Estimating Growth Rates-

Assignment VI

November 17

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In Corporate Valuation, the most important independent variable in the forecasted growth rate of the company under study. In this paper, I attempt to consider how best to estimate the growth forecasts of a company, especially one like Convergys Corporation, which is in a mature phase in its life cycle. There are three methods to estimate the growth rate of a company ie: historical growth rates, those predicted by analyst research and the third by estimating growth from a firms fundamentals

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All data presented in this report is from secondary research on the internet. The analysis presented is original and not replicated from any other source

Sector: Technology

Industry: IT Outsourcing and Services

Current Market Price: $5.75

ESTIMATING THE GROWTH RATE OF CONVERGYS CORPORATION THROUGH HISTORICAL DATA

Estimating future growth rate based on historical earnings and revenue may be particularly usefully for valuing companies in a stable growth phase. We may note at this juncture, that, while historical growth may not always be a good indicator for predicting the future, it does reveal and convey important information for the future. There are primarily three methods for valuing growth of a company based on past data:

1. Arithmetic and Geometric Average Growth rates based on past revenues or Earnings per Share
2. The Linear and log Linear Model
3. Time Series models such as Box-Jenkins model using quarterly returns

Note: The time series models of estimating future growth rate by using past quarterly returns is used to value companies in the super normal growth stage. Convergys Corporation, however, is a company in the stable growth rate stage and hence, we chose to leave this model out of the scope of this paper.

ESTIMATION BASED ON REVENUES AND EARNINGS PER SHARE

(All figures in $Million)

Year	Revenues	% Change	Operating Income	% Change	Net Income	% Change	EPS (Basic)	% Change
2000	2,196.60		320.6		189.2		1.13	
2001	2,320.60	5.65%	276.6	-13.72%	138.8	-26.64%	0.82	-27.43%
2002	2,286.20	-1.48%	253.3	-8.42%	145.9	5.12%	0.9	9.76%
2003	2,288.80	0.11%	292.4	15.44%	171.6	17.61%	1.18	31.11%
2004	2,487.70	8.69%	185.5	-36.56%	111.5	-35.02%	0.79	-33.05%
2005	2,582.10	3.79%	223.6	20.54%	122.6	9.96%	0.88	11.39%
2006	2,789.80	8.04%	252.9	13.10%	166.2	35.56%	1.2	36.36%
2007	2,844.30	1.95%	244.8	-3.20%	169.5	1.99%	1.26	5.00%
AM		***3.82%***		***-1.83%***		***1.22%***		***4.73%***
GM		***3.28%***		***-3.32%***		***-1.36%***		***1.37%***
Std Deviation		***3.88%***		***20.06%***		***24.60%***		***26.55%***

Source: Annual Reports of the company (www.convergys.com)

The arithmetic average rate is higher than the geometric growth rate for all four of the above variables. The difference between the arithmetic mean and the geometric mean is much higher for operating income and net income as compared to revenues. Also, the standard deviation of returns over the period is also greater for operating income and net income. While Net Income dropped by 3.32% @ compounded annual growth rate, and net income by 1.36%, the revenue showed a marginal increase of 3.28% over the period 2000 – 2008. This is primarily because the operating expenses of providing services and products sold as well as selling and administrative costs have increased over the years with increasing competition and falling margins. For our analysis we would consider the geometric growth average of revenues for the period of study because it is computed on a compounded annual basis.

LOG AND LOG LINEAR MODEL

Year	EPS (Basic)	% Change	LN(EPS)
2000	1.13		0.122
2001	0.82	-27.43%	-0.198
2002	0.9	9.76%	-0.105
2003	1.18	31.11%	0.166
2004	0.79	-33.05%	-0.236
2005	0.88	11.39%	-0.128
2006	1.2	36.36%	0.182
2007	1.26	5.00%	0.231

Source: Annual Reports of the company (www.convergys.com),Ashwath Damodaran on Investment Valuation

There are two methods of estimating the growth rate through this method.

1. Co-eff of linear regression between EPS and Time variable/ Average EPS
2. Regress ln(EPS) against the time variable.

Co-eff of linear regression between EPS and Time variable/ Average EPS = **2.75%**

While regressing the LN (EPS) against the time variable coefficient on the time variable here can be viewed as a measure of compounded percent growth in earnings per share which equaled **2.62%.**

In the world of finance, the returns follow a log normal distribution and hence, if we were to value a company in a growth stage by considering its growth rate as per growth in EPS we would consider 2.62% as indicated by this method. Also, it is closer to the growth rate indicated by the CAGR of revenues of the firm.

While the growth rate as indicated by both methods of estimation under this method are quite close, they would be expected to vary significantly with an increase in the volatility of earnings. However, the company under study, Convergys Corporation is in a stable growth stage and hence, these figures are expected to remain similar.

ESTIMATING GROWTH RATE THROUGH FUNDAMENTAL DETERMINANTS

One way of measuring growth based on fundamentals is by estimating how much equity a company reinvests back into the business in the form of net working capital and capital expenditure.

Growth can be estimated on the basis of

1. Net Income

Equity reinvested = Capital Expenditure – Depreciation + Change in Non Cash Working Capital – (New Debt – Debt Repaid)

Equity reinvestment rate = Equity Reinvested/ Net Income

Expected Growth rate = Equity Reinvestment Rate * ROE

	2007	2006	2005	2004	2003	2002
Net Income after Tax	169.5	166.2	122.6	111.5	171.6	145.9
Gross Fixed Assets	1300.3	1298.9	1321.9	1329.6	1135.1	1029.3
Amortization	14.5	12.6	21.2	22.1	15.1	14.4
Depreciation	115.4	130.1	126.1	119.1	108.9	122.7
Δ Non Cash Working Capital	216	62.8	38	0.015	-0.538	-0.965
Capital Expenditure	1.4	-23	-7.7	194.5	105.8	1029.3
Equity reinvested in business	269.5	21.4	-199.9	-166	-258.1	-140.9
Equity Reinvestment rate	***1.590***	***0.129***	***-1.631***	***-1.489***	***-1.504***	***-0.966***
Reinvestment rate	***1.590***	***0.129***	***-1.631***	***-1.489***	***-1.504***	***-0.966***

Source: Annual Reports of the company (www.convergys.com)

2. Operating Income

Equity reinvested = Capital Expenditure – Depreciation + Change in Non Cash Working Capital

Equity reinvestment rate = Equity Reinvested/ Operating Income (1-Tax Rate)

Expected Growth rate = Equity Reinvestment Rate * ROCE

	2007	2006	2005	2004	2003	2002
Net Income after Tax	169.5	166.2	122.6	111.5	171.6	145.9
Gross Fixed Assets	1300.3	1298.9	1321.9	1329.6	1135.1	1029.3
Amortization	14.5	12.6	21.2	22.1	15.1	14.4
Depreciation	115.4	130.1	126.1	119.1	108.9	122.7
Δ Non Cash Working Capital	216	62.8	38	-69.485	25.415	164.645
Capital Expenditure	1.4	-23	-7.7	194.5	105.8	1029.3
Reinvestment	***185.9***	***-67.3***	***-119.4***	***50.9***	***-178.6***	***-219.1***
EBIT(1-T)	***159.120***	***164.385***	***145.340***	***120.575***	***190.060***	***164.645***
Reinvestment rate	***1.168***	***-0.409***	***-0.822***	***0.422***	***-0.940***	***-1.331***

Source: Annual Reports of the company (www.convergys.com)

As can be seen from the above table, the reinvestment in the business through both methods is negative. Companies can have negative reinvestments if the depreciation amount consistently exceeds the capital expenditure as is the case with Convergys Corporation. For most companies, it may just be a temporary phenomenon. For the time being, we may assume that the company is living off its past investments and reinvesting very little in the period of study.

Hence we shall not use the negative reinvestment rates in forecasting and estimating growth rates.

3. Growth Rate: b(ROCE + D/E(ROCE – i(1 – t))

Where, ROE = ROCE + D/E(ROCE – i(1 – t)

and b = (1-dividend payout ratio)

	2007	2006	2005	2004	2003	2002
ROCE	8.93%	9.14%	8.13%	7.37%	14.87%	13.93%
Debt-Equity Ratio	17.08%	23.61%	31.89%	27.36%	11.79%	4.91%
Interest Expense/Debt	6.73%	6.64%	4.91%	2.93%	5.12%	19.89%
Dividend Payout Ratio	**0**	**0**	**0**	**0**	**0**	**0**
Reinvestment Rate [1-Dividend Payout]	100%	100%	100%	100%	100%	100%
Growth	9.71%	10.28%	9.71%	8.86%	16.23%	13.98%
Arithmetic Mean						**11.46%**
Geometric Mean						***11.43%***

Source: Annual Reports of the company (www.convergys.com)

Convergys has not paid any dividends to its common shareholders since listing on NYSE in 1998. All of the Earnings are reinvested in the business. The annual reports also do not suggest any indication of distributing dividends in the near future. Hence, we estimate that the company would grow @ geometric mean of ROE over the period 2002 – 2008 ie: **11.43%.**

SENSITIVITY ANALYSIS OF GROWTH RATE UNDER CHANGING DEBT – EQUITY SCENARIO

	2008 F
ROCE	10.36%
Debt-Equity Ratio	19.44%
Interest Expense	5.26%
Dividend Payout Ratio	0
Reinvestment Rate [1-Dividend Payout]	100%
Growth	***11.71%***

Source: Annual Reports of the company (www.convergys.com)

Sensitivity Test Results

Debt-Equity Ratio	Growth Rates
10%	11.05%
20%	11.74%
30%	12.44%
50%	13.82%
70%	15.21%

Basis for forecasting:

1. ROCE: Geometric mean of 2002 – 2007 @ 10.36%.
2. Debt – Equity Ratio: Average of 2002 – 2007 @ 19.44%
3. Interest Expense: Average of 2002 – 2007 @ 5.26%

The forecasted growth rate for the company for 2008 is 11.71% based on the aforementioned assumptions. As can be seen from the sensitivity test results, as the financial leverage of the firm increases, so does the growth rate. The debt – equity ratio of the company is in line with the sector average of 17.11%. The growth rates however do not grow in the same proportion as the increase in leverage in the sensitivity test. In my opinion the company may have achieved an ideal debt – equity ratio. The company may not grow at a rate to meet its interest obligations without negatively affecting its bottom-line.

Note: The growth rate of the company as per the fundamental ratios analysis far greater than the historical growth trends methods because the company has a 100% retention rate.

ESTIMATING GROWTH ON THE BASIS OF WHAT RESEARCH ANALYSTS PREDICT

Convergys Corporation is followed by analysts from the following firms:

Banc of America Securities	First Analysis	Morgan Stanley	Thomas Weisel
BMO Capital Markets	Garp Research Corp.	Oppenheimer	UBS Investment Research
Breen Murray, Carret	ICAP	Raymond James	Wachovia
Citigroup	Kaufman Brothers	Robert W. Baird & Co.	Wedbush Morgan Securities
Credit Suisse	McAdams, Wright, Ragen	Stifel, Nicolaus & Co.	Zacks

I reviewed the consensus forecasts available on Thompson Reuters and www.nasdaq.com to study the expected growth rate of the company. Following were the results:

	# of estimates	Mean	High	Low	*Growth Rate of Mean value vis-à-vis 2007*
Revenues	18	2900.38	2849.47	2947.4	***2%***
EPS	18	1.33	1.35	1.28	***5.56%***

Critical Analysis:

We note by summarizing from the above methods of computing growth rate that each one speak s a different story. While, the growth rate is expected to range form 2.62% to 3.82% p.a as per the historical growth rate estimation method. Fundamental analysis of the company estimates a growth rate of 11.71%. However, we may not consider this method of estimation of future growth of the company because it does not issue any dividend and there is no forecast of any distribution of dividend. The company is assumed to grow as per the ROE or ROCE which may not be a fair estimation. Also, the company has a negative reinvestment rate in the business which may dilute the validity of this model. Hence, only the EPS and revenue growth figures from the analyst forecast were taken within the scope of study. ***All forecasts suggest that the company is in a stable growth phase and is expected to grow at a rate in the range of 3% - 5% in the future ie: in the rate of long term expected inflation to GDP growth rate of the USA economy. This growth is expected to last till maturity. Not much change in the capital structure should be expected from the company as well in the future.***