

IPVEA & EU PVSEC 2011 PV Production Forum

Status of the Global PV Equipment Market...

... Reasons for Optimism

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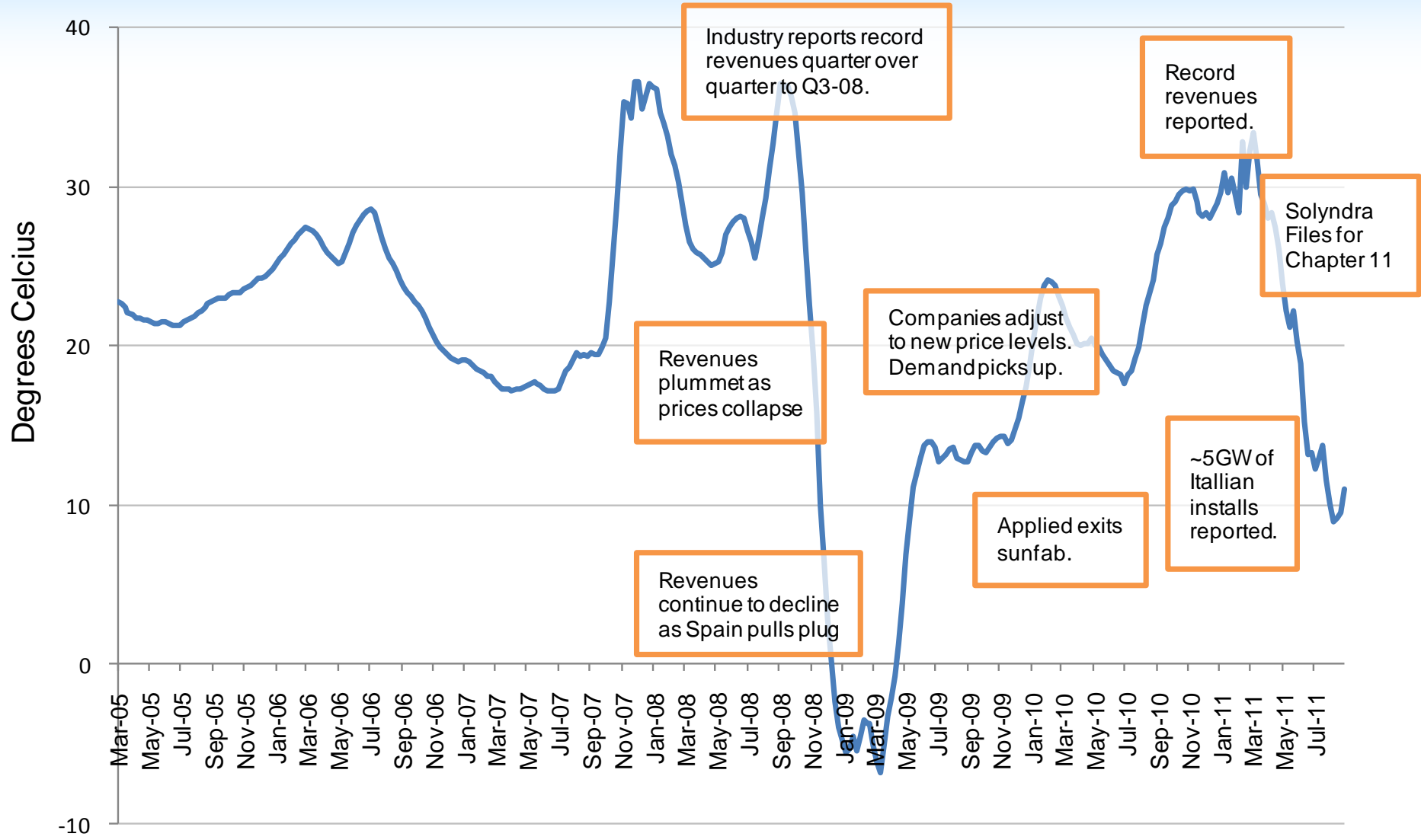
Presentation Overview

Current Environment – PV Market

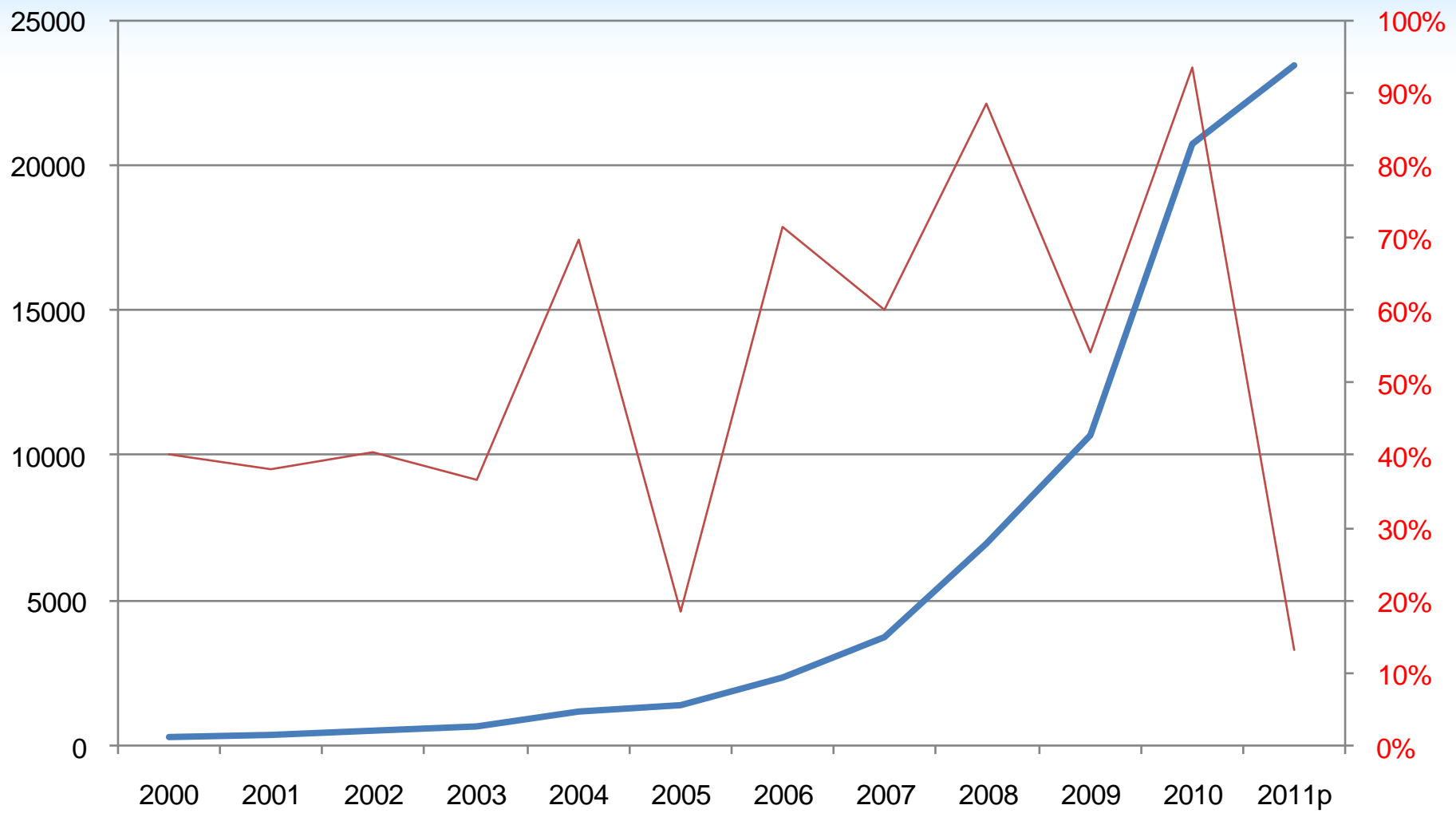
PV Equipment Market Update

Summary

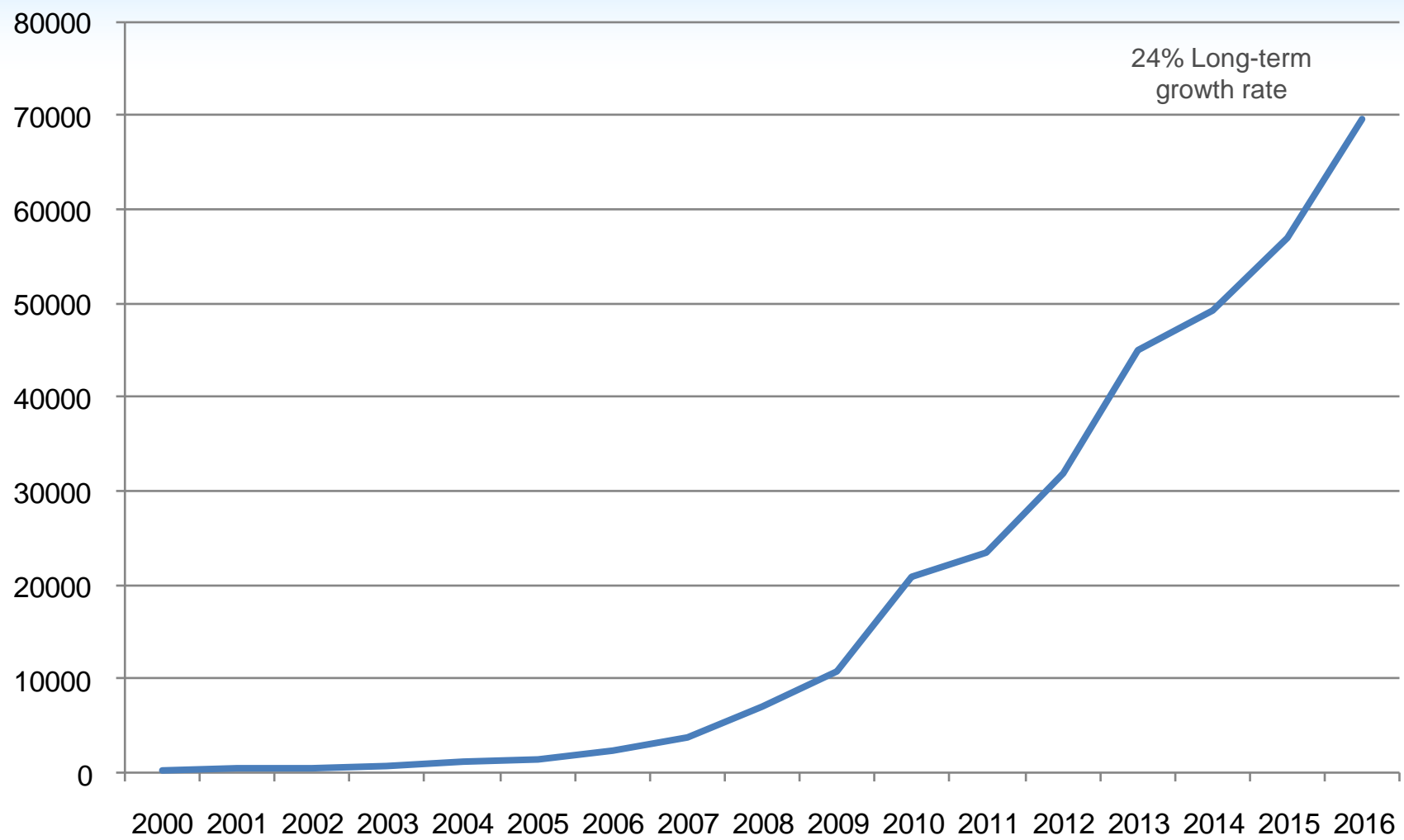
Industry Confidence – VLSI Research’s PV Weather Report



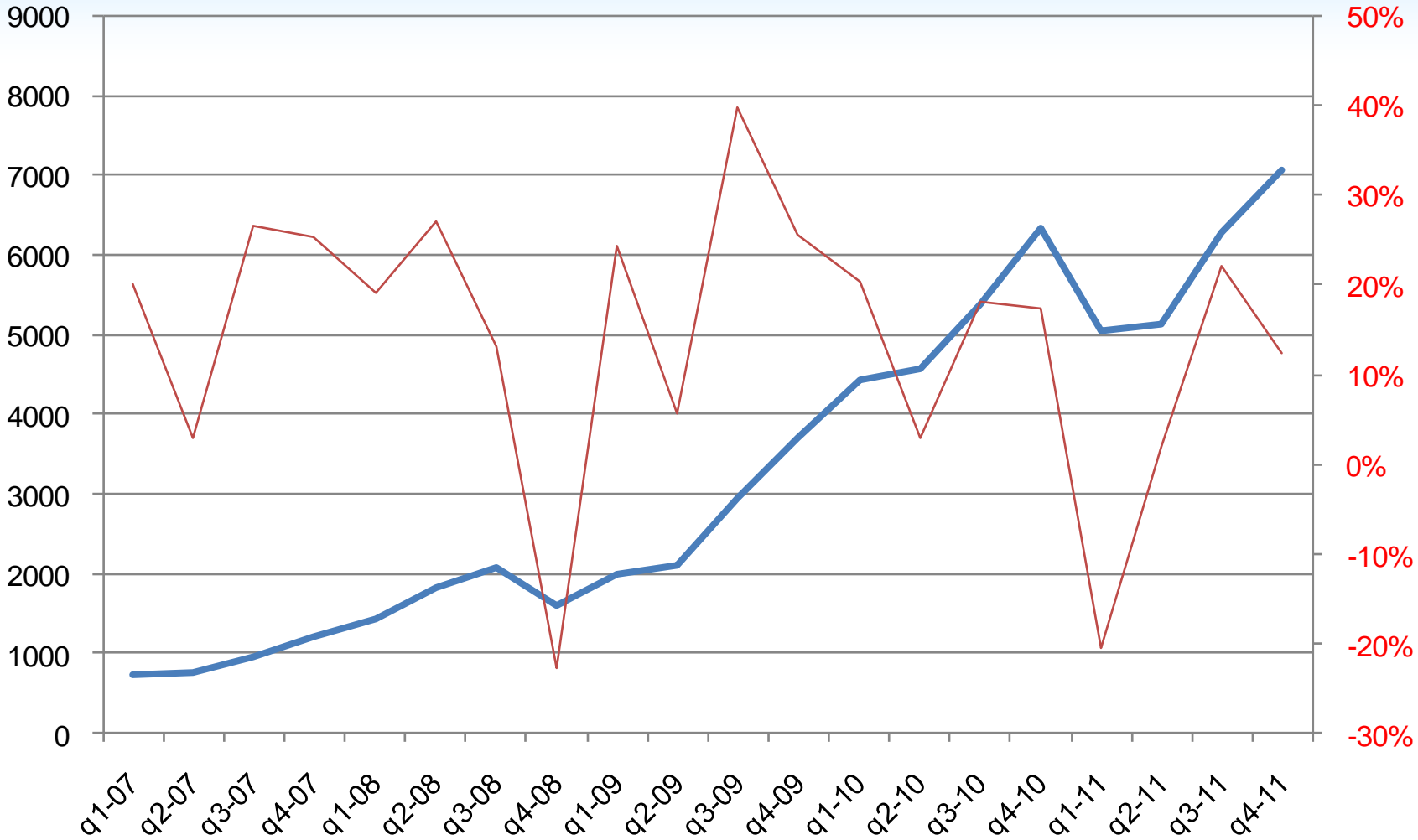
Annual Shipments in MWp and Growth Rates % - Historical



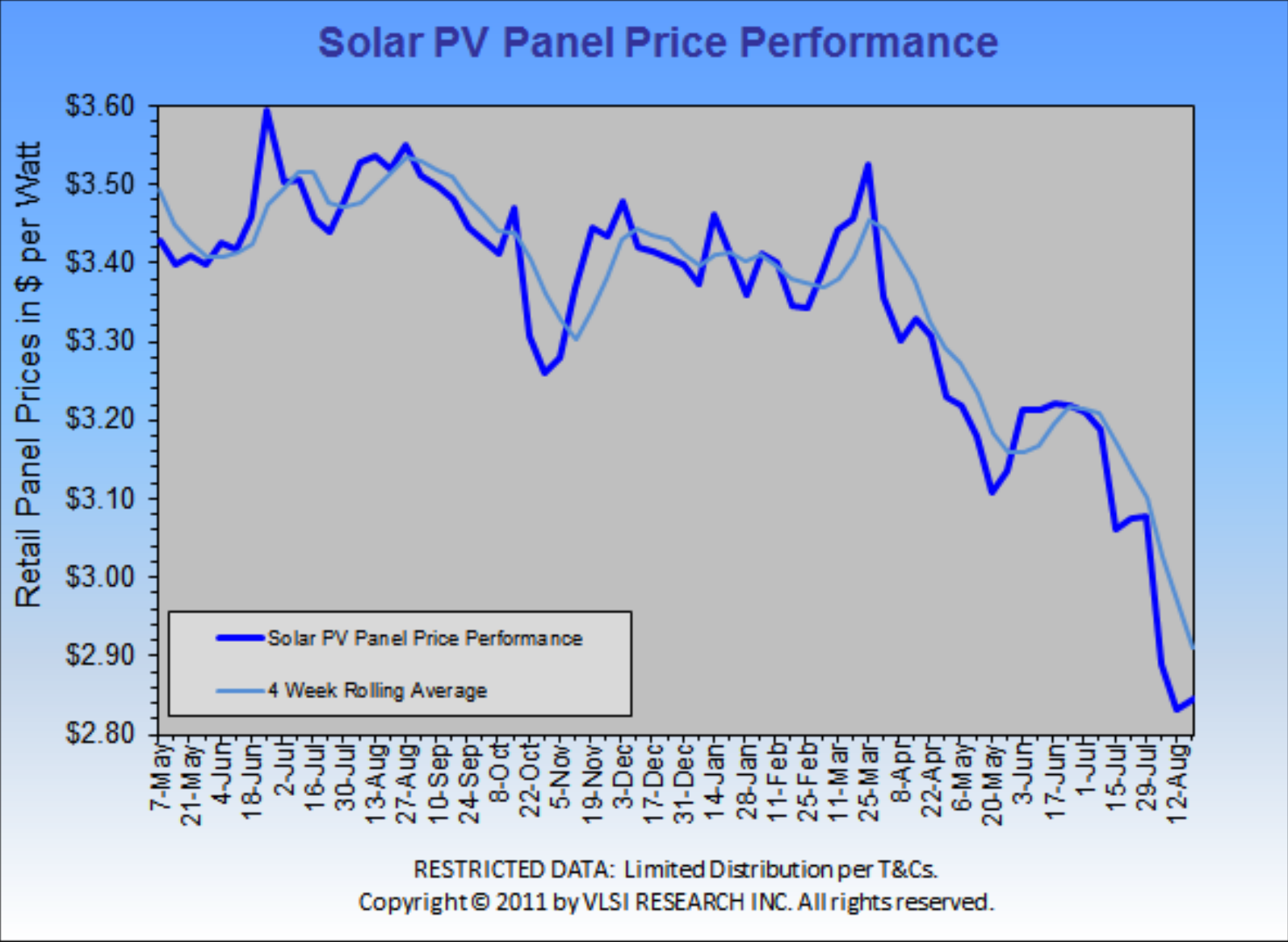
Annual Shipments, MWp - Forecast



Quarterly Shipments in MWp and Growth Rates %

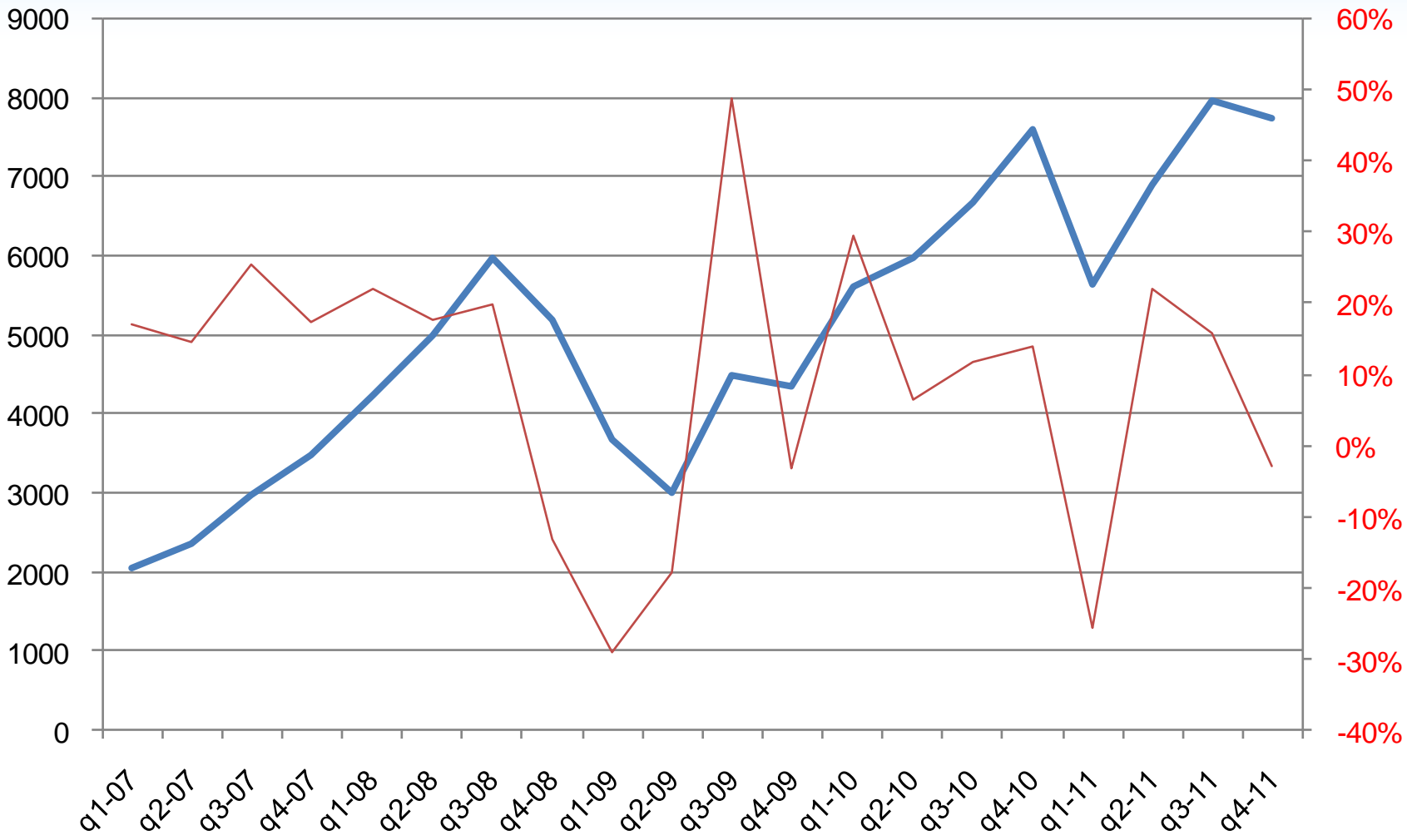


Pricing – Retail Prices \$/Wp



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Quarterly Module & Panel Revenues in \$M and Growth in %



Profit Squeeze Causing a Shake up in PV Manufacturing

Growing number of manufacturers exiting or at risk of exiting

Uncompetitive

Investors running out of patience/time

Industry giants are emerging

Benefit from Economies of Scale, Vertical Integration

New entrants will need larger investments

Thin Film Fighting to Keep up With Crystalline Silicon

Investments generally on a smaller scale

Running out of time

What does this mean for PV Equipment Suppliers?

Fewer, but larger customers

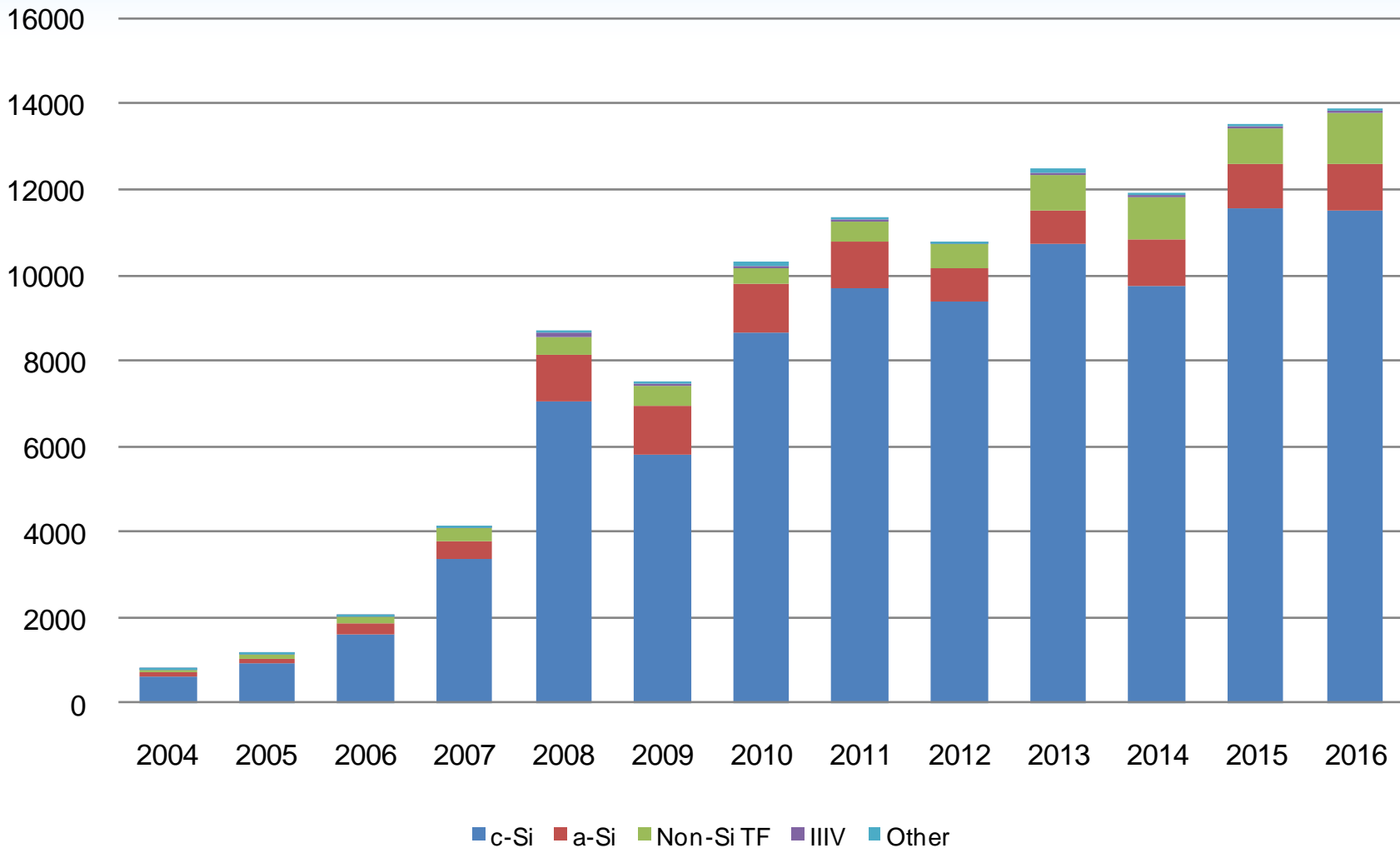
Fewer new entrants

Persistent pressure to reduce the cost of capital equipment

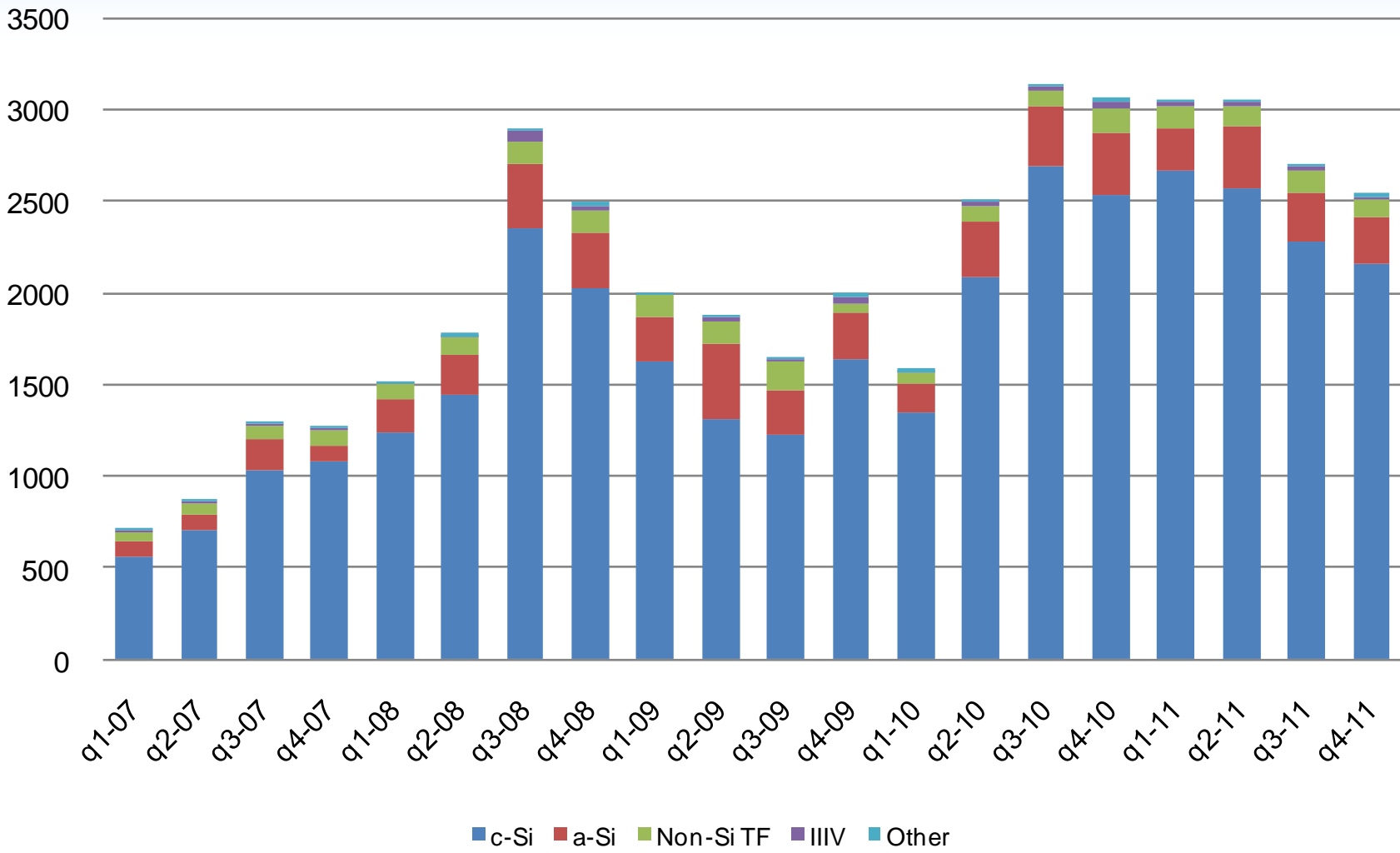
Suppliers need sufficient scale to support rapid improvements in throughput, yields, process technology, etc.

Focus on Crystalline Silicon Technology

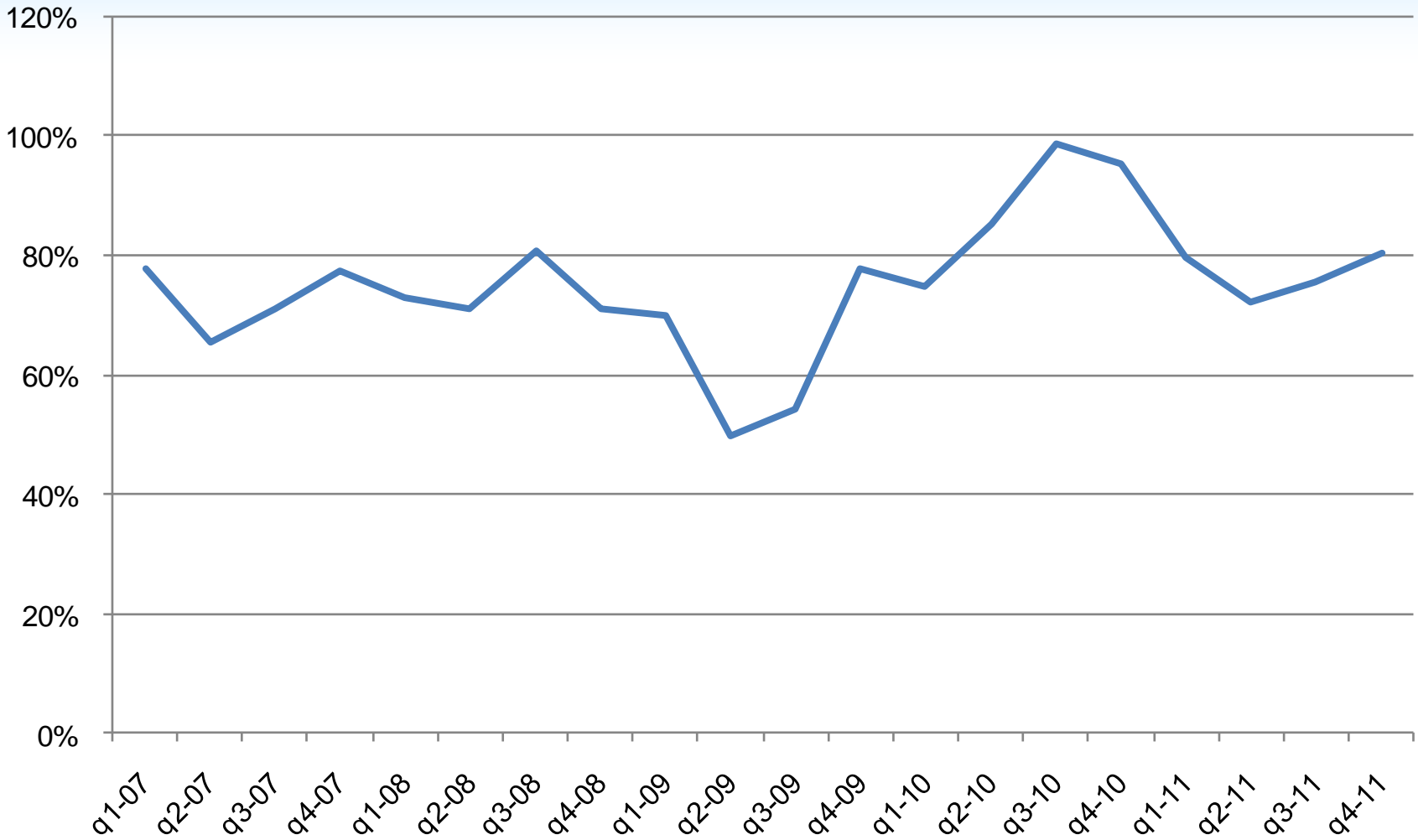
PV Equipment Demand - \$M



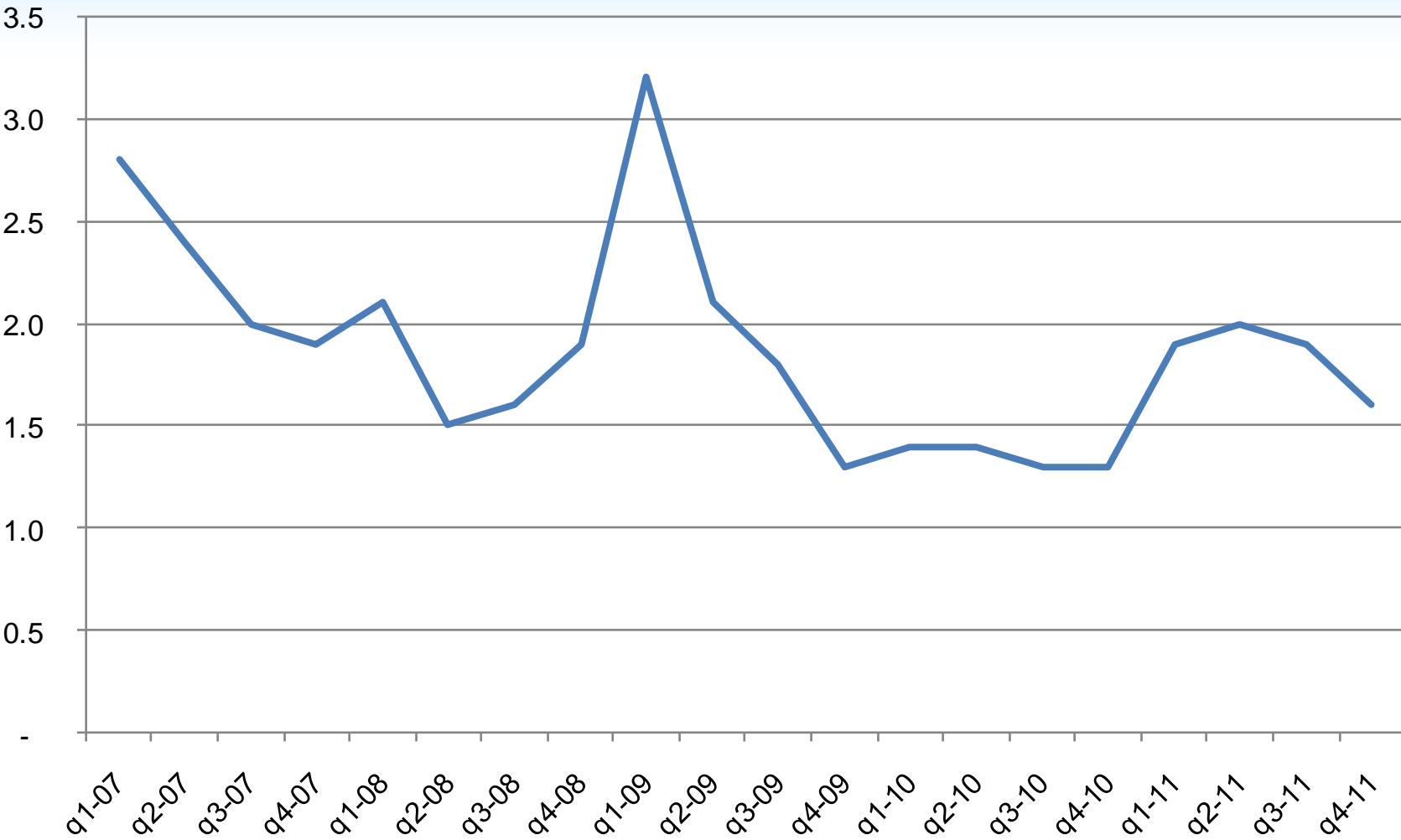
Quarterly PV Equipment Demand - \$M



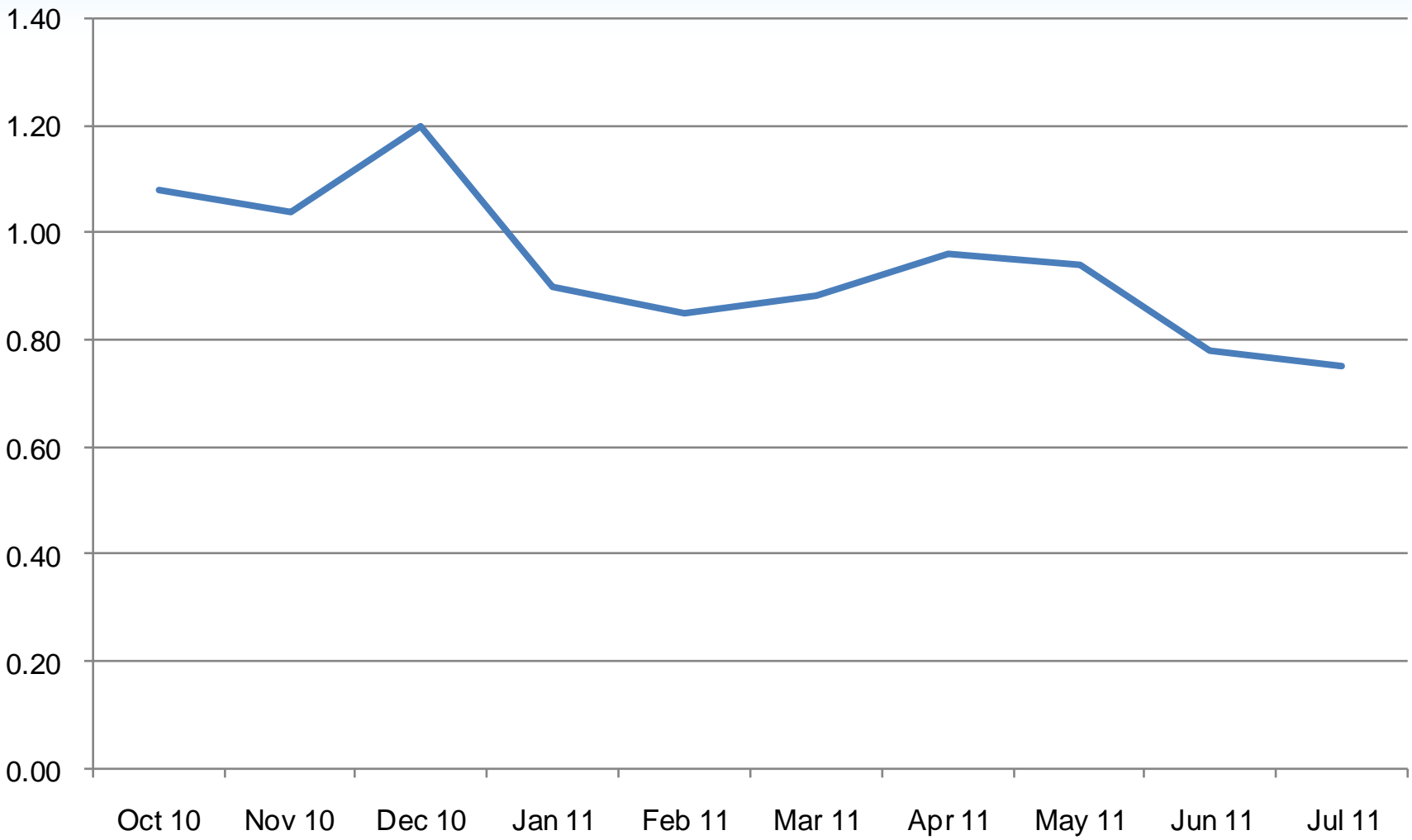
Utilization Rates



Inventory – Months of Inventory



Monthly Book to Bill Ratio – PV Equipment

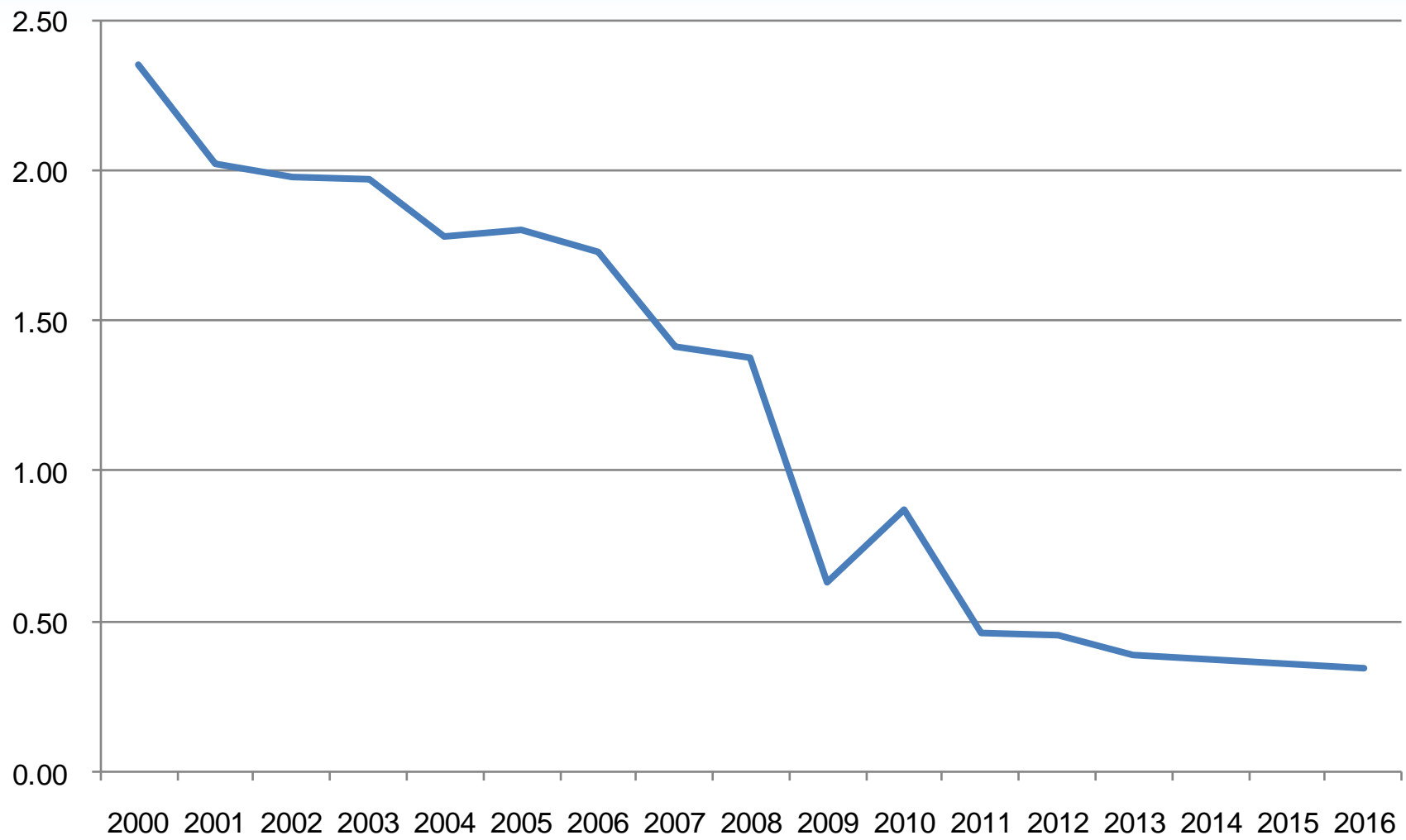


Capital Expenditure

Is the current rate of capital expenditure sustainable?

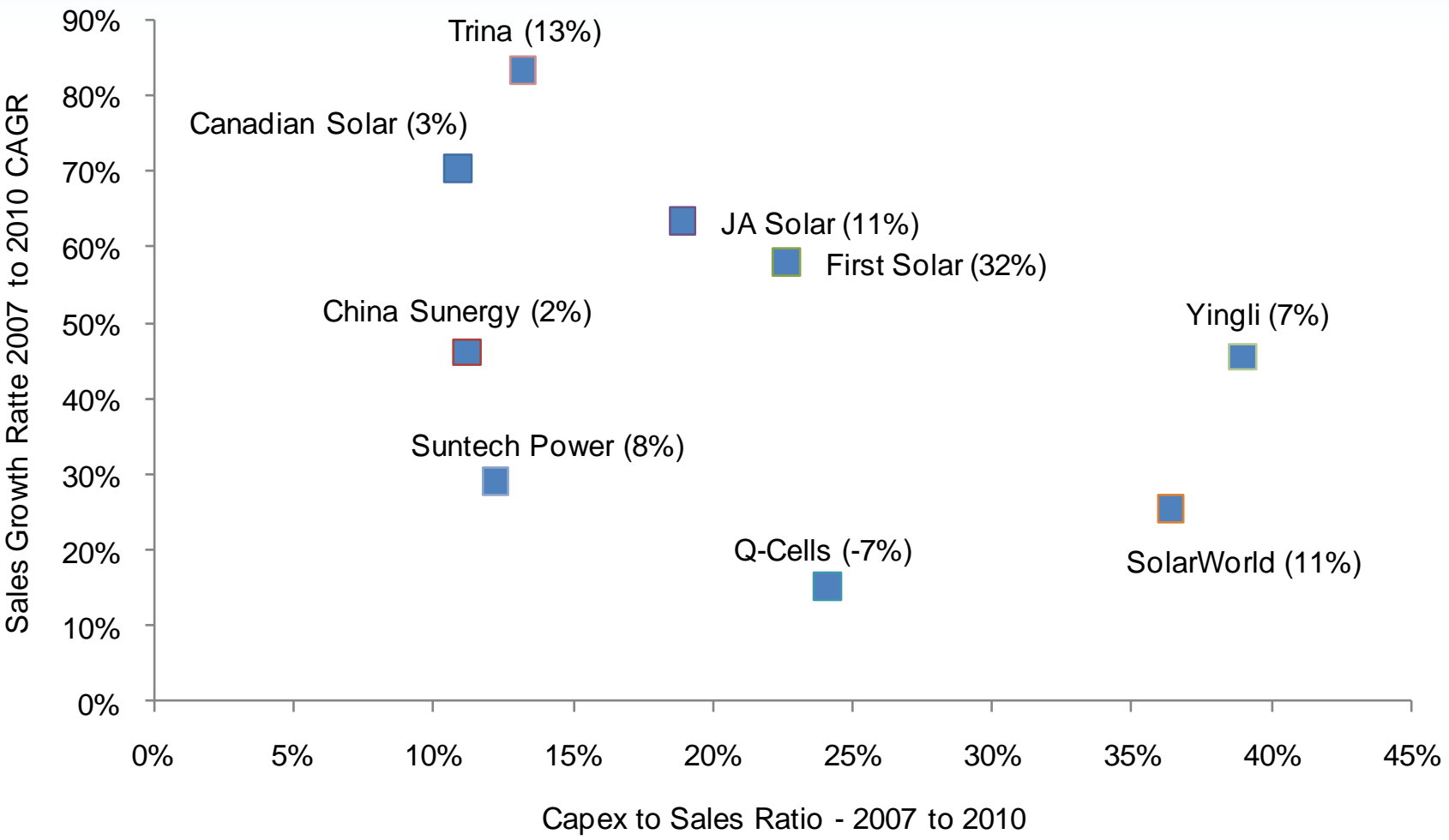
	2005	2006	2007	2008	2009	2010	2011
Module & Panel Shipments, \$Bn	3.9	7.2	10.8	20.4	15.5	25.8	28.2
Cell & Module Equipment – excludes polysilicon, ingot and wafering equipment, \$Bn	0.7	1.3	2.6	5.3	4.8	6.4	7.1
Capital Intensity, %	18%	18%	24%	26%	31%	25%	25%

Equipment Cost (\$M) per MWp of Capacity Addition



Efficient Use of Capital?

(Profitability 2007 to 2010)



Top 10 PV Equipment Suppliers 2010

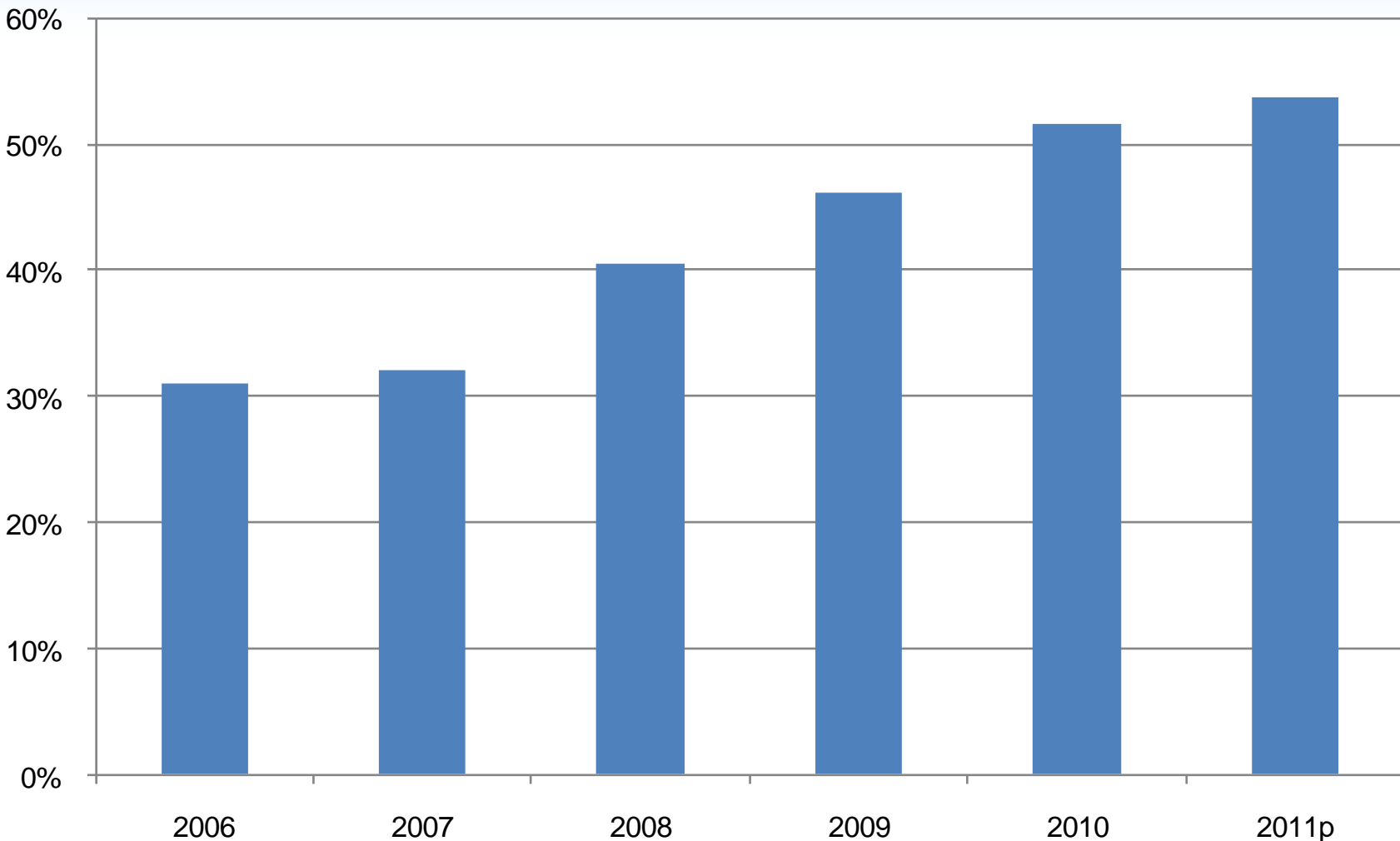
Company	Rank 2009	Rank 2010	Revenues 2010, \$M
Applied Materials	1	1	1495
centrotherm photovoltaics AG	2	2	825
GT Solar Incorporated	4	3	775
Meyer Burger	7	4	735
Gebr.Schmid GmbH+Co	3	5	570
Apollo Solar	32	6	390
Ulvac, Inc.	5	7	380
Komatsu	14	8	305
Roth & Rau AG	8	9	300
RENA Sondermaschinen GmbH	9	10	295

How things have changed...

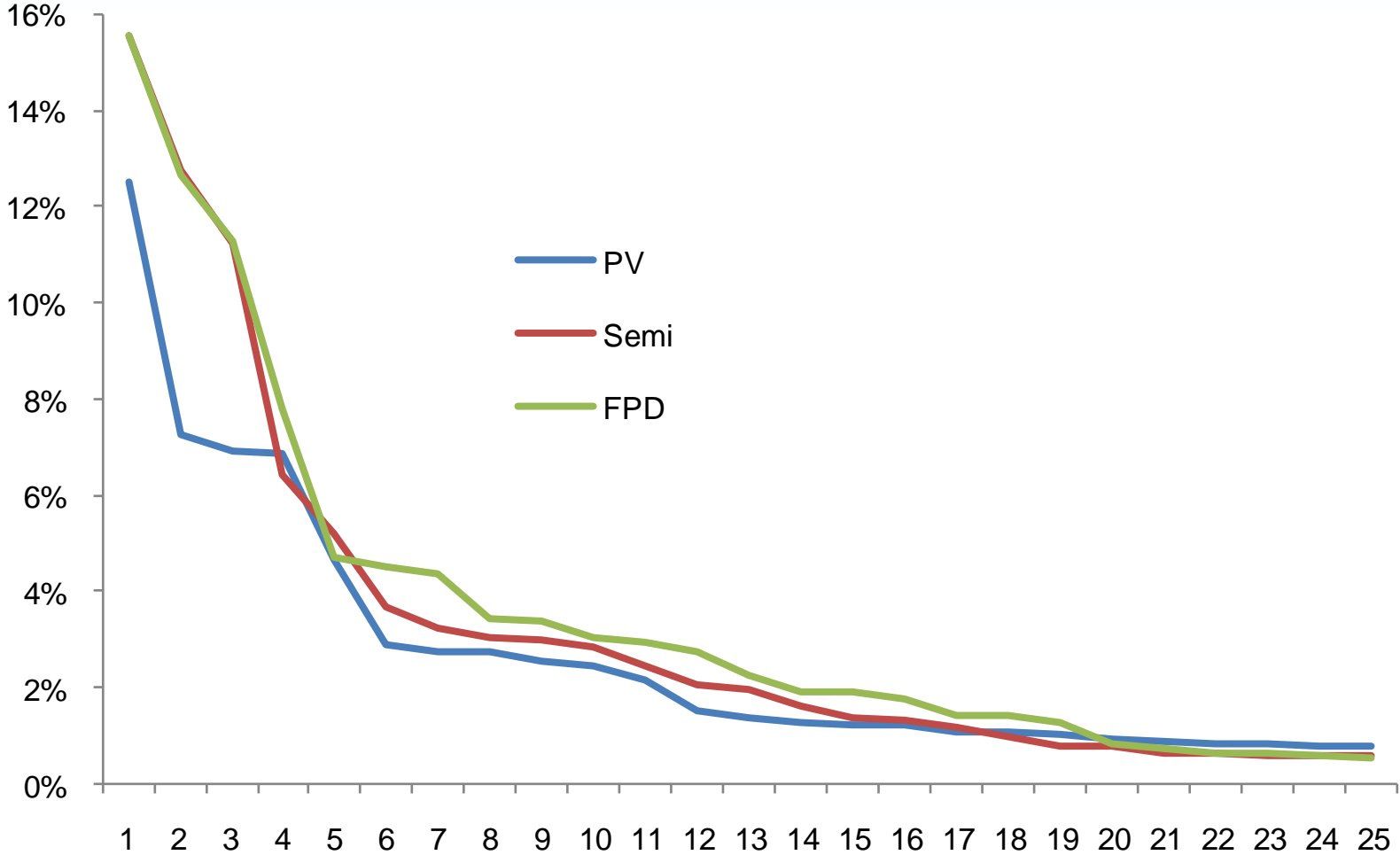
Top 10 PV Equipment Suppliers 2006

Company	Rank 2006	Rank 2010
Gebr.Schmid GmbH+Co	1	5
HCT Shaping Systems	2	n/a
centrotherm photovoltaics AG	3	2
Komatsu NTC	4	8
Oerlikon Solar	5	18
Von Ardenne Anlagentechnik	6	16
Meyer Burger	7	4
Roth & Rau AG	8	9
Baccini	9	n/a
Ulvac	10	7

Industry Consolidation – Top 10 OEM 's Share of Market

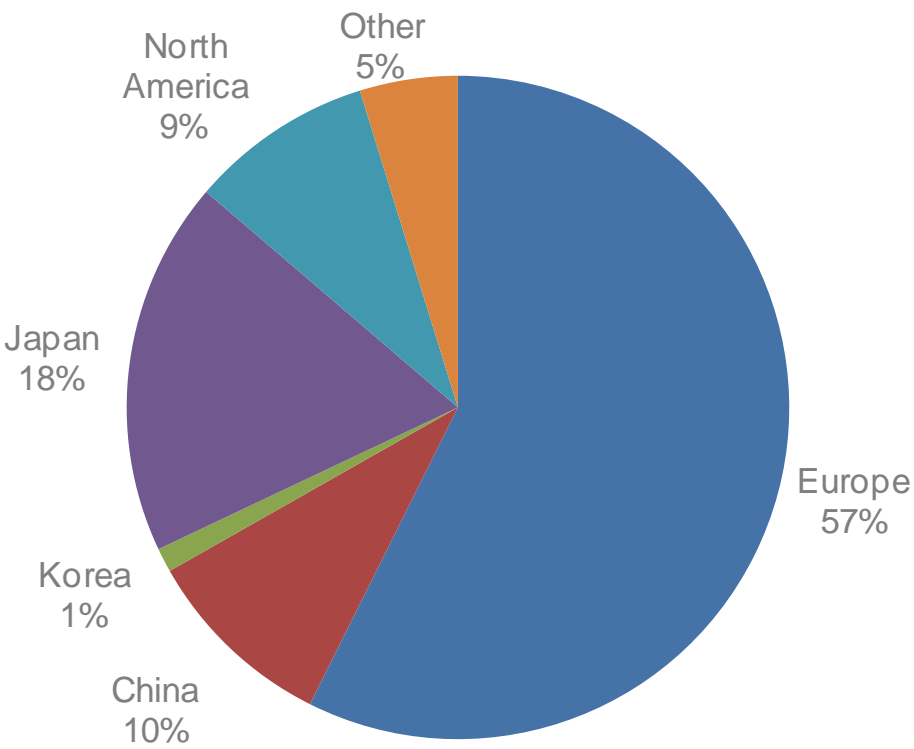


Industry Consolidation – Share of Market by Rank

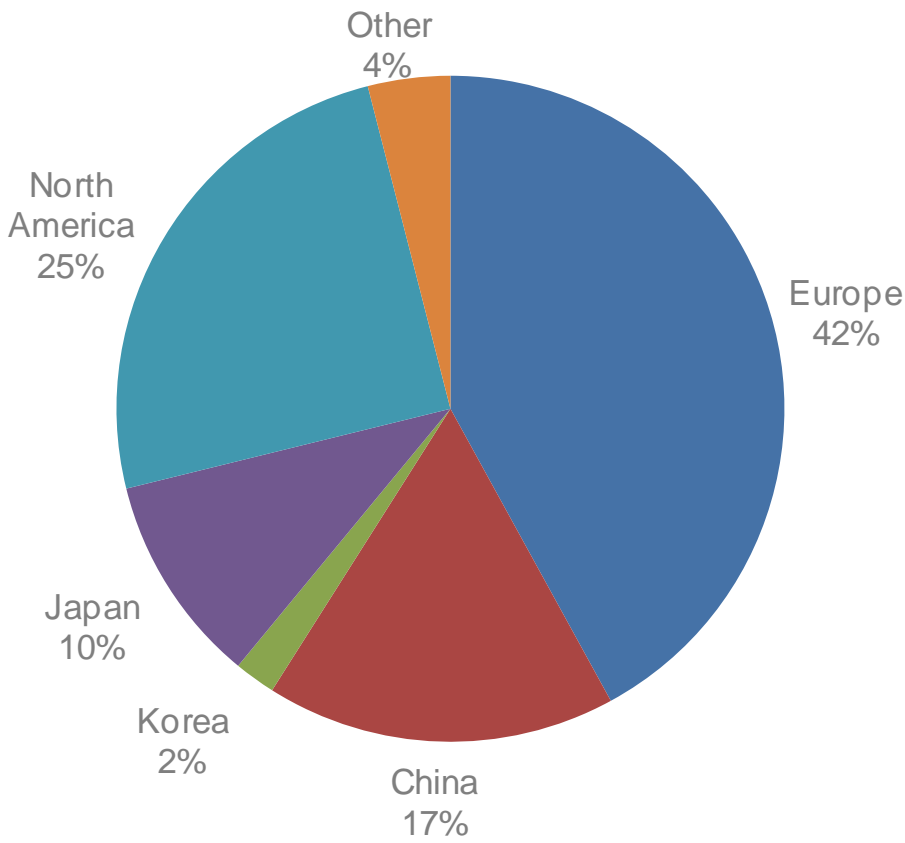


PV Equipment Suppliers by Region of Company HQ

2006 - \$2.1Bn

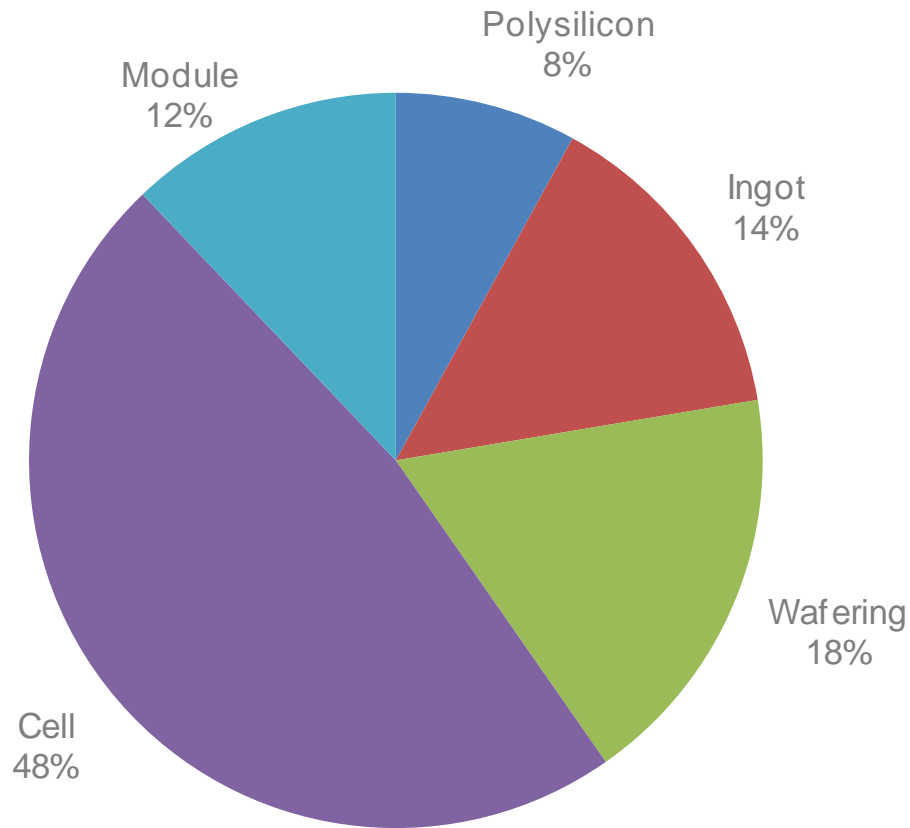


2010 - \$10.3Bn

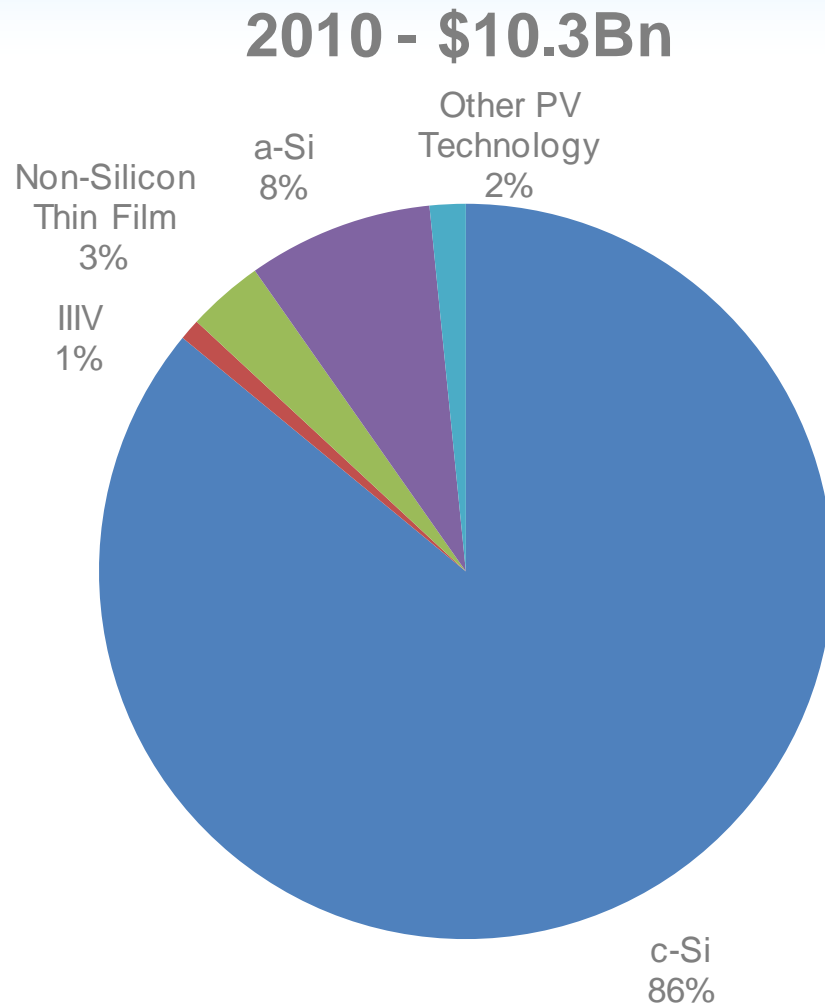


PV Equipment by Market

2010 - \$10.3Bn

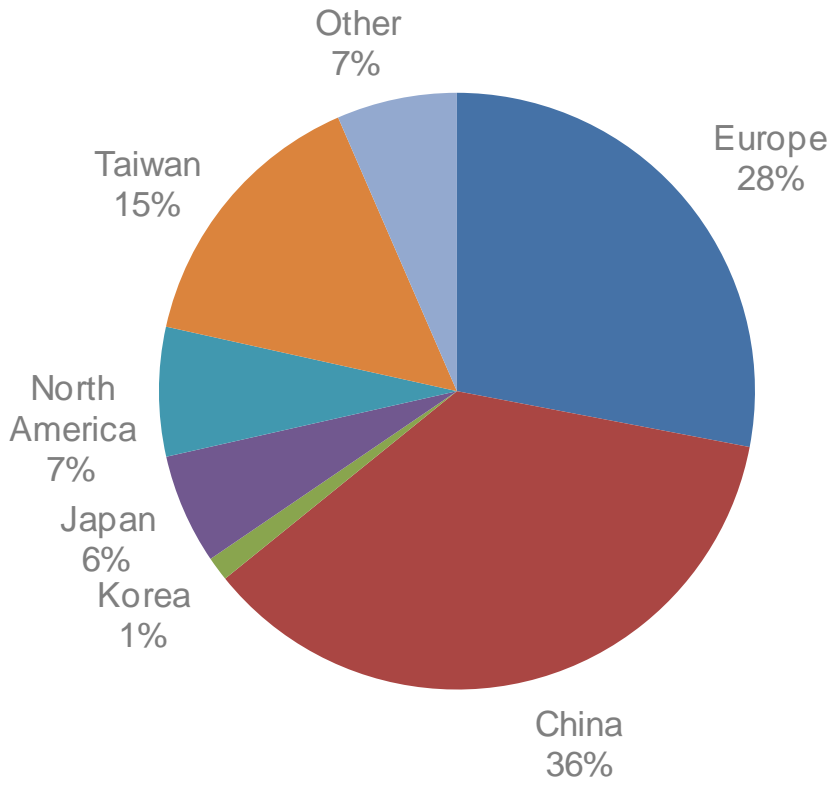


PV Equipment by Cell Technology

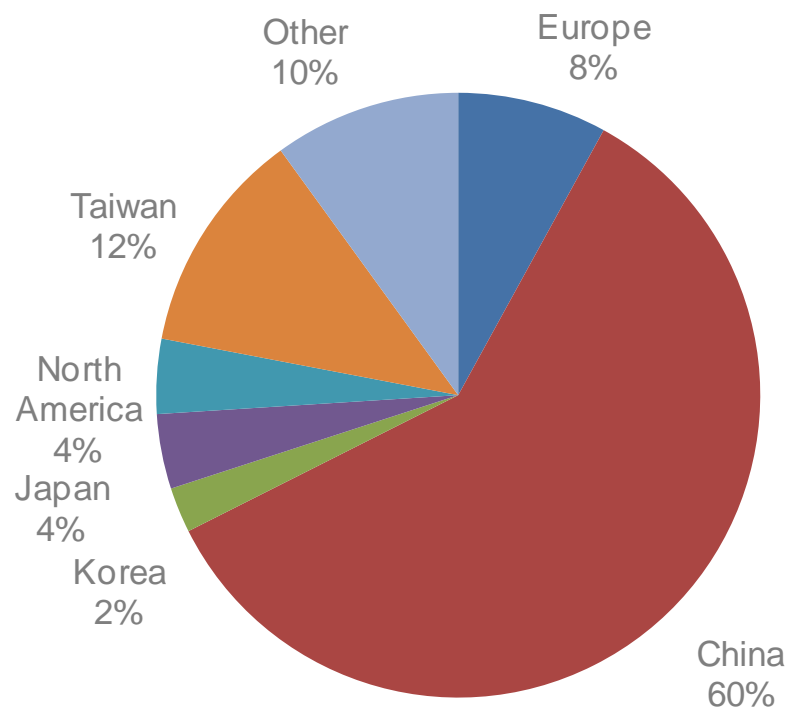


PV Equipment – By region of consumption

2006 - \$2.1Bn



2010 - \$10.3Bn



Summary – Reasons for Optimism

PV Market

Profits getting squeezed but growth prospects remain good

Tier 1 manufacturers are profitable

Prices will continue to fall...

..which will force more companies to exit or reconfigure

PV Equipment Market

Consolidation – Top 10 > 54% Share of market and growing

European suppliers still dominate the equipment market

Industry confidence low but improving

Outlook for 2012 – Market down by only 5%

Long term growth rate of 5% to 10%

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