was initiated on July 2 2001. The Government started a tender procedure for selling 65% of the company. On October 23 2002 the Bulgarian Privatization Agency announced that it has selected Viva Ventures GmbH as the preferred buyer. The next months were spent in negotiations about the price and additional requirements of Bulgarian government. Because of political pressure the deal was challenged in court with concerns about how strictly the approved privatization procedure has been followed. Even though the Supreme Court has approved the acquisition of the controlling stake by Viva Ventures, the Privatization Agency's Supervisory Board has blocked the deal and started negotiations with the second bidder – Koch Holding-Turk Telecom Consortium. On May 16 2003 Viva Ventures in turn filed an appeal with the Supreme Administrative Court. On July 7 2003 the Supreme Administrative Court reversed the decision of the country's Privatization Agency Supervisory Board to reject the deal. At that time Viva Ventures was already offering EUR 280 million for the stake. Another two months followed during which both bidders were constantly improving their bids while threatening or undertaking legal actions for violations of the privatization procedure. On August 21 2003 Koch Holding withdrew from any further bidding and Viva Ventures remained the sole bidder for the company. However, the deal was not made easier then. It took another 10 months until the government and the prospective buyer reached an agreement about the prices and all related clauses of the deal. The final contract was signed on June 11 2004 under the following conditions:

Share price	230,000,000 EUR
Capital Increase of BTC	50,000,000 EUR
Guaranteed Employment	
2004	24,010 employees
2005	22,300 employees
2006	20,530 employees
Investments	700,000,000 EUR

Including	400,000,000 EUR with in the next 5 years after the sale
	300,000,000 EUR in addition upon buyer's decision
Fulfillment guarantees	30,000,000 EUR per year for the investment and employment schedule
Management fees	2.25% of the turnover
Refinancing of the government guaranteed debt at the amount of	70,000,000 EUR
Additional social clauses	15,000,000 EUR

The committed investments were needed in order to digitalize the network in accordance with EU accession obligations of Bulgaria. A target of 80% digital lines until the end of 2008 was set in the investment program.

Bulgaria's third GSM license was awarded to BTC as part of the privatization deal. The license fee amounts at 54,160,000 BGN or 27,600,000 EUR.

2.2.2 Initial Public Offering

On January 27 2005 the Bulgarian government offered a total of 2 869 573 shares (34.78 per cent of the BTC capital) at the Bulgarian Stock Exchange (Table 4). The shares had a par value of BGN 35 and were offered at a starting price of BGN 100 per share. The payment was announced against compensatory instruments (securities, issued by the government and granted to owners of property that cannot be restored as a part of denationalization program). On the last day of the trade against non-cash instruments the telecom shares reached an unprecedented peak of BGN 1,320 in compensatory instruments. Only four working days were enough to sell the total of 2 869 251 shares offered for sale[8].

[8] Bulgarian Telecommunications Company, <www.btc.bg >

The BTC's share price rose to BGN 297 on a free share trade after the end of the bid against compensatory instruments. The company's capitalization is the highest one among the other companies at the local market and amounts to BGN 2.72 bln.[9]

Table 4 BTC Key Stock Data

Full Name of the Company:	Bulgarian Telecommunications Company AD
Registered Office:	Sofia, Bulgaria
Registration/Trading Exchange:	Bulgarian Stock Exchange (BSE)
Ticker Symbol:	BTC
Industry:	Telecommunications
IPO Date:	January 27, 2005
Type of Shares:	Common Stock
IPO Nominal Share Value:	BGN 35.00
Stock Split:	35-for-1. Effective July 14, 2005
Current Nominal Share Value:	BGN 1.00
Number of Outstanding Shares:	288,764,840
Denomination Currency:	Bulgarian Leva (BGN)
Financial Year:	January 01 - December 31

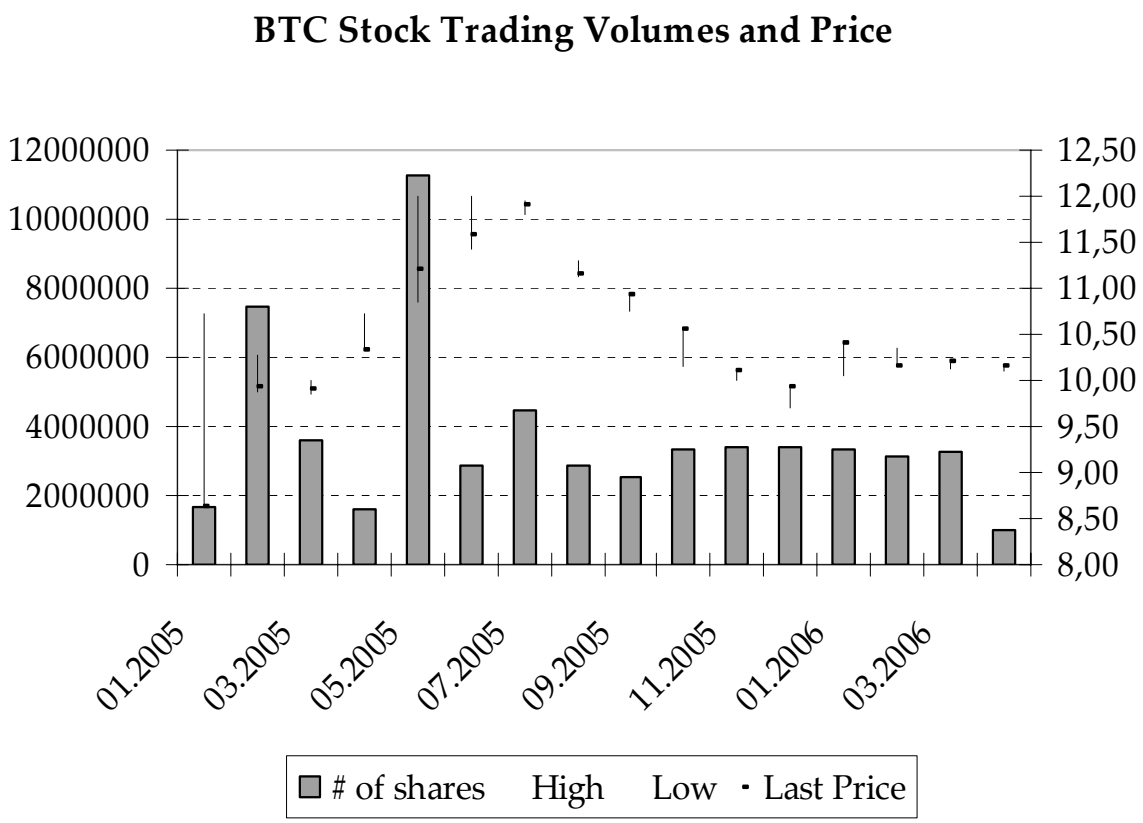
Source: Bulgarian Telecommunications Company

The Annual General Meeting held on June 24 2005 agreed to a stock split so that the face value of the shares will be BGN 1. Effective from June 30 2005 the company has 288,764,839 ordinary registered shares and one preference "golden" share, held by the Government through the Ministry of Transport and Communications. At the same annual meeting dividends at the amount of BGN 146,687,000 were distributed.

[9] BTC News review, from Cash, 03.10.2005, Bulgarian Enterprise Information system

The stock split allowed also smaller investors to include BTC in their trading portfolios and thus the volumes traded on a monthly basis after July 2005 do not vary as much as before. (Fig.2) The annual return on investments in BTC's stock is 26%[10].

Figure 2 BTC Stock Trading Volumes and Prices



Source: Bulgarian Telecommunications Company (2006)

[10] Benchmark Finance, Company Profile: Bulgarian Telecommunications Company, 16 February 2006, PARI Daily, English, Factiva Database (6 June 2006)

2.3 Current market position

2.3.1 Market regulation

Since January 1 2003 BTC lost its monopoly rights over the supply of local, national and international fixed voice and leased lines services. Carrier selection and obligations for universal telecommunications service were enforced from October 2004. In 2004 BTC introduced cost based accounting. Obligations that had to be implemented in 2005 include provision of Local Loop Unbundling access, carrier pre-selection, publication of the Reference Offer for Local Loop Unbundling access and application for cost-based prices. As of January 1 2009 BTC should also provide the right of number transfer.

After the liberalization of the market, BTC is considered by Bulgarian authorities as an operator with significant market power and thus is subject to several restrictions to ensure that no barriers of entry are imposed to potential competitors. Those restrictions are focused mainly on the pricing practices and the non-discriminatory supply of services to competitors. The current legal framework for pricing of BTC services includes a price cap calculated on the base of different macroeconomic indices, GNP and consumer-price indices. All price changes have to be approved by the Communications Regulation Commission one month prior to their implementation.

In addition BTC had the obligation to prepare Reference Offers for Interconnect, Leased Lines and Local Loop Unbundling (LLU) access for other operators. The Reference Offers for Interconnect, Leased Lines and Local Loop Unbundling had been approved by CRC in June, July and December 2004 respectively. In November last year the Supreme Administrative Court abolished the decision of CRC to approve the Reference Interconnection Offer. This fact will surely delay further the effective start of competitors' operations. BTC has entered into 5 interconnect

agreements in 2004 and another 7 in 2005 with the fixed voice service license holders. In 2005 the company entered into LLU agreements with 3 companies: Orbitel AD, Nexcom Bulgaria AD and Spectrum Net AD. Although BTC and the Commission were working in cooperation through 2004 and the first half of 2005, it seems that during the last months of 2005 the Commission has adopted more conservative position not to approve a number of BTC's suggestions. The company evaluates that as impediment for the future liberalization of the market. This fact was also used as an official reason to start another internal restructuring program in May 2006.

2.3.2 BTC product mix

Currently the company offers end-user fixed-line voice and data transfer services to home or business subscribers, packaged in various subscription plans. It also acts as a wholesaler of services through its network as required by the regulator. Its daughter company BTC Mobile offers mobile phone services branded under Vivatel brand.

BTC has significantly increased the number of services and subscription schemes offered. In October 2004 it introduced new "At home" subscription plans for home users. A month later the company introduced high-speed internet packages for residential users and small and medium size enterprises. In 2005, BTC launched three new fixed-line packages for business subscribers. BTC Office, BTC Planet, and BTC Mega were approved without remarks from CRC in May, and were launched in August. A new subscription plan for business customers was rejected by CRC in February 2006[11]. Increased efforts have been dedicated to improving the customer service both in terms of accessibility and quality.

[11] Bulgarian News Digest, State Regulator Stops Bulgaria BTC Business Service, 02 March 2006, Factiva Database (6 June 2006)

In line with the changes, in March 2005 the company introduced new logo and image system. Promotion campaigns have become part of its regular marketing policy[12]. According to a ranking published in Capital newspaper, BTC moved from seventeenth to third position into the top 50 Bulgarian advertisers in the printed media, the trends are presumably the same with other types of media.

An average price increase of 14.5% was introduced in May 2004, although the connection fees and the prices for long-distance and international calls were reduced by 12.5%, 8.4% and 9.5% respectively. In the end of 2004 the price relationships in Bulgaria were 1:3:13 for local, long-distance and international calls respectively, while the average EU member levels are 1:2.4:5.7.

In May 2005 BTC was granted a license for construction of mobile 3G telecommunication system under the UMTS standard, B Class (2 x 5 + 5 MHz). The license was issued for a period of 20 year after BTC pays up the license fee totaling BGN 42 million.

In the beginning of November 2005 the company acquired one of the three licenses granted for construction of "point-to-multipoint" network for the amount of BGN 6.172 mln. The license will allow BTC to build and operate high-speed wireless network.

2.3.3 Competitors

No single competitor offers the whole range of BTC products and services. The biggest companies in Bulgarian telecommunications are ranked in Table 5. BTC holds the leading position and together with its daughter companies generates 48.7% of the net sales of the top 11 Bulgarian companies in the telecommunication

[12] BTC web-site, News section

sector in 2004. Second and third place are held by the two mobile operators, which are direct competitors of BTC Mobile.

Orbitel JSC and Spectrum Net JSC have started as internet providers that are now entering also the market of long-distance and local phone calls. Eurotur SAT TV JSC is a cable TV operator.

According to publications in the local press BTC serves 90 per cent of the country's international traffic and is an internet access leader, holding above 60 per cent of the service in Bulgaria[13]. Even though the sector is open for competition in legal terms, effectively BTC is still enjoying a dominant position on the market. The prospects however are that this situation will not last long.

Table 5 Top Bulgarian telecommunication companies by Net Sales in BGN

No	Company	2004	2003	2002
1	Bulgarian Telecommunications Company JSC – Sofia	1,034,698,000	1,025,542,000	1,025,837,000
2	Mobiltel SPJSC – Sofia	693,358,000	857,670,000	782,980,000
3	Cosmo Bulgaria Mobile SPJSC – Sofia	347,133,000	197,751,000	91,172,000
4	Telelink JSC – Sofia	37,511,000	19,496,000	21,609,000
5	Radio-telecommunication company Mobikom SPLTD – Sofia	36,904,000	54,835,000	78,108,000
6	Orbitel JSC – Sofia	18,259,000	14,492,000	11,583,000
7	Cabletel JSC – Sofia	16,205,000	10,492,000	10,143,000
8	BTC-Net (Global One Communications and Information Services) SPLTD – Sofia	13,325,000	6,939,000	4,561,000
9	Intracom-Bulgaria JSC - Sofia	12,019,000	15,118,000	18,610,000
10	Spectrum-net JSC - Sofia	8,841,000	8,826,000	7,220,000
11	Eurotour Sat TV JSC - Sofia	8,512,000	8,578,000	

Source: Adopted from Bulgarian Enterprises Information System and Bureau van Dijk, 2006

[13] BTC News review, from Cash, 03.10.2005, Bulgarian Enterprise Information system

2.3.4 SWOT analysis

The SWOT analysis in this section is inspired from BMI's Bulgaria Telecommunications Report Q4 2005. The findings of BMI are extended to include local knowledge and personal experience in terms of the customer relationship management.

The analysis shows that the company is facing a few threats, subject to consumer style preferences, which could only marginally be improved with the right strategy. On the other hand, the company has the prerequisites to grasp the advantages of changing technologies. The legacy is both weakness and strength, since the company is well-known not last because of its shortcomings. Should the management succeed in building new customer-friendly image, the future prospects will be positive even in the face of increased competition.

Table 6 SWOT Analysis of BTC

Strengths	***Weaknesses***
➢ Dominant player in the fixed line segment ➢ High market penetration ➢ The basic Internet provider in the country ➢ High financial independence	➢ Low rate of digitalization ➢ Subject to stringent government regulations (price caps) ➢ Universal service obligation ➢ Bad customer service image
Opportunities	***Threats***
➢ The start of mobile services ➢ Professional management ➢ Modern marketing strategies ➢ Improved efficiency after the fall of after-privatization restrictions	➢ Competition in fixed line services also through competitive networks ➢ Decline in fixed line subscriptions ➢ VoIP

2.4 Accounting practices and events that will influence the analysis

BTC group has adopted IFRS as a primary basis of accounting from January 1st, 2003. In the financial statements for 2003 there is a reconciliation of the basic financial parameters for FY 2002 that makes it possible to include 2002 in the analysis.

In 2004 the company has started consolidating the figures of its newly established subsidiaries. The financial statements of the Parent company and its subsidiaries have been combined on line-by-line basis, and intra-group transactions and resulting profits or losses have been eliminated in full. The financial statements for 2003 have been restated.

The company is using new format for their financial statements for FY 2005. Although the numbers are restated accordingly for FY 2004, such comparison has not been done with previous years, and thus the analysis of more than 2 years period is highly unreliable.

In 1997 Bulgaria experienced severe hyperinflation. Instead of applying hyperinflation accounting, the company chose German Mark (DEM) as measurement and reporting currency for its financial statements. According to this policy which continued until December 31 2001, all non-monetary and related assets were valued at the historical DEM/BGN rate, monetary assets and liabilities were valued at the balance sheet date rate and income and revenues items were valued at the rate of the date of transaction. Because of this change in measurement and reporting currency in the past nowadays the book value of equity is 91% higher than the capital as per court registration.

The company has been consistent in distributing dividends during the last 5 years. However, it has been only one year since the company is in private hands and the dividend payout policy is decided between the shareholders, not by the government according to the needs of the budget. In 2004 the paid dividends amounted at 58% of the net income. Keeping in mind all the investments the company needs to undertake in order to remain competitive, this will not be sustainable in the near future.

Another fact worth mentioning is the frequent refinancing of company's debt. The new management took the company with the commitment to refinance the government guarantees. Since then the company has refinanced also the loans of the company every year. The last refinancing deal is from January 18 2006. The new credit line is for higher amount, but the interest rates are the same as the ones for the previous loan, so the interest payments forecasts can be based on data from 2005.

3. Telecommunication industry developments

3.1 Privatization of incumbent telecoms

The dominant trend in the telecommunications development over the last two decades has been privatization and liberalization. The beginning was the privatization of British Telecom in 1984. Since then more than 80 countries have fully or partially divested their share in the national telecommunications service provider, raising almost USD 450 billion in public offerings[14].

According to Meggison (2005), telecommunications were considered a natural monopoly and thus state-owned telecom monopolies were maintained in order to protect consumers from exploitation. Even though in the beginning of the century many countries allowed private ownership of telecoms, until early 1980 the only countries with privately owned telecoms were Canada and the United States[15]. The state owned monopolies were providing service of bad quality at high cost. Investment decisions were taken by the government and the telecoms were competing for scarce financial resources with other social priorities. Thus they often were technologically outdated and also overstaffed. The example of private owned telecoms that offered ever decreasing price and improved services was one of the driving force that started the privatization wave in Europe. The new advances in telecommunication technology also changed the basics of the business. Digital systems, cable television, cellular networks and new equipment for fixed-line telephone service made it possible to significantly increase the variety of

[14] Megginson, William L. (2005): The Financial Economics of Privatization, Oxford University Press, Inc., New York

[15] Ibid

communication services and thus the state-owned monopoly structure was not able to provide the required level of service and became obsolete. According to Li and Xu (2002) less than 2% of the telecom providers in 167 countries were privately owned in 1980, while in 1998 their share grew to 42%. Alongside with the launch of privatization programs the governments had to devise ways to limit the power of the monopoly and to create investment incentives. Liberalization of the sector was badly needed and different governments chose for different solutions. Some introduced special legislation and created new regulating authority. Others considered breaking up the incumbent into smaller companies or introducing competition either immediately or shortly after the sale. In countries where the government was late with introducing the appropriate legislation or had hard times imposing it, truly exploitative privatizations were possible at the expense of the consumers and laid-off employees.

Meggison (2005) describes two basic types of privatization deals – an asset sale (trade, private or direct sale) or through a public share offering at the stock exchange. The choice of privatization method depends, among other things, on the stage of development of the stock exchange, and thus smaller and developing countries preferred direct sales, while larger industrialized countries choose public offerings[16]. However few countries with less developed stock markets intentionally opted for public offerings in order to boost up the trade and attract more investors[17]. In addition public offerings are transparent deals that leave less room for corruption and political considerations. A number of examples of both successful and troublesome privatization process come from Eastern European countries like Poland, Hungary and the Czech Republic. Their telecommunication companies

[16] Li, Wei, Christine Zhen-Wei Qiang, Lixin Colin Xu (2005): Regulatory Reforms in the Telecommunications Sector in Developing Countries: The Role of Democracy and Private Interests, CEPR working paper, March 7th, 2005

[17] Bekaert, Geert, Campbell R. Harvey (2002): Emerging Markets Finance, Available http://papers.ssrn.com/sol3/papers.cfm?abstract_id=350180 (1 March 2006)

attracted lots of investor attention when the governments announced their sale in the middle of 1990s, but only Hungarian Matav had smooth development and privatization process in 1999. Poland and Czech Republic had more controversial experiences – they managed to attract strategic investors but disagreements about the investment policy, control and restructuring steps were difficult to overcome and both governments retained large and unwanted stakes in their fixed-line providers[18].

Where does the case of privatizing the Bulgarian incumbent telecom fall? As shown in the company history the process had been significantly prolonged. Local media characterized the deal as the longest privatization in Bulgarian history and also the one that came through all circles of the judicial system and was an object of many political bargains. The fact that it was finalized after the big stock market crash in April 2000 related to the inflated investor expectations towards new technology companies provoked lots of accusations in Bulgarian media that the government lost the moment and because of that had to sell the company much cheaper than the other countries following the same strategy. Publications in the local newspapers spread the news that Deutsche Bank, consulting Bulgarian Government with regard to BTC privatization, evaluated the whole company at a minimum of EUR 467 millions and a maximum of EUR 1.078 billion and recommended a price for the 65% of the shares between EUR 280 millions and EUR 600 millions[19]. A similar value was published as an outcome of City Group's valuation of the company at EUR 936 millions[20].

[18] Megginson, William L. (2005): The Financial Economics of Privatization, Oxford University Press, Inc., New York

[19] Valentin Georgiev, Deutsche Bank's Evaluation of BTC Stands at EUR 1bn., 11 March 2004, PARI daily, Factiva Database (6 June 2006)

[20] Ibid

The gap between the recommended maximum and the actual price of EUR 230 million for the deal also provoked concerns that the main drivers behind the privatization process were not economic but political. The same claims were voiced when the government offered the rest of its shareholdings in the company to the public on January 27 2005[21]. The exact timing of the public offering and the payment method chosen were reviewed in the light of the pending elections in June 2005 and the need of the party in power to regain its decreasing popularity.

The initial public offering of BTC shares may be considered also as an attempt to increase the importance of Bulgarian Stock Exchange. Perotti and van Oijen (1999) claim that listings of large privatized companies provide substantial impact on trading liquidity on the local stock market while at the same time increasing the investment opportunities for local investors to increase their portfolio diversification.

The positive effect of the announced public offering of BTC shares was noticed even before the trade started. The sale of shares against compensatory instruments also created a strong market for them thus allowing thousands of Bulgarians to receive shares or cash for the securities, issued in the beginning of 1990s to compensate land- and other properties owners for the expropriation of their property from the communist regime. Before the announcement of the terms of the offering, the compensatory instruments were traded at 25% of their face value, while just before the day of the offering their price has reached 110%[22].

Market capitalization stood at just BGN 4 billions at the start of the year (2005), equal to about 10 per cent of gross domestic product. Daily turnover in Sofia averaged less than BGN 2 millions until voucher trading pushed volume above

[21] Politics plays a part in Bulgaria's telecoms sell-off EMERGING EUROPE, 26 January 2005, Financial Times, Factiva Database (6 June 2006)

[22] Ibid

BGN 4 millions early this month. The Sofix general index has risen 9 per cent since the start of the year (2005).[23]

The statistics about the number and the type of traded companies at the Bulgarian Stock Exchange support the statement about the improved diversification possibilities after such major floatation: in the beginning of 2005 only about 30 companies were actively traded on the exchange, and none of them was one of the newly privatized Bulgarian banks[24]. They were predominantly local holdings, former privatization funds that controlled the biggest production plants and tourism sites. BTC shares attracted also serious international investors like Deutsche Bank London and Barclays Bank, currently holding about 9% of the company each. One year after its flotation on the stack exchange, BTC is the company with highest market capitalization and also one of the most actively traded.

[23] Politics plays a part in Bulgaria's telecoms sell-off EMERGING EUROPE, 26 January 2005, Financial Times, Factiva Database (6 June 2006)

[24] Ibid

3.2 Future Trends in Global Telecommunications

The recent developments in telecommunication industry show moderate growth, especially if we compare it with the positive investor expectations for the sector at the end of the 1990's. According to a report of the Communications Regulation Committee the growth in revenues in 2004 is 3.9% - lower than the average forecasted growth of 6% for the period 2002-2007[25]. Possible reasons include the fact that developed markets like Europe and Americas reach a point of saturation and in the same time the transition to new technology is not implemented fast enough to compensate the reduced growth rates.

For the purposes of this valuation the focus will fall only on European market for two main reasons. The development of telecommunication services in Bulgaria for the last 15 years is largely influenced by the EU accession process and the requirements for quality, competition and regulation are based on European benchmarks. The other reason is that the geographic proximity and intensive economic relations with European countries shape a consumer profile which is closer to European standards. The trends in all sub-sectors are of interest for this paper, since BTC offers the broadest range of telecommunication services.

The market in Europe has already reached significant level of penetration in the older sub-sectors like fixed line communications and mobile networks. In Western Europe and Baltic countries there are more than 100 subscribers per 100 inhabitants, showing that part of the people own more than 1 telephone line – either fixed or mobile[26].

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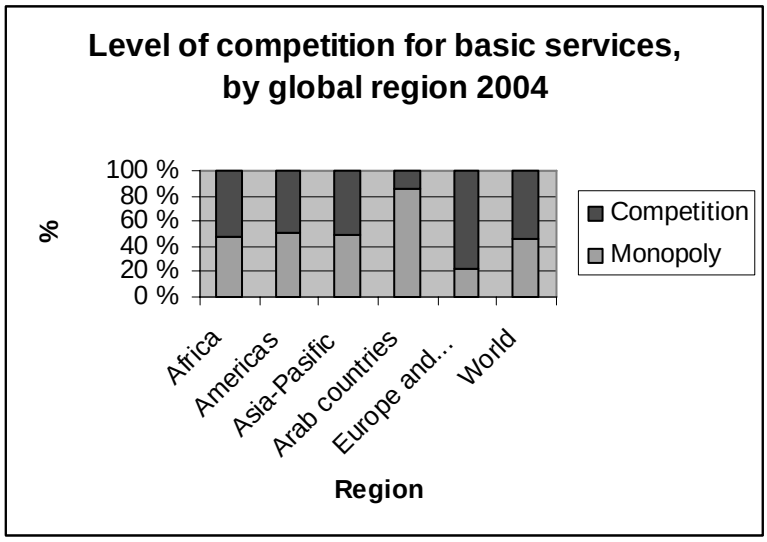
[25] CRC Annual report 2004

[26] International Telecommunication Union, Europe's telecommunications/ICT markets and trends 2003/2004, <http://www.itu.int/ITU-D/ict/statistics/at_glance/Europe_RPM_2005.pdf > (6 June 2006)

After the liberalization of the sector in 1998, Europe registers the highest level of competition in most sub-sectors (Fig.3). Privatization and liberalization of the sector had improved the consumer benefits. According to the European Commission in 2005 there were four times more fixed line operators than at the beginning of liberalization in 1998, and the average cost of national fixed line call had fallen 65% since 2000[27].

Figure 3 Level of competition for basic services by global region, 2004



Source: ITU World Telecommunication Regulatory Database

According to Unden (2005) the top ten Western European operators' revenue performance and profitability during the last 3.5 years has been driven mostly by mobile, data, most notably broadband and managed Internet Protocol virtual private network, and Internet. Those sub-sectors will continue to drive the growth during the next five years, while adopting VoIP services as it expands. The expected compound annual growth rate for the European telecom services market is 3.5 through 2009[28].

[27] Laitner, Sara, Mark Odell and Gerrit Wiesmann, Telecoms liberalisation in EU hailed as success for European consumers, Financial times, 21/02/2006, Factiva database (6 June 2006)

[28] Unden (2005)

3.2.1 Fixed-line services

European subscribers prefer mobile networks and broadband on the expense of fixed lines. The number of main lines reached its peak with 230.2 mln lines in 2001[29] and has been decreasing since then to stabilize at 226 mln in 2004[30]. However there are different trends within EU depending on the country. The latest annual developments show growth rates between 5 and 10% for Cyprus, Greece, Spain and Slovenia, but decrease of 5.5% in the Czech Republic[31]. Despite these trends the region remains the global leader in terms of fixed line penetration[32]. The density of the network reaches 49.6 main lines per 100 inhabitants at EU-25 level[33].

A point of concern for the fixed line operators should be the substitution between fixed and mobile lines. A survey of European telecommunication users shows that "an increasing number of households have one or more mobile phones without owing a fixed line"[34]. This substitution effect is even stronger in the low-income countries like CIS and the Baltic states, where the penetration rate of mobile phones is much higher than the density of the fixed lines. The explanation of this effect is the price level driven down by the intense competition in the mobile segment of the market. More evidence for this substitution can be found in the annual reports of the bigger telecommunications companies in Europe which offer both fixed and

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[29] Lumio, Martti, Telecommunications in Europe, Statistics in focus, Eurostat, 8/2005, European Communities, 2006, Available <http://epp.eurostat.cec.eu.int/cache/ITY_OFFPUB/KS-NP-05-008/EN/KS-NP-05-008-EN.PDF> (6 June 2006)

[30] Lumio, Martti, Telecommunications in Europe, Statistics in focus, Eurostat, 9/2006, European Communities, 2006, Available <http://observatorio.red.es/documentacion/actualidad/boletines/statistics.pdf> (6 June 2006)

[31] Ibid

[32] International Telecommunication Union, Europe's telecommunications/ICT markets and trends 2003/2004, <http://www.itu.int/ITU-D/ict/statistics/at_glance/Europe_RPM_2005.pdf > (6 June 2006)

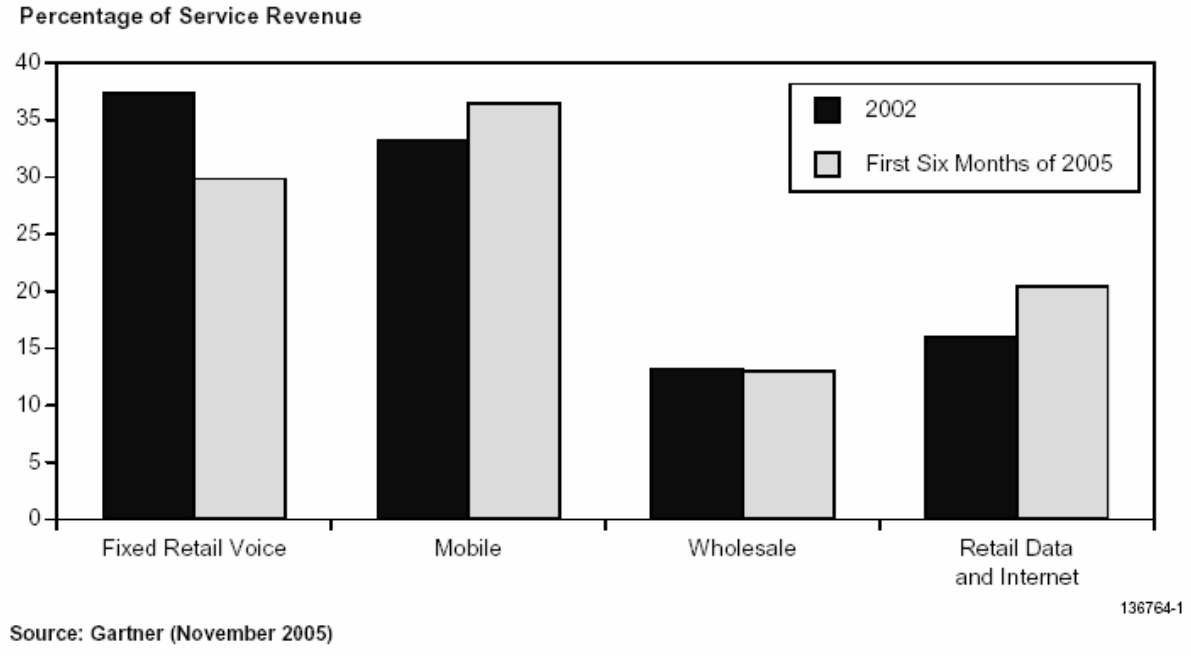
[33] Lumio, Martti, Telecommunications in Europe, Statistics in focus, Eurostat, 9/2006, European Communities, 2006, Available <http://observatorio.red.es/documentacion/actualidad/boletines/statistics.pdf> (6 June 2006)

[34] Household communications in the EU: Mobile penetration catches up with fixed lines, and broadband connections double, News, Eurostat, 24/09/2004. Available: <http://europa.eu.int/information_society/newsroom/cf/itemlongdetail.cfm?item_id=1347> (6 June 2006)

mobile services: the revenues from fixed services decrease while the revenues from new services (mobile and broadband) are showing stable and significant growth. Those trends can be found both in older EU member countries and new member countries like Czech Republic and Slovakia.

In terms of revenues from fixed-line voice services, according to Gartner Research (2005) data from incumbent telecoms for the last three years shows a quarterly decline of 1.4% from the end of 2002 to amount at only 30% of all revenues at the end of the second quarter of 2005 (Fig.4). Due to mobile substitution and other factors the revenues will continue to decline with 6.9% through 2009, but still represent the core source of revenues for the telecom.

Figure 4 Service Revenue of Top 10 Western European Telecom Operators



3.2.2 Mobile services

Mobile communications are developing rapidly in Europe. According to a recent publication of Eurostat, Telecommunications in Europe, the average annual increase in EUR-25 for the period 1996-2004 reaches 36.2%. The density of the network reaches 89.6 subscriptions per 100 inhabitants in 2004. However, the growth rate is

expected to slow down for the countries with high density. High growth levels for 2002 and 2003 are recorded only in new member countries like Latvia, Lithuania and Cyprus. Bulgaria has recorded one of the highest annual percentage change in 2004 of 37% to reach a density of 62.1 subscriptions per 100 inhabitants.

Unden (2005) forecasts stronger growth opportunities in mobile sub-sector in Easter Europe where the penetration is lower (58 to 59% at the end of 2005), while the market in Western Europe is saturated and the penetration levels reach 97%. In terms of revenue Unden (2005) forecasts 7.5% cumulative annual growth rate through 2009.

3.2.3 Internet Access

Similar rapid development is observed at a European level in terms of Internet access. The main part of the growth is attributed to the introduction of broadband technology. According to Unden (2005), in Europe incumbent operators dominate the local loop but face increasing competition from alternative unbundled local loop players and DSL providers. Broadband penetration is likely to reach 43% of the households in Western Europe in 2009 and 9% of the households in Eastern Europe, with the cumulative annual growth of revenues estimated at 14.9% through 2009.

3.2.4 Top European telecom operators' trends

On company level, France Telecom announced bad forecasts for its 2006 operations – sales growth of only 2% - the same as the growth registered in 2005 instead of the forecasted 3-5%. This led to a drop of share price of 10.8% for a week in March 2006. Similar development reached Telecom Italia, Deutsche Telekom, Telenor and

TeliaSonera. Some industry analysts even downgraded the entire sector, due to strong pressure on margins and unsustainably high return on invested capital[35].

Cesky Telecom announced a decline of 4.5% in the fixed-line revenues and of 7.2% in the number of fixed lines in 2005, and only 2% increase in the revenues of its mobile operator, Eurotel[36]. Telekom Austria also announced a decrease in its fixed-line revenues of 2.6% which is offset by 30% increase in wireless revenue for 2005, of which only 5% are organic growth, the rest is due to its acquisition of the largest wireless operator in Bulgaria, Mobiltel[37].

3.3 The market for telecommunication services in Bulgaria

The market regulation in telecommunication services in Bulgaria is carried out by the Communication Regulation Commission. It responsible to implement the government policy in this area, to issue licenses to telecom operators and to monitor and promote market competitiveness. The Commission publishes annual report with the recent trends in the industry. According to its report for 2004, the revenues from telecommunication services in Bulgaria for the years between 2001 and 2004 amount at EUR 1.280 billion – an increase of 13% compared to the previous year. The structure of the revenues follows the general development of the European telecommunication market (fig.5) - there is distinctive growth in mobile, while the fixed line revenues are declining. The broadband Internet access only started in

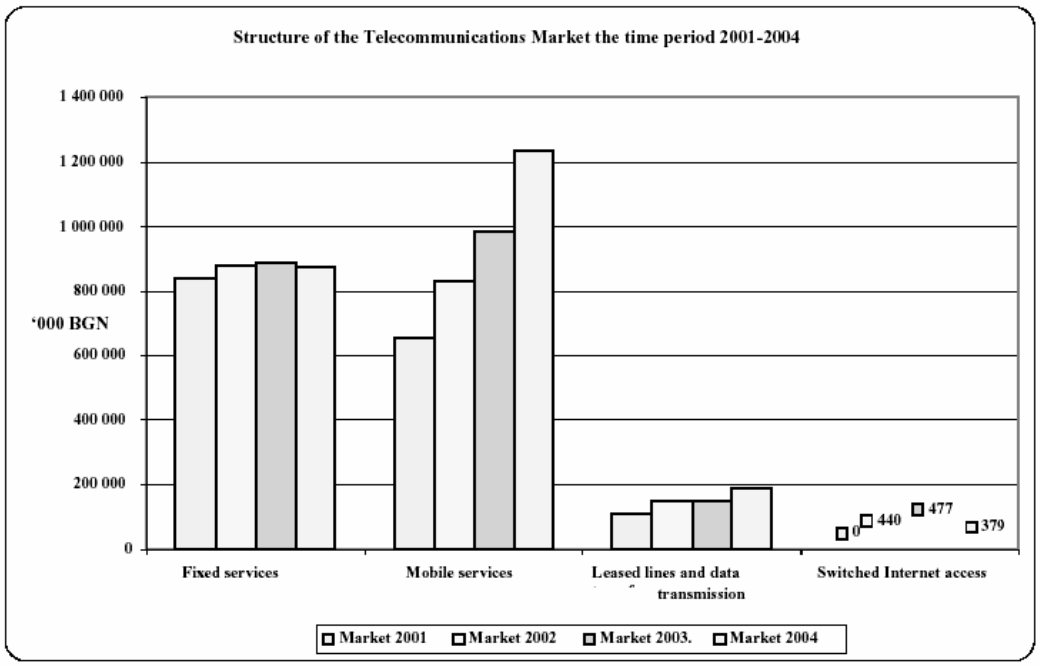
[35] Lincoln, Adam, France Telecom: Les Miserables, from the Economist Intelligence Unit, 19 Jan 2006, Available <http://www.ebusinessforum.com/index.asp?layout=printer_friendly&doc_id=8037> (6 June 2006)

[36] Cesky Telecom: 2005 Audited financial results, http://www.telecom.cz/web/en/infocentre/press_centre/press_releases/audited_financial_results_12150_2005.html (6 June 2006)

[37] Datamonitor, Telekom Austria: Strong Growth, 16 March 2006, Available <http://www.ebusinessforum.com/index.asp?layout=printer_friendly&doc_id=8318> (6 June 2006)

2004, and it has the biggest growth potential despite the strong competition in the face of cable operators and illegitimate local LAN networks.

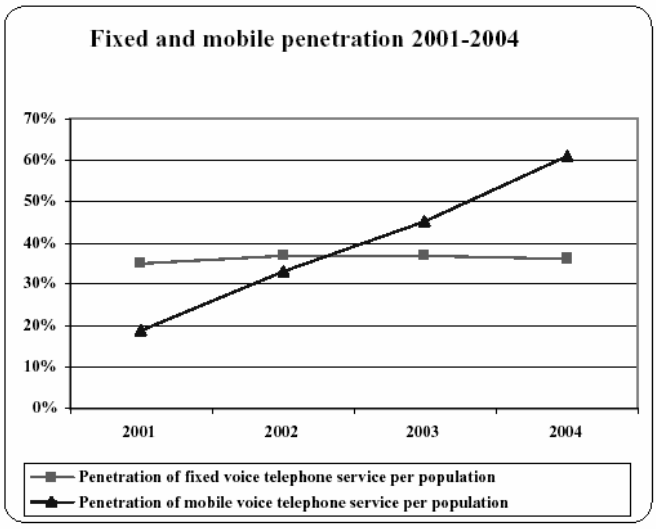
Figure 5 Structure of telecommunications revenues in Bulgaria, 2001-2004



Source: CRC, Annual report 2004

The penetration of both fixed and mobile services (Fig.6) is lower than the average for the European Union countries – for mobile phones the penetration reached 60% for Bulgaria against 89.6% in the EU-25 (Appendix 2), while fixed-lines penetration was 35.5% for Bulgaria against 49.6% for EU (Appendix 3).

Figure 6 Fixed-lines and mobile penetration in Bulgaria 2001 - 2004



Source: CRC, Annual report 2004

According to Economist Intelligence Unit Risk Briefing on Bulgaria's infrastructure the fixed line network in Bulgaria had one of the highest line densities of all Eastern and Central European countries in 1989 and it has further increased to 39 lines per 100 inhabitants in 2002 of which 83% were connected to private domestic phones[38]. The Bulgarian government however managed to conclude the privatization of its incumbent telecom much later than most of those countries and also failed to invest heavily in much needed digitalization of the network. This resulted in less than 30% of the total network being digital in 2004, the year when Viva Ventures acquired 65% of the incumbent operator and committed to invest EUR 400 billion network modernization to reach 75 to 81% digitalization at the end of 2007.

According to White Paper of Bulgarian Telecommunications, Services and Technologies, the decrease in the market share of the fixed voice services in Bulgaria is similar to the one registered in the European market. These negative trends have not discouraged the number of alternative operators, the two mobile operators Mobiltel and Globul amongst them, to acquire a license and possibly enter this market segment after its liberalization in 2003. The most interesting segment of the market of amounts at about 300 million BGN – this sum is spent annually by Bulgarian business on fixed-line voice services.[39]

According to the CRC data thirteen new fixed line operators hold license to provide fixed line telephone services as of June 3 2005 (Fig.7), but only Globaltech Bulgaria Ltd.[40] has effectively started operations and generate revenues from those services as early as 2004.

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[38] Bulgaria risk: Infrastructure risk, RSKW000020060307e23600002, 3015 Words, 06 March 2006, Economist Intelligence Unit - Risk Briefing, Risk Briefing, 2, English(C) 2006 The Economist Intelligence Unit Ltd., Factiva database

[39] JNN&Associates, Marketing Consultants (2005): White Book of Bulgarian Telecommunications, Services and Technologies, Available www.jnn-marketing.com/WPTelecom.htm (10 March 2006)

[40] In the beginning of 2005 the license of GlobalTech Bulgaria was transferred to CableTel.

The start of competitors' operations has been delayed partly because of prolonged introduction of Reference Offers for interconnect services, which the incumbent operator was responsible to design and the CRC to authorize.

In addition to the existing fixed network, several companies announced projects to build alternative main backbone network[41]:

- BULGARGAZ has optical network with total length of 651 km (2003), providing international connectivity with Romania and Turkey
- OVERGAZ will invest 4 million BGNs in building optical cable connections to Greece with a total length of 223 km
- NEK (NATIONAL ELECTRICAL COMPANY) plans to close 1000 km national wide optical ring
- BULGARIAN RAILWAYS started a project in 1998 for building high speed network for data transmission with 1100 km length

Figure 7 Companies holding licenses for telecommunication services, Source: CRC, 2005

Licensed company	Mobile network - voice	Fixed network - leased lines	Fixed network - selection	Fixed network - voice
БТК	2024 + 3G	2019	2019	2019 + fixed public devices
Bulfone				
Mobicom	2013			
NetPlus			2023	2023
Orbitel			2023	2023
CableTel		2024	2015	2018
East Telecom Company			2023	2023 + fixed public devices
Nexcom Bulgaria			2023	2023
Bulgaria Telecom Net ECT		2024		2024
Vestitel BG		2024	2024	2024
Bulgargaz		2024		
Spectrum Net			2024	2024
Telecom Partners Network				2019
Trans Telecom			2024	2024
Eurocom Cable		2019		2024
Mobiltel	2014 + 3G	2014		2025
Cosmo Bulgaria Mobile	2016 + 3G	2016	2025	2025
Gold Telecom Bulgaria			2024	
PTB		2024		
Televoice		2024		
Netera		2024		
Novatel		2025		

[41] JNN&Associates, Marketing Consultants (2005): White Book of Bulgarian Telecommunications, Services and Technologies, Available www.jnn-marketing.com/WPTelecom.htm (10 March 2006)

- The Cable Operator „CableTel" together with Mobiltel have 1800 km optical cable country wide

Business Monitor International follows the development of the telecommunication services in Bulgaria since March 1998 and issues quarterly forecasts since the second quarter of 2003. It has ranked Bulgaria at the thirteenth place in Emerging Europe region when it comes to telecom sector environment[42]. The ranking is based on a number of factors: long-term economic risk, long-term political risk, telecom market maturity, telecom growth potential, competitive environment, and regulation. The poor ranking reflects the concerns for the overall economic development of the country as well as status of competition in telecommunication sector due to delayed privatization of the incumbent operator and liberalization.

Despite this unfavorable ranking, Telekom Austria acquired the biggest mobile company in Bulgaria – Mobiltel Ltd in 2005. The top companies in the industry have foreign ownership – Viva Ventures (Austria) holds 65% of BTC, while CosmOTE (Greece) holds 100% of Cosmo Bulgaria Mobile (Globul). Each one of these three top companies holds also a license for 3G mobile network, with Mobiltel planning to start its operations in the second half of 2006, and the others not before 2007[43]. The inflow of fresh capital and improved management practices make the competition in the mobile section of the market even tougher. The launch of Vivatel (BTC's mobile brand) has started a price war in the prepaid services between Mobiltel and Globul, bringing the price per minute down with 50% on average[44].

The forecast of Business Monitor International for future development however are rather positive. They predict stable growth in ICT market of 10% until 2009. The number of main lines will continue to decrease due to mobile substitution. The

[42] Business Monitor International Ltd. (2005): Bulgaria Telecommunications Report Q4 2005

[43] Ibid

[44] Ibid

mobile sector is expected to continue its growth of 26% annually according to BMI in the short and medium term, largely due to pending start of new services. Strong growth is expected also in the internet sector – the internet penetration is about to reach 25% in the first quarter of 2006, 1% of which are broadband subscribers. The growth of broadband internet subscribers is limited mainly due to the low digitalization of the network outside biggest towns.

The information and communications technologies (ICT) market in Bulgaria enjoys sustainable growth and the forecasts for the development of the market are optimistic as well, data compiled by InvestBulgaria Agency shows. Growth in the IT sector in Bulgaria will continue until at least 2009 and the average annual growth rate will reach 12.4%[45].

To summarize, the telecommunication service market in Bulgaria is expected to register strong growth in mobile and broadband sub-sectors, due to the late start of the industry liberalization and the low penetration rate. In line with the general trends in Europe, fixed line voice telephony is on a decline. This decline however will be more than offset by the growth in other sub-sectors and the overall expectations are for annual growth rates between 10 and 12%.

[45] Bulgaria's ICT Sector to Continue Developing, 02 March 2006, PARI Daily, Factiva database (6 June 2006)

4. The choice of valuation model

4.1 Approaches to Valuation

Reilly and Brown (2003) distinguish two basic approaches to valuation process for the purposes of investment analysis: (a) a top-down, three-step approach or (b) the bottom-up, stock-picking approach, with the difference between them being the importance attributed to the economy and industry of the company for the valuation. The three-step approach comprises of analysis of alternative economies and securities markets, analysis of alternative industries and finally analysis of individual companies and stocks. The goal of this paper is to apply financial theory to the third step in the investment decision process and discuss the practical obstacles when valuing a company in emerging market like Bulgaria. In this paper the point of view of international investor is adopted, who has already accomplished the first two steps and has chosen to invest in telecommunication company in emerging or frontier market. In order to reach reasonable assumptions for the expected cash flows of the company in the future, the thesis incorporate an industry analysis in Chapter 3.

A detailed overview of valuation models is an immanent part of almost every financial book on investments. Damodaran (2002) and Reilly and Brown (2003) distinguish two general valuation approaches: ***discounted cash flow valuation***, which relates the value of the asset to the present value of expected future cash flows on that asset and ***relative valuation***, which estimates the value of an asset by comparing it with financial ratios of similar assets (price to earnings, price to book value, price to sales). Damodaran (2002) includes also ***contingent claim valuation*** – model, which uses option pricing models to estimate the value of an asset that share option characteristics. These models were initially designed to value traded options,

but lately are applied also in traditional valuation to price assets with option-features – like patents or undeveloped reserves. Alleman (2003) points out that the use of traditional valuation methods might be one of the reasons for the fact that telecom industry has built up significant over capacity in long-distance sector. Instead he recommends real option methodology, because it accounts for options embedded in the project and replaces the risk-adjusted discount rate with a measurement of uncertainty of the cash flows.

Discounted cash flow models are used to estimate the intrinsic value of a company based on its fundamentals. These models include the dividend discount model, free cash flow to equity, free cash flow to the firm and adjusted present value valuations. According to Penman (2001) they are most suitable for the valuation of companies which currently have positive cash flows and their future cash flows and risk can be estimated with a degree of certainty. He also discusses further distinction between dividend discount models and discounted cash flow models (Table 7). Reilly and Brown (2003) point out that discounted cash flow valuation allows a substantial amount of flexibility in terms of changes in sales and expenses, but they face a potential difficulty due to their dependency on two important inputs – the discount rate and the growth rate of the cash flows.

Table 7 Comparison of discounted cash flow methods

Valuation Model	***Advantages***	***Disadvantages***	***When it works best***
Dividend Discount Model	Dividends are fairly stable in the short run	• Dividend payout is not related to value • The model ignores capital gains	When company has fixed payout ratio
Discounted cash flow	Cash flows are not affected by accounting policies	• Free cash flows does not measure value added in the short run; • Investments are treated as a loss of value; • Requires longer forecasting period to recognize cash inflows from investments	When the investment pattern produces constant free cash flow or constant growth rate

Source: Penman, St., Financial Statement Analysis and Security Valuation, 2001

Damodaran (2002) defines relative valuation models as valuation based on how similar assets are priced by the market. Its basic assumption is that market prices correctly the stocks on average, but it makes errors on the pricing of individual stock, and over time the market tends to correct those mistakes. Reilly and Brown (2002) name as advantage of the relative valuation models the fact that they provide comparative information about the assets at different levels – aggregate market, alternative industries or other individual stocks within the industry. The disadvantage they see for those models is that the benchmark being used for the comparison might be incorrectly priced thus resulting in incorrect valuation of the asset.

Damodaran (2002) also dedicates a chapter of his book to the choice of model. He names factors like the marketability of the asset, cash flow generation capacity, the presence of comparables, the time horizon of the analysis, the aim of the valuation and the analyst's belief about markets. He has also published a useful tool to select the most appropriate valuation method for each concrete case in Internet (Appendix 4). In the case of BTC valuation the tool recommends to use discounted cash flows for 5 to 10 years horizon and two-stage growth model.

In order to limit the number of models applicable to BTC's valuation, we have to take into account that we are valuing a going-concern in a clearly defined industry with a number of similar companies. The time horizon of the valuation is up to 10 years, in order to incorporate the changing company structure after its privatization in 2004. The paper will also work with the assumption that markets are efficient in general but under- or over-price individual assets and correct the price estimate over time. The company is traded only since January 27 2005. It has not specified a dividend policy, thus we cannot use the dividend discount model.

4.2 Valuation in Emerging Markets

4.2.1 Theoretical concerns

A generally accepted definition of emerging markets for the purposes of financial analysis is the one offered by the World Bank and International Financial Corporation (IFC). Since 1997 Bulgaria is included in IFC's frontier market index series[46]. According to IFC definition, a frontier market is a newer, smaller and less well known emerging market[47].

Valuation of companies, operating in emerging markets poses specific challenges for the analysts. Currently there is no single preferred best practice for valuation of assets and securities in emerging markets which is widely accepted by both practitioners and academics[48]. The most commonly mentioned areas that make emerging markets so different are:

- Accounting transparency
- Liquidity
- Corruption
- Volatility
- Governance
- Taxes
- Transaction costs

[46] Stopford, Michael, 20 June 1996, IFC to add 17 new markets to its coverage of emerging stock markets, <http://www.ifc.org/ifcext/pressroom/ifcpressroom.nsf/PressRelease?openform&8E8159B86207567F85256974005938A8>, (11 June 2006)

[47] IFC FY97 Report on Operations, <http://www1.ifc.org/ar1997/AR97/html/2-3.html> (10 June 2006)

[48] Bruner, Robert F et al (2002): Valuation of Emerging Markets (2002), Emerging Markets Review, Forthcoming, < http://papers.ssrn.com/sol3/papers.cfm?abstract_id=354241> (05 April 2006)

- Political risk
- Macroeconomic uncertainty
- Controls on the flow of capital into and out of the country

Despite those concerns the cross-border capital flows into the emerging markets – foreign direct investment, equity flows, and commercial bank lending – are approaching the record levels last witnessed a decade ago and amount to USD 350 billion, according to Lars Thunell, executive vice president of International Finance Corporation, World Bank Group[49]. Thus improved valuation methods are needed to affect the welfare of investors and their targeted investments[50].

Because of the valuation complexity, Koller et al (2005, p.621) recommend a triangle approach – comparing estimates of the value from three methods: discounted cash flow model (DCF) with probability weighted scenarios that explicitly model the risks the business faces; DCF with a country risk premium built into the cost of capital and valuation based on comparable trading and transaction multiples.

The scenario DCF model gives the most details about analyst's assumptions about company development. However this approach relies heavily on detailed information about the company and its market and might be hard to achieve in countries with limited disclosure practices.

The second approach is less dependent on the knowledge of the company itself. Instead the analyst can project the cash flows in business-as-usual situation and then add an arbitrary country risk premium to the discounting factor. The challenge with this method is to estimate the country risk premium. Koller et all (2005, p.635) are cautious with the methods for estimating country risk premium and also with

[49] Emerging Markets Heading for Banner Year in 2006, Capitalization of Emerging Stock Markets Set To Exceed $5 Trillion for First Time, Washington D.C., January 17, 2006, World Bank Group

[50] Bruner, Robert F et al (2002): Valuation of Emerging Markets (2002), Emerging Markets Review, Forthcoming, < http://papers.ssrn.com/sol3/papers.cfm?abstract_id=354241> (05 April 2006)

applying the country risk premium equally to companies from different industries. This shortcoming can be overcome if we apply the suggested by Damodaran (2002) coefficient λ of sensitivity towards country risk. The issue of country risk estimate will be further discussed later in the paper.

The third method is based on defining the best comparables for the company and then comparing the financial ratios of the company with the ones of a similar business thus reaching a conclusion for the company's value. The crucial underlining assumption in this case is that markets are efficient and the comparables are correctly priced.

The specifics of emerging markets translate into a number of concerns for the analysts (Koller et all, 2005, p.622):

- the impact of inflation on the historical data for the company and also how to incorporate higher inflation expectations when projecting company's cash flows;
- the impact of exchange rates and interest rate gaps with developed markets on the valuation;
- cost of equity estimates;

When it comes to the valuation of Bulgarian company, I would disregard the first two concerns based on the following reasoning:

1. The historical financial statements of the company are of limited use in the valuation. The company is going through a transition from state-owned enterprise to publicly traded company. The change in ownership together with changes in the group structure (acquisition in full of previously associated companies and adding mobile communications to its portfolio) results in frequent changes in accounting policy. The company has adopted International Financial Reporting Standards as of January 1 2003. The company restates only the previous year results, thus there are no three

consecutive years with consistent financial data. Financial analysis based on historical data will then have relative accuracy only on the most aggregated level.

2. During the periods of hyperinflation in Bulgaria (1997) the company did not apply hyperinflation accounting but used DEM as measurement and reporting currency instead. The company management believes this approach does not result in material misstatement of balance sheet items and inflationary growth in revenues.
3. According to the National Statistic Institute of Bulgaria the inflation for 2005 is 5.67%[51]. Inflation expectations are more important for our valuation. Since Bulgaria is constantly improving its economic performance in accordance with the requirements for joining the EU, I believe the inflation will stay within the limits considered for normal and thus I will discard it from the analysis.
4. Since 1999 there has been a currency board established in the country with BGN tied to DEM at the exchange rate of 1.00. With the introduction of EUR, the BGN is fixed to the European currency at the exchange rate of 1.95583. This fact decreases the risk of exchange rate differences to the normal fluctuations of EUR/USD exchange rate.

The only element of concern in this paper thus remains the cost of equity estimation and the related risk-free rate and the systematic risk (beta).

For the purpose of this paper CAPM model will be used to reach an estimate for the cost of equity. However, empirical tests on the CAPM model found evidence that much of the variation in expected return is unrelated to market beta[52]. Fama and French (1992) confirmed that size, earnings-price, debt-equity and book-to-market

[51] Consumer price index, National Statistical Institute, Bulgaria, http://www.nsi.bg/Cpi_e/CPI_e.htm

[52] Fama and French (2004), p.15

ratios are the factors that could explain the differences. They propose a three-factor model for expected returns, that captures much of the variation in average returns for portfolios formed on size, book-to-market equity, and other price ratios that cause problems for the CAPM:

$$E(R_{ij}) - R_{ft} = \beta_{iM} * [E(R_{Mt}) - R_{ft}] + \beta_{is} * E(SMB_t) + \beta_{jh} * E(HML_t)$$

Where SMB_t (small minus big) stands for the difference between the returns on diversified portfolios of small and big stocks, HML_t (high minus low) is the difference between the returns on diversified portfolios of high and low book-to-market stocks, and the betas are the slopes in the multiple regression of excess returns on the market premium, small-minus-big and high-minus-low premiums[53]. The three suggested premiums have high average values for 1997-2003, but also high volatility that implies substantial uncertainty about the true expected premiums. Although this model is often used by practitioners as an alternative to CAPM[54], the restrictions of information available prevent me from applying it in the case of BTC cost of equity estimation.

4.2.2 Cost of equity

Damodaran (2002, p.182) recommends several approaches to estimate beta: to use historical market data to calculate the regression of the stock returns over a market index returns, to estimate beta from fundamental features of the investment and to use accounting data. As discussed earlier, it is hard to trace the accuracy of accounting data, so it is only possible to apply the first two approaches. Taking into account the fact that Bulgaria is classified as frontier market by the IFC, the special recommendations of Damodaran (2002, p.187) for estimating betas in emerging

[53] Fama and French (2004), p.20

[54] Ibid, p.21

markets will be followed. Because of limited liquidity, monthly returns instead of daily or weekly returns will be used to improve the quality of the estimate. The fact that the company has been traded only a little longer than a year will be no impediment, since it is going through post-privatization restructuring and also has added new highly lucrative business to its portfolio. Historical market returns data for longer periods will be of no use to estimate the risk it faces nowadays. The beta estimate will be regressed over a world-market index for two reasons. According to Damodaran (2002, p.189), indices that measure market returns in many smaller markets tend to be dominated by a few large companies. In fact, BTC is the biggest company in terms of market capitalization traded on the Bulgarian Stock Exchange – as of February 15 2006, the market capitalization of BTC amounted at 2.919 bln BGN, which represents 32.66% of the market capitalization of all companies traded at the exchange[55]. The market indices for Bulgaria are also rather shallow – the broader one (BG40) consists of only 40 companies[56]. This fact increase the chance that the local indices are dominated by the company itself and a beta regression on SOFIX or BG40 will not represent a true estimate of the market risk of the company.

On the other hand this paper assumes the viewpoint of an outside investor, which will be more interested in BTC stock returns as a means to diversify its international portfolio. Thus the correlation of BTC stock returns with the local market will bear little value.

Fundamental beta should be more accurate estimate of the market risk for the company, because it takes into account the current or desired structure of the company. It is determined by three variables: the type of business, the operating leverage and the financial leverage of the company. The challenges with this

[55] Bulgarian News Digest, Bulgaria Telecom News in Brief, 17 February 2006, Factiva database (6 June 2006)

[56] Bulgarian Stock Exchange – Sofia, Indices, Available <http://www.bse-sofia.bg/index.php?page=BG-40&PHPSESSID=a37595f862992a0c0b5f77342d0845df> (6 June 2006)

approach are to define comparable firms, to choose an averaging method and to control for differences in business risk and operating leverage (Damodaran, 2002, p.192).

Because there are no other telecommunication companies being traded on the Bulgarian Stock Exchange, the comparables will be chosen amongst companies traded at other world markets. Damodaran (2002, p.201) argues that in general there are no reasons to believe that betas will be different based on the geographical market. The telecommunication industry is a special case, due to the fact that those services are viewed as non-discretionary in developed markets (associated with low betas) and discretionary in emerging markets (associated with high betas). If the sample to estimate the beta of a telecom firm in an emerging market includes telecom companies in developed market, the resulting figure will underestimate the true beta. In order to avoid this misstatement, the comparable firms sample should include only telecoms in emerging markets (Damodaran 2002, p.201).

Using fundamental beta require an estimate for the risk of the comparable companies. Usually such estimates are published by financial analysts for the companies traded on a certain exchange. Industry and sector betas are also made available by financial information providers.

Damodaran has published his beta estimates for a number of industries and markets. Those can be used to come up with a reasonable approximation of BTC's fundamental beta. According to Damodaran, the average beta for companies offering telecommunication services in emerging markets is estimated at 1.50. For comparison, the beta for companies with the same industry classification in Europe amount at 1.27, while in US market the average beta of companies offering telecommunication services is 0.83. However, observed betas in the market reflect the actual financing choices of the companies. Therefore I need to un-lever and re-lever the asset beta with the debt-to-equity ratio of the company being valuated.

Unlevered Beta = Beta / (1 + (1- tax rate) (Debt/Equity Ratio))

Applying the average tax rate of 17.93% and debt to equity ratio of 68.49% for the industry to the above formula, the calculated unleveraged beta is 0.96. Further applying the tax rate and debt to equity structure of BTC, I receive a beta of 1.1428.

Economies of emerging market countries are very different from each other despite some common features. The estimate of beta, reached with a broad worldwide sample might be very different from the real beta of BTC. In order to check the magnitude of the possible difference I have also tried to gather information about the betas of other telecommunication companies, operating in Central and Eastern Europe. The information used is culled from Amadeus database. Since the industry category "telecommunications", using the NAIC 1.1 classification in Amadeus, is rather broad I preferred to select manually a few companies extending the geographic reach to the whole of Europe, which I believe represent a closer proxy of BTC activities (Appendix 5). The main reason for taking into account bigger European telecom operators as Deutsche Telekom is that they have shareholdings in a number of Eastern European telecom operators, which are not currently traded. The beta in Amadeus database usually relates the stock only to its local market even though some of the companies are also traded on European or International exchanges. The 1-year beta average of those companies for which there is a beta quoted against a broader international index like DJ STOXX 50 PRICE EUR results in an estimate of 0.755. Unlevering this result with BTC's specific debt-to-equity ratio gives beta of 0.24.

Another check is possible using a set of emerging European companies operating in telecommunications from the Factiva database with company information. The companies I have selected are the incumbent telecoms in The Czech Republic, Hungary, Poland and Greece. The average asset beta of those companies is estimated at 0.0516 (Appendix 6). Using the data about industry averages of beta,

tax rates and debt-to-equity ratio, I get a beta for BTC in the range between 0.24 (industry based) and 1.03 (peer companies based).

Finally, I have tried to estimate BTC beta by directly regressing the returns on BTC stocks over the SP500 returns. In order to eliminate the currency effects I have first recalculated the end of the month price of BTC into USD. The resulting beta is 0.1373.

The different approaches give very different results (Table 8), making the arbitrary choice of beta even more complicated. Therefore conducting a sensitivity analysis of the company value towards the estimate of beta becomes necessity in order to get a better insight of the possible error in BTC's valuation.

Table 8 Beta Estimates

Data	***BTC Beta***
Damodaran's telecoms in emerging markets data set	1.1428
Selected European telecoms, Amadeus data set	0.24
Selected emerging European markets telecoms, Factiva data set	1.03
Factiva data set, industry	0.44
Factiva data set, sector	0.34
Direct regression of BTC returns over SP500	0.1373
Beta, used in this valuation	***1.08***

For further calculations of weighted average cost of capital for BTC I have used the average between Damodaran's emerging and Factiva's emerging European telecom betas of 1.08. As a risk-free rate I use the 10 years US treasure bond rate as of April 7 2006 of 4.95 and the spread suggested by Damodaran as the average spread for the US market between 1929 and 1990 of 4.80. The resulting cost of equity is 10.13%.

4.2.3 Cost of debt

The cost of debt of the company to be used as an input in the weighted average cost of capital calculations should not be calculated on the basis of historical accounting data. According to Brigham and Houston (1998, p.355) the rate at which the firm has borrowed in the past is irrelevant for capital budgeting decision. They recommend using the cost of new debt or the marginal cost of debt. Damodaran (2002, p.143) outlines two components that are included in the cost of debt – the current level of interest rates and the default risk of the company. A very helpful tool for estimating a synthetic bond rating for companies which are not rated can be found at Damodaran's web page. Using the accounting data of BTC for FY2005 as an input in this tool results in a synthetic rating for BTC of A and default spread of 0.85 (Appendix 7). Thus the estimated cost of debt for BTC is 5.80%.

4.2.4 WACC

When calculating the market values of debt and equity I have assumed that the book value of debt is a reasonable proxy of its market value, since the company debt is not traded. I have used the long-term loan obligations as per the loan negotiated in the beginning of 2006 at the amount of EUR 350 000 000. In order to calculate the market value of equity I have used the share price of 10.10 BGN at April 7 2006. The detailed calculations for WACC are included in Appendix 8, but the following table summarizes the inputs and the resulting estimates.

Table 9 Weighted average cost of capital estimates

	D/D+E	Default spread	Risk-free rate	Market premium	Beta	Estimate
Cost of equity	-	-	4.95	4.80	1.08	10.13
Cost of debt	-	0.85	4.95	-	-	5.80
WACC	0.19	-	-	-	-	***9.14***

The WACC of 9.14% will be used further in the analysis to discount the free cash flows with probability weighted scenarios.

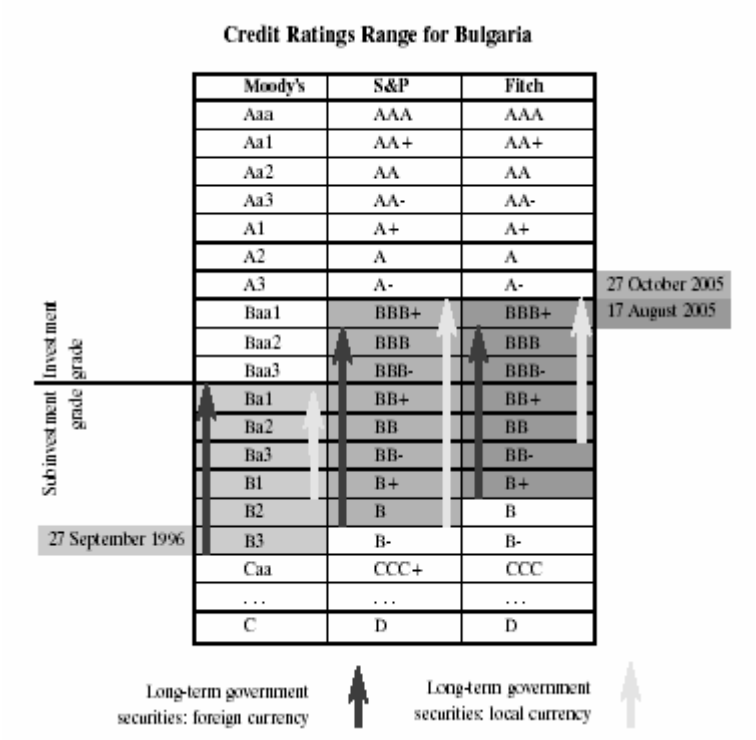
4.3 Including a country risk premium

An important question in deciding about the discount factor for BTC valuation is whether a country risk premium should be included in the cost of equity and how to estimate it. The relevance of country risk premium has been addressed by Damodaran (2002, p.164). Since the only risk which is relevant for estimating a cost of equity is risk that cannot be diversified, the important questions to answer are if the risk in an emerging market is diversifiable and if the country risk is really country specific. The first issue relates to the segmentation of the markets – if investors have the opportunity to diversify their portfolio globally or they are limited to investing in their domestic market. The second issue requires an estimate of the correlation between market returns in different countries. Damodaran concludes that even though trading barriers across markets are gradually alleviated, markets remain significantly segmented, due to the local preferences of the investors. However the globalization trends after 1990s have transformed a portion of the country-specific risk into non-diversifiable market risk. He suggests three approaches which will generally result in different figures, but he also believes that country risk premiums will decline over time.

According to Damodaran's estimates, the country risk premium for Bulgaria is 3.38%, while the historical premium for the USA is 4.8%. The country risk premium for Bulgaria has been estimated by multiplying the default spread of government bonds with a coefficient of 1.5 to account for the higher volatility in the equity market. In October 2005 Standard&Poor upgraded the credit rating of Bulgaria to BBB for long term government securities in foreign currency and to BBB+ for long-term securities in local currency (fig.8). This corresponds to a default spread of 2.25[57].

[57] http://pages.stern.nyu.edu/~adamodar/

Figure 8 Bulgaria's credit rating



Source: Ministry of Finance, Bulgaria

The next step after estimating a figure for the country risk premium will be to find out how much the company being evaluated is exposed to this country risk. Approaches vary from assuming all companies are equally exposed, through assuming that company's exposure to country risk is the same as its exposure to market risk, to estimating a separate country risk exposure factor (λ) for each company. Damodaran recommends the last approach suggesting the following formula for expected return:

Expected return = Rf + β (Mature equity risk premium) + λ*(Country risk premium)*

The estimate of λ can be reach either by calculating the proportion of revenues in the country of the company towards the proportion of revenues in the country of an average local firm, or by running regression of stock returns for each firm in the emerging market against the returns on the country bond[58].

[58] Damodaran, Aswath (2002): Investment Valuation: Tools and Techniques for Determining the Value of Any Asset, John Wiley&Sons, Inc., New York

According to World Development Indicators Database, the percentage of exported goods and services in the GDP of Bulgaria in 2004 amounted at 58%. Using this input the calculated λ for BTC amounts at:

λ= % domestic revenue of BTC / % domestic revenue of an average company

= 100/42 = 2.38

In order to avoid piling up the risk premiums both in the estimate of beta and in the additional factor of country risk, when calculating the cost of equity under this scenario the beta calculated by direct regression of BTC returns over the market portfolio of 0.13 should be used. The risk free rate and the market premiums are the same as previously used. Thus the cost of equity for BTC will amount at:

Ke= 4.95% + 0.13*4.8% + 2.38*3.38% = 0.0495+0.00624+0.080444=0.13618= 13.62%

Similar calculations have to be done in order to include country risk in the estimate the cost of debt for an emerging market firm. Damodaran recommends the following formula to estimate the cost of debt of emerging market company[59]:

Cost of debt = Risk free rate + Country default spread + Company default spread

Thus the company cost of debt for BTC is calculated at:

Cost of debt = 4.95+2.25+0.85 = 8.05%

Feeding the adjusted cost of equity and cost of debt for country risk into the WACC formula results into cost of capital of 12.33% (Table 10).

Table 10 WACC estimates country risk premium included

	λ	Country default spread	D/V	Company default spread	Rf	Market premium	β	Value
Cost of equity	2.38	3.38	-	-	4.95	4.80	0.13	13.62
Cost of debt	-	2.25	-	0.85	4.95	-	-	8.05
WACC	-	-	0.19	-	-	-	-	***12.33***

[59] http://www.stern.nyu.edu/~adamodar/pc/ratings.xls

Since the calculations of weighted average cost of capital are based on a number of estimates, it will be useful to perform sensitivity analysis (Table 11). It shows the possible values of WACC using different combinations of country risk premium and beta. An error in beta estimate of 0.05 results in error in WACC between 0.19 and 0.20% for all levels of country risk premium, while an error of 0.05% in the country risk premium results into 0.10% error in WACC. Even though the company is more exposed to country risk then to market risk, the correct estimate of market beta is much more important for the analysis. The explanation lies in the fact that the market risk premium is twice as high as the country risk premium.

Table 11 WACC Sensitivity Analysis

		Country risk premium						
	12.33 %	2.00 %	2.25 %	2.50 %	2.75 %	3.00 %	3.25 %	3.50 %
Beta	0.10	9.55 %	10.04 %	10.52 %	11.00 %	11.48 %	11.96 %	12.45 %
	0.15	9.75 %	10.23 %	10.71 %	11.19 %	11.68 %	12.16 %	12.64 %
	0.20	9.94 %	10.42 %	10.91 %	11.39 %	11.87 %	12.35 %	12.83 %
	0.25	10.14 %	10.62 %	11.10 %	11.58 %	12.06 %	12.55 %	13.03 %
	0.30	10.33 %	10.81 %	11.29 %	11.78 %	12.26 %	12.74 %	13.22 %
	0.35	10.53 %	11.01 %	11.49 %	11.97 %	12.45 %	12.94 %	13.42 %
	0.40	10.72 %	11.20 %	11.68 %	12.17 %	12.65 %	13.13 %	13.61 %
	0.45	10.91 %	11.40 %	11.88 %	12.36 %	12.84 %	13.32 %	13.81 %
	0.50	11.11 %	11.59 %	12.07 %	12.55 %	13.04 %	13.52 %	14.00 %
	0.55	11.30 %	11.78 %	12.27 %	12.75 %	13.23 %	13.71 %	14.19 %
	0.60	11.50 %	11.98 %	12.46 %	12.94 %	13.43 %	13.91 %	14.39 %
	0.65	11.69 %	12.17 %	12.66 %	13.14 %	13.62 %	14.10 %	14.58 %
	0.70	11.89 %	12.37 %	12.85 %	13.33 %	13.81 %	14.30 %	14.78 %
	0.75	12.08 %	12.56 %	13.04 %	13.53 %	14.01 %	14.49 %	14.97 %
	0.80	12.27 %	12.76 %	13.24 %	13.72 %	14.20 %	14.68 %	15.17 %
	0.85	12.47 %	12.95 %	13.43 %	13.92 %	14.40 %	14.88 %	15.36 %

Explicitly including a country risk premium results in much higher value than the initial cost of capital calculations. Thus other things equal, discounting free cash flows on this higher value will result in lower company value.

5. BTC Value Calculations

5.1 Historical Analysis

As pointed out in the company presentation, the historical analysis will be of limited use in BTC's valuation due to two main reasons:

- BTC has recently added a mobile service to its product portfolio which will significantly change the composition of its revenues and its risk exposure
- It is hard to trace the historical accounting data of the company due to frequent changes in accounting policy. During the period while the company was state-owned enterprise a high level of transparency was not appreciated, and the management of the company has not prepared a prospectus for potential investors for the initial public offering in January 2007.

As a result in this chapter I will review the status of company finances in 2005 and use them as a starting point for my future forecasts.

The profit and loss statement of the company for FY 2005 show a decrease of 16.55% in revenues of the company as compared to FY 2004 (Appendix 9). The drop can be attributed to quantitative as well as qualitative changed in the customer base – in 2005 the company lost subscriber to its fixed-line services but also changes the pricing of its services. The start of mobile services in November could not compensate this decrease for the short time until the end of the year, and its effects are about to be seen more distinctively during the next financial period.

In 2005 the structure of expenses has changed – the biggest part went for other operating expenses overtaking the personnel-related expenses. In the group of other operating expenses the biggest part and also the biggest increase compared to last year comes from two categories – professional services and other expenses.

Professional services have almost doubled to reach BGN 69,486,000. These are amounts paid according to management and technical services agreements with related parties. The other expenses have increased from BGN 9,913,000 in 2004 to BGN 57,314,000 in 2005. The biggest part of them are one-off impairment of fixed assets at the amount of BGN 15,633,000 related to the fact that the government has released the company from its duty to maintain war-time telecommunication facilities and the related assets were transferred to the State as of January 1 2006 without compensation.

The salary expenses have increased in 2005 with 14.20% despite the decrease in the number of employees from 17,418 to 14,736.

The third biggest expense item is the advertising and customer service costs, which have risen from BGN 19,259,000 to BGN 44,016,000 in result to increased competition and the new more aggressive marketing strategy of the company.

As a result of those developments the after-tax operating margin of the company was only 11.91% in 2005 compared to 25.34% in 2004. The interest payments of the company have grown together with the increasing long-term debt, but because of increase in interest income and also other financial income the change in net financial expenses is only 3%. The after-tax profit margin in 2005 stood at 11.11%.

In terms of balance sheet items there are few things that need to be noted (Appendix 10):

The level of cash and cash equivalents remained high for a second year – in 2005 it stood at 23.53% of the revenues. The restricted cash however has decreased from BGN 57,078,000 to BGN 391,000. The accounts receivable and inventory holdings have almost doubled for the period, the collection period stood at 35 days. Net property, plant and equipment and intangible assets have increased at cost by BGN 285,485,000. Following the acquisition of the remaining shares in several

previously associated companies and consolidating their results and assets, the investment item in the balance sheet stands at BGN 1,827,000 down from BGN 13,204,000 in 2004.

The long-term borrowing of the company has increased with 48.80% for the period, resulting in debt-to-equity ratio of 0.23. The changes in equity are related to the payment of dividends and a gain from a swap deal.

A review of certain financial ratios and comparison with the same multiples for peer companies, sector and industry (Appendix 11) shows that BTC outperforms its peers in terms of financial strength. The higher levels of quick and current ratios for BTC are based on the large holdings of cash that brings it closer to the industry and sector average then its peers. BTC also holds considerably less debt than the other companies except Cesky telecom. BTC's interest coverage is better than the peer average but falls behind the sector average.

In terms of profitability BTC's operating margin is higher than the sector average but less than the peer and the industry average. In terms of net profit margin however BTC outperforms the peer, sector and industry average, due to its low level of debt and also lower tax rate.

With regard to management effectiveness BTC is ahead of its peers but falls behind sector averages for return on investments and average equity.

The efficiency ratios show that BTC is facing much longer collection period than industry and sector averages and peers, but holds less inventory than all of them. The asset turnover is close to the one of peers but is half the average for the sector.

BTC's operating performance falls short behind comparables and the main reasons which drive the net profit margin higher than the rest are the limited amount of debt and the lower tax rate.

5.2 Assumptions

Based on the insights for the future of telecommunication industry in general and in particular the expectations about the development of Bulgarian economy and Bulgarian telecommunication sector, I will use the following assumptions when building the pro-forma statements of the company:

1. The industry analysis and experts' reports, presented in chapter 3 suggest that the ICT market in Bulgaria will grow at about 10% annually until 2009. The ICT market comprises of sub-sectors that exhibit different trends. Due to the increasing competition in the shrinking fixed-line telephone services sector I do not expect that BTC will manage to keep its market share. The growth for BTC will come from the mobile sub-sector. In 2006 BTC has a chance to increase its revenues from mobile services at a rate higher than the growth of the sub-sector mainly because it is a newcomer in a market with low switching costs and might attract a big portion of the users with better pricing schemes and services. In the long term however the market will settle and the growth in revenues for BTC will come from the growth of the sub-sector in general. Another source of increase in revenues is the Internet services which are underdeveloped compared to other countries (see chapter 3), but the company will also face increasing competition by market entrants.
2. The privatization contract imposes a guaranteed employment in the company for three-year period after the date of the contract. This period will expire in 2007. Even with this restriction the company currently employs less people that the minimum required in the contract but the salaries expenses have increased in 2005 compared to 2004. I can assume that the company is changing the composition of its labor force or that the general increase in the salaries overwhelms the decrease in the number of employees. For the forecasts I will assume that the increase in the level of salaries will offset any

reductions in the number of employees and thus the changes in labor costs will be only marginal. I will express the labor costs as a percentage of the revenues.

3. Until now the company has not been reporting cost of services sold. Thus the forecasts and pro forma statements will focus on estimating the operating profit margin and the net income.
4. With regard to the balance sheet items, a point to be considered is the management commitments as per the privatization contract. In the financial notes to the consolidated financial statements for the last quarter of 2005 the management points out they have committed to invest an amount of at least BGN 782 mln (EUR 400 mln) during a period of 5 years, starting at completion for the implementation of the program for modernization. Additional investments of BGN 586 mln (EUR 300 mln) are also mentioned in the contract. For the purposes of this valuation I will assume that the total investments for the five-year period until 2009 will not be higher than BGN 1,368 mln. The change in fixed assets at cost in 2006 will amount at about BGN 116,815,000 – the amount shown as commitment in the company's notes to financial statements (Note 23). For the next three years the investment are arbitrary spread. I can only assume that the purpose of those investments will be mainly to build the new 3G network and in the facilities required for providing broadband internet access.
5. The depreciation is forecast as a per cent of the PPE and Intangible assets for the period. Expressing this driver as a percent of the revenues is also possible, but in this case certain investments have to be done without immediate result for the revenues.
6. The company will not issue more capital. The only changes in equity will come from increase or decrease in retained earnings.
7. With regard to the company debt and the related interest payments I will assume that the amount of debt as per the latest loan contract will remain

constant for the future, also the interest payments. There are some discrepancies which have to be noted. The calculated cost of debt as per the company financial statements is 10.16% for FY 2005 and 9.11% for FY 2004. This is quite different from the interest rates stated in the notes to the financial statements of 5.676% interest rate for the loan in 2004 and 3.762% for the loan in 2005. The contractual interest expenses are estimated at BGN 9,965,608, while the interest expenses booked for FY 2005 amount at BGN 22,684,000. Even if I take into account that the early retirement of the loan is probably related to paying penalties, the larger portion of this difference remains unexplained. For the purposes of forecasting the interest expenses I will use the interest rate between 5% and 12.90% under the different scenarios. For the WACC calculations I will base the estimate on the cost of debt of company with similar default risk.

8. Note 23 to the 2005 consolidated financial statements announces that the current loan has been fully repaid in January 2006 and refinanced with another loan with the same interest payments as the one from 2005. The new loan has a higher total amount - EUR 350 millions with EUR 275 millions term facility and EUR 75 millions revolving facility. I can assume that it will change the debt-to-equity ratio of the company to almost 0.55 if the full amount of the revolving credit facility is used.
9. The plug value in this model is excess cash.
10. Because I will value the free cash flows for the firm, the amount of interest rate payments and the dividends distributed to the shareholders will not influence the valuation result.
11. For some of the items in the balance sheet like deferred tax liabilities and long-term employee benefits I do not have enough information to make reasonable forecasts. For the purposes of pro-forma statements I will use the average change for the past 3 years – a decrease of 12% annually for both items.

12. In order to incorporate different expectations about the development of the company I will analyze 3 scenarios – upside case, management case and downside case. The probabilities of those cases are estimated as follows – 0.2 for the upside and downside case and 0.6 for the management case.
13. When choosing the similar companies for the relative valuation and to estimate the beta of BTC, I looked for incumbent telecoms in emerging markets that went through similar changes. Those include Cesky Telecom, Magyar Telekom Telecommunications Plc., Telekomunikacja Polska S.A. and Hellenic Telecommunications Organization S.A. (OTE). The data for this company is culled from Factiva database.
14. The assumption about long-term growth is estimated as the average of Business Monitor International estimates about growth in the Euro zone for the period 2004 - 2007.

5.3 Value with DCF scenario approach

5.3.1 Upside case

The first scenario will represent the upward development of both the company and the market. Following the most optimistic forecasts, I have calculated 20% increase in revenues in 2006, and another 10% annually for 2007 and 2008. Afterwards the growth rate decreases gradually to reach the long-term growth of 3% in 2016.

The company will slowly improve its operating performance to reach an operating profit margin of 26.40% in 2015. I expect that the company will decrease the financial expenses to 10% and the financial incomes will remain at 1.89%.

Those assumptions result in a profit margin of 24.83% in 2015.

This scenario is based on the assumption that the current structure of the company fixed assets is used at optimum, so any growth in revenues should be followed by similar increase in the infrastructure. This assumption is feasible in the sense that the company will loose share in a declining market like fixed-line telephony, and the growth is expected in the mobile and internet sectors, for which the infrastructure is not developed in full. The asset turnover ratio is estimated on yearly basis to take into account also the investment program to which the company management committed in the privatization contract.

The level of operating cash in the company amounts to 4.17% of the revenues or 15 days instead of the registered in 2005 cash at the amount of 23.53% of the revenues (84 days). In 2006 the company will decrease closer to sector averages (Appendix 9) its inventory holding period to 20 days, its collection period to 10 days and its credit period to 40 days. The other current liabilities will remain at a constant level of 10.57% of the revenues.

In this scenario I also assume the company will pay out 70% of its net income as dividends to its shareholders.

Since all risks related to the company are explicitly modeled in the revenue and expenses forecasts, I will not consider a country risk premium when calculating the WACC. The equity value is calculated at BGN 5,440,114,000 or BGN 18.84 per share. (Appendix 12)

In order to check how vulnerable the estimated value is to errors in inputs I have conducted sensitivity analysis of the stock value towards the WACC estimate and the long-term growth rate (Table 12). The highlighted values show the range within which the company is currently traded. Provided that the assumptions used to build the pro forma statements under this scenario are correct, the market is pricing BTC shares correctly and the long-term growth is not expected to be higher than 2%, the WACC of the company should be between 12% and 13%. Higher long-term growth rates are associated with higher WACC.

Table 12 Upside case - value sensitivity analysis

Equity Value 18.84		Long-term growth rate					
		1 %	2 %	3 %	4 %	5 %	6 %
WACC	20 %	4.73	4.83	4.95	5.08	5.22	5.39
	19 %	5.16	5.29	5.42	5.58	5.76	5.96
	18 %	5.65	5.80	5.97	6.16	6.38	6.64
	17 %	6.20	6.38	6.59	6.83	7.11	7.44
	16 %	6.83	7.05	7.31	7.61	7.97	8.40
	15 %	7.55	7.83	8.16	8.54	9.01	9.57
	14 %	8.39	8.75	9.16	9.66	10.28	11.04
	13 %	9.38	9.84	10.38	11.04	11.87	12.93
	12 %	10.56	11.15	11.87	12.76	13.91	15.45
	11 %	11.98	12.76	13.73	14.98	16.65	18.98
	10 %	13.74	14.79	16.15	17.95	20.48	24.28
	9 %	15.94	17.41	19.37	22.12	26.24	33.10
	8 %	18.79	20.92	23.90	28.38	35.84	50.76

5.3.2 Management case

This scenario represents the most likely outcome of managed company in the face of the opportunities offered. It will account for moderate improvement of company operating performance and reasonable growth rates.

In order to get a better insight in the company growth opportunities I have applied the bottom-up approach to revenue forecasting. The industry trends discussed earlier showed a decrease of fixed-line services income. I base the forecast on 3% drop in revenues in 2006, 2% from 2007 to 2009, and 1% decrease afterwards. In the same time the positive trends in mobile segment will drive company revenues upwards. The forecasts used in this paper are based on calculating the market value using the industry growth trends of 20% in 2006, 12.4% in 2007, 10% in 2008 and gradually decreasing afterwards to reach a growth of 5% in 2015. The revenues for BTC mobile operations for 2006 I calculate by simply annualizing the revenues received in 2005 (Vivatel had revenues in November and December 2005 only). This amounts to 12% market share for Vivatel in 2006. From 2007 onwards the estimates are based on constantly growing market share, to settle at 35% in 2012. The implied growth rates are then used in building the pro forma statements for BTC. (Appendix 13)

The company will remain similar structure of expenses resulting in operating margin of 17.5% in 2006. It will gradually improve to reach a level of 22.68% in 2015.

The financial expenses will remain constant at 10% of the debt amount while the interest received will remain at 2% of the financial assets. The profit margin will grow from 12.74% in 2006 to 20.61% in 2015.

In regard to balance sheet items, the fixed and intangible assets will grow at a slower rate than the revenues, and the assets turnover ratio will reach 1 in 2009. The

company will hold cash and inventory for 25 days, for the collection period will be 33 days, and the credit period will be 47 days.

The WACC related assumptions remain unchanged, resulting in equity value of BGN 3,510,412,000 or BGN 12.16 per share (Appendix 14).

The sensitivity analysis under this scenario (Table 13) shows that the market would have priced the BTC shares correctly if the WACC estimate is between 9% and 11% with long-term growth estimates up to 3%.

Table 13 Management case – value sensitivity analysis

Equity Value		Long-term growth rate					
12.16		1 %	2 %	3 %	4 %	5 %	6 %
WACC	20 %	3.13	3.21	3.29	3.38	3.49	3.61
	19 %	3.45	3.54	3.64	3.76	3.89	4.04
	18 %	3.81	3.92	4.04	4.18	4.34	4.53
	17 %	4.22	4.35	4.50	4.68	4.88	5.12
	16 %	4.68	4.85	5.04	5.26	5.52	5.83
	15 %	5.22	5.42	5.66	5.94	6.28	6.69
	14 %	5.84	6.10	6.40	6.77	7.22	7.77
	13 %	6.57	6.90	7.30	7.78	8.38	9.16
	12 %	7.44	7.87	8.39	9.05	9.89	11.01
	11 %	8.49	9.06	9.76	10.68	11.89	13.60
	10 %	9.78	10.55	11.53	12.85	14.70	17.47
	9 %	11.39	12.47	13.90	15.91	18.91	23.93
	8 %	13.49	15.04	17.22	20.49	25.94	36.83

5.3.3 Downside case

The third scenario represents the downturn development of the company. The expected revenues in the mobile segment will be modest in 2006 - only 5% and will come into power only from 2007 to 2009, resulting in 7% growth. Afterwards the growth rates will gradually decrease to reach 1% after 2015. The company will spend around 27% of the revenues in external services to reflect increased competition and personnel expenses will stabilize at about 23% of the revenues. The financial expenses will remain high (12.90%). The profit margin will reach its peak of 14.25% in 2015. The investment in fixed and intangible assets will continue, but they will not bring the expected growth in revenues. The asset turnover will vary from 0.77 to 0.88 and will reach 1 only in 2015.

The equity value under this scenario will amount at BGN 2,213,136,000 or BGN 7.66 per share (Appendix 15).

If we believe that the market is pricing BTC shares correctly and those are the assumptions for future development, the WACC should range between 7% and 9% with long-term growth rates of up to 3% (Table 14).

Table 14 Downside case – value sensitivity analysis

Equity Value		Long-term growth rate					
7.66		1 %	2 %	3 %	4 %	5 %	6 %
WACC	20 %	1.39	1.45	1.52	1.60	1.69	1.80
	19 %	1.62	1.70	1.79	1.88	2.00	2.12
	18 %	1.89	1.98	2.09	2.21	2.35	2.51
	17 %	2.20	2.31	2.44	2.59	2.76	2.97
	16 %	2.55	2.69	2.85	3.04	3.26	3.53
	15 %	2.96	3.13	3.34	3.58	3.87	4.22
	14 %	3.44	3.66	3.92	4.23	4.61	5.09
	13 %	4.01	4.29	4.63	5.04	5.56	6.22
	12 %	4.69	5.06	5.51	6.07	6.79	7.74
	11 %	5.53	6.01	6.62	7.40	8.44	9.89
	10 %	6.56	7.22	8.07	9.19	10.77	13.14
	9 %	7.88	8.79	10.02	11.73	14.31	18.59
	8 %	9.59	10.92	12.78	15.58	20.23	29.55

Combining the three scenarios with the appropriate probabilities results into equity value per share of BGN 12.60 (Table 15). Provided that the assumptions on which the forecasts are based and the probability distribution are correct, the BTC shares are currently under priced by almost 25%.

Table 15 DCF scenarios valuation recapitulation

Scenario	Value per share BGN	Probability	Total BGN
Upside case	18.84	0.2	3.77
Management case	12.16	0.6	7.30
Downside case	7.66	0.2	1.53
Total Value per share as per DCF scenario approach:			***12.60***

5.4 Value with DCF, country risk included in the discount factor

Following Koller et all (2005) recommendations to compare the results from three valuation models when valuing emerging market companies, I will apply the DCF with country risk premium model to BTC valuation.

The pro-forma statements in this case are built using "business-as-usual" development of the company and the free cash flows are discounted with a weighted average cost of capital that includes a country premium. The details of calculating the estimates for country risk premium were described in Chapter 4. The assumptions on which "business-as-usual" cash flows are calculated are as follows:

- Growth in revenues of 20% in 2006, 15% in 2007 and 10% for 2008 and 2009, gradual decrease of the growth rate to reach 4% in 2015
- Long-term growth rate of 2%
- Depreciation of 12% of the net fixed assets value
- Interconnect costs at 17% of the revenues
- External services costs at 22% of revenues

- Salary costs at 21% of revenues
- Materials at 5% of revenues
- Interest payments at 10% of the obligations until 2009 and 5% afterwards
- Cash and inventory holdings for 15 days
- Collection period of 10 days
- Credit period of 30 days

The other parameters of the WACC calculations - the choice of country risk premium and risk-free rate - were described in detail in the choice of valuation model section.

The equity value under these assumptions is estimated at BGN 2,931,888,000 or BGN 10.15 per share. Thus the market is currently under pricing the BTC shares by 5% (Appendix 16).

The sensitivity analysis in this case (Table 16) shows that the company is currently correctly priced if the WACC ranges between 11% and 13% with long-term growth rates of up to 3%.

Table 16 DCF with country risk premium valuation

Equity Value		long-term growth rate					
10.15		1 %	2 %	3 %	4 %	5 %	6 %
WACC	20 %	4.20	4.30	4.42	4.55	4.70	4.87
	19 %	4.62	4.75	4.89	5.05	5.23	5.44
	18 %	5.10	5.26	5.43	5.63	5.85	6.12
	17 %	5.65	5.84	6.05	6.29	6.58	6.92
	16 %	6.28	6.51	6.77	7.08	7.45	7.88
	15 %	7.00	7.29	7.62	8.01	8.49	9.07
	14 %	7.84	8.20	8.63	9.14	9.77	10.55
	13 %	8.83	9.30	9.85	10.53	11.38	12.47
	12 %	10.02	10.62	11.36	12.27	13.46	15.03
	11 %	11.45	12.25	13.25	14.53	16.24	18.63
	10 %	13.22	14.31	15.70	17.55	20.14	24.03
	9 %	15.46	16.97	18.98	21.79	26.02	33.06
	8 %	18.35	20.54	23.60	28.19	35.84	51.14

5.5 Value with relative valuation

The relative valuation is performed using the multiples offer by Factiva database for few similar individual companies, as well as the industry and sector average (Table 17). The comparable companies are the incumbent telecom operators of the Czech Republic, Hungary, Poland and Greece.

Table 17 Peers' multiples

Valuation Ratios	***Price to Sales***	***Price to Book***	***Price to Tangible Book***
Sector	2.91	3.65	--
Industry	2.79	2.56	--
SP500	3.02	3.96	--
Cesky Telecom	2.59	1.67	2.2
Magyar telecom	1.62	1.9	4.83
Telekom Polska	1.65	1.68	2.79
OTE	1.63	2.72	3.16
Average peer group	1.87	1.99	3.25

Source: Factiva company database

Table 18 BTC relative valuation

Peer group	**Multiples**	**BTC ('000 BGN)**	**BTC's valuation**
Sales	1.8725	1,020,076.00	1,910,092.31
Book Value	1.9925	1,179,438.00	2,350,030.22
Tangible assets	3.245	1,146,824.00	3,721,443.88
Industry			
Sales	2.79	1,020,076.00	2,846,012.04
Book Value	2.56	1,179,438.00	3,019,361.28
Sector			
Sales	2.91	1,020,076.00	2,968,421.16
Book Value	3.65	1,179,438.00	4,304,948.70
		Average for valuations	***3,017,187.08***
		per share	***10.45***

The average valuation of BTC, using those multiples suggests that the company value is BGN 10.45 (Table 18) - the company is currently under priced by 3.46 %.

Conclusion

Comparison of the results of the three valuation methods is inevitable requirement to reach a "buy", "hold" or "sell" recommendation. As expected the lowest value is produced by the discounted cash flows method with country risk premium included in the discount factor, confirming that even the most positive forecasts cannot offset the effect of higher discount rate. The value from relative valuation falls in between, and the most positive result comes from the discounted cash flow scenario valuation. However none of the values is less than the trading price as per April 7th, 2006 and the average value is BGN 10.95. Even if some of the assumptions used in the valuation prove to be unreasonable, we can still claim the company is worth buying.

By the time this paper was finally completed, the share price of BTC increased to reach BGN 10.40 as of June 10th, 2006. In the same time the consolidated financial statements of the company for the first quarter of 2006 show negative trends of development – the revenues are actually less than the same period of last year. Should the company fail to compensate this decline during the rest of the year, the annual revenues will decrease with 1.40%. In the same time up to date there are no major announcements about negative expectations apart from restructuring program that should change the recommendations of this analysis.

BTC value calculations confirmed that making successful investment recommendations is much more a gift than a science. In addition to the methodological uncertainties, a number of dilemmas which in academic surrounding are handled through unquestionable simplifications in practice require extensive experience to come up with the educated guess. Working with real-life data proved to be a challenging task that calls for broad business knowledge and persistence.

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Appendix

Appendix 1 Note on legal entities as per Bulgarian Code of Commerce

This note is necessary because the legal entities as per the Bulgarian legal requirements do not always translate unanimously into English language equivalent and different institutions/sources use different notations.

Currently BTC is registered as public limited company or joint stock company. The Bulgarian legal system uses the abbreviation "AD". The capital of this entity is split into shares that can be traded on the stock exchange.

BTC's daughter companies are registered as limited liability company with a single owner, or Single Person Joint Stock Company (SPJSC) as used by the Bulgarian Enterprise Information System. BTC company site uses the abbreviation "EOOD" as per the Bulgarian legal system. The partners have limited liability and are free to sell their shareholdings in the company, but those stocks are not publicly traded.

Sources: Bulgarian Commerce Act
http://unpan1.un.org/intradoc/groups/public/documents/UNTC/UNPAN016324.pdf

Appendix 2 Number of mobile telephone subscriptions

Table 2: Number of mobile telephone subscriptions (in 1000)

						Distribution among EU Member States (%)	Average annual increase (%)	change %)	Mobile phone subscriptions per 100 inhabitants	
	1998	2001	2002	2003	2004	2004	2004/1998	2004/2003	1996	2004
EU25	**34613**	**307857**	**337559**	**368047**	**409242**	**100**	**36.2**	**11.2**	**7.7**	**89.6**
EU15	**33421**	**279485**	**299576**	**323360**	**353701**	**86.4**	**34.3**	**9.4**	**9.0**	**92.5**
BE	478	6959	8102	8806	9132	2.2	44.6	6.1	4.7	87.8
CZ	200	6947	8610	9709	10783	2.6	64.6	11.1	1.9	105.6
DK	1317	3980	4478	4787	5168	1.3	18.6	8.4	25.1	94.8
DE	5554	56126	59128	64800	71316	17.4	37.6	10.1	6.8	86.4
EE	70	739	882	1050	1257	0.3	43.5	19.7	4.9	93.0
EL	531	7984	9314	8936	9306	2.3	43.0	4.1	5.0	84.3
ES	2997	29856	33531	37220	38623	9.4	37.6	3.8	7.6	91.5
FR	2467	38997	38593	41702	44552	10.9	43.6	6.8	4.3	74.4
IE	289	2800	3000	3400	3800	0.9	38.0	11.8	8.0	94.4
IT	8422	51246	53003	55918	62750	15.3	33.0	12.2	11.3	108.4
CY	71	314	418	552	658	0.2	32.1	19.2	10.8	90.1
LV	29	825	917	1220	*1537*	0.4	64.3	26.0	1.2	68.3
LT	51	1018	1632	2102	3051	0.7	68.8	45.1	1.4	88.5
LU	45	409	474	539	648	0.2	39.5	19.9	10.9	143.0
HU	473	4967	6886	7945	8727	2.1	44.0	9.8	4.6	86.3
MT	13	221	277	290	308	0.1	48.5	6.2	3.5	77.0
NL	1018	12200	12300	13491	14821	3.6	39.8	9.9	6.6	91.2
AT	563	6541	6736	7095	7990	2.0	39.3	12.6	7.1	98.2
PL	217	9805	13898	17401	23096	5.6	79.2	32.7	0.6	60.5
PT	664	8356	8530	9354	9773	2.4	40.0	4.5	6.6	93.3
SI	41	1509	1539	1739	1849	0.5	61.0	6.3	2.1	93.7
SK	29	2226	2923	3879	4275	1.0	88.7	16.2	0.5	79.5
FI	1477	4176	4517	4747	4999	1.2	16.5	5.3	28.9	95.8
SE	2492	7177	7949	8801	9775	2.4	18.6	11.1	28.2	108.9
UK	7109	44919	46921	*52984*	*61100*	14.9	30.9	15.3	12.1	102.4
IS	48	248	260	280	291		25.9	3.9	17.2	100.1
LI	:	:	11	:	:		:	:	:	:
NO	1216	3766	3911	4163	4716		18.5	13.3	27.8	103.0
CH	663	5276	5736	6189	6275		32.4	1.4	9.4	85.2
BG	40	1615	2500	3534	4842		82.1	37.0	0.5	62.1
HR	:	1731	2340	2551	2842		:	11.4	:	64.0
RO	:	4595	5099	7085	10215		:	44.6	:	47.0
TR	360	18299	23323	27889	34708		77.0	24.5	:	48.7

Footnote:

Source ITU : IT (1996-2004), LV (2004), NL (2004), UK (2003,2004)

Appendix 3 Number of main telephone lines

Table 1: Number of main telephone lines (in 1000)

						Distribution among EU Member States (%)	Average annual increase (%)	change (%)	Main telephone lines per 100 inhabitants	
	1996	2001	2002	2003	2004	2004	2004/1996	2004/2003	1996	2004
EU25	**204909**	**227444**	**226331**	***225682***	***226310***	**100**	1.2	0.3	45.8	49.6
EU15	**188269**	**203033**	**202157**	***201464***	***202087***	**89.3**	0.9	0.3	50.6	52.8
BE	:	3702	3666	3570	3447	1.5	-0,9 **(1)**	-3.4	:	33.2
CZ	2816	3861	3675	3626	3428	1.5	2.5	-5.5	27.3	33.6
DK	3251	3865	3701	3612	3488	1.5	0.9	-3.4	61.9	64.6
DE	44200	52450	53780	54340	54680	24.2	2.7	0.6	54.0	66.3
EE	439	512	477	464	445	0.2	0.2	-4.1	30.8	32.9
EL	5329	5608	5413	5200	5612	2.5	0.6	7.9	49.9	50.8
ES	15413	17531	17641	17759	18924	8.4	2.6	6.6	39.1	44.8
FR	32900	34084	34124	33913	33910	15.0	0.4	0.0	56.8	56.6
IE	1390	1860	1759	1610	1593	0.7	1.7	-1.1	38.4	39.6
IT **(2)**	25259	27353	27142	26596	25957	11.5	0.3	-2.4	44.4	44.8
CY	366	435	427	424	464	0.2	3.0	9.4	55.8	63.5
LV	750	722	701	654	631	0.3	-2.1	-3.5	30.4	27.2
LT	993	1144	930	824	820	0.4	-2.4	-0.5	27.5	23.8
LU	258	336	248	245	244	0.1	-0.7	-0.4	62.7	54.0
HU	2651	3746	3670	3607	3570	1.6	3.8	-1.0	25.7	35.3
MT	181	208	207	208	211	0.1	1.9	1.4	48.8	52.0
NL	8431	8158	8027	7841	7862	3.5	-0.9	0.3	54.4	48.4
AT	3779	3316	3187	3159	3050	1.5	-2.6	-3.5	47.5	37.5
PL	6532	11427	11872	12304	12545	5.5	8.5	2.0	16.9	32.8
PT	3822	4518	4143	4497	4469	2.0	2.0	-0.6	38.1	42.7
SI	665	800	812	812	859	0.4	3.3	5.8	33.4	43.0
SK	1246	1556	1403	1295	1250	0.6	0.0	-3.5	23.2	23.2
FI	2802	2806	2726	2568	2390	1.1	-2.0	-6.9	54.8	45.8
SE	6032	5953	5828	5780	5688	2.5	-0.7	-1.6	68.3	63.4
UK	30678	31492	30773	:	:	*13.6 (3)*	0.6 **(4)**	:	52.3	:
IS	154	157	149	152	150		-0.3	-1.3	57.5	51.6
LI	20	:	20	:	:		:	:	64.7	:
NO	2589	2338	2317	2229	2173		-2.2	-2.5	59.2	47.5
CH	4290	4101	5388	5323	5263		2.6	-1.1	60.7	71.5
BG	2647	2922	2906	2856	2770		0.6	-3.0	31.6	35.5
HR	:	1780	1685	1684	1676		:	-0.5	:	37.7
RO	3161	4165	4207	4330	4883		5.6	12.8	14.0	22.5
TR	14286	18904	18915	18917	19125		3.7	1.1	:	26.8

Appendix 4

CHOOSING THE RIGHT VALUATION MODEL

This program is designed to help in choosing the right model to use for any occassion.

Inputs to the model

Level of Earnings		(in currency)
Are your earnings positive ?	Yes	(Yes or No)
If the earnings are positive and normal, please enter the following:		
What is the expected inflation rate in the econom	2,50 %	(in percent)
What is the expected real growth rate in the ecor	2,00 %	(in percent)
What is the expected growth rate in earnings (revenues) for this firm i	10,00 %	(in percent)
Does this firm have a significant and sustainable advantage over compe	Yes	(Yes or No)
If the earnings are negative, please enter the following:		
Are the earnings negative because the firm is in a cyclical business ?		(Yes or No)
Are the earnings negative because of a one-time or temporary occurrence?		(Yes or No)
Are the earnings negative because the firm has too much debt?		(Yes or No)
If yes, is there a strong likelihood of bankruptcy?		(Yes or No)
Are the earnings negative because the firm is just starting up?		(Yes or No)
Financial Leverage		
What is the current debt ratio (in market value terms) ?	19,00 %	(in percent)
Is this debt ratio expected to change significantly ?	No	(Yes or No)
Dividend Policy		
What did the firm pay out as dividends in the current year?	BGN 146 687,00	(in currency)
Can you estimate capital expenditures and working capital requiremer	Yes	(Yes or No)
Enter the following inputs (from the current year) for computing FCFE		
Net Income (NI)	BGN 121 474,00	
Depreciation and Amortization	BGN 131 455,00	
Capital Spending (Including acquisitions)	BGN 142 653,00	
Δ Non-cash Working Capital (ΔWC)	BGN 57 728,00	

FCFE = NI - (Capital Spending - Depreciation) *(1- Debt Ratio) - Δ WC (1-Debt Ratio) = $65 643,94

OUTPUT FROM THE MODEL

Based upon the inputs you have entered, the right valuation model for this firm is:

Type of Model (DCF Model, Option Pricing Model):	**Discounted CF M**	! If option pricing model, first do a DCF valuation
Level of Earnings to use in model (Current, Normalized):	**Current Earnings**	
Cashflows that should be discounted (Dividends, FCFE, FCFF) :	**FCFE (Value equity)**	
Length of Growth Period (10 or more, 5 to 10, less than 5)	**5 to 10 years**	
Appropriate Growth Pattern (Stable, 2 stage, 3 stage):	**Two-stage Growth**	

! In an n-stage model, you will estimate target operating margins (if valuing the firm) or net margins (if valuing equity) and revenue growth each year.

Source: Damodaran, http://pages.stern.nyu.edu/~adamodar/

Appendix 5 European Telecoms' Beta

Company	Reference Index	Type of beta	Beta
TELEKOM AUSTRIA AG	DJ EURO STOXX 50 PRICE EUR	beta - 1 year :	0,5
KONINKLIJKE KPN N.V.	DJ EURO STOXX 50 PRICE EUR	beta - 1 year :	0,66
TELEFONICA SA	DJ EURO STOXX 50 PRICE EUR	beta - 1 year :	0,71
TELECOM ITALIA	DJ EURO STOXX 50 PRICE EUR	beta - 1 year :	0,91
FRANCE TELECOM	DJ EURO STOXX 50 PRICE EUR	beta - 1 year :	0,95
DEUTSCHE TELEKOM AG	DJ EURO STOXX 50 PRICE EUR	beta - 1 year :	0,71
	DJ EURO STOXX 50 PRICE EUR Average		**0,7400**
TELEKOM AUSTRIA AG	DJ STOXX 50 PRICE EUR	beta - 1 year :	0,6
CABLE AND WIRELESS PUBLIC LIMITED COMPANY	DJ STOXX 50 PRICE EUR	beta - 1 year :	0,92
TELIASONERA AB	DJ STOXX 50 PRICE EUR	beta - 1 year :	0,64
KONINKLIJKE KPN N.V.	DJ STOXX 50 PRICE EUR	beta - 1 year :	0,66
BT GROUP PLC	DJ STOXX 50 PRICE EUR	beta - 1 year :	0,68
TELEFONICA SA	DJ STOXX 50 PRICE EUR	beta - 1 year :	0,73
TELECOM ITALIA	DJ STOXX 50 PRICE EUR	beta - 1 year :	0,94
FRANCE TELECOM	DJ STOXX 50 PRICE EUR	beta - 1 year :	0,92
DEUTSCHE TELEKOM AG	DJ STOXX 50 PRICE EUR	beta - 1 year :	0,71
	DJ STOXX 50 PRICE EUR Average		**0,7555**
TELEKOM AUSTRIA AG	FTSE EUROTOP 100 EUR	beta - 1 year :	0,63
CABLE AND WIRELESS PUBLIC LIMITED COMPANY	FTSE EUROTOP 100 EUR	beta - 1 year :	0,97
TELIASONERA AB	FTSE EUROTOP 100 EUR	beta - 1 year :	0,68
KONINKLIJKE KPN N.V.	FTSE EUROTOP 100 EUR	beta - 1 year :	0,71
BT GROUP PLC	FTSE EUROTOP 100 EUR	beta - 1 year :	0,7
TELEFONICA SA	FTSE EUROTOP 100 EUR	beta - 1 year :	0,74
TELECOM ITALIA	FTSE EUROTOP 100 EUR	beta - 1 year :	0,97
	FTSE EUROTOP 100 EUR Average		**0,7714**
	Grand Average		**0,7563**

Source: Factiva Database

Appendix 6 Peer companies' beta

Company Name	Inputs	Company	Industry	Sector	SP500	Asset Beta	Industry unlevered	Sector Unlevered
Cesky Telecom	Beta, 5 Years	1,33	1,39	1,08	1,00	0,1468	0,0219	0,0171
	Total Debt to Equity	9,92	93,00	92,40	72,50			
	Tax Rate	28,58	26,04	30,20	30,80			
	Tax Rate, 5-Yr Average	18,72	32,96	32,88	31,91			
Magyar Telekom	Beta, 5 Years	1,00	1,39	1,08	1,00	0,0175		
	Total Debt to Equity	65,10	93,00	92,40	72,50			
	Tax Rate	13,18	26,04	30,20	30,80			
	Tax Rate, 5-Yr Average	13,62	32,96	32,88	31,91			
Telekomunikacja Polska	Beta, 5 Years	1,25	1,39	1,08	1,00	0,0308		
	Total Debt to Equity	52,77	93,00	92,40	72,50			
	Tax Rate	12,81	26,04	30,20	30,80			
	Tax Rate, 5-Yr Average	24,88	32,96	32,88	31,91			
OTE	Beta, 5 Years	0,76	1,39	1,08	1,00	0,0113		
	Total Debt to Equity	105,51	93,00	92,40	72,50			
	Tax Rate	0,00	26,04	30,20	30,80			
	Tax Rate, 5-Yr Average	37,33	32,96	32,88	31,91			
						0,0516	0,02	0,02
					BTC beta	**1,03**	**0,44**	**0,34**

Appendix 7

Inputs for synthetic rating estimation

Enter the type of firm =	2	(Enter 1 if large manufacturing firm, 2 if smaller or riskier firm, 3 if financial service firm)
Do you have any operating lease or rental commitments?	no	
Enter current Earnings before interest and taxes (EBIT) =	141 706	(Add back only long term interest expense for financial firms)
Enter current interest expenses =	22 689	(Use only long term interest expense for financial firms)
Enter current long term government bond rate =	4,95 %	

Output

Interest coverage ratio =	**6,25**
Estimated Bond Rating =	**A**
Estimated Default Spread =	**0,85 %**
Estimated Cost of Debt =	**5,80 %**

Updated: February 2004; If you want to update the spreads listed below, please visit http://www.bondsonline.com

For smaller and riskier firms

If interest coverage ratio is			
greater than	≤ to	Rating is	Spread is
-100000	0,499999	D	20,00 %
0,5	0,799999	C	12,00 %
0,8	1,249999	CC	10,00 %
1,25	1,499999	CCC	8,00 %
1,5	1,999999	B-	6,00 %
2	2,499999	B	4,00 %
2,5	2,999999	B+	3,25 %
3	3,499999	BB	2,50 %
3,5	3,9999999	BB+	2,00 %
4	4,499999	BBB	1,50 %
4,5	5,999999	A-	1,00 %
6	7,499999	A	0,85 %
7,5	9,499999	A+	0,70 %
9,5	12,499999	AA	0,50 %
12,5	100000	AAA	0,35 %

Source: Damodaran, http://pages.stern.nyu.edu/~adamodar/

Appendix 8 WACC calculations

General inputs:	
r_f	4.95 %
r_m-r_f	4.80 %
Market Values	
Equity (E)	2 916 524 884.00
Debt (D)	684 540 500.00
Total (V= D+E)	3 601 065 384.00
D/V	0.19
T_c	15.00 %
r_e	10.13 %
r_d	5.80 %
beta (industry avg)	1.08
WACC based on industry beta	9.14 %
Country risk inputs	
country risk premium	3.38 %
lambda	2.38
beta (BTC)	0.13
r_e (country risk premium)	13.62 %
r_d (country risk premium)	8.05 %
WACC with country premium	12.33 %

$$WACC = \frac{E}{V} r_e + \frac{D}{V} r_d (1 - T_c)$$

WACC = (1-0.19)*10.13 + 0.19*5.80*(1-0.15) = 9.14%

WACC *country risk premium* = (1-0.19)*13.62 + 0.19*8.05*(1-.15) = 12.33%

Appendix 9 Reformulated Profit & Loss Statements BTC 2002 – 2005

	2005	2004	2003	2002		2005	2004	2003	2002
Revenues	1 020 076	1 037 246	1 026 454	1 027 910		100,00 %	100,00 %	100,00 %	100,00 %
Impairment of receivables		-2 274	-3 781			0,00 %	-0,22 %	-0,37 %	0,00 %
Operating expenses									
Internconnect	-157 572	-177 208	-183 947	0		-15,45 %	-17,08 %	-17,92 %	0,00 %
External services	-276 098	-155 668	-81 506	-261 168		-27,07 %	-15,01 %	-7,94 %	-25,41 %
Salaries	-262 203	-229 595	-213 508	-204 161		-25,70 %	-22,14 %	-20,80 %	-19,86 %
Depreciation	-131 455	-125 081	-140 142	-91 489		-12,89 %	-12,06 %	-13,65 %	-8,90 %
Materials and electricity	-51 042	-47 783	-56 401	-52 010		-5,00 %	-4,61 %	-5,49 %	-5,06 %
License fees and other expenses	0	0	-28 877	-43 150		0,00 %	0,00 %	-2,81 %	-4,20 %
	-878 370	-735 335	-704 381	-651 978		-86,11 %	-70,89 %	-68,62 %	-63,43 %
Operating profit	**141 706**	**299 637**	**318 292**	**375 932**		13,89 %	28,89 %	31,01 %	36,57 %
Tax on COI	-20 232	-36 787	-57 786	-90 642		-1,98 %	-3,55 %	-5,63 %	-8,82 %
Aftertax COI	**121 474**	**262 850**	**260 506**	**285 290**		11,91 %	25,34 %	25,38 %	27,75 %
Other revenues/ (expenses)									
Interest, net	-17 989	-10 239	-5 925	-9 405					
Income from associated companies			-131	-151					
Core financial income	**-17 989**	**-10 239**	**-6 056**	**-9 556**					
Tax on CFI	2 568	1 257	1 099	2 304					
After tax CFI	**-15 421**	**-8 982**	**-4 957**	**-7 252**					
Negative goodwill	1 867	0							
Other net	6 605	-774	-2 459	2 191					
Impairment loss			-830	-30 960					
Unusual financial income	**8 472**	**-774**	**-3 289**	**-28 769**					
Tax on UFI	-1 210	95	597	6 937					
After-tax UFI	**7 262**	**-679**	**-2 692**	**-21 832**					
Earnings before taxes	**132 189**	**288 624**	**308 947**	**337 607**		12,96 %			
Taxes	-18 873	-35 435	-56 089	-81 401					
After tax earnings	**113 316**	**253 189**	**252 858**	**287 166**		11,11 %			
Tax rate	14,28 %	12,28 %	18,15 %	24,11 %					

Appendix 10 Reformulated Balance Sheet BTC 2002 – 2005

Assets	**2005**	**2004**	**2003**	**2002**
Current assets				
Cash and cash equivalents	24 915	25 335	25 071	77 721
Accounts receivable, net	99 944	51 858	54 370	54 708
Receivables from international, net	-	17 715	20 101	20 921
Inventory	72 418	43 173	48 417	43 294
Advances and prepaid expenses	-	5 459	3 279	4 222
Net property plant and equipment	1 146 824	1 101 258	1 114 222	953 183
Intangibles + goodwill	200 599	92 135	54 617	48 872
Optical cables	-	-	-	12 254
Investments	1 827	13 204	15 155	14 657
Total operating assets	***1 546 527***	***1 350 137***	***1 335 232***	***1 229 832***
Other investments	-			3 892
Other assets	1 534		0	430
Non-operating cash	215 124	257 316	30 044	
Total financial assets	***216 658***	***257 316***	***30 044***	***4 322***
Total assets	**1 763 185,00**	**1 607 453,00**	**1 365 276,00**	**1 234 154,00**
Liabilities and Equity	**2005**	**2004**	**2003**	**2002**
Current portion of long-term debt	72 142	33 741	21 897	51 633
Long term loans	198 301	142 175	88 812	110 921
Long term tax obligations	-	2 008	4 018	-
Long term employee benefits	10 044	10 570	18 140	16 327
Total IBD	***280 487***	***188 494***	***132 867***	***178 881***
Shareholders' equity	551 901	551 901	518 384	518 384
Equity premium	114 784	64 274	0	0
Legal reserves	0	25 524	25 524	22 337
Retained earnings	512 753	548 492	504 599	342 968
Deffered tax liability, net	61 065	75 978	84 969	90 598
Total Equity	***1 240 503***	***1 266 169***	***1 133 476***	***974 287***
Accounts payables to suppliers	134 699	64 015	36 655	25 271
Other current liabilities	107 496	66 285	42 061	55 715
Revaluation reserve	-	22 490	21 415	0
Total NIBD	***242 195***	***152 790***	***100 131***	***80 986***
Total Liabilities and Equity	**1 763 185,00**	**1 607 453,00**	**1 366 474,00**	**1 234 154,00**
Capital Employed	1 520 990	1 454 663	1 266 343	1 153 168
Net Operating Assets	1 304 332	1 197 347	1 236 299	1 148 846

Appendix 11 Selected Ratios, BTC and peer companies

Valuation Ratios	*BTC*	*Sector*	*Industry*	*Cesky Telecom*	*Magyar telecom*	*Telekom Polska*	*OTE*	*Peer average*
Price to Sales TTM	2,86	2,91	2,79	2,59	1,62	1,65	1,63	1,87
Price to Book MRQ	1,65	3,65	2,56	1,67	1,9	1,68	2,72	1,99
Price to Tangible Book MRQ	2,54	--	--	2,2	4,83	2,79	3,16	3,25
Financial Strength								
Quick Ratio MRQ	1,08	0,83	0,74	0,61	0,6	0,47	1,34	0,76
Current Ratio Quarter	1,31	1,34	1	0,65	0,63	0,5	1,39	0,79
Long Term Debt to Equity MRQ	22,84	79,4	80,3	9,82	42,75	35,31	95,23	45,78
Total Debt to Equity MRQ	28,96	92,4	93	9,92	65,1	52,77	105,51	58,33
Interest Coverage TTM	6,25	8,11	3,72	8,31	3,49	5,42	0,13	4,34
Profitability Ratios								
Operating Margin TTM	13,89	13,83	14,9	15,42	21,78	20,61	0,05	14,47
Pre-Tax Margin TTM	12,96	11,38	10,98	14,3	16,79	16,38	-0,37	11,78
Net Profit Margin TTM	11,11	8,24	7,29	10,22	14,58	14,28	-1,07	9,50
Tax Rate TTM	17,20	30,2	26,04	28,58	13,18	12,81	--	18,19
Management Effectiveness								
Return on Average Assets TTM	6,72	6,28	3,22	4,83	8,56	7,43	-0,55	5,07
Return on Investment TTM	7,45	8,94	3,82	5,96	11,94	9,5	-0,79	6,65
Return on Average Equity TTM	9,04	13,6	10,07	6,8	15,33	13,58	-8,79	6,73
Efficiency								
Receivables Turnover TTM	35,27	17,76	8,96	7,04	6,75	7,78	5,14	6,68
Inventory Turnover TTM	14,09	19,73	22,34	45,7	4,63	2	23,83	19,04
Asset Turnover TTM	0,58	1,11	0,44	0,47	0,59	0,52	0,52	0,53

Source: Factiva company database

Appendix 12 DCF Scenario Approach - Upside Case

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenues	1 020 076	1 224 091	1 346 500	1 481 150	1 599 642	1 727 614	1 831 271	1 941 147	2 038 204	2 140 114	2 225 719
Operating expenses		-868 092	-915 671	-977 615	-1 055 824	-1 123 014	-1 190 394	-1 261 818	-1 324 909	-1 391 154	-1 446 801
Depreciation	-131 455	-141 755	-146 769	-157 002	-166 363	-174 489	-175 802	-176 644	-179 362	-184 050	-191 412
Operating profit	141 706	214 245	284 061	346 534	377 456	430 111	465 074	502 684	533 933	564 910	587 506
Interest paid	-22 689	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430
Interest received	4 700	3 929	11 983	12 621	12 510	12 714	13 462	15 621	18 103	20 416	22 567
Earnings before taxes	132 189	160 744	238 614	301 725	332 536	385 395	421 106	460 875	494 607	527 896	552 643
Taxes	-18 873	-22 950	-34 068	-43 078	-47 477	-55 024	-60 123	-65 800	-70 616	-75 369	-78 902
After tax earnings	113 316	160 744	238 614	301 725	332 536	385 395	421 106	460 875	494 607	527 896	552 643
dividends	-146 687	-112 521	-167 030	-211 208	-232 775	-269 777	-294 774	-322 613	-346 225	-369 527	-386 850
Profit Margin	**11,11 %**	**13,13 %**	**17,72 %**	**20,37 %**	**20,79 %**	**22,31 %**	**23,00 %**	**23,74 %**	**24,27 %**	**24,67 %**	**24,83 %**
Operating Profit Margin	**13,89 %**	**17,50 %**	**21,10 %**	**23,40 %**	**23,60 %**	**24,90 %**	**25,40 %**	**25,90 %**	**26,20 %**	**26,40 %**	**26,40 %**
Cash and cash equivalents	24 915	51 004	56 104	61 715	66 652	71 984	76 303	80 881	84 925	89 171	92 738
Accounts receivable, net	99 944	34 003	37 403	41 143	44 435	47 989	50 869	53 921	56 617	59 448	61 826
Inventory	72 418	68 005	74 806	82 286	88 869	95 979	101 737	107 841	113 234	118 895	123 651
Net property plant and equipment	1 146 824	1 224 091	1 252 245	1 333 035	1 407 685	1 468 472	1 465 016	1 455 860	1 467 507	1 498 080	1 558 003
Intangibles + goodwill	200 599	228 905	215 440	236 984	255 943	276 418	293 003	310 583	326 113	342 418	356 115
Investments	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827
Total operating assets	***1 546 527***	1 607 835	1 637 825	1 756 990	1 865 410	1 962 669	1 988 756	2 010 914	2 050 222	2 109 840	2 194 160
Other assets	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534
Non-operating cash	215 124	656 042	690 999	684 894	696 072	737 020	855 202	991 131	1 117 730	1 235 475	1 332 779
Total financial assets	***216 658***	657 576	692 533	686 428	697 606	738 554	856 736	992 665	1 119 264	1 237 009	1 334 313
Total assets	**1 763 185,00**	2 265 411	2 330 358	2 443 418	2 563 016	2 701 222	2 845 492	3 003 579	3 169 486	3 346 848	3 528 473
Liabilities and Equity											
Current portion of long-term debt	72 142	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908
Long term loans	198 301	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632
Long term employee benefits	10 044	8 839	7 778	6 845	6 023	5 301	4 664	4 105	3 612	3 179	2 797
Total IBD	***280 487***	693 379	692 318	691 385	690 563	689 841	689 204	688 645	688 152	687 719	687 337
Shareholders' equity	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901
Equity premium	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784
Retained earnings	512 753	560 976	632 560	723 078	822 839	938 457	1 064 789	1 203 052	1 351 434	1 509 802	1 675 595
Total Equity	***1 179 438***	1 227 661	1 299 245	1 389 763	1 489 524	1 605 142	1 731 474	1 869 737	2 018 119	2 176 487	2 342 280
Accounts payables to suppliers	134 699	161 639	149 611	164 572	177 738	191 957	203 475	215 683	226 467	237 790	247 302
Other current liabilities	107 496	128 995	141 895	156 084	168 571	182 057	192 980	204 559	214 787	225 526	234 547
Deffered tax liability, net	61 065	53 737	47 289	41 614	36 620	32 226	28 359	24 956	21 961	19 326	17 007
Total NIBD	***303 260***	344 371	338 795	362 271	382 929	406 240	424 813	445 198	463 215	482 642	498 856
Total Liabilities and Equity	**1 763 185,00**	2 265 411	2 330 358	2 443 418	2 563 016	2 701 222	2 845 492	3 003 579	3 169 486	3 346 848	3 528 473
Capital employed	1 459 925	1 921 040	1 991 564	2 081 148	2 180 087	2 294 983	2 420 679	2 558 381	2 706 271	2 864 206	3 029 618
Net operating assets	1 243 267	1 263 463	1 299 030	1 394 720	1 482 481	1 556 429	1 563 942	1 565 716	1 587 007	1 627 197	1 695 304
ATO	0,82	0,97	1,04	1,06	1,08	1,11	1,17	1,24	1,28	1,32	1,31
Operating cash flow	260 192	348 361	424 341	497 138	537 405	598 216	634 599	673 359	707 680	743 675	773 941
Change in NWC		157 471	(14 429)	12 319	10 841	11 708	9 484	10 053	8 880	9 324	7 832
Change in FA at cost		247 328	161 458	259 336	259 972	255 751	188 932	185 068	206 538	230 929	265 032
Free cash flow		258 504	248 454	250 122	288 275	354 173	455 151	498 344	510 022	522 071	516 741
Long run FCF growth	3 %										
WACC	9,14 %										
Terminal value of FCF											8 661 755
Total FCF		258 504	248 454	250 122	288 275	354 173	455 151	498 344	510 022	522 071	9 178 496
Discounted FCF		236 845	208 565	192 372	203 140	228 666	269 239	270 090	253 260	237 522	3 825 982
Enterprise value	5 925 681										
Equity Value	5 440 114										
EV per share	18,84										

Appendix 13 BTC Revenue forecasts – DCF Management Case

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Mobiltel	748 018 552										
Globul	421 228 058										
BTC Mobile	29 506 070	177 036 420	323 374 174	448 681 667	542 904 817	639 640 584	736 865 953	846 244 493	888 556 717	932 984 553	979 633 781
BTC Mobile Revenue Growth		500 %	83 %	39 %	21 %	18 %	15 %	15 %	5 %	5 %	5 %
Total Mobile Market	1 198 747 680	1 438 497 216	1 616 870 871	1 794 726 667	1 974 199 333	2 132 135 280	2 302 706 102	2 417 841 407	2 538 733 478	2 665 670 152	2 798 953 659
BTC	990 569 930	960 852 832	941 635 775	922 803 060	904 346 999	895 303 529	886 350 493	877 486 989	868 712 119	860 024 997	851 424 747
Total BTC group	1 020 076 000	1 137 889 252	1 265 009 950	1 371 484 727	1 447 251 815	1 534 944 113	1 623 216 446	1 723 731 481	1 757 268 836	1 793 009 551	1 831 058 528
BTC Revenue Growth		11,55 %	11,17 %	8,42 %	5,52 %	6,06 %	5,75 %	6,19 %	1,95 %	2,03 %	2,12 %

Appendix 14 DCF Scenario Approach – Management Case

	2005	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Revenues	1 020 076	1 137 889	1 265 010	1 371 485	1 447 252	1 534 944	1 623 216	1 723 731	1 757 269	1 793 010	1 831 059
Operating expenses		-806 960	-885 554	-946 376	-984 185	-1 028 470	-1 087 616	-1 154 965	-1 177 436	-1 201 384	-1 226 878
Depreciation	-131 455	-131 772	-165 463	-174 453	-180 617	-186 035	-186 995	-188 231	-185 568	-185 039	-188 965
Operating profit	141 706	199 157	213 992	250 656	282 449	320 439	348 606	380 535	394 265	406 587	415 216
Interest paid	-22 689	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430
Interest received	4 700	3 957	11 263	11 676	11 320	11 578	12 173	13 616	15 210	17 484	19 521
Earnings before taxes	132 189	145 685	167 825	204 902	236 339	274 587	303 349	336 721	352 045	366 641	377 307
Taxes	-18 873	-20 800	-23 961	-29 254	-33 743	-39 204	-43 310	-48 075	-50 263	-52 346	-53 869
After tax earnings	113 316	145 685	167 825	204 902	236 339	274 587	303 349	336 721	352 045	366 641	377 307
Dividends	-146 687	-101 979	-117 478	-143 431	-165 437	-192 211	-212 344	-235 705	-246 432	-256 649	-264 115
Profit Margin	**11,11 %**	**12,50 %**	**13,27 %**	**14,94 %**	**16,33 %**	**17,89 %**	**18,69 %**	**19,53 %**	**20,03 %**	**20,45 %**	**20,61 %**
Operating Profit Margin	**13,89 %**	**17,50 %**	**16,92 %**	**18,28 %**	**19,52 %**	**20,88 %**	**21,48 %**	**22,08 %**	**22,44 %**	**22,68 %**	**22,68 %**
Cash and cash equivalents	24 915	79 020	87 848	95 242	100 504	106 593	112 723	119 704	122 033	124 515	127 157
Accounts receivable, net	99 944	111 487	115 959	125 719	132 665	140 703	148 795	158 009	161 083	164 359	167 847
Inventory	72 418	80 782	87 848	95 242	100 504	106 593	112 723	119 704	122 033	124 515	127 157
Net property plant and equipment	1 146 824	1 137 889	1 176 459	1 234 336	1 273 582	1 304 702	1 298 573	1 292 799	1 265 234	1 255 107	1 281 741
Intangibles + goodwill	200 599	212 785	202 402	219 438	231 560	245 591	259 715	275 797	281 163	286 882	292 969
Investments	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827
Total operating assets	***1 546 527***	1 623 791	1 672 343	1 771 804	1 840 641	1 906 010	1 934 356	1 967 839	1 953 372	1 957 204	1 998 698
Other assets	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534
Non-operating cash	215 124	615 102	637 682	618 205	632 331	664 910	743 892	831 179	955 684	1 067 209	1 145 183
Total financial assets	***216 658***	616 636	639 216	619 739	633 865	666 444	745 426	832 713	957 218	1 068 743	1 146 717
Total assets	**1 763 185,00**	2 240 427	2 311 559	2 391 543	2 474 506	2 572 454	2 679 782	2 800 551	2 910 590	3 025 946	3 145 415
Liabilities and Equity											
Current portion of long-term debt	72 142	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908
Long term loans	198 301	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632
Long term employee benefits	10 044	8 839	7 778	6 845	6 023	5 301	4 664	4 105	3 612	3 179	2 797
Total IBD	***280 487***	693 379	692 310	691 385	690 563	689 841	689 204	688 645	688 152	687 719	687 337
Shareholders' equity	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901
Equity premium	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784
Retained earnings	512 753	556 458	606 806	668 277	739 178	821 554	912 559	1 013 575	1 119 189	1 229 181	1 342 373
Total Equity	***1 179 438***	1 223 143	1 273 491	1 334 962	1 405 863	1 488 239	1 579 244	1 680 260	1 785 874	1 895 866	2 009 058
Accounts payables to suppliers	134 699	150 256	165 154	179 055	188 947	200 395	211 920	225 043	229 421	234 087	239 055
Other current liabilities	107 496	119 911	133 307	144 528	152 512	161 753	171 055	181 647	185 182	188 948	192 958
Deffered tax liability, net	61 065	53 737	47 289	41 614	36 620	32 226	28 359	24 956	21 961	19 326	17 007
Total NIBD	***303 260***	323 904	345 750	365 197	378 079	394 374	411 334	431 646	436 564	442 361	449 019
Total Liabilities and Equity	**1 763 185,00**	2 240 427	2 311 559	2 391 543	2 474 506	2 572 454	2 679 782	2 800 551	2 910 590	3 025 946	3 145 415
Capital employed	1 459 925	1 916 522	1 965 809	2 026 346	2 096 427	2 178 080	2 268 449	2 368 905	2 474 026	2 583 585	2 696 396
Net operating assets	1 243 267	1 299 886	1 326 593	1 406 608	1 462 562	1 511 636	1 523 022	1 536 193	1 516 808	1 514 842	1 549 679
ATO	0,82	0,88	0,95	0,98	0,99	1,02	1,07	1,12	1,16	1,18	1,18
Operating cash flow	260 192	323 295	372 864	418 576	456 483	499 928	529 139	562 511	573 805	585 923	598 768
Change in NWC		18 726	7 928	573	408	472	475	541	180	192	205
Change in FA at cost		135 024	193 650	249 366	231 985	231 187	194 989	198 539	163 369	180 630	221 687
Free cash flow		206 998	187 143	169 783	224 906	269 213	334 625	364 513	410 617	405 485	377 286
Long run FCF growth	2 %										
WACC	9,14 %										
Terminal value of FCF											5 386 212
Total FCF		206 998	187 143	169 783	224 906	269 213	334 625	364 513	410 617	405 485	5 763 498
Discounted FCF		189 654	157 097	130 583	158 485	173 813	197 944	197 557	203 898	184 480	2 402 468
Enterprise value	3 995 979										
Equity Value	3 510 412										
Equity Value per share	12,16										

Appendix 15 DCF Scenario Approach – Downside Case

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenues	1 020 076	1 071 080	1 146 055	1 226 279	1 312 119	1 377 725	1 446 611	1 504 475	1 564 654	1 611 594	1 643 826
Operating expenses		-784 261	-837 424	-896 044	-958 767	-992 928	-1 042 575	-1 084 278	-1 127 649	-1 161 478	-1 184 708
Depreciation	-131 455	-137 019	-163 244	-168 785	-174 774	-181 860	-189 217	-189 564	-187 759	-185 656	-179 506
Operating profit	141 706	149 800	145 387	161 450	178 577	202 937	214 819	230 634	249 247	264 460	279 612
Interest paid	-22 689	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430
Interest received	4 700	3 929	9 440	10 069	9 651	9 265	8 876	8 516	9 330	10 583	11 993
Earnings before taxes	132 189	96 299	97 397	114 089	130 798	154 771	166 265	181 720	201 147	217 613	234 176
Taxes	-18 873	-13 749	-13 906	-16 289	-18 674	-22 097	-23 738	-25 945	-28 718	-31 069	-33 434
After tax earnings	113 316	96 299	97 397	114 089	130 798	154 771	166 265	181 720	201 147	217 613	234 176
Dividends	-146 687	-67 409	-68 178	-79 862	-91 559	-108 340	-116 386	-127 204	-140 803	-152 329	-163 923
Profit Margin	**11,11 %**	**8,99 %**	**8,50 %**	**9,30 %**	**9,97 %**	**11,23 %**	**11,49 %**	**12,08 %**	**12,86 %**	**13,50 %**	**14,25 %**
Operating Profit Margin	**13,89 %**	**13,99 %**	**12,69 %**	**13,17 %**	**13,61 %**	**14,73 %**	**14,85 %**	**15,33 %**	**15,93 %**	**16,41 %**	**17,01 %**
Cash and cash equivalents	24 915	104 133	111 422	119 222	127 567	133 945	140 643	146 268	152 119	156 683	159 816
Accounts receivable, net	99 944	104 941	127 339	136 253	145 791	153 081	160 735	167 164	173 850	179 066	182 647
Inventory	72 418	76 039	95 505	102 190	109 343	114 810	120 551	125 373	130 388	134 300	136 985
Net property plant and equipment	1 146 824	1 204 165	1 146 055	1 177 228	1 246 513	1 295 061	1 345 348	1 354 028	1 329 956	1 305 391	1 249 308
Intangibles + goodwill	200 599	200 292	214 312	229 314	209 939	220 436	231 458	225 671	234 698	241 739	246 574
Investments	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827
Total operating assets	***1 546 527***	1 691 397	1 696 461	1 766 034	1 840 980	1 919 161	2 000 561	2 020 332	2 022 839	2 019 006	1 977 158
Other assets	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534
Non-operating cash	215 124	516 817	551 265	528 358	507 217	485 927	466 258	510 780	579 418	656 611	773 664
Total financial assets	***216 658***	518 351	552 799	529 892	508 751	487 461	467 792	512 314	580 952	658 145	775 198
Total assets	**1 763 185,00**	2 209 748	2 249 260	2 295 926	2 349 731	2 406 622	2 468 354	2 532 646	2 603 790	2 677 151	2 752 355
Liabilities and Equity											
Current portion of long-term debt	72 142	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908
Long term loans	198 301	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632
Long term employee benefits	10 044	8 839	7 778	6 845	6 023	5 301	4 664	4 105	3 612	3 179	2 797
Total IBD	***280 487***	693 379	692 318	691 385	690 563	689 841	689 204	688 645	688 152	687 719	687 337
Shareholders' equity	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901
Equity premium	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784
Retained earnings	512 753	541 643	570 862	605 088	644 328	690 759	740 639	795 155	855 499	920 783	991 036
Total Equity	***1 179 438***	1 208 328	1 237 547	1 271 773	1 311 013	1 357 444	1 407 324	1 461 840	1 522 184	1 587 468	1 657 721
Accounts payables to suppliers	134 699	141 434	151 334	161 928	173 263	181 926	191 022	198 663	206 609	212 808	217 064
Other current liabilities	107 496	112 871	120 772	129 226	138 272	145 185	152 444	158 542	164 884	169 830	173 227
Deffered tax liability, net	61 065	53 737	47 289	41 614	36 620	32 226	28 359	24 956	21 961	19 326	17 007
Total NIBD	***303 260***	308 042	319 395	332 768	348 155	359 337	371 825	382 161	393 454	401 964	407 298
Total Liabilities and Equity	**1 763 185,00**	2 209 748	2 249 260	2 295 926	2 349 731	2 406 622	2 468 354	2 532 646	2 603 790	2 677 151	2 752 355
Capital employed	1 459 925	1 901 706	1 929 865	1 963 158	2 001 576	2 047 285	2 096 528	2 150 485	2 210 336	2 275 187	2 345 058
Net operating assets	1 243 267	1 383 355	1 377 066	1 433 267	1 492 826	1 559 824	1 628 736	1 638 171	1 629 385	1 617 042	1 569 860
ATO	0,82	0,77	0,83	0,86	0,88	0,88	0,89	0,92	0,96	1,00	1,05
Operating cash flow	260 192	279 181	301 779	323 473	346 530	377 920	397 104	413 214	430 138	443 427	452 631
Change in NWC		-10 960	-31 352	-4 351	-4 656	-3 558	-3 736	-3 138	-3 264	-2 546	-1 748
Change in FA at cost		194 053	119 155	214 960	224 684	240 905	250 525	192 457	172 714	168 132	128 257
Free cash flow		74 167	151 272	104 162	117 190	133 456	142 842	217 618	254 160	272 750	322 626
Long run FCF growth	1 %										
WACC	9,14 %										
Terminal value of FCF											4 000 758
Total FCF		74 167	151 272	104 162	117 190	133 456	142 842	217 618	254 160	272 750	4 323 384
Discounted FCF		67 953	126 986	80 113	82 581	86 164	84 497	117 944	126 207	124 091	1 802 168
Enterprise value	2 698 703										
Equity Value	2 213 136										
EV per share	7,664										

Appendix 16 DCF country risk included in the discount factor

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenues	1 020 076	1 224 091	1 407 705	1 548 475	1 703 323	1 856 622	2 005 152	2 145 512	2 274 243	2 387 955	2 483 473
Operating expenses		-868 092	-957 292	-1 022 052	-1 124 257	-1 206 874	-1 303 424	-1 394 663	-1 478 343	-1 552 260	-1 614 351
Depreciation	-131 455	-141 755	-184 128	-196 966	-212 575	-225 023	-230 993	-234 290	-240 160	-246 437	-256 294
Operating profit	141 706	214 245	266 285	329 458	366 491	424 726	470 735	516 559	555 740	589 258	612 828
Interest paid	-22 689	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430	-57 430
Interest received	4 700	3 929	10 068	11 040	9 998	9 412	9 634	11 102	13 239	15 208	17 302
Earnings before taxes	132 189	160 744	218 923	283 068	319 059	376 708	422 939	470 232	511 549	547 036	572 700
Taxes	-18 873	-22 950	-31 256	-40 414	-45 553	-53 784	-60 384	-67 136	-73 035	-78 102	-81 766
After tax earnings	113 316	160 744	218 923	283 068	319 059	376 708	422 939	470 232	511 549	547 036	572 700
dividends	-146 687	-112 521	-153 246	-198 147	-223 342	-263 695	-296 057	-329 162	-358 084	-382 925	-400 890
PM	**11,11 %**	**13,13 %**	**15,55 %**	**18,28 %**	**18,73 %**	**20,29 %**	**21,09 %**	**21,92 %**	**22,49 %**	**22,91 %**	**23,06 %**
OPM	**13,89 %**	**17,50 %**	**18,92 %**	**21,28 %**	**21,52 %**	**22,88 %**	**23,48 %**	**24,08 %**	**24,44 %**	**24,68 %**	**24,68 %**
Cash and cash equivalents	24 915	51 004	58 654	64 520	70 972	77 359	83 548	89 396	94 760	99 498	103 478
Accounts receivable, net	99 944	119 933	39 103	43 013	47 315	51 573	55 699	59 598	63 173	66 332	68 985
Inventory	72 418	86 902	58 654	64 520	70 972	77 359	83 548	89 396	94 760	99 498	103 478
Net property plant and equipment	1 146 824	1 224 091	1 309 166	1 393 628	1 498 924	1 578 129	1 604 121	1 609 134	1 637 455	1 671 569	1 738 431
Intangibles + goodwill	200 599	228 905	225 233	247 756	272 532	297 060	320 824	343 282	363 879	382 073	397 356
Investments	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827	1 827
Total operating assets	***1 546 527***	1 712 661	1 692 637	1 815 264	1 962 541	2 083 307	2 149 567	2 192 633	2 255 855	2 320 797	2 413 556
Other assets	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534	1 534
Non-operating cash	215 124	551 216	604 427	547 377	515 295	527 463	607 841	724 807	832 589	947 261	1 039 214
Total financial assets	***216 658***	552 750	605 961	548 911	516 829	528 997	609 375	726 341	834 123	948 795	1 040 748
Total assets	**1 763 185,00**	2 265 411	2 298 598	2 364 175	2 479 370	2 612 303	2 758 942	2 918 974	3 089 977	3 269 592	3 454 303
Liabilities and Equity											
Current portion of long-term debt	72 142	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908	136 908
Long term loans	198 301	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632	547 632
Long term employee benefits	10 044	8 839	7 778	6 845	6 023	5 301	4 664	4 105	3 612	3 179	2 797
Total IBD	***280 487***	693 379	692 318	691 385	690 563	689 841	689 204	688 645	688 152	687 719	687 337
Shareholders' equity	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901	551 901
Equity premium	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784	114 784
Retained earnings	512 753	560 976	626 653	711 574	807 291	920 304	1 047 185	1 188 255	1 341 719	1 505 830	1 677 640
Total Equity	***1 179 438***	1 227 661	1 293 338	1 378 259	1 473 976	1 586 989	1 713 870	1 854 940	2 008 404	2 172 515	2 344 325
Accounts payables to suppliers	134 699	161 639	117 309	129 040	141 944	154 718	167 096	178 793	189 520	198 996	206 956
Other current liabilities	107 496	128 995	148 344	123 878	136 266	148 530	160 412	171 641	181 939	191 036	198 678
Deffered tax liability, net	61 065	53 737	47 289	41 614	36 620	32 226	28 359	24 956	21 961	19 326	17 007
Total NIBD	***303 260***	344 371	312 942	294 532	314 830	335 474	355 867	375 389	393 421	409 358	422 641
Total Liabilities and Equity	**1 763 185,00**	2 265 411	2 298 598	2 364 175	2 479 370	2 612 303	2 758 942	2 918 974	3 089 977	3 269 592	3 454 303
Capital employed	1 459 925	1 921 040	1 985 656	2 069 643	2 164 540	2 276 829	2 403 075	2 543 585	2 696 557	2 860 234	3 031 663
Net operating assets	1 243 267	1 368 290	1 379 695	1 520 732	1 647 711	1 747 832	1 793 700	1 817 244	1 862 434	1 911 438	1 990 915
ATO	0,82	0,89	1,02	1,02	1,03	1,06	1,12	1,18	1,22	1,25	1,25
Operating cash flow	260 192	348 361	443 651	519 800	572 294	642 893	694 904	744 235	789 591	829 667	863 394
Change in NWC		52 644	76 446	(28 377)	8 086	8 006	7 757	7 330	6 723	5 938	4 988
Change in FA at cost		247 328	265 530	303 952	342 647	328 755	280 751	261 761	289 078	298 745	338 440
Free cash flow		153 677	254 567	187 472	237 734	322 143	421 910	489 804	507 235	536 860	529 942
Long run FCF growth	2 %										
WACC	12,33 %										
Terminal value of FCF											5 232 551
Total FCF		153 677	254 567	187 472	237 734	322 143	421 910	489 804	507 235	536 860	5 762 492
Discounted FCF		136 808	201 747	132 265	149 315	180 121	210 009	217 042	200 093	188 533	1 801 522
Enterprise value	3 417 454										
Equity Value	2 931 888										
EV per share	10,15										