**Corporate Finance in the Global Environment** 

Abengoa, Cosan, and Verenium 'A Tale of Three Cities': Strategic Financial Management in the Biofuel Industry





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# Abengoa, Cosan, and Verenium 'A Tale of Three Cities': Strategic Financial Management in the Biofuel Industry



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# **Overview**

#### **Executive Summary**

This report examines value management in the biofuel industry by examining three companies headquartered in distinct global cities: Abengoa SA in Seville, Spain; Cosan in Piracicaba, Brazil; and Verenium in Cambridge, Massachusetts, USA. Each has approached this growing but volatile new industry according to unique strengths, regional situations, approaches to value management, and corporate governance structures. Theirs is a tale of global ambition, competition, advanced science, shifting alliances, and the race to create a more sustainable global energy supply. In scrutinizing core value management practices we seek not only comparative insight, but to understand the evolving character of a rapidly emerging new industry.

**KEYWORDS:** biofuel, ethanol, industrial biotechnology, bioethanol, sustainability, innovation, cellulosic ethanol, biomass, feedstock, financial analysis, value management, corporate governance

#### **Biofuel Industry Overview**

Biofuel is a term used to describe combustible fuel produced via the conversion of organic material (Demirbas, 2009). Advancements in process science and intermediaries have led to second generation biofuels, a still developing approach which involves converting non-edible feedstock to biofuel. Third generation biofuels, still in the early laboratory stages, are the result of biotic synthesis from genetically engineered organisms (Economist Staff, June 2010). The particular processes, organisms, and catalysts employed vary widely, as do the types of feedstock and the end products. As per Figure 1, now dominant bioethanols may be supplanted in the future by "drop-in" biofuels, a hydrocarbon-based diesel substitute.

Rapidly evolving, the industry sits at the nexus of change: growing enthusiasm for sustainability, debates concerning global warming, government incentives, the quest for alternative energy sources, expansion in developing economies, and the emergence of new technologies. The challenge for this nascent industry is that its central competitor, and sometimes partner, the petroleum majors, have distinct advantages. The oil industry is systematized into the global economy and realizes dramatic cost efficiencies and synergies as a result.



Figure 1: Biofuel technical development

Biofuel ventures must manage capital carefully to sustain profit margins as fundamental technologies and infrastructure efficiencies gradually emerge. Government assistance, tax credits, and loan guarantees are crucial to meeting profit margins. Companies depend upon a subsidy factor, and, even then, are not profitable yet, though technical improvements are narrowing the gap. However, subsidies, as stimulus measures, are a temporary measure on the path to the anticipated emergence of a selfsustaining industry. Firms active in this arena must project towards a strategic vision for self-sufficiency using incentives as a financial springboard. The stakes are high: the biofuel industry is expected to multiply its production by a factor of 50 by 2020 (Biodiesel News Staff, 2010). The U.S. Renewable Fuel Standard calls for a 10% blend of cellulosic fuel in transport fuels by 2022. Of interest here are the ways in which biofuel firms adopt strategies to drive financial value while still developing, even as the sands of government policy, cost economics, and technology factors in the industry shift.

## **Overview of Companies**

## **Companies 'At-a-Glance'**

	Abengoa SA	Cosan SA	<u>Verenium</u>
Stock Ticker(s)	IBEX: ABG	BOVESPA: CSAN3	Nasdaq: VRNM
	MCE: ABG.MC	NYSE: CZZ	
Share Snapshot (2005-2010 monthly % ∆)			
Volume Snapshot (2005-2010)			
Industry	Technology, engineering,	Sugarcane agriculture,	Biotechnology specialty
Segment	sustainable energy	biofuel	enzymes
Founded	1941	1936	2007
Headquarters	Seville, Spain	Piracicaba, Brazil	Cambridge, MA, USA
Chairman/CEO	Felipe Benjumea Llorente	R. Ometto Silveira Mello	Carlos A. Riva
Key Products	Solar energy and bioenergy devices, IT, water and waste treatment, construction of telecom networks, power stations, infrastructure	Production, trade, and distribution of sugarcane- based processed sugar, ethanol, fuel, and lubricants	Specialty enzymes for biofuel and industrial applications
Revenues '09	€4,147B	BR\$2.7B	\$65.9M
Oper Income	€431.0M	-(BR\$116.6M)	-(\$64.3M)
Net Income	€202.7M	-(BR\$40.2M)	-(\$21.9M)
Employees	23,320	45,000	290
Website	www.abengoa.com	www.cosan.com.br	www.verenium.com
Strategic Summary	Horizontal business lines with loose synergies. Increasing international production of biofuel	Brazilian biofuel vertical supply chain integration from crop-to- pump and international export Sugar foodstuff	Specialty enzyme development for industrial & biofuel market. Cellulosic biofuel segment sold to BP

Figure 2: Snapshot comparison of three biofuel majors

November 5<sup>th</sup>, 2010

#### Abengoa

Abengoa SA is a Spanish global engineering conglomerate with a focus on sustainability in infrastructure, environmental, and energy projects. Biofuel accounts for a strategic and growing 25% of the business by gross sales, with complementary units occupying the remainder: solar, IT, environmental services, and industrial engineering / construction. Abengoa Bioenergy operates eight international biofuel plants. Recently the company expanded operations to Brazil and announced plans to deploy the first commercial-scale cellulosic bioethanol facility in the U.S. The company has attempted to reduce risk by diversifying across distinct horizontal business-lines and by dispersing internationally to optimize subsidy, tax savings, commodity prices, and other regional advantages.

#### Cosan

Cosan SA is a Brazilian firm engaged in the production, trade, and distribution of sugarcane-based processed sugar, ethanol, fuel, and lubricants. Operating 18 surgarcane mills which process 43m tons of cane annually, the firm produces bioethanol along with sugar for both consumer and industrial use. The firm benefits from the mature state of the bioethanol industry in Brazil and a highly-integrated and efficient supply chain: inexpensive manual labor, abundant agricultural land, a high-yield tropical growing climate, high-energy yield crops (sugar cane and corn in particular), transport infrastructure, biofuel fermentation plants, end-product distribution networks, point-of sale depots (hybrid fueling stations), and Brazilian engines designed and certified to work with high blend rates (Almeida, 2007). Recently Cosan formed a joint venture with Shell to build an innovative hydrocarbon fuel plant (Economist Staff, November 2010).

#### Verenium

Verenium Corporation formed as a result of a merger between Diversa Corporation and Celunol Corporation, a private company. The combined organization coupled Diversa's growing portfolio of specialty enzyme products for use in industrial processes and its unique R&D capabilities with Celunol's expertise in cellulosic ethanol production. Verenium is the first company in the cellulosic ethanol business to possess integrated end-to-end project capabilities in novel enzyme development, which it leverages to develop enzymes that facilitate the production of biofuels (Verenium, June 2007). However, hard-hit by the financial crisis, in Q3 of 2010 Verenium was forced to license out its cellulosic capabilities to BP and retreat to a focus on selling specialty enzymes.

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# **Comparative Value Management Analysis**

#### **Operational Efficiency**

Consistent success in the biofuel industry depends upon operational efficiency: the core profitable processing and distillation of feedstock into biofuel. Demonstration of value creation via improving operational factors over time is thus a key 'watch-point'. Operating Profit Margin (OPM) is a key relevant indicator: the percentage of revenue remaining from net sales after variable production costs are accommodated. Figure 3, a comparison of OPMs, tells a dramatic story: Verenium undertook a risky gambit by attempting to commercialize cellulosic bioethanol production while Abegoa and Cosan focused on core businesses, the former being diversified in horizontal, non-biofuel lines and the latter focusing on vertical supply chain efficiencies.



Figure 3: Comparative Operating Profit Margins

Working Capital Management (WCM) is an additional sign of efficiency: tight inventory and current accounts management frees capital for development and expansion. Consistently *negative* WCR contributes to a firm's Self Sustainable Growth Rate (SSGR), allowing for expansion without resort to external capital. Abengoa is the clear star performer in terms of maintaining a consistently negative WCR (see Appendix 7), followed by Verenium. However, it is important to note that these two firms

have realized negative WCR by virtue of pre-negotiating long-term feedstock supply and ethanol offtake contracts with third-parties, a common approach in the industry. Such contracts contain their own risk when adverse commodity price movements trap the firm in losing pricing commitments.

In the case of Cosan, the firm has maintained a positive WCR balance, indicative of a different approach to supply-chain management. As a vertically integrated company, Cosan directly owns feedstock production land, which not only lowers raw material prices, but negates the need to negotiate risky long-term contracts with third-parties. Cosan reaps great cost savings and control from this circumstance. Beyond this, WCR margins have halved in the space of four years, displaying the fruits of intensive investments in improved supply-chain speed and efficacy.

For a broader view into value drivers, Appendix 4 summarizes comparative figures for the three firms as averaged over a five-year period. Key components of interest are highlighted: working capital components and the effect of operational factors on core RoE and ROIC. Appendix 8 provides highlighted comparative measures which include industry and index views as per Reuters.

#### **Comparative Role of Equity Financing**

Biofuel firms have evidenced a special attraction to investors with a higher-than-average risk appetite, an active segment during bull markets. Cosan and Verenium both averaged 66% proportional market value adjusted equity financing over the period 2005 – 9 (see Figure 4), with greater than 90% equity financing in 2005.



Figure 4: Comparative equity financing

Whereas the boom equity market of 2005-6 brought high biofuel company equity valuations, the Global Financial Crisis of 2007–10 resulted in challenges for each of the firms under scrutiny. From Figure 4, it is apparent that Cosan presciently reduced its equity financing exposure just prior to the collapse of global equity markets. Verenium, however, became trapped by its commitment to a high-risk strategy associated with cellulosic ethanol: investors pulled-out, leaving the firm struggling to maintain its path. As profitability declined in the face of standing commitments, a vicious cycle of equity decline followed. The lesson is that high reliance on equity valuation collapse is equally important: Cosan focused on realizing core supply chain efficiencies while Abengoa diversified horizontally, allowing both to weather the macroeconomic storm that ensued.



Figure 5: Comparative stock valuation (1/2006–9/2010)

#### **Core Comparative Value Creation**

Concerning Abengoa, consistently positive Return on Invested Capital (ROIC) and upward-trending Retained Earnings suggest a well-managed, growing operation. The firm's consistent financial measures are a testament to solid risk management and hedging (aided by its dedicated commodity trading operation). Concerns include unpredictable year-to-year sales growth, unpredictable tax rate swings, and a rapidly inflating AP current liability. Although the firm has had a number of Economic Value Added (EVA) shortfalls, when averaged over 2006 – 9 the EVA balance is positive, making Abengoa the comparative best performer in terms of core value creation amongst the three firms. For a patient value investor, Abengoa would be the recommended equity investment of the group.

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November 5<sup>th</sup>, 2010

Concerning Cosan, there is a great deal of volatility in the firm's Return on Equity (RoE) components and EVA is consistently negative. The firm's domineering "paterfamilias", Ometto, has forced through a number of ambitious acquisitions which have made it difficult to realize value creation. As per Appendix 5, the firm has on average sacrificed value creation to fuel acquisition and growth. These acquisitions are still being integrated and streamlined into the supply chain. Sales Growth exploded in 2009, showing the results of an increasingly global export market along with its ability to enact natural hedging: to sell bioethanol *or* processed sugar as price benefits dictate. A negative item for improvement is the SSGR, which is flat or negative over the past four years, indicating that the firm requires external investment to grow and a sign that capital has been allocated sacrificially to fund growth and expansion. This is a sign that Ometto's acquisition spree needs to wind-down and begin to show core results. As operational efficiencies have borne fruit, it is likely the SSGR profile will improve as margins increase, development expenses reduce, retained earnings grow, and acquisitions are fully integrated.

Concerning Verenium, this is the laggard of the group. As mentioned, although the firm has strong OE ratios, consistently negative ROE, a poor SSGR, and negative EVA indicate that the firm is destroying value. Verenium's failure to achieve core profitability has threatened its chances of remaining a going concern.

#### Value Creation in the Biofuel Industry

The unpredictable gyrations of commodity markets, investor sentiment, government largess, and technical uncertainties combine to make diversification, dynamism, and flexibility a key asset in the biofuel industry. Risk management and the ability to make quick decisions are otherwise crucial. From the perspective of financial results, the relatively autocratic management of Abengoa and Cosan appear to have provided this capacity. Verenium, having taken an all-or-nothing bet on risky new technology, survives now only having sold its cellulosic ethanol technology rights to BP (Fahey, 2010).

Abengoa, bolstered by its horizontal diversification and international dispersion, has weathered the crisis with an even keel. The firm has demonstrated shrewd financial and capital management savvy. Its financial engineering finesse and penchant for realizing global value arbitrage opportunities is a cause

for investor enthusiasm. So far, the interests of the ruling Benjumea family and shareholder interests have been closely aligned. The future challenge will likely pit the interests of familial wealth preservation and diversification against growing opportunities for specialization and, potentially, conglomerate expansion in the biofuel sector.

Cosan as well has remained comparatively stable, although a feverish period of acquisitions must now be followed by retrenchment and focus on core profitability measures. As it seeks to expand, it will need to compete on global terms outside the fostering Brazilian biofuel economy. In particular, it will need to make itself more accountable in terms of management transparency and answer to growing charges from regulators that it benefits from unfair competitive advantages (Economist Staff, September 2010). Ometto in particular will need to demonstrate to global investors a willingness to loosen his autocratic reigns. Cosan has entered into a recent co-venture with Shell from a position of strength and has been rewarded with an equity investment premium.

# **Comparative Corporate Governance Assessment**

#### **Board of Directors Structures**

Figure 6 summarizes key comparative aspects of the Board of Director (BoD) structures for each of the three companies. Although the duration of members varies, all three companies have staggered boards: not all members are due for re-election simultaneously. Abengoa has the longest term, a potential method to maintain familial seats. Verenium also has long comparative seat durations. However, none of the firms issue BoD contracts, meaning that any standing member can be removed at any time.

Summary Board of Director Structures (from company 2009 Annual Reports)									
	Staggered Service Re-election Contracts # Total #							#Also	% Also
	Board	Duration	Potential	Offered	Members	Independent	Independent	Executives	Executives
Cosan	Yes	2 years	Yes	No	9	3	33%	3	33%
Abengoa	Yes	4 years	Yes	No	16	6	38%	3	19%
Verenium	Yes	3 years	Yes	No	9	8	89%	1	11%



Figure 6: Sumary of Board of Director structures

An area of distinction amongst the three BoDs is that of independence (see Figure 7). Verenium by far has the greatest independent representation with 89%, the only exception being the CEO. In contrast, Cosan and Abengoa independent board membership is 33% and 38%, respectively.

Figure 7: Independence among Board of Directors

With stringent Sarbanes-Oxley regulations, U.S. companies generally go to greater comparative lengths to demonstrate independent board representation. Brazilian and Spanish companies have a stronger tradition of patriarchal control and a greater acceptance of overt ownership by dynastic powers. Cosan heavily concentrates its control by way of its parent company and its "dono" (owner), Chairman Ometto. Abengoa has a different pattern of tight control: four individuals (25%) of the BoD are members of the Benjumea family, descendants of the company's founder. Another four board members represent Abengoa's majority owner, ICSA, in which the Benjumea family is also heavily vested.

A heavily concentrated BoD can provide decision-making and strategic focus, as seen with Cosan's vertical integration and Abengoa's horizontal diversification. However, from an audit and oversight perspective, shareholders also value evidence of independent board oversight. The balance between the two ultimately is subject to the judgment of long-term value creation. Authoritarian or transparent, the market will judge evidence of value destruction in publicly listed firms harshly.

Company Own	ership		
• •	Cosan	Abengoa	Verenium
Cosan Ltd.	61%		
Rezende	1.7%		
Barbosa	12/0		
BOD/Execs	0%		
Others	27%		
ICSA		50%	
Finarpisa		6%	
Blackrock		4%	
BOD/Execs		2%	
Others		38%	
AWM			12%
Investment Co.			12/0
Highbridge			9%
Capital Mngt			970
BOD/Execs			11%
Others			68%

#### **Ownership of Board Members**

Figure 8: Company ownership

All three firms examined had potential conflicts of interest related to board ownership and control. Combining ownership and control raises the "conflict of interest" specter. Cosan and Abengoa both are firmly controlled by their respective parent companies. Ometto indirectly owns 24% of Cosan SA through its parent Cosan Ltd, an immense stake for a single individual. The Benjumea family is heavily invested in ICSA, Abengoa's majority owner.

Verenium does not have a dominant single owner, although 11% of the firm is owned by three BoD members (4.6% by Chairman Cavanaugh). There is the potential for conflicts of interest when one-third of the BoD has both outsized interest and control. Prior to the Economic Crisis, Verenium committed to a risky strategy of commercializing untested cellulosic bioethanol technology. While initially a boost to the firm's equity valuation, the collapse of the broader market in 2008 saw investors pull-out on this risky and speculative strategy. The fact that key members of the board stood to gain substantially from this venture asks whether they were in effect gambling with shareholder funds.

### **Compensation System**

Details on remuneration policies across the three firms can be viewed in Figure 9. Verenium's approach is publicly illustrated in its annual proxy statements, while Cosan's and Abengoa's compensation systems are mentioned in their annual reports, although specific details are not public. Again, this difference may be attributable to the U.S.'s stance of full disclosure for public companies, while other countries, particularly those with strong patriarchal traditions, place less emphasis on full-disclosure.

2009 Exec and BOD Remuneration (from 2009 annual reports)							
		Total	Amount	%	Options		
	Net Income	Remuneration	Variable	Variable	Granted		
Cosan	R\$ (40)k	R\$ 6.9M	Not Given	Not Given	No		
Abengoa	€ 170M	€ 8.7M	€ 5.6M	64%	No		
Verenium	US\$ (22)M	US\$ 5.1M	US\$ 3.0M	59%	Yes		

*Figure 9*: Executive and BoD comparative remuneration (2009)

Cosan and Abengoa have similar systems: total compensation is allocated by the BoD. External consultants are contracted to provide guidance. Verenium, on the other hand, states in its proxy statement that its compensation is a means to attract and retain high-quality executives who will make contributions to the long-term success of the company. This approach includes granting stock options. The criticism that Verenium cannot escape, however, is that it continues to make significant losses while paying its executives and BoD quite well. In 2009 Verenium paid \$5.1M in remuneration while it had a net loss of approximately \$22M. Verenium should rethink how it structures compensation, tying remuneration more closely core value creation. Abengoa, by contrast has a relatively reasonable position: 2009 remuneration of &3.7M represents 5% of the company's net income of &17OM.

#### **Committee Structure**

All three companies employ Audit Committees, responsible for monitoring financial reporting process and related accounting policies. In addition, all three have an Appointment & Remuneration Committee which serves the function of approving executive salaries and incentive/benefit plans. In terms of independent directors sitting on these two committees, Verenium is fully independent, Abengoa is two thirds independent, and Cosan has only one independent director in both committees combined.

Committees			
	Cosan	Abengoa	Verenium
Audit	х	х	х
Appointment &	×	v	v
Remuneration	X	X	X
Risk Management	х		
Finance			х

Cosan's Risk Management Committee also lacks independence, but does serve the function of setting exposure limits and ratios to achieve better operational and financial control.

Figure 10: Comparative committees established

With Abengoa's diversified portfolio, a risk management committee would be a beneficial addition, demonstrating a willingness to second-guess strategic risks. Lastly, like Verenium's other committees, its Finance Committee is completely independent, providing advice and strategy regarding capital structure, short-term and long-term financial planning, etc. A finance committee might be beneficial additions to Abengoa and Cosan, particularly considering the latter's volatile financials and unfettered M&A activities driven by Chairman Ometto.

#### **Corporate Governance Lessons Learned**

When compared to Cosan and Abengoa, Verenium seems to have stronger corporate governance. Save for its questionable compensation figures amidst significant losses, Verenium's board structure is wellbalanced and highly independent, its ownership is distributed among many owners and its committees consist of independent directors. However, when it comes to financial performance, Verenium is at the bottom of the pile. Perhaps tighter decision management would be of benefit to Verenium within the still maturing biofuel industry. Abengoa and certainly Cosan would likely benefit from greater transparency and demonstrated board independence. Now that they are successfully entrenched in the biofuel industry, perhaps loosening the reigns and establishing increased BoD independence will lead these firms to greater heights.

# **Concluding Commentary**

Value management in the emerging biofuel industry is fraught both with risk as well as upside potential; early players stand to grab controlling stakes in the future market. As the scientific, engineering, and supply chain management fundamentals of efficient global biofuel production emerge, firms able to realize the most profitable configurations and innovations stand to gain conglomerate power. As the fundamental of the biofuel industry converge over the next decade, those with demonstrated value management discipline will realize crucial leverage as key players in the race towards economies of scale. For the time being, of the three firms examined Abengoa is the best all-around pick for a patient value investor. Its horizontal diversification, demonstrated financial management skills, and growing ability to create core economic value suggests it as the best balanced global contender going forward.

## REFERENCES

- Abengoa Corporate Communications. (September 2010). *Abengoa Corporate Overview*. Abengoa Corporate Website. Retrieved September 2010 from http://www.abengoa.com/corp/web/en/acerca de nosotros/que es/index.html
- Abengoa Bioenergy Corporate Communications. (2009). *Abengoa Bioenergy Annual Report 2009*. Retrieved September 2009 from http://www.abengoabioenergy.com/corp/export/sites/bioenergy/resources/pdf/acerca\_de/en/ Annual\_report\_2009\_1.pdf
- Abengoa Bioenergy Corporate Communications. (2009). *Abengoa Bioenergy Annual Report 2008*. Retrieved September 2009 from http://www.abengoa.es/corp/export/sites/abengoa\_corp/resources/pdf/en/gobierno\_corporat ivo/informes\_anuales/2008/2008\_Volume1\_AnnualReport.pdf
- Almeida, C. (December 2007). Sugarcane ethanol: Brazil's biofuel success. SciDev.net. Retrieved September 2010 from http://www.scidev.net/en/features/sugarcane-ethanol-brazils-biofuelsuccess.html
- Answers.com. (September-f 2010). *Abengoa, S. A. Profile*. Answers.com retrieved September 2010 from http://www.answers.com/topic/abengoa-s-a
- Answers.com. (September 2010). *Cosan Ltd. Profile*. Answers.com. Retrieved September 2010 from http://www.answers.com/topic/cosan-limited
- Biodiesel News Staff. (March 2010). *Global biodiesel market analysis and forecasts*. Biodiesel-News.com. Retrieved October 28 from http://biodiesel-news-com/index.php/2010/03/22/global-biodiesel-market-analysis-andforecasts-to-2020/
- Brigham, E. and Daves, P. (2004). *Intermediate Financial Management*. Thompson South-Western: Mason, Ohio.
- Cartledge, J. (September 2010). *Progress for Abengoa's Kansas cellulosic ethanol project*. BrighterEnergy.org. Retrieved September 2010 from http://www.brighterenergy.org/16541/news/bioenergy/progress-for-abengoas-kansascellulosic-ethanol-project/
- CincoDias Staff. (June 2009). *La retribución del consejo de Abengoa aumentó un 33% en 2008, hasta los 9,14 millones*. Retrieved September 2010 from http://www.cincodias.com/articulo/empresas/retribucion-consejo-Abengoa-aumento-33-2008-914-millones/20090406cdscdsemp 12/cdsemp/
- CincoDias Staff. (March 2010). Abengoa redujo un 4,7% la retribución al consejo de administración en 2009. CincoDias.com. Retrieved September 2010 from http://www.cincodias.com/articulo/empresas/Abengoa-redujo-47-retribucion-consejo-administracion-2009/20100308cdscdsemp\_4/cdsemp/
- Cosan Annual Report. (2009). *Cosan Annual Reports*. Cosan Corporate Website. Retrieved September 2010 from

http://www.cosan.com.br/cosan2009/web/conteudo\_en.asp?idioma=1&conta=44&tipo=26559 &img=26539

- Cosan Corporate Communications. (September 2010). Cosan Company Profile. Retrieved September 2010 from http://www.cosan.com.br/cosan2009/web/conteudo\_eni.asp?idioma=1&conta=46&tipo=26652 & img=26644
- Demirbas, A. (2009). *Biofuels*. Springer, Green Energy and Technology Series: London.
- Diario De Sevilla. (February 2008). *Ayer y Hoy Sevilla: Dos hombres claves para España 1936- 1963*. DiarioDeSevilla.es. Retrieved on September 2010 from http://www.diariodesevilla.es/article/sevilla/53436/dos/hombres/claves.html
- Economist Staff. (June 2010). *Inhuman genomes*. The Economist, June 17, 2010. Retrieved September 2010 from http://www.economist.com/node/16349380
- Economist Staff. (September 2010). *Ethanol's mid-life crisis*. The Economist, September 2<sup>nd</sup> 2010. Retrieved September 2010 from http://www.economist.com/node/16952914?story id=16952914
- Economist Staff. (October 2010). *Lula's legacy*. The Economist, October 2<sup>nd</sup> 2010.
- Economist Staff. (November 2010). *The post-alcohol world*. The Economist, November 1<sup>st</sup> 2010.
- EuropaBio Team. (2010). About biofuels. Retrieved October 2010 from http://www.europabio.org/Biofuels/Biofuels\_about.htm
- Graham, J., and Harvey, C. (2002). *How Do CFOs Make Capital Budgeting and Capital Structure Decisions*? Journal of Applied Corporate Finance: Spring 2002, 15, 1.
- Hawawini, G. and Viallet, C. (2007). *Finance for Executives. Managing for Value Creation*. South-Western Cengage Learning, ISBN-13 978-0-324-27431-8.
- Jarrett, L. (May 2009). *What's Up with Abengoa Bioenergy?*. St. Louis Commerce Magazine. Retrieved September 2010 from http://www.allbusiness.com/science-technology/engineering/12361976-1.html
- Kelleher, K. (2008). VeraSun's warning: is the bankruptcy bug spreading? Gigaom.com . Retrieved November 2010 from http://gigaom.com/cleantech/verasuns-warning-is-the-bankruptcy-bug-spreading/
- Koller, T., Goedhart, M., & Wessels, D. (2005). *Valuation: Measuring and Managing the Value of Companies*. John Wiley & Sons, Inc., New Jersey, USA.
- Leal, J. F. (2008). Los 100 ricos de España (The 100 richest in Spain). Elmundo Magazine: Elmundo.es. Retrieved September 2010 from http://www.elmundo.es/suplementos/magazine/2008/480/1228301893.html
- Mint Global. (September 2010). *Full business report of ABENGOA BIOENERGIA BIODIESEL S.A.* MintGlobal.com. Retrieved September 2010 from www.mintglobal.com
- Parkinson, J., and Draimin, C. (2007). *Accounting for Non-Financial Managers*. Captus Press, Revised Second Edition, ISBN-13 978-1-55322-173-9.
- Pino, P. (September 2010). Millonarios, pero con menos ceros: Los 100 ricos de España. La crisis da un vuelco al ránking de nuestras mayores fortunas, aunque Amancio Ortega mantiene su liderazgo. Retrieved September 2010 from http://www.elmundo.es/suplementos/magazine/2008/480/1228301893.html

- Reference for Business. (September 2010). *Abengoa S. A.* ReferenceForBusiness.com. Retrieved September 2010 from http://www.referenceforbusiness.com/history/1-Al/Abengoa-S-A.html
- Reuters Financials. (September 2010). Abengoa, S.A. (ABG.MC). Retrieved September 2010 from http://www.reuters.com/finance/stocks/financialHighlights?symbol=ABG.MC
- Reuters Company Research. (August 9, 2010). *Cosan Limited (CZZ)*. Reuters. Retrieved September 2010 from www.etrade.com
- Reuters UK. (July 24, 2010). *Cosan SA Industria e Comercio*. Reuters UK. Retrieved September 2010 from www.etrade.com
- Reuters Financials. (September 2010). *Cosan S.A. Industria e Comercio (CSAN3.SA)*. Retrieved September 2010 from http://www.reuters.com/finance/stocks/financialHighlights?symbol=CSAN3.SA
- Shell Corporate Communications. (August 2010). Shell and Cosan sign joint venture. Retrieved September 2010 from http://www.shell.com/home/content/investor/news\_and\_library/2010\_media\_releases/shell\_c osan\_sign\_joint\_venture\_25082010.html
- Tribe, D. (September 2007). Abengoa Bioenergy on the move worldwide turning straw to bioethanol. GMOpundit.blogspot.com. Retrieved September 2010 from http://gmopundit.blogspot.com/2007/09/abengoa-bioenergy-on-move-worldwide.html
- Wikipedia. (September 2010). *Ethanol Fuel in Brazil*. Retrieved September 2010 from http://en.wikipedia.org/wiki/Ethanol\_fuel\_in\_Brazil
- XEC Internet. (September 2010). *Biofuel History*. Retrieved September 2010 from http://biofuel.org.uk/history-of-biofuels.html

# **APPENDIX A**

<b>Appendix 1:</b>	Consolidated	Income	<b>Statements</b>	(5 year	averages)
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AVERAGE INCOME STATEMENT 2005-2009						
	Abengoa (M€)	Cosan (M BR\$)	Verenium (M US\$)			
Gross Operating Revenue (Net Sales)	3,054,595	1,255.87	57,069			
Net Operating Revenues		1,155.59	57,069			
Gross Profit	219,118	199.94	57,069			
Operating Profit		53.34	(96,196)			
Earnings Before Interest and Tax (EBIT)	281,958	53.34	(92,430)			
Net Non-Operating Inc & Expenses	(154,729)	(27.60)	(3,391)			
Pretax income (EBT)	134,754	41.30	(86,991)			
Earnings After Tax (EAT)	133,673	85.66	(86,991)			
Net Income		29.59				
Net Operating Profit After Taxes (NOPAT)	119,492	97.71	(86,991)			

\* NOTE: Due to averaging, numbers do not balance linearly

Averaged Balance Sheet 2005 - 2009							
	Abengoa (€)	Cosan (BR\$)	Verenium (US\$)				
Total Current Assets	3,221.93	2,106.12	58,066				
Total non -Current Assets	4,376.39	4,431.06	94,794				
Total Assets	7,604.79	6,537.20	152,860				
Current Liabilities	3,264.32	931.76	32,630				
Non-Current Liabilities	3,656.63	3,500.02	79,141				
Total Liabilities	7,072.12	4,431.78	111,771				
Non-Controlling Interests		17.25	13,530				
Stockholders' Equity	732,65	2,086.19	27,559				
Total liability, non-controlling interest	7,804.80	6,537.20	152,860				
and Stockholders' equity							
Total Debt Foreign Currency		1,356.90					

# Appendix 2: Consolidated Balance Sheet (5 year averages)

\* NOTE: Due to averaging, numbers do not balance linearly

AVERAGED Statement of Changes in Financial Position 2005-2009						
·	Abengoa (€)	Cosan (BR\$)	Verenium (US\$)			
Operating activities	89,069	37	(40,581)			
Investing activities	(266,586)	(62)	(14,013)			
Financing activities	332,882	130	54,246			
Net change in cash	155,365	164	(348)			
Cash and cash equivalents	292,668	463	34,131			

## Appendix 3: Consolidated Statement of Changes of Financial Positions (5 year averages)

\* NOTE: Due to averaging, numbers do not balance linearly

AVERAGED CONSOLIDATED VALUE DRIVERS 2005-2009						
VALUE DRIVERS	Abengoa	Cosan	Verenium			
Current ratio	4.04	2.77	1.96			
Quick ratio	3.80	1.98	1.85			
Liquidity ratio	(25.49)	1.79	(5.61)			
<b>Operating Cash Flow Ratio</b>			(1.54)			
Avg. days receivable	137.24	55.27	119.15			
Avg. days inventories	27.71	227.27	66.07			
Avg. conversion cycle	(104.48)	211.39	179.90			
Fixed Asset Turnover	0.81	0.44	5.32			
Tax effect ratio	1.36	0.01	0.63			
Financial cost ratio	0.46	(0.082)	1.00			
Financial structure ratio	7.28	2.41	0.89			
Financial leverage ratio	3.44	(2.09)	0.70			
Operating profit margin	0.09	0.02	0.29			
Capital turnover	0.67	0.16	(4.11)			
ROIC	0.08	0.01	0.25			
ROE	0.21	0.04	(0.83)			
Gross Margin	0.09	0.16	0.20			
Times interest earned	1.51	(0.21)	(30.43)			
Annual sales growth	0.21	0.48	0.51			
Self-sustainable growth rate	0.16	0.12	0.22			

# Appendix 4: Consolidated Value Drivers (5 year averages)

# Appendix 5: Consolidated Value Measures (5 year averages)

AVERAGED CONSOLIDATED VALUE MEASURES 2005-2009									
	Abengoa (€)	Cosan (BR\$)	Verenium (US\$)						
Cost of Equity	17.0%	12.22%	12.66%						
Cost of debt	4.9%	8.94%	9.93%						
Book value of debt	4,513,769	2,306,691	73,611						
Market value of Equity	1,674,690	5,272,104	233,748						
Equity Proportion	29%		67%						
WACC	8.39%	12.01%	12.20%						
EVA	34,503	(478)	(107)						
MVA	1,077,358	(427.12)	182,701						

# Appendix 6: Corporate Governance

ABENGOA					
NAME ROLE		STATUS	COMMITTEE MEMBERSHIP	% Shares	
M r. Felipe Benjumea Llorente	Executive Chairman	Internal	StrategyCommittee	0.89% *	
Prof. José B. Terceiro (Rep. Aplicaciones Digitales S.L. ~)	Executive Vice-Chairman. Lead Director	Internal	Appointments and Remuneration Committee: Director / Strategy Committee: Executive Vice-Chairman / Audit Committee: Director	1.023%~	
M r. José Joaquín Abaurre Llorente	Director	Dominion; External		0.0021% *	
Mr. José Luis Aya Abaurre	Director	Dominion; External	Appointments & Remuneration Committee: Dir. / Audit Committee: Dir.	0.06%	
M s. M ª Teresa Benjumea Llorente	Director	Dominion; External		0.013%*	
M r. Javier Benjumea Llorente	Director	Dominion; External		0.004% *	
Prof. José Borrell Fontelles	Vocal	Independent; External		0.00%	
Prof. Mercedes Gracia Díez	Director	Independent; External		0.00%	
M r. Miguel Martín Fernández	Director	Independent; External		0.01%	
Prof. Carlos Sebastián Gascón	Director	Independent; External	Appointments and Remuneration Committee: Chairman		
M r. Ignacio Solís Guardiola	Director	Dominion; External		0.03%	
Mr. Fernando Solís Martínez-Campos	Director	Dominion; External		0.09%	
M r. Carlos Sundheim Losada	Director	Dominion; External		0.05%	
M rs. A licia Velarde Valiente	Director	Independent; External	Appointments and Remuneration Committee: Director / Audit Committee: Director		
Prof. Daniel Villalba Vilá	Director	Independent; External	Audit Committee: Chairman	0.02%	
M r. Miguel Á . Jiménez-Velasco M azarío	Secretary of the Board	Internal; Secretary of the Board	Strategy Committee: General Secretary / Audit Committee: Secretary	-	
CORAN					

COSAN									
	Initial Yr	<b>Re-election</b>				Compen-	Risk	Approx.	
Name	Appointed	Class	Position	Independent	Audit	sation	Mngt	% Own	
Board of Directors:									
Rubens Ometto Silveira Mello	2000	2010	Chariman	No				24%	Indirectly
Marcus Vinicius Pratini de Moraes	2009	2010	Director	No	х	х		0%	
Mailson Ferreira Nobrega	2007	2011	Director	Yes	х			0%	
Pedro Isamu Mizutani	2000	2010	Vice Chairman	No		х		0%	
Marcelo de Souza Scarcela Portela	2005	2012	Director	No		х		0%	
Burkhard Otto Cordes	2005	2012	Director	No				0%	
Serge Varsano	2009	2012	Director	Yes				0%	
Roberto Rezende Barbosa	2009	2012	Director	No				0%	
Pedro Luiz Cerize	2008	2011	Director	Yes				0%	
Board of Executive Directors:									
Marcos Marinho Lutz	2009	N/A	CEO	N/A			х	0%	
Pedro Isamu Mizutani	2000	N/A	COO	N/A				0%	
Marcelo Eduardo Martins	2009	N/A	CFO	N/A			х	0%	
Marcelo de Souza Scarcela Portela	2009	N/A	Legal Officer	N/A				0%	
Rodolfo Norivaldo Geraldi	2000	N/A	Executive Officer	N/A				0%	
Antonio Alberto Stucchi	2009	N/A	Executive Officer	N/A				0%	

#### Verenium

DIRECTOR ROLES, REMUNERATION	AND OWNERSHIP											
		2009 Committees			2009 Remuneration			ation	2009 Ownership			
		Re-election			Governance &							
Name	Role, Employee?	Class***	Audit	Compensation	Nominating	Finance		Cash	Options	Total	# Shares	% Shares
Dr. James H. Cavanaugh	Chairman, Non-Emp	2012		Х	Х		\$	41,500	\$ 90,386	\$ 131,886	548,301	4.6%
Mr. John F. Dee	Director, Non-Emp	2010				Х	\$	39,500	\$ 30,278	\$ 69,778	993	**
Mr. Peter Johnson	Director, Non-Emp	2011		X*	Х		\$	45,500	\$ 70,853	\$ 116,353	8,411	**
Dr. Fernand Kaufmann	Director, Non-Emp	2010	Х	Х			\$	48,500	\$ 58,584	\$ 107,084	4,352	**
Mr. Simon Rich	Director, Non-Emp	2012					\$	35,500	\$ 31,769	\$ 67,269	951	**
Mr. Carlos A. Riva	Director, Emp	2010					\$	-	\$-	\$-	see	below
Mr. Joshua Ruch	Director, Non-Emp	2012		Х		Х	\$	46,500	\$ 55,488	\$ 101,988	418,339	3.5%
Ms. Cheryl A. Wenzinger	Director, Non-Emp	2011	X*				\$	61,000	\$ 60,442	\$ 121,442	4,748	**
Mr. Michael Zak	Director, Non-Emp	2011	Х			X*	\$	58,500	\$ 55,488	\$ 113,988	358,268	3.0%
Former Director:												
Mr. Mark Leschly (resigned 4/30/09)			Х		X*		\$	17,810	\$ 21,119	\$ 38,929		
EXECUTIVE COMPENSATION AND O	WNERSHIP				•	-						
					Executive Cor	npensation					2009 Ov	/nership
Name	Year	Salary	Bonus	Stock	Options	Non-Equity		Other	Total		# Shares	% Shares
Mr. Carlos A. Riva	2009	\$ 498,991	\$-	\$ 114,400	\$ 1,453,071	\$-	\$	2,941	\$ 2,069,403		81,584	**
Mr. James E. Levine	2009	\$ 214,438	\$-	\$ 32,500	\$ 280,604	\$-	\$	641	\$ 528,183		2,605	**
Mr. Jeffrey G. Black	2009	\$ 266,702	\$-	\$-	\$ 154,135	\$ -	\$	16,010	\$ 436,847		6,288	**
Mr. William H. Baum	2009	\$ 372,885	\$-	\$-	\$ 77,255	\$-	\$	10,362	\$ 460,502		26,825	**
Mr. Gerald M. Haines II	2009	\$ 311,279	\$-	\$ 55,000	\$ 272,434	\$-	\$	1,331	\$ 640,044		15,662	**
Dr. Gregory Powers	2009	\$ 319,702	\$-	\$-	\$ 178,571	\$-	\$	2,367	\$ 500,640		10,480	**
Former Officer:												
Mr. John R. Malloy, Jr.	2009	\$ 120,380	\$ 123,000	\$-	\$ -	\$-	\$	250,663	\$ 494,043			

# Appendix 7: Working Capital Requirements & Managerial Balance Sheets (5 yr averages)

WCR & Managerial Balance Sheet Averages, Period 2005 - 2009								
	Abengoa (€)	Cosan (BR\$)	Verenium (US\$)					
WCR	(673,003)	657	(12,695)					
Cash	1,208,281	764	42,966					
Net Fixed Assets	4,582,856	4,431	66,599					
Total Net Assets	5,246,423	5,853	124,658					
Short Term Debt	705,960	346	4,835					
LTF	3,807,809	5,507	3,807,809					
Owner's Equity	732,654	2,088.17	45,340					
Non-current liabilities	5246,423	5,853	138,939					

Valuation Ratios	Abengoa	Cosan	Verenium	Industry	Sector	S&P 500
P/E High - Last 5 Yrs.				0.01	1.09	24.64
P/E Low - Last 5 Yrs.				0.02	0.44	6.17
Growth Rates	Abengoa	Cosan	Verenium	Industry	Sector	S&P 500
Sales - 5 Yr. Growth Rate	25.16	51.84	2.75	16.33	10.72	9.96
EPS - 5 Yr. Growth Rate	26.59	79.82		8.31	7.51	7.30
Cap Spend - 5 Yr Growth Rate	58.96	57.27	-6.68	31.00	8.10	7.84
Financial Strength	Abengoa	Cosan	Verenium	Industry	Sector	S&P 500
Quick Ratio (MRQ)	0.94	1.12	1.36	0.70	0.68	0.82
Current Ratio (MRQ)	1.02	1.71	1.50	1.12	0.92	0.99
LT Debt to Equity (MRQ)	585.90	103.58		32.69	24.57	126.85
Total Debt to Equity (MRQ)	645.73	120.32		85.10	36.75	182.83
Interest Coverage (TTM)			-29.36	0.04	0.70	28.38
Profitability Ratios	Abengoa	Cosan	Verenium	Industry	Sector	S&P 500
Gross Margin - 5 Yr. Avg.	29.95	16.94	62.69	28.60	36.37	29.02
<b>Operating Margin - 5 Yr. Avg.</b>	7.78	3.75	-75.88	7.64	9.66	16.57
Pre-Tax Margin - 5 Yr. Avg.	3.72	3.74	-168.85	8.52	9.75	16.11
Net Profit Margin - 5 Yr. Avg.	3.69	2.50	-168.85	6.48	6.62	11.83
Effective Tax Rate - 5 Yr. Avg.	0.80	33.24		37.21	31.05	25.68
Efficiency	Abengoa	Cosan	Verenium	Industry	Sector	S&P 500
Revenue/Employee (TTM)		408,432	252,996	294,176	7,867,117	645,363
Net Income/Employee (TTM)		17,145	-201,704	25,886	281,531	80,550
Receivable Turnover (TTM)		26.18	9.24	0.86	11.96	8.81
Inventory Turnover (TTM)		10.45	8.71	0.82	1.79	6.72
Asset Turnover (TTM)		1.16	0.45	0.07	0.30	0.55

# Appendix 8: Company Comparative Value Drivers (Reuters)

Management Effectiveness	Abengoa	Cosan	Verenium	Industry	Sector	S&P 500
Return on Assets - 5 Yr. Avg.	1.96	1.99	-62.38	3.33	7.24	5.64
Return on Investmt - 5 Yr. Avg.	3.55	2.33	-84.55	4.28	12.14	7.26
Return on Equity - 5 Yr. Avg.	25.29	6.01	-192.47	5.92	15.71	10.17

Source: Reuters (Reuters Financials, 2010)

**APPENDIX B – Revised EU Local Paper (Abengoa)** 

# **Corporate Finance in the Global Environment**

# Individual Report: EU Region

# Value Management at Abengoa S.A. within the Biofuel Industry

**OneMBA 2011** 

# European Union (EU) Region Erasmus Rotterdam School of Management (RSM)

# Scott Mongeau

Friday, 5<sup>th</sup> November, 2010

Word Count: 2000 words

# Value Management Analysis

#### Value Creation / Destruction Trends

Abengoa S.A. is a Spanish global engineering conglomerate with a focus on sustainability in infrastructure, environment, and energy projects. The following provides an examination of value management at the firm. For general background on Abengoa and the biofuel industry, please see Appendix Tables 8 and 9.

Several factors are apparent in Abengoa's Value Drivers (Table 4): excellent Operating Efficiency (OE) factors, positive and fairly consistent Return on Equity (RoE) components, and a positive Self-Sustainable Growth Rate (SSGR). On the surface we see a well-managed, growing operation with consistently positive Return on Invested Capital (ROIC) and upward-trending Retained Earnings. Concerns include unpredictable year-to-year sales growth, broadly fluctuating tax rates, and a rapidly inflating Accounts Payable (AP) current liability.

Digging below the Value Driver numbers, interpretation of the strong OE Ratios are enhanced by a closer look at the consistently negative Working Capital Requirements (WCR) (Table 7). The negative WCR, a great benefit to the firm, has led us to remove the Liquidity Measures, as no external funding is needed to support operations, the matching principle being observed (no long-term liabilities are funding current assets). This healthy OE picture contributes to a SSGR which averages 16% over the past 4 years, indicating the firm can grow at a healthy annual pace without resort to external capital.

A concern is the size of AP, currently at €3.8m and growing apace, outstripping operations (2008 - 9 seeing AP expansion of 34% versus 21% growth in total assets and 16% in current assets). The high overall AP is indicative of many pre-negotiated commodity supply contracts, particularly feedstock toll agreements for Abengoa Bioenergy. However, such standing purchase obligations are also a liability, sensitive to macroeconomic and fundamental pricing shifts.

ROE is strong and consistent, averaging 21% over 4 years. Looking more closely at the ROE components, corporate taxes appear overall quite low and somewhat irregular, with a tax rebate windfall in 2008. The tax return is apparent as a large spike in After-Tax ROIC that year. Considering the sensitivity of NOPAT to taxes, the overall wide variance in tax rates is a cause for concern. Other factors are fairly regular: Capital Turnover trends slightly downward year-to-year, indicating a 'not-unusual' deteriorating efficiency in the use of capital as the company scales.

In 2008, during the depths of the Global Financial Crisis, a large hit was taken to financial income, which dipped from -€127.7m in 2007 to -€293.9m. The 2008 Annual Report explained this loss as being due to adverse interest rate movements associated with projects financed via fixed, non-recourse arrangements (Abengoa CC, 2010). Also, provisions of €65m were recorded against negative valuations in interest and exchange rate financial instruments (not being classified as hedging vehicles according to accounting rules). This potential loss in 2008 was offset by the large tax windfall of €107.6m. This 'Income Statement-saving' one-time tax gain was explained as being associated with Spanish government export tax deductions, booked R&D tax credits, and tax-legislation-related windfalls.

In addition to hedging, Abengoa speculates in the financial and commodity markets and sometimes bets wrongly, as happened to the tune of nearly € 300m in 2008. From the standpoint of an investor seeking to understand risk, there are substantial risks being taken related to financial speculation in the derivatives markets. However, financial engineering risk aside, the real question is whether firm overall growth is real as well as sustainable: in short, whether real economic value is being created.

#### Impact of Corporate Governance

Abengoa S.A. ownership includes three major investment corporations: ICSA 50%, Finarpisa 6% (majority-owned by ICSA), and BlackRock 4%, an American global asset management firm. In 2008, the Benjumeas brothers were re-elected for another 4-year BoD Chairmanship period. In terms of Corporate Governance, Board and Committee management of Abengoa is highly centralized and dominated by the Benjumea family. For an overview of Abengoa and Abengoa Bioenergy's Boards and Committees, see Table 6. The Benjumea family directly holds 4 of 16 Board of Director (BoD) seats.

The major Committees are: Appointments & Remuneration, Audit, and Strategy. Only Strategy is staffed by non-BoD members. There is some concern related to the lack of non BoD representation on the core financial committees, although some members are listed as being external / independent to Abengoa. Evidence of a lack of arm's distance audit advice may be resident in the 2008 complications with derivatives accounting and the unusual tax rebate. As observed, Abengoa is active in financial engineering, otherwise being a core aspect of commodity trading activities. Active derivative instruments recorded as assets were at €45.5m in 2009 and €100m in 2008, those recorded as liabilities were at €96m and €66m, respectively. The 2008 Annual Report notes that derivative trades previously identified as hedges according to accounting rules needed to be restated as investments, leading to the booking of substantial financial losses. The BoD exclusive composition of the Audit Committee in this respect indicates a relationship that may not be sufficiently arm's distance for objective auditing.

Concerning Remuneration, in 2009 the remuneration of the board of directors at Abengoa was reduced by more than 4% in relation to the year prior. Felipe Benjumea was remunerated with  $\notin$  3.9 million, a reversal from previous years when pay increased at steady 33% annual rate (CincoDias Staff, 2010). This indicates that austerity measures are being felt and enacted all the way to the BoD level, an indicator of proper remuneration control, although this could also be interpreted as a cynical measure to keep activist shareholders at bay.

The Strategy Committee has the most non-BoD membership and has specific roles identifying with key areas, including Human Resources, Finance, Investor Relations, Institutional Relations, and Sustainability (see Table 6). Such roles connect directly with Abengoa's professed 'Management Model', as seen in Figure 1 below. The effects of solid strategy planning via this model can be seen in the firm's value management approaches. In particular, solid operational finance management, continual technical innovation, and international diversification are apparent in how Abengoa manages capital.



FIGURE 1: As per Abengoa Annual Report (Abengoa CC, 2009)

Abengoa has diversified horizontally and internationally in order to distribute risk, smooth growth, and realize tax benefits in the interests of steady shareholder (and owner-familial) wealth creation. International distribution of bioenergy operations includes USA, Brazil, and Europe. Pushing the frontiers of technology is a central goal of Abengoa Bioenergy, which states: "cellulose bioethanol technology capacities, coupled with its farming, productive and local marketing capacities, will give rise to very important synergies enabling the company to register significant growth in the world bioethanol market" (Abengoa CC, 2010).

Initially, Abengoa Bioenergy was established to meet EU and US benchmarks for ethanol production and to increase the energy yield efficiency of crops. Its long-term strategy is to mass-produce high ethanol blends from wood cellulosic biomass. Both in its short and long term strategies, Abengoa has made abundant use of government subsidies (Tribe, 2007). For R&D, the firm engages in joint ventures and partnerships. All current R&D programs are either partly or fully subsidized by the US Department of Energy or the EU and involve major partners such as BP, Dow, and Cargill.

#### **Reflection on Value Measures**

Based on EVA and a fairly consistent negative Return Spread (a deficit between AT ROIC and WACC, as per Table 5), Abengoa can be classified as a value destroying company with a cash surplus. In the past four years, total assets have been growing at an average rate of 40%, but there has been little core improvement in EVA, aside the 2008 tax windfall. However, MVA has been consistently positive over the past four years: equity investors have bid-up the company's stock, injecting a 'vote-of-confidence' in future potential growth / returns. This equity market-valuation 'buys-into' the notion that management is sacrificing short-term value creation for strategic, long-term growth. This can be observed in the decisions to deploy capital to diversify internationally and to push technical boundaries, such as in the recent announcement of the hybrid cellulosic ethanol plant initiative in the US. The positive MVA indicates equity investors believe management's plan to build a foundation for future growth, sacrificing annual EVA for the promise of future NPV-positive cash flow streams. However, it is worthy to note that the positive annual MVA trend is declining: the change (Delta MVA) in the past year is more than -200% (declining from €932m to €274m). This indicates that investors may gradually be losing patience: as of September 30<sup>th</sup> ABG was quoted at €18.70, down 15.33% year-to-date from €22.30 at the close of 2009.



FIGURE 2: Abengoa (ABG) Monthly Stock Quotes (€)

Other positive factors which offset the negative EVA trend include well-managed WCR, showing as consistently negative and declining. The negative WCR growth has been largely due to an immense 'supplier accounts payable' liability, indicating that Abengoa has exerted influence on suppliers to extend credit. A portion of this may be due to pre-negotiated biofuel feedstock 'tolling agreements'. It is not clear this can be sustained indefinitely, however, particularly if core firm value continues to be sacrificed for growth and should equity valuation waiver. Maintaining the large current accounts liability depends upon the firm's ability to maintain its credit standing, perceived and actual. Implications in the press are that Abengoa's dynastic owners have and do enjoy some amount of special status within Spain, but this does not logically extend to the international markets. Abengoa must 'market' its strategic plan to invest in growth to an increasingly global and diverse set of capital providers.

Abengoa appears to be conservative about capitalizing R&D expenses, with the exception of 2008. Capitalizing R&D expenses would bolster profits (by reducing expenses) and would increase Invested Capital and Retained Earnings (as Fixed Assets would expand). However, booking R&D into Fixed Assets would reduce ROA-associated measures, including ROIC and EVA. It is possible management 'banks' R&D credits for a 'rainy day' (profit-challenged year), as seen in 2008 when the company decided to book outstanding R&D credits to bolster profits.

Towards the future, management must validate the trust-premium of equity investors by realizing the capital sunk into international expansion and new technologies. ROIC can be increased by improving core operating margins: higher volumes at higher prices and lower operating expenses. WACC (Table 5) could be restated ('de-risked') based on lower global capital-risk premiums (as opposed to the high relative Spanish premiums cited). However, the average 4-year annual AT ROIC of 2.6% is an impossible hurdle to overcome via pure WACC optimization. The firm's best opportunities for improvement going forward are to improve core operational margins. Management has been focused on top-line shareholder measures (RoE, Equity Retention, and Gross Margin), but must retrench and refocus on value creation via core AT ROIC and EVA in 2011 to sustain equity investor and credit provision confidence. In value management terms specific to corporate governance, the desire to grow, develop, diversify, and expand must now give way to core operational value creation.

## REFERENCES

- Abengoa Corporate Communications. (September 2010). *Abengoa Corporate Overview*. Abengoa Corporate Website. Retrieved September 2010 from http://www.abengoa.com/corp/web/en/acerca de nosotros/que es/index.html
- Abengoa Bioenergy Corporate Communications. (2009). Abengoa Bioenergy Annual Report 2009. Retrieved September 2009 from http://www.abengoabioenergy.com/corp/export/sites/bioenergy/resources/pdf/acerca\_de/en/ Annual\_report\_2009\_1.pdf
- Abengoa Bioenergy Corporate Communications. (2009). *Abengoa Bioenergy Annual Report 2008*. Retrieved September 2009 from http://www.abengoa.es/corp/export/sites/abengoa\_corp/resources/pdf/en/gobierno\_corporat ivo/informes\_anuales/2008/2008\_Volume1\_AnnualReport.pdf
- Answers.com. (September 2010). *Abengoa, S. A. Profile*. Answers.com retrieved September 2010 from http://www.answers.com/topic/abengoa-s-a
- Brigham, E. and Daves, P. (2004). *Intermediate Financial Management*. Thompson South-Western: Mason, Ohio.
- Cartledge, J. (September 2010). *Progress for Abengoa's Kansas cellulosic ethanol project*. BrighterEnergy.org. Retrieved September 2010 from http://www.brighterenergy.org/16541/news/bioenergy/progress-for-abengoas-kansascellulosic-ethanol-project/
- CincoDias Staff. (June 2009). La retribución del consejo de Abengoa aumentó un 33% en 2008, hasta los 9,14 millones. Retrieved September 2010 from http://www.cincodias.com/articulo/empresas/retribucion-consejo-Abengoa-aumento-33-2008-914-millones/20090406cdscdsemp\_12/cdsemp/
- CincoDias Staff. (March 2010). Abengoa redujo un 4,7% la retribución al consejo de administración en 2009. CincoDias.com. Retrieved September 2010 from http://www.cincodias.com/articulo/empresas/Abengoa-redujo-47-retribucion-consejo-administracion-2009/20100308cdscdsemp\_4/cdsemp/

Demirbas, A. (2009). *Biofuels*. Springer, Green Energy and Technology Series: London.

- Diario De Sevilla. (February 2008). *Ayer y Hoy Sevilla: Dos hombres claves para España 1936- 1963*. DiarioDeSevilla.es. Retrieved on September 2010 from http://www.diariodesevilla.es/article/sevilla/53436/dos/hombres/claves.html
- Economist Staff. (June 2010). *Inhuman genomes*. The Economist, June 17, 2010. Retrieved September 2010 from http://www.economist.com/node/16349380
- Graham, J., and Harvey, C. (2002). *How Do CFOs Make Capital Budgeting and Capital Structure Decisions?* Journal of Applied Corporate Finance: Spring 2002, 15, 1.
- Hawawini, G. and Viallet, C. (2007). *Finance for Executives. Managing for Value Creation*. South-Western Cengage Learning, ISBN-13 978-0-324-27431-8.

- Jarrett, L. (May 2009). *What's Up with Abengoa Bioenergy?*. St. Louis Commerce Magazine. Retrieved September 2010 from http://www.allbusiness.com/science-technology/engineering/12361976-1.html
- Leal, J. F. (2008). Los 100 ricos de España (The 100 richest in Spain). Elmundo Magazine: Elmundo.es. Retreived September 2010 from http://www.elmundo.es/suplementos/magazine/2008/480/1228301893.html
- Pino, P. (September 2010). Millonarios, pero con menos ceros: Los 100 ricos de España. La crisis da un vuelco al ránking de nuestras mayores fortunas, aunque Amancio Ortega mantiene su liderazgo. Retrieved September 2010 from http://www.elmundo.es/suplementos/magazine/2008/480/1228301893.html
- Mint Global. (September 2010). *Full business report of ABENGOA BIOENERGIA BIODIESEL S.A.* MintGlobal.com. Retrieved September 2010 from www.mintglobal.com
- Parkinson, J., and Draimin, C. (2007). *Accounting for Non-Financial Managers*. Captus Press, Revised Second Edition, ISBN-13 978-1-55322-173-9.
- Reference for Business. (Spetember 2010). *Abengoa S. A.* ReferenceForBusiness.com. Retrieved September 2010 from http://www.referenceforbusiness.com/history/1-Al/Abengoa-S-A.html
- Reuters Financials. (September 2010). Abengoa, S.A. (ABG.MC). Retrieved September 2010 from http://www.reuters.com/finance/stocks/financialHighlights?symbol=ABG.MC

Tribe, D. (September 2007). *Abengoa Bioenergy on the move worldwide - turning straw to bioethanol*. GMOpundit.blogspot.com. Retrieved September 2010 from http://gmopundit.blogspot.com/2007/09/abengoa-bioenergy-on-move-worldwide.html

XEC Internet. (September 2010). *Biofuel History*. Retrieved Septmber 2010 from http://biofuel.org.uk/history-of-biofuels.html
## APPENDIX

## Table 1: Income Statement (5 years)

ABENGOA					
CONSOLIDATED INCOME STATEMENT					
Years Ending: Dec 31, 2005 - 2009					
(in thousands of Euros (€))					
INCOME STATEMENT	2009	2008	2007	2006	2005
Current Assets					
Gross Oper Revenue (Net Sales or Net Turnover)	4,147,315	3,769,202	2,655,756	2,677,186	2,023,515
Cost of Goods Sold (COGS) (-)	(3,793,735)	(3,643,170)	(2,422,401)	(2,458,014)	(1,860,064)
Change in inventory	(23,662)	20,608	26,995	2,541	(817)
Other operating income	1,275,627	1,060,348	332,524	134,690	35,704
Materials consumed	(3,057,700)	(2,976,807)	(1,880,737)	(1,645,700)	(1,162,857)
Personnel expenses	(736,027)	(666,348)	(351,296)	(402,719)	(325,908)
Depreciation and amortization	(319,436)	(178,371)	(89,551)	(68,679)	(52,906)
R&D costs	(51,145)	(41,720)	(20,984)	(23,239)	(18,305)
Other operating expenses	(881,392)	(860,880)	(439,352)	(454,908)	(334,975)
Other operating income & expenses	77,400	236,800	-	-	-
Net Operating Profit (EBIT)	430,980	362,832	233,355	219,172	163,451
Net Financial Profit / Loss (-)	(181,430)	(313,927)	(127,674)	(91,856)	(58,757)
Financial income	14,124	30,890	22,630	24,430	22,709
Financial charges	(213,091)	(276,681)	(164,707)	(119,239)	(70,409)
Net exchange differences	67,777	(61,020)	19,959	8,283	(1,695)
Other net financial income/ expenses	(50,240)	(7,116)	(5,556)	(5,330)	(9,362)
Particip. profits/losses of assoc. co's (+)	11,246	9,244	4,243	7,532	5,359
Consolidated Profit Before Tax (EBT)	260,796	58,149	109,924	134,848	110,053
Corporate income tax (+)	(58,058)	107,628	(10,065)	(13,345)	(31,572)
Corporate tax rate	22%	-185%	9%	10%	29%
Consolidated Profit After-Tax (EAT)	202,739	165,778	99,860	121,504	78,481
Item from discontinuing operations	-	-	35,960		
Profit from minority interests cont ops	(32,432)	(25,375)	(1,733)	(21,164)	(12,477)
Profit from minority interestes disc ops			(13,683)		
Profit Attributable to Parent Co (NOPAT)	170,307	140,403	120,405	100,340	66,004
No. of ordinary shares circulating (x1000)	90,470	90,470	90,470	90,470	90,470
EPS for the year's result	1.88	1.55	1.33	1.11	0.73

## Table 2: Balance Sheet (5 years)

ABENGOA					
CONSOLIDATED BALANCE SHEETS - Long Form					
Years Ending: Dec 31, 2005 - 2009					
(in thousands of Euros (€))					
ASSETS	2009	2008	2007	2006	2005
Current Assets					
Cash & Equivalents	1.546.431	1.333.748	1,697,889	1.027.972	435,366
Accounts Receivable	2.002.169	1,343,305	1,420,860	982.053	525,595
Trade Receivable	1,459,501	919,351	1,145,786	714,414	365,823
Credits	542,668	423,954	275.074	267,639	159,772
Inventories	345,589	316,093	242,451	150,737	137,806
Financial investments	481,964	661,703	596,447	481,739	379,734
Total Current Assets	4,376,153	3,654,849	3,957,647	2,642,501	1,478,501
Non-Current Assets (Fixed)					
Intangible Fixed Assets	1,490,884	1,056,891	1,227,022	623,336	348,667
Tangible Fixed Assets	1,864,199	1,035,062	870,861	639,745	542,723
Fixed Assets in Projects	3,623,274	2,249,773	1,638,139	1,146,907	681,767
Financial Investments Non-Current	1,015,350	765,704	416,487	374,089	271,066
Total Non-Current Assets	7,993,707	5,107,430	4,152,509	2,784,077	1,844,223
Non cur asset sale (discontinued ops)	-	1,032,333	-	-	-
Total Assets	12,369,860	9,794,612	8,110,156	5,426,578	3,322,724
LIABILITIES AND OWNERS EQUITY					
Current Liabilities (Short-Term)					
Short-term non-recourse financing	185,352	249,284	503,161	457,802	284,475
Loans and borrowings	682,901	254,296	206,567	502,740	203,220
Suppliers & other trade accounts payable	3,775,306	2,868,376	2,319,449	1,660,881	1,011,179
Current tax liabilities	292,829	183,148	159,095	135,322	92,455
Derivative financial instruments	96,007	65,861	4,687	47,494	30,843
Provisions for other liabilities	8,749	14,344	9,621	13,710	2,461
Total Current Liabilities	5,041,144	3,635,309	3,202,580	2,817,949	1,624,633
Non-Current Liabilities (Long-Term)					
LT Non-Recourse financing	2,748,015	1,883,443	1,186,002	796,068	386,365
Loans and borrowing	2,799,203	2,433,995	2,643,117	1,033,630	686,901
Provisions for other liabilites	135,471	184,649	125,415	58,434	47,702
Derivative financial instruments	213,101	141,040	9,769	88,389	-
Deferred taxes liabilities	246,725	123,432	139,180	86,372	49,327
Employee benefits	15,225	8,446	6,603	4,610	1,605
Total Non-Current Liabilities	6,157,740	4,775,005	4,110,086	2,067,503	1,171,900
Non cur liabilities neid for sale (discontinued ops)	-	756,811 9 167 125	7 312 666	4 885 452	2 796 533
	11,130,004	5,107,125	1,512,000	4,003,432	2,100,000
Equity	000 700	400 700	040.000	200.405	205.000
Capital and Reserves	802,702	406,789	616,988	390,105	395,096
Share capital	22,017	22,017	22,017	22,017	22,017
Other reperves	(91.152)	220,534	237,309	(70,716)	(20,202)
Exchange differences	(01,153)	(250,114)	15 20/	(7 278)	(20,302)
Retained earnings	534 514	403 652	317 227	227 805	138 704
Minority Interest	368,274	220,698	180,502	151.021	131,095
Total Equity	1,170,976	627,487	797,490	541,126	526,191
Total Liabilities & Shareholders Equity	12,369,860	9,794,612	8,110,156	5,426,578	3,322,724
A = L+E: Check	-	-	-	-	-

ABENGOA									
CONSOLIDATED STATEMENT OF CASH FLOW									
Years Ending: Dec 31, 2005 - 2009									
(in thousands of Euros (€))									
	2009	2008	2007	2006	2005 *				
Net Operating Cash Flow (NOCF)	803,452	761,534	461,223	246,142	199,088				
CF from Operating Activities	803,452	761,534	461,223	246,142	199,088				
Net cash flow from inv activities	-1,805,453	-1,713,076	-1,164,378	-877,237	-455,691				
CF from investing activities	-1,805,453	-1,713,076	-1,164,378	-877,237	-455,691				
Net cash flow from fin activities	1,149,768	652,317	1,373,072	1,223,701	439,824				
CF from financing activities	1,149,768	652,317	1,373,072	1,223,701	439,824				
Total net cash flow	147,767	-299,225	669,917	592,606	183,221				
Opening Cash	1,398,664	1,632,973	1,027,972	435,366	252,145				
CLOSING CASH	1,546,431	1,333,748	1,697,889	1,027,972	435,366				
Cash	1,546,431	1,333,748	1,697,889	1,027,972	435,366				
Check	-	-	-	-	-				

## Table 3: Statement of Changes of Financial Position (5 years)

## Table 4: Value Drivers

VAI	LUE DRIVERS				
Yea	rs Ending: Dec 31, 2005 - 2009				
(in f	thousands of Euros (€))				
		2009	2008	2007	2005
		2005	2008	2007	2000
Ope	rating Efficiency Ratio				
	Average Days Receivables	147.22	133.84	165.12	102.77
	Average Days Inventories	31.83	27.98	29.62	21.42
	Average Days Payable	319.60	259.88	299.87	198.39
	Cash Conversion Cycle	(140.55)	(98.06)	(105.12)	(74.19)
	Fixed Asset Turnover	0.59	0.73	0.77	1.16
Retu	urn on Equity Components				
	Return on Equity (ROE) 1	22.5%	23.3%	14.9%	22.8%
	Tax Effect Ratio	0.78	2.85	0.91	0.90
	Financial Cost Ratio	0.61	0.16	0.47	0.62
	Operating Profit Margin	0.10	0.10	0.09	0.08
	Capital Turnover	0.56	0.61	0.58	0.93
	Financial Structure Ratio	8.26	8.62	6.86	5.39
	Return on Equity (ROE) - full	22.5%	23.3%	14.9%	22.8%
	Return on Invested Capital (ROIC) BT	5.8%	5.9%	5.1%	7.6%
	ROIC AT	4.5%	16.8%	4.6%	6.9%
	Financial Leverage Multiplier	3.89	3.94	2.94	2.99
	Gross Margin	0.10	0.10	0.09	0.08
	Times Interest Earned	1.64	1.28	1.37	1.76
Gro	wth and Reinvestment				
	Annual Sales Growth	10.0%	41.9%	-0.8%	32.3%
	Annual retained earnings	130,862	86,425	89,422	89,101
	Net Annual Earnings	170,307	140,403	120,405	100,340
	Equity Retention Rate	76.8%	61.6%	74.3%	88.8%
	Self-Sustainable Growth Rate	17.3%	14.3%	11.1%	20.2%
	Effective Annual Tax Rate	22.3%	-185.1%	9.2%	9.9%

\* NOTE: Liquidity ratios not included as WCR is negative - no external funding required

## Table 5: Value Measures

1/01/01						
VALU	E MEA SURES					
YEARS	S 2005 - 2009					
(in the	busands of EUROS (€))					
Econor	mic Value Added (EVA)	2009	2008	2007	2006	2005
COST (	DF CAPITAL					
1 Aft	ter-Tax Cost of Debt					
US	Gov't Security (10Y)	0.04	0.02	0.04	0.05	0.04
	ESP Gov't Sec (10Y)	0.05	0.05	0.05	0.05	0.05
ES	P Gov't debt over US premium	0.01	0.02	0.01	0.00	0.01
Inter	Veighted Corp Cost of Debt (2009)	0.06	0.06	0.06	0.06	0.06
1014 C 0	st of Debt	0.01	0.01	0.01	0.01	0.00
C0	rnorate Tax Pate	0.00	(4.95)	0.00	0.00	0.00
AT	Cost of Debt	0.22	(1.05)	5.4%	5.4%	4.0%
	COST OF DEDI	4.4%	5.0%	5.176	5.1/6	4.0 /0
2 Co:	st of Equity					
RF	R (ESP Gov't Sec 10Y)	0.05	0.05	0.05	0.05	0.05
	US Base Market Risk (ex-RFR)	0.06	0.06	0.06	0.06	0.06
50	spanish Market Risk Premium	0.07	0.02	0.07	0.00	0.07
Sp	anish Market Diek	0.07	0.00	0.07	0.06	0.07
Be	ta ABG (against IBEX)	1.42	1.42	1.42	1.42	1.42
Co	st of Equity	16.0%	18.7%	16.9%	16.0%	17.2%
3 We	eights D/F					
Bo	ok Val I T Debt (Can Employed - Equity)	7 025 993	6.035.396	4 819 814	3 028 045	1 659 595
Bo	ok Val Debt	7.025.993	6.035.396	4.819.814	3.028.045	1.659.595
	Share price (ABO) (AVE Appuel)	45.07	47.24	29.25	20.94	10.25
	Shares outstanding (200e)	13.97	00.470	20.25	20.04	00.470
Ma	arket Value Equity	1.445.032	1.559.929	2.556.004	1.885.546	926.941
De	bt + Equity	8 471 025	7 595 325	7 375 848	4 913 591	2 586 536
De	bt Proportion	83%	79%	65%	62%	64%
Eq	uity Proportion	17%	21%	35%	38%	36%
4 14/	ACC					
~+ ¥¥/	AT Cost of Debt	0.044	0.056	0.051	0.051	0.040
	Debt Proportion	83%	70%	65%	62%	64%
	Cost of Fauity	0 160	0 187	0.169	0.160	0 172
	Equity Proportion	17%	21%	35%	38%	36%
W/	ACC	6.37%	8.32%	9.22%	9.29%	8.73%
ROIC 8	k IC					
NO	PAT and arrest	140.403	120.405	100.340	66.004	-
Inv	ested Capital	6 662 883	5 617 304	3 569 171	2 185 786	-
RO		4 51%	16 85%	4 62%	6 86%	-
Re	turn Spread	-1.86%	8.53%	-4.61%	-2.43%	-
Econor		2000	2008	2007	2005	2005
Econor		2009	2008	2007	2000	2005
EV	A	(123,692)	479,139	(164,408)	(53,028)	-
Marke	t Value Added (MVA)	2009	2008	2007	2006	2005
Ma	arket Value Added (MVA) per year	274,056	932,442	1,758,514	1,344,420	-
An	Inual Delta MVA	-240%	-89%	24%	-	-

## Table 6: Corp Governance – Abengoa S.A.

NAME	ROLE	STATUS	COMMITTEE MEMBERSHIP	% Shares
Mr. Felipe Benjumea Llorente	Executive Chairman	Internal	Strategy Committee	0.89% *
Prof. José B. Terceiro (Rep. Aplicaciones Digitales S.L. ~)	Executive Vice- Chairman. Lead Director	Internal	Appointments and Remuneration Committee: Director / Strategy Committee: Executive Vice- Chairman / Audit Committee: Director	1.023% ~
Mr. José Joaquín Abaurre Llorente	Director	Dominion; External		0.0021% *
Mr. José Luis Aya Abaurre	Director	Dominion; External	Appointments & Remuneration Committee: Dir. / Audit Committee: Dir.	0.061%
Ms. M <sup>a</sup> Teresa Benjumea Llorente	Director	Dominion; External		0.013% *
Mr. Javier Benjumea Llorente	Director	Dominion; External		0.004% *
Prof. José Borrell Fontelles	Vocal	Independent; External		0.0011%
Prof. Mercedes Gracia Díez	Director	Independent; External		0.0005%
Mr. Miguel Martín Fernández	Director	Independent; External		0.009%
Prof. Carlos Sebastián Gascón	Director	Independent; External	Appointments and Remuneration Committee: Chairman	0.028%
Mr. Ignacio Solís Guardiola	Director	Dominion; External		0.028%
Mr. Fernando Solís Martínez-Campos	Director	Dominion; External		0.092%
Mr. Carlos Sundheim Losada	Director	Dominion; External		0.051%
Mrs. Alicia Velarde Valiente	Director	Independent; External	Appointments and Remuneration Committee: Director / Audit Committee: Director	0.0004%
Prof. Daniel Villalba Vilá	Director	Independent; External	Audit Committee: Chairman	0.015%
Mr. Miguel Á. Jiménez- Velasco Mazarío	Secretary of the Board	Internal; Secretary of the Board	Strategy Committee: General Secretary / Audit Committee: Secretary	-

#### I. COMPOSITION ABENGOA BOARD OF DIRECTORS as per Abengoa Annual Report (Abengoa CC, 2009)

\* Llorente family, direct descendants of founder, own combined 0.91% direct shares of Abengoa

COMMITTEES: Appointments and Remuneration, Audit, and Strategy (Strategy Committee membership specified below)

Chief Executive Officer	Felipe Benjumea Llorente *
Executive Vice-Chairman	José B. Terceiro *
Director of Strategy and Corporate Development	Javier Camacho Donézar
Bioenergy Business Group President	Javier Salgado Leirado
Environmental Services Business Group President	Javier Molina Montes
Information Technologies Business Group President	Manuel Sánchez Ortega
Engineering & Industrial Construction & Latin America Bus Group President	Alfonso González Domínguez
Solar Business Group President	Santiago Seage Medela
Technical General Secretary	José Domínguez Abascal
Human Resources Director	Álvaro Polo Guerrero
Direct of Organization, Quality and Budgets	Luis Fernández Mateo
Financial Director	Amando Sánchez Falcón
Director of Investor Relations	Juan Carlos Jiménez Lora
Assistant CEO. International Institutional Relations	Germán Bejarano García
General Secretary for Sustainability	Fernando Martínez Salcedo
General Secretary	M.A. Jiménez-Velasco Mazarío *

\* Board of Directors Officer

#### II. COMPOSITION ABENGOA BIOENERGY BOD: as per Abengoa Bioenergy Annual Report 2009 (Abengoa Bioenergy CC, 2009)

Current Board of Directors constituted in July 2007, is formed by eleven members, ten Board Members, and one Non-Board Member Secretary. The current board members are independent and do not hold any executive post in the Abengoa Bioenergy companies, with the exception of the Chairman, Javier Salgado Leirado, who serves as CEO. The Board Committees are formed by three Non-executive Board Members designated by the Board of Directors, for a maximum period of four years, renewable for maximum periods of the same duration. 18 subsidiary firms report-up to Abengoa Bioenergía S.A. Corporate. Mr. Leirado, Chairman of the Board of Abengoa Bioenergy, acts as President and/or CEO of all member firms.

## COMITTEES: Appointments and Remuneration Committee, Audit Committee, New Technologies Committee

## Table 7: Working Capital Requirements

A V Y (i	BENGOA /ORKING CAPITAL REQUIREMENTS (WCR) ears Ending: Dec 31, 2005 - 2009 n thousands of Euros (€))								
	WCR Direct Method *	2009	2008	2007	2006	2005	NOTES		
+	Operating (Current) Assets (+)	2,415,361	1,884,949	1,831,298	1,322,063	780,453			
	Accounts Receivable	2,002,169	1,343,305	1,420,860	982,053	525,595	* Central A	AR item	
	Investment accounts receivable	413,192	541,644	410,438	340,010	245,494	* Treated	as AR	
	Investment deferred tax assets	-	-	-	-	9,364	* Treated as prepaid expense		
+	Inventories (+)	345,589	316,093	242,451	150,737	137,806			
-	Operating (Current) Liabilities (-)	4,172,891	3,131,729	2,492,852	1,857,407	1,136,938			
	Suppliers & other trade accounts payable	3,775,306	2,868,376	2,319,449	1,660,881	1,011,179	* Central A	AP item	
	Current tax liabilities	292,829	183,148	159,095	135,322	92,455	* Treated as accrued expense		expense
	Derivative financial instruments	96,007	65,861	4,687	47,494	30,843	* Treated as accrued expense		
	Provisions for other liabilities	8,749	14,344	9,621	13,710	2,461	* Treated	as AP	
۷	/CR Direct Method	-1,411,941	-930,687	-419,103	-384,607	-218,679			
_	Year-on-Year Trend	34%	55%	8%	43%	-			

## Table 8: Biofuel Industry Overview



Picture from Abengoa Bioenergy Annual Report 2008 (Abengoa CC, 2008)

Biofuel, a rapidly evolving industry, sits at the nexus of change: climate change, growing enthusiasm for sustainability, government policies, the quest for alternative energy sources, expansion in developing economies, and the emergence of new technologies, especially bio-industrial processes and genetic engineering. Biofuel is a broad term used to describe combustible fuel produced via the conversion of (or via the agency of) biomass / organic material. Depending on the particular biomass source and conversion processes applied, resulting derived fuels include ethanol, diesel, bio-oils, bioethers, biogas, syngas, biohydrogen, and solid biofuels (Demirbas, 2009). First generation biofuels derive from processed sugar, starch, vegetable oils, or animal fats, typically extracted from feedstock materials such as sugar cane, maize (corn), wheat, and various seeds.

The global growth of biofuel production has controversially caused the prices of many associated otherwise-edible commodities to soar to parity with oil, resulting in a political backlash based on ethical grounds (Jarrett, 2009). Advancements in process science and intermediaries have led to second generation biofuels, a still developing approach which involves converting non-edible feedstock to biofuel (cellulosic biomass principally). Third generation biofuels, though still in the early development stages, results from advanced genetically engineered organisms producing fuel directly as an output of biotic synthesis (Economist Staff, 2010).

The larger challenge for this nascent industry is that oil is 'baked-in' or systematized into the globalized economy to such a degree that massive systemic supply chain engineering is needed to make biofuel economically feasible. It is worthy to observe that the strongest national biofuel industry is in Brazil, having flourished due to the ability of the Brazilian government to push through systemic, vertically integrated supply chain solutions. Absent similar strong, centralized subsidy and planning from Spain and/or the EU generally, another strategy has been pursued by Abengoa: that of distributing biofuel risks by operating across allied but separate industries within a horizontally diversified conglomerate and diversifying globally in the interests of cost, regional economic, and subsidy arbitrage.

## Table 9: Abengoa Firm Overview

Abengoa S.A. is a Spanish global engineering conglomerate with a focus on sustainability in infrastructure, environment, and energy projects. Biofuel, the focus of this analysis, accounts for a strategic and growing 25% of the business by gross sales, with complementary units occupying the remainder: solar, IT, environmental services, and industrial engineering / construction. The following examines how Abengoa approaches financial value management, particularly its strategy of maintaining distinct horizontal business-lines. As well, internationalization is observed as a method to optimize subsidy, tax savings, commodity prices, and other regional advantages. While the firm appears well-managed in top-line terms, consistent underlying EVA value destruction and unstable core industries make it a somewhat risky, uncertain firm. However, this is moderated by strong financial management, tax and regulatory support, and strategic investments in new technology for future growth.

Abengoa was founded in 1941 by an aristocrat linked to the Franco regime and provided much-needed post-war national electrical infrastructure development. The company flourished and expanded into construction by the 1960's. Felipe Benjumea Llorente, the current chairman and son the founder, took the reins in the early 1990's. Under his leadership the firm horizontally diversified, creating, amongst others, Abengoa Bioenergy, which built its first landmark biofuel plant by 2000. The Benjumea family is firmly part of the Spanish 'establishment' (Leal, 2008), being closely linked by ownership and management to a number of powerful Spanish companies. Viewing Abengoa within the context of the clannish Spanish business elite, tax savings, a key concern of Spain's wealth families, is realized via international diversification and a close attachment to sustainability as a generator of subsidy and tax-rebates. A critical interpretation of value management at Abengoa must understand the context of the long-term interests of dynastic wealth preservation and growth from the perspective of one of Spain's most powerful families.

At present, Abengoa Bioenergy operates 4 biofuel plants in Europe and 4 in the US. Recently the company expanded operations to Brazil (Tribe, 2007) and announced plans to deploy the first commercial-scale hybrid cellulosic bioethanol facility, slated to go online by 2013 in the US (Cartledge, 2010). The firm categorizes core activities into five areas: raw material procurement, bioethanol origination, production, commodity trading, and new technologies. For a general overview of the biofuel industry, see Table 8. The relative youth of the biofuel / bioenergy sector makes Abengoa both an interesting and challenging firm to examine. Abengoa, in not being exclusively focused in the biofuel industry, diversifies risk in horizontal, synergistic lines. Of interest are the ways in which management is adopting and shifting strategy to drive value, even as the sands of government policy, cost economics, and technology factors in the industry shift. Companies purely active in the biofuel sector depend upon a subsidy factor, and, even then, are not profitable yet, though improvements in technology are narrowing the gap.

Evolution 1999 - 2009 (Consolidated Data)	Fou	r Business Units	Eng	gineering Company
		2009		1999
Business Units	Sales %	Gross Cash Flows (1) %	Sales %	Gross Cash Flow (1) %
Solar	2,8	8,0	0,0	0,0
Bioenergy	24,4	20,5	0,0	0,0
Environmental Services	17,4	13,0	8,5	5,5
Information Tecnologies	18,3	18,9	35,4	38,1
Industrial Engineering and Construction	37,1	39,6	56,1	56,4
Consolidated Total	100.0	100.0	100.0	100.0
Geography	%	%	%	%
US	13,9	14,7		
Latin America	28,4	29,7	40,0	28,8
Europe (excluding Spain)	15,0	15,5	4,9	1,7
Africa	7,9	4,4	1,4	2,1
Asia	3,4	1,1	0,5	0,2
Oceanía	0,1	0,1		
Spain	31,3	34,5	53,2	67,2
Consolidated Total	100.0	100.0	100.0	100.0
Types of Activities	%	%	%	%
Concession and recurrent businesses	15,0	36,9	5,8	14,5
Businesses involving commodities risk	29,8	22,6		
Rest of engineering businesses	55,2	40,5	94,2	85,5
Consolidated Total	100.0	100.0	100.0	100.0

## Table 10: Abengoa Value Drivers (Reuters)

Valuation Ratios	Company	Industry	Sector	S&P 500
P/E Ratio (TTM)		11.25	19.30	16.90
P/E High - Last 5 Yrs.		0.09	0.36	24.66
P/E Low - Last 5 Yrs.		0.02	0.09	6.18
Beta	1.47	1.41	1.14	1.28
Price to Sales (TTM)		0.42	1.49	2.07
Price to Book (MRQ)	1.38	0.58	1.14	2.94
Price to Tangible Book (MRQ)		0.72	1.31	15.33
Price to Cash Flow (TTM)		5.90	19.17	18.09
Price to Free Cash Flow (TTM)		3.74	13.94	24.70
% Owned Institutions				
Dividends				
Dividend Yield	0.98	1.08	1.29	1.70
Dividend Yield - 5 Year Avg.	0.74	1.15	1.17	2.57
Dividend 5 Year Growth Rate	1.91	11.02	8.66	-7.52
Payout Ratio(TTM)		6.90	11.65	36.04
Growth Rates				
Sales - 5 Yr. Growth Rate	25.16	3.49	7.67	10.03
EPS - 5 Yr. Growth Rate	26.59	17.46	9.66	7.29
Capital Spending - 5 Yr. Growth Rate	58.96	15.57	13.39	7.87
Financial Strength				
Quick Ratio (MRQ)	0.94	0.47	1.12	0.81
Current Ratio (MRQ)	1.02	0.62	1.38	0.98
LT Debt to Equity (MRQ)	585.90	40.39	54.03	127.35
Total Debt to Equity (MRQ)	645.73	57.03	74.51	183.85
Interest Coverage (TTM)		0.06	0.39	27.97
Profitability Ratios				
Gross Margin - 5 Yr. Avg.	29.95	16.77	24.89	28.86
EBITD - 5 Yr. Avg	10.43	7.22	13.37	18.34
Operating Margin - 5 Yr. Avg.	7.78	4.71	9.09	16.63
Pre-Tax Margin - 5 Yr. Avg.	3.72	4.90	9.14	16.18
Net Profit Margin - 5 Yr. Avg.	3.69	3.06	6.15	11.88
Effective Tax Rate - 5 Yr. Avg.	0.80	45.16	117.89	25.65
Efficiency				
Receivable Turnover (TTM)		1.54	1.58	8.74
Inventory Turnover (TTM)		1.83	2.16	6.67
Asset Turnover (TTM)		0.30	0.24	0.54
Management Effectiveness				
Return on Assets - 5 Yr. Avg.	1.96	2.81	4.16	5.60
Return on Investment - 5 Yr. Avg.	3.55	5.52	7.15	7.20

\* From Reuters (Reuters Financials, 2010)

**APPENDIX C – Revised Latin America Local Paper (Cosan)** 

# Corporate Finance in the Global Environment Individual Report: Latin American Region Value Management at Cosan S.A. within the Biofuel Industry

**OneMBA 2011** 

Latin American Region

## Escola de Administração de Empresas de São Paulo da Fundação Getulio Vargas (FGV-EAESP)

## Scott Mongeau

Friday, 5<sup>th</sup> November, 2010

## Value Management at Cosan S.A. within the Biofuel Industry



<u>Source</u>: Economist Staff, September 2<sup>nd</sup> 2010

## **Value Management Analysis**

## Value Creation / Destruction Trends

Cosan S.A. (NYSE: CZZ; Sao Paulo: CZLT11) is a firm engaged in the production, trade, and distribution of sugarcane-based processed sugar, ethanol, fuel, and lubricants. Founded in 1936, began a rapid expansion in the Brazilian sugarcane bioethanol sector in the 1980's, becoming the first vertically integrated bioethanol firm. The firm is majority controlled by Cosan Ltd., through which BoD Chairman Rubens Ometto Silveira Mello exerts a 24% ownership stake. His autocratic domination of the firm is controversial from a independence and transparency perspective. Operating 18 sugarcane mills which process 43m tons of cane annually, the firm both produces bioethanol along with sugar for both consumer and industrial use. Its current bioethanol production capacity is on the order of 1.7b liters per year (Cosan CC, 2010). Cosan, currently staffed by 38,600 employees, represents a mature and successful biofuel company relative to peers in the industry. The firm benefits from the mature state of the bioethanol industry in Brazil, which has been heavily developing for 30 years and is now the second largest producer of ethanol fuel and largest exporter in the world (Wikipedia, 2010). Brazil has a streamlined national ethanol production / supply infrastructure which lowers costs / realizes efficiencies along the biofuel value chain: inexpensive manual labor, abundant agricultural land, a high-yield tropical growing climate, high-energy yield crops (sugar cane and corn in particular), transport infrastructure, biofuel fermentation plants, end-product distribution networks, point-of sale depots (hybrid fueling stations), and vehicle engines designed and certified to work with high blend rates (Almeida, 2007). Nearly 20% of Brazil's transport infrastructure is supplied by sugarcane bioethanol, with the newer flexi-fuel vehicles able to run on both 25% ethanol / petrol blend and 100% pure ethanol fuel.

Concerning Working Capital Requirements (WCR) (Table 7), as opposed to younger, less mature firms in this sector, Cosan has a positive WCR balance, indicating mature supply-chain management. As a vertically integrated company, Cosan directly owns sugarcane feedstock production land, which not only lowers raw material prices, but negates the need to negotiate risky long-term supply contracts with agricultural producers. The lack of pre-negotiated supply contracts reduces the need for maintaining Accounts Payable (AP) balances with feedstock suppliers and raises the overall WCR quotient as a result (as inventory is owned while being grown and harvested). This shows up dramatically in the high Average Days Inventory (ADI) and Cash Conversion Cycle (CCC) periods (see table 4). While declining from levels as long as a full year, ADI stood at 145 days and CCC at 147 in 2009. This represents the company's "crop-to-tank" cycle in full. Although high relative to peers who purchase pre-harvested feedstock on the market, Cosan reaps great cost savings and control from this circumstance. It is quite a positive sign that these margins have halved in the space of just four years, displaying the fruits of intensive investments in improved supply-chain speed and efficacy, from sugarcane feedstock genetics, to agricultural practices, to plant processing techniques. AP, although initially kept at a longer duration than Receivables several years ago, is now in parity with Receivables, indicating a matching principle between short-term trade assets and receivables. Overall, the financial and operational optimization benefits of vertical value chain integration are apparent.

Concerning Return on Equity (RoE) components, the picture is less positive: there is a great deal of volatility apparent in these measures. Cosan's RoE measures shows the marks of an industry highly susceptible to the volatility of underlying commodity costs (feedstock, electricity byproduct, ethoanol, and processed sugar prices) as well as heavy expenditures on acquisitions. Corporate taxes waiver heavily between rebates and charges, implying there is a great deal of regulatory wrangling and/or year-to-year accounting treatment variation. As the tax effect ratio turns positive in challenging years when profits are down, one might assume that Cosan actively chooses to book certain tax credits and rebates to defray losses some years (such as 2007 - 8) and to settle outstanding tax liabilities during bumper years (such as 2006 and 2009). Finally, variability in financials can be linked to heavy merger and acquisition activity over the past few years, pushed through by the authoritarian edicts of Chairman Ometto. As core value measures are consistently negative (RoE and EVA), Cosan is at a point where it must consider focusing on integration and operational efficiencies over growth by acquisition.

There has been a downward shift in the Financial Structure ratio in the past two years, indicating a narrowing of year-to-year proportional changes between Owner's Equity and Invested Capital. Although total Invested Capital has expanded nearly four-fold in just five years, the Capital Turnover ratio measure has remained fairly stable, with the last reported year, 2009, showing a doubled improvement. Again, this suggests that active managerial and capital investment attention into operational supply chain efficiencies are bearing fruit and are a cause for investor optimism. The Operating Profit margin has turned from a deficit in 2007 – 8 to an 8% premium in 2009, more evidence that investments in core operational efficiencies are bearing fruit.

Finally, Sales Growth exploded 176% in 2009, showing the results of an increasingly global export market along with its ability to enact natural hedging: to sell bioethanol *or* processed sugar as price benefits dictate. This practice also explains the long inventory holding period: holding ethanol or sugar stocks to time sales to price peaks. Some analysts even use such practices to classify Cosan as being in the 'crops' industry. A caveat is that this practice is showing signs of leading to Brazilian regulatory backlash (Economist Staff, September 2010). A negative, and item for improvement, is the Self-

Sustainable Growth Rate, which is flat or negative over the past four years, indicating that the firm requires external investment to grow and a sign that capital has been allocated sacrificially to supplychain efficiency investments (as noted above). As the operational efficiencies have borne fruit, it is likely the SSGR profile will improve as operational margins increase, development expenses reduce, and retained earnings grow.

#### Impact of Corporate Governance

Cosan S.A. is controlled by Cosan Ltd. via majority ownership and is supported by subsidiaries segmented by operational function: Cosan Açúcar e Álcool S.A. (operating company), Rumo Logistica S.A. (port, storage, transport of sugar), Terminal Exportador de Alcool de Santos S.A. (ethanol port), Radar Propriedades Agricolas S.A. (agricultural real estate management), Cosan Combustiveis e Lubrificantes (ESSO) (marketing and distributing fuel), Cosan S.A. Bioenergia and Barra Bioenergia S.A. (energy co-generation), DaBarra Alimentos Ltda. (sugar retailer), and Cosan Centro-Oeste S.A. Açúcar e Álcool (strategic operations).

This high segmentation of operations realizes focused performance management of specific supply chain components according to function-specific targets and metrics. However, 'roll-up' financial performance is a potential victim in this approach: aggregate financials suggest an operational management bullwhip effect due to uneven target-setting across the separately functioning components. Compared to peers, Cosan's financials display a dramatic volatility which ultimately raises risk premiums expected from debt providers and investors. Cosan S.A. could limit this phenomenon by applying concerted focus on forecasts from a firm-wide efficiency perspective, perhaps via an advanced supply chain management ERP implementation. Also, the firm shows little signs of being engaged in advanced Treasury-function based commodity hedging (or if pursued, it is implemented poorly, as there is a lack of year-to-year stability in profit line items). Cosan has 'natural hedging' capabilities via supply chain integration, but could supplement this with improved commodity market-making and financial hedging capabilities.

Concerning equity ownership of Cosan S.A., 129 institutions own 65% of the 0.27 billion outstanding common shares. Reuters analysts remark that this is much higher than is typical in the Crops Industry (14.5% institutional ownership), but lower than the US S&P 500 average (66.6%) (Reuters Company Research, 2010). However, significantly, the 2009 Annual Report reveals that 61% of this ownership is from the Cosan Ltd. Holding firm, indicating high centralized control of the Cosan S.A. operational firm. Cosan Ltd. holds 41.5% of Cosan S.A. total capital (class A & B shares combined), resulting in 86.1% voting capital. Cosan Ltd. has 270m shares trading on the NYSE, with Rubens Ometto Silveira Mello indicated as one of the main private shareholders. Cited as "dono" (owner) of Cosan, he is also Chairman of the Cosan Board of Directors since 2007 and a member of the Board of Executive Directors since 2007. From 2000 – 2009 he was CEO (Cosan Annual Report, 2009). Ometto exerts autocratic dominance over the firm via Cosan Ltd, a highly controversial factor from the standpoint of transparency and independence. Indeed many shareholders feel Ometto has driven acquisition activities too far and that it is now time to retrench to core value creation.

Cosan's central executive body is the Board of Executive Officers (BoEO), the firm's legal representative, responsible for internal organization, transactions, and implementing the policies and guidelines established by the BoD. Cosan S.A.'s BoD establishes general guidelines for the firm's businesses and is

responsible for monitoring the BoEO. At least 20% of the BoD Directors must be independent members. This low proportion of independent members is not overwhelming in its suggestion of external oversight.

From this profile, ownership concentration and control can be said to be highly centralized, especially the singular influence of Chairman Ometto. There is little exposure to the market for corporate control and little risk of activist stakeholders gaining substantial voting power. This has been highly effective in pushing-through centralized decisions requiring authoritarian dictate, such as that of tight intra-group supply chain integration and growth through acquisitions. However, the functionally segmented nature of the component subsidiaries bear the mark of 'running in circles' to achieve dictated objectives without the benefit of advanced dynamic supply chain information optimization and centralized advanced commodity demand risk management (as observed previously). The firm would benefit were it to cede a degree of centralized operational control to specialized units with a charter to push the boundaries of advanced IT-based supply chain and commodity price (demand) forecasting and management. As well, demonstration of greater oversight over Ometto's decision making would be a positive sign in terms of demonstrating greater firm transparency. Thus, the highly centralized ownership, control, management, and oversight of the firm is a double-edged sword: effective in gaining brute force operational efficiency, but not evidencing an ability to smooth growth and earnings.

Concerning government support, Cosan is quite self-sufficient compared to peers in the industry, a sign of its relative strength and of the general maturity of the Brazilian biofuel sector. As opposed to biofuel companies in the US and Europe, Cosan has no direct subsidy, although it does evidence tax benefits. Indeed, the firm is considered a competitor of the state-supported Brazilian oil conglomerate, Petrobras, especially since Cosan acquired Esso and its network of 1,500 Brazilian fueling stations in April 2008.

#### **Reflection on Value Measures**

Cosan Value Measures are cited on Table 5. There is tremendous volatility in historical Brazilian cost-ofdebt and equity rates, making WACC calculations somewhat speculative. Many analysts as well as investors deem Brazil a far more stable national economy than 8 years ago (Economist Staff, October 2010). Cost of debt and equity return rates applied in the calculation of WACC imply a confidence in the stability achieved in the national economy over the last decade. Thus, Cosan, being considered a speculative investment even within Brazil, has a reasonable WACC of 12% averaged over the five year period cited.

As of the end of 2009, annual EVA and MVA were consistently negative, indicating value was being destroyed and that the market was skeptical concerning future growth opportunities. AT ROIC indicates a struggle for positive returns, having dipped into negative territory 2007 – 8 during the Economic Crisis. Even when positive, AT ROIC does not surmount WACC, leading to a negative Return Spread and a negative EVA. MVA follows in relatively tight synchronicity, indicating investors have not speculated on future growth to offset this loss-making trend.

However, within the global biofuel industry Cosan is remarkably mature in terms of operational development and overall stability. This was recognized recently by the vote-of-confidence placed in it when Shell announced a \$12B joint venture to produce sugar cane based ethanol (Shell CC, 2010). The

negative EVA trend showed signs of abatement in 2009, displaying an EVA improvement from BR\$ -616k to BR\$ -57k, with MVA rising in close parallel. This can be explained by massive sales growth, a reduction in core operating expenses (reaped from concerted investments in supply chain efficiency measures), and connected improvements in operational profit.

As a post-script, fortunes have changed dramatically with the Shell joint-venture announcement: the stock being at a two-year high-point (in the BR\$25 range) as of September 2010, which is raising 2010 MVA as a sign of future expected performance and growth. As EVA and MVA have remained in tight synchronicity, one may assume that Cosan investors are fairly shrewd concerning growth prospects, the biofuel industry otherwise being a mature and commoditized industry within Brazil. The new confidence in the firm show by investors will likely be rewarded in future real profit terms.

Typical of most firms, Cosan does not capitalize R&D expenses. While useful for proper firm valuation, comprehensive R&D figures were not available. However, two observations can be made: 1) producing first-generation biofuels, Cosan is not investing heavily in second- or third-generation fuels, but is rather focusing on lower-cost feedstock (sugarcane) development (Cosan CC, 2010), and 2) the modest R&D expenditures (relative to other biofuel players attempting to advance second-generation cellulosic technology) would raise profits slightly (by reducing expenses) and would cause a decline in RoA measures, including ROIC and EVA (as Invested Capital would inflate).

In conclusion, Cosan can be considered profitable; however, liquidity is not a value driver in of itself, but a sign of the potential for value creation. Core economic value creation depends on operational margins surmounting economic hurdle rates to evidence true capital creation. Operating margins and expected growth rates are key to increasing firm value. Based on Cosan's streamlined vertical supply-chain efficiencies and relative maturity, Shell has vested a vote-of-confidence in the firm. Investors have followed suit and the influx of capital must now be allocated by management to achieve higher volumes, prices, and, ultimately, margins to surmount firm WACC and to realize EVA. Chairman Ometto must now focus on core firm value creation and scale down growth via acquisition.

## **REFERENCES**

- Almeida, C. (December 2007). *Sugarcane ethanol: Brazil's biofuel success*. SciDev.net. Retrieved September 2010 from <u>http://www.scidev.net/en/features/sugarcane-ethanol-brazils-biofuel-success.html</u>
- Answers.com. (September 2010). *Cosan Ltd. Profile*. Answers.com. Retrieved September 2010 from <u>http://www.answers.com/topic/cosan-limited</u>
- Brigham, E. and Daves, P. (2004). *Intermediate Financial Management*. Thompson South-Western: Mason, Ohio.
- Cosan Annual Report. (2009). *Cosan Annual Reports*. Cosan Corporate Website. Retrieved September 2010 from <u>http://www.cosan.com.br/cosan2009/web/conteudo\_en.asp?idioma=1&conta=44&tipo=26559</u> &img=26539
- Cosan Corporate Communications. (September 2010). *Cosan Company Profile*. Retrieved September 2010 from <a href="http://www.cosan.com.br/cosan2009/web/conteudo\_eni.asp?idioma=1&conta=46&tipo=26652&img=26644">http://www.cosan.com.br/cosan2009/web/conteudo\_eni.asp?idioma=1&conta=46&tipo=26652&img=26644</a>

Demirbas, A. (2009). *Biofuels*. Springer, Green Energy and Technology Series: London.

- Economist Staff. (June 2010). *Inhuman genomes*. The Economist, June 17, 2010. Retrieved September 2010 from <u>http://www.economist.com/node/16349380</u>
- Economist Staff. (September 2010). *Ethanol's mid-life crisis*. The Economist, September 2<sup>nd</sup> 2010. Retrieved September 2010 from http://www.economist.com/node/16952914?story\_id=16952914
- Economist Staff. (October 2010). *Lula's legacy*. The Economist, October 2<sup>nd</sup> 2010.
- Graham, J., and Harvey, C. (2002). *How Do CFOs Make Capital Budgeting and Capital Structure Decisions?* Journal of Applied Corporate Finance: Spring 2002, 15, 1.
- Hawawini, G. and Viallet, C. (2007). *Finance for Executives. Managing for Value Creation*. South-Western Cengage Learning, ISBN-13 978-0-324-27431-8.
- Koller, T., Goedhart, M., & Wessels, D. (2005). *Valuation: Measuring and Managing the Value of Companies*. John Wiley & Sons, Inc., New Jersey, USA.
- Parkinson, J., and Draimin, C. (2007). *Accounting for Non-Financial Managers*. Captus Press, Revised Second Edition, ISBN-13 978-1-55322-173-9.
- Reuters Company Research. (August 9, 2010). *Cosan Limited (CZZ)*. Reuters. Retrieved September 2010 from <u>www.etrade.com</u>
- Reuters UK. (July 24, 2010). *Cosan SA Industria e Comercio*. Reuters UK. Retrieved September 2010 from <u>www.etrade.com</u>
- Reuters Financials. (September 2010). *Cosan S.A. Industria e Comercio (CSAN3.SA)*. Retrieved September 2010 from <u>http://www.reuters.com/finance/stocks/financialHighlights?symbol=CSAN3.SA</u>
- Shell Corporate Communications. (August 2010). *Shell and Cosan sign joint venture*. Retrieved September 2010 from

http://www.shell.com/home/content/investor/news\_and\_library/2010\_media\_releases/shell\_c osan\_sign\_joint\_venture\_25082010.html

- Wikipedia. (September 2010). *Ethanol Fuel in Brazil*. Retrieved September 2010 from <u>http://en.wikipedia.org/wiki/Ethanol\_fuel\_in\_Brazil</u>
- XEC Internet. (September 2010). *Biofuel History*. Retrieved September 2010 from <u>http://biofuel.org.uk/history-of-biofuels.html</u>

## APPENDIX

## Table 1: Income Statement (5 years)

CONSOLIDATED INCOME STATEMENT (in thousands of BRL (R\$))				
	1			
INCOME STATEMENT	2009	2008	2007	2006
Gross Operating Revenue (Net Sales)	2,533.64	916.39	755.42	818.04
Sales Taxes (-)	183.85	73.37	73.34	70.57
Net Operating Revenues	2,349.79	843.02	682.08	747.46
Cost of Goods Sold (-)	2,109.89	693.62	511.81	507.26
Gross Profit	239.90	149.41	170.26	240.21
Sales Expenses (+)	101.48	74.88	75.17	46.36
Administrative Expenses (+)	78.25	57.71	97.72	44.89
Operating Expenses (-)	179.73	132.58	172.89	91.25
Other operating income (+)	199.86	-	(40.74)	-
Other operating expenses (-)	50.04	40.33	20.57	58.13
Other operat incm. (expns.) (+)	149.82	(40.33)	(61.31)	(58.13)
Operating Profit	209.98	(23.51)	(63.94)	90.82
Extraordinary Items	-	-	-	-
Earnings Before Interest and Tax (EBIT)	209.98	(23.51)	(63.94)	90.82
Financial Income (+)	198.25	102.99	372.88	250.69
Financial Expenses (-)	391.64	101.98	39.29	336.09
Net Financial Income (+)	(193.39)	1.01	333.59	(85.40)
Net equity income (+)	0.52	6.36	(0.51)	0.05
Net Non Operating Inc and Expenses	(116.61)	3.69	0.36	2.14
Operating + Other Inc (+)	17.11	(16.14)	269.14	5.48
Pretax income (EBT)	(99.50)	(12.44)	269.50	7.62
Income Tax charge (-)	(227.59)	7.39	26.16	16.56
Earnings After Tax (EAT)	128.09	(19.84)	243.34	(8.95)
Deferred Income Tax (+)	167.95	(14.04)	76.36	(13.92)
Minority interest (+)	0.37	(0.53)	2.26	5.84
Net Income	(40.23)	(5.27)	164.73	(0.87)
Net Operating Profit After Taxes (NOPAT)	437.57	(30.90)	(90.10)	74.26

## Table 2: Balance Sheet (5 years)

COSAN					
CONSOLIDATED BALANCE SHEETS					
Years Ending: Dec 31, 2005 - 2009					
ASSETS	2009	2008	2007	2006	2005
Current Assets					
Cash & ST Investments	719.36	1,010.09	1,217.13	831.52	39.98
Commercial Credits ST	1,199.09	215.24	112.28	212.60	119.06
Accts Receivable Net	599.16	215.24	112.28	212.60	119.06
Various credits	599.93	-	-	-	-
Inventories	1,106.19	570.52	503.35	523.97	426.71
Total current assets	3.074.91	487.75	2.224.75	2.146.57	215.03
		2,200101	2,22 0	2,110,01	
Assets I T	1 381 57	1 052 58	796 57	620.80	153.80
Permanent Assets	6 190 91	4 057 28	3 242 04	2 892 04	1 767 79
Inv in subs and others	278 21	120.31	93 17	13 41	13 13
Prop Plant & Equip Net	3.493.95	2.771.36	2.013.14	1.523.27	1.394.66
Intangibles & Good Will	2,418,75	1,160.67	-		-
Deferred Charges		4.94	1.135.74	1.355.36	360.00
Total Non-Current Assets	7,572.48	5,109.86	4,038.61	3,512.84	1,921.59
Total Assets	10,647.39	7,393.47	6,263.35	5,659.40	2,722.38
LIABILITIES AND STOCKHOLDERS' EQUITY	2,009.00	2,008.00	2,007.00	2,006.00	2,005.00
Current Liabilities					
Debt ST	1,449.50	83.34	88.99	68.78	38.14
Debentures ST	-	-	-	-	-
Accounts Payable ST	456.12	190.99	113.77	201.72	94.88
Due Taxes ST	168.60	116.09	126.20	111.12	88.07
Dividends Due ST	-	-	75.82	-	-
Provisions ST	93.16	80.70	63.27	49.73	30.14
Due to Subsidiaries ST	5.17	-	0.67	0.08	1.43
Other ST Liabilit	152.69	106.56	123.01	238.56	241.491
Total Current Liabilities	2,325.23	577.69	591.73	669.98	494.15
Non-Current Liabilities					
Liabilities LT	4,925.54	3,472.26	4,020.43	3,619.99	1,461.89
Deferred Income	-	-	-	-	-
Total Non-Current Liabilities	4,925.54	3,472.26	4,020.43	3,619.99	1,461.89
Total Liabilities	7,250.77	4,049.95	4,612.16	4,289.96	1,956.04
Noncontrolling Interest					
Min interest consi subs	30.88	17.72	20.19	14.02	3.46
I otal Noncontrolling Interest	30.88	1/./2	20.19	14.02	3.46
Stockholders' Equity					
Capital Stock	3,819.77	2,935.27	1,192.69	1,185.77	301.01
Capital Reserves	41.66	-	-	-	-
Revaluation Reserves	-	194.37	195.00	195.86	326.63
Earnings Reserve	-	196.16	243.30	-	7.07
Adjustments securities	-	-	-	-	-
Retained earnings	(495.68)	-	-	(26.21)	128.17
Prov for future cap incr	-	-	-	-	-
Total Cosan Stockholders' Equity	3,365.75	3,325.80	1,631.00	1,355.42	762.88
Total Lish Noncontrolling Int and SHe' Equity	10 647 30	7 303 47	6 262 25	5 659 40	2 722 28
rotar clab, noncontroning int and ons equity	10,041.33	1,353,41	0,203.33	0,000,40	2,122,30
Debt as Foreign Currency (not included in Liabilities)					
Debt Foreign Currency	2,334.85	1,620.15	2,314.05	-	525.44
Debt Foreign Currency Total Debt Foreign Currency	2,334.85 2,334.85	1,620.15 <b>1,620.15</b>	2,314.05 2,314.05	-	525.44 525.44

## Table 3: Statement of Changes of Financial Position (5 years)

CONSOLIDATED STATEMENT OF CASH FLOW Years Ending: Dec 31, 2005 - 2009 (in thousands of BRL (R\$))         2008         2007         2006         200           Cash Flow         2009         2008         2007         2006         200           Cash generated from operations         -148.93         16.76         133.53         231.91         81.           Net income         -40.23         -5.27         164.73         5.38         -6.           Deprec, amortiz & deplet         72.50         69.74         192.37         126.69         86.1           Los(gain) P3 & monet chg         89.00         -37.20         -26.57         116.78         -3.           Los(gain) equity of subs         -0.52         -6.36         0.51         -0.26         0.01           Deferred taxes         -68.45         45.44         -38.86         0.13         -3.           Gain(los) of minority in         0.37.70         -60.01         117.46         1.58         0.           Other non cash exp(inc)         16.00         6.30         -279.93         -20.43         44.14           Decr(incr) inventories         530.72         464.25         278.84         -420.49         -115.           Decr(incr) other assets         71.14         23.73	COSAN					
Years Ending: Dec 31, 2005 - 2009 (in thousands of BRL (R\$))         2008         2007         2006         20           Cash generated from operations         -148 93         16.76         133.53         23.19         81.           Net income         -40.23         -5.27         164.73         5.36         -66.           Deprec, amortiz & deplet         72.50         69.74         192.37         126.69         86.           Los(gain) Sale perma asst         -20.85         4.00         0.00         0.00         0.00           Sold asset value(net dep         -8.65         4.11         3.80         2.04         2.4           Los(gain) aele perma asst         -0.52         -6.36         0.51         -0.25         0.1           Other non cash exp(inc)         16.00         6.30         -27.93         -20.43         4.1           Decr(incr) receivables         -14.20         -111.27         9.69.5         -17.65         -21.1           Decr(incr) inventories         530.72         246.425         27.88.4         -42.04         -115.7           Decr(incr) inventories         63.94         38.21         25.43         32.45         -17.65           Decr(incr) inventories         63.94         38.21         25.43	CONSOLIDATED STATEMENT OF CASI	H FLOW				
(in thousands of BRL (R\$))         2008         2007         2006         20           Cash generated from operations         -148.93         16.76         133.53         231.91         81.           Net income         -40.23         -5.27         164.73         5.38         -66.           Deprec, amortiz & deplet         72.50         69.74         192.37         126.69         86.1           Los(gain) sale perm asst         -208.94         0.00 <th>Years Ending: Dec 31, 2005 - 2009</th> <th></th> <th></th> <th></th> <th></th> <th></th>	Years Ending: Dec 31, 2005 - 2009					
Cash Jenerated from operations         -148.93         16.76         133.53         23.19         81.           Net income         -40.23         -5.27         164.73         5.38         -6.           Deprec, amortiz & deplet         72.50         69.74         192.37         126.69         86.           Los(gain) FX & monet chg         89.00         -37.20         -26.57         116.78         -3.           Los(gain) sale perm asst         -20.89 4         0.00         0.00         0.00         0.00           Sold asset value(net dep         -8.65         4.11         3.80         2.04         2.4           Los(gain) sale perm asst         -0.52         -6.36         0.51         -0.26         0.01           Deferred taxes         -6.84         4.54.4         -38.66         0.13         -3.           Gain(los) of minority in         0.37         -60.01         117.48         1.58         0.0           Decr(incr) assets         114.00         -111.27         96.95         -17.65         -21.1           Decr(incr) inventories         530.72         464.25         27.84         -420.49         -115           Decr(incr) taxes         -63.94         38.21         25.43         32.45	(in thousands of BRL (R\$))					
Cash Flow         2009         2008         2007         2006         20           Cash generated from operations         -148.93         16.76         133.53         231.91         81.           Net income         -40.23         -5.27         164.73         5.38         -6.           Deprec, amotiz & deplet         72.50         69.74         192.37         126.69         88.1           Los(gain) sale perm asst         -208.94         0.00<	(					
Cash generated from operations         -148.93         16.76         133.53         231.91         81.           Net income         -40.23         -5.27         164.73         5.38         -6.           Deprec, amortiz & deplet         72.50         69.74         192.37         126.69         86.           Los(gain) FX & monet chg         89.00         -37.20         -26.57         116.76         -3.           Los(gain) equity of subs         -0.52         -6.36         0.51         -0.26         0.0           Deferred taxes         -66.845         45.44         -38.86         0.13         -3.           Gain(los) of minority in         0.37         -60.01         117.48         1.58         0.           Other non cash exp(inc)         16.00         6.30         -279.93         -20.43         4.0           Decr(incr) nesets & liabilities         434.74         334.17         397.32         -65.29         -52.2           Decr(incr) other assets         71.14         -23.76         -33.73         168.24         7.           Incr(decr) tayppliers         -62.07         -161.85         0.00         177.89         69.1           Incr(decr) tayppliers         -62.07         -451.45         -84.43	Cash Flow	2009	2008	2007	2006	2005
Net income         -40.23         -5.27         164.73         5.38         -6.           Deprec, amortiz & deplet         72.50         69.74         192.37         126.69         86.           Los(gain) FX & monet chg         89.00         -37.20         -26.57         116.78         -3.           Los(gain) equity of subs         -0.52         -6.36         0.51         -0.26         0.0           Deferred taxes         -68.45         45.44         -38.66         0.13         -3.           Gain(los) of minority in         0.37         -60.01         117.48         1.58         0.           Other non cash exp(inc)         16.00         6.30         -27.93         -20.43         4.4           Decr(incr) receivables         -142.09         -111.27         96.95         -17.65         -52.           Decr(incr) receivables         -142.09         -111.27         96.95         -17.65         -24.4           Decr(incr) other assets         71.14         -23.76         -33.73         168.24         7.           Incr(decr) suppliers         -62.07         -161.85         0.00         0.00         0.00           Incr(decr) other liabil         100.99         128.58         29.82         -5.73 <td>Cash generated from operations</td> <td>-148.93</td> <td>16.76</td> <td>133.53</td> <td>231.91</td> <td>81.01</td>	Cash generated from operations	-148.93	16.76	133.53	231.91	81.01
Deprec, amortiz & deplet         72.50         69.74         192.37         126.69         86.1           Los(gain) FX & monet chg         89.00         -37.20         -26.57         116.78         -3.3           Los(gain) sale perm asst         -208.94         0.00         0.00         0.00         0.00           Sold asset value(net dep         -8.65         4.11         3.80         2.04         2.1           Los(gain) equity of subs         -0.52         -6.36         0.511         -0.26         0.0           Deferred taxes         -68.45         45.44         -38.86         0.13         -3.3           Gain(tos) of minority in         0.37         -60.01         117.48         1.58         0.1           Decr(incr) assets & liabilities         434.74         334.17         397.32         -65.29         -52.           Decr(incr) inventories         530.72         464.25         278.84         -420.49         -115.5           Decr(incr) other assets         71.14         -23.76         -33.73         166.24         7.7           Incr(decr) taxes         -63.94         38.21         25.43         32.45         -166.52         28.8           Incr(decr) other liabil         100.99         128.58 <td>Net income</td> <td>-40.23</td> <td>-5.27</td> <td>164.73</td> <td>5.38</td> <td>-6.19</td>	Net income	-40.23	-5.27	164.73	5.38	-6.19
Los(gain) FX & monet chg         89.00         -37.20         -26.57         116.78         -3.           Los(gain) sale perm asst         -208.94         0.00         0.00         0.00         0.01           Sold asset value(net dep         -8.65         4.11         3.80         2.04         2.1           Los(gain) equity of subs         -0.52         -6.36         0.51         -0.26         0.0           Deferred taxes         -68.45         45.44         -38.86         0.13         -3.           Gain(los) of minority in         0.37         -60.01         117.48         1.58         0.1           Other non cash exp(inc)         16.00         6.30         -27.93         -20.43         4.0           Decr(incr) receivables         -142.09         -111.27         96.95         -7.65         -52.           Decr(incr) other assets         71.14         -23.76         -33.73         166.24         7.           Incr(decr) suppliers         -62.07         -161.85         0.00         177.89         68.1           Incr(decr) other liabil         100.99         128.58         29.82         -5.73         25.6           Total CF - Operating Activities         285.81         350.92         530.85	Deprec, amortiz & deplet	72.50	69.74	192.37	126.69	86.25
Los(gain) sale perm asst         -208.94         0.00         0.00         0.00         0.00           Sold asset value(net dep         -8.65         4.11         3.80         2.04         2.1           Los(gain) equity of subs         -0.52         -6.36         0.51         -0.26         0.0           Deferred taxes         -68.45         45.44         -38.86         0.13         -3.           Gain(los) of minority in         0.37         -60.01         117.48         1.58         0.           Other non cash exp(inc)         16.00         6.30         -279.93         -20.43         44           Decr(incr) receivables         -142.09         -111.27         96.95         -17.65         -21.1           Decr(incr) inventories         530.72         464.25         27.84         -42.049         -115           Decr(incr) inventories         530.72         464.25         2.48         -7.5         -25.1           Incr(decr) suppliers         -62.07         -161.85         0.00         177.89         69.8           Incr(decr) taxes         -63.94         38.21         25.43         32.45         -18.1           Incr(decr) taxes         -225.39         -167.50         -80.00         0.00	Los(gain) FX & monet chg	89.00	-37.20	-26.57	116.78	-3.46
Sold asset value(net dep         -8.65         4.11         3.80         2.04         2.1           Los(gain) equity of subs         -0.52         -6.36         0.51         -0.26         0.0           Deferred taxes         -68.45         44.544         -38.66         0.13         -3.           Gain(los) of minority in         0.37         -60.01         117.48         1.58         0.1           Decr(incr) assets & liabilities         434.74         334.17         397.32         -65.29         -52.           Decr(incr) inventories         530.72         464.25         278.84         -420.49         -115.5           Decr(incr) inventories         -63.94         38.21         25.43         32.45         -18.1           Incr(decr) suppliers         -62.07         -161.85         0.00         177.9         69.1           Incr(decr) taxes         -63.94         38.21         25.43         32.45         -18.1           Incr(decr) atkes         285.81         350.92         530.85         166.62         28.           Cash Hows - Investing Activities         285.93         -642.67         -445.14         -49.4           Purchase of perman asset         -334.58         -475.17         -365.14         -84	Los(gain) sale perm asst	-208.94	0.00	0.00	0.00	0.00
Los(gain) equity of subs         -0.52         -6.36         0.51         -0.26         0.0           Deferred taxes         -68.45         45.44         -38.66         0.13         -3.           Gain(los) of minority in         0.37         -60.01         117.48         1.58         0.3           Other non cash exp(inc)         16.00         6.30         -279.93         -20.43         4.0           Decr(incr) receivables         -142.09         -111.27         96.95         -75.5         -21.0           Decr(incr) receivables         -142.09         -111.27         96.95         -77.65         -21.0           Decr(incr) receivables         -71.14         -23.76         -33.73         168.24         7.1           Decr(incr) other assets         71.14         -23.76         -33.73         168.24         7.3           Incr(decr) taxes         -63.94         38.21         25.43         32.45         -18.3           Incr(decr) taxes         -63.98         -642.67         -445.14         -84.43         -49.0           Purchase of perman asset         -559.98         -642.67         -445.14         -84.43         -49.0           Purchase of perman inves         -225.39         -167.50         -80.00 <td>Sold asset value(net dep</td> <td>-8.65</td> <td>4.11</td> <td>3.80</td> <td>2.04</td> <td>2.82</td>	Sold asset value(net dep	-8.65	4.11	3.80	2.04	2.82
Deferred taxes         -68.45         45.44         -38.86         0.13         -3.           Gain(los) of minority in         0.37         -60.01         117.48         1.58         0.           Other non cash exp(inc)         16.00         6.30         -27.93         -20.43         4.           Decr(incr) assets & liabilities         434.74         334.17         397.32         -65.29         -52.           Decr(incr) receivables         -142.09         -111.27         96.95         -17.65         -21.4           Decr(incr) inventories         530.72         464.25         278.84         -420.49         -115.           Decr(incr) other assets         71.14         -23.76         -33.73         168.24         7.           Incr(decr) suppliers         -62.07         -161.85         0.00         177.89         69.3           Incr(decr) other liabil         100.99         128.58         29.82         -5.73         25.6           Total CF - Operating Activities         285.81         350.92         530.85         166.62         28.           Purchase of perman asset         -559.98         -642.67         -445.14         -84.43         -49.9           Purchase of perman inves         -225.39         -167.50<	Los(gain) equity of subs	-0.52	-6.36	0.51	-0.26	0.00
Gain(los) of minority in         0.37         -60.01         117.48         1.58         0.3           Other non cash exp(inc)         16.00         6.30         -279.93         -20.43         4.4           Decr(incr) assets & liabilities         434.74         334.17         397.32         -65.29         -52.2           Decr(incr) inventories         530.72         464.25         278.84         -420.49         -115.5           Decr(incr) other assets         71.14         -23.76         -33.73         168.24         7           Incr(decr) suppliers         -62.07         -161.85         0.00         107.789         69.1           Incr(decr) other liabil         100.99         128.58         29.82         -5.73         25.0           Total CF - Operating Activities         285.81         350.92         530.85         166.62         28.           Purchase of perman asset         -334.58         -475.17         -365.14         -84.43         -49.9           Purchase of perman asset         -372.06         0.00         0.00         0.0           Sale of permanent asset         372.06         0.00         0.00         0.0           Other investing Activities         -671.43         -244.84         -248.35	Deferred taxes	-68.45	45.44	-38.86	0.13	-3.41
Other non cash exp(inc)         16.00         6.30         -279.93         -20.43         4.4           Decr(incr) assets & liabilities         434.74         334.17         397.32         -65.29         -52.           Decr(incr) receivables         -142.09         -111.27         99.50         -17.65         -21.0           Decr(incr) receivables         530.72         464.25         278.84         -420.49         -115.           Decr(incr) other assets         71.14         -23.76         -33.73         168.24         7           Incr(decr) suppliers         -62.07         -161.85         0.00         177.89         69.3           Incr(decr) taxes         -63.94         38.21         25.43         32.45         -181.           Incr(decr) taxes         -6559.98         -642.67         -445.14         -84.43         -49.           Purchase of perman asset         -559.98         -642.67         -445.14         -84.43         -49.           Purchase fix & dif asset         -334.56         -475.17         -365.14         -84.43         -49.           Net sale (acquis) of inv         -481.17         394.57         197.17         0.00         0.0           Sale of permanent asset         -22.34         3.2	Gain(los) of minority in	0.37	-60.01	117.48	1.58	0.39
Decr(incr) assets & liabilities         434.74         334.17         397.32         -65.29         -52.           Decr(incr) receivables         -142.09         -111.27         96.95         -17.65         -21.0           Decr(incr) inventories         530.72         464.25         278.84         -420.49         -115.           Decr(incr) other assets         71.14         -23.76         -33.73         168.24         7.           Incr(decr) suppliers         -62.07         -161.85         0.00         177.89         69.           Incr(decr) other liabil         100.99         128.58         29.82         -5.73         25.0           Total CF - Operating Activities         285.81         350.92         530.85         166.62         28           Purchase of perman asset         -559.98         -642.67         -445.14         -84.43         -49.0           Purchase of perman inves         -225.39         -167.50         -80.00         0.00         0.00           Asset (acquis) of inv         -481.17         394.57         197.17         0.00         0.0           Cash Flows - Financing Activities         -671.43         -244.84         -248.35         -88.37         -49.0           Proceeds(repayn) of debt	Other non cash exp(inc)	16.00	6.30	-279.93	-20.43	4.61
Decr(incr) receivables         -142.09         -111.27         96.95         -17.65         -21.4           Decr(incr) inventories         530.72         464.25         278.84         -420.49         -115.           Decr(incr) other assets         71.14         -23.76         -33.73         168.24         7.           Incr(decr) suppliers         -62.07         -161.85         0.00         177.89         69.3           Incr(decr) taxes         -63.94         38.21         25.43         32.45         -18.1           Incr(decr) other liabil         100.99         128.58         29.82         -5.73         25.0           Total CF - Operating Activities         285.81         350.92         530.85         166.62         28.           Cash Flows - Investing Activities         285.39         -167.50         -80.00         0.00         0.00           Purchase of perman asset         -334.58         -475.17         -365.14         -84.43         -49.17           Net sale (acquis) of inv         -481.17         394.57         197.17         0.00         0.0           Other investing CF items         -2.34         3.26         -0.39         -3.94         0.           Total CF - Investing Activities         -671.43	Decr(incr) assets & liabilities	434.74	334.17	397.32	-65.29	-52.18
Decr(incr) inventories         530.72         464.25         278.64         -420.49         -115.           Decr(incr) other assets         71.14         -23.76         -33.73         168.24         7.           Incr(decr) suppliers         -62.07         -161.85         0.00         177.89         69.2           Incr(decr) taxes         -63.94         38.21         25.43         32.45         -18.3           Incr(decr) other liabil         100.99         128.58         29.82         -5.73         25.1           Total CF - Operating Activities         285.81         350.92         530.85         166.62         28.           Cash Flows - Investing Activities         285.81         350.92         -50.00         0.00         0.00           Purchase of perman asset         -559.98         -642.67         -445.14         -84.43         -49.1           Net sale (acquis) of inv         -481.17         -394.57         197.17         0.00         0.0           Sale of permanent asset         372.06         0.00         0.00         0.00         0.0           Total CF - Investing Activities         -671.43         -244.84         -248.35         -88.37         -49.2           Cash Flows - Financing Activities         -671.4	Decr(incr) receivables	-142.09	-111.27	96.95	-17.65	-21.07
Decr(incr) other assets         71.14         -23.76         -33.73         168.24         7.           Incr(decr) suppliers         -62.07         -161.85         0.00         177.89         69.3           Incr(decr) taxes         -63.94         38.21         25.43         32.45         -18.3           Incr(decr) other liabil         100.99         128.58         29.82         -5.73         25.43           Total CF - Operating Activities         285.81         350.92         530.85         166.62         28.8           Purchase of perman asset         -559.98         -642.67         -445.14         -84.43         -49.4           Purchase of perman inves         -225.39         -167.50         -80.00         0.00         0.0           Purchase of perman asset         -334.56         -475.17         -365.14         -84.43         -49.4           Net sale (acquis) of inv         -481.17         394.57         197.17         0.00         0.           Other investing CF items         -2.34         3.26         -0.39         -3.94         0.           Total CF - Investing Activities         -671.43         -244.84         -248.35         -88.37         -49.5           Proceceds(repaym) of debt         -37.14	Decr(incr) inventories	530.72	464.25	278.84	-420.49	-115.19
Incr(decr) suppliers         -62.07         -161.85         0.00         177.89         69.3           Incr(decr) taxes         -63.94         38.21         25.43         32.45         -163.3           Total CF - Operating Activities         285.81         350.92         530.85         166.62         28.           Cash Flows - Investing Activities         285.81         350.92         530.85         166.62         28.           Purchase of perman asset         -559.98         -642.67         -445.14         -84.43         -49.0           Purchase of perman inves         -225.39         -167.50         -80.00         0.00         0.00           Purchase fix & dif asset         -334.58         -475.17         -365.14         -84.43         -49.0           Net sale (acquis) of inv         -481.17         394.57         197.17         0.00         0.0           Other investing CF items         -2.34         3.26         -0.39         -3.94         0.           Total CF - Investing Activities         -671.43         -244.84         -248.35         -88.37         -49.           Cash Flows - Financing Activities         -671.43         -244.84         -248.35         -32.4         3.26         -0.39         -3.24         2.00 <td>Decr(incr) other assets</td> <td>71.14</td> <td>-23.76</td> <td>-33.73</td> <td>168.24</td> <td>7.35</td>	Decr(incr) other assets	71.14	-23.76	-33.73	168.24	7.35
Incr(decr) taxes       -63.94       38.21       25.43       32.45       -18.3         Incr(decr) other liabil       100.99       128.58       29.62       -5.73       25.0         Total CF - Operating Activities       285.81       350.92       530.85       166.62       28.         Cash Flows - Investing Activities       285.81       350.92       530.85       166.62       28.         Purchase of perman asset       -559.98       -642.67       -445.14       -84.43       -49.0         Purchase of perman inves       -225.39       -167.50       -80.00       0.00       0.00         Purchase fix & dif asset       -334.58       -475.17       -365.14       -84.43       -49.0         Net sale (acquis) of inv       -481.17       394.57       197.17       0.00       0.0         Sale of permanent asset       372.06       0.00       0.00       0.00       0.00       0.00         Ottal CF - Investing Activities       -671.43       -244.84       -248.35       -88.37       -49.0         Total CF - Investing Activities       -671.43       -244.84       -248.35       -88.37       -49.0         Proceeds from debt       -37.14       -25.49       -46.98       3.21       258.4     <	Incr(decr) suppliers	-62.07	-161.85	0.00	177.89	69.55
Incr(decr) other liabil         100.99         128.58         29.82         -5.73         25.1           Total CF - Operating Activities         285.81         350.92         530.85         166.62         28.           Cash Flows - Investing Activities         285.81         350.92         530.85         166.62         28.           Purchase of perman asset         -559.98         -642.67         -445.14         -84.43         -49.4           Purchase of perman inves         -225.39         -167.50         -80.00         0.00         0.00           Purchase fix & dif asset         -334.58         -475.17         -365.14         -84.43         -49.4           Net sale (acquis) of inv         -481.17         394.57         197.17         0.00         0.           Other investing CF items         -2.34         3.26         -0.39         -3.94         0.           Total CF - Investing Activities         -671.43         -244.84         -248.35         -88.37         -49.           Cash Flows - Financing Activities         -37.14         -25.49         -46.98         3.21         258.4           Repayment of debt         -37.14         -25.49         -46.98         3.21         258.4           Repayment of debt	Incr(decr) taxes	-63.94	38.21	25.43	32.45	-18.52
Total CF - Operating Activities         285.81         350.92         530.85         166.62         28.           Cash Flows - Investing Activities	Incr(decr) other liabil	100.99	128.58	29.82	-5.73	25.69
Cash Flows - Investing Activities         -559.98         -642.67         -445.14         -84.43         -49.           Purchase of perman inves         -225.39         -167.50         -80.00         0.00         0.0           Purchase of perman inves         -225.39         -167.50         -80.00         0.00         0.0           Purchase fix & dif asset         -334.58         -475.17         -365.14         -84.43         -49.0           Net sale (acquis) of inv         -481.17         394.57         197.17         0.00         0.0           Sale of permanent asset         372.06         0.00         0.00         0.00         0.00           Other investing CF items         -2.34         3.26         -0.39         -3.94         0.           Total CF - Investing Activities         -671.43         -244.84         -248.35         -88.37         -49.           Cash Flows - Financing Activities         -37.14         -25.49         -46.98         3.21         258.1           Proceeds from debt         -37.14         -25.49         -46.98         3.21         258.1           Repayment of debt         -51.00         -52.18         -25.91         -103.17         -204.1           Proc from issu of equity         16.40 </td <td>Total CF - Operating Activities</td> <td>285.81</td> <td>350.92</td> <td>530.85</td> <td>166.62</td> <td>28.82</td>	Total CF - Operating Activities	285.81	350.92	530.85	166.62	28.82
Purchase of perman asset         -559.98         -642.67         -445.14         -84.43         -49.           Purchase of perman inves         -225.39         -167.50         -80.00         0.00         0.01           Purchase fix & dif asset         -334.58         -475.17         -365.14         -84.43         -49.1           Net sale (acquis) of inv         -481.17         394.57         197.17         0.00         0.0           Sale of permanent asset         372.06         0.00         0.00         0.00         0.00           Other investing CF items         -2.34         3.26         -0.39         -3.94         0.           Total CF - Investing Activities         -671.43         -244.84         -248.35         -88.37         -49.           Cash Flows - Financing Activities         -671.43         -244.84         -248.85         -88.37         -49.           Proceeds from debt         -37.14         -25.49         -46.98         3.21         258.4           Repayment of debt         -51.00         -52.18         -25.91         -103.17         -204.3           Proc from (repur) equity         16.40         0.00         0.00         0.00         0.00           Dividends paid         0.00         -75.8	Cash Flows - Investing Activities					
Purchase of perman inves         -225.39         -167.50         -80.00         0.00         0.00           Purchase fix & dif asset         -334.58         -475.17         -365.14         -84.43         -49.0           Net sale (acquis) of inv         -481.17         394.57         197.17         0.00         0.0           Sale of permanent asset         372.06         0.00         0.00         0.00         0.00           Other investing CF items         -2.34         3.26         -0.39         -3.94         0.           Total CF - Investing Activities         -671.43         -244.84         -248.35         -88.37         -49.           Cash Flows - Financing Activities         -671.43         -244.84         -248.35         -88.37         -49.           Proceeds (repaym) of debt         -37.14         -25.49         -46.98         3.21         258.4           Repayment of debt         -37.14         -25.49         -46.98         3.21         258.4           Repayment of debt         -51.00         -52.18         -25.91         -103.17         -204.2           Proc from (repur) equity         16.40         0.00         0.00         0.00         0.00           Dividends paid         0.00         -75.82 <td>Purchase of perman asset</td> <td>-559.98</td> <td>-642.67</td> <td>-445.14</td> <td>-84.43</td> <td>-49.86</td>	Purchase of perman asset	-559.98	-642.67	-445.14	-84.43	-49.86
Purchase fix & dif asset         -334.58         -475.17         -365.14         -84.43         -49.4           Net sale (acquis) of inv         -481.17         394.57         197.17         0.00         0.           Sale of permanent asset         372.06         0.00         0.00         0.00         0.00           Other investing CF items         -2.34         3.26         -0.39         -3.94         0.           Total CF - Investing Activities         -671.43         -244.84         -248.35         -88.37         -49.           Cash Flows - Financing Activities         -671.43         -244.84         -248.35         -88.37         -49.           Proceeds(repaym) of debt         -88.15         -77.66         -72.89         -99.96         53.           Proceeds from debt         -37.14         -25.49         -46.98         3.21         258.4           Repayment of debt         -51.00         -52.18         -25.91         -103.17         -204.7           Proc from (repur) equity         16.40         0.00         0.00         0.00         0.00           Dividends paid         0.00         -75.82         -75.78         0.00         0.00         0.00           Oth Fin Cash Flow Items         5.90	Purchase of perman inves	-225.39	-167.50	-80.00	0.00	0.00
Net sale (acquis) of inv         -481.17         394.57         197.17         0.00         0.           Sale of permanent asset         372.06         0.00	Purchase fix & dif asset	-334.58	-475.17	-365.14	-84.43	-49.86
Sale of permanent asset       372.06       0.00       0.00       0.00       0.00         Other investing CF items       -2.34       3.26       -0.39       -3.94       0.         Total CF - Investing Activities       -671.43       -244.84       -248.35       -88.37       -49.         Cash Flows - Financing Activities       -671.43       -244.84       -248.35       -88.37       -49.         Cash Flows - Financing Activities       -671.43       -244.84       -248.35       -88.37       -49.         Cash Flows - Financing Activities       -671.43       -244.84       -248.35       -88.37       -49.         Cash Flows - Financing Activities       -671.43       -244.84       -248.35       -88.37       -49.         Proceeds from debt       -37.14       -25.49       -46.98       3.21       258.4         Repayment of debt       -51.00       -52.18       -25.91       -103.17       -204.7         Proc from (repur) equity       16.40       0.00       0.00       0.00       0.00         Oth Fin Cash Flow Items       5.90       -2.42       0.00       0.00       0.00         Oth Fin Cash Flow Items       5.90       -2.42       0.00       0.00       0.00         C	Net sale (acquis) of inv	-481.17	394.57	197.17	0.00	0.00
Other investing CF items         -2.34         3.26         -0.39         -3.94         0.           Total CF - Investing Activities         -671.43         -244.84         -248.35         -88.37         -49.           Cash Flows - Financing Activities              -671.43         -244.84         -248.35         -88.37         -49.           Cash Flows - Financing Activities              -77.66         -72.89         -99.96         53.           Proceeds (repaym) of debt         -37.14         -25.49         -46.98         3.21         258.4           Repayment of debt         -51.00         -52.18         -25.91         -103.17         -204.7           Proc from (repur) equity         16.40         0.00         0.00         0.00         0.00         0.00           Dividends paid         0.00         -75.82         -75.78         0.00         0.00         0.00           Oth Fin Cash Flow Items         5.90         -2.42         0.00         0.00         0.00         0.00         0.00           Oth Fin Cash Flow Items         5.90         -2.42         0.00         0.00         0.00         0.00         0.00	Sale of permanent asset	372.06	0.00	0.00	0.00	0.00
Total CF - Investing Activities         -671.43         -244.84         -248.35         -88.37         -49.           Cash Flows - Financing Activities         Proceeds(repaym) of debt         -88.15         -77.66         -72.89         -99.96         53.           Proceeds from debt         -37.14         -25.49         -46.98         3.21         258.4           Repayment of debt         -51.00         -52.18         -25.91         -103.17         -204.7           Proc from (repur) equity         16.40         0.00         0.00         0.00         0.00         0.00           Dividends paid         0.00         -75.82         -75.78         0.00         0.00         0.00         0.00         0.00           Oth Fin Cash Flow Items         5.90         -2.42         0.00 <th< td=""><td>Other investing CF items</td><td>-2.34</td><td>3.26</td><td>-0.39</td><td>-3.94</td><td>0.35</td></th<>	Other investing CF items	-2.34	3.26	-0.39	-3.94	0.35
Cash Flows - Financing Activities         Proceeds(repaym) of debt         -88.15         -77.66         -72.89         -99.96         53.           Proceeds from debt         -37.14         -25.49         -46.98         3.21         258.4           Repayment of debt         -51.00         -52.18         -25.91         -103.17         -204.1           Proc from (repur) equity         16.40         0.00         0.00         0.00         0.00           Proc from issu of equity         16.40         0.00         0.00         0.00         0.00           Dividends paid         0.00         -75.82         -75.78         0.00         0.00           Oth Fin Cash Flow Items         5.90         -2.42         0.00         0.00         0.00           Oth Fin Cash Flow Items         -65.84         -155.90         -148.67         -99.96         53.           NET CHANGE IN CASH         -451.46         -49.82         133.82         -21.71         35.           Cash & Equivalents, Begin Year         999.46         886.15         1,280.48         831.52         39.9           Cash & Equivalents, End Year         547.99         836.33         1,414.30         809.81         75.1           BS Cash         Total CF	Total CF - Investing Activities	-671.43	-244.84	-248.35	-88.37	-49.51
Proceeds(repaym) of debt         -88.15         -77.66         -72.89         -99.96         53.           Proceeds from debt         -37.14         -25.49         -46.98         3.21         258.4           Repayment of debt         -51.00         -52.18         -25.91         -103.17         -204.7           Proc from (repur) equity         16.40         0.00         0.00         0.00         0.00           Proc from issu of equity         16.40         0.00         0.00         0.00         0.00           Dividends paid         0.00         -75.82         -75.78         0.00         0.00           Oth Fin Cash Flow Items         5.90         -2.42         0.00         0.00         0.00           Total CF - Financing Activities         -65.84         -155.90         -148.67         -99.96         53.           NET CHANGE IN CASH         -451.46         -49.82         133.82         -21.71         35.           Cash & Equivalents, Begin Year         999.46         886.15         1,280.48         831.52         39.9           Cash & Equivalents, End Year         547.99         836.33         1,414.30         809.81         75.1	Cash Flows - Financing Activities					
Proceeds from debt       -37.14       -25.49       -46.98       3.21       258.4         Repayment of debt       -51.00       -52.18       -25.91       -103.17       -204.1         Proc from (repur) equity       16.40       0.00       0.00       0.00       0.00         Proc from issu of equity       16.40       0.00       0.00       0.00       0.00         Dividends paid       0.00       -75.82       -75.78       0.00       0.00         Oth Fin Cash Flow Items       5.90       -2.42       0.00       0.00       0.00         Oth Fin Cash Flow Items       5.90       -2.42       0.00       0.00       0.00         NET CHANGE IN CASH       -451.46       -49.82       133.82       -21.71       35.4         Cash & Equivalents, Begin Year       999.46       886.15       1,280.48       831.52       39.9         Cash & Equivalents, End Year       547.99       836.33       1,414.30       809.81       75.1         BS Cash       719.36       1,010.09       1,217.13       809.81       75.1	Proceeds(repaym) of debt	-88.15	-77.66	-72.89	-99.96	53.70
Repayment of debt       -51.00       -52.18       -25.91       -103.17       -204.1         Proc from (repur) equity       16.40       0.00	Proceeds from debt	-37.14	-25.49	-46.98	3.21	258.43
Proc from (repur) equity         16.40         0.00	Repayment of debt	-51.00	-52.18	-25.91	-103.17	-204.73
Proc from issu of equity         16.40         0.00         0.00         0.00         0.00           Dividends paid         0.00         -75.82         -75.78         0.00	Proc from (repur) equity	16.40	0.00	0.00	0.00	0.00
Dividends paid         0.00         -75.82         -75.78         0.00         0.0           Oth Fin Cash Flow Items         5.90         -2.42         0.00         0.00         0.0           Total CF - Financing Activities         -65.84         -155.90         -148.67         -99.96         53.           NET CHANGE IN CASH         -451.46         -49.82         133.82         -21.71         35.           Cash & Equivalents, Begin Year         999.46         886.15         1,280.48         831.52         39.9           Cash & Equivalents, End Year         547.99         836.33         1,414.30         809.81         75.1           BS Cash         719.36         1,010.09         1,217.13         809.81         75.1	Proc from issu of equity	16.40	0.00	0.00	0.00	0.00
Oth Fin Cash Flow Items         5.90         -2.42         0.00         0.00         0.00           Total CF - Financing Activities         -65.84         -155.90         -148.67         -99.96         53.           NET CHANGE IN CASH         -451.46         -49.82         133.82         -21.71         35.           Cash & Equivalents, Begin Year         999.46         886.15         1,280.48         831.52         39.9           Cash & Equivalents, End Year         547.99         836.33         1,414.30         809.81         75.1           BS Cash         719.36         1,010.09         1,217.13         809.81         75.1	Dividends paid	0.00	-75.82	-75.78	0.00	0.00
Total CF - Financing Activities       -65.84       -155.90       -148.67       -99.96       53.         NET CHANGE IN CASH       -451.46       -49.82       133.82       -21.71       35.         Cash & Equivalents, Begin Year       999.46       886.15       1,280.48       831.52       39.9         Cash & Equivalents, End Year       547.99       836.33       1,414.30       809.81       75.1         BS Cash       Cash & Tipe Structure       719.36       1,010.09       1,217.13       809.81       75.1	Oth Fin Cash Flow Items	5.90	-2.42	0.00	0.00	0.00
NET CHANGE IN CASH         -451.46         -49.82         133.82         -21.71         35.           Cash & Equivalents, Begin Year         999.46         886.15         1,280.48         831.52         39.9           Cash & Equivalents, End Year         547.99         836.33         1,414.30         809.81         75.1           BS Cash         The second	Total CF - Financing Activities	-65.84	-155.90	-148.67	-99.96	53.70
Cash & Equivalents, Begin Year         999.46         886.15         1,280.48         831.52         39.9           Cash & Equivalents, End Year         547.99         836.33         1,414.30         809.81         75.1           BS Cash         719.36         1,010.09         1,217.13         809.81         75.1	NET CHANGE IN CASH	-451.46	-49.82	133.82	-21.71	35.17
Cash & Equivalents, End Year         547.99         836.33         1,414.30         809.81         75.1           BS Cash         719.36         1,010.09         1,217.13         809.81         75.1	Cash & Equivalents, Begin Year	999.46	886 15	1 280 48	831.52	39.98
BS Cash 719.36 1,010.09 1,217.13 809.81 75.1	Cash & Equivalents, End Year	547.99	836.33	1,414.30	809.81	75.15
	BS Cash	719.36	1,010.09	1,217.13	809.81	75.15
* NOTE: Some discompanying between PS and CES Cook Palance based on differences in most in	*NOTE: Some dispersonation between 55	and CES Con	h Polones har	ad an difference	oo in mood	ing paried-

## Table 4: Value Drivers

COSAN					
VALUE DRIVERS					
YEARS 2005 - 2009					
(In thousands of BKL (R\$))					
	2009	2008	2007	2006	2005
Liquidity Ratios					
Current Ratio	1.32	3.95	3.76	3.20	1.62
Quick Ratio	0.85	2.97	2.91	2.42	0.76
Liquidity Ratio	0.30	2.22	3.33	2.09	1.01
Operating Efficiency Ratio					
Average Days Receivables	58.66	65.23	78.49	73.99	-
Average Days Inventories	145.03	282.55	366.32	342.03	-
Average Days Payable	55.97	80.19	112.50	106.71	-
Cash Conversion Cycle	147.72	267.59	332.31	309.32	-
Fixed Asset Turnover	0.81	0.38	0.43	0.56	-
Return on Equity Components					
Return on Equity (ROE)	3.83%	-0.80%	16.30%	-0.84%	-
Tax Effect Ratio	(1.29)	1.59	0.90	(1.17)	-
Financial Cost Ratio	(0.47)	0.53	(4.21)	0.08	-
Operating Profit Margin	0.08	(0.03)	(0.08)	0.11	-
Capital Turnover	0.31	0.15	0.14	0.22	-
Financial Structure Ratio	2.42	2.55	3.61	3.45	-
RoE	3.83%	-0.80%	16.30%	-0.84%	-
ROIC BT	2.59%	-0.37%	-1.19%	2.49%	-
ROIC AT	5.40%	-0.49%	-1.67%	2.03%	-
Financial Leverage Multiplier	1.48	2.15	(13.74)	(0.34)	-
Gross Margin	9.47%	16.30%	22.54%	29.36%	-
Times Interest Earned	0.54	(0.23)	(1.63)	0.27	-
Growth and Reinvestment					
Annual Sales Growth	176.5%	21.3%	-7.7%	-	-
Equity Retention Rate	-387.0%	0.0%	10.8%	-1725.8%	-
Self-Sustainable Growth Rate	-14.7%	0.0%	0.0%	-1.9%	-
Effective Tax Rate (inferred)	13.1%	0.0%	6.1%	27.6%	-

## Table 5: Value Measures

VALUE MEASURES YEARS 2005 - 2009					
(in thousands of BRL (R\$))					
Economic Value Added (EVA)	2009	2008	2007	2006	2005
COST OF CAPITAL					
1 After-Tax Cost of Debt					
BRZ RFR (BRZ Gov't Sec 10Y)	5.13%	6.47%	5.67%	6.13%	6.91%
BRZ AAA 10Y Bond Premium	1.31%	1.31%	1.31%	1.31%	1.31%
BRZ BA3/BB- 10Y Premium	2.75%	2.75%	2.75%	2.75%	2.75%
Cosan (BRZ BA3/BB-) Implied Yield	9.19%	10.53%	9.73%	10.19%	10.97%
Cosan Annual Marginal Tax Rate	13.15%	0.00%	6.08%	27.57%	11.70%
AT Cost of Debt	7.98%	10.53%	9.14%	7.38%	9.68%
2 Cost of Equity					
RFR (BRZ Gov't Sec 10Y)	5.13%	6.47%	5.67%	6.13%	6.91%
Equity Market Premium	6.00%	6.00%	6.00%	6.00%	6.00%
Aggregate BRZ Market Return	11.13%	12.47%	11.67%	12.13%	12.91%
Beta Cosan (CSAN3 vs. BVSP)	1.027	1.027	1.027	1.027	1.027
Cost of Equity	11.29%	12.03%	11.63%	12,29%	13.07%
3 Weights D/E					
Book Val LT Debt (bonds + debt)	2,885.46	2,191.23	2,825.50	2,057.75	798.44
# Implied 1000 face value bonds	2,885.46	2,191.23	2,825.50	2,057.75	798.44
Implied periods	10.00	12.00	14.00	16.00	18.00
Market rate return (implied CoD)	9%	11%	10%	10%	11%
Coupon payments	109.67	109.67	109.67	109.67	109.67
Implied market price provy bond	\$1 113 09	\$1.029.02	\$1.092.48	\$1,000	\$1,000,00
Implied Mrkt Val Debt	3.211.784	2.254.812	3.086.814	2,181,608	798.438
Share price (BBL)	20.99	10.20	26.04	20.20	29.70
Shares outstanding ('000s)	327 205	272 548	188 886	62 584	318 520
Market Value Equity	6.832.040	2.804.519	5.088.589	2.465.184	9.170.191
Debt : Equity (combined makt yel)	40.042.925	E 050 224	9 475 402	4 646 702	0.052.520
Debt Propertien	10,043,025	5,059,331	0,175,403	4,040,792	9,900,029
Equity Proportion	68%	45%	62%	53%	92%
Equity Proportion			02.70	0070	02.10
4 WACC					
AT Cost of Debt	0.080	0.105	0.091	0.074	0.097
Debt Proportion	32%	45%	38%	47%	8%
Cost of Equity	0.113	0.126	0.118	0.123	0.131
Equity Proportion	66%	55%	62%	53%	92%
WACC	10.23%	12.03%	11.03%	12,29%	13.07%
ROIC & IC					
NOPAT END PERIOD	437.571	(30.899)	(90.098)	74.260	-
Invested Capital REGIN REPIOD	6,881.40	5,740.42	5,042.84	2,262.29	-
ROIC AT	6.36%	-0.54%	-1.79%	3.28%	-
Return Spread	-3.87%	-13.17%	-13.62%	-9.01%	-
Fconomic Value Added (FVA)	2009	2008	2007	2006	2005
	(2003	(750)	(697)	(204)	2003
EVA (000 S BRL)	(207)	(720)	(087)	(204)	-
Market Value Added (MVA)	2009	2008	2007	2006	2005
Market Value Added (MVA) per year	(241.82)	(671.17)	(614.05)	(181.46)	-
MVA Delta	178%	-9%	-70%	-	-
Standard BRZ Co. Growth Rate	0.06	0.06	0.06	0.06	-
MVA (with BRZ Co. growth rate)	(6,676)	(12,085)	(12,484)	(3,434)	-
MV/A w/arowth Delta	040/	0.07	700/		

## Table 6: Corporate Governance

#### Ownership

On August 30, 2009, the Company's capital stock consisted of 372,810,142 common shares, of which Cosan Limited held 226,707,234, or 60.81%, and Rezende Barbosa Participacoes held 44,300,389, or 11.88%. Cosan Ltd. itself had 270,687,385 shares traded on the New York Stock Exchange – NYSE on September 30, 2009. The controlling group holds all the class B shares and 16,111,111 class A shares, totaling 41.5% of the Company's total capital and 86.1% of its voting capital.

Source: Annual Report 2009 Cosan, p. 76 - 77

Rubens Ometto Silveira Mello seems one of the main private shareholders to be. He is cited as "dono" = owner of Cosan in many websites the internet. He is also Chairman of the board of directors (since 2007) and member of the Board of Executive Directors (since 2007). From 2000 – 2009 he was CEO. *Source: Annual Report 2009 Cosan, p. 60* 

#### **Board of Directors**

Cosan S.A.'s Board of Directors is composed of a minimum of seven and a maximum of 20 members, who establish the general guidelines for the Company's businesses and are also responsible for monitoring the activities of the Board of Executive Officers. At least 20% (twenty percent) members of the Board of Directors must be independent members, as established at Rules of the Novo Mercado, being considered also independents, the members elected by rules of article 141, paragraphs 4 and 5, from Law 6.404/76.

#### **Board of Executive Officers**

The Board of Executive Officer is Cosan's executive body. The executive officers are its legal representatives, responsible for the Company's internal organization and routine transactions, as well as for implementing the policies and general guidelines established from time to time by the Board of Directors. *Source: Annual Report 2009 Cosan. p. 61 - 62* 

#### **Dividends Policy**

As defined by Cosan's by-laws at least 25% of its adjusted net income should be distributed as mandatory annual dividend. Adjust net income is the income which may be distributed before any deductions for statuary provisions and provisions for investment projects.

Source: http://www.cosan.com.br/cosan2009/web/index\_pt.html, accessed September 30<sup>th</sup>, 2010

The remuneration of the members of the Board of Directors and Board of Officers shall be established at the General Shareholders' Meeting, individually or globally. In such case the Board of Directors shall decide on the allocation of such remuneration between the members of the Board of Directors and the members of the Board of Officers. Source: By laws of Cosan, Art. 15, retrieved from: http://www.cosan.com.br/cosan2009/web/index\_pt.html, accessed September 30<sup>th</sup>, 2010

#### Non-equity stakeholders:

#### Employees

Cosan employs approximately 43,000 people at the peak of harvest and strictly complies with labor legislation. All its employees have employment contracts governed by the Brazilian Consolidated abor Laws – CL

#### Community

Cosan consistently invests in the communities in which it operates, developing educational, cultural and health programs with hospitals, blood banks and laboratories.

Since 2002, the Cosan Foundation, a non-profit organization, has carried out several programs in its education and professional centers, including in partnerships with several public and private entities, serving children, teenagers, employees' children and members of the communities where it operates.

#### Environment

Committed to environmental responsibility, Cosan manages its impacts and works to minimize them, adopting intelligent and sustainable means of producing clean, renewable energy for Brazil and the world. *Source: Annual Report 2009 Cosan, p. 81 - 90* 

## Table 7: Working Capital Requirements and Managerial Balance Sheet

COSAN					
CONSOLIDATED MANAGERIAL BALANCE SHEETS					
Years Ending: Dec 31, 2005 - 2009					
(in thousands of BRL (R\$))					
INVESTED CAPITAL OR NET ASSETS	2009	2008	2007	2006	2005
Cash	719.36	1,010.09	1,217.13	831.52	39.98
Working Capital Requirements (WCR)	1,043.79	761.45	484.68	698.48	300.71
Net Fixed Assets	7,572.48	5,109.86	4,038.61	3,512.84	1,921.59
Total Invested Capital or Net Assets	9,335.63	6,881.40	5,740.42	5,042.84	2,262.29
CAPITAL EMPLOYED	2009	2008	2007	2006	2005
Short-term debt	1,449.50	83.34	88.99	68.78	38.14
Long-term debt	4,520.38	3,472.26	4,020.43	3,618.64	1,461.28
Owners' equity	3,365.75	3,325.80	1,631.00	1,355.42	762.88
Long-term financing	7,886.12	6,798.06	5,651.43	4,974.06	2,224.15
Non-Current Liabilities	9,335.63	6,881.40	5,740.42	5,042.84	2,262.29
Working Capital Requirements (WCR)					
Liabilities LT	4,925.54	3,472.26	4,020.43	3,619.99	1,461.89
- Due to Subsidiaries LT	405.16	-	-	1.35	0.62
+ Total Cosan Stockholders' Equity	3,365.75	3,325.80	1,631.00	1,355.42	762.88
- Total Non-Current Assets	7,572.48	5,109.86	4,038.61	3,512.84	1,921.59
Net Long-Term Financing	313.65	1,688.20	1,612.82	1,461.22	302.56
Debt ST	1,449.50	83.34	88.99	68.78	38.14
Cash & ST Investments	719.36	1,010.09	1,217.13	831.52	39.98
Net Short-Term Financing	730.15	(926.74)	(1,128.14)	(762.74)	(1.85)
WCR	1,043.79	761.45	484.68	698.48	300.71

## Table 9: Cosan (CSAN3.SA) Equity Analysis

COSAN SHARES OUTSTANDING Years: 2005 - 2009					
Number of Shares	2009	2008	2007	2006	2005
Outstand shares	327,205	272,548	188,886	62,584	318,520
Balance date	3/31/2009	4/30/2008	4/30/2007	4/30/2006	4/30/2005
Release date	6/26/2009	7/30/2008	6/19/2007	11/29/2006	11/1/2005
Account method	L.S.	L.S.	L.S.	L.S.	L.S.
Consolidated	Yes	Yes	Yes	Yes	Yes



<sup>\* &</sup>lt;u>Source</u>: Reuters (Reuters Financials, 2010)



\* <u>Source</u>: own analysis(Beta = 1.027,

## Table 9: Biofuel Industry Overview



#### Source: Cosan Corporate Website (Cosan CC, 2010)

#### **Biofuel Industry Overview**

Biofuel, a rapidly evolving industry, sits at the nexus of change: climate change, growing enthusiasm for sustainability, government policies, the quest for alternative energy sources, expansion in developing economies, and the emergence of new technologies, especially bio-industrial processes and genetic engineering. Biofuel is a broad term used to describe combustible fuel produced via the conversion of (or via the agency of) biomass / organic material. Depending on the particular biomass source and conversion processes applied, resulting derived fuels include ethanol, diesel, bio-oils, bioethers, biogas, syngas, biohydrogen, and solid biofuels (Demirbas, 2009). First generation biofuels derive from processed sugar, starch, vegetable oils, or animal fats, typically extracted from feedstock materials such as sugar cane, maize (corn), wheat, and various seeds.

The global growth of biofuel production has controversially caused the prices of many associated otherwise-edible commodities to soar to parity with oil, resulting in a political backlash based on ethical grounds (Jarrett, 2009). Advancements in process science and intermediaries have led to second generation biofuels, a still developing approach which involves converting non-edible feedstock to biofuel (cellulosic biomass principally). Third generation biofuels, though still in the early development stages, results from advanced genetically engineered organisms producing fuel directly as an output of biotic synthesis (Economist Staff, 2010).

The larger challenge for this nascent industry is that oil is 'baked-in' or systematized into the globalized economy to such a degree that massive systemic supply chain engineering is needed to make biofuel economically feasible. It is worthy to observe that the strongest national biofuel industry is in Brazil, having flourished due to the ability of the Brazilian government to push through systemic, horizontally integrated supply chain solutions (Almeida, December 2007).

## Table 10: Cosan Value Drivers (Reuters)

Valuation Ratios	Company	Industry	Sector	S&P 500
P/E Ratio (TTM)	16.00	9.87	18.29	16.88
P/E High - Last 5 Yrs.		0.01	1.09	24.64
P/E Low - Last 5 Yrs.		0.02	0.44	6.17
Growth Rates	Company	Industry	Sector	S&P 500
Sales (MRQ) vs Qtr. 1 Yr. Ago	12.16	14.38	14.33	10.73
Sales (TTM) vs TTM 1 Yr. Ago	71.47	12.11	5.49	5.47
Sales - 5 Yr. Growth Rate	51.84	16.33	10.72	9.96
EPS (MRQ) vs Qtr. 1 Yr. Ago	-97.63	81.00	-3.05	146.48
EPS - 5 Yr. Growth Rate	79.82	8.31	7.51	7.30
Capital Spend - 5 Yr. Growth Rate	57.27	31.00	8.10	7.84
Financial Strength	Company	Industry	Sector	S&P 500
Quick Ratio (MRQ)	1.12	0.70	0.68	0.82
Current Ratio (MRQ)	1.71	1.12	0.92	0.99
LT Debt to Equity (MRQ)	103.58	32.69	24.57	126.85
Total Debt to Equity (MRQ)	120.32	85.10	36.75	182.83
Interest Coverage (TTM)		0.04	0.70	28.38
Profitability Ratios	Company	Industry	Sector	S&P 500
Gross Margin (TTM)	14.36	20.56	20.64	32.20
Gross Margin - 5 Yr. Avg.	16.94	28.60	36.37	29.02
Operating Margin (TTM)	6.06	6.23	5.78	
Operating Margin - 5 Yr. Avg.	3.75	7.64	9.66	16.57
Pre-Tax Margin (TTM)	6.06	6.30	5.82	14.65
Pre-Tax Margin - 5 Yr. Avg.	3.74	8.52	9.75	16.11
Net Profit Margin (TTM)	4.20	5.23	4.35	11.27
Net Profit Margin - 5 Yr. Avg.	2.50	6.48	6.62	11.83
Effective Tax Rate (TTM)	30.79	-54.11	11.00	19.83
Effective Tax Rate - 5 Yr. Avg.	33.24	37.21	31.05	25.68
Efficiency	Company	Industry	Sector	S&P 500
Revenue/Employee (TTM)	408,432	294,176	7,867,117	645,363
Net Income/Employee (TTM)	17,145	25,886	281,531	80,550
Receivable Turnover (TTM)	26.18	0.86	11.96	8.81
Inventory Turnover (TTM)	10.45	0.82	1.79	6.72
Asset Turnover (TTM)	1.16	0.07	0.30	0.55

Management Effectiveness	Company	Industry	Sector	S&P 500
Return on Assets (TTM)	4.88	0.65	2.22	5.88
Return on Assets - 5 Yr. Avg.	1.99	3.33	7.24	5.64
Return on Investment (TTM)	5.95	0.85	4.11	7.49
Return on Investment - 5 Yr. Avg.	2.33	4.28	12.14	7.26
Return on Equity (TTM)	14.33	1.29	6.48	16.60
Return on Equity - 5 Yr. Avg.	6.01	5.92	15.71	10.17

\* <u>Source</u>: Reuters (Reuters Financials, 2010)

## **APPENDIX D – Revised U.S. Local Paper (Verenium)**

# Corporate Finance in the Global Environment Individual Report: U.S. Region Value Management at Verenium

**OneMBA 2011** 

**Global Team 14** 

United States Region University of North Carolina (UNC)

Juan-Pablo Mancia

Friday, 5<sup>th</sup> November, 2010

Word Count: 1,995

## **Background and Introduction**

Verenium Corporation (Nasdaq: VRNM) formed in June 2007 as a result of a merger between Diversa Corporation (Nasdaq: DVSA) and Celunol Corporation, a private company. The combined organization coupled Diversa's growing portfolio of specialty enzyme products for use in industrial processes and its unique R&D capabilities with Celunol's expertise in cellulosic ethanol production in the emerging biofuel industry. Verenium is the first company in the cellulosic ethanol business to possess integrated end-to-end project capabilities in novel enzyme development, which it leverages to develop enzymes that facilitate the production of biofuels (Verenium, June 2007).

Biofuel is a broad term used to describe combustible fuel, such as ethanol in the case of Verenium, produced via the conversion of biomass or organic material (Demirbas, 2009). Biofuel is a rapidly evolving industry with abundant growth potential as many developed countries yearn for sustainable, green sources of energy that release them from their dependence on oil and lessen the burden on the environment. President Bush articulated the importance of biofuel to the US in his 2007 State of Union address, describing a "twenty in ten" goal of reducing gasoline consumption by 20 percent over ten years and calling for a seven-fold increase in production of ethanol and other biofuels to meet this goal (Nilles, 2007).

The biofuel industry's potentially lucrative rewards, however, inevitably come with its associated risks with which Verenium is all too familiar. The value management analysis below describes how Verenium's management destroyed value for its shareholders for the years 2005 – 2009 through the company's Value Drivers and Corporate Governance.

## **Value Management Analysis**

#### **Value Driver Trends**

Several key value drivers are indicative of Verenium's performance over the last five years, including strong operating efficiency ratios, consistently negative return on equity (ROE) figures and alarming self-sustainable growth rates (SSGR) (see Table 4). The combination of these value drivers tell a story that although Verenium's core operational efficiency is admirable, other factors are at play that threaten its chances of remaining a going concern.

sark7 consulting

The positives for Verenium are few, but let's first focus on its strong operating efficiency ratios. Verenium's average days receivables, average days inventories and average days payable have all consistently improved since 2006, resulting in an excellent cash conversion cycle that has even reached negative figures in 2008 & 2009. This means that Verenium takes much less time to collect payment on its invoices and to turnover its inventory than it does for it to pay its suppliers, an excellent use of cash. In addition, these operating efficiency ratios lead to an impressive working capital requirement (WCR), which is negative for all five years in this analysis (see Table 7). Negative WCR indicates that no external funding is necessary to support operations, allowing us to ignore Verenium's liquidity ratios. Unfortunately, this is not where the story ends as Verenium has significant R&D expenses due to being in the evolving biofuel industry as well as impairment charges that result in losses every year that contribute to negative ROE.

Turning our attention to Verenium's consistently negative ROE, we discuss the various components that drive this figure. The first thing that jumps out when reviewing Verenium's ROE is that all years from 2005 – 2007 are negative, while 2008 – 2009 are undefined due to negative owner's equity. Let's first breakdown ROE into its three major components: tax effect ratio, return on invested capital (ROIC) and financial leverage ratio. We can ignore the tax effect ratio of the top because Verenium's losses have resulted in an effective corporate tax rate of 0%.

Verenium's ROIC is negative for all five years and is the key driver, in this case, that leads to negative ROE. Capital turnover, a factor within ROIC, is encouraging mainly due to Verenium's excellent aforementioned operational efficiency ratios. Operating profit margin, another factor within ROIC, however, has always been negative as Verenium's earnings before interest and taxes (EBIT) have, in fact, been losses. Again Verenium is faced with high R&D expenses and impairment charges that have not resulted in comparable returns in product sales (see Table 1).

Regarding Verenium's financial leverage ratio, we start by looking at one of its factors: the financial cost ratio. This ratio is a non-issue (i.e. very close to 1.0) for all years except 2009 in which Verenium's losses were relieved somewhat by non-controlling interest in a joint venture with British Petroleum (BP) per Verenium's 2009 annual report. We'll later learn that this joint venture with BP is crucial to Verenium's survival (Fahey 2010). The other factor within financial leverage is the financial structure ratio which has consistently increased after removing 2008 as an anomaly. This is mainly attributed to a decrease in

owner's equity as illustrated in the managerial balance sheet on Table 4. In fact, Verenium's balance sheets illustrate that its retained earnings (or losses in this case) surpass its capital stock and additional paid-in capital as of 2008, causing the anomaly in 2008 where both the financial leverage ratio and ROIC were negative, making ROE a large positive figure. Thus, making ROE undefined. Verenium's only saving grace in 2009 was that its non-controlling interest was enough to maintain positive owner's equity in the managerial balance sheet. However, the 2008 anomaly may become the norm, making Verenium's ROE undefined, beginning in 2010 if Verenium doesn't start making a profit.

ROE is also a key component of the SSGR – the final value driver we analyze as part of Verenium's story. The retention rate is 100% in all years except for a minor difference in 2009, meaning that all of Verenium's losses have rolled into retained earnings. This fact results in the SSGR equaling ROE, which is alarming because the 2009 SSGR of -47.2% (Verenium's best year for SSGR) indicates that in the absence of external funding Verenium will have negative growth. Of course, the 2008 anomaly is also ignored for SSGR.

#### Impact of Corporate Governance

Verenium's corporate governance is a crucial part of its success or failure as a company, particularly in recent years with the decision to merge Diversa and Celunol. Its Board of Directors (BoD) consists of nine members at the end of 2009 who are elected by the company's stockholders to serve their interests in the conduct of the company's business (see Table 6). The BoD is responsible for selecting executive managers and for ensuring that the long-term interests of stockholders are advanced by Verenium's management in the operation of the business.

Verenium's system of corporate governance emphasizes the BoD's independence and strengthens its ability to evaluate corporate and management performance. In fact, eight of the nine directors are independent with the sole exception being CEO, Carlos Riva. Additionally, the BoD's four committees – Audit, Compensation, Governance & Nominating and Finance – are entirely made up of independent directors.

Of particular interest to a company with losses over the last five years is executive compensation and performance review. The Compensation Committee has the sole authority to hire and terminate compensation advisors for senior management compensation and directors' compensation review. Furthermore, the BoD reviews, at least at an annual basis, the performance of Verenium's CEO and top

managers, the development plan for top management and succession planning, as noted in Verenium's 2010 Proxy Statement. The executive compensation section in Table 6 clearly illustrates that the BoD reduced executive compensation, awarding no cash bonuses in 2009. Instead, the BoD has begun leaning towards stock options as a source of compensation to top executives. This practice makes executives have more skin in the game with potentially lucrative payouts if the stock price increases from its 2009 year end price of \$4.50 – Verenium's stock price was as high as \$130.55 at year end 2006 (see Table 8).

Although the BoD is doing the right thing by reducing cash compensation and awarding some stock options to executives, it was the BoD's hand in the 2007 merger that has left a lasting impact on Verenium. In retrospect, the move was bold and rather optimistic given that Diversa had to provide Celunol with \$20M in debt financing to fund its operations prior to the closing, which was ultimately assumed by Verenium (Verenium, February 2007). Furthermore, the company has had to fund cellulosic ethanol-related R&D and collaborative projects since the merger by issuing convertible notes each year since 2007, limiting its options to seize potential opportunities (see Table 10). The fact that the biofuel business has not yielded any revenues exacerbates an already precarious situation (Kirosec 2010). Meanwhile, the enzyme business' modest operating profits are hardly enough to sustain itself let alone the biofuel business (see Table 9).

#### **Reflection on Value Measures**

The analysis of Verenium's value drivers and corporate governance offer important insight on its value measures: Economic Value Added (EVA) and Market Value Added (MVA) (see Table 5). Although all aspects of the company are interrelated, we find that its value drivers particularly impact EVA while corporate governance is closely tied to MVA.

EVA has fluctuated over the five-year analysis, but has always been significantly negative because of its return spread (ROIC – WACC). Recall that in the value drivers illustrate that ROIC is negative every year, which consequently results in a negative return spread. Despite the fact that Verenium's WACC has decreased each year since 2006, primarily due to increased leverage from the convertible notes, its tanking share price and lower cost of debt compared to cost of equity, a lower WACC does little to overcome a negative ROIC. Furthermore, Verenium's sales growth is easily greater than its highly negative SSGR, resulting in a cash deficit position. A negative EVA paired with a cash deficit position is

November 5<sup>th</sup>, 2010

the worst combination in which a company can find itself and calls for either drastic restructuring or exiting of a business (Hawawini, 2007).

Ironically, in spite of significantly negative EVA every year, Verenium has managed to have a positive MVA. This means that the market believes the present value of all of Verenium's future EVAs is positive. Indeed, the desire for successful biofuels that can one day replace oil is that great. Upon closer inspection of the MVA, however, it has actually been falling since 2006 and is currently \$16.9M in 2009 down from \$470.8M. It's no happenstance that the beginning of Verenium's drastic fall in MVA coincided with the merger in 2007 which was approved and fully supported by the BoD. The market has since pulled back from Verenium as illustrated from its aforementioned plummeting stock price. Paradoxically, it's Verenium debt, which has severely constrained its business, that is holding its MVA up.

### Conclusion

We understand that Verenium must be viewed as an early stage company with new and unproven technologies; however, all companies must at least show signs of profitability to stay in business. Page 31 of Verenium's 2009 annual report sums it up best: "We have a history of net losses, we expect to continue to incur net losses, and we may not achieve or maintain profitability." This statement clearly indicates that the BoD bit off more than it can chew by blessing the 2007 merger.

Can cellulosic ethanol be commercialized in next few years? Absolutely. Can it be done by Verenium? Absolutely not. Verenium's enzyme business is not profitable enough and its grants are too small to sustain negative EVA and a cash deficit any longer. It must leverage its partnerships with larger, more stable firms that are interested in Verenium's technology to stay in business by having them put up the capital for most of the return, while Verenium pockets a portion of the returns and some royalties. Alternatively, Verenium must exit the biofuel business altogether and focus on its marginally profitable enzyme business, which also has considerable growth potential.

Verenium ultimately succumbed to financial pressures from destroying value as supported by its value drivers and risky decisions approved by its BoD. Verenium leveraged its strategic partnership with BP; it closed on the sale on September 2, 2010 of its cellulosic ethanol business to BP for \$98.3M.

## REFERENCES

Demirbas, A. (2009). *Biofuels*. Springer, Green Energy and Technology Series: London.

Fahey, Jonathan (July 15, 2010). "BP's Biofuel Play: Plan B or PR?" Forbes Blogs. Retrieved September 2010 from http://blogs.forbes.com/energysource/2010/07/15/bp-verenium-biofuel-ethanol/

Hawawini, Ganriel and Viallet, Claude. <u>Finance for Executives: Managing for Value Creation 3e</u>. South-Western, USA, 2007.

- Korosec, Kirsten (July 19, 2010). "BP and Biofuels: Why the Verenium Buy is So Risky." Business Net. Retrieved September 2010 from http://www.bnet.com/blog/clean-energy/bp-and-biofuels-whythe-verenium-buy-is-so-risky/2083
- Nilles, Dave (January 2007). "President Calls for Less Oil Dependence." Ethanol Producer Magazine. Retrieved September 2010 from http://ethanolproducer.com/article.jsp?article\_id=2664
- Verenium Corporate Communications. (2009). Verenium Annual Report 2009. Retrieved September 2009 from http://ir.verenium.com/secfiling.cfm?filingID=1193125-10-57347&CIK=1049210
- Verenium Corporate Communications. (2008). Verenium Annual Report 2008. Retrieved September 2009 from http://ir.verenium.com/secfiling.cfm?filingID=1193125-09-94718&CIK=1049210
- Verenium Corporate Communications. (2007). Verenium Annual Report 2007. Retrieved September 2009 from http://ir.verenium.com/secfiling.cfm?filingID=1193125-08-59040&CIK=1049210
- Verenium Press Release (September 2, 2010). "Verenium Closes Sale of Cellulosic Biofuels Business to BP." Retrieved September 2010 from http://ir.verenium.com/releases.cfm?ReleasesType=&Year=2010
- Verenium Press Release (June 20, 2007). "Diversa and Celunol Complete Merger to Create Verenium, a Leader in the Emerging Biofuels Industry." Retrieved September 2010 from http://ir.verenium.com/releases.cfm?Year=2007&ReleasesType=&PageNum=2
- Verenium Press Release (February 12, 2007). "Diversa and Celunol Announce Merger to Create a New<br/>Biofuels Industry Leader." Retrieved September 2010 from<br/>http://ir.verenium.com/releases.cfm?Year=2007&ReleasesType=&PageNum=2

## Appendix

## Table 1 – Income Statements

CONSOLIDATED INCOME STATEMENT					
in thousands of USD)					
NCOME STATEMENT	2009	2008	2007	2006	2005
Product Sales (+)	43,956	49,083	25,975	15,867	9,832
Collaborative Revenue (+)	5,118	13,656	17,581	30,014	34,392
Grants (+)	16,837	6,920	2,717	3,317	10,079
Gross Operating Revenue	65,911	69,659	46,273	49,198	54,303
Sales Taxes (-)	-	-	-	-	-
Net Operating Revenues	65,911	69,659	46,273	49,198	54,303
Cost of Goods Sold (-)	27,929	35,153	19,815	12,914	10,662
Gross Profit	37,982	34,506	26,458	36,284	43,641
Selling, General & Admin Expenses (+)	38,356	44,822	37,497	14,800	12,990
Research and Development Expenses (+)	63,961	63,438	52,296	50,033	72,751
Operating Expenses (-)	102,317	108,260	89,793	64,833	85,741
Goodwill Impairment Charge (+)	-	106,134	-	-	-
Acquired In-Process Research & Development (+)	-	-	42,400	-	-
Amortization of Acquired Intangible Assets (+)	-	-	-	-	2,602
Restructuring Charges (+)	-	-	-	12,026	-
Asset impairment Charges (+)	-	-	-	-	45,745
Other Operating Expenses (-)	-	106,134	42,400	12,026	48,347
Operating Profit (Loss)	(64,335)	(179,888)	(105,735)	(40,575)	(90,447
Other Gains (Losses) (+)	19,070	(239)	-	-	-
Earnings Before Interest and Tax (EBIT)	(45,265)	(180,127)	(105,735)	(40,575)	(90,447
Financial Income (+)	130	960	3,802	2,307	2,011
Financial Expenses (-)	11,105	9,823	5,652	1,003	1,282
Net Financial Income (+)	(10,975)	(8,863)	(1,850)	1,304	729
Net equity income (+)	-	-	-	-	-
Net Non Operating Inc and Expenses	(10,975)	(8,863)	(1,850)	1,304	729
Less Loss in Noncontrolling Interest (+)	34,349	12,500	-	-	-
Pretax income (EBT)	(21,891)	(176,490)	(107,585)	(39,271)	(89,718
Income tax (+)	-	-	-	-	-
Earnings After Tax (EAT)	(21,891)	(176,490)	(107,585)	(39,271)	(89,718
Deferred Income Tax (+)	-	-	-	-	-
Minority interest (+)	-	-	-	-	-
Net Income (NOPAT)	(21,891)	(176,490)	(107,585)	(39,271)	(89,718
Number of Shares Outstanding at Dec 31	11,821	5,649	5,258	4,020	3,75
Diluted Earnings Per Share	(1.85)	(31,24)	(20.46)	(9.77)	(23 90
	(1.50)	(04)	(20.40)	(0.17)	(20.00
#### Table 2 – Balance Sheets

VERENIUM CORPORATION					
CONSOLIDATED BALANCE SHEETS					
Years Ending: Dec 31, 2005 - 2009					
(in thousands of USD)					
ASSETS	2009	2008	2007	2006	2005
Current Assets					
Cash & Cash Equivalents	32,055	7,458	48,743	38,541	43,859
ST Investments	-	-	9.234	13,371	21,569
Commercial Credits ST	7.209	8.051	11,118	8,646	9.012
Accts Receivable Net	7,209	8.051	11,118	8,646	9,012
Inventories	2 653	2 432	5 904	4 098	2 671
Prenaid Expenses	4 657	2 938	1 408	2 378	2,325
Total current assets	46,574	20,879	76,407	67,034	79,436
Non-Current Assets					
Assets LT	12.949	15.473	5.575	453	388
Other Assets LT	12,949	15,473	5,575	453	388
Permanent Assets	108,399	117 271	182 797	12 418	18 245
Prop Plant & Equip Net	108,399	117 271	76 663	12,118	18 245
Intendibles & Good Will	100,000	-	106 134	12,410	10,240
Total Non-Current Assets	121,348	132,744	188,372	12,871	18,633
Total Assets	167,922	153,623	264,779	79,905	98,069
LIABILITIES AND STOCKHOLDERS' EQUITY	2,009.00	2,008.00	2,007.00	2,006.00	2,005.00
Current Liabilities					
Debt ST	18	9,196	2,712	5,223	7,024
Accounts Payable ST	10,695	15,921	16,412	6,702	4,968
Accrued Expenses	12,254	16,130	16,461	9,274	6,156
Deferred Income - Current Portion	2,199	3,397	5,478	5,395	7,535
Total Current Liabilities	25,166	44,644	41,063	26,594	25,683
Non-Current Liabilities	6.151.00				
Liabilities LT	112.554	136.671	128.501	9.612	6.332
Convertible Notes I T	105,756	130,391	120,000	-	-,
Other Notes LT	692	-	1,160	3.724	6.332
Restructuring Reserve LT	4,694	5 175	5,496	5,888	-
Other LT Liabilities	1,007	1 105	1 845	-	-
Deferred Income	-	-	-	783	1 250
Total Non-Current Liabilities	112,554	136,671	128,501	10,395	7,582
Total Liabilities	137,720	181,315	169,564	36,989	33,265
Noncontrolling Interest					
Min interest consl subs	55,651	12,000	-	-	-
Total Noncontrolling Interest	55,651	12,000	-	-	-
Charles and Free Star					
Stockholders' Equity	10			40	45
Capital Stuck	12	۵ 570 000	D3	48	45
	004,571	573,803	552,173	312,415	308,307
	-	-	-	-	(3,130)
Other Reserves	-	-	-	-	(3,130)
Retained earnings	(630,032)	(613,561)	(437,071)	(329,486)	(290,215)
Accumulated Other Comprehensive Income	-	-	50	(61)	(203)
	(25,449)	(39,692)	95,215	42,916	64,804
Total Liab. Noncontrolling Int and SHS' Equity	167 922	153 623	264 779	79 905	98.069
	-	-	-	-	-

## Table 3 – Statements of Changes of Financial Position

CONSOLIDATED STATEMENT OF CASH FLOW					
Years Ending: Dec 31, 2005 - 2009					
(in thousands of USD)					
Cosh Flow	2000	2002	2007	2006	2005
Cash Operated from Operations	2009	2008	2007	2006	2005
Cash Generated from Operations	(50,043)	(55,921)	(43,938)	(23,946)	(24,067)
Net income	(21,891)	(176,490)	(107,585)	(39,271)	(89,718)
Acquired in-Process Research and Development	-	-	42,400	-	-
Goodwill impairment	-	106,134	-	-	-
Depreciation and Amontization	13,638	9,219	8,875	9,018	17,732
Provision (Reduction) for Doubtini Accounts	(385)	1,080	(155)	-	45,745
Share-Based Compensation	7,088	11,233	10,966	5,690	877
Loss on Exchange of 2007 Notes	-	3,599	-	-	-
Gain on 2008 Notes Amendment	(3,977)	-	-	-	-
Gain (Loss) on Debt Extinguishment	(8,946)	(0.470)	-	-	-
Gain on Net Change in Fair Value of Derivatives	(5,277)	(3,478)	-	-	-
Loss Attributed to Noncontrolling Interests	(34,349)	(12,500)	-	-	-
Accretion of Debt Discount from Convertible Notes	2,931	4,009	-	-	-
Non-Cash Restructuring Charges	525	549	1,481	226	-
Net Loss on Disposais of Property and Equipment	-	-	(705)	391	1,297
Decr(Incr) In Operating Assets & Liabilities	(9,037)	(3,161)	(705)	7,574	340
	1,227	1,381	(2,117)	366	(3,241)
	(221)	3,472	(1,806)	(1,480)	(1,744)
Other Assets	(676)	(275)	2,768	(65)	719
Accounts Payable and Accrued Liabilities	(7,238)	(4,187)	3,413	3,564	1,713
Restructuring Reserve	(931)	(1,471)	(2,263)	7,796	-
Deterred Revenue	(1,198)	(2,081)	(700)	(2,607)	2,893
Total CF - Operating Activities	(59,080)	(59,082)	(44,643)	(16,372)	(23,727)
Cash Flows - Investing Activities					
Purchases of property, plant and equipment, net	(5,418)	(46,634)	(34,230)	(4,362)	(7,286)
Purchases of short-term investments	-	(132,127)	(309,376)	(217,248)	(223,015)
Sales and maturities of short-term investments	-	141,311	313,624	225,590	265,977
Cash acquired from Celunol Corp. Merger	-	-	1,029	-	-
Restricted cash	(360)	(10,040)	-		
Advances made to Celunol Corp.	-	-	(27,500)	-	-
Total CF - Investing Activities	(5,778)	(47,490)	(56,453)	3,980	35,676
Cash Flows - Financing Activities					
Proceeds from issuance of convertible notes	-	50,365	114,741	-	-
Proceeds from equipment financing	-	-	-	3,088	5,540
Net cash paid for convertible hedge transaction	-	(6,194)	-	-	-
Conversion of notes	(140)	(2,116)	-	-	-
Principle payments on debt obligations	(1,154)	(2,700)	(5,240)	(7,500)	(9,991)
Proceeds from sale of assets	-	-	-	781	-
Proceeds from sale of common stock and warrants	12,749	1,432	1,797	10,705	2,565
Proceeds from cap contr in noncontrolling interests	78,000	24,500	-	-	-
Total CF - Financing Activities	89,455	65,287	111,298	7,074	(1,886)
NET CHANGE IN CASH	24.597	(41.285)	10.202	(5.318)	10.063
Cash & Cash Equivalents Regin Year	7 458	48 743	38 541	43 859	33 796
Cook 9, Cook Envirolente En 197	22.055	7 450	40.740	20.544	42,050
Cash & Cash Equivalents, End Year	32,055	7,458	48,743	38,541	43,859

### Table 4 – Value Drivers

VERENIUM CORPORATION										
CONSOLIDATED MANAGERIAL BALANCE SH	IEETS - With F	Percentages								
Years Ending: Dec 31, 2005 - 2009										
(in thousands of USD)										
INVESTED CAPITAL OR NET ASSETS	2009	% Sales	2008	% Sales	2007	% Sales	2006	% Sales	2005	% Sales
Cash	32,055	73%	7,458	15%	57,977	223%	51,912	327%	65,428	665%
Working Capital Requirements (WCR)	(10,629)	-24%	(22,027)	-45%	(19,921)	-77%	(6,249)	-39%	(4,651)	-47%
Net Fixed Assets	108,399	247%	117,271	239%	76,663	295%	12,418	78%	18,245	186%
Other Net Non-Current Assets and Liabilities	12,949	29%	15,473	32%	111,709	430%	(330)	-2%	(862)	-9%
Total Invested Capital or Net Assets	142,774	325%	118,175	241%	226,428	872%	57,751	364%	78,160	795%
ΓΑΡΙΤΑΙ ΕΜΡΙΟΥΕΟ	2009	% Sales	2008	% Sales	2007	% Sales	2006	% Sales	2005	% Sales
Short-term debt	18	0%	0 106	19%	2 712	10%	5 223	33%	7 024	71%
	107 860	245%	131 496	268%	123.005	474%	3 724	23%	6 332	64%
Owners' equity	34 896	79%	(22 517)	-46%	100 711	388%	48 804	308%	64 804	659%
Long-term financing	142 756	325%	108 979	222%	223 716	861%	52 528	331%	71 136	724%
Testel Consistel Employeed	142,730	325%	110,373	2410/	225,710	0720/	52,520	20170	71,150	705%
	142,774	325%	118,175	241%	220,428	812%	57,751	304%	78,160	/95%
VERENIUM CORPORATION										
VALUE DRIVERS										
YEARS 2005 - 2009										
(in thousands of USD)										
	2009	2008	2007	2006	2005					
Liquidity Ratios	1									
Current Ratio	1.85	0.47	1.86	2.52	3.09					
Quick Ratio	1.75	0.41	1.72	2.37	2.99					
Net Short Term Financing (NSF)	(32,037)	1,738	(55,265)	(46,689)	(58,404)					
Net Long Term Financing (NLF)	34,357	(8,292)	147,053	40,110	52,891					
Liquidity Ratio	(3.23)	0.38	(7.38)	(6.42)	(11.37)					
Operating Cash Flow Ratio	(1.34)	(1.20)	(1.72)	(1.03)	(2.41)					
Operating Efficiency Ratio										
Average Days Receivables	63.36	71.27	138.86	203 10	N/A					
Average Days Inventories	33.23	43.28	92.12	95.66	N/A					
Average Days Pavable	173.92	167.86	212.88	164.92	N/A					
Cash Conversion Cycle	(77.34)	(53.31)	18.10	133.84	N/A					
Fixed Asset Turnover	0.39	0.51	0.58	1.03	N/A					
Poturn on Equity Components										
Tax Effect Ratio	1.00	1.00	1.00	1.00	1.00					
Financial Cost Ratio	0.48	0.98	1.00	0.97	0.99					
Financial Structure Ratio	4.09	(5.25)	2.25	1 18	1 21					
Financial Leverage Ratio	1.98	(5.14)	2.29	1.15	1.20					
Operating Profit Margin	(1.03)	(3.67)	(4.07)	(2.56)	(9.20)					
Capital Turnover	0.31	0.42	0.11	0.27	0.13					
Return on Invested Capital (ROIC)	(0.32)	(1.52)	(0.47)	(0.70)	(1.16)					
Return on Equity (ROE)	Not Defined	Not Defined	(1.07)	(0.80)	(1.38)					
Groce Margin	0.00	0.00	0.04	0.40	(0.00)					
	(4.08)	(18.34)	(18 71)	(40.45)	(0.06)					
	(4.00)	(10.34)	(10.71)	(40.43)	(70.55)					
Growth and Reinvestment										
Annual Sales Growth	-10.4%	89.0%	63.7%	61.4%	N/A					
Annual Retained Earnings	(16,471)	(176,490)	(107,585)	(39,271)	N/A					
Annual Net Income	(21,891)	(176,490)	(107,585)	(39,271)	N/A					
Retention Rate	75.2%	100.0%	100.0%	100.0%	N/A					
Self-Sustainable Growth Rate	Not Defined	Not Defined	-106.8%	-80.5%	N/A					
Note: ROE and SSGR are not defined when a	owner's equity i	s negative as se	en in Table 2 fo	or 2008 & 200	)9.					

### Table 5 – Value Measures

YEARS 2005 - 2009					
(in thousands of USD)					
Economic Value Added (EVA)	2009	2008	2007	2006	2005
COST OF CAPITAL					
1 After-Tax Cost of Debt					
US Gov't Security (10Y)	3.84%	2.37%	3.91%	4.68%	4.40%
Borrowing Premium @ 'B' Rating	5.37%	13.06%	5.41%	3.10%	3.49%
Cost of Debt	9.21%	15.43%	9.32%	7.78%	7.89%
Implied Marginal Tax Rate	0.00%	0.00%	0.00%	0.00%	0.00%
AT Cost of Debt	9.21%	15.43%	9.32%	7.78%	7.89%
2 Cost of Equity					
US Govt Security (10Y)	3.84%	2.37%	3.91%	4.68%	4.40%
US Market Premium	6.00%	6.00%	6.00%	6.00%	6.00%
Beta vs. SAP 500	1.47	1.47	1.47	1.47	1.47
Cost of Equity	12.66%	11.19%	12.73%	13.50%	13.22%
3 Weights D/E					
Book Val LT Debt (bonds + debt)	106,448	130,391	121,160	3,724	6,332
Share price (close of year)	4.50	10.56	59.88	130.55	57.60
Shares outstanding ('000s)	11,821	5,649	5,258	4,020	3,754
Market Value Equity	53,195	59,653	314,849	524,811	216,230
Debt + Equity (combined mrkt val)	159,643	190,044	436,009	528,535	222,562
Debt Proportion	66.68%	68.61%	27.79%	0.70%	2.85%
Equity Proportion	33.32%	31.39%	72.21%	99.30%	97.15%
4 WACC					
AT Cost of Debt	9.21%	15.43%	9.32%	7.78%	7.89%
Debt Proportion	66.68%	68.61%	27.79%	0.70%	2.85%
Cost of Equity	12.66%	11.19%	12.73%	13.50%	13.22%
Equity Proportion	33.32%	31.39%	72.21%	99.30%	97.15%
WACC	10.36%	11.19%	12.73%	13.50%	13.22%
ROIC & IC					
	(45,265)	(180,127)	(105,735)	(40,575)	N/A
	118,175	226,428	57,751	78,160	N/A
ROIC AT	-38.30%	-79.55%	-183.09%	-51.91%	N/A
Economic Value Added (EVA)	2009	2008	2007	2006	2005
FVA	(57,508)	(205,467)	(113,087)	(51,128)	N/A
				, , , , 	
Market Value Added (MVA)	2009	2008	2007	2006	2005
Market Value of Capital	159,643	190,044	436,009	528,535	222,562
Less: Capital Employed	142,774	118,175	226,428	57,751	78,160
MVA	16,869	71,869	209,581	470,784	144,402
MVA Yearly Change	(55.001)	(137.712)	(261.203)	326.382	N/A
	(,,	, . , . <b> ,</b>	( - ,)	.,	

#### Table 6 – Corporate Governance

DIRECTOR ROLES, REMUNERATION	AND OWNERSHIP									-									
							2009 Con	nmi	ittees				20	)09	Remunera	tior	۱	2009 Ow	nership
		Re	e-election					Go	vernance &										
Name	Role, Employee?		Class***		Audit	Co	mpensation	N	lominating	F	Finance		Cash		Options		Total	# Shares	% Shares
Dr. James H. Cavanaugh	Chairman, Non-Emp		2012				Х		Х			\$	41,500	\$	90,386	\$	131,886	548,301	4.6%
Mr. John F. Dee	Director, Non-Emp		2010								Х	\$	39,500	\$	30,278	\$	69,778	993	**
Mr. Peter Johnson	Director, Non-Emp		2011				X*		Х			\$	45,500	\$	70,853	\$	116,353	8,411	**
Dr. Fernand Kaufmann	Director, Non-Emp		2010		Х		Х					\$	48,500	\$	58,584	\$	107,084	4,352	**
Mr. Simon Rich	Director, Non-Emp		2012									\$	35,500	\$	31,769	\$	67,269	951	**
Mr. Carlos A. Riva	Director, Emp		2010									\$	-	\$	-	\$	-	see b	elow
Mr. Joshua Ruch	Director, Non-Emp		2012				Х				Х	\$	46,500	\$	55,488	\$	101,988	418,339	3.5%
Ms. Cheryl A. Wenzinger	Director, Non-Emp		2011		Х*							\$	61,000	\$	60,442	\$	121,442	4,748	**
Mr. Michael Zak	Director, Non-Emp		2011		Х						X*	\$	58,500	\$	55,488	\$	113,988	358,268	3.0%
Former Director:																			
Mr. Mark Leschly (resigned 4/30/09)					Х				Х*			\$	17,810	\$	21,119	\$	38,929		
, , , , , , , , , , , , , , , , , , , ,	1												1		, -		,		
EXECUTIVE COMPENSATION AND O	WNERSHIP	-		_				_		_									-
		-						Fx	ecutive Cor	nne	ensation							2009 Ow	nershin
				1							moution					1	Yearly	2000 011	lieromp
Name & Position	Year		Salary		Bonus		Stock		Ontions	N	on-Fauity		Other		Total		Change	# Shares	% Shares
Mr. Carlos A. Riva	2007	\$	243 389	\$	276 000	\$	1 535 618	\$	5 261 832	\$	350,000	\$	6.358	\$	7 673 197		N/A	# onaroo	70 0110100
President Chief Executive	2007	¢	/05 000	¢	208,000	Ŷ	1,000,010	φ	287 520	¢		Ŷ	1 1/3	Ψ Ψ	001 663	¢	(6 681 534)		
Officer and Director	2000	φ ¢	495,000	φ ¢	200,000	φ ¢	114 400	φ ¢	1 453 071	ф ¢		φ ¢	2 9/1	φ \$	2 069 403	φ \$	1 077 740	81 584	**
Mr. James F. Levine	2003	Ψ		Ψ	N/A	Ψ	N/Δ	Ψ	N/A	Ψ	N/A	Ψ	2,341 N/Δ	φ \$	2,000,400	Ψ	N/Δ	01,004	
Executive Vice President	2007		N/A		N/A		N/A		N/A		N/A		N/A	φ e		-	N/A		
and Chief Financial Officer	2000	¢	21/ /38	¢	IV A	¢	32 500	¢	280 604	¢	11/7	¢	6/1	φ ¢	528 183	┢	N/A	2 605	**
Mr. Jeffrey G. Black	2003	Ψ	Z14,430	Ψ	N/A	ψ	52,500 N/A	ψ	200,004 N/A	Ψ	N/A	ψ	N/A	φ Ψ	520,105	⊢	N/A	2,003	
Senior Vice President and	2007	¢	231 5/7	¢	IV/A	¢	-	¢	101.030	¢	105.000	¢	1 1/3	φ e	/38 720	-	N/A		
Chief Accounting Officer	2000	ψ ¢	266 702	φ ¢	-	9 Q		φ Φ	15/ 135	φ ¢	103,000	θ	16 010	φ Ψ	436,720	¢	(1.873)	6 288	**
Mr. William H. Baum	2003	φ ¢	367 422	φ S	275 567	¢ ¢	100 800	φ \$		Ψ \$		¢ \$	10,010	φ \$	754 264	Ψ	(1,073) N/Δ	0,200	
Executive Vice President	2007	φ ¢	367 /22	φ ¢	100.000	9 e	100,000	φ Φ	131 /68	φ ¢		θ	1 1/3	φ Ψ	600.033	¢	(15/ 221)		
Business Development	2000	φ ¢	372 885	φ ¢	100,000	9 ¢		φ Φ	77 255	φ ¢		θ	10 362	φ Ψ	460 502	φ ¢	(139,231)	26 825	**
Mr. Gerald M. Haines II	2003	Ψ	572,005 N/A	Ψ	N/A	ψ	N/A	ψ	N/A	Ψ	N/A	ψ	10,302 N/A	ф Ф	400,302	Ŷ	(133,331) N/A	20,023	
Executive Vice President	2007	¢	270 /55	¢	100.000	¢	-	¢	770.008	¢	11/7	¢	1 003	ф Ф	1 1/1 6/6	N/	Δ		
Chief Logal Officer	2008	ф Ф	211,400	¢ ¢	100,000	¢ ¢	55,000	ф Ф	272 424	¢ ¢	-	ф ф	1,093	ф Ф	640.044	¢	A (501 602)	15 662	**
Dr. Grogony Bowers	2009	φ	511,279 N/A	φ	- N/A	φ	55,000 N/A	φ	Z/Z,434	φ	- N/A	φ	1,331 N/A	¢ ¢	040,044	φ	(JU1,002)	15,002	
Executive Vice President	2007		N/A		N/A		N/A		N/A		N/A		N/A	ф ф		—	N/A		
Executive vice Flesidenic,     Becoards and Development	2008	¢	210 702	¢	NV A	¢	IN/A	¢	170 571	¢	IN/A	¢	2 267	ф ф	500 640	—	N/A	10.490	**
	2009	φ	319,702	φ		φ	•	φ	170,071	Ŷ		φ	2,307	φ	500,040	-	IVA	10,400	
Mr. John P. Mallov, Jr.	2007	¢	145 556	¢	140.000	¢		¢	2 452 000	¢	200,000	¢	541	¢	2 040 006	—	NI/A		
Executive Vice President	2007	φ	200 400	φ ¢	140,000	9 e	-	φ e	2,400,000	φ	200,000	эe	10.251	ф Ф	2,340,030	¢	(2 6/1 //5)		
Riofuelo Rucinoco Unit	2000	φ	120,400	φ ¢	122 000	9 e	-	φ e	-	φ	-	эe	250 662	ф Ф	404.042	φ e	105 202		
Biolueis Busiliess Offic	2009	φ	120,300	φ	123,000	φ		φ	-	φ	-	φ	200,003	φ	494,043	φ	195,592		L
	100	-																	
ADDITIONAL BENEFICIAL OWNERS	1175	_																0000 0	
No								A .1.1										2009 OW	nersnip
					FOT Madia		A	Add		. NI	Investigation of the second	000						# Snares	% Snares
Avvin investment Company, inc.					527 Waat C	50N /	Avenue, Suite	20	UU, NEW YOR	(, IN	IEW YORK TU	1022	2					1,506,073	12.4%
Highbridge Capital Management LLC		_		1	9 West s	57 th	Street, 27th	-100	or, inew york,	ive	W YORK TUU	19		_		_		1,100,903	9.0%
N /																			
Notes:																			
* = Committee Chairperson																			
^^ = <1.0% Ownership																<u> </u>			
*** = Verenium mandates that the Boar	d of Directors be divid	ed i	nto three cl	lass	es that cor	nsist	, as nearly as	в ро	ossible, of on	e-th	ird of the to	tal	directots, v	with	n each class	s ha	ving a three-	year term.	

A change to Verenium's corporate governance structure occurred as a result of the 2007 merger between Diversa and Celunol. The newly BoD included three directors from Celunol while the rest came from Diversa. In addition, Celunol's CEO, Carlos Riva, became Verenium's CEO and was also awarded a seat on the BoD.

#### Table 7 – Working Capital Requirements

VERENIUM CORPORATION WORKING CAPITAL REQUIREMENTS Years Ending: Dec 31, 2005 - 2009 (in thousands of USD)					
WORKING CAPITAL REQUIREMENTS	2009	2008	2007	2006	2005
(+) Accounts Receivable	7,209	8,051	11,118	8,646	9,012
(+) Prepaid Expenses	4,657	2,938	1,408	2,378	2,325
(+) Inventories	2,653	2,432	5,904	4,098	2,671
(+/-) Other Net Current Assets and Liabilities	(2,199)	(3,397)	(5,478)	(5,395)	(7,535)
(-) Accounts Payable	(10,695)	(15,921)	(16,412)	(6,702)	(4,968)
(-) Accrued Expenses	(12,254)	(16,130)	(16,461)	(9,274)	(6,156)
Working Capital Requirements (WCR)	(10,629)	(22,027)	(19,921)	(6,249)	(4,651)

## Table 8 – Stock Price Changes

VERENIUN	I CORPOR	ATION		
Stock Pric				
Source: Ya				
http://finar				
	VRNM	S&P 500	<u>% Change</u>	
2009	4.50	-57%	1,115.10	23%
2008	10.56	-82%	903.25	-38%
2007	59.88	-54%	1,468.36	4%
2006	130.55	127%	1,418.30	14%
2005	57.60	N/A	1,248.29	N/A

# Table 9 – Product-Based Operating Results

VERENIUM CORPORATION									
Product-Based Operating Results									
Years 2008 - 2009									
(in thousands of USD)									
		20	009			20	08		
Operating Results	Biofuel	Enzyme	Corporate	Total	Biofuel	Enzyme	Corporate	Total	
Product Revenue	-	43,956	-	43,956	-	49,083	-	49,083	
Collaborative and Grant Revenue	15,978	5,977	-	21,955	1,635	18,941	-	20,576	
Gross Operating Revenue	15,978	49,933	-	65,911	1,635	68,024	-	69,659	
Cost of Goods Sold (-)	-	27,929	-	27,929	-	35,153	-	35,153	
Gross Profit	15,978	22,004	-	37,982	1,635	32,871	-	34,506	
Selling, General & Admin Expenses (+)	6,194	8,870	23,292	38,356	15,920	7,702	127,333	150,955	
Research and Development Expenses (+)	59,709	4,252	-	63,961	38,945	24,494	-	63,439	
Operating Expenses (-)	65,903	13,122	23,292	102,317	54,865	32,196	127,333	214,394	
Operating Profit (Loss)	(49,925)	8,882	(23,292)	(64,335)	(53,230)	675	(127,333)	(179,888)	

## Table 10 – Convertible Debt Obligations Summary

VERENIUM CORPOR	ATION								
Convertible Debt Ob	oligations								
As of December 31,	2009								
(in thousands of USI	D)								
		Payments Due By Period							
	<u>Total</u>	<u>&lt; 1 Year</u>	<u>1 - 3 Years</u>	<u>3 - 5 Years</u>	<u>&gt; 5 Years</u>				
2007 Notes	135,478	3,797	7,594	7,594	116,495				
2008 Notes	18,241	1,216	17,025	-	-				
2009 Notes	35 397	1,336 2,467 2,467 29,125							
	00,001	6,349 27,086 10,061 145,62							