MASTER IN FINANCE

DEUTSCHE BANK AG

COMPANY REPORT

BANKING

4 JANUARY 2019

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Harsh times for EU Banks

Positive future economic outlook

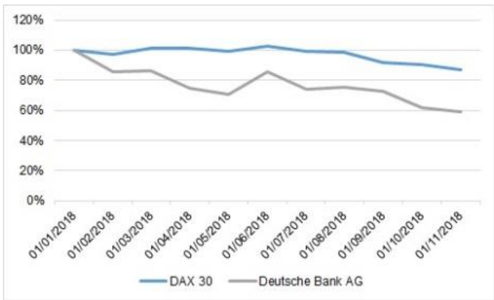
- In recent years Deutsche Bank reported large losses, mainly as a consequence of financial penalties and an extremely compressed interest rate margin environment, accounting this way a record loss of €6.7Bn in 2015. In Europe the ECB is expected to raise interest rates by the end of 2019, which will play a positive impact on Deutsche Bank and the overall European Banking Sector.
- At the time of this report Deutsche Bank is experiencing strong depreciations in the Equity Markets having reached all-time lows, losing almost 50% of its market capitalization in 2018 alone. To contribute to this drop in price are latest scandals regarding money laundering and the bank's financial fragility over recent years.
- Deutsche Bank is represented all over the world in its three main business categories, however is part of the bank's strategic decisions to focus in Germany, in an attempt to recoup for lost market share. The bank is also committed to reduce "Non-Interest Expenses", having set the target at €21Bn by the end of 2021, a reduction of 15% over 2017. Furthermore, as part of this strategy, in 2018 Deutsche Bank sold its operations in Portugal and Poland to reduce the group's complexity.
- The target price at the end of 2019 was the result of a Flow-to-Equity valuation method, which is most appropriate for financial institutions. This valuation method yield a result of €7.93 per share.

Recommendation:	**BUY**
Price Target FY19:	**7.93 €**
Price (as of 3-Jan-19)	**7.10 €**

Reuters: DBKGn.DE, Bloomberg: DBK GR

52-week range (€)	6.68-16.46
Market Cap (€Bn)	14.3889
Outstanding Shares (m)	2067

Source: Bloomberg



Source: Bloomberg

(Values in € millions)	2017	2018E	2019F
Net Revenues	25921	25893	26556
Provisions for Credit Losses	526	484	649
Net Profit	-737	1416	2240
ROE	-1.17%	2.30%	3.49%
Loan/Deposits	0.69	0.69	0.69
Risk Weighted Assets	344212	354626	364575
Tier 1 Capital Ratio	15.4%	17%	17%

Source: Company Reports & Analyst's Estimates

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Company Overview

Headquartered in Frankfurt, Deutsche Bank is currently the largest Bank in Germany and the 4th largest in Europe, by the amount of assets. It operates in 60 countries, represented by a total of 97,535 employees over 2,425 branches[1]. It is based in 3 core corporate divisions: Asset Management (AM), Corporate & Investment Banking (CIB) and Private and Commercial Banking (PCB). It takes part in the DAX-30 stock exchange with a market capitalization of €15Bn[2].

History

In early 1870's, several private bankers joint forces and created what is today known as Deutsche Bank. The two main founders were Adelbert Delbrück and Ludwig Bambergeras, whose goal was to create a financial institution that transacted "banking business of all kinds, in particular to promote and facilitate trade relations between Germany, other European countries and overseas markets" [1].

The bank started by having a strong impact in the development of Germany's electrical, chemicals and steel industries. These were the first steps taken by Deutsche Bank, beginning its expansion period, with the creation of strategic partnerships with larger banks, in the main German Industrial regions. Before the turn of the century, Deutsche Bank already had presence overseas, with operations in Argentina, Brazil, Chile and Asia.

The first half of the XX century turned out be hard for Deutsche Bank. By end of the World War I the bank had lost most of its foreign business, despite the strong investment and extension of the German branches network (thought mergers with regional banks). In 1929 the bank merged with the largest competitor, *Disconto-gesellschaft*, to form "Deutsche Bank und Disconto-Gesellschaft" later renamed as Deutsche Bank. The timing of this merge turned out to be on point to help facing the unfolding world economic and banking crisis. To make matters worse, the establishment of Hitler's regime made Deutsche Bank a tool of the Nazi State, leaving it on the verge of Bankruptcy by the end of World War II.

[1] Company Report
[2] As of 3 January 2019

From 1950's onwards international issuing business grew in volume and became important as "Germany moved from being a debtor to being a creditor nation[3]". During the 70's, expansion was the primary focus for the bank, leading to the acquisition of major banks in Italy, Spain, the UK and the United States.

In 2008 Deutsche Bank experienced its biggest "financial hit" since the World War II, resulting in some judicial cases in the subsequent years, for economical misconduct during the time that preceded the crisis, leading to severe financial and reputational consequences for the bank.

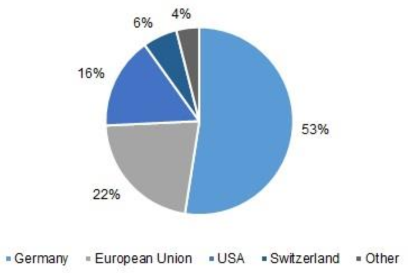
Shareholder Structure

Figure 1: Deutsche Bank's Largest Shareholders

6.55%	BlackRock
3.50%	C-QUADRAT Special Situations Dedicated unf
3.05%	Paramount Services Holding Ltd.
3.05%	Supreme Universal Holding Ltd.
3.00%	Stephen A. Feinberg

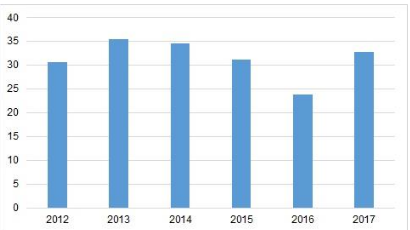
Source: Company Report

Figure 2: Geographic Distribution of Share Ownership



Source: Company Report

Figure 3: Deutsche Bank's Market Cap. (in €Bn)



Source: Company Report

Deutsche Bank has revealed a rather consistent capital structure over time, which has been practically the same for the last 5 years. Currently in divided in 2 parts, in which 19% belongs to Private Investors and the remaining to Institutional Investors (including other banks). The largest shareholder at the date of this report is BlackRock, owning 6.55% of Deutsche Bank[3].

Being a German bank, as it would be expected, the greatest share of capital is located in Germany itself. This ranking of capital distribution is followed by the European Union and the U.S..

By the end of 2017, Deutsche Bank's market capitalization was €32.8Bn, €9Bn more than the previous year. This substantial increase was the result of a carried out Capital Increase of €8.0Bn in April 2017, where 687.5 million new common shares were issued. In this operation 98.92% of the subscription rights were exercised, converting in 680.1 million new shares, each at this price of €11.65. The remaining newly issued stocks, were sold on the secondary market at an average price of €15.50 per share.

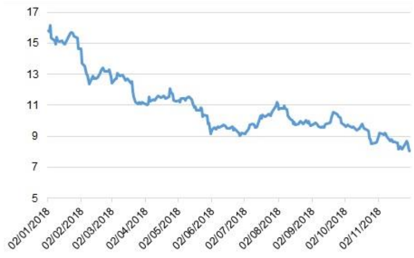
Despite this large rise in market capitalization, the net increase in Equity Value in 2017 was just €3.3Bn while compared to 2016, justified by the net losses attributable to shareholders (€751 million), Dividends (€392 million), net losses by from exchange rates (€2.6Bn), reduction of unrealized gains (losses) of both financial assets available for sale and derivatives hedging the variability of cash flows (€348 million) and additional coupons paid (€398 million).

By the end of 2018, this reality is extremely far off. Due to a series of depreciations in the financial markets, the bank's market cap plunged more than half of it was worth in the beginning of the year.

[3] Company Report

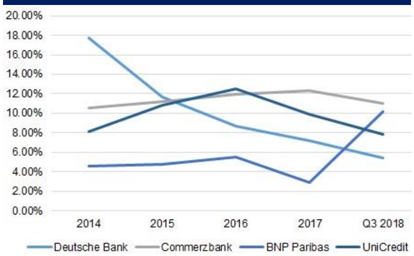
Equity Markets

Figure 4: Deutsche Bank's Share Price (in €)



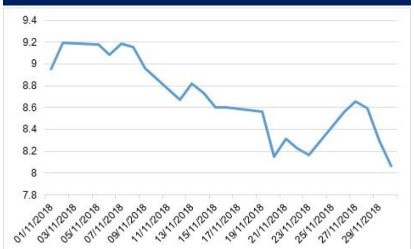
Source: Bloomberg

Figure 5: Market Share in German Loan Market (in %)



Source: German borrower loan data compiled by Bloomberg

Figure 6: Deutsche Bank's Share Price November 2018 (in €)



Source: Bloomberg

At the time of this report, Deutsche Bank has been facing large depreciations in the Equity Markets, having lost more than 50% of its market value just during the year of 2018 alone.

These consecutive depreciations are motivated by the lost in market share in its home country. In 2015 Deutsche Bank was the number one lender in Germany, however by the 3rd quarter of 2018 it was 5th [4]. The bank is no longer considered the backbone of the German Industry, as its biggest customers start to be less and less dependable on it. Competitors like BNP Paribas, Goldman Sachs and ING Group NV started to capture customers in Germany, putting even more pressure on the bank.

Having grown from a regional bank to a world player a little over a decade ago, Deutsche Bank became one of the biggest Investment Banks in the world, however when the financial crisis hit, the weakness behind Deutsche's Bank management and financial practices were brought to public, leading to massive losses and litigation costs for the bank. As a consequence of this decline in the Bank's activities, Deutsche has moved from €2.28 trillion in 2011 worth of assets to just €1.38 in last quarter[4].

To make matters worse, Deutsche Bank was recently associated with the money laundering scandal around Danske Bank, accused of processing more than $150Bn worth of payments between the years of 2007 and 2015. After the bank confirmed to Reuters these operations, the stock price reach all-time lows.

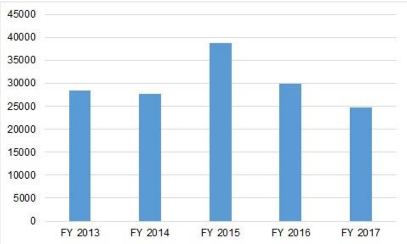
As a consequence of these series of events as well as quarterly results that did not meet shareholders expectations, a downward pressure on the bank's share prices is higher than ever. To worsen the current situation, customer's confidence on the bank starts to be affected.

The $7.2Bn Fine

At the end of 2016, Deutsche Bank was accused by the U.S. Department of Justice of misleading its clients to invest in Residential Mortgage-Backed Securities (RMBS) between the years of 2005 and 2007, contributing directly to the severe effects of 2008 Financial Crisis.

[4] Bloomberg. 2018. *Sewing's Options Dwindle as Deutsche Bank Hit by Fresh Scandals.* [ONLINE] Available at: https://www.bloomberg.com/news/articles/2018-12-01/sewing-s-options-dwindle-as-deutsche-bank-hit-by-fresh-scandals

Figure 7: Deutsche Bank's Non-Interest Expenses (in €m)



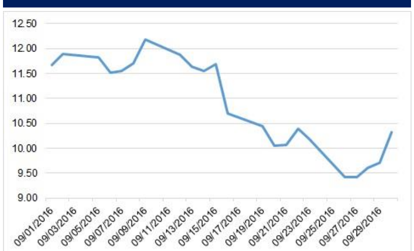
Source: Company Report

Figure 8: Fines by the U.S. Department of Justice (in €Bn)

Deutsche Bank	$7.2
Barclays	$2
HSBC	$0.765
RBS	$4.9
Goldman Sachs	$5.06
Credit Suisse	$5.28

Source: U.S. Department of Justice

Figure 9: Deutsche Bank's Share Price September 2016 (in €)



Source: Bloomberg

The investigation proved that Deutsche Bank advised its customers to "put their money" in the RMBS, despite the bank being fully aware of the risks and truly nature of the products, as the final investigation report stated that:

- "Deutsche Bank knew that for some securitized loan pools, more than 50 percent of the loans subjected to due diligence did not meet originators' guidelines[5]";
- "Deutsche Bank concealed from investors that significant numbers of borrowers had second liens on their properties[5]";
- "Deutsche Bank purchased and securitized loans with substantial defects to provide "flexibility" to the mortgage originators[5]";
- Deutsche Bank knew that the samples of loans used to conduct its due diligence "failed to capture the loans that did not meet representations to investors[5]";

In mid-September 2016 the regulator made a preliminary proposal for the fine at around $14Bn, well above the expected by the annalists ($2Bn - $5Bn). To make matters worse, the bank had only made a €5.5Bn litigation provision in the year before, making investors concerned about the capability of Deutsche Bank to pay the bill.

As a result, Deutsche Bank's stock price plunged more than 8% at that day, losing a little over 11% of its value during that month.

In the end, the fine was far lower than the $14Bn initially asked, however it was still the largest applied to a single institution from the investigations carried out by the U.S. Department of Justice. As a consequence of this reduction in the fine, the bank managed to restore some trust on its financial capability, resulting in the recovery of the stock price during the month of December 2016, with a climb above 14%.

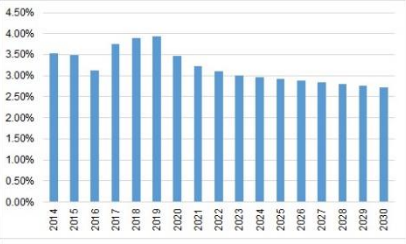
The $7.2Bn fine was split in two parts, in which $3.1Bn were allocated to a civil monetary penalties and the remaining was used to the "relief to homeowners, borrowers and communities harmed by its practices[6]". As the result of this fines, 2015 and 2016 turned out to be the years when Deutsche Bank experienced a record value for Net Income Losses, reporting a €6.7Bn and €1.3Bn respectably. This litigation expenses were carried out under "Non-Interest Expenses" in the Income Statement.

[5] The United States Department of Justice. 2018. *Deutsche Bank Agrees to Pay $7.2 Billion for Misleading Investors in its Sale of Residential Mortgage-Backed Securities.* [ONLINE] Available at: https://www.justice.gov/opa/pr/deutsche-bank-agrees-pay-72-billion-misleading-investors-its-sale-residential-mortgage-backed

[6] Company Press Release

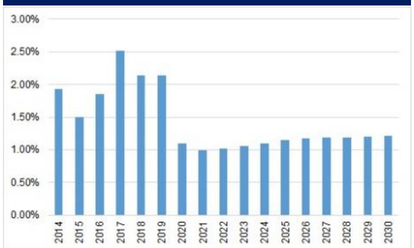
Macroeconomic Overview

Figure 10: World GDP Growth Rate (past and forecast) %



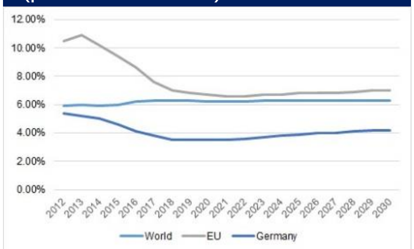
Source: Eurostat

Figure 11: German GDP Growth Rate (past and forecast) %



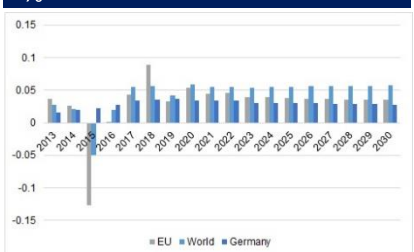
Source: Eurostat

Figure 12: Unemployment Rates (past and forecast) %



Source: International Labour Organization (ILO) / Eurostat

Figure 13: Consumer Spending Growth Rate (past and forecast) %



Source: International Labour Organization (ILO) / Eurostat

For the last years European Union (EU) countries are experiencing an economic recovery from the 2008 financial crisis. GDP is well above 2% growth per year in the EU and projections are optimist for the years to come, notwithstanding at slower pace. Germany has also been experiencing the same trend as the EU, however at a lower growth rate. GDP growth for Germany is expected to be around 1% between 2020 and 2023. Looking to the World as a whole, GDP growth rates reach consistently higher values, mainly due to the contribution of the Emerging Markets and Developing Economies.

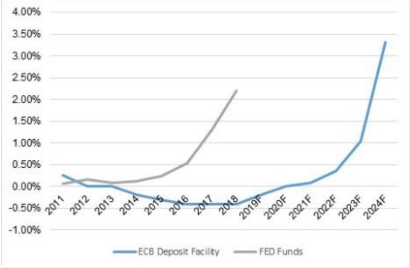
Labour markets, as expected, went along with the recent economic recovery, which translates in the reduction of the unemployment rate in all different geographies. Unemployment rates are reaching all-times lows, as it is expected for them to be around 7.0% in the EU, 6.3% in the World and a stronger 3.5% in Germany by the end of 2018. However is important to be not over optimistic regarding this topic, once the positive development in unemployment rates is expected to slow down, converging to 6.7% in the EU, 3.8% in Germany and 6.3% in the World by 2023.

As it is known, consumer spending has been the main driver for the economic recovery for the last years, which is highly dependent on the Employment Rates. So, bearing in mind the slower reduction in the unemployment rates for the future, it is forecasted that wage growth will be constraint, leading to a negative impact in private consumer spending. In the EU, consumer spending is expected to reached a peak of 8.95% growth by the end of 2018, however more conservative for the midterm, converging to 3.99% growth by 2023. Regarding to a world approach, consumer spending has a more optimistic outlook, with a steady growth rate around 5% until 2023.

Nonetheless, it is important to consider some sources of risk that might jeopardize this future economic outlook.

The current economic environment is experiencing a period of low interest rates, as a consequence of the measures taken by the ECB and Quantitative-Easing programme, which started in 2015. In a low interest rate environment the risk of a potential asset bubble becomes greater, which raises concerns about the stability of this prices and the possibility of a price correction. Following this topic, Konstantin A. Kholodilin and Claus Michelsen investigators at DIW, one of the main German Economic Research Institutes, developed a report about the signs of a housing bubble in OECD countries. The study concluded that "in recent years, prices for houses and condominiums have risen, sometimes significantly

Figure 14: ECB Deposit Rates vs FED Rates (Past and analysts forecast) %



Source: ECB & FED

Figure 15: Average amount of assets purchased per month by the ECB (in €Bn)

Source: ECB

in many countries [7]" and that in several OECD countries price dynamics are driven by speculative investment. Regarding the German housing market, the focus of this report, there is no evidence of the existence of a housing bubble, as indicators show solid financial condition, despite the need for precautionary measures.

Additionally, December 2018 marked the end of the asset purchase, which was responsible for the purchase of more than €2.6 trillion worth of sovereign bonds, at a peak rate of €80 million per month in 2017. Regarding the future after the end of this programme is still unknown, but what is known is that in an well-functioning markets new information is immediately incorporated in the prices, so is not expected a big shift from the path that markets are having. Regarding the interest rates set by the ECB, it is currently at a Base Deposit Rate of -0.4% and despite the FED having already started to increase their nominal interest rates, it is only expected that the first increase in the Interests rates will happen in 2019, until the end of Mario Draghi's mandate.

In addition to all of these concerns regarding the future, it is also important to point out that in Europe there are other geopolitical situations that could destabilize its economy. The UK and the Brexit, the Embargo of the EU to Russia and the migration crisis are some of them.

Collateralized Loan Obligation

With interest rates as low as they are at this moment, investors face a hard time looking for solutions regarding investing their money. One financial product that has been starting to raise some attention is the Collateralized Loan Obligation (CLO), which is similar to the Collateralized Mortgage Obligation (CMO), the main responsible for the 2008 financial crisis. The CLOs, instead of being backed by mortgages loans, are formed by pools of pour rating corporate loans, made to companies that are already carrying a debt load.

According to Bloomberg, just in the third quarter of 2018 the CLOs represented €17.4Bn of new issues, which turns out to be a 17% growth compared to the same period in the previous year (2017 closed at €20Bn). Still in 2017, the loan sales in Europe reached a value of €144Bn, 36% more than 2016, which shows that this market is developing fast. A big part of this assets sold, are allocated to the pools of assets that form new CDOs.

[7] Kholodilin, Konstantin A. and Michelsen, Claus. (2018) "Signs of new housing bubble in many OECD countries - lower risk in Germany", *DIW Weekly Report,* p276-285.

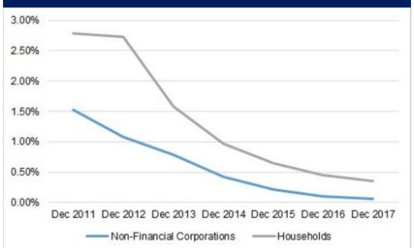
With interest rates on the rise again, some similarities are started to be drawn with the subprime crisis in 2008. In the U.S., the fiscal benefits associated holding debt has helped companies to boost their earnings. According to Moody's Analytics, the "default rates on leveraged are expected to remain low", although it is predictable that it will increase as economic growth starts to slow down and interest rates rise, as ECB is expected to do and FED already did.

So, in case interest rates start to hike in a way that corporations cannot keep up with, investors will be directly affected as well as the overall economy, as it happened in 2008 with the mortgage backed securities.

Banking Sector

Currently it is lived a "Post Crisis" economic environment, with a solid GDP Growth all around the world, low inflation, high indebtedness in the public and private sectors and low interest rates, mainly in the EU, where ECB is yet to raise interest rates.

Figure 16: Average annualized agreed rate on deposits in the EU %



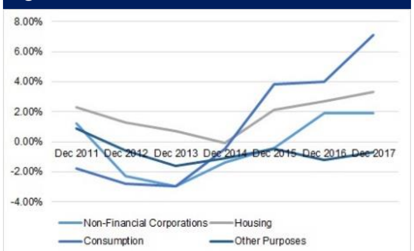
Source: ECB

Since 2011 the interest rate on loans granted to Non-Financial Corporations has fell over 55% in the EU. In consumer loans were the mortgage loans that experienced the largest drop in interest rates. Interest rate on deposits experienced the same trend (Figure 16). As a consequence of this reduction in the cost of holding a loan, 2017 marked a record year for loans growth, with special focus on Consumption Loans and Housing, with a change of 7.1% and 3.3% respectively when compared to the previous year. An interesting fact is that despite near to zero interests, deposits are facing a strong growth over the years.

Figure 17: Average Annualized agreed rate on loans in the EU %

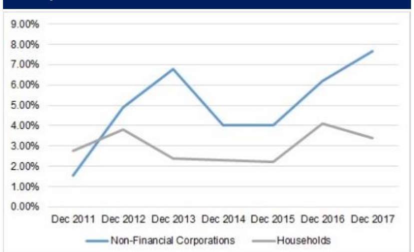
Source: ECB

Figure 18: Growth Rate in granted loans in the EU %



Source: ECB

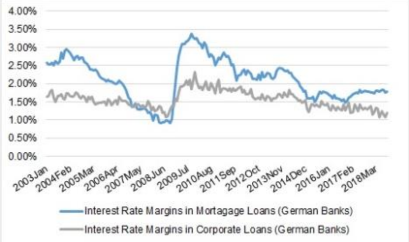
Figure 19: Growth Rate in deposits in the EU %



Source: ECB

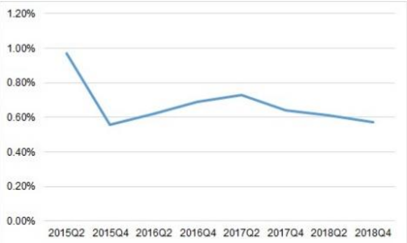
This low interest rate environment puts extra pressure on banks, that despite having lower funding costs, face higher difficulties in generating their own interest margins, which have been compressed over recent times. As it is possible to confirm in Figure 20, in Germany banks have been experiencing reduction around 50% in their interest margin for both Housing and Corporate Loans, the major contributors to Interest Income. According to the ECB, in the Eurozone,

Figure 20: German Bank's Interest Margins %



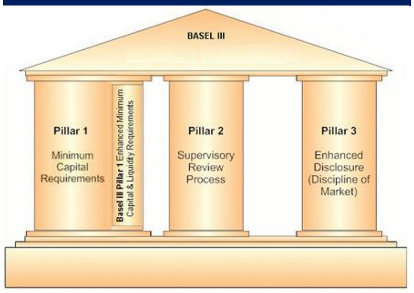
Source: ECB

Figure 21: EU Bank's Interest Margins %



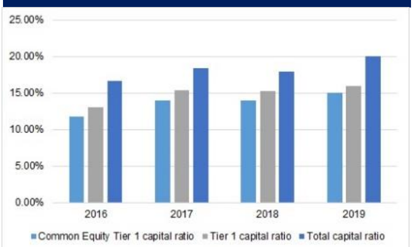
Source: ECB

Figure 22: Basel III Pillars



Source: BCBS

Figure 23: Deutsche Bank's Capital Ratios over the years (%)



Source: Company Report

from 3 years now, since the start of the Quantitative-Easing Program, banks have lost a little bit over than 40% in their interest margin. In 2019, when it is expected for ECB to raise deposit rates again, banks will reduce the pressure that they have on Interest Income. In the U.S. banks are already recovering from this stress, as the FED increased the interests, so the same it will expected in the EU.

On top of this interest margin problem, banks are dealing with strict post crisis capital requirements, not allowing for extreme leverage positions as before, forcing them to increase their capital base.

Basel Regulation

The Financial Crisis of 2007-09 brought to day light the liquidity fragilities of the Banking System, creating the need for stronger capital requirements that limited banks excess leverage.

Basel III capital requirements were published by the Basel Committee on Banking Supervision (BCBS) to combat the causes of the 2008 financial crisis, acting as a strength version of Basel II. Basel III is divided in three pillars and it is defined as an international agreed set of measures aiming on enhance "the stability of the financial system by increasing both quantity and quality of regulatory capital and liquidity[8]".

- ### Capital

In banking regulation, Capital Ratios depend upon Risk Weighted Assets (RWA) and Capital Buffers.

With Basel III, the minimum requirement for common equity is 4.5% of the total RWA and a Total Tier 1 capital requirement of 6%. The capital conservation buffer must be met at 2.5% using exclusively common equity. Furthermore, there is a countercyclical buffer, with a focus on the national level distress events of each bank, and it varies from 0 to 2.5% of common equity or other fully loss-absorbing capital.

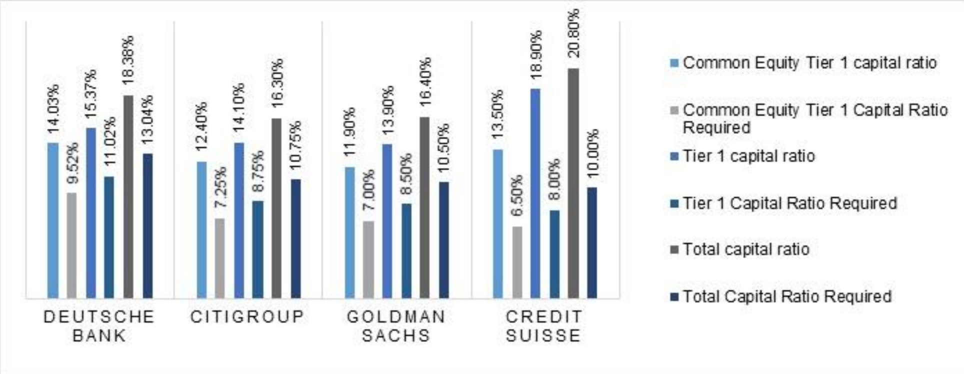
Additionally, to banks that are considered to be Systemically Important Financial Institutions (SIFIs) there are extra absorbency requirements that range from 1% to 2.5% of total RWA.

[8] Schneider et al (2017) "Basel "IV": What's next for banks?", *McKinsey & Company, p15*.

Once Deutsche Bank is designated as a "Global Systemically Important Institution", it has to comply with G-SII, which is an additionally buffer. For 2018, the capital requirements from Basel III impacted the bank's capital management in the following manner:

- Total CET requirement of 10.65%
- Total Tier 1 requirement of 12.15%
- Total Capital requirement of 14.15%

Figure 24: Capital Requirements across Banks % (2017)

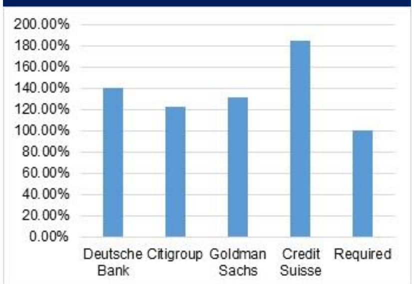


Source: Company Reports

As it is possible to observe in Figure 24, Deutsche's Bank Capital Requirements have always been met in a conservative way, being well above the minimum obligatory. Looking at its peers, the same behaviour is observed. Additionally, it is important to state that is part of Deutsche's Bank financial targets to continue to have such excess capital over the minimum required, maintaining its Tier 1 Capital Ratio "comfortably above 13% at all times[9] ".

- Liquidity

Figure 25: Liquidity Coverage Ratios across Banks (in %)



Source: Company Reports

The Liquidity Coverage Ratio is one of key ratios when referring to a bank's regulatory liquidity. The BCBS requires this ratio to be a least 100%, with the intention to assure that in a scenario of funding distress, banks have enough high-quality liquid assets to "survive" it least during 30 days. Like Capital Requirements, banks opt to have a strong LCR, well above the minimum required (Figure 25).

Looking at the longer run, the BCBS set the Net Sable Funding Ratio (NSFR) also at a minimum level of 100%, measure taken with the goal of incentivising banks to creating a solid and stable funding avoiding this way fundamental

[9] Deutsche Bank Annual Report (2017)

funding crisis that could compromise the entire bank structure. The implementation of the NSFR is still an ongoing process, which has started at 1st of January 2018.

- The Future of Banking Regulation

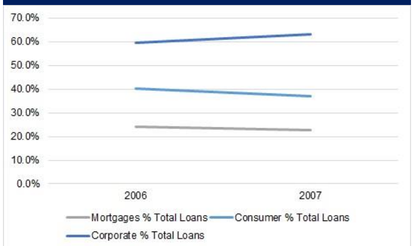
BASEL III TILL' 2021

"The impact of Basel "IV" will be much greater than initially anticipated. Banks will need to raise more capital, and will likely have to take some unconventional measures to comply[10]."

In December 2017, the BCBS ended the Basel IV standards formulation, which will be implemented in 1st of January 2022. It will focus on forcing banks to change the way that their RWA is calculated, which will be independent from the risk type hold by the bank. The floor is expected to be around 72.5% by 2027, meaning that the Bank's approach to calculate the RWA cannot fall below that value when comparing to the standardize approach, limiting the gains banks can incur using internal models.

Regarding the capital requirements, according to the regulator, they will maintain the same at least until 2027, and considering that 2018 marks the last year of the "Phase-In" process of the capital requirements of Basel III, Deutsche Bank and all its peers, *ceteris paribus*, will not be affected nor need to do any structural changes in their capital structure once everyone of them reveals an excess capital over the minimum required.

Figure 26: Deutsche Bank's Loan Portfolio %



Source: Company Reports

Concerning liquidity, the same principle as the capital requirements is applicable. The BCBS will maintain the minimum ratio for both NSFR and LCR at 100% in the medium-long run (LCR Phased-In process that will end at 2019), not having this way a great impact in the bank's capital structures.

Bearing in mind the stricter regulation it is predicted that Deutsche Bank's capital ratios will continue to be "comfortably above" the minimum establish by the regulators.

Asset Side - Loans

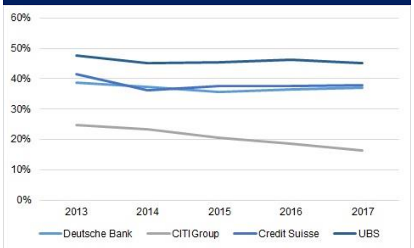
Prior to the Financial Crisis of 2008, was a common practice for banks to have a great deal of exposure to Mortgage Loans. So, with the start of the crisis, as a consequence of the growth in default rates, banks had to handle big amounts of

[10] Schneider et al (2017) "Basel "IV": What's next for banks?", *McKinsey & Company, p5*.

impairments and also deal with the collapse of the mortgage backed securities, which were mainly formed by pour rating mortgage loans.

Nowadays banks have changed the way they expose themselves to the different types of loans.

Figure 27: % of mortgage loans across banks

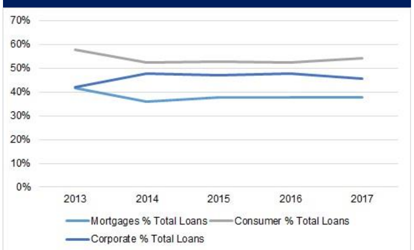


Source: Company Reports

Deutsche Bank is highly exposed to Mortgages Loans, accounting for 37% of its Loan Portfolio (80.3% of its Consumer loans). When compared to the years immediately before the Housing Crisis, particularly 2007, residential mortgage loans only accounted for 22.7% of its total loans, so Deutsche has been increasing the amount of Residential Mortgage Loans on its balance sheet. Furthermore, comparing to its peers the reality is not that far off. With the exception of CitiGroup, which reveals a tendency for the reduction in exposure of this type of Residential Mortgage Loans, other banks demonstrate a more stable portfolio of mortgages over the last 5 years, as Deutsche Bank does.

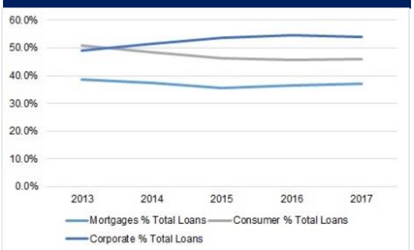
Looking at the loans portfolio as a whole, Deutsche Bank distributes almost evenly between consumer and corporate loans, which follow the trend of its peers.

Figure 28: Credit Suisse's Loan Portfolio %



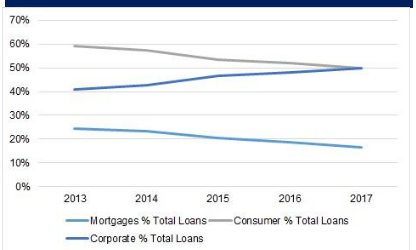
Source: Company Report

Figure 29: Deutsche Bank's Loan Portfolio %



Source: Company Report

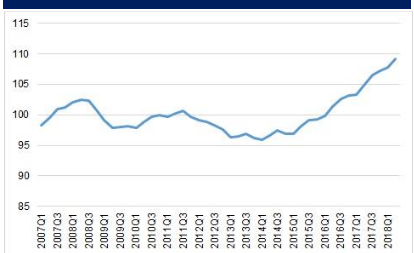
Figure 30: CitiGroup's Loan Portfolio %



Source: Company Report

- Housing Market

Figure 31: Housing Prices in EURO 19 (2007=100)



Source: ECB

It is safe to say that banks are heavily exposed to the housing market, as about 30% to 40% of their "loan mix" is composed of Residential Mortgage Loans, making a careful analysis of this market imperative.

The housing market is driven by the economic conditions, mainly GDP growth and interest rates. At the date of this report, unemployment rates all reaching all-time lows, negative interest rates set by the ECB, the housing prices are rising. Correlation between lagged GDP growth and house prices in the EU reached 83% during the last 10y[11]".

[11] Linhart et al (2017) "Rental market - is renting a dwelling a profitable investment?", *Deloitte*, p7.

According to ECB data, when looking at the second quarter of 2018, and comparing to the homologous period, growth in housing prices was more than 4% higher.

As already shown is this report, future economic growth and interest rates are expected to not favour the market, which will limit the price growth in housing for the years to come. In addition the felling of the existence of a market bubble starts to grow among investors, which if turns out to be true, can jeopardize bank's positions, and the overall economic as it happened in 2008 (see housing bubble in Macroeconomic Context).

- Loan Impairments

As already stated, the banking system is fairly exposed to mortgage loans and Deutsche Bank is no exception, so a deep analysis to this subject matter becomes imperative. Considering this exposure, Households Loan Impairments over the years have counted for about 35% to 40% of the total loan losses that Deutsche Bank has registered, followed by Manufacturing / Retail and Wholesale accounting for half that, around 13% to 16%.

Figure 32: Deutsche Bank Loan Losses *(In € m)*

	2013	2014	2015	2016	2017
Manufacturing / Wholesale and Retail	**1472**	**1348**	**1303**	**1461**	**1206**
Manufacturing / Wholesale and Retail Growth %		-8%	-3%	12%	-17%
Households	**3671**	**3750**	**3263**	**2661**	**2388**
Households Impairment Growth %		2%	-13%	-18%	-10%
Total	**11614**	**10697**	**9455**	**8909**	**7441**

Source: Company Report

Another important pieces of data, are the consecutive drops in impairment losses (in loans) that the bank has registered. In little over 4 years ago, the total loan losses and household loan losses plunged more than 35%, explained by the favourable economic environment. Furthermore, when comparing this data with the rates agreed when granting a loan in the EU, it is easy the conclusion that this reduction in loan impairment losses moved alongside with the reduction in the interest rates.

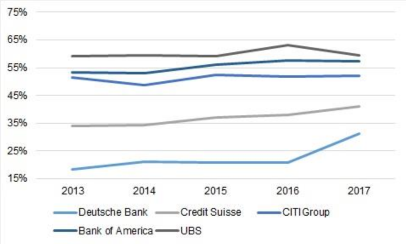
- Loan Expectations

Interest rates have a great impact in the amount of loans that a bank has in its portfolio. Once economic growth is expected to slow down and interest rates to increase in the medium-long run, banks will have a slower growth in their loan portfolio, as owning a loan becomes more costly.

Additionally, impairment losses will also invert their current trend as interest rates will increase.

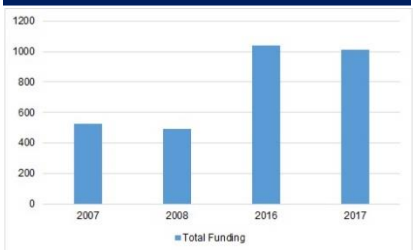
Lastly, the Consumer Confidance in Deutsche Bank might play a negative role in the demand for loans.

Figure 33: % of Deposits in overall funding structure across banks



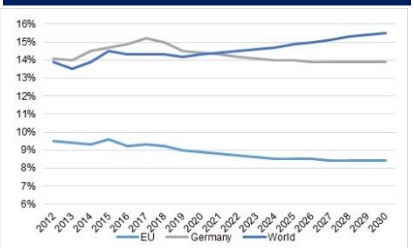
Source: Company Reports

Figure 34: Deutsche Bank's total Funding Amount (in € Bn)



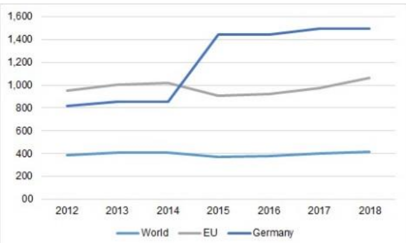
Source: ECB

Figure 35: Past and Forecasted savings ratio (%)



Source: ECB

Figure 36: Average Minimum Wage (in €)



Source: International Labor Organization

Deposits and Funding

Banks fund themselves using Equity, Money Markets, Whole Sale Deposits and deposits, which are the most common and expressive way of funding.

Nowadays interest margins became narrower than ever and banks are constantly challenged to cut the spreads in order to capture loans. The better side of the decrease in interest rates is that funding costs have decrease a lot. In the EU, the interest paid on deposits was on average 2.78% to households in 2011, and 6 years later this value decreased by almost 90% (Figure 16). Despite this reduction in the interest paid to depositors, the annual rate of change has been increasing, in special to the corporate segment. (Figure 19). This increase is explained in part by the higher salaries and consequently higher saving ratios (Figures 35 and 36).

In recent years banks have increased their deposit base, as a consequence of the regulatory requirements imposed. Looking at some examples, Deutsche Bank gains special attention for being the one with the largest increase in its Deposit/Total Funding Ratio, despite having the one with lowest coverage to loans.

Considering the total funding amount, banks have kept their values stable for the last 5 years, but looking at the times prior to the Basel III, reality was much different. Deutsche Bank, for example, only had €493Bn in 2007 and it ended 2017 with more than double that, at around €1014Bn.

- ### Deposits Expectations

Looking at the future of deposits, it is expected that they will increase as a consequence of the positive economic outlook. As already mentioned in this report, interest rates will rise, both in the U.S. and EU, which will lead to an ease in the extremely compressed interest margins that banks have to deal with. Furthermore, higher interest rates will mean a better return to depositors and therefore an incentive that will tend to favour them.

Despite not as "strong" as in recent years, GDP growth will contribute favourably to deposits, once lower unemployment rates lead to higher disposable income.

On top of the increased salaries, the higher saving ratios will also benefit bank's funding.

Bearing in mind Deutsche's Bank particular case, the future is more uncertain. Notwithstanding having increased in more than 10% its deposits over the last 5 years, consumer confidence on the bank might compromise the deposit growth in the future as well as the overall funding of the bank.

The Future of Banking

Nowadays banks convey business in a completely different way from past years, as technology assumed the main role in day-to-day operations. With this, big tech firms start to pose a threat to traditional banks, as they offer a series of more personalized, transparent and convenient solutions to its customers.

The cause of this big threat is the constantly changing consumer behaviour, as people start to be more open to use of non-banking financial alternatives in their daily-life's, as Apple, Amazon or Facebook offer. Another problem is the invisibility, as "Banks are losing brand awareness and becoming invisible as consumers can access financial services without knowing the brand [12]".

Having understood the power and reach of Fintech firms, banks are starting to understand that cooperation between these 2 types of financial institutions might be the way to go. For one side banks have the expertise regarding the financials, a solid funding structure, a great network of branches and most important of all a strong brand recognition. On the other side, Fintech companies are characterized by its tech knowledge, disruptive mind-set and consumer focus, characteristics that most traditional banks lack.

In order to capture this swift in the market and as Deutsche Bank did not discarded the possible source of revenues from outside the bank structure, the bank made an investment in 2 Fintech companies in 2018 alone, *Modopayments* and *Quantigous Solutions*, in a seek for "to provide new transaction services and payment alternatives for the rapidly growing digital economy [13]".

Deutsche Bank Income Statements

In order to understand what drives Deutsche Bank's Net Income over the years as well as to forecast it into the future, it is mandatory to explore the company structure.

[12] Haering, M (2018). *If you can't beat them, join them - How banks, Fintech and Tech Players can win together. [Online] Forbes.com. Available at:* https://www.forbes.com/sites/forbescommunicationscouncil/2018/04/05/if-you-cant-beat-them-join-them-how-banks-fintech-and-tech-players-can-win-together

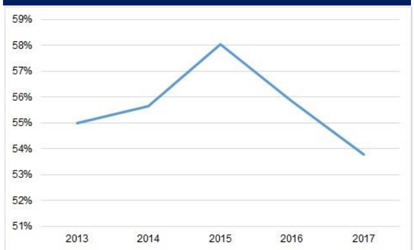
[13] Michael Spiegel, Deutsche Bank's head of cash management, *Media Release (2018)*

Deutsche Bank's activity is currently divided in 3 main market segments: Corporate & Investment Bank (CIB), Private and Commercial Bank (PCB) and Asset Management (AM).

Net Revenues

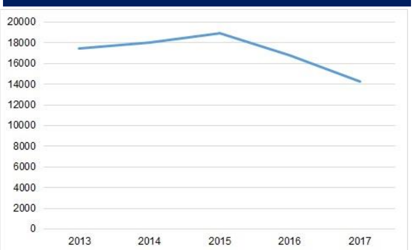
▪ Corporate & Investment Bank

Figure 37: CIB's contribution to overall Net Revenues %



Source: Company Reports

Figure 38: CIB's Total Revenues (in € m)



Source: Company Reports

CIB is the most important bank's division regarding revenues contribution to the overall bank's result. In 2017 it represented more than 54% of the bank's total revenues, however it has to be said that CIB's results over the years have been decreasing severely, due to the hard economic environment around banks. Additionally, is a strategic goal to focus on corporate clientele as well as taking this division to a European Leader level.

Deutsche Bank's CIB division comprises 3 inner divisions, being them Global Transaction Banking, Origination & Advisory and Sales & Trading.

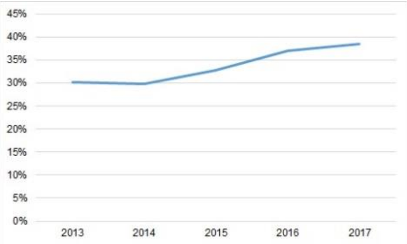
- Global Transaction Banking (GTB) "is a global provider of cash management, trade finance and securities services, delivering the full range of commercial banking products and services for both corporate clients and financial institutions worldwide[14]". This division is expected deliver greater results in the future, justified by the increase in trade finance and security services revenues as well as higher cash management. Additionally a supportive macro-economic background and interest rates increase go in line with this prevision;

- Origination & Advisory contribution to overall performance of the bank will experience a not expressive increase, at the same rate as the World Economy. However is important to notice that market fee volumes will remain constant over the next years;

- Sales & Trading "businesses combines sales, trading and structuring of a wide range of financial market products, including bonds, equities and equity-linked products, exchange-traded and over-the-counter derivatives, foreign exchange, money market instruments, and structured products[14]". This business will benefit from a both favourable equity derivatives and prime finance markets as well as FX, Emerging Markets and Interest rates revenues. Emerging markets growth and rate interest margin.

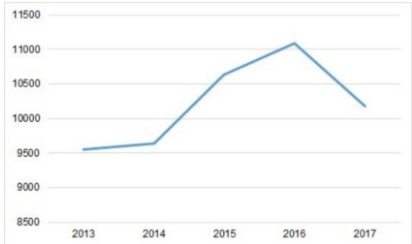
[14] Company Report

Figure 39: PCB's contribution to overall Net Revenues %



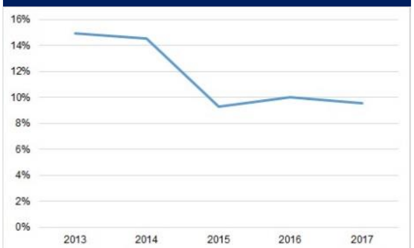
Source: Company Report

Figure 40: PCB's Total Net Revenues (in € m)



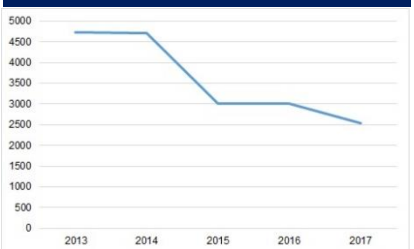
Source: Company Reports

Figure 41: AM's contribution to overall Net Revenues %



Source: Company Reports

Figure 42: AM's Total Net Revenues (in € m)



Source: Company Reports

- Private & Commercial Bank

The Private & Commercial Bank (PCB) activity consist in providing to "its private, corporate and wealth management clients with a comprehensive range of products from standard banking services to individual investment and financing advice, and to drive attractive returns for our shareholders. The product offering is supported by a global network, strong capital market and financing expertise and innovative digital services [15]".

Over recent years, the contributions of this commercial segment have grown in importance for the bank's overall result, accounting for around 40% of the total net revenues in 2017 versus the 30% in 2013. The PCB's results are mainly driven by the interest rates applicable to both deposits and loans granted to the Private and Commercial clients as well as the equity markets, due to the investment side of the business.

According to Deutsche Bank, is part of their own strategic view to focus the Private & Commercial Bank in Germany as the bank wants to occupy "the number one private and commercial banking position in" its "home market of Germany[15]". Furthermore, the German market already accounts for more than 60% of the total PCB's revenue, so this strategic shift is not impact structurally the bank's division.

- Private & Commercial Bank Expectations

This market segment is expected to provide better results in the future, as a consequence of favourable interest rate environment for banks that is planned to happen by the end of 2019 (interest rates increase by the ECB, that will raise interest rate margins). Furthermore, this new geographic strategy will be backed by the German economic growth which will play a big and positive role in PCB's financial future.

- Asset Management

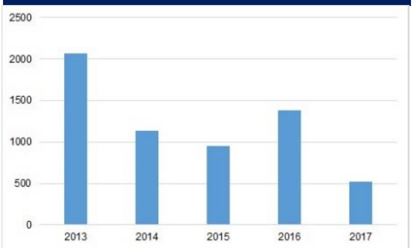
Deutsche Bank AM is the core division that has the least impact on the bank's overall net revenues performance, contributing around 9% in 2017. The Asset Management Division is focused in providing to its customers a personalized investment portfolio according their needs, using for that financial products as equities, fixed income or even real estate. Its main source of income are the management fees associated with the transactions involved in the day-to-day investment operations. Having said this, this division's success is highly

[15] Company Report

dependent on the performance of equity markets, global economic growth and stable credit markets. Looking into the future, positive world economic growth will have a good impact in the overall AM performance.

Provision for Credit Losses

Figure 43: Deutsche Bank's PCL (in € m)



Source: Company Reports

The CIB and PCB are the business divisions that most contribute to the bank's total amount of the Provisions for Credit Losses (PCL). As economic conditions start to improve around the Globe, the total amount of PCL starts to fall as shown in the Figure 43.

The CIB business is highly exposed to the shipping, metals & mining, oil and gas industries resulting extremely correlated results with this sectors. Recently, the CIB's provision for credit losses have decreased significantly both due to a reduction and good performance from the portfolios.

According to forecasts, these industry sectors will benefit from the positive economic environment, delivering better results with a strong growth trend, leading to an increase in value of the CIB's portfolio. Conservatively, it is estimated that the growth in PCL of this division will be the same as the industries that constitute it.

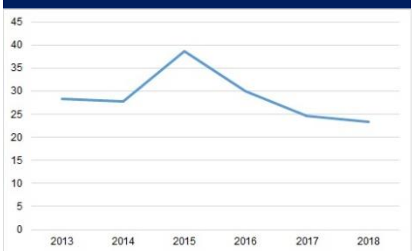
Figure 44: Industry Sectors *(In € m)*	2019F	2020F	2021F	2022F	2023F
Transport and Storage	**9,484,473**	**10,079,050**	**10,724,240**	**11,410,400**	**12,131,060**
Transport and Storage Gowth %	6%	6%	6%	6%	6%
Energy	**5,923,081**	**6,296,993**	**6,693,993**	**7,091,273**	**7,506,952**
Energy Growth %	4%	6%	6%	6%	6%
Extraction of Crude Petroleum and Natural Gas	**2,312,880**	**2,475,758**	**2,642,835**	**2,818,377**	**3,005,754**
Extraction of Crude Petroleum and Natural Gas Growth %	5%	7%	7%	7%	7%
Metal Products	**7,406,192**	**7,947,505**	**8,535,387**	**9,145,658**	**9,775,664**
Metal Products Growth %	5%	7%	7%	7%	7%

Source: Company Report

The PCB has been benefiting from a good economic environment as well as a solid portfolio quality as a result of selective portfolio sales back in 2015 and 2016, not experiencing big changes over the years regarding this topic. The same is expected for the future, as is has a stable portfolio.

Non-Interest Expenses

Figure 45: Deutsche Bank's Non-Interest Expenses (in € m)



Source: Company Reports

The Non-Interest Expenses represent a big portion of overall Deutsche Bank's Financial Activity. Looking at the last years it is possible to notice a clear trend in the reduction of this parameter (Figure 45), with exception to 2015, when the litigation provision (previously stated) increased this value by a large margin.

This decrease in Non-Interest Expenses is a result of a strategic shift towards a cost saving management which has seen some results, with the compression on Compensation and Benefits as well as General and Administrative Expenses, the larger contributors to this type of expenses.

As a result of this strategic change, some target numbers have been set. In the end of 2021 the goal is to achieve €21Bn in adjusted costs, and according to the latest company reports the values are well on track.

Valuation

Flow-to-Equity

Figure 46: Flow to Equity Formula

+ Net Income
- Change in Assets
+ Change in Liabilities
= Flow to Equity

In order to proceed the bank's valuation in this report, the Flow-to-Equity Method was used, determined by the formula in Figure 46. In the case of non-financial institution, the goal is to separate the operating decisions from the financing ones, however in the case of a Bank, these type of decisions cannot be distinguish from each other. Regarding the FTE method, both operational and financial cash flows are regarded as whole.

Discount Rate

Figure 47: CAPM Formula

+ R_{Free} Rate
+ β * (Market Risk Premium)
= Rate

In order to compute how much the bank's operations are worth, the value of each annual cash flow was discounted at the Cost of Equity (Re). With the application of the commonly used Capital Asset Pricing Model (CAPM), the Re turned out to be 8.42%.

The elements that went in the CAPM formula as well as its proxies were:

- The German Stock Index, Dax 30, was used as a proxy for the Market Return, yielding an annualized return of 6.55%[16];
- The Risk Free rate was computed through the use of the 10y German Bunds, at a rate of 0.32%[17] ;
- The βe, is the slope between the market return (Dax30) and Deutsche Bank's Stock Returns, which turn out to be 1.30[16,17].

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[16] In order to compute the necessary parameters to apply to the CAPM formula, it was used 5 years of monthly data.

[17] The 10y German Bunds rate used was at the 01/12/2018.

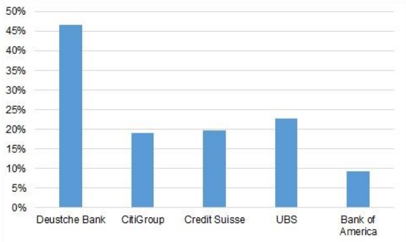
Relative Valuation

Figure 48: List of Banks used in Relative Valuation

Deutsche Bank AG
Credit Suisse Group AG
UBS Group AG
Citigroup Inc
Bank of America Corp
Goldman Sachs Group

Source: Bloomberg

Figure 49: Percentage of Trading Assets per Total Assets (in %)



Source: Company Reports

The Relative Valuation was used to validate the degree of consistency between market and intrinsic valuation. The comparable banks were the ones that revealed to have a greater past correlation with Deutsche Bank Stock Price movements as well as similar business structure. Being Deutsche Bank a financial institution the key ratios used were the P/E and P/B.

Despite the result obtained from the use of the FTE approach laying between the upper and lower boundaries defined by the relative valuation method, the values for the intrinsic stock price using the Price to Book Value ratio were completely far off from the current bank's reality. Deutsche Bank has an extremely low P/B ratio, which is about 70% lower than the average in the segment. A P/B ratio under 1 denotes that the stock is valued at a discount relatively to equity book value, but in this case, the lower P/B ratio means that Deutsche Bank is perceived as a riskier investment when compared to its peers, because it is highly exposed to trading assets in its balance sheet, which are by nature a more volatile asset class, leading to a larger harmful potential in case of not favourable market conditions.

In the other hand, the estimated stock price using the Price to Earnings average ratio is closer to the reality, being just 6% higher than the one that resulted from the FTE method. However this ratio usually produces unreliable valuation outcomes, as bank's results tend to me more volatile when compared to other business sectors.

	P/E	P/E Intrinsic Stock Price	P/B	P/B Intrinsic Stock Price
Mean	7.71	€8.35	0.71	€23.83
Median	7.51	€8.14	0.77	€25.90
Maximum	9.17	€9.94	0.99	€33.16
Minimum	6.67	€7.23	0.23	€7.69
Range	*2.50*		*0.76*	

Source: Bloomberg

All in all, at the time of this report the use of this valuation method might not the one that better suits the Deutsche Bank current reality.

Sensitivity Analysis

In order to complement to the analysis made by the FTE Valuation Method, it was estimated the impact of possible changes / departures from the original scenario.

In this Sensitivity Analysis the changes in the bank's Cost of Equity (R_e) and Perpetuity Growth rate were analysed, as they are elements with a big impact in the overall valuation process.

		Cost of Equity (R_e)				
	7.93 €	6.73%	7.58%	**8.42%**	9.26%	10.10%
Perpetuity Growth Rate	1.11%	10.21 €	8.76 €	7.66 €	6.78 €	**6.07 €**
	1.24%	10.45 €	8.94 €	7.79 €	6.88 €	6.15 €
	1.38%	10.70 €	9.12 €	**7.93 €**	6.99 €	6.24 €
	1.52%	10.96 €	9.32 €	8.08 €	7.11 €	6.33 €
	1.66%	**11.24 €**	9.52 €	8.23 €	7.23 €	6.42 €

Source: Analyst's Estimates

Once is part of the bank's strategy to focus on the German market, the "Perpetuity Growth Rate" was set at 1.38% (average forecasted German GDP growth rate [18] per year from 2023 until 2060). Fixing it at the base scenario it is easily concluded that the R_e has a big importance in the overall price estimation, since an increase in 20%, from the original 8.42%, might lead to a decrease of about 28% in the estimated stock price. The Perpetuity Growth Rate has a smaller impact in this analysis, when compared to the R_e.

For Deutsche Bank, in its worst case scenario, the stock price would be €6.07 per share as in the best case scenario the price would reach €11.24 per share, which translates in a deviation from the original estimated from of about 24% and 40% respectively. Attending the current stock price for Deutsche Bank, both scenarios are considered unlikely.

Final Conclusions

As already been stated during the current report, Deutsche Bank is facing uncertain times, mainly resulting from large depreciations in the stock markets, large annual losses and the lost in market share in its home country. Despite this recent and continuous deterioration of the bank's financials it is believed that the future reserve better results for the bank. Future economic environment is expect to play a positive role in the banking system, as interest rates increase there will be an ease the highly compressed margins banks have to deal with. Notwithstanding, and bearing in mind the elements above stated, the price target yielded by the FTE method for the end of 2019 is €7.93, which translates in a "BUY" recommendation.

[18] International Monetary Fund

Appendix

Financial Statements

Balance Sheet
(In € m., unless stated otherwise)

	2017	2018F	2019F	2020F	2021F	2022F	2023F
Assets							
Cash & Central Bank Balances	225655	223082	229796	236258	242526	249420	256807
Interbank Balances (w/o Central Banks)	9265	9159	9435	9700	9958	10241	10544
Central Banks Funds Sold € Securities purchased under resale agreements	9971	9857	10154	10439	10716	11021	11348
Securities Borrowed	16732	16541	17039	17518	17983	18494	19042
Total Financial Assets at Fair Value through profit or loss	636969	629706	648659	666897	684593	704053	724904
Financial Assets Available for Sale	49397	48834	50304	51718	53090	54599	56216
Equity Method Investments	866	856	882	907	931	957	986
Loans	401699	397119	409071	420573	431732	444005	457155
Securities held to Maturity	3170	3134	3228	3319	3407	3504	3608
Property and Equipment	2663	2633	2712	2788	2862	2943	3031
Goodwill and other Intangible Assets	8839	8738	9001	9254	9500	9770	10059
Other Assets	101491	100337	103354	106260	109079	112180	115502
Assets for Current Tax	1215	1201	1237	1272	1306	1343	1383
Deferred Tax Assets	6799	6721	6924	7118	7307	7515	7738
Total Assets	**1474731**	**1457916**	**1501797**	**1544022**	**1584991**	**1630045**	**1678322**

(In € m., unless stated otherwise)

	2017	2018F	2019F	2020F	2021F	2022F	2023F
Liabilities							
Deposits	580812	574616	591552	608251	623787	640753	659431
Central Banks Funds Purchased & Securities Sold under resale agreements	15105	17912	18440	18960	19445	19973	20556
Securities Loaned	6617	6812	7004	7183	7378	7378	7593
Total Financial Liabilities at fair value through profit or loss	**478636**	**473530**	**487486**	**501248**	**514051**	**528032**	**543424**
Other short-term borrowings	18411	18215	18751	19281	19773	20311	20903
Other Liabilities	132208	130798	134653	138454	141990	145852	150104
Provisions	5219	5163	5316	5466	5605	5758	5925
Liabilities for current tax	1001	990	1020	1048	1075	1104	1136
Deferred tax Liabilities	346	342	352	362	372	382	393
Long-Term Debt	159715	158011	162668	167260	171533	176198	181334
Trust preferred securities	5491	5432	5593	5750	5897	6058	6234
Obligation to purchase common shares	0	0	0	0	0	0	0
Total Liabilities	**1406632**	**1391627**	**1432641**	**1473084**	**1510711**	**1551800**	**1597034**

Equity							
Common Shares, no par value, nominal value of €2.56	5291	5291	5291	5291	5291	5291	5291
Additional paid-in capital	39918	35752	36478	37383	36538	36799	36907
Retained earnings	17454	18870	21110	24226	28179	32468	36856
Common shares in treasury, at cost	-9	-9	-9	-9	-10	-10	-10
Equity classified obligation to purchase common shares	0	0	0	0	0	0	0
Accumulated other comprehensive income (loss), net of tax	520	1517	1270	-1108	-1011	-1747	-3361
Total shareholder's equity	**63174**	**61420**	**64140**	**65782**	**68987**	**72801**	**75683**
Additional equity components	4675	4622	4761	4895	5025	5167	5320
No controlling interest	252	247	255	262	269	276	285
Total Equity	**68099**	**66289**	**69155**	**70938**	**74200**	**78245**	**81288**
Total Liabilities and Equity	**1474731**	**1457916**	**1501797**	**1544022**	**1584991**	**1630045**	**16778322**

Consolidated Statement of Income	2017	2018F	2019F	2020F	2021F	2022F	2023F
(In € m., unless stated otherwise)							
Total Net Revenues	25921	25893	26556	27123	27664	28267	28929
Provision for Credit Losses	526	484	649	621	603	608	627
Compensation and Benefits	12253	7821	7559	7319	7093	7130	7296
General and Administrative Expenses	11973	10309	10026	9739	9454	9504	9724
Policyholder Benefits and Claims	0	4890	4744	4603	4465	4488	4593
Impairment of Goodwill and other Intangible Assets	21	0	0	0	0	0	0
Restructuring Activities	447	331	321	312	303	304	311
Total Non-Interest Expenses	24695	23352	22651	21972	21315	21426	21924
Profit (loss) before tax	1226	3057	3256	4529	5747	6233	6379
Income Tax Expense	1963	642	1016	1413	1793	1945	1990
Net Income (loss)	**-737**	**1416**	**2240**	**3116**	**3954**	**4288**	**4389**

Corporate Investment Bank	2017	2018F	2019F	2020F	2021F	2022F	2023F
(In € m., unless stated otherwise)							
Global Transaction Banking	3917	3767	3915	4051	4182	4311	4441
Equity Origination	396	396	411	426	439	543	467
Debt Origination	1327	1178	1224	1267	1308	1348	1389
Advisory	508	439	431	446	460	474	489
Origination and Advisory	2231	2013	2066	2138	2207	2276	2344
Sales & Trading (Equity)	2247	2046	2075	2110	2149	2195	2262
Sales & Trading (FIC)	6434	5899	5984	6085	6195	6329	6522
Sales & Trading	8681	7945	8059	8196	8344	8524	8784
Other	-603	-94	-69	-83	-111	-121	-180
Total Net Revenues	**14226**	**13630**	**13972**	**14301**	**14622**	**14990**	**15390**
Provision for Credit Losses	816	213	140	149	159	170	180
Total Non-Interest Expenses	12890	12390	12020	11661	11313	11598	11907
No controlling Interests	-26	-28	-34	-30	-31	-32	-31
Net Income (loss)	**1096**	**1078**	**1777**	**2461**	**3119**	**3191**	**3272**

Private & Commercial Bank	2017	2018F	2019F	2020F	2021F	2022F	2023F
(In € m., unless stated otherwise)							
Private & Commercial Clients	5013	-	-	-	-	-	-
Postbank	3124	-	-	-	-	-	-
Private & Commercial Business (Germany) *	-	6897	7044	7122	7192	7265	7342
Private & Commercial Business (International)	-	1443	1500	1552	1602	1562	1701
Wealth Management	2041	1766	1836	1899	1961	2022	2082
Total Net Revenues	**10178**	**10107**	**10380**	**10573**	**10755**	**10939**	**11126**
Provision for credit losses	313	349	506	469	441	436	444
Total Non-Interest Expenses	9411	8873	8608	8350	8101	8239	8380
No controlling Interests	-12	1	-4	-5	-3	-4	-4
Net Income (loss)	**466**	**885**	**1270**	**1758**	**2216**	**2267**	**2306**
Assets (at period end)	333069	344865	361688	377734	393223	408884	425187
RWA (at period end)	87472	89781	94161	98338	102371	106448	110692

Asset Management	2017	2018F	2019F	2020F	2021F	2022F	2023F
(In € m., unless stated otherwise)							
Management Fees	2247	2137	2175	3306	2237	2272	2319
Performance & Transaction Fees	199	88	94	104	109	122	148
Other Revenues	86	25	25	25	25	25	26
Total Net Revenues	**2532**	**2250**	**2294**	**2335**	**2371**	**2419**	**2493**
Provision for credit losses	1	-1	0	0	-1	0	0
Total Non-Interest Expenses	1799	1705	1655	1605	1557	1589	1637
No controlling Interests	1	-32	-10	-14	-19	-14	-16
Net Income (loss)	**733**	**513**	**629**	**716**	**796**	**817**	**841**
Assets (at period end)	8050	9469	9657	9828	9981	10183	10493
RWA (at period end)	8432	9703	9895	10071	10228	10435	10752

Corporate & Other	2017	2018F	2019F	2020F	2021F	2022F	2023F
(In € m., unless stated otherwise)							
Total Net Revenues	**-488**	**-94**	**-90**	**-87**	**-84**	**-81**	**-79**
Provision for credit losses	0	3	3	3	3	3	3
Total Non-Interest Expenses	594	390	374	361	350	339	329
No controlling Interests	-16	-113	-108	-105	-101	-98	-95
Net Income (loss)	**-1098**	**-599**	**-576**	**-556**	**-538**	**-521**	**-505**
Assets (at period end)	12585	11818	11354	10961	10606	10277	9968
RWA (at period end)	16734	15714	15097	14574	14103	13665	13254

Free Cash Flow to Equity	2019	2020	2021	2022	2023	2023 Perp.
(In € m., unless stated otherwise)						
Net Income	**2240**	**3116**	**3954**	**4288**	**4389**	**-**
Change in Assets	43881	42226	40969	45054	48277	-
Change in Liabilities	41014	40443	37627	41089	45234	-
g (Perpetuity Growth)						*1.38%*
FCFTE	**-626**	**1333**	**612**	**324**	**1346**	**1364**
FCTE (*T=0*)	**-626**	**1229**	**520**	**254**	**974**	**14039**
Equity Value	**16391**					
# Shares Outstanding (In m.)	*2067*					
Price Per Share	**€7.93**					

Regulatory Capital	2017	2018F	2019F	2020F	2021F	2022F	2023F
(In € m., unless stated otherwise)							
Common Equity Tier 1 Capital	**48300**	**53194**	**54686**	**56129**	**57532**	**59080**	**60754**
Tier 1 Capital	52921	60286	3	3	3	3	3
Total Capital	63250	61547	-108	-105	-101	-98	-95
Risk-Weighted Assets	344212	354626	364575	374195	383544	393865	405027
Common Equity Tier 1 Capital Ratio	**14%**	**15%**	**15%**	**15%**	**15%**	**15%**	**15%**
Common Equity Tier 1 Capital Ratio Required	*9.5%*	*10.5%*	-	-	-	-	-
Tier 1 Capital Ratio	**15.4%**	**17%**	**17%**	**17%**	**17%**	**17%**	**17%**
Tier 1 Capital Ratio Required	*11%*	*12.2%*	-	-	-	-	-
Total Capital Ratio	**18.4%**	**17.4%**	**17.6%**	**18%**	**18.5%**	**18.7%**	**19%**
Total Capital Ratio Required	*13%*	*14.2%*	-	-	-	-	-

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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.

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