

But what comes next?

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Value of Operating Assets	Since this is a discounted cashflow valuation, should there be a real option premium?
+ Cash and Marketable Securities	Operating versus Non-operating cash Should cash be discounted for earning a low return?
+ Value of Cross Holdings	How do you value cross holdings in other companies? What if the cross holdings are in private businesses?
+ Value of Other Assets	What about other valuable assets? How do you consider underutilized assets?
Value of Firm	Should you discount this value for opacity or complexity? How about a premium for synergy? What about a premium for intangibles (brand name)?
- Value of Debt	What should be counted in debt? Should you subtract book or market value of debt? What about other obligations (pension fund and health care)? What about contingent liabilities? What about minority interests?
= Value of Equity	Should there be a premium/discount for control? Should there be a discount for distress?
- Value of Equity Options	What equity options should be valued here (vested versus non-vested)? How do you value equity options?
= Value of Common Stock	Should you divide by primary or diluted shares?
/ Number of shares	
= Value per share	Should there be a discount for illiquidity/ marketability? Should there be a discount for minority interests?

1. The Value of Cash

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- The simplest and most direct way of dealing with cash and marketable securities is to keep it out of the valuation - the cash flows should be before interest income from cash and securities, and the discount rate should not be contaminated by the inclusion of cash. (Use betas of the operating assets alone to estimate the cost of equity).
- Once the operating assets have been valued, you should add back the value of cash and marketable securities.
- In many equity valuations, the interest income from cash is included in the cashflows. The discount rate has to be adjusted then for the presence of cash. (The beta used will be weighted down by the cash holdings). Unless cash remains a fixed percentage of overall value over time, these valuations will tend to break down.

An Exercise in Cash Valuation

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	Company A	Company B	Company C
Enterprise Value	\$ 1 billion	\$ 1 billion	\$ 1 billion
Cash	\$ 100 mil	\$ 100 mil	\$ 100 mil
Return on Capital	10%	5%	22%
Cost of Capital	10%	10%	12%
Trades in	US	US	Argentina

Should you ever discount cash for its low returns?

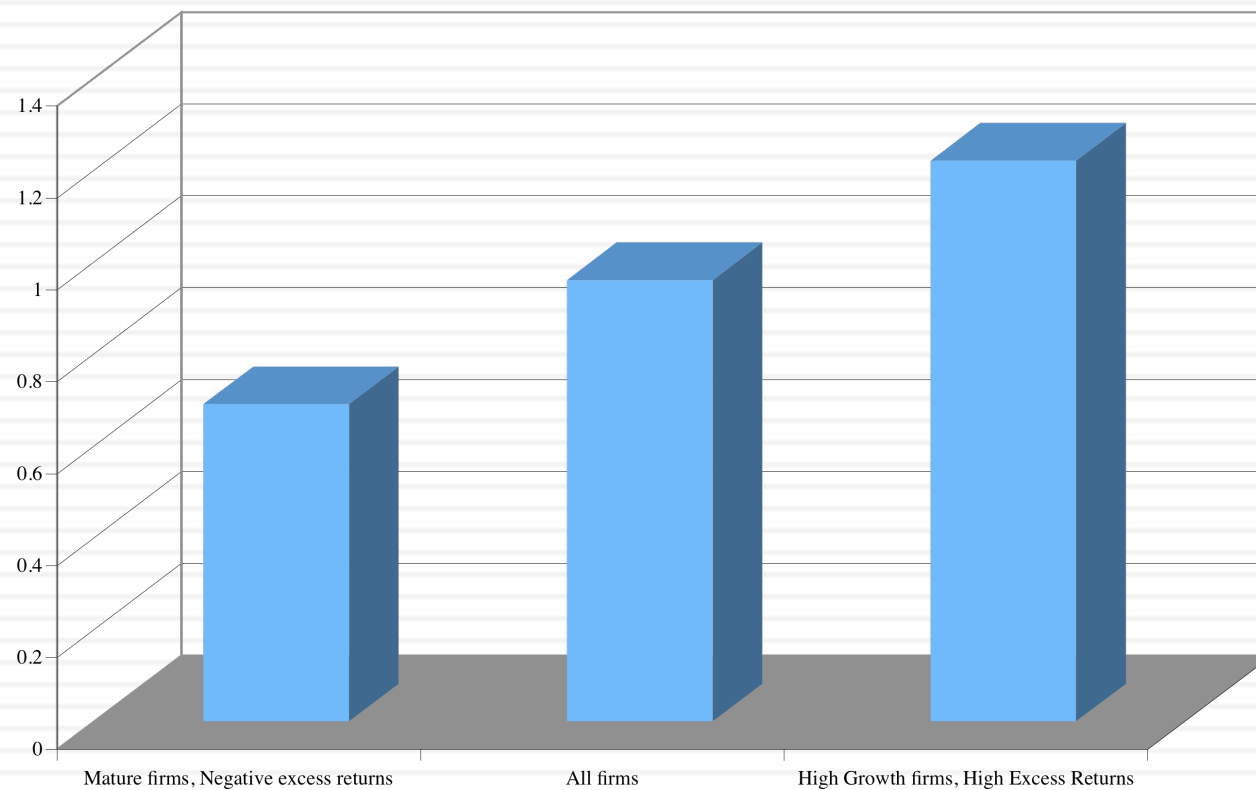
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- There are some analysts who argue that companies with a lot of cash on their balance sheets should be penalized by having the excess cash discounted to reflect the fact that it earns a low return.
 - Excess cash is usually defined as holding cash that is greater than what the firm needs for operations.
 - A low return is defined as a return lower than what the firm earns on its non-cash investments.
- This is the wrong reason for discounting cash. If the cash is invested in riskless securities, it should earn a low rate of return. As long as the return is high enough, given the riskless nature of the investment, cash does not destroy value.
- There is a right reason, though, that may apply to some companies... Managers can do stupid things with cash (overpriced acquisitions, pie-in-the-sky projects....) and you have to discount for this possibility.

Cash: Discount or Premium?

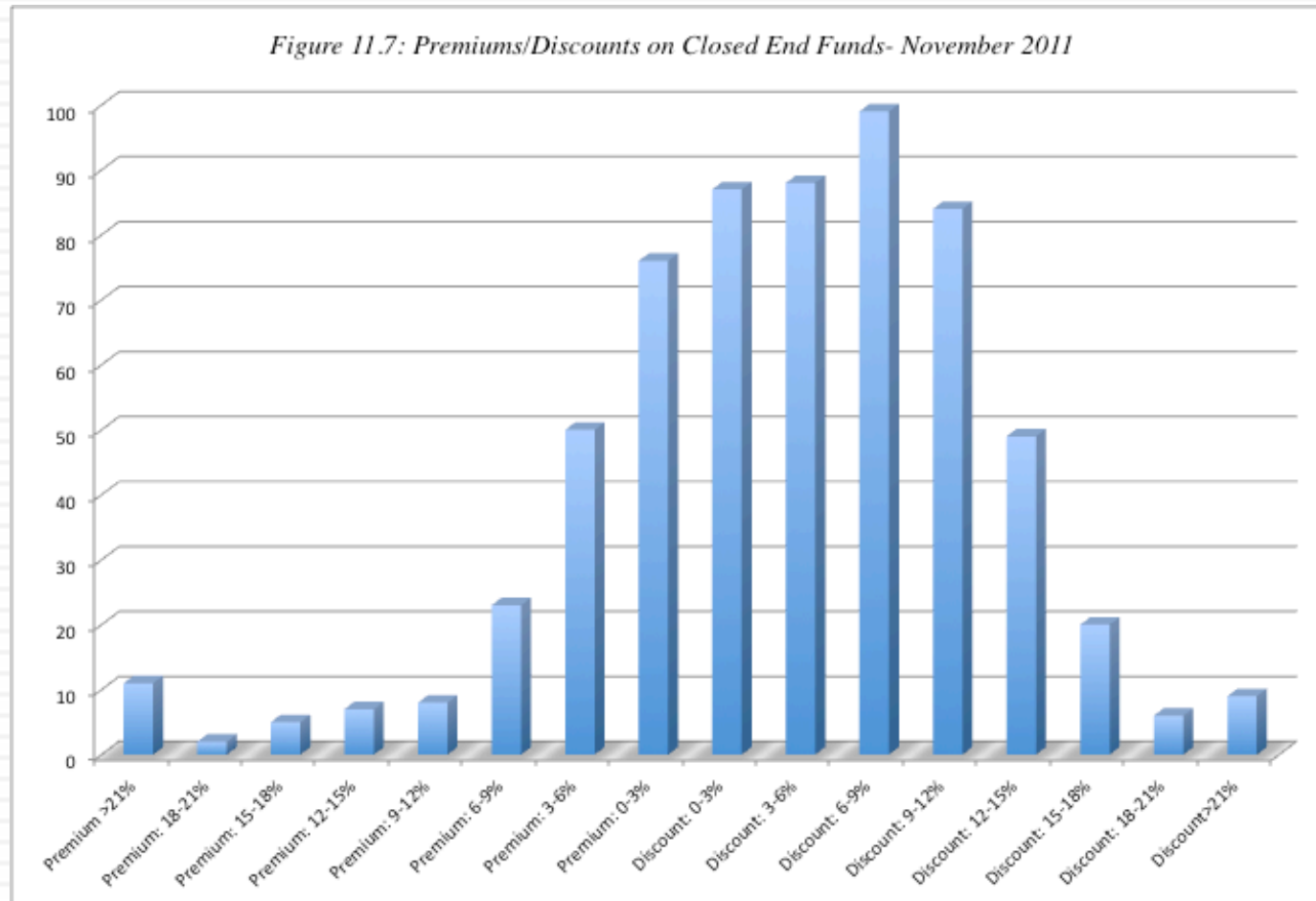
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*Market Value of \$ 1 in cash:
Estimates obtained by regressing Enterprise Value against Cash Balances*



The Case of Closed End Funds: Price and NAV

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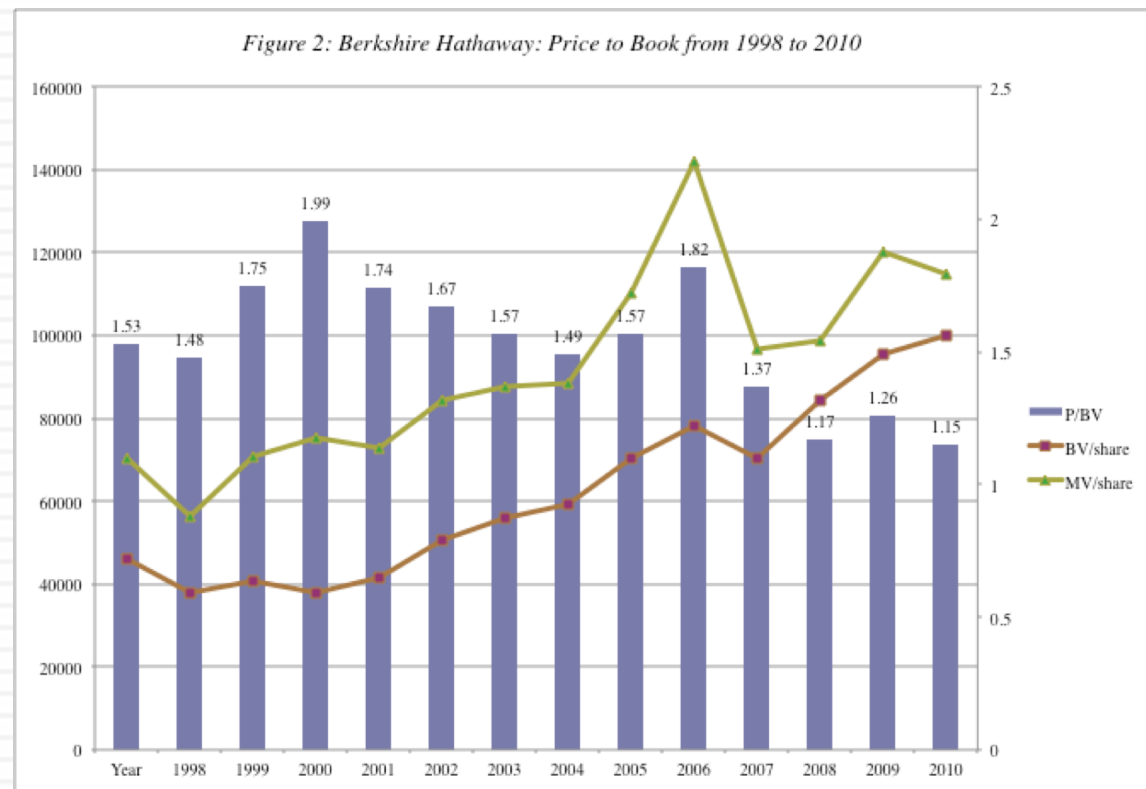
A Simple Explanation for the Closed End Discount

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- Assume that you have a closed-end fund that invests in ‘average risk’ stocks. Assume also that you expect the market (average risk investments) to make 11.5% annually over the long term. If the closed end fund underperforms the market by 0.50%, estimate the discount on the fund.

A Premium for Marketable Securities: Berkshire Hathaway

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2. Dealing with Holdings in Other firms

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- Holdings in other firms can be categorized into
 - Minority passive holdings, in which case only the dividend from the holdings is shown in the balance sheet
 - Minority active holdings, in which case the share of equity income is shown in the income statements
 - Majority active holdings, in which case the financial statements are consolidated.

An Exercise in Valuing Cross Holdings

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- Assume that you have valued Company A using consolidated financials for \$ 1 billion (using FCFF and cost of capital) and that the firm has \$ 200 million in debt. How much is the equity in Company A worth?
- Now assume that you are told that Company A owns 10% of Company B and that the holdings are accounted for as passive holdings. If the market cap of company B is \$ 500 million, how much is the equity in Company A worth?
- Now add on the assumption that Company A owns 60% of Company C and that the holdings are fully consolidated. The minority interest in company C is recorded at \$ 40 million in Company A's balance sheet. How much is the equity in Company A worth?

More on Cross Holding Valuation

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- Building on the previous example, assume that
 - ▣ You have valued equity in company B at \$ 250 million (which is half the market's estimate of value currently)
 - ▣ Company A is a steel company and that company C is a chemical company. Furthermore, assume that you have valued the equity in company C at \$250 million.
 - ▣ Estimate the value of equity in company A.

If you really want to value cross holdings right....

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- Step 1: Value the parent company without any cross holdings. This will require using unconsolidated financial statements rather than consolidated ones.
- Step 2: Value each of the cross holdings individually. (If you use the market values of the cross holdings, you will build in errors the market makes in valuing them into your valuation.
- Step 3: The final value of the equity in the parent company with N cross holdings will be:
 - ▣ Value of un-consolidated parent company
 - ▣ – Debt of un-consolidated parent company
 - ▣ + $\sum_{j=1}^{j=N} \% \text{ owned of Company } j * (\text{Value of Company } j - \text{Debt of Company } j)$

Valuing Yahoo as the sum of its intrinsic pieces

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<i>100% of Yahoo! US Equity</i>	<i>+ 35% of Yahoo! Japan Equity</i>	<i>+ 22.1% of Alibaba Equity</i>	<i>- Loose Ends =</i>	Equity value= \$41,571 Per share = \$41.19
Operating assets =\$4383	Operating assets = \$17,884	Operating assets = \$127,484	- Taxes due = \$5,017	
+ Cash = \$4,571	+ Cash = \$3,113	+ Cash = \$27963	- Yahoo options = \$298	
- Debt = \$1,591	- Debt = \$0	- Debt = \$6,670		
=Parent Equity = \$7,363	Equity = \$20,997 35% of value = \$7,349	Equity = \$145,587 22.1% of value = \$32,175		

If you have to settle for an approximation, try this...

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- For majority holdings, with full consolidation, convert the minority interest from book value to market value by applying a price to book ratio (based upon the sector average for the subsidiary) to the minority interest.
 - Estimated market value of minority interest = Minority interest on balance sheet * Price to Book ratio for sector (of subsidiary)
 - Subtract this from the estimated value of the consolidated firm to get to value of the equity in the parent company.
- For minority holdings in other companies, convert the book value of these holdings (which are reported on the balance sheet) into market value by multiplying by the price to book ratio of the sector(s). Add this value on to the value of the operating assets to arrive at total firm value.

Yahoo: A pricing game?

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<i>Item</i>	<i>Computation details</i>	<i>Estimated value</i>
Market Capitalization of Yahoo!	\$33.76*1009.39 million	\$34,077
- 35% of Market Cap of Yahoo! Japan	.35 (\$24,393 million)	\$8,538
- 22.1% of Equity value in Alibaba (estimate)	.221(\$150,000 million)	\$33,165
+ Taxes Due on Alibaba share sale	40% of capital gains	\$5,232
+ Yahoo Debt	From 2013 10K	\$1,228
- Yahoo Cash	From 2013 10K	\$4,998
+ Yahoo equity options	From Yahoo valuation	\$388
Imputed value for Yahoo Parent operating assets		-\$5,776
Intrinsic value (my estimate) of Yahoo! Parent		\$5,474
Relative value (my estimate) of Yahoo! Parent		\$5,289

3. Other Assets that have not been counted yet..

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- Assets that you should not be counting (or adding on to DCF values)
 - If an asset is contributing to your cashflows, you cannot count the market value of the asset in your value. Thus, you should not be counting the real estate on which your offices stand, the PP&E representing your factories and other productive assets, any values attached to brand names or customer lists and definitely no non-assets (such as goodwill).
- Assets that you can count (or add on to your DCF valuation)
 - Overfunded pension plans: If you have a defined benefit plan and your assets exceed your expected liabilities, you could consider the over funding with two caveats:
 - Collective bargaining agreements may prevent you from laying claim to these excess assets.
 - There are tax consequences. Often, withdrawals from pension plans get taxed at much higher rates.
 - Unutilized assets: If you have assets or property that are not being utilized to generate cash flows (vacant land, for example), you have not valued it yet. You can assess a market value for these assets and add them on to the value of the firm.

4. A Discount for Complexity: An Experiment

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	Company A	Company B
Operating Income	\$ 1 billion	\$ 1 billion
Tax rate	40%	40%
ROIC	10%	10%
Expected Growth	5%	5%
Cost of capital	8%	8%
Business Mix	Single	Multiple
Holdings	Simple	Complex
Accounting	Transparent	Opaque
Which firm would you value more highly?		

Measuring Complexity: Volume of Data in Financial Statements

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<i>Company</i>	<i>Number of pages in last 10Q</i>	<i>Number of pages in last 10K</i>
General Electric	65	410
Microsoft	63	218
Wal-mart	38	244
Exxon Mobil	86	332
Pfizer	171	460
Citigroup	252	1026
Intel	69	215
AIG	164	720
Johnson & Johnson	63	218
IBM	85	353

Measuring Complexity: A Complexity Score

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Item	Factors	Follow-up Question	Answer	Weighting factor	Hyundai Heavy Score
Operating Income	1. Multiple Businesses	Number of businesses (with more than 10% of revenues) =	3	2.00	6
	2. One-time income and expenses	Percent of operating income =	5%	10.00	0.5
	3. Income from unspecified sources	Percent of operating income =	15%	10.00	1.5
	4. Items in income statement that are volatile	Percent of operating income =	20%	5.00	1
Tax Rate	1. Income from multiple locales	Percent of revenues from non-domestic locales =	75%	3.00	2.25
	2. Different tax and reporting books	Yes or No	No	Yes=3	0
	3. Headquarters in tax havens	Yes or No	No	Yes=3	0
	4. Volatile effective tax rate	Yes or No	Yes	Yes=2	2
Capital Expenditures	1. Volatile capital expenditures	Yes or No	Yes	Yes=2	2
	2. Frequent and large acquisitions	Yes or No	No	Yes=4	0
	3. Stock payment for acquisitions and investments	Yes or No	No	Yes=4	0
Working capital	1. Unspecified current assets and current liabilities	Yes or No	Yes	Yes=3	3
	2. Volatile working capital items	Yes or No	Yes	Yes=2	2
Expected Growth rate	1. Off-balance sheet assets and liabilities (operating leases and R&D)	Yes or No	No	Yes=3	0
	2. Substantial stock buybacks	Yes or No	No	Yes=3	0
	3. Changing return on capital over time	Is your return on capital volatile?	Yes	Yes=5	5
	4. Unsustainably high return	Is your firm's ROC much higher than industry average?	Yes	Yes=5	5
Cost of capital	1. Multiple businesses	Number of businesses (more than 10% of revenues) =	3	1.00	3
	2. Operations in emerging markets	Percent of revenues=	50%	5.00	2.5
	3. Is the debt market traded?	Yes or No	No	No=2	2
	4. Does the company have a rating?	Yes or No	No	No=2	2
	5. Does the company have off-balance sheet debt?	Yes or No	No	Yes=5	0
No-operating assets	Minority holdings as percent of book assets	Minority holdings as percent of book assets	30%	20.00	6
Firm to Equity value	Consolidation of subsidiaries	Minority interest as percent of book value of equity	20%	20.00	4
Per share value	Shares with different voting rights	Does the firm have shares with different voting rights?	No	Yes = 10	0
	Equity options outstanding	Options outstanding as percent of shares	0%	10.00	0
		Complexity Score =			49.75

Dealing with Complexity

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□ In Discounted Cashflow Valuation

- The Aggressive Analyst: Trust the firm to tell the truth and value the firm based upon the firm's statements about their value.
- The Conservative Analyst: Don't value what you cannot see.
- The Compromise: Adjust the value for complexity
 - Adjust cash flows for complexity
 - Adjust the discount rate for complexity
 - Adjust the expected growth rate/ length of growth period
 - Value the firm and then discount value for complexity

□ In relative valuation

- In a relative valuation, you may be able to assess the price that the market is charging for complexity:
- With the hundred largest market cap firms, for instance:

$$PBV = 0.65 + 15.31 \text{ ROE} - 0.55 \text{ Beta} + 3.04 \text{ Expected growth rate} - 0.003 \text{ \# Pages in 10K}$$