

## WDC: Time to be optimistic

**Summary:** Western Digital—the leading Hard Disk Drive (HDD) maker—has been feeling the pressure in the past 12 months due to an accelerated decline in PC sales and increased adoption of Solid State Drive (SSD). Last year, the company acquired SanDisk, an SSD maker, to diversify its business. The market thought that Western Digital paid an unjustifiably high price for SanDisk at a time when the competition in the SSD market was heating up due to 3D NAND technology. The company’s stock price declined from \$100 to \$37. However, this acquisition has the potential to fundamentally change the risk profile of WDC in the impending technology shift. Despite short-term headwinds, the storage market will grow in the long term and Western Digital is best positioned to benefit.

### Investment Thesis

#### • Before acquisition, a dominant player in a declining HDD market

The HDD market came a long way via consolidation to reach the state of triopoly in 2012. Western Digital (43%), Seagate (42%), and Toshiba (15%) have since maintained a balanced market and earned decent returns. During this period, Western Digital achieved a 28%/22% Gross/EBITDA margin and maintained an average ROIC of 14%. However, nothing is static in technology, especially for commoditized hardware. The emergence of SSD has slowly intruded into the HDD market. The development of 3D NAND may further lower the cost of SSD and break the balance in the HDD triopoly.

#### • An underestimated acquisition that changed the competitive landscape

Although the acquisition of SanDisk may appear to be expensive, it completely changed Western Digital’s risk profile. Of the three storage technologies, the new Western Digital’s products are the leaders in HDD and planar SSD. The company is also fighting in the new 3D NAND development. Before the acquisition, there was a risk that the success of 3D NAND would permanently shrink Western Digital’s addressable market. Now, however, Western Digital’s technology portfolio ensures that it can prosper under all scenarios. Moreover, Toshiba’s small share in the HDD market and joint venture with SanDisk will provide it with an incentive to improve its cooperation with Western Digital and this will put pressure on pure players like Seagate.

#### • Short-term headwinds masked long-term growth potential

Instead of completely replacing HDD, SSD provides a cost-effective way for certain applications. The future of storage will be a mix of both devices. But it is also incorrect for the bulls to assume that all data will just move to the cloud without any impact on storage demand. Indeed, most of the pain in the HDD market was caused by shifting to the cloud. In the short to medium term during this transition, both the HDD and SSD will be under pressure. But after the transition, storage demand will again match the exponential data growth, and Western Digital is best positioned to capture that growth.

### Valuation

Even considering these headwinds, the valuation of ~5x PE (pro forma) is not justified for a long-term solid industry. The integration of SNDK in the next 12-18 months will provide a better picture for the market to understand the company.

Financials (USD m)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenue	3,639	4,341	5,468	8,074	7,453	9,850	9,526	12,478	15,351	15,130	14,572
Gross Profit	590	829	900	1,739	1,337	2,401	1,791	3,638	4,363	4,360	4,221
EBITDA	326	526	625	1,468	1,106	2,035	1,408	2,890	3,318	3,182	2,916
EBIT	195	366	415	1,055	627	1,525	806	2,065	2,085	1,938	1,802
Net profit	196	395	564	867	470	1,382	726	1,612	980	1,617	1,465
EPS	0.94	1.84	2.58	3.92	2.12	6.06	3.14	6.69	4.07	6.88	6.31
Net cash	546	655	885	595	1,312	2,334	3,196	1,023	2,354	2,650	2,719
Equity	700	1,157	1,716	2,696	3,192	4,709	5,488	7,669	7,893	8,842	9,219
Free Cash flow	227	100	294	784	786	1,205	877	2,350	2,167	2,188	1,630

Margin	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Gross Margin	16.2%	19.1%	16.5%	21.5%	17.9%	24.4%	18.8%	29.2%	28.4%	28.8%	29.0%
EBITDA Margin	9.0%	12.1%	11.4%	18.2%	14.8%	20.7%	14.8%	23.2%	21.6%	21.0%	20.0%
EBIT Margin	5.4%	8.4%	7.6%	13.1%	8.4%	15.5%	8.5%	16.5%	13.6%	12.8%	12.4%
Net Profit Margin	5.4%	9.1%	10.3%	10.7%	6.3%	14.0%	7.6%	12.9%	6.4%	10.7%	10.1%
Net Debt/Equity	78%	57%	52%	22%	41%	50%	58%	13%	30%	30%	29%
ROE	28%	34%	33%	32%	15%	29%	13%	21%	12%	18%	16%

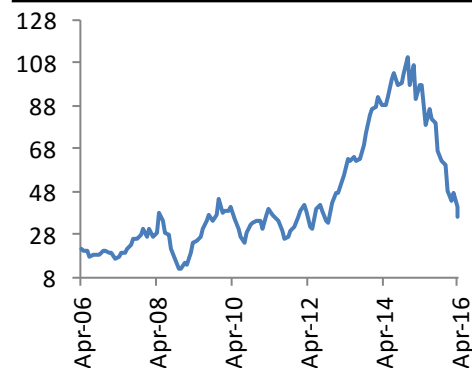
Source: Company data

Price Target	5/12/2016
Current price	\$36.36
Price target	\$68.00
Time Horizon	18 months
Dividend per share	\$2.00
Upside potential	93%
52-wk range	\$35.69-\$99.76

### Information

Shares outstanding	233m
Free float rate	100%
Daily trading volume	2.75m
Short Interest	12.30%
Next reporting date	27-Jul-15

### Stock price

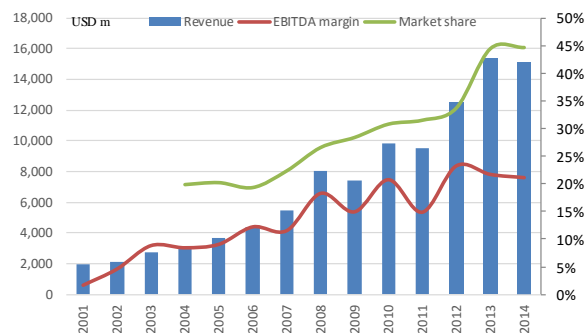


Source: Bloomberg

## Company overview

Western Digital is a hardware maker in the storage segment, mainly HDD, which can be categorized as a commodity despite some differences in the quality and technology. It was very hard for companies to achieve excess returns in the early stages. However, the industry experienced several rounds of consolidation between 2000 and 2012. Currently, three companies controlled 100% of the market, with Western Digital leading at 40%. The company has improved its EBITDA margin from below 5% to constantly over 20%.

Chart 1: Revenue & EBITDA margin



Source: Company data

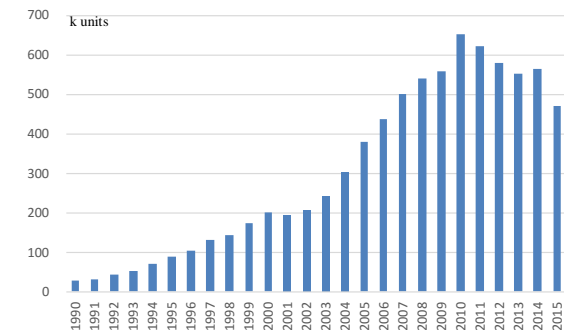
Table 1: Major consolidation in the Storage Industry

Year	Space	Event
1994	HDD	Quantum acquired DEC
1995	HDD	Seagate acquired Conner
2001	HDD	Maxtor acquire Quantum
2002	HDD	Hitachi acquired IBM
2006	HDD	Seagate acquired Maxtor
2009	HDD	Toshiba acquired Fujitsu
2011	HDD	Seagate acquired Samsung
2012	HDD	Western Digital acquired Hitachi
2016	SSD	Western Digital acquired Sandisk

Source: Company data

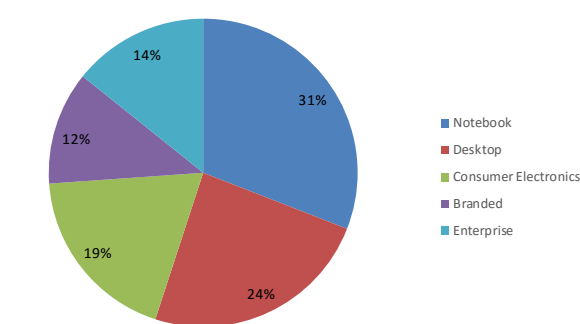
With data growing and the PC market booming, global HDD shipments recorded a 17% CAGR from 1990 to 2010. Since then, overall unit demand has declined due to decreasing PC sales and the emerging SSD. Although three companies still maintain a balanced market and decent returns, accelerated declines in recent quarters and the development of 3D NAND technology have signaled trouble ahead. This is why Western Digital entered into an agreement to purchase SanDisk in 2015.

Chart 2: Global HDD unit shipments



Source: Company data

Chart 3: 9M FY16 Revenue breakdown



Source: Company data

## Underestimated acquisition

What Western Digital paid for its acquisition is clear. The elevated multiple is the most controversial part in the market and the new debt is an additional cost. However, if investors will consider the *intangibles* that WDC got from the deal, then the overall picture looks different.

### Competitive advantage from a diversified technology portfolio

On a standalone basis, the SanDisk acquisition may seem to be unreasonably expensive, but from the industry's point of view, the combined company will gain a much stronger position. To simplify, the storage business can be classified into three technologies. The HDD has matured and held most of the digital data in the past. It has the lowest cost, but its performance is also relatively slow. The traditional SSD is much faster than HDD, but it is also at least 5x more expensive. The latest technology, the 3D NAND, has the potential to massively lower the cost of SSD and make it competitive with HDD in more applications. However, the characteristics of HDD and SSD ensure that both will be used in the future storage business. The technological issue is now more about mixing and matching the right hardware to a specific application. Below is a summary of the technology portfolios of the major players in the industry.

## Technologies portfolio of major industry players:

	HDD	Traditional SSD	3D NAND SSD
WDC/SNDK	Leader	Lowest cost	Developing
Toshiba	3rd place	Co-op with SNDK	Co-op with SNDK
Seagate	2nd place	Small	NA
Samsung	NA	Big player	Developing
Micron	NA	Big player	Co-op with Intel
Intel	NA	Big player	Co-op with Micron

Source: Company data

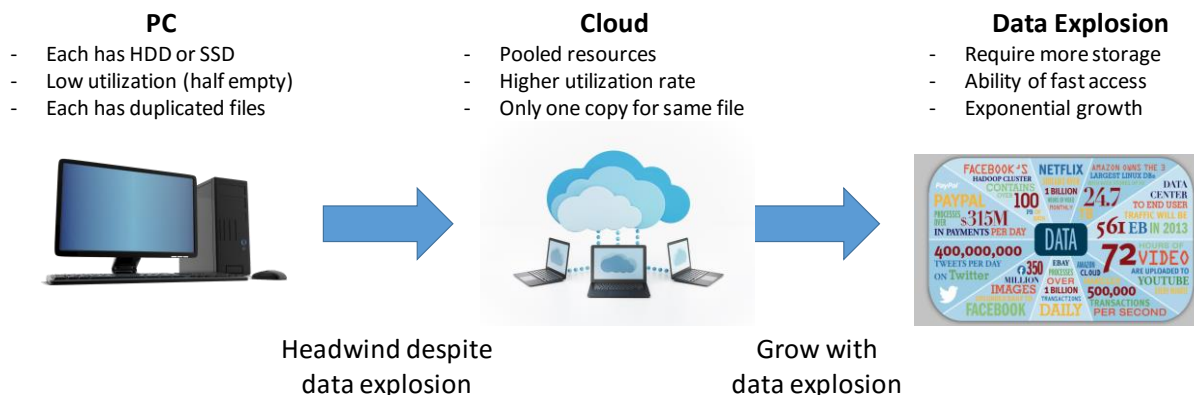
Before the SanDisk acquisition, investors in WDC worried about the new 3D NAND technology that could replace HDD on a large scale. Actually, it could be a question of survival for WDC. The success of 3D NAND may permanently shrink its addressable market and break the balance of the HDD triopoly. With the acquisition, WDC now has the ability to weather all kinds of scenarios. If 3D NAND turns out to be a huge success, WDC is in a much better position versus Seagate and is more likely to dominate the remaining HDD market. If 3D NAND fails, WDC's leading position in the HDD and traditional SSD will still help it to succeed in the storage market. Ironically, the WDC stock price was trading at a much higher level when there were huge long-term risks to the company before the acquisition.

### Relationship with Toshiba

Another overlooked factor is Toshiba. Its existing SSD joint venture with SanDisk can help to improve cooperation between Toshiba and Western Digital, even in the HDD market. This would put Seagate in a very difficult position. Although Toshiba only has ~20% of the HDD market compared with ~40% each for WDC and Seagate, this dynamic becomes important in a potentially shrinking HDD market. Eventually, there may need to be further consolidation in the industry, and the loser is increasingly likely to be Seagate. Again, ironically, STX was performing much better versus WDC after the acquisition.

## Storage demand will grow, but it will take a while

The shift to the cloud has claimed a lot of casualties in both the software and hardware industries. Its impact on the storage segment is a bit complicated. The growth of the underlining data has never been stronger, but the storage manufacturers seem to be suffering. To have a better understanding, we can divide growth into two stages, and the first is the transition to the cloud. During this stage, demand for storage will actually go down. Unlike in the PC era where HDD had a relatively low utilization rate (mine was below 50%), that rate will now increase and less total storage will be needed in the cloud platform. Moreover, instead of having 100 of the same files on 100 PCs, now you need only one in the cloud. At this stage, the main theme is to improve the efficiency of storage systems. However, there is a limit to this efficiency. This brings us to the second stage where storage demand will eventually catch up with the data growth.



The acquisition has put Western Digital in a very comfortable position to benefit from the long-term data growth. We can divide the storage market in a different way: 1) DRAM, the memory that works alongside CPU to facilitate fast calculations, 2) end users, traditionally PC and now also those mobile devices, and 3) storage, the major devices that store most of the data for the long-term. Below is a summary of the segments and the players.

## Different industry classification:

Memory (DRAM)	Storage	End user																								
<p><b>Characteristics:</b></p> <ul style="list-style-type: none"> <li>- Alongside CPU to facilitate calculation</li> <li>- Short-term store of data with electricity</li> <li>- Key: speed, size</li> </ul> <p><b>Players:</b></p> <p>Samsung Hynix Micron</p>	<p><b>Characteristics:</b></p> <ul style="list-style-type: none"> <li>- Storage in home, enterprise and cloud</li> <li>- Long-term storage of data</li> <li>- Key: reliability, speed</li> </ul> <p><b>Players:</b></p> <table border="0"> <tr> <td><b>HDD</b></td> <td><b>SDD</b></td> </tr> <tr> <td>Western Digital</td> <td>Samsung</td> </tr> <tr> <td>Seagate</td> <td>Micron</td> </tr> <tr> <td>Toshiba</td> <td>SanDisk</td> </tr> <tr> <td></td> <td>Western Digital</td> </tr> <tr> <td></td> <td>Toshiba</td> </tr> </table>	<b>HDD</b>	<b>SDD</b>	Western Digital	Samsung	Seagate	Micron	Toshiba	SanDisk		Western Digital		Toshiba	<p><b>Characteristics:</b></p> <ul style="list-style-type: none"> <li>- Used in consumer devices</li> <li>- Storage of work in process by consumer</li> <li>- Key: flexibility</li> </ul> <p><b>Players:</b></p> <table border="0"> <tr> <td><b>HDD</b></td> <td><b>SDD</b></td> </tr> <tr> <td>Western Digital</td> <td>Samsung</td> </tr> <tr> <td>Seagate</td> <td>Micron</td> </tr> <tr> <td>Toshiba</td> <td>SanDisk</td> </tr> <tr> <td></td> <td>Western Digital</td> </tr> <tr> <td></td> <td>Toshiba</td> </tr> </table>	<b>HDD</b>	<b>SDD</b>	Western Digital	Samsung	Seagate	Micron	Toshiba	SanDisk		Western Digital		Toshiba
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Source: Company data

DRAM and end-user segments are actually not highly correlated with the long term data growth. DRAM is more about improving the performance with the CPU. With the trend of cloud architecture, less data is stored on the user end. The task of storing future data will fall to the middle part with the usage of both HDD and SSD. Western Digital, after the acquisition, is best positioned to capture the long-term growth in this segment.

## Valuation

Western Digital announced the closure of SanDisk acquisition on May 12. On the pro forma basis, with conservatively estimated synergies from both SNDK and MOFCOM, Western Digital can achieve adjusted earnings of around \$1.9bn in CY2018. 18-month price target of \$68 with implied P/E of 10x. Current market price is suggesting that there won't be any synergies.

	WDC				SNDK				Consolidated			
	CY15	CY16E	CY17E	CY18E	CY15	CY16E	CY17E	CY18E	CY15	CY16E	CY17E	CY18E
Revenue	13,418	11,365	11,271	10,910	5,565	5,550	5,865	6,283	18,983	16,915	17,136	17,193
Gross profit	3,823	3,238	3,178	3,077	2,368	2,275	2,287	2,325	6,191	5,513	5,466	5,401
Gross margin	28.5%	28.5%	28.2%	28.2%	42.6%	41.0%	39.0%	37.0%	32.6%	32.6%	31.9%	31.4%
Operating expense	2,260	1,989	2,040	2,018	1,326	1,323	1,349	1,382	3,586	3,312	3,389	3,401
% of revenue	16.8%	17.5%	18.1%	18.5%	23.8%	23.8%	23.0%	22.0%	18.9%	19.6%	19.8%	19.8%
Synergies from SNDK										100	300	500
Synergies from MOFCOM		250	450	550						250	450	550
EBIT	1,563	1,499	1,588	1,608	1,042	953	938	942	2,605	2,552	2,827	3,051
Interest expense									800	800	800	800
Adj. Net Income	1,537	1,375	1,421	1,532	782	715	704	707	1,534	1,489	1,723	1,913

Source: Company data, Estimation

Despite recent headwinds, the storage market is still a solid industry in the long term with limited players. The acquisition of SanDisk gave Western Digital more competitive advantage over its peers with an attractive technology portfolio. Although the growth will take some time to materialize, the depressed valuation is not justified and provides opportunity investors.