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# 1% Focus Report: ExxonMobil (XOM)

## YCHARTS

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**The 1% Focus Report** hones in on the valuation drivers underlying a firm in either the top or bottom Value Score deciles in YCharts' data universe. The report is designed to be a visual form of financial statement analysis, allowing for an analyst or portfolio manager to understand the financial metrics that drive the focus company's valuation.

The Value Score is a quantitative six-factor model designed to separate companies according to their relative (rather than absolute) valuation; companies with a Value Score of 10 (highest) have historically performed much better than the S&P 500 index and those with a Value Score of 1 have historically performed worse.

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## Valuation at a Glance: ExxonMobil



The **Value Score** is a quantitative six-factor model designed to separate companies according to their relative (rather than absolute) valuation.

Companies with a Value Score of 10 (VS10) have historically performed much better than the S&P 500 index, and those with a Value Score of 1 (VS1) have historically performed worse.

Learn more by reading the [Value Score Support Page](#) or our separate document "The Big Picture: YCharts Value Score"

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### Focus Analysis: [ExxonMobil's Secret](#)

pp. 2-6

This is no low-profit commodity peddler. It is a high-tech intellectual property firm that is highly profitable.

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### Revenues: [Stable, Rising Demand](#)

p. 7

ExxonMobil cannot set the price of its commodity products, but it doesn't have to worry about drumming up customer demand. Countries naturally use more energy per capita as they industrialize and this trend fuels ExxonMobil's revenue growth.

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### Profitability: [Profits High Due to Structural Factors](#)

pp. 8-9

ExxonMobil's profit margin correlates closely to the price of oil. As long as oil demand is high enough to make tar sands and shale oil projects profitable to someone, ExxonMobil will make money hand over fist.

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### Investment Levels and Efficacy: [No One Invests Like ExxonMobil](#)

pp. 10-12

There are only six companies in the world that can make the investments ExxonMobil does. Profits in ExxonMobil's most important segment reflect this truth. Its acquisition of a large domestic natural gas provider in 2010 gave it one foot in the door of the future as well.

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### Cash Flow Generation: [Cyclical Cash Flows](#)

p. 13

Cash flow generation is strong at present, but weakens dramatically with downturns in the business environment. However, industrialization of developing countries may boost ExxonMobil's cash flows for years to come.

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### Market Pricing and Competitors: [Market Multiples](#)

pp. 14-18

Market multiples are hard to use for cyclical companies, but ExxonMobil appears at least moderately valued according to one of two measures.

# Overview

Ticker	XOM
Name	Exxon Mobil Corporation
Industry	Oil & Gas Integrated
Market Capitalization	\$430,255 million
TTM Sales	\$443,961 million
TTM CFO	\$47,930 million
TTM CFO Margin	11%
Mkt Cap / TTM Sales	1.0
Mkt Cap / TTM CFO	9.0
Long-Term Debt	\$105,570 million
Shareholders' Equity	\$165,863 million
D/E Ratio	64%
Altman's Z-Score	4.6
Beta	0.7
Return on Equity	20.5%

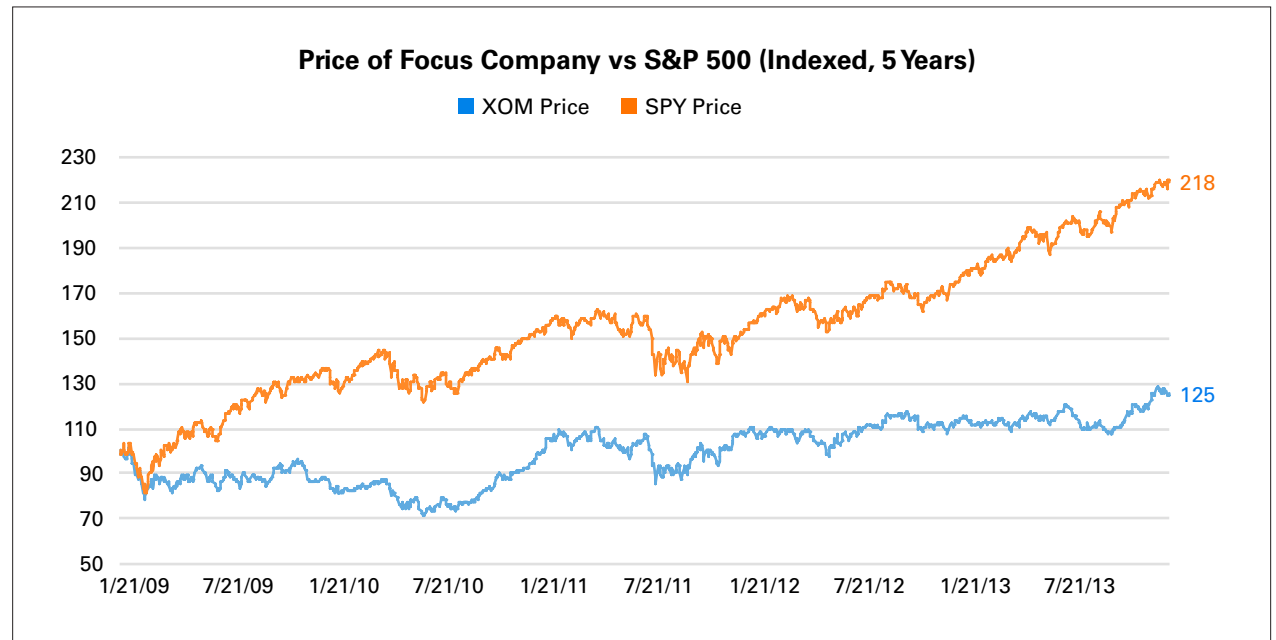
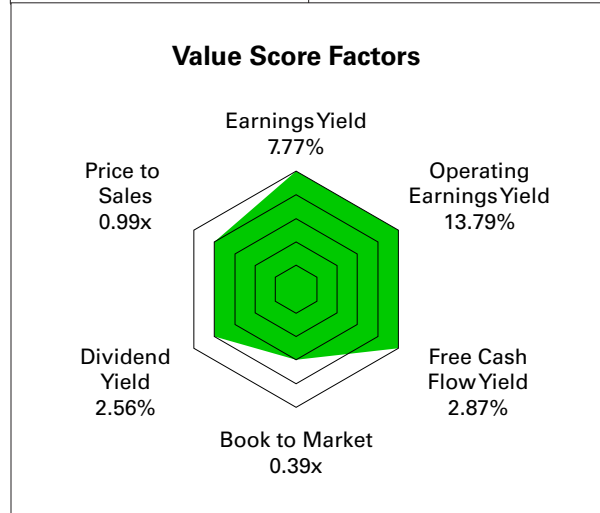
ExxonMobil is an enormously high-profitability, high-tech, intellectual property firm disguised as low-profit commodity producer. As long as oil prices stay above the \$20-\$30 per barrel (bbl) range, ExxonMobil will continue to generate healthy profits for its owners, and to the extent that the global economy will continue to expand as developing countries modernize and industrialize, the capacity for ExxonMobil to generate these profits and cash flows is virtually guaranteed.

Its ongoing investments in the oil mining business represent the highest return on investment projects in the world. There are only six public companies in existence with the capital resources and technological expertise to exploit these opportunities. In a game where scale counts, ExxonMobil is the largest player.

In short, ExxonMobil's present competitive position appears very strong. In addition, its management has made sensible strategic moves in anticipation of a future shift in global energy consumption.

Exxon's is a confusing business and the stock can be volatile when geopolitical and macroeconomic winds change suddenly. However, it is fundamentally a very good business.

[Continued on the next page](#)



## Focus on ExxonMobil

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### Exxon's Tech Segment

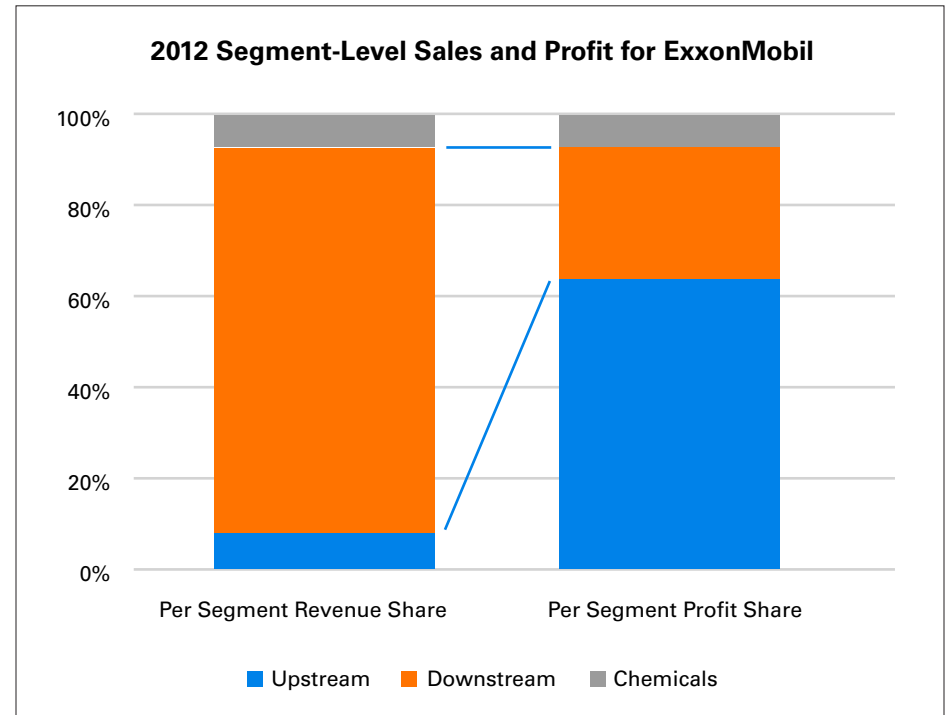
If you saw a company that hired some of the brightest, most well-educated graduates from top universities, set them up with some of the most sophisticated computers known to humankind, and put them to work at a business that generated net profits in the 75% range, wouldn't you assume the firm at which you were looking was a tech firm loaded with valuable intellectual property?

This description fits one of ExxonMobil's three segments to a "T" — the "Upstream" segment responsible for finding and drilling for oil and natural gas. For example, in 2012, ExxonMobil's upstream segment generated roughly \$40 billion in sales and generated a whopping \$30 billion in profits after taxes.

The "Downstream" segment deals with refining crude oil into various types of useable energy products (aviation fuel, gasoline, diesel, etc.) and marketing it to consumers. It is a notoriously volatile and low-profitability business but makes up 80% or more of ExxonMobil's revenues. 2012 was a very good year for the downstream segment—with after-tax profit margins four times what they had been in the previous two years—after-tax margins climbed to 4%.

Chemicals are the last of the firm's major segments, producing one-tenth of ExxonMobil's revenues at an average after-tax margin in the low double-digit percent range.

Graphically, the segments' revenue and profit share are as follows:

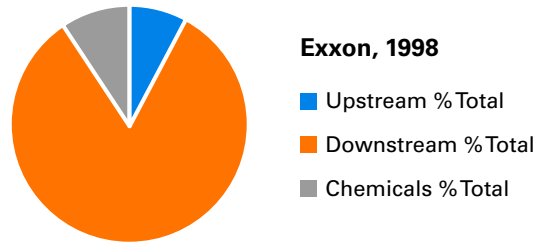


The cynic in me would characterize ExxonMobil's business in the following way:

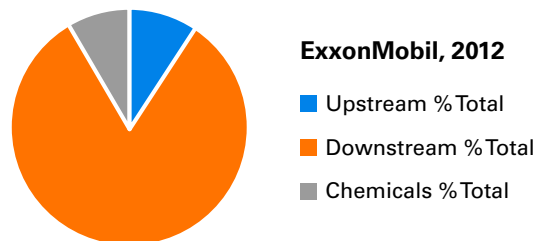
1. Upstream: ExxonMobil's real business
2. Downstream: A conveniently low-profitability business whose effect on overall profit margins is so large as to keep politicians and, to the extent possible, environmentalists, off management's back
3. Chemicals: Gravy

## Focus on ExxonMobil (continued)

The size of these segments have remained extraordinarily stable over time. In terms of revenue share per segment, this is Exxon before its merger with Mobil, in 1998.



This is ExxonMobil's revenue share in 2012:



Barely a difference at all in terms of revenue share, despite the presence of a large merger between the two time periods. The biggest difference between the two time periods is the profitability of the upstream segment—the subject of our next section.

### Upstream Options

ExxonMobil is a commodity producer. As such, it has zero ability to alter the price at which it sells its products. However, just because a commodity producer has no control over its product's price, it doesn't mean it doesn't have control over its profits. This insight is key to understanding ExxonMobil's secret to generating value.

Think back to 1998. Fallout from the Asian Currency Crisis and Long-Term Credit Management looked as though the global economy would be sent into a major backspin. The aver-

age price of WTI Crude Oil that year was \$14.41 / bbl—the lowest price over the previous decade. In the midst of this terror and fret about economic conditions, Exxon's upstream business generated after-tax profit margins of 31%. Compare this to Google's Fiscal Year 2012's after-tax profit margin of 22%.

In other words, Exxon's upstream segment's worst profit performance in the last 30 years was 50% higher than the high-tech, asset-lite paragon of the New Economy—Google.

Not what you expect for a commodity producer?

How about this: Over the past ten years, Google's after-tax profit averaged around 22%, with a high-water mark of 29% and a low of 7%. Contrast this with ExxonMobil's upstream segment's average after-tax profitability of 72% and a low of 69% over the last few years.

How is ExxonMobil's upstream segment able to generate this level of profitability? The secret can be expressed in a single word: optionality.

Imagine you are a movie producer. You read a novel that makes you alternately laugh and cry throughout its entire 300 pages. You contact the author—an unknown, presently working as a Starbucks barista—and offer her \$50,000 for option to adapt her book into a screenplay. She gratefully accepts.

If a popular daytime talk show host happens to read the book, has the same reaction as you, and features the work on her show, book sales will go through the roof and suddenly, the option you hold will be worth millions of dollars.

If, on the other hand, the book never becomes a hit and no one in Hollywood seems interested when you send copies, just because you hold the rights to the adaptation doesn't mean you have to make the film. Sure, you're temporarily out 50 grand, but for a big shot producer like you, that's about what you would spend on a nice weekend with a few friends—so no big loss. And, for as long as the rights last, if someone does get interested in the story, you may yet have a hit on your hands.

ExxonMobil's business is even better than this movie producer's. Namely, every time ExxonMobil spends money surveying a certain oil reservoir—its equivalent to spending a little money to buy the adaptation rights of an unknown book—it gets a scientific and fairly accurate estimate of how much the reservoir will likely produce and at what cost.

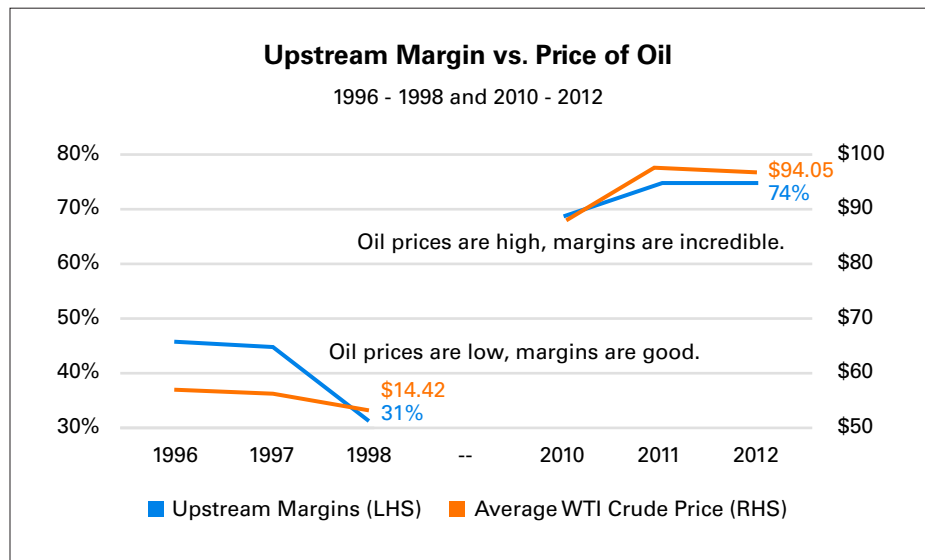
When oil demand is high and clients are paying top dollar for the oil, ExxonMobil can afford to drill out the more expensive reserves and will still make a great deal of profit. When oil

## Focus on ExxonMobil (continued)

demand is low and commodity prices slide, ExxonMobil can simply hold off on extracting the high-cost oil and instead focus on selling the lowest-cost oil in their portfolio—preserving a pretty good profit margin in the meantime.

This is why, for ExxonMobil’s upstream segment, when times are bad, they are good, and when times are good, they are very, very good.

In graphical format, this optionality looks like this.



Why can’t other producers simply tap into the same cheap reserves ExxonMobil is tapping?

This is because the oil deposits that are cheapest to drill out are not cheap to drill out for all but the wealthiest, most capable firms. Compare this to the example of the movie producer. Spending \$50,000 on movie rights would preclude investment for most people, for a big shot Hollywood mogul, it’s peanuts.

Exploitation of ultra-deep water and arctic reserves—the cheapest of the remaining un- or under-exploited oil reserves—requires huge capital expenditures and an enormous amount of technological know-how. Exploitation of certain fields also requires outfitting private

mercenary armies. For most companies (and more than a few nation-states), these kinds of expenses preclude investment. For ExxonMobil, it’s just another day’s work.

Oil production is a game of scale. ExxonMobil has the capital and technical resources to exploit the lowest cost opportunities available and to maintain profitability when times are bad. In a commodity industry, the low-cost producer always wins.

### Look to the Future

In 2010, ExxonMobil’s management purchased the North American natural gas driller XTO Energy. The purchase was, ExxonMobil’s own CEO admits, too early. That said, this acquisition too can be considered a long-lived option on natural gas.

ExxonMobil knows better than anyone that the Energy Return on Investment (EROI) of recent oil finds is falling. EROI is simply a measure of how much energy is required to be spent in order to draw out a single unit of energy in the form of oil. Energy is measured in kilocalories (kC) and there are roughly 1.4 million kC in one barrel of oil. If it takes 1.5 million kC to retrieve one barrel of oil, that one barrel should not be retrieved and thus will sit in the ground until the end of time.

In the 1970s, the huge, easy fields in Saudi Arabia had EROIs on the order of 25:1 (i.e., 25 units of energy extracted for every one of input). Present tar sands and oil shale are more like 4:1. When this number gets down to 1:1, it doesn’t make sense to drill for oil any longer. The closer it gets to 1:1, the more money ExxonMobil will make, of course. Presumably, at that point, ExxonMobil will still have access to higher EROI reserves, and if and when the day comes when it makes sense to someone to try to extract such low EROI oil, ExxonMobil will have a very hard time hiding the degree to which their upstream operations are profitable.

Growing economies need energy, though, so what happens when we hit the 1:1 EROI wall for oil? The answer is simple—the world will have to switch to an oil alternative. The best alternative from an energy density and portability perspective, is natural gas.

Natural gas is now mainly used as a heating fuel, but is increasingly being burned to generate electrical power. Still comparatively plentiful, natural gas extraction is a fairly high-EROI activity. The problem is that transportation and industrial infrastructure is not set up to use natural gas on a large scale. This is changing slowly, and it is likely that if we see another spike in oil prices, the rate of change will quicken.

## Focus on ExxonMobil (continued)

Roughly half of ExxonMobil's energy reserves are natural gas. While natural gas prices right now are low and infrastructure still predominantly uses oil, these reserves look like a drag on ExxonMobil's portfolio. In another twenty years, it is unlikely if this will seem so.

### Balance Sheet Effect

I am no closer to being a climate scientist than I am to being a petroleum geologist. Even still, it is clear to me, after extensive reading of scientific papers regarding the former, that anthropomorphic global warming (AGW) is an irrefutable reality.

The present level of political will to take action to protect against the effects of AGW is close to nil. Or, perhaps the political will is there, but the political class realizes there are no alternatives to oil without causing hardship and expense to their constituencies—the first thing on a politician's list of things not to do.

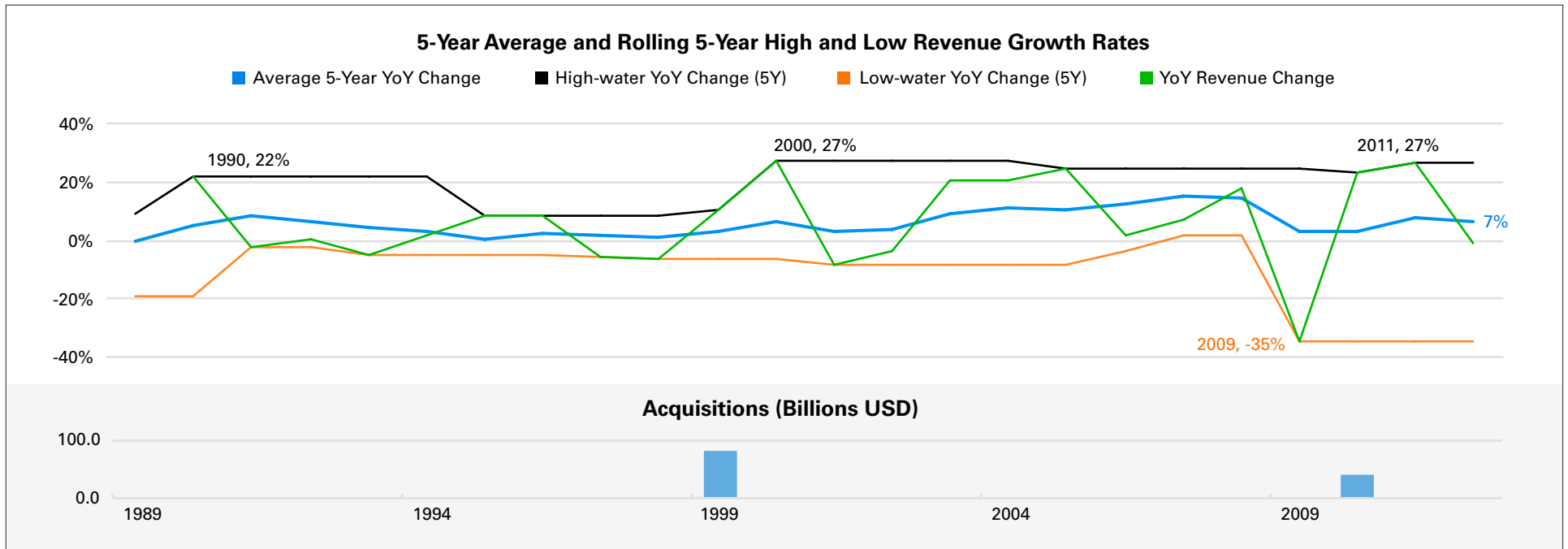
Whatever the case, if we extrapolate from the present, it seems that legislation to limit fossil fuel burning is a non-starter for at least the rest of my investing life.

However, climate systems are complex and chaotic, so assuming the continuation of a linear trend is perhaps a dangerous tact to take.

Political systems are also complex, chaotic, and non-linear. If a non-linear climate event prompts non-linear political action, the value of ExxonMobil and other oil producers may suddenly drop as punitive levies or remedial taxes are imposed.

This is a "Black Swan" scenario, but as Nassim Nicholas Taleb points out, Black Swans are much more likely than we imagine them to be.

## Valuation Drivers: Revenues



Because Exxon Mobil's main source of revenues is the price of a commodity, the firm's revenue changes are easy to explain but hard to predict, leading to considerable short-term forecasting uncertainty.

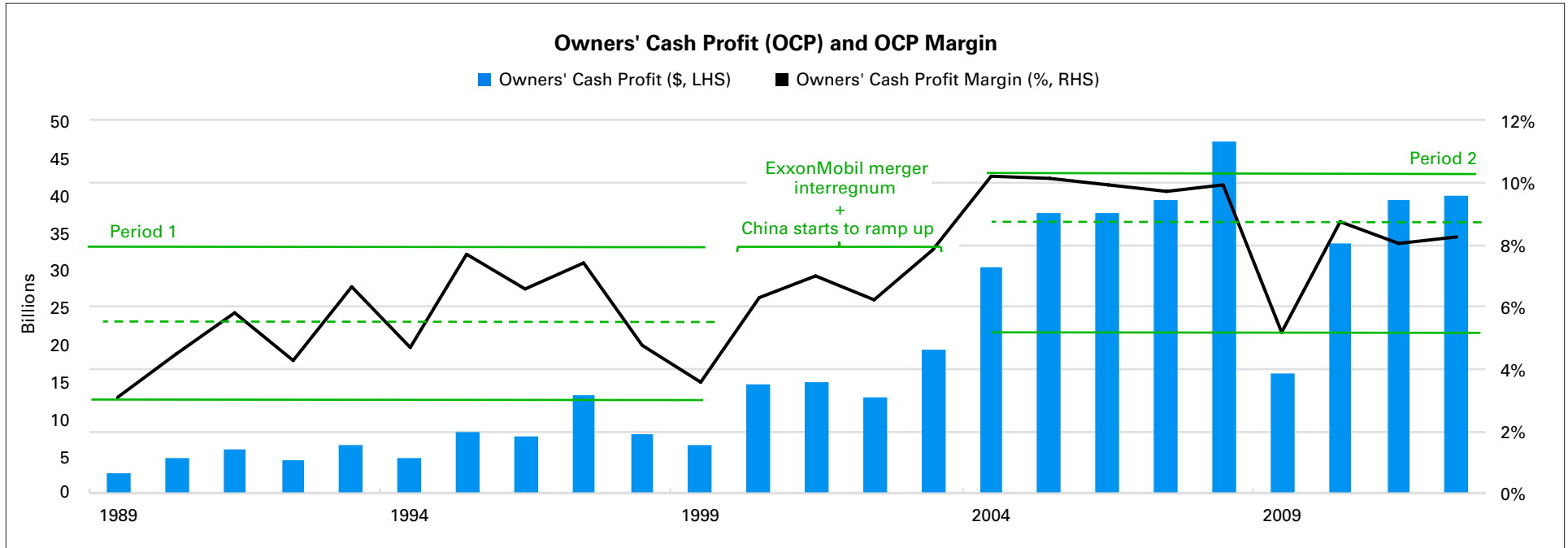
While it is tempting to think that the enormous acquisition in December 1999 of Mobil Oil caused the spike in revenue growth the next year, a good bit of this movement has to do with oil prices moving from an average around \$10 per barrel (bbl) level in 1998 when the announcement was made to around \$20 bbl when the transaction closed to approximately \$30 bbl in 2000.

There are only two ways to get more revenue: 1) sell more stuff (higher volumes) and 2) sell stuff for more (higher prices). Exxon—unlike other companies at its stage of maturity—can count on a fairly stable increase in demand as the global economy expands over time. As such, it does not have to fret about how to sell more stuff. Exxon's revenue uncertainty comes because it has minimal control over the sales price of its most important product. It is a price taker, so cannot make a decision to sell stuff for more.

Each page of the YCharts Focus Report focuses on a piece of the three fundamental elements that drive company valuations. Revenue growth is the first of these. Please see our detailed notes in the Methodology Section at the end of this report regarding this and the other drivers.



## Valuation Drivers: Profitability

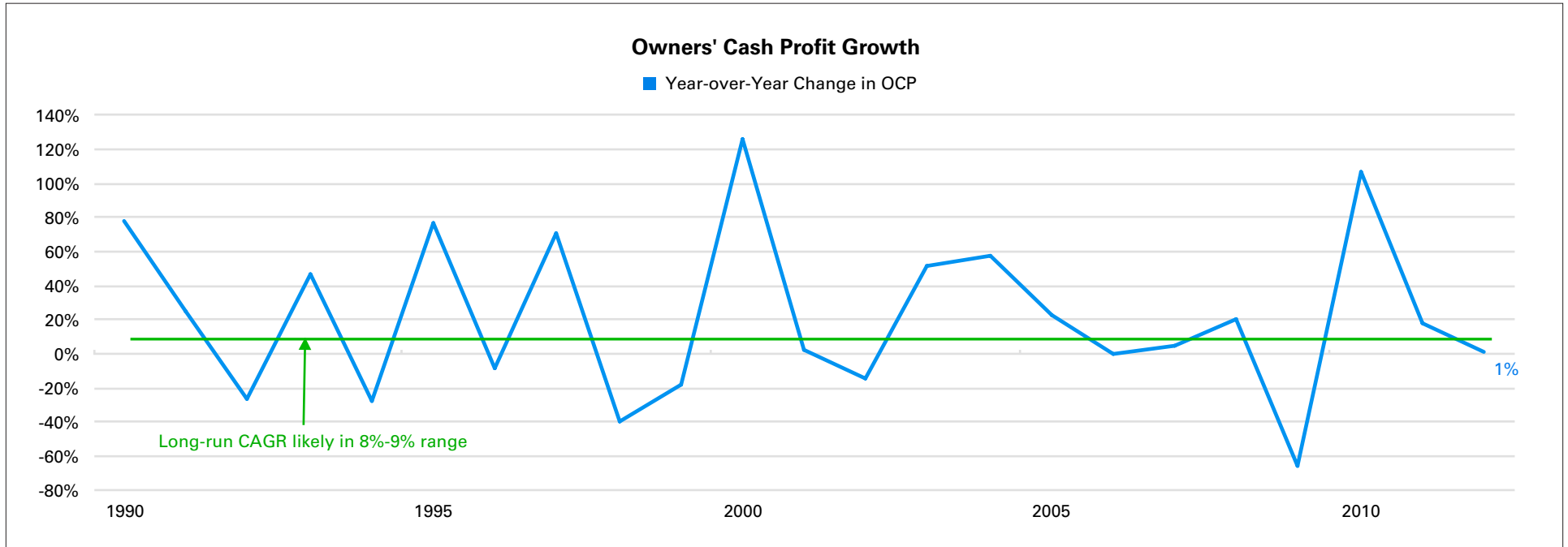


There are a few important things to notice in this graph. First, compare the jaggedness of the OCP margin line during Period 1 compared to the relative smoothness of that line (excluding the dark days of 2009, of course) during Period 2. These two periods are separated by an interregnum of three or four years during which we believe the firm was focused on right-sizing operations after the Mobil acquisition simultaneous to China’s explosive growth in energy consumption.

The average price of oil in period 1 was \$19.71 per barrel (bbl). The average price in the interregnum was \$28.40 / bbl. The average price in period 2 was \$74.06. We discuss the profitability profile of ExxonMobil in greater depth in the Focus Section of this report.

Profitability—which we define as Owners’ Cash Profits (OCP)—is the second of three fundamental valuation drivers. OCP is a cash-based measure equivalent to Cash Flow from Operations less a rough estimate of maintenance capital expenditures. Its calculation is an essential intermediary step to calculating Free Cash Flow to Owners. For detailed information regarding both measures, please see the Methodology Section at the end of this report.

## Valuation Drivers: Profitability (continued)

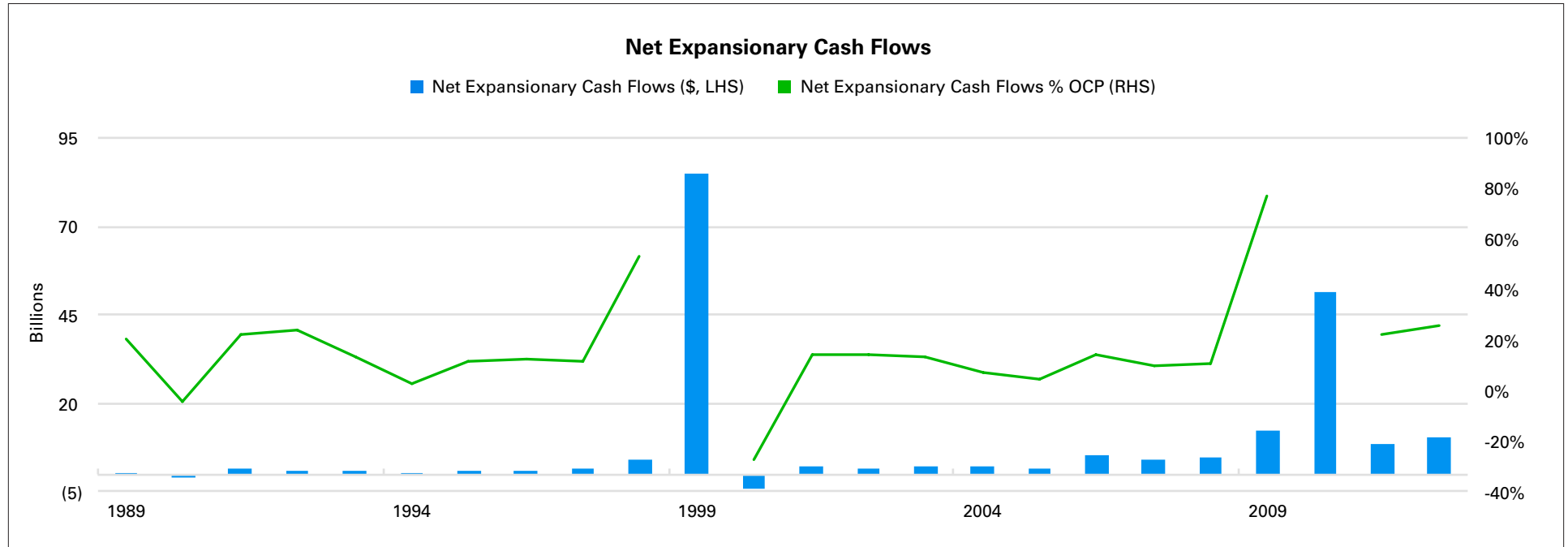


This graph—especially the saw tooth pattern in the early years—demonstrates why ExxonMobil is such a bear of a company to forecast. We believe that these early saw teeth are caused by two things: 1) low profitability in ExxonMobil's most important segment (upstream) causing a disproportionate profit share to be dependent on more volatile segments, and 2) working capital adjustments from year to year. We look at Exxon's segment split in the Focus Section later in this report.

To get a better sense of growth, we looked at long-run CAGRs. A data artifact associated with the Mobil merger affected our ability to do a simple calculation of long-run growth, so we split out the pre-merger data (1989-1996) from the post-merger (1997-2012) set. Both periods ended up telling the same basic story—high single-digit growth (8%-9% range) in OCP.

The largest proportion of a company's overall valuation is related to the projected growth rate of future free cash flows. Because free cash flows are a portion of OCP, it is vitally important to understand growth of OCP in order to develop a rational view of future free cash flows. For more information, please see the Methodology Section at the end of this report.

## Valuation Drivers: Investment Level



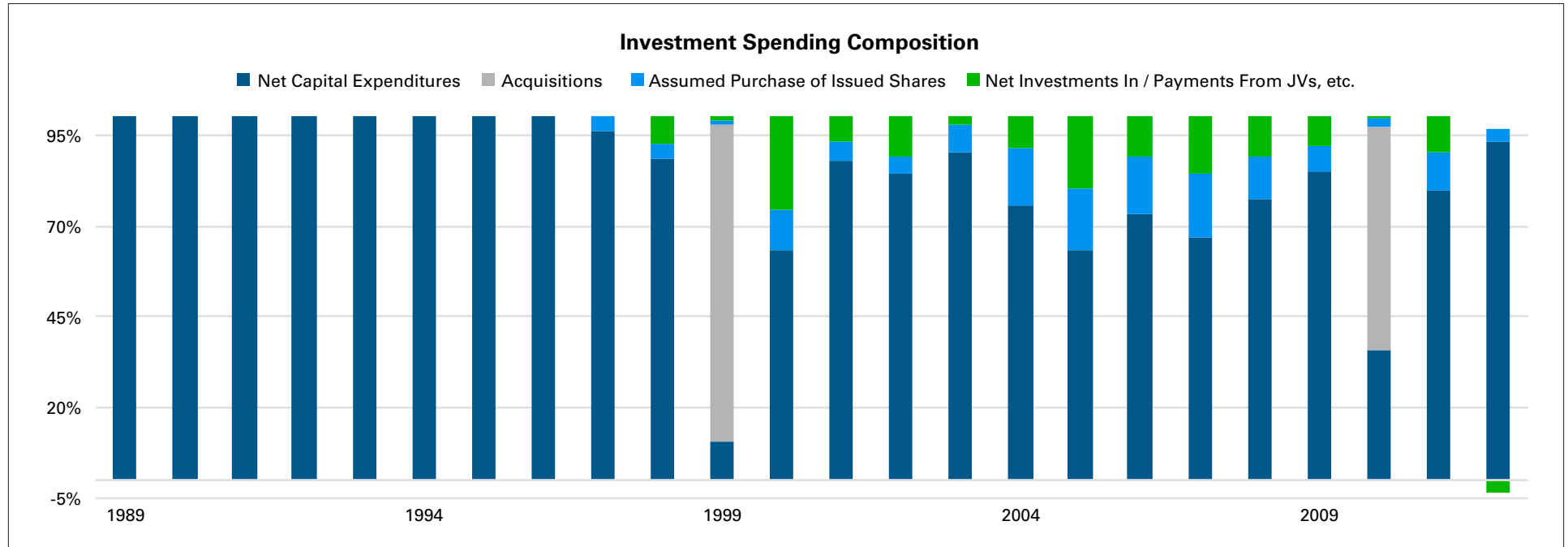
To make the percentage values on the right-hand axis more legible, we deleted the percentage data for the years 1999 and 2010. Doing so, it is clear that the company has generally spent around one-fifth of its OCP on expansionary projects each year.

The 1999 acquisition was not, in an accounting sense, an acquisition but rather a merger. The old Exxon effectively ceased to exist in 1999 as it merged with Mobil into a completely new company—ExxonMobil. This was accounted for using what is known as a “pooling of interests” Believe me, a discussion of this accounting treatment gets boring pretty quickly, but in short, it was a sly way for Exxon to acquire a large competitor without having to face unpleasant accounting repercussions (like depressed earnings for a generation). The negative value for expansionary flows in 2000—the year after the merger of Exxon and Mobil—represents a net cash inflow. This net cash inflow stems from ExxonMobil selling parts of its downstream operations (i.e., refining and marketing) as a necessary condition of the merger.

Those of you having trouble sleeping, grab a warm glass of milk and refer to Note 1 for information about Pooling of Interest accounting.

Expansionary spending is defined as all net cash outflows above what is necessary to maintain the firm as a going concern. In short, it is all capital spending above and beyond maintenance capex. From an owner’s perspective, it is the portion of owners’ cash profits a management team invests to generate excess growth of revenues and / or profits in the future. Please see details regarding the components of this measure and its rationale in the Methodology Section.

## Valuation Drivers: Investment Level (continued)



One of the ways Exxon manages the risk inherent in the process of prospecting and producing new reservoirs and making other large investments is to partner with other companies on a project-specific basis. The resultant JVs pay Exxon a dividend or a fixed interest rate for its investments. In 2012, the payments exceeded the outflows to generate a net investment inflow.

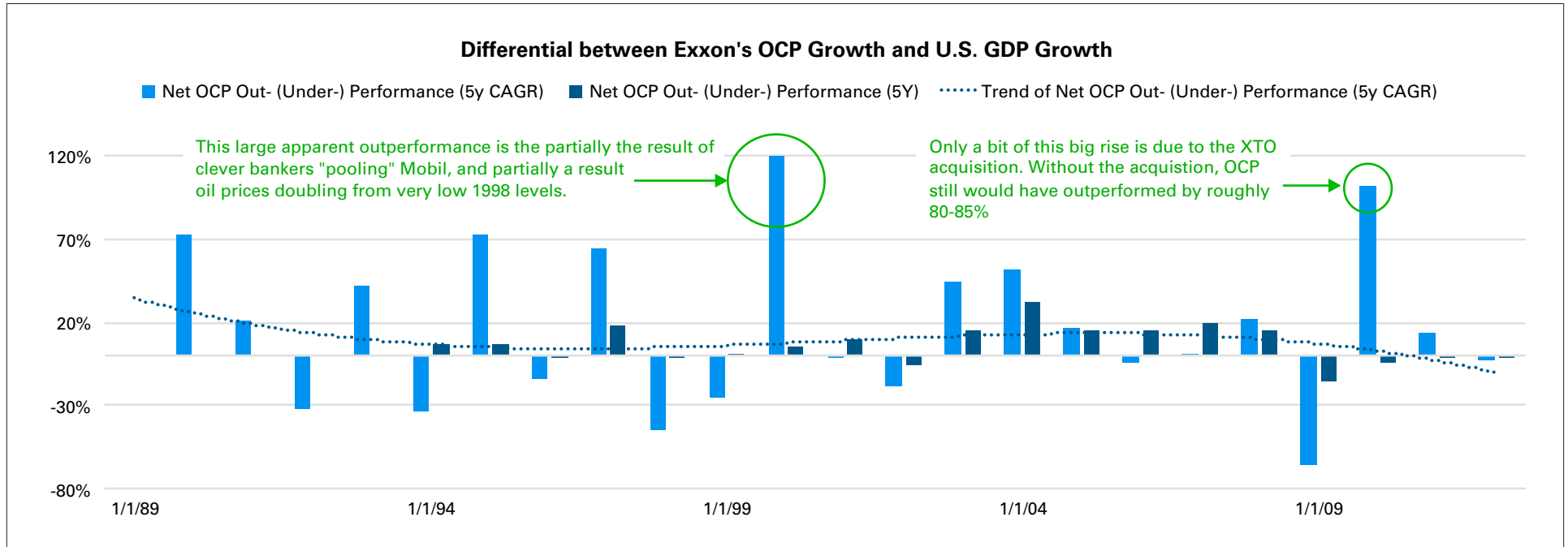
Issuing employees stock as a form of compensation then going into the stock market and using the owners' profits to buy back potentially dilutionary shares is something you might expect from a Tech company like Oracle ORCL. However, just about every company we analyze plays this game to one extent or another—Exxon is no different.

But if you really want to read about a gross (though not considered criminal) misuse of owner capital, please see the [New YorkTimes article](#) about former Exxon CEO Lee Raymond's retirement bonus.

Note that the graph on the previous page represented only expansionary cash flows whereas this one represents overall spending, including maintenance capital expenditures. In 2000, ExxonMobil's expansionary cash flows showed a net inflow due to the issue discussed on the previous page, but its overall capital spending was a net outflow--expressed by the "Net Capital Expenditures" bar you see for 2000 in the graph above.

The inclusion of "Assumed purchase of issued shares" in the Expansionary Spending category is explained fully in the Methodology Section at the end of this report.

## Valuation Drivers: Investment Efficacy

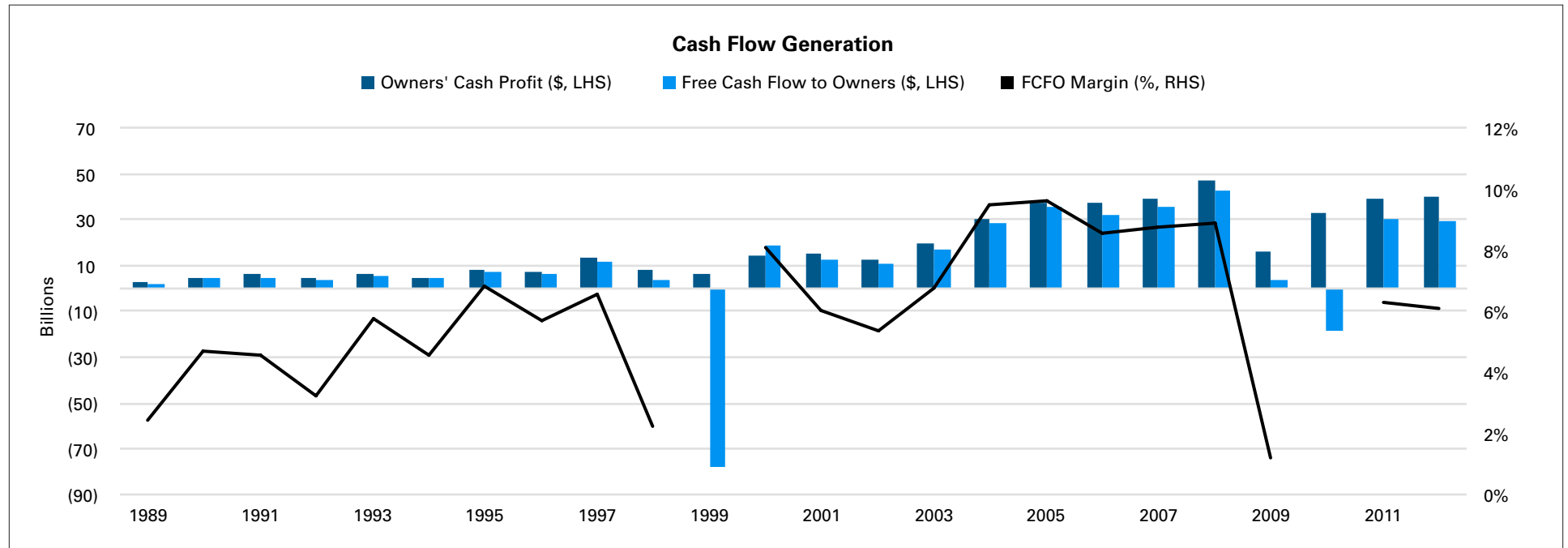


The light blue columns show the saw tooth pattern of OCP growth throughout the '90s that we highlighted earlier followed by stabilization through the 2000s. The first positive value post-merger is 2003—just as BRIC demand was starting to become a larger topic in the economic news. That emerging market resource boom period lasted for six years, with only one instance where ExxonMobil's OCP growth slipped below GDP growth during that time, and an average outperformance of 22%.

This slip in OCP growth probably has its roots in the ExxonMobil's cost structure. Rental costs for deep water rigs soared as BRIC oil demand surged in 2006. ExxonMobil was enormously profitable during this period, but its profit growth fell vis-à-vis GDP due to rapid operating cost rises.

This chart compares a company's growth in owners' cash profits to the nominal growth in the US economy over the same period. "Nominal" in this case means the growth in both activity (real GDP) and prices (inflation) in the economy. Please see the Methodology Section for more information regarding nominal GDP as a benchmark for corporate growth rates and determinations of company value.

# Cash Flow Generation

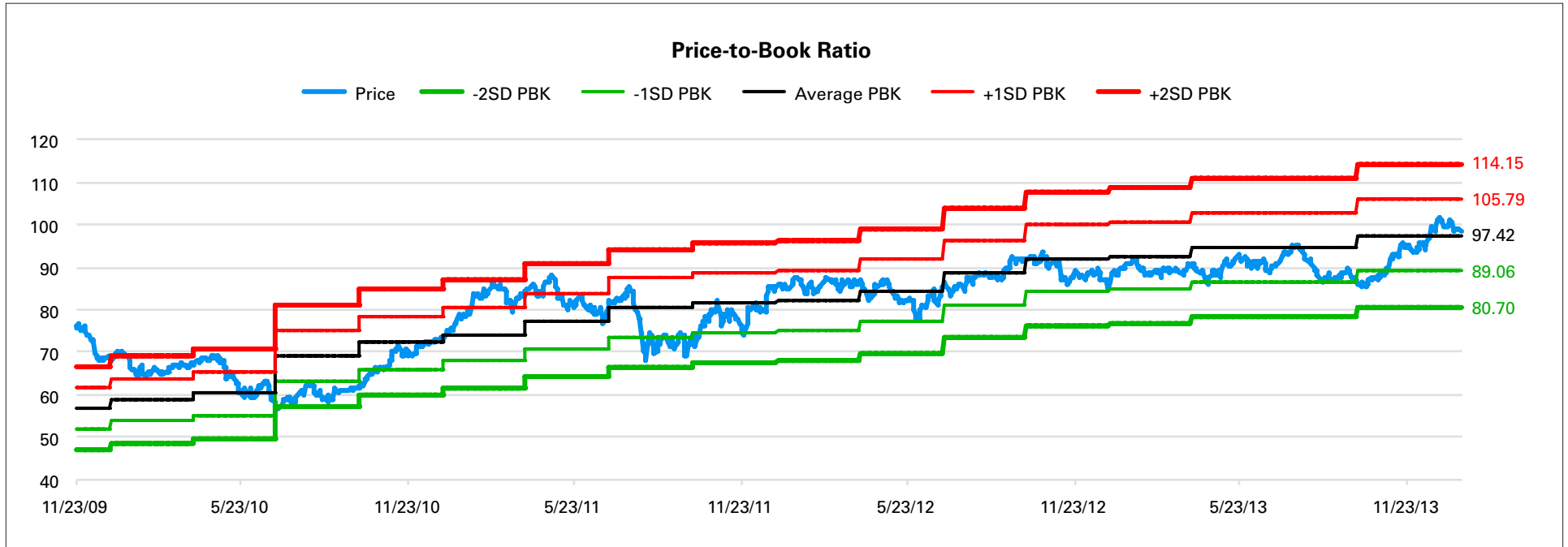


As oil prices rise, Exxon enjoys strong profits and cash flows—as can be clearly seen in the strong Free Cash Flow to Owners (FCFO) margin between 2003 and 2008—largely due to the enormous margins in its upstream operations. However, ExxonMobil is increasingly have to spend more on capital expenditures in order to increase its production. Over the last 5-6 years net expenditures on Property, Plant & Equipment (PP&E) have increased at roughly 15% per year and these expenditures have eaten into ExxonMobil’s FCFO Margins. The growing expenses involved in exploring and exploiting oil reservoirs in deep water, arctic conditions, and other challenging locations is one of the reasons that the company made the acquisition of domestic natural gas producer--XTO Energy--in 2010. Natural gas reserves are fairly plentiful and comparatively easy to find in North America, operating conditions are benign, and the political environment is more stable. XTO’s was a domestic natural gas producer, and exploiting these reserves are much less capital intensive.

Note that for the purpose of clarity, we have removed the huge negative FCFO margins in the year of the Mobil and XTO acquisitions. We estimate if these acquisitions were made with cash, it would have taken roughly 4.5 years of Exxon’s OCP to pay for the Mobil acquisition and just over a year to pay for the XTO acquisition.

This chart shows two proprietary measures—OCP and FCFO. Please see the Methodology Section for more information regarding our definitions of these measures and their impact on valuation.

## Market Multiples: Price to Book Ranges

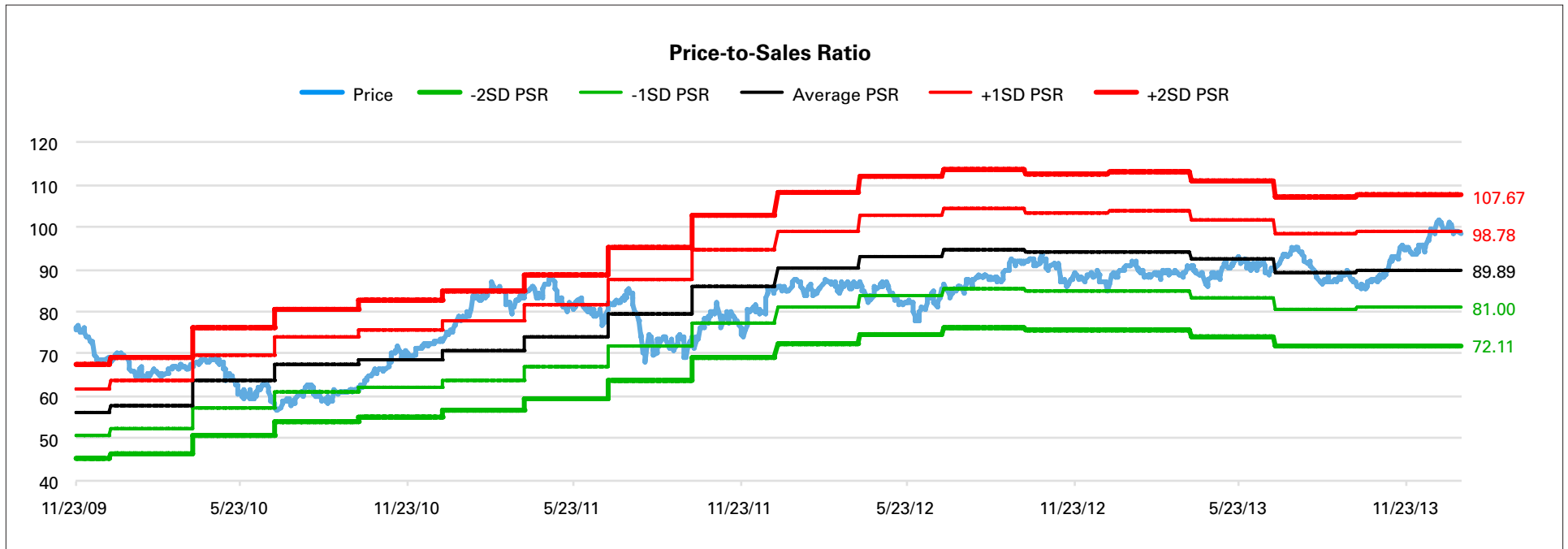


Originally, we had run this graph using only three years of data and XOM was trading at right around two standard deviations above its average Price-to-Book ratio on that time frame. However, taking five years of data into account, the stock looks closer to its average Price-to-Book ratio. This illustrates the difficulty of using ratio analysis as the sole criteria for making investment decisions—the ratios will depend a lot on what time period is chosen, and it is not always clear what the proper time period is.

Over the time period shown here, a strategy of buying the stock when it hits one standard deviation below its normal Price-to-Book ratio and selling at one standard deviation above would have generated good results.

Valuation multiples can be used to triangulate attractive buy and sell levels for a company, but are best used in conjunction with profit-based valuation methods. Please see the Methodology Section for more information regarding the strengths and weaknesses of multiples analysis

## Market Multiples: Price to Sales Ranges



Again, the choice of a timeframe made a significant difference to the way this graph looked. For consistency's sake, we used the same five-year period as for the Price-to-Book ratio graph. On the basis of this Price-to-Sales chart, XOM looks moderately overvalued at present prices, but not enough yet to trigger a dependable sell signal. According to this metric, over this time period, buying at 1-standard deviation below average Price-to-Sales and selling at two standard deviations above would have generated good results.

Please see note on previous page about market multiples.

Again, we would caution against allowing ratio analysis be one's only criteria for making investment decisions. Ratios might inform an investment decision, but they should not be relied upon to make the primary decision. This is discussed in greater detail in the Methodology Section at the end of this report.



## Competitive Summary

### Fundamental Data (in USD billions)

Ticker	Name	Market Cap	Net Income (a)	Pretax Income (b)	EBIT (c)	Sales (d)	Assets (e)	Equity (f)
COP	ConocoPhillips	83.1	8.1	15.5	16.1	60.6	119.8	51.1
BP	BP PLC	152.2	24.5	33	34.2	401.1	311.4	130.1
RDS.A	Royal Dutch Shell PLC	225.5	21.2	39.9	40.9	470.7	354.6	179.1
CVX	Chevron Corp	230.9	23.7	39.7	39.7	233.2	247.8	144.8
CHK	Chesapeake Energy Corp	17.4	1.1	2.1	2.6	16.5	42.3	16.2
XOM	Exxon Mobil Corporation	430.3	34.2	60.7	61	444	347.6	169.2

### DuPont Analysis

Ticker	Name	Tax Burden (a / b)	Interest Burden (b / c)	EBIT Margin (c / d)	Asset Turn (d / e)	ROA (a / e)	Leverage (e / f)	ROE (a / f)
COP	ConocoPhillips	52%	96%	27%	51%	7%	234%	16%
BP	BP PLC	74%	96%	9%	129%	8%	239%	19%
RDS.A	Royal Dutch Shell PLC	53%	98%	9%	133%	6%	198%	12%
CVX	Chevron Corp	60%	100%	17%	94%	10%	171%	16%
CHK	Chesapeake Energy Corp	52%	81%	16%	39%	3%	261%	7%
XOM	Exxon Mobil Corporation	56%	100%	14%	128%	10%	205%	20%

All "flow" numbers represent trailing twelve-month (TTM) quantities.

## Competitive Summary (continued)

### Cash Flow Measures (in USD billions, except where noted)

Ticker	Name	Dep / Amort	Change in NWC	TTM CFO	TTM CFO Margin	TTM FCF	FCF Margin	Dividend Yield
COP	ConocoPhillips	7	-0.2	16	26%	1.3	2%	4%
BP	BP PLC	12.5	-6.7	22	5%	-2.7	-1%	5%
RDS.A	Royal Dutch Shell PLC	14.6	5.7	44.3	9%	8	2%	5%
CVX	Chevron Corp	13.4	1.2	37.3	16%	0.5	0%	3%
CHK	Chesapeake Energy Corp	2.8	-0.6	4.4	27%	-4	-24%	1%
XOM	Exxon Mobil Corporation	15.9	-5.2	47.9	11%	12.6	3%	3%

### Multiples and Misc.

Ticker	Name	PS Ratio	PB Ratio	EV / EBITDA	P/E Ratio	P/FCF	Altman Z-Score	Beta
COP	ConocoPhillips	1.4	1.6	6.1	10.4	63.9	2.2	1.07
BP	BP PLC	0.4	1.2	5.1	6.3	NA	NA	1.55
RDS.A	Royal Dutch Shell PLC	0.5	1.3	6.2	10.6	28.0	NA	1.07
CVX	Chevron Corp	1	1.6	5.8	9.8	101.3	3.9	0.93
CHK	Chesapeake Energy Corp	1.1	1.3	11.9	19.8	NA	1	1.15
XOM	Exxon Mobil Corporation	1	2.5	7.5	12.9	34.8	4.6	0.67

All "flow" numbers represent trailing twelve-month (TTM) quantities.

## Note 1

It is amazing what a small army of well-paid lawyers, investment bankers and other consultants can do.

The merger of Exxon with Mobil to form ExxonMobil—announced in 1998 and consummated in 1999—was huge news in the business world at the time. A few years later, an investor not familiar with the company have a hard time finding evidence of it in its financial statements.

This is because Exxon's managers found a way to account for the Mobile acquisition as a "Pooling of Interests" rather than as a "Purchase."

Pooling of interest was originally a way to account for two entities of the same size pooling their assets and liabilities to form a new legal entity. For example, Grocer A and Grocer B decide to compete against a regional chain planning an expansion into their area by joining forces and founding "A&B Groceries."

There were significant advantages to using pooling of interests versus the purchase method of accounting that was used when a company bought outright the assets and operations of another. A story in the NewYorkTimes soon after the Exxon / Mobil merger was announced ("Big Oil: The Arithmetic" by Melody Petersen) spells out these advantages:

"Under the pooling method, the two companies simply combine their balance sheets. And in this case, the billions that Exxon has offered to pay for Mobil's oilfields, refineries and other assets, based on the value recorded on Mobil's balance sheet, simply disappears.

If the companies were forced to use the other accounting method -- known as purchase accounting -- the premium would be added to the balance sheet by increasing the value of current assets. And, it would then reduce future earnings because most assets must be written off over the years."

In other words by pooling Mobil rather than purchasing it, Exxon's managers could cover up any potentially unpleasant earnings consequences from the acquisition and start from an accounting tabula rasa (because, according to the official accounting ledgers, ExxonMobil was a brand new firm, not a firm that had just made a big acquisition).

TheTimes article ends with this prescient paragraph:

"Time may be running out for other companies that want to merge and use pooling accounting. Accounting rule makers, concerned that merger accounting rules are being abused, are expected to propose new rules next year that would eliminate pooling. Companies would then be left to use purchase accounting, which is already the only available method in most of the rest of the world."

Indeed, U.S. regulators clamped down on the acquisition rules that allowed for pooling of interests soon after the ExxonMobil acquisition was consummated and the method can no longer be used.

# Methodology

## Introduction

This report covers three topics: Valuation, Market Pricing, and Competition.

### Valuation

The majority of YCharts' 1% Focus Reports deal with valuation. Our base assumption is that the value of a firm is proportional to the cash that flows to its owners over its economic life. Considering this definition, there are only four factors that drive the valuation of any firm:

- |                          |                               |
|--------------------------|-------------------------------|
| 1. Revenue Growth        | Affects short-term results    |
| 2. Profitability         | Affects short-term results    |
| 3. "Investment Efficacy" | Affects medium-term growth    |
| 4. Balance Sheet Effects | Hidden assets and liabilities |

### Market Pricing and Competition

A portion of the YCharts 1% Focus Reports deal with market perception of value and operational comparisons to the focus firm's competitors.

The long-term value of a firm sometimes deviates from its publicly-traded price. To provide an aid in triangulating the present market price of a stock to its long-run value, YCharts' 1% Focus Reports provide information about market multiples over recent history as well as summary information about the Focus company's competitors.

## Valuation Drivers

What is the value of an asset?

Let's start with a simple asset: a hammer. One can buy a good, sturdy hammer on the Home Depot [HD](#) website for roughly \$30.

The price of that hammer is fixed, but its value depends on how it is used. A good carpenter would use that hammer to generate revenues.

If those revenues generate profits over and above his cost of living, he can generate some savings.

With enough savings, the carpenter may be able to invest in better equipment that will allow him to generate revenues more quickly or to become more efficient at covering his living and business expenses.

The value of the hammer could, in the right hands, be worth much more than its \$30 price.

No matter how complex an asset is—whether it has no moving parts like a hammer, thousands of moving parts like a machine, or thousands of patents like a modern tech company—the essence of valuation does not change.

Focus reports aim to uncover the drivers of value common to all companies and all assets. To have value, an asset must be able to generate revenues greater than costs incurred. The profits from this process can either be distributed to owners or re-invested in the business. If profits are re-invested successfully, the company will grow at a good clip into the future. If profits grow at a good clip into the future, more cash inflows will accrue to owners.

The Focus Report whittles down on each level of this process to bring readers to a modified form of Free Cash Flow to Equity that we call "Free Cash Flow to Owners (FCFO)." Please

*Focus reports aim to uncover the drivers of value common to all companies and all assets... Our base assumption is that the value of a firm is proportional to the cash that flows to its owners over its economic life.*

find detailed explanations of each valuation driver and the resultant valuation measure in the below sections.

Benjamin Graham once observed that over the short term, the market was a voting machine but over the long term, it was a weighing machine. The goal of YCharts' 1% Focus Reports is to highlight the "weight" of a firm.

Reading through, please keep the sage advice of Warren Buffett in mind: "It's better to be approximately right than precisely wrong." It is in this spirit that we have designed this report.

## Revenue Growth

The road to value starts with revenues. Our carpenter's hammer is only a novelty purchase if he cannot use that hammer to generate revenues.

Revenue growth is constrained by both supply and demand factors.

After a hurricane, the carpenter's skills are going to be in great demand. His revenues will increase because he can charge more for his services<sup>1</sup>, but his capacity to generate revenues is limited by his small capital base—one hammer. This is an example of how supply factors can limit revenue growth and is typical for a small firm operating in a robust demand environment.

The carpenter may be able to get outside funding to increase the size and / or efficiency of his capital base and in so doing, will realize fewer supply-side constraints to revenue growth. However, after the initial post-storm building boom, the carpenter's business is likely to face more demand constraints to revenue growth than supply-side ones. Demand for his services from local homeowners is simply not as strong after most people's houses are repaired.

Public companies also reach the point at which their revenues cease to be supply-constrained and are begins to be demand-constrained.

This is what Nike's [NIKE](#) Phil Knight said about his company's transition from supply- to demand-constraint in a 1992 Harvard Business Review article<sup>2</sup>:

*The road to value starts with revenues... Revenue growth is constrained by both supply and demand factors.*

[HBR:] "When did your thinking [about business strategy] change?"

[Bill Knight:] "When the formulas that got Nike up to \$1 billion in sales—being good at innovation and production and being able to sign great athletes—stopped working and... Reebok came out of nowhere to dominate the aerobics market."

Nike's ability to supply products to consumers was not a constraint to its revenue growth. Rather, demand for a competitor's products cut into demand for Nike's, and this dynamic constrained revenue growth.

In a demand-constrained environment, our carpenter might decide to spend more on advertising to win more clients (which affects profitability—our next valuation driver), or might

choose to acquire a similar business with a well-defined client base of its own. For instance, our carpenter might take out a loan or use his business's excess profits to buy a wholesale building products distributor.

This strategy, sometimes referred to as "buying revenues" is, of course, common in the world of listed companies as well. And while some investors look down on these kinds of transactions, as long as the company is not overpaying for its acquisitions, acquiring a new revenue stream by buying a business is as "valid" a strategy as acquiring a new revenue stream by building it.

Phil Knight's comments regarding Nike's purchase of casual shoe company Cole-Haan in the same HBR article quoted above are telling:

"We bought the brand knowing its potential... We could have created a brand and got it up to \$60 million in sales, which is where Cole-Haan was when we bought it, but it would have taken millions of dollars and a minimum of five years."

It should be obvious from this discussion that revenue growth is inextricably linked with capital expenditures and other "expansionary outflows"—such as acquisitions—which is why Focus Reports show revenue growth overlaid with the amount of money spent on acquisitions.

We will look more at how to assess whether acquisitions and other expansionary cash flows are good for owners or not when we look at Investment Efficacy.

For now, let us turn to the second driver of value: profitability.

## Profitability

Most of the measures of profitability drawn from Income Statements and widely used on The Street have little meaning to our carpenter and his business. He cares about how much cash his business generates in a year, not how the rarified, polite fictions embodied in Generally Accepted Accounting Principles (GAAP) rules view his growing firm's profitability.

Investors would do well to look at investing from a cash perspective as well since cash is the single accounting line item with the least amount of "fiction" in it. Cash balances are easy for auditors to count and verify and, unless you are living in a hyperinflationary economy, the purchasing power of cash is well-defined and stable.

<sup>1</sup> Revenues are proportional to price and volume. In this instance, volume is fixed, but price rises for an overall rise in sales level.

<sup>2</sup> Willigan, G. E. (1992, July-Aug). High Performance Marketing: An Interview with Nike's Phil Knight. HBR, 93-101.

It is for this reason that our view of profitability is based on a line item on the Statement of Cash Flows rather than on the Income Statement. Namely, we base our measurement of profit on Cash Flow for Operations.

In terms of Financial Statement accounts, the specific calculations we use are:

	Cash Flow from Operations (CFO)
Less	Estimate of Maintenance Capital Expenditures
Equals	“Owners’ Cash Profits (OCP)”

CFO is self-explanatory, but “Estimate of Maintenance Capital Expenditures” deserves explanation.

*Revenue growth is inextricably linked with capital expenditures and other “expansionary outflows”—such as acquisitions...*

In order for our carpenter to maintain his company as a viable economic entity, he must make sure the tools his employees use and the warehouse in which he keeps his supplies are maintained at a level at which they can continue to generate revenues.

Using only cash-based CFO as a measure of profitability—which is, in fact, one step better than relying on a figure like the widely-misused “EBITDA”—would vastly overstate a firm’s profitability. CFO overstates profitability because it does not reflect any future payments that must be made for maintenance of revenue-producing capital goods.

Like our carpenter, we as analysts cannot be sure of what cash will be required to maintain a business’s capacity to continue generating revenues. Cognizant of the fundamental uncertainties involved, and in keeping with our attempt to be “approximately right rather than precisely wrong,” we estimate the required amount of maintenance capital expenditures to be Depreciation Expense adjusted for inflation.<sup>3</sup>

The amount of cash a company generates from its operations less the amount of cash it will probably need to spend to maintain its operations in the future is our preferred measure of profitability. Once we calculate this measure—that we call “Owners’ Cash Profits (OCP)” — we are one step closer to the Free Cash Flow to Owners measure needed for valuation. The next step in the process is to see how much cash the firm is spending in excess of maintenance levels to expand the business at a faster rate—what we term “Expansionary Cash Flows.”

## Expansionary Cash Flows and Investment Efficacy

Our carpenter started the year with an empty bank account and, after paying himself and his employees a salary, paying for supplies and inventories, paying interest on any loans taken out, setting aside money for taxes and equipment maintenance, and doing all the other things necessary to keep his business going, he has a nicely positive balance at his local bank branch.

What does he do with those excess profits? The answer to that question will necessarily determine the future of the firm.

Our carpenter has two choices:

1. Reinvest left over profits in the business
2. Pay himself—the owner—a bonus out of profits

If he invests in projects that bring him greater revenues (geographic or business line expansion) or helps his company convert revenues to profit more efficiently, his future profits will be boosted. If he invests in projects that fail to increase revenues, or in those that increase revenues in an uneconomic way—meaning profits drop even as revenues increase—his future profits will dip.

If he pays himself a bonus out of profits, but otherwise runs his firm efficiently, his company’s profits will likely continue growing “organically” from periodic price rises and new customers learning about his services; however, profits will not grow as quickly or reach as high a level if he were actively and successfully investing in the business.<sup>4</sup>

Since our base assumption is that the value of a company is proportional to the cash it generates on behalf of its owners it is obvious that profit growth will have a huge impact on valuation.

Before discussing how to measure and assess “expansionary” investment cash flows, let us look more closely at growth rates.

<sup>3</sup> As a wonkish aside, we are trying to isolate the amount of cash that will be necessary to maintain the basic operations of the company, so we exclude any Amortization charges related to bond discounts, intangibles, etc. if these are split out in the company’s financial statements.

<sup>4</sup> The one other possible use of excess profits is what we consider “wasting” it. For example, one of the first mortgage brokers to go bankrupt in 2007 was one that had spent its excess profits on building a new headquarters building with an atrium entrance featuring a waterfall decorated with a tile mosaic portrait of the founder behind it. This mortgage broker went the way of all firms that consistently waste resources...

There is virtually no limit to our carpenter’s business’s early growth. If his services and products are compelling, and solve problems other carpentry services and products do not, his company will expand locally, regionally, nationally, and globally—limited only by his access to capital to fund the expansion. Think of Google **GOOG** as an example—its products were so compelling that it went from little more than a graduate school science experiment to one of the largest, most profitable corporations on earth in a decade and a half—despite two downturns of various severity in the interim.

However, if our carpenter is as successful as Google, eventually, he will have soaked up all available demand for carpentry services and squeezed every bit of efficiency out of his operations as possible. At this point, his company’s profit growth will slow.

The easiest and most powerful method we have found to analyze a company is to conceive of its future growth as being bucketed into three separate stages: near-, medium-, and long-term.

Near-term, growth of profits will vary according to dynamics related to the competitive environment. To put it in the context of our carpenter—how many people need carpentry services and how many other carpenters are there in the area.

Medium-term, growth of profits will depend on the success, failure, or absence of expansionary projects and organic growth in the core business. For our carpenter, this means whether or not his purchase of the distributor is successful or if he plays it safe and uses excess profits to take a Caribbean cruise.

Long term, a large firm’s growth is constrained ultimately by how fast the economy at large can grow. For most carpenters, this relates to the growth of new home construction and home remodeling in their local areas.

These stages and the value generated in each can be represented graphically, as we see in Figure 1 to the right. Here, we are assuming the company’s growth will fluctuate in the near term based on our projections of its revenue and profitability (marked by “Explicit forecast” in this diagram), that it will grow quickly for five years in Stage 2 based on assumed success of its investments, and that after its high-growth period, it will grow at a more or less constant rate equal to nominal GDP after that.

Note that even though future cash flows keep growing at a constant rate into the future, because the present value of those far-distant future cash flows is low<sup>5</sup>, their discounted value approaches an asymptote at around \$1,200.

It is obvious that if we are to assess the value of the Stage 2, high-growth period, we must

<sup>5</sup> Due to the theory of time value of money (TVM).

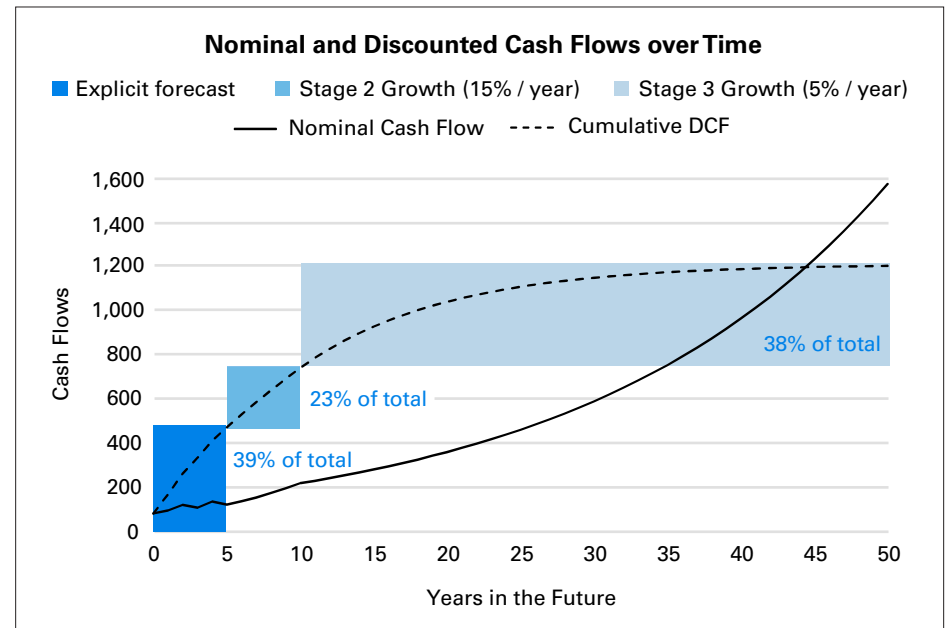


Figure 1.

first find a way to quantify how much of the owners’ profits the firm is spending on expansionary investments.

## Measuring Expansionary Cash Flows

People normally think of business reinvestment in terms of capital expenditures. Indeed, this is a valid way to think about investments for manufacturers in a fairly stable competitive environment (like our carpenter).

However, in these days of globalization and rapid technological innovation, we believe “Capex” fails to cover all the cash outflows made by large firms to expand their businesses at a rate faster than the economy at large.

Once these outflows are taken into account, any cash left over is free to be distributed to owners. It is this “Free Cash Flow to Owners (FCFO)” to which we assume companies’ values are proportional.



The formula we use to calculate investments and FCFO is:

	Owners' Cash Profits
Less	Capital Expenditures over and above Maintenance Needs
Plus	Cash Inflow from Asset Sales and Disposals
Less	Cash Loaned to JVs, Software development, etc.
Less	"Mandatory" Stock Buybacks
Equals	"Free Cash Flow to Owners (FCFO)"

All line items between OCP and FCFO are what we consider as Expansionary Cash Flows.

Recalling that our estimate of economic profit already has an estimate of maintenance capital expenses calculated in it, we can see that the first three lines above are simply the standard definition of Free Cash Flow to Equity Holders (FCFE); namely  $FCFE = OCF$  less net spending on PP&E.

Let us look at the other lines, one by one.

Our carpenter might decide to expand his distribution business by opening a new branch in

*In these days of globalization and rapid technological innovation, we believe "Capex" fails to cover all the cash outflows made by large firms to expand their businesses at a rate faster than the economy at large.*

the neighboring state. In order to run this business effectively, he forms a joint venture (JV) with a local businessperson and provides capital to that JV. Clearly, this is a cash outflow made with the purpose of expanding the carpenter's business. It might be a stretch to imagine, but perhaps our tech-savvy carpenter sees the opportunity to hire a programmer to write some inventory management software that will make his business more efficient. Because an increase in efficiency implies a greater amount of future profits being realized, we should also count this sort of investment as an expansionary cash outflow unavailable to distribution to owners.

While these measures are pretty straight-forward, the "Mandatory" Stock Buybacks line item requires a bit more commentary.

Over the past 20 years, companies have increasingly turned to stock buyback programs to

"return value to shareholders." Management teams are supported by academicians, who have proved through elegant mathematical reasoning that since managers have inside information about the future prospects of the firm, their purchases of stock on behalf of shareholders must always be value creative.

Indeed, to the extent that stock repurchases increase the proportional stake of an owner in the company, they can, in a certain sense, be thought of as value creative. However, one dirty little secret about stock buybacks is that in most cases, a material proportion of buybacks are going not to increase present owners' proportional stake, but rather to soak up dilution caused by management's granting its employees stocks as a part of their compensation package.<sup>6</sup>

By using equity grants as a form of worker compensation, upper management is essentially funding a portion of its operating costs through dilutive stock issuance. By buying back those shares, it is using cash flow that would otherwise become shareholder wealth to obfuscate this compensation scheme and keep earnings per share (EPS) from falling or stagnating.

It would be nice if we could tie this phenomenon to something a small businessperson like a carpenter might do. However, this is an "innovation" that most small businesspeople do not use for one obvious reason: Owners of a closely-held company would likely not see any sense in doing it. A large corporation can get away with it because, frankly, many of its owners are not paying close enough attention.<sup>7</sup>

It is a toss-up as to whether this spending on anti-dilutive stock buybacks should be treated as a deduction from owners' cash profits or a reduction of FCFO. Because the stock grants

<sup>6</sup>There are other dirty little secrets that are well-documented, such as the fact that management teams, which are allegedly super-investors in their own company's stock given their insider information, still tend to purchase more shares when the stock price is relatively high, and less when the stock price is low. While it is impossible to deny that an increase in proportional share of the company is good for shareholders, it is hard to believe that managements consistently do a good job of investing in their own company's stock.

<sup>7</sup>There may indeed be some cases in which a small businessperson, in the attempt to conserve cash in the short term, would compensate a lawyer or accountant by promising a share of the business's future profits. It would also be likely that a small businessperson in this situation would attempt to pay off the professional fees in cash as soon as he had cash to cancel the ownership claim. But the thought that a small businessperson would attempt to obfuscate this transaction when presenting financial results to his partners is hard to imagine.



are given as a way to meet operating costs, it could be counted as the former. However, one could make the argument that granting shares in lieu of cash encourages employees to work hard and creatively in order to generate superlative growth.

In the end, though, the difference is academic since the result is the same—a reduction in the cash flow available to be distributed to owners. We calculate the cash outflow associated with these anti-dilutionary purchases as the number of shares issued multiplied by the average share price during the year.

Now that we have an “approximately accurate” view of how much the firm is spending to boost its future growth, the next task is to find an objective measure of how effective its investment strategy is.

## Estimating Investment Efficacy

Assessing the success of a professional money manager, it is typical to measure the degree to which the manager’s investments over- or under-performed some benchmark over time. Warren Buffett’s investments have consistently outperformed those of the S&P by a wide margin over an extended period of time, so we recognize Buffett as a great investor. Surely, companies that invest in expansionary projects can also be assessed relative to success vis-à-vis some benchmark.

*Assessing the success of a professional money manager, it is typical to measure the degree to which the manager’s investments over- or under-performed some benchmark over time... Surely, companies that invest in expansionary projects can also be assessed relative to success vis-à-vis some benchmark.*

Thinking back to our prior discussion of growth stages, it is obvious that long-term, a company cannot grow faster than nominal GDP. It makes sense then, to use nominal GDP as a benchmark for growth during the high-growth, “Stage II” period.

Now, we have a benchmark, but against which quantity—growth of OCP or growth of FCFO—should we compare it?

Our preference is to compare growth of Owners’ Cash Profits to nominal GDP for the following reason:

FCFO is a quantity that is influenced by other investment decisions, so the number tends to be very noisy. For example, let’s say our carpenter invests 10% of his cash profits in a new piece of equipment at the end of year 1; this equipment improves his workers’ efficiency so much that he is able to generate a huge amount of excess profits over the next year. He has such a surfeit of cash at the end of year 2, that he decides to make a stretch purchase of a new distributor and spends 100% of his cash profits on it. It is clear that the year 1 investment was good for his company, but if one looked at it in terms of the FCFO in year 2—which is \$0, because he spent 100% of Owners’ Cash Profits on the distributor—it would look like a terrible investment.

Note also that business investments often take several years before their full impact on cash profits are felt. As such, we consider investment efficacy as a valuation factor that influences medium-term growth rates.

By benchmarking growth in Owners’ Cash Profits to nominal GDP, we are implicitly making the assumption that, at the end of the company’s high-growth period, the managers will be sage enough to return profits to owners rather than embarking on value-destroying investment projects. Depending on the firm and the industry, this might be a pretty big assumption to make, but investors are suspicious of management teams’ ability to act as sage stewards of owner capital can lower their “high-growth” growth projections to compensate.

A firm that has plenty of good investment opportunities—say one that is a leader in an emerging industry—and is skillful at choosing the best ones in which to invest, will be able to grow at a rate much higher than nominal GDP for a long time (e.g., 10 or 15 years after the initial 5-year “explicit” Stage I period).

A firm that has middling investment opportunities may be able to grow faster than GDP, but not significantly and not for as long. A company with a mature business in a stable competitive environment will return most of its cash profits directly to owners, so should be able to grow at about the rate of GDP—maybe a few points higher one year and a few lower the next.

Looking at growth stages from this perspective and tying value creation to each growth stage in this way makes it much easier to come to an objective opinion regarding the company’s value.

After understanding the level of investment spending and its efficacy, we turn to the value created or destroyed by “hidden” assets and liabilities—Balance Sheet Effects.

## Balance Sheet Effects

Let’s say our carpenter, after becoming very successful in his own trade and as a distributor, decides to expand into the taxi business. He buys two used cars for \$20,000 each as his

primary operating assets for this, the newest division of his burgeoning economic empire. The cars are used, so he decides to clean them out before putting them into service.

While he is cleaning out the first car, he finds a tightly-wrapped brown package in the spare tire well and, upon opening it, is surprised to find that the package conceals a large quantity of illicit drugs. Reporting his find to the police, the police impound the car as evidence and tell him they cannot give him an estimate of when it will be returned.

In the parlance of accountants, our carpenter's operational asset has become impaired by a non-operational contingency. In plain terms, he can't use his car to make money. Since revenues will decline, the value of his new taxi cab division has necessarily declined.

*A firm that has plenty of good investment opportunities—say one that is a leader in an emerging industry—and is skillful at choosing the best ones in which to invest, will be able to grow at a rate much higher than nominal GDP for a long time...*

Disappointed about the indefinite loss of one car, he grudgingly starts cleaning out the second one. As he is vacuuming between the seats, he finds a lottery ticket. He goes to claim the lottery ticket and finds it is worth \$500,000.

In the parlance of accountants, his operational asset has had a material upward revaluation. In plain terms, his new taxi cab division is his company's newest unexpected rain maker. The after-tax winnings from the lottery ticket are pure, unanticipated profit for his taxi division and hugely increase its value and the value of the firm.

Unlike the drivers of valuation mentioned earlier, these "balance sheet effects"—the hidden assets and liabilities controlled by a firm—are difficult to find with data alone. Instead, it usually requires an in-depth understanding of the company, accounting rules, and, in some cases, legal matters (think Enron or Lehman Brothers).

Because balance sheet effects are difficult or impossible to find by looking only at reported financial data, YCharts Focus Reports cannot directly highlight these drivers of value. However, the long history of data we display and the clear manner in which we do it should point the curious and intelligent investor to areas in which to investigate further and uncover them themselves.

## Historical Multiples

See also the notes on YCharts' site entitled Valuations from Historical Multiples.

While the drivers to corporate valuation are as listed above, the inherent imprecision of attempting to forecast economic outcomes for as complex an entity as a modern multinational firm means that it is helpful to use alternate metrics to triangulate our intrinsic value calculations.

One oft-used method for both screening a large universe of stocks for attractive investment opportunities and triangulating intrinsic value calculations is what is known as the historical or market multiple. Common examples include the price-to-earnings (P/E) ratio, price-to-sales ratio (PSR), and the like.

The idea behind multiples is that the price per unit of some financial statement quantity should, in general be relatively constant, or at least that it should return to normalized levels over time.

There is academic evidence of the success of at least one of these multiples (Price-to-Book ratio), but attempting to use historical multiples as a sole tool to value equities is a method fraught with conceptual difficulties.

The most important thing to realize about market multiples is that differences in capital structure, business model, geographical exposure, and other factors can make the direct comparison of multiples across companies difficult.

In order to compare one company to another on an apples-to-apples basis, one must factor in operational and capital structure differences; this often requires a great deal of detailed information about the company and a firm understanding of arcane accounting rules and concepts.

Even comparing a single company's multiples versus previous historical periods is difficult, since companies often change their capital structures over time, buy and sell off divisions, and the like.

In general, it is important to realize that unlike physical constants, there is no rule that a certain company's multiple cannot fall below a certain level. Apples fall to the earth at 32 feet / sec<sup>2</sup>, neglecting wind resistance. Stocks conform to no such physical constants.

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