

Universidad ORT Uruguay

Facultad de Administración y Ciencias Sociales

Un enfoque integrado para el análisis de mercado: inclusión financiera, gestión de riesgos y métodos de valoración en el contexto de la dinámica del mercado y la actividad de fusiones y adquisiciones

**An Integrated Approach to Market Analysis:
Financial Inclusion, Risk Management &
Valuation Methods in the Context of Market
Dynamics and M&A Activity**

Entregado como requisito para la obtención del título Máster en Dirección Financiera(Universidad ORT Uruguay) & Master of Science in Finance (Florida International University)

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2023

Declaración de Autoría

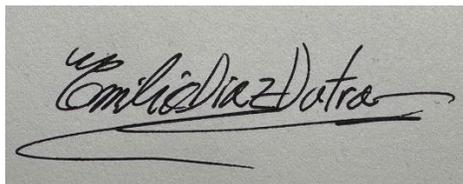
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Agradecimientos

Dedicado con mi sincera gratitud a Joshua Barroso, Jonathan Cohen Bary, Esteban Correa, Athanasios Klimentidis, Steven Quintero y Maria Senior, quienes han formado parte del Máster en Finanzas de FIU y han contribuido en este trabajo final.

Estoy profundamente agradecido por el privilegio de haber trabajado junto a cada uno de ustedes en este viaje tan desafiante y gratificante. Su inquebrantable dedicación, experiencia y espíritu de colaboración han jugado un papel vital en el éxito de nuestro esfuerzo colectivo. Me gustaría expresar mi más sincero agradecimiento por sus contribuciones en cada uno de estos trabajos presentados.

Index

I)	Abstract.....	5
II)	Introduction.....	7
II.I)	The Rise and Fall of Lehman Brothers	7
II.II)	Ant Financial Case: Fintech Unicorn.....	7
II.III)	Security Analysis: Walmart Valuation	8
II.IV)	Mergers and Acquisitions: Archaea & BP.....	8
III)	Chapter 1: The Rise and Fall of Lehman Brothers	10
IV)	Chapter 2: Ant Financial Case: Fintech Unicorn	28
V)	Chapter 3: Security Analysis: Walmart Valuation	46
VI)	Chapter 4: Mergers & Acquisitions: Archaea & BP	74
VII)	Final Comments, Mayor Giveaways, and Conclusion.....	99

I) Abstract

Este trabajo final presenta una selección de trabajos que exploran varios aspectos del análisis de los mercados e instituciones financieras, la gestión de riesgos financieros y la banca comercial. El objetivo de este compilado es proporcionar una visión general completa de estas áreas críticas dentro del campo de las finanzas y ofrecer información valiosa sobre sus aplicaciones prácticas.

La recopilación comienza con un examen en profundidad del auge y la caída de Lehman Brothers, un destacado banco de inversión que experimentó un colapso durante la crisis financiera mundial de 2008. El ensayo analiza los factores que contribuyeron a la caída de Lehman Brothers, incluidas las fallas en la gestión de riesgos, el apalancamiento excesivo y el impacto de la crisis de las hipotecas de alto riesgo. El estudio del caso ofrece valiosas lecciones sobre evaluación de riesgos, gobierno corporativo y los riesgos sistémicos asociados con las grandes instituciones financieras.

El caso de Ant Financial se centra en el surgimiento de un unicornio fintech y su transformación en una de las empresas fintech más valiosas del mundo. El trabajo explora el modelo de negocios innovador de Ant Financials, las nuevas tecnologías cambiantes y su impacto en los servicios financieros tradicionales. El ensayo se centra en temas como los pagos móviles, la banca digital y los desafíos regulatorios que enfrentan las empresas fintech que operan en un panorama que cambia rápidamente.

Como enfoque de análisis de mercado y securities, la compilación incluye un ensayo en el cual se utilizan técnicas de análisis de seguridad para evaluar la valoración de Walmart, una de las corporaciones minoristas más grandes del mundo. Estos estudios examinan el desempeño financiero, el panorama competitivo y las perspectivas de crecimiento de Walmart, y brindan información sobre su valor intrínseco y su potencial de inversión. El trabajo destaca la importancia del análisis financiero completo y la evaluación de la industria para tomar decisiones de inversión razonables.

Finalmente, el compilado de ensayos termina con la exploración de fusiones y adquisiciones que involucran a Archaea & BP, centrándose en consideraciones estratégicas, métodos de valoración y desafíos de integración posteriores a la fusión. Este ensayo analiza los factores que impulsan las transacciones de M&A, el impacto en la dinámica del mercado y los resultados financieros de las empresas involucradas. Los estudios brindan información valiosa sobre las complejidades de los acuerdos de fusiones y adquisiciones y la importancia de la debida diligencia y la planificación de la integración.

En conclusión, este compilado de trabajos ofrece una colección completa de documentos que cubren el auge y la caída de Lehman Brothers, el caso de Ant Financial como un unicornio fintech, el análisis de seguridad aplicado a la valoración de Walmart y las fusiones y adquisiciones que involucran a Archaea & BP. Al examinar estos estudios de casos diversos, se tiene como objetivo profundizar la comprensión de temas cruciales dentro de las finanzas, la estrategia comercial y la toma de decisiones corporativas.

Key words: Lehman Brothers, Ant Financial, Security analysis, Walmart valuation, Mergers and acquisitions, Archaea BP, Case studies, Global financial crisis, Risk management, Subprime mortgage crisis, Fintech, Mobile payments, Digital banking, Regulatory challenges, financial analysis, Due diligence, investment recommendation.

II) Introduction

II.I) The Rise and Fall of Lehman Brothers

El ensayo analiza la caída de Lehman Brothers, una importante corporación financiera, durante la crisis financiera de 2008. Comenzamos destacando los factores que contribuyeron a su quiebra, incluidas las inversiones de riesgo en valores respaldados por hipotecas (MBS) y préstamos de alto riesgo. El directorio de Lehman siguió estrategias de crecimiento agresivas, sin tener en cuenta las advertencias del mercado y participando en prácticas cuestionables como la táctica "Repo 105" para ocultar la deuda. Mencionamos cómo el colapso de Lehman impactó los mercados globales y llevó a la adquisición de sus operaciones por parte de Barclays. El gobierno de EE. UU. optó por no rescatar a Lehman Brothers, pero luego de tal acto, proporcionó fondos a otras empresas, lo que podría sugerir una decisión deliberada.

II.II) Ant Financial Case: Fintech Unicorn

En este análisis abordamos el concepto de inclusión financiera, que se refiere a brindar acceso a servicios y productos financieros a todos los ciudadanos de un país de manera segura, económica y fácil. Destacamos la transformación de China en una sociedad sin efectivo, con la adopción de métodos de pago en línea como Alipay y WeChat Pay, lo que abre nuevas oportunidades para que las pequeñas y microempresas accedan a servicios financieros como préstamos. Ant Financial, una empresa de tecnología financiera, que reconoció la injusticia que enfrentan estas empresas para obtener apoyo financiero y decidió abordar el problema ofreciendo inclusión financiera. La empresa aprovechó la tecnología y colaboró con bancos tradicionales para brindar servicios financieros rápidos, fáciles e inclusivos, incluidos pequeños préstamos y pagos móviles. A su vez, analizamos el impacto positivo de la inclusión financiera, como el crecimiento económico, la expansión empresarial, el aumento de la educación financiera y la reducción de las tasas de desempleo. También, destacamos la importancia de la inclusión financiera para abordar desafíos globales como la pobreza y la desigualdad. El ensayo analiza más a fondo el modelo comercial, la ventaja competitiva y la sostenibilidad de Ant Financials a través de servicios

impulsados por la tecnología. Enfatizamos la capacidad de Ant Financials para llegar y servir a las personas que tradicionalmente no tenían acceso a los servicios bancarios, en particular a los jóvenes que prefieren servicios financieros rápidos, eficientes y respetuosos con el medio ambiente. Finalmente, el análisis menciona las amenazas y desafíos potenciales que enfrentan los bancos tradicionales debido al surgimiento de empresas fintech como Ant Financial, que ofrecen soluciones financieras convenientes y rentables.

II.III) Security Analysis: Walmart Valuation

El análisis del security destaca la capacidad de Walmart para adaptarse a los cambios económicos y de la industria, manteniendo su objetivo de ofrecer productos de calidad a precios bajos. El crecimiento de los dividendos de Walmart ha sido constante, aunque está disminuyendo debido a la mayor competencia de empresas como Target y Costco. Sin embargo, el análisis sugiere que el valor de Walmart como empresa se mantiene estable y es poco probable que sea superado como la principal tienda minorista. Un análisis de la valoración de las acciones de Walmart usando diferentes modelos indica que las acciones están sobrevaluadas. El ensayo recomienda vender las acciones de Walmart con base en los promedios móviles, que muestran una caída significativa. Sin embargo, a pesar de estas preocupaciones, el modelo de crecimiento de dividendos de una etapa predice el crecimiento futuro de Walmart, y el bajo valor Z de la empresa indica un bajo riesgo de quiebra. El análisis concluye que Walmart sigue siendo una fuerte inversión debido a su dominio en la industria y la naturaleza esencial de sus productos, incluso en un período potencial de recesión.

II.IV) Mergers and Acquisitions: Archaea & BP

El ensayo analiza la fusión y adquisición de Archaea y BP, que ha marcado un desarrollo significativo en la industria energética. Archaea, una empresa de energía renovable conocida por sus tecnologías innovadoras, ahora se convertirá en una subsidiaria de BP, líder mundial en el sector del petróleo y el gas. Al unir fuerzas, Archaea y BP buscan aprovechar sus fortalezas y experiencia complementarias. Esta colaboración posiciona a BP para navegar mejor en el

panorama energético en evolución y satisfacer la creciente demanda de alternativas más limpias y ecológicas. Analizamos y destacamos que la fusión y adquisición de Archaea por parte de BP representa una alineación estratégica entre dos líderes de la industria, que combinan sus puntos fuertes para abordar la necesidad inmediata de soluciones de energía renovable.

III) Chapter 1: The Rise and Fall of Lehman Brothers

Abstract

In the face of its own desire for power and money, ignoring risk management strategies and pursuing aggressive growth strategies, Lehman Brothers fell from dominance in investment banking. The company, despite warnings that the mortgage market was deteriorating, had intended to establish a dominant position and gain control of the entire market. It fired its Chief Risk Officer for opposing its reckless growth policy, underestimating the crisis and overestimating its ability to handle the risks. In order to disguise its true financial situation, Lehman Brothers employed an accounting trick called "Repo 105," which temporarily paid off debts so as to make the balance sheet look better. But ultimately this strategy proved to be a failure, and the firm went bankrupt.

The analysis also discusses the importance of liquidity on finance markets and how investment banks play an important role in providing it. The issuing of mortgage securitized bonds and asset backed securities by Lehman Brothers has led to an increase in its debt while revenues have risen. However, the firm was forced to go into bankruptcy as delinquency rates on mortgages increased. The repeal of the Glass Thrall Act, which enabled investment banks to undertake risky activities, is also covered by this text.

In the issuance of debt and risk management, Lehman Brothers should have been more accountable. Regulation and corporate responsibility should have been taken more seriously by the government and financial institutions. The lessons learnt include the need for banks to bear accountability for their actions, good investment practices and avoidance of excessive risk taking. The "pure play" concept of investment banks, in which they focus only on a particular market segment, can be sustained as long as the risks are managed properly.

In order to prevent revenue opportunism, the Lehman Brothers case shows that firms must take on responsibility for their risks and market intervention such as mortgage lending should be cautiously taken into account.

Contents

Failure Analysis.....	13
Risk Management.....	16
Liquidity Crisis and Business Model of Investment Banks.....	17
Macro: Systemic Banking Crisis and Regulation.....	19
Macro: Federal Bailout and Public Policy.....	22
Financial Analysis: Leverage, Liquidity and Solvency analysis.....	26
References.....	27

Failure Analysis

Have you ever heard the expression “Don’t fly too close to the sun or your wings might burn”? This advice given by Daedalus to Icarus in the Greek mythology, is a common mistake that is seen every day in the financial markets, and it applies to all corporations regardless of how big they are. Lehman Brothers is the best modern example of how ambition, lack of self-awareness, and uncontrolled ego can lead one of the biggest companies in history to complete bankruptcy. In order to fully understand the financial disaster that took place in 2008, first it is important to understand the background of Lehman Brothers. They were founded by Henry, Emanuel, and Mayer Lehman in 1850 and they started in the commodities market trading very popular items such as cotton that was very valuable at that time, slowly they grew into other segments and became an investment bank, bringing companies from private to public, raising capital, lending money, etc. From 1984 to 1994, they merged with American Express but after 10 years American Express spun off Lehman Brothers... and this is where it all started.

Richard Fuld became the new CEO in the company after the spun off and decided that he was going to take Lehman Brothers back to the top. He was determined to do whatever it took to grow the bank and keep investors satisfied. At the beginning he was very successful, he grew fixed income operations internationally, gave 40% of the company to employees making them feel like owners and this took the company’s stock from \$5 in 1994 all the way to \$85 in 2007. Of course, Lehman Brothers was extremely involved in the MBS market, they were buying companies like Aurora which underwrote loans with small documentation and BNC mortgage. This raised their fixed income from \$2.2 billion in 2001 to \$7.3 billion in 2005. Now the story tells by itself, and the MBS’s that Lehman was buying weren’t in reality AAA rated but it was a mix of everything particularly having more C rated loans if anything, therefore the value of their investments had a sharp decline when such risky loans were defaulting because of the lack of capacity that loan owners had to actually paid. Now one could argue that this was the biggest factor that contributed to their failure, and perhaps it is since they were part of a bubble, however many other investment banking companies also had huge stakes in the same market and didn’t go into bankruptcy. Lehman Brothers was particularly borrowing high in short periods of time from other

banks in order to finance their operations, this was very risk because at the moment their investments started to decline, no one was willing to lend them money or they were asking for higher collateral, when taking such decisions they had to rely more on their equity capital or borrow in the long term at a fixed rate. Richard Fuld believed that there was no way that the company could ever go under regardless of the hints the market was giving in 2007 of what was about to come and he kept on pushing growth by buying Archstone for \$22 billion which was one of the largest apartment owners in the U.S, along with that, they were override risk limits and policies to seek highest returns instead of maintaining prudence. Now it is important to mention that in the summer of 2007, two Bear Stearns hedge funds had filed for bankruptcy because they were investing primarily in subprime mortgage-backed debt. Therefore, it was very irresponsible on behalf of Lehman to push growth whenever other companies inside the same industry were failing. Lehman also had investments in the new made-up market of CMO's, CDO's, and CDO's square, which went hand to hand with the MBS market. Now to finally address an important factor that contributed to their failure was their infamous "Repo 105" which consisted in recording as a sale what in reality was a repurchase agreement with other banks, they were able to do this because they were giving as collateral, securities worth \$105 on the dollar. Lehman was doing this to misguide other banks that were doing business with them to show that they weren't involved in too much debt, and they were selling those assets, when they had to buy them back.

All around the world, people in different countries and of different incomes were negatively impacted by what was going on during the financial crisis. Now in all this catastrophe in which Lehman Brothers ended up going bankrupt, a company like Barclays benefited from their implosion since they were able to buy all of their capital market and investment banking operations for a total price of \$1.75 billion, this was a relatively low price for all of the operations that Lehman Brothers had under them, after this Barclays became the seventh largest investment bank measured by revenue. On the other hand, the U.S government, the treasury secretary, the Federal Housing Finance Agency, and President Bush didn't quite benefit but didn't put too much effort on bailing out Lehman Brothers. As a matter of fact, it looks like they wanted them to fall and then bail out all the other companies because a month after Lehman declared bankruptcy, Congress came out with TARP which provided \$700 billion to buy the MBS's and President Bush lent \$17.4 billion

to GM and Chrysler. Now it is more than clear that the U.S was in condition to bail out Lehman, however they argued that why should taxpayers give money to save an organization that doesn't benefit them directly. Nevertheless, in October 2008 they ended up funding other corporations with the same money that could have gone to Lehman. It is possible that after Lehman failed, they realized that this couldn't happen to any more companies, or it is possible that they wanted to take Lehman out of business.

What happened with Lehman Brothers isn't something new in the market and those who don't know their history are doomed to repeat it. A decade earlier Long-Term Capital Management also went bankrupt in the middle of a financial crisis. They weren't an investment bank, they were a hedge fund that had an arbitrage strategy, and had mathematical models constructed by the most intelligent economist at that time. They were extremely profitable, and everything was invested in LTCM or lending money to them because your returns were 100% guaranteed. However, during that time there was a global economic crisis in which economies like the ones in Korea or Russia were defaulting and didn't seem to come back to regular levels like LTCM had predicted. Therefore, LTCM lost all their global investments, forcing the company to become bankrupt and the Federal reserve to buy them out. This event deferred from Lehman because many banks heavily depended on LTCM and them going under meant that all their loans would be lost, therefore LTCM going completely bankrupt would have cause a domino effect on the U.S market making all the other banks collapse, so it was a matter of only saving one hedge fund in order to prevent the U.S market from taking a larger hit. Also, one could argue that in 1998, the crisis was more global than internal, so the FED's had more reserves, whereas in 2008, the crisis was mostly internal due to the housing market and there were many more companies in need of bailing out.

The incident could have easily been avoided by being more cautious and conservative; a CEO like Fuld should know that not everything that shines is gold, and one must be very careful and extensively study what they were buying since they are managing billions of dollars that belong to others. Diversifying is key in this type of industry, and Lehman was mostly focusing on putting most of their eggs in one basket. They could have gotten the opportunity of exploiting markets that weren't growing as fast in the moment but that had great potential in the future like

technology. Finally, Fuld rushed to much their rise to the top by setting aggressive and risky investments, when he could have organized a much slower but stronger growth, that way by now Lehman would probably be the #1 investment bank in the world with a solid basis.

Risk Management

It is no secret that Lehman Brothers was a giant investment banking, which commanded the investment banking business for a long time. With more than 4 billion in earnings on revenues of 60 billion, this company looked down on them all from the top. But this giant, led by CEO Dick Fuld, reached the point of blinding itself to a hunger for power and money that made it think it could limit the risk it posed to the market and reality was living. As we said previously, Lehman Brothers was blinded and generated a strategy which consisted of looking at every possibility to grow without any measure.

Lehman Brothers' strategy between 2000 and 2008 basically consisted of trying to create a monopoly and take over the entire market. This risk behavior can be evaluated as something wrong since as an investor you should minimize risk, it ignored different factors that alerted it that the mortgage market was being affected by the non-payment of the holders. The bank did not consider the risk not only of them as a company but did not measure the risk attached to the market which was so high that it was the one that finally brought it to its end. Lehman thought it could handle it without any problem, so much that it fired its Chief Risk Officer for being against the bank's aggressive growth policy, underestimated the situation and underestimated the risk, never thought that the crisis affecting its competitors was going to reach them then it was a model that led to its own failure. It was trusted as an entity and did not correctly handle the contextual risky situation that was being experienced at that time, getting full of illiquid assets, seeing the moment as an opportunity to take the whole market. In other words, it risked everything for nothing.

Considering the above as an overview of what Lehman Brothers was going through and, in its eagerness, to stop its free fall. Lehman Brothers opted for a short-term financial instrument. The short-term repurchase agreement, classified as a sale by them, is known as Repo 105 and it is

considered an accounting trick. The bank seems to reduce its leverage by temporarily paying down liabilities, long enough for this to be reflected in the company's reported balance sheet, using the funds received from this "sale" to pay down debt. Following the release of the company's financial statements, the company borrows money and buys back its original assets.

In this instance of an asset sale, money or deposits are given in exchange for a financial asset. It's true that this procedure leaves the balance sheet unchanged, but Lehman now had plenty of liquidity to get rid of a lot of its liabilities. Days before the end of the quarter, these operations were conducted on a large scale to make the company's financial statements appear to investors to be healthier and less leveraged than they actually were. Days after the beginning of the new quarter, they completed all the repurchases they had committed to, as well as paying the inflated haircut at which they traded their repos.

Liquidity Crisis and Business Model of Investment Banks

Liquidity is key in the financial markets, institutions provide liquidity to investors, consumers and even within banks liquidity is important. When we talk about liquidity, we mean how easy it is for a party to provide assets (stocks, cash, etc.) to another party. We usually think of this as a mortgage or a loan, a bank provides cash in advance to a person so that person can purchase an asset with a promise that they will pay it back with interest. Investment banks are different from other financial institutions, their role is to purchase assets and sell them back to the public or other financial institution, also they provide underwriting services for different financial assets, for example IPO's and MBS. Another way to look at liquidity is from the eye of the beholder, meaning that how likely it is for a firm or a person to pay its obligations on time, the more liquid the safer and more likely you are to pay your obligations. When Lehman Brothers started issuing more debt (MBS, ABS), the revenues increased by a significant margin from \$2.2bln in 2001 to \$7.3bln in 2005, with almost half of it coming from the securitization business side. This also includes risk in the ability to pay debts incurred by Lehman brothers. When we go back and talk about the 2008 market crash, we tend to talk about how the stock market collapsed and many companies went bankrupt, but that is not the complete picture. This starts all the way

back in 1933 when the Glass-Steagall Act was introduced after the great recession to separate banks into commercial and investment banks to properly assess and regulate them. Now we go forward to 1999 when the Glass-Steagall Act was repealed, and this gave more flexibility to the investment banks to do business. In the early 2000's regulations were softened up for issuing mortgages, so banks started issuing at a higher rate, the business of Lehman brothers was to issue ABS and MBS and sell them for a profit. Note that this worked great as long as people did not default on their mortgages at a high rate. This all went crashing down when delinquency rates on real estate loans increased to 1.7% in late 2006. Companies started going bankrupt (ex. Bear Stearns). By September 2008 Lehman brothers had filed for bankruptcy.

Looking back and thinking, what could Lehman brothers have done differently, to start it is difficult to say since hindsight is 20/20. But we can say for certainty that Lehman brothers issued a high amount of MBS and ABS which made them susceptible to bankruptcy due to its high amount of debt. They should have done business in a more responsible way, issuing debt at a rate that was safer from bankruptcy. The run on the bank is difficult to pinpoint because it was more of a systematic failure, the government endorsed the issuing of mortgages and then the banks went back and packaged them in financial instruments to then sell it back to the market, in a sense it was a ticking time bomb. Of course, we have to learn from history and from mistakes. There was a lack of regulation, a lack of corporate and social responsibility from the government and from the financial institutions themselves. Something that is important to note is that when we invest in businesses, we like to know how our investment is going to be used, we never ask that question of our banks. In essence we are lending the bank money at a low interest rate, and they use it for highly complex and risky activities. This in our minds is the main lesson that we need to take from it. Now other key lessons are that we need to make banks responsible for their own actions, practice corporate responsibility and make smart investments. For the government they need to stop enticing companies with "free money" and let the market do its job. There is a famous quote by President Bush that says, "Wall Street got drunk", this exemplifies the activities performed by banks such as Lehman Brothers.

"Pure-Play", what is it, well "pure-play" is a company that focuses solely on a particular

product or service. Investment Banks can be 'pure play' because they can focus on one product or service, this gives maximum exposure to a particular market segment. Can "pure play" investment banks be sustainable? The answer is not straightforward, the technical answer is, it depends. Why? Well, it depends on how the company uses funds to generate revenue, if the firm takes on too much risk the concept of "pure play" will not work sense it is too much risk on a specialized segment of the market, so risk is magnified. When the usage of funds is done in a responsible manner "pure play" would likely work sense revenues are also magnified.

Lehman Brothers' case serves as an example of too much risk in search of excess revenue, this period in our history serves as a lesson that businesses should be accountable for the risks that they take and that we should not force anything onto the market such as the issuance of mortgages because companies will take advantage of the revenue opportunities.

Macro: Systemic Banking Crisis and Regulation

A systemic banking crisis is one in which there's an all-inclusive wipe-out of a considerable portion of the world's banking capital. These crises can be uncommon, but they are annihilating when they happen. As with most systemic banking crises, the one in 2008 came almost to begin with through a starting silent phase, where banks started to create awful credits, or "non-performing loans" (NPLs) included in their financial statements. These NPLs built up unobtrusively as they, in turn, gradually annihilated the banks' capital base in 2001. The insolvency of Lehman Brothers portrayed the 2008 crisis in its worst stage when financial institutions considered as well enormous to fall flat wiped out and collapsed ("Too big to fail"). A systemic banking crisis could be an unstable situation which influences the whole banking system. This can be an occasion in which signs of budgetary trouble in a banking system result in considerable misfortune of managing an account capital in a nation.

When such occasions are activated at a considerable size, certainty in an economy is reduced. As a result, people display an increase in risk aversion driving doubt in a bank's capacity to preserve dissolvability. To contain such a far-reaching flare-up of fear and collapse, governments intercede to spare and save financial institutions. Failure of banks leads to insolvency,

which in turn, leads to liquidity emergencies for the whole economy. This comes about in budgetary deficit: unsettling influences and disturbances within the showcase being transmitted from one range to another. When connected to keeping money, crisis happens when an institution of substantial size starts to liquidate assets quickly, coming about in a misfortune of certainty within the keeping money in the bank delivering a ripple effect on other banks and financial institutions.

Banking contagion portrays the situation when systemic banking crises are transmitted to numerous other banks or the financial system as entirety. There's high contagion risk in commercial banking as commercial banks have connections with other banks through the installment and payment system through which everybody pays their bills with checks or electronic installments. In case a bank goes bankrupt, for example, everyone's checking account in that bank freezes. In turn, everybody who has a relationship with the clients of that bank would discover their claim money related status compromised. Thus, numerous banks and their assets would have their market values influenced. The 2008 banking crisis within the States, for instance, was a systemic one that transmitted a spillover impact in which investment failure influenced the installment and payment system through gigantic contagion. Besides, the US markets' instability extended the banking contagion due to the size of the US banking sector and its concentration.

At the time of enactment, the banking act of 1933 made a solid division between investment banking and commercial banking. This was a reaction to the delicate banking system at the time after Depression-era bank failures. The banking act was made by the Federal Insurance Deposit Corporation (FDIC), to guarantee that commercial banks stores would not be utilized to fund risky securities. Parts of this enactment were afterward revoked by the GLBA, or Gramm-Leach-Bliley Act, in 1999, as a reaction to financial challenges such as the interest rate caps on bank deposits. It was moreover a reaction to potential financial openings in cross-selling insurance and securities items to clients, which was demonstrating to be productive at the time. In any case, this overlooks the reality that institutions like Lehman Brothers failed since they took on high-risk trade procedures such as managing in forceful subprime loans and credits.

On the off chance that the Glass Steagall Act had been put in its aggregate at the time of the emergency, this would not have halted institutions like Lehman Brothers from seeking these sorts of investments. Indeed, with the GLBA, banks were still permitted to guarantee US government bonds, civil bonds, and securities issued by firms like Fannie Mae and Freddie Mac, government-sponsored ventures. Since banks were still permitted to purchase and offer entire credits, securitization permitted them to offer these credits in a certain frame.

To avoid a future financial crisis, an increment in oversight by the FED seems to offer assistance. In any case, intemperate government intervention might make overconfidence within the value of securities, particularly in the event that the government is guaranteeing that they are well-backed like they did within the case of Fannie Mae and Freddie Mac, which supported awful loaning arrangements that driven to the development of the subprime market to a point where the measures of endorsing were extremely compromised.

The exchange of derivatives ought to be controlled to a certain degree, and mortgages ought to never be permitted to follow. Down-payment prerequisites ought to be more rigid, and adjustable-rate contracts ought to be closely directed. Additionally, there's no substitute for diversification of assets. On the off chance that Lehman Brothers had worked out more watchfulness in making beyond any doubt their ventures were broadened, they would not have contributed so intensely to mortgage-backed securities and credit default swaps. Overall, the US government ought to uphold more prominent results for banks that fall flat to act in its clients' interest, as they did with Lehman in letting them fall flat.

In order to relieve risk and legitimately deal with the contagion, arrangements from the GSA might be re-enacted. A halfway partition can possibly constrain systemic risk whereas still empowering banks to offer way better administration by utilizing way better economies of scale. The Volcker runs the show area of the Dodd Straight to the point that it ought to stay in activity as a risk restraint and auditing firms should be utilized for counseling and administrative purposes rather than private ones designated by the firms themselves. Expanding the banking reserve policy for all financial institutions, isolating depositor's reserves from investment banks and forcing stretch tests and living wills can encourage limit, restrict and constrain future catastrophes.

Deregulation endeavors continuing after the cancellation of certain segments within the Glass Steagall Act seem to have been to blame for the 2008 financial crisis and the collapse of Lehman Brothers. In any case, Lehman Brothers confronted months of developing instability due to speculations within the subprime market and dependence on unsafe mortgage-backed securities for value and liquidity. Lehman Brothers reliably exaggerated their investment in commercial and private contracts. Additionally, they overlooked counsel from their possess officials and received bookkeeping tricks and frauds in their valuations. Through all this, Lehman Brothers took on over the top use and blinded themselves to the reality of their monetary circumstance when they might not indeed secure short-term credit from other banks as required every day.

Macro: Federal Bailout and Public Policy

Lehman Brothers were initially allowed to collapse because they did not have adequate collateral to support a loan under the Fed's emergency lending power. On Friday, September 12, 2008, Lehman's shares closed at \$3.65, a 42% decline from the prior day's close and a 95% decrease from its January value. Lehman's internal calculations showed a significant less than \$2 billion of easily accessible liquidity, in contrast to the amount they had counterfeited which insisted they had to weather the storm and citing a liquidity pool of over \$40 billion. As an aid, the treasury had access to the exchange stabilization fund, a \$50 billion pool that could be used to support. Under its Section 13 of emergency powers, the Federal Reserve had the ability to lend money to any firm in the case of exigent circumstances. Despite these tools, it was made clear that the government would not use public money to bail out Lehman. As this progressed, two potential acquirers of Lehman emerged: Bank of America and Barclays Bank PLC (Barclays). Bank of America began due diligence on Lehman in connection with a potential sale.

However, it was unwilling to make an offer for the company as it was disclosed that their team could not get past Lehman's reported asset values. Ken Lewis, BOF CEO, talked about a "\$66 billion hole" in asset value. In turn, Bank of America then began talks with Merrill Lynch and conducted a deal to acquire the bank on September 15 for \$29 per share, a 70% premium.

Since Bank of America was off the picture already, talks between Lehman and Barclays continued, and once again, the group realized that Barclays would not be able to guarantee Lehman's trading obligations without a shareholder vote, and this vote could potentially take several days and weeks, with the possibility that shareholders would not agree to the transaction. The U.K. government was also approached about the possibility of waiving the voting requirement, but they were unwilling to accept. The Fed then declined to provide this short-term guarantee. Reflecting on this decision, Baxter recalled, "Lehman had no ability to pledge the amount of collateral required to satisfactorily secure a Fed guarantee, one large enough to credibly withstand a run by Lehman's creditors and counterparties." The Treasury Secretary Paulson also claimed, "Neither the Treasury nor the Federal Reserve had the authority to commit public money in that way", meaning it was out of their jurisdiction, and additionally they could not bail them out due to the financial implications.

In Contrast to Lehman Brothers, On March 13, 2008, Bear Stearns executives realized that the company was on the verge of running out of cash and CEO Alan Schwartz reached out to J.P. Morgan CEO Jamie Dimon and The Federal Reserve. The following day the New York Fed received authority from the Federal Reserve's Board of Governors to make an emergency loan to Bear Stearns. Morgan was "working closely with Bear Stearns on securing permanent financing or other alternatives for the company." Bear Stearns and J.P. Morgan agreed to a deal that valued Bear Stearns at \$2 per share. The collapse of Bear Stearns shook market confidence, but the Federal Reserve announced the creation of the Term Securities Lending Facility (TSLF) and development of the Primary Dealer Credit Facility (PDCF), which lent cash directly to primary dealers such as Lehman. Thomas Baxter. The Fed Counsel also mentioned that: "It is impossible to know what would have happened to Lehman without the TSLF and the PDCF, but it is safe to say that these facilities calmed markets and allowed Lehman and others more time to examine available options and to seek potential solution". Following the sale of Bear Stearns, federal regulators turned their attention to the remaining banks, sending onsite monitors from both the SEC and the New York Fed into Goldman Sachs, Merrill Lynch, Morgan Stanley, and Lehman. The feds orchestrated sale of Merrill lynch to Bank of America was contributed to Significant losses that were attributed to the drop in value of its large and unhedged mortgage portfolio in the form of collateralized debt obligations. Countless trading partners' loss of confidence in Merrill Lynch's solvency and ability

to refinance money market obligations led to its sale. Overall, it was considered an alleviation, as the market was crashing from all sections, and they could have potentially lost everything as well.

In the middle of the Lehman Brothers failure storm, Merrill Lynch & Co. Inc. quickly rushed into a sale agreement with Bank of America rather than take the risk of watching its funding outlets dry up completely. On the other hand, the liquidity concerns at Goldman Sachs and Morgan Stanley were not as dire as their compeers, subsequently they proceeded to become bank holding companies, increasing the likelihood of them surviving as independent companies. They understood that by becoming a bank holding companies meant Goldman Sachs and Morgan Stanley would subject themselves to Federal Reserve regulation, but it would also assure the market that they could borrow directly from The Federal Reserve at a time when access to funding was an issue for broker/dealers such as in that period in time with the ongoing crisis.

Counterparties stopped lending to brokers/dealers that faced speculation about their inability to fund themselves. However, as a bank holding company status does allow financial institutions to attract FDIC insured deposits, which can provide a low cost and stable funding source. Goldman Sachs and Morgan Stanley did just that, and they each executed acquisitions to start their deposit levels. This strategic move was in response to the dramatically changing landscape in markets and the investment banking industry brought about by the collapse of Lehman Brothers, which we believe Goldman Sachs and Morgan Stanley could have not survived for a long period of time without becoming a bank holding company even though they were more financially stable than their peers.

To begin with, the Fed's main objective is to maintain a balanced, stable monetary and financial system. In 2008 the Fed's actions were derived from the failing financial systems and institutions causing a financial strain on the economy. The first actions taken by The Fed were providing extensive cash as liquidity to the financial institutions as an immediate action to stabilize the banks. In the 2008-2009 economic crises the Fed took some extraordinary measures to maintain the balance such as the creation of different lending programs. However, currently, the policy that the Fed should adopt is Monetary Policy, which balances the output of productivity and the prices.

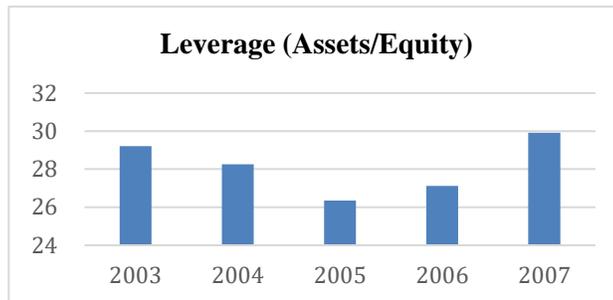
The recommendation along with the implementation of this policy would be to not apply credit easing as it was done during the Great Depression. This can not only cause instability but also have a huge impact on the currently increasing inflation. The public out-cry against the Wall Street investment banks bail out occurred after the unplanned bankruptcy filed by the Lehman Brothers on September 15, 2008. It was due to the fact that Lehman Brothers filed bankruptcy that caused a huge commotion in the capital market causing all of the big financial institution stocks to crash. In fact, there were signals of a collapse occurring even before Lehman Brothers bankruptcy when Bear Stearns faced a crash and was covered by having them bailed out and being sold to JP Morgan. Earlier during the year, when Bear Stearns faced bankruptcy, the regulators assisted in bailing them out and that gave a signal that they would assist in bailing out all of the major banks if they faced a similar situation.

However, in the public's opinion Lehman Brothers were the major cause of the stock market crash in 2008. This caused the public to get angry and express disapproval over the bankruptcy of Lehman Brothers which was later faced by the Wall Street bailout when Congress passed the Emergency Economic Stabilization Bill on October 3rd, 2008. During the current financial crisis faced by the U.S. economy such as, COVID-19, Fed again took it upon themselves to maintain the balance and keep the cash flowing to minimize the damage caused by the pandemic. Some of the urgent actions that the Fed took were lending money to households, financial institutions, small and large companies along with purchasing MBS (Mortgage-Backed Securities). As previously discussed, the policy recommended to maintain stability should have been monetary policy, however, in order to support the economy from facing crises like the COVID-19 pandemic, Fed decided to ease on the monetary policy by cutting the federal funds rate to 0% - 0.25% and Quantitative easing.

The Fed's main focus was to keep the financial market and institution functioning smoothly as the U.S economy thrives on the capital market. In conclusion, during the recent COVID-19 financial crises, the Fed provided financial institutions with an endless supply of cash so they can assist large corporations and households to deal with the financial detentions.

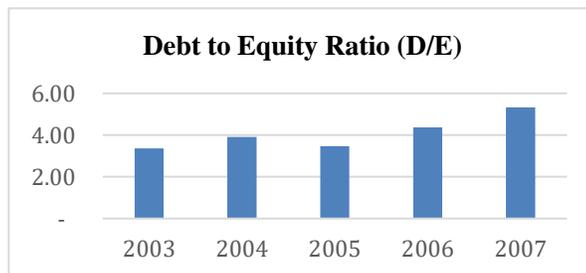
Financial Analysis: Leverage, Liquidity and Solvency analysis:

Lehman Brothers					
	2003	2004	2005	2006	2007
Assets	312,061	357,168	410,063	503,545	691,063
Equity	10,681	12,636	15,564	18,567	23,103
Leverage	29	28	26	27	30



Comments: As an investment bank, Lehman Brothers had a high degree of leverage and a high value in Assets, where the value methods used was questionable.

Lehman Brothers					
	2003	2004	2005	2006	2007
Assets	312,061	357,168	410,063	503,545	691,063
Debt	35,885	49,365	53,899	81,178	123,150
Equity	10,681	12,636	15,564	18,567	23,103
Debt to Equity	3.36	3.91	3.46	4.37	5.33
Debt to Assets	0.11	0.14	0.13	0.16	0.18



Comments: Lehman Brothers Debt kept increasing over time, obtaining higher solvency ratios. This is a clear sign that a solvency problem and bankruptcy instance was going to happen.

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IV) Chapter 2: Ant Financial Case: Fintech Unicorn

Abstract

The text describes the importance of financing in today's societies and emphasizes that there is a lower level of attention given to this form of inclusion compared to others, like gender or race. Financial inclusion is defined as the provision of access to financial services in a safer, less costly, and easier way. A case in point is China, where the adoption of online payment methods has given rise to a cashless society and new markets have emerged. Ant Financial, a fintech firm, recognizes the obstacles that small businesses face in obtaining financial services and is looking at technological solutions to this problem.

The paper highlights the positive impact of Financial Inclusion, which is mainly driven by economic growth, business expansion, market liquidity, financial responsibility and reduced unemployment rates. In addition, it points out the role of financial inclusion in dealing with global challenges such as poverty and hunger. The focus is then shifted to Ant Financial, a business model offering internet banking services that include small loans as well as payment by electronic means and has particular emphasis on the servicing of underserved populations and businesses. The text stresses the sustainability of fintech and its ability to offer services quickly, at low cost or without paper; it appeals to environmentally sensitive consumers.

Regarding competition, this report refers to the increasing presence of firms like Target and Costco that pose a threat to Walmart. In its opinion, however, the value of Wal Mart as a firm is not in danger of collapsing and it does not appear to have lost its position as America's largest retailer. Briefly the acquisition and merger of Archaea by BP has been mentioned as an example of its commitment to a Sustainable and Low Carbon Future.

The analysis ends with a discussion on the importance of being financially integrated to reduce poverty and promote equality. It considers that financial inclusion has a positive effect on the overall economic and social situation, whilst technological progress is key in overcoming obstacles and improving access to financial services.

Contents

Financial Inclusion and Macro Economy.....	31
Business Revenue Generation Model and Competitive Advantage.....	33
Competitor Risk and Threats Analysis – Bank’s threat of new entrants.....	35
Evaluation of Competitive Strategy.....	36
Competitive Realignment, Repositioning and Retaliation.....	37
Regulation Backlash and Failure Analysis – Contagion and Systemic Risk.....	38
Financial Analysis of ANT Financials Boom (2013-2017)	41
References.....	44
Appendix.....	45

Financial Inclusion and Macro Economy

Nowadays everybody talks about gender inclusion, skin color inclusion, disability inclusion, but how come nobody talks about financial inclusion? Financial inclusion is a modern-day phenomenon that has strongly taken place all around the world in the past 10 years. Basically, financial inclusion gives the possibility to all citizens within a country to access financial services and products in a safe, low cost and relatively effortless way. Analyzing China's situation for example, they are very close to becoming a cashless society since people consider that it is inconvenient and unsafe to carry around paper money. Instead, they started adopting online payment methods such as Alipay and WeChat Pay that opened their economy to more digitized forms of payments and it created a whole new market that wasn't being exploited before. Surprisingly enough, 94% of all business activities in China come from small and micro businesses, nevertheless prior to companies like Ant Financial, these micro and small entrepreneurships weren't given the opportunity to use financial services such as loans. The reason for this is because they had no collateral, they were in the lower tier cities, their projects were considered too small, banks assumed a higher default risk, and there was a lack of laws regulating these types of businesses. All these reasons are valid, and it is understandable that banks didn't want to involve themselves in lending 10,000 yuan since that wasn't an amount worth putting effort into, however what they weren't realizing is that a small business could triple their revenue with that small loan, also they could grow their operations and hire more people, providing economic growth to the country and lowering unemployment rate.

Ant Financial became aware of how unfair the banks were to individuals and small companies, therefore regardless of the risk, they decided that they were going to step in and provide what we know as financial inclusion. China being a first world country makes sure that their citizens have access almost all around the country to the internet, to the point that 99.1% of citizens can pay online as of 2019. So, Ant Financial realized that the vast majority of people could use their phones to solve their financial needs. This is why their range of products went from small loans to mobile payments, all the way to wealth management regardless of what your income or your occupation might be. Small businesses had the ability to push their growth because now their

operations were finally being financed, and not only that, but they were also being approved within seconds after submitting the application. Along with that, Ant Financial collaborated with the already established commercial banks in China to make sure that they were also providing technological services since at the end of the day, if they can all work together and make their country's economy grow, then they are all growing. Ant Financial for example worked in 2015 with Guilin Bank to provide 350 million Yuan to farmers and three years later, their chairman commented on the success of the loan.

Financial inclusion is not only important, but indispensable to the economic society that is rapidly growing these days. It gives the opportunity to people and businesses that have never had a bank account, let alone any credit score, to obtain financial services in a very familiar way, which is with the use of their phones. Financial inclusion provides economic growth, business expansion, market liquidity, financial literacy, and lower unemployment rate, just to name some of the positive aspects of this new modality. Of course, there is risk, because somebody can easily default on their payments in case, they take out a loan, however, risk is something that is inevitable in the finance industry.

Referring to the United Nations assessment about how essential financial inclusion is necessary to eradicate worldwide problems such as poverty, hunger, income inequality, etc., it is safe to say that they are correct on this belief since financial inclusion brings money to areas where there was no capital before. Let's take for example a third world country like Colombia that has many agricultural small businesses that are what families base their economies on, often they don't have the appropriate tools and necessary people to carry their day-to-day operations, and they are not able to sell all the commodities that they cultivate leading to economic inefficiency, hunger around their community, and wasted opportunities. However, with financial inclusion, this family could take out a loan to buy machinery, hire more people, grow their business, and potentially help eliminate poverty and hunger. It is imperative to understand that unless one is located in Dubai or Monaco, the majority of the population lacks resources. That is why governments, banks, and techfins, should focus also on aiding these people because if they are given the necessary help to succeed, people won't wake up in situations between life and death. Financial inclusion is more

than money, it is giving the opportunity to others to work towards and achieve their dreams. Nobody chooses where they are born and under what conditions, and those who lack a certain status are often deprived of different services. Nevertheless, Financial inclusion is able to eliminate this and trust those that for many years, weren't considered important by the big corporations.

Business Revenue Generation Model and Competitive Advantage

Ant financial is an interesting case, they are a fintech or as they like to call it techfin, that provides financial services to micro and small firms in China. They provide 2 main services that are named with the QR Merchant Growth plan and the MyBank service, which provide key services. Their two main pillars are the QR Merchant Ecosystem and the Digitalization of financial services. They are different from their competitors because they offer financial services online and without the need for people. Ant is part of the Alibaba company family meaning that they are backed up by a big corporation, this is great for the environment of the corporation which can back up investments in technology and logistics/operations. The bad side of it is that it would have less flexibility to work and have authority to make its own decisions on investments, which could hamper growth. Fortunately for Ant they are the biggest Fintech in the world with \$150 billion in valuation, this is astonishing as for a fintech unicorn is unheard of. According to the Financial times Ant financial is expected to file for an IPO.

When we think of who has access to banking we think of well-off individuals, what Ant financial did is given access to the millions of people who normally don't have access to banking. Micro and small businesses can't get a loan and if they do it is very expensive, with the use of technology Ant can offer great service for an affordable price very fast and hassle-free service. Ant has offered responsible and sustainable services that improve the livelihoods of individuals. Financial Inclusiveness create an environment where people feel empowered, they can create their own future and have a sense of pride and accomplishment, it provides millions of people the resources to get out of poverty into a better lifestyle and provide for their families. New and young customers tend to favor technology since they have been born in the technology era, this is the untapped potential that the banking system has not taken advantage of, meaning that young people

are new to credit but they are riskier and normally the traditional banking system favors less riskier borrowers, this is where Ant financial comes in, they take advantage of the influx of young people entering the workforce and who have the need for credit but also have the need of fast, easy and efficient financial services.

The most important thing about fintech is that it's very sustainable, you don't need paper trail nor any use of paper products, no banking locations and no driving, this creates a sustainable environment which helps the planet, now China is looking for growth and growth requires a driving forces that will power the machine, but it requires banking to fuel it, that is when Ant comes in they provide financial services fast and easy to millions of Chinese citizens in a cost effective and sustainable way that can fuel the growth of the Chinese market.

Ant is the biggest fintech unicorn in the world is has world. It has the power to drive growth and help people achieve their goals and be financially independent with no hassles and little barriers for entry into the financial market which normally they would not have with the traditional banking system. Also, young people are more environmentally aware which means that they care about sustainability and the environment. Ant financial provides a paperless and an easy experience for those environmentally conscious individuals. These same individuals tend to be young, ready to invest and more likely to get credit for many different assets, from mortgages to stock and bonds.

To summarize, Ant financial has disrupted a mature space where banking is established with physical locations and where the use of technology is not that mainstreamed into its services. Ant goes into an industry that is big and is constantly regulated, Ant in general is a less regulated since it's not a "bank" if is a financial service company that offers an easy, paperless and hassle-free financial services that would be similar to a traditional bank, also Ant can offer those services at a lesser cost since it requires less fixed costs with physical locations and less people involved in transactions.

Competitor Risk and Threats Analysis – Bank’s threat of new entrants

According to the World Bank, financial inclusion refers to the access that individuals and businesses have to a variety of useful and affordable financial products and services that meet their needs (transactions, payments, savings, credit, and insurance) and are provided in a responsible and sustainable manner, which is so important that financial inclusion is considered a key enabler for reducing extreme poverty and promoting shared prosperity. In this case Ant is a company that is dedicated to all those people who are being marginalized by the system and provides small and micro-business around China with access to inclusive financial services that are safe, sustainable, and environmentally friendly, to increase the value of society and promote equality.

Ant Financial built up the small merchant landscape in China considering China's demographic characteristics; In China, small and micro companies made up 94% of all business entities and in 2016, the industry generated close to 60% of China's GDP and employed 70% of the country's workforce. As we can see it is most people who fall into this group of forgetful people and yet, there are still many more people affected, Chinese banks neglected the bulk of these micro-businesses which were viewed as "risky" but in need of finance. On the other hand, Chinese commercial banks are fighting for a small number of tiny business enterprises with solid credit histories, with which they can make money.

The first step for the financial inclusion Ant did was the creation of “My Bank” which was a bank on the internet, it sought to offer small and micro companies in China convenient and affordable financial services. It was one of the first five privately owned banks to receive approval from the banking industry's regulator, the China Banking Regulatory Commission. It came with something innovative; when applying for loans online, borrowers were not only excused from supplying collateral but were promised the "3-1-0 experience" in which their applications would be completed in three minutes, approved in one second, and require no human intervention. and this ease of handling received very good reception from the people who made it part of their daily life, in that sense, we can see how the simplicity and quick access to a bank generates that people feel confident in MyBank. As we can see, Ant developed a model which considered the social

landscape. They feel that it should be made simple for individuals to secure financing for their own company. It is morally required of them to do it for them if they have no credit history and no one is granting them a loan.

On the other hand, the implications of such a move to Ant's entrenched financial competitors are that the management of it believed that financial institutions were partners rather than competitors. Ant Financial sought to leverage "open technology" to increase technology's influence in the financial sector. Ant Financials' aim was to entice merchants and retail customers to its platform and then introduce them to its ecosystem of products, as opposed to trying to make money or receive payments. Meeting user expectations and developing customer loyalty were priorities. Ant Financial saw the chance to provide customers with "technology as a service" as traditional financial institutions started to recognize the need for digital transformation. It grew to include providing traditional banks with the open technologies required to maintain cost-effective operations, which in turn increased inclusion for China's underserved population. Finally, and as a conclusion we can confirm that financial inclusion does allow the macro exploitation of the economy in all social sectors and although it may include many expenses for traditional banks; technology has come to stay and to overcome these expenses to reach every corner of China.

Evaluation of Competitive Strategy

As we know that the involvement of all the financial technologies has been increasing, we noticed that this has helped multiple businesses grow faster. The dual strategy of the Ant Group, also known as Ant Financial, has provided several benefits to their merchants. Some of these benefits include micro-financing, wealth management, insurance, and credit scoring. This has most definitely brought a greater degree of financial involvement in the industry as it helps merchants connect to one of the largest payment platforms, Alipay, along with many others. Similarly, Ant Group is expanding boundaries with its Intelligent Platforms like Facebook, Amazon, and other big companies in the industry. On August 17 in 2019, China announced the PBOC, The People Bank of China, to have regulations and supervision over the financial industry in China. Through the use of PBOC, China was able to implement monetary policy in mainland China. However,

there is nothing done in the financial industry without risk and threats. Some of those risks include Phishing, Malware, hacking, financial scams, and data theft. To lower the risk of all the mentioned thefts, Ant has an AI-powered risk engine called Alpha Risk, which analyzes fraud attempts and patterns. According to those patterns, it starts to adjust the risk profiles accordingly.

Though it may seem to be biased, we Ant will propel with their goal of financial inclusion. There are many reasons why this would be the direction that Ant would take. Some are that they will be able to provide a strong link between the financial inclusions and the banks in China to be more stabilized. As we know, the performance of banks has started to become much better and more effective with financial inclusions. Throughout the past 2-3 years we have noticed that financial inclusions played a critical role in helping the people recover and be able to respond to the global health and economic crises. Ant's move towards becoming a financial technology provider would allow them to increase their customer base through banks and other financial institutions in China as digital platforms have already become a preferred method of financial inclusion. They are quick to access, provide protection to the merchants using these platforms, and have better transparency of credit scores for the people to see. Ant has created more job opportunities while attracting multiple small businesses to adapt to financial inclusions. Therefore, we can conclude that Ant will only continue to propel their dual strategy in financial involvement, and it will continue increasing its customer base while stabilizing the financial institutions.

Competitive Realignment, Repositioning and Retaliation

Commercial banks usually target large corporations in Tier 1 and Tier 2 cities. They only provide loans to businesses that can provide collateral or documents. This is also costly for them to set up in Tier 3 to Tier 5 cities. Indeed, here is where Digital platforms play a major role. Ant Financials' digital support to commercial banks helped them overcome cost efficiencies and risk barriers of SME financing and helped traditional banks with tapping into rural markets. As traditional banks began relying on these platforms for support, we could see how roles have reversed between the two. Digital platforms like Ant Financials' are becoming the preferred method for financial support because of the quicker access to capital (3-1-0 strategy). They provide

loans to smaller businesses and merchants, without the need for collateral to access specific loans. Merchant protection has always been part of the plan as well, as included into programs like QR Merchant Growth programs. Ant Financial not only provided loans, but it also allowed them to scale business and provided security for health. Additionally, it improves credit transparency, while commercial bank's credit guarantee was inefficient, they only targeted businesses with strong credit history and the majority were risky businesses.

There are other countries following a similar trend such as the U.S, Japan, UK, however it depends on the financial status and advancement in technology or means to technology of the specific country. Not all countries might be able to implement such strategies due to the disadvantages. The main reason, in our opinion, for platforms like Ant Financials and similar to be successful is due to the access to smartphones. Almost 99.1% of the population had smartphones in 2019. We have seen a trend in the growth of fintech in a lot of countries and although this may not be possible everywhere immediately, it is a major possibility for us to see such development in the next 5- 10 years, as well as in various other countries.

Regulation Backlash and Failure Analysis – Contagion and Systemic Risk

China's Internet finance has gone through the stages of germination, takeoff, and boost, but due to the imperfect regulatory system and credit system, China's Internet finance industry is still in the early stages of development. As a representative of China's Internet finance, the problems Ant Financial faces in the development process are also a microcosm of the rapid development of China's Internet finance.

Due to the wide scope of Internet finance and the difficulty of supervision, China has not legally defined the rights and obligations, purposes, and content of Internet financial trading companies in legal form. First, the Chinese government should fully understand the characteristics of Internet finance, combine current laws and regulations to determine the access conditions, business scope and regulatory standards for various enterprises. Second, there is a need to strengthen surveillance of Internet financial transactions and strengthen penalties for Internet financial crimes. In addition, the situation of personal information leakage in China is a serious

problem.

All business activities use commodities as the core of their profit-generating value. The form of goods is not limited to the type of goods, and intangible services and technologies can also be regarded as goods. Whether facing market demand or competitive pressure from new entrants, the Internet financial industry constantly needs to develop new technologies and recruit talent. The financial industry is only a small sector, and financial technology and services are her two main development directions. Ant Financial Services needs to increase investment in scientific research and bring in talent. Ant Financial now predicts that artificial intelligence will be applied to all fields in the future. So, Ant Financial assembled a technical team to investigate how big data and cloud computing can make machines smarter.

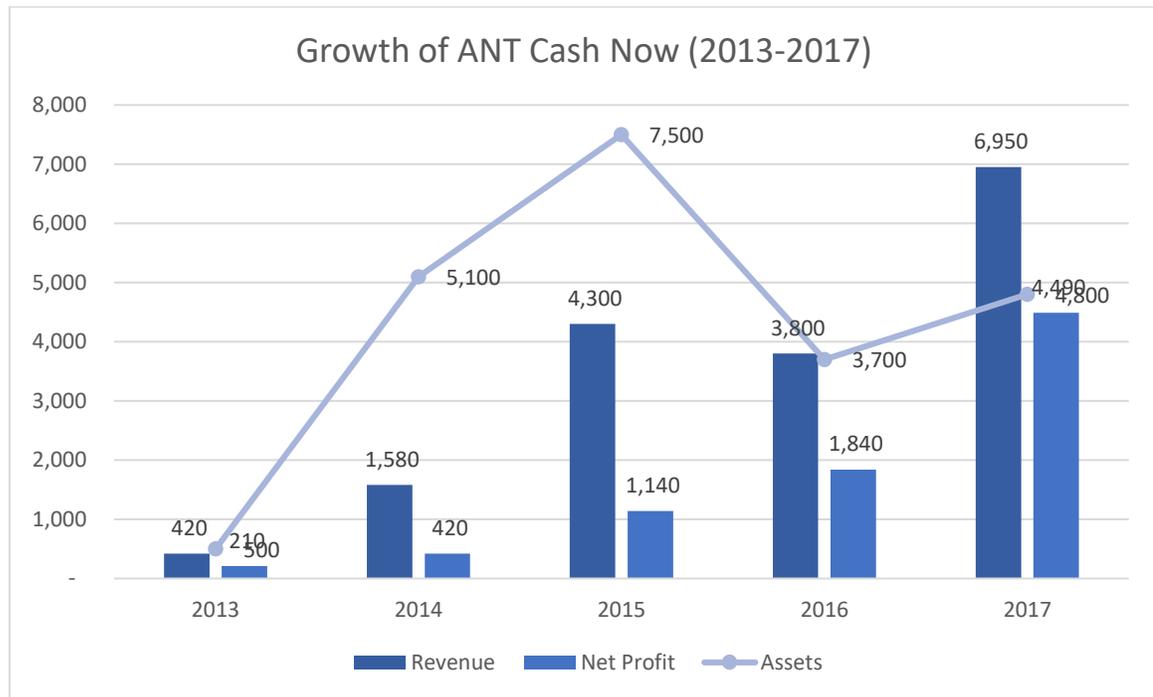
The long-term development of Internet finance is closely related to the construction of credit information systems. Currently, central bank credit information systems are open only to some commercial banks. As a result, many Internet financial institutions have no choice but to conduct credit evaluations by relying on the information obtained through their own searches. In this context, to establish a robust social credit system, it is first necessary to implement the exchange of information and data, expand the scope of the credit information system, and blacklist individual illegal activities. Second, there is a need to accelerate the promotion of credit laws. Unreliable and malicious leaks can be severely punished and increase public perception of social credit ratings.

Financial services are not the only industry experiencing many of these dynamics, but it is one of the most highly regulated, with technology straining existing regulatory frameworks. For example, the inherent range of internet-enabled credit and payment systems challenges assumptions about whether businesses should be regulated primarily at the federal or state level. Similarly, regulators that previously relied on intermediaries such as broker-dealers as checkpoints are beginning to realize that these intermediaries are being circumvented by new entrants. It changes and proliferates much faster. These pressures may require significant changes in financial regulation. For example, lending to nonbanks has been largely regulated at the state level, whereas

lending in online markets is inherently cross-state, so the federal government anticipates state regulation and seeks to create a consistent regulatory environment. Moreover, if the pace of innovation and technological complexity prevents regulators from producing suitable rules-based regulation, they may consider moving to more principle-based regulation. The entry of start-ups that may lack the resources to manage the significant compliance burden and may serve as an effective means of regulating the behavior of market participants through innovative competition.

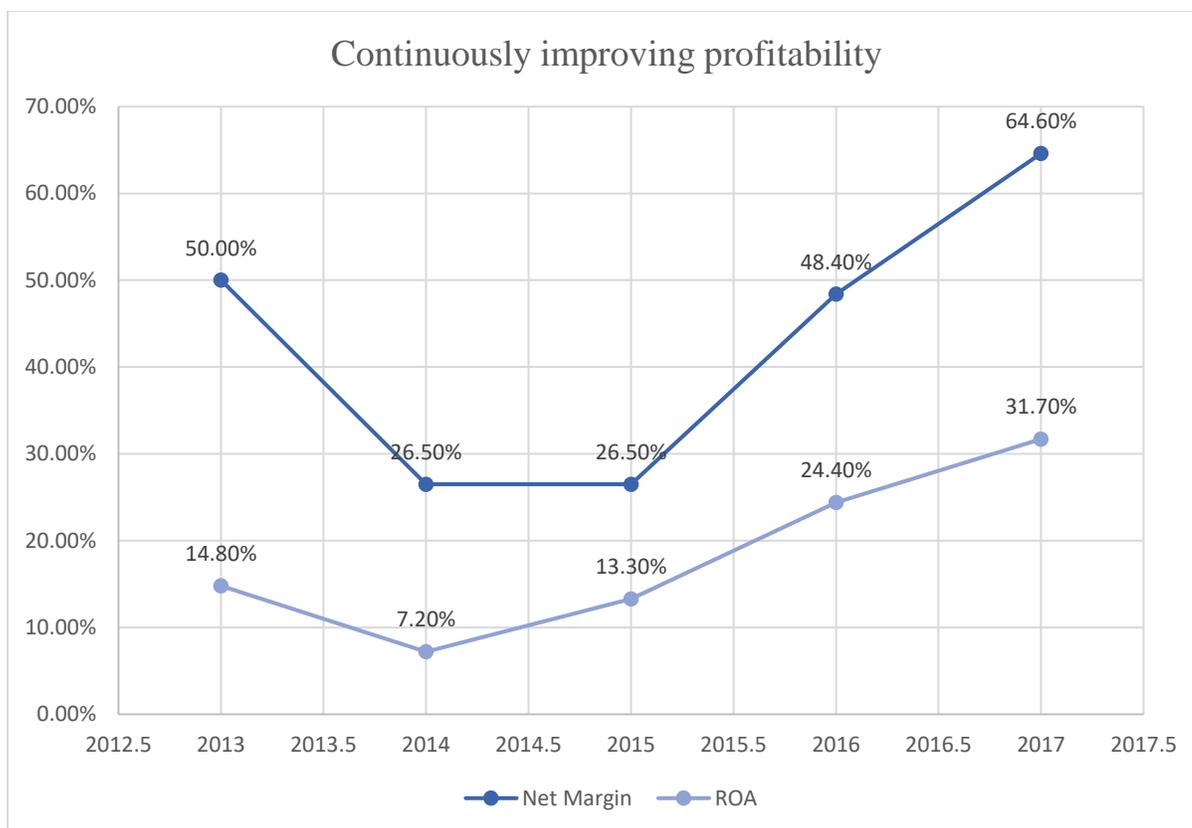
Given that significant changes to both the financial and regulatory systems are very likely, stakeholders (elected officials, regulators, market participants) consider whether the current regulatory system is appropriate, or whether reform is needed. Some of the challenges Ant will face in the future include increased competition in China and internationally, rising operating costs, and the complexity associated with global expansion and the growth of the Chinese market. The biggest challenge, in our opinion, is the complexity of international expansion. This brings new regulations, higher overheads and other challenges that need to be addressed in new ways that may need to be different than those used in China. There are many factors here that are difficult to consider, such as culture and how regulators are responding to it. Another challenge is growth in China. As reported in Case, they still have a lot of bases to gain in rural China and figuring out how to expand there is proving to be a challenge. The challenge is the control of regulators and state-owned banks. They are in an ongoing battle with China's state-owned banks and regulators, and it's not going away. This problem remains domestic and will certainly be seen as it expands to other countries with different regulations and rules.

Financial Analysis of ANT Financials Boom (2013-2017)

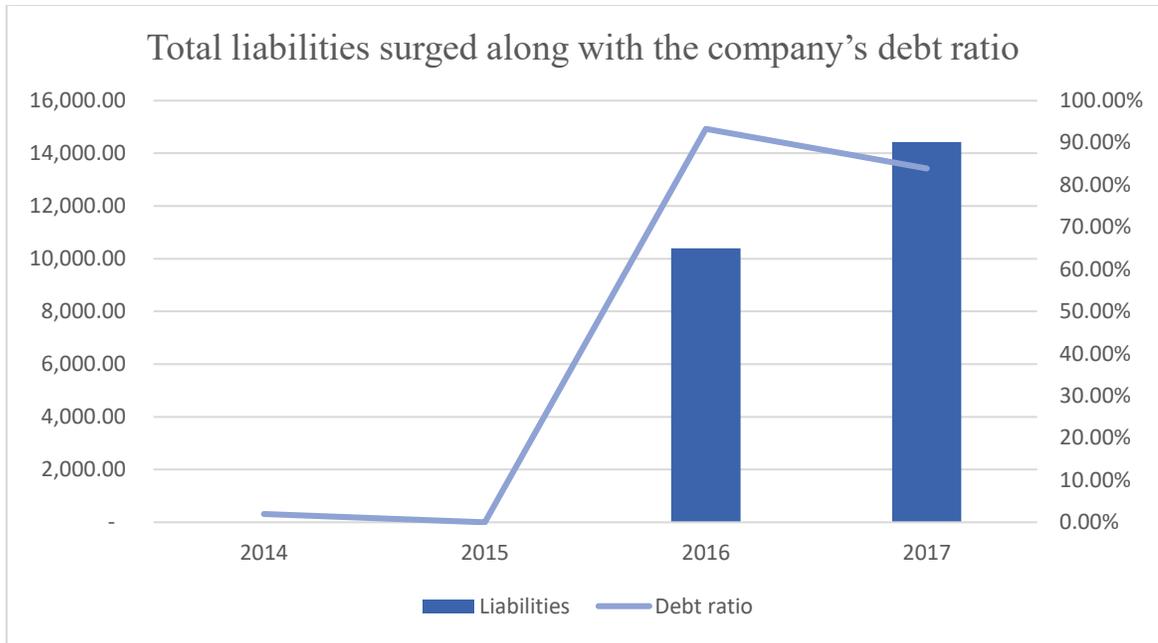


Over the period 2013 to 2017, ANT Financial recorded strong growth in both income and net benefit. By the conclusion of 2017, its income and net profit come to 6.95bn and 4.49bn, individually. Their assets ended in 2017 generating nearly \$1 income per 1\$ of Assets.

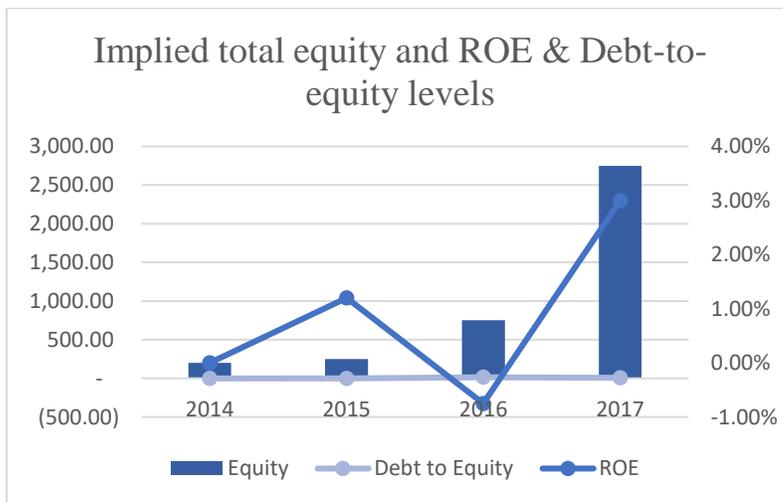
ANT Financial - ANT Cash Now					
Year	2013	2014	2015	2016	2017
Revenue	420	1,580	4,300	3,800	6,950
Net Profit	210	420	1,140	1,840	4,490
Assets	500	5,100	7,500	3,700	4,800



Year	Net Margin	ROA
2013	50.00%	14.80%
2014	26.50%	7.20%
2015	26.50%	13.30%
2016	48.40%	24.40%
2017	64.60%	31.70%



Year	Liabilities	Debt ratio	Equity	ROE	Debt to Equity
2014	4.50	2.00%	200.00	0.00%	0.00%
2015	0.10	0.00%	250.00	1.20%	-78.00%
2016	10,393.00	93.30%	750.00	-0.75%	1400.00%
2017	14,433.00	83.90%	2,750.00	3.00%	500.00%



References

Zhu, Feng, Ying Zhang, Krishna G. Palepu, Anthony K. Woo, and Nancy Hua Dai. "Ant Financial (A)." Harvard Business School Case 617-060, March 2017. (Revised March 2019.)

Zhu, Feng, Ying Zhang, Krishna G. Palepu, and Anthony K. Woo. "Ant Financial (B)." Harvard Business School Supplement 618-041, February 2018.

Zhu, Feng, Ying Zhang, Krishna G. Palepu, and Anthony K. Woo. "Ant Financial (C)." Harvard Business School Supplement 618-042, February 2018. (Revised January 2020.)

Appendix

ANT Financials- Financial Statements (Balance Sheet and Income Statement): 2017-2013

Annual Data Millions of US \$ except per share data	2017-03-31	2016-03-31	2015-03-31	2014-03-31	2013-03-31	2012-03-31
Cash On Hand	\$22,294	\$18,152	\$20,696	\$8,059	\$5,952	\$4,016.633
Receivables	-	-	-	-	-	-
Inventory	-	-	-	-	-	-
Pre-Paid Expenses	\$4,222	\$2,640	\$2,094	\$754	\$279	\$261.365
Other Current Assets	-	-	-	-	-	-
Total Current Assets	\$26,516	\$20,792	\$22,925	\$10,934	\$6,943	\$4,368.983
Property, Plant, And Equipment	\$2,936	\$2,114	\$1,474	\$900	\$612	\$385.706
Long-Term Investments	\$22,056	\$18,742	\$7,822	\$3,335	\$289	\$295.974
Goodwill And Intangible Assets	\$20,953	\$13,941	\$8,326	\$2,476	\$2,176	\$2,112.847
Other Long-Term Assets	\$1,169	\$932	\$659	\$336	\$241	\$229.576
Total Long-Term Assets	\$47,114	\$35,729	\$18,281	\$7,047	\$3,318	\$3,024.103
Total Assets	\$73,630	\$56,521	\$41,206	\$17,981	\$10,261	\$7,393.086
Total Current Liabilities	\$13,623	\$8,071	\$6,400	\$6,026	\$3,860	\$1,840.207
Long Term Debt	\$11,163	\$8,292	\$8,163	\$4,951	\$3,613	-
Other Non-Current Liabilities	\$188	\$335	\$347	\$12	\$10	\$16.286
Total Long Term Liabilities	\$13,353	\$9,750	\$9,413	\$5,394	\$4,638	\$168.502
Total Liabilities	\$26,976	\$17,821	\$15,813	\$11,420	\$8,498	\$2,008.708
Common Stock Net	-	-	-	-	-	\$0.157
Retained Earnings (Accumulated Deficit)	\$15,772	\$12,213	\$4,007	\$190	\$-3,296	\$1,965.643
Comprehensive Income	-	\$597	-	-	-	-

Annual Data Millions of US \$ except per share data	2017-03-31	2016-03-31	2015-03-31	2014-03-31	2013-03-31
Revenue	\$22,994	\$15,686	\$12,293	\$8,463	\$5,553
Cost Of Goods Sold	\$8,642	\$5,328	\$3,845	\$2,155	\$1,563
Gross Profit	\$14,352	\$10,358	\$8,448	\$6,308	\$3,990
Research And Development Expenses	\$2,479	\$2,138	\$1,720	\$821	\$604
SG&A Expenses	\$4,148	\$3,181	\$2,631	\$1,412	\$1,046
Other Operating Income Or Expenses	-	-	-	-	\$-561
Operating Expenses	\$16,013	\$11,102	\$8,533	\$4,439	\$3,795
Operating Income	\$6,981	\$4,584	\$3,760	\$4,024	\$1,758
Total Non-Operating Income/Expense	\$1,740	\$8,051	\$1,455	\$296	\$-131
Pre-Tax Income	\$8,721	\$12,635	\$5,215	\$4,320	\$1,627
Income Taxes	\$2,002	\$1,310	\$1,035	\$515	\$234
Income After Taxes	\$6,719	\$11,325	\$4,180	\$3,805	\$1,393
Other Income	-	-	-	-	-
Income From Continuous Operations	\$5,989	\$11,056	\$3,923	\$3,772	\$1,392
Income From Discontinued Operations	-	-	-	-	-
Net Income	\$6,345	\$11,083	\$3,896	\$3,720	\$1,352
EBITDA	\$9,058	\$5,623	\$4,472	\$4,291	\$1,908
EBIT	\$6,981	\$4,584	\$3,760	\$4,024	\$1,758
Basic Shares Outstanding	2,493	2,458	2,337	2,175	2,294
Shares Outstanding	2,573	2,562	2,500	2,332	2,389
Basic EPS	\$2.55	\$4.51	\$1.67	\$1.71	\$0.59
EPS - Earnings Per Share	\$2.47	\$4.33	\$1.56	\$1.61	\$0.57

V) Chapter 3: Security Analysis: Walmart Valuation

Abstract

The analysis shall describe the success and strategy of Walmart, demonstrating its 'high profit from lower prices' approach. By breaking down gender stereotypes in the workplace, offering competitive wages and contributing to the economy through weather monitoring systems, Walmart has disrupted critics. The yearly revenue of \$559 billion, representing a big increase in the amount of e-commerce growth during the P.N.E. outbreak, has been driven by its extensive range of products and White labeling Strategy.

The text will also take into account developments in retailing such as eCommerce, Live Streams and Virtual Buying, Supply Chains with Same Day Delivery, Shortages of Workers and New Industrial Borders. This report also examines the economic developments, which include tensions in borders, inflation, interest rates, commodity prices and a possible recession.

Despite market volatility, Walmart seems to be well equipped for these trends through successful e shopping operations, supply chain innovations and investments in automation and the metaverse. As the economy may affect its stock, and in times of downturns, it is expected that Walmart will be able to attract customers by offering a broad range of essential products at attractive prices. The company is, on the other hand, well positioned against the Omicron variant because of its desire to become a leading healthcare provider. Nevertheless, profitability will be challenged by a general deterioration of financial conditions on the markets, and it is important that Walmart can continue to keep down prices while efficiently managing its supply chain.

Contents

Introduction.....	49
CAPM Model.....	51
WACC Analysis.....	54
Competitors of Walmart.....	55
Dividend Forecast.....	56
Free Cash Flow Stock Valuation Methods.....	59
Other Stock Valuation Methods.....	61
Technical Indicators.....	62
Z-Score and Bankruptcy Analysis.....	64
Conclusion.....	65
References.....	67
Appendix.....	68

Introduction

What is the success behind the largest retailer in the world? The secret is described as “High profit from low price” and is the strategy that Sam Walton, founder of Walmart in 1962, has used for all these years to make sure that nowadays Walmart is a company worth over four hundred billion dollars and is included in the S&P 500. What is most remarkable about Walmart is that it is a company that has made sure to disrupt most of the critics that are often directed at the largest companies in the world. For example, 55% of Walmart’s employees are women, breaking all the stereotypes that men are often given more importance in the workplace. Even though the minimum hourly wage in some states falls all the way to \$7.25 per hour, Walmart has an average of \$14.26 per hour for their full-time employees. And many economists are thankful to Walmart during times of general high inflation over the country because they always manage to keep their prices low which slows down inflation. Another fact that many people aren’t aware of is how Walmart contributes to the economy by having a weather tracking system. They are constantly monitoring the weather, possible hurricanes, tornados, or just regular storms that could possibly threatening their stores and their shipments. This is very practical because with this weather tracking system, they are able to send to stores more products beforehand if they are expecting a natural disaster that could potentially interfere with their supply chain mechanism, making sure that their stores are never on a shortage of products. They are also able to use this to their advantage by adjusting the price of certain products taking in consideration if they believe that their supply will incur more expenses and the same way, they can lower certain products’ prices whenever there are no weather complications coming ahead. These are some key points that make Walmart stand out in the market and show how much they contribute to the economy.

Walmart is not only well known for their low prices, but also for the vast variety of products that they offer. Their stores have all of the products that one could need to solve any day-to-day problem since they have departments for clothing, books, electronics, party supplies, home improvement, auto parts, sports, household essentials, personal care, and most importantly groceries. Along with that Walmart also white labels products so that customers can only find them in their stores and give the customer less buying power. All this variety has given Walmart the

availability to obtain an annual revenue of 559 billion dollars and grow their e-commerce business by 70% during the pandemic which shows that regardless of the crisis, the retail giant has become a business that in certain circumstances is indifferent to the market conditions. Nevertheless, their CEO, Doug McMillon, is fully aware of the high-speed market we are facing; therefore, Walmart wants to focus on healthcare since it has opened 20 health clinics, they are launching a fintech app and will be investing \$14 billion in developing automation and supply chain.

It is undeniable that the world is currently going through historic events that are severely impacting the way business is done, and that is why the retail industry is experiencing some trends that weren't projected to take place this soon. The most important trends that this industry is facing are e-commerce selling, live stream and VR shopping, supply chain and same day delivery, labor shortage in stores, new industry borders. Along with the new industry trends, it is important to analyze the economic trends that are affecting the global market. Taking in consideration the Russia-Ukraine war and the Omicron variants that seem to appear daily, the estimated economic growth for this year is half of what it was last year. Going from 6.1% to 3.2% in 2022. Along with that inflation is currently 8.3% in the U.S and in some countries in South America it has even reached the 12% mark, certainly this inflation comes from previous economic measures that have been taking by the government in the past two years and the consequences are coming up now, however, interest rates have risen by 50% sitting at 75-100 basis point in order to fight inflation. Prices of commodities have risen, especially petroleum since Russia isn't exporting at the moment, supply chain has many issues and specialists in Goldman Sachs predict that there is a 38% chance of going into a recession in the next 24 months. Therefore, when putting all these circumstances together, it is safe to say that that market it's unstable and highly volatile.

The real question is, Is Walmart prepared for these industry and economic trends? For the industry trends, it seems as if their CEO already knew what was coming. They have been extremely successful with their ecommerce, currently they are the 2nd largest ecommerce company and 13% of their sales come from here. For the supply chain and same day delivery, they offer "Walmart+" which gives the customer free shipping and unlimited same day delivery and only costs \$12.95 per month. For labor shortages, as mentioned before Walmart will invest billions of dollars in

automation so that technology can do the work previously done by employees. Customers will soon be able to find Walmart in the metaverse and be able to purchase products and NFT's with their cryptocurrencies inside the store. The only possible threat that Walmart has from the new trends is that there are new mixed industry borders and customers can buy their products directly from restaurants, beauty salons, gyms, etc.

In regard to the economic trends, Walmart's stock is currently going down, however it's still higher than what it opened at the beginning of the year. Walmart is a company that sells indispensable products, even if the economy crashes, it is quite complicated to see a company like Walmart crash as well. High interest could potentially affect their sales because customers would slow down consumption, however, the inflation rates will also increase prices in other stores; therefore, at the end of the day it is even possible that this crisis brings in more customers to Walmart. On the other hand, the Omicron variants is something that Walmart is using to their favor since their target for the near future is to be a leading healthcare provider company.

Even though Walmart is a worldwide leading company, markets overall are showing a downward financial trend. At the moment it is highly unlikely that there will be a recovery any time soon. Therefore, the vast majority of companies regardless of their industry will have a hard time being profitable. What the world is facing right now is on another scale compared to what we lived during the Covid 19 prime which was in 2020. Walmart's biggest challenge for this downward trend will be to keep prices as low as possible in order to retain customers and possibly bring in more. However, since they are for the most part a retail company, they depend on their suppliers' stability and how effective their supply chain management is.

CAPM Model

The CAPM model describes the relationship between a security (i.e., Walmart) and the market return (i.e., S&P 500), when we as investors seek investment strategies, we need to be properly compensated for the risk we take. The CAPM model does exactly that, it uses the risk-free rate as a proxy to adjust for the risk of the security. When we used this model to estimate beta

and the cost of equity K_e for WMT, we first grabbed 5 years of price data and converted it to returns $(\text{New Price} - \text{Old Price})/\text{Old Price}$ of WMT and the S&P 500 index.

We then calculated the monthly arithmetic mean (WMT: 1.07%, S&P 500: 1.03%), the variance (WMT: 0.003, S&P 500: 0.0023) and the standard deviation (WMT: 5.8%, S&P 500: 4.77%) of both securities. An important part of the model is to calculate the Covariance: 0.0012 and the Correlation Coefficient: 0.41, in order to calculate the beta of WMT. We calculated beta using the covariance between WMT and the S&P 500 index and the Variance of the market, using the S&P 500 as a proxy. Our model has indicated that the beta of WMT is 0.50 which means that WMT on average is less risky than the market. This compares very closely with leading financial resources (0.50 vs Yahoo Finance: 0.51, Fin Viz: 0.52, NASDAQ: 0.51).

	WMT	S&P500
<i>Average return</i>	1.07%	1.03%
<i>Var</i>	0.00336	0.00228
<i>Stdev</i>	0.05798	0.04774
<i>Cov (wmt, mkt)</i>	0.00115	
<i>Correlation Coef.</i>	0.41415	

	Monthly %	Annual %
<i>Market Return</i>	1.03%	12.39%
<i>Rf</i>	0.25%	2.98%
ER (CAPM)	0.64%	7.71%
<i>Excess return</i>	0.39%	4.68%

Beta	0.50	$Beta = \frac{Cov(x,y)}{Var(m)}$
-------------	-------------	----------------------------------

$$Beta = \frac{0.00115}{0.00228} = 0.50$$

Our next step in the CAPM model was to calculate the cost of equity using the risk-free rate and the market risk premium (which is the excess return of our investment when properly compensated for risk).

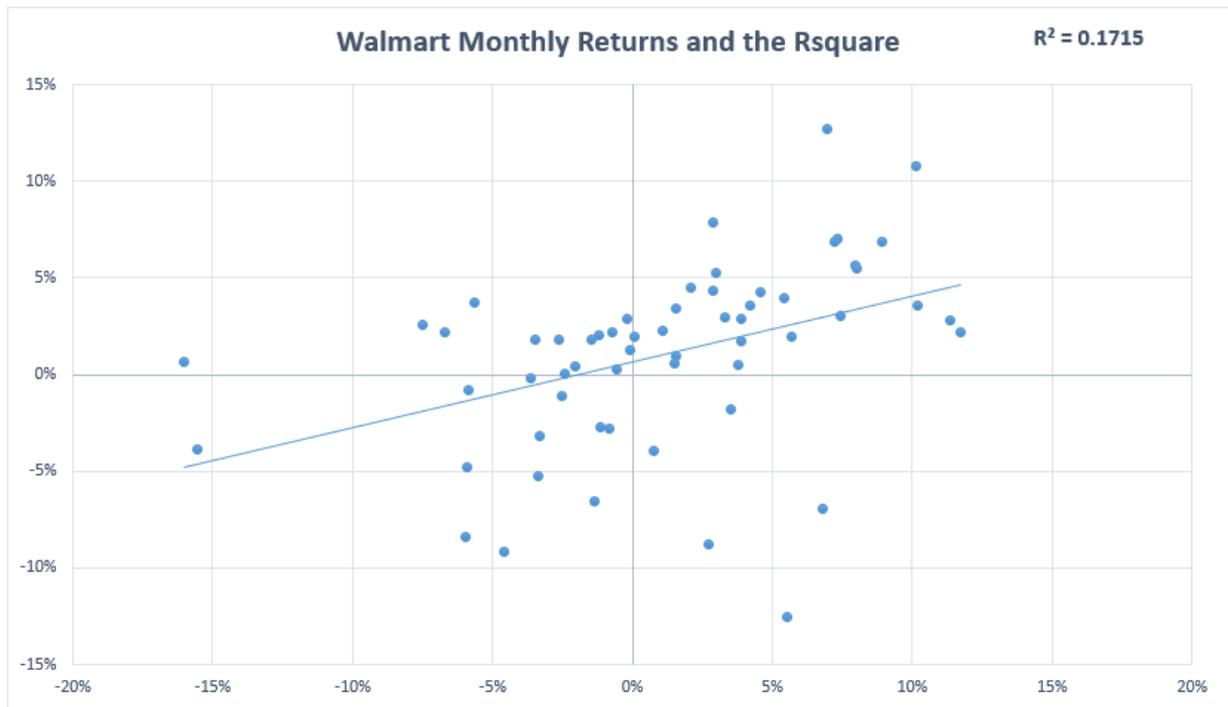
$$CAPM = R_f + (R_m - R_f) * \beta$$

Our CAPM model indicates that WMT's cost of equity (K_e) is 7.71%. Compared to the actual return of 12.39% (Actual return > Expected return) means that the stock has overperformed, which makes it undervalued.

$$E(R) \text{ as per CAPM} = 2.98\% - (12.39\% - 2.98\%) * 0.50 = 7.71\%$$

This analysis holds very true in real life as wealth management companies use these methods to account for risk-free adjusted returns.

Some key factors to take into consideration in this analysis is the R-squared which is defined as how much of the change in WMT is explained by the change in the S&P 500, this R-squared metric was calculated to be: 17.15% which means that there is little explanation of the variation in WMT by the variation of the proxy index (S&P 500).



The true meaning behind R-squared is that 17% of the movement in WMT is explained by the movement in the S&P 500 index which normally above 50% is considered good and above 75% you can assume that there is causation.

WACC Analysis

An important component for companies and how to acquire capital is to understand its underlying weighted average cost of capital, this single number gives a company a good indicator of what is the average cost of capital of its different possible streams of acquisition of capital, equity (Issuing stocks, Buy-Backs) and debt (Bonds, business loans, short and long term debt). The WACC is the average cost of capital and therefore it is widely used by corporations and investors. More importantly companies seek the best possible combination of cost of equity and cost of debt in order to fund their operations and investments.

To calculate the WACC we extracted several key information from WMT's financial statements, the formula for the WACC is as follows:

$$WACC = Ke * (E/A) + Kd(1 - T) * (D/A)$$

As K_e we used our CAPM model as the golden standard for cost of equity since it is used as a measure of how we properly account for risk and the opportunity cost of investing in the market and the risk-free rate. For the cost of debt (K_d) we researched current bond issues from WMT, we then averaged them to get 3.5%. For the weights we used the financial statements to determine how Walmart is funded at a point in time, we determined that to be the most current quarter (April-2022). Walmart is financed 85% by equity and 15% by debt which gives us a WACC of 6.98%, this number is a weighted cost of all the capital that WMT receives and therefore it key to track this number, also WMT is able to change its capital structure by issuing or retiring debt, issuing or buying back stocks among other measures which will change the WACC.

$$WACC = 7.71\% * (85.14\%) + (3.50\% * (1 - 21\%)) * 14.86\% = \mathbf{6.98\%}$$

Competitors of Walmart

To expand our work, we decided to conduct an analysis of Walmart's competitors in the industry: Target and Costco. The main objective is to identify the relationship between them and make a comparison analysis using the CAPM model and other indicators.

As we can see in these 2 tables, we have compared WMT to its main competitors in several key metrics, first we calculated the Correlation matrix or Costco (COST), Target (TGT) and the S&P 500. Our conclusion is that this industry is similarly correlated, meaning that the companies that we have compared have a similar correlation from 0.50 to 0.58.

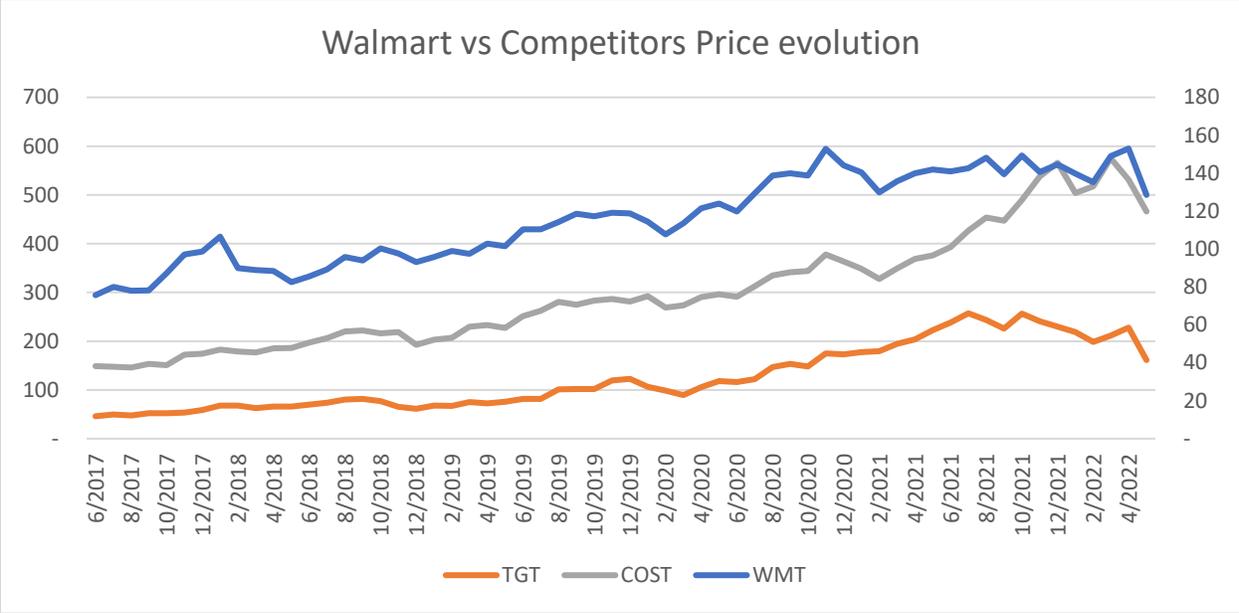
We also compared WMT competitors' using the CAPM model that we have previously used. The findings from this analysis are very interesting, we have found that all of WMT's competitors are also Undervalued. The interesting fact is that TGT is the riskiest and WMT and COST are similarly Risky, but COST has double the monthly average return than WMT. Another key finding is that the betas of TGT and COST are significantly bigger than WMT's.

Correlation Matrix between competitors (Costco & Target):

	WMT	TGT	COST	S&P500
WMT Price	1	0.55	0.58	0.41
TGT Price	0.55	1	0.50	0.48
COST	0.58	0.50	1	0.57
S&P500	0.41	0.48	0.57	1

Walmart vs Competitors using CAPM:

rf	2.98%			
Monthly Average	1.07%	2.59%	2.12%	1.03%
Geomean	0.90%	2.15%	1.95%	0.92%
Yearly Average	12.83%	31.03%	25.39%	12.39%
Monthly σ	5.80%	9.36%	5.75%	4.77%
Covariance	0.00115	0.00215	0.00157	
σ^2	0.00336	0.00877	0.00331	
β	0.50	0.94	0.69	
E(R) as per CAPM	7.71%	11.85%	9.47%	
R > E(R)	Undervalued	Undervalued	Undervalued	



Ke	7.71%
Kd	3.50%
Tax	21.00%
E/A	85.14%
D/A	14.86%
<i>Assets (in millions)</i>	\$ 246,142
<i>Debt (in millions)</i>	\$ 36,583
<i>Equity (in millions)</i>	\$ 209,559
WACC	6.98%

Cost of Debt:

Walmart Bonds:	Maturity	Coupon %	Yield %
US931142CM31	4/15/2038	6.20%	3.97%
US931142CB75	9/1/2035	5.25%	3.73%
US931142BF98	2/15/2030	7.55%	3.69%
US931142CH46	4/5/2027	5.88%	3.27%
US931142AU74	10/15/2023	6.75%	2.84%
Avg.			3.50%

Dividend Forecast

Dividends are an essential part of many companies and investors, it represents a steady cash flow stream outgoing for the company and incoming stream for the investor. Dividends are interesting because it provides the company with a way to compensate their investors by sharing profits. WMT as of now pays \$0.56 quarterly per share, which comes to \$2.24 per year, Walmart dividend yield, meaning how much of the price of the stock is distributed as dividend is 1.89%.

One-Stage Dividen Model:

1 share of WMT	2.24
Share value	\$ 113.95

	2022	2023	2024	2025	2026	2027
Forecast dividend	\$ 0.56	\$ 0.57	\$ 0.58	\$ 0.59	\$ 0.61	\$ 0.62
% of growth	1.93%	1.89%	1.85%	1.82%	1.78%	1.75%
Intrinsic value	\$ 116.21	\$ 120.84	\$ 125.66	\$ 130.68	\$ 135.89	\$ 141.31

To forecast dividend growth and how it affect the price of the stock, we extracted historical monthly dividend payment for the last 5 years and found out that Walmart is steadily growing dividends at a rate of 1.97% per year, an interesting observation is that dividend growth is at a decreasing pace of -1.95% per year. We took these two number into consideration and calculated dividends by using the 1-stage dividend growth model as follows:

1- We decreased growth by -1.95% every year.

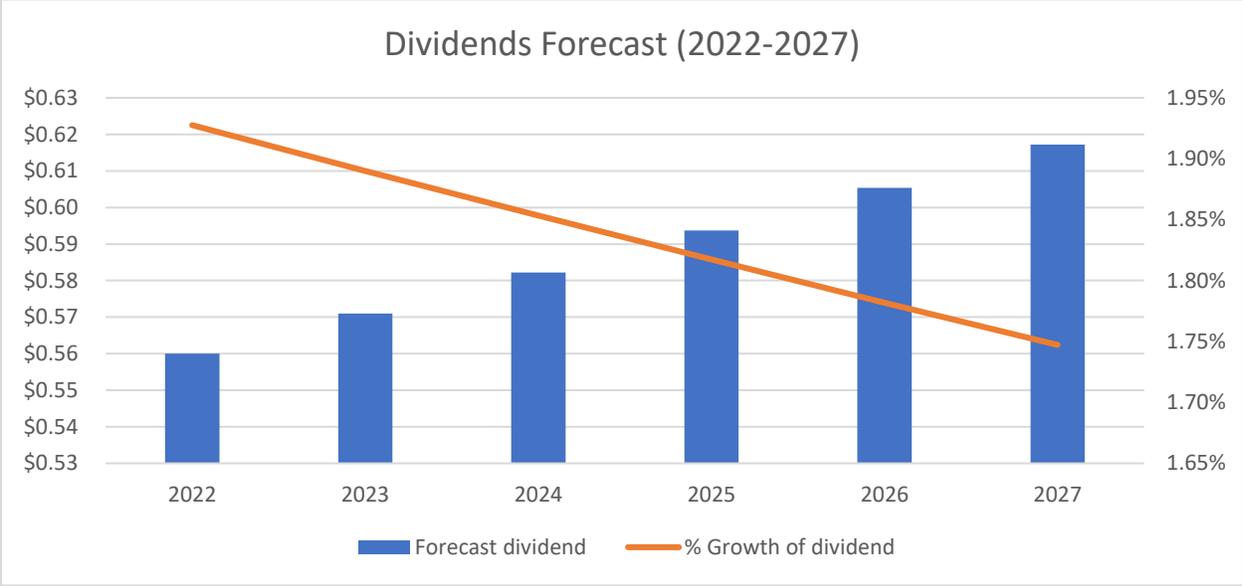
2- We calculated the dividends each year by increasing each year by its respective growth rate.

3- We calculated the intrinsic price of each year of WMT by dividing the dividend by the growth rate.

$$P * = \text{Dividend} / \text{Growth Rate}$$

$$p^{*2027} = \frac{0.62 * 4}{1.75\%} = \$141.31$$

According to our analysis WMT should be 2027, \$0.62 per share per quarter in dividends. We also calculated the intrinsic price of WMT's stock each year and the intrinsic stock went up. WMT's end intrinsic value for the same year was calculated to be \$141.31. The expected dividend yield for 2027 would be 1.76%.



Free Cash Flow Stock Valuation Methods

Knowing the value of your business is critical to track the effectiveness of your strategic decision-making. In the next phase, we performed several thorough valuations of the firm and the stock using various models. We conducted a free cash flow to equity valuation (FCFE) that can be used as a substitute for dividends in the one stage, two stage, or H-model. We performed the calculations using distinct variables such as net income, depreciation, capital expenditure, change in working capital as well as debt issued and payment, resulting in a total of \$10,798M. This model can also be potentially used if a particular firm does not pay dividends, occasionally pays them irregularly, or if dividends are not determined by how much the firm is earning.

We then proceeded to conduct the free cash flow to firm model (FCFF) to ultimately measure the firm's profit resulting in a total of \$15,336M. As we progressed, we then determined the value of equity, and the target price per share using the FCFF, FCFE, number of shares, K_e , as well as divide equity by number of shares to gather P^* . These two methods differ in the results, the reason is that in FCFE we are using net income and in FCFF we are using earnings before interest and taxes which in turn normally gave us a lower P^* .

$$FCFE = \text{Net income} + \text{Depreciation} - \text{Capital Expenditure} - \Delta WC - \text{Debt Payment} + \text{New Debt Issued}$$

$$FCFF = EBIT(1 - \text{tax}) + \text{Depreciation} - \text{Capital Expenditure} - \Delta WC - \Delta \text{Other Assets}$$

$$FCFE = 2,103 + 2,680 - 3,593 - (-10,402) - 10,069 + 9,275 = 10,798$$

$$FCFF = 5,318 * (1 - 21\%) + 2,680 - (10,402) - (-1,885) = 15,336$$

$$P^* \text{ of FCFE} = \text{Equity/Shares outstanding} = 187,900/2,753 = \mathbf{\$68.26}$$

$$P^* \text{ of FCFF} = (\text{Equity-Liabilities})/\text{Shares outstanding} = (97,620)/2,753 = \mathbf{\$35.46}$$

$$P^* \text{ of FCFF} = (\text{Equity-Total Debt})/\text{Shares outstanding} = (214,760)/2,753 = \mathbf{\$78.02}$$

Net income	2,103
Capital Expenditure	3,593
Depreciation	2,680
Change in WC	(10,402)

Free Cash Flow to Equity	10,798
Free Cash Flow to Firm	15,336

EBIT	5,318
Effective Tax rate	25.50%
Debt Payment	10,069
New Debt Issued	9,275
Change in other assets	(1,885)

Price using FCFE:

growth	2%
Shares outstanding (in millions)	2,753
Ke	8%
FCFE	10,798

Equity	187,900.41
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p*	68.26
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Price using FCFF:

FCFF	15,336
PV of FCFF:	266,866
<u>One-stage model:</u>	266,866

LIABILITIES	169,246
DEBT	52,106
Equity with Liabilities	97,620
Equity with Debt	214,760

Shares Outstanding	2,753
p* with EQ-LIAB	35.46
p* with EQ-DEBT	78.02

Sensitivity Analysis

Sensitivity Analysis basically determines how different values of an independent variable affect a particular dependent variable under a set of assumptions. In the table charts below, we can see how target prices change as the variables of growth rate and interest rates are inputted.

As we can see in this graph the target price of WMT changes when we change the cost of equity and/or the growth rate, this exercise shows how sensitive price is to small percentage changes in key variables. As we can observe, the higher the growth rate and the lower the cost of equity the higher the target price, this is clearly observed in the graph below. Sensitivity analysis is important, and it is used in many setting across the world, from health care to the financial sector, this is why we used it equate we understand the power around it and how it can give us more insight to a decision and if the decision changes with changes in the different variables.

		Growth Rate:								
		0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%
Cost of equity	5.0%	\$ 87.17	\$ 98.06	\$ 112.07	\$ 130.75	\$ 156.90	\$ 196.13	\$ 261.51	\$ 392.26	\$ 784.52
	6.0%	\$ 71.32	\$ 78.45	\$ 87.17	\$ 98.06	\$ 112.07	\$ 130.75	\$ 156.90	\$ 196.13	\$ 261.51
	7.0%	\$ 60.35	\$ 65.38	\$ 71.32	\$ 78.45	\$ 87.17	\$ 98.06	\$ 112.07	\$ 130.75	\$ 156.90
	8.0%	\$ 52.30	\$ 56.04	\$ 60.35	\$ 65.38	\$ 71.32	\$ 78.45	\$ 87.17	\$ 98.06	\$ 112.07
	9.0%	\$ 46.15	\$ 49.03	\$ 52.30	\$ 56.04	\$ 60.35	\$ 65.38	\$ 71.32	\$ 78.45	\$ 87.17
	10.0%	\$ 41.29	\$ 43.58	\$ 46.15	\$ 49.03	\$ 52.30	\$ 56.04	\$ 60.35	\$ 65.38	\$ 71.32

Other Stock Valuation Methods

To estimate the target stock price, we conducted the Graham's Relative performance model of stock valuation. Hence, $P^* = 8(1+g)^2 \times \text{EPS}$. We also used the price/earnings to growth ratio PEG metric that helps value the stock by taking into account the company's market price, its earnings and future growth prospects; hence, $\text{PEG ratio} = (\text{P/E}) / g$. Following this rule, a stock is undervalued, and you should potentially invest if the PEG ratio is < 1 (If P/E is less than growth rate in earnings).

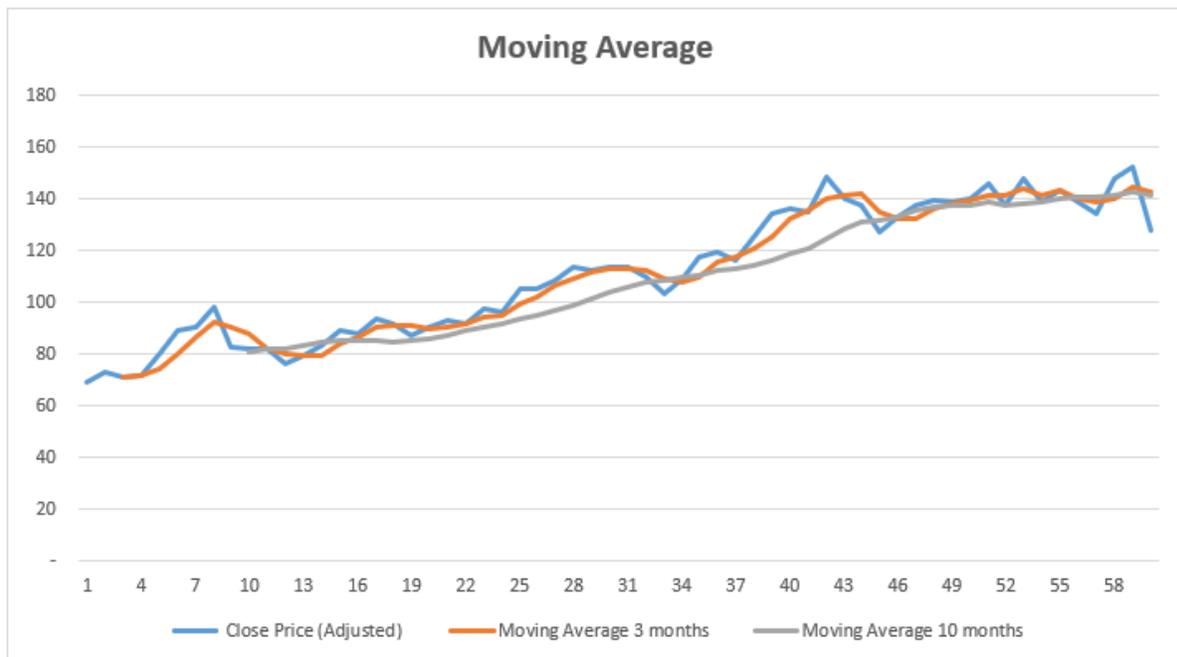
	Jul-21	Oct-21	Jan-22	Apr-22
EPS	6.27	6.92	4.88	4.65
Price	142.55	149.42	139.81	152.99
g	1.97%	1.97%	1.97%	1.97%
P/E	22.74	21.59	28.65	32.90
PEG Ratio	11.57	10.98	14.57	16.74
Graham Gravity Equation	50.18	55.38	39.06	37.21

As we can see in the table above over time WMT has decreased its PEG ratio, but according to the rule WMT is not investable at this moment since it is over 1. PEG ratio is a simple yet powerful tool to help us make correct decisions in our investment decisions.

Technical Indicators

Technical indicators are a crucial tool utilized to gain insight into the supply and demand of the market. Together, these indicators form the basis of technical analysis. Metrics, such as volume signals, moving averages, and several other trends are measured. In this matter, indicators can be used to generate buy and sell signals. Two of the technical indicators we computed are among the most popular were Moving averages and Stochastic. Moving average illustrates equal weight to every data point. Additionally, the older data is removed, as new data is added. Moving Average is also used in my sector, it is mainly used in supply chain to forecast/model demand to define logistic strategies, for finance s also used for strategizing for which investments to make.

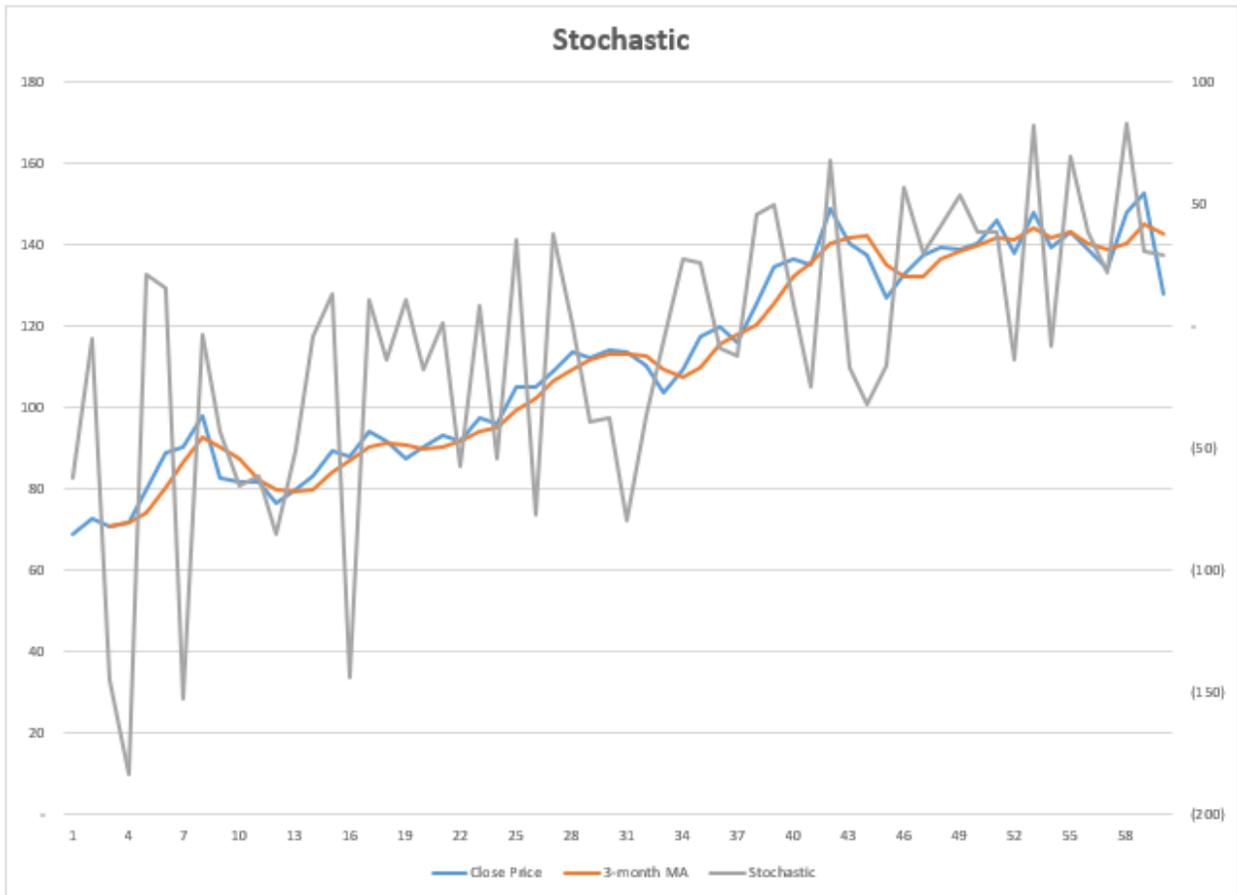
In the below Graph we plotted a short term moving average a long term moving average and WMT's close price, moving average is very good at defining buy and sell points when looking at graphs, as you can see when the long term moving average (in this case 10-months) goes above the short term moving average (in this case 3-months) then it is a buy signal when the short term goes below the long term then it is a sell signal.



The great thing is that it clearly shows in the graph what the buy signal is and also looking back you can see that the price increased when it had a Buy signal and it decreased when it had a sell signal.

Stochastic makes the assumption that with rising prices, closing prices move closer to the high for the period. However, with declining prices, closing prices move closer and closer to the low for the period. The stochastic is measured by $K = 100 \times (C-L)/(H-L)$. The Buy signal is if price reaches a low followed by a lower low, and D reaches a low followed by a higher low, and k line moves above D line.

As we can see in the graph below we plotted the stochastic, the 3-month moving average and WMT's closing price to show the buy and sell signal over our analysis period.



Z-Score and Bankruptcy Analysis

Over the decades studies have compared the financial ratios of deteriorating companies with flourishing companies. The non-failed companies usually exhibited relatively stable ratios over time. The declined companies usually exhibited progressively worsening ratios starting 4 to 5 years before failure. Several examples such as, (cash flow/total debt) ratio of failed companies start worsening. In contrast, the ratio for healthy companies remains. Thus, consistent decline in key ratios may signal imminent failure. The formula is as follows:

$$\text{Altman } Z - \text{Score} = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E$$

A = working capital / total assets

B = cumulative retained earnings / total assets

C = earnings before interest and tax (EBIT) / total assets

D = market value of equity / BV of debt

E = sales / total assets

Working Capital	(13,310)
Assets	83,220
Cumulative RE	83,258

EBIT	5,318
Number of shares	2753
Price per earning	128.48
MV of Equity	353,677

Sales	141,569
BV of Debt	52,424

Z	7.16862
---	---------

$$\text{Altman } Z - \text{Score} = 1.2 * \left(-\frac{13,310}{83,220} \right) + 1.4 * \left(\frac{83,258}{83,220} \right) + 3.3 * \left(\frac{5,318}{83,220} \right) + 0.6 * \left(\frac{353,677}{52,424} \right) + 1.0 * \left(\frac{141,569}{83,220} \right)$$

We calculated the Z-score by taking information from the financial statements of WMT. The Z-score provides insight into how safe a company is and how likely a company is to fail (go bankrupt). The rule is, if the Z-score is below 2.26 the company is likely to fail soon. In our model, WMT's Z-score is far above the threshold of 2.26 meaning that WMT is safe and not likely to fail.

Conclusion

In conclusion, Walmart once again demonstrates that regardless the current economic and industry situations, they are able to quickly adapt and not let any outside event prevent them from achieving their ultimate goal which is to supply millions of Americans with the best quality products for the lowest price in the market. If we analyze once again their dividends growth, they consistently increase year after year. It is important to remark on the fact that their dividends are growing in a declining way, meaning that every year they are returning less than what they were even though they are increasing. However, the power that Walmart's competitors have also gained over the years is the main reason why this is happening. This leads to the next point and one of Walmart's biggest concerns, which is the rapid growth that companies like Target and Costco are experiencing. In our charts they clearly outperform Walmart by having higher returns and a Beta that doesn't exceed the 1 mark which means that they are still safe investments. Regardless of Walmart's competitors' growth, our studies don't show Walmart decreasing in value as a company which means that they won't be taking over as the #1 retail store.

After reviewing the FCFE, FCFE, and the one stage dividend growth model, our group can firmly state that Walmart's stock is overvalued. Currently the stock is trading in the stock market for \$123.72, nevertheless only the one stage dividend growth model was the only one that came the closest to that value sitting at \$116.21, therefore investors will be facing a loss of about -\$7.51 if prices ever adjust. For the Free cash flow models that stock's intrinsic value shows a broader difference since for the FCFE, our final value was \$68.26 and for the FCFE was \$78.02. The numbers we received from these last two models were greatly surprising for the group since they have a difference of -\$55.46 and -\$45.7, respectively. To us, at the beginning we believed that there was a mistake in our numbers. Nevertheless, after reviewing the information that *Investment Analysis and Portfolio Management, 11th edition* has on these models, we concluded that these models often calculate P* significantly below what investors see in the market. Along with the stock currently being overvalued, our Moving Averages show that it is time to sell Walmart's stock. If we take a look at the end of the chart on page 14, the 3-month MA was above the 10-month MA, but it is currently showing a very steep drop and whenever the short MA goes below

the long MA, the best recommendation is to sell.

Regardless of their competitors gaining power, their stock price being overvalued and their short moving average having a considerable drop below the long moving average; it is not all bad for Walmart because our one stage dividend growth model still illustrates that their stock price will be growing over the next five years and their Z-value, which is used to calculate if the company could potentially be going under bankruptcy, was 7.17. Therefore, we can safely confirm that there is future growth for Walmart and not a bankruptcy threat ahead. Although our models showed Walmart's intrinsic value below of what it currently is our group's recommendation wouldn't be to sell since Walmart is the number 1 company in their industry. It is highly unlikely that the stock's price ever reaches \$78 or \$68 and taking in consideration that a recessionary period is coming ahead, Walmart's stock is one of the best investments because regardless of what happens in the economy, Walmart's products are essential to everyday life and their products will continue to sell equally as how they sell now, if not more.

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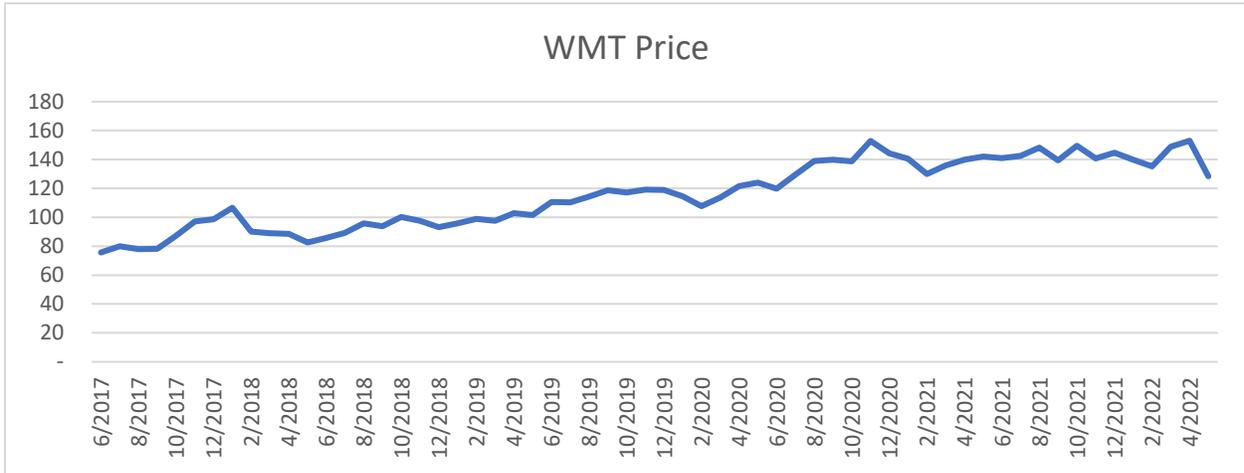
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Appendix

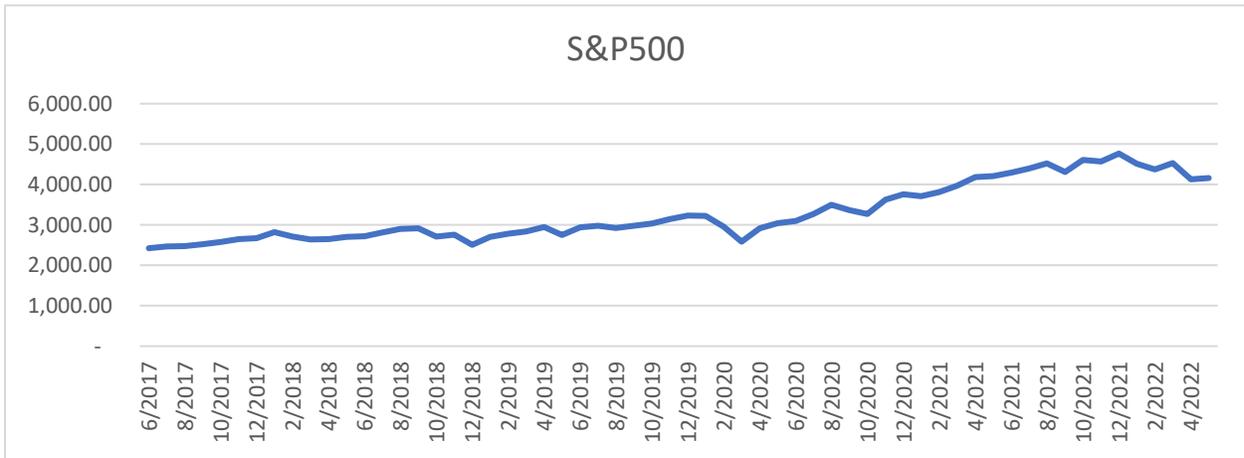
Walmart and Market (S&P500) Returns:

Date	Year/Month	WMT Price	S&P500	RWMT	RS&P500
6/1/2017	6/2017	75.68	2,423.41	5.70%	1.93%
7/1/2017	7/2017	79.99	2,470.30	-2.40%	0.05%
8/1/2017	8/2017	78.07	2,471.65	0.09%	1.93%
9/1/2017	9/2017	78.14	2,519.36	11.74%	2.22%
10/1/2017	10/2017	87.31	2,575.26	11.36%	2.81%
11/1/2017	11/2017	97.23	2,647.58	1.56%	0.98%
12/1/2017	12/2017	98.75	2,673.61	7.95%	5.62%
1/1/2018	1/2018	106.60	2,823.81	-15.56%	-3.89%
2/1/2018	2/2018	90.01	2,713.83	-1.16%	-2.69%
3/1/2018	3/2018	88.97	2,640.87	-0.57%	0.27%
4/1/2018	4/2018	88.46	2,648.05	-6.69%	2.16%
5/1/2018	5/2018	82.54	2,705.27	3.77%	0.48%
6/1/2018	6/2018	85.65	2,718.37	4.18%	3.60%
7/1/2018	7/2018	89.23	2,816.29	7.43%	3.03%
8/1/2018	8/2018	95.86	2,901.52	-2.03%	0.43%
9/1/2018	9/2018	93.91	2,913.98	6.78%	-6.94%
10/1/2018	10/2018	100.28	2,711.74	-2.62%	1.79%
11/1/2018	11/2018	97.65	2,760.17	-4.61%	-9.18%
12/1/2018	12/2018	93.15	2,506.85	2.88%	7.87%
1/1/2019	1/2019	95.83	2,704.10	3.30%	2.97%
2/1/2019	2/2019	98.99	2,784.49	-1.47%	1.79%
3/1/2019	3/2019	97.53	2,834.40	5.44%	3.93%
4/1/2019	4/2019	102.84	2,945.83	-1.36%	-6.58%
5/1/2019	5/2019	101.44	2,752.06	8.92%	6.89%
6/1/2019	6/2019	110.49	2,941.76	-0.10%	1.31%
7/1/2019	7/2019	110.38	2,980.38	3.52%	-1.81%
8/1/2019	8/2019	114.26	2,926.46	3.87%	1.72%
9/1/2019	9/2019	118.68	2,976.74	-1.20%	2.04%
10/1/2019	10/2019	117.26	3,037.56	1.56%	3.40%
11/1/2019	11/2019	119.09	3,140.98	-0.21%	2.86%
12/1/2019	12/2019	118.84	3,230.78	-3.66%	-0.16%
1/1/2020	1/2020	114.49	3,225.52	-5.95%	-8.41%
2/1/2020	2/2020	107.68	2,954.22	5.52%	-12.51%
3/1/2020	3/2020	113.62	2,584.59	6.98%	12.68%
4/1/2020	4/2020	121.55	2,912.43	2.06%	4.53%
5/1/2020	5/2020	124.06	3,044.31	-3.45%	1.84%
6/1/2020	6/2020	119.78	3,100.29	8.03%	5.51%
7/1/2020	7/2020	129.40	3,271.12	7.30%	7.01%
8/1/2020	8/2020	138.85	3,500.31	0.76%	-3.92%
9/1/2020	9/2020	139.91	3,363.00	-0.83%	-2.77%
10/1/2020	10/2020	138.75	3,269.96	10.12%	10.75%
11/1/2020	11/2020	152.79	3,621.63	-5.65%	3.71%
12/1/2020	12/2020	144.15	3,756.07	-2.54%	-1.11%
1/1/2021	1/2021	140.49	3,714.24	-7.52%	2.61%
2/1/2021	2/2021	129.92	3,811.15	4.55%	4.24%
3/1/2021	3/2021	135.83	3,972.89	3.00%	5.24%
4/1/2021	4/2021	139.91	4,181.17	1.52%	0.55%
5/1/2021	5/2021	142.03	4,204.11	-0.71%	2.22%
6/1/2021	6/2021	141.02	4,297.50	1.08%	2.27%
7/1/2021	7/2021	142.55	4,395.26	3.89%	2.90%
8/1/2021	8/2021	148.10	4,522.68	-5.89%	-4.76%
9/1/2021	9/2021	139.38	4,307.54	7.20%	6.91%
10/1/2021	10/2021	149.42	4,605.38	-5.88%	-0.83%
11/1/2021	11/2021	140.63	4,567.00	2.89%	4.36%
12/1/2021	12/2021	144.69	4,766.18	-3.37%	-5.26%
1/1/2022	1/2022	139.81	4,515.55	-3.33%	-3.14%
2/1/2022	2/2022	135.16	4,373.94	10.18%	3.58%
3/1/2022	3/2022	148.92	4,530.41	2.73%	-8.80%
4/1/2022	4/2022	152.99	4,131.93	-16.02%	0.64%
5/1/2022	5/2022	128.48	4,158.24		

Walmart Stock Price Chart:



S&P500 Price Chart:



Walmart Balance Sheet:

Period End Date		4/30/2022
Cash and Equivalents		11,817.00
Short Term Investments		
Cash and Short Term Investments		11,817.00
Accounts Receivable - Trade, Net		7,674.00
Total Receivables, Net		7,674.00
Total Inventory		61,229.00
Total Current Assets		83,220.00
Property, Plant And Equipment - Gross		
Property, Plant And Equipment - Net		113,217.00
Goodwill, Net		29,438.00
Intangibles, Net		
Long Term Investments		
Other Long Term Assets		20,267.00
Total Assets		246,142.00

Accounts Payable		52,926.00
Accrued Expenses		22,546.00
Notes Payable/Short Term Debt		11,432.00
Current Port. of LT Debt/Capital Leases		4,091.00
Other Current liabilities		5,535.00
Total Current Liabilities		96,530.00
Long Term Debt		32,174.00
Capital Lease Obligations		4,409.00
Total Long Term Debt		36,583.00
Total Debt		52,106.00
Other Liabilities		13,226.00
Total Liabilities		169,246.00
Common Stock		275.00
Additional Paid-In Capital		4,587.00
Retained Earnings		80,532.00
Unrealized Gain (Loss)		
Other Equity		-8,498.00
Total Equity		76,896.00
Total Liabilities and Equity		246,142.00

Walmart Dividends:

Date	Dividends	Yearly Div.	Div. Growth
3/8/2013	0.47		
5/8/2013	0.47		
8/7/2013	0.47		
12/4/2013	0.47	2.128%	-2.08%
3/7/2014	0.48		
5/7/2014	0.48		
8/6/2014	0.48		
12/3/2014	0.48	2.083%	-2.04%
3/11/2015	0.49		
5/6/2015	0.49		
8/5/2015	0.49		
12/2/2015	0.49	2.041%	-2.00%
3/9/2016	0.50		
5/11/2016	0.50		
8/10/2016	0.50		
12/7/2016	0.50	2.000%	-1.96%
3/8/2017	0.51		
5/10/2017	0.51		
8/9/2017	0.51		
12/7/2017	0.51	1.961%	-1.92%

Date	Dividends	Yearly Div.	Div. Growth
3/8/2018	0.52		
5/10/2018	0.52		
8/9/2018	0.52		
12/6/2018	0.52	1.923%	-1.89%
3/14/2019	0.53		
5/9/2019	0.53		
8/8/2019	0.53		
12/5/2019	0.53	1.887%	-1.85%
3/19/2020	0.54		
5/7/2020	0.54		
8/13/2020	0.54		
12/10/2020	0.54	1.852%	-1.82%
3/18/2021	0.55		
5/6/2021	0.55		
8/12/2021	0.55		
12/9/2021	0.55	1.818%	
3/17/2022	0.56		
5/5/2022	0.56		

Avg	1.97%	-1.95%
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Regression Model:

<i>Regression Statistics</i>	
Multiple R	0.41
R Square	0.17
Adjusted R Square	0.16
Standard Error	0.05
Observations	59.00

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1.00	0.03	0.03	11.80	0.00
Residual	57.00	0.16	0.00		
Total	58.00	0.19			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.01	0.01	0.77	0.44
RS&P500	0.50	0.15	3.44	0.00

Moving Average & Stochastic:

Date	Open	High	Low	Close	Close Price	Volume	Moving Average 3 months	Moving Average 10 months	Stochastic
1	78.64	80.47	73.29	75.68	68.83	247520700			(62.10)
2	75.84	80.34	73.13	79.99	72.75	143448100			(5.25)
3	80.25	81.99	77.50	78.07	71.00	203652700	70.86		(144.66)
4	78.31	81.12	77.73	78.14	71.52	161153600	71.76		(183.31)
5	77.90	89.11	77.50	87.31	79.91	198775100	74.14		20.74
6	87.07	100.13	87.00	97.23	88.99	222703100	80.14		15.14
7	97.61	99.91	96.14	98.75	90.38	166774100	86.42		(152.83)
8	99.30	109.98	98.52	106.60	98.08	169694600	92.48		(3.86)
9	105.96	106.56	90.00	90.01	82.81	307532700	90.42		(43.40)
10	90.17	90.50	85.28	88.97	81.86	256003000	87.58	80.61	(65.58)
11	88.00	89.66	84.84	88.46	81.87	163581800	82.18	81.92	(61.56)
12	87.67	88.10	81.78	82.54	76.39	248483300	80.04	82.28	(85.23)
13	83.04	87.49	82.37	85.65	79.77	185619400	79.35	83.16	(50.76)
14	85.65	89.66	83.40	89.23	83.11	117596900	79.76	84.32	(4.70)
15	88.86	100.21	87.62	95.86	89.28	205659500	84.05	85.25	13.19
16	95.80	97.66	93.69	93.91	87.97	127212500	86.79	85.15	(144.02)
17	94.29	102.60	92.89	100.28	93.94	216421000	90.40	85.51	10.81
18	99.96	106.21	93.31	97.65	91.48	191936600	91.13	84.85	(14.22)
19	98.02	99.59	85.78	93.15	87.26	186311800	90.89	85.29	10.72
20	91.64	99.35	91.64	95.83	90.26	160739700	89.67	86.13	(17.89)
21	95.92	104.18	93.11	98.99	93.24	166799500	90.25	87.27	1.15
22	99.47	100.49	95.00	97.53	91.86	141147100	91.79	88.82	(57.16)
23	97.97	104.15	96.79	102.84	97.38	110606900	94.16	90.58	8.08
24	102.77	103.96	98.85	101.44	96.06	155764900	95.10	91.87	(54.62)
25	101.63	112.22	101.40	110.49	105.18	121525000	99.54	93.46	34.98
26	111.30	115.49	109.63	110.38	105.08	91286900	102.11	95.17	(77.65)
27	110.32	115.38	104.84	114.26	108.77	157874200	106.35	96.66	37.32
28	113.68	119.86	113.49	118.68	113.54	105362500	109.13	98.86	0.75
29	118.85	120.71	114.58	117.26	112.18	96407600	111.50	101.36	(39.17)
30	117.92	125.38	117.08	119.09	113.93	116620600	113.22	103.72	(37.95)
31	119.15	122.12	117.42	118.84	113.69	98422700	113.27	105.77	(79.35)
32	118.86	119.89	112.68	114.49	110.02	127907500	112.55	107.58	(36.89)
33	114.90	119.95	104.37	107.68	103.48	132414100	109.06	108.19	(5.74)
34	107.60	128.08	102.00	113.62	109.18	318954800	107.56	109.51	27.55
35	112.15	133.38	111.80	121.55	117.32	207159800	109.99	110.72	25.59
36	121.48	131.99	120.78	124.06	119.74	186789700	115.42	112.19	(9.24)
37	123.44	124.41	117.01	119.78	116.12	185852200	117.73	112.92	(12.00)
38	119.45	134.13	118.22	129.40	125.45	197452100	120.44	114.11	45.43
39	129.91	141.07	128.27	138.85	134.61	230008400	125.39	116.35	49.53
40	141.20	151.33	134.75	139.91	136.19	268657200	132.08	118.58	8.71
41	140.80	146.60	137.37	138.75	135.07	128995000	135.29	120.72	(24.97)
42	140.59	153.40	139.03	152.79	148.73	137933500	140.00	124.59	67.52
43	153.60	153.66	142.30	144.15	140.32	170368500	141.37	128.27	(17.41)
44	144.30	149.93	140.35	140.49	137.26	150162900	142.10	131.08	(32.26)
45	140.91	147.50	129.86	129.92	126.93	184999800	134.84	132.04	(16.60)
46	131.58	137.59	126.28	135.83	132.71	246548100	132.30	133.34	56.82
47	135.94	141.77	135.33	139.91	137.26	153121900	132.30	135.45	30.02
48	139.68	144.58	135.76	142.03	139.34	174777800	136.44	136.84	40.62
49	142.21	142.80	134.40	141.02	138.90	169107000	138.50	137.27	53.52
50	140.41	143.86	138.22	142.55	140.40	131883100	139.55	137.69	38.70
51	142.83	152.57	141.67	148.10	145.87	181399800	141.72	138.77	38.52
52	147.56	149.65	139.25	139.38	137.79	151255200	141.35	137.68	(14.08)
53	139.26	150.55	134.71	149.42	147.71	137999600	143.79	138.42	82.07
54	149.98	152.00	140.01	140.63	139.02	178086200	141.51	138.59	(8.25)
55	140.51	146.53	135.24	144.69	143.03	238749200	143.26	140.20	69.04
56	144.00	146.63	133.95	139.81	138.77	165738700	140.27	140.81	37.99
57	139.21	141.99	132.01	135.16	134.15	162588100	138.65	140.50	21.46
58	135.87	150.54	135.02	148.92	147.81	185882500	140.24	141.34	82.40
59	149.66	160.77	148.84	152.99	152.44	142403600	144.80	142.70	30.14
60	154.96	154.99	117.27	128.48	128.01	259817900	142.75	141.46	28.49

VI) Chapter 4: Mergers & Acquisitions: Archaea & BP

Abstract

The analysis focuses on the valuation of both BP and Archaea using the EBIT-based Free Cash Flow method. For BP, the process involves gathering financial statements and calculating essential items for Free Cash Flow estimation. The Weighted Average Cost of Capital (WACC) is determined through regression analysis to find the firm's beta, and the cost of debt is computed using a market comparable.

The analysis is based on assumption that the WACC of British Petroleum will continue to be unchanged and shall calculate growth rates in both short term and longer term by means of a formula for sustained growth. In determining the equity value per share, a sensitivity analysis has been carried out in order to evaluate various scenarios on the basis of variable WACC and long-term growth rates, divided by the number of outstanding shares.

In Archaea, an analogous approach has been applied starting with the collection of data and by using regression analysis to find betas in a model known as CAPM. Relevant data are used to calculate the equity and debt costs, with a WACC being calculated taking into account the weighting of capital and debt in the company. The estimates of Archaea's free cash flows and the terminal value added to the fifth year FCF are based on assumptions for growth rates, in order to calculate its enterprise value. The equity value is established, and the price of each share is fixed after deducting debt and adding back cash.

For Archaea a sensitivity analysis is carried out, showing that different price scenarios based on differing WACC and LTV values emphasize the volatility of prices with regard to changes in growth rates over time. In general, this analysis provides an extensive overview of the valuation methods applied to both companies as well as key assumptions and calculations that have been made during the process. The sensitivity analysis provides a more accurate representation of how changes to critical variables might affect the expected equity value per share for both BP and Archaea.

Contents

BP – Enterprise Value.....	77
Summary of Valuation Process and Key Value Drivers and Assumptions.....	78
Archaea - Enterprise Value	81
Combined Firm Valuation with Synergy.....	84
Summary of Valuation Process and Key Value Drivers and Assumptions.....	85
Negotiation Process and Final Results.....	87
Comparable Multiples.....	88
Companies SWOT Analysis.....	89
CAPM.....	96
References.....	98

DCF Valuations

BP - Enterprise Value (FCF Method Based on EBIT)

Assumptions	in millions					
Revenues	157,739					
EBIT	18,082			Rf	1.014%	
Depreciation	14,805			Rm	16.38%	
Capital Expenditure	(10,887)			Beta	0.83096	
g ₁ in 5 years	4.75%			Rd	9.11%	
g ₂ after 5 years	4.00%			Re	13.78%	
NWC	(7,672)					
NWC/Revenues = q	-4.86%					
Debt/Asset	10.62%					
Taxes	44.26%					
Operating Margin	11.46%					
Equity	90,439					
Debt	30,495					
Equity + Debt	120,934					
WACC	11.59%					
Dividend Payout Ratio	50.71%					
Retention Ratio	49.29%					
ROE	9.64%					
Global GDP	2.50%					
Industry	1.50%					
Shares outstanding (2021)	20,128,862					
FCF Estimation						
Year	0	1	2	3	4	5
Sales	157,739	165,237	173,091	181,318	189,937	198,965
EBIT	18,082	18,941	19,842	20,785	21,773	22,808
EBIT*(1-T)	10,078	10,557	11,059	11,585	12,135	12,712
NCE	25,692	26,913	28,192	29,532	30,936	32,407
NWC	7,672	8,037	8,419	8,819	9,238	9,677
dNWC		365	382	400	419	439
FCF		37,835	39,634	41,517	43,491	45,558
Terminal Value						624,352
FCF Total		37,835	39,634	41,517	43,491	669,910
Enterprise Value	\$	559,723	=NPV(B17,C35:G35)*(1+B17)^(10/12)			
Add in initial (year 0) cash	\$	30,681				
Subtract value of firm's debt (year 0)	\$	(55,619)				
Equity Value	\$	534,785	Million			
Equity Value Per Share	\$	26.57				

r_D			Sensitivity Analysis							
	2021	2020	Long-Term Growth							
Net Debt	30,495	32,194								
Interest Expense	2,857	3,115								
Implied r_D (Accounting)	9.11%									
Implied r_D (Market)	1.75%									
			WACC	\$ 26.57	0%	1%	3%	5%	7%	
				6%	\$ 37.44	\$ 43.72	\$ 68.81	\$ 194.27	nmf	
				8%	\$ 28.03	\$ 31.20	\$ 41.33	\$ 64.98	\$ 183.23	
				10%	\$ 22.38	\$ 24.24	\$ 29.56	\$ 39.12	\$ 61.44	
				11.59%	\$ 19.29	\$ 20.59	\$ 24.11	\$ 29.76	\$ 40.34	
				14%	\$ 15.95	\$ 16.77	\$ 18.86	\$ 21.88	\$ 26.62	
				16%	\$ 13.94	\$ 14.53	\$ 15.98	\$ 17.96	\$ 20.81	

Summary of Valuation Process and Key Value Drivers and Assumptions

For BP's valuation, we employed the EBIT-based Free Cash Flow method. We kicked off the analysis by gathering information about the company's financial statements for the past two years (in order to match those of Archaea). We then proceeded to calculate key items that are essential for the calculation of the company's Free Cash Flows. With regards to the WACC, we first ran a regression of BP's returns on the Market's returns in order to calculate the firm's beta. Data on the risk-free were obtained from the Federal Reserve Bank of St. Louis. Using the CAPM equation and annualizing the result (as we had initially used monthly returns), we computed the annualized cost of equity for BP. For the cost of debt component of WACC, we used the accounting definition of cost of debt and calculated the relative metric based on the data from BP's financial statements. To compute the relative weights of the cost of debt & equity, we calculated BP's net financial debt and used the company's total equity.

The tax rate used for BP is the company's tax rate at its main area of operations, i.e., BP's tax rate in Great Britain. An additional assumption made is that the company's WACC remains constant to perpetuity. With respect to the growth rates, we used the sustainable growth rate formula to compute the short-term growth rate. To approximate the long-run growth rate, we summed the global GDP growth rate with the growth rate within BP's industry. With the exception of the calculation of Net Working Capital, the figures for all the other items were retrieved directly from BP's financial statements. Notably, to calculate BP's Net Working Capital, we subtracted all the current liabilities from the company's current assets. We only included items that specifically

pertain to the company's core business activities (operations). The dividend payout ratio was inferred from the company's dividend expenses relative to the profits generated. Having laid the groundwork and under our working assumptions, we then proceeded to estimate BP's Free Cash Flows, such that we can eventually calculate the firm's equity value per share.

To arrive at the cash from the firm's core business activities, we applied the EBIT approach, with which one calculates the after-tax EBIT, subtracts the net capital expenditure, and finally subtracts the change in Net Working Capital. For the FCF projection, we assumed that the Sales, EBIT and NCE will grow for the next five years at the short-term growth rate (4.75%). Based on that, we calculated the FCF for the next five years. After the fifth year, we assumed that those items would grow at the long-run growth rate (4%) to perpetuity. The aforementioned assumption is important, as it allows us to use a closed-ended formula to discount infinitely many future cash flows (in accordance with the Finance Theory) and thus compute the value of the firm. Under this assumption, we calculated the terminal value at year five, discounting the future FCF at year six using the (constant) WACC and the long-term growth rate. Having computed the Total Free Cash Flows in the next five years, we then computed BP's enterprise value by discounting the Total FCF's back to the December 31st, 2021 using the WACC- and then compounded that value 10 months forward to October 31st, 2022 (also using the WACC, as the enterprise value pertains to the entirety of the firm). Having calculated BP's enterprise value on October 31st, 2022, we then added back the company's "year zero" cash in order to calculate the firm (or asset) value. By subtracting the firm's "year zero" financial debt, we obtained BP's equity value. Finally, we divided the latter by BP's number of shares outstanding to obtain the company's estimated Equity Value Per Share. As depicted in cell B41, the former amounts to \$26.57, staggeringly close to the actual market (adjusted close) price of \$32.92 at that date. To provide perspective into what would be BP's share price under different assumptions, we performed sensitivity analysis for varying values of the company's WACC, short-term, and long-term growth rate. As can be observed from the tables depicted above, the higher the firm's WACC, the lower the firm's stock price. Conversely, the higher the firm's short-term & long-term growth rates, the higher the firm's stock price. Those results accord with common sense, as the higher the overall cost of the firm, the riskier the firm, and thus the higher the required rate of return and the free cash flow's discount rate. On the other

hand, the higher the growth rates, the more cash flows can be generated in the future, and therefore the higher the present value of the expected future cash flows. With respect to the WACC-long-run growth rate combination, we believe that a sensible price range is one spanning from \$16.77 to \$194.27, excluding all the prices that pertain to a 0% and 7% long-run growth rate. That's because, once again, we believe that a prestigious firm like BP is unlikely to end up with a WACC of 16%. At the same time, we believe that 0% and 7% long-run growth rates constitute the two likely extremes for BP's growth rate; a zero percent growth rate is highly unlikely given the nature of BP's operations (dealing with energy), while a 7% growth rate seems to be far-fetched and not justified by the firm's initiatives and the evolution of the industry.

Archaea - Enterprise Value (FCF Method Based on EBIT)

Assumptions		in thousands				
Revenues	77,126					
EBIT	(23,561)	Rf	1.014%			
Depreciation	16,025	Rm	16.38%			
Capital Expenditure	(139,467)	Beta	1.17530			
g ₁ in 5 years	20.00%	Rd	8.25%			
g ₂ after 5 years	4.60%	Re	19.07%			
NWC	10,024					
NWC/Revenues = q	13.00%					
Debt/Asset	18.25%					
Taxes	21.00%	<-- U.S. corporate tax rate				
Operating Margin	-30.55%					
Equity	830,993					
Debt (for WACC)	264,914	<-- LT-Debt + ST-Debt + Current Portion of LT-Debt - Cash				
Equity + Debt	1,095,907					
WACC	16.04%					
Dividend Payout Ratio	0.00%					
Retention Ratio	100.00%	<-- pg 40 of annual report				
ROE	-3.72%					
U.S GDP	2.60%					
Industry	2.00%					
Shares outstanding (2021)	119,460,314					
FCF Estimation						
Year	0	1	2	3	4	5
Sales	77,126	92,551	111,061	133,274	159,928	191,914
EBIT	(23,561)	(28,273)	(33,928)	(40,713)	(48,856)	(58,627)
EBIT*(1-T)	(18,613)	(22,336)	(26,803)	(32,164)	(38,596)	(46,316)
NCE	155,492	186,590	223,908	268,690	322,428	386,914
NWC	(10,024)	(12,029)	(14,435)	(17,321)	(20,786)	(24,943)
dNWC		(2,005)	(2,406)	(2,887)	(3,464)	(4,157)
FCF		162,250	194,700	233,640	280,368	336,441
Terminal Value						3,076,385
FCF Total		162,250	194,700	233,640	280,368	3,412,826
Enterprise Value	\$ 2,502,489	=NPV(B64,C83:G83)*(1+B64)^(10/12)				
Add in initial (year 0) cash	\$ 77,860					
Subtract value of firm's debt (year 0)	\$ (342,774)					
Equity Value	\$ 2,237,575	Thousands				
Equity Value Per Share	\$ 18.73					

r_D			Placement amount		Outstanding amount	
	2021	2020				
Net Debt	264,914	13,277	USD equivalent	9,000 USD	Minimum Settlement Amount	2,000 USD
Interest Expense			ISIN RegS	USU75295AM45	CFI RegS	DBFNGR
Implied r_D (Accounting)			FIGI RegS	BBG00YRT42K1	Ticker	RRC 8.25 01/15/29 REGS
Implied r_D (Market)	8.25%	<-- comparable ("Range Resources")				

Sensitivity Analysis						
Long-Term Growth						
	\$ 18.73	0%	2%	4.6%	6%	8%
WACC	10%	\$ 24.73	\$ 29.94	\$ 42.47	\$ 55.97	\$ 108.03
	12%	\$ 20.10	\$ 23.38	\$ 30.29	\$ 36.50	\$ 52.89
	14%	\$ 16.82	\$ 19.03	\$ 23.32	\$ 26.78	\$ 34.53
	16%	\$ 14.36	\$ 15.94	\$ 18.80	\$ 20.97	\$ 25.37
	18%	\$ 12.47	\$ 13.62	\$ 15.65	\$ 17.10	\$ 19.88
20%	\$ 10.96	\$ 11.84	\$ 13.32	\$ 14.35	\$ 16.23	

Lower Value	\$ 13.32
Higher Value	\$ 30.29

Summary of Valuation Process and Key Value Drivers and Assumptions

For Archaea's valuation, we used the EBIT Based Free Cash flow (EBIT- NCE-dNWC), and the statement of cash flows approach, operating income minus applicable investing activities. The best result came from using the EBIT-based approach. We began by data gathering; we used public pricing data available in Yahoo finance from January 2021 to November 2022. Archaea had become public until recently; therefore, the pricing data available was limited to one year and 11 months. We also used Archaea's publicly available 10Ks to access the company's income statement, Balance Sheet, and Statement of Cash Flows. To calculate the Free Cash Flow based on EBIT, we first found the WACC- that applied to the company. We determined the first component, the annualized cost of equity, by using the CAPM model approach. We obtained Beta by doing a regression analysis of the stock price against the S&P 500 for the timeframe obtained (1 year and 11 months).

We used the risk-free rate and market return from the BP data set to calculate Archaea's cost of equity using CAPM, resulting in a 19.07% annualized rate. Notably, the beta used to calculate Archaea's cost of equity was computed using the data set compiled specifically for Archaea, as shown in the CAPM tab. Because of Archaea's size and lack of outstanding bond issues, we decided that the best way to grasp the company's cost of debt was by using a market comparable. In this case, we used Range Resources YTO of a 2021 issued bond. Range Resources is similar to Archaea and a reliable proxy to use. The inferred cost of debt was 8.25%. Regarding the tax rate, we applied the standard 21% US corporate tax rate. This is because Archaea

paid no corporate income taxes due to losses in years past. We then calculated the weights of both equity and debt, using net financial debt (LT Debt + ST Debt + current portion of LT Debt - Cash) for the debt portion and total equity plus redeemable noncontrolling interests as part of equity. Non-controlling interests can be seen as equity in accounting terms or debt in financial terms. In our research in Bloomberg, we corroborated that the company does incorporate non-controlling interests as equity. With a debt weight of approximately 24% and equity weight of roughly 76%, Archaea's WACC equaled 16.04%. To calculate the company's free cash flows, we used the EBIT approach, which uses the after-tax EBIT subtracting the company's NCE and NWC. For the first 5-year projections, we assumed growth of 20% (based on our market research) on the company's EBIT and NCE. The short-term growth could not be calculated using a sustained growth formula, as the company's ROE stood at -3.72. The NCW was calculated by multiplying yearly sales times with a steady NWC/Revenues ratio, or q , at 13%, the difference between net-working capitals was calculated by subtracting NWC from the current year- NWC of the past year. We then proceeded to calculate Archaea's terminal value. After the fifth year, we assumed a constant long-term growth at 4.60% by using an average of 2.6% USA GDP growth + a 2% industry growth in perpetuity and a constant WACC of 16.04% (previously calculated). The terminal value was added to the fifth year FCF. With the completed Free Cash Flow, we calculated Archaea's enterprise value by discounting the FCF at the WACC rate and compounded the value to October 2022. With the enterprise value of \$2,502,489, we added back the initial cash in year 0 and subtracted the firm's debt in year 0 to get to the Equity Value of \$2,237,575. We then divided Archaea's outstanding shares, 119,460,314, to get an Equity Value per Share of 18.73.

Given the equity value per share of 18.73, we did a sensitivity analysis based on WACC and the Long-Term Growth rate. We feel that a lower price at a higher WACC of a maximum of 20% at the same long-term growth rate of 4.6% is sensible. So, our lower range price is 13.32. On the other end of the spectrum, the higher value we believe is logical is a share price at 30.29 with a WACC of 12% and a long-term rate of 4.6%. The reason why we solely included a sensitivity analysis table with varying values for the WACC and the long-term growth rate is because the price is more sensitive to changes in the long-term growth rate. After all, as one can observe from the table displayed above, for the same incremental change in long-term growth rate, the change

in price is not the same; from 0%-2%, the percentage change in price is 21%, however, from 6%-8%, the percentage change in price is 92%.

Combined Firm Valuation with Synergy

Assumptions	
Revenues	157,816,126,000
EBIT	18,058,439,000
Depreciation	14,821,025,000
Capital Expenditure	(11,026,467,000)
g ₁ in 5 years	5.00%
g ₂ after 5 years	4.00%
NWC	(7,661,976,000)
NWC/Revenues = q	-4.86%
Taxes	44.26%
Current Operating Margin	11.44%
Equity	91,269,993,000
Debt	30,759,914,000
Equity + Debt	122,029,907,000
WACC	11.60%
Global GDP	2.50%
Industry	1.50%
Shares outstanding (2021)	20,128,862

BP Unlevered Beta	0.6395
Archaea Unlevered Beta	0.9389
BP Enterprise Value	\$559,722,566,240
Archaea Enterprise Value	\$2,502,489,466
Combined Enterprise Value	\$562,225,055,706

Rf	1.014%
Rm	16.38%
Unlevered Beta	0.7006
Levered Beta	0.8322
Re	13.80%
Rd	9.11%

FCF Estimation	0	1	2	3	4	5
Sales	157,816,126,000	165,706,932,300	173,992,278,915	182,691,892,861	191,826,487,504	201,417,811,879
EBIT	18,058,439,000	18,961,360,950	19,909,428,998	20,904,900,447	21,950,145,470	23,047,652,743
EBIT*(1-T)	10,065,145,583	10,568,402,862	11,096,823,005	11,651,664,156	12,234,247,363	12,845,959,732
NCE	25,847,492,000	27,139,866,600	28,496,859,930	29,921,702,927	31,417,788,073	32,988,677,476
NWC	7,661,976,000	8,045,074,800	8,447,328,540	8,869,694,967	9,313,179,715	9,778,838,701
dNWC		383,098,800	402,253,740	422,366,427	443,484,748	465,658,986
FCF		38,091,368,262	39,995,936,675	41,995,733,509	44,095,520,185	46,300,296,194
Terminal Value						633,304,912,488
FCF Total		38,091,368,262	39,995,936,675	41,995,733,509	44,095,520,185	679,605,208,682

Value of Combined Firm with Synergy	\$ 566,973,485,941	=NPV(AF17,AG33:AK33)*(1-AF17)^(10/12)
Value of BP (Status Quo)	\$ 559,722,566,240	
Value of Archaea (Status Quo)	\$ 2,502,489,466	
Value of BP + Value of Archaea	\$ 562,225,055,706	
Total Value of Synergy	\$ 4,748,430,235	

Value of Archaea with Synergy	\$ 7,250,919,700
Archaea's Debt	\$ 342,774,000
Number of Shares Outstanding (Archaea)	119,460,314
Max Value Per Share for Archaea	\$ 57.83

Exchange Ratio 2.18 BP Shares/Archaea Share

Based on the analysis displayed above, our recommendation for the price and opening bid is \$31.14. Our walk-away bid price is the maximum value per share for Archaea, namely \$57.83.

The maximum exchange ratio we would be willing to accept is 2.18.

Sensitivity Analysis

		Long-Term Growth						
		3.00%	3.25%	3.50%	3.75%	4.00%	4.25%	4.50%
WACC	\$ 57.83							
	9.75%	\$ 765.03	\$ 929.51	\$ 1,107.16	\$ 1,299.61	\$ 1,508.80	\$ 1,737.00	\$ 1,986.94
	10.00%	\$ 578.38	\$ 730.02	\$ 893.33	\$ 1,069.70	\$ 1,260.77	\$ 1,468.45	\$ 1,695.02
	10.25%	\$ 404.61	\$ 544.78	\$ 695.34	\$ 857.47	\$ 1,032.58	\$ 1,222.28	\$ 1,428.48
	10.50%	\$ 242.43	\$ 372.32	\$ 511.49	\$ 660.97	\$ 821.95	\$ 995.81	\$ 1,184.15
	10.75%	\$ 90.71	\$ 211.36	\$ 340.33	\$ 478.51	\$ 626.92	\$ 786.75	\$ 959.37
	11.00%	\$ (51.51)	\$ 60.79	\$ 180.58	\$ 308.63	\$ 445.82	\$ 593.18	\$ 751.88
	11.25%	\$ (185.11)	\$ (80.37)	\$ 31.14	\$ 150.08	\$ 277.22	\$ 413.44	\$ 559.75
	11.50%	\$ (310.85)	\$ (212.96)	\$ (108.96)	\$ 1.76	\$ 119.85	\$ 246.09	\$ 381.35

Lower Value	\$ 31.14
Higher Value	\$ 119.85

Summary of Valuation Process and Key Value Drivers and Assumptions

For the combined valuation, we only evaluated the synergy impact and not the change in control. This assumption comes from our research and the Wall Street Journal's article on the acquisition, which stated that BP's reasoning for acquiring Archaea was to increase market penetration into the renewable energy/natural gas industry. The acquisition of Archaea would allow for the doubling in revenues for BP from \$1 billion to \$2 billion per year within eight years. To calculate the combined FCF, we used the EBIT Based Free Cash flow (EBIT- NCE- dNWC). We began by combining both companies' EBIT, depreciation, capital expenditures, and net-working capital. Once we had the initial year 0 combined numbers, we assumed a growth of 5% in the sales of the combined firm. We then estimated EBIT *(1-T) using BP's corporate tax rate of 44%. This growth aligns with the short-term growth we assumed for BP. The NCE was calculated by subtracting the aggregate depreciation from the Aggregate Capital expenditure at year 0, resulting in negative capital expenditures. We grew this initial number at a rate constant rate of 5%. The Net Working Capital for the year 0 was also the sum of the net working capital numbers for both companies. We grew this initial number at a constant rate of 5%. The resulting combined NWC was also negative. Both NCE and dNWC resulted in negative numbers; therefore,

the formula $EBIT \cdot (1-T) - NCE - dNWC$ turned both variables into positive numbers. We computed the FCF for every year using this formula. After the fifth year, we assumed a constant long-term growth at 4.00% by using an average of 2.5% global GDP growth + a 1.50% industry growth in perpetuity.

To calculate the combined WACC, we first calculated BP's unlevered Beta, using BP's initial Beta, its corporate tax rate, and its debt-to-equity ratio. We then calculated Archaea's unlevered Beta using Archaea's initial Beta, its assumed corporate tax rate, and its debt-to-equity ratio. We also calculated the combined Enterprise Value by adding both companies' enterprise values together (which had been previously estimated). We used this data to calculate the unlevered Beta of the combined company doing a weighted average (based on enterprise value) of both unlevered Betas. Then we used the unlevered Beta for the combined company to find the levered beta formula and the debt-to-equity ratio of the combined firm. We used that levered beta in CAPM to find the cost of equity for the combined firm at 13.8% (we used the same numbers for the Risk-Free rate and market return as we used for the BP valuation). The assumption for the cost of debt for the combined firm is that it would remain roughly the same as BP's current cost of debt of 9.11%, so we kept that number in our calculations. With this data, we calculated the combined firm's WACC at 11.60%. For the long-term growth, we assumed the same long term-growth as we had for BP at 4%.

We used both of these numbers, the WACC and the long-term growth, in computing the terminal value, using the FCF at year 5. This terminal value was then added to the FCF at year five to get the FCF totals for years 1-5. We then calculated the Combined Firm value by discounting the cash flows at the new WACC rate to get an Enterprise Value of \$566,973,485,941. This is the combined value of the companies with the synergy value included. To back out the synergy value itself, we subtracted the Status Quo Value of BP and the Status Quo Value of Archaea (which we had previously computed), from the combined value of the firm with synergy, and we got a total value of synergy equal to \$4,748,430,235. This synergy value is added to Archaea's Status Quo value to get Archaea's Value with Synergy. To compute the Max Value per Share for Archaea, we subtract Archaea's debt from Archaea's Value with synergy and divide that number by Archaea's

outstanding number of shares 119,460,314 to get to \$57.83. The exchange ratio would be 2.18, computed by dividing Archaea's Max Value per share by the Equity Value per share for BP.

In our sensitivity analysis for the Max Value per share for Archaea, and considering long-term growth, we suggest a price range of 31.14 to 119.85 per share for Archaea's value with synergy.

Negotiation Process and Final Results

Based on our group's analysis, the maximum value we were willing to pay to acquire Archaea Energy was \$57.83. We opened the negotiations with a bid of \$31.14 based on our sensitivity analysis. After lengthy negotiations, we reached a mutually agreed upon price, which was the maximum value we were willing to pay to acquire the company (our walk-away price). The transaction will be settled in cash, as BP has large cash reserves. Thus, a cash settlement will not result in liquidity issues for BP. Additionally, because we are settling this transaction in cash, the firm will not dilute ownership from issuing new shares, which would be the case in an equity settled transaction. Therefore, **the investors' ownership of the company will not be diminished.**

The acquisition of Archaea will provide multiple benefits for investors. Among others, the latter will increase BP's revenues and market penetration into renewable energy sources, further diversifying BP's sources of revenue and rendering the company less risky in the face of a global movement towards clean energy sources. Additionally, the acquisition will result in economies of scale for BP as average costs will be reduced as a result of larger operations. Further cost savings will be achieved as knowledge of renewable natural gas (RNG) is transferred from Archaea to BP. Thus, avoiding additional investments in research and development (R&D) from BP's perspective. Furthermore, this investment in renewables in the U.S. will bring additional cash flows to BP through tax credits provided by the U.S. government. All of the aforementioned benefits will translate into an increase in BP's short-term growth from 4.75% to 5% over the course of the next five years and sustaining a 4% long-term growth. Therefore, all of this will benefit the stakeholders in the form of a higher stock price and dividends paid.

Comparable Multiples

Comparables (in Millions)	KMI	LNG	EQT	SHEL	DCP	CTRA	RRC
P/E Ratio	16.49	N/A	13.38	4.95	6.74	5.71	5.08
Sales	16,610	15,864	4,681	261,504	10,832	3,449	3,060
Book Value of Equity	31,921	(33)	10,046	175,326	5,876	11,738	2,086
MV	40,644	40,763	13,581	202,433	8,048	20,232	6,111
EBITDA	5,100	771	336	49,200	557	2,300	1,000

	Industry Average	Archaea Implied Value	Combined Firm Implied Value
P/E Ratio	8.725	(269,785,725)	73,779,289,275
MV/EBITDA	5.599	152,290,415	149,184,138,474
MV/Sales	1.050	80,985,079	165,712,618,170
MV/Book Value of Equity	1.400	1,163,630,072	127,804,335,915

Archaea	
Earnings Per Share	(0.26)
EBITDA	27,200,000
Sales	77,126,000
Book Value of Equity	830,993,000
Combined Firm	
Earnings Per Share	30.18
EBITDA	26,645,200,000
Sales	157,816,126,000
Book Value of Equity	91,269,993,000

To calculate the following multiples and implied valuations, we gained access to the Bloomberg Terminal through FIU's on-campus computer lab. We took a sample of seven U.S. natural gas companies to find the industry averages. The seven companies include - Kinder Morgan Inc. (KMI), Cheniere Energy (LNG), EQT Corporation (EQT), Shell Plc (SHEL), DCP Midstream LP (DCP), Coterra Energy (CTRA), and Range Resources Corporation (RRC). The steps taken to find the industry averages and implied values can be found on the left.

On an overall basis, we do not believe the multiples give a good indication of the value of Archaea or the combined firm, even more so, the companies we chose may not be perfect proxies for Archaea and our combined firm, respectively. For Archaea, our analysis estimated an enterprise value of \$2,502 million, or \$2.5 billion. For the combined firm, we estimated the enterprise value to be \$559 billion.

Companies SWOT Analysis

BP - SWOT ANALYSIS

STRENGTHS

BP is a company that is adaptable and perspicacious towards the oil industry evolution and market trends, this allows them to be able to expand their portfolio and be able to acquire other companies that offer different products/services for them to reach more customers. Many companies, regardless of the sector, aren't able to grow with the market and they end up being outcompeted by emerging companies, however BP has made sure to not fall behind their competition.

Going off with the previous point, the fact that BP Energy has been able to diversify their portfolio of brands, this has helped them obtain an amplified worldwide reach, they are in many countries which allows them to have more economic stability because they are not just solely based on one place, also this way they are able to reach a broader set of customers.

BP Energy is a company known for being reliable, efficient, and effective. They have developed extremely solid customer loyalty. Their customers know that at BP, they can find the products they need and of high quality too, developing a certain type of dependence on BP Energy, which makes it harder for them to leave.

BP Energy has a very solid brand name, they are a worldwide known company, with a solid reputation that has been around since 1953. When a company is 70 years old and is still growing and being efficient, that gives investors and customers the trust and reliability that they are looking for in a company.

It is no secret that the petroleum industry is highly profitable, and BP Energy is one of the leaders inside the industry. That said, BP Energy is one of the most profitable companies in the world, and people will always need their products and services.

WEAKNESSES

The company was involved in several controversies involving oil spills in various parts of the world, which had a negative effect on its reputation with stakeholders and sustainability rating. Additionally, their oil spills have caused enormous environmental impact all over the world. And that's why the company is under increased pressure to transition offering sustainable energy solutions as a result of the increasing concern about climate change and the decline in the usage of fossil fuels. And not enough with this the executives handled these tragedies dishonestly and carelessly, which further harmed their reputation and resulted in significant penalties, fines, and expenditures to help the affected communities conveying the appearance that the corporation did not genuinely care about the environment or society.

BP is involved in a variety of endeavors, most of which are related to the oil industry. However, given that the company has matured, and that the production has declined, the competition has been positioned as more trustworthy and desirable as a result of these numerous errors, the absence from non-energy sectors may have a long-term effect on the company.

OPPORTUNITIES

The demand for electrical energy is always growing in the long term, therefore, even in the most competitive environment that is generation, all participants such as Archaea have opportunities to increase their income, even if they must carry out efficient investment and management policies.

Commitment of Archaea to long-term contracts with different Nations: These contracts are essential for the development of new investments, although it is true that they are aimed exclusively at generation, and not at transmission and distribution. The different mechanisms by which the Nation has committed to acquiring "clean" energy (solar, hydraulic, biomass, biodiesel, wind, etc.).

Development of renewable energies: This strength falls mainly on the distributors, who

have an exceptionally large customer database, and know their consumption patterns, with which, in principle, they could cover new non-regulated businesses to increase their income. Again, the use of this advantage will depend on the degree of compliance or limitation imposed by the control body on the development of these tasks. The company will use organic material from landfills, farms, and wastewater facilities to generate biogas which can be transformed to create low-carbon renewable natural gas. Archaea also utilizes renewable energy in their existing natural gas infrastructure to reduce their carbon footprints and meet sustainability goals.

THREATS

There is a big threat with environmental hazards, when extracting oil, it could cause leaks and spills. This could affect the company's reputation if they do not establish a strong Social corporate responsibility.

If the company does not solve its environmental issues, it could face severe lawsuits which could result in big penalties in the millions of dollars.

Competition in the Oil industry is fierce, companies such as Chevron and Exxon are better at dealing with environmental challenges which possess a big risk for BP.

Alternative/Renewable energy is a big threat to BP, as the world embraces renewable and sustainable energy sources, it could really hamper BP's bottom line. If BP does not take a look into these renewable sources, they might find themselves in big financial trouble in the future.

As BP operates in numerous countries it is exposed to currency fluctuations, especially given the volatile political and economic climate in the number of markets across the world.

Archaea - SWOT ANALYSIS

STRENGTHS

Archaea develops their renewable natural gas by the decomposition of organic matter. Things like animal waste, wastewater, sewage water, and garbage dumps which tend to hurt the environment with their pollution and that so often people take for granted; Archaea can turn them into a positive force for the development of projects and sustainable energy. Archaea has developed a technology in which they can eliminate the CO₂ that the previous emit and purify it,

making sure there is no negative effect from their production.

Archaea's method of developing renewable natural gas resources is very much more affordable and sustainable than traditional ways of getting energy. As we know the petroleum industry is very profitable but at the same it incurs a lot of costs, process like fracking that are done to extract oil and gas that are way below the ground are very costly and therefore make the oil price even higher for the major companies to have higher margin profits. Archaea does not need to extract resources that are not easily accessible; in fact, they take human and animal waste and inject it back into the economy efficiently.

Not only Archaea's production of renewable natural gas is cheaper but also it is a positive force in the environment. They can get rid of waste that contaminates land, water, and air, and they can clean it. On the other hand, oil production highly pollutes the ozone layer and through fracking we are also able to see how many clean rivers/lakes get the side waste from this oil and gas extractions.

Archaea is currently solving an economic crisis which is the energy crisis. Some people might think this crisis is distant but is already here, so with renewable natural gases, we can find an efficient alternative. Archaea is under the same wave of electric vehicles like Tesla, solar energy panels for houses and buildings, and most importantly, the wave of people who are conscious about the environment and saving the planet.

Archaea has had incredible growth, due to how efficient their method is and how they can impulse circular economy. Circular economy is a modern economic concept in which society reuses and recycles materials for as long as they can. A circular economy is more attractive to investors because this type of company receives more benefits from the government for helping the environment and companies like Archaea are more sustainable overall.

WEAKNESSES

Archaea is a relatively new company and although, as mentioned above, it has great potential, it is not unknown that its industry is a very small one. Its main objective however in the United States there are only 72 landfills where it could take direct advantage of the RNG. Something to remark about this type of gas is that if all sources were exploited, RNG could replace up to 16 percent of the current gas use in the country. However, Archaea is working to convert the

energy from the other 500 landfills that although it is not renewable gas, it can convert it into energy.

Archaea is difficult to value as a company currently, as it is relatively small with little or no revenues until very recently and huge net losses and cash outflows. Second, if all goes as planned, it is undergoing a substantial and rapid turnaround that could generate huge upside potential. Both circumstances make it difficult to analyze the stock.

The costs for Archaea of its main objective which is the RNG are very high and that is why the company has tried to buy other companies such as Aria to generate other types of services (PEI), in addition to this it has been shown that its use should be mainly industrial to replace gas and not electricity for homes.

OPPORTUNITIES

The demand for electrical energy is always growing in the long term, therefore, even in the most competitive environment that is generation, all participants such as Archaea have opportunities to increase their income, even if they must carry out efficient investment and management policies.

Commitment of Archaea to long-term contracts with different Nations: These contracts are essential for the development of new investments, although it is true that they are aimed exclusively at generation, and not at transmission and distribution. The different mechanisms by which the Nation has committed to acquiring "clean" energy (solar, hydraulic, biomass, biodiesel, wind, etc.).

Universality of the service by Archaea: no public service has as much geographical penetration as the electric service nor is it as universal. This strength falls mainly on the distributors, who have a very large customer database, and know their consumption patterns, with which, in principle, they could cover new non-regulated businesses to increase their income. Again, the use of this advantage will depend on the degree of compliance or limitation imposed by the control body on the development of these tasks. Examples of benefits that are currently made are the collection of other services or municipal fees, the rental of poles for cable or telephone or internet, but "custom" products could also be offered in terms of forms of consumption and associated rates.

THREATS

Changes in energy and commodity prices could affect ARCHAEA's margins, which in turn affects the bottom line.

Operating risks and the effect of disruptions on the business, including the effects of global health crises such as COVID-19, weather conditions, catastrophic events such as fires, explosions, earthquakes, droughts and acts of terrorism, and other force majeure events on ARCHAEA, their customers, suppliers, distributors and subcontractors.

Difficulties in identifying, obtaining and permitting suitable sites for new projects.

Identifying and entering new markets possess a bit of risk where ARCHAEA might not have the expertise or understanding of the market.

Combined Firm - SWOT ANALYSIS

STRENGTHS

Economies of scale and the subsequent cost reductions obtained through an increase in the scale of operations after the acquisition.

Increased market penetration into renewables, which will allow BP to become more competitive and capture a larger market share, further diversifying the sources of revenue.

The large cash reserves of BP will allow the combined firm to conduct the R&D into renewables that Archaea was incapable of conducting on its own.

The diversification of its business segments in a world of declining oil production, which will allow the combined firm to further secure its position as a leading energy producer.

Increased cash flows in the form of tax credits provided by the U.S. government. Expected to double its earnings before interest and taxes by the end of the decade (Wall Street Journal).

WEAKNESSES

Uncertainty with regards to Archaea's effectiveness in merging with the company Arias, as well as the prudence of its past investments. The mismanagement of its cash flows has negatively impacted on its ability to conduct R&D and has the potential to spillover to the combined firm.

BP's track record of corruption, mismanagement, and past scandals calls into question its ability to absorb Archaea.

OPPORTUNITIES

Improved goodwill as a result of BP's extensive incursion into green energy, effectively reinventing themselves as a leader in the green transition.

The opportunity to contract with businesses or governments that offer opportunities only to companies that support the green transition.

BP's insight into consumer preferences coupled with the development into AI will lead to more cost-efficient production and higher profitability.

THREATS

Potential FTC intervention, preventing the acquisition of Archaea.

Environmental threats and the company's inability to move fast enough into the renewable market.

Existing competitors are already heavily invested in the renewable market which may prevent the combined firm from capturing a sizable market share and growing at the expected long-term growth rate.

Conclusion on SWOT Analysis

The **motivation behind the acquisition of Archaea** pertains to the added benefits shown in the strengths analysis of the combined firm which include the following:

Economies of scale and the subsequent cost reductions obtained through an increase in the scale of operations after the acquisition.

Increased market penetration into renewables, which will allow BP to become more competitive and capture a larger market share, further diversifying the sources of revenue.

The large cash reserves of BP will allow the combined firm to conduct the R&D into renewables that Archaea was incapable of conducting on its own.

The diversification of its business segments in a world of declining oil production, which

will allow the combined firm to further secure its position as a leading energy producer.

Increased cash flows in the form of tax credits provided by the U.S. government. Expected to double its earnings before interest and taxes by the end of the decade (Wall Street Journal).

CAPM

Data used ONLY for Archaea's Beta Calculation							
Date	Archaea	S&P 500	T-Bill	Monthly Returns:	Archaea	S&P 500	Monthly T-Bill
11/1/2022	25.86	4003.58	3.53		0.19%	3.40%	0.294%
10/1/2022	25.81	3871.98	3.18		43.31%	7.99%	0.265%
9/1/2022	18.01	3585.62	2.52		-8.86%	-9.34%	0.210%
8/1/2022	19.76	3955.00	2.19		20.63%	-4.24%	0.182%
7/1/2022	16.38	4130.29	1.80		5.47%	9.11%	0.150%
6/1/2022	15.53	3785.38	1.03		-22.12%	-8.39%	0.086%
5/1/2022	19.94	4132.15	0.56		-9.36%	0.01%	0.046%
4/1/2022	22	4131.93	0.30		0.32%	-8.80%	0.025%
3/1/2022	21.93	4530.41	0.17		19.57%	3.58%	0.014%
2/1/2022	18.34	4373.94	0.04		6.07%	-3.14%	0.003%
1/1/2022	17.29	4515.55	0.05		-5.42%	-5.26%	0.004%
12/1/2021	18.28	4766.18	0.04		-4.24%	4.36%	0.003%
11/1/2021	19.09	4567.00	0.07		0.90%	-0.83%	0.006%
10/1/2021	18.92	4605.38	0.05		-0.11%	6.91%	0.005%
9/1/2021	18.94	4307.54	0.05		18.38%	-4.76%	0.004%
8/1/2021	16	4522.68	0.04		-5.33%	2.90%	0.003%
7/1/2021	16.9	4395.26	0.05		-6.37%	2.27%	0.004%
6/1/2021	18.05	4297.50	0.03		14.68%	2.22%	0.002%
5/1/2021	15.74	4204.11	0.01		2.88%	0.55%	0.001%
4/1/2021	15.3	4181.17	0.02		51.34%	5.24%	0.001%
3/1/2021	10.11	3972.89	0.02		-7.42%	4.24%	0.002%
2/1/2021	10.92	3811.15	0.04		-3.19%	2.61%	0.003%
1/1/2021	11.28	3714.24	0.08				

Archaea recently became a publicly traded company. Data is limited to less than 2 years (data also skewed by COVID and recent economic events). Therefore, we relied on BP's data set which included more observations (more reliable)

BP - CAPM		
Beta	0.83096	=SLOPE(J2:J61,K2:K61)
Risk-free rate, r_f	0.084%	=AVERAGE(L2:L62)
Expected market return, $E(r_m)$	1.37%	=AVERAGE(K2:K61)
r_E , CAPM	1.15%	=B3+B2*(B4-B3)
Annualized r_E	13.78%	=B6*12
Archaea - CAPM		
Beta	1.175	=SLOPE(\$T\$3:\$T\$24,\$U\$3:\$U\$24)
Risk-free rate, r_f	0.084%	=AVERAGE(L2:L62)
Expected market return, $E(r_m)$	1.37%	=AVERAGE(K2:K61)
r_E , CAPM	1.59%	=B3+B11*(B4-B3)
Annualized r_E	19.07%	=B\$16*12

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Bloomberg Terminal at MMC computer lab

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VII) Final Comments, Mayor Giveaways, and Conclusion

The Rise and Fall of Lehman Brothers

Lehman Brothers, una vez un gigante bancario de inversión dominante, se encontró con su desaparición como resultado de su hambre insaciable de poder y dinero. La empresa siguió estrategias de crecimiento agresivas, sin tener en cuenta la gestión de riesgos e ignorando las advertencias sobre el deterioro del mercado hipotecario. En su búsqueda por el dominio del mercado y los ingresos, despidió a su director de Riesgos, quien se opuso a su política de crecimiento imprudente, subestimando la crisis inminente y sobreestimando su capacidad para manejar los riesgos. Para ocultar su verdadera situación financiera, Lehman Brothers empleó un truco contable llamado "Repo 105", reduciendo temporalmente los pasivos para presentar un balance más saludable. Sin embargo, esta estrategia engañosa fracasó y condujo al colapso final de la empresa.

El análisis subrayó el papel crucial de la liquidez en los mercados financieros y la responsabilidad de los bancos de inversión para proporcionarla. Lehman Brothers aumentó exponencialmente su deuda mediante la emisión de valores respaldados por hipotecas (MBS) y valores respaldados por activos (ABS) a medida que aumentaban sus ingresos. Sin embargo, cuando aumentaron las tasas de morosidad de los préstamos inmobiliarios, la empresa se enfrentó a la quiebra, lo que expuso la importancia de una gestión responsable de la liquidez.

Además, la derogación de la Ley Glass-Steagall, que permite a los bancos de inversión participar en actividades más riesgosas, probablemente contribuyó a la voluntad de Lehman Brothers de asumir prácticas especulativas y de asunción de riesgos excesivos.

El análisis destaca la falta de responsabilidad por parte de Lehman Brothers en la emisión de deuda y la gestión de riesgos. Tanto el gobierno como las instituciones financieras deberían haber ejercido una mejor regulación y responsabilidad corporativa para evitar un colapso tan catastrófico.

Las lecciones aprendidas de este trágico evento incluyen la necesidad de que los bancos rindan cuentas por sus acciones, practiquen inversiones responsables y eviten la asunción de riesgos injustificados. El concepto de "juego puro" en la banca de inversión, centrado únicamente en un segmento de mercado específico, puede ser sostenible si los riesgos se gestionan adecuadamente.

En última instancia, el caso de Lehman Brothers sirve como un claro recordatorio de la importancia de la gestión responsable del riesgo, la rendición de cuentas y la regulación en el sector financiero. Hay que subrayar las posibles consecuencias de la avaricia desenfrenada y la asunción de riesgos excesivos y destaca la importancia de un enfoque cauteloso y sostenible para las intervenciones de mercado y las prácticas de banca de inversión.

Ant Financial Case: Fintech Unicorn

En conclusión, el análisis enfatiza la importancia de la inclusión financiera en la sociedad actual, señalando que a menudo recibe menos atención en comparación con otras formas de inclusión. La inclusión financiera, ayuda a como brindar acceso a servicios financieros de manera segura, asequible y conveniente, tiene el potencial de generar impactos positivos en el crecimiento económico, la expansión comercial, la liquidez del mercado, la educación financiera y las tasas de desempleo. El ejemplo de China y el surgimiento de una sociedad sin efectivo a través de métodos de pago en línea ilustran el poder transformador de la inclusión financiera.

Ant Financial, como empresa fintech, se destaca por reconocer y abordar las barreras que enfrentan las pequeñas empresas para acceder a servicios financieros a través de soluciones tecnológicas. Sus servicios financieros en línea, que atienden a personas y empresas desatendidas, ejemplifican la naturaleza sostenible de fintech, ofreciendo opciones rápidas, asequibles y sin papel, que atraen a consumidores conscientes del medio ambiente.

En última instancia, el análisis refuerza la importancia de la inclusión financiera para reducir la pobreza y promover la igualdad, enfatizando que la tecnología juega un papel crucial para superar las barreras y ampliar el acceso a los servicios financieros. Los esfuerzos de Ant Financials para brindar servicios financieros inclusivos y colaborar con bancos tradicionales en China demuestran las implicaciones positivas de la inclusión financiera para la economía y la sociedad en general. A medida que la inclusión financiera continúa creciendo, tiene el potencial de impulsar un cambio positivo, fomentando un panorama financiero más inclusivo y sostenible.

Security Analysis: Walmart Valuation

En conclusión, el análisis destaca el éxito y las estrategias de Walmart, mostrando su enfoque de "altas ganancias a precios bajos", iniciativas disruptivas y adaptabilidad a las tendencias económicas y de la industria. La capacidad de Walmart para romper con los estereotipos de género en el lugar de trabajo, ofrecer salarios competitivos y contribuir a la economía a través de sistemas de seguimiento meteorológico demuestra su compromiso con la responsabilidad social y la innovación.

La amplia gama de productos y la estrategia de marca blanca de la compañía han jugado un papel importante en sus impresionantes ingresos anuales de \$ 559 mil millones y el notable crecimiento del comercio electrónico durante la pandemia. La preparación de Walmart para las tendencias de la industria, como el comercio electrónico, la transmisión en vivo y las compras en realidad virtual, las innovaciones en la cadena de suministro y la entrega en el mismo día, junto con su inversión en automatización y el metaverso, lo posicionan como un gigante minorista con visión de futuro.

Si bien el análisis reconoce que las tendencias económicas, incluidos los conflictos geopolíticos, la inflación, las tasas de interés y los precios de las materias primas, pueden afectar las acciones de Walmart y la volatilidad general del mercado, se espera que los productos esenciales y los precios competitivos de la compañía mantengan la atracción de

clientes incluso durante las recesiones económicas. Sin embargo, el análisis reconoce que la tendencia financiera a la baja en los mercados plantea desafíos de rentabilidad, y la capacidad de Walmart para mantener precios bajos y administrar eficazmente su cadena de suministro será crucial para navegar por estas circunstancias.

En general, el análisis enseña una imagen de Walmart como un líder minorista resistente y adaptable, preparado para enfrentar los desafíos de los cambios en la industria y el panorama económico mientras continúa brindando valor a sus clientes. El éxito de sus estrategias y el compromiso con la innovación lo posicionan bien para seguir siendo un actor destacado en el mercado minorista.

Mergers & Acquisitions: Archaea & BP

El análisis emplea el método de flujo de caja libre basado en EBIT para evaluar la valoración de BP y Archaea. Para BP, el proceso consiste en recopilar datos financieros y calcular componentes esenciales para estimar los flujos de efectivo libres, como el WACC mediante análisis de regresión para encontrar la beta de la empresa y el costo de la deuda utilizando un mercado comparable. El análisis asume una perpetuidad de WACC constante y calcula las tasas de crecimiento a corto y largo plazo utilizando la fórmula de la tasa de crecimiento sostenible. Se proyectan los flujos de caja libres de BP y se determina el valor terminal para llegar al valor de la empresa el 31 de octubre de 2022. Luego, el valor de capital por acción se obtiene dividiendo el valor de capital por la cantidad de acciones en circulación, y un análisis de sensibilidad explora diferentes escenarios basados en valores variables de tasa de crecimiento a largo plazo y WACC.

Para Archaea, se toma un enfoque similar, comenzando con la recopilación de datos y utilizando el análisis de regresión para encontrar beta para el modelo CAPM. El costo del capital y la deuda se calculan utilizando datos relevantes, y el WACC se determina considerando las ponderaciones de capital y deuda de la empresa. Los flujos de caja libres de Archaea se proyectan con supuestos de tasa de crecimiento, y el valor terminal se suma al

flujo de caja libre del quinto año para calcular el valor empresarial. Al restar la deuda y agregar el efectivo, se obtiene el valor de las acciones y se calcula el valor de las acciones por acción.

El análisis de sensibilidad de Archaea explora más a fondo diferentes escenarios de precios basados en valores variables de WACC y tasas de crecimiento a largo plazo, destacando el impacto de los cambios en la tasa de crecimiento a largo plazo en los valores de capital estimados por acción.

En general, el análisis proporciona una descripción completa y sistemática de las metodologías de valoración utilizadas para ambas empresas, destacando los supuestos críticos y los cálculos involucrados. La inclusión del análisis de sensibilidad mejora la comprensión de las posibles variaciones en los valores de capital por acción en función de los cambios en las variables significativas, ofreciendo información valiosa para los inversores potenciales y los responsables de la toma de decisiones.