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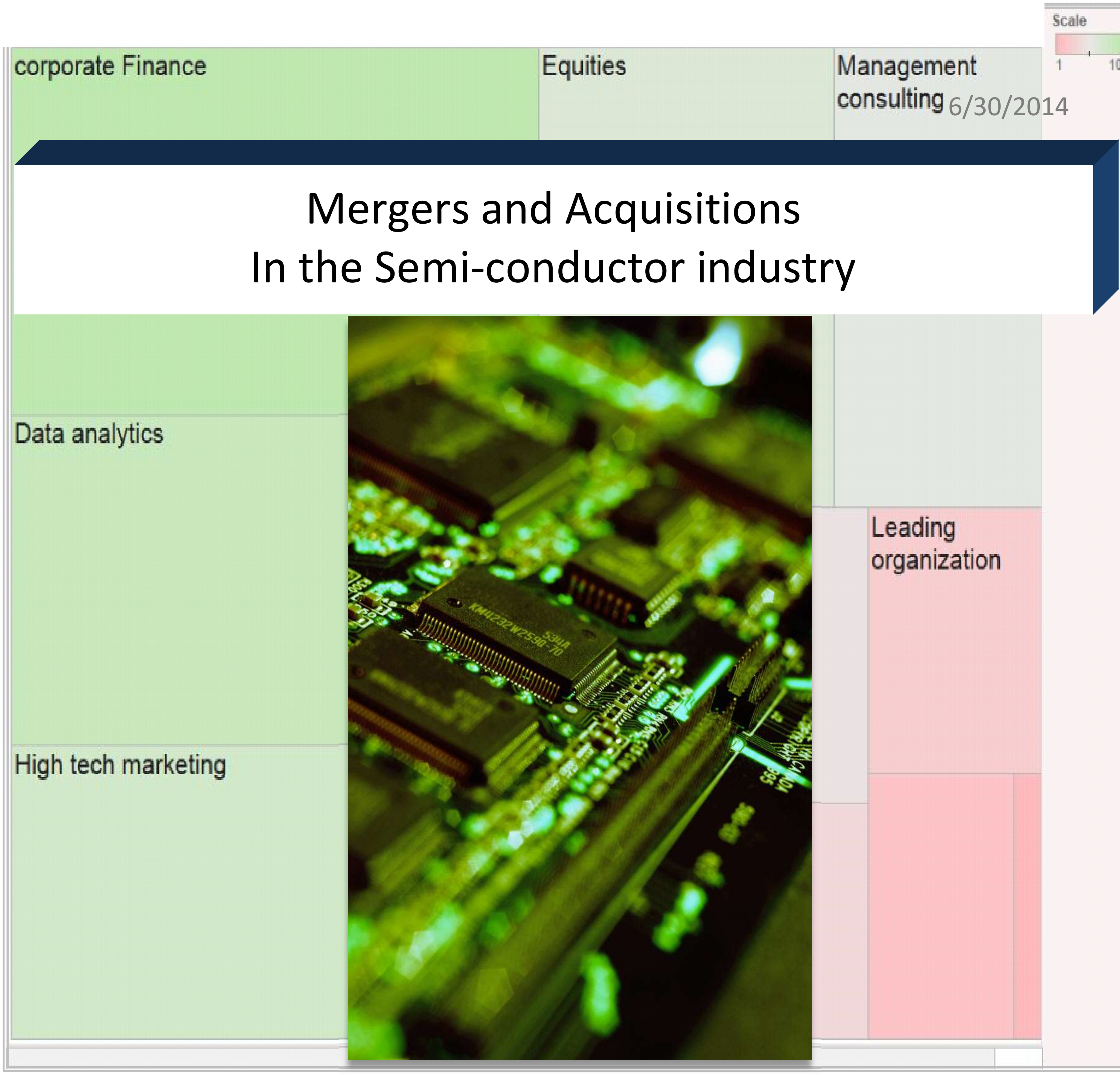
Mergers and Acquisitions
In the Semi-conductor industry



Scope: This graduate level business paper contains a high level feasibility analysis on a subsidiary type of acquisition. It does not include implementation, regulatory, tax implications, corporate capital restructuring activities, stock analysis or the detailed analysis of an actual merger activity which would span over a few months with a team of experienced and dedicated resources. However most of the high level basic concepts required for a 10 page graduate course level paper are covered such as industry analysis, possible synergies, financial valuation modeling, financing strategy, and negotiation strategy with a risk analysis. *The document does not represent the views or the decisions of corporations involved*, this is my analysis a business graduate student's analysis which includes numerous assumptions in terms of product applications, market share and possible synergies.

MKT7505 STRATEGIC MARKET PLANNING TERM PROJECT

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Contents

Executive summary

The merger of Linear Tech and Micro semi based on the analysis in this document will create synergies worth $6410 million through market share increase, reduction in operating expenses, optimization of plant capacity utilization, process improvements, increased buyer power with material vendors and wafer manufacturing vendors, the ability to reach economies of scale and scope in low cost developing regions and sharing of knowledge and intellectual property across the combined organization. The total entity valuation of the combined firm is in the range of $20551 to $24880 million with a stock price range of $66.65 to $83.29 which is approximately a 29.96% to 43.95% increase in stock price relative to Linear Tech's base stock price. The negotiating purchase price for Micro semi will be within a range of $3,750.84 to $4.5 billion, the existing market cap for micro semi is valued at $2,534.67 million. Financial payment strategy to finance the acquisition will be a combination of cash and stock transactions where Linear tech will issue convertible senior debt to cover a portion of the costs.

Semi conductor Industry level analysis

Linear Technology and Micro-semi are both part of the global semi conductor industry which generated $731 billion US dollars in revenue last year. The global industry is expected to generate $755.2 billion in revenue this year an increase of 3.2% from last year's revenue. The forecasted industry revenue is expected to increase to $1 trillion US dollars by 2019 which equates to annualized growth rate of 5.8% over the next 5 year (Global report, 2014). Although cyclical in nature due to macro economic variables for example a global recession caused by the collapse of the housing market, causing a drop in global industry revenue of about 18.3% in 2009 (Global report, 2014), this has been a historically profitable industry with a high potential future growth rate and bright prospects. The key drivers for the increase in demand for the products of this industry are projected increase in sales for computer and electronics products, consumer home appliances, communication devices including mobile phones, increase in use of electronics in industrial production mostly automation and last but not the least for those who believe in it Moore's law. In the global industry, the electronic production capacity has shifted towards Asia, where 54.9% of the production is in North Asia, North America being 17.7% (Global report, 2014), although the headquarters tend to be located in the developed countries such as United States and Japan, in order to reach economies of scale the production is in low cost labor regions. Global expansion is one of the main underlying reasons for increase in mergers and acquisitions for this industry. The barriers to entry for this industry are high mainly due to the high capital and technological Intellectual property required to be successful. In terms of growth and investment this is an attractive industry, but then again since I am part of the industry professionally I am a little biased in the analysis.

MicroSemi company Overview

Microsemi's product portfolio mix consists of mixed-signal digital and analog products such as the following

Field Programmable Gate Arrays

- The industries lowest power fpgas the fpgas which have transceivers which support PCIe communication links and soft microcontroller cores such as ARM Cortex-M1, 8051. These products compete with the Xilinx FPGAs.
- System on chip ICs which support PCI, serdes and DDR communications links.

Timing and synchronization circuitry

- Clock synthesizers with multiple outputs which support frequencies from 1hz to 914Mhz, with 180fs jitter specifications
- Clock distribution circuitry including fan out buffers up to 750Mhz with 39fs RMS jitter specifications
- Zero delay timing buffers
- Frequency synthesizers
- Supports LVCMOS,LVTTL, LVPECL,PECL,HSTL,HCSL,LVDS, input/output logic levels.
- The timing products are very popular and from personal use I can say they provide excellent results.

Power Managment

- Low drop out voltage regulators with fixed and adjustable supplies. Variable current drive strength
- DC to DC switchers with buck , boost, buck and boost types , non-inverting and inverting supplies with variable output/input voltage and current
- Power semiconductor devices such as power mosfets, RF mosfets.
- Power over ethernet modules

Interfacing circuitry

- Analog switches
- Multiplexers, Demultiplexers
- Operational amplfiers
- RF amplifiers
- Power relays
- FETS
- Passive components such as protection diodes, bypassing capacitors, resistors.

Microsemi has consistently increased its product portfolio through numerous acquisitions. Micro Semi Geographic locations are in the United States, Europe and Asia. Market share chart in the appendix provide details on the Micro-semi's product portfolio across various applications.

Linear Technology Company Overview and Business strategy

Linear technology also has a wide product portfolio however the analog Power management IC’s are the main products within the automotive and industrial markets. The market share includes Government, consumer, computer and communications in addition to automotive and industrial markets (Linear Tech). It is a competitor for Micro semi in common product lines such as high speed clocking circuitry, signal amplification, data conversion. The power management analog IC’s consist of digital power system management , along with a variety of low voltage drop regulators and DC-DC switchers, power over Ethernet interface controllers, pulse width modulators, wireless power transfer through wireless transceivers.

Diversification as the business vision statement for this strategic merger

Similar to the advantages of a diversified portfolio (e.g 80% variety of stocks, 20% bonds, and 10% cash) a company holding a diversified product line will incur less systemic risk. Michael Porter has explained three essential tests (Grant) in determining whether diversification will increase shareholder value, these are explained below:

The attractiveness test: For this situation, the merger is within the semiconductor industry which per the analysis above is a profitable and growing industry.

The cost of entry test: Linear Technology already exists in this space; the merger would be a subsidiary merger.

The better-off test: Analysis on the synergies is required to determine this. Would the combined firm be able to effectively take advantage of the synergies, achieve economies of scale and scope and increase profits?

Target selection:

Linear technology is a market leader in high performance analog ICs, acquiring a company with a strong digital product portfolio relative to the industry would achieve the goals of market power, market extension and product extension. Micro semi fits the criteria and since it has global brand recognition a friendly subsidiary merger should be pursued versus consolidation, statutory merger or a hostile take-over.

Synergies for the combined company Linear Tech-Micro Semi

The value realized from the incremental cash flows generated by combining the two businesses would be considered a synergy. Operating synergies, financial synergy, diversification, strategic realignment, access to intellectual property, satisfying managerial pride (Hubris), market power, managerialism and tax considerations are all motivations for mergers. (DePamphilis). Of the numerous advantages this document will focus on the following basic types of synergies operational, financial and diversification.

Operational synergies

From the merger the combined firm would have a higher buyer power in purchasing raw material. Estimating 10% reduction in cost of goods post merger. Linear Technology has high operating margins which means it achieves operational efficiency, it has streamlined is logistics and raw material procurement process. These process improvements can be applied to Micro semi and hence the capacity utilization for the combined firm for the manufacturing plants will be modified to achieve optimal capacity. Decreasing cycle time, lead time, removing bottlenecks, and decreasing throughput time can increase capacity. The wafer designs are outsourced to 3rd part vendors. The outsourcing vendors can be consolidated hence further improving operating margins. Capital expenditures will decrease due to optimization of plant capacity. Investing cash flow will increase due to the sale of certain assets which are not required or are overlapping. For operational synergies estimating a 20% reduction in net working capital expenses and a 5% reduction in capital expenditures over the next five years.

Marketing/product synergy

The diversified mixed signal product portfolio will generate additional revenues. Access to new distribution channels and customers will increase the market power for the combined firm. In terms of product segmentation, Micro semi's products are utilized mainly in the aerospace, communications, defense & security and industrial markets (semi). Linear technology main markets are in the industrial and automotive segments. Estimating an increase in earnings before income and taxes of the combined firm by 30% due to higher market share. Refer to appendix chart on the market share for the various applications (note these are my assumptions on the market share data, these are not the views of Micro semi or Linear Tech Corporation). In terms of geographic locations, Linear tech gains revenue ($USD million) as follows in United States $369.7, in Europe $235.3, in Japan $190.4 and in other $486.8. As a subsidiary it will continue to operate under its brand name in these locations however the product mix will be inclusive of linear tech products and in the markets that linear tech serves the product mix will be inclusive of micro semi products hence increasing market power for the combined firm.

Financial Synergies

The combined firm will have less volatile cash flows however in this case it will not reduce the cost of capital since the product mix diversification is still within the same industry (it's not a conglomerate merger). Other generic financial synergies such as increased access to financing or lower cost of borrowing debt is also not applicable for this case. However increase in a stable cash flows will increase the entity valuation of the firm and in effect will increase share holder value of the combined firm due to higher a P/E ratio and higher stock price.

Business plan financials and valuation

Determining the price of the target:

Entity valuation for MicroSemi pre-merger using discounted cash flow

Weighted average cost of capital	2013
historical Risk free rate	4.51%
levered Beta value from linear regression (Rsq =16%)	1.26
historical Market rate of return	12.04%
historical Market premium	7.53%
Cost of equity	**14.00%**
Cost of long term debt (rate of interest)	5.00%
post tax cost of long term debt	3.80%
% of equity (equity/Market entity value)	73.22%
% of existing debt (debt/market entity value)	26.78%
WACC (short term debt is negligible excluding from calculations, no preferred stock)	**11.2654%**
long term sustainable growth rate	4.00%
long term debt (USD $millions)	$678.90
tax rate	24.00%

Excluding firm size premium in the calculations.

Net working capital calculations		
Current working assets	**2012**	**2013**
Cash required for working short term assets assuming 10%	$20.42	$25.64
Inventory	$153.20	$162.00
receivables	$159.10	$162.10
short term assets	$44.80	$42.10
Total current working short term assets	**$377.52**	**$391.84**
Current working short term liabilities		
accrued payroll	$75.40	$24.60
accounts payable	$43.20	$69.60
short term liabilities	$37.00	$36.10
Total current working liabilities	**$155.60**	**$130.30**
Net property and plant	$116.10	$125.20
Net working capital	**$221.92**	**$261.54**
Revenue	**$1,012.50**	**$975.90**
Earnings before interest and taxes	$25.10	$86.50
Net Income		**43.8**

Projected increase in EBIT %		15.00%					
Forecast (USD $millions)	**2013**	**Forecast 2014**	**Forecast 2015**	**Forecast 2016**	**Forecast 2017**	**Forecast 2018**	**Forecast 2019**
Earnings before interest and taxes	$86.50	$99.48	$114.40	$131.56	$151.29	$173.98	$200.08
Taxes	$20.76	$23.87	$27.46	$31.57	$36.31	$41.76	$48.02
Net operating profits	$65.74	$75.60	$86.94	$99.98	$114.98	$132.23	$152.06
Depreciation and amortization	$136.10	$156.52	$179.99	$206.99	$238.04	$273.75	$314.81
Change in Net working capital	$39.62	$45.56	$52.40	$60.26	$69.30	$79.69	$91.64
Capital expenditures	$37.30	$42.90	$49.33	$56.73	$65.24	$75.02	$86.28
Free cash flow (USD $ millions)	**$124.92**	**$143.66**	**$165.21**	**$189.99**	**$218.49**	**$251.26**	**$288.95**
Terminal value							$4,136.09
Free cash flow		$143.66	$165.21	$189.99	$218.49	$251.26	$4,425.04

Discounted cash flow entity valuation	**$3,022.52**	**Price per share**	**$24.68**
long term debt (millions)	**$678.90**	**Earnings per share**	**$0.46**
DCF equity valuation(millions)	**$2,343.62**	**Price per share/earnings per share ratio**	**53.51**

Adjusted present valuation stand- alone without synergies for Micro Semi

Unlevered cost of capital	2013
historical Risk free rate	4.51%
levered Beta value from linear regression	1.26
UNLEVERED BETA	**0.9859**
historical Market rate of return	12.04%
historical Market premium	7.53%
UNLEVERED Cost of equity	**11.93%**
tax rate	24.00%
% of equity (equity/Market entity value)	73.22%
% of existing debt (debt/market entity value)	26.78%
Long term debt (millions)	$678.90
long term sustainable growth rate	4.0%
Cost of long term debt pre tax	5.00%
cost of long term debt post tax	3.80%

Net working capital calculations (millions)		
Current working assets	**2012**	**2013**
Cash required for working short term assets assuming 10%	$20.42	$25.64
Inventory	$153.20	$162.00
receivables	$159.10	$162.10
short term assets	$44.80	$42.10
Total current working short term assets	**$377.52**	**$391.84**
Current working short term liabilities		
accrued payroll	$75.40	$24.60
accounts payable	$43.20	$69.60
short term liabilities	$37.00	$36.10
Total current working liabilities	**$155.60**	**$130.30**
Net property and plant	$116.10	$125.20
Net working capital	**$221.92**	**$261.54**
Revenue(millions)	**$1,012.50**	**$975.90**
Earnings before interest and taxes	$25.10	$86.50
% increase in depreciation and amortization	7.84%	
Net Income(millions)		**43.8**

Projected increase in EBIT %		15.00%					
Forecast (USD $millions)	**2013**	**Forecast 2014**	**Forecast 2015**	**Forecast 2016**	**Forecast 2017**	**Forecast 2018**	**Forecast 2019**
Earnings before interest and taxes	$86.50	$99.48	$114.40	$131.56	$151.29	$173.98	$200.08
Taxes	$20.76	$23.87	$27.46	$31.57	$36.31	$41.76	$48.02
Net operating profits	$65.74	$75.60	$86.94	$99.98	$114.98	$132.23	$152.06
Depreciation and amortization	$136.10	$156.52	$179.99	$206.99	$238.04	$273.75	$314.81
Change in Net working capital	$39.62	$45.56	$52.40	$60.26	$69.30	$79.69	$91.64
Capital expenditures	$37.30	$42.90	$49.33	$56.73	$65.24	$75.02	$86.28
Free cash flow (USD $ millions)	**$124.92**	**$143.66**	**$165.21**	**$189.99**	**$218.49**	**$251.26**	**$288.95**
Terminal value							$3788.15
Free cash flow**(millions)**		$143.66	$165.21	$189.99	$218.49	$251.26	$4077.10

Tax shield Calculations	2013	Forecast 2014	Forecast 2015	Forecast 2016	Forecast 2017	Forecast 2018	Forecast 2019 with terminal value
Free cash flow		$143.66	$165.21	$189.99	$218.49	$251.26	$4,425.04
Total entity valuation		$3,022.53	$468.54	$2,405.17	$4,894.79	$4,676.30	$4,425.04
Constant % debt level	26.78%	26.78%	26.78%	26.78%	26.78%	26.78%	26.78%
Long term debt		$809.57	$125.50	$644.22	$1,311.05	$1,252.53	$1,185.23
interest expense		$30.76	$4.77	$24.48	$49.82	$47.60	$45.04
Terminal value							$900.77
Free cash flow		$30.76	$4.77	$24.48	$49.82	$47.60	$945.81
NPV analysis**(millions)**	$838.83						

Cash flow unlevered ENTITY VALUATION (millions)	**$2,750.90**
Tax shield calculations(millions)	**$838.83**
APV cash flow entity valuation(millions)	**$3,589.73**
LONG TERM DEBT(millions)	**$678.90**
APV EQUITY VALUATION(millions)	**$2,910.83**
Price per share APV evaluation	**$30.65**

Explanation of Analysis and summary of results

The historical rate of return for the U.S Treasury yields on long term bonds was calculated. Please see appendix chart for details. The historical rate of return for the micro semi stock was also calculated from 1990 onwards the median value of 12.86% is close to the calculated cost of equity. Same analysis was done for the NASDAQ market index. In order to calculate the systemic risk variable i.e. the beta factor a linear regression was run with rate of return of micro semi stock with a NASDAQ market index has the predictor. The long term cost of debt is assumed to be 5% for this analysis. Other methodologies also exist such are real option models and utilizing the black-scholes model, however for this case the risk or the volatility that Microsemi's cash flow will decrease or change is relatively low. But if that was the case then real options would provide a more accurate financial model since it takes into consideration the probability of achieving the value of the underlying asset. For the entity based evaluation the discount factor is the weighted average cost of capital. For the adjusted present value evaluation the discount factor is the unlevered cost of capital utilizing an unlevered beta value. The summary table shows an overview of the analysis with earnings per share of $0.46.

(USD $ millions for valuation)	Market Value	Entity DCF Valuation Method	APV method
Price per share	$26.69	$24.68	$30.65
Equity Valuation	$2,534.67	$2,343.62	$2,910.83
Entity Valuation	$3,213.57	$3,022.52	$3,589.73
PE ratio	58.021	53.51	66.63

Existing Valuation of the buyer

Entity valuation for Linear Technology using discounted cash flow

The same CAPM method was used calculate the weighted average cost of capital. Levered beta of 1.07, the cost of equity is 12.57%, with a short term rate of interest of 5% and tax rate of 24% with 7.49% as the debt to entity ratio the weighted cost of capital is 11.9098%.

Projected increase in EBIT %		**15.00%**					
Forecast (USD $millions)	**2013**	**Forecast 2014**	**Forecast 2015**	**Forecast 2016**	**Forecast 2017**	**Forecast 2018**	**Forecast 2019**
Earnings before interest and taxes	$577.20	$663.78	$763.35	$877.85	$1,009.53	$1,160.96	$1,335.10
Taxes	$138.53	$159.31	$183.20	$210.68	$242.29	$278.63	$320.42
Net operating profits	$438.67	$504.47	$580.14	$667.17	$767.24	$882.33	$1,014.67
Depreciation and amortization	$55.40	$63.71	$73.27	$84.26	$96.89	$111.43	$128.14
Change in Net working capital	$5.35	$6.15	$7.08	$8.14	$9.36	$10.76	$12.37
Capital expenditures	$17.60	$20.24	$23.28	$26.77	$30.78	$35.40	$40.71
Free cash flow (USD $ millions)	**$471.12**	**$541.79**	**$623.06**	**$716.52**	**$824.00**	**$947.59**	**$1,089.73**
							$14,328.06
Free cash flow		$541.79	$623.06	$716.52	$824.00	$947.59	$15,417.79

Discounted cash flow entity valuation (millions)	**$10,407.06**	**Price per share**	**$40.50**
Total debt (millions)	**$826.60**	**Earnings per share**	**$1.72**
DCF equity valuation (millions)	**$9,580.46**	**Price per share/earnings per share ratio**	**23.54**

Explanation analysis

Based on the analysis with the assumption of 15% growth rate in earnings before interest and taxes the valuation converges towards the actual market price. Summary below, earnings per share is $1.72

	Market Value	**Entity DCF Valuation**	**Adjusted Present Evaluation** [(see appendix for details)](#)
Price per share	$46.68	$40.50	$43.05
Equity valuation (USD $millions)	$11,042.15	$9,580.46	$9,908.45
PE ratio	27.139	23.54	24.35

Net working capital calculations		
Current working assets	**2012**	**2013**
Cash required for working short term assets assuming 10%	$21.34	$88.69
Inventory	$79.70	$87.20
receivables	$153.10	$145.30
short term assets	$69.60	$36.60
Total current working assets	**$323.74**	**$357.79**
Current working short term liabilities		
accrued payroll	$78.00	$77.70
accounts payable	$25.00	$58.60
short term liabilities	$67.60	$63.00
Total current working liabilities	**$170.60**	**$199.30**
Net working capital	$153.14	$158.49

Valuation of the combined company with Synergies (post merger)

Following assumptions are made for the combined firm in terms of synergies

- Acquisition integration cost is 5% of the EBIT
- Reduction in capital expenditure is 5.00% of the EBIT over the next 5 years.
- Reduction in working capital expense operation synergy is 20% the EBIT over the next 5 years.
- Market share synergy is 35.00% the EBIT with a volatility of +/-5% over the next 5 years.
- Projected increase in EBIT is 15.00% for the combined firm over the next 5 years with a volatility of +/-10%.

Adjusted present valuation of combined firm with Synergies

Net working capital calculations		
Current working assets	**2012**	**2013**
Cash required for working short term assets assuming 10%	$41.76	$114.33
Inventory	$232.90	$249.20
receivables	$312.20	$307.40
short term assets	$114.40	$78.70
Total current working short term assets	**$701.26**	**$749.63**
Current working short term liabilities		
accrued payroll	$153.40	$102.30
accounts payable	$68.20	$128.20
short term liabilities	$104.60	$99.10
Total current working liabilities	**$326.20**	**$329.60**
Net property and plant	$436.30	$413.70
Net working capital	**$375.06**	**$420.03**
Revenue	**$2,279.10**	**$2,258.10**
Earnings before interest and taxes		$663.50
Net Income		**$450.70**

Weighted average cost of capital of the combined firm	
historical Risk free rate	4.51%
Combined levered Beta	1.165
UNLEVERED BETA	**0.9295**
historical Market rate of return	12.04%
historical Market premium	7.53%
UNLEVERED Cost of equity (discount rate for APV analysis)	**11.51%**
Levered cost of equity	13.28%
tax rate	24.00%
% of equity (equity/Market entity value)	75.00%
% of existing debt (debt/market entity value)	25.00%
Total debt of combined firm	$1,505.50
long term sustainable growth rate	4.0%
Cost of long term debt pre tax	5.00%
cost of long term debt post tax	3.80%
Weighted average cost of capital	**10.91%**

From the analysis below it can be determined that the impact of the synergies is approximately $5.850billion. Based on the risk analysis see appendix for details, a sensitivity analysis was run on the market share increase and % increase in EBIT resulting in the following 95% confidence range for the combined entity valuation $20,588 to $24,880. The price per share for the combined firm is in the 95% confidence range of $66.51 to $83.29. At the higher margins the share holder value would be maximized due to this acquisition.

Tax shield Calculations	Forecast 2014	Forecast 2015	Forecast 2016	Forecast 2017	Forecast 2018	Forecast 2019 with terminal value
Free cash flow combined firm	$879.71	$1,011.67	$1,163.42	$1,337.93	$1,538.62	$26,277.62
Total levered entity valuation combined firm	$18,386.04	$31,329.25	$30,317.59	$29,154.17	$27,816.24	$26,277.62
Constant % debt level combined firm	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
Long term debt	$4,596.29	$7,831.93	$7,579.03	$7,288.19	$6,953.72	$6,569.09
interest expense(post tax rate)	$174.66	$297.61	$288.00	$276.95	$264.24	$249.63
Terminal value						$4,992.51
Free cash flow	$174.66	$297.61	$288.00	$276.95	$264.24	$5,242.13
NPV analysis	$4,754.77					

Forecast (USD $millions)	2013	Forecast 2014	Forecast 2015	Forecast 2016	Forecast 2017	Forecast 2018	Forecast 2019
Earnings before interest and taxes	$663.70	$763.26	$877.74	$1,009.40	$1,160.82	$1,334.94	$1,535.18
Additional EBIT earnings due to market share synergy	$232.30	$267.14	$307.21	$353.29	$406.29	$467.23	$537.31
Acquisition integration cost	$33.19	$38.16	$43.89	$50.47	$58.04	$66.75	$76.76
Total Earnings before interest and taxes	$862.81	$992.23	$1,141.07	$1,312.23	$1,509.06	$1,735.42	$1,995.73
Taxes	$207.07	$238.14	$273.86	$314.93	$362.17	$416.50	$478.98
Net operating profits	$655.74	$754.10	$867.21	$997.29	$1,146.89	$1,318.92	$1,516.76
Depreciation and amortization	$191.50	$220.23	$253.26	$291.25	$334.93	$385.17	$442.95
Change in Net working capital	$44.97	$51.72	$59.47	$68.39	$78.65	$90.45	$104.02
Reduction in net working capital operational synergies	$8.99	$10.34	$11.89	$13.68	$15.73	$18.09	$20.80
Change in net working capital	$35.98	$41.37	$47.58	$54.71	$62.92	$72.36	$83.21
Capital expenditures	$37.30	$42.90	$49.33	$56.73	$65.24	$75.02	$86.28
Reduction in capital expenditure	$1.87	$2.14	$2.47	$2.84	$3.26	$3.75	$4.31
Free cash flow (USD $ millions)	**$764.97**	**$879.71**	**$1,011.67**	**$1,163.42**	**$1,337.93**	**$1,538.62**	**$1,769.41**
Terminal value							$24,508.21
Unlevered Free cash flow to entity		$879.71	$1,011.67	$1,163.42	$1,337.93	$1,538.62	$26,277.62

Cash flow unlevered ENTITY VALUATION combined firm	$17,868.55	Without Synergies combined Entity value	$14,324.78
Tax shield calculations combined firm	$4,754.77	Without Synergies combined Equity value	$12,819.28
APV cash flow entity valuation combined firm	$22,623.32	Total # of share of combined firm (millions)	257.9725
LONG TERM DEBT combined firm	$3,394.04	**Total Synergies financial value**	**$6,410**
EQUITY VALUATION combined firm	**$19,229.28**	Existing price per share for Micro semi	$26.69
Price per share APV evaluation combined firm	**$74.54**	Existing price per share for Linear Tech	$46.68

Financing strategy and structuring the deal

Assuming the following loan covenants are applicable for the combined firm to achieve optimal capital structure Long term debt/ equity< = 0.75 and the Interest coverage ratio (EBIT/Interest expense) >= 2.5. Linear Tech has numerous options to finance the acquisition. It can issue public corporate unsecured convertible senior notes to finance the acquisition. The conversion feature within these additional convertible notes allows the bondholder to convert the bond to stock when the conversion price is higher than the market price of the stock. Alternatively it can finance through asset based secure lending utilizing the underlying stable asset cash flows as collateral. The payment strategy to purchase Micro semi stock would be a combined cash and linear tech stock transaction through a tender stock purchase offer to all micro semi share holders. This triangular merger would establish linear tech as the sole share holder however micro semi would be a subsidiary. The second step would be once the Linear Tech is the majority shareholder, through a back end merger it can require the minority shareholders to sell. To finance the purchase Linear Tech would borrow $1888.54 million through public corporate bonds, at the base purchase price of $26.69 Linear tech can purchase 70.75 million micro-semi shares through the additional debt. The remaining 24.2087 million would be purchased through additional distribution of 21.42 million linear tech stock which would cover the control premium and negotiated synergy.

Negotiation Strategy and risk assessment

Sensitivity analysis on the Micro semi standalone entity valuation number based on projected increase in EBIT is shown in the appendix. Minimum price for Micro semi – stand alone equity value range $1810 <x< $2972. USD millions. The current market capitalization for Micro semi is $2,534.67. Maximum price for Micro – semi equity value would include the net of all synergies of $6,410 bringing absolute maximum price range to $8228 to $9390 USD millions. The initial offer by Linear tech should be equal to the market value with a 10% control premium and a 15% net synergy impact, which would be $3750.84 USD million. The final price should be around $4.5 billion which equates to 1.4xtimes the market value which is reasonable. The payment structure would be a combination of cash and linear tech stock to buy stock from Micro- semi share holders. If Micro semi has a higher asking price, a contingent earn out can be created as additional payment of $323.65 million. Assuming the earn out target is the projected annual earnings increase of 15%, any additional increase to the earnings can be the earn out payment, the value above is assuming an additional 15% increase over the next 5 years. The combined company entity valuation is within the range of $20551 to $24880. The price of the combined firm will be $66.65 to $83.29 which is 29.96% to 43.95% increase in the share price from the base linear tech stock price mostly due to the synergies which are assumed to be achieved by the combined firm.

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semi, A. r. (n.d.). Annual report 2013 Micro semi .

APPENDIX CHARTS AND ANALYSIS

Chart: Historical annualized cost of equity for Micro semi Stock

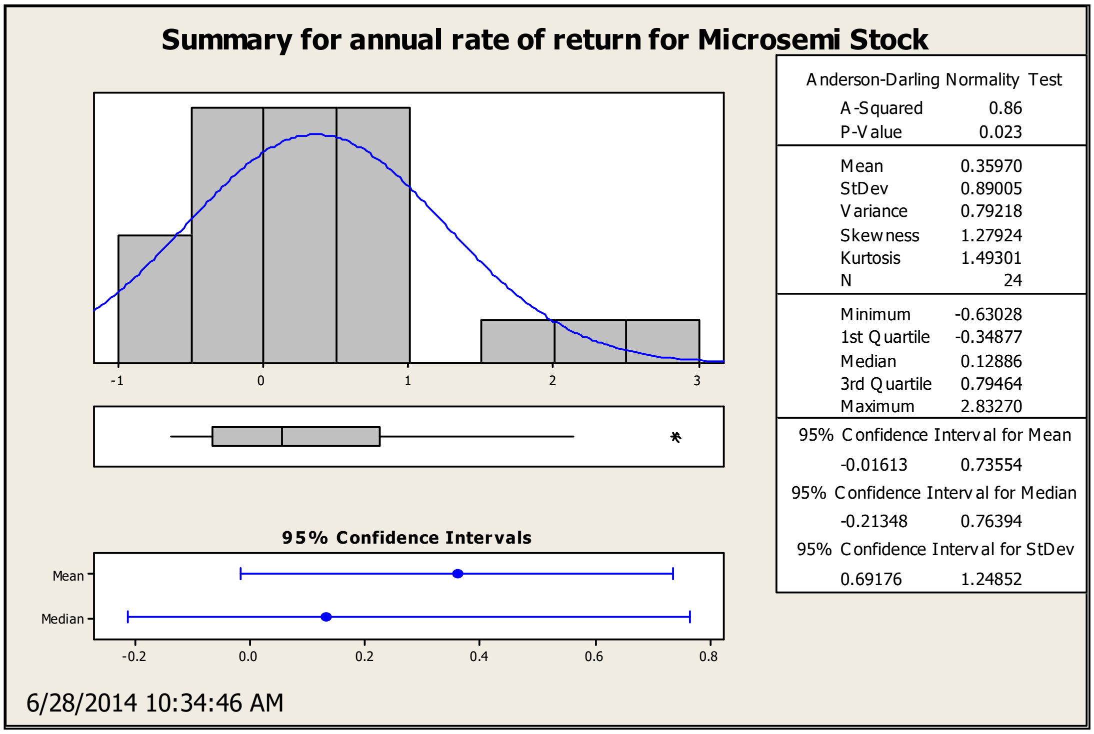


Chart: Historical annualized rate of return for the NASDAQ index

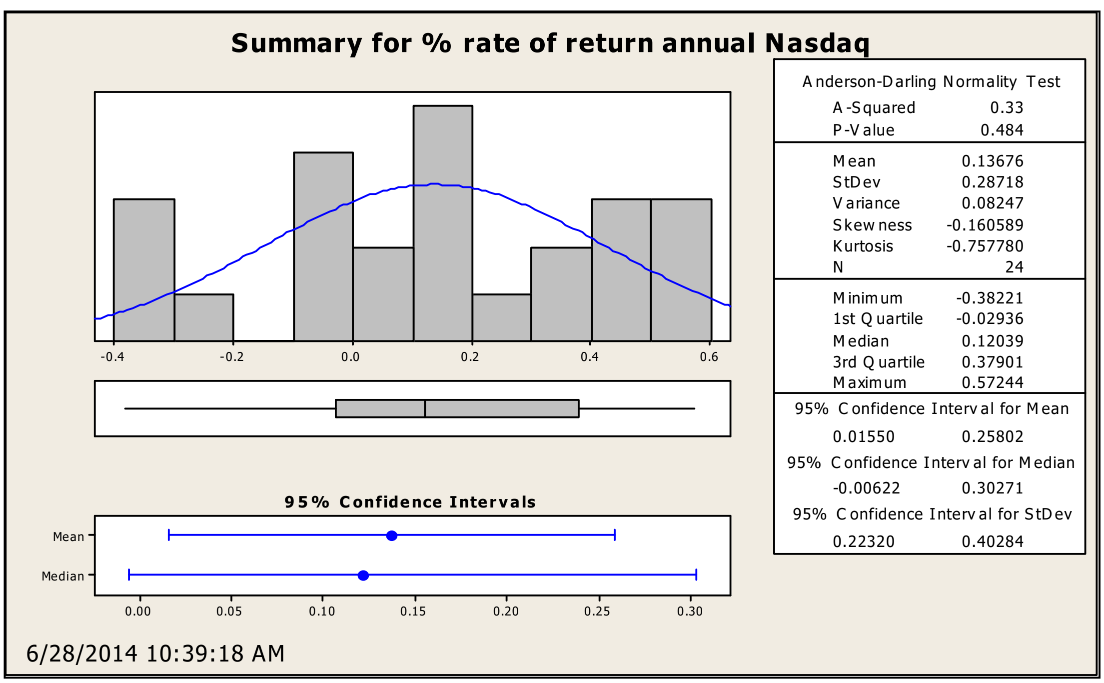
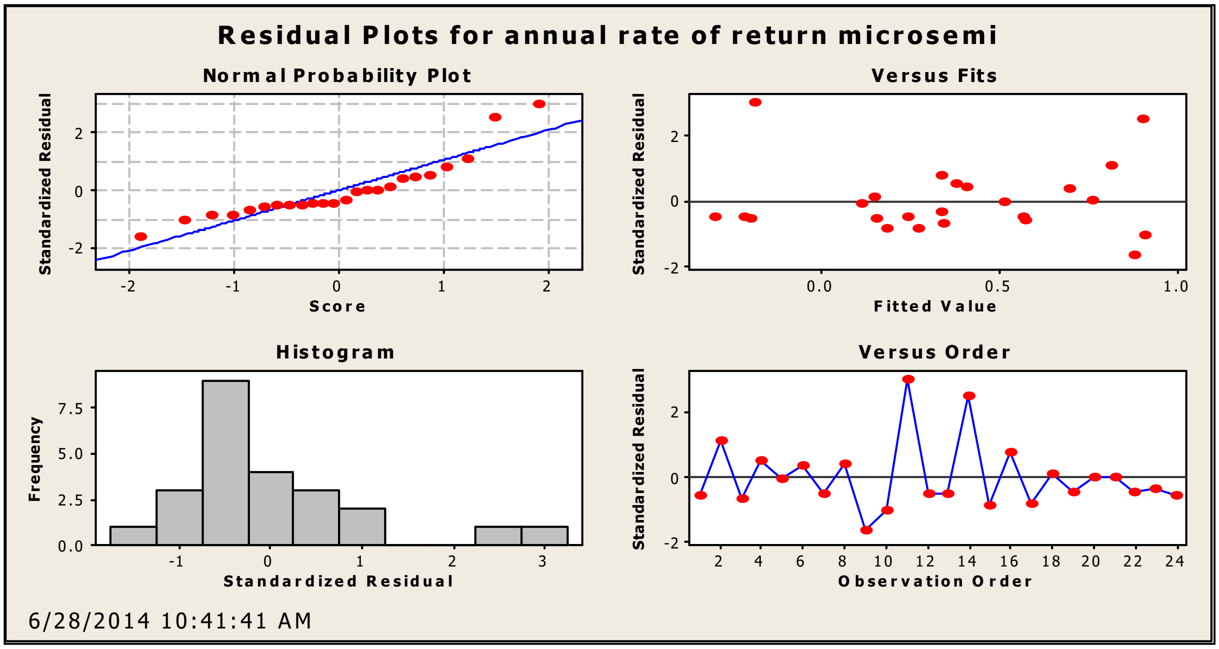


Chart: Calculating systemic risk factor for micro semi relative to Nasdaq index




```
The regression equation is
annual rate of return microsemi = 0.187 + 1.26 % rate of return annual Nasdaq

Predictor                           Coef  SE Coef     T      P
Constant                          0.1871   0.1887  0.99  0.332
% rate of return annual Nasdaq    1.2620   0.6035  2.09  0.048
S = 0.831185   R-Sq = 16.6%   R-Sq(adj) = 12.8%
```

Chart: Historical annualized yields for long term US treasury bonds

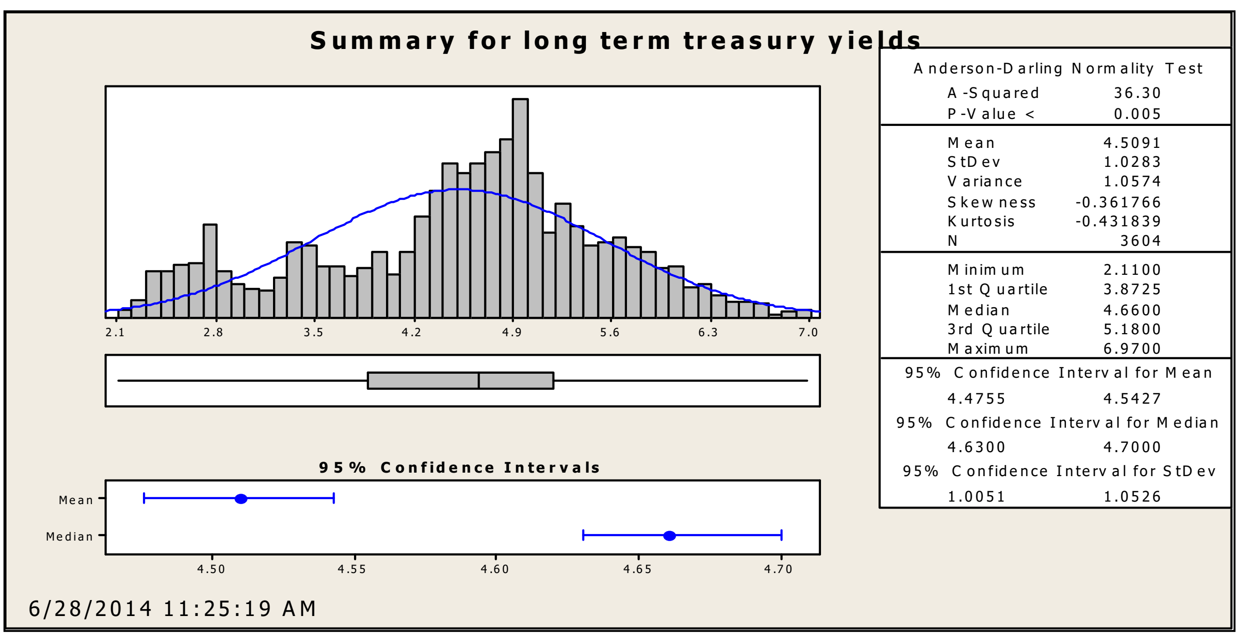


Chart: Annualized rate of return for Linear Tech stock,

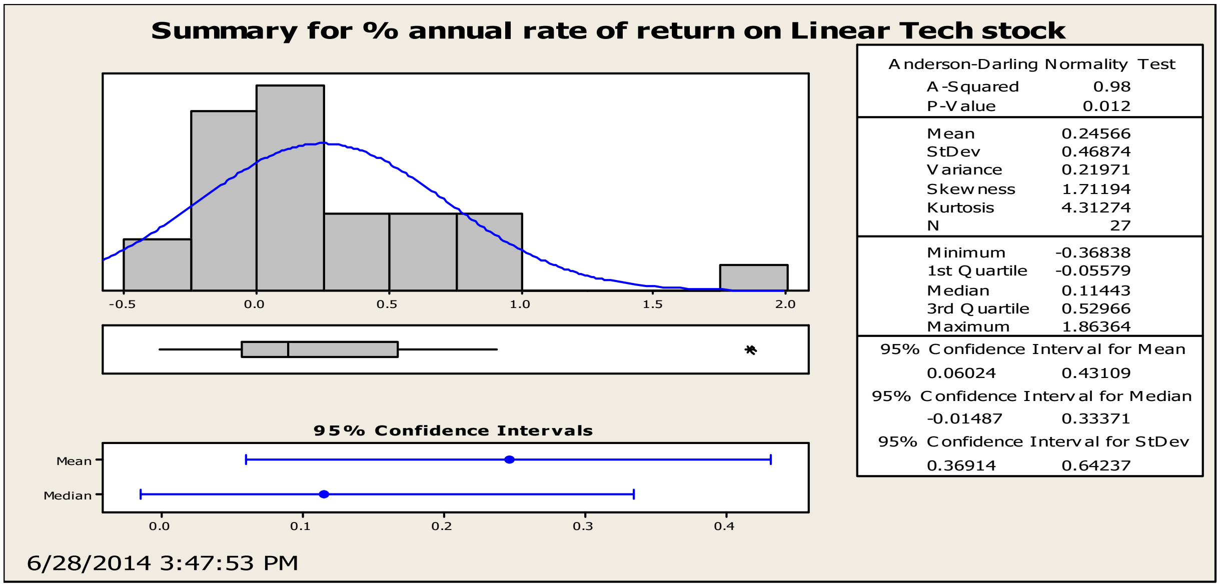


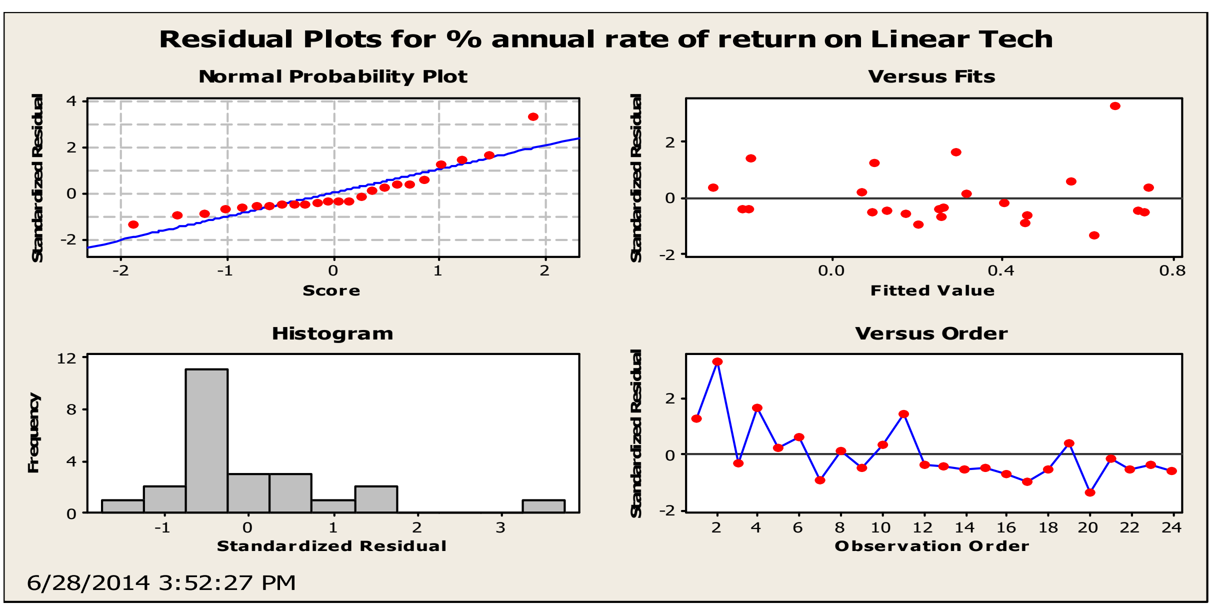
Chart: Calculating systemic risk factor for Linear Tech stock relative to Nasdaq index

Linear regression to find Beta values:

```
The regression equation is
% annual rate of return on Line = 0.130 + 1.07 Nasdaq

Predictor      Coef  SE Coef     T      P
Constant    0.12958  0.08820  1.47  0.156
Nasdaq       1.0698   0.2821  3.79  0.001

S = 0.388572   R-Sq = 39.5%   R-Sq(adj) = 36.8%
```



Analysis: Adjusted present valuation stand- alone without synergies for Linear Tech

Unlevered cost of capital	
historical Risk free rate	4.51%
levered Beta value from linear regression (Rsq =16%)	1.07
UNLEVERED BETA	1.008011308
historical Market rate of return	12.04%
historical Market premium	7.53%
Unlevered cost of equity	**12.10%**
Cost of short term debt (rate of interest)	5.00%
post tax cost of short term debt	3.80%
% of equity (equity/Market entity value)	92.51%
% of existing debt (debt/market entity value)	7.49%
Discount factor for NPV analysis	**12.38%**
long term sustainable growth rate	4.00%
short term debt	$826.60
tax rate	24.00%

Net working capital calculations		
Current working assets	**2012**	**2013**
Cash required for working short term assets assuming 10%	$21.34	$88.69
Inventory	$79.70	$87.20
receivables	$153.10	$145.30
short term assets	$69.60	$36.60
Total current working short term assets	**$323.74**	**$357.79**
Current working short term liabilities		
accrued payroll	$78.00	$77.70
accounts payable	$25.00	$58.60
short term liabilities	$67.60	$63.00
Total current working liabilities	**$170.60**	**$199.30**
Net property and plant	$320.20	$288.50
Net working capital	**$153.14**	**$158.49**
Revenue	**$1,266.60**	**$1,282.20**
Earnings before interest and taxes		$577.00
Net Income		**$406.90**

Projected increase in EBIT %		15.00%					
Forecast (USD $millions)	**2013**	**Forecast 2014**	**Forecast 2015**	**Forecast 2016**	**Forecast 2017**	**Forecast 2018**	**Forecast 2019**
Earnings before interest and taxes	$577.20	$663.78	$763.35	$877.85	$1,009.53	$1,160.96	$1,335.10
Taxes	$138.53	$159.31	$183.20	$210.68	$242.29	$278.63	$320.42
Net operating profits	$438.67	$504.47	$580.14	$667.17	$767.24	$882.33	$1,014.67
Depreciation and amortization	$55.40	$63.71	$73.27	$84.26	$96.89	$111.43	$128.14
Change in Net working capital	$5.35	$6.15	$7.08	$8.14	$9.36	$10.76	$12.37
Capital expenditures	$17.60	$20.24	$23.28	$26.77	$30.78	$35.40	$40.71
Free cash flow (USD $ millions)	**$471.12**	**$541.79**	**$623.06**	**$716.52**	**$824.00**	**$947.59**	**$1,089.73**
Terminal value							$13,518.05
Free cash flow		$541.79	$623.06	$716.52	$824.00	$947.59	$14,607.78

Tax shield Calculations	Forecast 2014	Forecast 2015	Forecast 2016	Forecast 2017	Forecast 2018	Forecast 2019 with terminal value
Free cash flow	$541.79	$623.06	$716.52	$824.00	$947.59	$15,417.79
Total entity valuation	$10,407.06	$1,294.65	$13,481.04	$17,189.38	$16,365.38	$15,417.79
Constant % debt level	7.49%	7.49%	7.49%	7.49%	7.49%	7.49%
Long term debt	$779.06	$96.92	$1,009.17	$1,286.77	$1,225.09	$1,154.15
interest expense	$29.60	$3.68	$38.35	$48.90	$46.55	$43.86
Terminal value						$877.16
Free cash flow	$29.60	$3.68	$38.35	$48.90	$46.55	$921.01
NPV analysis	$828.64					

Discounted cash flow UNLEVERED entity valuation for Linear Tech	$9,906.41
Tax shield calculations	$828.64
Total unlevered Entity Valuation for Linear Tech	$10,735.05
Total Debt	$826.60
DCF equity valuation	$9,908.45
Price per share for Linear Tech	$41.89
Earnings per share	$1.72
Price per share/earnings per share ratio	24.35

Chart: Sensitivity analysis on the valuation for Linear Tech

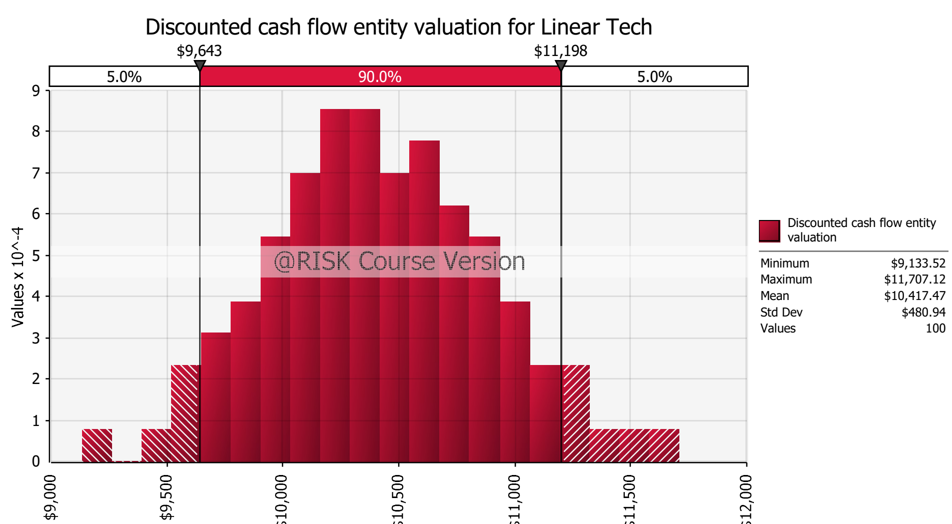
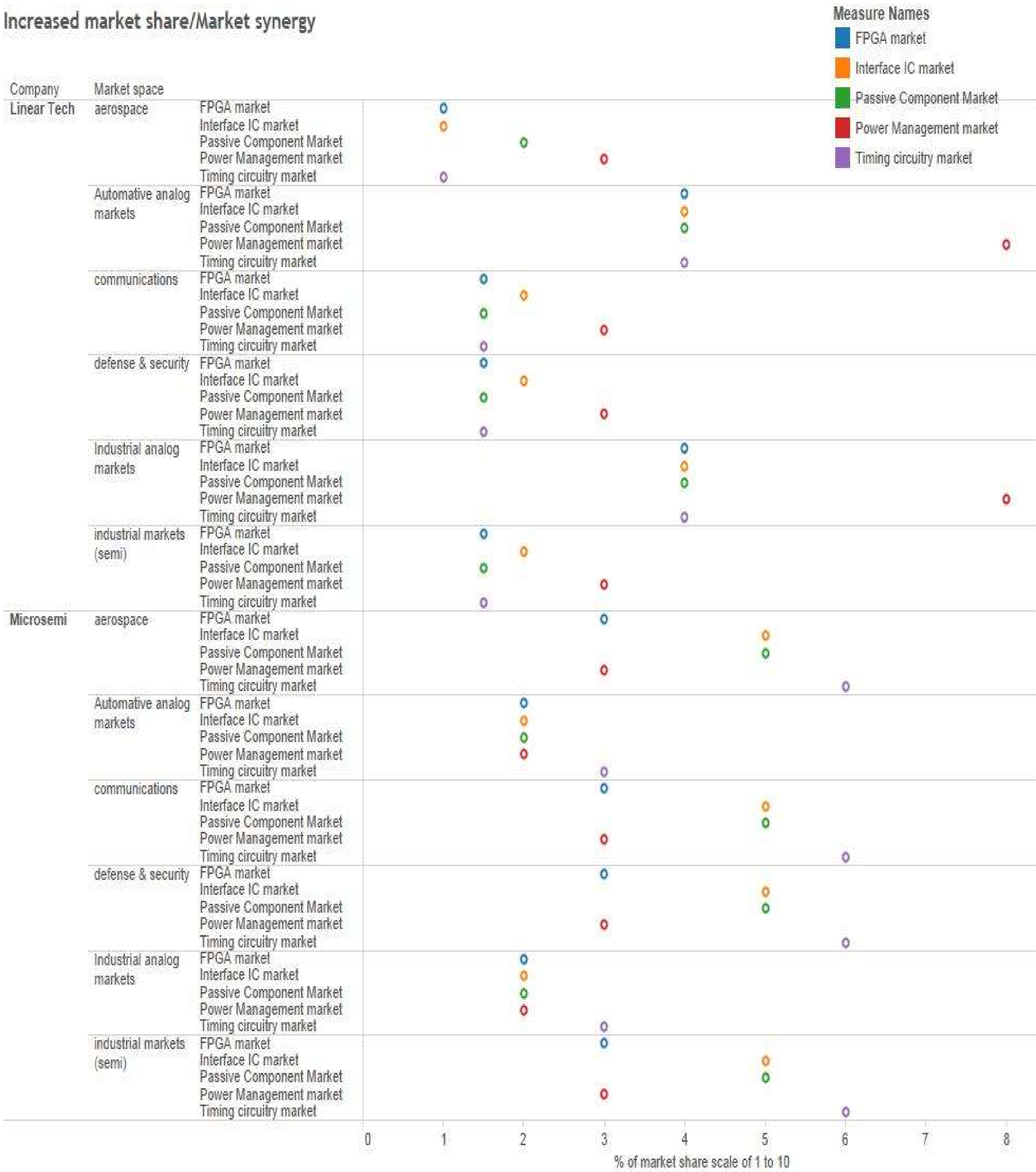
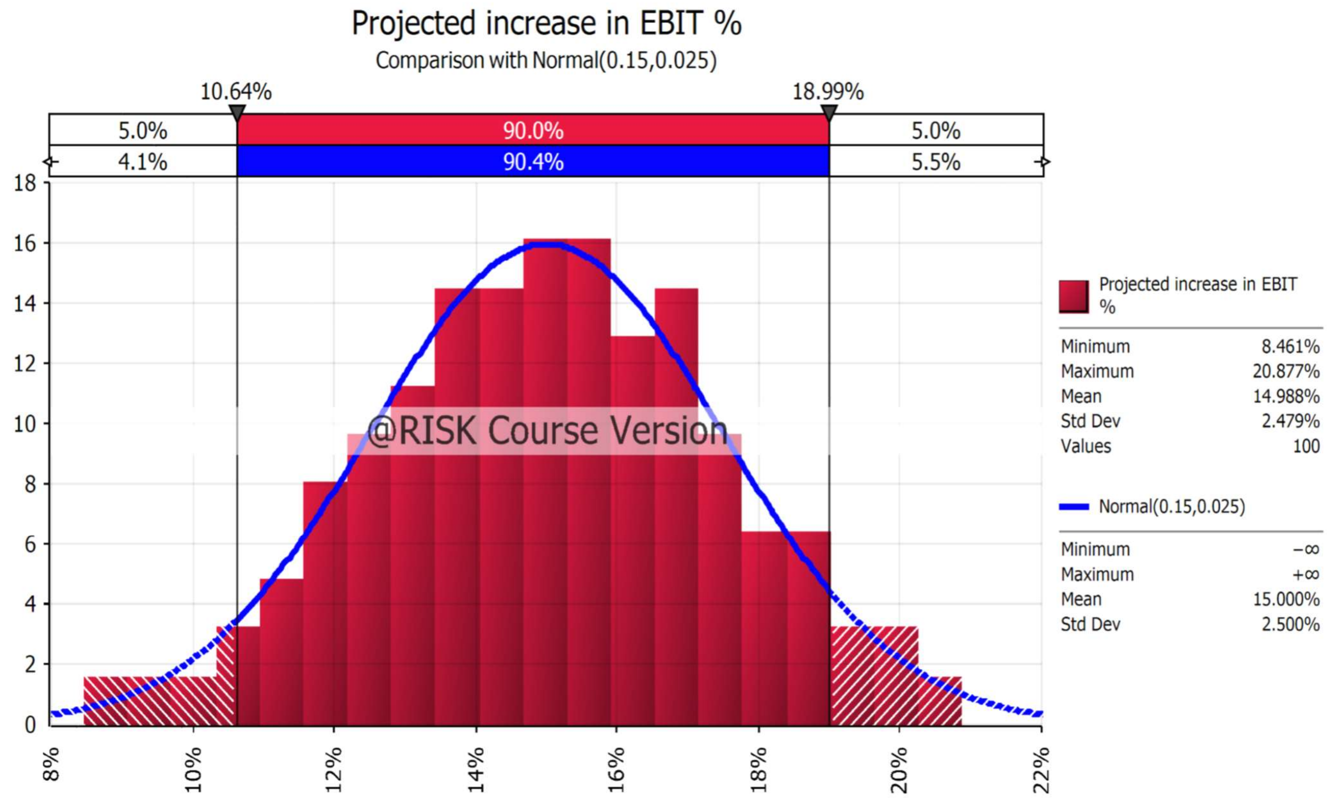


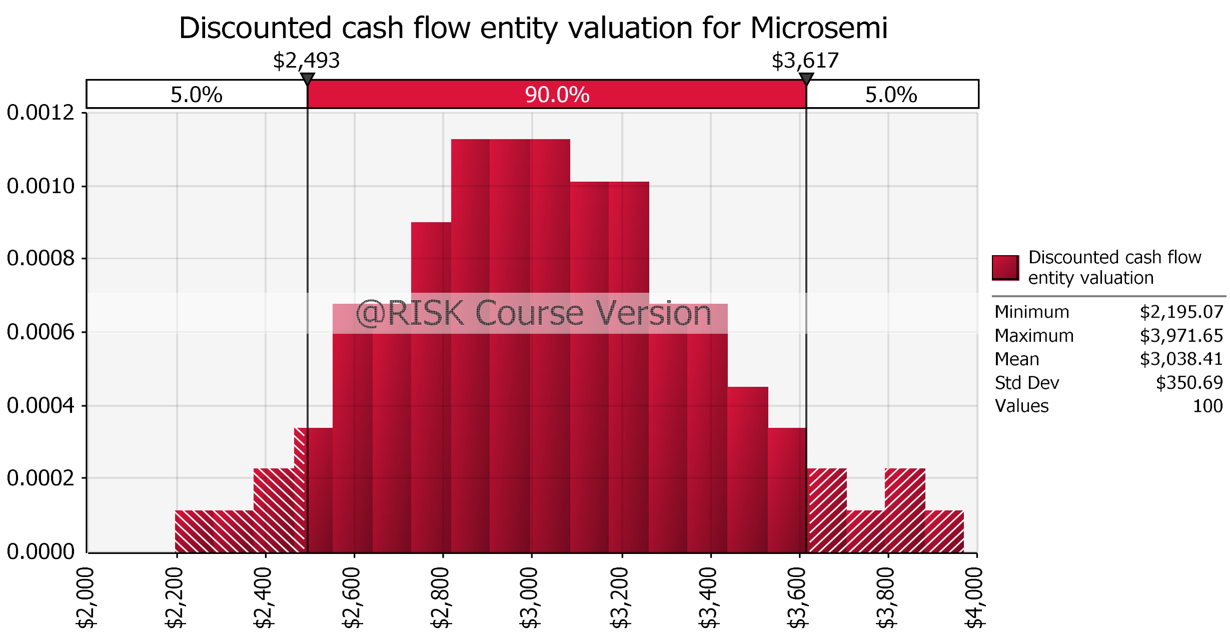
Chart: Market power synergy

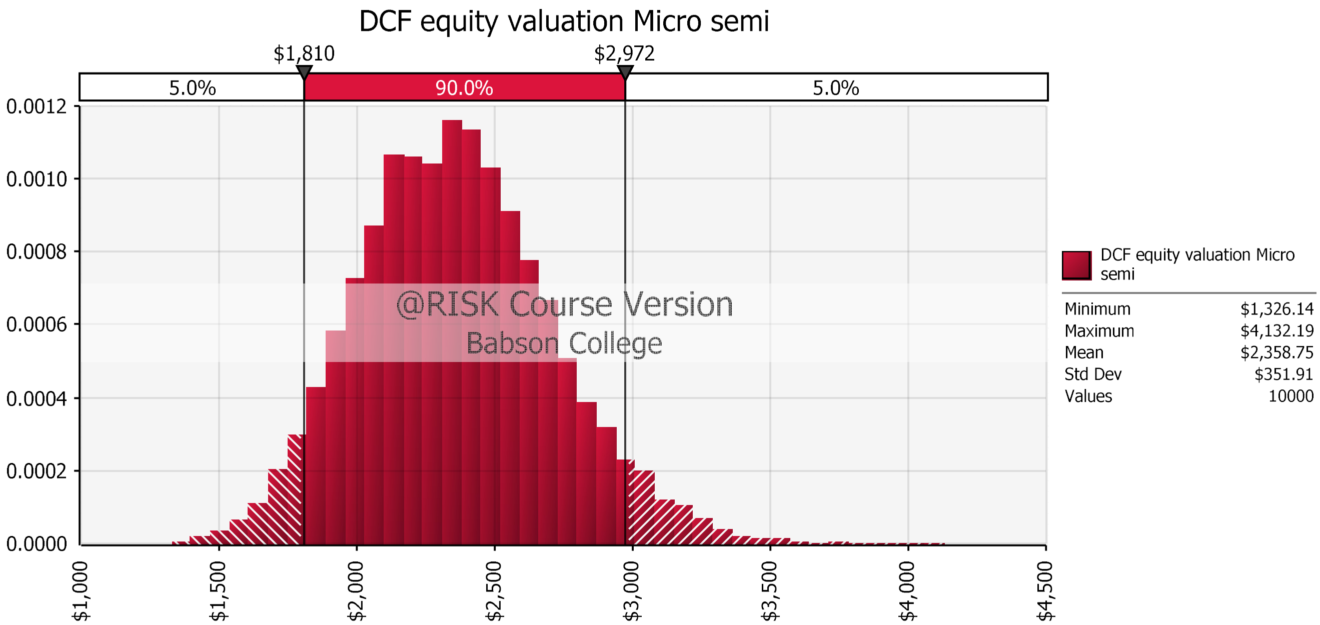


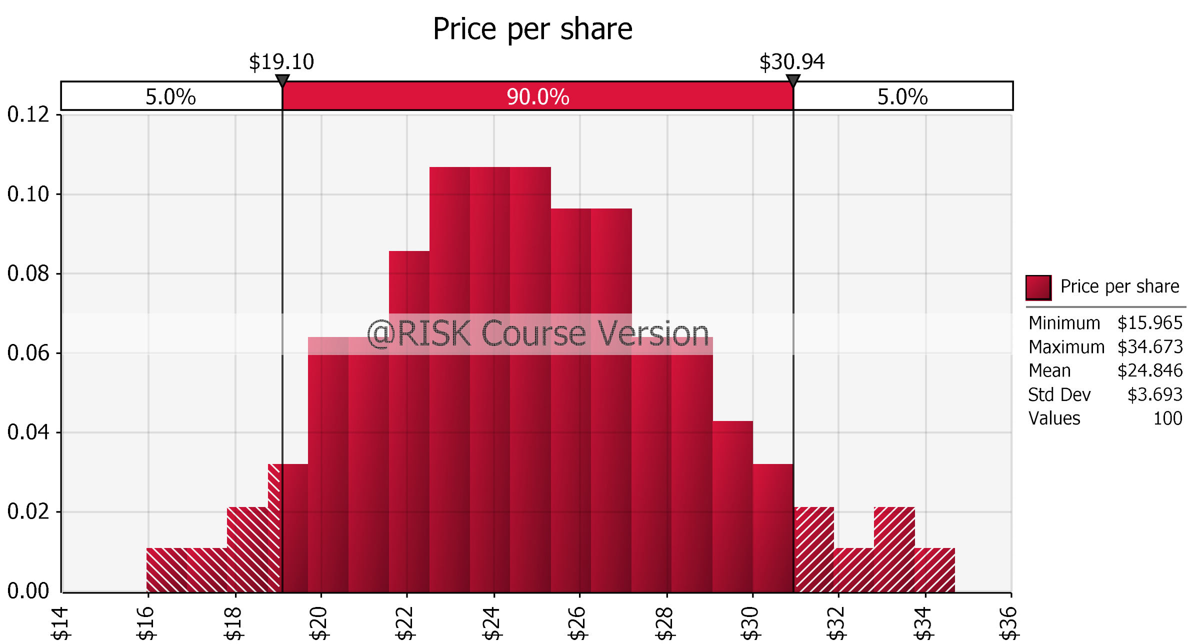
Charts for Negotiation strategy:

Sensitivity analysis on the Entity valuation for Micro semi stand alone



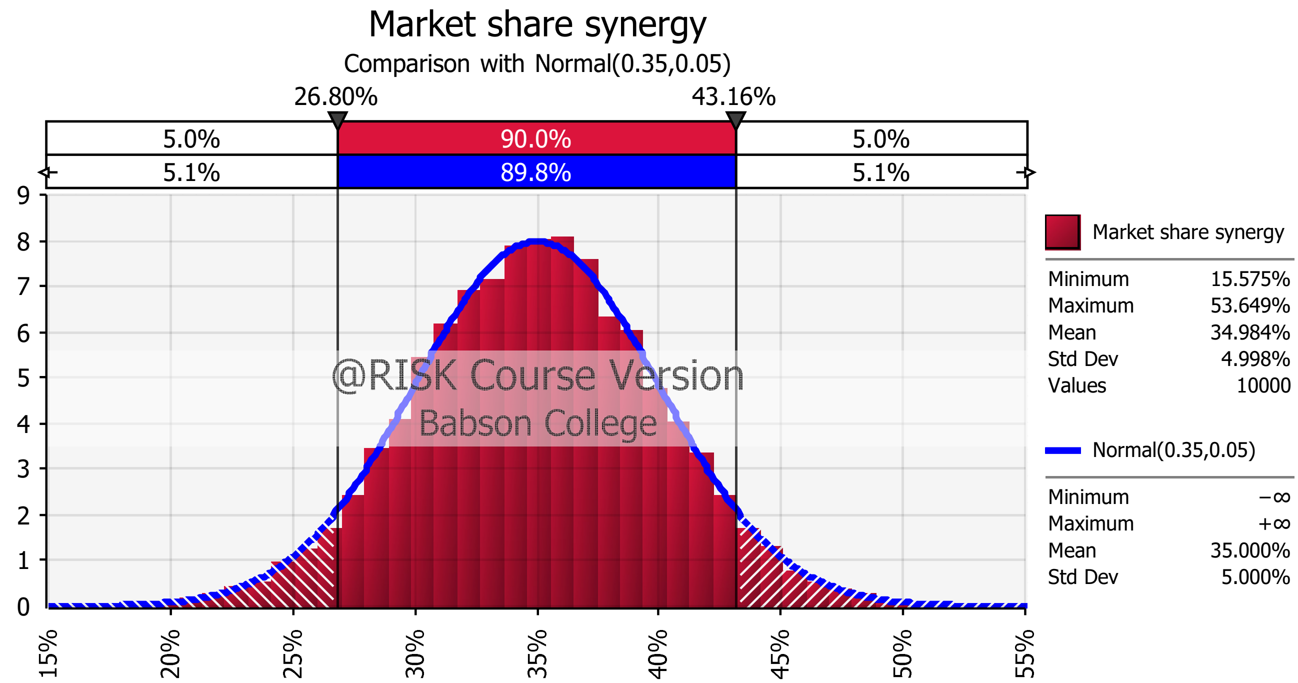



DCF equity valuation Micro semi
$1,810
$2,972
5.0%
90.0%
5.0%
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
$1,000
$1,500
$2,000
$2,500
$3,000
$3,500
$4,000
$4,500
@RISK Course Version
Babson College
DCF equity valuation Micro semi
Minimum $1,326.14
Maximum $4,132.19
Mean $2,358.75
Std Dev $351.91
Values 10000

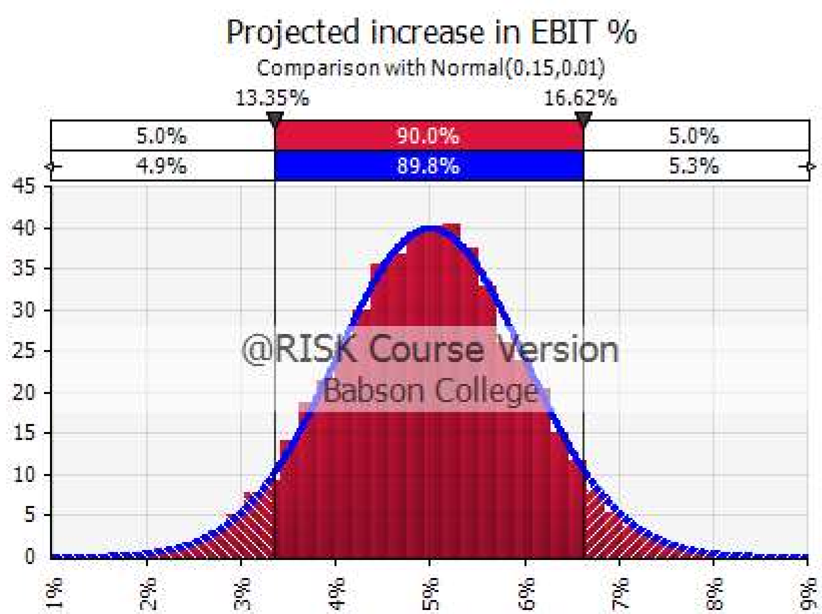

Price per share
$19.10
$30.94
5.0%
90.0%
5.0%
0.12
0.10
0.08
0.06
0.04
0.02
0.00
$14
$16
$18
$20
$22
$24
$26
$28
$30
$32
$34
$36
@RISK Course Version
Price per share
Minimum $15.965
Maximum $34.673
Mean $24.846
Std Dev $3.693
Values 100

Charts for Negotiation strategy including impact of synergies:

Sensitivity analysis based on the increase in market share



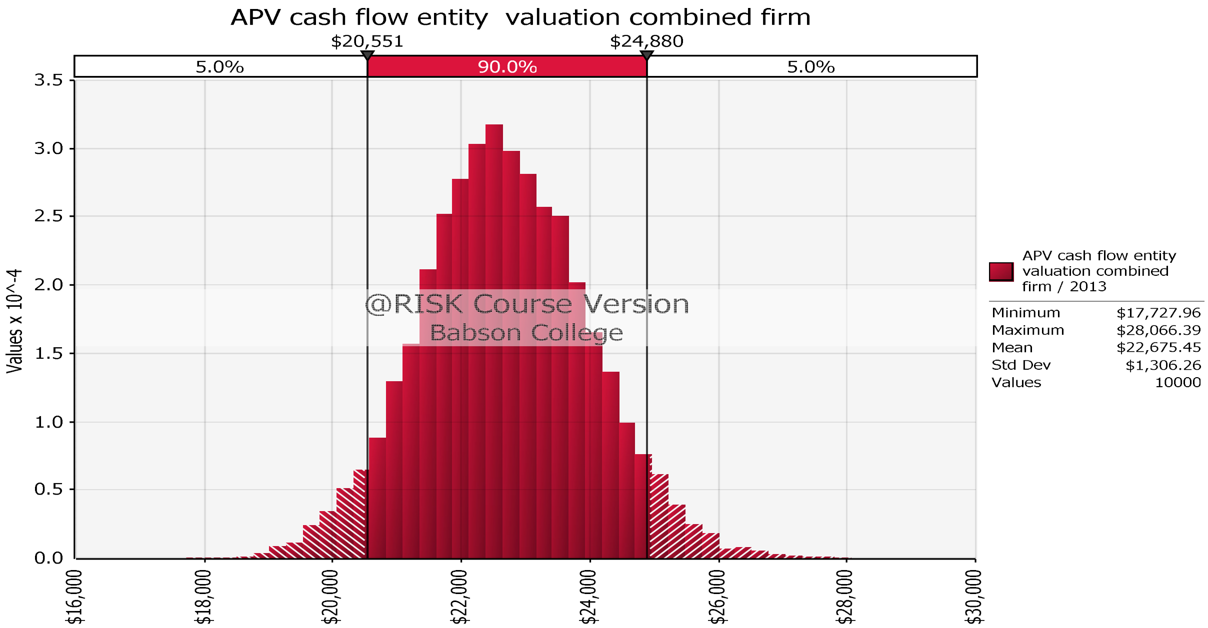
Sensitivity analysis on the based on % increase in EBIT% for the combined firm



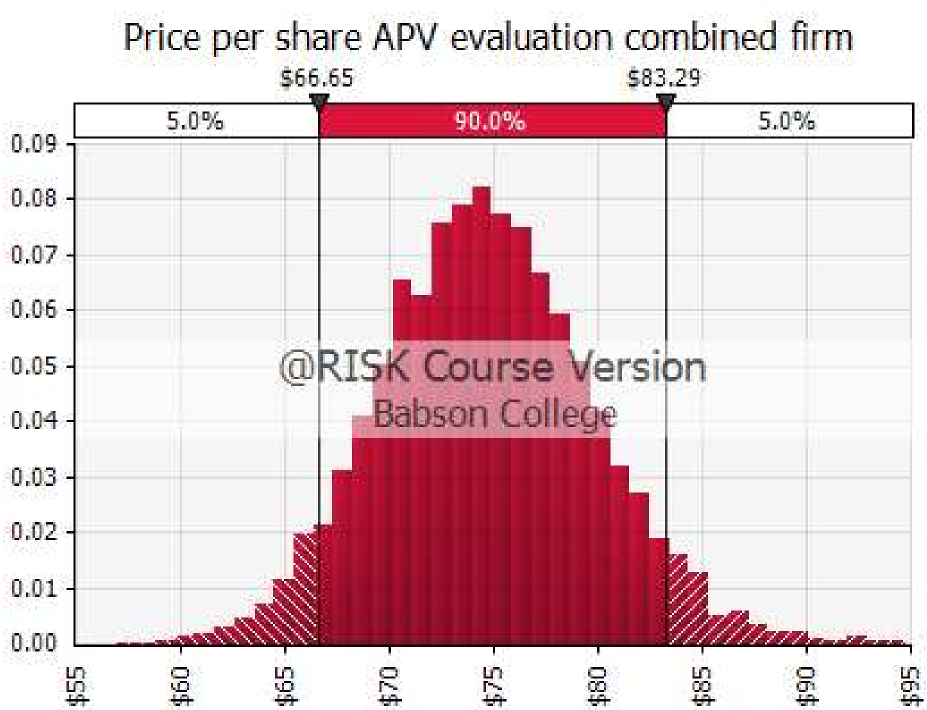
Statistics

	Projected incr...	Normal(
Cell	combinedfirmA...	combine
Minimum	11.3116%	
Maximum	18.9627%	
Mean	14.9801%	15.
Mode	15.1749%	15.
Median	14.9866%	15.
Std Dev	0.9990%	1.
Skewness	-0.0167	
Kurtosis	2.9993	
Values	10000	
Errors	0	
Filtered	0	
Left X	13.35%	
Left P	5.0%	
Right X	16.62%	
Right P	95.0%	
Dif. X	3.2692%	3.

Outputs: Effect of the sensitivity analysis on the entity valuation of the combined firm.



Effect of the sensitivity analysis on the price per share for the APV evaluation of the combined firm.



Statistics

	Price per share APV ev..
Cell	combinedfirmAPVevalu..
Minimum	$56.912
Maximum	$94.819
Mean	$74.722
Mode	$74.893
Median	$74.586
Std Dev	$5.034
Skewness	0.1791
Kurtosis	3.1186
Values	10000
Errors	0
Filtered	0
Left X	$66.65
Left P	5.0%
Right X	$83.29
Right P	95.0%
Dif. X	$16.638