

Optical Industry An Investment Perspective - OFC 2014 -

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Optical Stocks Reality Check

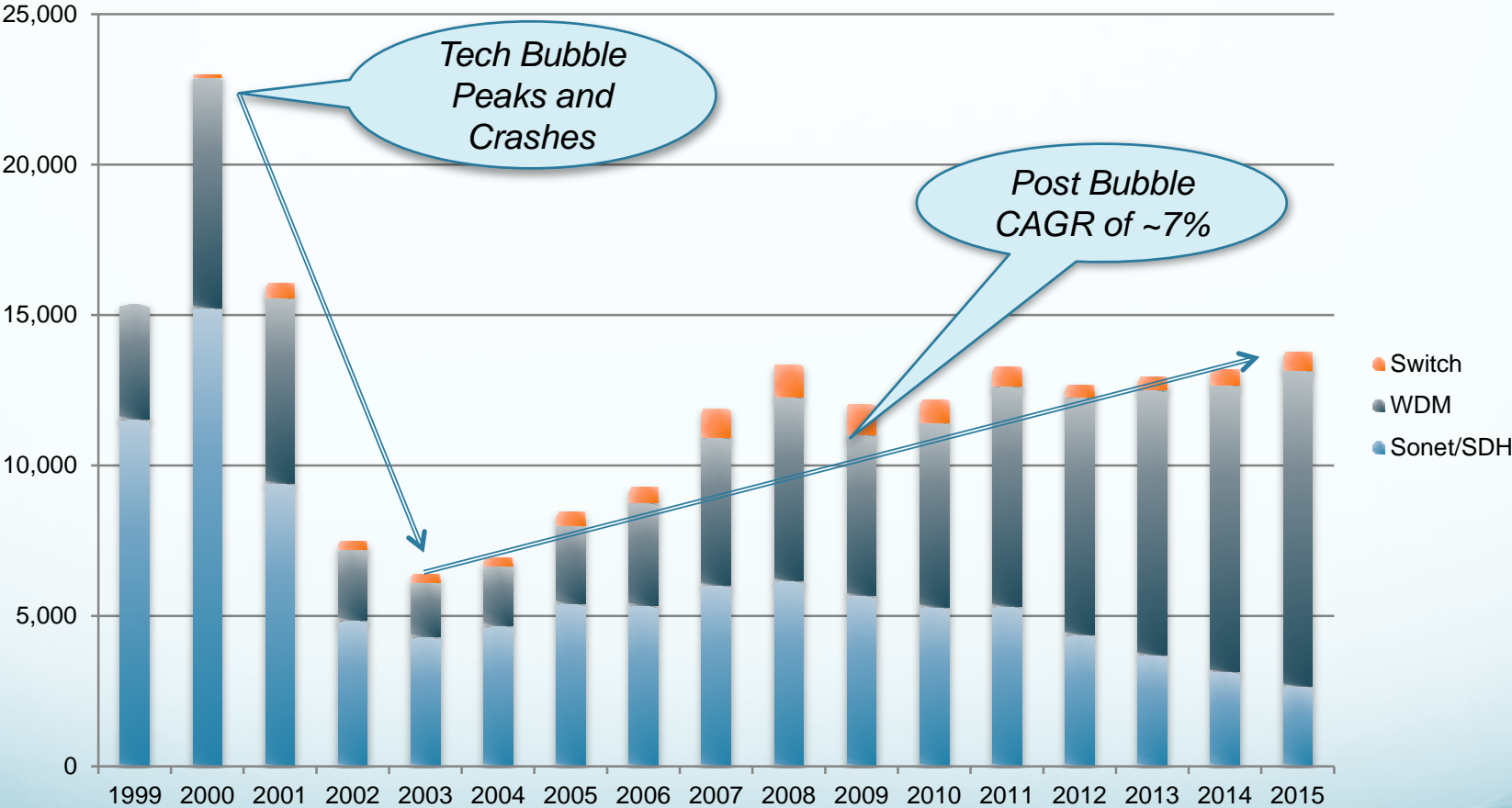
- **Consistent, successful investing in optical stocks is hard!**
- While network bandwidth has consistently grown historically, optical stocks have traded as volatile cyclical stocks, not growth stocks.
- Small relative aggregate sector market capitalization of ~\$10 billion has exacerbated valuation highs and lows when sentiment and outlook change.
- Manufacturing based model for optical components companies leads to large swings in earnings and stock volatility.
- A combination of extreme valuations and deviant growth rates vs. historical trend line growth can provide interesting investment opportunities.

Optical Stocks

What Really Matters?

- Macro: What is the overall economic and spending outlook?
 - Likelihood of a recession/recovery in the next 18 months
 - Service provider and data center capital spending trends
- Cycle: Where are we in the optical investment cycle?
 - Upgrades to a new meaningful technology (e.g. 100G)
 - Status of an inventory correction or replenishment
- Industry Structure: What is the industry structure trend?
 - Technology risk/oppty (e.g. silicon photonics, SDN/NFV)
 - Consolidation of customers (e.g. TWC/CHTR) vs. emergence of new customer segment (e.g. Web2.0)
 - Consolidation of optical suppliers (e.g. Coriant, Oclaro)
 - Customers seeking “in-house” solutions (e.g. Cisco)
- Valuation: What are valuations vs. historical averages

Optical Systems Market 1999 - 2015



Data Center Capex Dramatically Outgrowing Overall Capex

Capex \$ Billions	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	CAGR
Wireline	\$76	81.6	86.6	95	98.2	85.6	85.6	92.5	95.4	89.3	1.7%
Wireless	\$91	101.9	111.6	117.7	143.2	140	133.3	144.4	151.5	159.5	6.4%
Cable & SatTV	\$9	11.9	14.5	17.4	16.3	14.9	15	15.3	16.1	16	7.3%
Enterprise Comms	\$31	31.6	33.8	36.8	38	30.9	36.3	38.3	41	42.9	3.8%
Data Center	\$1	2.2	4.2	5.9	6.9	4.6	9.4	14	20.2	23.8	43.9%
Total	\$207	\$229	250.7	272.8	302.6	276	279.6	304.5	324.2	331.5	5.4%

Source: UBS Investment Research

- Data Center/Web2.0 Capex is growing much faster than overall capex
- Data Center/Web2.0 is emerging as a new material customer segment for optical component and system companies

Example of Growth Stock Chart Qualcomm

Qualcomm Price



Example of Growth Stock Chart Salesforce.com



Source: YCharts

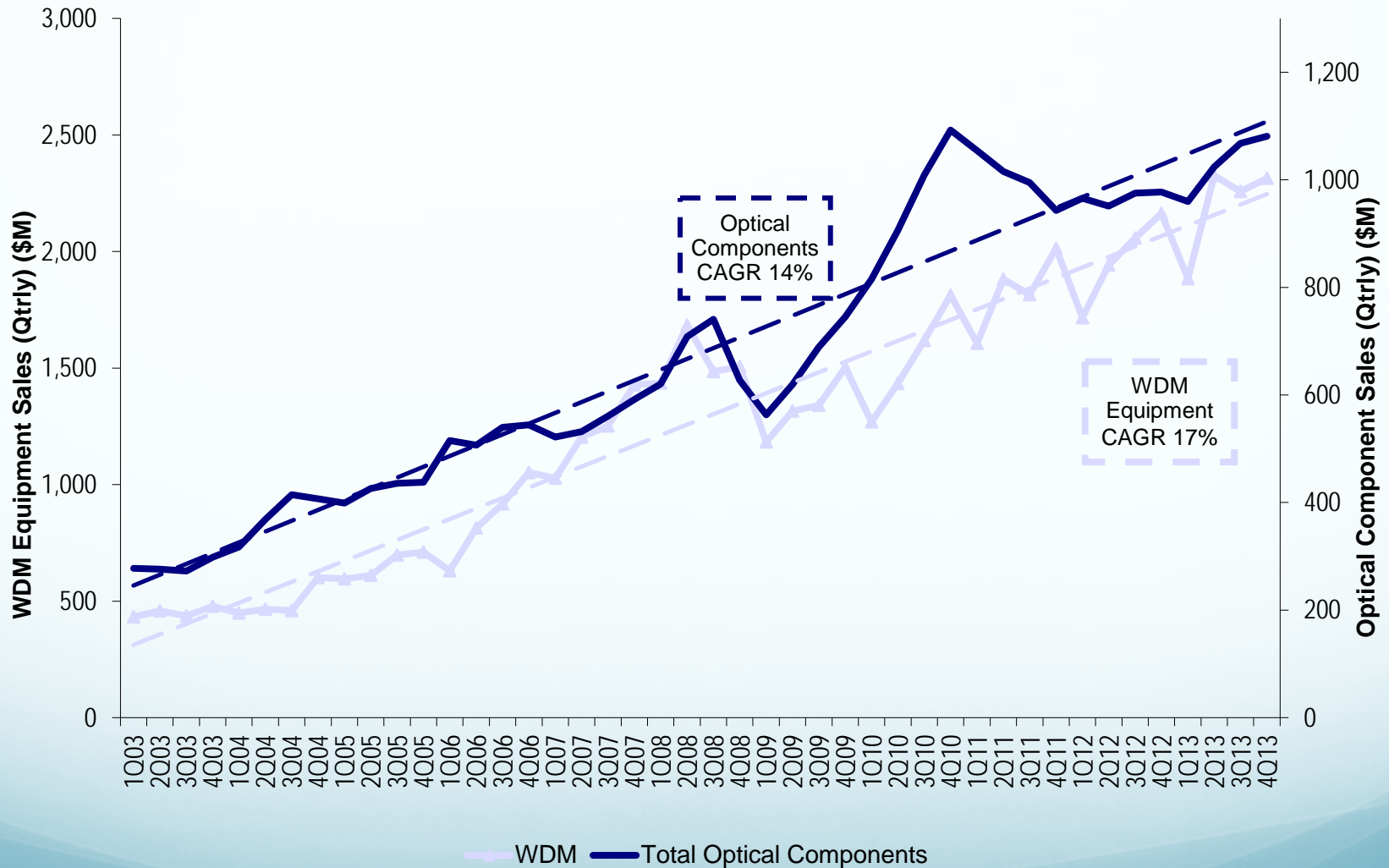
Example of Cyclical Stock Chart Finisar

Finisar Price



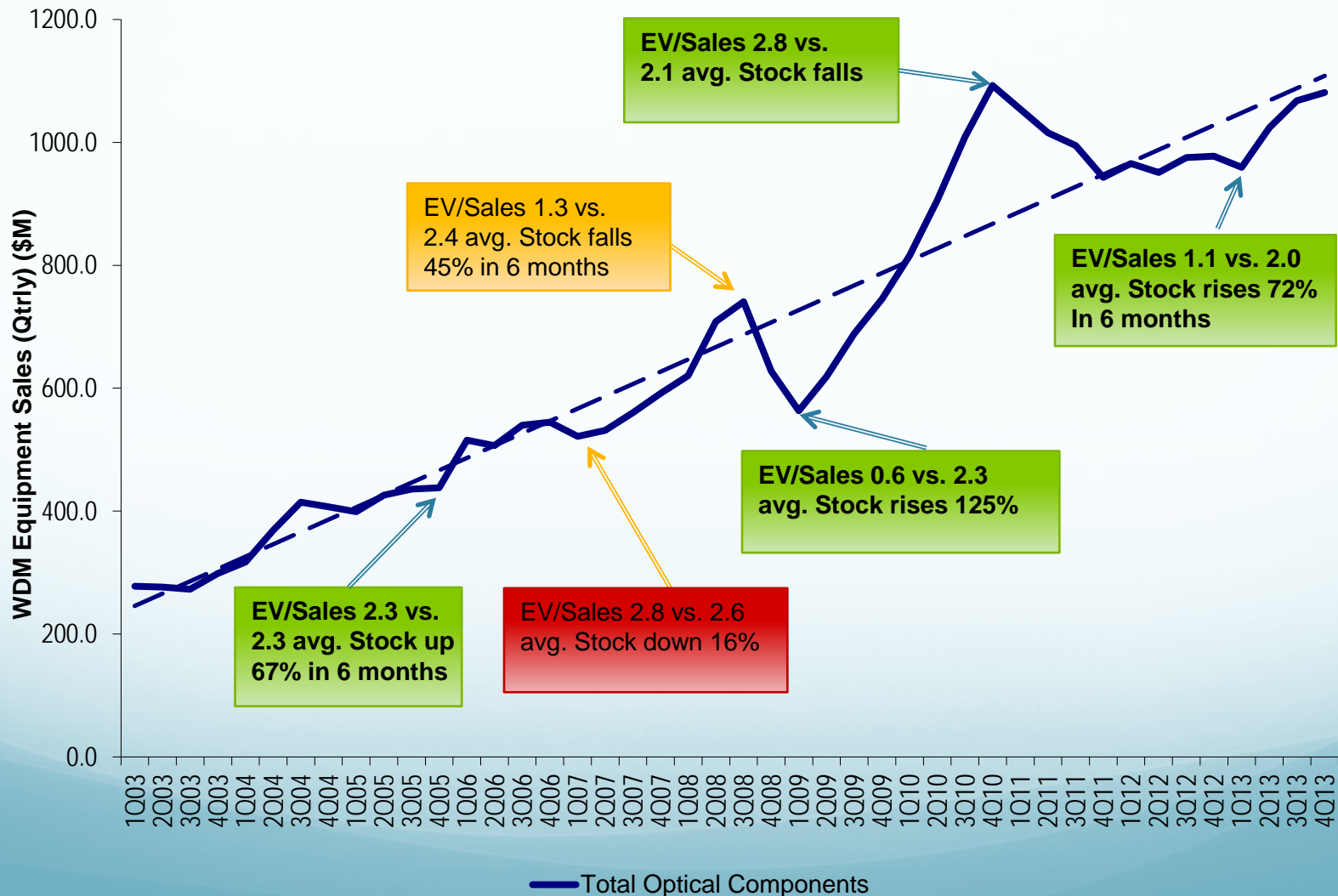
Source: YCharts

Optical Growth vs. Trend Line



Example: Finisar Stock Across The Cycles

- Look For Deviant Growth and Valuation -



So What About Now?

- Macro: Generally Positive
 - Unlikely US recession, Europe slowly recovering, some emerging market risk
 - Capex expected to grow in 2014 and with an upward bias on revisions
 - Carriers recently raised 2014 capex forecasts: US (AT&T, VZ, T-Mobile, Cable Cos...), Europe (BT, Vodafone, Telefonica...), Asia (China, Telekom Malaysia etc.)
- Cycle: Generally Positive
 - SONET/SDH now <30% of market; legacy less of an anchor to growth
 - 100G cycle; significant upgrade cycle in China begins in 2014
- Growth vs. Trend Line: Generally In-Line vs. Trend Line Growth
- Industry Structure: A Mixed Bag
 - Consolidation among vendors (e.g. Tellabs/NSN, Oclaro/Opnext) and limited VC investments is favorable for public company stocks
 - Carrier consolidation typically is not favorable (e.g. Comcast/TWC)
 - Web2.0 emerging as major new customer set is favorable
 - Lifting of Net Neutrality (e.g. Netflix/Comcast) generally positive
 - Internet Photonics remains longer term risk for component sector (e.g. Intel efforts)
 - NFV/SDN may be a margin enhancing opportunity, but require R&D and culture change
- Valuation: Generally In-Line With Historical Averages, But Varies By Company