

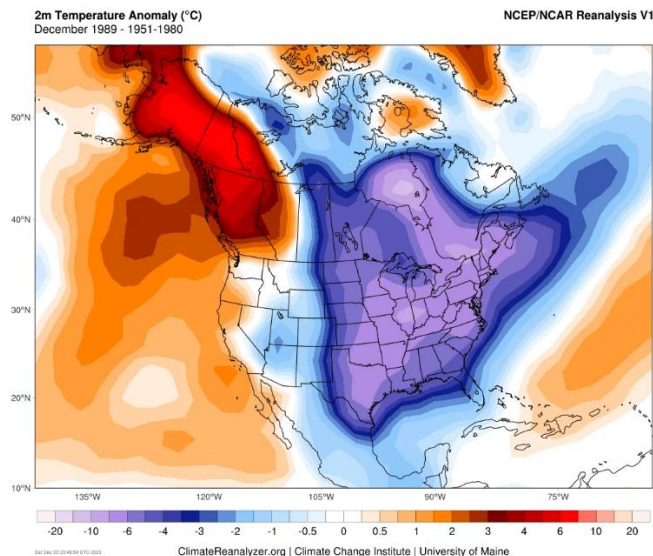
Heating Oil Price Shock

December 1989 Case Study

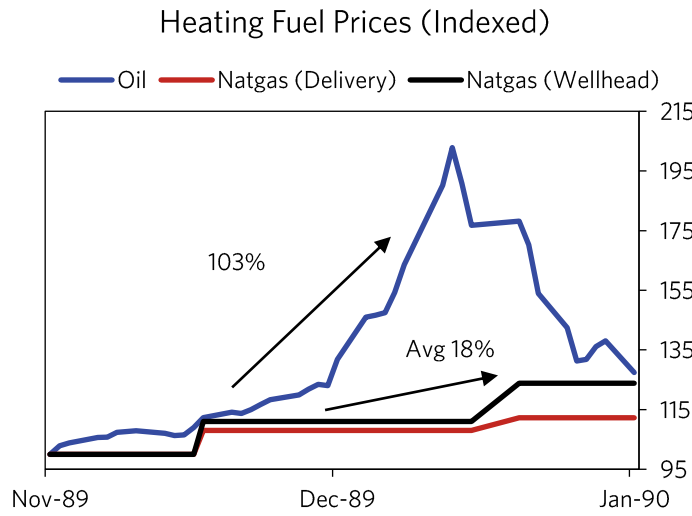
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By: Will Infante

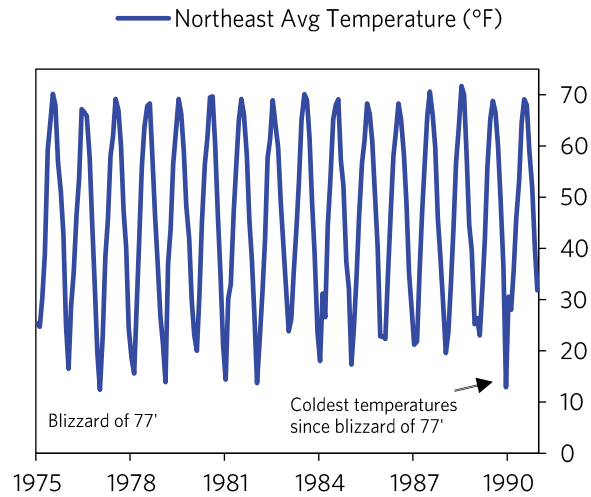
- Following warmer winters in the 80s, December 1989 featured **cold temperatures not seen since the late 70s and early 80s** throughout the US, with the Northeast facing the coldest December on record.
- **Prices of heating oil and natural gas rose roughly 100% and 20%,** respectively, reflecting increases in demand for heating oil in Europe and the Northeast, and for natural gas in other parts of the US after the onset of the cold.
- The differential increase in the two reflects there being **relatively less supply of heating oil** as opposed to gas before the demand shock. The natural gas market was in a 'supply bubble' during the 1980s and was prepared to meet large demand increases.
- This case study will dig into what exactly happened and suggest indicators that could be used as a part of semi-systematic trading models.



The bitter cold that struck North America in December of 1989 triggered rises in the prices of heating oil and natural gas, both major home heating sources. The cold brought much bigger increases in prices for heating oil than other fuels. In the Northeast in 1989, 38% of households used heating oil and 44% used natural gas. This paper will not focus on natural gas as price increases were subdued due to the supply bubble.

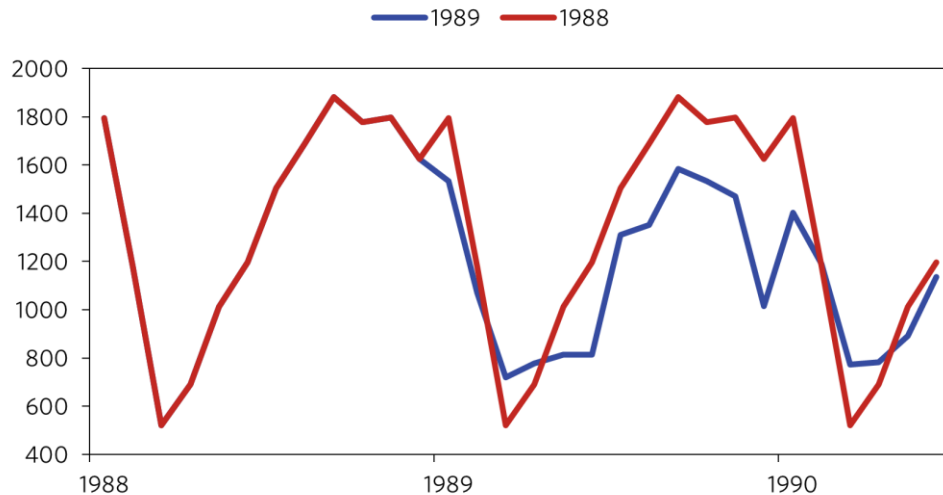


Source: EIA, FRED



Source: NCEI via timestelegram.com

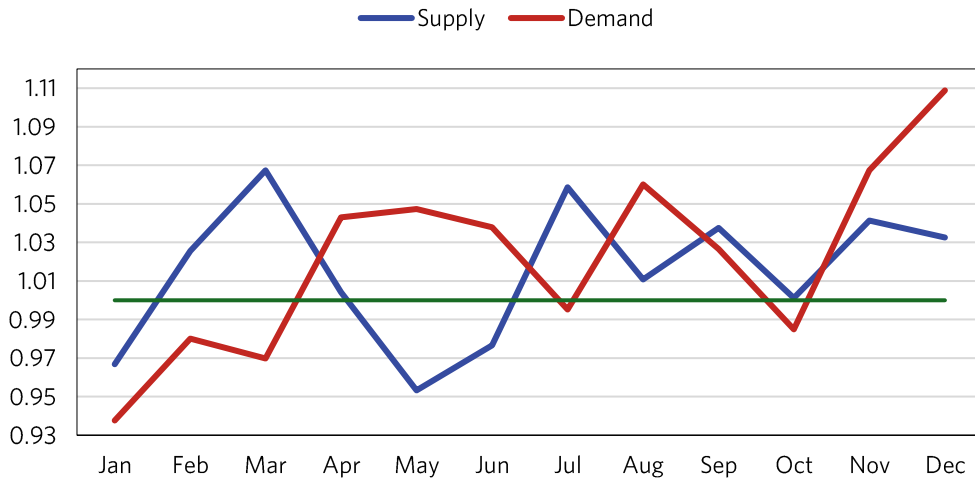
Heating Oil Stocks (Index)



Source: OTSI.GOV Petroleum Supply Monthly 1988, 1989

The first piece of data that comes to mind to look at for this is stocks of distillate fuel oil (heating oil). In 1989, stocks did not build up to the levels that had been reached in the previous year. The cause of this was that demand was greater than supply for the period, putting downward pressure on stocks.

Differences in HO Supply and Demand 1988-1989



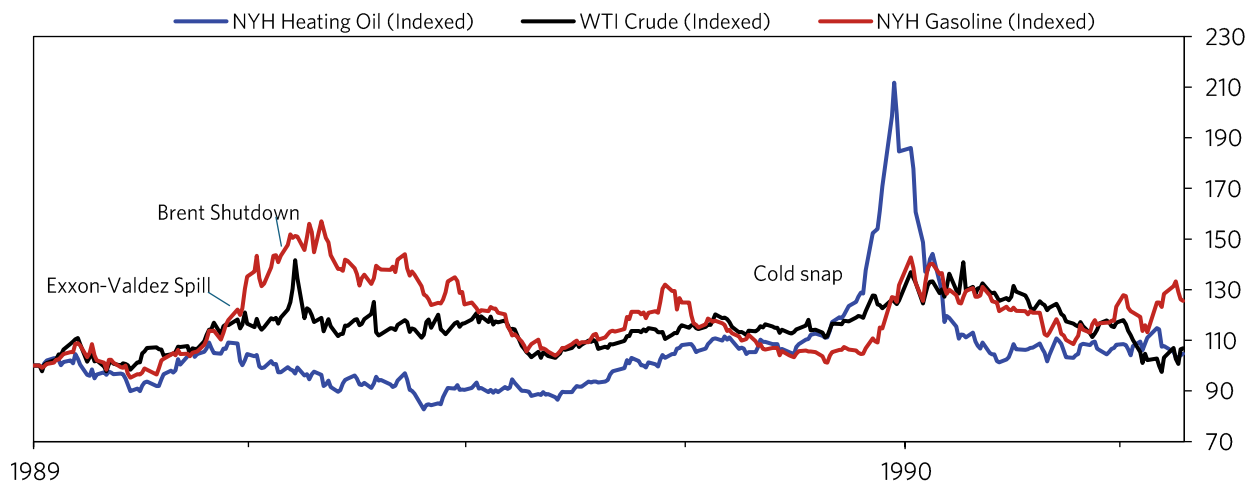
**Ex: Supply(89) divided by Supply(88) to see how much greater/less demand or supply is from the previous year

Source: OTSI.GOV Petroleum Supply Monthly 1988, 1989

Both supply and demand were on average higher than the previous year, but demand was on average slightly higher than supply, causing stocks to not reach the levels they had in 1988. One contributing factor to this dynamic was the Exxon-Valdez oil spill which occurred on March 24, 1989.

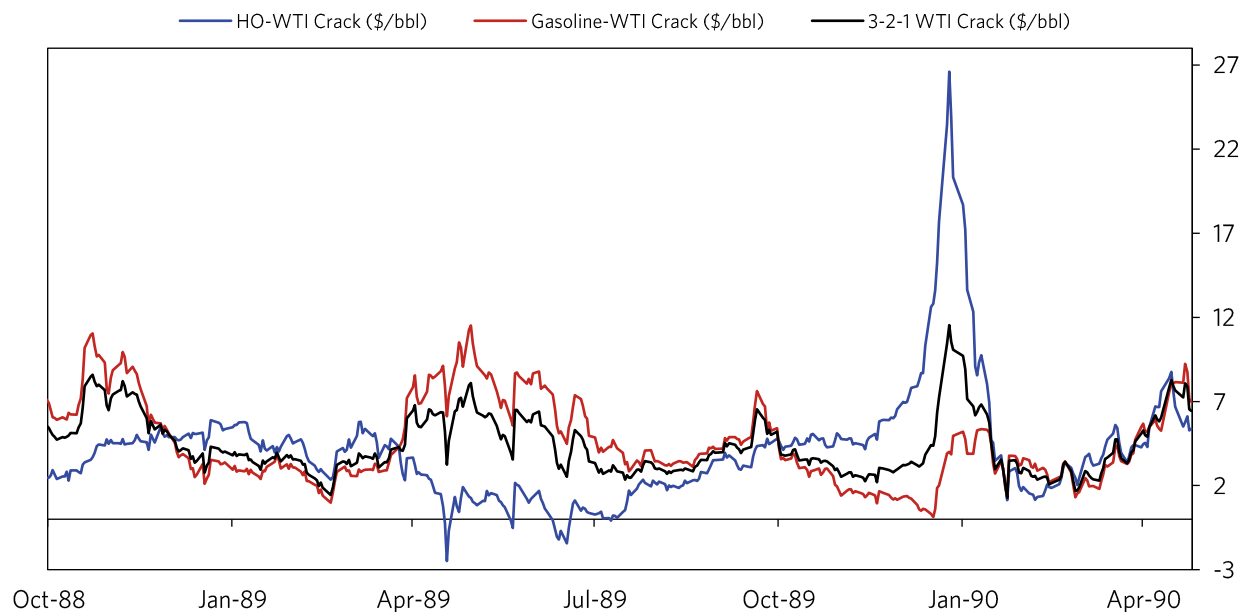
The prices of WTI crude, heating oil, and gasoline had moved in lockstep up until this event, whereupon the prices of heating oil and gasoline began to diverge with the latter going much higher and the former going lower. Aside from the fact that the supply of crude had decreased, one issue was that the spill was triggering panic buying of gasoline by wholesalers (especially on the West Coast). This tightness would be spread around as arbiters took advantage of east-west coast price differences.

Also contributing to higher prices of gasoline was the partial shutdown of the Brent system which occurred on April 18. This amounted to a loss of 17% of daily production. Many refineries depended on this system, whose product is light and yields more gasoline than some of its heavier counterparts in the Middle East. These refineries began to switch to higher-cost alternatives to produce gasoline.



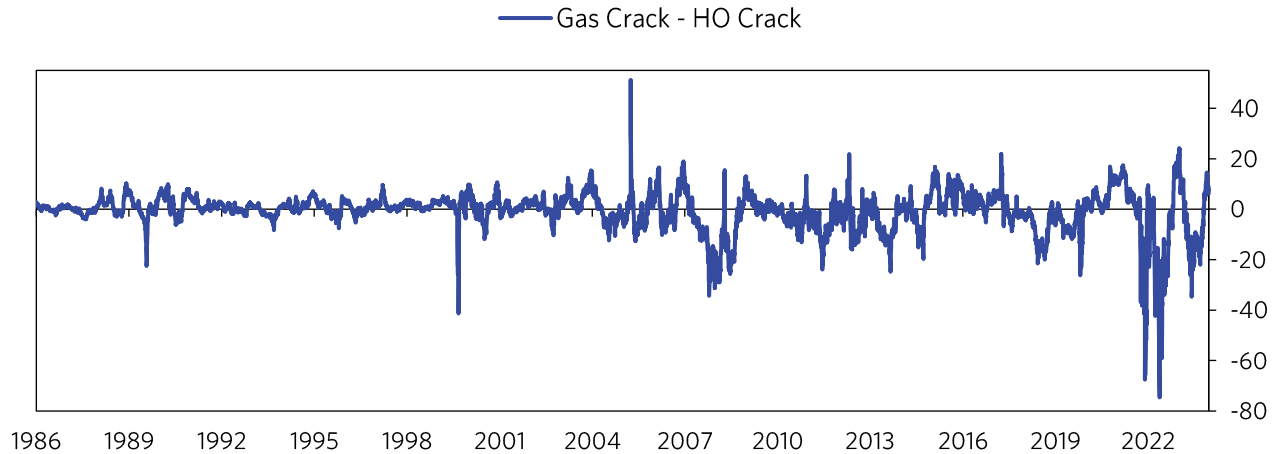
Source: Federal Reserve Bank of St. Louis

The combination of these factors pushed gasoline prices higher as heating oil prices naturally fell due to seasonally lower demand (the latter would be offset by a lower supply of oil for now). Subsequently, the 'crack' spread (profitability of different crude products) on gasoline rose while the heating oil crack went negative. These altered incentives led refineries to produce as much gasoline as possible from crude oil, whilst producing less heating oil. This was especially evident in May, as heating oil crack spreads went negative. This was also confirmed by the data on the previous page showing decreased supply for May.



As late November 1989 came around, winter hit Europe and began demanding heating oil left and right. Tankers of oil destined for the East Coast stayed across the Atlantic, driving up prices in the US, especially as the cold hit America. While the European cold receded by mid-December, at around the same time the cold snap began to hit America (including the southern states such as Florida which had a white Christmas). Demand was 'double' than normal for heating oil, according to John Lord of Mobil in a December 1989 editorial in the NY Times. **With less stock of heating oil to absorb this, prices skyrocketed.**

Another factor to take note of, which was mentioned in federal reports about the heating oil price surge, was that distribution networks simply couldn't keep up with the fast pace of demand. Some dealers had not stocked up on as much heating oil due to the previous winter being warmer than usual. The magnitude of price increases had something to do with smaller dealers not getting enough oil, something that wouldn't be reflected in stock data.



The cracks spreads can be used as trading signals. One indicator that can be useful is the difference between the gasoline and heating oil cracks. This indicator showed appreciable differences between the two during May and December 1989, times when more gasoline and heating oil were being produced, respectively. These indicators show the incentives of refiners of what products to produce, which can be leading indicators of future developments. Watching indicators such as the above, or even implementing them into trading models, can provide profit opportunities in oil and its derivatives. High or low spreads, along with the rate at which they changed to those levels could be potentially valuable signals in a systematic trading model.