

# IBM

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## Company Overview

IBM operates broadly through four main segments:

1. **Hardware:** This business includes mainframe, Unix, x86 based servers, disk/tape storage, and semiconductors. Historically, this business has been a dominant share of the company's revenues but has been de-emphasized over the last two decades. It now accounts for about \$10 billion in sales.
2. **Software:** This consists of middleware (WebSphere, Tivoli, Rational, Lotus) and operating systems. Company estimates two thirds of the revenue to be recurring license and support fees and the rest consists of one time fees for a perpetual license. Revenues of about \$25 billion. Key metric is growth of the middleware revenues as it represents two thirds of the revenues in this segment and subject to competition from several focused companies.
3. **Services:** Provides consulting and outsourcing services typically via long term contracts. Revenues of about \$55 billion. About 70% of the revenues are generated from long term contracts. Currently the long term contract backlog is about \$140 billion. This is a key metric to watch as it is a driver of future revenue.
4. **Financing:** Provides lease and loan financing for customer purchases of IBM products and services. Revenues of about \$2 billion. This should grow in line with revenues from the above three segments.

## Competitive Advantage

Given the company's near death experience just over two decades ago, it would seem preposterous to suggest an enduring competitive advantage to IBM. The fact that IBM had been able to come out of such a predicament by transforming into a services company along with strong returns on capital for the past two decades indicates otherwise.

1. IBM has an existing relationship with lots of the companies, where it is already providing a product or a service. IBM products (middleware and operating systems) provide the platform on which applications connect with other applications. Replacing them would entail significant cost, effort and risk to the customer. Similarly when a company enters into an outsourcing contract with IBM, it would be very expensive to bring it back in house. Unless, there is a very compelling need, customers would not actively look for alternatives due to these switching costs.
2. Some of IBM's competitive advantage could be explained by incentives of the people who make decisions regarding purchase of IT products and services. Most of the products and services that IBM sells are aimed at large established companies or government organizations. The decision makers in these organizations are frequently CIO, CTO, or mid level management whose career risk is sharply minimized if they chose to go with an established and reputed vendor. Given its history, IBM is nearly unmatched on this criterion. To put simply, as the saying goes, "No one ever got fired for buying IBM". So as long as IBM's products and services are roughly on par with its competitors it has at least an even chance of getting the customer's business.
3. IBM's counts most of the large companies as its customers with its services group embedded in these companies IT operations. This provides IBM with deep knowledge of the customers business and their problems, providing it with a leg up on competition when customers are ready to buy.

## Business Risks

1. Much of IBM's success in the past two decades is based on good decisions made by management. They focused on reducing costs, meeting customer core needs, migrating to higher margin businesses, paying rational prices for businesses that could complement their other products and an extremely shareholder friendly capital management policy. To the extent they deviate from these policies, business and intrinsic value would deteriorate. In other words, they need good management to succeed.
2. IBM has a pension liability north of \$100 billion. Although it has assets that nearly match this liability, changes in interest rates or asset values could cause potentially large deficits that IBM needs to cover.

## Valuation

IBM uses operating earnings to measure management's performance excluding items that are not in management control. However, as investors we should use normalized earnings that the company as a whole generates, whether they are in management control or not, to estimate its value.

To value IBM, we need to

1. Determine normalized earnings removing non-operating items and adjusting for extraordinary, non-recurring and unusual items.
2. Assess how much of the normalized earnings are translating into free cash flows.
3. Estimate current owners earnings by qualitatively assessing the sustainability of revenues and current profit margins of about 15% as they have nearly doubled over the last 14 years.

## Normalized Earnings Adjustments

Taking a look at IBM's performance over the last 14 years (the period 2001 to 2014 chosen to cover two complete business cycles) provides a basis for estimating the normalized earnings generated by the company in the past. Over this period, IBM had steadily grown total earnings by about 6% annually while total revenues remained the same. Earnings per share have grown by 9% due to share buybacks.

The following table summarizes the unusual items reported in earnings for the period from 2001 to 2014. Detailed financials are in the Appendix.

Totals for the 14 years from 2001 to 2014 (\$ billions) – Potential Adjustments to Reported Earnings		
Workforce Rebalancing (last 12 years only)	Amortization of Acquired Intangible Assets	Gain on Asset Sale
\$9	\$4	\$8

- IBM has a policy of continuously rightsizing its workforce, incurring expenses regularly. These are already included in earnings and since these would reoccur in future, we do not need to make any adjustment.
- Amortization of acquired intangibles is not a true expense as the company does not need to spend money to replace these assets. Thus \$4 billion should be added back.
- IBM periodically sells low margin business where it has little competitive advantage and as a result generates gains or losses. These gains or losses are not core to IBM business and \$8 billion should be deducted.

Thus only a minor adjustment of \$4 billion need to be deducted over the full 14 year period during which IBM generated \$156 billion in earnings.

### *Earnings to Cash Flow Conversion*

Comparing reported income with cash flow statements over the last 14 years, we can see how normalized earnings are translating into cash flow.

The following table summarizes the reconciliation between net income and operating cash flow for the period from 2001 to 2014. Detailed financials for this period are in the Appendix.

Totals for the 14 years from 2001 to 2014 (\$ billions) – Net Income to Operating Cash Flow Reconciliation								
Reported Net Income	Depreciation & Amortization	Retirement	Deferred Taxes	Receivables	Misc.	Gain on Asset Sale	Others	Reported Operating Cash Flow
\$156	\$68	(\$22)	\$13	\$10	\$11	(\$8)	\$8	\$237

Totals for the 14 years from 2001 to 2014 (\$ billions) – Capital Expenditures & Dispositions			
Property Plant & Equipment	Property Dispositions	Investment in Software	Acquisitions net of Divestures
\$59	\$10	\$9	\$30

- Maintenance Capex:** Total depreciation and amortization from 2001 to 2014 is \$68 billion. Over the same period the company has spent \$59 billion in Property, Plant and Equipment (PPE) and a further \$9 billion on Investment in Software for a total capital expenditure of \$68 billion. While IBM's overall revenues have grown very modestly, the company revenues have shifted to higher margin business lines. This suggests that there is some capital expenditure directed to growth within the \$68 billion total capex, but conservatively we estimate that this entire amount represents maintenance capex.

As capex matches the depreciation and amortization expense no adjustment to owner's earnings is needed.

- Pension Payments (Retirement):** This is a bit convoluted due to pension accounting. The \$22 billion total on the cash flow statement shown above represents the additional cash contribution IBM made to fund the various defined benefit retirement plans beyond what has been expensed on the income statement.

IBM had to make these additional contributions since discount rates used to calculate pension benefits dropped from about 7% to 4% and expected growth of plan assets dropped from 10% to 8% over this period.

Owner's earnings should be reduced by about \$22 billion for the last 14 years. Assuming interest rates would continue to remain low and with a current pension deficit of \$17 billion, additional contributions to pensions would be needed going forward.

Given that most of the defined benefits plans have been locked and there are tax benefits to pension contributions, we would estimate retirement liability at an annual rate of about \$1 billion. This is also roughly the additional annual cash contribution made by IBM over the last 5 and 10 years.

Owner's earnings would thus need to be reduced by \$1 billion annually.

- **Deferred Taxes:** These are generated from a number of different items and totaled \$13 billion over the past 14 years. By definition these would be reversed sometime in the future.

We treat this as non-recurring so would not count on this towards owner's earnings.

- **Receivables:** IBM has generated about \$10 billion of cash flow over the past 14 years from this. However, this is highly cyclical and periodically goes through a few years of positive cash flow followed by a few years of negative cash flow. The past 14 year period incorporates only one and half such cycle. Going back to 16 years would have generated net zero cash flow from this (Cash flow from 1998-2000 is a negative \$9 billion).

Thus, no adjustment is needed for this.

- **Miscellaneous:** This is a catch all that includes several items and totaled \$13 billion. The most significant item is \$8 billion from stock compensation. This cannot be considered as contributing to operating cash flow and should not be included here. The remaining \$5 billion in cash flow is due to changes in inventories, accounts payables and other assets. These are all onetime events and cannot contribute to owner earnings on a sustainable basis.

Thus, no adjustment is needed for this.

- **Gain on Asset Sale and Others:** These two roughly cancel each other out and no adjustment is needed.

Summary of adjustments to normalized earnings and free cash flow		
	Normalized Earnings	Non-Recurring
Reported Net Income	\$156 billion	
Maintenance Capex	none	
Retirement	-\$22 billion	
Deferred Taxes		\$13 billion
Receivables		\$10 billion
Miscellaneous		\$11 billion
Asset Sale	-\$4 billion	
Total	\$130 billion	\$34 billion

Over the last 14 years IBM has reported earnings of \$156 billion, of this about \$130 billion can be considered owner's earnings. It is also able to release an additional \$34 billion in cash from optimizing its business, but these are unlikely to be repeatable.

Thus, we see that with the exception of retirement expenses, IBM earnings are of very high quality, translating each dollar of earnings into at least a dollar of free cash flow.

### *Owners Earnings*

IBM has followed a program of divesting itself of low margin business and acquiring higher margin software/services business which have a recurring revenue stream. Margins in these businesses are both high and stable. IBM also had a continuous program of workforce and process optimization that resulted in considerable cost savings. These two programs have contributed to the increase in net margins and there is

strong likelihood that these margins would at least persist if not improve. Thus the margins the last few years provide a reasonable base on which to value the company.

<b>Segment Revenue Growth</b>			
	<b>2001</b>	<b>2014</b>	<b>Annualized Growth Rate</b>
Global Services	\$34,956	\$54,955	3.5%
Software	\$12,939	\$25,434	5.3%
Systems and Technology	\$33,695	\$9,996	-8.9%
Global Financing	\$3,407	\$2,034	-3.9%

Nearly two thirds of the Services and Software segments are annuity like with recurring revenue streams. Nearly the entire decline in revenues is a result of divestures in the hardware segment (Systems and Technology) which now represents only 10% of the total revenues. Thus current revenues are unlikely to go lower and thus serve as a solid base on which to estimate normalized earnings.

To determine owners earnings we use average of Income from Continuing Operations (GAAP) from the last 5 years and adjust for retirement expenses and amortization of acquired intangibles. We can do this since the analysis above indicated that net income is a close approximation to owner's earnings once we adjust for retirement expenses. We base it on Income from Continuing Operations, instead of net income to account for divestures.

<b>Adjusted Income Statement (\$ millions)</b>					
	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>
Net Income	12,022	16,483	16,604	15,855	14,833
Loss from discontinued Operations (net of tax)	(3,729)	(398)	(395)	(253)	(249)
Income from Continuing Operations (GAAP)	15,751	16,881	16,999	16,108	15,082
Acquisition related adjustment (net of tax)	670	747	641	495	443
Retirement related adjustment (net of tax)	280	729	381	(32)	(253)
Operating Earnings or (non-GAAP) Income from Continuing Operations	16,702	18,356	18,022	16,571	15,272

- GAAP Income from Continuing Operations averaged \$16 billion over the last 5 years.
- Add back \$0.3 billion annual amortization of acquired intangibles.
- Deduct annual retirement contributions of \$1 billion.
- Adjusting for all the above, the current normalized earnings are \$15.3 billion on revenues of \$92.8 billion or net margin of about 16.5%. Based on year end 2014 shares outstanding of 991 million, owners earnings per share is \$15.

### ***Intrinsic Value***

IBM is generating very high returns on invested capital and the earnings growth was accomplished with very little incremental capital. Net tangible assets actually declined over the period and the growth in net assets is entirely due to goodwill from acquisitions. This suggests that either those acquisitions are in fact adding value and contributing to earnings growth or there is lot of growth Capex hidden in SG&A.

Thus the owner's earnings as calculated above are truly available as cash flow that could be freely distributed to the owners. Further, the owner's earnings are estimated very conservatively, for example, incorporating recurring restructuring charges for optimizing business operations but not factoring in any further improvements to margins.

A typical S&P 500 company historically traded at a PE multiple of 14 and had to invest significant portion of its earnings into its operations just to maintain their current level of profitability. IBM is an above average business with little need to reinvest any of its earnings into its business. This suggests that a higher PE multiple, like 15 could be justified.

Given an owner's earnings per share of \$15, intrinsic value is about \$225 per share.

Normalized Earning Power	Earnings Multiple	Intrinsic Value	2017 Earnings Conservative	2017 Earnings Optimistic	2017 YE Price Conservative	2017 YE Price Optimistic
\$15	15	\$225	\$17	\$19	\$255	\$290

**2017 Earnings Conservative** are earnings that assume no revenue growth and change to operating margins but assumes \$25 billion of buybacks would be completed by 2017 YE to retire 110 million shares leading to a share count of 880 million.

**2017 Earnings Optimistic** are earnings that assume that revenue increases by 3% annually to \$101 billion and net margins improve to 17% (20 bps each year) along with the above share repurchases.

## Appendix

1. IBM is contributing on average about \$2 billion over the last 12 years to retirement plans. Did not understand why these contributions are being made; if these contributions are hitting the income statement; how they are being accounted for; and if these contributions needs to be made in future and if so how much?

### Research

PBO is the best guess as to the present value of the discounted liabilities assuming the employees keep working and salaries keep rising. Unrecognized actuarial gains/losses as well as unrecognized prior service costs/benefits are adjustments to the PBO due to various reasons, e.g., changing average employee life, loss/gain on actual assets, salary increase rate, you name it. However, when these numbers are assessed they are not expensed immediately as that would make the PBO volatile.

The application of accrual accounting means that actual cash flows are not counted each year. Rather, the computation of the annual pension expense is based on rules that attempt to capture changing assumptions about the future.

The above explains why cash contributed to the pension plan (shown on the CFO statement) bears little, if any, resemblance to the pension expense (also known as "pension cost") that is reported on the income statement and reduces reported earnings.

Pension expense is not necessarily equal to the cash flow (contribution to plan assets)

If contributions > pension expense, then treat as if you are prepaying a liability and as a result you reclassify from CFO to CFI.

The excess contribution decreased the tax bill and you want to determine the net effect on operating cash flow. We add back that excess charge (net of tax savings) back to CFO to arrive at a normalized CFO.

**Adjustment that needs to be made:** Look at the footnotes of the pension expense and determine the amount of the pension expense (the amount that is charged in the income statement) and look at the cash flow statement to determine the amount that the company actually paid to the retirement plans. The difference between the two would determine that amount that needs to be adjusted from owner earnings. If the pension expense is closer to the actual expense then use it or else rely on the actual contribution as the more realistic pension payment that needs to be made. (This adjustment is wrong.)

When the company is using the indirect method for cash flow statement. The company does the following

- a) Reverse charge for pension expense (current service cost, past service cost, expected return on plan assets) as they are non-cash.
- b) Subtract cash contribution paid into pension plan asset.

So the retirement amount shown on the operating cash flow part is really a combination of (a) and (b). Thus this amount shows the additional cash contribution beyond what is expensed.

2. IBM is reporting deferred taxes of about \$1.25 billion on average over the last 12 years. Did not understand what is causing these deferred taxes; if they would be reversed in future; and what sort of deferred taxes could be expected in future. If company indeed had deferred taxes of \$15 billion over the last 12 years, why does it not show up as a deferred tax liability in the 2012 FS?

## Research

A deferred tax asset must also be recognized because prior service cost and pension losses increase the benefits that will be paid to retired employees in the future. When these benefits are paid, the company will take a tax deduction for the benefit payments, decreasing future taxes. The related deferred tax benefit must be recognized in OCI as an offset to the unrecognized prior service cost or pension loss.

Pension expense.... will increase the expenses, reduces fin income thus reduces taxes now therefore results in DTA which will reverse in the years ahead when the pension benefits get paid

A deferred tax liability means that the company has paid lower cash taxes in the current period than what it has reported on the income statement. Thus you add back the increase in deferred tax liability in the current period to the Net Income to get the correct Operating Cash Flow.

**Adjustment that needs to be made:** Deferred taxes are composed of several different items, but pensions constitute about 50% of the deferred taxes. As pension cost estimates are revised (primarily due to lower discount rates) upwards, company needs to book losses (in OCI) that reduce its taxes. However, it cannot get the tax deduction until the benefits are actually paid out.

The other half of the deferred taxes is spread among lots of other things.

### 3. How is IBM defining operating earnings?

#### **Operating (Non-GAAP) Earnings Per Share and Related Income Statement Items**

Management presents certain financial measures excluding the effects of certain acquisition-related charges, non-operating retirement-related costs, and any related tax impacts. Management uses the term "operating" to describe this view of the company's financial results and other financial information. For acquisitions, these measures exclude the amortization of purchased intangible assets and acquisition-related charges such as in-process research and development, transaction costs, applicable restructuring and related expenses, and tax charges related to acquisition integration. For retirement related costs, the company has characterized certain items as operating and others as non-operating. The company includes service cost, amortization of prior service cost and the cost of defined contribution plans in its operating results.

Non-operating retirement-related costs include interest cost, expected return on plan assets, amortized actuarial gains/losses, the impacts of any plan curtailments/settlements, multi-employer plan costs, pension insolvency costs, and other costs. Non-operating costs primarily relate to changes in pension plan assets and liabilities which are tied to market performance, and management considers these costs to be outside the operational performance of the business. Management's calculation of these operating measures, as presented, may differ from similarly titled measures reported by other companies.

Overall, management believes that providing investors with an operating view as described above provides increased transparency and clarity into both the operational results of the business and the performance of the company's pension plans, improves visibility to management decisions and their impacts on operational performance, enables better comparison to peer companies, and allows the company to provide a long term strategic view of the business going forward. For the 2015 earnings per share roadmap, the company is utilizing an operating view to establish its objectives and track its progress. The company's segment financial results and performance reflect operating earnings, consistent with the company's management and measurement system.



## **Cash Flow**

Management uses a free cash flow measure to evaluate the company's operating results, plan share repurchase levels, evaluate strategic investments and assess the company's ability and need to incur and service debt. The entire free cash flow amount is not necessarily available for discretionary expenditures. The company defines free cash flow as net cash from operating activities less the change in Global Financing receivables and net capital expenditures, including the investment in software. A key objective of the Global Financing business is to generate strong returns on equity, and increasing receivables is the basis for growth. Accordingly, management considers Global Financing receivables as a profit generating investment, not as working capital that should be minimized for efficiency. Therefore, management includes presentations of both free cash flow and cash flow from operations that exclude the effect of Global Financing receivables.

**IBM Financials from 2001 to 2014 (\$ millions)**

	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
<b>Income Statement</b>														
Revenue	92793	99751	104,507	106,916	99,870	95,758	103,630	98,786	91,424	91,134	96,293	89,131	81,186	83,067
Total Cost	46386	51246	54,209	56,778	53,857	51,973	57,969	57,057	53,129	54,602	60,724	56,113	50,902	51,178
SGA	23180	23502	23,553	23,594	21,837	20,952	23,386	22,060	20,259	21,314	20,079	17,852	18,738	17,048
R&D	5437	6226	6,302	6,258	6,026	5,820	6,337	6,153	6,107	5,842	5,874	5,077	4,750	4,986
IP	(742)	(822)	(1,074)	(1,108)	(1,154)	(1,177)	(1,153)	(958)	(900)	(948)	(1,169)	(1,168)	(1,100)	(1,476)
Other	(1,938)	(327)	(843)	(20)	(787)	(351)	(298)	(626)	(766)	(2,122)	(23)	238	227	(353)
Int Exp	484	402	459	411	368	402	673	611	278	220	139	145	145	234
Taxes	4,234	3,041	5,298	5,148	4,890	4,713	4,381	4,071	3,901	4,232	3,172	3,261	2,190	3,304
Net Income	12,022	16,483	16,604	15,855	14,833	13,425	12,334	10,418	9,492	7,934	7,479	7,583	3,579	7,713
<b>Operating Cash Flow</b>														
Depreciation	3,145	3,327	3,392	3,589	3,657	3,773	4,140	4,038	3,907	4,147	3,959	3,961	3,691	3,881
Amortization	1,347	1,351	1,284	1,226	1,174	1,221	1,310	1,163	1,076	1,041	956	740	688	625
Stock Comp	512	614	688	697	629	558	659	713	846	1,043	1,578	0	0	0
Def Taxes	(237)	(1,610)	797	1,212	1,294	1,773	1,900	740	1,724	2,185	1,794	1,126	(67)	664
Net Gain Asset Sale	(1,535)	(236)	(729)	(342)	(801)	(395)	(338)	(89)	(175)	(1,525)	(420)	(275)	(343)	(340)
Receivables	1,270	(1,407)	(2,230)	(1,279)	(489)	2,131	274	(1,408)	(512)	2,219	2,613	2,024	4,125	2,837
Retirement	(655)	294	(1,008)	(1,371)	(1,963)	(2,465)	(1,773)	(228)	(850)	(1,728)	(1,868)	(1,695)	(4,144)	(2,796)
Inventories	(39)	(57)	280	(163)	92	263	(102)	182	112	202	(291)	293	793	287
Other	(1,886)	(747)	733	(28)	949	319	1,268	706	(885)	(100)	(900)	115	2,358	206
AP	(456)	(529)	(224)	451	174	170	(860)	(142)	355	(536)	411	617	(55)	(918)
Operating Cash Flow	16,868	17,485	19,586	19,846	19,549	20,773	18,812	16,094	15,019	14,914	15,349	14,569	13,788	13,966
<b>Investing Cash Flow</b>														
PPE	(3,740)	(3,623)	(4,082)	(4,108)	(4,185)	(3,447)	(4,171)	(4,630)	(4,362)	(3,842)	(4,368)	(4,393)	(4,753)	(5,400)
Disp Prop	404	372	410	608	770	330	350	537	430	1,107	1,311	1,039	775	1,149
Inv Software	(443)	(517)	(635)	(559)	(569)	(630)	(716)	(875)	(804)	(792)	(688)	(581)	(597)	(655)
Acquisitions	(656)	(3,056)	(3,722)	(1,811)	(5,922)	(1,194)	(6,313)	(1,009)	(3,799)	(1,482)	(1,738)	(1,836)	(3,158)	(916)
Divestitures	2,357	297	599	14	55	400	71	310	0	932	25	97	1,233	0
<b>Financing Cash Flow</b>														
Stock Repurchase	(13,679)	(13,859)	(11,995)	(15,046)	(15,375)	(7,429)	(10,578)	(18,828)	(6,399)	(6,506)	(5,361)	(3,232)	(3,087)	(3,652)
Stock Sale (Employee)	709	1,074	1,540	2,453	3,774	3,052	3,774	4,123	0	0	0	0	0	0
Dividends	(4,265)	(4,058)	(3,773)	(3,473)	(3,177)	(2,860)	(2,585)	(2,147)	(1,683)	(1,250)	(1,174)	(1,085)	(1,005)	(966)

<b>Balance Sheet</b>														
Current Assets	49,422	51,350	49,433	50,928	48,116	48,935	49,004	53,177	44,660	45,661	46,970	44,662	41,652	42,461
Net PPE	10,771	13,821	13,996	13,883	14,096	14,165	14,305	15,081	14,440	13,756	15,175	14,689	14,440	16,504
Receivables	11,109	12,755	12,812	10,776	10,548	10,644	11,183	11,603	10,068	9,628	10,950	10,741	11,440	12,246
Good Will	30,556	31,184	29,247	26,213	25,136	20,190	18,226	14,285	12,854	9,441	8,437	6,921	4,115	1,278
Intangible Assets	3,104	3,871	3,787	3,392	3,488	2,513	2,878	2,107	2,202	1,663	1,789	1,724	0	0
Total Assets	117,532	126,223	119,213	116,433	113,452	109,022	109,524	120,431	103,234	105,748	109,183	104,457	96,484	90,303
Current Liabilities	39,600	40,154	43,625	42,123	40,562	36,002	42,435	44,310	40,091	35,152	39,798	37,623	34,550	35,119
Long Term Debt	35,073	32,856	24,088	22,857	21,846	21,932	22,689	23,039	13,780	15,425	14,828	16,986	19,986	15,963