Summary of the 31st Annual Young & Partners Chemical Conference

Strategic, Financial and Shareholder Issues For Senior Chemical Executives

November 28, 2018
The Yale Club at 50 Vanderbilt Avenue - New York City

11:30 a.m.	**Registration**
12:00 p.m.	**Welcoming Comments and Luncheon**
12:30 p.m.	**Luncheon Keynote Speaker**
	A Fireside Chat: The Transformation of Dow Chemical Andrew Liveris, Former Chairman and CEO, *The Dow Chemical Company*, Former Executive Chairman, *DowDuPont* Moderator: Peter Young, President and Managing Director, *Young & Partners*
1:15 p.m.	**Shareholder Value Creation: Westlake's Acquisition of Axiall** Albert Chao, President and CEO, *Westlake Chemical Corporation* M. Steven Bender, EVP and CFO, *Westlake Chemical Corporation*
2:00 p.m.	**M&A and Financial Developments – Key Trends and Their Implications** Peter Young, President and Managing Director, *Young & Partners*
2:30 p.m.	**Perspectives and Update on China: Panel and Audience Discussion** Anla Cheng, Founder and Chairman, *SupChina* and Senior Partner, *Sino-Century* Jeremy Goldkorn, Editor-in-Chief, *SupChina* Peter Young, President and Managing Director, *Young & Partners*
3:15 p.m.	**Break**
3:30 p.m.	**The Chemical Industry Outlook** Joseph Chang, Global Editor, *ICIS Chemical Business* Robert Westervelt, Editor-in-Chief, *IHS Chemical Week* Peter Young, President and Managing Director, *Young & Partners*
4:15 p.m.	**The Global Chemical Industry: Geopolitical, Market and Supply Insights** Steve Lewandowski, VP Olefins, *IHS Markit*
5:00 p.m.	**Networking Cocktail Reception**
7:00 p.m.	**End of Conference**

A Fireside Chat with Andrew Liveris

ANDREW LIVERIS, CHAIRMAN EMERITUS, THE DOW CHEMICAL COMPANY

PETER YOUNG, PRESIDENT AND MANAGING DIRECTOR, YOUNG & PARTNERS

Young: Could you discuss your upbringing in Australia?

Liveris: My grandparents left Greece after World War 1 and found their way to Darwin in Northern Australia. I grew up with people of Chinese, Malaysian and Indian descent and I credit my ability to operate in a multi-national sense to the diversity of that community.

Being of Greek descent, we were lumped in with the other minorities who were "non Anglo-Saxon." As such, this experience honed my ability to recognize the conscious or unconscious biases of others. I lost my father at a very young age and I had to go out and work to support my mother and sisters. I was doing well in school, but it was quite a challenge. I had a mentor figure arrive in my life at that time and he encouraged me to stay in school where I was excelling in chemistry. Back then, there were very few televisions in Northern Australia so I spent all my time outdoors playing team sports. I learned a lot about team dynamics and leadership.

Young: How did you end up studying Chemistry and ultimately joining Dow?

Liveris: So the rural part of Australia where I grew up did not attract the best educators. The best preferred to live in major cities. However, a major hurricane destroyed our family home and we were forced to relocate to Brisbane. This was a stroke of good fortune as the school I attended in Brisbane was a feeder school to the University of Queensland, which had a top chemical engineering department.

Dow turned up in my third year offering internships at various factories in Australia. I turned them down in favor of Monsanto initially. However, Dow persisted and continued to recruit me in my fourth year. They sent me to Plaquemine, Louisiana to learn how to run chemical plants. They then sent me to Asia where I worked for roughly 20 years before they brought me back to Midland, Michigan as I had been shortlisted to get a top job.

Young: Tell me about some of the major transformations that occurred at Dow.

Liveris: I think the chemical industry gets complacent fast and the bigger the organization the more difficult it is to face change. The DowDupont transaction was the 6th major transformation of Dow in the company's history. During the strong spurts of innovation prompted by government spending during the World Wars, Dow management was very entrepreneurial. They embraced and got in front of the change that was affecting the chemical industry, which allowed them to climb the ranks.

The innovation cycle in chemistry (post-plastics) has been pretty poor. Starting in the 80's and 90's, our R&D engines were not producing anything new. As a company with a diversified portfolio, no matter where you allocated R&D dollars, you could never be as good as the pure-plays. As such, Dow ended up selling a number of the more innovative businesses. That portfolio is what I inherited when I became CEO. The cupboard was bare in terms of technology and innovation.

As we were formulating our shareholder value creation plan, it became apparent that investors went in and out of their positions in our stock based entirely on the commodity cycles. They were "stock renters" rather than "stock owners." The plan we ultimately settled on was to become "low cost" and to stay ahead of innovation. This said to us that we had to roll up the industry and convince our competitors that they had the same problem. Between 2011 and 2016, we went into deal hyper-drive, completing the various transactions that would keep us relevant in the sector beyond cyclical transformations.

I think the DowDuPont deal is seminal. It took all the work we had done at Dow (i.e. acquiring Rohm & Haas, acquiring Union Carbide) and all the work they had done at DuPont (i.e. acquiring the various biotech companies) and a reorienting of the combined assets. We cleaned the three balance sheets and gave the new companies verticals that they will be able to grow by smartly allocating capital. The short-termism that dominates current shareholder thinking requires that companies be predictable, be transparent and be able to demonstrate that they are the best capital allocator within their vertical. For chemical companies to stay relevant, they need to make the decision to be innovators so that they can stay ahead of the trend towards commoditization. If a business is commoditized it needs to go to its natural owner or, if it is going to be run for cash, it needs to fund an innovation that is going to replace that business in a short cycle.

Young: What were some of the challenges you were facing at Dow that drove the thinking behind the transaction?

Liveris: Post the global financial crises, Dow had to stay ahead of what shareholders were demanding. However, shareholders could not clearly articulate their demands given the overly simplistic view of chemicals (i.e. "commodities" vs "specialties") that dominates the market. Chemical companies are in value chains and they are in ecosystems that deliver value depending on where they are in the value chain. In attempting to keep their competitive advantages by staying opaque, chemical companies give up the ability to effectively communicate this value delivery to the market.

Dow's strategy was to have low-cost inputs that would keep us relevant, but that could not be our only value proposition. We funded innovation in packaging and decided that we would produce all the films used in synthetic packaging around the world. This is how we sought to overcome the valuation challenge associated with our growth rates being relegated to GDP as packaging has much robust prospects.

Young: How did the DowDuPont deal materialize in the early stages?

Liveris: The two DuPont CEO's before Ed Breen were convinced that DuPont could continue to compete in the agricultural chemicals business. Then, Nelson Peltz, the activist investor, got involved and insisted that they could not compete without becoming a pure-play, vertical agricultural chemicals business. Eventually, DuPont management came around to that view as well and when Ed Breen became CEO, he was receptive to a discussion with me. Nine weeks later, we struck the deal.

We put the deal together on strategic logic and portfolio transparency, so we had to spend another 6 months really getting to know one another to make sure we were allocating the portfolio appropriately. We knew that we were going to ultimately be three companies. We took 110,000 people and divided them into 3 companies. I think in Q1 2019 the market is going to see these three companies with clean balance sheets as having clear value propositions.

Young: Looking back on your time at Dow, what accomplishment are you most proud of? Is there anything that you would have done differently?

Liveris: I think I'm proudest of the cultural change in the workforce of the new Dow. In terms of demographics, the percent of the company that is under the age of 30 went from 9% in 2004 to 35% in

2018. We now hire as many mathematical modelers and data engineers as we do chemical engineers. The business divisions are established as decentralized entrepreneurial hubs with clear Key Performance Indicator goals. We have a very inclusive and diverse group of leaders.

Shareholder Value Creation: Westlake's Acquisition of Axiall

ALBERT CHAO, PRESIDENT & CHIEF EXECUTIVE OFFICER, WESTLAKE CHEMICAL CORPORATION

M. STEVEN BENDER, CHIEF FINANCIAL OFFICER, WESTLAKE CHEMICAL CORPORATION

Chao: If there is one word to describe our approach to the acquisition of Axiall, it is persistent. We first approached the company in 2012, but they were not interested in being acquired. Four years later, we approached them again and they turned us down again. After the second time we went through an exercise with the investment bankers that focused on how we might succeed with an unwilling seller. We were eventually able to get a deal done in August 2016. At that time, Axiall had $3.7 billion in Revenue, $330 million in EBITDA and 4700 employees. The combination created a vertically-integrated North American Olefins and Vinyls leader.

The final price paid was $33 per share which was approximately a 237% premium over the share price on the date of the first offer in January. However, it was an 18% discount to the 52-week high prior as of that first offer date. This represented an enterprise value of approximately $3.8 billion, 11.5x 2015 EBITDA of $330 million. However, it was only 7.3x the Cycle Average Adjusted EBITDA of approximately $523 million. When we were negotiating in 2016, we were at the bottom of the cycle. We felt that a modest improvement in the selling price of chlorine and caustic as well as achievement of some synergies would result in EBITDA closer to the cycle average.

The combined company is the second largest manufacturer of PVC and the third largest manufacturer of Chlor-alkali in North America. Being integrated from cost-advantaged ethane-based ethylene to PVC-based building products enhances margin stability and allows Westlake to capture value throughout the value chain and earnings cycle.

Bender: Building on Westlake's history of integration and strategic growth, the acquisition created a North American Chlorovinyls leader with enhanced sales, an integrated value chain that enhances margin stability, and $275 million of synergy opportunities. In addition, the company has a strong financial profile as evidenced by our BBB rating by all three rating agencies.

The combined business had $7.4 billion of LTM Sales and $1.4 billion of LTM EBITDA as of the end of Q2 2016. This has improved to $8.6 billion of LTM Sales and $2.2 billion of LTM EBITDA as of the end of Q3 2018. The synergies we realized came from eliminating duplicative G&A costs, optimizing procurement and the ethylene/natural gas supply chain, improved product mix and increased global sales channels. Since the acquisition, the company has retired $1.5 billion in debt. The transaction has positioned Westlake to be able to capture continued organic growth opportunities in Chlor-Alkali and PVC.

M&A and Financial Developments – Key Trends and Their Implications

PETER YOUNG

PRESIDENT AND MANAGING DIRECTOR
YOUNG & PARTNERS

M&A Trends –Through Third Quarter 2018

- In the first three quarters of 2018, $89.6 billion worth of deals closed. However, just two deals dominated and represented $69.7 billion of the total, the Bayer/Monsanto and Potash/Agrium deals. All of the rest was only $19.9 billion.
- In terms of number of deals completed, the first three quarters of 2018 was significantly down from 2017, with 42 deals completed (56 deals on an annualized basis) compared to 90 deals for all of 2017.
- In terms of the location of M&A targets, Asia/ROW dominated in the first three quarters of 2018, accounting for 46.7% of deals completed worldwide. This dominance has been true for quite a few years and has been increasing.
- In the first three quarters of 2018 private equity represented only 9.5% of the number of acquisitions and 1.5% of the dollar volume.
- The number and ratio of commodity versus specialty deals has shifted dramatically from specialties towards commodity deals, with commodities accounting for 52.4% of the deals and specialties accounting for 47.6% of the deals.
- Valuations are high overall, but very different by industry segment.
- Looking forward, the value of deals announced but not closed as of September 30, 2018 was massive at $102.0 billion (53 deals). A large portion of the dollar volume comes from two deals, the Praxair/Linde and the Carlyle/Akzo Nobel's Specialty Chemicals Business deals.
- We expect the Praxair/Linde deals to close this year, but after a very long delay given the heavy scrutiny by the relevant competition agencies.
- Carlyle closed its acquisition of Akzo Nobel Specialties on October 1st.
- Overall, the volume of deals has been healthy, but we have a dwindling number and dollar volume if you do not count the mega deals and very high dollar volumes if you do.
- In addition, the mega deals have tended to be concentrated in just a few industry sectors: coatings, ag chemicals and fertilizers, and industrial gases.
- Depending on what point of view you take, you can say that the market volume is declining or that the dollar volume is very high. In either case, your statement would be accurate.
- In fact, it comes down to what part of the market is relevant for your own strategy.

Debt Financing Trends – Through Third Quarter 2018

- The chemical industry debt issuance activity in the first three quarters of 2018 was significantly higher on an annualized basis than 2017, driven by a combination of M&A financing, refinancing and a surge in high yield debt.
- Global non-bank debt financing was $40.6 billion in the first three quarters of 2018 compared to $47.2 billion for all of 2017.
- The investment grade debt part of that total in the first three quarters of 2018 was $29.8 billion, compared to all of 2017 when $40.4 billion was issued.
- There was $10.8 billion of high yield debt issued in the first three quarters of 2018 compared to all of 2017 when $8.6 billion was issued.

Equity Financing Trends – Through Third Quarter 2018

- The chemical equity issuance market was stronger in dollar terms through the first three quarters on an annualized basis compared to 2017. However, the pace in terms of the number of offerings was down significantly.

- $23.3 billion of equity was issued from 49 offerings in the first three quarters.
- This compares to $15.7 billion of equity issued for the entire year of 2017 from 93 equity offerings.
- The pace of the number of IPOs slowed dramatically in the first three quarters with only 12 IPOs completed worth $2.0 billion.
- This compares to 46 IPOs and $4.3 billion for all of last year.
- In 2016 and 2017, Asian companies issuing in the Asian public markets dominated both the IPO and secondary offering markets.
- In the first three quarters of 2018, Asian companies continued to dominate with only one non-Asian IPO completed.
- However, there was a dramatic slowdown in Asian IPOs as the Chinese stock market prices have fallen.

Perspectives and Update on China

ANLA CHENG, FOUNDER & CHIEF EXECUTIVE OFFICER, SUPCHINA

JEREMY GOLDKORN, EDITOR IN CHIEF, SUPCHINA

PETER YOUNG, PRESIDENT AND MANAGING DIRECTOR, YOUNG & PARTNERS

Young: Could you comment on the current economic situation in China?

Cheng: 80% of the growth in GDP this year will come from consumption. Clearly, China has successfully transitioned from being an export-driven society to a consumer-driven society. A significant portion of global growth can be attributed to China's consumer growth.

Young: All the recent data shows manufacturing slowing down. Furthermore, the government is trying to deal with environmental issues creating further impediments to growth. Do you foresee cracks in the economy materializing in the near term?

Goldkorn: Everyone who has bet against the Communist party's management of China's economy over the past 30 years has been wrong. They've proven very adept so I would be hesitant to predict "doom and gloom." However, it is clear that the days of easy growth are over.

Cheng: It is important to remember that although growth has slowed, the base is now much larger than what it was. My anecdotal experience is that Chinese nationals have a more positive view about the economy than their Western counterparts. While national debt has been as much as 43% of GDP, the government has made it a priority to clamp down.

Young: Do you think that the Chinese government will address the issues around intellectual property protection for Western companies doing business in China?

Goldkorn: The escalation of the trade war has made it very difficult for the Chinese government to compromise on any of the issues without losing face. Furthermore, I don't believe that the anti-China forces in the United States are particularly open to compromise.

Cheng: Mike Pence's speech on October 5th at the Hudson Institute warned of a tougher approach to Beijing. On the other hand, as gauges on the strength of the US economy begin to turn, President Trump may feel pressured to soften his hard line stance.

Young: There is some question as to how effective a weapon tariffs really are. While they do certainly hurt the Chinese economy, the effects are felt in the US as well.

Goldkorn: Separately, there are a number of other geopolitical issues affecting US-China relations other than trade. China's activities in the South China Sea have created a lot of tension. The "Made in China 2025" plan to reduce China's dependence on foreign technologies has stirred significant negative sentiment.

Young: Is China going to be able to pivot away from being a low-cost manufacturing hub?

Cheng: China's GDP per capital is ranked 72nd in the world. They have ~7 million STEM graduates each year vs 500 thousand in the United States. China ruled the 13th century and as far as the Chinese are concerned. They feel they are simply reverting back to that dynamic.

Goldkorn: "Made in China 2025" is explicitly designed to help China avoid the middle income trap. There are already signs for the service and tech industries indicating an ability to do this. Service industries empowered by internet companies are a major economic force whereas 30 years ago, there was no service industry. It is widely acknowledged in the tech industry that Chinese engineers are innovating.

Young: Do you think China's potential ousting of the US as the largest economy in the world might result in military confrontation?

Goldkorn: There are a number of worrying incidents going on regularly in the South China Sea that, given current tensions, could escalate. However, I still think it is unlikely as I do not think it is inevitability that China will surpass the US given growing domestic discontent.

Young: Does China's shift from domestic stability and international frailty to domestic instability and international aggression bode ill for US-China relations?

Goldkorn: Xi Jinping has set as his goal the great rejuvenation of the Chinese nation. Part of that plan is bringing Taiwan back into the fold. This will be where the Chinese government will be most tempted to flex its international stature to achieve its goal.

Cheng: The majority of the executives I interact with do not feel repressed at all. They are occupied with capitalist pursuits and stay away from politics.

Young: Private business owners (beyond technology companies) in my experience are very unhappy. Taxes have increased significantly and the government is favoring state-owned enterprises. Private businesses are crying foul as they are much better creators of economic value that state-owned enterprises. However, the Chinese government wants to exercise an increasing level of control. Clearly the tensions along these dimensions will be increasing.

The Chemical Industry Outlook

PETER YOUNG

PRESIDENT AND MANAGING DIRECTOR
YOUNG & PARTNERS

The State of the Global Economy

- The U.S. economy is currently performing well due to underlying factors, an increase in government spending and the tax cut at the end of last year. The growth of the economy has been strong and unemployment has been low.
- Although growth of the global economies overall has been positive, the IMF has revised its global growth projections downward due to challenges in the emerging market economies, some weakness in selected European countries (Italy) and the threat of Brexit, and clear evidence that the Chinese economic growth is slowing.
- Some of the negative trends have been structural. Others have been driven by higher interest rates, a stronger U.S. dollar, and the impact of the trade tariffs that have been imposed and that may be imposed in the future.
- The trade related impact will vary depending on each global economy and on how each individual company operates in different countries and with global supply chains.
- The price of oil increased earlier this year due to increases in demand and some cut-backs in production among the OPEC and non-OPEC countries and instability in the Middle East. But weaker economic growth, high production rates among OPEC and other countries and the continuing increase in shale production in the U.S. has caused oil prices to fall dramatically.
- China is clearly struggling to prevent a softening of its economy from the trade dispute with the U.S., any bursting of their real estate bubble and the impact of their highly leveraged economy.
- Lastly, we have had a very long period since the last recession and it is unlikely that we will avoid a recession in the next few years.
- In summary, we are facing a period of significant uncertainty and global geopolitical stress that could be disruptive in various parts of the global economy, including the chemical industry.

M&A Outlook for 2019

- Separate from one or two mega deals, the dollar volume and number of deals has been declining for the last two years and will continue to decline in 2019.
- Although there are strategic buyers who want to add synergistic businesses, particularly in specialties, there are other forces that are pushed M&A volume the other direction. Many uncertainties face the industry that impact M&A: slowing economies worldwide, difficulties in the very large Chinese economy, higher interest rates, the slumping stock market, the unknown trajectory of the U.S/China trade disputes and tariffs, and the high levels of geopolitical strife are all factors that will drive a slower M&A market and, potentially, a severe downturn in activity and valuations.
- There is still a window to sell at solid valuations for certain assets, but that window will not stay open for all of 2019
- Of course, in the unlikely case that there is a dramatic deterioration in the global economic/financial environment from increased trade tariffs/restrictions or otherwise; or a geopolitical/military disruption, our predictions will be severely affected.

The Chemical Industry Outlook

JOSEPH CHANG

GLOBAL EDITOR
ICIS CHEMICAL BUSINESS

Over the past twelve months the Global Manufacturing Purchasing Managers Indices show the US staying strong, Europe slowing down and China continuing to lag. The global economic upswing has become much less synchronized with emerging markets particularly weak.

The US maintains a net trade surplus in chemicals with Mexico accounting for almost two thirds of that. Round 2 of US-China tariffs impacted ~$2.0 billion of US chemical exports and ~$2.2 billion of China chemical exports. Round 3 ratchets that impact up drastically.

There is a large amount of polyethylene capacity projected to come online through 2022, almost all of which is for export markets. The trade war puts the feasibility of all of these projects in question.

Both the Abu Dhabi National Oil Company and Saudi Aramco have made huge organic investments going downstream in petrochemicals. These companies recognize the long term threat from electric vehicles curtailing fuel demand. As such, it's going to be chemical demand driving hydrocarbon growth and these companies want to "stretch the value from the barrel of oil." Traditional chemical companies are retreating from mega cracker projects.

There is also a growing environmental concern about plastic waste. There is significant Polyethylene and Polypropylene demand at risk from curtailed consumption of single-use packaging items. More than 60 countries have put bans, restrictions or charges on single-use plastics.

The Chemical Industry Outlook

ROB WESTERVELT

EDITOR IN CHIEF
IHS CHEMICAL WEEK

IHS Markit is projecting 3.1% Real Global GDP growth for 2019 as global growth is expected to slow as a result of trade disputes and policy uncertainty. However, US chemical output is projected to rise 4.8% due to the availability of low-cost shale gas. The chemical industry is still in a sustained earnings cycle.

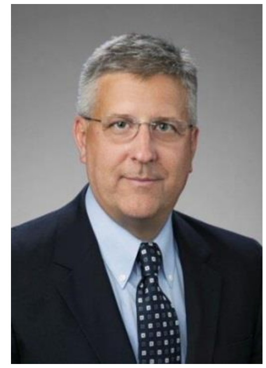
US economic expansion will continue with stable natural gas prices favored over volatile crude oil prices.

Public concern has passed the tipping point ("Attenborough effect") with regard to plastics. There is elevation risk of emotional rather than rational response. Broader outlines of response to this concern should emerge in 2019. Slowdown for commodity plastics demand must now be considered in long term forecasting.

European economic sentiment has fallen. While growth has peaked, there is still investment needed to meet demand.

Growth in China has slowed down but the base has become massive. There is significant capital cost and capital execution advantage to building in China instead of the US Gulf Coast. According to BASF, two-thirds of absolute chemical industry growth between 2017 and 2030 will come from China.

The Global Chemical Industry: Geopolitical, Market and Supply Insights



STEVE LEWANDOWSKI

VICE PRESIDENT, OLEFINS
IHS MARKIT LTD.

The recent drop in crude oil prices were driven by slowing economic growth in China, global supply growth outpacing demand growth and Saudi Arabia choosing not to cut production. There is no shortage of geopolitical risks to oil supplies including Iran Sanctions, Russian Sanctions, Venezuelan production and Latin American elections.

Our economists evaluated a number of protectionist scenarios and their impact on world GDP growth. All of the scenarios show weaker world GDP growth, with the US protectionism targeting Canada and Mexico scenario as particularly negative.

Sustainability in plastics has two problems: collection/containment and processing. The onus of collection is on the countries generating the waste. Burning is an option with some promise, but there are concerns about emissions that carbon sequestration technology may be able to solve. We know mechanical recycling is so expensive that China, even with its low labor costs, is no longer importing plastics for recycle.

We are on the cusp of a mobility revolution which threatens the future of oil in transportation. Fuel economy standards are actually projected to have a greater impact on oil demand than actual electric vehicle penetration. Other transportation segments are also ripe for disruption and refiners are now seeing peak demand on the horizon, followed by a long term decline.

We see the volume of crude and NGL's going to chemicals increasing by over 75% through 2040. To avoid being marginalized, refineries need to enhance competitiveness by integrating into petrochemicals.

There are technologies being developed that take crude to chemicals bypassing the refinery. These new technologies and new configurations will vastly increase the amount of chemicals that can be produced from oil.