

Capital Markets for Biofuels/Industrials: Still in Wait-and-See Mode

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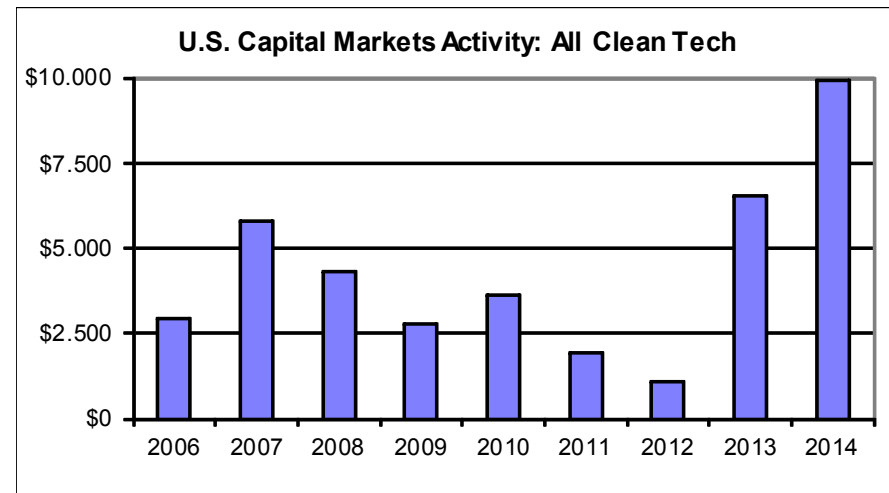
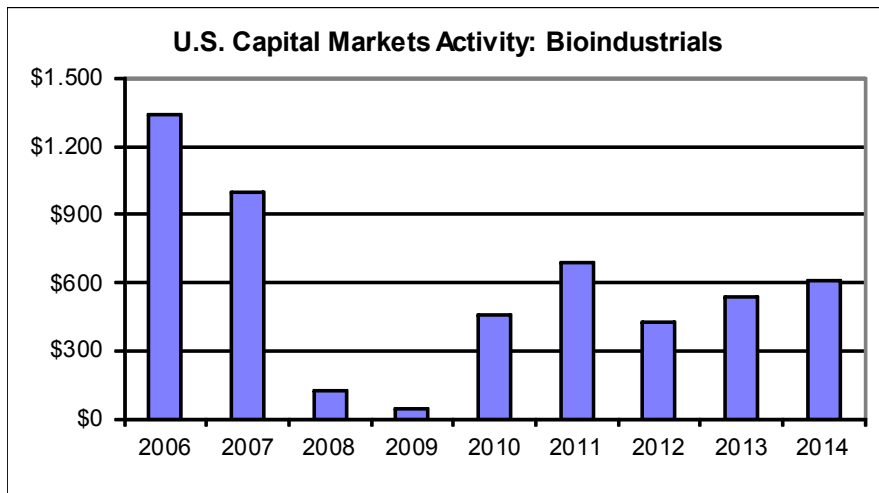
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Publicly Traded Bio Space Remains Small

- Mainly conventional biofuels (total market cap: ~\$4 billion)
 - Cosan (CZZ)
 - Green Plains (GPRE)
 - Methes Energies (MEIL)
 - Pacific Ethanol (PEIX)
 - Renewable Energy Group (REGI)
 - Recent “exits” included BioFuel Energy (acquired)
- Mainly advanced biofuels and renewable chemicals (total market cap: ~\$1 billion)
 - Amyris (AMRS)
 - BioAmber (BIOA)
 - Ceres (CERE)
 - Gevo (GEVO)
 - Metabolix (MBLX)
 - OriginOil (OOIL)
 - Solazyme (SZYM)
 - Recent “exits” included Syntroleum and Verenium (both acquired) and KiOR (bankruptcy)

Public Capital Raising in the Bio Space: Still Not Ramping

- Since 2005, biofuels/bioindustrials have accounted for approximately 13% of all capital raised by U.S.-traded clean tech companies (as compared to ~56% for solar power)
- During the period 2010-2014, there were 42 capital markets transactions in the bio space, raising a total of \$2.7 billion
- The lack of growth in aggregate deal volume over the past five years means that amounts raised remain well below the levels that the industry requires to support substantial capacity expansion



Over the Past Two Years, Bio IPOs Were Nearly Absent

- Priced in 2011
 - **Bio:** Gevo (GEVO), Solazyme (SZYM), KiOR (KIOR)
 - Other: None
- Priced in 2012
 - **Bio:** Renewable Energy Group (REGI), Ceres (CERE)
 - Other: Enphase Energy (ENPH), SolarCity (SCTY)
- Priced in 2013
 - **Bio:** BioAmber (BIOA), Abengoa (ABGB) (partially)
 - Other: Silver Spring Networks (SSNI), Pattern Energy (PEGI)
- Priced in 2014
 - **Bio:** None
 - Other: Opower (OPWR), Abengoa Yield (ABY), NextEra Energy Partners (NEP), TerraForm Power (TERP), Vivint Solar (VSLR), Sky Solar (SKYS)

How the Buy-Side Evaluates Bio IPOs

- Key theme #1: Proof of concept
 - It is essential to have clear evidence that the technology works: demo scale is a bare minimum, and commercial production is highly desirable
 - Investors want to know about key performance metrics – yield, productivity, etc. – and how close current figures are to target levels
- Key theme #2: Roadmap to profitability
 - Investors expect to see a credible and transparent roadmap to production scale-up and ultimately positive cash flow and profitability
 - This entails, among other things, adequate detail on: (1) target production economics; (2) cost of capacity expansion and how it will be funded; and (3) timing of scale-up and cost reduction plans
 - Are the targets credible, or are they overly ambitious?
- Key theme #3: Strategic partners
 - Partnerships can serve many purposes: (1) direct financial support for expansion; (2) offtake agreements; and (3) “blue chip seal of approval”
 - Given that partnerships can also limit room to maneuver, investors ask about exclusivity provisions in partnership agreements
- Key theme #4: Access to feedstock
 - If it is conventional feedstock, can it be obtained at preferential pricing, and are long-term supply contracts a viable option?
 - If it is cellulosic feedstock, is the pricing structure clear?

Key Near-Term Milestones to Watch in the Industry

- Production ramp-up at plants completed in 2014 or earlier
 - Amyris: farnesene (Brotas plant)
 - Gevo: isobutanol (Luverne plant)
 - INEOS Bio: cellulosic ethanol (Vero Beach plant)
 - Solazyme: algae-based oils (Clinton plant)
 - Solazyme: algae-based oils (Moema plant)
 - Enerkem: cellulosic ethanol (Edmonton plant)
 - GranBio: cellulosic ethanol (Alagoas plant)
 - Abengoa: cellulosic ethanol (Hugoton plant)
 - Ensyn: cellulosic fuel oil (Renfrew plant)
 - POET / Royal DSM: cellulosic ethanol (Emmettsburg plant)
 - Raizen / Iogen: cellulosic ethanol (Piracicaba plant)
 - DuPont: cellulosic ethanol (Nevada, IA plant)
- Completion expected in 2015-2016
 - BioAmber: renewable chemicals (Sarnia plant)
 - Genomatica / Novamont: renewable chemicals (Adria plant)
 - Cool Planet Energy: cellulosic gasoline (Alexandria plant)
 - Butamax: isobutanol (Lamberton plant)
 - Elevance: renewable chemicals (Natchez plant)
 - Beta Renewables: cellulosic ethanol (Sampson County plant)

Thoughts on the Road Ahead

- IPOs for pre-revenue companies remain very difficult
 - Every bio IPO from recent years – Amyris, BioAmber, Ceres, Gevo, Solazyme – is trading below its IPO price
 - The oil price meltdown since mid-2014 has clearly not helped vis-à-vis investor sentiment, but risk appetite was low even before that
- Achieving milestones is vital
 - Scale-up delays at many of the public companies have escalated investor concerns about technology risk
 - Successful milestones by the higher-profile companies in the space – especially, but not exclusively, the public ones – should gradually reduce the market’s perception of risk
- Strategic partners have tended to be more supportive than the IPO market – but this is where oil prices make things tenuous
 - For the most part, strategic investors tend to have a longer-term time horizon than buy-siders, which helps explain why several prior IPO candidates (e.g., Elevance, Fulcrum and Genomatica) have raised private capital instead of the IPO route
 - However, amid the depressed oil price environment, belt-tightening across the energy sector means that potential partners are often reluctant to invest in early-stage technologies (or anything that’s non-core)

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