NORGES HANDELSHØYSKOLE

Bergen, Spring 2013

Master Limited Partnerships – The Development of an Asset Class

Exploring Innovative Structuring and the Underpricing of Initial Public Offerings

Moving into the 21st Century

Camilla Kristine Kristensen

Thesis advisor: Tyler J. Hull

Master Thesis in Financial Economics

Abstract

This paper explores the development of the relatively young and emerging asset class of Master Limited Partnerships ("MLPs") moving into the 21st century. The topic has been the subject of widespread coverage in the financial press over the last year, and represents an interesting research area both from a practitioner and academic point of view.

This paper approaches the subject from both angles, dividing the paper roughly into two parts. Part one consists of a qualitative assessment of how regulatory modifications and innovations in the MLP structure with regards to governance and tax treatment have allowed for a wider set of assets within the energy complex to exploit the MLP structure. Part two approaches the subject from an academic point of view, and examines the phenomenon of initial public offering ("IPO") underpricing in the context of MLPs. For both parts, a sample of 100 MLP IPOs launched in the period from 1994 through November 2012 has been used.

Moving from the early MLPs in the 1980s to the asset class' revival during the 2000s, I find that the MLP regulatory and business environment, investor mix, and asset diversity have changed. Contrasting to "traditional" MLPs, an increasing proportion of growth oriented firms with more volatile cash flows have entered the space, as have more leveraged firms. I thus find that MLPs are becoming less of an asset class *per se*, with deviations from the norm appearing quite frequently.

In the second part of my analysis I find that MLP IPOs are underpriced. The results are interesting because they contrast to previous research, and hence represent an addition to the current literature on IPO underpricing. For the full sample of 100 MLP IPOs, I find that the average initial return is 5.51 per cent. When dividing the sample into two groups containing pre-2004 and post-2004 IPOs respectively, I find that the average initial return for IPOs launched prior to 2004 is 1.73 per cent, and insignificantly different from zero. For the post-2004 IPOs, average initial return is 6.36 per cent, and significantly larger than zero. I associate the shift in underpricing with the passing of the American Jobs Creation Act of 2004, which introduced institutional ownership as a more meaningful source of financing for MLPs. On theoretical grounds, the shift in underpricing is consistent with the winner's curse hypothesis.

Preface

This master thesis is written as a part of the Master of Science program at the Norwegian School of Economics and concludes five years of higher education. Working with the paper has been both challenging and interesting, and inspired lessons along a wide range of dimensions.

There are a number of people I would like to acknowledge. First, I would like to thank my thesis advisor, Tyler J. Hull, who has provided me with prompt and constructive feedback, and been patient and helpful throughout the writing process. Second, I would like to thank Jørn Ringheim at RS Platou Markets for pitching the topic as a research alternative, and for providing helpful insights along the way. Third, I owe special thanks Mary Lyman at the National Association of Publicly Traded Partnerships, Conrad Ciccotello at Georgia University, and Thomas Mejdell at Morgan Stanley for assisting with academic guidance and data collection.

Norwegian School of Economics

Bergen, 20.04.2013

Camilla Kristine Kristensen

Contents

List of Figures

List of Tables

1 Introduction

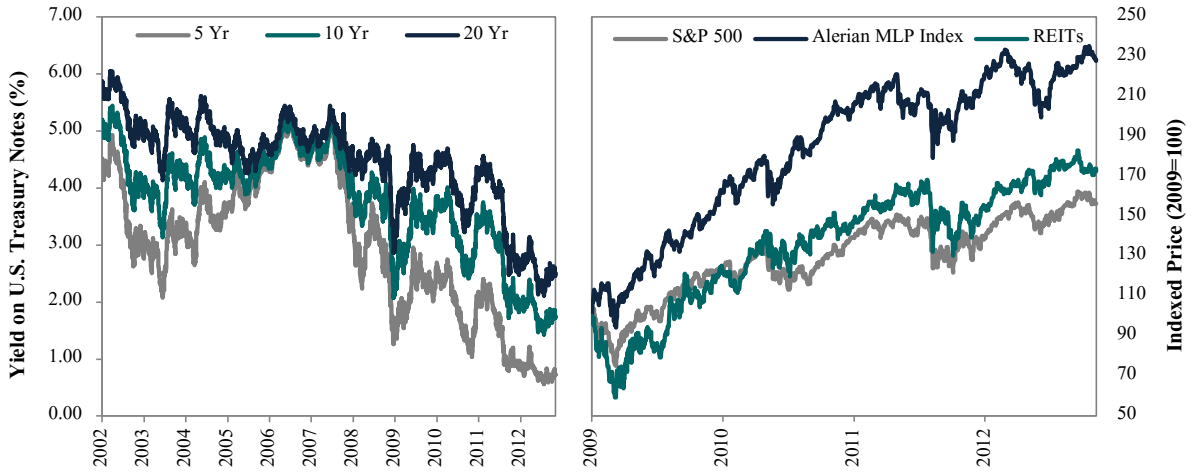
1.1 Topic Description and Motivation

This paper explores the development of the relatively young and emerging asset class of Master Limited Partnerships ("MLPs") moving into the 21st century. The topic carries a sense of timeliness as it has been the subject of widespread coverage in the financial press over the last year, and represents an interesting research area both from a practitioner and academic point of view. I will attempt to approach the subject from both angles, dividing the paper roughly into two parts. Specifically, I will first make a qualitative assessment of how regulatory modifications and innovations in the MLP structure with regards to governance and tax treatment have allowed for a wider set of assets within the energy complex to exploit the structure. Second, I will use data sampled for the first part to address implications for academic research. Specifically, I examine the phenomenon of Initial Public Offering ("IPO") underpricing in the context of MLPs, and compare results with early MLP research conducted with data from the 1980s.

From a practitioner point of view, the MLP structure is relevant for a number of reasons. Over the last decade, the MLP has resurfaced as an asset class after a popularity trough in the 1990s, and attracted the attention of investors, investment banking advisors, owners of energy related assets, and even politicians.

After three post-financial crisis rounds of quantitative easing in the United States ("U.S."), U.S. Treasury Notes are now trading at record low yields, forcing yield seeking investors to look elsewhere to place their capital. Coinciding with this development, the MLP asset class, which is known for its yield enhancing characteristics, has outperformed both regular stock market indices and related asset classes such as utilities and Real Estate Investment Trusts ("REITs").

Figure 1. Coincidental? U.S. Treasury Notes Trade at Record Low Yields – Alerian MLP Index[1] Outperforms[2]



In equity capital markets, 2012 saw the successful closing of 13 operating MLP IPOs[3], raising USD 2.9 billion in gross proceeds, and providing USD 180 million in underwriting fees and commissions to investment banks[4]. In 2011, 13 IPOs raised USD 2.4 billion, leaving USD 156 million with banks. Currently, the asset class comprises approximately 100 operating MLPs, implying that roughly a quarter of existing firms has come to market over the last two years. It should be noted that this quite substantial issuing activity has come hand in hand with the discovery of immense unconventional oil and gas plays across the U.S.. These discoveries represent real growth opportunities for firms operating in the energy infrastructure segment, and translate directly into demand for projects that favour MLP financing.

From a regulator point of view, the success of the structure in its current form is manifested by political efforts to expand its use into other industries, such as renewables[5]. The structure has proved ample in funnelling capital into energy infrastructure projects, which are capital intensive by nature, and important for securing future U.S. domestic

[1] The Alerian MLP Index was registered in 1996, and was the first index to track the performance of MLPs. The index is considered a benchmark for the MLP space, and is a composite index constructed based on the 50 most prominent energy MLPs. The Alerian MLP Index is calculated using a float-adjusted, capitalisation-weighted methodology.

[2] The graph to the left tracks the yield development from January 2002 to November 2012 for U.S. Treasury Notes with 5, 10 and 20 years to maturity respectively. The graph to the right tracks the price performance of the S&P 500 Composite Index (SPX), the Alerian MLP index (AMZ) and the FTSE NAREIT Real Estate 50 Index (FTY:US). Sources: U.S. Department of Treasury, Bloomberg.

[3] In 2012, three financial MLPs also commenced public trading in their units. These are The Carlyle Group LP, Oaktree Capital Group LLC, and Sandridge Mississippian Trust II.

[4] Aggregates are computed based on company prospectuses for 12 of the 13 IPOs. One IPO, Natural Resource Partners LP, was executed by allocating units on a pro-rata basis to existing unit holders of the parent.

[5] Two bills have been passed in 2012 requesting that income derived from renewable energy sources be included as MLP qualifying income under the IRC Section 7704(d). Senator Coons introduced the first bill in June 2012 (S. 3275: Master Limited Partnerships Parity Act), followed by a similar bill introduced by Congressmen Poe and Thompson in September 2012 (H.R. 6437: Master Limited Partnerships Parity Act).

energy supply. By allowing the structure for firms with income sourced from renewable energy projects, it is the hope of sponsors that it will benefit the U.S. in developing more sustainable energy sources.

Evidently, as demonstrated by the above mentioned trends, the MLP has become "too big to ignore" from a practitioner perspective. Through its dominant presence in energy infrastructure in the U.S., it is also an example of how business structures matter in society, and hence a relevant topic to explore for any student of corporate finance. In terms of research, I find that the most relevant topic to explore is that of structure innovation; how different projects with different business characteristics have been able to benefit from using the MLP as an investment vehicle.

In terms of literature, research related to innovative uses of the MLP structure is fairly limited. Ciccotello and Muscarella (2003) describe some innovations involving the Limited Liability Company ("LLC") and MLP forms that enabled the structure to become a suitable investment vehicle for institutional investors in the early 2000s. Their paper explores how innovative underwriting, demonstrated by the offering of Kinder Morgan Management LLC, gave institutions an opportunity to circumvent regulations prohibiting MLP investments for regulated investment companies. To my knowledge however, no papers have examined innovations that have allowed for a more diverse asset acceptance into the MLP space. As Ciccotello and Muscarella (2003) explain, certain assets have traditionally been more suitable for the structure than others: "*Both tax and agency considerations suggest that MLPs should hold assets that produce steady cash. MLPs are a poor fit for operations with volatile cash flow. In the energy industry, that translates to the use of MLPs for the "mid-stream" assets – namely distribution and storage. The corporate form is better suited for the volatile 'tails' exploration and retail*". Illustrated by recent IPOs, the first part of this paper seeks to explain how innovations in the MLP structure have now also made it suitable for "volatile tail" assets within the energy complex.

From an academic point of view, the topic presents an opportunity to add to existing literature on the underpricing of IPOs. To my knowledge, there are only two papers discussing the underpricing of MLP IPOs, namely those of Muscarella (1988), and of Michaely and Shaw (1994). Contrasting to established results in finance literature, Muscarella reports that he finds no significant underpricing for a sample of 50 IPOs in the time span from 1983 to 1987. While Muscarella does not attempt to reason the deviation, he does state that the evidence suggests that "*investors have no uncertainty about the value of the MLP units and thus are able to price the issue correctly*". There might be some truth to this statement, as many MLPs are formed by way of listing assets or divisions previously held by publicly traded corporations. When such assets have already been indirectly priced by the market, it is likely that investors will feel less uncertain about their value as the assets are carved out of the parent corporation, and listed as a separate entity. Still, many MLPs are formed by way of listing privately held assets or

through new firms launching IPOs, which lends to thinking that an alternative explanation can be found. Michaely and Shaw presents one such explanation in their 1994 paper, where they also report no significant underpricing for a sample of 59 MLP IPOs launched from 1984 to 1988. The authors test several models, and find that the evidence is consistent with the winner's curse hypothesis. The winner's curse hypothesis stems from the work of Rock (1986), and is part of a substantial strand of underpricing literature focusing on asymmetric information between IPO-participating agents. In Rock's (1986) winner's curse model, asymmetric information across investor classes is what necessitates underpricing. Rock (1986) assumes that there are two types of investors; the first consisting of outside investors who are better informed about the issuing firm's value than the issuer and the underwriter, and the second of outside investors who are less informed. Acknowledging the advantage of the informed investor, the uninformed investor rationally fears that on average, he will not profit from participating in IPOs. As the informed investor will only bid on underpriced IPOs, such allocations will be rationed between the two groups. In overpriced IPOs however, informed investors will not participate, and the uninformed investor will receive full allocations. Consequently, the average return to the uninformed investor, conditional on the allocation of shares, will be lower than the unconditional return, and possibly negative. Rock's (1986) model further assumes that it is important for issuing firms to keep the uniformed investors in the market, as informed investors do not have the amount of capital necessary to absorb all IPOs. In order to maintain uninformed investor participation, underpricing is thus viewed as an equilibrium requirement, bringing average return to a break even. Michaely and Shaw (1994) link the two types of investors in Rock's model to institutional and retail investors, which are assumed to be relatively better and less informed respectively. The apparent absence of underpricing of MLP IPOs is further associated with the lack of institutional interest in the MLP space, and hence less information asymmetry.

During the 1980s, institutional investors were largely deterred from owning MLPs due to restrictive regulations. Following Michaely and Shaw's (1994) line of reasoning, regular retail investors did not face an adverse selection in the context of MLP IPOs, and hence did not demand a premium in the form of underpricing to participate in issues. Since the 1980s however, the investor mix has changed for MLPs. Most notably, the passing of the American Jobs Creation Act of 2004 made it easier for regulated investment companies to invest directly in MLPs, and brought about institutional investors as a more meaningful source of financing. Prior to 2004, MLPs were primarily owned by retail investors, with institutions holding only a 10 per cent ownership share. According to Morgan Stanley, institutional ownership had reached approximately 32 per cent by the end of 3Q 2012, which means institutional ownership was up by more than 200 per cent since 2004.

In the second part of this paper, I propose a hypothesis that the influx of institutional investors to the MLP space may have widened the knowledge level gap between investor classes, or rather, increased information asymmetry. With a sample consisting of 100 MLP IPOs from 1994 through November 2012, I test whether the conclusions of

Muscarella and Michaely and Shaw still hold. I expect to see that MLPs are now underpriced, and that this potential shift can be associated with the passing of the American Jobs Creation Act of 2004. It is my belief that MLP IPOs represent a unique opportunity to test hypotheses that relate to information asymmetry, and that research in this direction can help further the understanding of the underpricing phenomenon.

1.2 Scope and Research Questions

The objective of this paper is to explore the MLP asset class, and to detect changes that may have occurred as the asset class has evolved. I choose to focus my attention on two main problem areas, each of which requires data from the prospectuses of MLP IPOs.

My first scope restriction is to exclude financial MLPs from any data presented in this paper. I define financial MLPs as MLPs whose main source of revenue is related to financial advisory, hedge funds, private equity funds, firms dealing in mortgage securities, or pure investment trusts. As much as these firms are MLPs, they display different characteristics to operating MLPs, and are less interesting in the context of my research. Thus, when any reference is made to MLPs in due course of this paper, only operating MLPs are included. I define operating MLPs as MLPs whose main source of revenue is related to the ownership and operation of physical assets. Included in this definition are General Partner MLPs, which in essence are levered plays on the underlying MLP in which it owns equity interests.

Further, I will limit my sample scope to MLPs that have been formed over the last 20 years, and record IPO activity through November 2012. Any aggregate numbers reported in this paper for 2012 are hence excluding any activity that might have occurred on subsequent dates. The motivation underlying the exclusion of 1980s observations is largely based on practical challenges related to data availability.

This paper will seek to answer the following two questions:

1) *"What is an MLP, and how has regulatory changes and innovative use of the structure allowed for a wider set of asset classes within the energy complex to exploit the structure?"*
2) *"Are MLP IPOs underpriced, and if so, can this be associated with the influx of institutional ownership following the American Jobs Creation Act of 2004?"*

1.3 Structure

This paper is divided roughly into two parts, which seek to cover relevant issues in the context of MLPs from a practitioner and academic point of view respectively.

Part one concerns research question number one, and is a qualitative assessment of how the MLP structure has developed through time. The first part of the chapter presents the basic characteristics of an MLP, including ownership structure, governance and tax treatment. Further, it explains different ways MLPs can be formed, and how MLPs are usually valued in practice. As the reader has gained basic knowledge of what an MLP is, the chapter moves on to discuss regulatory advances and how the asset class has developed historically. Lastly, data gathered from recent IPO prospectuses are presented, along with recent trends in how the structure is being employed in new ways by practitioners.

Part two concerns research question number two, and is an empirical study of the underpricing phenomenon in the context of MLPs. For the purpose of understanding the underpricing phenomenon, the first part of the chapter gives a brief introduction of the concept of IPOs, including a discussion of the benefits and disadvantages of being publicly listed, and of the of IPO process. Subsequently, the underpricing phenomenon is presented, followed by references to previous empirical evidence, and a literature review. In line with the research scope of this paper, theories that are based on asymmetric information receive relatively more attention in this part. After the literature review, I present the empirical analysis. The analysis part is initiated by a presentation of my hypothesis, and followed by a sample description and methodology for running relevant tests. Results are then presented along with criticisms and a discussion of implications. Lastly, I have also chosen to include some concluding remarks with suggestions for further research.

2 Master Limited Partnerships – A Qualitative Assessment of the Development of an Asset Class

In this chapter, I explore the development of MLPs as an asset class moving into the 21st century. The chapter looks at MLPs from a practitioner point of view, and seeks to detect how asset owners can tweak the MLP structure to allow for "unconventional" assets to enter the MLP space. Ciccotello and Muscarella (2003) provide the following explanation to why certain assets have traditionally been favoured by the MLP structure: "*Both tax and agency considerations suggest that MLPs should hold assets that produce steady cash. (…) In the energy industry, that translates to the use of MLPs for the "mid-stream"*[6] *assets – namely distribution and storage. The corporate form is better suited for the volatile "tails" exploration and retail*".

[6] The midstream value chain provides the link between the natural resource and the finished product, and generally refers to the gathering, treating, processing, transportation, or storage of oil and gas after it has left the well head (upstream), but before it has been distributed to the end consumer (downstream). Some typical midstream assets are interstate and intrastate oil and gas pipelines, commodity storage facilities, and facilities for gas compression, treating and fractionation.

Practitioners have observed two recent IPO trends for MLPs. The first trend is that a variety of different firms are going public, introducing a wider set of asset classes within the energy complex. These include firms operating both upstream and downstream assets, and also fertilizer and coal producers (for a categorisation of typical MLP assets, see Appendix 1). The second, and perhaps more interesting observation, is that "*investors are less concerned*" with what types of assets are contained within the MLP than they have been in the past (Fenn, 2011). Personally, I am a bit sceptical with regards to this statement, and believe that there must be a rational explanation to why investors are accepting these new assets. I believe that investors are not less concerned, but rather that the firms going public are able to tailor the MLP structure to fit their specific businesses. A lawyer at Vinson & Elkins puts it nicely: "*If it looks like an MLP, and smells like an MLP"...* surely it must be an MLP? The main take-away is that not all MLPs are created equal.

I choose to approach this chapter in the following way. First, I will explain what an MLP is, and provide some basic background information about the MLP in its current form. I then proceed to put the MLP in historical context, and show how the asset class has evolved along the lines of regulatory and market developments. Lastly, I conduct a qualitative assessment of how innovative use of the structure might have helped maintain high investor appetite for new MLPs. Specifically; I address how the traditional governance and tax treatment of MLPs have been tweaked by practitioners to make investors "less concerned" about new types of energy assets.

2.1 What is a Master Limited Partnership?

By definition, an MLP is a limited partnership whose equity interests (called units) are traded on an established securities market, such as the New York Stock Exchange ("NYSE") or the National Association of Securities Dealers Automated Quotation ("NASDAQ").

The MLP has existed in the U.S. as an alternative business structure to the corporation[7] since the early 1980s, but was not officially "created" until the Tax Reform Act of 1986 and Revenue Act of 1987 were passed. Among other things, the legislation limited the structure to firms that derive a minimum 90 per cent of revenue from *qualifying sources*, such as real estate and natural resources. As a result, a majority of MLPs have historically been focused within natural resources, dominated by firms in the midstream segment. This was also the intention of regulators; by allowing energy firms access to the attractive MLP structure, regulators hoped that it would incentivise investors to funnel capital into infrastructure projects that traditionally had yielded low returns to corporations, and hence improve domestic energy infrastructure.

[7] In this paper, the term corporation refers to the C-corporation, as differentiated from the S-corporation. The C-corporation and S-corporation are two different corporate forms in the United States. For federal tax purposes, C-corporations are governed by the subchapter C of the Internal Revenue Code of 1986, while S-corporations are governed by subchapter S. A C-corporation is characterised by the (1) continuity of life, (2) centralisation of management, (3) limited liability of owners, and (4) transferability of equity interests.

In essence, the MLP is considered an attractive business structure for investors because it combines the favourable tax treatment (pass through) of a partnership with the business development advantages of a corporation. Due to the pass through tax treatment, an MLP pays no entity level tax. Consequently, it avoids double taxation on distributions (often compared to corporate dividends even though they are considered return of capital for tax purposes), which makes the MLP favour assets that enable large and stable distributions. In this paper, assets that meet the success criteria for cash flow stability are thus termed "traditional" MLP assets. Such assets usually have low operational risk, low maintenance capital expenditures, and low exposure to commodity prices. In addition, high barriers to entry or protective regulations are considered preferential. The above criteria are almost an exact description of many midstream assets, such as pipelines. It is then interesting to see, as will be reported later, that a lot of new MLPs have assets that do not meet these criteria. These assets typically have higher exposure to commodity prices and seasonality in sales, less regulated business environments, and higher operational risk. In this paper, such assets are thus termed "unconventional" MLP assets.

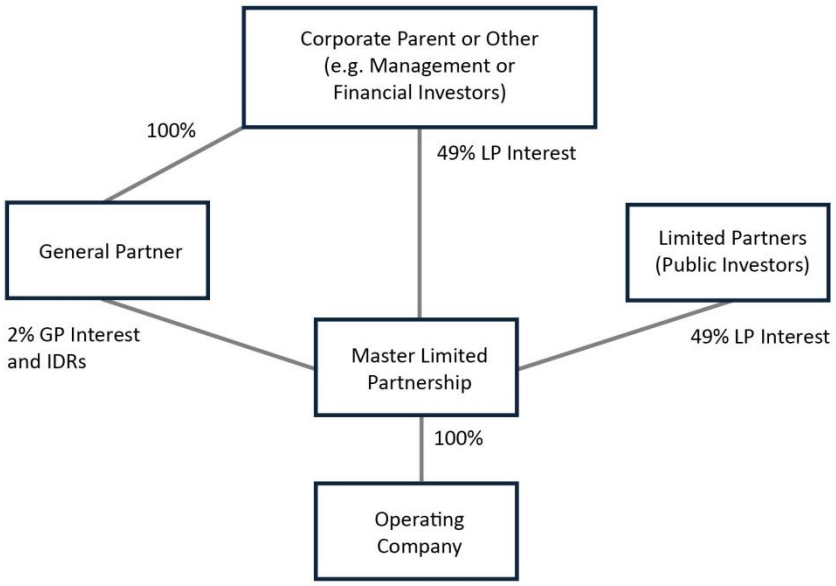
Before moving on to discuss how the MLP asset class has evolved for investors to accept unconventional assets, I will present some structural features that are unique to the MLP, and important for further analysis. Similar to the corporation, the MLP has unlimited life, and offers investors limited liability[8] and transferability in equity interests. With regard to ownership structure, governance and tax treatment however, the MLP is very different.

2.1.1 Ownership Structure

The ownership structure of an MLP typically consists of a decision-making General Partner ("GP") and passive-investor Limited Partners ("LPs"). The GP is the manager of the MLP, and holds a minority equity interest which typically amounts to 2 per cent. The remainder 98 per cent of the equity is owned by LPs, whose main function in the partnership is to contribute capital. In return, LPs receive quarterly cash distributions from the MLP. LP units are generally owned by outside public investors, but may also be held by a corporate parent ("Parent"), management affiliates or other financial investors.

[8] The Revenue Procedure 89-12 establishes certain requirements for the General Partner of the MLP in order to give Limited Partners limited liability. Specifically, the General Partner must maintain a net worth of 10 per cent of contributions made to the MLP, excluding the value of contributions made by the GP for equity interests in the MLP (Omer and Terando, 1999; Boyd et al., 1997).

Figure 2. Hypothetical MLP Ownership Structure



Upon the IPO of an MLP, it is normal that up to 49 per cent of the equity is sold to outside investors in the form of common units, while the remainder is retained by the GP or Parent in the form of either common or subordinated units. In general, neither LP unit class has any voting rights with regard to the operations of the MLP; they differ only with respect to eligibility for cash distributions. Subordinated units are not eligible for distributions until common units have received targeted distributions. This provides IPO investors with a "yield insurance" feature for a period of time following the IPO. Subordinated units are typically convertible at a one-for-one basis after a predefined number of years however, or when distributions paid to common unit holders have reached a predefined hurdle, as defined in the IPO prospectus.

As an MLP is not legally required to have a board of directors, the GP also has sole discretion with regards to any financial or strategic decisions. Consequently, the GP essentially assumes both governance and management functions. Fama and Jensen (1983) argue that when governance and control functions are centred in one entity, this person or group should also be the residual owner. In the case of MLPs, this is attempted through the GP assuming unlimited liability for the MLP's debt obligations (Omer and Terando, 1999). With LPs holding no voting rights with regards to operations however, there are many other potential conflicts of interest that can arise. How the MLP structure deals with such conflicts is discussed in the following subchapter.

2.1.2 Governance and the Partnership Agreement

The governance mechanism of an MLP differs conceptually from that of a corporation. Most notably, an MLP is not legally required to have a board of directors. In its place, an MLP is required to draft a Partnership Agreement ("PA") prior to the IPO which ensures that the interests of management and investors are adequately aligned. The PA

is a required part of the IPO prospectus, and the major governing mechanism in a partnership (Ciccotello and Muscarella, 2000). Specifically, the PA outlines the rights and duties of management and investors through detailing operating and financial policies, and through specifying managerial rights. Investors can agree to the terms either directly through signing a copy of the PA, or indirectly (most often) through purchasing units in the MLP IPO. Most provisions in the PA have become quite standardised, but the investor needs to pay attention to special features when assessing the investment story. Having a PA is useful in that it allows management to tailor governance controls to fit the MLP's strategy and environment. For an investor, the PA establishment is perhaps well illustrated by the words of Thomas Jefferson: *"The exact amount of tyranny you will live under is the amount you put up with".*

There are several issues to take into consideration when drafting the PA. In general, the MLP should seek to adjust the contractual design of the PA to suit its business strategy and environment in order to reduce agency costs (Jensen and Meckling, 1976). For example, if an MLP faces few valid growth opportunities and little uncertainty, it is in the interest of investors to place restrictions in the PA on how managers are allowed to use the firm's cash flows. Jensen (1986), among others, points out that overinvestment in mature industries can harm investors, and that the corporate form is unsuitable to industry cash cows[9]. Without restrictions on management spending discretion, cash rich firms may pursue investments that are the result of management's personal ambitions and not in the best interest of investors. The PA gives the firm an opportunity to minimise any such conflicts of interest, and Kensinger and Martin (1988) argues that partly as result of this, the MLP was an appropriate vehicle for "*quiet restructuring*" in slow-growth industries during the 1980s. The opposite situation arises if the MLP is facing promising growth prospects in its operating environment. Then, it might be in the interest of investors to allow management more flexibility, and to incentivise desired behaviour through appropriate performance rewards.

Ciccotello and Muscarella (2000) analyse a sample of 119 MLP PAs in the time period from 1981 to 1995. For the post-1988 MLPs, they find that provisions that are normally made in the PAs include terms for the *removal of the GP*, *withdrawal restrictions* for the GP, *GP ability to amend the PA*, cash *distribution policy*, and *incentive distribution rights* ("IDRs") policy. Interestingly, the authors also find that PA provisions have changed over time, with *scope restrictions* and *GP ability to compete* with the MLP being more frequently made prior to 1988, and distribution policy and IDRs less frequently made. The authors raise the question of whether the increase in distribution policy provisions after 1988 came as a result of a change in the way MLPs were valued in the market. In the late 1980s, there was a trend for MLPs to increasingly being valued based on yield. By providing clear guides to yield in the PA, MLPs hence played on the market trend, perhaps eyeing higher valuations. Other contractual terms

[9] The term "cash cow" uses the dairy cow as a metaphor for firms with certain characteristics. Typically, a cash cow firm requires an initial capital outlay, and subsequently produces steady cash flows over the course of its life with minimal capital requirements. Such firms usually will have few profitable growth opportunities, and best serves the interest of investors by paying out cash, either through repurchases of equity interests or direct distributions.

that only a few PAs addressed include *debt level restrictions*, *GP ability to issue senior equity*, and *pre-emptive rights*, including the right of existing owners to participate in future equity issues on a pro rata basis.

Essentially, the PA can address any concerns that investors may have, and align the interests of the GP and LPs through a tailored approach. For example, if the owners of the GP have a shorter investment horizon than outside investors, a conflict of interest could arise with regards to new investment decisions. This might be the case if the owner of the GP is a private equity fund or venture capitalist who is looking for a prompt exit opportunity. Without any governing mechanism, it is then highly likely that the GP will push the MLP to execute risky, short-term accretive acquisitions at the expense of long-term cash flow stability. With no voting power, LPs are clearly vulnerable in this setting if the PA does not provide any protection. One way the PA can protect LP interests when governance control is limited, is to define the scope of operations for the MLP. By restricting the scope of operations, managerial discretion in the face of making new investments becomes limited. Ciccotello and Muscarella (2000) report that MLPs that limit operating scope also actually tend to perform better. The authors state that when managers focus their efforts on predefined tasks, this may lead to efficiency gains in asset management. A second and more common way to limit managerial discretion is to establish a distribution policy in the PA. In this setting, the distribution policy functions as a disciplining mechanism. By regularly draining the MLP for cash, management has to turn to capital markets in order to afford making new investments. This ensures that all investments made are "approved" by investors before they are executed; if the investment is not regarded attractive, investors will not purchase equity, and creditors will not provide debt financing.

The distribution policy is usually showcased in great detail, including distribution target levels, unit class distribution eligibility terms, and whether or not the GP is entitled to IDRs. IDRs give the GP rights to a disproportionate share of the incremental increase in quarterly distributions, and can essentially be regarded as performance fees. The function of IDRs is to encourage management to grow distributions for investors, be it through organic growth, asset acquisitions from the Parent ("dropdowns"), or third-party acquisitions. For example, if an MLP with 100 million units outstanding (102.04 million including GP units when LP units make up 98 per cent of equity) targets a quarterly distribution of USD 0.375 per unit, but is able to pay out an extraordinary USD 0.7 per unit, the initial USD 38.3 million will be allocated on a pro-rata basis, while the incremental payments will be allocated at a percentage disproportionate to equity ownership shares. Employing the distribution policy of Delek Logistics Partners LP in the below table, the previous example would imply that 21.7 per cent of total distributions would be allocated to the GP despite only 2 per cent equity ownership.

Table 1. Incentive Distribution Rights Structure – A Hypothetical Example[10]

Declared Distribution Rate and Units Outstanding			
Distribution per Unit (USD)	0.7		
Units Outstanding (million), excl. GP Units	100		
Distribution Tiers (USD)		**LP share**	**GP share**
First Tier	0.375	98 %	2 %
Second Tier	0.43125	85 %	15 %
Third Tier	0.46875	75 %	25 %
Fourth Tier	0.5625	50 %	50 %
Allocation by Tier (USD million)		**LP**	**GP**
First Tier		37.5	0.8
Second Tier		5.6	1.0
Third Tier		3.8	1.3
Fourth Tier		13.8	13.8
Total		60.6	16.8
Allocation of Total Cash Distributed (USD million)			
Limited Partners		60.6	78.3 %
General Partner with IDRs		16.8	21.7 %
Total		77.4	100 %

Despite IDRs incentivising the GP to grow distributions for investors, there are also disadvantages attached to IDRs. When the MLP asset base is grown to a level where high-splits (50/50) are triggered upon distribution payments, the cost of GP capital increases, and with it the weighted cost of capital for the MLP. With a higher cost of capital, new acquisitions will require higher marginal cash flows to be profitable, and thus limit the competitiveness of the MLP in making acquisitions. It is quite the paradox really, that the very IDRs that are established to incentivise growth actually also establishes a hinder to growth beyond a certain distribution level. For growth oriented MLPs, the drafting of IDR policy is hence of utmost importance. In any case, a growth oriented MLP should consider establishing PA provisions that allow the GP to amend the IDR policy at a later stage in the life of the MLP. Should top-tier distributions be triggered ahead of a promising growth period, the GP will then be entitled to act on behalf of investors and lower IDR allocations to the GP to reduce capital cost.

Alternatively, the MLP can also think of the PA as a means to attract more outside investors or specific types of investors. Ciccotello and Muscarella (2000) report that MLPs with PAs that are protective of investors tend to have a lower proportion of insider ownership, and vice versa. Having an investor-friendly PA can hence act as a substitute

[10] The IDR structure is sampled from Delek Logistics Partners LP's IPO prospectus. Available from: [http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=8498120] (downloaded 03.11.2012).

for insider retention, and allow for a more dispersed ownership structure, and for a larger share of equity financed by outside investors.

To sum up, the MLP is very different from the corporation when it comes to governance. The PA, as the main governing mechanism, allows the individual MLP to tailor governance controls to suit its business strategy and environment. Ciccotello and Muscarella (2000) present evidence that contractual terms set out in the PA actually is related to how MLPs perform, and how their ownership structures are. Although certain PA provisions have become standard for most MLPs, there is nothing that says new MLPs *have* to adhere to traditional norms. There is room for innovative solutions, which can make the structure a more viable alternative to firms with unconventional assets.

2.1.3 Tax Treatment

For tax purposes, the MLP is considered a pass through entity, which means it is exempt from entity level taxation[11]. Instead, items of income, gain, loss, deduction and credit are passed directly through to unit holders on a pro-rata basis, and taxed at their respective individual income tax rates[12]. This pass through treatment of items makes the MLP avoid double taxation on income distributed to investors, and has traditionally been considered to have provided much of the rationale for the emergence of MLPs (Ciccotello and Muscarella, 2003). For example, if the individual income tax rate is 35 per cent, individual dividend tax rate is 15 per cent and the corporate income tax rate is 35 per cent, corporate investors will pay a marginal 44.75 per cent tax on cash dividends, while the MLP investors only pay 35 per cent on pro-rata attributable income. The marginal tax paid on cash flows to investors for a corporation is higher because operational income first needs to be taxed at the corporate level, and then a second time at the individual's dividend tax rate. For investors holding MLP units, pro-rata net income is taxed once at the individual income tax rate. Distributions on the other hand are considered as return of capital and generally not subject to tax, depending on the *basis* of the units held. As a result, a common saying about MLPs is that they provide investors with tax deferred distributions. Depending on the tax shields an MLP receive from for example depreciation and amortisation, the net income taxable for investors can be as low as 10 to 20 per cent of the distributions received on an annual basis. The *basis* of an MLP unit is normally equivalent to the price at which it was purchased by the investor. Adjustments are made to the basis to account for pass through items, debt and

[11] IRC Section 7704(c)(2) exempts publicly traded partnerships from entity level taxation, provided the entity derives a minimum 90 per cent of gross income from qualifying income sources, defined in Section 7704(d)(1). Qualifying income includes interests, dividends, real property rents, and income and gains derived from the exploration, development, mining or production, processing, refining, transportation (including pipelines transporting gas, oil or products thereof), or the marketing of any mineral or natural resource (including fertilizer, geothermal energy and timber), industrial source carbon dioxide, or the storage and transportation of certain alternative fuels. The Internal Revenue Service ("IRS") further releases Private Letter Rulings ("PLRs") on a regular basis, clarifying the scope of qualifying income for MLPs. Over the last 5 years, the IRS has published 40 PLRs, including the definition of income from cancellation of debt ("COD") related to qualifying income producing assets as qualifying income.

[12] Individual income tax rates currently range from 15 to 35 per cent, depending on the individual's income bracket.

distributions of cash[13]. On aggregate, the basis is adjusted upwards for taxable income, and downwards for cash distributions. If the basis reaches zero, distributions are taxable at the capital gains tax rate. In the event that the MLP passes through a loss, the investor is subject to passive loss limitation rules[14]. Unlike other securities, losses passed on from an MLP cannot be offset against other income, but must be offset from income derived from the same entity (Jones et al., 2008). In the event the investor should sell the unit after receiving tax deferred distributions, the investor will have to pay income tax on the amount of capital returned on the initial basis. For a simple example, see the calculations in the below figure.

Table 2. Taxable Income to Distributions – A Hypothetical Example[15]

	Unit Purchase Price	Year 1	Year 2	Year 3	Year 4	Sell Unit At End Of Year 5
MLP unit price (USD)	20	21	22	23	24	25
Annual distribution per unit (USD)	1	1	1	1	1	1
Distribution yield (%)	5.0 %	4.8 %	4.5 %	4.3 %	4.2 %	4.0 %
% of distribution tax deferred (tax shield)	80 %					
Ordinary personal income tax rate	35 %					
Capital gains tax rate	15 %					
Tax deferred portion of distribution		0.8	0.8	0.8	0.8	0.8
Taxable portion of distributions		0.2	0.2	0.2	0.2	0.2
Tax paid at year-end on distributions (at 35%)		0.07	0.07	0.07	0.07	0.07
Cost basis for the MLP unit	20	19.2	18.4	17.6	16.8	16
Tax paid when units are sold at the end of year 5						
Capital gains tax paid (on unit price increase from USD 20 to USD 25)	0.75					
Ordinary income tax paid (on "return of capital" - reduction in investor's cost basis from USD 20 to USD 16)	1.4					
Tax paid on year 5 distribution	0.07					
Total tax paid at the end of year 5	2.22					

Intuitively, the lower marginal tax paid on cash flows to investors should put the MLP structure at a cost of capital advantage to similarly situated corporations. One can argue that with a lower cost of capital, MLPs should hence *ceteris paribus* be able to either (1) pay more for acquisitions than a corporation and realise the same cash flow growth, or (2) realise more cash flow growth at the same acquisition price.

[13] For a detailed description of basis adjustments, see IRC Sections 705, 732, 733, 752, and Treasury Regulations section 1.752-3(a).
[14] For a detailed description of passive loss limitations for MLP unit holders, see IRC Section 469(k).
[15] Wells Fargo Securities (2010)

Collins and Bey (1986) point out however, that partnership tax treatment does not always put the MLP at an advantage to corporations. For example, if a company is in a growth phase that requires high income retention rates, or if the personal marginal tax rate is much higher than the corporate tax rate, then the MLP structure might actually be worse for the investor from an after-tax cash flow perspective. Corporations can also assimilate MLP after-tax cash flows by having a more leveraged capital structure, as illustrated by Scholes and Wolfson (1992). Corporations paying entity level income tax can deduct interest expenses from operating income, and hence reduce the tax burden[16] for the firm. And indeed, as documented in previous literature, corporations do tend to have more debt than MLPs. Omer and Terando (1999) build on existing literature (Jaffe, 1991; Guenther, 1992; Shaw and Weir, 1993; Gentry, 1994) when exploring differences in capital structure across organisational forms. Examining a sample of 95 MLPs and matched corporations, Omer and Terando (1999) find that the combination of relatively higher business risk and GP unlimited liability for MLP debt is a significant factor in explaining capital structure differences. According to Omer and Terando (1999), the goal of the GP is to be "*in a position similar to limited partners by increasing the probability that, in the event of LP liquidation, its loss exposure will not exceed its unrecovered equity investment*". If the MLP is already risky by nature, for example through exposure to volatile commodity prices, it is predicted that the GP will seek to reduce debt in the MLP capital structure.

For the MLP, having partnership status for tax purposes also poses some costly administrative challenges. First of all, since the income of the MLP is to be taxed on the hands of the investors, the MLP incurs a lot of extra costs related to tax reporting. Guenther (1992) observes that the extra cost associated with tax reporting can consume as much as two per cent of revenues. When Apache Petroleum Company filed to convert back to corporate form in 1988, one of the main motivations was to reduce administrative costs. According to a letter to unitholders, Apache Petroleum Company estimated that it could save USD 4 million annually, which represented 2.58 per cent of revenue (Moore et al., 1989). Further, the cost burden from administrative work will be even larger if the MLP elects to be treated according to Section 754 in the Internal Revenue Code ("IRC"). Under this section, unitholders can adjust their basis for tax purposes to equal the price the unit was purchased at. Section 754 election hence requires the MLP to track *all* trading in its units, including when units are traded, to what price, and what the outstanding basis was at the time it was traded. Without going further into the technicalities of the process, it is clear that in a market where thousands of units are traded every day, the information gathering requirements are substantial. Moving into the 21st century however, the administrative burden has become lesser with the development of better technological solutions.

[16] The tax benefit from having a more debt in the capital structure is often called having an *interest tax shield* in finance literature. MLPs do not benefit from debt in the same way as corporations, as the MLP does not pay entity level income tax.

Similarly, investors also incur higher costs related to tax reporting from investing in MLPs. For unit holders in the U.S., LP status involves the receipt of a Schedule K-1 detailing the partner's pro-rata share of MLP income, gain, loss, deduction and credit for the purpose of tax reporting. For the individual investor, this may pose an administrative challenge, as the K-1 form is considered to be much more complex than the regular Form 1099. For foreign investors, the process is even more cumbersome, and generally, non-U.S. investors might be better off holding instruments that track the performance of MLPs instead of the actual MLP itself. For example, if a foreign investor owns shares in a hedge fund that invests in MLPs, any flow through income that is "effectively connected" with U.S. trade or business is subject to U.S. federal income tax. According to EisnerAmber, a U.S. accounting firm, such effectively connected income transfers can be avoided under certain safe-harbour trading exemptions, but this is not the case for MLP income. Ultimately the fund has to withhold tax on behalf of the foreign investor, and the foreign investor might eventually end up having to file U.S. income tax returns in addition to the tax returns filed in the investor's home country.

The partnership tax treatment also bears special consequences for investors that are already tax exempt entities, such as pension plans or charitable organisations. These investors will not receive the regular benefits that individuals do, as income derived from MLPs (as for any partnership, S-corporation or pass through limited liability company) is considered so-called unrelated business taxable income ("UBTI")[17]. If the tax exempt entity receives more than USD 1,000 in UBTI, it will have to file a Form 990-T and pay income tax on the overshooting amount. Consequently, the tax motivation for investing in an MLP diminishes, and the investor might be better off investing on an individual basis.

Prior to the passing of the American Jobs Creation Act of 2004, income from MLPs was also considered UBTI for registered investment companies ("RICs"), such as mutual funds. RICs are only allowed to receive 10 per cent of income from UBTI, so investments in MLPs were fairly limited. After the act, the UBTI classification was removed for RICs, which made MLP investments more relevant to these entities. Presently, RICs can receive an unlimited amount of income from MLPs, subject to certain holding limitations. Today, RICs are permitted to place 25 per cent of fund values in MLPs, and are restricted to a maximum 10 per cent ownership share in any one MLP.

To conclude, MLPs enjoy pass through taxation and are hence exempt from entity level taxation. This lowers the cost of capital to the firm compared to similarly situated corporations, and puts the MLP at a competitive position for asset growth through acquisitions. Despite the evident benefits derived from favourable tax treatment, costs related to more complex tax reporting may be substantial both for the MLP and for the individual investor. Before electing

[17] For a detailed description of unrelated business taxable income, see IRC Section 511-514 (unrelated business taxable income rule for partnerships is in section 512(c)), or IRS Publication 598, "Tax on Unrelated Business Income of Exempt Organizations", available from: [http://www.irs.gov/pub/irs-pdf/p598.pdf]. Downloaded 13.11.2012.

to be treated as a partnership for tax purposes, the firm should hence consider the cost-benefit trade-offs related to tax, also with regards to target investors. In some instances, for example if the firm does not have any business in the U.S., or if it is targeting mainly non-U.S. or institutional investors, an alternative solution could be superior to the traditional MLP structure.

2.2 How is a Master Limited Partnership Formed?

There are several different ways to form an MLP. The most common types are termed the *roll-up*, *dropdown*, *acquisition*, *conversion*, and *IPO* method. Depending on the method used, the decision to assume the MLP structure is motivated by different cost-benefit evaluations. The different methods with underlying motivations are briefly discussed in the following.

The first, and most common method during the 1980s, is the *roll-up* (Muscarella, 1988). In a roll-up, two or more existing partnerships decide to go together and form a new MLP. In this transaction, the owners of non-traded partnership units contribute assets from the old partnerships into the new MLP, and receive units in the MLP matching the share of their contribution. The transaction may or may not result in the complete liquidation of the contributing partnerships. The motivation for non-traded partnerships to form an MLP is multi-faceted. The method provides risk reduction and diversification for the contributing owners. Further, owners get better liquidity in their units, and hence a better chance of realising wealth through selling units through the exchange. Lastly, the old partnerships that don't liquidate might enjoy better access to capital markets.

The second and perhaps most common type of MLP formation today, is the *dropdown* (also called *rollout* in some papers) method, which is similar to equity carve-outs. In this transaction, a Parent sponsor contributes a division or specific assets from its existing business into the new MLP, including any debt attached to the assets. In return, the parent receives GP interest, and often also LP units for the overshooting value. Sometimes, the MLP will alternatively establish intra-company debt related to the acquisition, which can be paid back using proceeds from the offering. In a dropdown transaction, the most normal way to carry out the IPO is for the MLP to issue units to the public. In this way, the sale of units is considered a primary offering, and hence a non-taxable event for the MLP. Alternatively, existing owners may concomitantly sell some seasoned units, and claim proceeds at their own benefit. Gains from these units are generally subject to tax however, as a seasoned equity sale is considered a taxable event. A third method is to distribute the new equity to existing owners of the Parent, making the transaction more similar to a corporate *spinoff*. The primary motivation for corporations to shift assets into the MLP form is often associated with the immediate gains from tax exemption. Moore et al. (1989) study the valuation effect of shifting assets from a corporate structure into an MLP, and find that for a sample of 7 dropdowns during the period 1982 to 1987, MLPs experience a significant positive average price reaction at 2.41 per cent, or 30.4 per cent per dollar of assets dropped

down. For 5 spinoffs in the same time period, the positive price reaction averaged 6.41 per cent, or 20.8 per cent return per dollar of assets spun off. Moore et al. (1989) posit that the abnormal positive gain for dropdowns and spinoffs of corporate assets is consistent with (1) MLP tax advantages, (2) reduction of free cash flow, (3) information signalling, (4) reduced information asymmetry, and (5) improved efficiency of asset management. Improved valuations based on reduced information asymmetry and better asset management is consistent with results found for corporate equity carve-outs (Schipper and Smith, 1986) and spinoffs (Hite and Owers, 1983; Schipper and Smith, 1983). In addition to improved valuations, the Parent also keeps control over the assets through GP ownership, receives LP units that provide cash inflows at a regular basis, reduce debt on its balance sheet, and may realise part of the asset value immediately. As such, the dropdown method can be a smart financing tool for the Parent, and also benefit investors by realising fair valuations for assets that have previously been discounted in a more diversified business unit. For example, when midstream assets such as pipelines are held by oil majors or refiners, they may be underutilised and undervalued as they are not the focus of management, and might not even be run for profit. Dropping such assets down into an MLP will likely increase valuation, as the new entity will have both the incentive, expertise and focus necessary to manage the assets efficiently.

A third method is the *acquisition* method. Here, the parent corporation will form an MLP, issue units to the public, and use the proceeds to acquire assets from a third party. In essence, the transaction is quite similar to the dropdown; the parent retains GP interest, and proceeds are used to finance the assets. However, in this transaction the parent acts more as an intermediary between the MLP and the selling party, and can charge a fee from the MLP for locating the assets and negotiating the acquisition.

A fourth way to form an MLP is for a traditional corporation to perform a complete *conversion* into partnership form. In this transaction, major shareholders or officers are likely to adopt the role of GP, while LP units are allocated to existing owners in exchange for outstanding shares. A corporate conversion is most likely motivated by the partnership tax treatment, and has been proven to spark immediate abnormal positive returns (Moore et al., 1989).

The fifth and final method, the *IPO*, happens when a private firm choose to list publicly in the form of an MLP.

2.3 How is a Master Limited Partnership Valued?

On a general note, the valuation of an MLP is no different from that of a corporation. At the most basic level, the present fair value of an MLP should reflect the value of future expected cash flows to the investor, discounted for market risk and the time value of money. But, as for most asset classes, a specific set of MLP valuation methods and metrics have developed amongst practitioners. In order to illustrate what investors generally look for, some of these

valuation principles and metrics are provided in the following. A full assessment of valuation techniques is outside the scope of this paper, however.

2.3.1 Distribution Yield

Historically, the MLP has been associated with fixed income and other yield investments. Specifically, 10-year U.S. Treasury Notes yield was long used as a benchmark for MLP yields, exhibiting a 52-week rolling correlation in the range between 10 and 30 per cent in "normal" periods (Morgan Stanley, 2011). Following the financial crisis and resulting QE rounds however, correlations are now in the negative, mostly due to the FED's persistence in holding interest rates low. Increasingly, MLPs are being viewed more as a total return vehicle, although investors still do look at yield metrics in assessing relative value.

When comparing yields, the most commonly used metric is the current yield. Current yield is calculated by dividing the most recent annualised distribution by current price[18]. The metric does provide some relative insight, but by and large ignores fundamental value drivers for the MLP. For example, a higher relative yield can result from the MLP having a riskier profile, with more volatile cash flows or higher leverage. A relatively lower yield on the other hand, can result from the MLP having ex ante higher growth prospects, which may be reflected in a relatively higher unit price. Essentially, investors need to look at the MLP as a total return vehicle, and take into consideration other factors that drive both cash flow yield and unit price appreciation to arrive at a sound assessment.

2.3.2 Two-Stage Dividend Discount Model

One frequently used method that does take into account the total return feature of MLPs is the Two-Stage Distribution Discount Model ("DDM") (Morgan Stanley, 2011; Wachovia, 2008; Wells Fargo Securities, 2010). The model calculates the present value of expected future distributions made to investors, using expected distribution per unit, the cost of equity and expected growth rate as input. As a proxy for expected distributions, it is common practice to use "distributable cash flow" divided by the number of units outstanding. For MLP IPOs, this figure is provided in the IPO prospectus (pro forma unaudited). For seasoned MLPs, cash available for distribution can be calculated as shown in Table 3.

[18] Some practitioners also use the forward yield for relative valuation assessment. The forward yield is calculated by taking the expected distributions to be paid within a financial year and divide by current price.

Table 3. Calculating Distributable Cash Flow

Net income			EBITDA	
+ Depreciation and amortisation			- Interest expense	
- Maintenance capital expenditures		**OR**	- Maintenance capital expenditure	
= Available cash flow			= Available cash flow	
- Cash to the general partner			- Cash to the general partner	
= Distributable cash flow			= Distributable cash flow	

There are many versions of the DDM; here, "two-stage" refers to the model taking into account two different growth rate periods.

$$P_0 = \sum_{t=1}^{t=n} \frac{DPU_t}{(1+k_{e,hg})} + \frac{P_n}{(1+k_{e,hg})^n}, \text{ where } P_n = \frac{DPU_{n+1}}{(k_{e,sg}-g_n)}$$

Where:

$DPU_t =$ Expected distribution per unit;

$k_e =$ Cost of equity (hg = High growth period, sg = Stable growth period);

$P_n =$ Terminal value at the end of year *n;*

$g_n =$ Perpetual growth rate after year *n*

The DDM is equivalent to the Dividend Discount Model, which will be familiar to most finance students and practitioners[19]. The component that differs from common practice however, is the cost of equity, k_e. Despite certain model limitations, the cost of equity in finance literature is often derived using the Capital Asset Pricing Model ("CAPM"), where the cost of equity is found by performing the following calculation:

$$k_E = r_f + \beta \times MP$$

Where:

$k_E =$ Cost of equity;

$r_f =$ Risk free rate;

$\beta =$ Beta of the underlying security (systematic risk);

$MP =$ Market premium

[19] For an introduction to the Dividend Discount Model, see for example Damodaran's chapter on the subject, available from [http://pages.stern.nyu.edu/~adamodar/pdfiles/valn2ed/ch13.pdf]

For MLPs however, this method is not considered optimal (Morgan Stanley, 2011; Wells Fargo Securities, 2010). MLP returns have historically not exhibited high correlations with the stock markets[20], thus having very low beta values. Since a major feature of the CAPM is to determine cost of capital based on how the price of the underlying security moves with the marked, this lacking market correlation makes the use of the CAPM less meaningful. This is especially true since the CAPM does not capture the cost of GP equity, hence often understating the cost of equity capital to the MLP. What is normally used instead of the CAPM is some metric conveying the required rate of return for investors. For LP equity, the required rate of return can be approximated by the forward yield plus expected distribution growth. For the GP equity, the calculation is similar, but needs to take into account any IDRs attributable to the GP following distribution growth. The weighted average cost of equity will increase as distributions are grown to levels where IDRs are triggered.

In deriving the required rate of return, there are two main areas to consider, namely (1) cash flow volatility and (2) cash flow sustainability. Volatility refers to the fluctuation in operating cash flows, which will vary depending on the underlying assets and business model. For example, MLPs such as propane and heating oil distributors are exposed to seasonality in sales, thus exhibiting high cash flow volatility on a quarterly basis. Sustainability of cash flows refers to the impact from the regulatory environment in which the MLP operates. For example, pipeline MLPs have highly regulated business models, with prices and tariffs set by the Federal Energy Regulatory Commission ("FERC"), and with flow-through volumes contracted ahead of time. In addition to barriers to entry in the industry, these characteristics are indicative of cash flow sustainability.

In general, the cheapest financing for MLPs is likely debt, followed by LP equity and GP equity. Creditors receive interest payments before investors receive distributions, and should hence require a lower rate of return. Due to MLP governance characteristics and distribution payments however, MLPs are considered more risky by rating agencies (Moody's Investors Services, 2007), receiving sub-investment grade ratings. This can potentially make debt more expensive than for similarly situated corporations. If the cost of equity then does not take distribution growth and IDRs into consideration, the resulting cost of equity might be lower than the cost of debt.

2.3.3 Net Asset Value

For a more comprehensive analysis of the underlying assets of an MLP, the investor can also perform a Net Asset Value ("NAV") calculation. The NAV calculation is useful in combination with the DDM, as it may reveal structural

[20] As measured by the Alerian MLP Index (AMZ), MLPs have historically exhibited a 47 per cent correlation with the S&P 500, and had a 61 per cent correlation with the S&P 500 for 2012 (as of 05.11.2012). In general, MLPs have followed markets in times of severe stress, while correlations have fallen during normal times. During the financial crisis, when raising capital became more difficult, the valuation of the entire MLP asset class fell along with the market. At the height of the crisis however, it became evident that most MLPs sustained their distributions, sending the Alerian MLP Index up 76 per cent in 2009 (Rusoff, 2012). SteelPath Fund Advisors (2011) also notes that in August 2004, when equity markets hit rock bottom that year, investors were concerned about the general economic outlook, resulting in a 90 per cent correlation between MLPs and the S&P 500.

problems not accounted for in the DDM. The DDM favours MLPs that pay out the largest share of cash flows regardless of whether such payments are appropriate in the current business environment. Conversely, a NAV calculation needs to follow a bottom-up approach, and take into account specific risks associated with different segments or assets within the MLP. On an aggregate level, NAV is defined as the value of an entity's assets, less any intangible assets and liabilities.

2.3.4 Distribution Coverage Ratio

A common valuation metric in the MLP space is the Distribution Coverage Ratio ("DCR"), defined as the ratio of available cash for distribution to distributions paid to the GP and LP.

$$DCR = \frac{Cash\ Available\ for\ Distribution\ (LP\ \&\ GP)}{Distributions\ Paid\ (LP\ \&\ GP)}$$

The ratio is essentially a liquidity measure, and can be compared to the Interest Coverage Ratio used by banks to assess a company's ability to meet interest payments. In general, MLPs will target certain DCR levels based on the nature of the underlying assets and cash flow volatility. It is normal to see for example propane producers targeting DCRs at 1.1x, while pipeline MLPs will target DCRs in the range between 1.0x to 1.1x. A higher the ratio increases the likelihood of the MLP meeting its target distributions, and also gives management more flexibility in raising distributions.

2.3.5 Multiples

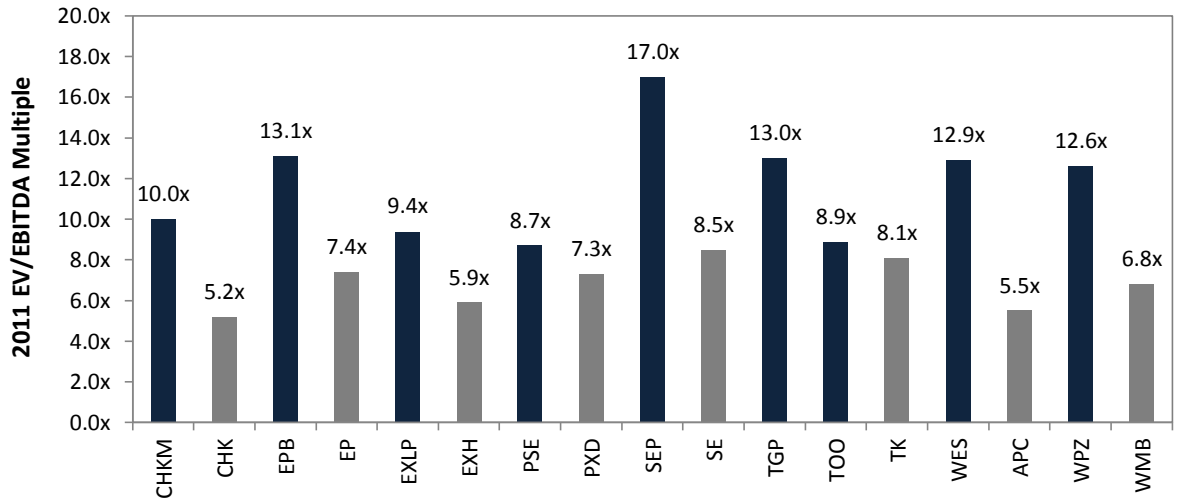
Multiples in various forms are commonly used for valuation sanity checks. Two multiples relevant for the MLP asset class are Price-To-Distributable Cash Flow ("P/DCF") and Enterprise Value-To-Adjusted EBITDA ("EV/EBITDA").

P/DCF is comparable to the more common Price-To-Earnings ("PE") ratio. Distributable cash flow is more relevant for MLP valuation than net income, and hence the PE ratio is not as frequently used. The ratio is useful for assessing relative valuations within the MLP space. According to Morgan Stanley (2011), MLPs have historically traded at an average 13.0x P/DCF multiple.

EV/EBITDA is useful for evaluating an MLP's value compared to non-MLP traded companies. In doing so however, it is important to adjust for the GP's interest in the EBITDA, in order to compare "apples to apples". EBITDA is used to support distributions paid to LPs and the GP, while enterprise value only reflects the value to LPs. Adjusting the EBITDA can be done simply by deducting the relevant percentage of EBITDA (accounting for IDRs) attributable to the GP (Wells Fargo Securities, 2010).

In many investment commentaries, it is stated that MLPs trade at more attractive valuations than regular corporations. In the below figure, 2011 multiples are shown for some MLPs, matched against associated corporate parents. MLPs trade at a median 12.6x EV/EBITDA multiple versus a median 7.0x for matched corporations. While it is not guaranteed that an MLP will achieve a more attractive valuation, this is what is generally observed in the market. According to Morgan Stanley (2011), MLPs have historically traded at an average 10.8x EV/EBITDA multiple.

Figure 3. Valuation Differences between MLPs and Related Corporations[21]



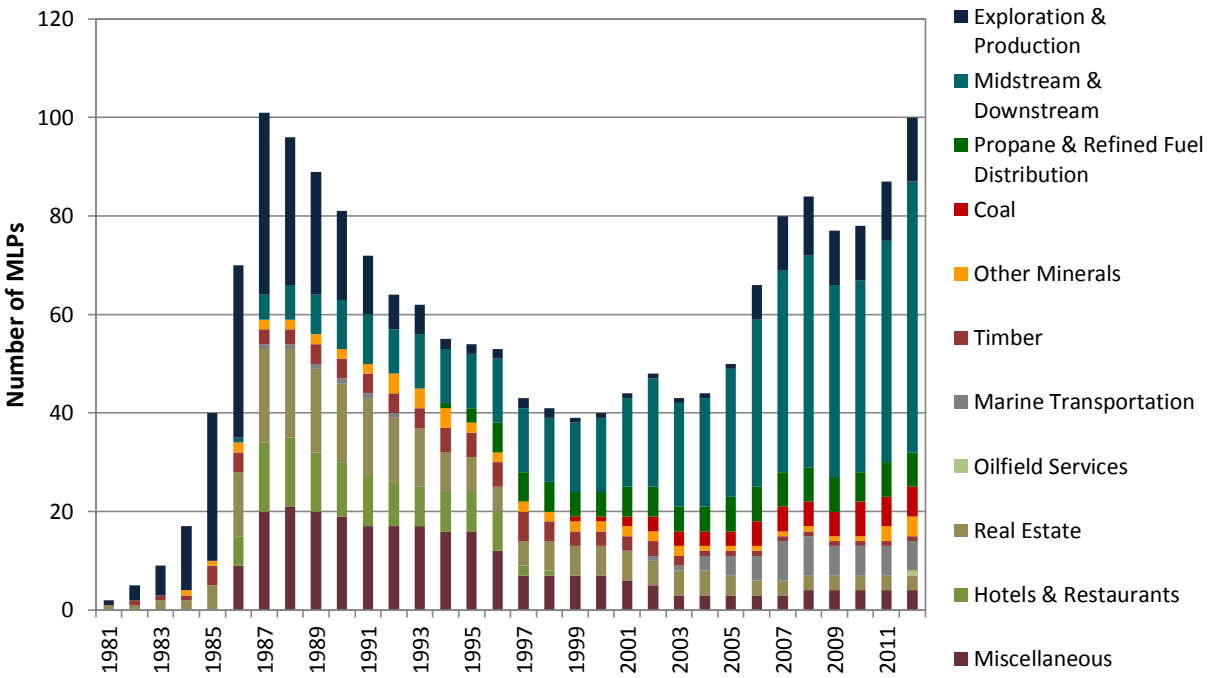
2.4 Historical Changes in the Regulatory and Business Environment of Master Limited Partnerships

The MLP has existed as an alternative business model in the U.S. since the early 1980s. Due to its unique characteristics, the MLP became quite popular in the 1980s. From Apache Petroleum Company established the first MLP in 1981 and until the number of operating MLPs peaked in 1987, 105 firms had adopted the structure (132 including financial MLPs). At that time, the asset class comprised firms from a wide variety of industries, including firms operating restaurants and hotels, oil and gas producers, real estate developers, and even a commercial sports firm, the Boston Celtics. Smith and Brewerton (1988) and Bullard et al (1990) note that during the 1980s, the MLP was popular in industries with few growth opportunities, and for firms with assets creating large cash flows available for distribution. Ciccotello and Muscarella (2000) examine a sample of 119 MLP IPOs from 1981 to 1995, and find that the median average sales growth over the four first years of operations was in fact only 1.3 per cent for sample firms, versus an industry median at 2.2 per cent. In comparison, firms in the S&P 500 Index experienced a median annual sales growth at 8.8 per cent from 1986 to 1990.

[21] The blue bars represent MLPs, and the grey bars corporations. Sources: FactSet, Wells Fargo Securities estimates.

Compared to today, many of these early MLPs were more cyclical in nature. This is especially true for the oil and gas exploration and production ("E&P") MLPs, which were more reliant on exploratory drilling to sustain cash flows, and to a lesser extent hedged commodity price exposure. As a result, E&P MLPs were severely hit during the commodity price collapse in the 1980s (Steelpath Fund Advisors, 2011). According to the U.S. Energy Information Administration ("EIA"), the price per barrel of imported crude oil in 1981 was on average USD 95.29. In 1986, the same commodity was priced at an average USD 29.45 per barrel and moved further down to an absolute low in 1998 at USD 17.16 per barrel[22]. Not surprisingly, these early E&P MLPs quickly went bankrupt, were acquired or otherwise left the MLP space (see Figure 4) when prices plunged. The event left a foul taste in the mouth of investors, and shifted preferences towards assets in the more stable midstream space.

Figure 4. Number of Operating MLPs by Year and Industry[23]



Even though MLPs had existed in practice for half a decade, the structure was not officially "created" until the U.S. Congress passed the Tax Reform Act of 1986 ("TRA 86") and the Revenue Act of 1987 ("RA 87").

The TRA 86 established the *structural scope* of limited partnerships through prohibiting investors to use partnership losses to offset taxable income from other sources[24]. This effectively led to the fallout of partnerships that were not

[22] Prices are given in real U.S. dollar terms, calculated based on the nominal price in the given year multiplied by the ratio of the 2012 consumer price index divided by the consumer price index value for the given year. Source: U.S. Energy Information Administration (2012). Data spread sheet available for download from: [http://www.eia.gov/forecasts/steo/realprices/].

[23] Sources: National Association for Publicly Traded Partnerships ("NAPTP"), own research

motivated by economic profitability, but merely established to function as tax shelters (SteelPath Fund Advisors, 2011). At the same time, the TRA 86 lowered both the individual and corporate income tax rate, and moved the maximum individual tax rate (28 per cent) to a level below the top corporate tax rate (35 per cent). It further eliminated the preferential capital gains tax rate for corporate tax filers, leaving this benefit to individuals only. The passing of the TRA 86 hence increased the tax benefit of investing in limited partnerships, and pushed the MLP structure into a favourable position over the corporation from a tax perspective (Michaeley and Shaw, 1995). And, as can be observed in Figure 4, a large number of firms from a variety of industries moved into the asset class in the late 1980s. In particular during the years from 1985 to 1987, there was a substantial rise in the number of operating MLPs. The wave of corporate conversions into MLPs soon spurred concerns about the "disincorporation of America", and a potential erosion of the corporate tax base (Jones et al., 2008). Not long after, the Omnibus Budget Reconciliation Act of 1987 was passed as part of the RA 87, establishing the *operating scope* of MLPs. The RA 87 defined the term "publicly traded partnership" ("PTP"), and introduced the IRC Section 7704[25], listing the sources of qualifying income for MLPs. The legislation restricted partnership tax treatment to MLPs that derive a minimum 90 per cent of revenue from certain energy related activities, including for example the exploration, development, mining or production, processing, refining, transportation, or marketing of any mineral or natural resource. As a result, non-qualifying MLPs were grandfathered, and the number of MLPs declined moving into the 1990s (Smith and Brewerton, 1988; Ciccotello and Muscarella, 2003). Increasingly, midstream oil and gas firms came to dominate the MLP space, with predictable cash flow businesses that both qualified for and suited the structure as it were. These MLPs primarily held assets that required little capital maintenance, produced stable cash flows, and had business models that had very limited exposure to commodity price fluctuations. It should also be noted that the downward trend in the number of operating MLPs coincided with the emergence of the "new economy" and the 1990s internet boom. As the focus of the market shifted toward growth stories in the technology sphere, MLPs temporarily moved out of the limelight and received little attention from investors.

---

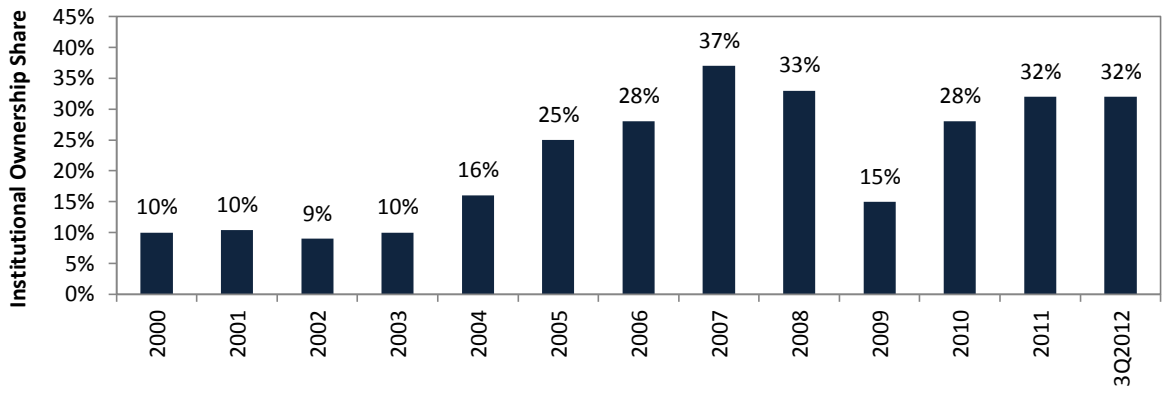
[24] The Economic Tax Recovery Act of 1981 established a 15-year cost recovery period for real estate assets, which allowed for a widespread growth in real estate limited partnerships to function as tax shelters. Passive investors could depreciate highly leveraged real estate properties on their own hands, and use it to offset taxable income generated from other sources. The TRA Section 465 prohibited passive investors from offsetting other taxable income against costs related to debt unless they were personally liable for repayment. The TRA Section 469 further prohibited the use of partnership losses to offset income from other sources than income derived from the same partnerships.

[25] IRC Section 7704(c)(2) exempts publicly traded partnerships from entity level taxation, provided the entity derives a minimum 90 per cent of gross income from qualifying income sources, defined in Section 7704(d)(1). Qualifying income includes interests, dividends, real property rents, and income and gains derived from the exploration, development, mining or production, processing, refining, transportation (including pipelines transporting gas, oil or products thereof), or the marketing of any mineral or natural resource (including fertilizer, geothermal energy and timber), industrial source carbon dioxide, or the storage and transportation of certain alternative fuels. The Internal Revenue Service ("IRS") further releases Private Letter Rulings ("PLRs") on a regular basis, clarifying the scope of qualifying income for MLPs. According to Goldman Sachs, the IRS has published 40 PLRs over the last 5 years, including the definition of income from cancellation of debt ("COD") related to qualifying income producing assets as qualifying income.

Since 1987, legislation that has influenced the MLP space includes the Jobs and Growth Tax Relief Reconciliation Act of 2003 ("JGTRRA 03")[26], the Tax Increase Prevention and Reconciliation Act of 2005 ("TIPRA 05")[27], the American Jobs Creation Act of 2004 ("AJCA 04")[28], the Emergency Economic Stabilization Act of 2008 ("EESA 08")[29], and the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 ("TRUIRJCA 10")[30]. The JGTRRA 03 reduced the capital gains tax rate to 5 per cent for individuals in 10 and 15 per cent income tax brackets, and 15 per cent for individuals in higher income tax brackets. JGTRRA 03 also reduced the capital gains tax rate to zero for individuals in 10 and 15 per cent tax brackets for post-2007 tax years. This 0/15 per cent policy was extended into 2010 through the TIPRA 05, and later through 2012 by the TRUIRJCA 10. The legislation has maintained income and capital gains tax at lower levels than those experienced by investors in 1987, and maintained the attractiveness of partnership investments (Jones et al., 2008) from a tax perspective.

The AJCA 04 expanded the investment scope of RICs, such as mutual funds, through modifying the IRC Section 851. Prior to the AJCA 04, RICs were limited in their ability to invest in MLPs, as income derived from MLPs was considered UBTI. RICs can only receive 10 per cent of income from UBTI sources in order to maintain its RIC tax status. With the AJCA 04, income from MLPs was no longer considered UBTI, and RICs were able to increase the amount of income received from MLPs, subject to certain ownership limitations. Under the new rules, RICs can now hold MLP investments amounting to 25 per cent of total assets, as long as the ownership share in any one MLP does not exceed 10 per cent. The AJCA 04 thus introduced more meaningful institutional financing opportunities to existing and prospective MLPs. Moreover, the AJCA 04 sparked what was to become a move in the investor structure of MLPs from predominantly retail investors into a more mixed pool of investors.

Figure 5. Institutional Ownership Trend from 2000 to 3Q 2012[31]

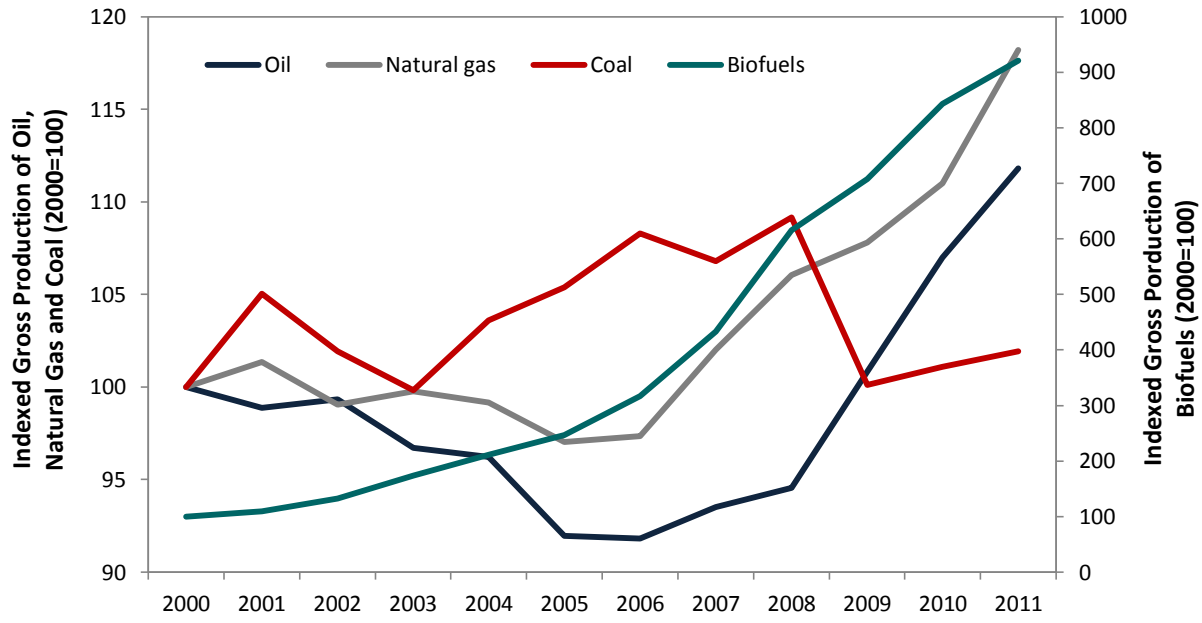


[26] Jobs and Growth Tax Relief Reconciliation Act of 2003, Public Law 108-127.
[27] Tax Increase Prevention and Reconciliation Act of 2005; Public Law 109-222.
[28] American Jobs Creation Act of 2004; Public Law108-357.
[29] Emergency Economic Stabilization Act of 2008; Public Law 110-343.
[30] Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010; Public Law 111-312.
[31] Sources: Thomson Reuters, Morgan Stanley Research

As displayed in Figure 5, institutional ownership has increased from approximately 10 to 32 per cent from 2004 to 3Q 2012. The implications for MLPs from the AJCA 04 changes have thus been noticeable shift in investor mix, albeit not overwhelming. According to Morgan Stanley, 23 midstream closed-end funds have listed from 2004 to 3Q 2012, managing funds with a total net asset value at USD 28.426 billion. In addition, various MLP exchange traded notes and funds have become available to investors, with funds valued at approximately USD 12 billion listed since 2009. Steelpath Fund Advisors (2011) point out that the reason why MLPs are not experiencing an even larger influx of institutional investors might be that there are still some practical hurdles related to tax reporting that make MLP investments less attractive compared to corporations. A second possible explanation is that historically, MLPs have not been on the radar for institutional investors, which in turn might have limited the number of expert analysts and portfolio managers who work with and understand the asset class. With increased focus on MLPs from mainstream Wall Street, it is likely that MLP products to a larger extent will be marketed, spurring continued growth in institutional ownership. Lastly, the EESA 08 slightly modified the operating scope of MLPs by expanding the definition of qualifying income. Specifically, the transportation of certain alternative fuels, such as ethanol, biodiesel, and industrial-source carbon dioxide were included under the qualifying income definition in the IRC Section 7704. During 2012, two bills have also been passed in Congress and the House of Representatives, arguing the case to expand the IRC Section 7704 even further, and accept renewable energy as a qualifying income source.

It is likely that all of these regulatory changes have played a part in bringing the MLP asset class back into shape. It should be noted however, that the proliferation of the asset class also can be linked to growing energy production volumes observed in the U.S. The emergence of new extraction technology such as horizontal drilling and hydraulic fracturing has pushed volumes across the continent, with Texas and North Dakota seeing the strongest growth.

Figure 6. Relative Growth in Gross Production Volumes for Natural Resources in the United States from 2000 to 2011[32]



As energy production volumes is an important driver for energy infrastructure demand, midstream MLPs have seen some very real growth opportunities materialise over the last decade. For example, the Interstate Natural Gas Association of America ("INGAA") published a report in 2011 suggesting that in order to support growing supply of oil, natural gas and natural gas liquids ("NGLs") from emerging shale plays, a total amount of USD 251.1 billion (in real 2010 dollars) will have to be invested in energy infrastructure moving from 2011 into 2035. Further, the U.S. Department of Energy ("DOE") recently released its long anticipated liquefied natural gas ("LNG") exports study. The report examines the overall impact on the U.S. economy from exporting natural gas, and also considers the impact on global natural gas prices. The report concluded that in all scenarios covered, LNG exports would have a net positive impact on the U.S. economy making LNG exports approval increasingly more likely (NERA Economic Consulting, 2012). According to Morgan Stanley, the DOE is currently reviewing 15 pending applications for LNG exports, including Kinder Morgan Inc. ("KMI"), which holds GP interest in the two MLPs Kinder Morgan Energy Partners LP ("KMP") and El Paso Pipeline Partners LP ("EPB"). Other MLPs that have filed for LNG exports with the DOE include Energy Transfer Equity LP ("ETE") and Energy Transfer Partners LP ("ETP"). If export is permitted, MLPs face growth opportunities both within LNG onshore transportation, storage, and maritime transportation.

[32] Source: U.S. Energy Information Administration

2.5 Recent Innovations in the Master Limited Partnership Structure

The objective of this chapter is to explore the development of MLPs as an asset class moving into the 21st century, and to detect how asset owners can tweak the MLP structure to allow for unconventional assets to enter the MLP space. With regulatory and business environments encouraging scope expansion, it is the task of managers and underwriters to make unconventional assets attractive for investors in the MLP form. Concluding this chapter, I will first present data on recent MLP IPOs, and proceed to present trending innovations in the MLP structure for recent listings of unconventional assets. Such innovations are primarily related to deviations from traditional MLP governance and tax treatment.

2.5.1 Presentation of Data on Recent Issue Activity

The data presented in the below tables have been extracted from the sample used to test underpricing in part two. For a thorough description of how data have been sampled, refer to the part two subchapter "Sample Description" on pp. 59-62.

Table 4. Sample MLP IPOs by Asset Category[33]

IPO Year	Coal	Downstream	Maritime	Midstream	Other minerals	Upstream	Total
1994		1					1
1996		2		2			4
1998				2			2
1999	1			1			2
2000				1			1
2001	1	1		2			4
2002	1		1	4			6
2004			2	3			5
2005		3	1	5			9
2006	2	1	1	8		6	18
2007			3	7		4	14
2008				2		1	3
2010	2			3		1	6
2011		2	1	5	2	3	13
2012		5		5	1	1	12
Total	7	15	9	50	3	16	100

Table 4 illustrates how unconventional assets in the upstream and downstream segments have entered the MLP space over the last decade. Some maritime transporters, coal and other minerals producers have also launched IPOs, representing deviations to the traditional pattern of midstream IPOs. For a closer look at recent IPO activity, more detailed information about recent listings is provided in Table 5.

[33] Assets have been categorised according to Appendix 1. "Other Minerals" includes fertilizer and monocrystalline sand producers.

Compared to the previous popularity peak in the late 1980s, the MLP universe now exhibits a wider diversity in assets adopting the structure. The trend can be illustrated by looking at the assets listed in recent IPOs in Table 5. Coal producers such as Oxford Resource Partners LP and Rhino Resource Partners LP both launched their IPOs in 2010, and in 2011, fertilizer producers CVR Partners LP and Rentech Nitrogen Partners LP followed suit. Like oil and gas producers, these firms are to a larger extent sensitive to fluctuations in commodity prices. Rentech Nitrogen Partners LP states in its IPO prospectus that "*nitrogen fertilizer prices are, seasonal, cyclical and highly volatile* (*...) and could potentially expose us to significant fluctuations in our operating and financial results, and (...) our quarterly distributions*"[34]. This differs substantially from the situation for midstream MLPs such as Access Midstream Partners LP (previously Chesapeake Midstream Partners LP), which owns and operates natural gas gathering systems focused on "*cost-advantaged unconventional resource plays such as the Barnett Shale and the Colony Granite Wash and Texas Panhandle Granite Wash*"[35]. Access Midstream Partners LP's revenues are mostly derived from long-term, fixed-fee contracts, which makes the firm's business model more traditional in the context of MLPs. The last three years also saw the re-entry of IPOs in the upstream segment, which is a segment characterised by more volatility in cash flows than the midstream behemoths that have historically dominated the MLP space. Compared to the early E&P MLPs in 1980s however, these new upstream MLPs own mostly mature longer-life reserves, and employ methods to lessen cash flow volatility. For example, it has become normal for E&P MLPs to hedge commodity price risks. Mid-Con Energy Partners LP state in their IPO prospectus that they "*expect to enter into commodity derivative contracts at times and on terms designed to maintain, over the long-term, a portfolio covering approximately 50% to 80% of estimated oil production from proved reserves over a three-to-five year period at any given point of time"*[36]. Lastly, another recent development has been the introduction of maritime transporters and offshore E&P and oil services firms, such as Golar LNG Partners LP and Seadrill Partners LLC. These firms own assets that are traditionally highly leveraged; sometimes ships or drilling rigs may be up to 70 per cent debt financed. As previously stated, MLPs are usually not as highly leveraged due to the GP unlimited liability factor, which might pose a challenge when structuring growth transactions in the maritime transportation segment.

Considering the deviations from traditional MLP success criteria detected in the above examples, these new MLPs represent cases where certain innovations have likely been made to attract investor interest. In the following sub-chapters, some observed trending innovations are discussed.

[34] Rentech Nitrogen Partners LP IPO prospectus. Available from: [http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=7856904]
[35] Chesapeake Midstream Partners LP IPO prospectus. Available from: [http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=7051174#D424B4_HTM_ROM27184_4]
[36] Mid-Con Energy Partners LP IPO prospectus. Available from: [http://www.nasdaq.com/markets/ipos/filing.ashx?filingid=7923699#H83468B4E424B4_HTM_H83468105]

Table 5. Recent MLP IPOs Illustrating Market Acceptance of Unconventional Assets[37]

IPO date	Issuer Name	Deal Value (USD million)	Offer Price (USD)	% Δ Offer/ 1 Day	% Δ Offer/ Current	Implied Yield at Offer Price	Industry Segment	Primary Assets/ Activity
20.11.2012	Alon USA Partners LP	160	16	6.3 %	18.0 %	-	Downstream	Refinery
02.11.2012	Delek Logistics Partners LP	168	21	6.4 %	6.9 %	7.1 %	Downstream	Oil logistics and marketing
02.11.2012	Southcross Energy Partners LP	180	20	11.8 %	17.4 %	8.0 %	Midstream	Pipelines, processing plants
26.10.2012	MPLX LP	381	22	23.6 %	30.7 %	4.8 %	Midstream	Pipelines, storage
25.10.2012	Lehigh Gas Partners LP	120	20	1.2 %	-3.3 %	8.8 %	Downstream	Fuel wholesale distribution
19.10.2012	Seadrill Partners LLC	193	22	7.6 %	19.4 %	7.0 %	Upstream	Offshore drilling rigs
28.09.2012	Summit Midstream Partners	250	20	5.6 %	-1.3 %	8.0 %	Midstream	Pipelines
20.09.2012	Susser Petroleum Partners LP	195	20.5	11.8 %	21.8 %	8.5 %	Downstream	Fuel wholesale distribution
16.08.2012	Hi-Crush Partners LP	191	17	17.6 %	-9.2 %	11.2 %	Minerals extraction	Monocrystalline sand production
26.07.2012	Northern Tier Energy LP	228	14	1.1 %	66.4 %	-	Downstream	Refinery
27.06.2012	EQT Midstream Partners, LP	263	21	13.1 %	46.3 %	6.7 %	Midstream	Pipelines
04.05.2012	PetroLogistics LP	595	17	-2.9 %	-31.1 %	11.9 %	Downstream	Petrochemicals production
16.12.2011	Inergy Midstream LP	272	17	3.8 %	38.4 %	8.7 %	Midstream	Natural gas storage
15.12.2011	Mid-Con Energy Partners LP	97	18	0.3 %	14.9 %	10.6 %	Upstream	Onshore oil and gas reserves
09.12.2011	Memorial Production Partners LP	171	19	-1.1 %	-1.9 %	10.0 %	Upstream	Onshore oil and gas reserves
09.12.2011	Rose Rock Midstream LP	140	20	0.0 %	64.9 %	7.3 %	Midtream	Pipelines and storage
11.11.2011	LRR Energy LP	179	19	0.3 %	-2.5 %	10.0 %	Upstream	Onshore oil and gas reserves
04.11.2011	Rentech Nitrogen Partners LP	300	20	-0.7 %	99.6 %	-	Fertilizer	Fertilizer production
27.07.2011	American Midstream Partners LP	79	21	-0.2 %	-22.6 %	7.9 %	Midstream	Pipelines, processing plants
14.07.2011	Oiltanking Partners LP	215	21.5	10.2 %	72.6 %	6.3 %	Midstream	Oil terminaling, storage, transportation
15.06.2011	Compressco Partners LP	53	20	-5.0 %	-13.4 %	7.8 %	Midstream	Natural gas compression

[37] Sources: NAPTP, 424B filings sampled from the SEC's Electronic Data-Gathering, Analysis and Retrieval ("EDGAR") system, Bloomberg. For a thorough description of how data were sampled, see chapter 3.3.2 Sample Description on pp. 49-50.

12.05.2011	NGL Energy Partners LP	74	21	-0.1 %	7.6 %	6.4 %	Downstream	Propane distribution
20.04.2011	Tesoro Logistics LP	273	21	11.9 %	119.5 %	6.4 %	Midstream	Oil logistics and marketing
08.04.2011	CVR Partners LP	307	16	9.7 %	64.1 %	-	Fertilizer	Fertilizer production
08.04.2011	Golar LNG Partners LP	270	22.5	10.4 %	32.9 %	6.8 %	Shipping	LNG carriers
16.12.2010	QR Energy LP	336	19.2	2.2 %	-5.3 %	9.91 %	Upstream	Onshore oil and gas reserves
29.09.2010	Rhino Resource Partners LP	65	20	9.5 %	-31.1 %	8.90 %	Coal	Coal extraction
29.07.2010	Access Midstream Partners LP	452	21	6.7 %	66.6 %	6.43 %	Midstream	Pipelines
13.07.2010	Oxford Resource Partners LP	162	18.5	-2.9 %	-69.1 %	9.46 %	Coal	Coal extraction
12.05.2010	Niska Gas Storage Partners LLC	350	20	-4.5 %	-44.0 %	8.05 %	Midstream	Natural gas storage
30.04.2010	PAA Natural Gas Storage LP	252	21.5	8.1 %	-13.3 %	6.28 %	Midstream	Natural gas storage
	Mean	225	20	5.2 %	18.1 %	8.1 %		
	Median	195	20	5.6 %	14.9 %	8.0 %		

2.5.2 Innovations in Governance and the Partnership Agreement

Board of Directors Increasingly Part of Governance Structure

With regard to governance, the MLP has changed slightly over the years. Ciccotello and Muscarella (2000) state that within their sample of MLPs formed in the 1980s and 1990s, most MLPs have no board of directors. MLPs currently going to market increasingly include a board of directors to govern the GP's activities. However, as noted by Moss (2007), the GP is still likely to retain control, as outside investors' voting powers are limited with regard to the election of board members. In most MLPs, LPs are not entitled to vote for board members, and hence, the board functions more as a monitoring and advisory device for the Parent. Even in MLPs where LPs are granted to install a majority of board members, it is likely that due to investor dispersion, the candidates nominated by management are the ones to be elected. For example, Seadrill Partners LLC notes in its IPO prospectus that the "*board will consist of seven members, three of whom will be appointed by the Seadrill Member in its sole discretion and four of whom will be elected by our common unitholders*"[38]. Seemingly, outside investors are provided better governance in this situation, as they are able to install the majority of the board vote. However, it is not given that this theoretical

[38] Seadrill Partners LLC IPO prospectus. Available from: [http://www.sec.gov/Archives/edgar/data/1553467/000119312512428803/d412047d424b4.htm]

benefit will translate into a real benefit for investors. Unless owners are block holders and have keen interest to monitor the MLP, the time and effort spent to track down and nominate suitable board members will likely be more costly than the expected gains from improved governance.

Limited Liability Company Used as Alternative to the Master Limited Partnership

A second development is the increase of Limited Liability Companies[39] ("LLCs") in the MLP space. An LLC can choose to be taxed either as a partnership or as a corporation, thus enjoying the same tax benefits as regular MLPs. The primary difference between the two structures is that an LLC does not have a GP or IDRs, but may have similar performance fees through what is termed Management Incentive Interests ("MIIs"). LLCs also provide unit holders with voting rights, subject to restrictions made in the Management Agreement ("MA"), which is similar to the PA.

Table 6. Comparison of the MLP, LLC, and Corporation Structures[40]

	MLP	LLC	Corp
Entity level taxation	No	No	Yes
Tax deferral on distributions	Yes	Yes	No
Tax reporting	K-1	K-1	DIV-1099
General partner	Yes	No	No
Incentive distribution rights	Yes	No	No
Management incentive interests	No	Yes	No
Investor voting rights	No	Yes	Yes
Limited liability	Yes	Yes	Yes

Of recent MLP IPOs, two firms have chosen to be structured as LLCs rather than partnerships, namely Seadrill Partners LLC and Niska Gas Storage Partners LLC. While Niska Gas Storage Partners LLC is structured more or less like an MLP, with limited voting rights and IDRs, Seadrill Partners LLC permits all members to vote. However, as stated in the IPO prospectus, "*if at any time, any person or group owns beneficially more than 5% of any class of units then outstanding, any such units owned by that person or group in excess of 5% may not be voted on any matter*"[38]. In general, structuring the firm as an LLC may give investors increased governance power, which can be relevant for firms with unconventional assets. However, as in the case of Seadrill Partners LLC, the firm is still able to limit investors' governance power through the MA.

Variable Distribution Policy

The third trend observed in recent IPOs is the movement away from traditional distribution policies. For example, Northern Tier Energy Partners LP and Alon USA Partners LP both abandoned traditional distribution policies and instead embraced floating distribution policies when launching their IPOs in 2012. Both MLPs are focused in the

[39] As of 10.12.2012, Atlas Energy Resources, Constellation Energy Partners, Copano Energy, Linn Energy, NuStar GP Holdings, Niska Gas Storage Partners, Vanguard Natural Resources, and Seadrill Partners are registered as LLCs.
[40] Wachovia (2008)

downstream segment, and have clear ambitions to pursue growth opportunities either through organic growth or acquisitions[41]. For example, Alon USA Partners LP state in its IPO prospectus that "*The amount of our quarterly cash distributions, if any, will vary significantly both quarterly and annually and will be directly dependent on the performance of our business. Unlike most publicly traded partnerships, we will not have a minimum quarterly distribution or employ structures intended to consistently maintain or increase distributions over time".* Both Northern Tier Energy Partners LP and Alon USA Partners LP own and operate crude refining facilities. Refining is essentially a margin-based business, with profitability depending on the prices of both feedstock (primarily crude oil) and the higher value finished products. Further, Alon USA Partners LP states that part of its business strategy is to "*enhance existing operations and invest in organic growth*" and that it also "*may pursue accretive acquisitions within (...) refining and wholesale marketing business operations*". Clearly, these are companies with potentially volatile cash flows and growth ambitions. Allowing for flexibility in cash flow management is a way to avoid defaulting on promised distribution payments to investors, while still allowing investors to partake in upside situations. Essentially, these MLPs go to market perhaps not on the grounds of being a traditional MLP, but on being a firm in the downstream segment committed to distribute cash to investors whenever it is appropriate. Further, they are structured for growth, rather than as steady yield vehicles. The two fertilizer producers Rentech Nitrogen Partners LP and CVR Partners LP are also examples of new MLPs that have chosen to adopt variable distribution policies. Similar to the downstream MLPs, these firms have highly cyclical business models, and prefer to let distribution levels flow with cash flow variability.

Reduced Top-Tier Splits in Incentive Distribution Rights

Some MLPs have reduced the maximum split for IDRs, which may give more room for growth through lessening the burden on cost of capital as distributions increase. For example, in 2002, Enterprise Products Partners reduced its IDR top-tier split from 50 per cent to 25 per cent in order to reduce its cost of equity. Other MLPs that have taken steps to reduce or eliminate IDRs include NuStar LP, Mark West Energy Partners LP, Suburban Propane Partners LP, Sunoco Logistics Partners LP, and TC PipeLines LP (Wells Fargo Securities, 2010). Memorial Production Partners LP and LRR Energy LP launched their IPOs with lower top-tier IDR splits, at 25 and 23.1 per cent respectively. Memorial Production Partners LP is a growth oriented upstream MLP, which has clear ambitions to use its cost of capital advantage to pursue acquisitions competitively: "*Unlike our corporate competitors, we do not expect to be subject to federal income taxation at the entity level. We believe that this attribute should provide us with a lower cost of capital compared to many of our competitors, thereby enhancing our ability to compete for future acquisitions*". By avoiding higher IDR splits, Memorial Production Partners LP will be able to maintain a

[41]Northern Tier Energy Partners LP IPO prospectus. Available from: [http://www.secinfo.com/d14D5a.p9NK5.htm#u7h];
Alon USA Partners LP IPO prosctus. Available from:
[http://www.sec.gov/Archives/edgar/data/1556766/000119312512478964/d400066d424b4.htm].

reasonable cost of capital, and be able to compete for new properties to sustain reserve levels in the future. The MLP has also included provisions in its PA that allows the GP to amend IDR levels without the approval of LPs. For investors, such provisions signal that the upstream MLP has ambitions beyond exploiting current reserves, and that the MLP may be suitable for long-term investments.

No Incentive Distribution Rights

Over the last two years, 6 MLPs have gone public with no IDRs, including Alon USA Partners LP, Mid Con Energy Partners LP, Rentech Nitrogen Partners LP, CVR Partners LP, Northern Tier Energy LP, and PetroLogistics LP. The common denominator for the above MLPs is that all firms are involved in cyclical industries, where operating income is subject to commodity price variations. By excluding IDRs, these MLPs signal to investors that any abnormal positive cash flows are to be distributed on a pro-rata basis. This might function as a sweetener for investors when assuming ownership of assets producing more volatile cash flows.

2.5.3 Innovations in Tax Treatment

Corporate Tax Treatment Election

As some non-U.S. based corporates have chosen to list assets in the U.S. using the MLP structure, more MLPs now choose to be treated as corporations for tax purposes. Recently formed MLPs that have chosen to be taxed as corporations include Golar LNG Partners LP, and Seadrill Partners LLC. Others include Capital Products Partners LP, Navios Maritime Partners LP, and Teekay Offshore Partners LP. By not being taxed as partnerships, the MLPs forego tax advantages, but avoid the administrative burden related to tax reporting. For MLPs without material business in the U.S., the cost-benefit calculation does not favour partnership election, making investors better off when the MLP is taxed as a corporation. Being taxed as a corporation also makes it easier for non-U.S. retail investors and institutional investors to own units. This can benefit an MLP seeking a specific investor mix, or gain sufficient interest if it is a large issue.

Intuitively, the choice of some MLPs to be taxed as corporations validates that there are other benefits to the MLP structure than favourable tax treatment. As previously stated, the structure can function as an innovating financing method for the Parent, allowing for the sale of equity without losing control over the assets. The MLP provides an opportunity to realise part of asset financing at an attractive valuation, and in addition receive cash from quarterly distributions through retained LP shares.

2.6 Concluding Remarks

Having explored the development of the MLP structure, it is challenging to conclude whether it is true or not that "*investors are less concerned*" with what types of assets are contained within the MLP than they have been in the

past. What is certain however is that owners of assets with the help of underwriters have become aware of how the MLP can be tweaked to function well also for unconventional assets. A second conclusion that can be drawn is that there has been a shift towards more growth oriented platforms during the last decade, perhaps motivated by the energy renaissance experienced in the U.S., and investors' move towards valuing MLPs as total return vehicles.

Increasingly, MLPs are becoming less of an asset class *per se*, with deviations from the norm appearing quite frequently. Still, similarities persist, and MLPs will likely be marketed to investors along the storyline of stable yield and tax deferred cash flows for some time to come. "*If it looks like an MLP, and smells like an MLP"*... surely it must be an MLP.

3 Underpricing of Master Limited Partnership Initial Public Offerings

As illustrated by the qualitative assessment made in the chapter two, it is evident that the MLP space has changed considerably since the 1980s. It is then interesting to examine whether the academic research results tracking early MLPs still hold when the same tests are employed using new data. In this chapter, I will address parts of early research, and explore the phenomenon of IPO underpricing in the context of MLPs.

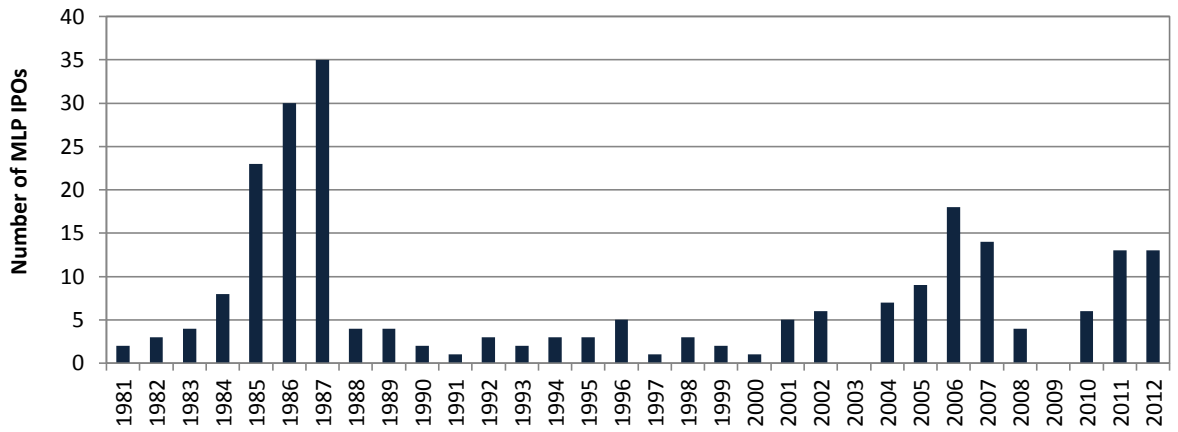
Underpricing has been a popular research topic since it was first recorded during the 1970s. For the purpose of understanding the underpricing phenomenon, this chapter first presents a brief introduction to IPOs. Information about the benefits and disadvantages of being publicly listed, as well as the IPO process, is presented from the perspective of an MLP. Subsequently, I will move on to explain what is generally meant by the term underpricing, before presenting empirical observations across time and geographies. Despite underpricing being regarded as a more or less ubiquitous phenomenon, no one theory has succeeded in explaining *why* underpricing exists. Inspired by the categorisations in Ljungqvist (2004) and Ritter and Welch (2002), I present existing and tested theories to establish a foundation for further analysis. In line with the objective of this paper, hypotheses focusing on asymmetric information are given the most attention. At the end of this chapter, I present an empirical analysis on the underpricing of MLPs, where I motivate my hypothesis based on established theory and previous empirical research.

3.1 What is an Initial Public Offering?

An IPO is the process where a company lists its equity for public trading on an exchange, and there has been no prior market for the company's equity. Concomitant to the listing, the company will execute a transaction where either newly issued ("primary") or existing ("secondary") equity is sold to the public in the exchange for cash. There are also alternative ways to execute an IPO besides a public cash offering, such as allocating equity to pre-selected investors through a private placement.

The number of IPOs is known to vary over time. For MLPs, a large number of firms went public in the late 1980s. In the 1990s, the asset class experienced a substantial drop in IPO activity, but picked up again following the internet bubble crash. In 2006, 18 MLPs came into existence, representing a local peak for the 2000s. Similar to other asset classes, the years following the financial crisis in 2008 and 2009 saw meagre IPO activity. Coinciding with post-crisis low fixed income yields, an increasing number of MLPs have launched their IPOs moving into 2012.

Figure 7. Number of Operating MLP IPOs by Year[42]



As for MLPs, the number of firms going public is known to vary substantially across time periods. As a result, a lot of effort both on theoretical and empirical grounds has been made to better understand the going-public decision process. Theories roughly categorise the going-public decision as motivated either by the *life cycle* of a firm, or by *market timing.* For example, Chemmanur and Fulghieri (1999) argue that in the early phase in the life of a firm, the cost burden of going public will be higher than the valuation accretion from the benefits of being publicly listed. Hence, the authors suggest that early in its life cycle, the firm will be private, but as it grows increasingly large, it will become attractive to go public. Market timing models posit that the entrepreneur will await bull markets' favourable pricing, or wait until real growth opportunities are reflected by valuations before going public (see for example Lucas and McDonald, 1990; Subrahmanyam and Titman, 1999; Schultz, 2000). On a more practical note, underwriters may also influence entrepreneurs in their decision to proceed with an IPO. Underwriters can gauge market sentiment by observing how attempted IPOs are absorbed in the market, and advise entrepreneurs to launch when valuations are relatively higher. Ljungqvist and Wilhelm (2002b) provide some insight to this hypothesis, and present data that show a 38 per cent withdrawal rate for NASDAQ IPOs in 2000. This higher-than-usual withdrawal rate coincided with the lowest return recorded over 30 years for the NASDAQ Composite Index.

[42] Sources: NAPTP, own research.

In practice, the decision is probably coloured by several perspectives. In order to compare theory with practice, Brau and Fawcett (2006) survey 336 chief financial officers ("CFOs") in the U.S., covering topics such as the motivations for going public, timing of the IPO, and other issues related to the IPO process. With Brau and Fawcett's (2006) conclusions as a foundation for discussion, a generic presentation of benefits and disadvantages of public listing in the context of MLPs is provided in the following.

3.1.1 Benefits of Public Listing

Access to Capital Markets

In general, public listing makes it easier for the firm to access both debt and equity capital markets to raise financing. In addition to the equity proceeds received from the IPO, the firm will have the opportunity to tap equity markets through seasoned equity offerings in the future, and then likely at a lower cost than at the IPO. Companies that go public also have a tendency to reduce their cost of credit (Pagano et al., 1998), perhaps due to increased negotiation power with banks. Being publicly listed also makes it more feasible to use equity as a form of payment in transactions. As noted in Pagano et al. (1998), access to capital markets is highly important for companies that have high leverage, and that face investment needs with regard to growth opportunities. In Brau and Fawcett, CFOs lists the need for capital to support growth as the third most influential factor for timing IPOs. For MLPs, access to capital markets is critical, as it represents the primary source of funding for new capital investments. Most MLPs pay out all available cash at a quarterly basis, and only retain a minor share for working capital requirements and maintenance capital expenditures. In order to grow distributions, many MLPs seek to grow either through organic growth or acquisitions, and need to finance this growth either through bonds, bank debt or equity issuance.

Liquidity in Equity Interests and Exit for Early Investors

Listing at an exchange facilitates the matching of potential sellers and buyers of the firm's equity interests through the organised securities market. By being publicly listed, the MLP makes it both easier and less costly for investors to trade, resulting in better liquidity in the MLP's units. Increased liquidity also makes it easier for venture investors or entrepreneurs to realise part of their wealth, or to exit the investment completely.

Transparency

Upon the public listing of an MLP, it is legally required that the firm publishes any information relevant for the unit price. Information transparency is required by the exchange in order to reduce information heterogeneity between market participants. If investors receive the same information about the MLPs operations, it is more likely that the valuation realised in the market is correct. In general, but also for MLPs in particular, information requirements can function as a disciplining mechanism for management. The GP in an MLP often retains a sizeable stake of the LP equity, and is entitled to IDRs. If the GP makes poor decisions on behalf of the MLP which is required to be

published, the unit price may depreciate and reduce the wealth of the GP. In the event individual managers personally are holding equity or receive options or units as part of their compensation, the disciplining mechanism becomes even stronger.

Hostile Takeover Defence

In some situations, a firm can be under the threat of a hostile takeover from investors that deem the company underpriced. One possible way to realise the fair underlying value of the company's equity, is to list the firm for public trading, achieve the "right" valuation, and hence let the market mitigate the takeover. In the context of MLPs, this situation is relevant in particular for corporates that hold a variety of assets, with certain "bad" assets depressing the value of the entire firm. In order to mitigate a takeover, the corporation can execute a dropdown of either high or poorly performing assets into an MLP, and thus realise a higher value for the "crown jewels" and for the corporation in its entirety. By retaining part of the LP units in the new MLP, the corporate parent will still receive cash flows from the assets through distributions, and may have efficiently blocked a takeover from outside investors.

Realising Higher Valuations in Bull Markets

Zingales (1995) observed that entrepreneurs might be motivated to go public by the prospect of realising a higher exit valuation for their ownership shares. A public firm is more likely to attract the attention of potential acquirers, and less likely to be pressured on price, as outside investors are harder to negotiate terms with. A follow-up to Zingales is provided by Black and Gilson (1998), who examines a sample of venture-capital-backed IPOs. They note that high entrepreneur retention rates indicate that the IPO is more of an exit opportunity for venture capitalists rather than entrepreneur exit. This strand of theory is substantiated by CFO answers in Brau and Fawcett (2006), which lists overall stock market conditions as the most important IPO timing factor. The second most important reason listed is industry conditions. When the stock market and industry conditions are favourable, valuations are likely to be higher on average. Higher valuation not only gives existing investors an opportunity to realise higher returns, but also increases the amount of proceeds received by the firm from the IPO. For MLPs, many firms came to market coinciding with increasing energy production volumes through the 2000s. In particular, the present value of future growth opportunities for the midstream segment increased during this period (Interstate Natural Gas Association of America, 2011), which may have led to higher valuations for the industry in the market.

3.1.2 Disadvantages of Public Listing

Information Transparency Requirements

Just like transparency can benefit the firm, it can also pose a disadvantage. When an event detrimental to the value of the company takes place, information about the event is required to be published. In some situations, this may substantially depreciate the value of equity interests. Information that is harmful to the reputation of the firm may

even affect long term pricing, and lead to other indirect costs through for example less liquidity in the firm's equity. Further, information requirements may reduce the competitiveness of a firm if information regarding the company's operations is required to be published. The SEC imposes strict disclosure requirements with regard to information reporting for public companies, and the running administrative cost related to such requirements might be taxing. Like corporations, an MLP is for example required to file 10-Q and 10-K forms with the SEC on a quarterly and annual continual basis respectively. Given that favourable information may positively affect unit prices, information transparency requirements could potentially also shift management's focus from long-term goals to short-term performance.

Reduced Control

In an IPO, the entrepreneur may sell down to realise wealth. As a result, outside investors will gain more power over how the business is run. For MLPs, this specific disadvantage is avoided through the PA. The PA specifically assigns control rights over the MLP's assets to the GP, and can enhance control through provisions regarding the removal of the GP. In most cases, the GP can only be removed by supermajority in the vote of LPs (66.7 per cent). Considering that recent MLP IPOs have issued less than 66.7 per cent of LP units to outside investors, the loss of control is substantially mitigated in the case of MLPs.

Tax Reporting and Other Administrative Costs

The major disadvantage for MLPs in being publicly listed is the increased cost burden from administrative requirements. With regard to tax reporting, the MLP must supply outside investors with annual Schedule K-1 forms. If the MLP has chosen Section 754 election, it also needs to keep track of all trading in its units, and make regular adjustments to match the outside and inside basis of the MLP.

Direct Costs Related to the Initial Public Offering

The process of going public is costly. For an MLP as for a corporation, the firm will have to engage both an auditor, legal counsel, and one or more underwriters to help prepare and execute the IPO. For MLPs, The SEC imposes stringent disclosure requirements with regard to the IPO prospectus[43]. An important part of the preparation phase is due diligence of the firm's assets and liabilities. In cooperation with auditors, management is required to prepare both predecessor historical financial statements, and pro-forma financial statements for the new entity. For a firm which has previously not prepared detailed financial statements, this process can be time consuming. Lee et al. (1996) reports that as a share of total proceeds, direct costs related to the IPO amount to 11 per cent. Of this, approximately 7 per cent is paid to the underwriter in the form of fees and commissions. Other costs that accrue from an IPO include fees payable to the exchange for listing, and future payments to remain listed.

[43] For detailed information about financial statement disclosure requirements, see Earnst&Young (2011).

Indirect Costs Related to the Initial Public Offering

Underpricing can be considered an indirect cost related to the IPO. Underpricing is commonly defined as the positive differential between the first-day closing price and the offer price, multiplied by the number of units issued at the IPO. The amount of proceeds foregone is sometimes termed "money left on the table", and can be regarded as transfer of wealth from existing owners to new investors. The level of underpricing can be quite substantial, and even push indirect costs higher than the direct costs related to the IPO.

3.1.3 The Initial Public Offering Process

The IPO process for an MLP is quite complex. The IPO process is relevant for the underpricing phenomenon because it relates to how the pricing decision is made. In the following, I will hence focus on describing the general process and dynamics between the different consortium parties in the IPO process, rather than legal and reporting issues.

The IPO process generally consists of four different phases: the *advisory*, *preparatory*, *marketing,* and *aftermarket* phase. Arguably, there are different ways to categorise the phases of an IPO process. The one I use is based on my own experience working with and talking to practitioners.

The Advisory Phase

In the advisory phase, the issuer approaches (or is approached by) an underwriter to discuss a potential listing of the company's equity. For MLPs, the underwriter is typically a large bank that has analyst coverage on the segment, transaction expertise and a wide marketing reach. For example, Citigroup has functioned as one of the lead underwriters for 13 out of 26 of MLP IPOs the last two years. Other large banks that have functioned as lead underwriters are Morgan Stanley (10), Credit Suisse (6) and Goldman Sachs (5)[44]. As MLP IPOs tend to be large in size, the issuer often has several banks involved in underwriring the issue. If the issuer decides to move forward with the listing process after preliminary discussions, an auditor and legal counsel will also be hired to help facilitate the preparation of materials. The lead underwriter will coordinate the consortium on behalf of the issuer, and establish a timeline for the transaction. After the underwriter has processed financial data provided by the issuer (such as financial statements and past and future capital expenditure requirements), the parties will go into discussions about how much equity should be issued, how the transaction should be carried out, and in what price range the units should be traded in.

The Preparatory Phase

In the preparatory phase the underwriter initiates contact with the SEC and the relevant stock exchange to file for registration. Filing for registration through the SEC is a time consuming process, and according to Citigroup, due

[44] Based on underwriter information listed in company prospectuses from sample described in chapter 3.3.2.

diligence to prepare the registration statement can take months. For MLPs, the two major stock exchanges are NYSE and NASDAQ. Choosing which stock exchange to list on is a function of many considerations, including trading liquidity, market for comparable MLPs and listing fees. Parallel to the listing process, the issuer will continue due diligence work in cooperation with the consortium to uncover all relevant information that might affect valuation. The next step is to decide on an appropriate valuation for the company, issue size, what types of units to issue, ownership structure, target investor mix, syndicate structure, use of lock-up period, and how to price the transaction. Governance and control issues also need to be addressed in cooperation with legal experts, establishing the terms for the PA as part of the prospectus.

The most common method to price an IPO in the U.S. today is the bookbuilding method. Other methods that can also be used are the fixed price method and the auction method. By using the bookbuilding method, the underwriter can deduce demand information from investors prior to the IPO to help price the issue. Preceding the launch of the IPO, the lead underwriter(s) will accompany the issuer management on a "road show" to meet with important investors and present the investment case. During the road show, the underwriter will "build a book" of demand as indicated by investor interest. By noting size interest and price ranges, the underwriter is in a position to change the initial valuation upwards or downwards before the actual launch of the IPO.

The Marketing Phase

The marketing phase is initiated by presenting the investment case to analysts and equity brokers within the syndicate banks. The finished IPO prospectus with indicative price range is then published online, and distributed to investors by request. The marketing phase overlaps with the preparatory phase, and includes the marketing of the investment case to investors and bookbuiling process. By the end of the marketing phase, the "book is closed", and investors can no longer make requests for allocations in the IPO. Based on discussions with the issuer, the underwriter will proceed to go through the list of interested parties, and range investors in classes based on their indicated price, allocation size and whether they are considered long-term of short-term investors. Subject to certain legal limitations, the issuer and underwriter are hence given a fair amount of discretion with regards to the allocation of units and pricing. When the final offering price is decided, allocations are distributed to investors, and payment is collected. After the transaction is made, the units are registered at the exchange, and trading may commence. In the U.S., where MLP IPOs are launched, the final price is usually set the day prior to the IPO launch, which minimises the impact on valuation from general market movements.

The Aftermarket Phase

The aftermarket phase comprises services that the underwriter provides for the issuer during an extended time period after the listing. For example, the underwriter may receive the right to issue additional units, commonly called an

"over-allotment option". This is one of the few SEC-permitted ways the underwriter can facilitate liquidity and price support for the IPO in the aftermarket. Typically, the size for an over-allotment option is around 15 per cent of the original issue. If the underwriter suspects that demand will be weak, the bank can allocate for example 30 per cent more units than indicated, and buy back the overshooting 15 per cent in the aftermarket at the depressed price. These units are then annulled, and the underwriter helps support the price of the issue. In the event that market demand is suspected to be strong, the underwriter can simply sell the extra 15 per cent it is entitled to, collect commission, and provide the issuer with additional issue proceeds.

3.2 What is Underpricing?

When firms issue equity to the public, the term "underpricing" is used to describe the systematic increase from the offer price to the first-day closing price. The wording in itself suggests that the shares issued were priced too low compared to the market clearing price, and that the firm could have achieved a higher valuation without jeopardising investor appetite. Essentially, underpricing thus represents a wealth transfer from existing owners to new investors. Existing owners get a lower price for shares sold, while new investors realise an immediate gain. A popular phrasing for this situation is to say that existing owners leave "money on the table" (defined as initial return multiplied by the number of shares issued) to the benefit of new investors.

Empirically, underpricing is considered present when initial returns are significantly larger than zero. In some instances it can also be relevant to adjust for the returns of the underlying market, for example if the offer price is set at a time long before the actual offer date. In the time period between pricing announcement and the offering, events may have taken place that can influence both the valuation of the issuer and the market, and needs to be taken into consideration. Adjusting for market movements can be done by subtracting the return of an associated market index from initial returns in the relevant time period, alternatively adjusted for the firm's beta value.

3.2.1 Empirical Evidence

Underpricing was first documented in the 1970s (Stoll and Curley, 1970; Logue, 1973; Reilly, 1973; Ibbotson, 1975), and has since been reported across time, industries and geographies. Allowing for comparison, Loughran et al. (2012) lists results from research conducted in 48 countries all over the world.

Most European and North American markets exhibit underpricing that fall within a 5 to 30 per cent bracket, with Greece as a clear exception at 50.8 per cent. Some interesting observations can be made with regards to differences between neighbouring countries. For example, the level of underpricing is markedly lower in Norway (9.6 per cent) than in Sweden (26.1 per cent), and also lower in France (10.5 per cent) than in Germany (24.2 per cent). Ljungqvist (2004) notes that such differences can be result of different institutional frameworks in the countries where the IPOs take place.

Figure 8. Underpricing Across Geographies – Europe and North America[45]

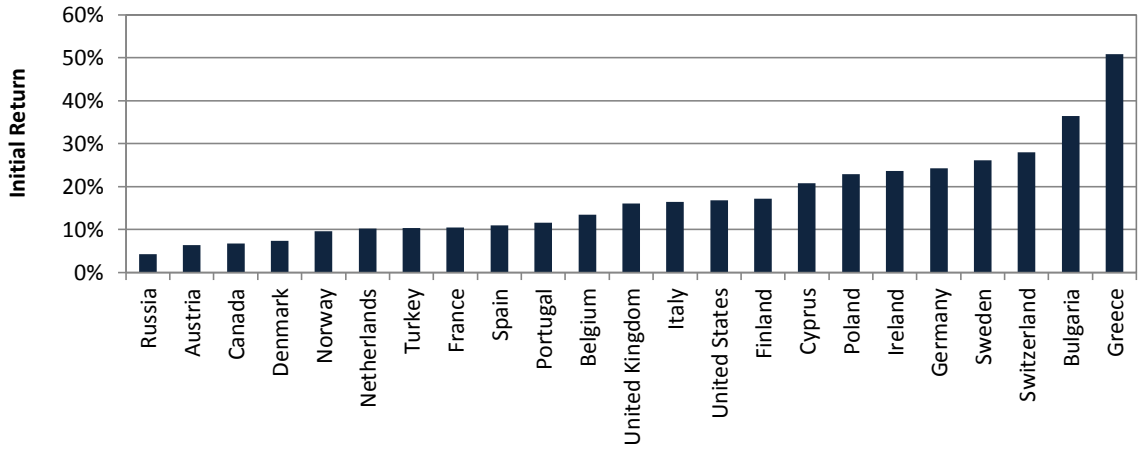
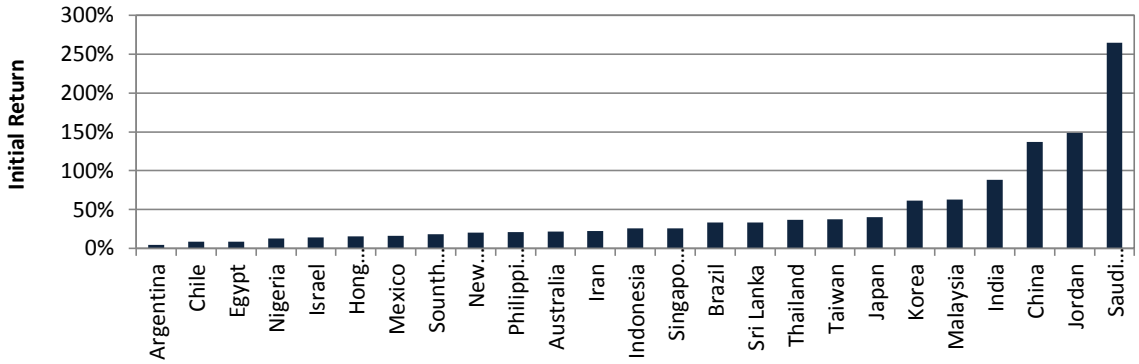


Figure 9. Underpricing Across Geographies – Africa, Asia, Australia, and South America[45]



For the non-European markets, several countries report much higher initial returns, with the extreme case of Saudi Arabia at 264.5 per cent in the time period from 2003 to 2010. Studies from China and Jordan also indicate substantial underpricing at 137.4 and 149 per cent respectively.

In addition to variation in the level of underpricing between countries, underpricing is also known to vary across time. For example, while underpricing in the United States has been at an average 17 per cent since the 1960s, variation can be observed moving across years and even decades. From 1980 to 2011, underpricing averaged 17.9 per cent, fluctuating in a range from 3.2 per cent in 1984 to 70.9 per cent in 1999. During the 2000s, average underpricing has been a bit lower, at 11.7 per cent[46].

[45] The two figures report equal weighed initial returns for 48 countries. Initial return is calculated as the first-day closing price divided by the offer price less one. Exceptions are made in the case of France and Greece, where the fifth trading day closing price is used due to certain daily volatility limits on the stock exchanges. The data is collected from Loughran et al. (2012), who have sampled the results from various sources.

[46] Data on U.S. underpricing is collected from J. R. Ritter's website, available from: [http://bear.warrington.ufl.edu/ritter/ipodata.htm]

3.2.2 Literature Review of Underpricing Theory

While underpricing has become recognised as a ubiquitous phenomenon, there is no one hypothesis that has succeeded in fully explaining *why* underpricing exists. Theories can be categorised on various grounds; I have chosen to follow a hybrid setup based on Ljungqvist (2004) and Ritter and Welch (2002), and present theories based on whether they focus on *asymmetric information, the allocation of shares, institutional explanations,* or *behavioural explanations.* As noted in Ritter and Welch (2002), hypotheses that deal with the allocation of shares can be based both on the assumption of asymmetric information and symmetric information. As it represents a relatively new area of research however, I have decided to include a separate chapter for this particular part of literature.

Theories Based on Asymmetric Information

The term "asymmetric information" is used to describe relative information heterogeneity between parties in connection with a transaction. Put bluntly: one party knows more than the other, and can use this benefit at the expense of the other. If the cause of the information asymmetry comes into effect prior to the transaction, the direct consequence is *adverse selection*. If the cause of the information asymmetry comes into effect *after* the transaction however, this may indirectly result in *moral hazard* from the informed party.

With regards to an IPO transaction, asymmetric information refers to information heterogeneity between the key parties involved prior to the transaction, namely between the issuing firm, the underwriter and investors buying the equity.

Signalling Theories

When *the issuer is more informed than investors* about the future cash flow prospects of a company, the investors face an adverse selection situation. Suppose there are two types of firms, high-quality and low-quality, and that investors are unable to distinguish between them. As a consequence, investors will only be willing to pay the average price for any one IPO. The rational investor will quickly conclude that only below-average-quality firms will be willing to issue equity at the average price, and hence demand an even lower price for IPOs. Increasingly, this will force high-quality IPOs out of the market, creating a "market for lemons" (Akerlof, 1970). Some theories maintain that high-quality firms underprice to *signal* their quality to investors and to "leave a good taste in investors' mounts" (Ibbotson, 1975). Underpricing here represents a credible signal of quality to investors, as low-quality firms are assumed not to have the financial capacity to imitate the underpricing of high-quality firms. Undoubtedly, underpricing may be a high price to pay to signal quality. Signalling theories maintain however, that high-quality firms can recoup money left on the table at a later stage, through seasoned equity offerings (Welch, 1989), increased

analyst coverage (Chemmanur, 1993), or favourable market responses upon the future announcement of dividends (Allen and Faulhaber, 1989).

The evidence supporting signalling models is mixed. For example, Jegadeesh et al. (1993) find that just like positive initial returns, subsequent returns are just as effective in explaining future issuing activity. Michaely and Shaw (1994) reject signalling, and find no relation between the level of underpricing and future issuing activity. It should also be noted that there are other potentially less costly ways to signal quality than underpricing, and hence that signalling cannot completely explain the phenomenon. For example, the entrepreneur can retain a sizeable share of equity upon the IPO, signalling belief in the future prospects of the firms (Leland and Pyle, 1977; Tirole, 2006). Also, more innovative structuring of the IPO transaction may be put to use. For example, as Seadrill Ltd. did in connection with a secondary block sale of shares in March 2012, the issuer can attach put options to the shares issued if the value of the equity is considered truly secure. This strategy is risky and not likely to be pursued in IPOs, but would undoubtedly signal quality.

Winner's Curse Theories

A second line of theories is based on the situation where *the investors are more informed than the issuer* about the value of the firm. In this situation, the issuer faces a placement problem, as it does not know the market demand for its IPO (Ritter and Welch, 2002). When the firm going public has not previously been traded in the market, there is no indicative price range available to value the operating assets of the firm. The challenge hence lies in establishing a valuation at which the IPO will attract sufficient investor interest. If the IPO is priced too high, the firm will not be able to raise the amount of equity financing needed, and if priced too low, the firm will forego funds. If assuming that all outside investors have the same superior information to the issuer, the result is that all successful IPOs will be underpriced. If assuming that investors are differently informed however, the outcome is uncertain.

In Rock's (1986) winner's curse model, asymmetric information across investor classes is what necessitates underpricing. Rock (1986) assumes that there are two types of investors; the first consisting of outside investors who are better informed about the issuing firm's value than the issuer and the underwriter, and the second of outside investors who are less informed. In a winner's curse, the uninformed investor fears that he will only receive IPO allocations if he is among the most optimistic investors. As the informed investor will only bid on underpriced IPOs, such allocations will be rationed among the two groups. In overpriced IPOs however, informed investors will not participate, and the uninformed investor will receive a full allocation as requested. As a result, the average return to the uninformed investor, conditional on the allocation of shares, will be lower than the unconditional return, and possibly negative. Rock's model further assumes that it is important for issuing firms to keep the uniformed investors in the market, as informed investors do not have the amount of capital necessary to absorb all IPOs. In

order to maintain uninformed investor participation, underpricing is thus viewed as an equilibrium requirement bringing average return to a break even. Koh and Walter (1989) test Rock's theory using a unique data set on Singapore IPO allocations. During the 1980s, oversubscribed IPOs in Singapore were allocated based on random ballot, and hence not favouring any type of investor. The authors report that in fact, when allocations are adjusted for rationing, the average initial return falls from 27 to 1 per cent. Beatty and Ritter (1986) adds to Rock's argument by noting that there is a positive association between the *ex ante* uncertainty in a firm's value and the underpricing of its IPO. When *ex ante* uncertainty is larger, informed investors likely have a larger advantage to uninformed investors.

Assuming that Rock's model is correct, one can argue that it is easy to solve the undepricing puzzle. In order to mitigate underpricing, the information asymmetry across investor classes must simply be reduced. With no information asymmetry, no underpricing. Michaely and Shaw (1994) use the perceived information heterogeneity between institutional and retail investors to test winner's curse models such as that of Rock (1986). Institutional investors are highly specialised persons or entities which are responsible for large scale capital placements on a regular basis. Consequently, institutional investors are more dependent on, and able to, acquire costly information than retail investors. Michaely and Shaw (1994) conduct a comparison of underpricing across asset classes, using a sample of 59 MLP IPOs and 778 corporate IPOs from 1984 to 1988. They argue that since the institutional investors largely avoided MLPs in the 1980s, the information asymmetry between investor classes was likely to be less for MLP IPOs than corporate IPOs. They list two explanations as to *why* institutional participation can result in underpricing. The first explanation relates to information asymmetry between institutions and retail investors, claiming that institutions will receive more underpriced IPO allocations as they are able to bid more for them when knowing the underlying true value. The second explanation relate to the allocation of shares of an IPO, stating that institutions are favoured by investment banks since they are more important clients than retail investors. The results from empirical tests find no significant underpricing within the MLP sample, versus a significant 8.5 per cent initial return for the corporations.

Muscarella (1988) conducts a similar test on a sample of 50 MLP IPOs executed from 1983 to 1987. Results are (predictably) similar to Michaealy and Shaw (1994), showing no indication of significant underpricing. Muscarella looks to theories presented by Baron (1982) and Rock (1986) that imply that uncertainty regarding the issuer's market value should be related to greater IPO underpricing. Based on the content of these papers, Muscarella concludes that there might be less uncertainty regarding the pricing of MLPs, and that the seemingly correct pricing of MLP units is consistent with an efficient capital market. Michaely and Shaw (1994) also control for ex ante uncertainty in their tests, using the dollar value of the IPO and an industry classification dummy as proxies for uncertainty. They report that these factors do not seem to impact underpricing significantly for the MLP sample. Ritter and Welch (2002) notes that the IPOs of non-operating companies, such as mutual funds, are generally not

underpriced. Hence, one could also consider the question whether MLPs exhibit characteristics similar to non-operating firms, or if investors have valued IPOs in a similar fashion to non-operating investment vehicles.

Information Revelation Theories

With the widespread introduction of bookbuilding as the preferred way of building demand for an IPO, underwriters have been granted more discretion in the way IPO allocations are made. Bookbuilding, as opposed to fixed price issues, involves the soliciting of demand prior to the IPO, where the underwriter bases the final pricing decision on indicated demand from investors. The underwriter will first set an indicative price range, and then go on a "road show" with the issuer management to market the IPO investment story. Based on the response from investors, the underwriter builds a book of indicated demand. If outside investors are better informed about the value of the issuing firm, this process allows the underwriter to level information asymmetry and reduce underpricing. However, informed investors are not likely to reveal such information without incentives, as it would reduce potential initial returns for the investor. Benveniste and Spindt (1989), Benviste and Wilhem (1990) and Spatt and Srivastava (1991) argue that bookbuilding can allow the underwriter to give larger, and potentially underpriced allocations to investors who reveal that they are willing to purchase the share at a higher price.

Empirical tests generally support information revelation theories. Hanley (1993) finds a positive association between the level of underpricing and the upward revision of the offer price from the indicative price range. This suggests that when underwriters receive information indicating that the IPO can be sold at a higher offer price, they do not fully adjust the price. Instead, underwriters adjusts price upwards to maintain a constant underpricing, perhaps to compensate informed investors for revealing information. Ritter and Welch (2002) reports, however, that for a sample of 6,238 U.S. IPOs from 1980 to 2001, underpricing was on average 52.7 per cent when conditional on upward price adjustment. They argue that surely, this level of underpricing appears to be too large to be considered solely as compensation for revealing information.

Principal-Agent Theories

Baron (1982) propose a model where *the issuer is less informed than the underwriter*, and allows the underwriter some discretion with regards to underpricing in order to avoid monitoring costs, and to encourage the underwriter to make an effort in marketing the issue.

Criticism of the principal-agent theories includes the observation that when banks themselves go public, the IPOs are also usually underpriced (Muscarealla and Vetsuypens, 1989). This contradicts the notion that absent of information asymmetry between the issuer and underwriter, the IPO should not be underpriced. Ljungqvist (2004) also note that banks are paid by form of commission, which in turn depends on the amount of proceeds gained from the IPO. One can thus argue that banks should have an incentive not to underprice IPOs. Further, any large pricing error might

negatively affect the reputation of the bank, and discourage future issuers to approach the bank. Supporting this statement, Michaely and Shaw (1994) address the impact of having a prestigious investment bank as an underwriter for an issue. They find that IPOs underwritten by top-tier banks are less underpriced on average. Others, such as Loughran and Ritter (2004), have found that the association between underpricng and top-tier bank underwriters has changed over time. Moving into the 1990s, top-tier banks underpriced *more*. Loughran and Ritter (2004) explain this shift with the *changing issuer objective function*, which proposes that issuers moved to choose underwriters based on whether they would receive better analyst coverage, and whether decision makers would receive personal allocations in underpriced IPOs. They propose that when choosing an underwriter the issuer seeks to maximize the total of IPO proceeds, proceeds from future sales, and side payments. In order to do this, issuers increasingly turned to underwriters who were willing to distribute underpriced allocations to "family and friends" of management, hence increasing the personal wealth of issuer decision makers.

Theories Focusing on the Allocation of IPOs

In recent years, literature has increasingly turned towards the allocation of shares during IPOs in trying to explain the underpricing puzzle. The shift is motivated both by the widespread public attention towards the unfairness in allocations given the large sums of "money left on the table", but also by improved information availability.

Many empirical papers focus in particular on the distinction between institutional and retail investors (Cornelli and Goldreich, 2001; Aggarwal et al., 2002). As previously discussed, Rock (1986) argues that underpricing is an equilibrium requirement in order to attract retail investors to participate in IPO allocations. Rock (1986) posit that since institutional investors have superior information to retail investors about the true value of IPOs, they will only bid on cheap allocations, or "hot IPOs", leaving retail investors with a disproportionate share of expensive allocations. And, as documented by Aggarwal et al. (2002), and Hanley et al. (1995), institutional investors do receive large allocations of underpriced IPOs. Chemmanur et al. (2010) explore the subsequent trading patterns of institutional investors receiving IPO allocations from 1999 to 2004, and find that a 70.2 per cent share of IPO allocations is sold within the first year post-IPO, fully realising money left on the table. Interestingly, institutional investors are found to hold allocations with weaker post-issue demand for a longer period of time, and are rewarded for this activity by underwriters in the form of subsequent hot IPO allocations. Chemmanur et al. (2010) conclude that institutional investors "*possess significant private information about IPOs, play an important supportive role in the IPO aftermarket, and receive considerable compensation for their participation in IPOs*".

As noted in Ritter and Welch (2002), underpricing can be preferred by the issuer if it creates enough excess demand preceding the IPO so that the issuer and underwriter can choose whom to allocate shares to. For example, Stoughton and Zechner (1998) argue that getting block holders at the IPO can create a positive externality for retail investors, as

a block holder is more likely to function as a corporate control mechanism through monitoring management. They further suggest that in order to attract block holder attention, underpricing is a necessary incentive. Hence, institutional investor participation in IPOs may be related to underpricing. Institutional investors have larger amounts of capital at hand, and are more likely to be block holders than retail investors.

Brennan and Franks (1997) propose a theory where the issuer allows underpricing in order to retain control and minimise monitoring by outsiders. By underpricing the IPO, the issuer can execute discretion in the allocation of shares, and for example achieve a target retail investor percentage. With dispersed ownership, it is less likely that investors will monitor management directly; instead they will "vote with their feet" through selling or buying the share.

Theories Based on Institutional Explanations

Institutional theories look to structural market characteristics to explain underpricing. Legal and tax issues represent one part of this literature, while another relates to price stabilisation in the aftermarket.

Legal Responsibility

When a company lists for public trading, it is subject to strict disclosure requirements regarding the state of its business. This is particularly true in the U.S., where the underwriter may be sued by investors if they perceive that the information provided in the IPO prospectus was misleading[47]. Lowry and Shu (2002) examine the association between litigation risk and IPO underpricing, and find evidence that firms with higher litigation risk underprice their IPOs more. Exploring a sample of 1,841 U.S. IPOs from 1988 to 1995, they find that around 6 per cent of the firms are sued after their IPOs. The same conclusion can be drawn from tests conducted in other geographies, such as Germany, United Kingdom, Sweden, Switzerland, Australia, and Japan (Ljungqvist, 2004). In order to avoid litigation, underpricing can be used as an "insurance buffer" (Tinic, 1988; Hensler, 1995). If an issue is underpriced, investors receive initial returns, and are less likely to feel tricked by the issuer and underwriter. If the cost of underpricing is lower than the potential cost of litigation, this can be considered a viable strategy for the underwriter.

Tax Issues

If the capital gains tax is lower than the income tax rate, a firm can use undepricing as a means of compensating managers and other employers. If the company is able to allocate enough shares to inside investors, the net tax benefit of this type of compensation might be higher than the cost of underpricing on shares allocated to outside investors. Dandapani et al. (1994) argue that in the presence of tax and for certain levels of entrepreneur retained equity, underpricing can be preferential to the issuer. The paper presents a simulation model assuming income tax

[47] Under the Securities Act of 1933 Section 11, investors are entitled to sue the issuing firm of an IPO for material untruths or omissions made in the IPO prospectus. The legislation is directly linked to the pricing decision, as any lawsuit liability is payable based on the differential between the offering price and the market price at the time the lawsuit was filed.

from 40 to 70 per cent, and capital gains tax at 50 per cent of the respective income tax bracket. Through simulation, they find that for retention levels between 66.6 and 100 per cent, underpricing benefits the entrepreneur. Results vary with tax regimes however, and the paper argues that underpricing should be less *after* the 1987 (in the U.S.) change in capital gains tax. As tax regimes are constantly revised by politicians, this theory is not widely supported by empirical tests, but can hold in certain periods of time when tax regimes are highly skewed.

Aftermarket Stabilisation

In connection with an IPO, one of the services provided by the underwriter to the issuing firm is *price stabilisation*. In the event the share price should drop following the IPO, the underwriter will pick up shares in the market to support the price for a pre-defined period of time. As a result, aftermarket stabilisation can remove some of the left tail end observations in the distribution of returns, converting negative returns into zeros because underwriters are supporting the offering price (Ruud, 1993). The price stabilisation commitment from the underwriter's side can be considered as a put option written by the underwriter to the IPO participants, hence mitigating the winner's curse for uninformed investors. It also sends signals to the market that the underwriter will not intentionally overprice the issue in order to boost commissions. Aftermarket support of an overpriced IPO is likely much more costly to the bank than any additional payments received from higher commissions.

Theories Focusing on Behavioural Explanations

Some researchers focus on behavioural aspects related to demand side participants in order to explain IPO underpricing. In the late 1990s, initial returns skyrocketed. In the U.S., underpricing reached an average 70.9 per cent in 1999, and U.S. issuers left over USD 62 billion on the table during 1999 and 2000 (Ljungqvist, 2004). Many researchers turned to behavioural theories following the dot-com bubble, doubtful that other developed theories could possibly motivate the level of underpricing observed in the market. Behavioural theories revolve mainly around two assumptions. The first category assumes that investors are irrational, and liable to bid up the price beyond its true value. The second category assumes that the issuer is irrational, and subject to behavioural biases in decision making, thus failing to push the underwriter to lower underpricing.

Negative Cascade Theories

Welch (1992) proposes that information asymmetry across investor classes can lead to a *negative cascade* in the event an IPO is priced too high. In this theory, investors move like sheep herds, observing the moves of "leading" informed investors before deciding whether or not to participate in IPOs. The informed investor will only participate in IPOs that are underpriced, and so the uninformed investor expects to profit by only participating in IPOs when informed investors do. The negative cascade hypothesis claims that because the probability of complete failure is so high when the IPO is only marginally overpriced, the issuer will underprice to make sure there is sufficient demand

for the IPO. Welch's (1992) hypothesis is supported by the tendency for IPOs to be either hugely oversubscribed, or undersubscribed (Amihud et al., 2001), with very few moderately subscribed issues.

Investor Sentiment

Theories about investor sentiment assume that some investors behave irrationally in the market place, basing their valuation of firms on subjective information. This can lead to unfounded valuations, where investors either overvalue or undervalue a company's shares. The assumption is particularly relevant in the context of IPOs, when there has previously been no public market for the company's equity, and information about the underlying business is not readily available. Relatively more optimistic investors will then be willing to pay more for a share than its true value, while pessimistic investors will be limited in their activity since short selling is not possible prior to the shares being issued. As a result, the issuing firm will benefit if it is able to allocate all shares to these optimistic investors. In practice however, this poses some challenges, as (1) the optimistic investors might not be able to absorb the entire issue, and (2) it may not be legal to discriminate on price between buyers in the allocation. Ljungqvist et al. (2006) model the issuer's optimal response to the presence of sentiment investors, suggesting that the issuer should allocate a larger share of the issue to "regulars" (usually institutional investors), who then might proceed to sell the overshooting allocation to irrational investors in the secondary market. The authors note that since carrying an extra inventory of shares is risky, the issuer underprices to compensate regulars for the risk. The issuer still benefits, however, as the offer price is able to capitalise part of the expected trading gain of regulars. Thus, the investor sentiment theory explains underpricing by irrational investors' miscalculated valuations, and not by too low pricing on the hand of the issuer and underwriter. The theory projects that when short selling is permitted in the market place, valuations will revert to reflect the true value of the firm, consistent with empirical evidence on long-run negative IPO returns (Ritter, 1991).

Prospect Theory and Mental Accounting

Prospect theory is a descriptive theory first introduced by Kahneman and Tversky (1979). Prospect theory deals with the decision making of individuals' under uncertainty, and explains deviations from for example expected utility maximisation by individuals being subject to cognitive biases. Loughran and Ritter (2002) apply prospect theory to explain underpricing, attributing the cause of underpricing to the mental accounting of the issuer. Mental accounting refers to the process where people mentally categorise current and future assets, and assign different levels of utility to the different categories. In the context of an IPO, the issuer places both proceeds received from the issue itself, and personal wealth accretion on retained ownership shares, into the same current category. Balancing the cost of underpricing and the benefit of first day returns, the issuer willingly lets the underwriter underprice the issue.

3.3 Analysis

In the following subchapter, I will present an analysis based on the underpricing phenomenon in the context of MLP IPOs. First, I present my hypothesis founded on relevant theory presented in the literature review. Second, I proceed to describe my sample, how it was collected and what criteria have been employed in the sampling process. Third, I will move on to discuss different underpricing methodology and measurement. Fourth, test results are presented and analysed in light of the thesis objective. Finally, criticisms and suggestions for future research are presented.

3.3.1 Hypothesis – Winner's Curse

The winner's curse hypothesis assumes that underpricing is necessary in order to compensate uninformed investors facing adverse selection in IPO allocations. In Michealy and Shaw's paper (1994), information heterogeneity between retail and institutional investors is used as a proxy to test the winner's curse hypothesis. During the 1980s, institutional investors were largely deterred from owning MLPs due to restrictive regulations. Following Michaely and Shaw's (1994) argumentation, regular retail investors did not face adverse selection in the context of MLP IPOs, and hence did not demand a premium in the form of underpricing to participate in issues. Since the 1980s however, the investor mix has changed for MLPs. Most notably, the passing of the American Jobs Creation Act of 2004 made it easier for regulated investment companies to invest directly in MLPs, and brought about institutional investors as a more meaningful source of financing. Prior to 2004, MLPs were primarily owned by retail investors, with institutions holding only a 10 per cent ownership share. Since the passing of the American Jobs Creation Act however, institutional investors have increased ownership share to approximately 32 per cent by the end of 3Q 2012.

Consistent with the findings of this chapter I propose a hypothesis that the influx of institutional investors to the MLP space may have widened the knowledge level gap across investor classes, or rather, increased information asymmetry. In order to examine whether the presence of information asymmetry can explain the underpricing phenomenon, I will adopt the line of reasoning set forth in Michaely and Shaw's (1994) paper.

Hypothesis: In issues where there is no a priori knowledge of information heterogeneity across investor classes, uninformed investors do not face a winner's curse, and underpricing is not necessary.

3.3.2 Sample Description

The sample used to test the hypothesis consists of 100 MLP IPOs launched from June 1994 through November 2012.

Initial firm data were sampled with the assistance of the National Association of Publicly Traded Partnerships ("NAPTP"), which contributed a comprehensive list of all MLP IPOs they had registered in the period from 1978 through September 2012. The data included (1) name of the MLP, (2) stock exchange, (3) trading ticker, (4) date of IPO, (5) date left market, and (6) industry segment. Moving through October and November of 2012, I added

observations to the initial sample as more MLPs launched their IPOs. By November 2012, the initial sample comprised of 291 MLP IPOs, after adjusting for duplicates found in the initial firm sample.

In order to approach the data collection in a structured manner, I first established a set of requirements for final sample eligibility. Initially, I wanted to include as many observations as possible, and aspired to include all eligible IPOs from 1978 through 2012. As I moved on with the data sampling however, I realised that offering data for IPOs prior to 1990 was not readily available through the databases I had access to. As a result, I decided to include requirement (3) mid-process.

For my final sample, requirements for eligibility include the following:

1. The MLP's main source of revenue must be of non-financial character;
2. The IPO prospectus must be available through the SEC EDGAR system;
3. The IPO took place in the time period from 1990 through November 2012;
4. The MLP was listed in CRSP and COMPUSTAT following the IPO (exception made for 2012 IPOs);
5. The IPO was executed by way of a public cash offer.

The excluding of non-operating MLP IPOs is in line with previous IPO valuation literature (see for example Aggarwal et al. 2009), and motivated by the different nature of operating and financial MLPs. To determine which firms should be excluded based on industry classification, the segment information provided by NAPTP gave some guidance. In addition, SIC codes indicating industry classification were obtained through the Wharton Research Data Services' Center for Research in Securities Prices ("WRDS CRSP") daily tapes for MLPs that were listed in CRSP. 46 non-operating MLPs, mostly financial advisors and MLPs dealing in mortgage securities (SIC code ranging from 6000 to 6999), were removed from the sample based on this first exercise. Three MLPs that the NAPTP indicated were of financial character were listed in CRPS with erroneous SIC codes. These firms were removed based on own research. Further, five royalty trusts were removed from the sample.

Second, I began searching the SEC's Electronic Data Gathering Analysis and Retrieval ("EDGAR") system to retrieve IPO prospectuses. Prospectuses can be found by locating 424B filings stored in the EDGAR system. As a substantial part the prospectuses for MLPs launching in the 1980s were not available, I performed a parallel search for relevant offering data for all MLPs through CRSP and COMPUSTAT. For most 1980s IPOs, relevant data were also missing for firms listed in CRSP and COMPUSTAT. As a result, I decided to look only at IPOs launched from 1990 to 2012. This immediately excluded another 122 IPOs from the sample. For IPOs launched in the 1990s, I was unable to retrieve 424B filings for 19 MLPs.

Lastly, MLPs that did not execute their IPOs by way of a public cash offer were removed from the sample. One MLP was excluded based on this requirement, namely Atlas Resource Partners LP.

This procedure yielded a total of 100 unique MLP IPOs for the final sample.

Offering Data

For IPOs from 1990 to 2011, data on offer date were collected from the initial NAPTP sample. All dates were cross-checked by collecting units' initial trading date using the WRDS CRSP database. When dates differed, the IPO date was checked against 424B filings from the SEC EDGAR system, and articles published on the Wall Street Journal web site. For IPOs in 2012, data on offer date were collected from IPO prospectuses and articles on the Wall Street Journal web site.

Data on offer prices were hand collected from 424B filings, which were sampled from the SEC EDGAR system. After rejecting the validity of data on post-IPO units outstanding collected from CRSP, these too were hand collected from the offering prospectuses. This was a lengthy, but necessary process. CRSP typically reports common units outstanding as the total amount of units outstanding, excluding subordinated equity classes. For the final sample, 79 MLPs had subordinated units as part of their post-IPO equity structure, of which 47 maintained a minimum 49 per cent level. Not accounting for subordinated and general partner interests would have substantially distorted the sample characteristics.

Other offering data used in this paper that were hand collected from 424B filings include distribution targets and distribution policy characteristics, estimated taxable income to distributions ratio, election of tax status, net proceeds, the use of proceeds, identity of lead underwriters and syndicate banks, syndicate size, size of over-allotment option, and asset types.

Unit Price and S&P 500 Composite Index Return Data

Unit price and initial return data for the 20 first days after the IPO were collected from CRSP. For the IPOs launched in 2012, return data were sampled from Bloomberg. In both instances, the closing price on the first day of trading was used to calculate initial return. The similar approach was used when collecting return data on the S&P 500 Composite Index.

Underwriter Ranking Data

Underwriter ranking is considered an important variable in underpricing literature, and exists in many forms. For my sample, I used the rankings produced by Loughran and Ritter described in Appendix C of their 2004 paper "Why Has IPO Underpricing Changed Over Time?". The data have been updated through 2011, and are available from Ritter's web site using the following link: [http://bear.warrington.ufl.edu/ritter/ipodata.htm]. The ranking system is

based on work by Carter and Manaster (1990), Carter et al. (1998), and the authors own work. The system ranks banks on a scale from 0 to 9, with 9 being the highest. For 2012, the ranking used in 2011 was assigned. I also tried assigning the average ranking used over the last three years, which gave no difference in the data.

3.3.3 Method for Measuring Underpricing

Underpricing is a widely covered topic in finance literature, and typically refers to the first-day return on issued equity. There are different ways to measure underpricing empirically, and in the following I will present two such methods.

Simple Initial Return Model

Most studies about underpricing use simple initial return to measure underpricing. For example, this is the method used in both of the articles that have previously been written about MLP underpricing (Muscarella, 1988; Michaely and Shaw, 1994).

The initial return of unit *i,* is defined as $R_{i1} = \frac{P_i^1 - P_i^0}{P_i^0}$, where

$R_{i1} =$ the first day return of unit *i;*

$P_i^0 =$ the IPO offer price for unit *i;*

$P_i^1 =$ the first day closing price for unit *i*

It is important to be aware of the implicit assumptions being made when using the simple initial return model. First, the model assumes that all relevant information is reflected by the closing price on the first trading day[48]. This is probably an unproblematic assumption to make if the IPOs take place in an efficient equity capital market, where there are many market participants and no restrictions placed on price movements by regulators. In some markets however, this is not the case. Price movement limits have been used in many countries after the 1987 stock market crash to control unfounded intraday price movements. Such countries include for example France, Italy, Japan, Korea, Greece, Belgium, Netherlands, and Switzerland (Nobanee et al., 2010). Price limits have also been used in the U.S., but only for derivatives such as futures, not for equity. When there are price limits, it will make more sense to measure underpricing as the return between the offer price and the closing price at a later point in time. The same conclusion can hold in situations where there are few market participants, or where the actual trading process does not work efficiently. In some studies conducted prior to the 1980s, underpricing is measured on a weekly or even monthly basis (Logue, 1973; Ibbotson, 1975).

[48] Some empirical research also calculates underpricing based on the market opening price the day after the IPO. Ritter and Welch (2002) state that the opening price is considered an unbiased indicator for the preceding day closing price, and that results have proved insensitive to the use of either two methods.

Second, the model assumes that there has not been any major shift in the market since the offer price was set, and that the offer price thus reflects the value of the firm given the market conditions at the time of the IPO. In some countries, the offer price can be set several days prior to the IPO. If there is a major upward shift in the market between the day the offer price is set and the day of the IPO, it is implied that the valuation of the firm going public should also shift upward. First-day returns will thus likely be positive. When adjusting for the overall market movement between the offer price setting and the launch however, it becomes clear that the positive return cannot be fully attributed to underpricing. In the U.S., where MLP IPOs are launched, the offer price in normally set the day immediately preceding the listing day.

Simple Market Adjustment Model

There are several ways to adjust for market movements. The common denominator for all of them however, is that the simple initial return is adjusted by the return of a relevant index over the relevant time period. Consequently, the selection of the market index is of utmost importance to determine the extent of underpricing when employing a market adjustment model.

Some firms will be less affected by market movements than others, which some models take into account by adjusting the market return by the company's *beta* value. This is challenging in particular for IPOs, since the beta value does not theoretically exist for non-listed companies. One way to estimate beta is to look at the beta values of comparable companies, and adjust for differences in leverage. Loughran and Ritter (2002) point out however, that non-listed firms are likely to have much higher betas than seasoned firms, which makes this method problematic.

Another way to adjust for market movement is to assume that on average, companies will have a beta of one (similar to the market beta), and adjust all observations for the simple index return without beta adjustment. This is in line with early research such as Ibbotson and Jaffe (1975).

The IPO initial abnormal return is defined by: $u_{i1} = R_{i1} - R_{m1}$, where

R_{i1} = the first day return of unit *i* $= \frac{P_i^1 - P_i^0}{P_i^0}$;

P_i^0 = the IPO offer price for unit *i;*

P_i^1 = the first day closing price for unit *i;*

R_{m1} = Return on the index at time *t* $= \frac{I_i^1 - I_i^0}{I_i^0}$, where

I_i^0 = the index opening quotation on the offering date for unit *i;*

I_i^1 = the index closing quotation on the offering date for unit *i*

Choice of Measurement Method

For the purpose of making results directly comparable with previous MLP IPO research, I have chosen to use the simple return model to test my hypothesis. Taking into account that IPOs launched in the U.S. are not affected by price movement limitations imposed by regulators, and that IPOs are usually priced the day prior to the IPO, this choice seems unproblematic.

3.3.4 Underpricing Results

Descriptive Statistics

The sample average simple initial return is 5.51 per cent. Using the market adjusted model with the S&P 500 Composite Index as a benchmark, the average return is marginally higher at 5.52 per cent (assuming a beta of 1). The models yield only marginally different results, which suggest that the use of the simple initial return model is not inappropriate for further analysis.

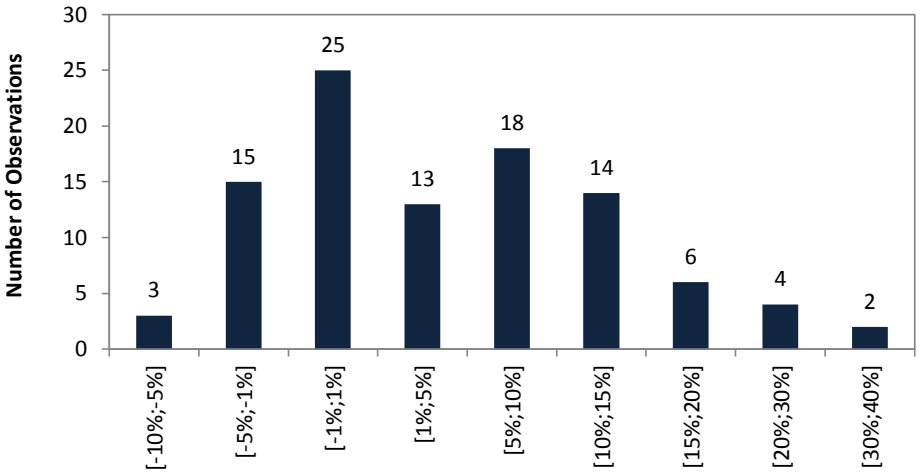
Table 7. Simple Initial Returns and Simple Market Adjusted Initial Returns

	Simple Initial Return	Market Adjusted
Average return	5.51 %	5.52 %
25th percentile	-0.07 %	-0.48 %
Median	3.62 %	3.42 %
75th percentile	10.31 %	10.67 %
Minimum	-6.84 %	-8.56 %
Maximum	33.27 %	33.48 %
Skewness	1.16	1.06
Standard deviation	8.33 %	8.43 %

The average return is an equally weighted arithmetic return, and might give a biased impression of the data. A better way to get a sense of the distribution is to look at the percentiles and median. The median is slightly lower than the average at 3.62 per cent, meaning the sample is skewed to the right. I have calculated the skewness[49] of the distribution, which for the full sample equals 1.16.

[49] If the sample is normally distributed, the observations will be symmetrical around the mean, and skewness will equal zero.

Figure 10. Distribution Frequency of Observations



The skewness can be illustrated graphically by looking at the frequency of initial return by percentage brackets. As should be expected, most observations are found around zero. Relatively more observations can be found on the right side of the distribution than on the left side. The right tail is longer and includes more extreme observations, inflating the average initial return of the sample.

Table 8. Initial Returns by Year

Year	Number of IPOs	Average Initial Return	Min. Initial Return	Median Initial Return	Max. Initial Return	Standard Deviation
1994	1	0.00 %	0.00 %	0.00 %	0.00 %	NM
1996	4	0.60 %	0.00 %	0.30 %	1.79 %	0.84 %
1998	2	-1.14 %	-2.27 %	-1.14 %	0.00 %	1.61 %
1999	2	-0.34 %	-0.99 %	-0.34 %	0.30 %	0.91 %
2000	1	-4.81 %	-4.81 %	-4.81 %	-4.81 %	NM
2001	4	10.95 %	6.82 %	9.86 %	17.27 %	4.67 %
2002	6	-0.64 %	-6.84 %	-1.16 %	7.80 %	4.92 %
2004	5	9.79 %	4.49 %	10.34 %	15.28 %	4.79 %
2005	9	13.86 %	-2.82 %	14.53 %	29.11 %	9.55 %
2006	18	2.52 %	-5.26 %	0.58 %	19.05 %	5.97 %
2007	14	8.63 %	-3.75 %	3.94 %	33.27 %	12.20 %
2008	3	1.14 %	0.00 %	0.00 %	3.42 %	1.98 %
2010	6	3.18 %	-4.50 %	4.43 %	9.50 %	5.90 %
2011	13	3.03 %	-5.00 %	0.26 %	11.90 %	5.56 %
2012	12	9.57 %	-2.94 %	11.26 %	23.64 %	7.63 %

As can be observed in Table 8, underpricing varies across years. Prior to 2004, initial returns are chiefly in the low positives or negative, with an odd deviation in 2001, when underpricing was 10.95 per cent on average. All four IPOs in 2001 were underpriced, with Shamrock Logistics Partners LP pulling up the average at 17.27 per cent. The

standard deviation illustrates the degree of variation in underpricing within a year. A trend that can be observed is that prior to 2004, standard deviations were below 5 per cent for any one year, while they were generally larger after 2004. An exception is found in 2008 when the financial crisis hit. In 2008, only three MLP IPOs were closed. 2008 saw relatively low underpricing and standard deviation compared to other years.

Table 9. Initial Returns by Industry

Industry	Number of IPOs	Average Initial Return	Min. Initial Return	Median Initial Return	Max. Initial Return	Standard Deviation
Coal	7	1.14 %	-3.00 %	-0.99 %	9.50 %	5.36 %
Downstream	15	6.24 %	-2.94 %	1.79 %	23.69 %	7.63 %
Maritime	9	8.08 %	-6.84 %	10.44 %	24.42 %	10.63 %
Midstream	50	6.13 %	-5.26 %	4.28 %	33.27 %	9.26 %
Other minerals	3	8.86 %	-0.75 %	9.69 %	17.65 %	9.23 %
Upstream	16	2.74 %	-1.57 %	1.23 %	10.77 %	3.87 %

As shown in the above table, underpricing also varies across industries. Other minerals, which include fertilizer and monocrystalline sand producers, are underpriced the most at 8.86 per cent on average, while maritime transporters are underpriced 8.08 per cent. Coal producers face the lowest underpricing across industries at 1.14 per cent.

Table 10. Initial Returns by Type of MLP

Type of MLP	Number of IPOs	Average Initial Return	Min. Initial Return	Median Initial Return	Max. Initial Return	Standard Deviation
Non-GP	87	5.68 %	-6.84 %	3.82 %	33.27 %	8.39 %
GP	13	4.40 %	-4.53 %	0.30 %	23.69 %	8.15 %

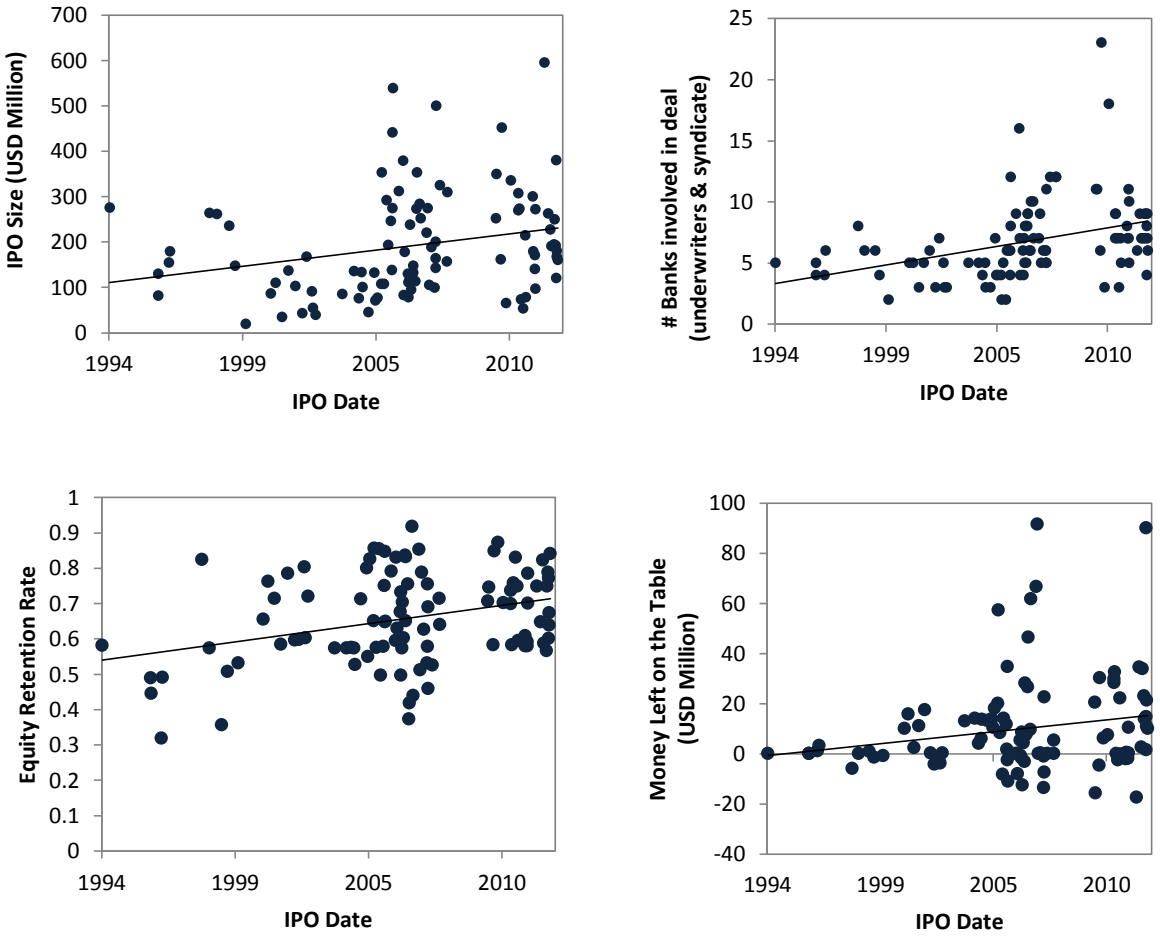
It is also possible to look at underpricing levels based the MLP type. There are two main types of MLPs within the sample; GPs and operating MLPs. In essence, a GP is a leveraged play on the underlying MLP's assets. The valuation of a GP is extra sensitive to growth assumptions with regards to distributions, as certain growth levels will trigger IDRs and substantially boost the GPs cash flows. The descriptive statistics for MLP types show that GPs and non-GPs both experience underpricing on average.

Table 11. Initial Returns and Fundamental Characteristics by Year

IPO Year	Number of IPOs	% Δ Offer/First-Day	Number of Managing Underwriters	Syndicate Size	Money on the Table	Gross Proceeds	Post-Issue Valuation		Pro-Forma Sales
							Offer Price	Market Price	
1994	1	0.00 %	5.0	5.0	0.0	275.1	657.7	657.7	541.9
1996	4	0.60 %	3.3	4.8	1.0	136.4	243.2	245.2	1233.2
1998	2	-1.14 %	5.0	7.0	-3.0	262.9	1058.7	1041.6	1383.4
1999	2	-0.34 %	2.5	5.0	-0.4	191.5	332.4	331.5	196.0
2000	1	-4.81 %	2.0	2.0	-0.9	19.5	41.7	39.7	7.1
2001	4	10.21 %	3.0	4.5	9.8	92.0	290.8	323.3	91.4
2002	6	0.90 %	4.0	4.5	1.2	83.3	290.7	298.8	423.6
2004	5	9.79 %	4.4	4.4	10.1	106.0	243.9	267.0	137.0
2005	9	13.86 %	2.6	4.1	16.3	153.3	758.1	834.3	1644.1
2006	18	1.99 %	2.8	7.4	3.4	208.7	773.1	789.6	757.0
2007	14	8.04 %	2.2	7.1	22.2	226.5	831.5	905.8	162.5
2008	3	1.14 %	3.0	12.0	1.8	263.7	697.5	703.8	83.6
2010	6	3.18 %	4.8	12.0	7.3	269.3	1202.6	1247.0	290.7
2011	13	3.03 %	3.2	7.3	9.0	186.9	608.6	639.0	177.3
2012	12	8.59 %	3.9	7.3	19.8	243.5	932.0	1003.0	1345.4
Total	100	5.28 %	3.2	6.8	10.1	192.1	693.6	731.8	638.5

Table 11 displays tendencies in different characteristics for MLP IPOs by year. Figures are given as arithmetic means, and are provided to illustrate that while underpricing has increased over the last decade, so has the average syndicate size, IPO size (gross proceeds) and value of MLPs going public implied by the offer price. For a more intuitive comprehension of the trends, selected data are provided for the full sample in Figure 11.

Figure 11. Trends in Fundamental Characteristics



The figures show a clear trend for MLP IPOs to have increased in both offer size, syndicate size, and the amount of equity retained by existing owners. The graph displaying money left of the table shows an upward trend line, but with a larger dispersion around the line moving towards 2012.

Test Results - Winner's Curse Hypothesis

I test the winner's curse hypothesis by dividing the sample into two groups containing IPOs prior to and after 2004 respectively. This is motivated by the passing of the AJCA 04, which allowed for more meaningful institutional participation in MLP IPOs.

Table 12. Initial Returns by Time Period – Before and After the American Jobs Creation Act of 2004

Time Period	Number of IPOs	Average Initial Return	Median Initial Return	T-Statistic	P-Value
Pre 2004	20	1.73 %	0.01 %	1.33	0.10
Post 2004	80	6.36 %	4.64 %	6.70	0.00

The mean initial return for the pre-2004 sample is positive (1.73 per cent) and insignificantly different from zero at a 5 per cent level. For the 80 IPOs launched after 2004, the mean initial return is positive (6.36 per cent) and significantly larger than zero at the 1 per cent level. The difference between the two sample returns is significant (t-statistic = 2.92, p-value = 0.006).

As the graphs showing trends in fundamental characteristics suggest, the average IPO size is larger for the MLPs listed after 2004 than for the ones listed before, at USD 207.4 million vs. USD 130.8 million. The average syndicate size is also larger for post-2004 issues, with an average 7.28 banks participating in transactions vs. 4.75 banks for pre-2004 IPOs. By and large, most MLP IPOs are underwritten by top tier ranking banks, and the two groups are not very different in this respect. Employing the ranking system of Loughran and Ritter (2004), the pre-2004 sample on average had a maximum ranking bank among the lead underwriters with a rank at 8.28, while the post-2004 syndicates had an average maximum ranking at 8.68. Existing owners also retain a larger share of issued equity after 2004 than prior to 2004, at 67.27 per cent vs. 59.69 per cent respectively.

Table 13. Pearson Correlation between Initial Returns and Selected Fundamental Characteristics

	Initial Return	Post-2004 Dummy	IPO Size	Retention Rate	Total Syndicate
Post-2004 Dummy	0.228				
	0.022*				
IPO Size	-0.01	0.268			
	0.923	0.007**			
Retention Rate	0.073	0.236	0.102		
	0.468	0.018*	0.315		
Total Syndicate	0.005	0.308	0.612	0.147	
	0.959	0.002**	0**	0.145	
Max Ranking	0.092	0.218	0.445	0.106	0.376
	0.362	0.029*	0**	0.296	0**

The Pearson correlation matrix illustrates the correlation between underpricing and a selection of fundamental variables. Fundamental variables are positively associated with initial returns, except IPO size, which is mildly negatively associated with initial returns. However, none of the fundamental variables display significant correlation. The dummy variable for post-2004 issues is significant, and positively associated with initial returns.

Comparison with Previous Studies and Discussion

Compared to previous studies for corporate IPOs in the U.S, MLPs are underpriced relatively less than average (Loughran et al., 2012). Results for the MLP IPOs are more similar to levels reported for more similar transactions, such as the equity carve-outs examined by Schipper and Smith (1986), where mean initial returns are reported at 4.9 per cent for 41 equity carve-outs in the time period from 1963 to 1983. Muscarealla and Vetsuypens (1989) also find a mean initial return at 2.1 per cent for 76 reverse LBOs during 1986 to 1983. Both sample average initial returns are significantly larger than zero, but still below regular levels. In these types of transactions, prior knowledge about the value of the firms is better than for regular IPOs, and hence they are more similar to the situation for a majority of MLPs coming to market.

Compared to previous research on MLP IPOs, my results represent a shift in empirical evidence. Both Muscarella (1988) and Michaely and Shaw (1994) report no significant underpricing for MLP IPOs that occurred during the 1980s. Further, Wang et al. (1992) examine a sample of 87 REIT IPOs in the 1980s, and report a -2.82 per cent initial return. Similar to MLPs, institutional investors did not participate on a meaningful scale in REIT IPOs at that time. The shift in underpricing reported in this paper stems primarily from the group of issues that occurred following the passing of the AJCA 04, when institutional investors were granted permission to invest more heavily in MLPs. The empirical results are hence consistent with the winner's curse hypothesis, and suggest that there is an association between underpricing and the time when institutional investors became relatively more dominant in the pool of IPO participants.

Fundamental variables such as retention rate and underwriter ranking are positively correlated with underpricing, but not significant. As relates to other strands of literature focused on asymmetric information, these tendencies are contradictory to some established theoretical arguments. Leland and Pyle (1977) and Tirole (2006) suggest that ownership retention by the entrepreneur can function as a signal to investors about the quality of the firm, and hence *reduce* underpricing. In the context of MLPs, the signalling argument might be less meaningful with regards to retention rates due to the financing aspect attached to LP unit distributions. Instead of existing owners retaining units because they believe the MLP is undervalued, they might choose to retain units due to the prospect of receiving tax deferred regular cash payments in the future.

Underwriter ranking is another variable that has been thought to be negatively associated with underpricing (see for example Carter and Manaster, 1990; Michaely and Shaw, 1994). One can argue the case for top tier banks to have "more to lose" in terms of damaging their reputation through mispricing IPOs, and that they to a larger extent are able to choose between IPO candidates coming to market, and hence selecting chiefly high-quality issuers. Others, such as Loughran and Ritter (2004), have found that the association between underpricng and top-tier bank

underwriters has changed over time. Moving into the 1990s, they found that top-tier banks underpriced *more*. Loughran and Ritter (2004) explain this shift with the *changing issuer objective function*, which proposes that issuers moved to choose underwriters based on whether they would receive better analyst coverage, and favourable allocations of underpriced IPOs. It is then interesting to see that the syndicate size is growing into the 2000s, which should imply wider analyst coverage for the issuers.

Concluding Remarks and Suggestions for Further Research

Having explored the phenomenon of underpricing in the context of MLPs, it is evident that the MLP asset class is relevant also for academic research. Compared to early empirical results conducted using data from the 1980s, the empirical evidence on underpricing has shifted, representing an addition to existing literature. It is interesting to see that results are also consistent with the winner's curse hypothesis, illustrated by initial returns becoming positive and significant for the period following the introduction of a more meaningful institutional ownership share in the asset class. While the results presented document a shift in underpricing, and the shift correlates to the introduction of institutional participation in IPOs, the results do not contradict theories focusing of the allocation of IPOs to explain underpricing. For future research it could be interesting to obtain data on the allocation of MLP IPOs, and examine whether the shift in underpricing can be associated with more specific strands of existing literature.

References

Aggarwal, R., Krigman, L., Womack, K. (2002). Strategic IPO underpricing, information momentum, and lockup expiration selling. *Journal of Financial Economics*, vol. 66, pp. 105-137.

Akerlof, G.A. (1970). The market for 'lemons': Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, vol. 84, no. 3, pp. 488-500.

Allen, F., Faulhaber, G. R. (1989). Signaling by underpricing in the IPO market. *Journal of Financial Economics*, vol. 23, pp. 303-324.

Amihud, Y., Hauser, S., Kirsh, A. (2001). Allocations, adverse selection and cascades in IPOs: Evidence from

Israel. Working paper, New York University.

Baron, D.P. (1982). A model of the demand for investment bank advising and distribution services for new issues. *Journal of Finance*, vol. 37, pp. 955-976.

Beatty, R.P, Ritter, J.R (1986). Investment Banking, Reputation, and the Underpricing of Initial Public Offerings. *Journal of Financial Economics*, vol.15, pp. 213-232.

Benveniste, L.M., Spindt, P.A. (1989). How investment bankers determine the offer price and allocation of new issues. *Journal of Financial Economics*, vol. 24, pp.343-362.

Benveniste, L.M., Wilhelm, W.J. (1990). A comparative analysis of IPO proceeds under alternative regulatory environments. *Journal of Financial Economics*, vol. 28, pp. 173-208.

Black, B.S., Gilson, R.J. (1998). Venture capital and the structure of capital markets: Banks versus stock markets. *Journal of Financial Economics*, vol. 47, pp. 243-277.

Boyd, J.H., Heller, K.H., Strueling, G.F. *Federal taxation of partners and partnerships*, Second edition. Englewood Cliffs, NJ: Prentice-Hall, 1997.

Brau, J.C., Fawcett, S.E. (2006). Initial public offerings: An analysis of theory and practice. *The Journal of Finance*, vol. LXI, no. 1, pp. 399-436.

Brennan, M.J., Franks, J. (1997). Underpricing, ownership and control in initial public offerings of equity securities in the UK. *Journal of Financial Economics*, vol. 45, pp. 391-413.

Bullard, R.H., Denman, D., Alford, M. (1990). Are master limited partnerships in the oil and gas industry dead? A case study of Valero Natural Gas Partners. *Oil and Gas Tax Quarterly*, vol. 38, pp. 661-686.

Carter, R.B., Dark, F.H., Singh, A.K. (1998). Underwriter reputation, initial returns, and the long-run performance of IPO stocks. *Journal of Finance,* vol. 53, pp. 285-311.

Carter, R.B., Manaster, S. (1990). Initial public offerings and underwriter reputation. *Journal of Finance*, vol. 45, pp. 1045-1067.

Chemmanur, T. J. (1993). The pricing of initial public offers: A dynamic model with information production. *Journal of Finance*, vol. 48, pp. 285-304.

Chemmanur, T.J., Fulghieri, P. (1999). A theory of the going-public decision. *Review of Financial Studies*, vol. 12, pp. 249-279.

Chemmanur, T.J., Hu, G., Huang, J. (2010). The role of institutional investors in initial public offerings. *The Review of Financial Studies,* vol. 23, no. 12, pp. 4496-4540.

Ciccotello, C.S., Muscarella, C.J. (1997). Matching Organizational Structure with Firma Attributes: A Study of Master Limited Partnerships. *European Finance Review*, vol. 1, pp. 169-191.

Ciccotello, C.S., Muscarella, C.J. (2000). Contracts Between Managers and Investors: A Study of Master Limited Partnership Agreements. *Journal of Corporate Finance*, vol. 7, pp. 1-23.

Ciccotello, C.S., Muscarella, C.J. (2003). The Energy MLP Goes Institutional: Implications for Strategy and Governance. *Journal of Applied Corporate Finance*, vol. 15, no. 3, pp. 112-118.

Collins, J.M., Bey, R.P. (1986). The master limited partnership: An alternative to the corporation. *Financial Management*, vol. 15, no. 4, pp. 5-14.

Cornelli, F., Goldreich, D. (2001). Bookbuilding and strategic allocation. *Journal of Finance*, vol. 56, pp. 2337-2369.

Damodaran, A. (2012). Dividend discount models. Available from: [http://pages.stern.nyu.edu/~adamodar/pdfiles/valn2ed/ch13.pdf]. Downloaded 15.11.2012.

Dandapani, K., Reside, M.A., Robinson, R.M., Prakash, A.J. (1994). A tax-based motive for the underpricing of initial public offerings. *Manegerial and Decision Economics*, vol. 15, no. 6, pp. 553-561.

Earnst&Young (2011). Master limited partnership accounting and reporting guide. Available from: [http://www.ey.com/Publication/vwLUAssets/Master_limited_partnership_accounting_and_reporting_guide/$FILE/MLP_BB1889_3November2011.pdf]. Downloaded 06.12.2012.

Fama, E.F., Jensen, M.C. (1983). Separation of ownership and control. *Journal of Law and Economics*, Vol. 26, No. 2, pp. 301-325.

Fenn, T. (2011). MLP IPO trends. Available from: [http://www.lw.com/thoughtLeadershipSearch.aspx?searchText=mlp]. Downloaded 04.09.2012.

Gentry, W.M. (1994). Taxes, financial decisions and organizational form: Evidence from publicly traded partnerships. *Journal of Public Economics*, vol. 53, no. 2, pp. 223-244.

Guenther, D. (1992). Taxes and organizational form: A comparison of corporations and master limited partnerships. *The Accounting Review*, vol. 67, no. 1, pp. 17-45.

Hanley, K.W. (1993). The underpricing of initial public offerings and the partial adjustment phenomenon. *Journal of Financial Economics*, vol. 34, pp. 231-250.

Hanley, K.W., Weiss, K., Wilhelm, W.J. (1995). Evidence on the strategic allocation of initial public offerings. *Journal of Financial Economics*, vol. 37, pp. 239-257.

Hensler, D. A. (1995). Litigation cost and the underpricing of initial public offerings. *Managerial and Decision Economics*, vol. 16, pp. 231-250.

Hite, G., Owers, J. (1983). Security price reactions around corporate spin-off announcements. *Journal of Financial Economics*, vol. 12, pp. 409-436.

Ibbotson, R.G. (1975). Price performance of common stock new issues. *Journal of Financial Economics*, vol. 2, pp. 235-272.

Ibbotson, R. G., Jaffe, J. F. (1975). Hot issue markets. *The Journal of Finance*, vol. 30, no. 4, pp. 1027-1042.

Interstate Natural Gas Association of America (2011). North American natural gas midstream infrastructure through 2035: A secure energy future. Available from: [http://www.ingaa.org/File.aspx?id=14911]. Downloaded 18.12.2012.

Jaffe, J.F. (1991). Taxes and the capital structure of partnerships, REIT's and related entities. *The Journal of Finance*, vol. 46, no. 1, pp. 401-407.

Jegadeesh, N., Weinstein, M., Welch, I. (1993). An empirical investigation of IPO returns and subsequent equity offerings. *Journal of Financial Economics*, vol. 34, pp. 153-175.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economics Review*, vol. 76m pp.323-329.

Jensen, M.C., Meckling, W.H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, vol. 3, no. 4, pp. 305-360.

Jones, C.J., Johnson, J., Anderson, S.C. (2008). Master limited partnerships: Tax and investment issues. *The CPA Journal*, pp. 48-53.

Kahneman, D., Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, vol. 47, pp. 263-292.

Kensinger, J.W., Martin, J.D. (1988). The Quiet Restructuring. *Journal of Finance*, vol. 1, pp. 16-25.

Kensinger, J.W., Martin, J.D. (1990). Valuation Effects of Rollout Publicly Traded Partnerships in the Oil and Gas Industry. *Manegerial and Decision Economics*, vol. 2, no. 3, pp. 143-153.

Koh, F., Walter, T. (1989). A direct test of Rock's model of the pricing of unseasoned issues. *Journal of Financial Economics*, vol. 23, pp. 251-272.

Lee, I., Lochhead, S., Ritter, J., Zhao, Q. (1996). The Cost of Raising Capital. *Journal of Financial Research,* vol. 19, pp. 59-74.

Leland, H. E., Pyle, D. H. (1977). Informational asymmetries, financial structure, and financial intermediation. *The Journal of Finance*, vol. 32, pp. 371-387.

Ljungqvist, A. (2004). IPO Underpricing: A Survey. Handbook in Corporate Finance: Empirical Corporate Finance, B. Espen Eckbo, ed., Forthcoming. Available from: [http://ssrn.com/abstract=609422]. Downloaded 03.11.2012.

Ljungqvist, A., Wilhelm, W. (2002b). IPO-pricing in the dot-com bubble: Complacency or incentives? Working paper, New York University.

Ljungqvist, A., Nanda, V., Singh, R. (2006). Hot markets, investor sentiment, and IPO pricing. *The Journal of Business*, vol. 79, no. 4, pp. 1667-1702.

Loghran, T., Ritter, J. (2004). Why has IPO underpricing changed over time? Financial Management, vol. 33, no. 3, pp. 5-37.

Loughran, T., Ritter, J.R., Rydqvist, K. (2012). Initial public offerings: International insights. Updated version of 1994 article previously published in *Pacific-Basin Finance Journal*, vol. 2, pp. 165-199.

Logue, D.E. (1973). On the pricing of unseasoned equity issues: 1965-1969. *Journal of Financial and Quantitative Analysis*, vol. 8, pp. 91-103.

Lowry, M., Shu, S. (2000). Litigation risk and IPO underprising. *Journal of Financial Economics*, vol. 65, pp. 309-335.

Lucas, D., McDonald, R. (1990). Equity issues and stock price dynamics. *Journal of Finance*, vol. 45, pp. 1019-1043.

Michaely, R., Shaw, W.H. (1994). The pricing of initial public offerings: Tests of adverse-selection and signalling theories. *The Review of Financial Studies*, vol. 7, no. 2, pp. 279-319.

Michaely, R., Shaw, W.H. (1995). The choice of going public: spin-offs vs. carve-outs. *Financial Management*, vol. 24, pp. 5-21.

Moody's Investors Services (2007). Corporate governance structure of master limited partnerships carries credit risk. Available from: [http://www.moodys.com/sites/products/AboutMoodysRatingsAttachments/2006600000441511.pdf] Downloaded 15.12.2012.

Moore, W.T., Christensen, D.G., Roenfeldt, R.L. (1989). Equity valuation effects of forming master limited partnerships. *Journal of Financial Economics*, vol 24, pp. 107-124.

Morgan Stanley (2011). Midstream Energy MLPs Primer. Available from: [http://fa.smithbarney.com/public/facilityfiles/sb091007092909/d93ae0c9-0ae8-4703-9352-2a1fd38d15fc.pdf]. Downloaded 02.11.2012.

Moss, W.S. (2007). Complex structural issues exist in combinations of master limited partnerships. *Natural Gas Electricity*, vol. 24, no.4, pp. 2-7.

Muscarella, C.J. (1988). Price Performance of Initial Public Offerings of Master Limited Partnership Units. *The Financial Review*, vol. 23, no. 4, pp. 513-521.

Muscarella, C.J., Vetsuypens, M.R. (1989). A simple test of Baron's model of IPO underpricing. *Journal of Financial Economics*, vol. 24, pp. 125-136.

NERA Economic Consulting (2012). Macroeconomic Impact of LNG Exports from the United States. Available from: [http://www.fossil.energy.gov/programs/gasregulation/reports/nera_lng_report.pdf]. Downloaded 03.01.2013.

Nobanee, H., AlShattarat, W. K., Haddad, A. E., AlHajjar, M. (2010). Price limits and volatility: A new approach and some new empirical evidence from the Tokyo Stock Exchange. *International Research Journal of Finance and Economics*, vol. 42, pp. 162-169.

Omer, T.C., Terando, W.D. (1999). The effect of risk and tax differences on corporate and limited partnership capital structure. *National Tax Journal*, vol. 52, no. 4, pp. 699-716.

Pagano, M., Panetta, F., Zingales, L. (1998). Why do companies og public? An Empirical Analysis. *The Journal of Finance*, vol. 53, pp. 27-64.

Reilly, F.K. (1973). Further evidence on short-run results for new issues investors. *Journal of Financial and Quantitative Analysis,* vol. 8, pp. 83-90.

Ritter, J. R. (1991). The long-run performance of initial public offerings. *Journal of Finance*, vol. 46, pp. 3-27.

Ritter, J.R., Welch, I. (2002). A review of IPO activity, pricing, and allocations. *The Journal of Finance*, vol. 57, no. 4, pp. 1795-1828.

Rock, K. (1986). Why new issues are underpriced. *Journal of Financial Economics*, vol. 15, pp. 187- 212.

Rusoff, J.W. (2012). MLPs come into sharp focus. *Research Magazine*, pp. 7-19.

Ruud, J. S. (1993). Underwriter price support and the IPO underpricing puzzle. *Journal of Financial Economics*, col. 34, pp. 135-151.

Schipper, K., Smith, A. (1983). Effects of recontracting on shareholder wealth: The case of voluntary spin-offs. *Journal of Financial Economics*, vol. 12, pp. 437-467.

Schipper, K., Smith, A. (1986). A comparison of equity carve-outs and seasoned equity offerings: Share price effects and corporate restructuring. *Journal of Financial Economics*, vol. 15, pp. 152-186.

Scholes, M.S., Wolfson, M.A. *Taxes and business strategy: A global planning approach*. Englewood Cliffs, NJ: Prentica Hall, 1992.

Schultz, P.H. (2000). The timing of initial public offerings. Working paper, University of Notre Dame.

Shaw, W.H., Weir, H.A. (1993). Organizational form choice and the valuation of oil and gas producers. *The Accounting Review*, vol. 68, no. 3, pp. 657-667.

Smith, K.A., Brewerton, J.L. (1988). Are master limited partnerships still viable? *The Practical Tax Lawyer*, vol. 2, pp. 67-76.

Spatt, C. S., Srivastava, S. (1991). Preplay communication, participation restrictions, and efficiency in initial public offerings. *Review of Financial Studies*, vol. 4, pp. 709-726.

SteelPath Fund Advisors (2011). Master Limited Partnership Primer: Understanding an Emerging Asset Class. Available from: [http://www.steelpath.com/wp-content/uploads/MLP-Primer.pdf]. Downloaded 02.11.2012.

Stoll, H.R., Curley, A.J. (1970). Small business and the new issues market for equities. *Journal of Financial and Quantitative Analysis*, vol. 5, pp. 309-322.

Stoughton, N.M., Zechner, J. (1998). Ownership Structure and IPO Underpricing. *Journal of Business Finance & Accounting*, vol. 33, pp. 102-126.

Subrahmanyam, A., Titman, S. (1999). The going public decision and the development of financial markets. *Journal of Finance*, vol. 54, pp. 1045-1082.

Tinic, S. M. (1988). Anatonmy of initial public offerings of common stock. *Journal of Finance*, vol. 43, pp. 789-822.

Tirole, J. (2006): "The theory of corporate finance", Princeton University Press, New Jersey, USA.

Wachovia (2008). Equity research, MLP primer – Third edition. Available from: [http://www.naptp.org/documentlinks/071508wacoviaprimer.pdf]. Downloaded 02.11.2012.

Welch, I. (1989). Seasoned offerings, imitation cost, and the underpricing of initial public offerings. *Journal of Finance*, vol. 44, pp. 421-449.

Welch, I. (1992). Sequential sales, learning and cascades. *Journal of Finance*, vol. 47, pp. 695-732.

Wells Farco Securities (2010). MLP Primer – Fourth Edition. Available from: [http://naptp.org/documentlinks/Investor_Relations/WF_MLP_Primer_IV.pdf]. Downloaded 01.09.2012.

Zingales, L. (1995). Insider ownership and the decision to go public. *Review of Economic Studies*, vol. 62, pp. 425-448.

Appendices

Appendix 1. Categorisation of MLP Assets

Upstream	Midstream	Downstream	Other
• Oil reserves • Natural gas reserves • Coal reserves • Other exhaustible natural resource reserves • Drilling platforms • Drilling rigs • Other E&P assets used to extract exhaustible natural resource reserves	• Interstate oil and natural gas pipelines • Intrastate oil and natural gas pipelines • Petroleum product pipelines • Gas gathering and processing assets • Facilities for gas compression, treating and fractionation • Commodity storage facilities • Compressor stations • Coal preparation and transloading facilities • LNG regasification facilities	• Refinery assets • Transportation to wholesaler terminals or refineries by: - Rail cars - Trucks and trailers - Barges and tugboats - Tankers - Propane delivery and service vehicles	• Timber • Geothermal energy • Fertilizer • Nitrogen and sulphur manufacturing plants • Marine transportation • Petrochemicals production

Appendix 2. Final Sample Data - Master Limited Partnership Initial Public Offerings

MLP Name	Entered Market (IPO)	IPO price (USD)	First day closing price (USD)	First day return	Industry
Alliance Holdings GP LP	10.05.2006	25	25	0.0 %	Coal
Alliance Resource Partners LP	17.08.1999	19	18.81	-1.0 %	Coal
Alon USA Partners LP	20.11.2012	16	17	6.3 %	Downstream
American Midstream Partners LP	27.07.2011	21	20.95	-0.2 %	Midstream
Atlas Energy Resources LLC	13.12.2006	21	22.1	5.2 %	Upstream
Atlas Energy LP	20.07.2006	23	23	0.0 %	Upstream
Atlas Pipeline Partners LP	28.01.2000	13	12.37	-4.8 %	Midstream
Boardwalk Pipeline Partners LP	09.11.2005	19.5	18.95	-2.8 %	Midstream
BreitBurn Energy Partners LP	04.10.2006	18.5	18.21	-1.6 %	Upstream
Buckeye GP Holdings LP	03.08.2006	17	16.23	-4.5 %	Midstream
CVR Partners LP	08.04.2011	16	17.55	9.7 %	Other minerals
Calumet Specialty Products Partners LP	26.01.2006	21.5	21.75	1.2 %	Downstream
Capital Product Partners LP	30.03.2007	21.5	26.75	24.4 %	Maritime
Cheniere Energy Partners LP	20.03.2007	21	21.71	3.4 %	Midstream
Chesapeake Midstream Partners LP	29.07.2010	21	22.4	6.7 %	Midstream
Compressco Partners LP	15.06.2011	20	19	-5.0 %	Midstream
Constellation Energy Partners LLC	11.11.2006	21	21.95	4.5 %	Upstream
Copano Energy LLC	09.11.2004	20	22.7	13.5 %	Midstream
Cornerstone Propane Partners LP	17.12.1996	21	21.37	1.8 %	Downstream
Crosstex Energy LP	12.12.2002	20	20.1	0.5 %	Midstream
DCP Midstream Partners LP	02.12.2005	21.5	23.05	7.2 %	Midstream
Delek Logistics Partners LP	02.11.2012	21	22.35	6.4 %	Midstream
Duncan Energy Partners LP	31.01.2007	21	23.05	9.8 %	Midstream
EV Energy Partners LP	27.09.2006	20	19.79	-1.1 %	Upstream
Eagle Rock Energy Partners LP	25.10.2006	19	18	-5.3 %	Midstream
El Paso Pipeline Partners LP	16.11.2007	20	20.9	4.5 %	Midstream
Encore Energy Partners LP	12.09.2007	21	21.03	0.1 %	Upstream
Energy Transfer Equity LP	03.02.2006	21	22.65	7.9 %	Midstream
Enterprise GP Holdings LP	24.08.2005	28	32.55	16.3 %	Midstream
Enterprise Products Partners LP	28.07.1998	22	21.5	-2.3 %	Midstream
EQT Midstream Partners LP	27.06.2012	21	23.75	13.1 %	Midstream
Ferrellgas Partners LP	28.06.1994	21	21	0.0 %	Downstream
Genesis Energy LP	27.11.1996	20.62	20.75	0.6 %	Midstream
Global Partners LP	29.09.2005	22	23.7	7.7 %	Downstream
Golar LNG Partners LP	08.04.2011	22.5	24.85	10.4 %	Maritime
Heritage Propane Partners LP	25.06.1996	20.25	20.25	0.0 %	Midstream
Hi-Crush Partners LP	16.08.2012	17	20	17.6 %	Other minerals
Hiland Holdings GP LP	20.09.2006	18.5	19.25	4.1 %	Midstream
Hiland Partners LP	10.02.2005	22.5	29.05	29.1 %	Midstream
Holly Energy Partners LP	08.07.2004	22.25	24.55	10.3 %	Midstream
Inergy Holdings LP	21.06.2005	22.5	27.83	23.7 %	Downstream
Inergy LP	26.07.2001	22	23.5	6.8 %	Downstream
Inergy Midstream LP	16.12.2011	17	17.65	3.8 %	Midstream

K-Sea Transportation Partners LP	09.01.2004	23.5	27.09	15.3 %	Maritime
LRR Energy LP	11.11.2011	19	19.05	0.3 %	Upstream
Legacy Reserves LP	11.01.2007	19	20.3	6.8 %	Upstream
Lehigh Gas Partners LP	25.10.2012	20	20.23	1.2 %	Downstream
Linn Energy LLC	13.01.2006	21	22	4.8 %	Upstream
Magellan Midstream Holdings LP	10.02.2006	24.5	24	-2.0 %	Midstream
MarkWest Energy Partners LP	21.05.2002	20.5	20.55	0.2 %	Midstream
Martin Midstream Partners LP	01.11.2002	19	17.7	-6.8 %	Maritime
Memorial Production Partners LP	09.12.2011	19	18.79	-1.1 %	Upstream
Mid-Con Energy Partners LP	15.12.2011	18	18.05	0.3 %	Upstream
MPLX LP	26.10.2012	22	27.2	23.6 %	Midstream
NGL Energy Partners LP	12.05.2011	21	20.98	-0.1 %	Downstream
National Propane Partners LP	27.06.1996	21	21	0.0 %	Downstream
Natural Resource Partners LP	11.10.2002	20	19.4	-3.0 %	Coal
Navios Maritime Partners LP	13.11.2007	20	19.25	-3.8 %	Maritime
Niska Gas Storage Partners LLC	12.05.2010	20	19.1	-4.5 %	Midstream
Northern Tier Energy LP	26.07.2012	14	14.16	1.1 %	Downstream
OSG America LP	08.11.2007	19	18.85	-0.8 %	Maritime
Oiltanking Partners LP	14.07.2011	21.5	23.7	10.2 %	Midstream
Oxford Resource Partners LP	13.07.2010	18.5	17.96	-2.9 %	Coal
PAA Natural Gas Storage LP	30.04.2010	21.5	23.25	8.1 %	Midstream
Pacific Energy Partners LP	23.07.2002	19.5	19	-2.6 %	Midstream
Penn Virginia GP Holdings LP	05.12.2006	18.5	18	-2.7 %	Coal
Penn Virginia Resource Partners LP	25.10.2001	21	22.7	8.1 %	Coal
PetroLogistics LP	04.05.2012	17	16.5	-2.9 %	Downstream
Pioneer Southwest Energy Partners LP	30.04.2008	19	19.65	3.4 %	Upstream
Plains All American Pipeline LP	18.11.1998	20	20	0.0 %	Midstream
QR Energy LP	16.12.2010	19.18	19.6	2.2 %	Upstream
Quest Energy Partners LP	08.11.2007	18	16.5	-8.3 %	Upstream
Quicksilver Gas Services LP	06.08.2007	21	21	0.0 %	Midstream
Regency Energy Partners LP	31.01.2006	20	19.81	-1.0 %	Midstream
Rentech Nitrogen Partners LP	04.11.2011	20	19.85	-0.7 %	Other minerals
Rhino Resource Partners LP	29.09.2010	20	21.9	9.5 %	Coal
Rose Rock Midstream LP	09.12.2011	20	20	0.0 %	Midstream
Seadrill Partners LLC	19.10.2012	22	23.67	7.6 %	Upstream
SemGroup Energy Partners LP	18.07.2007	22	29.32	33.3 %	Midstream
Shamrock Logistics LP	16.04.2001	24.5	28	14.3 %	Midstream
Southcross Energy Partners LP	02.11.2012	20	22.35	11.8 %	Midstream
Spectra Energy Partners LP	27.06.2007	22	28.65	30.2 %	Midstream
StoneMor Partners LP	15.09.2004	20.5	21.6	5.4 %	Midstream
Summit Midstream Partners LP	28.09.2012	20	21.11	5.6 %	Midstream
Sunoco Logistics Partners LP	05.02.2002	20.5	24	17.1 %	Midstream
Susser Petroleum Partners LP	20.09.2012	20.5	22.91	11.8 %	Downstream
TC PipeLines LP	25.05.1999	20.5	20.56	0.3 %	Midstream
Targa Resources Partners LP	09.02.2007	21	23.76	13.1 %	Midstream
Teekay LNG Partners LP	05.05.2005	22	24.3	10.5 %	Maritime

Teekay Offshore Partners LP	14.12.2006	21	25	19.0 %	Maritime
Tesoro Logistics LP	20.04.2011	21	23.5	11.9 %	Downstream
Transmontaigne Partners LP	25.05.2005	21.4	24.51	14.5 %	Downstream
U.S. Shipping Partners LP	29.10.2004	22.25	23.25	4.5 %	Maritime
Universal Compression Partners LP	17.10.2006	21	22.53	7.3 %	Midstream
Valero GP Holdings LLC	14.07.2006	22	22	0.0 %	Midstream
Vanguard Natural Resources LLC	24.10.2007	19	18.94	-0.3 %	Upstream
Western Gas Partners LP	08.05.2008	16.5	16.5	0.0 %	Midstream
Williams Energy Partners LP	06.02.2001	21.5	24	11.6 %	Midstream
Williams Partners LP	18.08.2005	21.5	25.5	18.6 %	Midstream
Williams Pipeline Partners LP	17.01.2008	20	20	0.0 %	Midstream