Samuel Weber presented his in-depth investment thesis on Deutsche Bank (Germany: DBK, NYSE: DB) at European Investing Summit 2017.

Deutsche Bank: New CEO John Cryan is transforming Deutsche into a "safe" bank that focuses on providing value-added products and services to a diversified client base. The bank's recent market capitalization does not reflect its potential future performance. Cryan is a credible, capable, and humble CEO with high integrity, a focus on value creation, shareholder orientation, and a long-term business outlook. He wants to make the bank simpler and more efficient, less risky, and better capitalized, with more disciplined execution. He has replaced one-half of the top 200 managers and reassigned another 20% to new positions. He stopped business with high-risk clients and has continued to strengthen internal controls. He has resolved nine of the top twenty litigation issues, comprising 90% of litigation provisions. He has also aligned compensation with performance. In 2016, Cryan earned €3.8 million in total compensation; no manager was paid a bonus, and variable compensation was reduced by 77%. In 2Q17, Deutsche's liquidity coverage ratio of 144% was higher than that of most peers. If Deutsche generates revenue of €30 billion in 2018, it should earn €8 billion in income before income taxes. This figure should increase to €11+ billion by 2021. Net income should therefore be around €4 billion in 2018 and €5.5+ billion in 2021. Applying a P/E ratio of 15x suggests intrinsic value of €60 billion in 2018 and €82 billion in 2021, compared to a recent equity market quotation of less than €30 billion.

Read an article that outlines Sam's thesis on Deutsche Bank.

The following transcript has been edited for space and clarity.

It is a privilege to present to you my best European investment idea, Deutsche Bank. This is a slide is a little overview over my presentation. We are living today in a very complex financial ecosystem. I will, therefore, try to make it as simple as possible, but not simpler. This slide is an overview over the different activities of Deutsche Bank, which engages in pretty much every banking activity that we can think of and offers a broad range of financial products and services from corporate and investment banking to private and commercial banking to asset management.

Banks are fundamentally relationship companies. In the words of John Cryan, its CEO, Deutsche Bank is a technology services provider, which cross-sells a portfolio of technologically-empowered products and services to establish new clients. As you can see on the right side, in 2016 Deutsche Bank generated around €30 billion of revenues, 51% of which came from non-interest sources of income, representing the balanced mix of revenue-generating activities. As you can see on this slide, in the first half of 2017 more than 50% of Deutsche Bank's revenues have been generated in the investment bank while the private and commercial bank generated most of the rest. This is why in this presentation I will mostly focus on these two subunits. Deutsche Bank asset management contributed less than 10% to revenues and less than 1% to total assets. Half of investment bank revenue came from sales and trading activities while the true investment bank, which includes M&A and advising companies on rising debt and equity contributed €1.2 billion to the €8 billion of investment banking revenues.

As you can see here indicated by the red exclamation marks, Deutsche Bank's corporate and investment bank has recently been ranked sixth place globally and second place in Europe, eighth place in the US and sixth place in the Asia-Pacific region. Coalitions ranking compares total IB revenues, including trading activities. Overall, Deutsche Bank is a leading European bank with a global reach, supported by a strong home base in Germany, Europe's largest economy. It wants to focus on serving the real economy needs of its corporate institutional asset management and private clients.

John Cryan, who is CEO since 2015, wants to make Deutsche Bank simpler and more efficient, less risky and better capitalized with a more disciplined execution. He aims at the common equity tier one ratio comfortably above 13%, a leveraged ratio of 4.5% and a return on tangible equity of 10% in a normalized operating environment. He further espies to deliver a competitive dividend payout ratio for 2018 and reduce the adjusted cost to €22 billion in that year, which will be further reduced to €21 billion by 2021. John Cryan is a credible, reliable and humble CEO with high integrity, a focus on value creation, shareholder orientation and the long-term business outlook. As Bloomberg Business Week described in an article, "Now Cryan at long last is rebuilding the bank from the ground up. He's strengthening its legal controls, rewiring its information technology systems, taming its trading culture, rebalancing its customer base, all while trying to boost sales from a shrinking enterprise." "Getting all these done will take years," warn Cryan and his team.

In my eyes, this gives a perfect summary of what is going on in Deutsche Bank. There are many indications that Cryan made a lot of progress in the last two years towards a more disciplined execution. He replaced 50%, I repeat 50% of the bank's top 200 managers and reassigned a further 20% to new positions and strengthened internal controls substantially. Of the unsolved litigation issues, 20 cases are responsible for 90% of the provisions. Out of those 20 cases, nine have been solved by the end of 2016 while material progress has been made on the other cases. Cryan ceased to make business with high-risk clients and, most importantly, he aligned compensation with performance. In 2016, Deutsche Bank made a substantial loss of €1.4 billion. On the lower left, you'll find a paragraph of Deutsche Bank's annual report of last year. It basically says that Deutsche Bank had to align compensation with performance, which is why variable compensation was reduced by 77% and no management board member received a bonus. In my eyes, those are painful, but necessary steps towards a culture of accountability.

Compare this to the statement that the CEO of Credit Suisse made in the [PH 0:06:33] VU interview. Please bear in mind that the bank made a loss of CHF3 billion in that year. "We are quite satisfied with the performance of 2016. The loss that you mentioned is entirely attributable to dealing with legacy issues. This is an issue that comes from 2005-2007. It is hard to hold current management accountable for that." Thiam got CHF12 million of total compensation for that year and so as you can, the tone at the top of Credit Suisse and many other banks is much different from that of Deutsche Bank.

Ermotti, CEO of UBS received the compensation of CHF 9 million in 2012 when the bank made a loss of 2.5 billion and Jamie Dimon, who is the CEO of one of the most successful banks globally earned $28 million USD. John Cryan earned just the base salary of €3.8

million reflecting the meager performance of the institute. On the lower, right you'll find the comparison of the salaries of the chairman of Deutsche Bank, Credit Suisse and UBS. That also shines a very favorable light on Deutsche Bank's newly found culture of accountability and last but not least, after substantial negotiations between members of Deutsche Bank's current and former board of directors, 11 former directors and manager agreed to forego almost €40 million of compensation contrary to contractual agreements.

Cryan also made a lot of progress in making the bank simpler and more efficient. He reduced the number of business segments to create operational synergies and the number of client relationships as the bank makes 70% of its revenues with its top 20% of clients. He exited several countries, reduced the number of branches by more than 15% and is in the process of reducing the number of employees by around 10%. Those figures are further said to increase due to a possible sale of the Spanish retail unit and a possible reintegration of [PH 0:08:46] post bank. Furthermore, the bank is modernizing its IT, reducing end-of-life hardware and the number of core operating systems from 45 to 38 on the way to the target of just four. Deutsche Bank invests €2 billion every year into digitalization and over time, this will get evermore important due to the digital revolution.

The bank is also better capitalized as it increased its capitalization by €8 billion through a capital raise in the beginning of 2017 and reduced its risk-rated assets by €120 billion since 2012 down to below €360 billion, a decrease of almost 13%. The bank may get further capital through the partial IPO of its asset management unit and through asset disposals. Overall, Deutsche Bank got less risky. Since 2007, it increased its shareholder equity by 1.8 times, its liquidity reserves by 4.4 times, its most stable funding sources by 2.4 times and reduced its level three assets by 75%. All these changes reflect substantial progress towards an increased safety of the institution.

Let's take a look at Deutsche Bank's liquidity situation. In the second quarter of 2017, the bank's liquidity coverage ratio of 144% was higher than that of most peers. However, liquidity coverage ratios can have significant flaws as assets that might prove illiquid in a crisis may count as liquid when calculating this ratio, so that's why I prefer to focus on true liquidity. As Mervin King writes in The End of Alchemy, "In the crisis, it became clear that the only truly liquid assets for cash and bank deposits," so if you compare those assets among international banks, you see that Deutsche Bank is among the most liquid banks internationally, if not the most liquid bank and has more than 15% of its balance sheet invested in cash and central bank balances. The only bank that plays in a similar league is JP Morgan.

A comparison of Deutsche Bank's balance sheet with that of other international banks furthermore shows that it is heavily engaged in both investment and traditional banking. Compared to banks that are heavily engaged in lending, Deutsche Bank has a significant exposure in sales and trading and vice versa. What I like very much about Deutsche Bank is that it is among the least exposed through securities borrowing or lending or reverse repurchases. Those activities offer alternatives to conventional bank financing on the passive side and cash and equivalence on the active side. In the current low interest environment, it may seem attractive not to invest too much in cash. This is obviously true in

the short run as Deutsche Bank needs to pay almost €1 billion on the cash that it holds in central bank balances due to the negative 0.4% interest rate demanded by the ECB. However, in the long run such optimization might prove disastrous as many of the alternatives to cash turn out to be illiquid during a crisis.

The fact that Deutsche Bank has only invested a little more than 2% of its balance sheet in reverse repurchases or securities borrowed is very comforting. The same is true for funding other than deposits such as repurchase agreements, which comprise less than 2% of Deutsche Bank's funding. During a crisis, such liabilities may run quite suddenly and the main advantage in good times, namely that those liabilities come without much oversight, may turn into a major disadvantage as the stability of deposit funding maybe of enormous value in a crisis. Here you can see that 71% of Deutsche Bank's funding comes from most stable funding sources, which comprise retail and transaction banking deposits, capital market sets and equity. Deposits exceed loans by a big margin and because of the relatively short-term nature of the other liabilities, they are primarily used to fund cash and liquid trading assets. After analyzing Deutsche Bank's liquidity and funding profile, let's now compare its capitalization to that of other banks.

According to management, the leverage ratio of 3.8% will increase to 4.5% in the near future. Even a leverage ratio of 4.5%, however, is very low and may indicate high-risk for investors. From this perspective, the whole banking system maybe undercapitalized. However, leverage is a very crude instrument that does not take into account the risk profile of various assets and there are good reasons to believe that even though Deutsche Bank's leverage ratio is low, it maybe even too low, it might still be a safer bank than many others with higher ratios. Deutsche Bank's common equity tier one ratio in the second quarter of 2017 was 14.2%, higher than that of most peers. The European average was 13.7%. As with the liquidity ratios, we need to be very careful when interpreting those numbers. On the lower right, you can compare total assets with risk-rated assets and as you can see, Deutsche Bank's assets are significantly reduced when applying risk rates from €1.6 trillion to less than €360 billion in 2016.

To judge the appropriateness of Deutsche Bank's capitalization, we need to dive into the difference of components as banks with the same CET1 ratio can entail totally different risk profiles. For example, the appropriate risk rates can change suddenly and abruptly in a crisis and many risky assets such as sovereign debt from certain countries do not have any risk rates attached to them. This does not pose a problem for investors in Deutsche Bank, however. As we can on the upper left, Deutsche Bank had an exposure of only €2.4 billion to sovereign Eurozone debt of Ireland, Spain, Greece, Italy and Portugal. That is less than 4% of its equity. Furthermore, as you can see on the lower left, the exposure to debt of foreign governments other than the US has been drastically reduced from over €34 billion to less than €24 billion since last year. On the right side, you can see that the ECB stress test assessed the impact of net credit losses on CET1 ratios of European banks in an adverse scenario. Deutsche Bank came out on top.

As John Cryan said in an interview with Bloomberg, "On loan loss provisions, we are heavily exposed to Germany and, by and large, a very positive feature of Germany is that people

don’t borrow very much and when they do, they pay it back,” so if you look at Deutsche Bank, even over the last two decades it has been a very good credit bank. This slide underlines John Cryan’s message. It is packed, so please just focus on the red exclamation marks. As you can see on the two tables on the upper right, Deutsche Bank’s loan portfolio of a little over €400 billion is broadly diversified across industries, but entails a high degree of geographic concentration with 48% of loans in Germany and 71% in Western Europe, including Germany. What you also see from this slide is the very high quality of Deutsche Bank’s credit portfolio. Allowance for lower losses were 1.1% of cross loans and overall impaired loans were below 2% of total loans.

This compares very favorably to other countries. The European average of impaired loans is 7% of gross loans. Furthermore, consumer loan delinquencies and the loan to value ratio for mortgage loans is extremely low. The latter below 50% for almost 70% of all mortgages as shown on the lower right of this slide. As we will further see in the slide after the next one, Deutsche Bank’s credit write-downs never exceeded €2.7 billion and I personally see no realistic scenario in which Deutsche Bank gets in trouble because of its lending activities. Overall, these slides have shown that the common equity tier one ratio of Deutsche Bank is a less flawed risk measure than for many other banks as Deutsche Bank is truly liquid, has only a small exposure to Europe’s own sovereign bonds other than Germany, relies to a large extent on traditional, stable financing and has a loan portfolio with a credit quality that is very high compared to other banks. This gives a very positive picture compared to other banks, but to truly judge the quality of the bank’s capitalization, we need to take a close look at its derivatives operations.

Here you see the development of Deutsche Bank’s three main sources of income during the past 11 years. Interest income, fee and commission income and fair value changes of assets and liabilities that the bank holds on its balance sheet as part of its trading and market making activities. The first two sources of income are by far the biggest one and they prove to be quite stable over time. It was the smallest of the three income streams that made the most problems during the financial crisis. Gains and losses on balance sheet items turned out to have the most important impact on the income statement with a loss of €10 billion in 2008.

As you can see on the left of this slide, trading assets generate both significant interest and commission income. Overall in 2016, one-third of total revenues was generated by trading assets. On the right side, you see that out of the total assets of €1.6 trillion the trading assets comprised €1 trillion, so considering that those assets generate much of the revenue of Deutsche Bank and comprise much of the assets and were responsible for the big losses generated during the financial crisis, we need to analyze how they are currently being managed and without this analysis, we cannot be sure whether Deutsche Bank’s capitalization is adequate even though it compares favorably to other banks.

A look at Deutsche Bank’s balance sheet shows you that most of the trading is done with derivatives. In the second quarter of 2017, derivative receivables comprised almost €400 billion of the total financial assets held for trading of below €600 billion. When banks engage in derivative contracts, they put them in their books at the value of zero. Over time,

depending on the market value changes of the underlying assets, those contracts result either in a receivable asset or a payable liability. The former is subject to credit risk, the latter may lead to additional demands on liquidity.

In the case of Deutsche Bank, derivative transactions relate to sales and market marking activities. The bank does explicitly not engage in proprietary trading, a fact confirmed by Marcus Schenck and John Cryan when asked by interviewers. This means that the bank does actively manage the risks from its exposure to derivatives by entering into other derivative transactions or by purchasing or selling other financial instruments that partially or fully offset the exposure from client activities. The bank does not intend to profit from market swings of these assets, so as long as you trust Deutsche Bank to engage only in market making activities and manage them appropriately, there should be no risk of substantial losses on its derivatives trading assets and liabilities as receivables will be matched by payables and vice versa.

Generally speaking, I really understand investors that are afraid of investing in banks with such a sizable derivative portfolio. Lending to companies is limited by the amount they wish to borrow, but there is no corresponding limit on the size of transactions in derivative financial instruments, so if banks wish to engage in a responsible derivative activities, there are no natural limits to that irresponsibility making derivatives potential financial weapons of mass destruction, to use the words of Warren Buffett. That’s why it is tremendously important that such assets are managed with extreme care. For this to happen, there needs to be a healthy risk culture supported by good incentives. This is especially difficult as dangerous accounting rules allow a stream of expected future profits, which might or might not be realized to be capitalized into current values and show up in trading profits, so permitting large bonuses to be paid out today of a highly uncertain future prospect.

With this in the back of our minds, how does Deutsche Bank manage its derivative operations? As has already been said before, when derivative liabilities increase, Deutsche Bank will have to pay more cash at some point in the future and may be asked to pose more collateral at present. This should not be an issue as the bank has ample liquidity. Therefore, I will focus in my analysis on the credit risk from derivative assets and not on the cash risk from payables. Derivative assets or receivables represent 25% of Deutsche Bank’s balance sheet assets. Also as already said, when derivative assets increase, credit risk increases as the counterparties may default on Deutsche Bank’s receivables. To protect itself, Deutsche Bank enters into master netting agreements where in the case of insolvency of a debtor, Deutsche Bank can net the receivables and payables of the client resulting in less cash outflows. This is a quite solid way to reduce credit risk as Deutsche Bank does not need to pay liabilities to defaulted counterparties that owe it money. Deutsche Bank also asks collateral from its counterparties to minimize credit risk.

On the right side of this slide, on the lower right side, I compared the positive market values of derivative receivables after taking those two risk measures into account, so after netting and cash collateral received and calculate that as a percentage of equity. As you can see from this comparison, Deutsche Bank is highly exposed to credit risk from derivative receivables amounting to €45 billion, almost 70% of its equity. To be honest, I would much

prefer Deutsche Bank's exposure to be similar to that of JP Morgan where receivables after netting and collateral amount to 25% of equity. I will follow closely how that possession develops in the future.

This slide shows us that Deutsche Bank decreased the credit risks from its derivative portfolio significantly since 2008. The positive market values after netting and cash collateral received decreased from €130 billion, as you can see on the very lower right side of this slide, which was almost four times the equity at that time to €45 billion 2016, as we already said, 70% of equity. Bilateral receivables decreased by two-thirds from €1.2 trillion in 2008 to €430 billion in 2016. Bilateral notional amounts decreased from €409 trillion to below €16 trillion. Bilateral business is far riskier as the parties to essentially clear over the counter derivatives, exchange daily payments that reflect the daily change in value of the derivatives, so these payments are commonly referred to as variation margins and serve to protect the parties from a loss if one of them were to default. As a result from this daily exchange, receivables and payables don't accumulate and you can see that by the fact that only 10% of derivative receivables are from not bilaterally-traded derivatives.

Variation margin payments are typically treated as collateral against the derivative position, so when Deutsche Bank trades over centric counterparties, credit risk is significantly reduced. Bilateral business accounts for just 37% of total notional amounts, but for 88% of derivative receivables reflecting their higher credit risk. Last but not least – we're almost done here, so, please bear with me – the notional amounts of credit-related derivatives came down from €4.4 trillion in 2008 to €1.5 trillion in 2016. The receivables on those derivatives decreased from €295 billion to €21 billion. In addition, the receivables on interest rate derivatives came down from €653 billion to €310 billion even though the notional amount decreased by only 13%. As a result of all of this, the receivables as a percentage of notional amounts decreased from 2.4% to 1.1%, indicating that the derivatives of today are less risky.

As you can see on this slide, Deutsche Bank is trading mostly with counterparties of high credit quality. Eighty-seven percent of its derivative receivables are in the two highest ranked credit rating categories and of the €44 billion receivable after netting and collateral, €29 billion are in the highest two credit rating categories. Of course, these figures only mean something if Deutsche Bank measures the credit risks accurately. If you do not trust Deutsche Bank to make honest and capable assessments of credit risks, these figures should not impress you too much, but if you trust Deutsche Bank, then those figures are quite comforting. On the lower right, you see that the main credit risk reduction is accomplished through netting. This is a more solid risk reduction method than relying on collateral because if collateral loses its value, Deutsche Bank may ask its customers to increase the amount of collateral, but in a crisis, clients may have great difficulties in complying with those margin calls, so the fact that most of the risk reduction is accomplished with netting tells us that this risk reduction is quite solid.

This slide shows us that the process of changing the derivative's portfolio to a more efficiently clear and collateralized business model is far from over. Deutsche Bank identified €35 billion of risk-rated assets that it wants to further wind down. As you can see on the

right side, in 2016, out of the total corporate and investment bank risk-rated assets of €240 billion, €84 billion related to the fixed income and €17 billion to the equity sales and trading business. This €101 billion will be reduced by a further €23 billion, a reduction of more than 20%. I guess that trading receivables will fall by a similar amount, reducing the credit risk after netting and collateral to around 50% of Deutsche Bank's equity.

On the upper left side of this slide and this is the last slide about derivative operation, so please try to bear with me, you see that Deutsche Bank reduced its balance sheet from €2.2 trillion in 2008 to €1.6 trillion in 2016. Particularly, the positive market values from derivative financial assets decreased from over €1.2 trillion to below €500 billion and below €400 billion in the second quarter of 2017. The Level III assets, as you can see on the lower left side, have been reduced from almost €50 billion in 2007, almost twice the equity at that time to below €10 billion in 2016, less than 15% of equity. Furthermore, as Bloomberg wrote, "One of the reasons why Deutsche Bank lacked its competitor's performance in recent months is that it decided to withdraw from trading securitized assets."

Having analyzed Deutsche Bank's derivatives operations in detail, can we be sure that those activities are managed well? From the outside, I guess it's impossible to judge the riskiness of Deutsche Bank's derivative portfolio with certainty. It is the bank's risk management that determines the riskiness of those activities and this is influenced by established processes, compensation incentives and cultural attitude towards risk. I understand people do have a general mistrust in bank's ability to manage risk and engage in reasonable activities and I also understand everyone who has doubts about the possible progress of Deutsche Bank towards a culture of accountability given its past performance, but I personally think that those doubts are misplaced in this case. I personally trust the bank's new management to have the integrity and the ability to implement a healthy risk culture, but in the end, every investor needs to judge for himself whether he agrees or disagrees with my assessment.

After all this, let's now take a quick step back and look at what we have just analyzed. We discovered that compared to other banks Deutsche Bank has a high liquidity coverage ratio and is the leading bank when looking at true liquidity. We have seen that even though Deutsche Bank has a low leverage ratio, its capitalization looks healthy compared to other banks, but may be too low in absolute terms. This comparatively healthy capitalization and liquidity situation is further cemented by stable, long-term funding profile. Overall, I think there are many indications that Deutsche Bank is a very good bank with a healthy risk profile especially and this is the most important point when compared to its competitors. As with the two guys that run away from the bear, the guy that survives doesn't run faster than the bear, he just runs faster than the guy next to him. I think that this analogy entails a lot of truth when considering investing in a bank that is too big to fail.

As an investor in Deutsche Bank, you know that in the case of a financial crisis many banks and institutions will go bankrupt before Deutsche Bank faces existential problems. Therefore, there is a high probability that the system will need to be stabilized long before Deutsche Bank finds itself in a critical situation. The combined probability that 1) there will be a crisis and 2) the regulators won't effectively intervene are, in my eyes, quite low, lower than 5% in any given year. However, that does not mean that a total failure is impossible.

The low leverage ratio implies a permanent existential risk and if things go really bad, Deutsche Bank might face bankruptcy, so having answered the question, "Is Deutsche Bank a good bank," I will now try to explain why the bank might also be a good investment.

Generally speaking, banking is a very stable industry. Companies and people will continue to raise capital, make investments, hedge operational risks, trade in securities and listen to expert advice when making their financial decisions. If you were to examine a list of major banking products today and 50 years ago, you will find very little difference in what is offered to customers. Furthermore, many large banks have core legacy systems for running payment processing, etc. that have largely remained untouched for, in some cases, decades. In my opinion, there is also no imminent threat of an inflection point. The rules of the game are established since a very long time. They are also cemented by regulation as banks are regulated to pay deposits. Regulation, however, might change the rules of the game. For example, Basel IV might increase capital requirements to an extent that they significantly reduce bank profits.

As John Cryan communicated, however, regulatory used asset inflation won't affect Deutsche Bank before 2021. A more imminent danger is the payment services directive tool that needs to be implemented until January next year. This directive changes the balance of power between banks and financial services providers and may significantly increase competition and reduce bank profits. We will have to see how significant this impact will be and what banks can do to counteract it. Regulation could also transform banking fundamentally. Ideas like 100% money, which would take away the ability from banks to create [PH 0:36:51] tired money are currently discussed, but still far from being implemented.

While we can always imagine technology companies taking away business from established banks, most fail to do so. Most technological innovations that bank executives are currently confronted with would simply take out all the profits from the banking industry and how this should work over the long run and on an industry-wide basis is an unanswered question. We should also not forget Deutsche Bank's own technological innovations. For example, its digital factory. It currently employs 400 people and intends to add another 400 in 2018 and cooperates with the reputed Massachusetts Institute of Technology. Deutsche Bank expects the digital factory to be a driver in innovation, digitalization and reengineering of the bank. As Kim Hammonds, member of the management board and group Chief Operating Officer said, "The Deutsche Bank labs discover and evaluate new ideas and the digital factory retranslate these ideas into real products and services for our clients. This demonstrates our commitment to invest and digitalize the bank."

Furthermore, we should not forget that big, established banks enjoy access to data from which they can extract value when using modern technologies as 80% of today's data is private, mostly on company servers. People tend to forget that fact when they think of the enormous amounts of data collected by Google and Facebook. As Ginni Rometty CEO of IBM says, "Incumbents have data and there is gold in that data," to me, we are on the verge of companies being able to use all that data. Companies have to go in the offense now against startups, against disruption. Fundamentally, I think that the time value of money will

continue to exist.

Currently, deposit taking is a loss making activity for Deutsche Bank as the ECB asks a negative interest rate on bank reserves. This implies that there is no time value of money as Deutsche Bank needs to pay for the money that it gets from its clients. Should that situation become permanent, Deutsche Bank would need to adjust to a world of negative time value of money and there are many ways how it could do that. For example, by asking negative interest rates on deposits. However, I cannot imagine how such a system should work. It does take time, for example, to transport something from A to B and during that time, money will be bound up in the process and the same is true for manufacturing processes and all the other activities that bound up capital. Providers of capital will need to earn something on that money. Otherwise, they have no incentives to provide it, so I think we will live again in a world of positive interest rates, even though those interest rates might be lower for longer and even if there should not, Deutsche Bank could adjust.

On a similar note, the need for an exchange medium i.e. money to make payments will always be there. As Mervyn King writes, "Transactions can never be literally instantaneous. It is highly unlikely that we'll move in the foreseeable future to a system of making payments that is entirely diverse from some form of money. Bank accounts, either to make anticipated payments or to hold a liquid reserve of generalized purchasing power will be with us indefinitely. Even if money disappears as means of payment, we will always need a stable unit of account to price goods and services. Even though the financial industry, in my eyes, is not immediately threatened by an inflection point, competition is fierce. Money is essentially a commodity. People and corporations want to borrow from the cheapest source and choose to have deposits where they get the most value and pay the least.

Brand plays a role, but the willingness to pay for brand is very limited. In investment banking, contrary to commercial banking, there is some quite significant opportunity to offer differentiated services that center around the ability to offer smart and sophisticated solutions to demanding corporate clients. The main differentiating factors here for Deutsche Bank are its people, reputation and access to capital. Deutsche Bank's private and commercial bank, however, plays a scaling game. It relies on advantages of scale and distribution and financing to spread its fixed costs. In Germany, it has more than 20 million customers compared to 12.5 million of the next biggest competitor. Eleven out of those twenty million customers already use digital offerings. This offers tremendous opportunities for efficiency improvements, mainly through reductions and support staff and cheaper distribution. That's why Deutsche Bank aims at a 65% cost income ratio for its private and commercial bank, a figure unseen in German banking.

The most important cost advantage however, is in deposit financing. In 2016, deposits provided 3.4 times the funding for 1.5 times the cost of long term debts. In Germany, Deutsche Bank's deposit base was more than twice the size of the next biggest competitor and is among the largest in Europe. Furthermore, because of Deutsche Bank's big corporative customer franchise, deposits can be used to finance not only mortgages, but also corporate loans that offer much higher interest rates, a huge advantage vis-à-vis the many small competitors that lack the critical mass to serve corporate clients, so this

financing advantage works as an autocatalytic process. Autocatalysis refers to a chemical process in which the result of the chemical reaction is the input for the same reaction.

Through cheaper funding, Deutsche Bank can offer cheaper products that attract more customers or increase business with existing customers, which in turn, increases the deposit base in an ongoing virtuous cycle of growth. This process explains why these advantages take years or even decades to develop. Autocatalysis is the chemical equivalent of compound interest and as we know, compound interest takes time to evolve and is enormously powerful over the long-term, so these advantages are very hard to replicate for competitors. Furthermore, this deposit-based competitive advantage is protected by regulation. A non-bank can lend money or handle payments, but only a chartered institution can accept consumer deposits into a transaction account and, therefore, enjoy the benefits of this cheap funding. Being regulated, however, is expensive, serving as a significant barrier of entry.

Deutsche Bank has significant competitive advantages and is not immediately threatened by an inflection point. It also faces the prospect of improved efficiency, increase revenues and overall higher return on equity. On the cost side, the bank targets an adjusted cost base of €22 billion in 2018 and €21 billion in 2021. These cost reductions are achieved by improving the efficiency of internal processes mainly through digitalization and job cuts that affect only support staff while continued investments in infrastructure and revenue-generating staff will be main. These cost reductions, therefore, won't cut into revenues. Regarding future revenue development, the bank sees many positives. It expects client activity, which it lost last year due to fears regarding its solvency to return this year.

Furthermore, the bank is very positively exposed to an increase in interest rates. According to the former CFO and current co-head of the CIB, a 70-basis-point increase in interest rates would lead to more than €1 billion of additional revenues as additional interest income would far surpass additional funding costs and increases in bad loans. The bank also expects reduced funding costs from the capital race in March and the increase capitalization further allows Deutsche Bank to invest capital in revenue generating opportunities. Last but not least, there are also big opportunities for its corporate and investment bank to cross-sell as two thirds of its corporate clients use only one of its services. Overall, the bank expects to achieve a return on equity of 10% in a normalized operating environment, also helped by the wind down of the legacy derivatives portfolio that currently drags down the corporate and investment banks return on tangible equity by 2% each year. I consider those targets realistic.

If Deutsche Bank achieves revenues of €30 billion in 2018, a reasonable and conservative estimate in my eyes, this might result in an income before income taxes of €8 billion. Looking out to 2021, revenues could increase a lot if interest rates rise. A conservative assumption of €32 billion of revenue implying a total growth of just 10% over the next four years would result in an income before income taxes of €11 billion. Net income should, therefore, be around €4 billion in 2018 and more than €5.5 billion in 2021. Applying a justified PE ratio of 15 to those figures gives an intrinsic value of €60 billion in 2018 and €83 billion in 2021. Compare this to the current market cap of around €30 billion and you

have a margin of safety of more than 50% for 2018 and more than two-thirds of 2021.

Looking at valuation from a different angle, Deutsche Bank wants to generate a return on tangible equity of 10% and the second quarter 2017, tangible book value per share was a little more than €27. If a company earns 10% on its book value, which equates to around 8% after tax, the justified market value is at least worth 1.3 times book value and I consider 6% a reasonable estimate for market rates of return. This gives us an intrinsic value of around €36 per share, implying a margin of safety of more than 60%. This is high even if you adjust the price to book or the PE downwards to reflect the effect of the cyclical industry. One more general thought on the relationship, on the unique relationship between discount rates and the intrinsic value of banks. I assume here that 6% is a reasonable estimate for future market returns in Swiss francs. In the case of banks, there is this unique relationship between interest rates and intrinsic value as banks are somehow naturally hedged against high interest rates. If interest rates increase, the discounted value of future cash flows and, therefore, intrinsic value decreases, but bank profits increase as higher interest rates increase bank revenues.

Vice versa, we currently live in a world of low interest rates. While this depresses Deutsche Bank's revenues and profits, it also lowers the discount rate with which we discount future cash flows and that effect counteracts and increases intrinsic value. The above estimates of Deutsche Bank's intrinsic value should, therefore, be quite conservative. Once we live again in a world of more than 4% risk-free interest rates as assumed by our PE ratio of 15, Deutsche Bank revenues and profits will be a lot higher than today. There are several risks to those estimates, most of which relate to low interest rate environment and business model risks that we analyzed above. Furthermore, there may be additional litigation expenses and who knows, maybe they will be so big that they destroy the above value calculations.

The biggest risk certainly is a major financial crises. As interest rates are very low and central banks will have problems intervening in the next crisis, it may be that they cannot effectively intervene, leading to severe stresses and Deutsche Bank's bankruptcy. I think probabilities of this happening are less than 5% in any given year, but I am open to change my mind on this. In my eyes, the most realistic risk to my investment thesis is that John Cryan will be replaced after his contract expires in 2020 as there is no long-term or surety owner of Deutsche Bank that can guarantee Cryan's backing. This would seriously endanger my investment thesis as culture change starts at the top and even though this process has started, it is far from over. You need to check how far this progress will have advanced until 2020. I would also need to check the capabilities and integrity of the new person in charge.

A few concluding remarks, Deutsche Bank seems to be very cheap, priced at around half its book value. During the last two years, many changes have been made to its business model. It is simpler, more efficient, more liquid and better capitalized with a healthier risk culture and better incentives than just a few years ago and, most importantly, compared to competitors. The probability that Deutsche Bank goes bankrupt in my eyes is less than 5% in any given year, but the upside within the next two years is 100% and within the next five years, 200%.

The following are excerpts of the Q&A session with Samuel Weber:

Q: A question on capital allocation as the bank generates profitability going forward. What would you like them to prioritize? Is it further deleveraging, reinvestment in the business or return of capital to shareholders?

A: Well, I have quite a high level of trust in John Cryan's ability to manage those tradeoffs in a way that satisfies long-term shareholders. I think he will focus on reducing costs and while investing in digitalization as said, the bank invests €2 billion in digitalization every year and they will continue to do so. I guess that once Deutsche Bank achieves a sustainable level of profitability and that should happen in 2018, latest 2019, that they will significantly increase the payout ratio to around, I guess, 50%. I'm not sure about that and I trust John Cryan to make reasonable decisions.

Q: You already talked about digitization and some of the issues around that. Blockchain has been mentioned a lot lately. Do you have any views on that and how it might impact Deutsche Bank?

A: Yes and I'm actually following very closely just whatever I can get my hands on when I read about what the bank does and what other banks do with regard to digitalization and blockchain, etc. I didn't so far see a fundamental risk to the basic competitive advantage of banks and the cheap deposit financing and I think that banks can use technology to increase their reach. There are many underserved people in this world, so I guess you can use digitalization to your advantage as a bank. You can use it also to increase profitability, to increase efficiency, but I didn't so far see a fundamental risk to banks' business models, but this may change. Every day, this may change and blockchain specifically, I read about the different consortia that are currently being built where five or six or seven banks cooperate on a new platform where they want to increase the efficiency of security transactions and they try to do that with the blockchain technology, but so far they use it to improve their own efficiency. I don't see it yet as a risk to their business model.

Q: Maybe lastly from me, in terms of sensitivity to interest rates, you talked about the benefit from a rise in interest rates. Do you have a sense roughly, let's say, a 1% rise in interest rates what that might translate into in terms of interest income or EPS?

A: Yes, exactly. I actually pointed out that the financial officer, the former CFO and current co-head of the investment bank, Marcus Schenck, told investors in the last conference call that a 70-basis-point increase in interest rates will lead to roundabout €1 billion of addition revenue and so I guess that's a reasonable figure. I think concerning my investment case over the next two to five years and the most important thing is that the bank can increase its efficiency without losing too much of revenue, so the revenue increases come on top of that whether or not the main reasons for why I would consider investing in Deutsche Bank.

About the instructor:

Samuel S. Weber is an independent wealth manager based in Zug, Switzerland. He is a passionate value investor, who is focused on generating long-term, market beating returns by investing in high-quality opportunities in the stock market and providing patient capital to SMEs with the overall aim of fostering productive investments in Switzerland and Europe. To achieve the latter, he founded the SW Kapitalpartner GmbH (www.swkapitalpartner.com). Samuel holds a master's degree in strategy and international management from the University of St. Gallen.