



2010 Storage
Demand Drivers:

It's Still the PC,
Stupid!

**IDEMA Asia-Pacific
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TRENDFOCUS

Topics



- HDD Industry Update
 - Out of the Valley of Death
- 2010 HDD Demand Drivers
 - Enterprise Storage
 - Consumer Electronics
 - PCs
- The Impact of SSD
- Conclusions

HDD Industry Update



- 2008: 540 million despite CQ4 meltdown
- 2009: Nearly flat in unit sales
 - Strong CQ2 bounce, 2H increase
 - PCs off <2% from 2008 – better than expected
 - 2.5" becomes dominant form factor in CQ3
- 2010: Forecast nears 600 million
 - Typical seasonality, commercial PC recovering
 - PCs to grow, but CE will be stagnant

CQ3 '09 Preliminary Estimate



- >150M HDDs, better than expected
 - 3.5" DT/CE >70 million
 - 2.5" Mob/CE >71 million
 - 1.8" Mob/CE ~ 3 million
 - Ent 3.5/2.5 ~ 6.2 million
- Seagate still on top...barely..... but.....
-Western Digital is gaining ground
- Second tier gap is growing

2010 HDD Demand Drivers



- Enterprise unit demand starting to recover, revenue/margin impact
- Consumer electronics demand focused on few, expanding, applications
- But, it's still the PC!
 - Windows 7 launches October, new Intel platforms
 - Corporate PC refresh seen in 2010
 - Improving macroeconomic environment
 - The PC is necessary, fashionable, indispensable

Enterprise HDDs

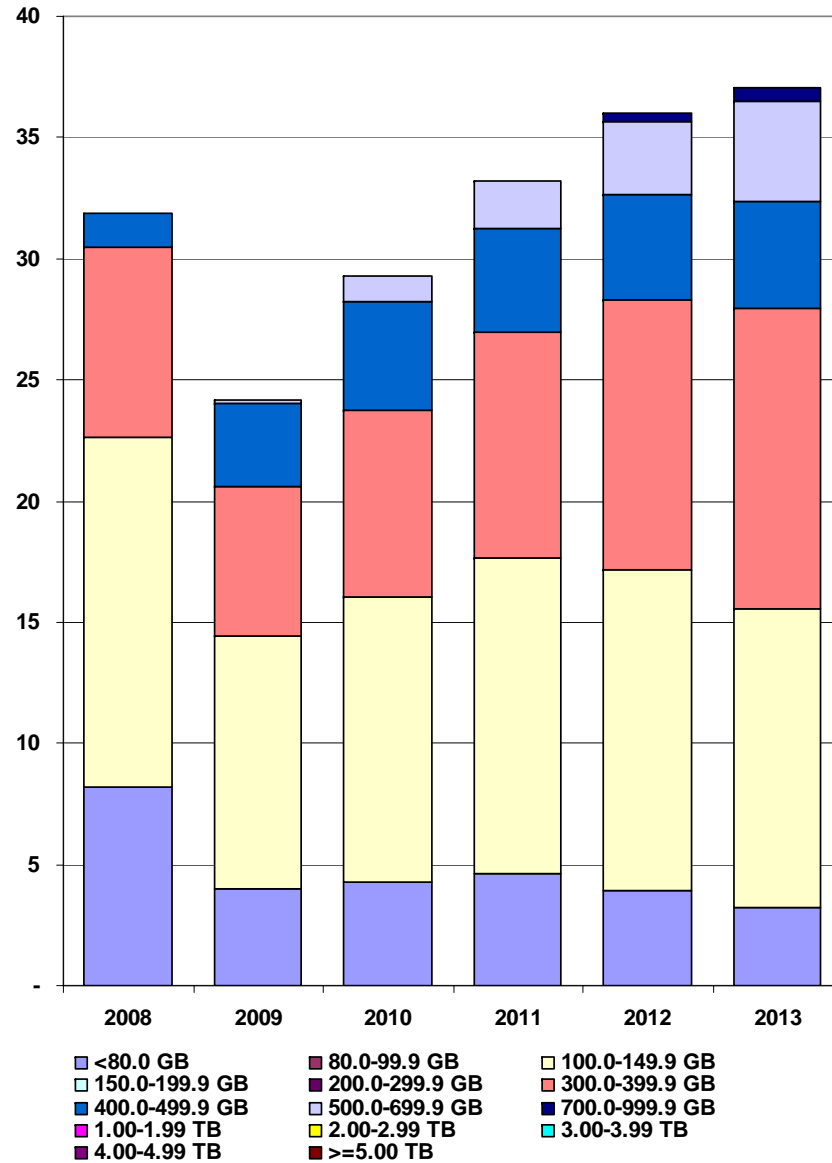
Demand Drivers



- Enterprise HDD shipments tend to lead recovery – and its happening now
 - Storage system, server providers seeing order boost through 2010
- Huge internet, “cloud” demand
- SSD may begin to affect growth in 2010
- However, evolving requirements will see HDD units growing in near future

Enterprise HDD Market Forecast

by Capacity, Units (M)



Consumer Electronics

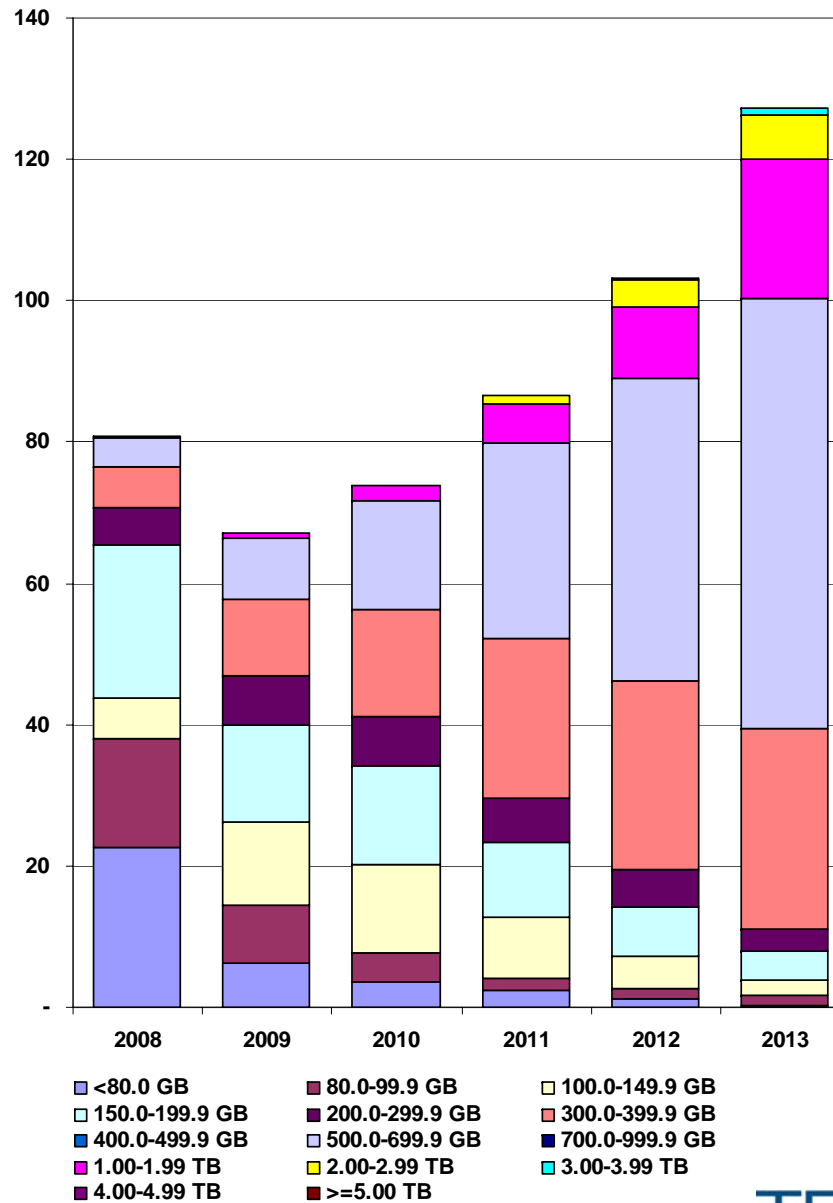
Demand Drivers



- Continuing growth of xVR market
- TVs with built-in HDDs, IPTV boxes
- Gaming, video cameras
- External HDDs for digital content
- Improving consumer feeling

CE HDD Market Forecast

by Capacity,
Units (M)



But, It's Still the PC, Stupid



- CE is underperforming, and enterprise has the profit margins, but.....
- PCs still consume well over 80% of all HDDs shipped
- Netbook changed mobile PC prices, and is helping demand boom
- External HDDs support back-up, as well as low-capacity netbooks

Global GDP to PC Unit Regression Analysis



- Analyzed various GDP metrics vs. PC unit shipments
- GDP of advanced economies best fit
- 2001 excluded from data set as anomaly
- IMF's predicted GDP growth used to predict PC unit shipments

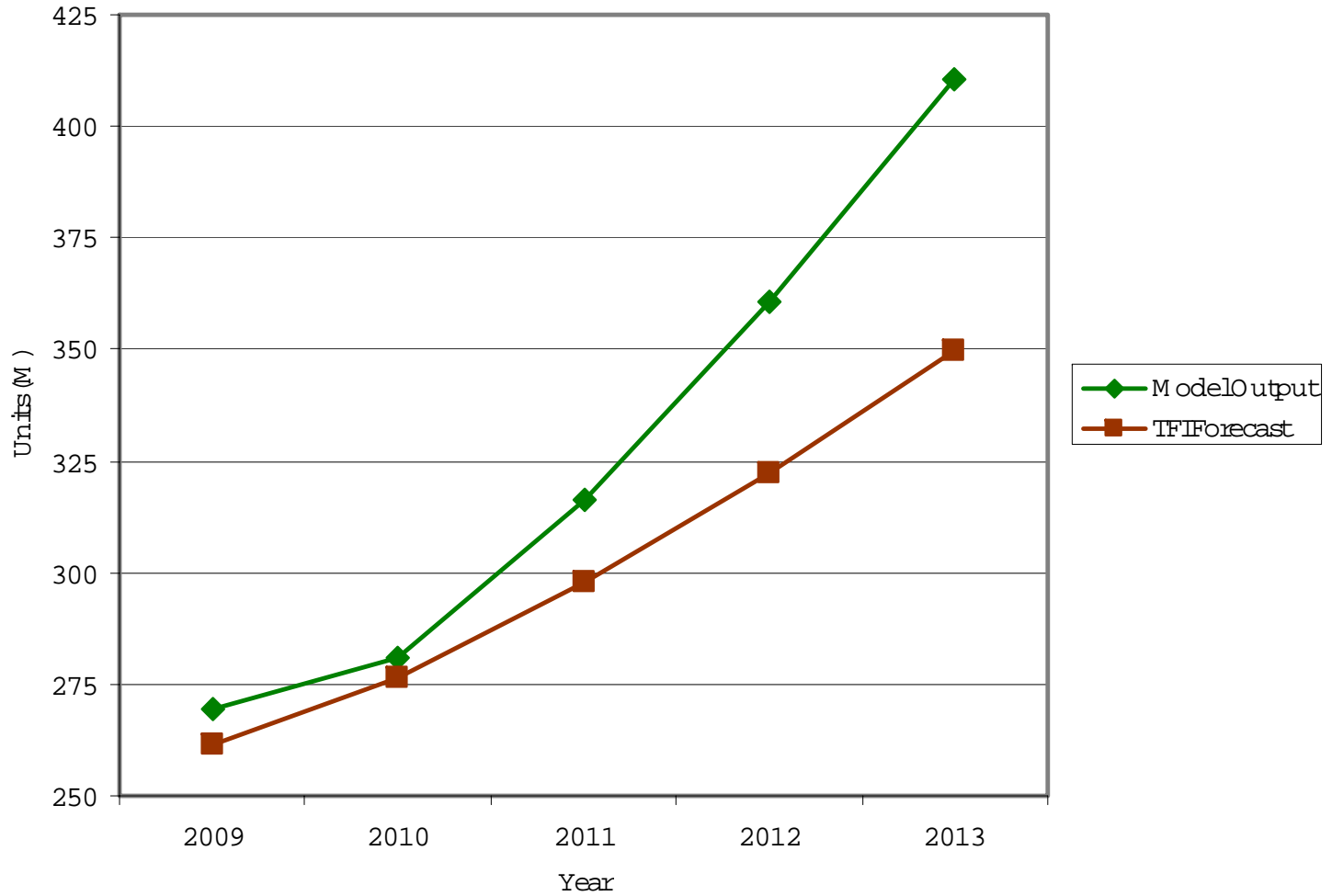
Global GDP to PC Unit Regression Analysis



	Adv.Econ.GDP % Change	PC Units % Change	PC Units (M)	TFIForecast D (M)	ifference
1997	3.5%	13.7%	80.61		
1998	2.5%	15.3%	92.93		
1999	3.5%	26.6%	117.63		
2000	4.0%	14.1%	134.17		
2002	1.6%	15.7%	148.15		
2003	1.9%	14.1%	169.06		
2004	3.2%	11.8%	188.98		
2005	2.6%	15.7%	218.63		
2006	3.0%	9.4%	239.21		
2007	2.7%	13.4%	271.18		
2008	0.9%	7.6%	291.71		
2009	-3.8%	-7.6%	269.44*	261.60	-2.9%
2010	0.0%	4.3%	281.08*	276.45	-1.6%
2011	2.6%	12.5%	316.21*	297.80	-5.8%
2012	3.1%	14.1%	360.72*	322.32	-10.6%
2013	3.0%	13.8%	410.35*	349.61	-14.8%

*Predicted by Model

PC Unit Shipments



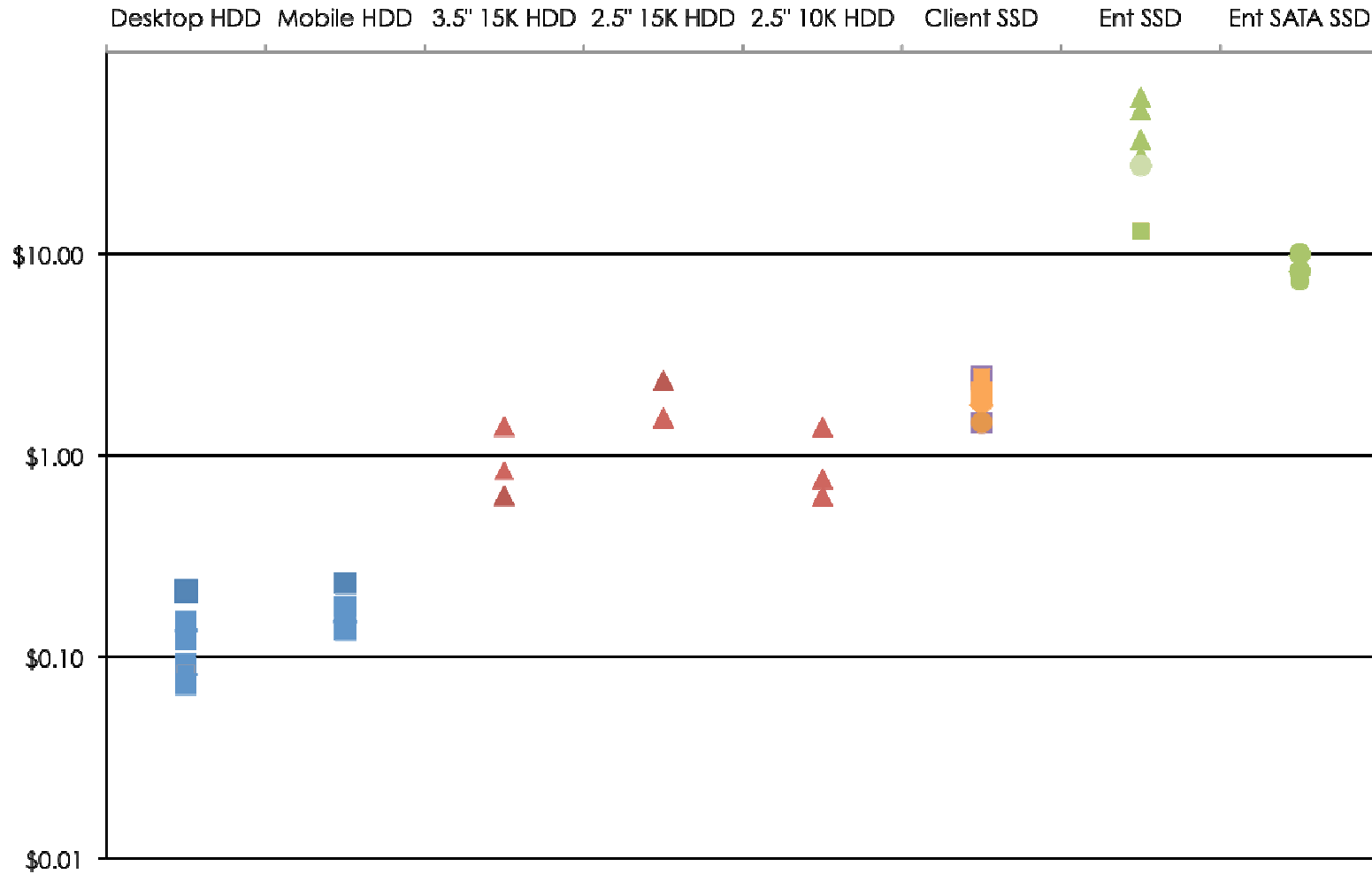
Growth Scenarios



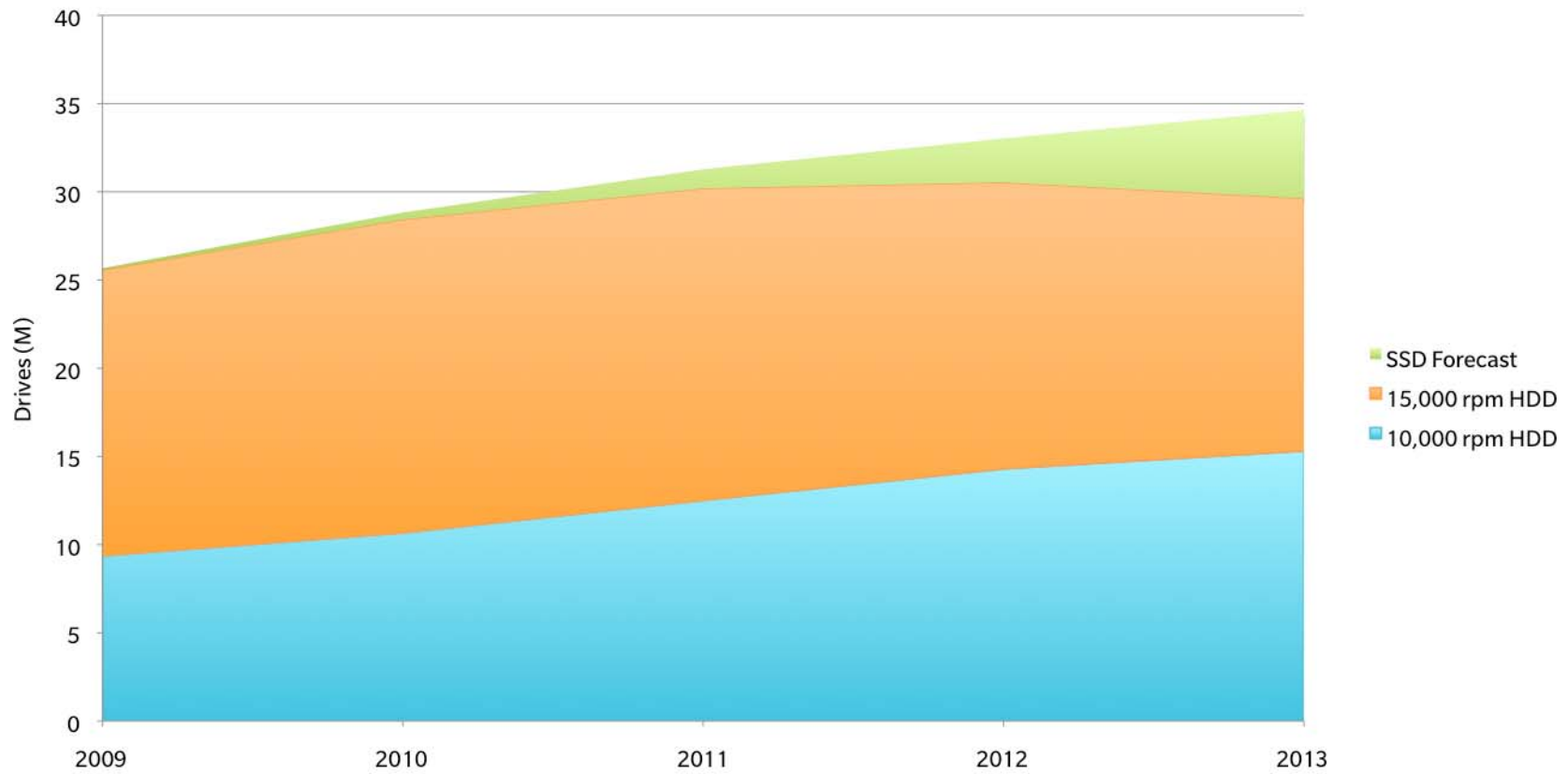
- Difficult to predict GDP of advanced economies
- Table shows % change in PC unit shipments based on % change in GDP

GDP	PC
-3.0%	-5.1%
-2.5%	-3.5%
-2.0%	-2.0%
-1.5%	-0.4%
-0.5%	2.7%
0.0%	4.3%
0.5%	5.9%
1.0%	7.5%
1.5%	9.0%
2.0%	10.6%
2.5%	12.2%
3.0%	13.8%
3.5%	15.3%
4.0%	16.9%
4.5%	18.5%
5.0%	20.1%

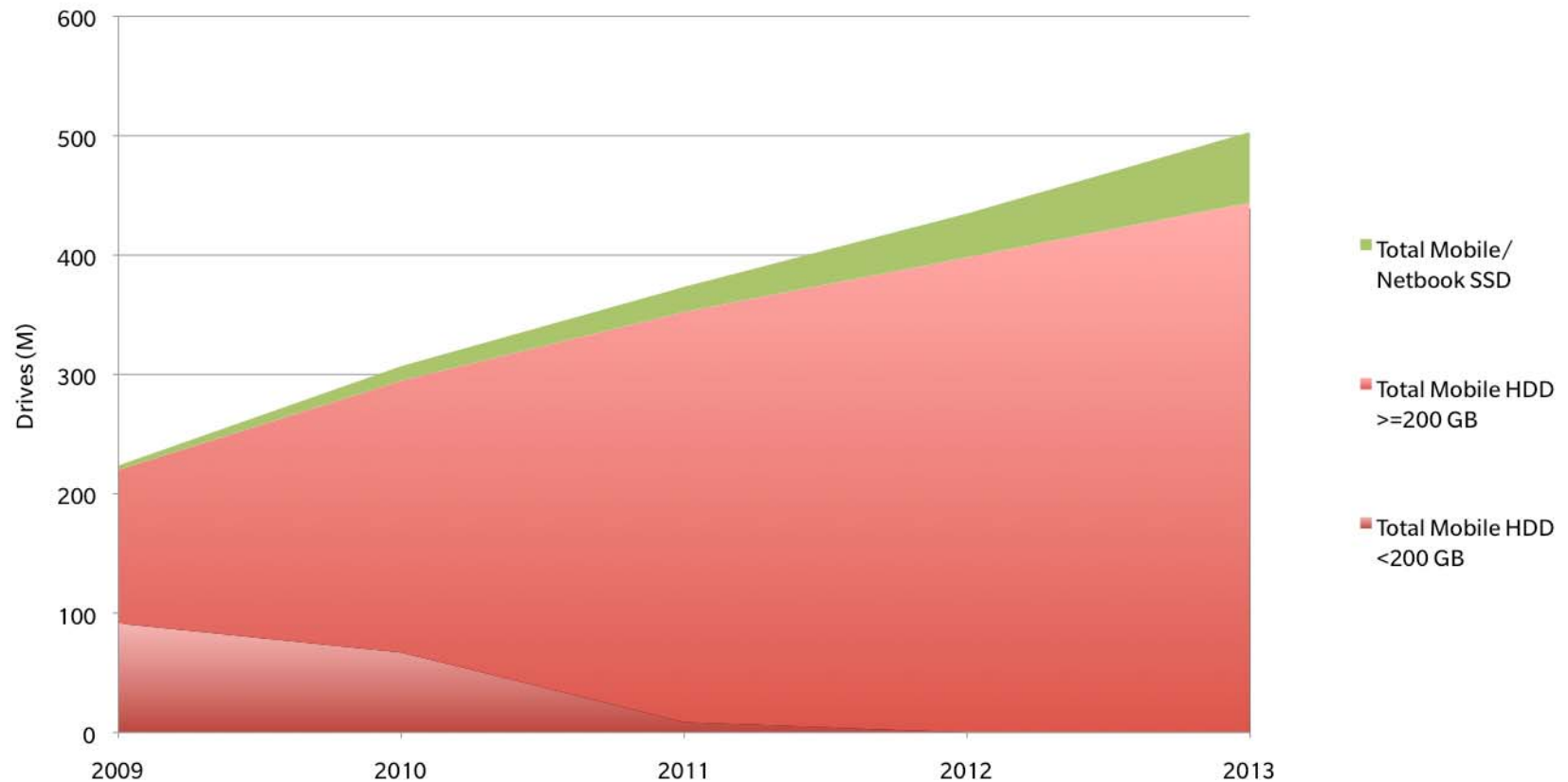
\$/GB: SSD and HDD



Enterprise SSD vs. HDD



Client SSD vs. Mobile HDD



It's Not That Simple, Is It?



- No, the global economy is not out of the woods
- Speed of PC recovery unusual and demands ongoing caution
- Will companies upgrade soon?
- Virtualization?
- Capital spending unclear

Conclusions



- Enterprise and CE applications will contribute to next year's growth
- PCs still largest HDD demand driver
- Impact of SSD in 2010 small
- Overall market conditions & outlook are better
- HDD industry set for nice recovery in 2010