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## **Microsoft Corporation (MSFT-US)**

### **Software**

- We are upgrading our rating from Neutral to Buy on MSFT. Improving business performance and the increasing return of cash to shareholders will drive outperformance and greater shareholder value creation.
- MSFT continues to evolve into a cloud company.
- Azure has evolved into being a strong competitor to Amazon's Web Services.
- MSFT continues to invest in the development integration of AI.
- Bing search engine is gaining market share.
- MSFT continues maintain a leading position in the gaming sector.

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**Company Note**
**Microsoft Corporation (MSFT-US)**  
 Software

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**Research Action:**
**Rating Upgrade**
**Rating:** Buy

**Prior Rating:** Neutral

**Price 01/20/2017:** \$62.74

**52 Week High / Low:** \$64.10 / \$48.04

**Key Data: (TTM as an of Sep-16)**
**Excess Cash per Share:** \$18.38

**Annual Dividend:** \$1.56

**Dividend Yield:** 2.49%

**Ave. Volume (30 Day):** 19.8M

**Shares Outstanding:** 7,775.4M

**Float:** 7,579.2M

**Equity MV:** \$487,825.5M

**Sales TTM:** \$84,967.0M

**Beta:** 1.13

**EBITDAR:** \$41,645.8M

**NOPAT:** \$18,237.4M

**Total Invested Capital:** \$161,572.0M

**Return on Capital:** 13.15%

**Cost of Capital:** 6.72%

**Economic Profit:** \$8,917.1M

**Market Value Added:** \$411,104.4M

**Current Operations Value:** \$271,403.1M

**Future Growth Value:** \$301,273.4M

- **We are upgrading our rating from Neutral to Buy on MSFT.** We believe MSFT's expanding cloud transition strategy including Azure, the subscription-based office 365 model and the future integration with LinkedIn along with new initiatives in Artificial Intelligence (AI), search, gaming and other new products will begin to drive a new acceleration in Business Performance. Together their strong cash flow and excess cash that can be used to continue to increase dividends and fund greater stock repurchase will drive relative outperformance and greater shareholder value creation.
- **MSFT continues to evolve into a cloud company.** Growth of the adoption of the office 365 subscription model continues to accelerate as users opt to upgrade from older versions. Azure is positioned for steady evolution into one of the dominant cloud platforms, as MSFT continues to incorporate new features, as well as offer an extremely high level of security.
- **Azure has evolved into being a strong competitor to Amazon's Web Services (AMZN-US, buy rated).** MSFT now offers a hybrid cloud solution enabling the integration of existing IT infrastructure with the public cloud. It is also increasingly entering into strategic partnerships with competitors like Salesforce (CRM-US, Unrated), Oracle (ORCL-US, Neutral Rated) and even Google (GOOGL-US, Strong Buy rated) to improve its product offering. MSFT is also pursuing growth in the SMB segment through partnerships with infrastructure providers such as GoDaddy (GDDY-US, Unrated). We see MSFT's strong brand equity and very large balance sheet enabling it to emerge as a dominant cloud player. Monthly active users of Office 365 increased 40% Y/Y year to more than 85 million. Azure revenue increased 121% Y/Y with Azure compute usage doubling. MSFT is benefitting from its hybrid and hyperscale cloud for use by multinational companies and banks that have global operations and are required to be in compliance with laws of the countries in which they operate.
- **MSFT continues to invest in the development integration of AI.** MSFT's recent acquisition of artificial intelligence startup Maluuba is one part of their initiative to enable the incorporation of AI in web-based and standalone applications including office along with enhancing security levels for its web-based platforms.

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- **Bing search engine is gaining market share.** Bing is gaining market share from smaller search rivals and is also benefiting from strategic partnerships including Yahoo (YHOO-US, Neutral Rated), HP (HPQ-US, Neutral Rated) and Facebook (FB-US, Strong Buy Rated). HP incorporates Bing in its PCs as the default search engine and FB uses Bing to support its graph search. Bing is also the default search engine for the world's largest and dominant operating system Microsoft Windows.
- **MSFT continues maintain a leading position in the gaming sector.** MSFT is one of the three largest providers of gaming hardware. Its Xbox console was one of the first gaming devices of its kind. MSFT is also one the largest publisher of video games and its Xbox console serves as a web-based household gaming and entertainment platform enabling subscribers to play multiplayer games and access non-gaming entertainment like Facebook, Twitter (TWTR-US Neutral Rated, Netflix (NFLX-US, Unrated) and Amazon-Home-Video.

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Company Report – Research Update

Financial Data

| Report Basis                                      | LTM         | LTM         | LTM         | LTM         | LTM         | LTM          | NTM          | 5 Yr        | 3 Yr        | Current      |
|---|-------------|-------------|-------------|-------------|-------------|--------------|--------------|-------------|-------------|--------------|
| Reported Period Ending                            | 09/30/2011  | 09/30/2012  | 09/30/2013  | 09/30/2014  | 09/30/2015  | 09/30/2016   | 09/30/2017   | Average     | Average     | Trend        |
| <b>Net Sales Revenue</b>                          | \$71,260.0  | \$72,302.0  | \$80,191.0  | \$91,404.0  | \$90,375.0  | \$84,967.0   | \$95,058.3   | \$83,847.8  | \$88,915.3  | \$90,012.6   |
| Sales Growth                                      | 9.05%       | 1.46%       | 10.91%      | 13.98%      | -1.13%      | -5.98%       | 11.88%       | 3.85%       | 2.29%       | 2.95%        |
| Sales Growth Trend                                | 12.46%      | 4.50%       | 7.13%       | 12.75%      | 4.92%       | -4.04%       | 4.73%        | 5.05%       | 4.54%       | 0.35%        |
| <b>Operating Cash Flow (EBITDAR)</b>              | \$40,830.9  | \$40,306.0  | \$43,850.7  | \$47,701.7  | \$46,372.2  | \$41,645.8   | \$48,325.3   | \$43,975.3  | \$45,239.9  | \$44,985.6   |
| EBITDAR Margin                                    | 57.30%      | 55.75%      | 54.68%      | 52.19%      | 51.31%      | 49.01%       | 50.84%       | 52.59%      | 50.84%      | 49.93%       |
| EBITDAR Growth                                    | 3.88%       | -1.29%      | 8.79%       | 8.78%       | -2.79%      | -10.19%      | 16.04%       | 0.66%       | -1.40%      | 2.92%        |
| <b>Net Operating Profit Before Tax (NOPBT)</b>    | \$28,331.9  | \$26,774.0  | \$28,422.7  | \$29,462.7  | \$27,450.2  | \$21,536.8   | \$27,869.3   | \$26,729.3  | \$26,149.9  | \$24,703.1   |
| NOPBT Margin                                      | 39.76%      | 37.03%      | 35.44%      | 32.23%      | 30.37%      | 25.35%       | 29.32%       | 32.09%      | 29.32%      | 27.33%       |
| NOPBT Growth                                      | 4.12%       | -5.50%      | 6.16%       | 3.66%       | -6.83%      | -21.54%      | 29.40%       | -4.81%      | -8.24%      | 3.93%        |
| <b>Cash Operating Income Tax</b>                  | \$4,699.7   | \$6,256.2   | \$5,379.0   | \$6,406.5   | \$8,861.8   | \$3,299.4    | \$6,442.2    | \$6,040.6   | \$6,189.2   | \$4,870.8    |
| Economic Tax Effective Rate                       | 16.59%      | 23.37%      | 18.93%      | 21.74%      | 32.28%      | 15.32%       | 23.12%       | 22.33%      | 23.12%      | 19.22%       |
| <b>Net Operating Profit After Tax (NOPAT)</b>     | \$23,632.3  | \$20,517.8  | \$23,043.7  | \$23,056.2  | \$18,588.4  | \$18,237.4   | \$21,427.1   | \$20,688.7  | \$19,960.7  | \$19,832.3   |
| NOPAT Margin                                      | 33.16%      | 28.38%      | 28.74%      | 25.22%      | 20.57%      | 21.46%       | 22.54%       | 24.87%      | 22.42%      | 22.00%       |
| NOPAT Growth                                      | 15.87%      | -13.18%     | 12.31%      | 0.05%       | -19.38%     | -1.89%       | 17.49%       | -4.42%      | -7.07%      | 7.80%        |
| <b>Cash &amp; Equivalents</b>                     | \$65,979.0  | \$76,682.0  | \$92,667.0  | \$103,136.0 | \$110,793.0 | \$147,418.0  | \$154,394.5  | \$106,139.2 | \$120,449.0 | \$150,906.2  |
| <b>Total Assets</b>                               | \$107,415.0 | \$121,876.0 | \$142,348.0 | \$169,656.0 | \$172,896.0 | \$212,524.0  | \$222,581.6  | \$163,860.0 | \$185,025.3 | \$217,552.8  |
| <b>Non - Interest Bearing Liabilities (NIBLs)</b> | \$32,027.0  | \$36,487.0  | \$39,582.0  | \$49,467.0  | \$50,559.0  | \$59,773.0   | \$62,601.7   | \$47,173.6  | \$53,266.3  | \$61,187.4   |
| <b>Net Assets</b>                                 | \$75,388.0  | \$85,389.0  | \$102,766.0 | \$120,189.0 | \$122,337.0 | \$152,751.0  | \$159,979.9  | \$116,686.4 | \$131,759.0 | \$156,365.4  |
| <b>Economic Asset Adjustments</b>                 | \$163.6     | \$414.1     | \$3,453.2   | \$4,755.4   | \$6,477.6   | \$8,821.0    | \$9,238.5    | \$4,784.3   | \$6,684.7   | \$9,029.8    |
| <b>Net Operating Assets</b>                       | \$75,551.6  | \$85,803.1  | \$106,219.2 | \$124,944.4 | \$128,814.6 | \$161,572.0  | \$169,218.3  | \$121,470.7 | \$138,443.7 | \$165,395.2  |
| <b>Debt &amp; Debt Equivalents</b>                | \$13,694.6  | \$13,762.1  | \$18,098.2  | \$27,691.4  | \$43,212.6  | \$81,352.0   | \$85,202.0   | \$36,823.3  | \$50,752.0  | \$83,277.0   |
| <b>Equity &amp; Equivalents</b>                   | \$59,391.0  | \$68,836.0  | \$81,641.0  | \$90,170.0  | \$77,445.0  | \$70,372.0   | \$73,702.3   | \$77,692.8  | \$79,329.0  | \$72,037.2   |
| <b>Total Capital - Financing Sources</b>          | \$73,085.6  | \$82,598.1  | \$99,739.2  | \$117,861.4 | \$120,657.6 | \$151,724.0  | \$158,904.3  | \$114,516.1 | \$130,081.0 | \$155,314.2  |
| <b>Capital Adjustments</b>                        | (\$1,604.0) | (\$1,398.0) | \$1,287.0   | \$784.0     | \$1,832.0   | \$3,191.0    | \$3,342.0    | \$1,139.2   | \$1,935.7   | \$3,266.5    |
| <b>Net Capital Financing Sources</b>              | \$71,481.6  | \$81,200.1  | \$101,026.2 | \$118,645.4 | \$122,489.6 | \$154,915.0  | \$162,246.3  | \$115,655.3 | \$132,016.7 | \$158,580.7  |
| <b>Net Working Capital</b>                        | \$255.0     | (\$3,275.9) | (\$3,048.5) | (\$5,061.8) | (\$5,256.3) | (\$12,075.7) | (\$12,647.1) | (\$5,743.6) | (\$7,464.6) | (\$12,361.4) |
| Cost of Net Working Capital                       | (\$65.1)    | (\$99.6)    | (\$238.6)   | (\$268.5)   | (\$341.6)   | (\$582.3)    | (\$609.9)    | (\$306.1)   | (\$397.5)   | (\$596.1)    |
| % of Revenue                                      | -0.09%      | -0.14%      | -0.30%      | -0.29%      | -0.38%      | -0.69%       | -0.64%       | -0.36%      | -0.45%      | -0.66%       |
| <b>Operational Capital</b>                        | \$10,055.6  | \$6,865.2   | \$9,891.7   | \$12,138.6  | \$14,435.3  | \$12,778.4   | \$13,383.1   | \$11,221.9  | \$13,117.5  | \$13,080.8   |
| Cost of Operational Capital                       | \$562.9     | \$558.1     | \$632.1     | \$729.4     | \$879.9     | \$914.3      | \$957.6      | \$742.8     | \$841.2     | \$936.0      |
| % of Revenue                                      | 0.79%       | 0.77%       | 0.79%       | 0.80%       | 0.97%       | 1.08%        | 1.01%        | 0.88%       | 0.95%       | 1.04%        |
| <b>Productive Capital</b>                         | \$23,618.6  | \$24,754.2  | \$27,540.7  | \$38,912.6  | \$36,322.3  | \$34,207.4   | \$35,826.2   | \$32,347.5  | \$36,480.8  | \$35,016.8   |
| Cost of Productive Capital                        | \$1,448.4   | \$1,595.4   | \$1,972.7   | \$2,200.2   | \$2,491.1   | \$2,369.7    | \$2,481.8    | \$2,125.8   | \$2,353.7   | \$2,425.8    |
| % of Revenue                                      | 2.03%       | 2.21%       | 2.46%       | 2.41%       | 2.76%       | 2.79%        | 2.61%        | 2.52%       | 2.65%       | 2.70%        |
| <b>Total Operating Capital</b>                    | \$13,135.6  | \$12,736.2  | \$17,561.7  | \$26,378.6  | \$22,540.3  | \$18,402.4   | \$19,273.3   | \$19,523.9  | \$22,440.5  | \$18,837.8   |
| Cost of Total Operating Capital                   | \$747.7     | \$853.3     | \$1,142.9   | \$1,454.8   | \$1,619.7   | \$1,375.6    | \$1,440.7    | \$1,289.3   | \$1,483.4   | \$1,408.2    |
| % of Revenue                                      | 1.05%       | 1.18%       | 1.43%       | 1.59%       | 1.79%       | 1.62%        | 1.52%        | 1.52%       | 1.67%       | 1.57%        |
| <b>Non - Operating Capital</b>                    | \$62,416.0  | \$73,066.9  | \$88,657.5  | \$98,565.8  | \$106,274.3 | \$143,169.7  | \$149,945.1  | \$101,946.8 | \$116,003.2 | \$146,557.4  |
| Cost of Non - Operating Capital                   | \$3,675.4   | \$4,468.4   | \$6,100.8   | \$6,198.8   | \$6,782.4   | \$8,380.9    | \$8,777.5    | \$6,386.2   | \$7,120.7   | \$8,579.2    |
| % of Revenue                                      | 5.16%       | 6.18%       | 7.61%       | 6.78%       | 7.50%       | 9.86%        | 9.23%        | 7.59%       | 8.05%       | 9.55%        |
| <b>Total Capital</b>                              | \$75,551.6  | \$85,803.1  | \$106,219.2 | \$124,944.4 | \$128,814.6 | \$161,572.0  | \$169,218.3  | \$121,470.7 | \$138,443.7 | \$165,395.2  |
| Cost of Total Capital                             | \$4,423.1   | \$5,321.7   | \$7,243.7   | \$7,653.6   | \$8,402.1   | \$9,756.5    | \$10,218.3   | \$7,675.5   | \$8,604.1   | \$9,987.4    |
| % of Revenue                                      | 6.21%       | 7.36%       | 9.03%       | 8.37%       | 9.30%       | 11.48%       | 10.75%       | 9.11%       | 9.72%       | 11.12%       |
| <b>Cost of Capital (WACC)</b>                     | 6.53%       | 6.60%       | 7.54%       | 6.62%       | 6.62%       | 6.72%        | 6.72%        | 6.82%       | 6.65%       | 6.72%        |
| <b>Capital Structure</b>                          |             |             |             |             |             |              |              |             |             |              |
| <b>Debt &amp; Debt Equivalents</b>                | \$13,694.6  | \$13,762.1  | \$18,098.2  | \$27,691.4  | \$43,212.6  | \$81,352.0   | \$85,202.0   | \$36,823.3  | \$50,752.0  | \$83,277.0   |
| Debt & Debt Equivalents % of Market Value         | 6.16%       | 5.23%       | 6.13%       | 6.76%       | 10.88%      | 15.36%       | 15.36%       | 9.71%       | 11.39%      | 15.36%       |
| <b>Preferred Equity</b>                           | \$0.0       | \$0.0       | \$0.0       | \$0.0       | \$0.0       | \$0.0        | \$0.0        | \$0.0       | \$0.0       | \$0.0        |
| Preferred Equity % of Market Value                | 0.00%       | 0.00%       | 0.00%       | 0.00%       | 0.00%       | 0.00%        | 0.00%        | 0.00%       | 0.00%       | 0.00%        |
| <b>Market Value of Common Equity</b>              | \$208,535.0 | \$249,489.9 | \$277,220.9 | \$381,999.4 | \$353,990.6 | \$448,361.8  | \$469,580.3  | \$342,212.5 | \$394,784.0 | \$458,971.1  |
| Common Equity % of Market Value                   | 93.84%      | 94.77%      | 93.87%      | 93.24%      | 89.12%      | 84.64%       | 84.64%       | 90.29%      | 88.61%      | 84.64%       |
| <b>Total Economic Market Value (MV)</b>           | \$222,229.7 | \$263,252.0 | \$295,319.1 | \$409,690.8 | \$397,203.2 | \$529,713.9  | \$554,782.3  | \$379,035.8 | \$445,536.0 | \$542,248.1  |
| Total %   | 100.00%     | 100.00%     | 100.00%     | 100.00%     | 100.00%     | 100.00%      | 100.00%      | 100.00%     | 100.00%     | 100.00%      |
| <b>Excess Cash</b>                                | \$62,416.0  | \$73,066.9  | \$88,657.5  | \$98,565.8  | \$106,274.3 | \$143,169.7  | \$149,945.1  | \$101,946.8 | \$116,003.2 | \$146,557.4  |
| <b>Economic Enterprise Value</b>                  | \$159,813.7 | \$190,185.1 | \$206,661.7 | \$311,125.0 | \$290,929.0 | \$386,544.2  | \$404,837.2  | \$277,089.0 | \$329,532.7 | \$395,690.7  |
| <b>Ending Capital</b>                             | \$71,481.6  | \$81,200.1  | \$101,026.2 | \$118,645.4 | \$122,489.6 | \$154,915.0  | \$162,246.3  | \$115,655.3 | \$132,016.7 | \$158,580.7  |
| - Beginning Capital                               | \$56,251.3  | \$71,481.6  | \$81,200.1  | \$101,026.2 | \$118,645.4 | \$122,489.6  | \$154,915.0  | \$98,968.6  | \$114,053.7 | \$138,702.3  |
| <b>Average Capital</b>                            | \$63,866.4  | \$76,340.9  | \$91,113.1  | \$109,835.8 | \$120,567.5 | \$138,702.3  | \$158,580.7  | \$107,311.9 | \$123,035.2 | \$148,641.5  |
| Capital Δ   | \$15,230.4  | \$9,718.5   | \$19,826.1  | \$17,619.3  | \$3,844.1   | \$32,425.5   | \$7,331.3    | \$16,686.7  | \$17,963.0  | \$19,878.4   |

Source: Company Data, Financial statements and Tigress Research

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Company Report – Research Update

| Report Basis                                     | LTM           | LTM          | LTM          | LTM         | LTM         | LTM          | LTM         | NTM         | 5 Yr        | 3 Yr        | Current |
|--|---------------|--------------|--------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|---------|
| Reported Period Ending                           | 09/30/2011    | 09/30/2012   | 09/30/2013   | 09/30/2014  | 09/30/2015  | 09/30/2016   | 09/30/2017  | Average     | Average     | Average     | Trend   |
| Return on Market Value (NOPAT / MV)              | 10.63%        | 7.79%        | 7.80%        | 5.63%       | 4.68%       | 3.44%        | 3.61%       | 5.87%       | 4.58%       | 3.52%       |         |
| Return on Enterprise Value (NOPAT / EV)          | 14.79%        | 10.79%       | 11.15%       | 7.41%       | 6.39%       | 4.72%        | 4.94%       | 8.09%       | 6.17%       | 4.83%       |         |
| Return on Capital (NOPAT / Average Capital)      | 37.00%        | 26.88%       | 25.29%       | 20.99%      | 15.42%      | 13.15%       | 13.77%      | 20.35%      | 16.52%      | 13.46%      |         |
| Cost of Capital (WACC)                           | 6.53%         | 6.60%        | 7.54%        | 6.62%       | 6.62%       | 6.72%        | 6.72%       | 6.82%       | 6.65%       | 6.72%       |         |
| Economic Return Spread                           | 30.47%        | 20.28%       | 17.75%       | 14.37%      | 8.80%       | 6.43%        | 6.73%       | 13.52%      | 9.86%       | 6.58%       |         |
| Capital Charge                                   | \$4,171.9     | \$5,035.6    | \$6,874.2    | \$7,273.1   | \$7,984.1   | \$9,320.4    | \$9,761.4   | \$7,297.5   | \$8,192.5   | \$9,540.9   |         |
| Economic Profit (EP)                             | \$19,460.4    | \$15,482.2   | \$16,169.6   | \$15,783.0  | \$10,604.3  | \$8,917.1    | \$9,339.1   | \$13,391.2  | \$11,768.1  | \$9,128.1   |         |
| Economic Profit Improvement (EPI)                | \$3,115.7     | (\$3,978.2)  | \$687.3      | (\$386.5)   | (\$5,178.8) | (\$1,687.2)  | \$422.0     | (\$2,108.7) | (\$2,417.5) | (\$632.6)   |         |
| EP Growth  | 19.06%        | -20.44%      | 4.44%        | -2.39%      | -32.81%     | -15.91%      | 4.73%       | -13.42%     | -17.04%     | -5.59%      |         |
| Economic Profit Margin on Sales                  | 27.31%        | 21.41%       | 20.16%       | 17.27%      | 11.73%      | 10.49%       | 9.82%       | 16.21%      | 13.17%      | 10.16%      |         |
| Economic Profit Per Share                        | \$2.29        | \$1.84       | \$1.93       | \$1.90      | \$1.30      | \$1.13       | \$1.18      | \$1.62      | \$1.44      | \$1.15      |         |
| GAAP Earnings Per Share                          | \$2.78        | \$1.87       | \$2.70       | \$2.58      | \$1.50      | \$2.11       | \$2.98      | \$2.15      | \$2.06      | \$2.55      |         |
| Excess Cash Per Share                            | \$7.44        | \$8.70       | \$10.63      | \$11.95     | \$13.29     | \$18.38      | \$19.25     | \$12.59     | \$14.54     | \$18.82     |         |
| <b>Performance Drivers</b>                       |               |              |              |             |             |              |             |             |             |             |         |
| Sales Growth                                     | 9.05%         | 1.46%        | 10.91%       | 13.98%      | -1.13%      | -5.98%       | 11.88%      | 3.85%       | 2.29%       | 2.95%       |         |
| Sales Growth Trend (ROC Sales Growth)            | 12.46%        | 4.50%        | 7.13%        | 12.75%      | 4.92%       | -4.04%       | 4.73%       | 5.05%       | 4.54%       | 0.35%       |         |
| EBITDAR Margin                                   | 57.30%        | 56.75%       | 54.68%       | 52.19%      | 51.31%      | 49.01%       | 50.84%      | 52.59%      | 50.84%      | 49.93%      |         |
| EBITDAR Growth                                   | 3.88%         | -1.29%       | 8.79%        | 8.78%       | -2.79%      | -10.19%      | 16.04%      | 0.66%       | -1.40%      | 2.92%       |         |
| NOPBT Margin                                     | 39.76%        | 37.03%       | 35.44%       | 32.23%      | 30.37%      | 25.35%       | 29.32%      | 32.09%      | 29.32%      | 27.33%      |         |
| NOPBT Growth                                     | 4.12%         | -5.50%       | 6.16%        | 3.66%       | -6.83%      | -21.54%      | 29.40%      | -4.81%      | -8.24%      | 3.93%       |         |
| NOPAT Margin                                     | 33.16%        | 28.38%       | 28.74%       | 25.22%      | 20.57%      | 21.46%       | 22.54%      | 24.87%      | 22.42%      | 22.00%      |         |
| NOPAT Growth                                     | 15.87%        | -13.18%      | 12.31%       | 0.05%       | -19.38%     | -1.89%       | 17.49%      | -4.42%      | -7.07%      | 7.80%       |         |
| Economic Profit Margin on Sales (EP / Sales)     | 27.31%        | 21.41%       | 20.16%       | 17.27%      | 11.73%      | 10.49%       | 9.82%       | 16.21%      | 13.17%      | 10.16%      |         |
| Economic Profit Growth                           | 19.06%        | -20.44%      | 4.44%        | -2.39%      | -32.81%     | -15.91%      | 4.73%       | -13.42%     | -17.04%     | -5.59%      |         |
| Economic Return Spread (ROC-WACC)                | 30.47%        | 20.28%       | 17.75%       | 14.37%      | 8.80%       | 6.43%        | 7.05%       | 13.52%      | 9.86%       | 6.74%       |         |
| Economic Return Ratio (ROC / WACC)               | 566.47%       | 407.45%      | 335.22%      | 317.00%     | 232.82%     | 195.67%      | 204.93%     | 297.63%     | 248.50%     | 200.30%     |         |
| Economic Profit Momentum (ΔEP/Capital)           | 4.36%         | -4.90%       | 0.68%        | -0.33%      | -4.23%      | -1.09%       | 0.26%       | -1.97%      | -1.88%      | -0.41%      |         |
| Economic Profit Momentum Margin (ΔEP/Sales)      | 4.37%         | -5.50%       | 0.86%        | -0.42%      | -5.73%      | -1.99%       | 0.44%       | -2.56%      | -2.71%      | -0.77%      |         |
| Capital Growth                                   | 27.08%        | 13.60%       | 24.42%       | 17.44%      | 3.24%       | 26.47%       | 4.73%       | 17.03%      | 15.72%      | 15.60%      |         |
| Capital Turns                                    | 1.00X         | 0.89X        | 0.79X        | 0.77X       | 0.74X       | 0.55X        | 0.59X       | 0.75X       | 0.69X       | 0.57X       |         |
| EVC Acceleration Margin                          | 4.77%         | -5.58%       | 0.95%        | -0.48%      | -5.67%      | -1.87%       | 0.50%       | -2.22%      | -2.88%      | -0.71%      |         |
| EVC Acceleration Spread                          | 6.09%         | -6.23%       | 0.90%        | -0.42%      | -4.72%      | -1.40%       | 0.30%       | -1.33%      | -2.25%      | -0.51%      |         |
| <b>Risk Factors</b>                              |               |              |              |             |             |              |             |             |             |             |         |
| Free Cash Flow (NOPAT - Δ Capital)               | \$8,401.9     | \$10,799.3   | \$3,217.6    | \$5,436.9   | \$14,744.3  | (\$14,188.0) | \$14,095.8  | \$4,002.0   | \$1,997.7   | (\$46.1)    |         |
| Free Cash Flow Rate (FCF / Capital)              | 11.75%        | 13.30%       | 3.18%        | 4.58%       | 12.04%      | -9.16%       | 8.69%       | 4.79%       | 2.49%       | -0.24%      |         |
| Free Cash Flow Yield (FCF / MV)                  | 3.78%         | 4.10%        | 1.09%        | 1.33%       | 3.71%       | -2.68%       | 2.54%       | 1.51%       | 0.79%       | -0.07%      |         |
| Total Debt / Total Capital                       | 19.16%        | 16.95%       | 17.91%       | 23.34%      | 35.28%      | 52.51%       | 52.51%      | 29.20%      | 37.04%      | 52.51%      |         |
| Total Debt / EBITDAR                             | 33.54%        | 34.14%       | 41.27%       | 58.05%      | 93.19%      | 195.34%      | 176.31%     | 84.40%      | 115.53%     | 185.83%     |         |
| Excess Cash                                      | \$62,416.0    | \$73,066.9   | \$88,657.5   | \$98,565.8  | \$106,274.3 | \$143,169.7  | \$0.0       | \$101,946.8 | \$116,003.2 | \$71,584.8  |         |
| Financial Leverage ((Total Debt - Excess Cash) / | -21.92%       | -22.53%      | -23.89%      | -17.30%     | -15.88%     | -11.67%      | 15.36%      | -18.25%     | -14.95%     | 1.84%       |         |
| Pension Leverage (Net Pension Liability / MV)    | 0.00%         | 0.00%        | 0.00%        | 0.00%       | 0.00%       | 0.00%        | 0.00%       | 0.00%       | 0.00%       | 0.00%       |         |
| Equity Risk Index (S&P 500 = 1.00)               | 1.07          | 1.09         | 1.09         | 1.09        | 1.09        | 1.09         | 1.09        | 1.09        | 1.09        | 1.09        |         |
| Stock Price Volatility                           | 3.21          | 2.97         | 3.13         | 2.94        | 3.41        | 3.52         | 3.52        | 3.19        | 3.29        | 3.52        |         |
| Sales Index (NL Sales)                           | 11.17         | 11.19        | 11.29        | 11.42       | 11.41       | 11.35        | 11.46       | 11.33       | 11.39       | 11.41       |         |
| Market Value Index (NL Market Value)             | 12.31         | 12.48        | 12.60        | 12.92       | 12.89       | 13.18        | 13.23       | 12.81       | 13.00       | 13.20       |         |
| Size Index (NL Sales: MV)                        | 11.74         | 11.83        | 11.94        | 12.17       | 12.15       | 12.27        | 12.34       | 12.07       | 12.20       | 12.30       |         |
| Beta   | 1.10          | 1.13         | 1.13         | 1.13        | 1.14        | 1.13         | 1.13        | 1.13        | 1.13        | 1.13        |         |
| TFP Adjusted Beta                                | 1.07          | 1.09         | 1.09         | 1.09        | 1.09        | 1.09         | 1.09        | 1.09        | 1.09        | 1.09        |         |
| Stock Price Volatility                           | 3.21          | 2.97         | 3.13         | 2.94        | 3.41        | 3.52         | 3.52        | 3.19        | 3.29        | 3.52        |         |
| <b>Valuation Measures</b>                        |               |              |              |             |             |              |             |             |             |             |         |
| Total Economic Market Value (MV)                 | \$222,229.7   | \$263,252.0  | \$295,319.1  | \$409,690.8 | \$397,203.2 | \$529,713.9  | \$554,782.3 | \$379,035.8 | \$445,536.0 | \$542,248.1 |         |
| Economic Enterprise Value                        | \$159,813.7   | \$190,185.1  | \$206,661.7  | \$311,125.0 | \$290,929.0 | \$386,544.2  | \$404,837.2 | \$277,089.0 | \$329,532.7 | \$395,690.7 |         |
| Equity Market Value                              | \$208,535.0   | \$249,489.9  | \$277,220.9  | \$381,999.4 | \$353,990.6 | \$448,361.8  | \$469,580.3 | \$342,212.5 | \$394,784.0 | \$458,971.1 |         |
| Total Capital                                    | \$75,551.6    | \$85,803.1   | \$106,219.2  | \$124,944.4 | \$128,814.6 | \$161,572.0  | \$169,218.3 | \$121,470.7 | \$138,443.7 | \$165,395.2 |         |
| Market Value Created MVC (MV - Capital)          | \$146,678.0   | \$177,448.9  | \$189,099.9  | \$284,746.4 | \$268,388.6 | \$368,141.8  | \$385,563.9 | \$257,565.1 | \$307,092.3 | \$376,852.9 |         |
| MVC Margin (MVC / Sales)                         | 205.84%       | 245.43%      | 235.81%      | 311.53%     | 296.97%     | 433.28%      | 405.61%     | 307.18%     | 345.38%     | 418.67%     |         |
| MVC Spread (MVC / Capital)                       | 194.14%       | 206.81%      | 178.03%      | 227.90%     | 208.35%     | 227.85%      | 227.85%     | 212.04%     | 221.82%     | 227.85%     |         |
| Current EVC Value (EP / WACC)                    | \$297,916.5   | \$234,713.6  | \$214,318.6  | \$238,349.1 | \$160,133.7 | \$132,700.8  | \$138,980.8 | \$196,326.5 | \$176,843.5 | \$135,840.8 |         |
| Current Operations Value COV                     | \$361,783.0   | \$311,054.5  | \$305,431.7  | \$348,184.9 | \$280,701.2 | \$271,403.1  | \$297,561.4 | \$303,638.5 | \$299,878.7 | \$284,482.3 |         |
| Current Operations Value Per Share               | \$42.61       | \$37.05      | \$36.47      | \$41.96     | \$34.33     | \$34.25      | \$36.14     | \$36.87     | \$36.87     | \$35.21     |         |
| Future Growth Value (MVC - EVA Value)            | (\$139,553.3) | (\$47,802.4) | (\$10,112.6) | \$61,505.9  | \$116,502.0 | \$258,310.8  | \$257,220.8 | \$75,397.3  | \$145,657.3 | \$257,765.8 |         |
| Future Growth Value Reliance (FGV / MV)          | -62.80%       | -18.16%      | -3.42%       | 15.01%      | 29.33%      | 48.76%       | 46.36%      | 19.89%      | 32.69%      | 47.54%      |         |
| Share Price                                      | \$24.89       | \$29.76      | \$33.28      | \$46.36     | \$44.26     | \$57.60      | \$57.60     | \$42.25     | \$49.41     | \$57.60     |         |
| Dividend Yield                                   | 2.73%         | 2.79%        | 2.91%        | 2.48%       | 2.91%       | 2.55%        | 2.55%       | 2.65%       | 2.65%       | 2.55%       |         |
| Total Shareholder Return (TTM)                   | 4.37%         | 22.36%       | 14.74%       | 41.78%      | -1.62%      | 32.69%       | 0.00%       | -26.65%     | 16.93%      | 16.58%      |         |
| MV to IC Ratio                                   | 2.94X         | 3.07X        | 2.78X        | 3.28X       | 3.08X       | 3.28X        | 3.28X       | 3.12X       | 3.22X       | 3.28X       |         |
| EV / EBITDAR Multiple                            | 3.91X         | 4.72X        | 4.71X        | 6.52X       | 6.27X       | 9.28X        | 8.38X       | 6.30X       | 7.28X       | 8.80X       |         |
| EV / NOPBIT Multiple                             | 5.64X         | 7.10X        | 7.27X        | 10.56X      | 10.60X      | 17.95X       | 14.53X      | 10.37X      | 12.60X      | 16.02X      |         |
| EV / NOPAT Multiple                              | 6.76X         | 9.27X        | 8.97X        | 13.49X      | 15.65X      | 21.20X       | 18.89X      | 13.39X      | 16.51X      | 19.95X      |         |
| EV / EP Multiple                                 | 8.21X         | 12.28X       | 12.78X       | 19.71X      | 27.44X      | 43.35X       | 43.35X      | 20.69X      | 28.00X      | 43.35X      |         |
| Future Growth Value (% of MV)                    | -62.80%       | -18.16%      | -3.42%       | 15.01%      | 29.33%      | 48.76%       | 46.36%      | 19.89%      | 32.69%      | 47.54%      |         |
| Current Operations Value (% of MV)               | 162.80%       | 118.16%      | 103.42%      | 84.99%      | 70.67%      | 51.24%       | 51.24%      | 80.11%      | 67.31%      | 52.46%      |         |
| Market Value (COV + FGV %)                       | 100.00%       | 100.00%      | 100.00%      | 100.00%     | 100.00%     | 100.00%      | 100.00%     | 100.00%     | 100.00%     | 100.00%     |         |
| Basic Shares Outstanding                         | 8,490.0       | 8,396.0      | 8,375.0      | 8,299.0     | 8,177.0     | 7,925.0      | 8,234.4     | 8,234.4     | 8,133.7     | 8,079.7     |         |

Source: Company Data, Financial statements and Tigress Research

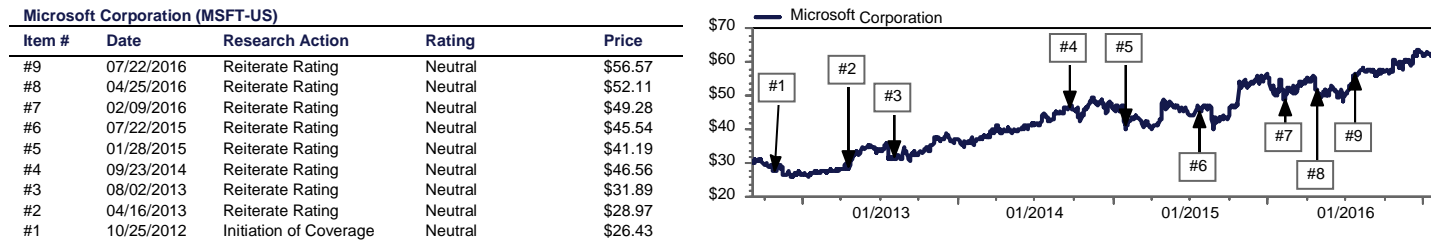
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We employ proprietary quantitative valuation models combined with dynamic fundamental analysis based on the principles of Economic Profit to formulate timely and insightful investment ratings, analysis, strategies and recommendations.

We make key adjustments to reported financial data eliminating GAAP-based accounting distortions and measuring all companies on a cash operating basis.

Our proprietary research framework is a multi-factor model that scores and ranks companies based on their risk-adjusted ability to create Economic Profit relative to their current market value focusing on three key components:

**Business Performance:** Measuring economic profitability, growth and operating efficiency.

**Risk:** Measuring business sustainability, volatility, strength and consistency.

**Valuation:** Linking business performance to market value. Measuring value created relative to capital employed and enterprise multiples of economic profit and cash flow.

We score and rank 24 key measurements of performance, risk and value into relative market and industry investment recommendations.

*For more information on our research methodology, please review the Tigress Investment Research Guide to Company Valuation and Analysis.*

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**Excess Cash per Share:** Excess Cash per Share is the amount of excess cash divided by basic shares outstanding. Excess Cash consists of all cash and short-term securities less operating cash needed to run the business. Operating Cash is 5% of TTM net sales revenue.

**EBITDAR:** Earnings Before Interest, Taxes, Depreciation, Amortization, and Restructuring and Rent Costs. This is especially important when comparing companies that use a significant amount of leased assets like restaurants and retailers.

**NOPAT:** Net Operating Profit after Tax. Represents a company's after-tax cash operating profit excluding financing costs.

**Total Invested Capital:** Total Invested Capital the total cash investment that shareholders and debt holders have made during the life of company.

**Return on Capital:** Return on Capital equals NOPAT divided by Total Invested Capital. It is a key measure of operating efficiency. ROC quantifies how well a company generates cash flow relative to the capital invested in its business.

**Cost of Capital:** Is the proportionately weighted cost of each category of capital – common equity, preferred equity and debt.

**Economic Profit:** Economic Profit is the net operating income after tax less the opportunity cost of the total capital invested. It is the most important driver of shareholder value.

**Current Operations Value:** Current Operations Value is the portion of market value based on the discounted present value of the current earnings stream assuming it remains constant forever.

**Future Growth Value:** Future Growth Value is the portion of market value based on un-earned Economic Profit

*For more information on the key terms and measures, please review the Tigress Investment Research Guide to Company Valuation and Analysis.*

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| Rating:              | Meaning:   |
|----------------------|--|
| <b>Strong Buy:</b>   | Expect significant price gains in the price of the stock relative to its industry peer group and general market over the next 12 months. |
| <b>Buy:</b>          | Expect out-performance for the price of the stock relative to its industry peer group and general market over the next 12 months.        |
| <b>Neutral:</b>      | Expect little or no outperformance opportunity over the next 12 months.  |
| <b>Underperform:</b> | Expect underperformance for the price of the stock relative to its industry peer group and general market over the next 12 months.       |
| <b>Sell:</b>         | Expect price decline or significant relative market and industry underperformance over the next 12 months.                               |

**Rating Distribution (01/20/2017)**

|              | Companies Under Coverage |             | Relationship Companies Under Coverage* |             |
|--------------|--------------------------|-------------|--|-------------|
|              | #                        | %           | #                                      | %           |
| Strong Buy   | 16                       | 15%         | 0                                      | 0%          |
| Buy          | 50                       | 46%         | 4                                      | 80%         |
| Neutral      | 37                       | 44%         | 1                                      | 20%         |
| Underperform | 6                        | 5%          | 0                                      | 0%          |
| Sell         | 0                        | 0%          | 0                                      | 0%          |
| <b>Total</b> | <b>109</b>               | <b>100%</b> | <b>5</b>                               | <b>100%</b> |

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| <b>Company:</b>       | <b>Disclosure:</b> |
|-----------------------|--------------------|
| VMWare, Inc. (VMW-US) | 14                 |

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|------------|---|
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