



## A Pause in Ethanol Contribution to US Energy Independence

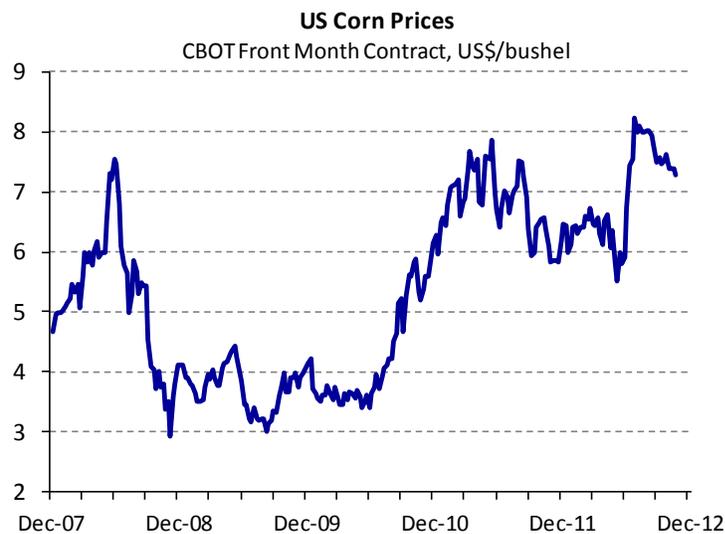
**Ethanol production and gasoline blending also part of energy independence**

Almost forgotten amidst the current excitement over rising US tight oil production, a critical US policy instrument towards US energy independence has been the promotion of ethanol blended gasoline. In late 2007, the *Energy Independence and Security Act* (EISA 2007) included provisions for rising annual average ethanol blending volumes derived from corn, as well as next-generation feed sources. Since 2007, the volume of ethanol blended into US gasoline production has jumped by 121%, to a year-to-date average 826 kbpd. Domestic ethanol output has stalled this year, however, as the severe US drought drove corn prices sharply higher, punishing the margins from ethanol production. This drop in supply has reversed the country's net export position in ethanol, prompting a rise in ethanol imports.

**Worst drought five decades...**

This year, the worst US drought in five decades has shrivelled crops, forced livestock producers to cull their herds and sent the price of corn soaring to \$8/bushel, as shown in the chart below.

**...sent corn prices soaring**



Sources: CBOT/CME, Bloomberg

**40% of US corn crop goes into ethanol**

As late as June 2012, the USDA had reported that 66% of the US corn crop was rated good or excellent, but after a month of searing heat, this proportion had fallen to only 26%, with 2012/13 crop year production estimates crashing from 13 billion bushels to only 10.7 bushels. Roughly 40% of the annual US corn crop has fed into ethanol

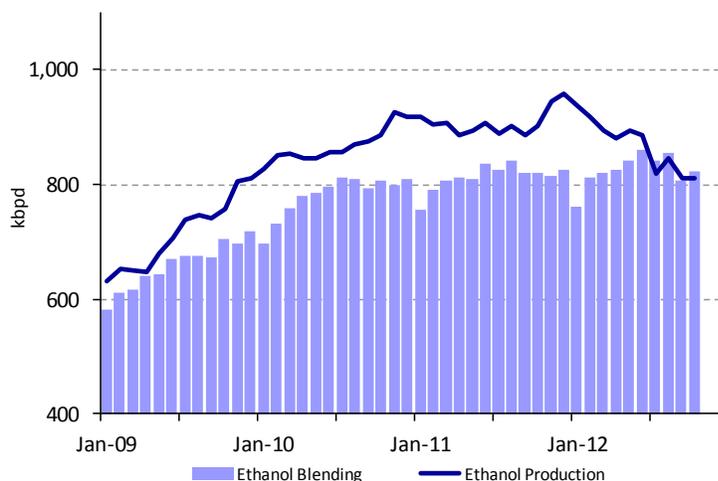
production, with an estimated 4.9 billion bushels consumed in 2011. As a major cost component for ethanol, the sharp price jump pressured ethanol production margins, as the price of ethanol rose, but failed to keep pace with rising corn costs.

Faced with negative ethanol margins, producers began to shut down ethanol plants this summer and autumn. As shown in the chart below, ethanol production had jumped as high as 959 kbpd in late-2011, in response to higher gasoline blender demand, ahead of expiring tax credits. Ethanol margins fell in early-2012 from the surge in supply, but competitive global pricing supported production during 1h12, until the drought arrived and punished margins. Since then, US ethanol output has slid to 810 kbpd in October, a 10.2% decline from 1h12 levels of 902 kbpd.

**Poor ethanol margins forced ethanol plant shutdowns**

**US Ethanol production declining to demand levels**

US Ethanol Production & Blending Input



Source: EIA

**Ethanol production to stabilise due to 2012 mandate for 861 kbpd**

**Ethanol blending into gasoline has hit 10% blend wall**

Ethanol production should stabilise during 4q12 and even tick slightly higher, as the second Renewable Fuel Standard (RFS2) enacted with EISA 2007 calls for a mandatory 13.2 billion gallons of ethanol production during 2012, or 861 kbpd. Earlier this month, the US EPA refused requests to waive the RFS2 mandate, arguing that it did not cause undue economic harm, despite steep competition for depleted U.S. grain supplies.

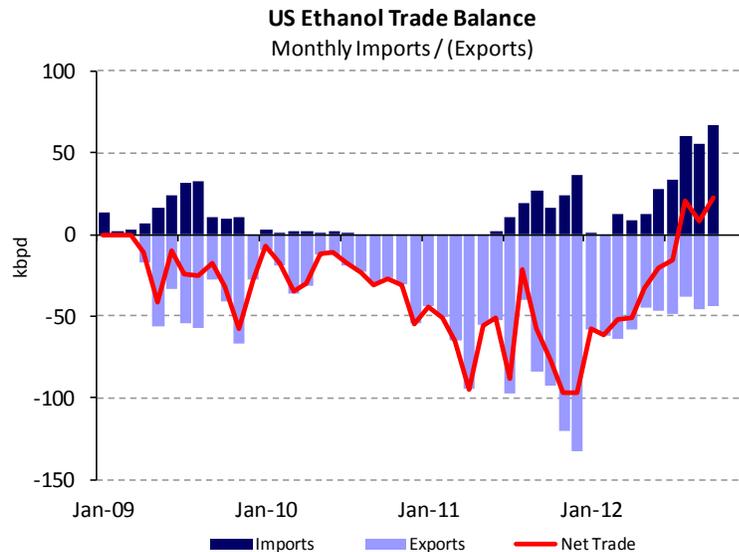
The chart above also highlights the surplus position in US ethanol that prevailed until this summer, as mandated supply outpaced the amount of ethanol actually blended into gasoline supply. This volume of ethanol blending has levelled off just above 800 kbpd, as producers have hit the ethanol “blend wall”, in which almost all gasoline in the US is already blended with 10% ethanol (E10), the maximum level approved for use in all cars and light trucks. Although the EPA has approved use of a 15% ethanol blend (E15) for model year 2001 and newer cars and light trucks, misfueling concerns and infrastructure costs will continue to limit E15 consumption in the near term.

With domestic ethanol production exceeding gasoline blending requirements, the US had developed a strong external position in ethanol during 2009-11, as imports virtually

**Excess ethanol output supported strong export position, but...**

disappeared and as exports expanded rapidly. As shown in the chart below, US net exports of ethanol approached 100 kbpd during 4q11, when production surged, but returned to earlier levels near 50 kbpd during 1q12 as output subsided. The US ethanol trade balance reversed suddenly during the remainder of 2012, as production declined and as ethanol blending rose on improving gasoline demand. The US finally became a net ethanol importer in August 2012, when imports jumped to 60 kbpd and imports fell to 39 kbpd.

**...US now net ethanol importer**



Sources: EIA, Poten

**Brazil was major importer of US ethanol in 2011**

Brazil has remained a key element of the US ethanol trade balance and reflects the swing in trade position. During the record export volumes of 2011, Brazil was the main recipient, as its ethanol output fell by 18% year-over-year in 2011, due to a poor sugarcane harvest. From average US ethanol export volumes of 78 kbpd during 2011, Brazil comprised a third of this, with 26 kbpd. Other major ethanol importers included Canada, the Netherlands, the UK and Peru. With lower local ethanol blending requirements and recovering sugarcane production, Brazil has reduced its imports of US ethanol to 8 kbpd during 2012 ytd.

**Now major supplier, with tariff expiration**

Meanwhile, Brazil has become the dominant supplier of ethanol in 2012, following changes in US ethanol tax credits and tariffs. On December 31, 2011, the Volumetric Ethanol Excise Tax Credit (VEETC) of \$0.45 per gallon of ethanol blended with gasoline expired, as did the \$0.54/gallon tariff on imports of fuel ethanol. This duty was intended to offset the benefit of VEETC ethanol blending credit and maintain the credit for domestic ethanol producers only.

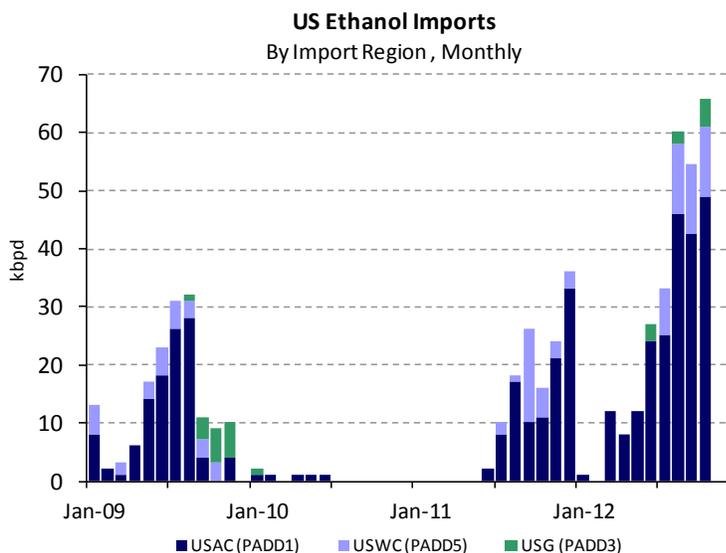
This tariff structure also effectively blocked imports of Brazilian ethanol, but once expired, Brazilian ethanol has flowed into the US. Of the 19 kbpd of US ethanol imports during 2012 through August, Brazilian material has represented 89%, or 17 kbpd. This

follows only 7 kbpd of Brazilian imports during 2011, much of it destined to PADD5, encouraged by the California Low Carbon Fuel Standard (LCFS), which favours sugarcane ethanol.

Now, Brazilian ethanol exports are directed towards the USAC. PADD1 is effectively a gasoline blending centre, with refinery production representing only 16% of product supplied. With declining PADD2 ethanol output and transfers into PADD1, the region has been forced import additional material. As shown in the chart below, PADD1 ethanol imports have represented 82% of overall US imports during 2012 to date, with 22 kbpd.

**As gasoline blending centre, PADD1 is major importer of ethanol**

**PADD1 ethanol imports have surged with declining transfers from PADD2**



Source: EIA

**Brazil is key PADD1 supplier**

Brazil has emerged as a key supplier to this market, providing 92% of PADD1 ethanol imports during 2012 to date. This share has jumped from 57% during 2011, but this may reflect Caribbean trans-shipment of Brazilian ethanol prior to the tariff expiration, under the Caribbean Basin Initiative.

**Ethanol imports are modest but providing a tonne-mile boost**

Although these volumes are a fraction of the 600 kbpd of gasoline blending component imports flowing into PADD1, the jump in ethanol imports and tonne-miles from Brazil are providing a modest boost to tanker demand. If high corn prices and weak ethanol margins continue to pressure domestic ethanol production, any recovery in gasoline demand and ethanol blending potential could keep the US and PADD1 in a net importer position for the near term, a head of any future E15 adoption.

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