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Assessing Financial Reporting Quality of Early Stage Private Companies

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Abstract

There are a variety of widely accepted methods that are used in order to evaluate the financial positioning of companies that are traded on stock exchanges. However, these methods that are common in the public markets do not suffice for assessing companies that are privately held. Attempting to devise an intrinsic value using anticipated cash flows is ineffective given that most companies are pre-revenue. Deriving a value based off of assets held is also inaccurate given that a young company will be in the process of capitalizing itself and more of its assets cannot be represented on a balance sheet, compared to public companies. Furthermore, the sheer lack of raw data provided by the companies in some cases can also contribute to pitfalls in valuation attempts. In addition, the lack of reliability of private companies' financial information makes the valuation of these companies difficult. This study aims to develop a framework to assess the financial reporting quality of these early stage private companies.

Keywords
Startup, Financial Reporting Quality, FRQ, Privately Held, Early Stage

Subject Categories
Accounting

ASSESSING FINANCIAL REPORTING QUALITY OF EARLY STAGE PRIVATE COMPANIES

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Introduction

There are a variety of widely accepted methods that are used in order to evaluate the financial positioning of companies that are traded on stock exchanges. However, these methods that are common in the public markets do not suffice for assessing companies that are privately held. Attempting to devise an intrinsic value using anticipated cash flows is ineffective given that most companies are pre-revenue. Deriving a value based off of assets held is also inaccurate given that a young company will be in the process of capitalizing itself and more of its assets cannot be represented on a balance sheet, compared to public companies. Furthermore, the sheer lack of raw data provided by the companies in some cases can also contribute to pitfalls in valuation attempts. In addition, the lack of reliability of private companies' financial information makes the valuation of these companies difficult. This study aims to develop a framework to assess the financial reporting quality of these early stage private companies

In order to assess the Financial Reporting Quality of startups, common methods were explored. Ultimately, the Modified Jones model, which is a regression based model, was selected. The Modified Jones model has been used in a variety of studies and has proven its efficacy when assessing the FRQ of publicly traded companies. The model accounts for the change in sales, average total assets, and gross PP&E, in order to determine the degree to which management is manipulating the company's performance.

In order to test the fit of the Modified Jones Model it was applied to a cross sectional sample of 17 New England startup companies. After the initial application, the results did not deem the model to be a solid fit, nor were the results statistically significant. Due to the nature of modern day startups, specifically in the fact that they do not have many physical assets, the GPP&E component of the model was removed. In place of the removed variable the change in

salary expense was included. This variable is believed to capture more of the natural growth of the business, and explain what portion of the net operating accruals is not due to management manipulation. After the contributions were made, and the variables adjusted, the model was run again with the same sample. The results were promising, a heavily enhanced Adjusted R Square value of .22 from .015 prior, furthermore the regression showed all variables were statistically significant.

The ultimate goal of this work is to identify additional financial metrics and accounts that will adjust the current methods used to assess Financial Reporting Quality in order to provide more consistent financial analysis for early stage investors. This is to be completed by researching trends in real startups in the greater New England area and identifying financial indicators and ratios that allow for a more comprehensive understanding of the position of the company. Any metrics identified will then be used to enhance the Modified Jones Model to improve its ability to assess the Financial Reporting Quality of early stage privately held companies.

Literature Review

To assist in identifying helpful financial metrics, the current literature in this field must be surveyed. Currently, there is a substantial amount of published works that pertain to the discrepancy in consistency between valuation methods in the private and public markets. Of these works, many focus on the practice of earnings management and its detrimental effects on financial reports. Others identify the variation in regulatory requirements and standards between the public and private sectors as the main driver of quality differences. Some researchers also argue that it is the sheer lack of available data from private companies that leads to inferior reporting quality. The objective of this literature review is to divulge any financial metrics that

have been identified by the academic community and have yet to be brought into widespread practice, as well as to identify difficulties experienced by other researchers, and to develop a foundational understanding of the driving forces behind the disparity in quality between public and private financial reports.

Division of Works

Many of the works published regarding the differences between public and private financial reporting quality (FRQ hereafter) have been published in *The Accounting Review, Contemporary Accounting Research, The Journal of Business Finance & Accounting,* and *Abacus.* These journals are all highly regarded in the field of accounting research and the articles selected are all pertinent to the objective of the thesis. For the ease of organization the journals reviewed have been divided into areas of main focus that are believed to have the predominant effect on FRQ and efficacy for valuation. The primary categories are the variation in regulatory environment, the lack of information available in the private sector, the degree of conservatism, the involvement and effect of third parties such as creditors and investors, and the manipulation of reports to depict certain financial performance.

Hope, Thomas, and Vyas (2013) focuses on the drastic differences in the financial reporting quality (FRQ) between public and private companies, with specific focus on the conservatism employed in the financial statements. They use a database of the financial reports from privately held US companies. To provide some perspective, the most recent U.S. Census Bureau showed that there are 29 million privately held companies in the United States, 7.6 million of which have paid employees, which represents roughly one-half of the nation's GDP. Although these numbers heavily surpass the 15,000 SEC registered companies in the US, the degree to which data is available is varied. This article's central argument, which is shared

among other researchers, is that the main driver behind quality differences in the financial reports is the lack of available information on the private side. Furthermore, in this study the researchers explored the diminishing effects of external pressures on public companies which materializes through practices such as earnings management and 'window-dressing'. Therefore, it is important to take a wholesome approach that accounts for the fundamental differences between the environments, specifically regulatory, in which the two types of companies operate and how it affects the financial reports.

There are specific accounting standards that are mandated by various regulatory agencies in the United States. The domestic standards are the Generally Accepted Accounting Principles (GAAP) which are set forth by the Financial Accounting Standards Board (FASB). The goal of GAAP is to provide an environment where public companies provide accurate, reliable, and comparable information on their financial performance. Along with the multitude of specific accounting rules and guidelines, there are also regulations regarding the restatement and amendment of existing financial statements. The Securities and Exchange Commission requires active disclosures of significant accounting corrections and methodology changes which would be disclosed in Form 8-K. Currently, all publicly traded companies in the United States are required to uphold stringent reporting standards in order to continue to source capital from the public equity markets. These requirements necessitate high FRQ scores for publicly traded companies due to the legal repercussions if they do not comply.

The fact that there are more stringent regulatory financial reporting standards in publicly-traded companies cannot be ignored when comparing it to private practices. Ball and Shivakumar (2005) investigated the earnings quality at the time of initial public offering. In their research the paradigm shifts when a company begins the steps to become a publicly traded entity leading to a

shift in the conservatism employed in the preparation of the financial statements (Ball, R., & Shivakumar, L 2008). It was noted that in general, FRQ suffered due to optimism when the company was privately held, but as the number of investors, particularly institutional, begins to increase the quality demanded of the financial statements will be enhanced. This is a somewhat self-explanatory finding, given that the financial statements are created in order to inform decision makers of the standing of the company, and the moment a company goes public the ownership interests in the entity will become less centralized. This research further demonstrates that the fundamental differences in the reporting standards between a private and public entity has a significant role on the overall quality of the financials.

Another key difference between private and public firms which is believed to have a significant impact on the validity of the financial reports is the reliance on debt by matured privately held companies in order to grow their businesses. Ding, Liu, and Wu (2016) examine the relationship between a private company's ability to fundraise debt and their financial reporting quality. Generally speaking, it was found that on average private firms would require some debt financing after obtaining early stage funding from more traditional venture and equity investors. However, the difference in the due diligence process between a creditor and an equity investor is believed to have an overall positive impact on the company's financial reporting quality. This is most likely due to a creditor's reliance on future cash flows and limited upside potential in the contractual agreement, when compared to the potential unlimited gains of an equity investor. This difference leads banks and other traditional lenders to demand more detailed financial statements which can more accurately capture future cash flow generating ability. The stage at which an early stage company begins to seek debt capital therefore marks one of the major moments in which the lack of available information begins to be remedied.

Furthermore, the quality of the financial statements is generally observed to increase from the stages of debt capital to an eventual IPO, with the only remaining major change to be the shift in the conservatism of the financials (Ball and Shivakumar 2008).

Financial statements are generally depicted in a conservative manner, mainly to avoid leading users into false expectations of over-performance. However, it has been noted that when companies are in their earlier stages, the financial reporting is generally more optimistic than when they are more mature. Whether this is a malicious attempt to mislead investors, a lack of historical data to project more realistic results, or entrepreneurs' over-confidence is debated across many mediums, but it is commonly accepted that the financial statements of these companies improve in their reliability and conservatism as they mature. One of the major moments that is believed to have a major developmental influence on these companies is the monitoring and structural support of Venture Capital (VC) investors.

Wongsunwai (2012) investigates the involvement of VC firms and their influence on the financial reporting quality. Similarly to the effect of external creditors, the involvement of VC firms was found to contribute to higher FRQ. Specifically this paper found that VC-backed firms at the time of IPO had less abnormal accruals and less number of incorrect applications in accounting practices. These findings, when contrasted to higher occurrences of earnings management in non VC-backed entities, demonstrate that the involvement of VC firms leads to improvements in the accounting practices of privately held companies. An important distinction made in this research is that there may be an incentive for VC firms to allow improper accounting practices in order to increase personal gains in a portfolio company at the expiration of the lockup period, in which the ownership interest of the VC firm becomes liquid. In order to assess this, Wongsunwai (2012) divide VC firms into quartiles based on reputation and the

financial performance of newly IPO companies was analyzed to identify areas where earnings management was most likely to have occurred. Companies backed by low quality VCs were found to have negative returns if the stock was held for three years after the lock up period, while on the other hand the top VC backed companies and non VC backed companies had a positive return of the same magnitude. These results suggest that the low tier VC backed companies may have been allowed to manage their earnings more directly which led to a higher sales price for the VC but a lower return for longer term investors. On the other hand, the high quality VC backed firms yielded positive returns for longer term investors, which suggests that the VC firms may have promoted higher quality accounting practices in order to prevent inflated stock prices at the end of the lockout period. Overall, the literature shows that the involvement of both high-quality VC firms and conventional lenders enhances financial reporting quality in private companies.

There are many works that have been completed with a focus on the differences in private and public accounting with respect to FRQ on an international setting. For the most part in this review, these works have been subordinated to pieces that researched domestic companies. This is due to the fact that the US accounting standards (GAAP) are different from the standards used in most of the remainder of the world, which is International Financial Reporting Standards (IFRS). Furthermore, the laws and regulatory environment for small businesses can be drastically different across international borders, so in an effort to reduce incomparability that may adversely affect research results, the focus has been put on only US companies. However, many articles that have been published that focus on private companies and reporting quality still provide valuable insight for the development of this research. Chen, Hope, Li, and Wang (2011) investigates whether high-quality accounting information is more

mitigating to information asymmetry for private firms when they are in need of external

financing and whether private firms' investment efficiency is more sensitive to FRQ when these

firms seek financing from banks versus equity capital. Their paper confirms prior findings that

financial reporting quality is lower in private firms than in public ones. Furthermore, they found

that this relationship is unaffected by whether companies are international, and identified that the

FRQ has a direct effect on the investment efficiency for private companies and holds true for

ones seeking capital in both emerging and domestic markets.

Common Themes in Literature

Through the many articles focusing on financial reporting quality in private firms there

are a few common methods that are applied. There is an arbitrary aspect of selecting what

method may be the most suitable for assessing FRQ in a company, and often many different

approaches are aggregated in order to improve efficacy. The use of performance-adjusted

discretionary accruals as well as tracking drastic changes in accruals was developed by Kothari

et al. (2005), and is one of the more common methods used when attempting to assign a value to

gauge a company's financials accuracy (Chen, Hope, Li, and Wang 2011). Another method is the

assessment of estimates and discretionary revenues, which can be accomplished through Account

Receivable testing and monitoring as used in McNichols and Stubben (2008). This method is

difficult to use to assess the FRQ of early stage companies due to misclassification risk and

inconsistent accounting practices used by founders. Another method is the analysis of the

frequency of previously-issued financial statements being restated. However, restatement data is

only applicable to publicly traded companies and would limit to around a company's IPO in this

research (Wongsunwai 2012). It is most likely that these misstatements are indicative of earnings

management or a deficiency in the financial reporting system of the company. Therefore, with

the variety of approaches considered, analyzing performance-adjusted accruals is the most promising method when being implemented on early stage companies.

Many of the works in this field argue that the lack of a strong regulatory institution leads private companies to provide minimal information. Other articles focus more on the positive role that banks and third party investors, mainly venture capital firms, have on the FRQ of private companies. On the other hand, some researchers cite the involvement of VC firms to be detrimental to the FRQ of private companies due to the potential that they may be incentivized to compromise accuracy in favor of enhanced investment returns.

In order to complement the existing research, the pro forma financials of early stage companies can be aggregated in a similar fashion to those of more mature privately held companies, and similar methods of assessing FRQ can be applied. Among the various methods used to assess performance-adjusted accruals is the Modified Jones Model. The Modified Jones Model is considered one of the standard approaches for measuring FRQ, and due to its flexibility, combined with the weakness of the other approaches when applied to startups, it was selected.

Furthermore, once the overall accuracy of the financials of the startup companies is assessed through modified versions of the FRQ methods then the process can be adapted in order to value the underlying companies as well. There are many current methods, which are all subjective, that are used to value early stage privately held companies. If the financials are confirmed to be accurate then the current valuation methods can be more confidently employed by early stage investors If this process becomes more standardized, then startup companies will gain more positive enforcement to maintain their financial reporting quality which in turn would likely lead to long term benefits through enhanced organization and investment efficiency.

The Modified Jones Model - Overview

The Model

Exhibit 1: The Modified Jones Model

$$\frac{Net\ Operating\ Accruals}{Average\ Total\ Assets_{t-1}} = \beta_0 + \beta_1\left(\frac{1}{ATA_{t-1}}\right) + \beta_2\left(\frac{\Delta Sales - \Delta Rec}{ATA_{t-1}}\right) + \beta_3\left(\frac{GPPE}{ATA_{t-1}}\right) + \varepsilon$$

*Net Operating Accruals is the Net Income with the operating cash flow subtracted.

The Modified Jones model is a regression based model that is a derivative from the

Dechow et al. model that was created in the 1990's. The model regresses the total net accruals

(or net operating accruals), which is derived from removing the operating cash flows from net

income, on variables which measure the actual change in companies' performance, considered as

nondiscretionary. Some of these variables commonly include average total assets, change in

sales, change in accounts receivable, and the gross PP&E value for the company. Therefore the

residuals of this model are considered as the portion of accruals subject to the discretion of

management. The residuals are commonly referred as discretionary accruals. The higher the

discretionary accruals, the lower the financial reporting quality.

Average Total Assets

Throughout the model the different coefficients will need to be scaled by the overall

average total assets. In addition, the first item in the regression will be the average total assets,

this is because the overall size of the firm will have a direct relationship on financial reporting

quality. Generally speaking, the larger the firm, the less the effect discretionary accruals will

have on the overall financial performance of the company and therefore the financial reporting

quality will be higher. This is an important point to identify because the firms that will be

analyzed using the model will be startups and other young companies which will have minimal

assets as they are just getting started.

Change in Sales

The overall level of sales will implicitly affect the overall levels of the other factors

identified in the model and a high sales growth rate, especially growth in credit sales, can be

indicative of an increased likelihood for lesser financial reporting quality (Kothari et al. 2005).

High credit sales growth rate is generally due to burgeoning use of credits granted to customers

and the assessment on the credit worthiness of these customers in order to expand the company.

Due to this, this metric will be closely watched during the testing of startup companies which

tend to experience more explosive growth than the more mature companies that the model tends

to be applied to. There are a few important considerations when evaluating the importance of

changes in sales to the perspective of the evaluation of FRQ. The model will be sensitive to the

volatility of sales growth and will yield unfavorable FRQ values for companies that have more

unsteady sales, which is more common in younger companies, than for companies with recurring

revenue.

Gross Property, Plant, and Equipment

The last independent variable, gross PP&E, is a measure of a company capital

expenditure. This metric is to show as a company grows and invests more on capital expenditure,

net operating accruals grow proportionally and the growth in the net operating accruals is not due

to the manipulation of accruals by management. This variable does not include depreciation

because depreciation can be manipulated by the discretion of management. Therefore, the PP&E,

scaled by average total assets, is an indicator of capital spending and does not include the

adjustments made at the discretion of management in the form of depreciation. This metric may

be of the least value in the original model in this study due to the fact that most startup and

young companies operate with lean organizational and productive structures and rarely have extensive equipment or hard assets.

Applying the Model – Important Considerations

Time Series vs. Cross Sectional Data Selection

When assessing financial reporting quality through the use of the Modified Jones model to measure accruals, one can estimate the model using either time series data or cross sectional data. In the case of time series data, the model is estimated for each company over a set number of operative years. This means that it is required for the company to have existed and yielded the necessary operating variables for a substantial number of years in order to ensure a reliable regression result. This generally is not a stumbling block for public companies, which many have existed and have well documented histories that span decades. In the case of startup companies however, the opposite is true. It is commonplace for startup companies to have inconsistent record keeping in their initial years and generally will not have more than 3-5 years of documented operations. Therefore, the time series analysis approach will not be viable to use with startup companies due to the fact that they do not possess an adequate number of observations and would not produce reliable regression results.

To estimate the Modified Jones model for startup companies, this study uses cross sectional data. This means that the model is estimated for each year by using numerous startup companies in that sector. One potential caveat to this approach would be an introduction of error due to the heavy variation from start up to start up. The drastic differences are caused by qualitative factors such as competency of the founding team and can also be significantly altered by variations between niche strategies. Despite this caveat, pursuing a cross sectional approach is

essentially the only viable method given that most startups only have one or two years of operating results, which effectively prevents the use of a time series approach.

Application of the Model

Overview of Procedure

In assessing the financial reporting quality of early stage companies, the Modified Jones model was applied to a collection of companies that are primarily pre-series A and seed stage startup companies. Series A is a stage in private equity funding where the first institutional investors get involved and begin to raise upwards of $10 million to grow the business. These companies were collected through a combination of sources but primarily through companies that have pitched to the Mel Rines Student Angel Investment Fund, or commonly referred to as Rines Angel Fund. The Rines Angel Fund is a cross-disciplinary, undergraduate, student-run angel investment fund that allows students at the University of New Hampshire (Durham) to learn angel and venture capital investment strategies through the first-hand experience of co-investing in start-up companies. Additional companies and information was collected through the Center of Venture Research at the University of New Hampshire as well as through online public sources (such as bplans.com).

Some of these start-up companies have pro formas with 2-5 years of combined actual and projected numbers. Other startups only have 2-3 years of performance projected as these companies pivot and change their business model in the early stages which leads to unpredictability of future financial results. This fact is one of the main reasons that the process for assessing the financial reporting quality of early stage companies is more difficult than for older more established companies. The process is initially started by determining the dependent variable which is Net Operating Accruals.

$$Net\ Operating\ Accruals = Net\ Income - Cash\ Flow\ from\ Operations$$

The NOA will serve as the dependent variable for the regression of the model, because the main point is to determine how the other variables, such as changes in cash sales and total assets, affects the total accruals of the company. Once the NOA has been found the necessary inputs into the base model must be calculated. The base inputs for the modified Jones model are the average total assets (β_1), the change in cash sales (β_2), and the gross property, plant and equipment (β_3).

All of these variables are divided by the lagged average total assets of the company before being regressed against the net operating accruals. It is important to note that the requirement of one lagged year of average total assets necessitated starting with the second year of operations so that all variables could be fulfilled in the model. Furthermore, due to the nature of startups omitting accounting information, particularly in their first year of operations, this also contributed to the decision to use second year financial projections. Another important consideration to not using first year operating results is that the high degree of variability in performance would likely skew results. In the case of taking 17 startup companies and regressing them to their net operating accruals for the years 2014-2015 the following results were yielded. The Adjusted R Squared of .015 does not indicate that the model is a good fit for the data, and the P-Values do not indicate statistical significance. The results of the regression can be seen below.

Exhibit 2: Regression Results with Unadjusted Model.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.447112054
R Square	0.199909189
Adjusted R Squ	0.015272848
Standard Error	4.591648534
Observations	17

ANOVA

	df	SS	MS	F	Significance F
Regression	3	68.4816321	22.82721	1.082719	0.390793228
Residual	13	274.0820714	21.08324		
Total	16	342.5637035			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-5.679687422	1.978137716	-2.87123	0.013112	-9.953194141	-1.406180703	-9.953194141	-1.406180703
TA	71767.51322	111934.7346	0.641155	0.532563	-170052.7791	313587.8055	-170052.7791	313587.8055
sales	0.109002974	0.130389838	0.835978	0.418269	-0.172687146	0.390693094	-0.172687146	0.390693094
ppe	6.751970116	3.971734518	1.700005	0.112915	-1.828440647	15.33238088	-1.828440647	15.33238088

With the coefficients for the independent variables (TA, Cash Sales, and PP&E) identified one could solve for the discretionary accruals which are depicted as the error term at the end of the formula. The three factors that are put into the model are representative of a company's performance that affect a company's net operating accruals and are not due to management manipulation. The explained portion of the model is therefore the discretionary accruals, which can then be subtracted from the net operating accruals to find the discretionary accruals.

$$Discretionary\ Operating\ Accruals = Net\ Operating\ Accruals - Nondiscretionary\ Accruals$$

The value that is ultimately found for the discretionary operating accruals can then be compared to industry averages or other comparable companies in order to determine relative financial reporting quality.

Contributions and Analysis of Results

Dealing with the lack of information

Throughout the majority of financial statements prepared by startup companies, one of the most apparent issues in the process of assessing FRQ is caused by the generalization of accounts. Specifically, this is the classification of assets between cash and only other assets, by doing this the actual amount of accounts receivable is indistinguishable from the other possible assets. Another account that is commonly disregarded or improperly reported is the PP&E account. In many early financial statements it appears as though founders and management teams classify equipment as either inventory or it is aggregated into a general account like "other assets." These errors are largely a result of unsophisticated users preparing financial statements, and inhibits the use of the Modified Jones Model when assessing FRQ, and will also predicate a low FRQ score overall. Therefore, when a founder is compiling their financial statements there are certain distinguished categories, such as separating accounts receivable from other assets, which are critical in assessing financial reporting quality and must be adequately separated.

The outright omission of accounting information inhibits the ability to measure financial reporting quality through testing discretionary accruals in a company. Therefore, the proper separation of a company's assets into the correct accounts is necessary in order to obtain a correct image of financial reporting quality. This also means that by default the financial reporting quality of an entity that reports all the required information will have a more favorable FRQ score than a company that may pool one of the variables into a general account.

Issues with Statistical Significance

An issue that is apparent with applying the Modified Jones Model to startup companies is that the P values for the non-discretionary variables do not indicate statistical significance, with all values above the .05 significance threshold. This may be caused by the sporadic omission of some of the variables across the sample of startups taken or could be the result of varying optimism in projected years between companies (or in other words the conservatism employed when the financial statements were created by founders).

This could also mean that this specific approach of determining discretionary accruals is not as affective in assessing the FRQ in startup companies, suggesting that other methods would be necessary or that additional factors are needed in order to improve the model's specification. One shortcoming of the method used was the simple calculation of total accruals by manipulating net income. In the case in which a company has more detailed financial statements, then a more complex calculation of total net accruals can be used. The more specific equation breaks down the cash flows of the company in order to more accurately depict the effect of cash inflows and outflows, and is shown below.

$$Total\ Net\ Accruals = Net\ Income - \Delta Cash - Cash\ Dividends - Stock\ Repurchases + Equity\ Issuance$$

However, the ability to use the equation above is unlikely given that startup companies struggle with asset class specification. This means that the process of breaking down net accruals more specifically is likely inferior to the method of removing aggregate operating cash flows from net income, due to the common issue of missing accounts from startup financials.

The Removal of Property, Plant, & Equipment

Out of the three variables that were already identified in the model, the inclusion of

Property, Plant, & Equipment was the variable that coincided the least with the sample of startup

companies. This is likely a result of the fact that many of the startup companies in the sample, as

well as in existence today, are "asset light". The majority of early stage companies are in the

technology and biomedical sectors, and neither of which require the production of a physical

product which contributes to low or nonexistent PP&E accounts.

Another reason to omit PP&E from the model is due to the suspicion that many startups

misclassify other asset accounts as PP&E, or vice versa. This is an understandable mistake for a

user who is unfamiliar with the differentiating factors between PP&E and other assets, however

it still severely inhibits the usefulness of PP&E as a gauge of FRQ. Therefore, PP&E was

removed from the model, due to the lack of relevancy when being implemented on startup

companies as well as the common misclassification of the asset due to inexperienced or

unsophisticated users preparing financial statements.

Salary expense as an additional factor

Due to the unique positioning of startup companies, specifically the fact that there are

mass inconsistencies across financial statements combined with significant skepticism around the

legitimacy of projected earnings, there is an opportunity to increase the precision of the Modified

Jones Model through adding another variable. Now given that lack of information, and poor

separation of proper accounts is rampant, the account must be a simple one as well as a readily

available one at the early stages in a company. The most reasonable variable to add to the model

would be salary expense.

In theory, during the earliest stages of a company the salary expense will be only to compensate the founder and his management team. In many situations the founder, and members of the team, will not take a salary and instead forgo it for stock options or other types of compensation. This practice, which is common, leads to end of the year corrections to salary expense during the cases in which founders forego their compensation, which is exemplary of the account's flexible nature. Additionally, salary expense as a whole is sometimes subject to rapid changes as the economic performance of the company is relatively volatile during early stages. Salary expense is also one of the most straightforward expense accounts, which means that company founders who may not possess accounting backgrounds will still be able to logically calculate it on prepared financials, which means it will rarely be omitted. Because salary expense is indicative of the growth and performance of startups, including it in the model further controlled for the portion of the net operating accruals which are not due to management manipulation of financial information.

It is important to note that some companies identify salary expense as a single line item while others break it into separate accounts (for example marketing payroll, administrative payroll, etc). In order to include the effects of salary expense the payroll accounts were aggregated for each of the original 17 companies that were analyzed. The regression was re-run without PP&E and with salary expense scaled by lagged total assets.

As one can see the Adjusted R Squared increased from .015 to .22, which is a significant increase in the correlative relationship between the variables and the overall fit of the model to the data. The most noteworthy change is the shift of the P-values which were previously statistically insignificant. Now, after the addition of salary expense into the model and the removal of PP&E, the P-values for all of the variables now indicate statistical significance.

Exhibit 3: Regression Results with Contributions to Model.

SUMMARY OUTPUT

Regression Statistics			Coefficients	Standard Error	P-value
Multiple R	0.600	Intercept	-3.092	1.380	0.042
R Square	0.360	TA	247173.9	113812.73	0.048
Adjusted R Squ	0.223	sales	1.159	0.431	0.018
Standard Error	4.046	Salary Exp	-2.668	1.003	0.019
Observations	17				

From these initial results one can conclude that the inclusion of salary expense is an enhancement to the Modified Jones Model. The removal of PP&E is also a positive contribution to the model, mainly due to the lack of relevance to modern day startups.

Concluding Thoughts

Summary of Results

The Modified Jones Model, although initially showing marginal results when applied to startup companies, can be adjusted to properly assess FRQ. The removal of PP&E from the model due to the sporadic omission of the account from startup financials, as well as the common misclassification of the account, enhanced the model's efficacy. Furthermore, the inclusion of Salary Expense in the model in the place of PP&E proved to be a more accurate indicator of the companies standing and a better variable to assess FRQ. Salary expense was selected due to the frequent inclusion of it in startup financials, the accounts straightforwardness which in theory will lead to less error in reporting, and the flexible nature of the account. After the two contributions were factored into the model, the coefficient estimates in the model become significant, and multiple R values also improved. This exemplifies that the Modified

Jones Model, a tool originally designed to be used on publicly traded enterprises, can be adjusted in order to assess early stage privately held companies.

Exhibit 4: Modified Jones Model with Contributions.

$$\frac{Net\ Operating\ Accruals}{Average\ Total\ Assets_{t-1}}$$
$$= \beta_0 + \beta_1 \left(\frac{1}{ATA_{t-1}}\right) + \beta_2 \left(\frac{\Delta Sales - \Delta Rec}{ATA_{t-1}}\right) + \beta_3 \left(\frac{\Delta Sal.\ Exp}{ATA_{t-1}}\right) + \varepsilon$$

Further Research and Future Uses

The application of the Modified Jones Model to a cross sectional sample of startups originally yielded unfavorable results. An Adjusted R Squared value of .015 and an absence of significant P-values indicated the model was a poor fit. After some contextual consideration the gross PP&E variable in the model was removed and the change in salary expense was added. The addition of salary expense was due to the concept that it demonstrates the growth and performance of startups, and including it in the model provided further control for the portion of the net operating accruals which are not due to management manipulation. Gross PP&E was removed to accommodate the fact that most startup companies either do not have significant plant and equipment assets or founders are unable to effectively divide asset classes (such as inventory and equipment). After the two adjustments were made and the model was rerun with the same sample, the results improved significantly. The Adjusted R Squared value increase to .22 and all of the P-values indicate statistical significance.

This model, and the adjustments made, ultimately must be assessed by applying the regression to a larger sample of companies to see if the enhancement persists, and if so it may be held in consideration as a permanent addition to the model when being applied to early stage companies. The novel introduction of the model being used to assess early stage private

companies will likely lead to experimentation with other variable adjustments, which may further enhance the effectiveness in deriving FRQ.

One important indication, especially when dealing with startup companies, is that there is a high degree of variation among them. This means that the "one size fits all" approach that is commonly carried with models may prove problematic when attempting to assess startups. Any two startup companies could have significantly different operating results and business operations, which means that adjustments to this model may be necessary depending on the sector being analyzed. An example of this kind of alteration was the removal of PP&E due to the sample being largely technology, software as a service, and biomedical companies which do not frequently have many real assets. This adjustment makes sense given the sample of companies, which shows that there is an amount of needed fine-tuning depending on the sector, and its characteristics, that the model is being applied to.

Now that the model can effectively assess FRQ, the ideal expansion of this concept would be to use FRQ as a means to quantitatively rank a startups financial position, as well as the financial prowess of the founder. This would service the need for standardization in the process of assessing a startups financial positon. Currently, the alternative is relatively weak due to the arbitrary nature of valuation methods for startups and reliance on forecasted growth rates, which upon changing will drastically alter any projections. Therefore, assessing the company on its ability to create accurate and representative financial statements will allow investors to assess both the standing of the company as well as the ability of the founder to create financial statements. This will help validate any valuation attempts that are done, and a high FRQ will likely allow a startup to obtain additional funding, whether from venture or debtors, at more favorable rates or on enhanced terms. All in all, the ability to provide some support to the

projections of startup companies, as well as their current financial standing, could have massive

implementations in helping solve the lack of standardization in the early stage private equity

market.

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