Index Investing and Equity Prices

by

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Abstract

This paper studies whether and the extent to which stocks in the S&P 500 index get higher market value relative to asset replacement cost. Following Morck and Yang (2001), I measure the index premium and find the following stylized facts: First, the index premium has reached as high as 54.1% in 1999 and continues to be positive and significant. Second, index premium shows cyclical time variation: it rises in the run-up to the crisis, sharply drops as economy falls into recession, and rebounds as economy recovers. The rebound was particularly slow after the Great recession. Third, the co-movement between the index premium and the value of the indexed assets that was strong during the sample period of Morck and Yang (2001) largely disappears afterwards.

1. **Introduction**

Index investing has been a successful and increasingly popular strategy. Net flow into passive funds has been steadily increasing, almost reaching $500 billion in 2016, whereas that for active funds has dropped over the years. (Stein 2017) Moreover, S&P 500 outperformed almost 90% of active fund managers in 2016. (S&P Global 2016). However, despite the appeal of high returns and low transaction cost that index investing seems to offer, there have been concerns on the economic consequences of passive investing. For instance, Robert Shiller warned that passive investing is a "chaotic system" that will lead to market inefficiency, since stock prices would no longer reflect all the relevant information due to the lack of active pricing. (Landsman 2017) Even John Bogle, the founder of Vanguard who started this trend of passive investing, was concerned that passive indexing forces costs to active investors, incentivizing them to put off asset pricing to other investors. (Aenelle 2017) My paper is related to the broader research question: whether index investing distort stock prices. Specifically, I study whether and the extent to which the stocks are more expensive just because they are in the index using long sample period from 1978 to 2017s.

There is a large body of literature studying the impact of index investing on stock prices. Some papers investigate the immediate effect of index inclusion or deletion on stock prices: Shleifer (1986) finds that stocks enjoy a significant positive abnormal return of 2.79% between when they are newly included in the S&P 500. Similarly, Petajisto (2010) shows that stocks experience a price boost of 8.8% upon inclusion and a price fall of 15.1% upon deletion for the S&P 500 between 1990 and 2005. Taking a step further, Morck and Yang (2001) find that membership in the S&P 500 grants a permanent boost to the firms' market value to asset replacement cost, up to 40% between 1978 and 1997 as shown in Figure 1. Cremers, Petajisto, and Zitzewitz (2010) also reveal that the excess returns of the S&P 500 have 0.82% alpha relative to Carhart four-factor model. On a related note, Wurgler and Zhuravskaya (2002) show that the size of abnormal return associated with inclusion in the S&P 500 is larger for firms that are more difficult to substitute, lending support to Shleifer's (1986) claim that the demand curves for stocks slope downward. As to why the demand curves for stocks are not flattened by arbitrage, Shleifer and Vishny (1997) find that the pressure to chase returns can limit active managers' abilities to arbitrage the premium. Baker, Bradley, and Wurgler (2011) suggest that arbitrageurs being constrained by institutional investors' objective to beat fixed benchmarks could be partly responsible for the low-volatility anomaly, in which stocks with higher betas and volatilities return less than those with lower betas and volatilities.

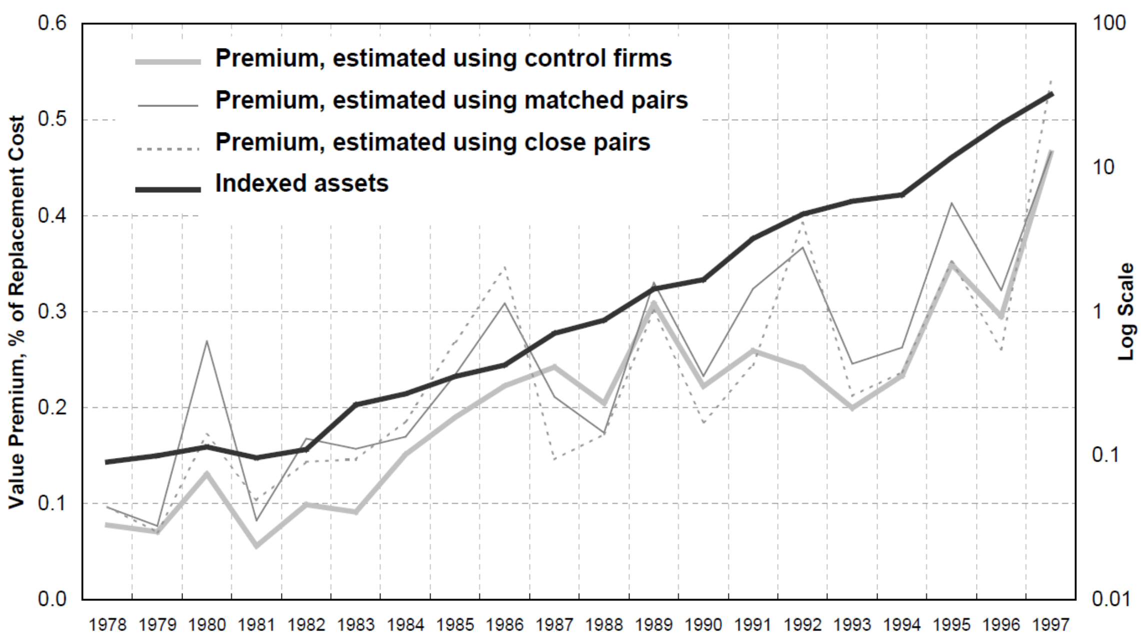

Figure 1: Growth of Index Premium and Indexed Assets over time[1]

[1] Morck and Yang (2001)

I measure index premium for S&P 500 following Morck and Yang (2001)'s approach, yearly cross-sectional regression: regressing Tobin's Q (market value over asset replacement cost) on index membership and control variables. The average number of firms per year is about 1900.

Based on the analysis, I find the following stylized facts: First, the index premium has reached as high as 54.1% in 1999 and continues to be positive and significant. This implies that there is a persistent tendency over 40 years that the stocks that are included in the S&P 500 index are not perfectly substitutable with those that are not in the index. Second, index premium shows cyclical time variation: it rises in the run-up to the crisis, sharply drops as economy falls into recession, and rebounds as economy recovers. This is not surprising considering that the stock index would be grossly undesirable when everyone is shorting stocks and the systematic risk is very high. Interesting finding is that the rebound was particularly slow after the Great recession compared to other recessions. Third, the co-movement between the index premium and the value of the indexed assets that was strong during the sample period of Morck and Yang (2001) largely disappears afterwards. This result is unexpected based on the recent popularity in index investing, as increase in index investing would lead to higher demand for stocks in the index, driving their premium upward.

The rest of the paper is organized as the following: Part 2 and 3 explains the regression model and the methods of variable construction respectively, that I borrow from Morck and Yang (2001) Part 4 discusses the result of the regression and Part 5 concludes.

1. Empirical Model

To investigate the premium on the prices of indexed stock, I use the empirical framework from Morck and Yang (2001). I run cross-sectional (yearly) regressions of firms' market value over replacement costs on index membership and other control variables. For each year, I run the following regression:

$$\frac{V_{t,j}}{A_{t,j}} = \sum_{i=1}^{I} \gamma_{i,t}\delta_{t,i,j} + \beta_{1,t}\frac{rd_{t,j}}{A_{t,j}} + \beta_{2,t}\frac{adv_{t,j}}{A_{t,j}} + \beta_{3,t}\frac{debt_{t,j}}{A_{t,j}} + \beta_{4,t}\ln(A_{t,j}) + \beta_{5,t}\eta_{t,j} + u_{t,j} \quad (1)$$

$V_{t,j}$: market value of firm j in year t
$A_{t,j}$: replacement cost of tangible assets of firm j in year t
$\gamma_{i,t}$: industry fixed effect for industry I in year t
$\delta_{t,i,j}$: 1 if firm j is in industry i in year t, 0 if otherwise
$rd_{t,j}$: research and development spending
$adv_{t,j}$: advertising spending
$debt_{t,j}$: leverage
$\eta_{t,j}$: 1 if firm j is in index in year t, 0 if otherwise
$u_{t,j}$: iid error

I construct the sample and the variables based on Morck and Yang (2001). My sample of firms begins from all firms listed in Compustat between 1978 and 2017. Firms in banking and financial industries (SIC codes 6000-6999) are excluded from the sample, as their accounting information does not compare with that of other companies. For better comparability, I also exclude firms with accounting data recorded in currencies other than USD to rule out foreign exchange fluctuations. To minimize the size effect, non-index firms smaller than the smallest index firms are removed from the sample as well. Then, I delete observations for which sales, the share price, the number of shares outstanding, inventories, or property plant and equipment are missing or negative. If other variables, including research and development spending, advertisement spending, short-term debt, long-term debt, or non-inventory short term assets, are missing, they are considered as null values.

I define membership in the S&P 500 for a given year as being in the index as of December 31 of that year[2], following Morck and Yang (2001). The indicator variable $\eta_{t,j} = 1$ if the firm j is in S&P 500 at the end of the year t and $\eta_{t,j} = 0$ if otherwise.

The market value of the firm, $V_{t,j}$, is the market value of the firm's all outstanding equity and all outstanding debt. There are thus four components constituting $V_{t,j}$,: the market value of common stocks, $V_{cs,t,j}$, that of preferred stocks, $V_{ps,t,j}$, that of short-term debts, $V_{sd,t,j}$, and that of long term debts, $V_{ld,t,j}$.

The market value of firm's equity is the sum of the market value for common stocks, $V_{cs,t,j}$, and that for preferred stocks, $V_{ps,t,j}$. $V_{cs,t,j}$ is the multiple of the annual closing price[3] and the number of common shares outstanding[4].

The market value of firm's debt is the sum of the market value of short-term debt, $V_{sd,t,j}$, and that of long-term debt, $V_{ld,t,j}$. Due to their short duration, short-term debts are assumed to have market value equal to book value[5].

To estimate the market value of long-term debts, I borrow from Morck and Yang (2001) the simplifying assumption that all debts are 20-year BAA (Moody's) coupon bonds issued at par and that the BAA rate for a given year is the proper discount rate for pricing payments in subsequent years. Based on this assumption, the estimation is done as the following:

$$V_{ld,t,j} \cong B_{ld,t,j} \sum_{a=2}^{20} f_{a,t,j} \sum_{s=t}^{t-a} \left(\frac{\frac{r_{t-a}}{2}}{\left(1+\frac{r_t}{2}\right)^{2(s-t)}} + \frac{1}{\left(1+\frac{r_t}{2}\right)^{2a}} \right) \quad (2)$$

[2] I am grateful to Prof. Morck and Prof. Yang for providing me with index membership data up to 2010. I use the index constituent data from Compustat for years after 2010.
[3] Compustat item PRCC
[4] Compustat item CSHO
[5] Compustat item DLC

$B_{ld,t,j}$: book value of firm j's long-term debt in year t[6]
$f_{a,t,j}$: fraction of the firm's long-term debt that is a years old at the end of year t
r_t: average BAA bond for year t[7]

When the book values of long-term debt are available for all past 19 years for a given year, $f_{a,t,j}$ is calculated as the following:

$$f_{a,t,j} = \frac{B_{ld,t-a,j} - B_{ld,t-a-1,j}}{B_{ld,t,j}} \quad (3)$$

In cases for which the book value of long-term debt is missing for some of the years, I first estimate the average age structure of all sample firms in each year, $f_{a,t}$.

$$f_{a,t} \cong \frac{\sum_j (B_{t-a,j} - B_{t-a-1,j})}{\sum_j B_{t,j}} \quad (4)$$

Then, I renormalize the $f_{a,t}$ into $\hat{f}_{a,t,j}$ and use $\hat{f}_{a,t,j}$ as the proxy for the missing $f_{a,t,j}$.

$$\hat{f}_{a,t,j} \equiv f_{a,t}\left(\frac{1 - \sum_{data\ available} f_{a,t,j}}{\sum_{data\ missing} f_{a,t}}\right) \quad (5)$$

Now, I add up the four components to get $V_{t,j}$.

$$V_{t,j} = V_{cs,t,j} + V_{ps,t,j} + V_{sd,t,j} + V_{ld,t,j} \quad (6)$$

[6] Compustat Item DLTT
[7] Extracted monthly data (BAA) from FRED website (https://fred.stlouisfed.org/series/BAA)

To estimate the replacement cost of firms' tangible assets, $A_{t,j}$, I look into the following components: property, plant, and equipment, $A_{ppe,t,j}$, inventories, $A_{inv,t,j}$, other assets, $A_{oa,t,j}$, and net current assets, $A_{nca,t,j}$.

$A_{ppe,t,j}$ is estimated by adjusting the book value, $B_{ppe,t,j}$, for inflation.

$$A_{ppe,t,j} \cong B_{ppe,t,j} \frac{\hat{p}_t}{\hat{p}_{t-a_{t,j}}} \quad (7)$$

$\hat{p}_t$: capital goods price index[8] (fixed non-residential investments GDP deflator)
$a_{t,j}$: average age of firm j's PP&E in year t

$a_{t,j}$ is estimated as:

$$a_{t,j} \cong \frac{B^G_{ppe,t,j} - B_{ppe,t,j}}{D_{t,j}} \quad (8)$$

$B^G_{ppe,t,j}$: gross value of PP&E[9]
$D_{t,j}$: depreciation expense[10]

For the replacement cost of inventories, $A_{inv,t,j}$, I assumed that all inventories are reported in the FIFO method and used the book value, $B_{inv,t,j}$, as the estimate.

I assume that the replacement cost of other assets, $A_{oa,j,t}$, is the sum of investments in unconsolidated subsidiaries[11], other investments[12], and investments in intangibles[13]. For the estimation of $A_{oa,j,t}$, I adjust the book value of other assets, $B_{oa,j,t}$, for inflation. The formulae for the adjustment are as the following:

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[8] Extracted Gross Private Domestic Investment: Fixed Investment: Nonresidential from FRED website (https://fred.stlouisfed.org/series/A008RD3Q086SBEA)
[9] Compustat Item PPEGT
[10] Compustat Item XDP
[11] Compustat Item IVAEQ
[12] Compustat Item IVAO
[13] Compustat Item INTAN

$$A_{oa,j,t} = \frac{\hat{p}_t}{\hat{p}_{t-1}} A_{oa,j,t-1} + \left(B_{oa,t,j} - B_{oa,t-1,j}\right) \text{ for } B_{oa,t,j} \geq B_{oa,t-1,j}$$

$$A_{oa,j,t} = \frac{\hat{p}_t}{\hat{p}_{t-1}} A_{oa,j,t-1} * \left(B_{oa,t,j}/B_{oa,t-1,j}\right) \text{ for } B_{oa,t,j} < B_{oa,t-1,j} \quad (9)$$

For the replacement cost of net current assets, $A_{nca,t,j}$, I use the book value of net current assets as the estimate, as they are liquid.

Finally, I add up the four components to get the total replacement cost of the firm's tangible assets:

$$A_{t,j} \equiv A_{ppe,t,j} + A_{inv,t,j} + A_{oa,t,j} + A_{nca,t,j} \quad (10)$$

The control variables for the regression include research and development spending, $rd_{t,j}$, advertising spending, $adv_{t,j}$, and leverage, $debt_{t,j}$. For $rd_{t,j}$ and $adv_{t,j}$, I use the reported value from Compustat for the advertisement expense[14] and research and development expense[15]. $debt_{t,j}$ is estimated as the sum of the market values for short-term debt, $V_{sd,t,j}$, and long-term debt, $V_{ld,t,j}$. For the industry fixed effect, I use the three-digit Standard Industrial Classification (SIC) code from Compustat to group firms within the same industry.

2. Empirical Results

[14] Compustat Item XAD
[15] Compustat Item XRD

Persistence of Index Premium

By running the regression (1), I obtain the time series of $?_5$, the proxy for the index premium embedded in the Tobin's Q of constituent firms in Figure 2. The index premium has reached as high as 54.1% in 1999 and continues to be positive and significant. The pre-1998 result is largely in line with that from Morck and Yang (2001). The positive and significant premium implies that there is a persistent tendency over 40 years that the stocks that are included in the S&P 500 index are not perfectly substitutable with those that are not in the index.

Cyclical Variation in Index Premium

In addition, the index premium in Figure 2 shows cyclical time variation: it rises in the run-up to the crisis, sharply drops as economy falls into recession, and rebounds as economy recovers. During the burst of the Dot-com Bubble, the premium dropped from 48.2% in 2000 to 31.5% in 2002. Similarly, the premium fell from 36.0% in 2007 to 14.8% in 2009. This is not so surprising given that the stock index would be grossly undesirable when everyone is shorting stocks and the systematic risk is very high. Interesting finding is that the rebound was particularly slow after the Great recession compared to other recessions. It took almost 5 years after the Great recession for the index premium to rebound, whereas the rebound was almost immediate for other recessions.

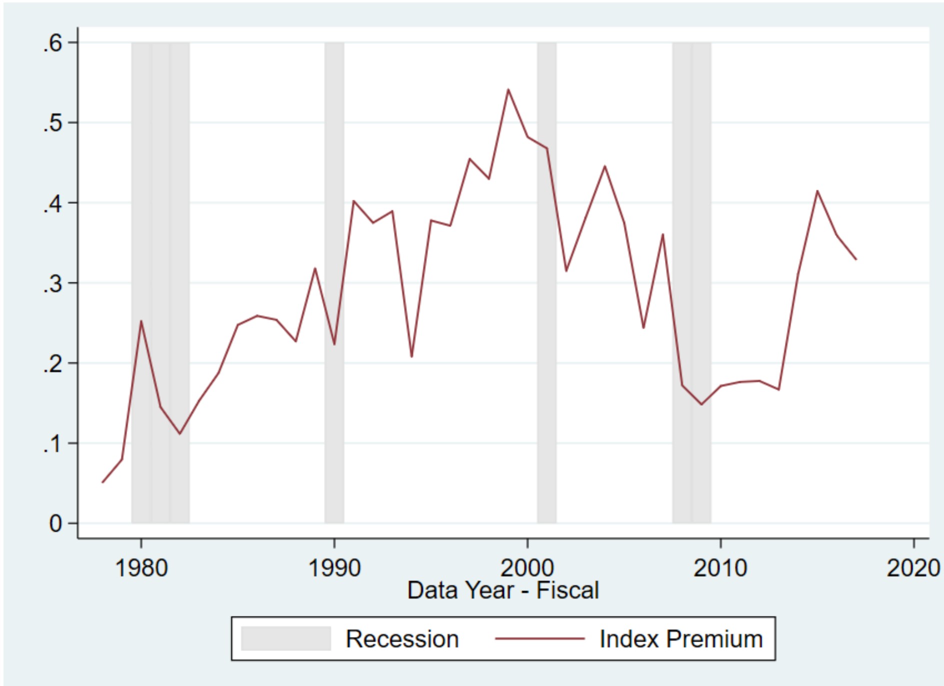
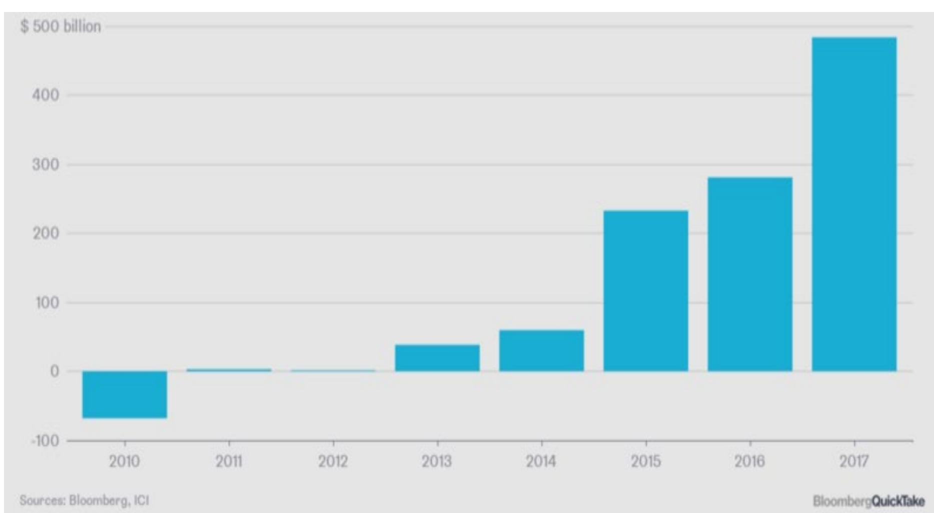


Figure 2: Index Premium overlaid with Periods of Recession[16]

Index Premium vs. Value of Indexed Assets

Index investing has been growing substantially: Figure 3 shows that the net flow into passive funds from active funds reached nearly $500 billion in 2017.



[16] NBER Website: https://www.nber.org/cycles.html

Figure 3: Net Flow into Passive Funds out of Active Funds[17]

It is natural to hypothesize that the increase in index investing would lead to higher demand for stocks in the index, driving their premium upward. Indeed, Morck and Yang (2001) finds that the co-movement between the index premium and the value of the indexed assets that was strong during their sample period (Reproduced in Figure 4). However, Figure 5 shows that the index premium does not rise as much as the value of assets linked to S&P 500 index. Furthermore, the index premium does not strongly move together with value of indexed assets post-1997. The correlation between the two time-series was very high at 0.8838 between 1978 and 1997, it plummeted to 0.1026 for the period afterwards (Figure 6). This finding suggests that the demand for indexed stocks no longer explain the time variation in index premium.

[17] Bloomberg: https://www.bloomberg.com/quicktake/active-vs-passive-investing

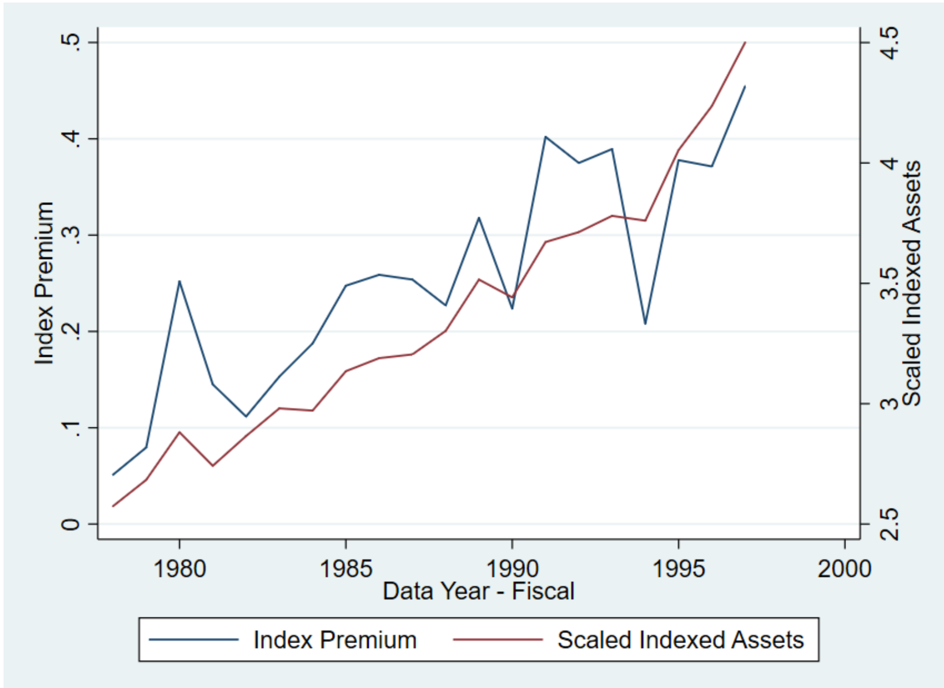


Figure 4: Time Series of Index Premium and the Value of Indexed Assets before 1997

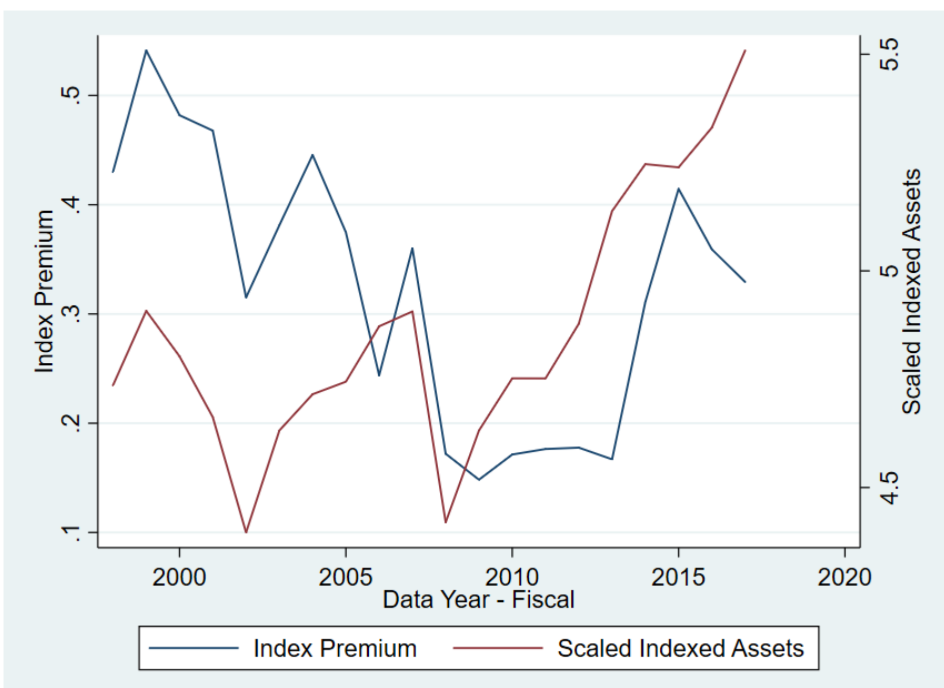


Figure 5: Time Series of Index Premium and the Value of Indexed Assets after 1997

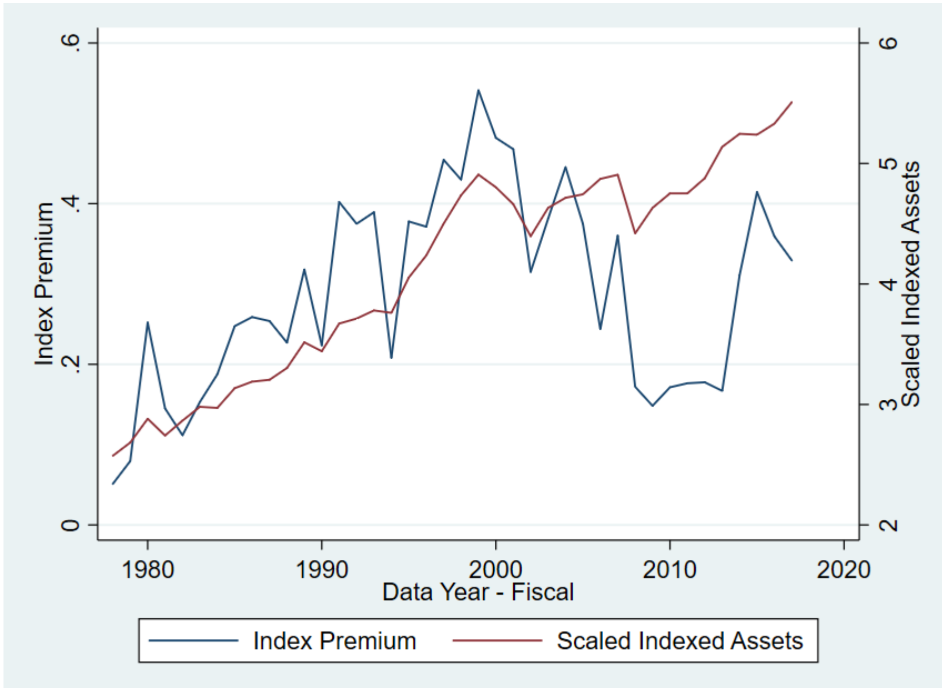


Figure 6: Time Series of Index Premium and the Value of Indexed Assets[18] for the entire sample period

3. Conclusion

In this paper, I study whether firms in a stock index command higher valuation relative to their asset replacement cost than firms that are not in the index. I estimate the index premium for the S&P 500 from 1978 to 2017 following the empirical framework from Morck & Yang. The findings are summarized as follows: First, the index premium has reached as high as 54.1% in 1999 and continues to be positive and significant. Second, index premium shows cyclical time variation: it rises in the run-up to the crisis, sharply drops as economy falls into recession, and rebounds as economy recovers. The

[18] Extracted the Net Asset Value for the Vanguard Investor-class Index Fund (VFINX) from Bloomberg

rebound was particularly slow after the Great recession. Third, the co-movement between the index premium and the value of the indexed assets that was strong during the sample period of Morck and Yang (2001) largely disappears afterwards. These facts suggest that index premium indeed has been strong for the past 40 years; however, the premium is not directly linked to the value of indexed assets, particularly in 2000s. This opens up an interesting research question on what factors other than the size of index investing that drive the index premium.

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Appendix 1. Regression Results

	(1) va	(2) va	(3) va	(4) va	(5) va
rda	4.762***	5.286***	9.577***	8.050***	8.024***
	(9.30)	(7.98)	(10.29)	(12.01)	(10.20)
adva	0.355	0.368	-0.118	0.312	1.301*
	(1.07)	(0.77)	(-0.15)	(0.47)	(1.99)
debta	0.129*	0.180*	-0.155	-0.155	-0.256
	(2.10)	(2.12)	(-1.05)	(-1.25)	(-1.83)
loga	-0.0551***	-0.0850***	-0.182***	-0.124***	-0.148***
	(-8.18)	(-9.48)	(-13.78)	(-10.83)	(-10.46)
eta	0.0512*	0.0795*	0.252***	0.145**	0.112*
	(2.20)	(2.52)	(4.43)	(3.26)	(2.42)
N	2154	2101	2368	2221	1674
adj. R-sq					

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 1: Results for 1978-1982

	(1) va	(2) va	(3) va	(4) va	(5) va
rda	6.897***	4.602***	4.880***	5.297***	3.725***
	(7.98)	(8.13)	(7.17)	(8.37)	(5.72)
adva	0.801	1.155**	0.478	1.093	1.280*
	(1.21)	(2.66)	(0.85)	(1.85)	(2.16)
debta	-0.131	-0.00212	0.0867	0.241**	0.235**
	(-0.89)	(-0.02)	(0.89)	(2.80)	(3.13)
loga	-0.164***	-0.131***	-0.176***	-0.164***	-0.127***
	(-9.72)	(-10.07)	(-11.47)	(-10.40)	(-9.02)
eta	0.153*	0.188***	0.247***	0.259***	0.254***
	(2.52)	(4.24)	(4.57)	(4.44)	(5.09)
N	2084	1975	2008	2165	2043
adj. R-sq					

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 2: Results for 1983-1987

	(1) va	(2) va	(3) va	(4) va	(5) va
rda	**3.488*****	**4.771*****	**4.348*****	**7.128*****	**4.674*****
	(6.03)	**(9.08)**	**(7.36)**	**(13.10)**	**(5.79)**
adva	**2.720*****	**1.827****	**3.102*****	**1.963***	**2.784****
	(4.94)	**(2.76)**	**(4.25)**	**(2.27)**	**(2.69)**
debta	**0.228****	**0.346*****	**0.987*****	**1.160*****	**1.181*****
	(3.22)	**(5.87)**	**(46.93)**	**(50.70)**	**(115.12)**
loga	**-0.125*****	**-0.162*****	**-0.0870*****	**-0.193*****	**-0.260*****
	(-8.79)	**(-10.76)**	**(-4.73)**	**(-8.69)**	**(-9.86)**
eta	**0.227*****	**0.318*****	**0.224****	**0.402*****	**0.375*****
	(4.56)	**(5.21)**	**(3.05)**	**(4.01)**	**(3.99)**
N	**1972**	**2252**	**2241**	**2667**	**1987**
adj. R-sq					

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 3: Results for 1988-1992

	(1) va	(2) va	(3) va	(4) va	(5) va
rda	**3.519*****	**4.508*****	**8.878*****	**7.387*****	**6.331*****
	(4.06)	**(6.88)**	**(10.43)**	**(9.01)**	**(9.73)**
adva	**1.180**	**0.990**	**0.861**	**0.689**	**1.474**
	(1.07)	**(0.93)**	**(0.60)**	**(0.46)**	**(1.17)**
debta	**1.134*****	**0.992*****	**1.093*****	**0.972*****	**0.953*****
	(125.43)	**(199.47)**	**(192.14)**	**(247.69)**	**(200.99)**
loga	**-0.284*****	**-0.165*****	**-0.304*****	**-0.309*****	**-0.289*****
	(-10.01)	**(-7.16)**	**(-8.72)**	**(-9.27)**	**(-9.71)**
eta	**0.389*****	**0.208****	**0.378*****	**0.371*****	**0.455*****
	(4.04)	**(2.58)**	**(3.33)**	**(3.37)**	**(4.80)**
N	**1928**	**2177**	**1810**	**2031**	**2009**
adj. R-sq					

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 4: Results for 1993-1997

	(1) va	(2) va	(3) va	(4) va	(5) va
rda	11.14***	27.21***	15.37***	7.054***	1.854*
	(7.45)	(11.43)	(14.71)	(12.24)	(2.01)
adva	4.117	4.715	3.877	3.674**	2.794
	(1.53)	(1.10)	(1.73)	(3.24)	(1.29)
debta	1.067***	1.168***	0.985***	1.050***	1.248***
	(160.65)	(91.02)	(186.27)	(338.06)	(327.78)
loga	-0.244***	-0.472***	-0.274***	-0.198***	-0.0625
	(-3.88)	(-4.62)	(-6.34)	(-7.86)	(-1.69)
eta	0.430*	0.541	0.482***	0.468***	0.315*
	(2.45)	(1.58)	(3.55)	(5.47)	(2.55)
N	1487	1876	1769	2105	1949
adj. R-sq					

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 5: Results for 1998-2002

	(1) va	(2) va	(3) va	(4) va	(5) va
rda	5.146***	5.723***	6.065***	9.431***	9.185***
	(8.85)	(8.26)	(9.38)	(8.05)	(12.54)
adva	5.112***	4.455**	2.860*	5.320**	3.009*
	(3.89)	(3.22)	(2.42)	(3.05)	(2.18)
debta	0.988***	1.203***	1.053***	1.134***	0.830***
	(502.47)	(133.50)	(138.50)	(26.20)	(16.65)
loga	-0.170***	-0.187***	-0.167***	-0.211***	-0.226***
	(-7.94)	(-7.18)	(-7.05)	(-6.34)	(-8.32)
eta	0.381***	0.445***	0.375***	0.244**	0.360***
	(5.90)	(5.27)	(4.80)	(2.70)	(3.74)
N	1679	1949	1955	1348	1999
adj. R-sq					

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 6: Results for 2003-2007

	(1) va	(2) va	(3) va	(4) va	(5) va
rda	3.661***	6.043***	9.152***	8.867***	8.706***
	(7.65)	(7.02)	(9.15)	(10.16)	(11.21)
adva	1.476	5.994***	3.040	7.471***	7.002***
	(1.71)	(4.00)	(1.62)	(4.66)	(4.86)
debta	0.805***	0.432***	0.230	0.278*	0.368**
	(25.56)	(4.03)	(1.67)	(2.02)	(3.25)
loga	-0.109***	-0.172***	-0.223***	-0.241***	-0.224***
	(-6.82)	(-7.45)	(-8.31)	(-9.28)	(-9.51)
eta	0.172***	0.148*	0.171*	0.176**	0.178**
	(3.60)	(2.30)	(2.27)	(2.66)	(3.03)
N	1528	1295	1297	1065	1079
adj. R-sq					

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 7: Results for 2008-2012

	(1) va	(2) va	(3) va	(4) va	(5) va
rda	10.77***	14.50***	14.83***	15.33***	16.31***
	(9.46)	(13.30)	(20.33)	(20.37)	(18.67)
adva	10.40***	10.64***	4.971***	6.443***	8.019***
	(5.30)	(5.98)	(3.69)	(4.27)	(4.85)
debta	0.236	0.294*	0.340***	0.379***	0.442**
	(1.46)	(2.15)	(3.54)	(3.35)	(2.98)
loga	-0.362***	-0.330***	-0.269***	-0.280***	-0.289***
	(-10.25)	(-9.92)	(-9.85)	(-10.20)	(-8.16)
eta	0.167*	0.311***	0.415***	0.359***	0.329***
	(1.98)	(4.01)	(5.53)	(5.04)	(3.80)
N	1003	994	1371	1183	1047
adj. R-sq					

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 8: Results for 2013-2017