MASTER LIMITED PARTNERSHIPS:

A NON-PARAMETRIC EXAMINATION TO FIND AN INCENTIVE FOR FORMATION

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Abstract:

Over the last half century Master Limited Partnerships, MLPs, have provided investors with a unique investment opportunity. This type of business structure has become increasingly popular within industries of low growth and sufficient continuous cash flow with the majority of them residing within the oil and gas industry. In order to maintain their MLP status these organizations are required to report 90% of their revenue from transporting some type of natural resource. MLPs are unique in that they are registered as limited partnerships while also having a portion of their units publicly traded. This puts them in a similar category as corporate stock while avoiding the double taxation consequences suffered by dividend recipients. So why is it that not all eligible companies choose this particular structure and are there any other benefits in conjunction to tax minimization? Within this paper we conduct a non-parametric analysis to decipher what, if any, benefits MLPs might have in comparison to their corporate counterparts.

Section I: Historical Context

The MLP structure was created in the early 1980s and redefined with the Tax Reform Act of 1986 and the Revenue Act of 1987. The first MLP was Apache Petroleum Company, formed in 1981 from the consolidation of 33 oil and gas operations from Apache Corporation. Soon after, there was an influx of MLPs in the market place from various industries including restaurants, investment advisors, and even entertainment including the Boston Celtics. Since 1995, the number of MLPs created has increased annually, though many of the partnerships have either gone out of business or been acquired. As of 2010, there were approximately 72 publicly traded MLPs. Figure 1 shows the number of publicly traded MLPs since 1995.

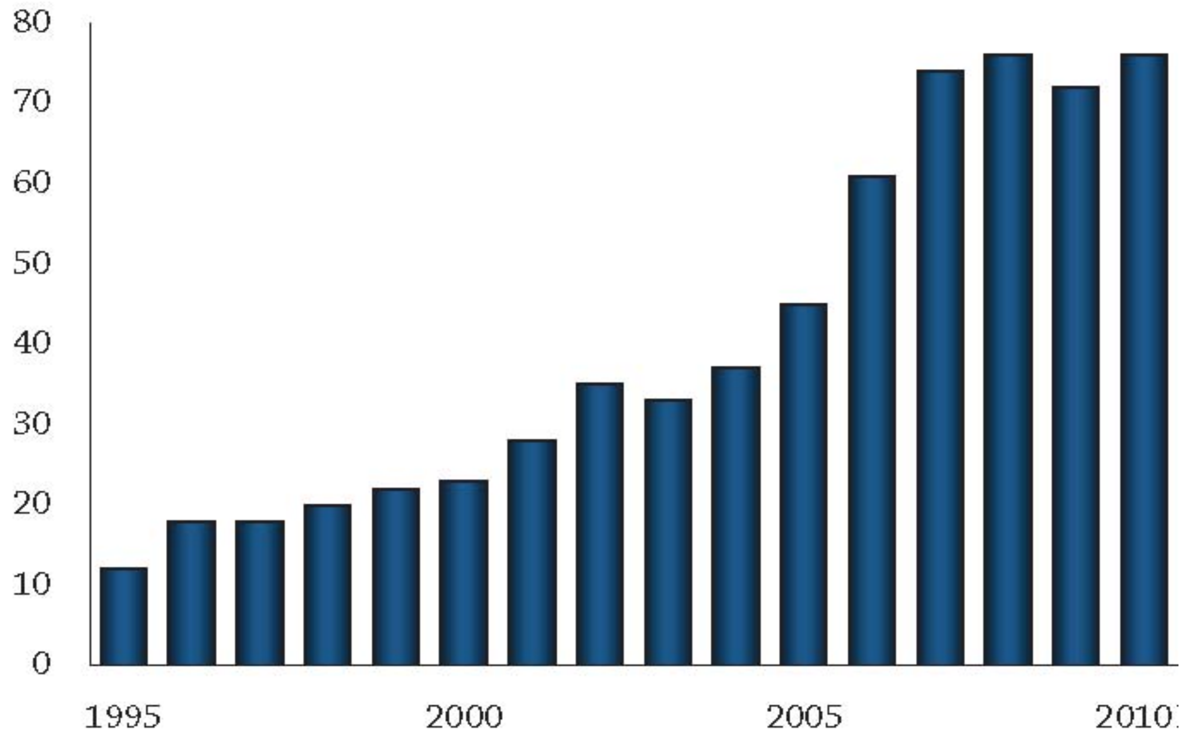

Figure 1: Publicly Traded MLPs (Source: SteelPath Fund Advisors, 2010)

Since the Tax Reform Act of 1986 and the Revenue Act of 1987 eliminated the special tax status for all except those engaged in natural resource activities, the majority of MLPs are in the Energy Sector. As of 2008, 76% of listed MLPs were in that sector, as shown in Figure 2.

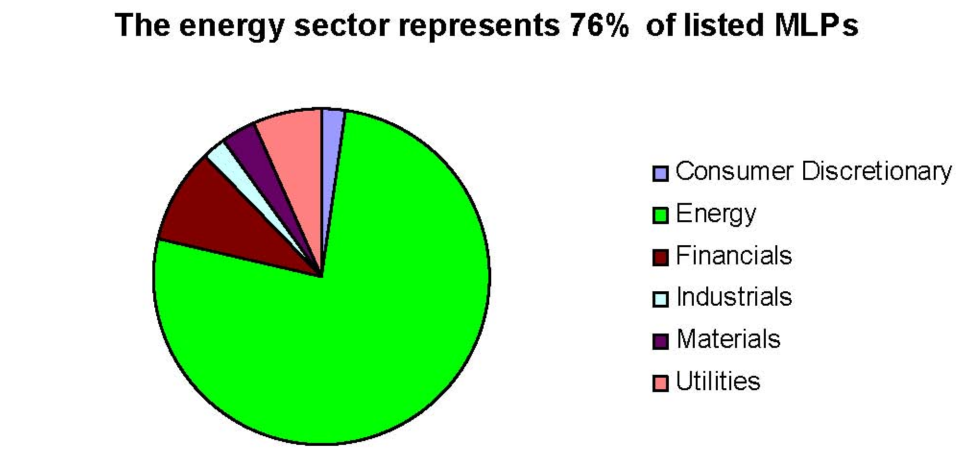

Figure 2: Breakdown of MLPs by Industry (Source: Standard & Poor's Master Limited Partnerships - A Primer (2008))

Most MLPs are owned by individuals, largely because until recently mutual funds were restricted in their ability to invest in them. With the passage of the American Jobs Creation Act in October 2004, mutual funds can now own MLPs, though no more than 25% of a fund's assets can be invested in MLPs and a fund may not own more than 10% of any one MLP. Tax-exempt investment vehicles such as pensions and endowments are restricted from owning MLP units because the income is considered to be earned from business activities unrelated to the entity's tax-exempt purpose. If that type of income exceeds $1,000, the entity may be liable for tax on the income. Figure 3 shows a breakdown of MLP investor base from 2005. As you can see Retail Ownership comprises the largest portion of MLP ownership, 55.3%, while General Partner Ownership makes up the second largest investor base. We will further discuss the role of general partners in the next section.

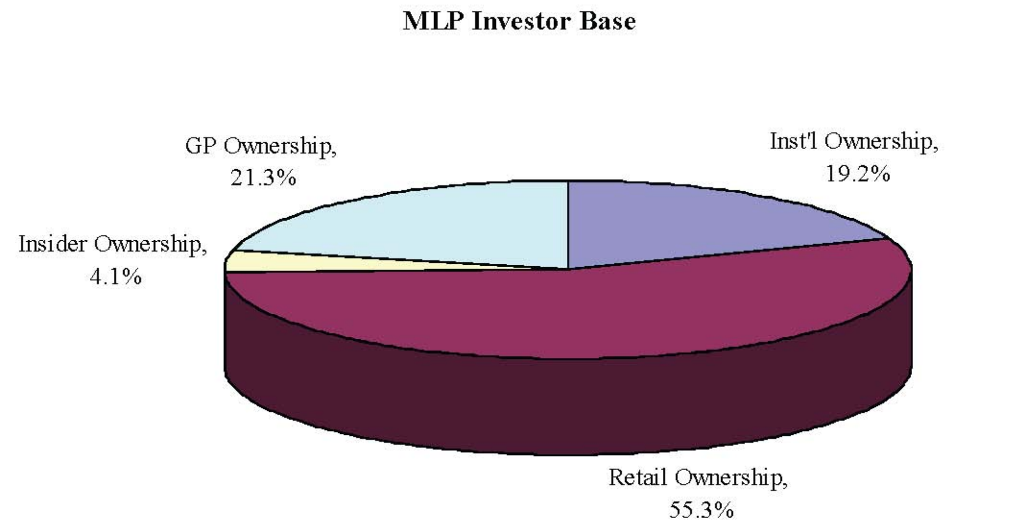

Figure 3: MLP Investors (Source: Wachovia Capital Markets, 2005)

Section II: MLPs as Limited Partnerships

Partnerships are referred to as "pass-through entities," which basically references how the revenues, gains, and losses are distributed amongst the ownership and also the tax regulation regarding these specific entities. As mentioned before, the financial responsibilities of the partners within a partnership are distributed according to the designated partner status and the proportion of ownership they have invested within the firm. This being so, a primary reason for investors to consider partnerships as an investment vehicle is often the tax benefits from such an entity. Because these particular structures pass their revenues directly on to the investor there is no taxation at the corporate level. Rather the revenues are reported on their individual tax return and thus taxed at their personal tax rate. Compare this to dividends investors typically receive as a distribution of the earnings on the corporation they are invested in which are taxed at a preferential rate, currently 15%. Now, considering that personal tax rates are typically higher than 15%, one might ask how partnerships are perceived to have a tax benefit. The reason for this is that prior to the dividends being distributed to investors, the revenue they are derived from is initially taxed as earnings to the corporation. Once the corporation has paid taxes on its earnings, and thus diminished them accordingly, the dividends are distributed to the investors and once again taxed at a rate of 15% Of course this double taxation is obsolete if the corporate tax rate and individual tax rate as well. So walking through the process again in chronological order, dividends are taxed initially as earning to the corporation and then as dividends to the individual investors, whereas distributions from a partnership are taxed only as personal income to the investor; this process is referred to as double taxation of dividends.

As mentioned before, MLPs are established as limited partnerships which have slightly different characteristics than traditional partnerships. Within limited partnerships there are two types of partners, general and limited. The general partner typically runs the day-to-day operations of the business and is part of any major financial, business, or strategic decision. With such responsibility comes greater reward as general partners normally have a higher stake in the profits of the company and thus receive more revenue. However, along with these specific duties the general partner assumes primary liability in regards to the partnership's debt and financial obligations; should the partnership be unable to keep up with its financial responsibilities then the creditors, in most cases, can go after the general partners in order to settle the debt. Limited partners, on the other hand, as depicted in their designation, have limited liability for the financial obligations of the partnership should it default. These partners are only responsible for the proportionate amount they hold within the firm and nothing more. They are not actively involved in the day-to-day operations of the business nor the financial decisions or any other major decision making within the business. Essentially the people that typically assume this type of responsibility are investors seeking some percentage return from their investment. Even still the distributions from the partnership might not produce any gain from a taxation standpoint if they are not greater than the investors' adjusted basis within the partnership.

The adjusted basis is essentially the stake an investor holds within the partnership's distributions and overall ownership. It is determined by the value of property, debt, or cash contributed to the entity in exchange for Units. If the partner contributes cash to the partnership through purchasing Units, the partner's basis is the amount of cash paid plus the nonrecourse liabilities of the partnership. Non-recourse debt in this situation would be a loan obligation that is secured by collateral, typically property held by the partnership. This particular form of debt restricts the lender from pursuing additional funds greater than the value of property seized. Determining the adjusted basis if property, rather than cash, is contributed can be a little bit more difficult. The basis in this particular scenario would be the sum of three things: the contributing partner's adjusted basis in the contributed property at the time of contribution, money contributed by the partner, and the contributor's share of the partnership liabilities. However, this basis will increase by the amount of liabilities the contributor retains that is associated with the contributed property and their share of any other liabilities held within the partnership. Because the partner has contributed property in exchange for ownership in the firm, his adjusted basis will decrease by any amount of non-recourse debt held by the firm, opposite that of a partner who contributed cash. Although MLPs retain the basic characteristics of a limited partnership, there is another key feature that makes them unique from other entities.

MLPs offer a third option by which investors can participate in the distributions; the Units of MLPs have the capability of also being traded on exchanges similar to stock. This makes the Units more liquid and accessible to investors. Although they can be traded on the same exchanges as stock, and treated in a similar manner, if the partners choose this route they are required to follow all the necessary listing requirements established by the exchange. This can restrict companies from being able to file as an MLP because there are often minimum restrictions based on amount of revenue, number of investors, and also filing requirements that might turn out to be too expensive for smaller companies. In addition to following the listing requirements established by certain exchanges, the Revenue Act of 1986 further restricted the type of companies that can register as an MLP.

Section III: Structural Features and Reasons for Choosing MLP Form

Along with the issue of MLP Units being publicly traded there arises an issue that is referred to as “fungability.” This particular issue refers to how similar the Units of both the general partner and limited partner are so as to place the Unitholder in a similar economic and tax position regardless of the Unit they hold. There are several different sources by which this issue could arise from. Units could be distributed upon exercise of an option, conversion of debt held by the MLP, or vesting of a residual interest. In any of these particular scenarios, each of the units will have equal capital accounts. Another source of non-uniformity could exist with disproportionate distributions and allocation of such distributions. Typically the cash distributions for publicly-traded Units are prioritized to a specified level over other Units. Once, or if, the other subordinate units forgo their cash distributions their capital accounts will grow correspondingly. New Jersey Law and Business proposes several different options that could be considered to offset this non-uniformity (#3). Unrealized appreciation could be recognized on the assets of the partner holding subordinated Units; however, this could cause some tax implications for that particular partner. A similar solution is to recognize an allocation of unrealized gain on the capital accounts. A more practical approach would be for the subordinated Units to receive "catch-up" distributions that would balance out the capital accounts of the two different types of Units. The one final approach that is often taken advantage of produces what are commonly referred to as "incentive distribution rights." In this particular scenario the partnership distributes additional Units to partners with excess capital accounts. The number of units distributed is determined by the balance in each partner's capital account divided by the trading price of such Units on the distribution date. Typically this approach is used by the Sponsoring firm in order to rapidly gain market share of the partnership and plays an important role in determining the distribution levels of a partnership.

There are four approaches companies typically take when forming an MLP: dropdown, rollup, acquisition, and liquidation. In the dropdown method, the sponsoring company ("Sponsor") contributes assets in order to form a new limited partnership. In exchange for its contribution, the Sponsor receives a general partner's interest in the partnership and additional limited partner interests. These limited partner interests are sold in an initial public offering where secondary market investors have the opportunity to purchase them. These interests are referred to as "units" within legal documentation. If the units are sold by the Sponsor to the public the transaction will be deemed a 'secondary" offering and is taxable event in that the Sponsor's profits from the sale of MLP units are taxed to the Sponsor. If, however, the units are sold by the MLP to the public then this event would be deemed a "primary" offering and classified as a nontaxable event. This particular type of transaction allows the Sponsor the opportunity to enhance the valuation of its stock, raise equity capital, and retire debt incurred by the company. The Sponsor does this all by acquiring debt to purchase assets and form new operations and then transferring such assets and ultimate liability of debt to the MLP in exchange for units. This essentially eliminates the debt that would otherwise be on the Sponsor's balance sheet and allows the Sponsor to therefore raise more equity capital for other projects. Considering that the MLP's revenues will be transferred directly to the Sponsor for its general partner stake, as well as limited partners, those distributions can be used by the Sponsoring firm to then pay off the debt originally incurred in forming the MLP.

A second type of formation is classified as the rollup method. This particular method involves a number of limited partnerships that come together as a group in order to form one separate MLP. Each participant contributes assets to the MLP in exchange for units and in some instances this action results in the ultimate liquidation of the contributing partnerships. Another option for partnerships that want to contribute to the MLP, is that the MLP may simply tender their interests in exchange for units. Either way this particular method provides greater risk reduction and diversification for the firms contributing to the MLP as well as investor liquidity with the ability for units to be traded on exchanges. Once again it provides greater access to equity capital for partnerships that contribute assets but don't liquidate entirely.

As opposed to acquiring an entire firm, there is another structural approach by which an MLP can be formed in acquiring assets from a third party (the acquisition method of forming an MLP). In this particular method the Sponsor forms an MLP initially and sells the limited partnership units obtained to the public. The proceeds from this sale are then used by the MLP in order to purchase assets from a third party which the Sponsor has targeted. This particular approach provides several benefits for the Sponsor as both a general partner of the MLP and also because it is technically an intermediary between the MLP and third party. It allows the Sponsor the opportunity to relinquish its equity from the particular properties acquired and still maintain control over their ownership through its general partner units. This in turn provides the Sponsor with the opportunity to partake in future appreciation of such property through its lasting interest in the MLP. In addition to these two benefits, the Sponsor, acting as an intermediary, has the opportunity to receive fees from the MLP for locating and operating such properties transferred.

There is one final approach to structuring MLPs that can be used, and that is through the liquidation of the Sponsor. In this particular situation certain major shareholders and/or officers of the Sponsor will likely participate as general partners within the newly formed MLP. Once the new entity has been established, the Sponsor then liquidates and distributes the remaining Units to its remaining shareholders. There may be many reasons for such a decision to liquidate the Sponsoring firm including the attraction to convert to partnership form in order to take advantage of tax benefits discussed earlier. This particular approach from switching to corporate form to partnership form is discussed in Ciccotello and Muscarella (#1).

Ciccotello and Muscarella address several fundamental characteristics regarding MLPs, including increased cash distributions, low growth, and management discretion in a comparison of companies in the corporate form versus those as MLPs. One characteristic that they address is how MLPs, being partnerships, pass their revenues directly to their partners. This alters the business strategy in two separate ways for MLPs with taxation and growth priorities. As mentioned earlier, MLPs being pass-through entities allows for investors to avoid taxation at the corporate level which increases the incentive for distributions to such partners. They confirm this particular quality when they compare distribution levels of corporations and similar MLPs. They find that the distributions of MLPs are significantly higher than the dividend distributions produced by corporations. Being structured as partnerships they are required to distribute their earnings to the owners of the company whereas corporations make the decision themselves whether or not to distribute dividends. This is possibly one reason to explain why MLPs have increased distributions in comparison to corporations.

Another quality Ciccotello and Muscarella address is that the companies that usually adopt this structure are in low growth industries. They find that the companies with this particular structure are highly specialized in their area of expertise and offer superior operating performance. They also attribute this particular characteristic to the limited management discretion within a partnership. Compared to a corporation with a designated board of directors, partnerships are not required to have a board set up as centralized governance over the firm. Without a centralized governance there is no real push or change in direction of where the company should be operating. The authors dig deeper into their analysis of growth by comparing debt levels and capital expenditures to sales ratios between corporations and MLPs. They find that there is no significant difference between debt levels or capital expenditure levels between corporations and MLPs. However, it must be taken into consideration that their sample incorporated many MLPs that were established prior to the Tax Reform Act of 1987. Although they find that capital expenditure ratios are similar between corporations and MLPs, the primary focus of their paper is analyzing firms that change from corporate to MLP form. In that comparison, what they find is a significant amount of evidence that the median capital expenditures drop about 30% upon adoption of the MLP form.

Ciccotello and Muscarella analyze and confirm that, compared to corporations, MLPs typically have lower growth and increased distributions. The focus of this paper is similar to that of Ciccotello and Muscarella in that we attempt to find discrepancies between financial statistics of companies that have adopted the MLP form in comparison to those within a similar industry but with a corporate structure. It is our assumption that there must be some sort of financial benefit that arises from choosing the MLP structure over the corporate structure and we asses this by taking a look at several leverage and profitability ratios as well as the underlying statistics that comprise them. This paper attempts not only to discover what the true incentive is for a company to choose the MLP structure but also what benefit there might be for the parent company of such MLP. Considering that Ciccotello and Muscarella's paper was written over ten years ago and their sample included observations from prior to the Tax Revenue Act of 1987, our first area of focus is in the sample selection process.

Section IV: Sample Selection

When selecting the sample set we began by identifying all MLPs formed after 1987 as this was post the Tax Revenue Act of 1987 which changed the requirements for MLP formation. Next, we found that many of the MLPs formed were no longer trading. This could have been for several different reasons including bankruptcy, acquisition from another firm, acquisition by parent firm, etc. Therefore we decided to focus primarily on the MLPs that were still existing and publicly traded so as not to expose the study to any bias from such restructuring transactions. After this we discovered that there were MLPs covering a broad range of industries, yet the majority of them resided within the oil and gas sector. Therefore, we further limited our selection to just companies within the oil and gas industry in order to further eliminate any bias that might arise from characteristics of different industries.

We first match each parent company and MLP with another company in the same industry, according to SIC code with the closest asset size as of December 2009, and the same year of inception. It was important to make sure that the companies dealt within the same sub-sector as there are various types of companies within the oil and gas industry each of which operate differently. We found the SIC code to be the most consistent and accurate identifier across financial databases, although there were a few discrepancies. Asset size was the next level of comparison as it takes into consideration the different financial structures that could arise between young and established companies. Finally, it was important to find a match with close to, if not the same, year of inception as this avoids any bias that could result from market conditions when the MLP was formed. It was important to use all three of these measures of comparison not only for selecting a match for the MLP but also the Parent company of the MLP. This approach was chosen to provide the most accurate comparison when analyzing differences in the profitability, leverage, and risk measurements of each company.

Section V: Empirical Method

There are three ratios we use to measure profitability: ROE (Net Income/Stockholders Equity), ROA (Net Income/Total Assets), and EBITDA/A(Earnings Before Interest Taxes Depreciation and Amortization/Assets). ROE was chosen as it provides an analysis of the efficiency of the company's capital structure in providing return for its shareholders. ROA looks at how efficient the company is at generating profit with its assets which is rather important for MLPs considering most of their assets are used for transporting products which is their main function. Next, in assessing EBITDA/A we try to determine if there is any discrepancy between the MLP's earnings in relation to its match prior to taxes and depreciation expenses. As mentioned before MLPs are tax preferred entities and it will be important to identify any profit discrepancy prior to taxes being assessed. Likewise we use three measures of leverage: Debt/Assets, Debt/Equity, and Long-Term Debt/Total Debt. Debt/Assets will be important to analyze the firm's debt situation as we used similar asset size in matching firms. Debt/Equity will, similar to ROE, allow us to compare capital structure discrepancies between the two firms or time periods. Finally Long-Term Debt/Total Debt should identify any differences in the borrowing tendencies of the counterparties. When assessing the risk characteristics we look at Beta to determine if there has been any change.

When analyzing the Parent companies and their matches there are three major periods of time that we focus on. The first time period is three years prior to the formation of its MLP. This specific time period provides a foundation from which we can compare any differences that might appear in the other two time periods. The next time period is the year in which the underlying MLP is formed. Finally, we examine the three years after the MLP was formed in order to determine if there are any differences in profitability, leverage, and or risks after the MLP was formed. We test for differences in Parent firm characteristics across each of the three time periods to determine if there has been any internal changes due to the formation of the MLP. We also take a look to see if there are any differences between the Parent and its matching firm across all three time periods. This allows us to determine if there were any significant changes due to the formation of the MLP and if such a difference was present prior to the MLPs formation. Finally, we test for any difference in financial data that might be present between the MLPs and their matches three years post the MLP inception.

Considering our sample size is so small we felt it would be relevant to conduct a nonparametric test, specifically the Wilcoxon Signed-Rank Test. The first step in conducting this test required us to assign a ranking of the absolute value of the difference between the parent/match, parent pre-/-post, and MLP/match with the largest absolute difference being assigned the largest ranking. Once the rankings are given they are then assigned the sign of the difference from the data; for example, if the original difference resulted in -2 and its ranking was 9 then its ranking would be assigned the original negative value, -9. In conducting the test of significance we test to see if the sum of the ranks is significantly different from zero. Depending on which ratio we are testing and our corresponding hypothesis for how we feel that particular ratio will react will determine whether or not we use a one- or two-tailed test.

Section VI: Hypothesis

We hypothesize that the formation of an MLP will result in increased profitability and risk as well as an overall decrease in the leverage of the corresponding Parent after the MLP has been formed. ROA is expected to increase while net income is expected to have no change for the Parent because income from the subsidiary MLP should still be reported within the overall income of the Parent. Assets should decrease on the other hand as they are transferred from the Parent to the MLP. ROE is therefore used to confirm that such a change is not due to a change in net income. If there is a significant increase in the average ROA of Parent, and no significant difference in their corresponding ROEs, then it is evident that average overall assets of the Parent have decreased while net income has not changed. EBITDAA is used as a before tax measurement to see if any change in ROE might have been caused by the tax free implications associated with MLPs.

The capital structure of the Parent is expected to shift as the debt used to acquire assets, which are transferred to the MLP, is typically transferred along with the assets while the equity should remain the same. Therefore, we do expect to see some difference with the Debt/Equity ratios as the Parent's equity situation should not be affected by the formation of its corresponding MLP. However, this transfer of debt is not expected to have an effect on the Parent's Debt/Assets as both assets and debt are typically transferred together. Similar to this, we expect Long-TermDebt/Total Debt to remain constant as most of the debt used in acquiring the transfer assets is expected to be long-term. Ultimately, the transfer of debt, along with assets, would then transfer more emphasis on the Parent's funding from equity in its capital structure, thus, opening up room for additional debt to be acquired.

When looking at the beta for the Parent and how/if it changes in accordance the formation of its MLP, we assume that it will ultimately increase. This is because many of the companies that form an MLP are more stable and less risky. It seems that if a Parent Company were to transfer its "stable" business practices and assets to a separate entity then ultimately their business would become more risky.

When comparing the Parent firms to their corresponding matches we assume that our sample selection has set us up to compare two similar companies. Therefore, we expect to see that the Parent company will prove to be more profitable, with an increasing ROA and stagnant ROE, in comparison to its match. Similar we expect to see the beta of the Parent company rise significantly in comparison to their match. In looking at the leverage however, it is our expectations that the Parent company will have an overall decrease in leverage relative to that of its match as the Parents debt level is expected to decrease in relation to its equity level.

In looking at how the MLP's profitability compares to that of its match I expect it to prove higher with the exception of EBITDAA. Considering that MLPs are classified as pass through entities and there are therefore no taxes paid at the corporate level, there should be no difference in the MLP's EBITDA and Net Income. With Net Income being the numerator in ROE and ROA it is expected then that a MLP should have higher ratios in comparison to its non-MLP match. However, in the case of EBITDAA we do not foresee any significant difference between the two considering they were both paired on the basis of similar asset size.

When analyzing the MLPs' leverage ratios we use a similar technique in deciphering any significant differences from the MLP Matches' leverage ratios. Non-MLP firms should have more funding from equity in comparison to MLPs. This being said, when comparing the MLP's Debt/Equity ratio it is expected that the MLP will have a higher ratio than its match. In order to test this theory and confirm that there is an imbalance in equity funding between the two firms we will then compare both firms' Debt/Assets ratio. If there is in fact discrepancy due to an imbalance in the equity position then there should in fact be no difference between the two firms Debt/Assets ratio. From our presumption stated earlier that the majority of debt used to acquire assets, which are ultimately transferred to the MLP, is long-term, it is also presumed that the MLPs' debt structure is primarily composed of long-term debt. Thus, it is expected that the MLPs' will have on average a higher Long-TermDebt/Total Debt ratio.

Section VII: Empirical Results

Before assessing any of the tests conducted we felt it would be beneficial to see how the mean and median for each of the statistics for all four samples compared against each other. The statistics are all those that make up the ratios which are tested later on for significance. This will help provide a better understanding of what exactly caused a significant difference between the test subjects if any. Looking at Table 1 we can see at first that there seems to be some discrepancy in average Total Assets for the Parent firms and their matches with the Parent firms have almost twice as much Total Assets on average. Within Net Income it is interesting that both the Parent and their matching firm have such low median values relative to their average Net Income. Looking at EBITDA, MLPs seem to have a lower statistic relative to their matching firms from both an average and median perspective. Total Debt appears to be higher with Parent companies as well in comparison to their matches which is similar to Long-Term Debt.

Table 1: Summary statistics
This table reports the mean and median values for each of the four samples: parent company, the match for the parent company, the MLP, and the match for the MLP. The mean for each observation is depicted on top while the median is depicted on the bottom.

Variable	Parent	Parent Match	MLP	MLP Match
Total Assets	12,253.03 5,196.00	6,644.23 1,506.08	421.39 320.68	822.39 717.53
Net Income	484.53 32.03	676.18 69.48	17.10 9.71	64.72 37.67
EBITDA	1,301.26 331.00	1,630.52 235.96	43.76 35.22	100.93 59.31
Total Debt	9,145.53 3.690.00	4,587.60 1,191.40	127.66 98.08	390.12 385.35
Long-TermDebt	4,150.73 917.50	1,449.22 393.16	58.21 30.00	190.27 99.87

In looking at Table 2 we begin testing for significant difference in Parent firm data from three years prior to the MLP formation and three years post. In looking at the

Wilcoxon results we fail to reject the null hypothesis for each of the ratios, except for the equity beta. Therefore, we cannot say that there is any significant difference in the profitability and leverage of the Parent firms three years prior and post the MLP's formation. However, there appears to be a significant difference in the equity beta between the two time periods. In looking at the average beta three years post, 0.9573, we can see that is significantly higher than three years prior at 0.6849 at the 10% significance level. This leads us to conclude that a Parent firm becomes riskier after spinning off its more stable assets into an MLP.

Table 2: Parent company data before and after MLP formation
This table reports the mean and median for the three year period before and after the MLP formation, along with the Wilcoxon signed rank test for each of the following: Return on Equity (Net Income/Book Value of Equity), Return on Assets (Net Income/Total Assets), EBITDA/Assets (Earnings Before Interest, Taxes, Depreciation and Amortization/Total Assets), Debt to Assets (Total Debt/Total Assets), Debt to Equity (Total Debt/Book Value of Equity), Long-TermDebt to Total Debt (Long-TermDebt/Total Debt), and Equity Beta, calculated as the slope coefficient of a regression of stock return on the CRSP equally-weighted index for each one-year period.
Numbers in parenthesis are p-values.

	Three year period before MLP formation	Three year period after MLP formation	Wilcoxon signed rank test for difference in means
Return on Equity	0.0449	0.0870	139.00 (0.3694)†
Return on Assets	0.0082	0.0091	148.00 (0.3417)
EBITDA/Assets	0.0827	0.0996	144.00 (0.2658)
Debt to Assets	0.5983	0.6807	139.00 (0.3695)†
Debt to Equity	2.2326	2.2345	149.00 (0.3618)
Long-TermDebt to Total Debt	0.3938	0.4188	153.00 (0.8918)†

Equity Beta	0.6849	0.9573	126.00 (0.0543)

† indicates a two-tailed test. All others are one-tailed.

Next, we compare the financial data between the Parent firm and their corresponding matches. Table 3 shows the results discovered using the Wilcoxon signed-rank test in comparing the two for both three years post and three years prior MLP formation. Looking first at three years prior MLP formation, there once again appears to be very little significant difference between the Parent and matching firms financial data except for the equity beta. We discover that the Parent firm's equity beta is different from that of the matching firm's at a significance level of 5% thus allowing us to reject the null hypothesis that they are the same. In looking at three years post MLP inception we come close to finding a significant difference at the 10% level on both ROA and Debt/Equity but both fall just short of rejecting the null hypothesis. Also, we see that the difference between the equity beta also loses its significance three years post MLP inception which follows along with our previous discovery that the Parent firm becomes riskier after spinning off its more stable assets.

Table 3: Parent company compared to its match before and after MLP formation
This table reports the mean and median for the three year period before and after the MLP formation, along with the Wilcoxon signed rank test for each of the following: Return on Equity (Net Income/Book Value of Equity), Return on Assets (Net Income/Total Assets), EBITDA/Assets (Earnings Before Interest, Taxes, Depreciation and Amortization/Total Assets), Debt to Assets (Total Debt/Total Assets), Debt to Equity (Total Debt/Book Value of Equity), Long-TermDebt to Total Debt (Long-TermDebt/Total Debt), and Equity Beta, calculated as the slope coefficient of a regression of stock return on the CRSP equally-weighted index for each one-year period.
Numbers in parenthesis are p-values.

	Parent company	Matched company	Wilcoxon signed rank test for difference in means
Panel A: Three year period before MLP formation			

Return on Equity	0.0449	0.0359	154.00 (0.8399)†
Return on Assets	0.0082	-0.0096	158.00 (0.3325)
EBITDA/Assets	0.0827	0.0906	166.00 (0.1854)
Debt to Assets	0.5983	0.5496	135.00 (0.4025)†
Debt to Equity	2.2326	1.8791	136.00 (0.2179)
Long-TermDebt to Total Debt	0.3938	0.3337	136.50 (0.4528)†
Equity Beta	0.6849	1.1834	106.00 (0.0486)
Panel B: Three year period after MLP formation			
Return on Equity	0.0870	0.2295	206.00 (0.1239)†
Return on Assets	0.0091	0.0372	200.00 (0.1092)
EBITDA/Assets	0.0996	0.1473	199.00 (0.1191)
Debt to Assets	0.6807	0.5850	146.00 (0.1370)†
Debt to Equity	2.2345	1.5535	151.00 (0.1092)
Long-TermDebt to Total Debt	0.4188	0.3690	163.00 (0.5383)†
Equity Beta	0.9573	1.1104	169.00 (0.2483)

† indicates a two-tailed test. All others are one-tailed.

Finally, we take a look and see if there is any significant difference between our MLP sample set and their matches. The results are displayed in Table 4. There is no significant difference between the financial performance of the MLPs and their corresponding matches. We do not report a test statistic for the equity beta for this particular test this is due to the fact that we found very little information related to beta three years post inception for the MLP firms.

Table 4: Master limited partnership compared to its match after MLP formation
This table reports the mean and median for the three year period after the MLP formation, along with the Wilcoxon signed rank test for each of the following: Return on Equity (Net Income/Book Value of Equity), Return on Assets (Net Income/Total Assets), EBITDA/Assets (Earnings Before Interest, Taxes, Depreciation and Amortization/Total Assets), Debt to Assets (Total Debt/Total Assets), Debt to Equity (Total Debt/Market Value of Equity), Long-TermDebt to Total Debt (Long-TermDebt/Total Debt), and Equity Beta, calculated as the slope coefficient of a regression of stock return on the CRSP equally-weighted index for each one-year period.
Numbers in parenthesis are p-values.

	Master Limited Partnership	Matched company	Wilcoxon signed rank test for difference in means
Return on Equity	0.1659	0.1485	156.00 (0.7507)†
Return on Assets	0.0670	0.0577	155.00 (0.3975)
EBITDA/Assets	0.1143	0.1121	151.00 (0.4885)
Debt to Assets	0.5385	0.5153	148.00 (0.9310)†
Debt to Equity	0.4121	2.0261	166.00 (0.1853)
Long-TermDebt to Total Debt	0.5292	0.3807	125.50 (0.1648)†

† indicates a two-tailed test. All others are one-tailed.

Section VIII: Conclusion and Reflection

In conclusion we found that there was very little significant difference between the Parent firm before and after, Parent firm and its match, and MLP and its match both pre and post MLP inception. This provides evidence against many of the predictions we made prior to the tests and further disaffirms any financial benefit that might come from forming an MLP. Although these tests have disproved any direct tax or financial benefit to the Parent company this leads us to believe that there must be some sort of indirect benefit that causes such firms to adopt this particular type of business structure. However we did find one significant difference between the Parent firm before and after the MLP, at the 10% level, as well as between the Parent firm and its match, at the 5% level, regarding the equity beta three years prior to MLP inception. This corroborates the findings discovered by Ciccotello and Muscarella in their 1997 paper. Should the MLP firms be identified with lower growth and a more stable business model, then if a Parent firm happens to spin such assets off into an MLP it therefore loses a portion of its own stable business and as a result becomes more risky. Although our results did show such a significance it is still important to keep in mind that the tests run still have room for improvement.

One of the main reservations in conducting and analyzing the tests is that there was not a large enough sample size in order to statistically rely upon the results produced. The entire sample size consisted of twenty Parent firms and thus twenty matching firms. However, not all of the firms were used for several different reasons including issues such as; the statistical data showed the MLP to have been formed before the parent company and no beta data for the parent for such particular time periods. Taking this into consideration when conducting the significance of the profitability and leverage ratios there were twelve firms used in the analysis for three years prior to the MLP's inception and thirteen samples used for three years post inception. In assessing the betas of the firms there was only enough information to use six firms.

This is one of the main things that could be changed or improved upon for this particular experiment in order to improve it in the future. Although there were some small findings discovered with this particular experiment it would be interesting to see if more drastic differences or if they would be completely eliminated with more samples being added. Another thing that could be improved upon is finding a more consistent source from which to derive the data. In seeking the financial information for the Parent firms and their matches we ran into issues with matching S&P identifiers and establishing the correct dates of inception for the underlying MLP's.

Even though most of the tests conducted turned out no significant difference this does not disaffirm any benefit from forming an MLP as opposed to another particular structure. As you can see from Section II of this paper, Historical Context, there has been an increasing number of MLPs entering the market place over the past several years. It is evident that this particular form of business must offer some sort of advantage and whether or not this advantage comes from a purely financial standpoint this paper appears to disapprove such a notion. However, there could also be some sort of subjective benefit from forming a particular business structure such as managerial incentives. Future research could take a look at other subjective areas of interest that might reveal an underlying benefit to adopting this particular form of business.

Bibliography

Ciccotello, Conrad S., and Chris J. Muscarella. "Matching Organizational Structure With Firm Attributes: A Study of Master Limited Partnerships." *European Finance Review* (1997): 169-91. Print.

Handbook of Master Limited Partnerships. New York, NY: Standard & Poor's Partnership, 1989. Print.

Master Limited Partnerships : Uses and Applications under the New Tax Code. Clifton, NJ: Law & Business, 1987. Print.

Master Limited Partnerships. Chicago, Il: American Bar Association, 1987. Print.

Muhtaseb, Majeb R., and John E. Karayan. "The Impact of the Revenue Act of 1987 on Master Limited Partnerships." *Applied Financial Economics* 6th ser. (1996): 233-42. Print.

"Oil Market Report." *International Energy Agency (IEA)*. Web. 03 Oct. 2010. <http://www.iea.org/>.

Prasad, Devendra. *Initial Public Offerings : Common Stock vs. Master Limited Partnership Units*. San Antonio, TX: Institute for College of Business in College of Business, 1991. Print.

Rutherford, Ronald C., and Thomas M. Springer. *Valuation Consequences of Master Limited Partnership Formation*. Print.

Schramm, David S. *Master Limited Partnerships In the U.S. Oil and Gas Industry*. Print.

Shaw, Wayne H. "An Examination of Ex-Dividend Day Stock Price Movements: The Case of Nontaxable Master Limited Partnership Distributions." *The Journal of Finance* 46.2 (1991): 755-71. Print.

"Difference Between Means, Correlated Pairs." *Online Statistics Education: A Free Resource for Introductory Statistics*. Web. 23 Feb. 2011. <http://onlinestatbook.com/chapter10/correlated.html>.

"Testing a Single Mean." *Online Statistics Education: A Free Resource for Introductory Statistics*. Web. 23 Feb. 2011. <http://onlinestatbook.com/chapter10/single_mean.html>.

"Testing Differences Between Means." *Online Statistics Education: A Free Resource for Introductory Statistics*. Web. 23 Feb. 2011. <http://onlinestatbook.com/chapter10/difference_means.html>.

"Apache Corporation : Return to Roots." *Apache Corporation : Home Page*. Web. 22 Apr. 2011. <http://www.apachecorp.com/About_Apache/History/return_to_roots.aspx>.

Master Limited Partnership Primer: Understanding an Emerging Asset Class. Dallas, Texas: SteelPath, 2010. Print.