NOVA SCHOOL OF BUSINESS & ECONOMICS

MASTER IN FINANCE

MORGAN STANLEY

COMPANY REPORT

"INSTITUTIONAL FINANCIAL SERVICES"

4 JANUARY 2019

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Start Leading the Industry

Technology penetration in a regulated industry

- A Price Target FY19 of $60,80, corresponding to a 56,6% overall upside compared to the price at 1st January 2019, results into a **BUY recommendation**. The market momentum and the fear regarding the global economy future are reflected on the current low share price that will be adjusted during 2019.

- **Uncertainty and Stagnation** are two characteristics expected for the global economy in 2019 that are already influencing the financial services industry. However, Morgan Stanley market share increase and capital ratios full compliance show that the firm is ready to survive in an adverse environment and overcome the market.

- Considered one of the most important banks in the world, Morgan Stanley is under **additional capital constraints** that limit the firm's capacity to invest the total capital available. This issue is being undermined due to the firm effort to invest in **new technologies** that allow it to at the same time reduce costs and increase revenues.

- **M&A Advisor market leader** in different regions of the world and a strong position in crucial business lines sustain an expected net income 3,90% $CAGR_{2018\text{-}2025}$, expected to be reflected in the coming years share price.

Company description

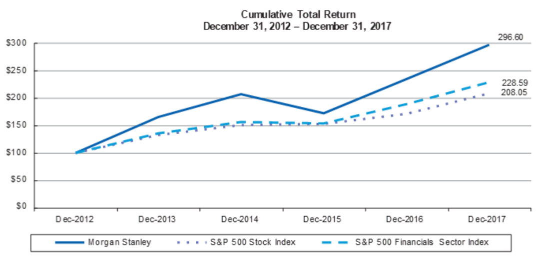
Morgan Stanley, founded in 1935 and headquartered in New York, is a global financial services firm, with a significant market position in the following business segments: Institutional Securities, Wealth Management and Investment Management. Operating in 42 countries, the company is responsible for advice, invest and managing capital for, governments, institutions and individuals.

Recommendation:	**BUY**
Price Target FY19:	**60,80 $**
Price (as of 1-Jan-19)	**39,65 $**

Reuters: MS.N, Bloomberg: MS:US

52-week range (€)	36,74-59,38
Market Cap (€m)	79 949
Outstanding Shares (m)	1 744

Source: Thomson Reuters



Source: Company Report – 10K Form

(Values in € millions)	2017	2018E	2019F
Net Revenues	38 235	41 823	44 090
Net Interest	3 296	3 626	3 807
Non-Interest Expenses	27 832	28 587	29 445
Net Income	6 212	9 927	10 984
Efficiency Ratio	72,8%	68,4%	66,8%
Price to Book Value (P/B)	0,97	1,18	1,11
Price to Earnings (P/E)	16,73	10,98	10,16
Return on Equity (ROE)	7,9%	11,5%	11,6%
Return on Assets (ROA)	0,7%	1,1%	1,2%
CET 1 Ratio	16,5%	16,7%	16,7%
Total Capital Ratio	21,7%	22,5%	22,5%

Source: Thomson Reuters & Analyst Estimates

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Executive summary

The **1929 market crash** was one of the reasons to create the *Glass-Steagall Act*, which decreed the separation between commercial banks and investment banks. Also known as the *Banking Act*, the goal of this law was to recover public confidence on commercial banks and prohibit them from execute and participate in the investment banking business, reducing commercial banks' risk exposure. As a consequence, on September 1935, Henry S. Morgan and Harold Stanley, former J.P Morgan employees, founded Morgan Stanley. In the first year, the company achieved a 24% market share among public offerings and private placements. After 80% of its market share value has been lost during the 2007 U.S Sub-Prime financial crisis, the company was bailout by the U.S. government and received $9 000 million from Mitsubishi UFJ Financial Group, Japan's largest bank and still the most important strategic shareholder with 24,11% outstanding shares. Nowadays, Morgan Stanley is one of the most important investments banks in the world, operating in 42 countries and organized into three business units: Institutional Securities, Wealth Management and Investment Management, which together generated $38 235 million in Net Revenues (2017), a 3,97% CAGR over the period 2013-2017.

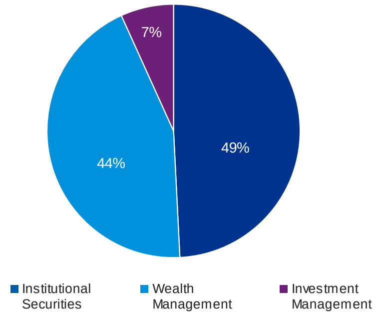
The financial services industry today is marked by a strong regulation, challenged by new technologies that are changing the industry. On one hand, central banks are trying to keep stability and control banks' balance sheets and assets exposure in order to avoid another financial crisis. On the other hand, the industry is learning how to use Artificial Intelligence and other mechanisms to increase revenues and reduce costs, which makes the financial services industry one of the most competitive industries in the world, forcing the players operating on it to constantly invest on new ways to differentiate themselves from the peers.

This report presents detailed information regarding the macroeconomic factors that might affect Morgan Stanley in the future complemented by an industry overview and a competitive position analysis that were crucial to decide the assumptions underlying the report forecasts.

Morgan Stanley stock price is currently undervalued and for 2019 it is expected to reach a $60,80 final price target that results from a **Free Cash Flow to Equity** valuation sustained by a **Relative Valuation.** The final recommendation is a "Buy", considering 1st January 2019 share price of $39,65 and the consequent 56,6% capital gain plus dividends during the 2019 fiscal year.

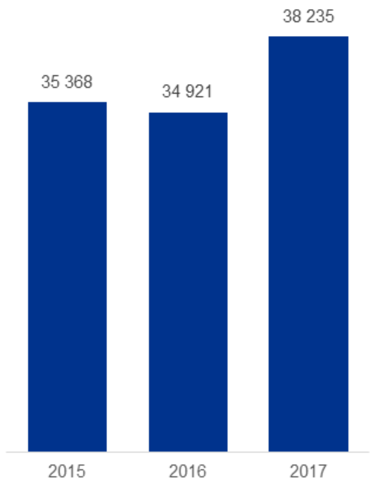
Company overview

Exhibit 1 – Revenues Distribution - % (2017)



Source – Company Report – Form 10K

Exhibit 2 – Net Revenues Evolution (2015-2017)

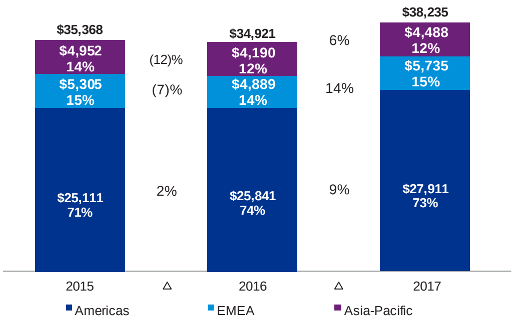


Source – Company Report – Form 10K

Morgan Stanley, a global financial services firm, has a significant market position in the following business segments: **Institutional Securities**, **Wealth Management** and **Investment Management**. Headquartered in New York City, Morgan Stanley has 59 835 employees worldwide and is present in the main world financial centers such as London, Hong Kong and Tokyo. The firm is responsible for advice, invest and managing capital for, governments, institutions and individuals.

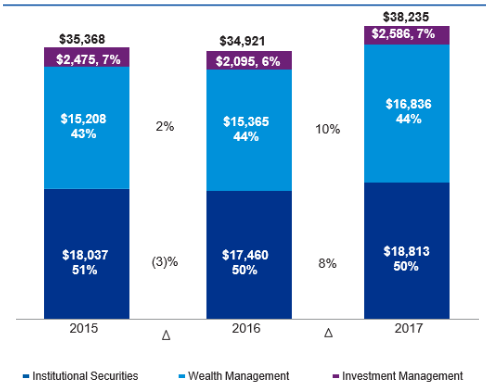
Institutional Securities represented half of MS source of revenues (**$18 813 million** in 2017) and is the segment responsible for providing **Investment Banking** services consisting of **Capital Raising** (IPOs) and **Financial Advisory** on project financing, underwriting of debt and mergers and acquisitions. **Sales and Trading** is also an Institutional Securities' source of revenues and includes sales, financing and market-making activities in equity and fixed income products. The third source of revenues are **Lending services** that includes "origination and purchasing corporate loans, commercial and residential mortgage lending, asset-backed lending, and financing extended to equities and commodities customers and municipalities"[1]. **Wealth Management** in 2017 accounted for **$16 836 million** of Morgan Stanley revenues (44%) and provides "investment advisory, financial and wealth planning services, annuity and insurance products, credit and other lending products, banking and retirement plan services to small and medium-sized institutions"[1]. This division, started in 2009 by Morgan Stanley and Citigroup, was fully acquired by Morgan Stanley in 2013 after the regulatory authorities' approval. **Investment Management**, the smallest business segment considering revenues generated (**$2 586 million** in 2017), is the division operating as asset manager, providing a diversified range of investment strategies in different asset classes such as equity, fixed income, liquidity and other products to a diverse group of clients across different markets.

Exhibit 3 – Revenues Distribution by Geography



Source – Company Report – Form 10K

Exhibit 4 – Revenues Distribution by Source of Revenue

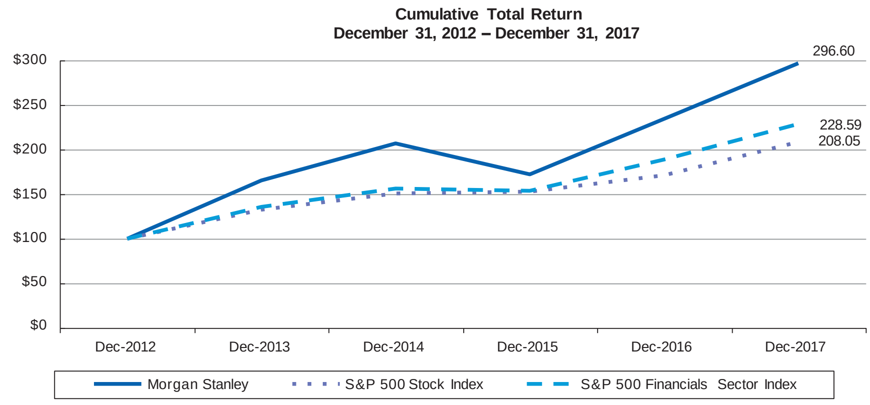


Source – Company Report – Form 10K

1 Company Reports – Form 10K

Morgan Stanley shares are traded in the New York Stock Exchange (NYSE) and since 2012 the stock cumulative returns have outperformed the US market (Exhibit 5 - S&P500 Stock Index as a proxy) as well as its peers (Exhibit 5 - S&P500 Financials Sector Index as a proxy). Furthermore, Morgan Stanley share price has been following the market and industry growth trend and is expected to be highly correlated to the market and follow the same path in 2019.

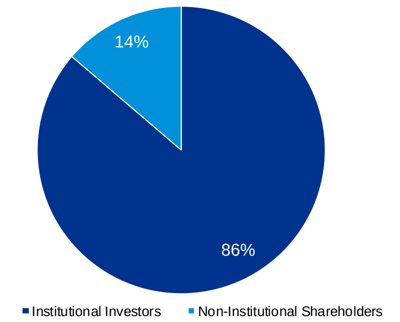
Exhibit 5 – Morgan Stanley Cumulative Total Return vs Indexes Cumulative Total Return (5 Years)



Source – Company Report – Form 10K

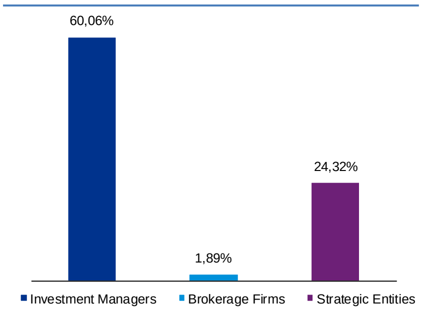
Shareholder structure

Exhibit 6 – Shareholder structure in 2018 (%)



Source – Thomson Reuters

Exhibit 7 – Shareholder structure per investor group (%) - 2018



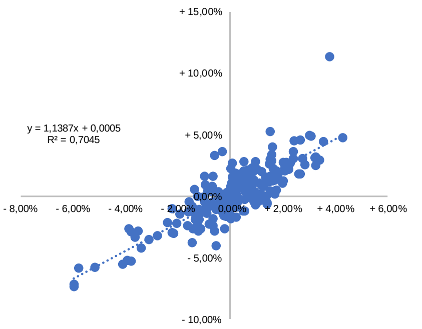
Source – Thomson Reuters

Morgan Stanley shareholder structure comprises two different types of investors: **Institutional investors** (86%) and **Non-institutional shareholders** (14%). Institutional Investors are split into three main segments: **1 765 investment managers** that hold approximately 1 047 million shares representing 60,06% of the entire company, **47 brokerage firms** holding 1,89% and **23 Strategic entities (Holding companies, Corporations and Individuals)** representing 24,32% of the company. Within Strategic Companies, the holding company Mitsubishi UFJ Financial Group Inc (MUFG) has the biggest percentage of total shares outstanding (24,11%). The remaining shares are diluted among other shareholders highlighting State Street Global Advisors (7,59%), The Vanguard Group, Inc. (5,46%) and T. Rowe Price Associates, Inc. (5,01%) with more than 5% of the total shares outstanding. Geographically, North American Investors held 52,53% of the institutional shares and Japan is the second country with the highest percentage of shares outstanding (24,68%) result of Mitsubishi UFJ Financial Group Inc's strong presence.

In 2018, Morgan Stanley was able to pay a 1,10$ dividend per share representing a 22% increase compared to 2017. Since 2013 the increase in dividends declared per common share is a pattern which reflects favourable market conditions in the financial services industry in recent years.

Macroeconomic Overview

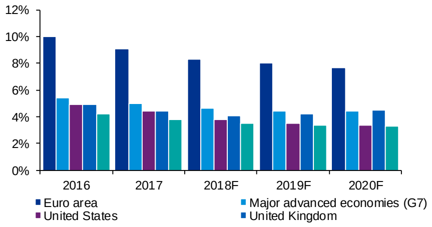
Exhibit 8 – Regression between S&P500 and S&P500 Financials (Sector)



Source – Thomson Reuters & Analyst Estimates

In 2005, Ross Levine[2] published a paper discussing the effect of the banking sector in the economy growth and concluded that financial intermediaries companies actually have an impact on society and, consequently, Banking Sector and the global economy are highly correlated. Two years later, in 2007 the world confirmed the theory with a practical case: **The 2007 U.S Sub-Prime financial crisis**. Exhibit 8 shows a regression between S&P 500 historical returns and the S&P 500 Financials (Sector) returns and it proves that the variables are correlated (Correlation is equal to 0,84 and the R^2 is 0,70). For this reason, understanding the global economy future expectations is crucial to define Morgan Stanley market position and hence the forecasts to value the company. Morgan Stanley's operations are highly concentrated in "Americas" region, mainly in the United States, however, due to the systemic risk[3], it would be a mistake to focus the analysis in one region.

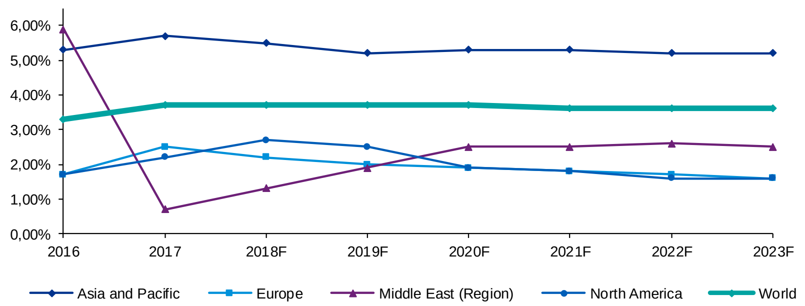
Exhibit 9 – Unemployment Growth Rate (%)



Source – IMF Data

Although in 2017 the economy improved compared with 2016, uncertainty and stagnation dominate the global economy today: slowing growth rates, global trade tensions, low-interest rates, European Union's future after Brexit and important elections in Latin America and Europe can impact negatively the economy prosperity and consequently the financial services industry. Economic indicators show an improvement in 2017 compared to 2016. The real GDP growth rate (Exhibit 10) increased in all the regions where Morgan Stanley is operating, except in the Middle East due to Crude Oil price fluctuations and to geopolitical conflicts. Overall, the world real GDP growth rate increased from 3,3% in 2016 to 3,7% in 2017 and is expected to decrease to 3,6% and remain constant in the future. The unemployment rate (Exhibit 9), also an important economy predictor, has been decreasing during the last years globally. In the United States, the unemployment rate is the lowest since 2000 and in the Euro Area was the lowest since 2008.

Exhibit 10 – World Real GDP Growth (%)



Source – IMF Data

[2] **Ross Levine**: American economist who is currently at the University of California at Berkeley

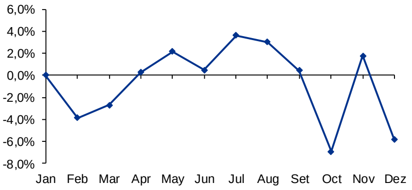
[3] **Systemic Risk** – "The possibility that an event at the company level could trigger severe instability or collapse an entire industry or economy" - Investopedia

According to the Economist Intelligence Unit (EIU)[4], "Financial firms will face difficult conditions in the coming years." due to the high dependence on mature markets characterized by mitigated growth rates and for new business models with technological requirements that banks may not be ready to develop. Furthermore, low-interest rates represent a risk for Morgan Stanley development in the future because it dampening interest margins and fixed income portfolio returns. Thus, Morgan Stanley might choose to invest in emergent markets with strong growth and wider interest spreads to reduce the exposure to mature and slow growth markets. Fed raised **interest rates** four times in 2018 and is expected, according to the EIU to raise it three times in 2019 which makes the United States a favourable environment for the firm. However, following the turning of the economic cycle, is expected an easing of rates in 2020. In Europe, the European Central Bank next raise shouldn't happen until 2020 and the Bank of England raised it last August which turns the next raise unlikely to occur until late 2019. Also, in Asia where the economy growth rates are expected to slightly decrease but to remain stable, the Bank of Japan will lift rates above zero only in 2021-22.

"Financial firms will face difficult conditions in the coming years" - EIU

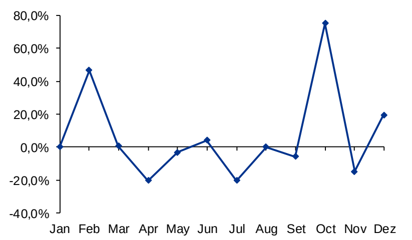
A second economic concern is the recent **trade tension** between the US and China that could have a negative impact on the economy. However, according to the EIU the financial sector is "largely immune from the trade tensions" because except in the EU's single market, "financial business is rarely conducted under the terms of trade pacts" and therefore is not expected a significant impact on the business result of this issue.

Exhibit 11 – Market Fluctuation (S&P 500) (%)



Source – Thomson Reuters

Exhibit 12 – Volatility Index (VIX) (%)

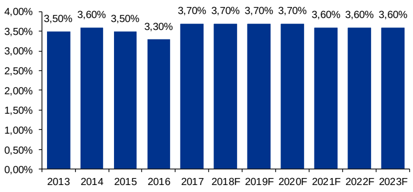


Source – Thomson Reuters

Besides the concerns previously described, **market fluctuations** (Exhibit 11) may affect negatively Morgan Stanley's operations results. These fluctuations impact the primary and secondary market causing negative variations in the fair value of securities and other financial products accompanied by a reduction in asset liquidity. The second consequence of market uncertainty is that usually during periods of unfavourable market conditions, investors participate less in the global markets, reducing Morgan Stanley's revenues. The **Volatility Index**, known as VIX index and commonly called "fear index", measures expected price fluctuations of the 500 largest U.S. publicly traded companies (S&P 500) and is a good proxy for investor's confidence in the stock market. Exhibit 12 shows that in 2018 investors' expectations were worse than in 2017. In the beginning of 2018, the VIX was quoted at $9,22 but it reached the highest value since August 2015 during 2018 and the value is still high due to macroeconomic events mentioned previously and consequent market volatility.

[4] **Economist Intelligence Unit** - Provides country, risk and industry analysis, across 200 countries worldwide

Exhibit 13 – World GDP Growth Rate



Source – IMF Data

Concluding, the macroeconomic outlook in 2019 is going to be marked by a deceleration of the global economy and a deterioration of the financial services sector outlook around the world. Central banks reactions will be crucial to smooth and to prevent negative consequences for the economy. IMF[5] (Exhibit 13) is expecting a stagnation of the World GDP Growth rate that should reach 3,6% in 2021 and remain constant until 2023.

Investment Banking Overview

Morgan Stanley operates in the financial sector, more precisely in the Institutional Financial Services industry. Morgan Stanley and its peers (Exhibit 14) are commonly called **"Investment Banks"** and nowadays the sector is characterized for a high competition to provide to individual and institutional clients financial services in businesses such as **Global Securities** and **Asset Management**.

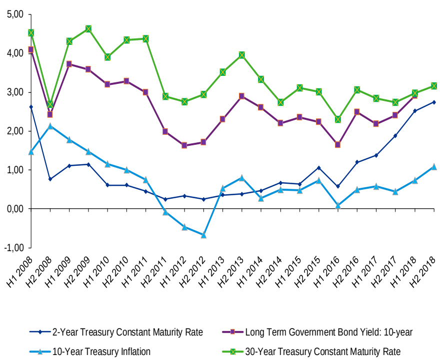
Exhibit 14 – "Investment Banks" Ranking

Ticker (Reuters)	Company Name	Country of Headquarters
BAC.N	**Bank of America Corp**	United States of America
BK.N	**Bank of New York Mellon Corp**	United States of America
BARC.L	**Barclays PLC**	United Kingdom
BNPP.PA	**BNP Paribas SA**	France
C.N	**Citigroup Inc**	United States of America
CSGN.S	**Credit Suisse Group AG**	Switzerland
DBKGn.DE	**Deutsche Bank AG**	Germany
GS.N	**Goldman Sachs Group Inc**	United States of America
HSBA.L	**HSBC Holdings PLC**	United Kingdom
JPM.N	**JPMorgan Chase & Co**	United States of America
8604.T	**Nomura Holdings Inc**	Japan
RJF.N	**Raymond James Financial Inc**	United States of America
UBSG.S	**UBS Group AG**	Switzerland
WFC.N	**Wells Fargo & Co**	United States of America

Source – Thomson Reuters

As mentioned in the last chapter, financial services industry's returns are highly correlated to the economic outlook expected for the future financial markets outcome especially the returns of each asset class, namely **Fixed Income**, **Equities**, **Commodities and Currencies**. Morgan Stanley's balance sheet is positively correlated to the financial assets value hold by the firm and consequently, the market value of the firm may fluctuate if the portfolio of asset hold is not well hedge during high volatility periods. Adding to this, sources of revenues such as **"Commissions and Fees"**, **"Trading"** and **"Investments"** are also impacted by the financial market performance and can be a risk for the firm.

Exhibit 15 – US Bonds Yields Comparison



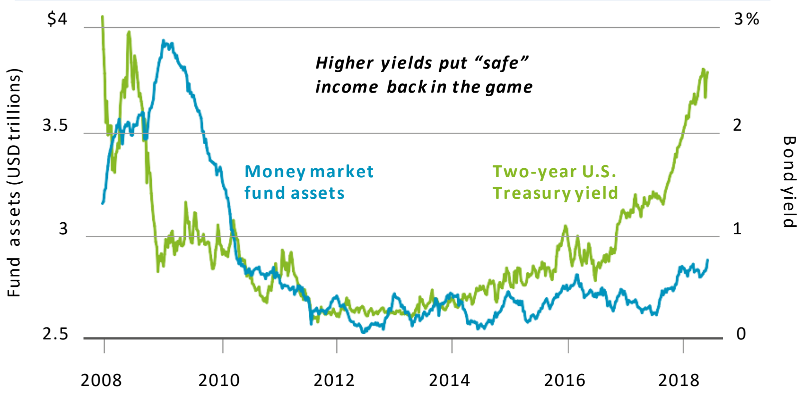
Source – FRED & Bloomberg

Fixed Income, a type of investment whose return is paid on a regular basis, might be a trend on US-based investors' portfolios. Yields for two-year U.S. Treasuries (Exhibit 16) are expected to be above the inflation and can attract domestic and non-based US investors to invest in the United States, and consequently increase Morgan Stanley's gains. Long-term maturities are vulnerable to yield curve steepening which makes them less attractive. Exhibit 15 shows that 2-year and 10-year maturities are becoming more attractive than 30 In Europe, low interest rates and late hikes, make the money market less attractive. Asian fixed income market, according to Blackrock[6] is driven by "Stable fundamentals, cheapening valuations and slowing issuance" which makes it an attractive investment subject to China's growth slowdown.

[5] **IMF** - International Monetary Fund

[6] **BlackRock -** An American global investment management corporation based in New York City

Exhibit 16 – US Bonds Yields Comparison



Source – Blackrock Market Report

"Define new markets and search for new opportunities outside the mature markets"

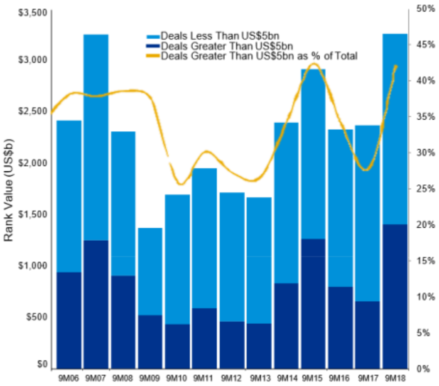
The **equity market**, as mentioned in the last chapter is under high volatility since the begging of the year, this is evidenced by the S&P500 total annual returns in 2016 (11,96%) and 2017 (21,83%) that were higher compared to the 3% return of S&P 500 in July 2018 since the begging of the year that was already has been overtaken by the October and December sell-off. The **new tax plan** in the US and the **expected hike on interest rates** were responsible for gains in the equity market but the uncertainty about the future cut-off the gains during this year and is expected to continue. The situation is similar in Europe (weak economic momentum and heightened political risks) and Asia ex-Japan (steady growth and trade tension between China and the US) and for this reason, the returns for Morgan Stanley, dependent on the equity market, might shrink in the next years and this fact is considered in the valuation model. Next year will be crucial to define new markets and search for new opportunities outside the mature markets, for example, in developing economies in Middle East or South America that will expand GDP more quickly, and whose financial markets offer more room for growth.

"Commodities and currencies can be a good investment in 2019"

Commodities and currencies can be a good investment in 2019 and consequently a "safe place" for investors. On one hand, crude inventories are declining globally that supported by geopolitical tensions might increase the oil price. On the other hand, historically Gold price, driven by demand and supply, increases during recessions and high volatility periods and, it could also be considered an opportunity for the next years. **Currencies** are affected by several factors such as interest rates, inflation, current account deficits, public debt and political stability. Considering the current scenario and the economic decisions in each region, US dollar ($) is expected to appreciate against other currencies which can be a positive factor to US based investors. However, Euro (€) and Pound Sterling (£) performance in 2019 dependents on the final conditions negotiated for Brexit and the post-Brexit environment in the European Union and in the UK.

Competitive Position

Exhibit 17 – Worldwide Announced M&A by Deal Size (First 9 months 2006-2018)



Source – Thomson Reuters

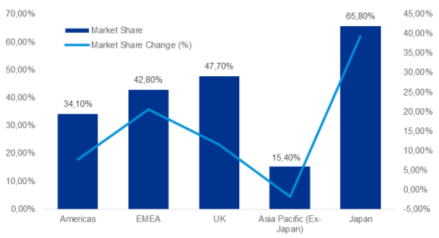
Morgan Stanley's revenues are affected not only by the asset classes' performance but also for the output of other services offered by the company. **Advisory services** that include M&A deals, an important Morgan Stanley source of revenues, are evaluated every year through **"League Tables"** elaborated by important financial databases to compare banks in one of the most important industry activities. Worldwide M&A activity hit a record number of deals, totalled $3.3 trillion during the first nine months of 2018, the strongest nine months of a year since 1980. However, 43% of the value generated was concentrated on "**Deals Greater than US$5Bn**" (Exhibit 17) and overall the number of deals declined 9%, which should not be a concern for Morgan Stanley because it was the investment bank that was present in more "Top Deals" and is less dependent on "Other Transactions" compared Goldman Sachs, the bank ranked number two in 2018 (Exhibit 20). Morgan Stanley's M&A activity revenues were approximately $985 million, ranked on the first position with 30,3% market share, an increase of 10,1% compared to the same period in 2017 and 265 completed deals advised. Morgan Stanley was the leader on **Healthcare** industry, while Goldman Sachs dominated the **High Tech** and **Financials**, and Citi was ranked the number one advisor on the **Energy and Power** sector. Morgan Stanley was involved in all "Top 5 2018 M&A Deals", except the "Energy Transfer Partners LP" deal. Moreover, the firm market share increased in important regions of the world such as Americas, EMEA, UK and Japan in 2018 (Exhibit 19), being above 30% in almost all of them which evidence a strong and consistent Morgan Stanley market position that is expected to remain constant for the coming years. Although, Asia Pacific (Ex-Japan) market shared declined -1,8%, Morgan Stanley was ranked number one advisor, overtaken CITIC Group[7] position in 2018.

Exhibit 18 – Worldwide M&A Ranking

	Rank Value per Advisor (US$m)				
Financial Advisor	2018 Rank	2017 Rank	Rank Value US$m	Market Sh (%)	Market Share Ch.
Morgan Stanley	1	2	985,391.3	30.3	10.1 ▲
Goldman Sachs & Co	2	1	932,550.8	28.6	8.0 ▲
JP Morgan	3	3	685,222.8	21.0	4.0 ▲
Citi	4	4	618,244.0	19.0	4.4 ▲
Bank of America Merrill Lynch	5	5	466,976.3	14.3	1.5 ▲
Barclays	6	6	398,825.1	12.2	3.1 ▲
Deutsche Bank	7	12	369,392.0	11.3	6.0 ▲
Credit Suisse	8	8	357,887.3	11.0	2.9 ▲
Lazard	9	9	356,057.7	10.9	2.8 ▲
Evercore Partners	10	10	341,309.1	10.5	3.3 ▲
Centerview Partners LLC	11	20	328,389.7	10.1	7.5 ▲
UBS	12	11	321,353.4	9.9	3.3 ▲
Rothschild & Co	13	7	219,847.1	6.8	-1.4 ▼
PJT Partners Inc	14	33	142,724.2	4.4	3.1 ▲
Nomura	15	23	123,849.4	3.8	1.3 ▲
Moelis & Co	16	19	113,616.5	3.5	0.7 ▲
Wells Fargo & Co	17	30	108,112.7	3.3	1.9 ▲
BNP Paribas SA	18	13	106,285.9	3.3	-0.7 ▼
RBC Capital Markets	19	15	105,703.3	3.3	0.0 ▲
Mizuho Financial Group	20	70	96,564.4	3.0	2.6 ▲
Robey Warshaw LLP	21	29	89,537.5	2.8	1.3 ▲
Perella Weinberg Partners LP	22	18	85,287.9	2.6	-0.3 ▼
Macquarie Group	23	25	81,589.2	2.5	0.6 ▲
Jefferies LLC	24	22	71,434.5	2.2	-0.3 ▼
Sumitomo Mitsui Finl Grp Inc	25	49	68,801.7	2.1	1.3 ▲
Industry Total†			**3,257,358.0**	**100.0**	

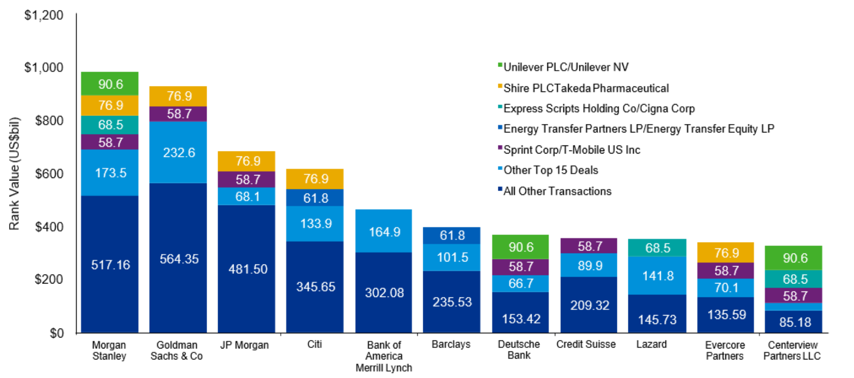
Source – Thomson Reuters

Exhibit 19 – Worldwide Morgan Stanley's Market Share (2018)



Source – Thomson Reuters
**Japan – Represented by Mitsubishi UFJ Morgan Stanley*

Exhibit 20 – Top Worldwide Announced M&A Advisors by Transaction Size (Jan 1 - Sept 30 2018)



Source – Thomson Reuters

[7] **CITIC Group -** Formerly the "China International Trust Investment Corporation", is a state-owned investment company of the People's Republic of China

Equity and Debt underwriting (Exhibit 21), other important key revenue drivers, improved 12,6% and 15,6%, respectively in 2017 as it is shown on exhibits 22 and 23. Last year (2017) results show that it was a good season for the financial industry empowered by a high level of confidence in the market that motivated corporations and governments to be more active and to take advantage of the market momentum. Based on an average of the last 2 years, Morgan Stanley was ranked on both lines of business as the "second winner". Citigroup was the investment bank growing more on Equity Underwriting (27,6% on average) between 2016 and 2017 and Bank of America was the only bank to decrease in the activity (-4,5% on average). Based on "**Top 5 Investment Banks**"[8] revenues, was computed an approximation for Morgan Stanley market share on this line of business and was concluded that the company increased the market position during the last year from 16,3% in the 2Q17 to 17,8% in 2Q18, being second only to Goldman Sachs. **Equities Trading** (Exhibit 25) decreased on average -2,4% in the last 2 years reflecting lower results in execution services due to the introduction of Artificial Intelligence methods to perform daily tasks formerly done by human beings but that can be efficiently and cheaply done by machines. This fact was crucial for new players' penetration in this sector and consequently slowing down "Top 5" growth rates. Morgan Stanley decreased -1,4% on average since 2016 ("Top 5" decreased on average -2,4%), despite good results in 4Q 2016. **Fixed Income, Commodities and Currencies Trading (FICC)** grew 8,6% overall in the last 2 years (Exhibit 26). Morgan Stanley was the investment bank that improved the most, even considering the last three quarters of 2017 characterized by lower results in global macro products. Morgan Stanley's market share for **Total Trading**[9] (Exhibit 24), in the second quarter of 2018 was 18,9% which meant an increase of 0,3% compared with the last quarter and 0,7% the equivalent period in the second quarter of 2017.

Exhibit 21 – Top 5 Investment Banks "Equity & Debt Underwriting" Market Position

Equity & Debt Underwriting	Amount ($M)			% Change	
	2Q18	2Q17	1Q18	2Q17	1Q18
JPM	1 513	1 336	1 121	13,20%	43,20%
BAC	1 164	1 132	1 141	2,80%	-0,95%
C	1 061	1 217	915	-12,80%	29,50%
GS	1 241	981	1 207	26,5%	6,85%
MS	1 081	909	939	18,90%	16,35%
Total	6060	5575	5323	9,7%	19,0%
MS Market Share	17,8%	16,3%	17,6%		

Source – RBC Capital Markets & Analyst Estimates

Exhibit 22 – Equity Underwriting – Top 5 Investment Banks Performance (2016-2017)

Equity Underwriting	Average	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17
JPM	11,3 %	-48,6%	-36,9%	37,5%	-4,8%	107,3%	34,0%	-18,9%	20,7%
BAC	-4,5 %	-45,5%	-44,4%	38,8%	-36,0%	66,0%	-0,4%	-26,1%	11,5%
C	27,6 %	-48,9%	-41,2%	-15,6%	-7,8%	111,9%	77,6%	113,0%	32,1%
GS	8,6 %	-65,7%	-54,8%	19,5%	-7,0%	69,9%	-3,3%	-6,6%	117,0%
MS	20,2 %	-47,9%	-45,6%	-5,6%	-36,1%	143,8%	52,3%	15,7%	84,9%
Average	12,6 %	-51,3 %	-44,6 %	14,9 %	-18,3 %	99,8 %	32,0 %	15,4 %	53,2 %

Source – RBC Capital Markets

Exhibit 23 – Debt Underwriting – Top 5 Investment Banks Performance (2016-2017)

Debt Underwriting	Average	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17
JPM	13,2 %	-35,2%	-2,4%	3%	32,2%	78,7%	7,8%	-2,0%	14,4%
BAC	11,1 %	-14,3%	0,2%	4%	31,3%	38,4%	1,3%	5,9%	4,4%
C	12,3 %	-21,7%	9,3%	2%	3,9%	44,5%	13,1%	4,4%	12,6%
GS	22,3 %	23,8%	20,1%	1%	28,4%	25,0%	-0,4%	3,4%	60,9%
MS	19,1 %	-39,5%	-34,7%	7%	21,7%	122,2%	46,1%	21,4%	18,5%
Average	15,6 %	-17,4 %	-1,5 %	16,1 %	23,5 %	61,8 %	13,6 %	6,6 %	22,2 %

Source – RBC Capital Markets

Exhibit 24 – Top 5 Investment Banks "Total Trading" Market Position

Total Trading	Amount ($M)			% Change	
	2Q18	2Q17	1Q18	2Q17	1Q18
JPM	5 412	4802	6 570	12,70%	-17,60%
BAC	3 596	3369	4 053	6,70%	-11,30%
C	3 940	3999	4 521	-1,50%	-12,90%
GS	3 570	3051	4 385	17,00%	-18,60%
MS	3 859	3 394	4 431	13,70%	-12,90%
Total	20 377	18 615	23 960	9,7%	-14,7%
MS Market Share	18,9%	18,2%	18,5%		

Source – RBC Capital Markets & Analyst Estimates

Performance Metrics (KPI's)

Despite the strong market position consolidated by Morgan Stanley during recent years, in order to access the firm's position among its peers and confirm its financial strength, it was computed a comparison of the most important banks' performance metrics (Exhibit 27), considering the "**Top 5 Investment Banks**" and the estimated results for 2018 of each one of them. Morgan Stanley's ROE[10] (11,5%) and ROA[11] (1,1%) are in line with the peer group median however, compared with Goldman Sachs (the closest peer), the ROE is lower which could

[8] **Top 5 Investment Banks (Top 5) –** Group composed by: J.P. Morgan (JPM), Bank of America Merrill Lynch (BAC), Citigroup (C), Goldman Sachs (GS) and Morgan Stanley (MS)

[9] **Total Trading –** The sum of Equities Trading and FICC Trading

[10] **ROE –** Return on Equity

[11] **ROA –** Return on Assets

be a downside when comparing both companies. The **expense efficiency ratio**[12] (68,4%) that measures the firm ability to generate revenues considering the money expended to achieve it, is also expected to be worse compared to the peer group, but this issue was already taken into account in the 2017 final year report, where it is assumed that this ratio has been exceeded by Morgan Stanley and that improve it would be one of the priorities for the next years. The **Price-to-earnings (P/E) ratio**[13] (11%) that gives how many dollars are the investors available to pay for each dollar received from company's earnings, is higher compared to the peers which mean that the investors are expected to pay more for each dollar produced by Morgan Stanley. The **Price-to-book (P/B) ratio**[14] is also higher than its peers, reflecting that the investors are willing to pay 1,2 times more the book value of the firm, which could mean that the stock is being valued at a premium to equity book value, considering the 2018 expected model results and if the stock reaches the value computed by the model. The **Earnings per share (EPS)**[15] **of $5,3** are slightly below to the peer group median and significantly below to Goldman Sachs results of $23,2.

Exhibit 25 – Equities Trading – Top 5 Investment Banks Performance (2016-2017)

Equities Trading	Average	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17
JPM	0,4 %	-4,5%	1,5%	0,8%	8,1%	1,9%	-0,9%	-3,6%	-0,2%
BAC	-2,2 %	-10,7%	-7,7%	-16,8%	7,5%	7,4%	2,7%	2,5%	— %
C	-0,9 %	-19,1%	20,5%	-34,4%	14,5%	15,1%	-6,6%	20,0%	-17,2%
GS	-7,7 %	-23,4%	-12,2%	1,8%	-9,2%	-6,0%	7,9%	-6,5%	-14,1%
MS	-1,4 %	-10,3%	-8,4%	0,7%	9,5%	-1,9%	0,5%	0,4%	-1,7%
Average	-2,4 %	-13,6 %	-1,3 %	-9,6 %	6,1 %	3,3 %	0,7 %	2,6 %	-8,3 %

Source – RBC Capital Markets

Exhibit 26 – FICC Trading – Top 5 Investment Banks Performance (2016-2017)

FICC Trading	Average	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17
JPM	4,7 %	-13,4%	35,1%	47,8%	30,9%	17,2%	-18,8%	-27,0%	-34,2%
BAC	4,6 %	-17,5%	22,1%	38,9%	12,2%	29,4%	-13,8%	-21,7%	-13,0%
C	6,7 %	-12,5%	13,2%	33,7%	34,0%	20,6%	-4,6%	-14,0%	-16,7%
GS	-3,6 %	-46,9%	20,1%	34,4%	78,3%	1,3%	-39,9%	-26,1%	-49,9%
MS	30,5 %	-56,4%	-5,8%	61,1%	219,1%	96,3%	-4,5%	-21,1%	-45,0%
Average	8,6 %	-29,3 %	16,9 %	43,2 %	74,9 %	33,0 %	-16,3 %	-22,0 %	-31,8 %

Source – RBC Capital Markets

Exhibit 27 - Top 5 Investment Banks Performance Metrics (2018 Estimated)

KPI's	MS	GS	JPM	C	BAC	Median
ROE (%)	11,5%	12,4%	13,7%	9,2%	10,8%	11,5%
ROA (%)	1,1%	1,0%	1,3%	0,9%	1,1%	1,1%
Efficiency ratio (%)	68,4%	66,4%	56,7%	57,4%	58,6%	58,6%
P/E	11,0	7,2	11,5	8,0	10,3	10,3
P/B	1,2	0,8	1,5	0,7	1,1	1,1
PVTB	1,3	0,9	1,9	0,8	1,5	1,3
EPS	5,3	23,2	9,1	6,6	2,6	6,6
Dividend Payout ($)	1,1	3,2	2,7	1,5	0,5	1,5

Source – Analyst Estimates & Credit Suisse Estimates

Analysing those metrics alone could induce investors to consider Morgan Stanley a less attractive investment compared to the other listed peers. Nevertheless, the competitive position should be measured considering the entire outlook and not just focus on the financial metrics. The market share on different business lines and other factors explained further on this report should be taken into account to draw a final conclusion regarding the firm.

Regulation

Exhibit 28 – Risk-Based Capital Ratio Formula

$$\text{Risk-based capital ratio} = \frac{\text{Regulatory capital}}{\text{Risk-weighted assets}}$$

Source – Basel Committee on Banking Supervision

The 2007 U.S Sub-Prime financial crisis was the proof that the regulatory framework and the consequent capital requirements under which banks were subject were not enough to protect them from a financial crisis. Basel II, the regulation in place in 2007 failed to control leverage and liquidity requirements that were proved to be one of the causes for the crisis magnitude due to important banks leveraged balance sheets and maturity mismatch between assets and liabilities. Consequently, in November 2010 the Basel III was approved by the members of the Basel Committee on Banking Supervision. The new framework focused on more and better quality capital, and introducing new ratios to regulate the funding and leverage of banks. Nowadays, the Banking Supervision reforms are made to "strength microprudential regulation and

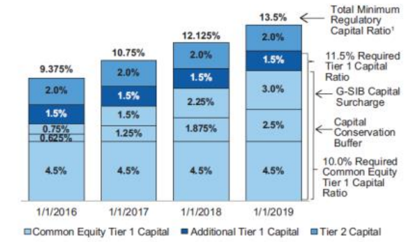
[12]**Expense Efficiency Ratio –** The efficiency ratio is calculated by dividing the bank's noninterest expenses by their revenues.

[13]**Price-to-earnings (P/E) ratio –** "The ratio for valuing a company that measures its current share price relative to its per-share earnings" - Investopedia

[14]**Price-to-book (P/B) ratio –** "Firm's market to book value by dividing price per share by book value per share" - Investopedia

[15]**Earnings per share (EPS) —** "Portion of a company's profit allocated to each share of common stock" - Investopedia

Exhibit 29 – Regulatory Ratios (2016-2019)



1. These ratios assume the requirements for the G-SIB capital surcharge (3.0%) and CCyB (zero) remain at current levels. See "Total Loss-Absorbing Capacity, Long-Term Debt and Clean Holding Company Requirements" herein for additional capital requirements effective January 1, 2019.

Source – Company Report – Form 10K

supervision, and to add a macroprudential overlay that includes capital buffers"[16]. Basel III main features include a level and quality of capital increase which means banks are required to have a minimum 6% **Tier 1 capital**, of which at least three quarters must be the highest quality (common shares and retained earnings) maintaining "more capital of higher quality to cover unexpected losses"[17]. The three quarters mentioned previously are called **Common Equity Tier 1 (CET1)** and it has to represent 4,5% of the **Risk Weighted Assets[18] (RWAs)**. **Total Regulatory Capital** should represent more than 10,5% of the RWAs, of which 4,5% for the CET1 plus 2,5% of the Conservation Buffer that sum up to 7% of CET1 capital.

Additionally, the Committee identifies global systemically important banks (**G-SIBs**) that together are the group of all the financial institutions whose failure might be a potential cause of a financial crisis. In addition to capital and leverage ratio requirements, "G-SIBs must have higher loss absorbency capacity to reflect the greater risks that they pose to the financial system"[19]. This means that besides the Basel III regulation, Morgan Stanley (one of the G-SIBs) is also required to submit a **Resolution (Capital) Plan** to the Federal Deposit Insurance Corporation (FDIC) and an additional risk-based capital buffer which is calculated based on quantitative and qualitative elements and then each bank is allocated to a bucket which corresponds to an increase in CET1. Morgan Stanley was allocated in November 2018 on bucket 1 (Exhibit 30) meaning a 1% increase.

Exhibit 30 – 2018 list of global systemically important banks (G-SIBs)

Bucket[12]	G-SIBs in alphabetical order within each bucket
5 (3.5%)	(Empty)
4 (2.5%)	JP Morgan Chase
3 (2.0%)	Citigroup Deutsche Bank HSBC
2 (1.5%)	Bank of America Bank of China Barclays BNP Paribas Goldman Sachs Industrial and Commercial Bank of China Limited Mitsubishi UFJ FG Wells Fargo
1 (1.0%)	Agricultural Bank of China Bank of New York Mellon China Construction Bank Credit Suisse Groupe BPCE Groupe Crédit Agricole ING Bank Mizuho FG Morgan Stanley Royal Bank of Canada Santander Société Générale Standard Chartered State Street Sumitomo Mitsui FG UBS Unicredit Group

Source – Financial Stability Board – 16/11/2018

Besides capital requirements, Basel III also stipulates a "**Leverage ratio"** which constrains the build-up of debt to fund banks' investment and activities (bank leverage), reducing the risk of a deleveraging spiral during downturns."[19], that for G-SIBs, including Morgan Stanley must not be lower than 4%. Adding to this, the 2017 reforms introduced changes on the standardized approach used by the banks for credit risk, mainly "Enhance risk sensitivity while keeping the standardized approach for credit risk sufficiently simple"[19] and "reduce reliance

Exhibit 31 – Basel III transitional arrangements, 2017-2027

		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Leverage ratio		2014 exposure definition				Revised exposure definition G-SIB buffer					
Capital	Capital conservation buffer	1.25%	1.875%	**2.5%**								
	Minimum common equity plus capital conservation buffer	5.75%	6.375%	**7.0%**								
	Minimum total capital plus conservation buffer	9.25%	9.875%	**10.5%**								
	Phase-in of deductions from CET1¹	80%	**100%**									
	Capital instruments that no longer qualify as non-core Tier 1 or Tier 2 capital	Phased out from 2013										

Source – Financial Stability Board – 16/11/2018

[16] **Source** – "Basel III transitional arrangements, 2017-2027", Basel Committee on Banking Supervision

[17] **Source** – "Basel III transitional arrangements, 2017-2027", Basel Committee on Banking Supervision

[18] **Risk Weighted Assets (RWAs) -** "Computed by adjusting each asset class for risk in order to determine a bank's real world exposure to potential losses." – Financial Times

[19] **Source** – "Finalising Basel III", Basel Committee on Banking Supervision

Source – Financial Stability Board – 16/11/2018

on external credit ratings". In 2022, according to Basel III reforms and "finalising plans", is expected to be implemented a revised output floor that says that "Banks' calculations of RWAs generated by internal models cannot, in aggregate, fall below 72.5% of the risk-weighted assets computed by the standardized approaches. This limits the benefit a bank can gain from using internal models to 27.5%."[19]

"Repurchase of up to $4.7 billion of outstanding common stock for the four quarters beginning in the third quarter of 2018"

Besides Basel III, Morgan Stanley also implements certain provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act ("Dodd-Frank Act") which include adopting and follow the Federal Reserve capital planning and stress test requirements for large Bank Holding Companies (BHCs). In June 2018, the company run stress tests and submitted a Capital Plan that was approved by the Board of Governors of the Federal Reserve and it includes "the repurchase of up to $4.7 billion of outstanding common stock for the four quarters beginning in the third quarter of 2018 through the end of the second quarter of 2019, and an increase in the Firm's quarterly common stock dividend to $0.30 per share from the current $0.25 per share, beginning with the common dividend declared for the third quarter of 2018."[20]

"We expect to see common-sense recalibrations over the next few years" – James P. Gorman

Investment Banks are highly controlled by Central Banks and other institutions responsible for guarantee the economies' stability. The institutional financial services industry is probably one of the most rigorous and regulated industries in the world. Morgan Stanley is considered a G-SIBs and all the capital requirements can limit the bank potential growth in the next years. James P. Gorman, Morgan Stanley's Chairman and CEO, said in April 2018, "while there has not yet been a significant revision in the financial services regulatory framework, we expect to see common-sense recalibrations over the next few years"[21] reinforcing the idea that regulation limits bank's growth.

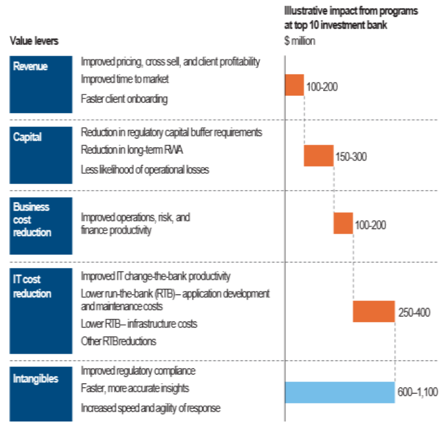
Trends

Adding to the financial markets' dependence, the sector is facing a technological challenge. **Artificial Intelligence (AI)** and **Blockchain** are changing all the banking businesses, from retail banking to investment banking, the entire banking sector is going to be affected and needs to adapt their strategy to clients' needs. The long-term investment banking sustainability is directly linked to the speed of AI adoption that will separate winners from losers. Artificial intelligence techniques include advances in computer vision, natural language processing and generation, machine translation, and processing and analytics of massive datasets. Facilitating this resurgence is the ever-increasing availability of

[20] **Source** – Morgan Stanley Reports Second Quarter 2018
[21] **Source** – Morgan Stanley Shareholders Letter 2018

analysable data **(Data Mining)**, as well as cheap processing power for their analysis. **Machine Learning (ML)** is a current application of AI based on the idea that we should really just be able to give machines access to data and let them learn for themselves. The industry is already changing, for example, J.P. Morgan is using robots to execute trades and Morgan Stanley has an AI fraud detection.

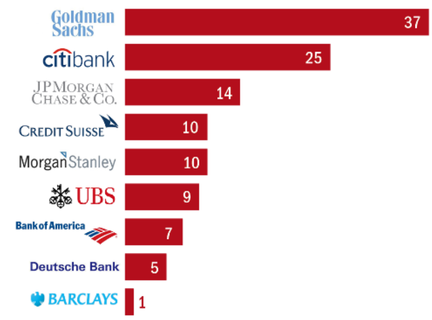
Exhibit 32 – "Improved data and application architecture boosts financial performance"



Source – Mckinsey Analysis

Mckinsey estimated in December 2017 the value impact of technological benefits that the top 12 investments banks in the US can have with a $3 billion budget for technology. A better technological architecture could increases **revenues** per year in 200 million, "thanks to improved cross-selling, faster and smarter trading, a more efficient allocation of credit, and an enhanced ability to launch new products."[22] An efficient and good planned application of technology in banks process can also bring benefits in **Capital Savings** and **Costs Reduction**. A better data quality creates capital savings for market, credit and operational risks and consequently reduce the amount of RWAs which means more capital available to invest or to distribute to the shareholders. Mckinsey estimates that efficient data analysis can save as much as $300 million a year in capital exposures. Front office, operations and finance were three areas that used to represent high costs for investment banks, however the introduction of technology that allows predicted signals for trading or real-time balance sheet and liquidity management to optimize trading based on relationship between revenue, volatility and capital demand could represent an additional savings cost of $200 million a year. Also, the IT infrastructures costs can be reduced. Large banks like Morgan Stanley usually spend more than 1 billion a year on the IT infrastructure and is estimated that at least 30% of the applications can be eliminated, representing a save up to $400 million annually.

Exhibit 33 – Top US Investment Banks ranked by Fintech Portfolio



Source – CBInsights, April 2018

Moreover, Morgan Stanley is investing in "Fintech" companies but is not the bank that invests the most on new technologies which can be a problem in the future. Half of Morgan Stanley investment is concentrated on "Capital Markets Software" and the remaining portfolio is composed by "Data Analysis", "Insurance", "Lending" and "Regulatory Technology" companies, a different scenario compared with Goldman Sachs and Citigroup that acquired a larger number of companies from different technologies areas. Morgan Stanley to capitalize its investment should complement partnerships with redeploying and training current technologists and hiring new human capital in order to highlight from the peers that are investing more.

[22] **Source** – "A foundation for value in capital markets" – Mckinsey&Company *Financial Services*

Financial Analysis

Exhibit 34 – Free Cash Flow to Equity Formula according to Aswath Damodaran

$$FCFE_{\text{Financial Service Firm}} = \text{Net Income} - \text{Reinvestment in Regulatory Capital}$$

Source – "Valuing Financial Service Firms" - Aswath Damodaran

Aswath Damodaran published in 2002 and later in 2009 a book where he discussed the pros and cons of financial services firms' valuation. Banks' valuation differs from other firms in the market due to three reasons. First, **debt** for a financial firm cannot be considered a source of capital but rather as a raw material used to keep their activities. Therefore, capital to invest at financial firms seems to be only equity capital and not both debt and equity as is considered on other firms. Second, as mentioned in the last chapter, financial firms operate under **regulatory constraints** that limit banks' capital ratios and exposure to a certain type of products which is a good measure to avoid a financial crisis similar to 2007 but it also limits banks' capacity to use capital. Third, is not possible to define **Capex and Working Capital**, or in other words, which amount banks reinvest in their operations. For these reasons the valuation method decided to use was the **Free Cash Flow to Equity (FCFE)** modified by Damodaran (Exhibit 34) that discounts all available cash flow to the shareholder considering the need to reinvest in regulatory capital which is important, considering Morgan Stanley's capital requirements. The **Dividend Discount Model** could also be used but it would undervalue the firm because it only discounts the dividends distributed penalizing firms that have high retention rates.

Exhibit 35 – Free Cash Flow Formula (Equity Value)

$$Equity\ Value = \frac{FCFE_1}{(1+K_E)^1} + \frac{FCFE_2}{(1+K_E)^2} + \frac{FCFE_3}{(1+K_E)^3} + (\dots) + \frac{FCFE_i + RV_i}{(1+K_E)^i}$$

Where,

$FCFE_i$: Free Cash Flow to Equity in period i

K_E: Cost of Equity

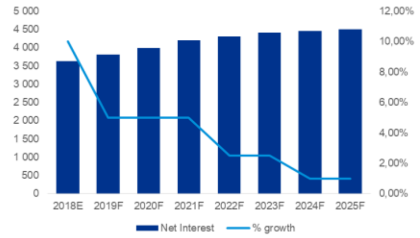
RVi: Residual Value in year i

Source – Mckinsey

The model estimates 2018 expected results based on the first nine months of 2018 and forecasts the remaining years until 2025. A set of inputs are crucial to value Morgan Stanley equity and consequently to estimate the share price.

Revenues & Costs Forecast

Exhibit 36 – Net Interest Evolution (2018E-2025F)



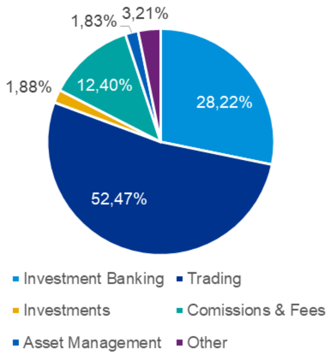
Source – Analyst Estimates

Morgan Stanley sources of revenues are divided into 2 categories: **Net Interest** and **Non-Interest Income**. Net Interest revenues are the difference between **Interest Income** and **Interest Expenses**, in other words, is the difference between interest from Customer receivables, restricted cash and interest bearing deposits with banks plus fees received on Securities loaned and received from prime brokerage customers for stock loan transactions minus fees paid on Securities borrowed. Summing up, it reflects the result of cover customers' short positions trading strategies, customer activity in the prime brokerage business, and the prevailing level, term structure and volatility of interest rates. In 2013, **Net**

Exhibit 37 – Non-Interest Evolution (2018E-2025F)

Source – Analyst Estimates

Exhibit 38 – Institutional Securities distribution by Source of Revenue (2017)



Source – Analyst Estimates

Exhibit 39 – Institutional Securities Revenues Distribution 2018-2025

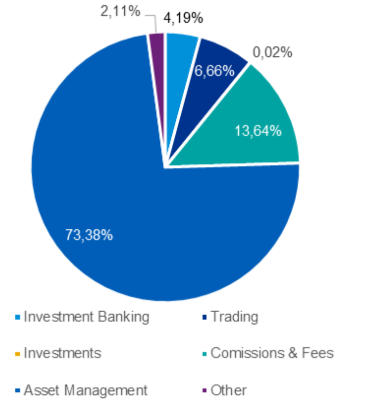
Source – Analyst Estimates

Interest was $773 million but during the last 4 years it quadrupled to $3 296 million in 2017. For 2018 is estimated a conservative 10% growth based on 22% growth in the first 9 months of the year but considering a slowdown for the last quarter due to macroeconomic outlook and market volatility that can originate a fall of fees received (Exhibit 37). The model forecasts 5% growth for the period between 2019 and 2021 that decrease for 2,5% in for the period 2022-2023 and reach the steady state in 2024 when Net Interest is expected to grow 1%.

Non-interest Income (Exhibit 37) is composed by revenues generated by **Investment Banking Activities**, **Trading**, **Investments**, **Commissions & Fees**, **Asset Management and Others**. In 2017, hit a record of $34 939 million, a **11,9% YoY growth** and in 2018 third quarter the amount already overtook $31 500 million and is expected to reach **$38 198million** until the end of the year (a 9,3% YoY growth). In order to better understand the revenues distributions for each business segment described in the "Company Overview" chapter it was decided to allocate each revenue source to each business segment, as it has been done by the company to report results to SEC[23]. **Institutional Securities Revenues** (1,60% $\text{CAGR}_{2018\text{-}2025}$) are mainly concentrated on Trading, 52,5% in 2017 and is forecasted to decrease to 45,5% until 2025 due to technological developments previously mentioned that could negatively impact "Total Trading" fees (Exhibit 38). Investment Banking division also contributes to Institutional Securities (28,2% in 2017 and expected to reach 37,3% in 2025), that are originated from Advisory services (M&A transactions) and Equity and Fixed Income Underwriting. Overall, Institutional Securities revenues increased 13,5% from 2016 to 2017 and in 2018 are expected to sum up to $22 061 million which would mean more than half total non-interest revenues (57,8%). Considering 2Q 2018 Morgan Stanley's growing market share on **Total Trading** (18,9%), **Advisory Services** (31,9%) and **Equity and Fixed Income Underwriting** (17,8%) was forecasted the growth of each source of revenue based on the potential market share change, macroeconomic conditions and sector regulation and trends. Advisory revenues are estimated to grow 15% in 2018, reflecting the market share gains in the first months of the year and the historical results of the entire sector. The model considers the steady GDP growth around the world and tough market conditions for following years can suppress Morgan Stanley market share gain and for those reasons, is considered a growth rate deceleration (Exhibit 39) that should lead Advisory Revenues to reach $9 331 million in 2025. **Total Trading** market share might decrease because new players are trying to change the "Trading market", introducing new technologies that allow them to charge low fees and this change can have a negative impact on fees until the

23 **SEC –** Securities and Exchange Commission

Exhibit 40 – Wealth Management distribution by Source of Revenue (2017)

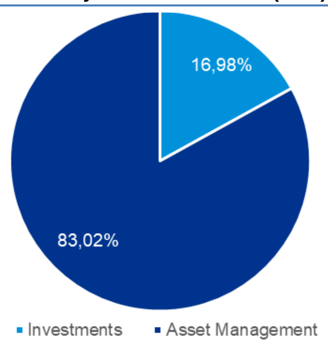


Source – Analyst Estimates

Exhibit 41 – Wealth Management Revenues Distribution (2018-2025)

Source – Analyst Estimates

Exhibit 42 – Investment Management distribution by Source of Revenue (2017)



Source – Analyst Estimates

Exhibit 43 – Investment Management distribution (2018-2025)

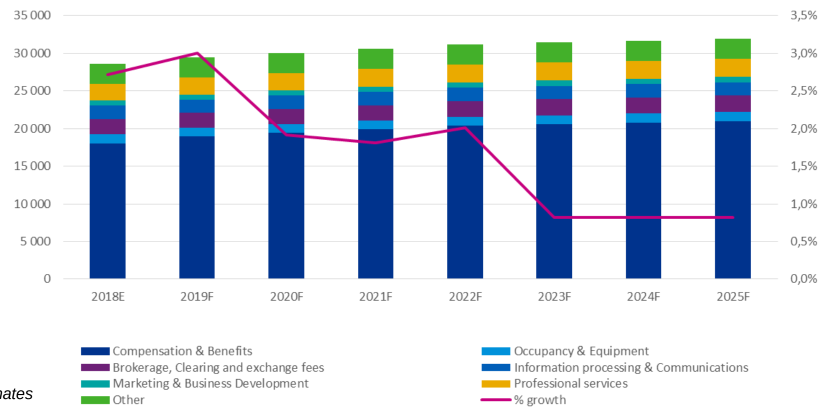
Source – Analyst Estimates

firm adapts to the new trends. Thus, for Institutional Securities, the model considers 13% growth for 2018, explained by the first three quarters of the year, and then is forecasted to grow at 2,5% in 2019-2020 and is considered the impact of new players afterwards, declining -2,0% in 2021-2022 and -1,0% in 2023-2025. Equity and Fixed Income Underwriting market share is growing in the last year and this trend is expected to remain constant, constrained by the global economy slowdown, resulting in a 7,42% $CAGR_{2018\text{-}2025}$ for equity underwriting and 4,96% $CAGR_{2018\text{-}2025}$ for debt underwriting. "**Investments**", "**Commissions and Fees**" and "**Asset Management**" are less significant for Institutional Securities and are expected to grow at similar growth rates after 2018, because the model that not takes into account non-current events.

Wealth Management (3,24% $CAGR_{2018\text{-}2025}$) contributed to 36,4% of total non-interest revenues in 2017 ($12 731 million) and the weight of this segment is expected to decrease in the next two years, mainly due to two reasons: a -39% fall on **trading fees** that should be smooth until the end of 2019 but then follow the trend of declining explained previously (Exhibit 40). Wealth Management target clients are usually high net worth individuals and companies that are reluctant to trust their fortunes to technology and prefer the customized and personal service and for this reason, the model delays the decline for 2021. Asset Management is highly dependent on the economic conditions and despite the undergoing uncertainty moment, it is the source that contributes the most to Wealth Management (73,5% in 2017) and is expected to increase its importance until 2025 ($14 099 million forecasted in 2025), growing at 4,03% $CAGR_{2018\text{-}2025}$. **Investment Management** (1,44% $CAGR_{2018\text{-}2025}$) revenues, as expected, are highly dependent on the assets owned by the company performance during the year and on the strategies adopted by the company to hedge the portfolios and protect them from market fluctuations (Exhibit 43). In 2016, 97,9% of revenues were originated due to asset management activities but in 2017, higher carried interest and performance gains in all asset classes leveraged "Investments" heading, and reduced "Asset Management" weight to 83%. This line of business is expected to decrease its weight overall in Morgan Stanley portfolio which is justified by the conservative model approach and the expected deceleration of the economy and volatility of the financial market.

Non-interest Expenses (Exhibit 44) have been constant since 2013. 61,0% of total non-interest expenses are **Compensation and Benefits** which means that the bank invest the majority of its money available into human capital and is expected to increase this percentage until 2025 (74,6%) that is in line with McKinsey projections of investment made in human capital capable to develop and implement technology strategies that would allow Morgan Stanley to save money on IT infrastructures and on operational activities such as Trading and Sales. However, for the projected period was also considered a smooth on the growth rate based on a decrease in salaries, severance costs and discretionary incentive compensation motivated by the expected market volatility and deceleration of the global economy that will negatively affect variable compensation linked to financial markets performance. In 2025, non-interest expenses are expected to reach $31 937 million (1,39% $CAGR_{2018\text{-}2025}$) which reflects an effort to invest more in technology but at the same time an opportunity to reduce expenses in other areas.

Exhibit 44 – Non-interest Expenses Distribution (2018-2025)



Source – Analyst Estimates

Capital Ratios

Exhibit 45 – Regulatory Capital Requirements Snapshot

Regulatory Capital Requirements	2017	2018E	2025F
Risk-Weighted Assets (RWA)	17 486	23 297	77 792
Common Equity Tier 1 capital	**60 980**	**62 499,58**	**70 775,27**
Ratio (%)	16,5%	16,7%	16,7%
Minimum Capital Ratio	7,3%		
Tier 1 capital	**69 938**	**71 107,31**	**80 522,76**
Ratio (%)	18,9%	19,0%	19,0%
Minimum Capital Ratio	8,8%		
Total capital	**80 275**	**81 212,03**	**91 965,47**
Ratio (%)	21,7%	21,7%	21,7%
Minimum Capital Ratio	10,8%		
Total RWAs	**369 578**	**374 249**	**423 804**
% Total Assets	*43,4%*	43%	43%
% growth	*3,2%*	1,3%	1,6%

Source – Company Reports & Analyst Estimates

Morgan Stanley capital ratios have been accomplished since 2013. Being considered one of the banks with more influence in the world (G-SIBs), entails extra requirements and rules that can minimize the firm's capacity to use capital available to invest and develop his own business. In 2017, the company totalled $369 578 million RWAs, weighting 43,4% of total assets and representing an 18,95% decrease compared with the total 2014's RWAs. To project the coming years, it was decided to assume a constant 43% weight of total asset to estimate RWA's. Based on the third quarter financial reports, was concluded that the Common Equity Tier 1 capital would represent in 2018 16,7% of total RWA's that reflects a year on year increase of 0,2%, a safe position considering the minimum 7,3% requirement. Tier 1 Capital percentage (19%) remained the same for 2018 that amounts an expected $71 107 million. For the FCFE model assumptions, it was considered the **Total Capital ratio**, because it both include CET1 and Tier 1 capital and is the most reliable to estimate the reinvestment in regulatory capital needed to the FCFE valuation. Since 2015, Tier 1 and Tier 2 capital (the sum is the "Total Capital Ratio"), Morgan Stanley decided to establish a 22% ratio (less 0,3% in 2017) which represents a 10,9% buffer compared with the minimum capital ratio required by the authorities. Based on that, the model assumes a **22,5% target capital ratio**, discussed further on the report.

Tax Plan

"… our base case is that legislation will ultimately settle closer to a 25% rate"

On December 2017, the president of the United States Donald Trump signed the Tax Cuts and Jobs Act that cuts the **corporate tax rate** from **35%** to **21%** from 2018 onwards. Based on effective income tax rate calculations and considering average values for US State and local income taxes, domestic tax credits, tax-exempt income and foreign tax rate differential, the tax rate calculated was 12,3%, which was utopic considering a 40,1% 2017 effective tax rate. Morgan Stanley, publicly announced "that our base case is that legislation will ultimately settle closer to a 25% rate"[24] and in the long run, they expect to achieve a 20% effective income tax rate. Considering the conservative approach in the forecasts was decided to consider a constant 25% effective income tax rate for all periods forecasted.

Shares Repurchase Plan

"The model forecasts that in 2018 and 2019 a repurchase of 47 million shares"

The Capital Plan submitted this year to the Federal Reserve and includes a repurchase plan of up to "$4.7 billion of outstanding common stock for the four quarters beginning in the third quarter of 2018 through the end of the second quarter of 2019 and an increase in the Firm's quarterly common stock dividend to $0.30 per share from the current $0.25 per share, beginning with the common dividend declared for the third quarter of 2018."[25]. The tax cut besides the positive effect on the effective tax rate, also resulted in a "one-time drop in the capital ratios of the firms", according to the Federal Reserve which forced Morgan Stanley to shrink shareholders dividends and keep their shares repurchase programs. The model forecasts that in 2018 and 2019 a repurchase of 47 million shares, considering that the firm will complete the plan and repurchase shares equivalent to $4.7 billion of outstanding common stock.

Cost of Equity & Growth Rate

Exhibit 46 – Cost of Equity Assumptions & Formula

Assumptions Calculations	
Cost of Equity Formula	Re = rf + (rm – rf) * β
Risk free rate	2,89%
Beta	1,51
Market Risk Premium	5,08%
Country Risk Premium (Diversified)	0%
Cost of Equity (Re)	**10,55%**

Source – Damodaran Data & Analyst Estimates

In order to discount cash flows to equity was computed the **cost of equity** under the Capital Asset Pricing Model (CAPM) and the inputs considered were the **risk free rate (rf)**, **market risk premium, country risk premium** and the **beta**. The risk free rate of 2,89% is based on a US 10-year long-term government bond yield estimated by Federal Reserve Economic Data (FRED). The market risk premium of 5,08% was based on data from Damodaran data base built on 42 Investment Banking competitors and accepted by the market. The country risk premium was considered 0% because Morgan Stanley activities are spread into many countries around the world and its exposure to country risk is diversified.

[24] **Source –** "9 Key Takeways from the GOP Tax Framework" – Morgan Stanley, September 2017

[25] **Source** – Morgan Stanley Reports Second Quarter 2018

The beta[26] was obtained through a regression between each company's stock excess returns against the returns of the S&P500 Index for being considered a good proxy for the market. Summing up, the cost of equity considered for the model was 10,55%. The perpetuity **growth rate (g)** was the most critical input to estimate. Since Morgan Stanley has no issues with capital requirements was initially decided to calculate the growth rate base on the 2025 Return on Equity (ROE) and the plowback ratio[27] of the company, assuming that the firm will converge to that values in the future. Although, it is a method commonly accepted, the result was not considered appropriated for this model because the high retention due to capital requirements and not exactly to invest, the growth rate of 6,61% clearly overestimated the real growth in perpetuity of the company. The impossibility of calculate the invested capital and consequently the RONIC[28], the only solution available was to consider that Morgan Stanley will grow at the GDP growth rate in the perpetuity. Considering the diversified activity around the world it was not performed any weighted average of the countries where the firm is operating but was considered the 2% **World GDP growth rate** estimated OECD in 2060 as the perpetual growth rate. To conclude, and to complete the FCFE model, it was decided a **"Target Capital Ratio"** of 22,5%. The 0,5% additional buffer is considered to protect the price estimated from a hypothetical decision to increase the minimum ratios required that might happen if the entities responsible for keep the economy stability, have signs that the banking system is not sufficiently protected from a crisis and that banks should take less risks.

Exhibit 47 – FCFE Assumptions

Assumptions	
Target Capital Ratio	22,5%
Cost of Equity (Re)	10,55%
Growth Rate (g)	2,00%

Source – Analyst Estimates

Valuation

The FCFE model estimates a share price of $61,92 which means that considering the $39,65 price at 1st January 2019, there is a market opportunity. The target share price estimated for 2019 would mean an upside of 56,2% to its current share price. It is also expected a total shareholders return of 59,5% considering the dividends paid during 2019.

Multiples Valuation

Furthermore, to confirm FCFE results and better understand Morgan Stanley's positing in the industry, it was computed a multiples valuation. A relative valuation of banks is not 100% reliable because even under the same authority control, the restrictions and capital requirements that each bank is subject are different and this fact doesn't allow us to consider the same risk level for all

Exhibit 48 – Morgan Stanley Peer Group

Ticker (Reuters)	Company Name
GS.N	Goldman Sachs Group Inc
C.N	Citigroup Inc
BK.N	Bank of New York Mellon Corp
UBSG.S	UBS Group AG
BAC.N	Bank of America Corp
JPM.N	JPMorgan Chase & Co

Source – Thomson Reuters

26 **Rolling Beta** (4-year period from 5/12/2014 to 23/12/2018)

27 **Plowback ratio – "**Measures how much earnings are retained after dividends are paid out." - Investopedia

28 **RONIC –** "Determine the expected rate of return for deploying new capital**"** - Investopedia

Exhibit 49 – Comparables Valuation

Comparables - Valuation	P/E	PTVB	P/B
Min	7,44	0,99	0,77
1º Quartil	9,41	1,03	0,86
Median	**10,18**	**1,35**	**1,00**
3º Quartil	11,25	1,90	1,14
Max	11,97	3,12	1,37
Average	10,09	1,64	1,02
MS Current	**8,70**	**1,21**	**0,94**
Price per Share (2018)	**54,25**	**52,40**	**46,77**
Price per Share (2019)	**62,03**	**59,68**	**52,60**
Final Ponderated Price per Share (2018)	**52,40**		
Final Ponderated Price per Share (2019)	**59,68**		

Source – Thomson Reuters & Analyst Estimates

banks. In order to mitigate as much as possible this handicap, was applied a criteria to choose the comparables. Initially were selected all the companies operating in the financial services industry and operating as investments banks, but to reach an accurate and rigorous result other criteria were applied. First, all the banks with small presence in the United States were excluded because the multiples would be biased by the geographical location of each bank, then were excluded the banks with a Net income below $3.000 million to avoid compare financial ratios of small-sized banks. The third exclusion criteria was to remove all the firms that the core activity were not related to Morgan Stanley's and for that reason couldn't be consider a comparable, for example, Wells Fargo that is considered a retail bank and not an investment bank. Exhibit 48 shows the final list of comparables composed by **Goldman Sachs**, the closest Morgan Stanley's peer, **Citigroup** and **Bank of New York Mellon** that accomplished with all the criteria previously described, **UBS Group** a Swiss bank with a high market share in the US and for this reason, direct Morgan Stanley's competition and finally, **Bank of America Merrill Lynch** and **J.P. Morgan,** banks with a different scope but that compete with Morgan Stanley in some business lines, or in other words, they were considered peers because clients might choose their services, in preference to Morgan Stanley's offer. For banks valuation, and according to McKinsey and Damodaran literature, the most appropriate ratios to compare firms are the **Price to Earnings (P/E)**[29] ratio and the **Price to Book ratio (P/B ratio)**[29]. Adding to this two it was also considered the **Price to Tangible Book Value (PTBV)**[29] in order to exclude the weight of the intangible assets. The analysis shows that the estimated Morgan Stanley's share price of $59,68 for 2019 has a 50,5% upside complementing the FCFE result.

Key Risks and Challenges

Morgan Stanley discloses, together with the financial results, the challenges that the company expects to face according to the different risks category. The most important and the challenge with the most influence in our model is the **Market Risk**. As mentioned along the report, Morgan Stanley is highly exposed to the market fluctuations, and to the global and economic conditions that can impact directly the value of the assets owned by the firm. It's admitted in the 2017 final year report that, "severe market events have historically been difficult to predict and we could realize significant losses if extreme market events were to occur"[30], enhancing the idea that the share price is highly attached to the global economy. The second challenge for the firm is **Credit Risk** that can arise from two events. As a bank, Morgan Stanley results depend on the third parties' capability to

[29] **Source** – Thomson Reuters

[30] **Source** – Company Reports – Form 10K (2017)

accomplish with their obligations, for example, the possibility of not receive counterparties payments obligations when the firm enters a swap contract or when the securitizations of loans provided do not fully covers the loan repayment. Once again, these situations are difficult to detect and Morgan Stanley already reserves capital to covering future potential losses. Another credit risk is the **systemic risk**. The concept means that if an important financial institution has problems and eventually defaults, it could adversely affect the financial markets and consequently Morgan Stanley. The third challenge is the **Regulatory Risk** of the company not pay dividends or invest the capital needed to develop the business because of revised capital requirements. For example, the Federal Reserve may change the minimum amount of capital required and limit Morgan Stanley's capital actions. The last relevant risk is the probable inability of a financial firms like Morgan Stanley manage to capture all the advantages of new technologies and take advantages of it, cutting costs and increase revenues. This can be critical if Morgan Stanley does not follow its competitors which could lead to pricing pressures that could affect the company results.

Sensitivity Analysis

Growth rate and cost of equity assumptions are exposed to different economic events that can affect them and are difficult to predict. For this reason, it was considered a 95% confidence interval (Exhibit 51) of beta in order to estimate the upper and lower value of the cost of equity. Adding to this, it was also considered a growth rate 0,25% variations, taking into account different expectations for the World GDP growth rate.

Exhibit 50 – Sensitivity Analysis: Cost of Equity vs Growth Rate

		Growth Rate								
Cost of Equity $	**61,92**	1,00%	1,25%	1,50%	1,75%	**2,00%**	2,25%	2,50%	2,75%	3,00%
	9,50%	64,74	66,06	67,47	68,97	70,56	72,27	74,10	76,07	78,18
	9,76%	62,79	64,02	65,32	66,71	68,19	69,76	71,44	73,24	75,18
	10,02%	60,95	62,10	63,31	64,60	65,96	67,42	68,97	70,62	72,40
	10,29%	59,22	60,29	61,42	62,61	63,88	65,22	66,66	68,18	69,82
	10,55%	57,58	58,58	59,63	60,74	**61,92**	63,17	64,50	65,91	67,41
	10,81%	56,03	56,96	57,95	58,99	60,08	61,24	62,47	63,78	65,17
	11,07%	54,56	55,43	56,36	57,33	58,35	59,43	60,57	61,79	63,08
	11,33%	53,16	53,99	54,85	55,76	56,71	57,72	58,79	59,91	61,11
	11,59%	51,84	52,61	53,42	54,27	55,16	56,11	57,10	58,15	59,26

Source – Analyst Estimates

Exhibit 51 – Confidence Interval Assumptions

Cost of Equity - Confidence Interval	
Standard Error	0,11
95% Upper limit	1,71
95% Lower Limit	1,30
Upper Limit	11,59%
Lower Limit	9,50%

Source – Analyst Estimates

From this analysis, Morgan Stanley's stock price is not excessively sensitive to cost of equity and growth rate changes. A 3,0% growth rate, ceteris paribus can represent an upside of 8,87% but less -7,38% from the initial price if it is consider a growth rate of 1,0%. If the cost of equity decrease to 9,50%, ceteris paribus, the recommended share price increases 13,96% but, in reverse a 11,59% cost of equity would mean a downside of -10,91%.

Exhibit 52 – Sensitivity Analysis: Cost of Equity vs Perpetuity Growth Rate (%)

Cost of Equity $	61,92	Growth Rate 1,00%	1,25%	1,50%	1,75%	2,00%	2,25%	2,50%	2,75%	3,00%
	9,50%	104,55%	106,69%	108,96%	111,38%	113,96%	116,71%	119,67%	122,84%	126,26%
	9,76%	101,40%	103,39%	105,49%	107,73%	110,11%	112,66%	115,37%	118,28%	121,41%
	10,02%	98,43%	100,28%	102,24%	104,32%	106,52%	108,87%	111,38%	114,05%	116,92%
	10,29%	95,63%	97,36%	99,18%	101,11%	103,16%	105,33%	107,65%	110,11%	112,75%
	10,55%	92,99%	94,60%	96,30%	98,10%	100,00%	102,02%	104,16%	106,44%	108,87%
	10,81%	90,48%	91,99%	93,58%	95,26%	97,03%	98,90%	100,89%	103,00%	105,25%
	11,07%	88,11%	89,52%	91,01%	92,58%	94,23%	95,97%	97,82%	99,78%	101,86%
	11,33%	85,86%	87,18%	88,58%	90,04%	91,59%	93,21%	94,94%	96,76%	98,69%
	11,59%	83,71%	84,96%	86,27%	87,64%	89,09%	90,61%	92,22%	93,91%	95,71%

Source – Analyst Estimates

Exhibit 53 – Sensitivity Analysis: Cost of Equity vs Target Capital Ratio

Cost of Equity $	61,92	Regulatory Capital 20,50%	21,00%	21,50%	22,00%	22,50%	23,00%	23,50%	24,00%	24,50%
	9,50%	131,51	116,27	101,04	85,80	70,56	55,33	40,09	24,85	9,62
	9,76%	127,09	112,36	97,64	82,91	68,19	53,46	38,74	24,01	9,28
	10,02%	122,95	108,70	94,46	80,21	65,96	51,71	37,47	23,22	8,97
	10,29%	119,08	105,28	91,48	77,68	63,88	50,08	36,28	22,48	8,68
	10,55%	115,44	102,06	88,68	75,30	**61,92**	48,54	35,16	21,79	8,41
	10,81%	112,02	99,03	86,05	73,07	60,08	47,10	34,12	21,13	8,15
	11,07%	108,79	96,18	83,57	70,96	58,35	45,74	33,13	20,52	7,91
	11,33%	105,75	93,49	81,23	68,97	56,71	44,45	32,20	19,94	7,68
	11,59%	102,87	90,94	79,02	67,09	55,16	43,24	31,31	19,39	7,46

Source – Analyst Estimates

The last model assumption challenged was the **Target Capital Ratio**, an important model input that in opposition to the perpetuity growth rate and the cost of equity, the recommended price is highly sensitive. Ceteris paribus, if the required regulatory capital decreases 2% would mean increase of 186,42% that would allow the firm to reinvest this surplus or distribute to the shareholders, increasing the share price. However, a target capital ratio of 24,5% represent a decrease of -86,42%, reinforcing the importance of this assumption.

Scenario Analysis

Exhibit 54 – Scenario Analysis Assumptions

Scenario Analysis	
Best Case Scenario	
Target Capital Ratio	22,0%
Cost of Equity (Re)	10,0%
Growth Rate (g)	3,6%
Worst Case Scenario	
Target Capital Ratio	23,5%
Cost of Equity (Re)	11,0%
Growth Rate (g)	1,0%
Base Case	
Target Capital Ratio	22,5%
Cost of Equity (Re)	10,5%
Growth Rate (g)	2,00%

Source – Analyst Estimates

The Base case scenario initially calculated is considered the most likely to happen. Considering the “Key Risks and Challenges” chapter, two additional possible scenarios were performed. For the Best Case Scenario was considered that the Target Capital Ratio would be the same than the previous years (22%), not expecting a ratio relief in the next few years, the cost of equity would decrease to 10%, considering a beta adjustment and the growth rate considered is 3,6%, the World GDP growth rate estimated by IMF for 2025 that was not consider for the model because it includes emerging countries growth rates that overvalue Morgan Stanley growth that is not exposed to those countries. The worst case Scenario, considers an higher capital requirements, reflected on the target capital ratio of 23,5%, an 0,5% higher cost of equity (11%) and 1% growth rate, only possible if Morgan Stanley is exposed only to steady growth countries. The result wasn’t surprising, the best case gives a share price for 2019 of $94,25 that would mean a 137,7% upside with respect to the base case and the worst case scenario discloses a 31,19 share price, representing a negative capital gain in 2019 of -21,3% and the recommendation would change to “SELL”.

Exhibit 55 – Scenario Analysis – Base Case

Final Price Recommendation	
FCFE 2019 Share Price	$ 61,92
Final Recomendation Share Price	$ 61,92
Current Share Price (DEZ 2018)	$ 39,65
Capital Gain (2019)	56,2%
Capital Gain & Dividends (2019)	59,5%
RECOMMENDATION	BUY
RECOMMENDATION (Cost Of Equity)	BUY

Source – Analyst Estimates

Exhibit 56 – Scenario Analysis – Best Case

Final Price Recommendation	
FCFE 2019 Share Price	$ 94,25
Final Recomendation Share Price	$ 94,25
Current Share Price (DEZ 2018)	$ 39,65
Capital Gain (2019)	137,7%
Capital Gain & Dividends (2019)	141,0%
RECOMMENDATION	BUY
RECOMMENDATION (Cost Of Equity)	BUY

Source – Analyst Estimates

Exhibit 57 – Scenario Analysis – Worst Case

Final Price Recommendation	
FCFE 2019 Share Price	$ 31,19
Final Recomendation Share Price	$ 31,19
Current Share Price (DEZ 2018)	$ 39,65
Capital Gain (2019)	-21,3%
Capital Gain & Dividends (2019)	-18,1%
RECOMMENDATION	SELL
RECOMMENDATION (Cost Of Equity)	SELL

Source – Analyst Estimates

Final Considerations

In January 2018, James P. Gorman explained the 2018-2019 and the medium term objectives during the “2018 Strategic Update”. The firm considers that for the coming years is important to reach a ROE between 10-13% and a ROTCE between 11,5% and 14,5%, both considered in the model and expected to happen between 2020 and 2021. Concerning important financial ratios, next year (2019) the firm is also going to focus attention on deliver a Wealth Management Pre-tax margin of 26%-28% and realize an efficiency expense ratio below or equal to 73%, both also considered in the model assumptions. In addition, Morgan Stanley’s CEO also mentioned that position “Investment Management” for growth and maintain the company attractive capital return profile are key objectives to keep the firm on track.

Morgan Stanley’s growing market share in crucial business lines and the stable financial condition of the company described throughout the report together with a strategic investment on disruptive technologies sustain the price target FY19 of $60,80 given by a weighted average between the FCFE valuation and the comparables method. The company effort to comply with all the capital requirements and rules established by the authorities will help the firm to survive during the expected stagnation of the economy in the coming years and Morgan Stanley is going to stand out from the peers which is going to be reflected on the share price.

Appendix

Financial Statements – Balance Sheet

Balance Sheet	2013	2014	2015	2016	2017	2018E	2019F	2020F	2021F	2022F	2023F	2024F	2025F
Assets													
Cash and Short Term Investments	99 086	87 591	85 552	77 360	80 395	105 378	126 721	139 794	148 256	157 116	166 239	175 366	187 140
Trading Assets at fair value	280 744	256 801	228 280	262 154	298 282	290 825	287 917	293 675	296 612	299 578	301 076	302 581	304 094
Investment Securities	53 430	69 316	71 983	80 092	78 802	76 832	76 064	77 585	78 361	79 144	79 540	79 938	80 337
Securities received as collateral, at fair value	20 508	21 316	11 225	0	0	0	0	0	0	0	0	0	0
Securities purchased under agreements to resell	118 130	83 288	87 657	101 955	84 258	82 152	81 330	82 957	83 786	84 624	85 047	85 472	85 900
Securities borrowed	129 707	136 708	142 416	125 236	124 010	117 810	114 864	112 567	113 693	114 830	115 404	115 981	116 561
Customer & Other Receivables	57 104	48 961	45 407	46 460	56 187	54 782	54 235	55 319	55 872	56 431	56 713	56 997	57 282
Loans	42 874	66 577	85 759	94 248	104 126	108 215	110 390	112 684	113 811	114 949	115 523	116 101	116 682
Other Investments	5 086	4 355	4 202	0	0	0	0	0	0	0	0	0	0
Premises, equipment and software costs	6 019	6 108	6 373	0	0	0	0	0	0	0	0	0	0
Goodwill	6 595	6 588	6 584	6 577	6 597	6 597	6 597	6 597	6 597	6 597	6 597	6 597	6 597
Intangible Assets	3 286	3 159	2 984	2 721	2 448	2 448	2 448	2 448	2 448	2 448	2 448	2 448	2 448
Other Assets	10 133	10 742	9 043	18 146	16 628	17 459	17 896	18 343	18 710	19 084	19 275	19 468	19 663
Total Assets	**832 702**	**801 510**	**787 465**	**814 949**	**851 733**	**862 498**	**878 461**	**901 969**	**918 145**	**934 801**	**947 862**	**960 949**	**976 703**
Liabilities													
Deposits	112 379	133 544	156 034	155 863	159 436	162 625	165 877	169 195	170 887	172 596	173 459	174 326	177 812
Trading Liabilities at Fair Value	104 521	107 381	109 139	128 194	131 295	128 013	126 732	129 267	130 560	131 865	132 525	133 187	133 853
Commercial Paper and other short term borrowings	2 142	2 261	2 173	0	0	0	0	0	0	0	0	0	0
Obligation to return securities received as collateral	24 568	25 685	19 316	0	0	0	0	0	0	0	0	0	0
Securities sold under agreements to repurchase	145 676	69 949	36 692	54 628	56 424	55 013	54 463	55 553	56 108	56 669	56 952	57 237	57 523
Securities Loaned	32 799	25 219	19 358	15 844	13 592	10 788	9 170	8 253	7 427	7 056	6 880	6 708	6 540
Other secured financings	14 215	12 085	9 464	11 118	11 271	10 989	10 879	11 097	11 208	11 320	11 377	11 433	11 491
Customer and other payables	157 125	181 069	186 626	190 513	191 510	195 340	199 247	203 232	205 264	207 317	208 353	209 395	210 442
Other liabilities and accrued expenses	16 672	19 441	18 711	15 896	17 157	17 500	17 850	18 207	18 389	18 573	18 666	18 759	18 853
Long-term Borrowings	153 575	152 772	153 768	165 716	192 582	196 434	200 362	204 370	206 413	208 477	209 520	210 567	211 620
Total Liabilities	**763 672**	**729 406**	**711 281**	**737 772**	**773 267**	**776 702**	**784 581**	**799 173**	**806 257**	**813 874**	**817 731**	**821 613**	**828 135**
Shareholders' Equity													
Preferred Stock	3 220	6 020	7 520	7 520	8 520	8 520	8 520	8 520	8 520	8 520	8 520	8 520	8 520
Common Stock, $0,01 par value	20	20	20	20	20	20	20	20	20	20	20	20	20
Additional Paid-In Capital	24 570	24 249	24 153	23 271	23 545	23 545	23 545	23 545	23 545	23 545	23 545	23 545	23 545
Retained Earnings	42 172	44 625	49 204	53 679	57 577	64 907	72 991	81 907	91 000	100 038	109 242	118 446	127 679
Employee Stock trusts	1 718	2 127	2 409	2 851	2 097	2 097	2 097	2 097	2 097	2 097	2 097	2 097	2 097
Treasury Stock - Common	-2 968	-2 766	-4 059	-5 797	-9 211	-9 211	-9 211	-9 211	-9 211	-9 211	-9 211	-9 211	-9 211
Accumulated other comprehensive income (loss) - AOIC	-1 093	-1 248	-1 656	-2 643	-3 060	-3 060	-3 060	-3 060	-3 060	-3 060	-3 060	-3 060	-3 060
Common stock issued to employee stock trusts	-1 718	-2 127	-2 409	-2 851	-2 097	-2 097	-2 097	-2 097	-2 097	-2 097	-2 097	-2 097	-2 097
Average Common Shares Outstanding:													
Basic	1 906	1 924	1 909	1 849	1 780	1 733	1 686	1 634	1 584	1 536	1 489	1 443	1 399
% growth		*0,94%*	*-0,76%*	*-3,15%*	*-3,73%*	*-2,64%*	*-2,71%*	*-3,06%*	*-3,06%*	*-3,06%*	*-3,06%*	*-3,06%*	*-3,06%*
Diluted	1 957	1 971	1 953	1 887	1 821	1 766	1 713	1 662	1 612	1 564	1 517	1 471	1 427
% growth		*0,72%*	*-0,90%*	*-3,37%*	*-3,50%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*
Outstanding Shares Repurchase Plan 2018 (N. Shares)						**-47**	**-47**						
Total Morgan Stanley shareholders' equity	65 921	70 900	75 182	76 050	77 391	84 721	92 805	101 721	110 814	119 852	129 056	138 260	147 493
Non-controling interests	3 109	1 204	1 002	1 127	1 075	1 075	1 075	1 075	1 075	1 075	1 075	1 075	1 075
Total Equity	**69 030**	**72 104**	**76 184**	**77 177**	**78 466**	**85 796**	**93 880**	**102 796**	**111 889**	**120 927**	**130 131**	**139 335**	**148 568**
Total Liabilities and Equity	**832 702**	**801 510**	**787 465**	**814 949**	**851 733**	**862 498**	**878 461**	**901 969**	**918 145**	**934 801**	**947 862**	**960 949**	**976 703**

Financial Statements – Income Statement

Income Statement	**2013**	**2014**	**2015**	**2016**	**2017**	**2018E**	**2019F**	**2020F**	**2021F**	**2022F**	**2023F**	**2024F**	**2025F**
Interest and similar income	5 682	5 908	6 298	7 899	9 973	10 970	11 519	12 095	12 699	13 017	13 342	13 476	13 611
Interest and similar charges	-4 909	-4 177	-3 205	-4 201	-6 677	-7 345	-7 712	-8 098	-8 502	-8 715	-8 933	-9 022	-9 112
Net Interest Income	773	1 731	3 093	3 698	3 296	3 626	3 807	3 997	4 197	4 302	4 410	4 454	4 498
Investment Banking	5 311	5 999	5 632	4 960	6 070	6 775	7 513	8 046	8 621	9 024	9 450	9 703	9 965
Trading	9 349	9 383	10 130	10 246	11 121	12 151	12 454	12 766	12 510	12 260	12 138	12 016	11 896
Investments	1 777	836	541	160	820	615	577	545	536	524	523	521	519
Comissions & Fees	4 634	4 737	4 598	4 204	4 170	4 535	4 622	4 674	4 599	4 533	4 523	4 514	4 505
Asset Management	9 771	10 675	10 866	10 810	11 897	13 192	14 171	15 144	15 812	16 469	16 828	17 181	17 542
Other	1 106	1 110	508	843	861	930	946	963	970	977	981	984	988
Non-Interest Revenue	31 948	32 740	32 275	31 223	34 939	38 198	40 283	42 138	43 048	43 788	44 443	44 919	45 414
Net Banking Income	32 721	34 471	35 368	34 921	38 235	41 823	44 090	46 135	47 245	48 090	48 852	49 372	49 912
Compensation & Benefits	-16 277	-17 824	-16 016	-15 878	-17 166	-18 024	-18 926	-19 399	-19 884	-20 381	-20 585	-20 790	-20 998
Occupancy & Equipment	-1 499	-1 433	-1 382	-1 308	-1 329	-1 263	-1 199	-1 169	-1 140	-1 169	-1 180	-1 192	-1 204
Brokerage, Clearing and exchange fees	-1 711	-1 806	-1 892	-1 920	-2 093	-1 988	-1 939	-1 987	-2 037	-2 088	-2 109	-2 130	-2 151
Information processing & Communications	-1 768	-1 635	-1 767	-1 787	-1 791	-1 791	-1 791	-1 791	-1 791	-1 791	-1 791	-1 791	-1 791
Marketing & Business Development	-638	-658	-681	-587	-609	-633	-659	-685	-699	-713	-720	-727	-734
Professional services	-1 894	-2 117	-2 298	-2 128	-2 169	-2 212	-2 257	-2 302	-2 325	-2 348	-2 360	-2 372	-2 383
Other	-4 376	-5 407	-2 837	-2 465	-2 675	-2 675	-2 675	-2 675	-2 675	-2 675	-2 675	-2 675	-2 675
Non-Interest Expenses	-28 163	-30 880	-26 873	-26 073	-27 832	-28 587	-29 445	-30 008	-30 550	-31 164	-31 419	-31 677	-31 937
Income from continuing operations before income taxes	**4 558**	**3 591**	**8 495**	**8 848**	**10 403**	**13 236**	**14 645**	**16 127**	**16 695**	**16 926**	**17 433**	**17 695**	**17 975**
Provision for income taxes	-902	90	-2 200	-2 725	-4 172	-3 309	-3 661	-4 032	-4 174	-4 231	-4 358	-4 424	-4 494
Income from continuing operations	**3 656**	**3 681**	**6 295**	**6 123**	**6 231**	**9 927**	**10 984**	**12 095**	**12 521**	**12 694**	**13 075**	**13 272**	**13 481**
Income (Loss) from discoutinued operations, net of income taxes	-43	-14	-16	1	-19								
Net Income	**3 613**	**3 667**	**6 279**	**6 124**	**6 212**	**9 927**	**10 984**	**12 095**	**12 521**	**12 694**	**13 075**	**13 272**	**13 481**
Net income applicable to redeemable noncontrolling interests	-681	-200	-152	-144	-105	-168	-186	-204	-212	-215	-221	-224	-228
Net Income applicable to Morgan Stanley	**2 932**	**3 467**	**6 127**	**5 980**	**6 107**	**9 759**	**10 798**	**11 891**	**12 310**	**12 480**	**12 854**	**13 047**	**13 254**
Preferred Stock Dividends & Other	-277	-315	-456	-471	-523	-523	-523	-523	-523	-523	-523	-523	-523
Growth (%)		*18,3%*	*76,7%*	*-2,4%*	*2,1%*	*59,8%*	*10,6%*	*10,1%*	*3,5%*	*1,4%*	*3,0%*	*1,5%*	*1,6%*
Earnings applicable to Morgan Stanley common shareholders	**2 655**	**3 152**	**5 671**	**5 509**	**5 584**	**9 236**	**10 275**	**11 368**	**11 787**	**11 957**	**12 331**	**12 524**	**12 731**
Growth (%)		*18,7%*	*79,9%*	*-2,9%*	*1,4%*	*65,4%*	*11,2%*	*10,6%*	*3,7%*	*1,4%*	*3,1%*	*1,6%*	*1,6%*
Earnings per basic common share (EPS)	**1,39**	**1,64**	**2,97**	**2,98**	**3,14**	**5,33**	**6,09**	**6,96**	**7,44**	**7,78**	**8,28**	**8,68**	**9,10**
Earnings per diluted common share	**1,36**	**1,60**	**2,90**	**2,92**	**3,07**	**5,23**	**6,00**	**6,84**	**7,31**	**7,65**	**8,13**	**8,51**	**8,92**
Dividends Paid	-521	-1 014	-1 548	-1 816	-2 178	-2 429	-2 715	-2 975	-3 217	-3 441	-3 650	-3 843	-4 021
Dividends declared per common share	**0,20**	**0,35**	**0,55**	**0,70**	**0,90**	**1,10**	**1,30**	**1,50**	**1,70**	**1,90**	**2,10**	**2,30**	**2,50**
Growth		**0,15**	**0,20**	**0,15**	**0,20**	**0,20**	**0,20**	**0,20**	**0,20**	**0,20**	**0,20**	**0,20**	**0,20**
Growth (%)		*75,0%*	*57,1%*	*27,3%*	*28,6%*	*22,2%*	*18,2%*	*15,4%*	*13,3%*	*11,8%*	*10,5%*	*9,5%*	*8,7%*
Dividends per common share (Calculated)	**0,13**	**0,36**	**0,57**	**0,73**	**0,93**	**1,10**	**1,30**	**1,50**	**1,70**	**1,90**	**2,10**	**2,30**	**2,50**

Financial Statements – Assets = Liabilities + Equity

Assets = Liabilities + Equity	2013	2014	2015	2016	2017	2018E	2019F	2020F	2021F	2022F	2023F	2024F	2025F
Cash and Short Term Investments	**99 086**	**87 591**	**85 552**	**77 360**	**80 395**	**86 425**	**92 906**	**97 552**	**102 429**	**104 990**	**107 615**	**109 767**	**111 963**
Deposits	**112 379**	**133 544**	**156 034**	**155 863**	**159 436**	**162 625**	**165 877**	**169 195**	**170 887**	**172 596**	**173 459**	**174 326**	**177 812**
Net Income applicable to Morgan Stanley	**2 932**	**3 467**	**6 127**	**5 980**	**6 107**	**9 759**	**10 798**	**11 891**	**12 310**	**12 480**	**12 854**	**13 047**	**13 254**
Increases in Funding (adjustment for change in total Liabilities)						**3 435**	**7 880**	**14 591**	**7 084**	**7 617**	**3 858**	**3 882**	**6 522**
Deposits						3 189	3 252	3 318	1 692	1 709	863	867	3 487
Trading Liabilities at Fair Value						-3 282	-1 280	2 535	1 293	1 306	659	663	666
Securities sold under agreements to repurchase						-1 411	-550	1 089	556	561	283	285	286
Securities Loaned						-2 804	-1 618	-917	-825	-371	-176	-172	-168
Other secured financings						-282	-110	218	111	112	57	57	57
Customer and other payables						3 830	3 907	3 985	2 032	2 053	1 037	1 042	1 047
Other liabilities and accrued expenses						343	350	357	182	184	93	93	94
Long-term Borrowings						3 852	3 929	4 007	2 044	2 064	1 042	1 048	1 053
Adjustment for Change in total Assets						**8 189**	**-1 102**	**-15 080**	**-12 592**	**-10 356**	**-6 563**	**-6 112**	**-6 175**
Cash and Short Term Investments						-6 030	-6 482	-4 645	-4 878	-2 561	-2 625	-2 152	-2 195
Trading Assets at fair value						7 457	2 908	-5 758	-2 937	-2 966	-1 498	-1 505	-1 513
Investment Securities						1 970	768	-1 521	-776	-784	-396	-398	-400
Securities purchased under agreements to resell						2 106	822	-1 627	-830	-838	-423	-425	-427
Securities borrowed						6 201	2 945	2 297	-1 126	-1 137	-574	-577	-580
Customer & Other Receivables						1 405	548	-1 085	-553	-559	-282	-284	-285
Loans						-4 089	-2 175	-2 294	-1 127	-1 138	-575	-578	-581
Intangible Assets						0	0	0	0	0	0	0	0
Other Assets						-831	-436	-447	-367	-374	-191	-193	-195
Dividends Paid						**-2 429**	**-2 715**	**-2 975**	**-3 217**	**-3 441**	**-3 650**	**-3 843**	**-4 021**
Cash and Deposits in central banks (bop)							**18 953**	**33 815**	**42 242**	**45 827**	**52 126**	**58 624**	**65 599**
Change						18 953	14 861	8 427	3 585	6 299	6 498	6 975	9 579
Cash and Deposits in central banks (eop)						**18 953**	**33 815**	**42 242**	**45 827**	**52 126**	**58 624**	**65 599**	**75 177**
Check (Assets = Liabilities + Equity)						TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Cash and Short Term Investments (Adjusted)	**99 086**	**87 591**	**85 552**	**77 360**	**80 395**	**105 378**	**126 721**	**139 794**	**148 256**	**157 116**	**166 239**	**175 366**	**187 140**
Deposits (Adjusted)	**112 379**	**133 544**	**156 034**	**155 863**	**159 436**	**162 625**	**165 877**	**169 195**	**170 887**	**172 596**	**173 459**	**174 326**	**177 812**

Valuation – Free Cash Flow to Equity Model

Valuation	2018	2019	2020	2021	2022	2023	2024	2025
RWA's	**374 249**	**381 176**	**391 376**	**398 395**	**405 622**	**411 290**	**416 968**	**423 804**
Total Capital (w/ net income of the year)	**81 212**	**82 715**	**84 929**	**86 452**	**88 020**	**89 250**	**90 482**	**91 965**
Net Income applicable to Morgan Stanley	9 759	10 798	11 891	12 310	12 480	12 854	13 047	13 254
Δ Regulatory Deductions								
Intangible Assets	0	0	0	0	0	0	0	0
Deferred Tax Assets	0	0	0	0	0	0	0	0
Total Capital (before capital shortage/excess) (1)	90 971	93 513	96 819	98 761	100 500	102 104	103 529	105 219
Total Capital Ratio	24,31%	24,53%	24,74%	24,79%	24,78%	24,83%	24,83%	24,83%
FCFE	6 765	7 749	8 760	9 122	9 235	9 563	9 712	9 863
Target Total Capital (2)	84 206	85 765	88 060	89 639	91 265	92 540	93 818	95 356
Total Capital (after capital shortage/excess)	84 206	85 765	88 060	89 639	91 265	92 540	93 818	95 356
Total Capital Ratio	22,5%	22,5%	22,5%	22,5%	22,5%	22,5%	22,5%	22,5%
FCFE (Considering no Capital Increase)	6 765	7 749	8 760	9 122	9 235	9 563	9 712	9 863
Discount Factor		0,904587255	0,8182781	0,7402039	0,669579053	0,605692677	0,547901876	0,495625055
Period		1	2	3	4	5	6	7

Valuation (Equity Value - 2019)		**104 401,2**
Terminal Value (%)		**62%**
2019 Share Price	**$**	**61,92**
Current Share Price (DEZ 2018)	**$**	**39,65**
Overvalued/Undervalued (2018)		**47,6%**
Capital Gain (2019)		**56,2%**
Capital Gain & Dividends (2019)		**59,5%**

Important References

Damodaran, A. (2011). *Damodaran on valuation: Security analysis for investment and corporate finance.* New Delhi: Wiley India Pvt.

Koller, T., Goedhart, M., & Wessels, D. (2015). *Valuation measuring and managing the value of companies*. Hoboken, NJ: Wiley

Basel Committee on Banking Supervision. 2017. *Basel Committee on Banking Supervision reforms - Basel III*. Available at: https://www.bis.org/bcbs/basel3/b3_bank_sup_reforms.pdf.

Basel Committee on Banking Supervision. 2017. *Basel III: Finalising post-crisis reforms*. Available at: https://www.bis.org/bcbs/publ/d424.pdf.

Basel Committee on Banking Supervision. 2017. Basel III transitional arrangements, 2017-2027. Available at: https://www.bis.org/bcbs/basel3/b3_trans_arr_1727.pdf.

Blackrock Investment Institute. 2018. *Global Investment Outlook - Midyear 2018*.Available at: https://www.blackrock.com/corporate/literature/whitepaper/bii-2018-midyear-investment-outlook-us.pdf

Guillemette, Y. and D. Turner (2018), *"The Long View: Scenarios for the World Economy to 2060"*, OECD Economic Policy Papers, No. 22, OECD Publishing, Paris, https://doi.org/10.1787/b4f4e03e-en

McKinsey&Company. 2017. *A foundation for value in capital markets*. Available at: https://www.mckinsey.com/industries/financial-services/our-insights/a-foundation-for-value-in-capital-markets.

Morgan Stanley. 2017. *MS 10-K December 2017*. Available at: https://www.morganstanley.com/about-us-ir/pdf/MS_10K_December_31_2017.pdf

Morgan Stanley. 2015. *MS 10-K December 2015*. Available at: https://www.morganstanley.com/about-us-ir/pdf/2015_MS_10-K_Final_Clean_Bannerless.pdf

Thomson Reuters. 2018. *Global Investment Banking Review - First Nine Months 2018*. Available at: http://dmi.thomsonreuters.com/Content/Files/3Q2018_MA_Legal_Advisor_Review.pdf.

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Report Recommendations

Buy	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
Hold	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
Sell	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

This report was prepared by Nuno André Neto Gonçalves, a Master in Finance student of Nova School of Business & Economics ("Nova SBE"), within the context of the DRI Directed Research Internship Finance – Alternative Track.

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