Financial Analysis and Investment Choice of TSMC, Bank of America and American Express

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Abstract. This paper presents a punctilious financial analysis of Taiwan Semiconductor Manufacturing Company, Bank of America and American Express respectively in the semiconductor industry, bank and financial service. The investigation encompasses an analysis of recent financial indicators from the perspectives of risk assessment, profitability, and market ratio. This step will list the financial performances of these companies by reference to financial statement from Yahoo Finance including Beta, Total Debt Ratio, TAT, Profit Margin, ROA, ROE and P/E, P/B ratio etc. Then, this paper will give an exploration of asset selection challenges faced by nine distinct investor profiles including Value, Income, PEG, Index, Ratio analysis, DCF, Momentum, Insider buying Smart money and Stock buyback investors. In terms of the overall performance in the risk, profitability, and market ratio, TSMC seems to be the best choice. However, BAC can still be a choice for value investors. Leveraging established financial models, the research reveals that Momentum, Insider Buying, Smart Money and Stock Buyback investors are inclined to invest in all three stocks. This paper will also provide useful reference for the further investment analysis about these three companies.

Keywords: TSMC, Bank of America, American Express.

1. Introduction

The stock market is a mixture of risk and opportunities. Investing allows individuals to accumulate wealth over time by earning returns on their investments. By investing in assets such as stocks, bonds, and real estate, individuals can generate income through dividends, interest, or rental payments. Investing can help protect the purchasing power of individuals' money over time, as the returns on investments may outpace inflation, too. Investing in a variety of assets can provide opportunities for higher returns compared to keeping money in cash or savings accounts. The chosen companies of Taiwan Semiconductor Manufacturing Company, Bank of America and American Express are representative companies in manufacture, banking, and financial service. The following paper will give a brief introduction of these companies as well as their financial indicators from profitability, risk, and market ratio to providing information for different investors.

2. Profiles of the Selected Companies

Taiwan Integrated Circuit Manufacturing Co., LTD. (TSMC) founded in 1987 is the world first and largest dedicated semiconductor foundry. In 2023, TSMC served 528 customers and manufactured 11,895 products for various applications and their services and products covering a variety of end markets including high performance computing, smartphones, the Internet of Things (IOT), automotive, and digital consumer electronics [1]. As a joint venture between the Taiwanese government, Philips and other private investors, TSMC is a semiconductor manufacturer using proprietary integrated circuit designs. Considering its considerable production capacities and large market share, this paper choose company as a representative of manufacturing area to measure its investment potential.

Bank of America is one of the world’s leading financial institutions, serving individual consumers, small and middle-market businesses, and large corporations with a full range of banking, investing, asset management and other financial and risk management products and services. Bank of America is a global leader in wealth management, corporate and investment banking and trading across a broad range of asset classes, serving corporations, governments, institutions and individuals around the world. This paper chooses Bank of America to

American Express (AXP) joined the mailing industry in 1850, when it was founded as an express delivery company. For nearly 70 years, express shipping was the firm's core business. AMEX transported financial documents, parcels, freight, gold, currency, and myriad household items. The company supported the growth of the United States during the 19th and early 20th centuries, facilitating the development of communities and businesses across the country.

3. Financial Indicators

This paper will give assessments of these three companies from risk indicators, profitability and market ratio. The financial data are mainly obtained from the financial statements of each company via. Yahoo Finance, encompassing the year 2023 as the specified time frame for these financial.

3.1. Risk Analysis

Risk refers to the potential for loss or damage to an investment or asset. Beta refers to the level of volatility of the stock against its benchmark. Setting 1 as the benchmark, the data higher than 1 means higher fluctuation level [2]. Debt to Equity Ratio is a solvency ratio that compares the total debt owned by the company to equity. It is a useful tool to measure the risk level of a company [3]. Its formula can be written as TD/TA=(Short-Term Debt+Long-Term Debt)/Total Assets. The ratio greater than 1 means that company is technically insolvent as it has more liabilities than all of its assets combined. This ratio also reflects the leverage trend and the company's ability to pay off its debt. The indicator of risk for the three companies are shown in Table 1.

Table 1. Risk indicators

Risk	Market Cap	Beta	Total Debt Ratio
TSMC	587billion	1.18	0.372
BAC	269billion	1.42	0.914
AXP	158billion	1.23	2.167

Based on Table 1, the market capitalization of TSMC, BAC and AXP are 587, 269 and 158 billion respectively. All of them are big companies since their market capitalization are more than 100 billion. By comparing three companies, The Beta of Bank of America has the highest beta figure (1.42), showing that BAC's fund has highest risk to the market. The Beta of American Express with Beta 1.23 comes the second, which is also relatively higher than the benchmark. TSMC has the lowest risk of investment at the beta ratio of 1.18. Furthermore, all these three companies have the beta data above 1, meaning that all of them still contain certain risk for invest and investors should consider their fund stability before making the decision.

Debt ratios of these companies shows that AXP, having a Total Debt Ratio of 2.167, has critical debt problem. AXP may have difficulty to pay off its debt once cash flow chain broke because it has high dependence over debt while running the business. Therefore, the high Debt ratio will be one of the main factors for investors to consider while evaluating the investing risk of AXP. The Debt ratio of Bank of America is 0.914, signifying that Bank of America is also not so safe for its debt ratio since almost 90% of company's asset are financed by debt even though this data is much better than AXP's. TSMC performs the best in the Debt ratio with the lowest data of 0.372. Therefore, TSMC will be the best choice for those investors preferring to safer and long-term investment.

3.2. Profitability

Profitability refers to their ability to generate profits or positive financial returns from their business operations. It provides insights into the company's ability to generate value for its shareholders and sustain its operations over the long term.

Total asset turnover (TAT), also known as asset turnover, is a financial metric that measures the efficiency with which a company uses its assets to generate revenue. Profit Margin is a financial ratio that is the difference between revenue and cost. Return on Assets (ROA) refers to a financial ratio that measures a company's ability to earnings. Return on Equity (ROE) is a financial ratio that measures a company's profitability in relation to the ownership interests of its shareholders. The indicator of profitability for the three companies are shown in Table 2.

Table 2. Profitability

Profitability	TAT	Profit Margin (year)	ROA	ROE
TSMC	0.39	38.75%	15.96%	26.18%
BAC	0.03	26.9%	0.85%	8.8%
AXP	0.06	15.06%	3.42%	31.74%

For the above data, TSMC has the highest TAX (0.39), which is significantly higher than BAC’s 0.03 and AXP’s 0.06. This shows that TSMC has highest efficiency to generate value. Also, TSMC has the highest Profit margin at 38.75%, surpassing that of BAC’s 26.9% and American Express’s 15.06%. Since profit margin reflects the revenue can be generated for per cost invested, the higher number means the higher revenue return. Moreover, ROA of TSMC also ranks first with a figure of 15.96%, significantly higher than that of BAC 0.85% and AXP 3.42%. The higher number of returns of asset, the higher earning potential a company has. From this stance, TSMC have better performance in profitability as TAX, Profit Margin (YEAR) and ROA shown. Differently, AXP with ROE of 31.74% higher than the other two companies (TSMC: 26.18% and BAC 8.8%). Because the main difference between ROE and ROA is that ROA takes the company’s debt into account while ROE does not [4]. Extreme high Debt ratio of AXP explains difference in ROE. Overall, TSMC is the highest one in TAT, Profit Margin and Return of Assets, thus this company can be the top choice for investors who prioritize the profitability.

3.3. Market Ratio

The market ratio of a company refers to a financial metric that compares the company's market value to its book value or other relevant measures. Price to earnings ratio (P/E) is a way to value a company by comparing the price of a stock to its earnings and is calculated by the price of a share of stock divided by the company's earnings-per-share. This ratio shows how much the investors willing to pay for a stock based on its previous and future earnings performance. The high the ratio shows the stronger confidence the investors hold to the stock. PEG ratio is a more accurate indicator of P/E ratio with the expected earnings growth being taken into account. Normally, A PEG ratio of under 1.0 can indicate a stock is undervalued and a potential buy. A PEG above 1.0 can indicate an overvalued stock [5]. P/B ratio is designed to compare a firm's market capitalization to its book value and locate undervalued companies. This ratio is calculated by dividing the company's current stock price per share by its book value per share (BVPS). The value below 1 will be a solid investment by value investors because it indicates the stock is at discount to its book value. Discounted Cash Flow (DCF) is a valuation method used in finance to estimate the intrinsic value of an investment, such as a stock, bond, or company. The indicator of market ratio for the three companies are shown in Table 2.

Table 3. The market ratio presentation

Market Ratio	P/E	P/B	PEG	Current price	DCF
TSMC	21.74	5.15	1.25	$112.96	$135.66
BAC	10.13	0.92	8.32	$55.37	$55.37
AXP	19.49	5.64	1.67	$218.46	$117.47

Based on P/E ratios of these three companies, it shows that investors hold highest confidence toward TSMC with a P/E ratio of 21.74, with AXP (19.49) coming the second and BAC (10.13) coming the third. BAC is considerably over-valued with PEG of 8.32. The other two companies are around 1, meaning that their value is in line with the benchmark and a potential buy. Among three companies, BAC's P/B ratio is below 1, and the other two are about 5. From this stance, value investor will prefer BAC as their top investing choice. By comparing the DCF with their current price (current cost of investment), all these three companies have higher DCF than their current prices, thus, all of these three companies are worthwhile to invest in terms of DCF.

4. Asset Selection

There are many types of investors in the markets, however the analysis about nine distinct investor profiles including Value, Income, PEG, Index, Ratio analysis, DCF, Momentum, Insider buying Smart money and Stock buyback investors are very important because their investing decision is closely related to the financial indicators. These investors are classified by their investing purpose, sophisticated level towards stock market and risk avoidance tendency. Value investing is an investment strategy that involves picking stocks that appear to be trading for less than their intrinsic or book value. Value investors prefer to those stock that is undervalued. They believe that the stock market fluctuates to the company news and industry trends, creating them the chance to buy discounted stocks [6]. Income investors want to obtain ongoing income from this investing. They normally prefer safer and stable stock and have high risk-avoidance tendency. PEG investing refers to those investors highlight PEG ratio. PEG ratio tells the investors how expensive the stock is related to the growth rate. Index investors refers to those who take a passive approach by tracking the index in the S&P 500. They value the long-term return of the market by balancing the gain and risk of stocks to match the market benchmark. Financial ratio investors who make decision based on financial ratios with the use of numerical values taken from financial statements, including the profitability, liquidity, solvency, and valuation. DCF investing values the investment by discounting the estimated future cash flows. The DCF ratio will be one of the main ratios for this type of investor to look at. Momentum investing is a strategy that aims to capitalize on the continuance of an existing market trend [7]. Basically, these investors will find those stocks that have rising trend but yet to reach the peak to buy, expecting to sell it later when it reaches a profitable price. They are quite risk-seeking investors. Some investors have more inner information than normal investors such as the insiders of the companies or those investing experts. For example, insider buying refers to the purchasing of the company stock from company's board members or executives. These individuals generally have extra information regarding their respective organizations. Insider buying normally happens when the company shows positive prospect and high cash flow [8]. A stock buyback happens when a company repurchases its own stock, reducing the total number of shares outstanding [9]. Smart money refers to the funds or capital controlled by investment professionals who are more experienced and well-informed than retail investors. Expert financial entities or individuals who can foresee market trends and get the most out of the profits manage the capital. Banks and funds are two examples of such financial entities [10].

In general, the investment decision is a combination assessment of investors' purpose and expectations with different performances of each company measured by financial ratios. As the Table 4 shown, for investors who want higher returns and with higher risk bearing ability, they will prefer to those companies with better profitability figures and dividends. Those experienced buyers like PEG, Index, rational analysis and DCF will evaluate the previous performance and future trend of the company as well as industry trend to make their decisions. Overall, TSMC performs better in terms of low risk, high profitability, so it will be the priority for ratio and index investors; Also, because TSMC is lowest at 1.25 and BAC is highest at 8.32, PEG investors will prefer to TSMC as well. For those investors who want long-term and stable income, they will also emphasize the risk ratios and leverage apart from profitability. For example, income investors who prefer the long-term and safe stock will put TSMC as their priority choice because TSMC has the lowest risk of investment among these three stocks with the lowest beta ratio (1.18) and Debt Ratio (0.372). The Beta of Bank of America has the highest beta figure (1.42), and American Express has very high debt ratio (2.167), so income investors will be less likely to consider the other two stocks; Value investors tend to refer to P/B and P/E ratio to decide whether a stock is undervalued. Because BAC's the P/B value below 1 and its P/E ratio ranks lowest, it shows the possibility that BAC 's stock is under-valued. TSMC's P/E ratio is highest and over-heated, showing investors are willing to pay high price for its stock. The value investing client will be less likely to consider this stock. As for Momentum investors, because all the three companies' current price are higher than that of 200MA and 50MA, they are in the rising trend and may be included in the choices of momentum investors. For Inside buying, stock buyback and smart money, these types of investors make their decision based on the inside information, long-tern experience, and overall investing strategies of their companies.

Table 4. Asset selection of 9 types of investors

	The Best Invest Choice	The less-likely Investing Choice	Comment
Value	BAC	TSMC	BAC 's the P/B value is 0.92 and its P/E ratio ranks lowest, it shows the possibility that BAC 's stock is under-valued. TSMC's P/E ratio is 21.74.
Income	TSMC	BAC, AXP	The Beta of Bank of America has the highest beta figure (1.42) and American Express has very high debt ratio (2.167), so both of them are risky. TSMC has the lowest risk of investment with the lowest beta ratio and Debt Ratio.
PEG	TSMC	BAC	TSMC is lowest at 1.25 BAC is highest at 8.32
Index	TSMC		
Ratio Analysis	TSMC		Overall, TSMC performs better in terms of low risk, high profitability.
DCF	All the three companies' DCF ration are well-performed.		
Momentum	All the three companies' current price are higher than that of 200MA and 50MA		Risk-seeking investors.
Insider Buying	All three are possible		
Stock buyback	All three are possible		Based on the decision of top company and availability of cash flow
Smart money	All three are possible		Expert financial entities or individuals who can foresee market trends and get the most out of the profits manage the capital. Normally banks and funds fit this category.

5. Conclusion

This research gives the financial analysis and comparison among TSMC, Bank of America and American Express (AXP) by assessing their risk ratios, profitability, and market ratios. It shows that TSMC seems to be the best choice based on its better performance in financial ratios. However, BAC can still be a choice for value investors. Also, Momentum, Insider Buying, Smart Money and Stock Buyback investors are inclined to invest in all three stocks.

Due to the limits of the length of this research and research ability of the researcher, this research can be further examined in the future research. The possible direction can be the exploration of 9 investors with more detailed analysis of stock trend as well as the influencing factors behind their decisions. The other direction can be the comparison of these companies with other companies in the same industry so as to have a horizonal idea of the financial performance of these companies.

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