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IPO Ready? Illuminating the Dark Box of Private Equity

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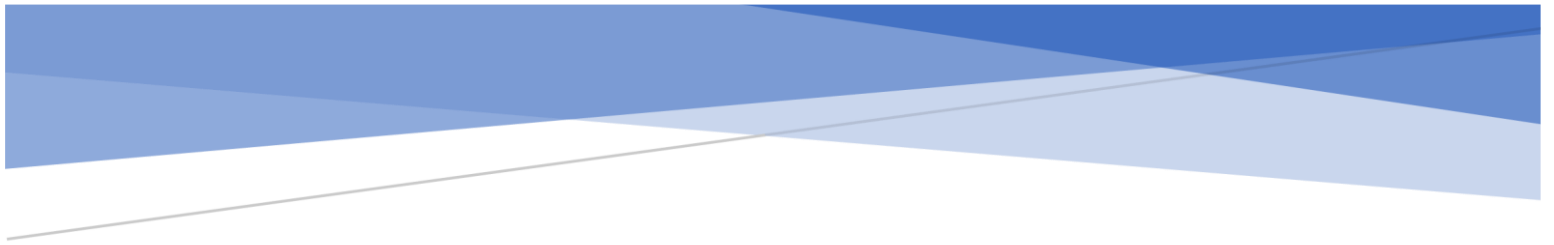
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IPO READY?

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Table of Contents

I. INTRODUCTION.....	3
II. BACKGROUND.....	5
III. LITERATURE SEARCH.....	9
IV. THESIS OUTLINED	15
V. TESTING THE THESIS	20
VI. CONCLUSION	24
VII. APPENDIX.....	26
VIII. WORKS CITED.....	27

I. Introduction

Value Investing is a term coined by Benjamin Graham and David Dodd at Columbia Business School in 1928. Value investing describes an investment strategy in which investors buy publicly traded companies that the market has undervalued. The investors realize profits through the mispricing of the underlying security by determining that the intrinsic value is worth more than the market's current price. This strategy has seen plenty of success through high-profile proponents such as Warren Buffett and Seth Klarman. The idea in recent years is that value investing can also be used in the data-poor environment of private equity.

Value investing relies solely on public information. Public companies provide investors in the stock market with an abundance of information that can be used in making investment decisions. Alternatively, in private equity, there is little data available to aide private equity firms and investors in making investment decisions. There is a question to be answered: can data in the equity market be used as an instrument in helping both investors and entrepreneurs illuminate the dark box of private equity; helping both parties within the space make better decisions?

The use of public equity data can help combat the challenges private equity funds currently face regarding data availability. Within the private equity market, funds and investors have a hard time analyzing data. The inefficiencies that cause the lack of information available within the private equity space start from the portfolio company. The data provided from portfolio companies vary between sector regarding level of sophistication, amount, variety and quality (Swan). These portfolio companies struggle when aggregating and filtering data on their own and in turn, private equity funds and investors must compile and gather the loosely found

data during the due diligence process on their own when making investment decisions. Even if the portfolio company does have data organized and readily available, the information may mean little or have no value to the private equity fund or investor; the information would be rendered useless. David Rubin, Cohnreznick Principal and Management Consulting National Director, stated: “When aggregated and organized, the data can become powerful tools for reaching good business decisions that can result in increased portfolio and enterprise value” (“The Private Equity Market”). The need for organized data gathered from the equity market can solve these inefficiencies and support Rubin’s remarks.

What will be done to combine data from the equity markets to the private equity space? The goal is to create a model to provide guidance to both investors and entrepreneurs in the decision-making process. The data gathered would provide insight on how close a private company is to a successful Initial Public Offering (IPO). Companies that have gone public in the last ten years have different financial makeups and can vary tremendously by industry, thus creating a challenge for both investors and entrepreneurs in understanding how they compare to competitors. The idea is that a model, showing the average financial metrics of companies within certain industries during an IPO, can provide new perceptiveness as to how the private company is performing. The model will be explained further in the *Thesis Outlined* and *Testing the Thesis* sections of the report. A briefing on the background of private equity is recommended before explaining the model and its invaluable uses for both investors and entrepreneurs.

II. Background

Private equity refers to the market where private equity funds and outside investors allocate capital into privately-held companies in hopes of realizing a capital gain. Private equity funds include principal and institutional investors such as family offices, pension funds, investment funds, endowment funds, banks and insurance companies. The primary goal of an investor in private equity is to increase shareholder value and make a return, either from interest or dividends, or capital gain from selling the investment (Swan). Throughout this report, the term investor will refer to both private equity funds and outside investors who allocate money into such funds in hopes of realizing a gain indirectly.

As competition of private equity funds increased in the 1990's, the need to generate value in individual investments increased as well. Investors shifted from diversifying a portfolio with companies spanning several sectors to focusing primarily on one or two ("The Private Equity Market"). This shift led to a variety of strategies aimed at increasing the success rates of these funds. Investors focused on specific industries to gain competitive advantages over other funds in private equity. This competition encouraged investors to spot value in opportunity (Barber & Goold). For every deal closed in private equity, there are hundreds of potential targets that are screened and reviewed (Spindler). Throughout time, firms and investors have dedicated more hours and capacity to this than any other segment of the business. Finding value led investors to become skillful in predicting cash flows and other financial metrics to increase the chances of a successful investment. Value investing began to grow exponentially from this point on (Barber & Goold).

Private equity today has continued to shift to value investing as opposed to growth investing. There has been strong interest in active management compared to the old model of backing incumbent management to buy the companies outright ("The Private Equity Market"). Some funds within the space have moved to financial conglomerate models in which fund managers represent multiple funds in different spectrums of investing in both private and public companies ("The Private Equity Market"). No matter the fund type, investors have faced tightened due diligence time horizons as the competition continues to increase. Shortened due diligence timeframes have shifted investors' focus to analyzing key issues and trends while utilizing data analytics. This will be discussed detail in the *Literature Search* section of this report.

Investments within private equity have also transformed within recent years. Figure 1, in the Appendix, shows a global snapshot of private equity investments since 2006. One can see that the quarterly aggregate deal volume has plateaued since 2011. There have been small troughs and peaks since 2011, however, the deal value does not compare to the numbers seen in 2006 and 2007 leading up to the market crisis in 2008. When looking at Figure 1, the number of deals globally in the private equity market is cyclical on a quarterly basis and has been decreasing slightly since mid 2012 ("The Private Equity Market"). A trend worth mentioning is the small decline in outside investors into private equity funds since late 2010. The amount raised by global private equity funds was at its highest leading up to the market crisis and has not since neared surpassing the former mark. These trends can be better understood and visualized when referencing Figure 2 of the Appendix ("The Private Equity Market").

It is beneficial to understand the different potential exits for privately-held companies, before entering the *Literature Search* section of this report. This will prove helpful when trying to understand why the IPO is the exit of choice for this model. Potential exits for entrepreneurs include a full or partial sale to a third party, corporate partnerships or joint ventures, selling the company to employees or family members or an IPO. Each potential exit provides the entrepreneur with different direction and forward guidance. These exits have many advantages but also disadvantages that entrepreneurs must consider.

The first potential exit for a private company is an outright sale to a third party. An outright sale to a third party provides diversification of risk and wealth, either from a strategic buyer or financial buyer. These exits have many advantages but also disadvantages that entrepreneurs must consider. A strategic buyer is a business owner in a similar industry that understands the financial performance of the selling company. Advantages of this exit include providing high valuations to shareholders, increased operating synergies and amplified knowledge of the business. Alternatively, a financial buyer is not focused on synergistic opportunities but rather a focus on investing in *undervalued* companies. Management and shareholders of the selling company maintain significant responsibilities and retain upside potential. Disadvantages of selling to a third party include negative impacts to morale and culture, customer loyalty and the potential loss of a career (Barber & Goold). Selling to a third party is a path that, if taken, can benefit both the investor and entrepreneur.

Another potential exit for a private company is a corporate partnership or joint venture. Corporate partnerships and joint ventures are growth strategies that provide the entrepreneurs of both companies the ability to combine synergies and access new markets. This exit strategy

expands product offering and deepens relationships with customers. Management can stay intact and maintain the course of action necessary to grow. However, a difficulty to sustain long term growth is a disadvantage that many entrepreneurs could encounter (Barber & Goold).

Selling the company to employees or family members are other options for entrepreneurs when deciding how to exit the company. An employee stock ownership plan (ESOP) is common and allows ownership to pass from upper management to the employees themselves. A company who participates in this process can make tax-deductible contributions and defer tax roll-overs of the price paid for the seller's stock. One disadvantage of the ESOP is the notion that there is no new equity provided to the business. A sale or transfer of the company to a family member does not provide new equity nor does it add monetary value to the company. Selling to a family member allows the business to remain in the family and maintain a similar culture, however, can worry current investors regarding the best interests of the new manager ("The Private Equity Market").

An Initial Public Offering is the last potential exit strategy for an entrepreneur. Offering securities of the company to the public is an exit strategy that can be executed when the management team has realized they have continued to meet business growth objectives. Going public provides companies with access to long-term capital and improvements in financial position. This exit also creates prestige and provides liquidity for shareholders. Disadvantages of going public include pressure for promising short-term performance, reduced business flexibility and increased regulation (Barber & Goold). The model of public equity data to aide investors and entrepreneurs in private equity is designed to perform best while analyzing public offerings. Public offerings provide significant value to shareholders and early-stage investors.

More information regarding the details of the public equity data used in the model can be found in the *Thesis Outlined* section of this report.

III. Literature Search

A *Literature Search* is necessary to answer three important questions regarding the efforts of illuminating the dark box of private equity: What information is useful to investors? What information is useful to entrepreneurs? Has this been done before? These questions guide research and present findings as to how the model and analysis of combining private equity and public equity can help the decision-making process. To help decision-making for both parties, one must understand the needs and wants of the two to provide value.

As previously mentioned, a lack of information in the private equity market has created challenges for investors. However, research has been done regarding big data and predictive analytics and how useful it could be to both investors and entrepreneurs within the space. Big data is data that has significant volume, variety and quality and requires substantial analysis to understand it. Big data can take many forms and range from clicks on advertisements and views on a viral video on social media to a data-dump of public equity data. The magnitude of big data can be seen from a 2014 study illustrating that for every minute, users generate 48 hours of YouTube videos, Facebook users share 684,478 pieces of content, Instagram users share 3,600 new photos and Tumblr users see 27,778 published posts (Swan). Gordon Moore, Intel co-founder, supported these numbers by mentioning that he expects computing power to double every eighteen months into the foreseeable future (Swan).

Big data is useful to companies and investors if they know how to correctly interpret and use it. There are various ways to do just that. Rubin stated, “The key to the successful use of big data is developing a strategy to assess values, trends and potential impact of the investment” (Swan). If the collection and sophistication of gathering the data improves than the user of the big data will create a competitive advantage. There are said to be three different kinds of data analytics, all of which could be useful if implemented correctly. Descriptive analytics uses simple tools, models and charts to analyze current trends within the data. Predictive analytics uses models that describe past data to predict the future. Lastly, prescriptive analytics provides recommendations to “front-line workers” (Finger). Data Analytics continues to become prevalent in investors’ due diligence process as the time horizon for completing deals has shortened due to increased competition. Big data will continue to be a driving force in the performance of private equity firms.

One must now understand what else investors are looking for in entrepreneurs and what information could be useful. There are many qualitative and quantitative metrics that investors measure and assess when allocating capital. Investors of private equity firms examine the team and experience, the business model, market potential and investor fit. These metrics provide investors with insight on how the company operates and assists in the decision-making process when making an investment. Delving into these metrics can reduce investment and business risk that investors typically take when allocating funds to portfolio companies.

Examining the management team is crucial in the due diligence process. Investors look for management teams with a track record of high performance in a specific industry or in prior ventures (Newlands). “Investor fit” is important to investors in all stages of a private company

because it relates solely to the connection between investor and entrepreneur. Bob Rice, investor at Tangent Capital, supports the notion of chemistry between both parties by saying: “Most VCs will go through a checklist and everything’s got to meet our criteria. If we’re vegetarian, we don’t want to see a steak” (“What Investors Look For - What Investors Want to See”). Competitive advantage is also highly reviewed by investors. They typically answer the following questions: *What kind of domain expertise does the team have? Does the team have core competencies? Does the team have complementary skills?* (Abecassis) A company can create a competitive advantage by showing company uniqueness. Company uniqueness can be implemented through an entrepreneur’s business model (Newlands). The business model is attractive if it shows that the company has the strength and capabilities to commercialize the product or service (Abecassis).

Market potential is another area of concern for investors. They desire numbers and financial metrics that represent growth and opportunity within any industry an investment may be made. Murray Newlands, entrepreneur and author of *Online Marketing: A User’s Manual*, says, “Investors look for companies that can grow quickly and manage this high growth scale” (Newlands). Newlands speaks to the fact that companies must be able to sustain growth in a growing market. Arie Abecassis, startup entrepreneur and investor in NYC, supports the need for high growth in dynamic markets by explaining the need to understand the meaning behind market growth:

Big is defined in terms of not just today, but the future as well. If it’s a market with existing solutions, be prepared to spend a lot of time explaining how your solution is different from your peers. If it’s a new, emerging market, the focus will

be on how big the market is expected to get and what's driving growth.

(Abecassis)

Abecassis, along with other investors in private equity, understand that an investment must be in a portfolio company that is breaking into a new market or a market that is expected to grow exponentially.

The financial performance of a company can sway an investor into investing capital or turning away from the opportunity. The financial due diligence of a company confirms that the information is correct and can help identify unique characteristics of the business ("Private Equity Investment Criteria"). The main areas of financial diligence are the quality of earnings, debt items, net working capital and tax structure. All areas of the due diligence provide guidance about the financial stability of a company including profitability metrics and its ability to pay off debt. A lack of data and financial metrics can be a problem for this portion of an investor's due diligence process. Private equity firms use compiled data to help entrepreneurs make decisions, however the accuracy of the data can be misleading (Swan). The issue is magnified for private equity firms that may want to compare key metrics among other investments made within the same industry.

These qualitative and quantitative metrics provide guidance to an investor's decision making process. However, there is still risk and uncertainty with any investment made. An investor allocates capital on the sole premise of making invested money back alongside a capital gain as quickly as possible. Using public equity data in the private equity space could be a way to help reduce this unsystematic risk and ultimately help investors make better decisions. Before exploiting this idea, one must understand the entrepreneur.

What are entrepreneurs looking for and what information is useful to them? The answers to these questions are strongly correlated to a company's success and their ability to perform in the market. The answers refer to the company's wants and needs regarding the investor. The answers assume that the company has already completed an internal due diligence report, which covers market analysis, competitive analysis, a SWOT analysis and an analysis on many other internal metrics within the company. It is important to know what entrepreneurs want in investors.

The first thing entrepreneurs look for is value in investors (Acharya, Kehoe & Reyner). The value an investor provides is multi-faceted. A survey of nine entrepreneurs whom have had successful careers across the globe have provided insight on the true value of an investor. First, entrepreneurs look for investors who know what it is like to be a founder. They understand the investment process from the beginning and have the startup frame of mind. "Founders respect founders and people who think like founders," said one member of the survey (Acharya, Kehoe & Reyner). Entrepreneurs must look for investors who have had to sacrifice the large and small things in life to succeed.

Secondly, investors provide value to entrepreneurs through their ability to align expectations in a similar fashion. Many founders who were interviewed in the survey mentioned that it is challenging to differentiate passionate investors from check-writers. Passionate investors fully understand the vision, have solid understandings of what potential exits are in the foreseeable future and have relationships that could provide subsequent rounds (Schlag). Check-writers are investors who have no true interest in the company and will write a

check without significantly reviewing the company and market. The differentiation between the two is important and must be understood before an entrepreneur accepts funding (Schlag).

Investors' skills and abilities to build a network are other sources of value provided to entrepreneurs. In most cases, investors know less about a market and the business than the entrepreneur. In venture capital or angel investing, many investors may not know the customers, markets or potential partners. Vinod Khosla, founder of Khosla Ventures, mentioned at TechCrunch that, "70% to 80% of VCs add negative value." Khosla emphasized that this conclusion can also be drawn for other types of investors including family offices and private equity (Hoque). Andreessen Horowitz, a private venture capital firm founded in 2009, believes that the most value a private equity firm can provide entrepreneurs is their ability to network. Founders Marc Andreessen and Ben Horowitz have employed a talent management model of "Hollywood" to build their network. The venture capital firm believes that partnering with other firms within the industry provides opportunities for all. A private equity firm that partners with another private equity firm can extend their network and provide increased value to the entrepreneurs (Schlag).

Outside of the internal due diligence entrepreneurs complete, many also prepare for an exit. In the *Background* section of the report, one can see a breakdown of the different options an entrepreneur has and the difficult decisions that need to be made throughout the growth of the company. Specifically, for an IPO, entrepreneurs would like to know what it would take to go to public. A way for entrepreneurs to do this would be to look at similar companies who have filed for an IPO within the same industries and corresponding sub segments. This would

provide guidance as to how the company is performing in comparison to companies who have seen enough business growth to file an IPO. This model simplifies this process.

IV. Thesis Outlined

Public equity data can illuminate the dark box of private equity. Using public equity data in the private equity space can help investors and entrepreneurs make better decisions in the long run. The goal is to create a model that both parties can use as a reference when trying to compare the company to companies that have filed for an IPO within the same industry. The model will provide a benchmark that can be used to evaluate the growth of the company and ultimately determine if the company is on the right track for filing an IPO.

The first step was to gather the data. The data used for the model was accumulated from a Bloomberg terminal where a scan was conducted to locate the companies. The scan filtered companies that have filed for an IPO in the United States between January 2, 2009 and March 22, 2017. The scan also filtered for companies that issued common stock in all the industries available. The 845 companies that have filed for an IPO during this time conduct business in one of ten industries. These industries include: basic materials, communications, consumer cyclical, consumer con-cyclical, diversified, energy, financial, industrial, technology and utilities. The model currently includes data for 25% of each industries' IPOs. Of that, only the basic materials, communications and technology industries are currently complete. The reasoning for using these industries as examples of how the model works is that locating the additional information for the other industries was misleading. Further explanation of the challenges when populating the data into the model can be found in the *Conclusion* section of

this report. Below is a chart representing the total number of initial public offerings segmented by industry.

Industry	# of Companies
Basic Materials	21
Communications	79
Consumer, Cyclical	99
Consumer, Non-cyclical	285
Diversified	19
Energy	45
Financial	183
Industrial	47
Technology	65
Utilities	2

Organizing the data was the next step. Once the data was collected from the Bloomberg terminal, quantitative metrics on companies' S-1 filings needed to be located. With the use of the U.S. Securities and Exchange Commission's database, financial metrics could be collected for each company. These metrics included sales, costs, gross profit, net income and number of shares registered. Qualitative metrics of the companies included the date of a company's inception and the date of the IPO announcement. The premise of the model is that an average of these metrics from each industry can be gathered and used as a benchmark for analysis. Investors and entrepreneurs will be able to interpret the position of a private company by comparing the company's metrics to the averages of these metrics from companies that have filed for an IPO. Further explanation of the model and how an investor or entrepreneur will use the model can be found in the *Testing the Thesis* section of the report.

The model created can aide investors in making better decisions by minimizing investment risk. The model and analysis minimizes risk by creating a benchmark for analysis of new and old investments, improving the financial due diligence process and solidifying investments. This benchmark can be used for past and future investments. A benchmark to

compare a private company reduces the need for private equity firms to generate their own reports in Excel (Swan). As previously mentioned, data availability is a challenge that private equity firms are facing. There are inefficiencies in the way portfolio companies gather data and present data to investors. One problem investors face regarding data aggregation is that companies within the same industry accumulate information differently and present different financial metrics (Swan). The data provided by portfolio companies can also vary by industry in both quality and quantity. The model could provide private equity firms a concise platform in which they can properly value the company by comparing the various financial metrics. The aggregated data is concise and accurate.

The model can also help investors and private equity firms reevaluate past investments. The model will allow the user to easily compare a portfolio company's financial metrics to the benchmarks gathered. Private companies that seem overvalued in a portfolio may need reconsideration, while a company that is undervalued may be a strong reinvestment opportunity. The ease at which a private equity firm can evaluate the number of companies that IPO in certain industries alongside the average financial metrics per industry can guide investors in making better decisions while reducing risk.

Using public equity data as guidance to helping entrepreneurs make decisions is two-fold. The model provides a benchmark, much like it does for investors, to compare company performance and to understand investor perception. For any industry and sub segment, a company can easily understand if they are underperforming or outperforming the average. For example, if a basic materials company that has been in business for a year has revenues close to the industry average at the time of IPO; the company would consider themselves undervalued.

Entrepreneurs will have the ability to view the company from an investor's perspective to truly understand if an investment is close. Private companies can use these benchmarks to shape business decisions to either grow, add value or reshape their business model.

Public equity data has not been fully used when determining if a privately-held company is ready for an IPO. However, private equity firms and entrepreneurs do have a system and process in place to understand if a company is truly ready. But first one must understand why a company would go public. A company would file for an IPO to access capital markets to raise more capital ("Roadmap for an IPO"). The influx of capital would help the business expand operations and continue to sustain commercialization and growth. Another reason a company would file for an IPO is to enhance the company's reputation. The company's reputation would improve when going public and would assist in attracting and retaining highly-skilled employees. Filing for an IPO also provides liquidity to shareholders and diversifies investor holdings ("Roadmap for an IPO").

Currently, there are multiple measures that are taken into consideration when determining if a company is ready to go public. The first consideration is a review of the management team. The management team that has led the company through recent years of growth needs to have the skills and experience necessary to represent a public company. A strong team structure with an increased focus on accounting and finance are strong attributes of a company ready for an IPO (Farley). This team must be committed to the registration requirements and the time and effort associated with an IPO filing ("Roadmap for an IPO"). Lastly, the company must have a developed focus on external communications. An investors

relations team, which is not necessary for private companies, must be experienced in dealing with both investors and shareholders.

The next attribute of the assessment in determining if a company is ready to file for an IPO is their financial performance. “Wall Street needs to trust your ability to make money and keep making money” (Forrest). This quote, taken from an article in Tech Republic, supports the notion that private company’s must see continued growth and forecast that growth. Accurate financial revenues and cost projections play a key role in the company’s success (Farley). To prove the accuracy and consistency of financial data, a company should develop financial forecasting and budgeting functions. The accuracy in predicting growth is a strong driver in determining if a company is ready to go public (Farley).

The last measure investors and entrepreneurs assess when determining if a company is ready to go public is the story and road map of the business. A road map is an explanation provided by the company that clarifies where the company has come and where it plans to go in the future. The plans within the road map must be constructive and concrete. Andreas Stavropoulos, Partner at DFJ Venture Capital, says, “Going public involves selling your vision and future results” (Forrest). If a company cannot sell their vision than the company may not be ready to go public. A strong vision accompanies a sustainable competitive advantage that a management team passionately believes in.

As illustrated above, there are different measures both investors and entrepreneurs use in determining if a company is ready to file for an IPO. Even at a company’s earliest stages, investors look at these measures to understand if additional rounds of funding are needed. If investors can align with and understand the vision of the entrepreneur and the strong

relationship between the two, then a worthwhile investment can be made. However, there is still uncertainty with attributes related to their decision-making process. How can an investor or entrepreneur truly know just how close the company is to being IPO ready? The model using public equity data is the answer to this question.

V. Testing the Thesis

As previously mentioned, the data within the model contains quantitative metrics from the 845 companies that have filed for an IPO from January 2, 2009 to March 22, 2017. As previously mentioned, the model only uses 25% of the companies that became public within each industry. The data scanned from the Bloomberg terminal includes announcement date, company name, industry, industry group, offer size, issuer ticker and offer type. Individual research into each company's S-1 filing resulted in the gathering of financial metrics including sales, costs, gross profit, net income, inception date and number of shares registered, as previously stated. The model focuses on these financial metrics and the company's age, which is found by taking the difference of the announcement date and date of inception. The model has been created and organized in Microsoft Excel.

After obtaining and populating the appropriate cells with the collected data, the model was complete and functional. An example of how an investor or entrepreneur would use the model will be best illustrated through an example. Due to non-disclosure agreements and the securitization of private information, one is unable to provide a real example of an investment made in the past. In this example, the term "user" can be used interchangeably between investor and entrepreneur. Also, the term sector and industry are interchangeable.

The first step in completing the model is for the user to input decision variables in both the *Description* table and *Analysis* table. Below are screenshots of the tables in the model.

Description

Who	Investor	<input type="text"/>
Company	ABC Inc.	
Date	4/26/17	
Year	2017	

Analysis

Sector	Basic Materials	<input type="text"/>
Sub-sector	All	<input type="text"/>
Sales	\$6,000,000	
Costs	\$3,500,000	
Gross Profit	\$2,500,000	
Net Income	\$800,000	
Inception (Year)	2010	
Age	7	

The user can select from the drop down in the *Description* table to choose who they are. The options for this drop down are either “Investor” or “Entrepreneur”. In this case, the user is an investor who is analyzing ABC Inc. on April 24, 2017. The date automatically populates whenever the model is opened. In the *Analysis* table, the user has the option to select what sector and sub-sector he or she believes the company competes in. The sector options are defined in the *Thesis Outline* section of the report. In the Sub-sector cell, the user has the option to click “All” which includes every sub-sector. In this case, the investor believes ABC Inc. belongs in the basic materials sector and the user would like to run the model by viewing all sub-sectors. Next, the user can input the sales, costs, gross profit, net income and year of inception in the *Analysis* table. The “Age” cell auto populates and does not require a user input.

Once this is complete, the model returns the averages of the financial metrics previously mentioned. The averages represent the average sales, costs, gross profit, net income and age of

a company that filed for an IPO in the selected sector. Below is a screenshot of the *Ideal Company* table which represents these figures. The ideal company refers to the average snapshot of a company on the day of an IPO filing.

<i>Ideal Company</i>	
Sector	Basic Materials
Sub-Sector	All
Sales	\$14,366,490
Costs	\$4,013,432
Gross Profit	\$9,056,945
Net Income	\$5,174,055
Age	5

In this case, the average sales figures of a basic materials company on the day of filing for an IPO is \$14.36 million and the average age of a basic materials company to file for an IPO is five years. The same logic goes into the costs, gross profit, and net income metrics in the table above. The *Comparison* table is complete now that the user has entered the decision variables and the model has returned the ideal company profile. The *Comparison* table is a way for the user to quickly assess the current situation of the company of interest in comparison to the ideal company. Below is the *Comparison* table for the investor interested in ABC Inc.

<i>Comparison</i>				
	ABC Inc.	Ideal Company	Difference	% of Industry
Sales	\$5,000,000	\$14,366,490	(\$8,366,490)	42%
Costs	\$3,500,000	\$4,013,432	(\$513,432)	87%
Gross Profit	\$2,500,000	\$9,056,945	(\$6,556,945)	28%
Gross Profit(%)	42%	63%	-21%	66%
Net Income	\$800,000	\$5,174,055	(\$4,374,055)	15%
Age(Years)	7	5	2	-40%

The *Comparison* table is the final product of the model. The table closely compares the different metrics to the ideal company and calculates the differences. The “% of Industry” column refers to how close the ideal company is to equaling the ideal company for that specific

metric. The comparisons of ABC Inc. to the ideal company in basic materials can provide the user with insightful information. The number in the “% of Industry” column will be either green or red, depending on the company’s performance. Green means that the company of interest is superior to the ideal company for that financial metric. For example, when looking at the *Comparison* table, one can notice that ABC Inc.’s costs are smaller than the ideal company’s costs, ultimately calculating a green “% of Industry”. A red “% of Industry” will appear if the company of interest is underperforming the ideal company for that financial metric. For example, ABC Inc.’s sales are smaller than the ideal company’s sales, calculating a red “% of industry”.

From an investor’s perspective and entrepreneur’s perspective, one is able formulate a story for ABC Inc. One can notice that the company has been in business for five years and has not sufficiently increased sales. The ideal company in the basic materials sector has on average \$14.36 million in sales while ABC Inc. only has \$6 million in sales. Regarding costs, it is evident that ABC Inc. has almost the same costs as the ideal company. The overall story of ABC Inc. can be concluded by realizing that the company has been in the industry longer than it should be, with little revenue and high costs compared to the ideal company. ABC Inc. can be considered overvalued when looking at this model.

Decisions can be made now that the user understands that ABC Inc. is overvalued. Investors can decide to not invest in the company and look to other companies that have more value within the basic materials industry. Investors can use this model for other potential portfolio companies to determine where the best place to invest is. The entrepreneur of ABC Inc. has multiple decisions that can be made as well. The entrepreneur can either decide to shift

and improve operations to increase revenue growth and minimize costs, or shift the company's vision to target a new market. The decisions for investors and entrepreneurs are plentiful and it is up to both parties to interpret the model and act in their own best interest.

VI. Conclusion

The model has two flaws that must be considered when analyzing the results. The first flaw is that the model does not consider growth in revenue. The averages of the financial metrics of the ideal company are gathered from S-1 filings which contain snapshots of the companies at the time of filing an IPO and do not provide a significant amount of historical performance. Another flaw of the model is that the numbers gathered do not take into effect global economic factors. Companies filed for IPOs at various times between January 2, 2009 and March 22, 2017, and the model does not reflect the current state of economy at those times. Looking ahead, investors and entrepreneurs will need to consider the current economic environment on a global perspective and an industry-specific perspective when making decisions. Aside from these flaws, the model was built on accurate and available information from the public markets and can help investors and entrepreneurs make better decisions.

There were two challenges that also must be addressed when gathering the financial metrics from the U.S. Securities and Exchange Commission's database. These challenges are the reason why the model only has a few of the industries completed. The first challenge was locating the company within the database as some of the companies were not found when searched. This is an error either from withdrawal from the exchanges or bankruptcy and ultimately limited the ability to populate data into the model. The second challenge when

populating the model with data was locating revenue metrics. Many of the companies have gone public in various markets where there are no revenue expectations and guidelines. The model would be stronger if more financial information was readily available. These challenges were the reasons why the current model only includes 25% of the basic materials, communications and technology industries' IPOs.

If the model were to continue to improve in the future, multiple steps should be taken. The first step would be to continue to populate the model with data from the S-1 filings of all the remaining companies. This data can be found on the U.S. Securities and Exchange Commission. Once this step is complete, the user can then create a way for the user to filter between sub-sectors of the industry. This would provide additional insight into the company of interest and better aide both investors and entrepreneurs.

The question introduced at the beginning of the report was as follows: *can data in the equity market be used as an instrument in helping both investors and entrepreneurs illuminate the dark box of private equity?* After understanding the background of private equity and the desired information of both investors and entrepreneurs, one is finally able to answer this question. This model is the answer through the utilization of the public equity data collected and could ultimately help investors and entrepreneurs make better decisions. With the use of this tool, the dark box of private equity seems slightly brighter.

VII. Appendix

Figure 1: Global private equity investments and global aggregate deal value (Q1 2006 – Q3 2014)

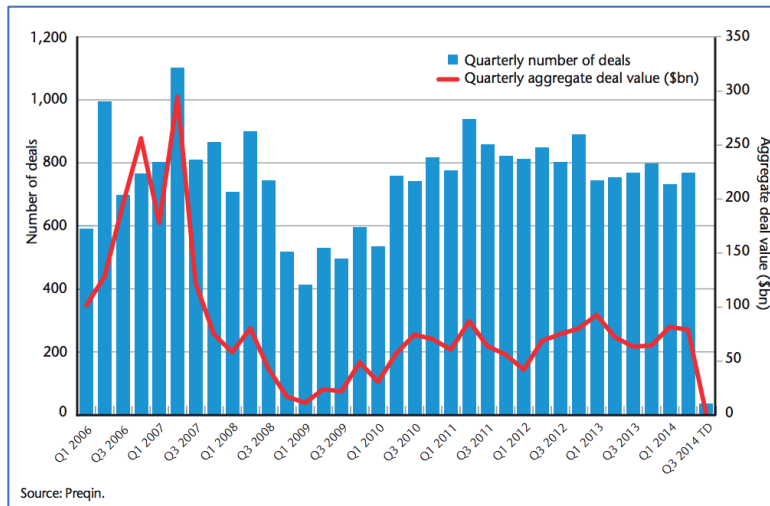
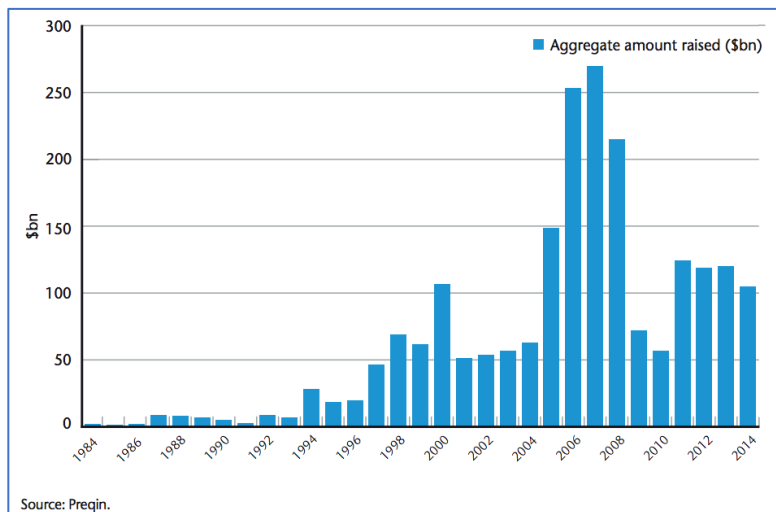


Figure 2: Global private equity funds raised (1984 – 2014)



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