



Chlor-alkali gives window on outlook

The world's markets for chlor-alkali and PVC typify the already high and still rising levels of uncertainty that continue to surround the global economy

PAUL HODGES INTERNATIONAL E-CHEM

Essential components of the chemical industry's portfolio for more than a century, chlorine and caustic soda provide a valuable source of insight into the chemical market's present and future.

There are two reasons for this. First, chlorine is primarily an early-cycle product, with major sales via polyvinyl chloride (PVC) into housing and other consumer-based industries. While, second, caustic soda is more of a late-cycle product because of its employment in

mining applications that boom as infrastructure demand picks up.

PVC is interesting in its own right. Being a link between the chlor-alkali chain and petrochemicals, it serves a dual role from a producers' viewpoint. PVC can boom if housing markets are strong, as it has, until recently, in China. It can also act as a "sink" for co-produced chlorine when caustic soda is strong.

To properly interpret the chlor-alkali marketplace, one must understand the economics involved: in contrast to petrochemical production, it is impossible to vary the output

ratio between chlorine and caustic soda. Given that the markets for chlorine and caustic soda are often at different stages of the life-cycle, producers have learned to optimize their profitability by combining the value of both products in the form of the electrochemical unit (ECU).

INVALUABLE ROLE

When chlorine is strong, producers will be prepared to move caustic soda, even at times when its price is weak. The reverse scenario, in which chlorine is weak and caustic strong, can also occur, as it has recently. However, the situation is complicated by the need to "sink" chlorine, which cannot be safely stored in large quantities.

PVC consequently plays an invaluable role for producers closely integrated between the chlor-alkali and petrochemical chains.

Producers have relied heavily on this flexibility in recent years. Those in the US have had to be particularly inventive, as the core domestic market for chlorine – housing construction – has collapsed since 2006. Housing starts peaked that year at 2.2m, but have since fallen to only 700,000, their lowest level since records began in 1959.

China's massive lending and stimulus program... came to the rescue in 2009–2010

China's massive lending and stimulus program, which boosted investments in infrastructure and residential building, came to the rescue in 2009–2010. As the chart on the next page shows, it enabled the US to boost net caustic soda exports by 72% between 2009 and 2011, from 1.5m tonnes to 2.7m tonnes, as mining markets in Brazil and elsewhere boomed in response to China's needs. Without a sink for chlorine, the US would have been unable to achieve these exports.

MAJOR OPPORTUNITY

But China's housing boom, coupled with the arrival of cheap ethane from shale gas, created another major opportunity for the US, as the second chart shows. The US was able to quadruple its PVC exports to China from 77,000 tonnes in 2008 to 327,000 tonnes in 2009 and to maintain them at similar levels in 2010–2011. The US also took the opportunity to boost PVC exports to markets traditionally served by EU producers, such as Russia, Turkey and the Middle East.

Today, around 40% of US PVC production is being exported, a record. Other producers, particularly those in Europe, have not been passive, however. Greater use of ethane in the US has boosted co-product values for propyl-

ene and butadiene, allowing European and Asian petrochemical producers to achieve healthy profitability. They have also benefited from the strong caustic demand caused by China's boom.

Thus EU producers have also been able to compensate for a slower domestic housing market since 2009 by boosting their own PVC exports. Between 2009 and 2011, these exports jumped 50% from 637,000 tonnes to 954,000 tonnes. Exports to China fell back to low levels after a one-off jump in 2009, but the EU was able to fight back quite successfully against US competition in markets such as Russia and Turkey. Thus China's 2009–2011 boom "rescued" chlor-alkali/PVC producers in all major regions. It was a rising tide that floated all boats.

EXPORT VOLUMES

The key question, of course, is what happens next? Can the US increase its export volumes still further, to accommodate additional ethylene production from ethane extracted from shale gas? Will co-product values for propylene and butadiene allow European and Asian producers to remain competitive with the US in export markets? Most importantly of all, will the Chinese economy continue to boom? Or will domestic markets in the West now start to recover?

Nobody knows the answers to these questions. On one side stand the optimists, who maintain that everything is for the best in this best of all possible worlds. They see demand and profitability on a steadily rising trend until at least 2016, as Western economies stage a measured recovery and China maintains steady, if slower, growth.

On the other side are the pessimists, who have diametrically-opposed views. They point to signs that China's lending boom has in fact been a credit "bubble" on an even larger scale than in the US, with its sub-prime bubble. They worry that rising debt levels in the West will cut short any recovery before it reaches take-off speed.

In the middle are the hopefuls. They see strengths in both arguments, and are, frankly, confused about which may eventually prove to be correct. They are also concerned that such opposite views are possible, after a 25 year supercycle between 1982–2007, when the global economy hardly paused for breath. They therefore hope that we are returning, somehow, to the old normal when growth seemed more assured.

PVC markets therefore typify the rising levels of uncertainty that are confronting all of us at the moment.

We are also uncomfortably aware that our policy makers seem unusually at a loss with regard to the right options for the future. Some are arguing for more tax cuts and others for

more austerity, while yet others are demanding increased stimulus spending.

Equally, the impact of today's high level of oil prices presents another threat to growth. Currently costing more than 5% of global GDP, they are at levels that have always led to recession in the past.

In Europe, the euro's weakness means they have recently been higher than in 2008. Retail prices for diesel and gasoline have also been

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higher in China because the subsidies introduced to prevent social unrest during the Beijing Olympics have not been repeated.

In these circumstances, it becomes very risky to assume only one potential outcome is possible. If we cannot know what might happen next, then we need to revive the art of Scenario planning. This was pioneered dur-

ing the more uncertain world of the 1960s and 1970s, by companies such as ICI and Shell. It involved identifying the major alternatives in advance, and then planning ahead as to how the company might respond if they occurred.

CONSTANT GROWTH

This was quite different from the more tactical type of planning which evolved from the 1980s onwards. Planners then came to assume that growth was more or less constant, and that wise and all-seeing policy makers would ensure that any hiccups along the way were quickly resolved. Thus confidence remained strong even when downturns did occur, and helped to ensure they remained only minor on a global scale.

Developments in the chlor-alkali and PVC chain are thus helpfully highlighting the key strategic challenges. Scenario planning, based on real and quite different options, is no longer a "nice-to-have" option. It is fast becoming essential for any company that wants to survive the likely challenges ahead and to profit from the new opportunities that will develop. ■

Paul Hodges writes online about the chemicals industry for ICIS at icis.com/blogs/chemicals-and-the-economy/

