Calculating Return on Invested Capital

How to Determine ROIC and Address Common Issues

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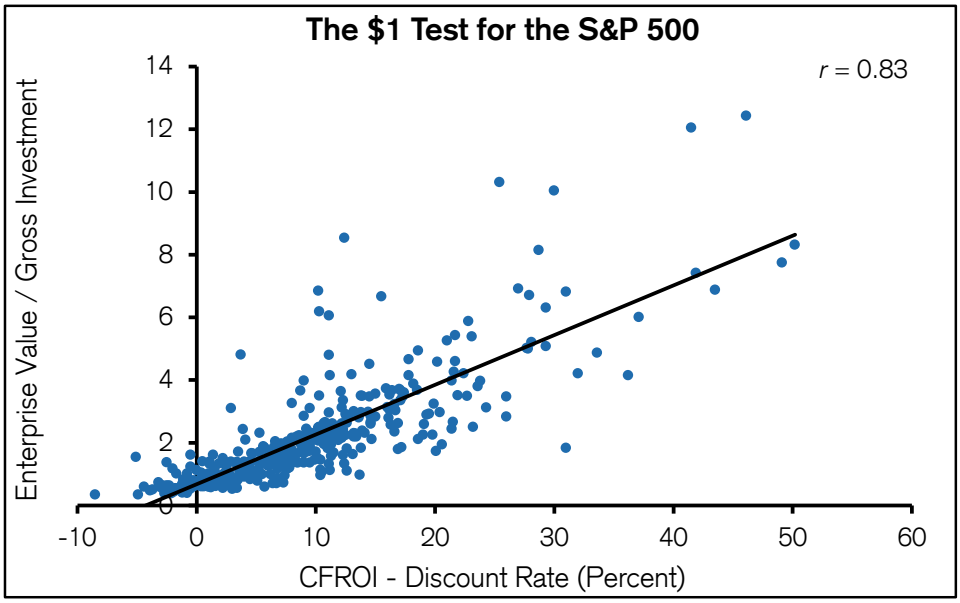

Source: Credit Suisse HOLT ®, FactSet, and Credit Suisse (see Appendix A for details about the chart).

- A core test of success for a company is whether one dollar invested in the business generates value of more than one dollar in the marketplace.
- Return on invested capital (ROIC) is one measure of a company's capital efficiency. But value creation includes not only the spread a company earns above the cost of capital but also how much the company can invest.
- Proper calculation of ROIC requires handling a number of practical issues in a thoughtful and consistent fashion.
- ROIC analysis can provide insight into the sources of a company's competitive advantage.
- A model of future ROIC should include reversion to the mean in most cases.

Introduction

A core test of success for a business is whether one dollar invested in the company generates value of more than one dollar in the marketplace. Warren Buffett, the chairman and chief executive officer of Berkshire Hathaway, calls this the $1 test.[1] Logically, this occurs only when a business earns a return on investment in excess of the opportunity cost of capital.

Here's an extremely simple example. Say a company invests $1,000 in a new factory and estimates that the cost of capital is 10 percent. Were the factory to generate $80 in after-tax earnings into perpetuity, the market value of the factory would be $800 ($80/.10) and the investment would fail the $1 test. Earnings of $120 would create value of $1,200 ($120/.10), hence passing the $1 test. As companies announce investments such as acquisitions or capital expenditures, the market renders its judgment as to whether the investments add or detract from value.

Business schools generally treat finance and competitive strategy as distinct silos and teach them accordingly. In proper practice, though, investors should join the two fields at the hip. A thoughtful valuation requires judgment about industry structure and competitive advantage. And a strategy must pass the $1 test to create value. Thoughtful investors and businesspeople operate at the intersection of finance and competitive strategy.

Clayton Christensen, a professor at Harvard Business School, argues that an undue focus on financial metrics, including return on invested capital (ROIC), has led to underinvestment in growth and innovation. He calls this the "capitalist's dilemma." Slavishly beholden to financial metrics that measure value creation, business leaders fail to create value.[2]

Our view is that the problem lies not with the financial measures themselves but with the hazard that managers misuse them. For example, maximizing return on capital should not take precedence to maximizing economic profit, a measure that considers both the return on capital and the magnitude of investment. At the end of the day, the present value of cash flow drives value and that cash flow in large part reflects management's acuity at allocating capital.

The challenge for investors is to use financial statements to assess the capital allocation skills of management. This is precisely what Credit Suisse HOLT® does through cash flow return on investment (CFROI®*).[3] CFROI measures the cash returns a business earns on the investments it makes. Since CFROI is also adjusted for inflation, it is an ideal tool for comparing results over time. Appendix A describes CFROI in more detail.

This piece focuses on ROIC. A company that generates an ROIC in excess of the cost of capital generally indicates that management has been able to deploy resources intelligently. Subpar ROICs can suggest poor capital allocation. ROICs relative to comparable companies within an industry are particularly useful, as they account for the fact that some industries earn returns that are higher than others.

Of course, the stock market looks forward and you earn excess returns by anticipating revisions in expectations for financial results. So we're less interested in the ROIC today than we are in understanding changes in ROIC over time. Further, the absolute spread between ROIC and the cost of capital doesn't give a full picture of the prospects for value creation because the spread provides no indication of how much capital

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* CFROI® is a registered trademark in the United States and other countries (excluding the United Kingdom) of Credit Suisse Group AG or its affiliates.

the company can deploy at a given positive spread. If two companies enjoy the same positive spread of ROIC to cost of capital, the company that grows faster will create more value.

CFROI and ROIC are two measures of capital efficiency. Other measures include return on equity (ROE) and return on assets (ROA). ROE equals net income divided by shareholders' equity. ROA is net income divided by assets. ROIC is superior to both measures.

For example, ROIC is preferable to ROE because ROIC is unaffected by financial leverage and share buybacks whereas ROE varies based on a firm's chosen capital structure and buyback activity. In measuring a company's economic returns, we don't want to conflate operating and financing issues. ROE, with appropriate adjustments, is useful for companies in the financial services sector (more on this below).

ROA has a number of inconsistencies between the numerator and the denominator that make it unreliable. For instance, while changes in debt can affect the numerator, earnings, they need not have a proportionate effect on the denominator, assets. Notwithstanding the limitations of ROA and ROE, they remain the primary measures that academics use in their studies of corporate performance.[4]

We now turn to defining ROIC in more detail, including the most common adjustments you will have to consider. The most important point is that everyone in an investment organization should measure return on invested capital in a consistent fashion. The HOLT database ensures this, of course, but it is common for analysts within the same firm to use somewhat different methodologies and adjustments. Consistency is key.

The Definition of Return on Invested Capital

The textbook definition of ROIC is as follows:

$$\text{Return on invested capital (ROIC)} = \frac{\text{Net operating profit after tax (NOPAT)}}{\text{Invested capital (IC)}}$$

The numerator of ROIC is net operating profit after tax (NOPAT), which measures the cash earnings of a company before financing costs. Said differently, NOPAT assumes no financial leverage. NOPAT is the same whether a company is highly levered or free of debt. This is essential for comparability.

NOPAT is a very handy number in finance: It is the number from which you subtract investments (change in net working capital, net capital expenditures, and net M&A) to derive free cash flow in a discounted cash flow model; it is the number from which you subtract a capital charge (invested capital times the cost of capital) to calculate economic profit; and it is the number that serves as the numerator of ROIC.[5]

Specifically, NOPAT equals earnings before interest, taxes, and amortization (EBITA) minus the cash taxes attributable to EBITA. Or,

NOPAT = EBITA – cash taxes

The definition of EBITA is relatively straightforward. It is essentially operating income plus amortization of intangibles. The calculation of cash taxes attributable to EBITA is more complex. It has three components:

- Tax provision
- Deferred taxes
- Tax shield

You can use the tax provision off of the income statement, but you should adjust it for any unusual items as appropriate (e.g., restructuring charges). The tax provision lowers net operating profit.

Deferred taxes are more complex.[6] A growing deferred tax liability, a line item on the balance sheet, reduces the tax burden and NOPAT is higher. When the deferred tax liability is shrinking, the tax burden rises and NOPAT is reduced. You calculate deferred taxes through the annual change in deferred taxes on the balance sheet.

The tax shield reflects the difference between the taxes the company actually paid and the taxes it would have paid had it been all equity financed. Two companies with the same operating income but different levels of debt will have different pretax income. Since interest expense is tax deductible, the tax bill will be lower for the levered company. The tax shield, net interest expense times the tax rate, increases the tax bill for levered companies and puts all companies on an equal footing.

Exhibit 1 shows the calculation of NOPAT for Cisco Systems, Inc. (The full financial statements with each line numbered for reference are in Appendix B.) The company's NOPAT was approximately $10.4 billion in fiscal 2013.

Exhibit 1: Calculation of NOPAT for Cisco Systems, Inc.

Operating approach						
Description	**2009**	**2010**	**2011**	**2012**	**2013**	Reference
Net sales	36,117	40,040	43,218	46,061	48,607	line 1
- Cost of goods sold	13,023	14,397	16,682	17,852	19,167	line 2
Gross income	23,094	25,643	26,536	28,209	29,440	line 3
- R&D	5,208	5,273	5,823	5,488	5,942	line 4
- Sales and marketing	8,403	8,716	9,812	9,647	9,538	line 5
- General and administrative	1,565	1,999	1,908	2,322	2,264	line 6
- Amortization and in-process R&D	596	491	1,319	687	500	line 7 + line 8
EBIT	7,322	9,164	7,674	10,065	11,196	
+ Amortization and in-process R&D	596	491	1,319	687	500	line 7 + line 8
EBITA	7,918	9,655	8,993	10,752	11,696	
- Income tax provision	1,559	1,648	1,335	2,118	1,244	line 14
+ Deferred taxes	1,258	(654)	(162)	653	(96)	line 46 (current year - prior year)
- Tax shield	(75)	(44)	(26)	(20)	(3)	(line 11 + line 12)*line 18
NOPAT	**7,692**	**7,397**	**7,522**	**9,307**	**10,359**	
Financing approach						
Description	**2009**	**2010**	**2011**	**2012**	**2013**	Reference
Net income	6,134	7,767	6,490	8,041	9,983	line 15
+ Amortization and in-process R&D	596	491	1,319	687	500	line 7 + line 8
Adjusted income for common	6,730	8,258	7,809	8,728	10,483	
- Other income, net	371	251	151	94	31	line 11 + line 12
+ Deferred taxes	1,258	(654)	(162)	653	(96)	line 46 (current year - prior year)
- Tax shield	(75)	(44)	(26)	(20)	(3)	(line 11 + line 12)*line 18
NOPAT	**7,692**	**7,397**	**7,522**	**9,307**	**10,359**	

Source: Company published data and Credit Suisse.

For modeling, you can simply assume that in the future NOPAT = EBITA * (1-cash tax rate). For growing industries the cash tax rate is generally modestly below the stated tax rate to reflect an increase in deferred taxes.[7]

Invested capital is the denominator of ROIC. You can think of invested capital in two ways that are equal. First, it's the amount of net assets a company needs to run its business. Alternatively, it's the amount of financing a company's creditors and shareholders need to supply to fund the net assets. These approaches are equivalent since dual-entry accounting requires that both sides of the balance sheet equal one another.

That said, you should calculate ROIC using the assets side of the balance sheet if given the choice. The reason is that the net assets approach allows you to see how efficiently the company is using capital. In contrast, the right-hand side shows only how much capital the firm has and how it has chosen to finance the business. Ideally, you should calculate ROIC from both the left- and right-hand sides of the balance sheet.

Exhibit 2 shows how to calculate invested capital.

Exhibit 2: Calculation of Invested Capital

Invested capital (Assets)	Invested capital (Liabilities + Equity)
Current assets	Short-term debt
– Non-interest-bearing current liabilities	+ Long-term debt
= Net working capital	= Total debt
+ Net property, plant, and equipment	+ Deferred taxes
+ Goodwill	+ Other long-term liabilities
+ Other operating assets	
	+ Preferred stock
	+ Shareholders' equity
	= Total equity
= Invested capital	= Invested capital

Source: Credit Suisse.

Starting with the assets side of the balance sheet, the calculation of invested capital begins with net working capital. You can think of this as the cash a company needs in the next twelve months. This calculation starts with current assets, of which accounts receivables and inventories are generally the largest components. Current assets are then reduced by non-interest-bearing current liabilities (NIBCLs). NIBCLs are basically all current liabilities that are not debt, with accounts payable often the most sizable item.

Net working capital can be less than zero for companies with a negative cash conversion cycle, where NIBCLs are larger than current assets.[8] These companies can sell inventory and collect cash before they have to pay their suppliers, and hence suppliers become a de facto source of financing. Negative cash conversion cycles can't go on forever, but can go on for a very long time. Further, working capital changes are generally very sensitive to the company's growth rate. If you see an acceleration or deceleration in the growth rate, be sure to check what's going on with net working capital.

You then add net property, plant, and equipment (PP&E) to net working capital. Further, you need to add goodwill—more on that in a moment—and any other operating assets required to run the business. If you are wondering about whether to include an item in invested capital, simply ask if the company could generate the same level of NOPAT without the item. If not, include it. If so, exclude it.

From the liabilities plus equity side of the balance sheet, the invested capital calculation starts with total debt, both short- and long-term, and adds equity, including preferred stock or any other equity-linked securities. Finally, there are a number of other items you must capture. These include deferred taxes and other long-term liabilities, such as those related to pensions.

Exhibit 3 shows the calculation of Cisco's invested capital. Cisco's ROIC in fiscal 2013 was 34.1 percent [$10.4 billion/($33.6 billion + $27.2 billion/2)] and 34.2 percent in 2012 [$9.3 billion/($27.2 billion + $27.3 billion/2)].

Exhibit 3: Calculation of Invested Capital for Cisco Systems, Inc.

Operating approach

Description	2009	2010	2011	2012	2013	Reference
Cash *	1,445	1,602	1,729	1,842	1,944	line 1 * 4%
Accounts receivable	3,177	4,929	4,698	4,369	5,470	line 28
Inventories	1,074	1,327	1,486	1,663	1,476	line 29
Deferred tax assets	2,320	2,126	2,410	2,294	2,616	line 30
Prepaid and other	2,605	3,178	4,052	4,891	5,349	line 31
Total current assets	10,621	13,162	14,375	15,059	16,855	
- NIBCLs	13,655	16,137	16,918	17,700	18,909	line 39 + line 40 + line 41 + line 42 + line 43
Net working capital	(3,034)	(2,975)	(2,543)	(2,641)	(2,054)	
+Net PP&E	4,043	3,941	3,916	3,402	3,322	line 33
+Goodwill	12,925	16,674	16,818	16,998	21,919	line 34
+ Intangibles	1,702	3,274	2,541	1,959	3,403	line 35
+Other assets	5,281	5,820	6,589	7,467	7,026	line 36
Invested capital	**20,917**	**26,734**	**27,321**	**27,185**	**33,616**	

(*) cash = 4 percent of sales.

Financing approach

Description	2009	2010	2011	2012	2013	Reference
Current portion LT debt	0	3,096	588	31	3,283	line 38
Long Term debt	10,295	12,188	16,234	16,297	12,928	line 45
Deferred revenue (LT)	2,955	3,419	4,182	4,028	4,161	line 47
+Other	2,546	2,005	1,914	2,402	2,782	line 46 + line 48
+Minority interest	30	18	0	0	0	line 49
Shareholders' equity	5,091	6,008	4,403	4,427	10,462	line 52 - (line 26 + line 27) + (line 1 * 4%)
Invested capital	**20,917**	**26,734**	**27,321**	**27,185**	**33,616**	

Source: Company published data and Credit Suisse.

Practical Issues in Calculating Return on Invested Capital

While calculating ROIC is conceptually straightforward, there are a host of practical matters to consider when doing the calculation. These lead to potential adjustments, which are important because they address material economic issues. Hence, without certain adjustments and the application of good judgment, ROIC calculations are of little absolute or comparative value.

Here's a list of some of the practical issues to consider:

- Excess cash
- Goodwill and the usefulness of ROIC in M&A analysis
- Restructuring charges
- Operating leases
- Minority interests
- R&D capitalization
- Share buybacks

Excess cash. There are two schools of thought on excess cash. The first says that a company is the steward of capital and hence should earn an appropriate return on all of the capital on its balance sheet. This group argues that it's proper to calculate ROIC including all cash and marketable securities. HOLT, for example, takes this viewpoint. Academic research shows there is a basis for this argument. Specifically, the market values $1.00 in cash at roughly $0.40-$0.90 for companies that are deemed to have poor corporate governance.[9]

The second school believes that while earning the cost of capital is critical, investors should treat the ROIC calculation and capital allocation issues separately. The goal of an ROIC calculation is to understand how efficiently a company uses its operating capital. The capital allocation assessment should focus on the likely ways a company will deploy its capital and what the prospective returns may look like.

We are in the second camp. We prefer to keep the discussions of ROIC and the risk of capital allocation separate. But given the high levels of cash today, especially in the technology and healthcare sectors, capital allocation is appropriately a substantial focus of investors. Cash and marketable securities were $1.7 trillion for companies in the S&P 500 Index, excluding the financial sector, at the end of 2013.[10]

So how do you strip out excess cash? The idea is to include only the amount of cash a company needs to run its business. Some considerations include the cash a company needs until it reaches free cash flow break-even, the cash to fund all capital needs for two to three years, and the cash a company needs to run its business day to day. Of course, the proper number varies based on the nature of the business, its cash conversion cycle, earnings volatility, and where the business is in its life cycle.

Once a company reaches a steady state, a rule of thumb suggests you should include two percent of sales as cash. For less predictable companies with greater growth prospects, a ratio of cash to sales of five percent may be appropriate. Research shows that more established companies with strong credit ratings and access to capital tend to hold less cash as a percentage of assets, and younger firms with brighter growth opportunities and riskier cash flows hold more cash.[11]

Naturally, how you treat cash makes a huge difference in the calculated ROIC. Take Microsoft as an example. Following its special dividend of $32 billion in the fall of 2004, invested capital including all cash fell more than 60 percent while NOPAT was unaffected. Amazingly, Microsoft still had in excess of $30 billion after the

distribution. So using the first approach, Microsoft's ROIC jumped overnight. Apple Inc. appears to be following a similar path.

If the fundamental question you're trying to answer with ROIC is, "What are the underlying economics of this business?" you should remove excess cash and debate the issues surrounding capital allocation separately.

The treatment of excess cash and marketable securities also highlights why calculating invested capital solely from the right hand side of the balance sheet is potentially misleading. Without reviewing how much excess cash a company has (an asset), you won't know whether or not you should adjust equity to reflect that excess cash. If you remove excess cash from the asset side of the balance sheet, then you need to make an identical adjustment to shareholders' equity. That way both sides of the ledger remain balanced.

Goodwill. One of the keys to a proper ROIC analysis is making sure the numerator and the denominator remain consistent. This is important in evaluating companies that have been active in mergers and acquisitions (M&A). Goodwill is an item that has the potential to substantially shift a company's ROIC picture.

Until 2002, companies could account for an acquisition using either the purchase or the pooling method. In a purchase deal, companies had to reflect as goodwill any amount that was in excess of book value. Companies recorded goodwill on the balance sheet and amortized it on the income statement, typically over 40 years.

In contrast, in a pooling deal the two companies simply combined their balance sheets. That avoided the need to add goodwill to the balance sheet and to expense amortization on the income statement.

In 2002, the Financial Accounting Standards Board abandoned pooling accounting but modified the treatment of M&A deals under purchase accounting. Currently, companies must reflect goodwill on the balance sheet but don't have to amortize the goodwill on the income statement. The companies are required to periodically test whether or not the goodwill is impaired. If so, they have to take a write-off. If not, it sits there indefinitely. However, companies must still amortize intangible assets.

So for acquisitive companies, the numerator is going to look good but the denominator will not. As an example, goodwill and intangibles represented 22 percent of Cisco's assets and 65 percent of its invested capital as of July 31, 2013. Here is Cisco's ROIC for fiscal 2013 with and without goodwill:

	2013
ROIC excluding goodwill	125.4%
ROIC including goodwill	34.1%

So what's the practical implication? You need to carefully consider two issues: acquisitions and write-offs. First, if a company has been acquisitive, you have to distinguish between operating returns and acquisition returns. The operating returns are the actual cash-on-cash returns that a business generates. You can think of this as organic returns.

Acquisition returns are based on the value a company paid for an acquisition, which is typically a substantial premium to the amount the acquired company actually invested in its business.

The best way to deal with the operating versus acquisition return issue is to calculate ROIC two ways: including and excluding goodwill. If you don't expect a company to do many deals going forward, operating ROIC probably provides a better picture of returns on incremental capital. This is how HOLT deals with acquisitions. In contrast, if you expect a company to be acquisitive, you have to focus on M&A economics.[12]

The second practical issue is asset write-offs. Companies are required to periodically test the value of their goodwill. If the asset a company acquired drops below a certain value threshold, it is required to write off the goodwill.

Some theorists advocate for adding back asset write-offs to invested capital.[13] The idea is that investors should hold management's feet to the fire to deliver returns on all the capital they have allocated. If you do add back an asset write-off, the number should be net of any tax savings.

In principle this is fine, but you should really consider the context of the asset write-off and whether or not it helps you understand how management uses capital. For example, in April 2002 Time Warner announced a $54 billion write-off related to the AOL acquisition completed in early 2001. Does it make sense to hold Time Warner's current management responsible for that deal into perpetuity by adding back the goodwill? Common sense suggests the answer is no.

Another example is the massive, $1.4 billion write-off Quaker Oats took in March 1997 following its unsuccessful acquisition of Snapple for $1.7 billion in 1994. At that point, management had changed and the company announced its intentions to sell Snapple. Here again, adding back goodwill probably doesn't clarify the economic picture.

Restructuring charges. Restructuring charges, which include costs related to items such as reducing the size of the work force and plant closings, are routine in financial reporting. How should we treat these charges in our ROIC calculations?

Restructuring charges typically have two components: an asset write-off, which is non-cash, and a provision for charges related to the restructuring—including headcount reductions and equipment relocation—that reflect a true cash outlay. The principle behind how to deal with asset write-offs is the same as we discussed above with goodwill. As it turns out, you don't have to make any adjustments to capture the provision for changes.

But it is important to understand what's going on. Let's say a company takes a charge and sets up an accrued liability to cover anticipated cash outlays for employee severance. From an ROIC perspective, invested capital initially goes down (the accrued liability is a non-interest-bearing current liability and hence reduces net working capital). As the company spends the cash on the employees, the accrued liability goes down and invested capital rises.

This does distort ROIC in the short term, but does not affect free cash flow. Free cash flow is NOPAT minus investment needs. The decline in the accrued liability shows up as an increase in net working capital, properly reflecting the increase in invested capital associated with the cash outflow.

Operating leases. Companies have some choice in how they finance their assets. One major choice is whether to buy or lease assets. For example, a retailer may choose one alternative over the other if it perceives a financial advantage in doing so. The analytical goal is to put all companies on an equal economic footing so that buy or lease decisions do not distort ROIC.

Operating leases are any lease obligations the company has not put on the balance sheet, or "capitalized." This tends to be most relevant for industries with heavy investment needs, including transportation (e.g., airlines) and retail. If a company chooses to lease a substantial percentage of its assets, you should make adjustments to ROIC to reflect the financing choice.

There are two steps to reflect leases in ROIC. The first is to adjust NOPAT by reclassifying the implied interest expense portion of the lease payments from an operating expense to a financing cost. This increases EBITA by the amount of the implied interest. You also need to adjust taxes to remain consistent.

Second, you need to add the implied principal amount of the lease to assets as well as debt, hence increasing invested capital. If material, you should also adjust your debt-to-total capitalization ratios in your cost of capital calculation. Credit rating agencies take leases into consideration when they evaluate firms.

Aswath Damodaran, a professor of finance at the Stern School of Business at New York University, provides spreadsheets that are very user-friendly to guide you through the calculations.[14] Companies provide information about their lease obligations in the footnotes to their financial statements. In theory, this adjustment should not affect your calculation of ROIC much, but in reality it can make quite a difference.

Minority interest. An adjustment for minority interest is relevant either when another company owns a meaningful minority percentage of the company you are analyzing or the company you are analyzing owns a meaningful minority stake in another company.

In the first case, the best course is to calculate ROIC as if the business is wholly owned. In fact, this takes little additional analysis since minority interest falls below the EBITA line—you just need to watch taxes. The minority stake is relevant for valuation, of course. You need to subtract the value of the minority stake in order to correctly calculate shareholder value per share.

In the second case, the approach is similar to the first. Calculate ROIC as you would normally excluding the minority stake. Again, watch taxes. Then add the value of the minority stake, net of tax considerations, to come up with shareholder value per share.

Research and development (R&D) capitalization. When there is no reliable way to measure the economic benefit of an outlay, accountants mandate that the company expense the investment. R&D and advertising spending are such expenditures. As a result, companies do not reflect investments in R&D and advertising on their balance sheets. Accounting rules do allow for capitalization of some development costs.

For most companies, the treatment as an expense or capital outlay is not a big deal. But for some companies, R&D or advertising is their most important investment. Those companies must still expense those investments even though there's a reasonable economic case for a multi-year payoff. For example, Microsoft's $10.4 billion in R&D spending in fiscal 2013 was almost two-and-a-half times as large as its $4.3 billion in capital expenditures. In this case, you might argue that both earnings and invested capital are understated. Free cash flow, and hence value, is impervious to this adjustment.

The economic solution is to capitalize expenses that are likely to have a long-term payoff and amortize them on the income statement. This is relevant for industries that are R&D intensive or firms that are in a phase of heavy marketing. To do this you first reflect the investment on the balance sheet, which increases assets and equity. Next you determine an appropriate rate of amortization, which varies from industry to industry. Recognize that the shorter the amortization period, the less relevant is this adjustment.[15]

Share buybacks. Many investors and companies believe that since share buybacks can increase earnings and ROE, it must also have an effect on ROIC. One of the advantages of ROIC is that share repurchases do not affect it provided you strip out excess cash.

The reasoning is straightforward. Companies can fund buybacks one of two ways: with cash on the balance sheet or with new debt. If it's cash on the balance sheet, it has to be excess cash. So neither NOPAT (which doesn't reflect interest income) nor invested capital will change.

If a company funds a buyback with debt, NOPAT doesn't move because it's financing neutral, and invested capital remains the same because the increase in debt is exactly offset by the decline in equity.

Now it is true that buybacks can affect book value per share. Companies that buy stock at a premium to book value, even in cases where the stock is undervalued, will reduce the company's book value per share. This has no economic relevance, but it makes some companies appear more expensive on a price-to-book basis after the buyback. The ratio of enterprise value to invested capital does not change, however. That ratio is a better indication of the $1 test than the price-to-book ratio.

Incremental ROIC, Return Measures for Financials, and Divisional Analysis

ROIIC. We have discussed how to calculate ROIC. We must now emphasize that it's not the absolute ROIC that matters but rather the change in ROIC. Or, even more accurately, what's crucial is the expectation for changes in ROIC. Needless to say, the markets are not always perfect at anticipating change in ROIC, so having a sense of where ROIC is going can be of great value.[16]

One potentially useful measure is return on incremental invested capital, or ROIIC. ROIIC properly recognizes that sunk costs are irrelevant and that what matters is the relationship between incremental earnings and incremental investments.

The definition of ROIIC is as follows:

$$\text{ROIIC} = \frac{\text{Year}_2\ \text{NOPAT} - \text{Year}_1\ \text{NOPAT}}{\text{Year}_1\ \text{invested capital} - \text{Year}_0\ \text{invested capital}}$$

In words, ROIIC compares the change in NOPAT in a given year to the investments made in the prior year. Let's say a company's year_0 invested capital is $1,000 and it invests $100 during the year (making year_1 invested capital $1,100). Further, earnings from year_1 to year_2 climb from $150 to $170. Given these assumptions, ROIIC is 20 percent [($170-150)/($1,100-1,000)].

For businesses with a volatile pattern of investments or NOPAT, it makes sense to calculate ROIIC on a rolling 3- or 5-year basis. At the other extreme, you can take quarterly changes and annualize them if you want to see if there are any recent trends or improvements. Obviously these results will be the most volatile, but they can give you some insights into how the business is doing.

Exhibit 4 shows both ROIC and ROIIC for Cisco. Note that the 1-year ROIICs are very noisy but settle down for the 3-year result.

Exhibit 4: Calculation of ROIC and ROIIC for Cisco Systems, Inc.

Description	2009	2010	2011	2012	2013
NOPAT	7,692	7,397	7,522	9,307	10,359
Invested capital	20,917	26,734	27,321	27,185	33,616
Average invested capital		23,825	27,027	27,253	30,401
ROIC	**36.8%**	**27.7%**	**27.5%**	**34.2%**	**30.8%**
ROAIC		**31.0%**	**27.8%**	**34.1%**	**34.1%**
ROIIC (1-year)			**2%**	**304%**	**-778%**
ROIIC (3-year)					**47%**

Source: Company published data and Credit Suisse.

High ROIICs generally indicate that a business is either capital efficient or has substantial operating leverage (which often proves transitory). Calculating a company's historical ROIIC can be very helpful in understanding potential earnings moves.

A final note of warning: ROIIC—for a host of technical reasons—is not really an economic measure of value. So use it to determine the likelihood of change and to understand past patterns, but don't compare it with the cost of capital or consider it a true return measure.

Financials. The standard way to value industrial companies is to take the present value of future free cash flows to estimate the enterprise value of the firm, and then subtract debt and other claims to arrive at the value for shareholders. This is appropriate because you can segregate operating and financing decisions. Further, it follows that the weighted average cost of capital is the discount rate to bring future cash flows back to today's value. ROIC is consistent with this approach because it is financing neutral.

For many financial institutions, including banks, financing costs are a component of operations. As a result, you should value a financial company by taking the cash flows attributable to equity holders and discounting them to the present value by the cost of equity capital. Return on equity (ROE) is consistent with this approach. So the principle of discounting cash flows is the same for all companies, but the number that you project and the discount rate that you use is different depending on whether you are analyzing a non-financial or a financial company.[17]

ROE is to financials as ROIC is to industrials. The definition of ROE is as follows:

$$\text{Return on equity (ROE)} = \frac{\text{Adjusted net income}}{\text{Book value of equity}}$$

For a typical large bank, net income would equal net interest income (less provision for credit losses) plus noninterest income (typically comprised of service charges and fees) less expenses (salaries, benefits, etc.) and cash taxes. You can take equity directly off the balance sheet, as a bank's assets and liabilities are meant to be a reasonable reflection of market values. A number of the practical issues we discussed above are also relevant for financials.

Analysis by Division. It is common for ROICs to vary widely for divisions or segments within a multi-business firm. One analysis suggests that all of the value creation in many companies is concentrated in 50 percent of the invested capital.[18] This means that a thoughtful assessment of returns by a business may provide insight into where value is trapped or being squandered. It is common for managers to allocate capital by inertia rather than by what the economics justify.

Financial standards require that public companies disclose information about the segments within their businesses. The goal is to allow outsiders to gain a better understanding of the company's results overall and the prospects for future cash flows. As a result, this disclosure should contribute to a more informed judgment of the company.

The "management approach" is the method to determine what information a company should disclose. The management approach says that the company should disclose information to the public in a way that is consistent with how the company makes decisions and assesses operations internally. To the degree to which companies adhere to this principle, a divisional analysis should provide you with a good sense of how the business is doing through the same lens that management uses to make decisions.[19]

Consistent with this, most companies give some data on divisional, geographic, or segment results. Companies commonly provide data about sales, some measure of profit, and assets. They sometimes provide capital expenditures. Getting from those rough cut numbers to ROICs can take some work, but the effort can produce useful insights. Here are three guides to effective segment analysis.

First, remember that the sum of the divisions has to equal the total for the company. So if you have some sense of the earnings and assets deployed by each division, you can make a rough estimate of how each contributes to the whole. Still, you have to be careful. For instance, the invested capital-to-asset ratio in one geography may be different than that in another because of different methods of product distribution. So you do have to give thought to how the pieces are likely to fit together.

Second, use comparable company analysis. Look at businesses similar to the division you are analyzing and ask whether there are useful parallels to consider. This is a case where comparable company analysis can provoke useful questions and ultimately provide insight into how each business works.

Finally, use your analysis as a basis for discussion with management. The company may tell you that your analysis for one business is way off; but since you know the total number for the company, adjustments in one business have to be offset by adjustments in another. By going back and forth with management and competitors you can quickly sharpen your assessment of divisional economics.

A divisional analysis done properly provides an analyst with a clearer sense of how the company can and should proceed to create value. It also unearths sources of value drag. Not surprisingly, activist investors are among the most astute in breaking down the economics by business.

Return on Invested Capital and Competitive Strategy Analysis

You should not view the calculation of ROIC as an academic exercise. The goal is to understand the magnitude and sustainability of ROICs in excess of the cost of capital. Companies with large excess returns generally have some competitive advantage. A company must meet two tests before you can say it has a competitive advantage. First, the company must earn, or promise to earn, a return in excess of the cost of capital. This is a restatement of the $1 test. Second, it must earn a higher return than its peers.

Our report, "Measuring the Moat: Assessing the Magnitude and Sustainability of Value Creation," develops a framework for this vital analysis.[20] For now, we will focus on how a quick analysis of ROIC indicates whether a company has a competitive advantage and, if so, what lies at the foundation of that advantage.

Bruce Greenwald, a professor at Columbia Business School, argues that there are two sources of competitive advantage: consumer advantage and production advantage. The key to each advantage is the creation of barriers to entry that fend off competition. Barriers to entry are particularly strong when a company enjoys economies of scale, which mean that the cost per unit for the incumbent is lower than that for a challenger.[21]

A consumer advantage is the result of the habitual use of a product, high costs of switching to a new product, or high costs of searching for a superior product. A production advantage allows a company to deliver its goods or services more cheaply than its competitors either as the result of privileged access to inputs or to proprietary technology that is difficult or costly to imitate. A competitive strategy analysis focuses on identifying these sources of advantage and assessing their durability.

ROIC can provide a quick and useful way to guide this analysis. The first step is to recognize that ROIC can be decomposed into two parts (this is a modified version of what is known as a DuPont Analysis):

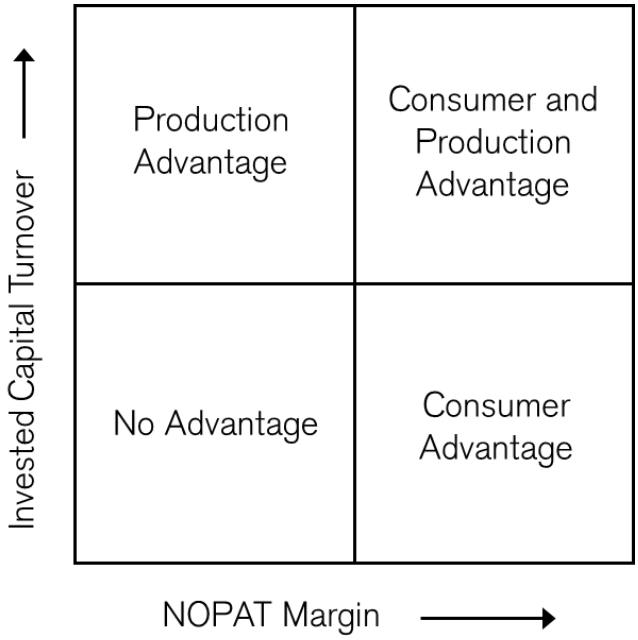
$$\text{Return on invested capital (ROIC)} = \frac{\text{NOPAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Invested Capital}}$$

The ratio of NOPAT/Sales, or NOPAT margin, is a measure of profit per unit. Sales/Invested Capital, or invested capital turnover, is a measure of capital efficiency. When you multiply the terms, sales cancel out and you are left with NOPAT/Invested Capital, or ROIC.

It is easy to imagine two companies arriving at the same ROIC via different paths. A low-cost retailer, for example, may get to a 20 percent ROIC via a 4 percent NOPAT/Sales ratio and a 5 times Sales/Invested Capital ratio, the classic low-margin, high-invested capital turnover business. A luxury goods seller, on the other hand, may reach the same ROIC with a 20 percent NOPAT/Sales ratio and one times invested capital turnover.

Here's the quick analysis: If a company gets to a high ROIC through a high NOPAT margin, you should focus your analysis on a consumer advantage. If the company's high return comes from a high turnover ratio, emphasize analysis of a production advantage. For companies that are high in both, consider how the advantages are reinforced by economies of scale. Exhibit 5 summarizes the point.

Exhibit 5: ROIC and Competitive Advantage



Source: Credit Suisse.

The decomposition of ROIC not only provides a solid sense of where to allocate your energy in assessing advantage, analysis of the components provides a sense of the rate of change. You can do a similar breakdown of ROE for financial institutions, which also allows for an analysis of the contribution of leverage to ROE.

Modeling Future Return on Invested Capital

Reversion to the mean occurs when the results of measuring the same metric over two successive time periods are not perfectly correlated.[22] ROIC is a series that reverts to the mean. That suggests that ROICs that are well above the average have an expected value closer to the average in the future. The same is true for ROICs that are substantially below the average.

The essential considerations are the rate of reversion to the mean and to what mean ROICs revert.[22] The rate of reversion to the mean varies by sector and industry. Sectors such as consumer staples and health care tend to show slower reversion to the mean than technology and energy, where mean reversion is relatively rapid. The median ROIC for the sector or industry is a good starting point for the figure toward which company ROICs are likely to regress.[23]

A sensible model of the path of future ROICs is essential to valuation. Investors who rely primarily on price-earnings (P/E) multiples must recognize that companies that earn an ROIC equal to the cost of capital should trade at a P/E multiple that is the inverse of the cost of equity. For example, a company with an 8 percent ROIC and cost of equity should trade at a 12.5 P/E multiple (1/.08). So the natural path of the P/E multiple over time is toward that baseline figure.[24]

Analysts frequently argue that P/E multiples that have declined over time should revert to some previous level, ignoring the fact that the level of ROIC drives the multiple. Ascribing an appropriate P/E multiple is very difficult without a clear understanding of both the level and trend of ROIC.

Investors who use discounted cash flow models should include a row that shows the ROIIC and overall ROIC levels throughout the forecast horizon. It is common for analysts to model sales, margins, and operating income separately from investments in future growth, including working capital changes and capital expenditures. As a result, the implied ROIIC gets lost in the model. Making ROIC explicit is a reality check on the model.

While ROIC in the aggregate does revert to the mean, under certain conditions companies can enjoy "increasing returns."[25] In these cases, high ROICs do not migrate toward the cost of capital but rather rise. Increasing returns generally occur only when certain conditions are in place. These include high upfront costs, the existence of strong network effects, and cases when a product or service becomes a de facto standard. While not common, analysts should understand the mechanisms behind increasing returns and apply them accordingly.

Summary

A company's primary governing objective is to allocate capital so as to earn a return on capital that is in excess of the cost of capital. The $1 test measures whether a company meets this objective. If one dollar invested in the business is worth more than a dollar in the market, the company has added value.

The goal of investors is to find a mismatch between the expectations built into the stock price and the financial results the company will actually achieve. Part of that assessment is accurately measuring how successfully the company allocates capital. A proper calculation of ROIC can help with that assessment.

While most investment organizations acknowledge the usefulness of return measures including ROIC, they fail to make full use of them for a number of reasons. To begin, analysts within the same organization frequently calculate return measures in different ways, thus diminishing the utility of comparing companies to one another.

There are also a handful of practical issues that an analyst needs to address. These include how to handle excess cash, restructuring charges, and leases. All of these issues are analytically tractable, but analysts must execute the adjustments consistently.

Finally, a thoughtful assessment of economic returns allows for a quick introduction into the sources of competitive advantage and provides guidance for modeling future financial performance. Such an assessment provides an essential link between competitive strategy analysis and valuation.

Endnotes

[1] In his 1984 letter to shareholders, Warren Buffett, chairman and CEO of Berkshire Hathaway, writes, "Unrestricted earnings should be retained only when there is a reasonable prospect - backed preferably by historical evidence or, when appropriate, by a thoughtful analysis of the future - that *for every dollar retained by the corporation, at least one dollar of market value will be created for owners.* This will happen only if the capital retained produces incremental earnings equal to, or above, those generally available to investors." (Emphasis original.)

[2] Clayton M. Christensen and Derek van Bever, "The Capitalist's Dilemma," *Harvard Business Review*, June 2014. See http://hbr.org/2014/06/the-capitalists-dilemma/ar/1.

[3] "The HOLT® Reference Handbook: Key Concepts of the CFROI and CFROE Metric," Credit Suisse HOLT.

[4] Thomas Fritz, *The Competitive Advantage Period and the Industry Advantage Period: Assessing the Sustainability and Determinants of Superior Economic Performance* (Wiesbadan, Germany: Gabler, 2008), 29.

[5] Economic profit is also known as economic value added (EVA®). See G. Bennett Stewart, III, *The Quest for Value: A Guide for Senior Managers* (New York: HarperCollins, 1991).

[6] Deferred taxes arise as a consequence of the two sets of books companies keep: one for shareholders and the other for the government. For shareholders, companies typically show straight-line depreciation. That is, a $1,000 asset with an estimated life of 10 years will generate $100 in depreciation per year. For the government, companies typically use accelerated depreciation, hence depreciating more in the early years and less in the latter years. Accelerated depreciation reduces pretax income, and hence taxes, in the early years, but companies must record the difference between the two sets of books as a deferred tax liability. These are taxes the company will eventually have to pay, so it is a real liability. But for companies that grow through investment in depreciable assets, the deferred tax liability can exist for a long time and hence lower a company's short-term tax burden.

Here are two final points. Companies not only have deferred tax liabilities but also deferred tax assets. Deferred tax assets are what they sound like: Taxes the company paid in advance and hence won't have to pay in the future. In calculating the deferred tax for NOPAT, you should take the net of the deferred tax liability and asset, and calculate the change in that net amount for each year. Since Cisco's deferred tax asset was part of current assets, we left it in net working capital. Second, there are other tax-related items, including tax loss carryforwards and tax assets and liabilities related to non-operating assets. You should reflect these items in your analysis but not in your calculation of NOPAT.

[7] See Aswath Damodaran's website: http://tinyurl.com/orvmul7.

[8] The cash conversion cycle indicates how long it takes a company to collect on the sale of inventory. In cases where the company collects quickly and can pay its suppliers later, the cash conversion cycle is negative and suppliers effectively become a source of financing. The cash conversion cycle (CCC) = days in sales outstanding (DSO) + days in inventory outstanding (DIO) – days in payables outstanding (DPO). DSO = [(Beginning accounts receivable + ending accounts receivable)/2]/(Revenue/365). DIO = [(Beginning inventory + ending inventory)/2]/(Cost of goods sold/365). DPO = [(Beginning accounts payable + ending accounts payable)/2]/(Cost of goods sold/365). For fiscal 2013, Cisco System, Inc.'s CCC was 48.9 days. DSO was 36.9 days, DIO was 29.9 days, and DPO was 18.0 days.

[9] Amy Dittmar and Jan Mahrt-Smith, "Corporate Governance and the Value of Cash Holdings," *Journal of Financial Economics*, Vol. 83, No. 3, March 2007, 599-634.

[10] Michael J. Mauboussin and Dan Callahan, "Disbursing Cash to Shareholders: Frequently Asked Questions about Buybacks and Dividends," *Credit Suisse Global Financial Strategies*, May 6, 2014.

[11] See Aswath Damodaran, "Dealing with Cash, Cross Holdings and Other Non-Operating Assets: Approaches and Implications," *New York University – Stern School of Business*, September 30, 2005. For research conclusions, see Tim Opler, Lee Pinkowitz, René Stulz, and Rohan Williamson, "The Determinants and Implications of Corporate Cash Holdings," *Journal of Financial Economics*, Vol. 52, No. 1, April 1999, 3-46.

[12] ROIC is a very poor way to assess M&A. The right way to think about M&A is net present value: do the present value of future cash flows, including the benefit of synergies, exceed the purchase price? If so, the deal creates economic value. Think of a simple investment like opening a restaurant. Let's say the restaurant costs $1 million to open. What will the day one ROIC look like? It will be awful, because the numerator is small and the denominator is large. Fast forward 15 years, and the ROIC can be huge—the numerator may be large and the denominator small as assets depreciate. Neither the low initial ROIC nor the high subsequent ROIC indicate whether the restaurant created shareholder value. The same math applies for M&A.

[13] Stewart, 112-117.

[14] See http://tinyurl.com/drc88 and select "oplease.xls."

[15] Aswath Damodaran has a very useful spreadsheet to guide this analysis as well.
See http://tinyurl.com/drc88 and select "R&DConv.xls."

[16] Michael J. Mauboussin and Dan Callahan, "Economic Returns, Reversion to the Mean, and Total Shareholder Returns: Anticipating Change Is Hard but Profitable," *Credit Suisse Global Financial Strategies*, December 6, 2013.

[17] For an excellent discussion of valuing banks, see Tim Koller, Marc Goedhart, and David Wessels, *Valuation: Measuring and Managing the Value of Companies, 5th Edition* (Hoboken, NJ: John Wiley & Sons, 2010), 741-764.

[18] James M. McTaggart, Peter W. Kontes, and Michael C. Mankins, *The Value Imperative: Managing Superior Shareholder Returns* (New York: Free Press, 1994), 241.

[19] See http://www.iasplus.com/en-us/standards/fasb/presentation/asc280.

[20] Michael J. Mauboussin and Dan Callahan, "Measuring the Moat: Assessing the Magnitude and Sustainability of Value Creation," *Credit Suisse Global Financial Strategies*, July 22, 2013.

[21] Bruce Greenwald and Judd Kahn, *Competition Demystified: A Radically Simplified Approach to Business Strategy* (New York: Portfolio, 2005).

[22] Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus and Giroux, 2011), 181.

[23] Michael J. Mauboussin, Dan Callahan, Bryant Matthews, and David A. Holland, "How to Model Reversion to the Mean: Determining How Fast, and to What Mean, Results Revert," *Credit Suisse Global Financial Strategies*, September 17, 2013.

[24] Michael J. Mauboussin and Dan Callahan, "What Does a Price-Earnings Multiple Mean? An Analytical Bridge between P/Es and Solid Economics," *Credit Suisse Global Financial Strategies*, January 29, 2014.

[25] W. Brian Arthur, "Increasing Returns and the New World of Business," *Harvard Business Review*, July-August 1996, 100-109.

Appendix A: Cash Flow Return on Investment

Cash Flow Return on Investment (CFROI) measures a company's economic returns by capturing its inflation-adjusted cash flow return on operating assets. Through the use of CFROI, HOLT seeks to avoid the vagaries of accounting standards in order to provide managers and investors with a consistent metric of performance over time. CFROI allows investors to compare results across a portfolio, market, or universe of companies.

HOLT uses two steps to calculate CFROI. First, HOLT measures the inflation-adjusted gross cash flows available to all capital owners, and compares that sum to the inflation-adjusted gross investment that the capital owners made. Second, HOLT translates this ratio into an internal rate of return (IRR) by recognizing that depreciating assets have a finite economic life and by reflecting the residual value of non-depreciating assets.

CFROI applies to industrial and service firms but we need to use Cash Flow Return on Equity (CFROE) to analyze companies in the financial services sector. Similar to CFROI, the calculation of CFROE requires adjustments to better reflect economic value. But CFROE also takes into account that lenders use the liability side of the balance sheet to generate value, so it narrows the analysis to the gross cash flows for equity holders. The global averages for CFROI and CFROE are 6 percent and 7.5 percent, respectively, over the long term.

The chart on the cover includes the non-financial constituents of the S&P 500 as of May 31, 2014 (all figures are for the latest fiscal year). The horizontal axis shows the spread between a company's CFROI and its discount rate, and the vertical axis is the ratio of the company's enterprise value to its inflation-adjusted gross investment. We can say that companies that have a ratio of enterprise value to gross investment greater than 1.0 have passed the $1 test.

HOLT calculates enterprise value as market capitalization plus HOLT debt and equivalents, plus the market value of minority interest, minus cash and short-term investments.

HOLT's inflation-adjusted gross investment includes non-depreciating and depreciating assets. Non-depreciating assets include primarily net working capital and land. Depreciating assets include primarily gross plant, leased property, and capitalized R&D.

Appendix B: Cisco Systems, Inc. Historical Financial Statements

Income Statement

		2009	2010	2011	2012	2013
(1)	Net sales	36,117	40,040	43,218	46,061	48,607
(2)	Cost of goods sold	13,023	14,397	16,682	17,852	19,167
(3)	Gross income	23,094	25,643	26,536	28,209	29,440
	Gross margin	63.9%	64.0%	61.4%	61.2%	60.6%
(4)	Research & development	5,208	5,273	5,823	5,488	5,942
(5)	Sales and marketing	8,403	8,716	9,812	9,647	9,538
(6)	General and administrative	1,565	1,999	1,908	2,322	2,264
(7)	Amortization of intangibles	533	491	520	383	395
(8)	In-process R&D/other	63	0	799	304	105
(9)	Operating income	7,322	9,164	7,674	10,065	11,196
(10)	Operating margin	20.3%	22.9%	17.8%	21.9%	23.0%
(11)	Interest income (net)	499	12	13	54	71
(12)	Other income (loss), net	(128.0)	239.0	138.0	40.0	(40.0)
(13)	Pretax income	7,693	9,415	7,825	10,159	11,227
(14)	Income tax provision	1,559	1,648	1,335	2,118	1,244
(15)	Net income	6,134	7,767	6,490	8,041	9,983
(16)	Earnings per share	$1.05	$1.36	$1.17	$1.50	$1.87
(17)	Shares outstanding	5,828	5,732	5,529	5,370	5,329
(18)	Tax rate	20.3%	17.5%	17.1%	20.8%	11.1%
(19)	Depreciation	1,235	1,539	1,966	2,219	1,956
(20)	Amortization	533	491	520	383	395

	Balance Sheet	2009	2010	2011	2012	2013
	Current assets					
(26)	Cash and cash equivalents	5,718	4,581	7,662	9,799	7,925
(27)	Short-term investments	29,283	35,280	36,923	38,917	42,685
(28)	Accounts receivable	3,177	4,929	4,698	4,369	5,470
(29)	Inventories	1,074	1,327	1,486	1,663	1,476
(30)	Deferred tax assets	2,320	2,126	2,410	2,294	2,616
(31)	Prepaid and other	2,605	3,178	4,052	4,891	5,349
(32)	Total current assets	44,177	51,421	57,231	61,933	65,521
(33)	Net PPE	4,043	3,941	3,916	3,402	3,322
(34)	Goodwill	12,925	16,674	16,818	16,998	21,919
(35)	Purchased intangibles	1,702	3,274	2,541	1,959	3,403
(36)	Other assets	5,281	5,820	6,589	7,467	7,026
(37)	**Total assets**	68,128	81,130	87,095	91,759	101,191
	Current liabilities					
(38)	Short-term debt	0	3096	588	31	3,283
(39)	Accounts payable	675	895	876	859	1,029
(40)	Income taxes payable	166	90	120	276	192
(41)	Accrued compensation	2,535	3,129	3,163	2,928	3,378
(42)	Deferred revenue	6,438	7,664	8,025	8,852	9,262
(43)	Other accrued liabilities	3,841	4,359	4,734	4,785	5,048
(44)	Total current liabilities	13,655	19,233	17,506	17,731	22,192
(45)	Long term debt	10,295	12,188	16,234	16,297	12,928
(46)	Income taxes payable	2,007	1,353	1,191	1,844	1,748
(47)	Deferred revenue	2,955	3,419	4,182	4,028	4,161
(48)	Other	539	652	723	558	1,034
(49)	Minority interest	30	18	0	0	0
(50)	Common stock and paid capital	34,344	37,793	38,648	39,271	42,297
(51)	Retained earnings + accumulated comp	4,303	6,474	8,611	12,030	16,831
(52)	Total common shareholders' equity	38,647	44,267	47,259	51,301	59,128
(53)	**Total liabilities and shareholders' equity**	68,128	81,130	87,095	91,759	101,191

	Statement of Cash Flows	2009	2010	2011	2012	2013
	Operating activities					
(54)	Net income	6,134	7,767	6,490	8,041	9,983
(55)	Depreciation and amortization	1,768	2,030	2,486	2,602	2,351
(56)	Stock-based compensation	1,231	1,517	1,620	1,401	1,120
(57)	Provision for doubtful accounts	54	44	7	50	44
(59)	Deferred income taxes	(574)	(477)	(157)	(314)	(37)
(61)	Excess tax benefits from stock-based compensation	(22)	(211)	(71)	(60)	(92)
(62)	In-process R&D	63	0	0	0	0
(63)	Changes in investments	80	(223)	(213)	(31)	9
	Changes in working capital, net of businesses acquired and sold:					
(65)	Accounts receivable	610	(1,528)	298	272	(1,001)
(66)	Inventories	187	(158)	(147)	(287)	218
(67)	Prepaid expenses, other	(780)	(639)	(1,534)	(846)	(723)
(68)	Lease receivables, net	(222)	(387)	275	(674)	(27)
(69)	Accounts payable	(208)	139	(28)	(7)	164
(68)	Income taxes payable	768	55	(156)	418	(239)
(70)	Accrued compensation	175	565	(64)	(101)	330
(71)	Deferred revenue	572	1,531	1,028	727	598
(72)	Other accrued liabilities	61	148	245	300	196
	Net cash provided from operating activities	9,897	10,173	10,079	11,491	12,894
	Investing activities:					
(73)	Acquisition of property, plant and equipment	(1,005)	(1,008)	(1,174)	(1,126)	(1,160)
(74)	Acquisition of businesses, net	(426)	(5,279)	(266)	(375)	(6,766)
(75)	Change in investments in private companies	(89)	(79)	(41)	(138)	(16)
(77)	Purchases of ST investments					
(78)	Proceeds from sale of ST investments					
(79)	Purchase of investments	(41,225)	(48,690)	(37,130)	(41,810)	(36,608)
(80)	Proceeds from sale of investments	32,825	42,997	35,655	39,468	32,708
(81)	Other	(39)	128	22	166	74
	Net cash used in investing activities	(9,959)	(11,931)	(2,934)	(3,815)	(11,768)
	Financing activities:					
(82)	Issuance of common stock	863	3,278	1,831	1,372	3,338
(83)	Repurchase of common stock	(3,611)	(7,864)	(6,896)	(4,760)	(3,103)
(84)	Issuance of common debt	3,991	4,985	4,621	(557)	4
(85)	Repayments of debt	(500)		(3,113)	0	(16)
(86)	Excess tax benefits from stock-based compensation	22	211	71	60	92
(87)	Dividends			(658)	(1,501)	(3,310)
(88)	Other items, net	(176)	11	80	(153)	(5)
	Net cash provided from (used in) financing activities:	589	621	(4,064)	(5,539)	(3,000)
(89)	**Increase (decrease) in cash and equivivalents**	527	(1,137)	3,081	2,137	(1,874)
(90)	Cash and cash equivalents at beginning of year	5,191	5,718	4,581	7,662	9,799
(91)	**Cash and cash equivalents at end of year**	5,718	4,581	7,662	9,799	7,925

Source: Company published data and Credit Suisse.

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