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January 25, 2011

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The Year 2010 in Review

Snapshot of Photonics Industry M & A Transactions

2010 began with M&A transactions closing at numbers consistent with the low levels of 2009. Activity was low in the first quarter given uncertainties about the economy, healthcare legislation, and weak pricing offered by buyers. Activity increased second quarter and now there is a whirlwind of activity taking place.

Biophotonics segments saw, by far, the most activity - followed by Optoelectronics and Optics and then, Defense and Security segments.

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Valuing Privately Held Businesses

Beyond Compliance Toward Relevance & Better Decisions

Measure Lake Winnepesaukee by first measuring the Atlantic Ocean and then identifying, analyzing, and quantifying their dissimilarities. The Capital Asset Pricing Model and Build-Up Method are the accepted and compliant methods to value public and private businesses. Applying these valuation methods, however, to private businesses can be analogous to measuring an ocean and then identifying, analyzing, and quantifying its dissimilarities with a small, yet crystal clear lake. Why not simply measure the lake?

The Private Cost of Capital Model (PCOC) is based on the expected rate of return that private capital markets require in order to attract funds to a particular investment. This model enables appraisers and others to directly derive private business values from private return expectations, allowing a more relevant comparison - as opposed to solely documenting business value for compliance.

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CERES and Newbury Piret Team Up

Investment Banking with a Focus on Photonics

Ceres Technology Advisors is pleased to announce its joint initiative with Newbury Piret & Company, Inc., a leading global middle market investment banking firm.

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Pan Mass Challenge

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Corporate sponsors, friends, and family rally to support Pan Mass Challenge. Team Dassault raises \$415,037 for Dana-Farber Cancer Institute.

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The Year 2010 in Review

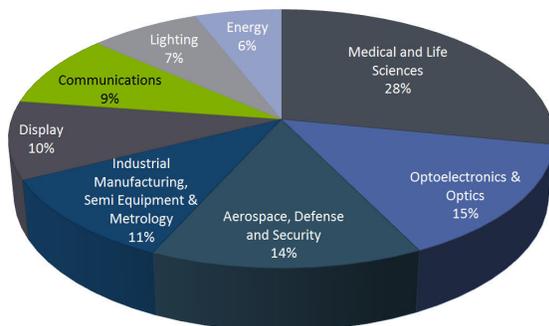
Snapshot of Photonics Industry M & A Activity

2010 began with Merger & Acquisition transactions closing at numbers consistent with the low levels of 2009. Activity was low in the first quarter given uncertainties about the economy, healthcare legislation, and weak pricing offered by buyers. Activity increased second quarter and now there is a whirlwind of activity taking place.

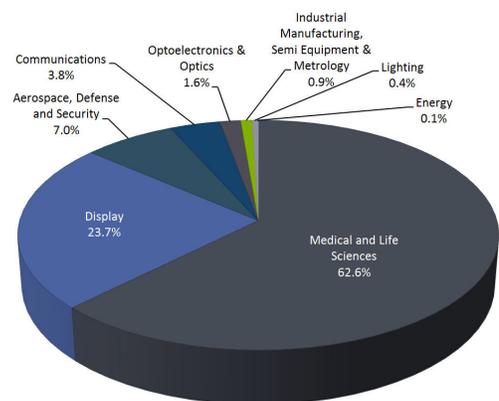
Activity

Biophotonics segments saw, by far, the most activity - followed by Optoelectronics and Optics and then, Defense and Security segments. Below is a snapshot of activity by market segment.

2010 Transactions by Market Segment



2010 Disclosed Transaction Value by Market Segment



Medical and Life Sciences saw the most activity and the greatest reported total value. Segments include medical devices, medical imaging, diagnostics, environmental monitoring and life sciences instrumentation. *Optoelectronics and Optics*, including optical components, materials, lasers, sensors, cameras and subassemblies, and *Aerospace, Defense and Security* followed in terms of number of transactions. *Display*, including displays and back lights, followed in total reported transaction value.

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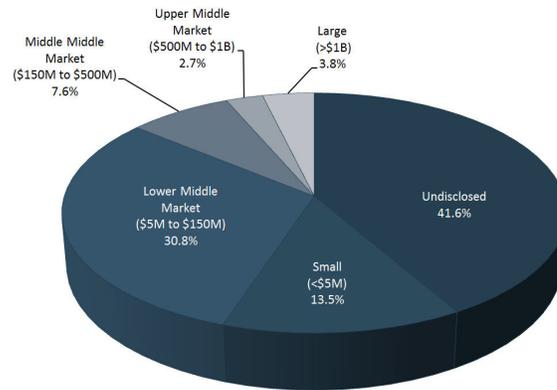
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Industrial Manufacturing and Metrology includes semiconductor equipment, process control equipment, and industrial laser material processing. Most of the target companies in this segment supplied equipment that supported the manufacture of LEDs and photovoltaics. *Lighting* includes LEDs and luminaires. *Communications* include optical networking gear and test equipment. *Energy* includes solar cell photovoltaics, materials and subassemblies. *Security* includes intelligent sensing, surveillance, personal identification, and trace detection.

185 M&A transactions with target companies employing photonics technologies are researched. 58% of researched transactions disclose the transaction value. Of those disclosed transactions, more than 75% are small and lower middle market companies.

2010 Transactions by Size



This may indicate a trend of consolidation in highly fragmented vertical market segments, such as Medical and Life Sciences Instrumentation, Communications and Display, where photonics plays a differentiating role - as well as continued consolidation of the core Photonics market that includes manufacturers of lasers, sensors, optical components, and OEM subassemblies.

Private Investment Firms are active in 2010. 9% of transactions involve private investment firm buyers and 23% of transactions involve private investment firm sellers.

Valuations

The total and average value of researched transactions are \$65billion and \$609million. This is skewed high by Novartis' acquisition of Alcon for \$29billion, Innolux Display's acquisition of Chi Mei Optoelectronics for \$13billion, and Merck's acquisition of Millipore for \$7billion.

The simple average of reported Average Total Enterprise Value to Revenue and EBITDA multiples are 2.6 and 26.8 respectively.

Comparing a simple average with no adjustments for size, capital structure, or other dissimilarities by market segment - *Medical Devices, Materials, and Energy* realize the highest multiples of Total Enterprise Value to Revenue while *Communications, Semiconductor Equipment, and Medical Imaging and Diagnostics* realize the highest multiples of Total Enterprise Value to EBITDA.

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	# Transactions	% Total	Reported Transaction Value (\$USDM, Historical rate)	% Total	Average Deal Value (\$M):	Average Total Enterprise Value / Revenue:	Average Total Enterprise Value / EBITDA:
Medical Devices	16	9%	31,162.74	47%	3,462.53	4.80	13.90
Display	18	10%	15,584.86	24%	974.05	0.11	4.05
Life Sciences Instrumentation	16	9%	9,071.15	14%	907.12	1.26	9.58
Security	12	6%	3,042.58	5%	380.32	6.41	
Communications	17	9%	2,498.46	4%	227.13	1.08	140.15
Aerospace & Defense	11	6%	1,564.90	2%	312.98	0.75	8.23
Medical Imaging & Diagnostics	20	11%	945.85	1%	67.56	1.83	39.70
Optoelectronics - Lasers, Sensors, Cameras, Assemblies	17	9%	825.64	1%	103.21	3.36	9.69
Metrology	10	5%	427.69	1%	85.54	1.64	11.45
Lighting	14	8%	256.76	0%	43.38	1.02	9.95
Optics	9	5%	122.97	0%	30.74		
Materials	4	2%	96.58	0%	32.19	4.99	24.60
Industrial Manufacturing	4	2%	72.97	0%	36.49		
Semiconductor Equipment	6	3%	67.76	0%	13.55	1.25	40.40
Energy	11	6%	46.96	0%	23.43	3.74	9.46
	185		65,787.88		609.15	2.61	26.79

Average Total Enterprise Value to EBITDA is skewed high by two lower middle market Korean transactions - Hitachi Kokusai Electric's control stake acquisition in Kook Je Electric Korea, a South Korean manufacturer of liquid crystal display equipment (270x) and EROOM G&G acquisition of Timo Technology, South Korean manufacturer of optical telecommunications equipment (110x).

The Transactions

Follow this link to a snapshot of these of transactions. [<2010 Photonics M&A Transactions>](#)



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Valuing Privately Held Business Private Cost of Capital

Measure Lake Winnepesaukee by first measuring the Atlantic Ocean and then identifying, analyzing, and quantifying their dissimilarities. The Capital Asset Pricing Model and Build-Up Method are the accepted and compliant methods to value public and private businesses. Applying these valuation methods, however, to private businesses can be analogous to measuring an ocean and then identifying, analyzing, and quantifying its dissimilarities with a small lake. Why not simply measure the lake?

The Private Cost of Capital Model (PCOC) is based on the expected rate of return that private capital markets require in order to attract funds to a particular investment. This model enables appraisers and others to directly derive private business values from private return expectations, allowing a more relevant comparison. As opposed to solely documenting business value for compliancy, the PCOC model promises to help business valuation professionals advise business owners in making better investing and financing decisions.

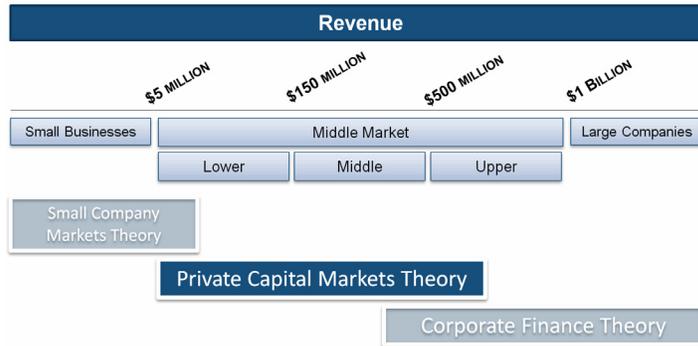
Public and Private Capital Markets are Not Substitutes

Today, public return data is used by appraisers to derive costs of capital for private company valuation. Corporate Finance Theory, grounded in assumptions around a single efficient public market, is also used by appraisers to value private companies - private companies that have no access to public markets and never plan to IPO.

Public companies use a C-Corporation with a goal to maximize profit. Their owners have limited liability, are well diversified, and employ a professional management team. On the contrary, private companies use also an S-Corporation, LLC or other entity. Owners have unlimited liability, are undiversified with typically one primary asset, and are often managing the business.

These fundamental dissimilarities make questionable the application of Corporate Finance Theory to valuing private businesses. They call for the development of new theories and compliance guidelines to predict risk and return, rational market behavior, equilibria, and utility for both small company and private capital markets.

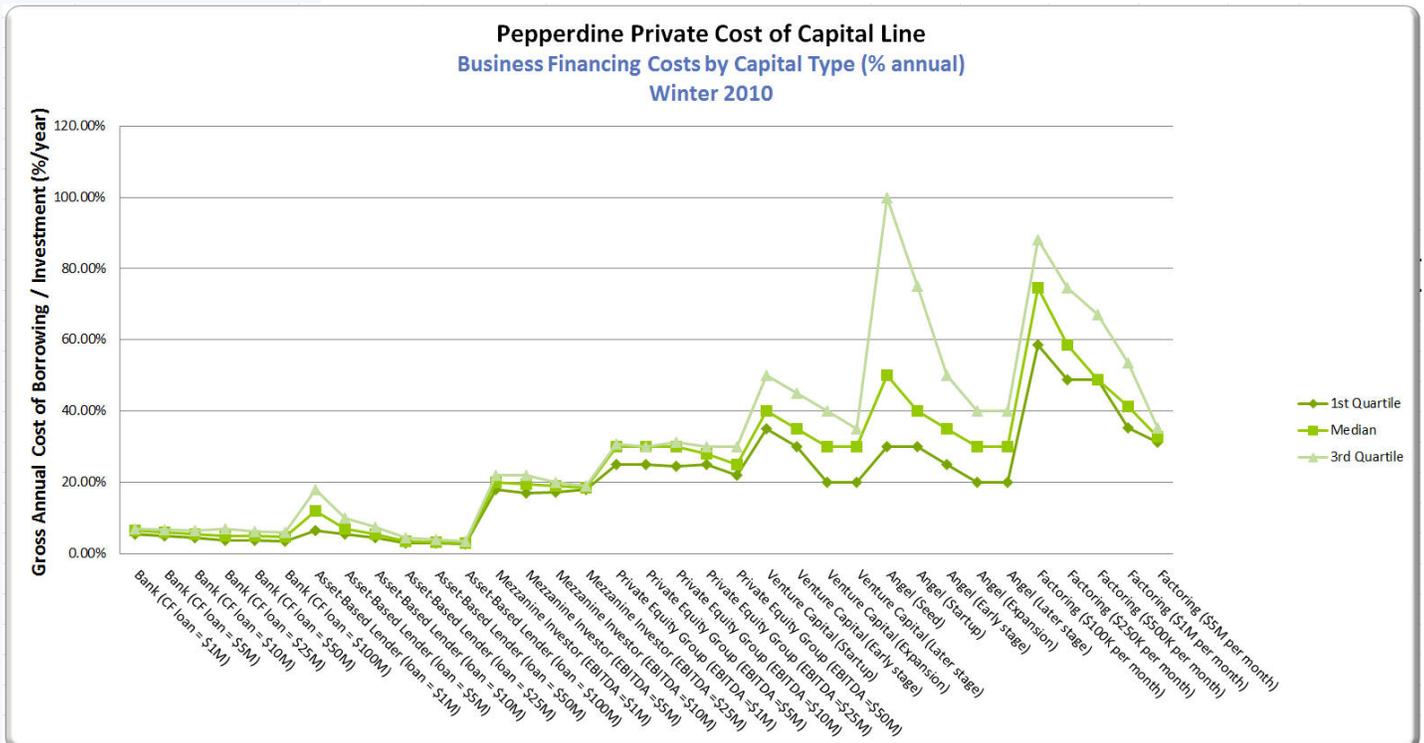
The PCOC model derived from Private Capital Markets Theory applies to private companies with sales from approximately \$5 to \$500 million.



Pepperdine PCOC Survey

The Pepperdine private cost of capital survey is a web based survey of tens of thousands of capital providers including banks, asset based lenders, mezzanine investors, private equity groups, venture capitalists, factoring companies, business owners, investment banks, and business valuation professionals.

The survey below, released in December of 2010, investigated for each private capital market segment, the important benchmarks that must be met in order to qualify for capital - amount of capital typically accessible, required returns for extending capital in the current economic environment, and outlooks on demand for various capital types, interest rates, and the economy in general.



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327 private equity firms responded to the survey. Private equity (PE) reported to review 100 business plans to close one deal. Their median PE realized return in the last 12 months was 25% while the median expected return in the next 12 months is 27%. 68% of their transactions are control and the average percentage of equity in the capital structure is 60%. Only 8% are looking to exit via IPO and 88% plan to sell to another PE or to a private or public company. Nearly 70% of respondents said that demand for business investment is up from six months ago, as are investment standards, appetite for risk, and the quality of companies seeking investment. One third reported making zero investments in the last 6 months. More than 40% reported taking three to four months to close one deal.

Private Equity firms reported the following deal multiples of EBITDA paid in the manufacturing industries.

Manufacturing Companies	\$1M EBITDA	\$5M EBITDA	\$10M EBITDA	\$25M EBITDA
1st quartile	4.0	4.7	4.3	5.0
Median	4.0	5.0	5.0	6.0
3rd quartile	4.8	5.0	5.0	6.0

Private Cost of Capital Model

The Private Cost of Capital model is based on the principal of substitution and mirrors how private capital providers make investment decisions. The relevant market of investors is the market that determines the cost of capital. Discount rates emanate from the return expectations of the relevant capital providers. Referencing the PCOC model below,

$$PCOC = \sum_{i=1}^N \left[(CAP_i + SCAP_i) * \frac{MV_i}{\sum_{j=1}^N MV_j} \right]$$

- Where N = number of sources of capital
- MV_i = market value outstanding securities i
- CAP_i = median expected return for capital type i
- SCAP_i = specific CAP_i risk adjustment for capital type i

the first step in determining the appropriate CAP is to review the credit boxes described in the most current Pepperdine survey. Next, select the appropriate median CAP from the survey results. Then, adjust the survey CAP by SCAP_i to reflect the company specific risk based on a comparison between the subject company and the survey. Use the upper and lower quartile returns as a guide to this adjustment. Determine the market value of each CAP and derive the percentage of the capital structure for each CAP. Finally, add the individual percentages to derive PCOC.

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Compliance vs. Relevancy

Contrasting the PCOC model to Capital Asset Pricing Model and Build Up Method, questions around both fundamental theory and compliance arise. How will minority interest discounts be calculated? Is there a need for control premiums and discounts for lack of marketability? How will minority interests be calculated? Are there robust sources of private capital? Do they price risk? Is it possible to learn return expectations of individual private capital providers?

Applying private capital market risk in business valuation can move business valuation more toward market relevancy. According to the survey, 80% of business owners are not generating a return on investment greater than their cost of capital. As opposed to solely documenting business value for compliancy, the PCOC model promises to help business valuation professionals advise business owners in making better investing and financing decisions.

Sources: Slee, Rob and Paglia, John. "Private Cost of Capital Model." The Value Examiner. March / April 2010.; Pepperdine Private Capital Markets Project - Survey Report IV - Winter 2011



CERES and Newbury Piret Team Up

Investment Banking with a Focus on Photonics

Ceres partners with Newbury Piret & Company, Inc. to provide investment banking services. This initiative applies decades of investment banking experience in mergers and acquisitions and capital raising, including equity and debt, as well as business valuation services, to the high potential technology markets served by photonics.

Mergers and Acquisitions

- Buy-Side Advisory
- Acquisition Financing
- Sell-Side Advisory
- Corporate Divestitures
- Management Led Buyouts
- Acquisition Searches

Private Equity and Corporate Finance

- Common & Preferred Equity Solutions
- Recapitalizations
- Mezzanine, Subordinated, and Senior Debt
- Funding of Management Led Buyouts

Financial Advisory

- Corporate Valuations
- Fairness Opinions
- Purchase Price Allocations
- Goodwill Impairment Analysis



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News

Ceres Technology Advisors Receives National Certification as Women's Business Enterprise

Needham, Massachusetts - December 20, 2010

Ceres Technology Advisors, a business specializing in Investment Banking, Merger and Acquisition Advisory and Business Valuation services, received national certification as a Women's Business Enterprise by Women's Business Enterprise National Council (WBENC).



WBENC's national standard of certification is a meticulous process including an in-depth review of the business and site inspection. The certification process is designed to confirm the business is at least 51% owned, operated and controlled by a woman or women. By including women-owned businesses among their vendors, corporations, and government agencies demonstrate their commitment to fostering diversity and the continued development of their supplier/vendor diversity programs.

WBENC encourages companies to take advantage of resources to grow, update, and/or improve their Supplier Diversity programs. Corporate members that are actively creating an environment of opportunity for women's business enterprises include Alcatel-Lucent, Allergan, Boeing, Bristol-Meyers Squibb, Eastman Kodak Company, General Electric, Guidant, Hewlett-Packard, IBM, Lockheed Martin, Merck, Pfizer, Raytheon, Sandia National Labs, Siemens, Telcordia, Tyco, and United Technologies Corporation.

About WBENC

The Women's Business Enterprise National Council is the nation's largest third party certifier of businesses owned and operated by women in the United States. WBENC is a resource for the more than 700 companies and government agencies that rely on WBENC's certification as an integral part of their supplier diversity programs.

For more information, please contact Ceres Technology Advisors:

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We all know people near and dear to us who have battled cancer. Because of the love and superhero efforts of researchers, doctors, fund raisers, patients and their supporters, cancer can be prevented, diagnosed early and curable in our lifetime.

The PMC is the single largest contributor to the Dana-Farber Cancer Institute and raises more money than any other athletic fund-raising event in the country. PMC donates 100% of every rider-raised dollar directly to the cause.

Team Dassault members rode 84 to 192 miles on routes from Sturbridge to Provincetown, MA to raise \$400,000 this year.

If you would like to make a donation, please follow this link: <http://www.pmc.org/profile/LS0128>.

If you are interested in joining the team as a rider or volunteer, please do not hesitate to contact us. It is an opportunity to channel energy into something much greater than the athletic accomplishment - it is an opportunity to make a real difference in the lives of millions whose lives are touched by cancer.

Thank you for your continued support.

Linda
www.cerescom.net



Team Dassault 2010



Team Photon 2005

Thank You Corporate Sponsors!

Friends and colleagues rally to support Pan Mass Challenge - raising \$415,037 for Dana-Farber Cancer Institute

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