

Econometric Forecasters Profit by Watching the Weather

Economic forecasting is frequently compared, sometimes derisively so, to weather forecasting. Both economic and meteorological forecasts share the reputation of being stubbornly difficult to perform accurately, even though both types of forecasting often employ rather complex mathematical models and statistical methods. You might be surprised to learn, however, that econometric forecasters of some types of commodities find it quite profitable to include weather forecast information in their demand and supply forecasting models. Commodity trading firms—financial service companies that specialize in buying and selling legal contracts for future delivery of commodities such as electricity, natural gas, heating oil, crude oil, coal, wheat, corn, and some precious metals—have long recognized that large profits can be made by correctly forecasting changes in the prices of commodities that other market forecasters failed to predict. In the high-stakes business of commodity price forecasting, weather forecasts can play a crucial role in two important categories of weather-sensitive commodities: agricultural and energy products. For this reason, meteorologists are now indispensable members of econometric forecasting teams for agricultural and energy commodities.

Recall from our discussion of econometric forecasting that price and quantity forecasts are made by finding the intersection of empirical demand and supply equations at future points in time. Meteorological forecasts of rainfall, temperature, and destructive weather phenomena (such as flooding, drought, tornado, and hurricane activity) can greatly improve the accuracy of supply equations in agricultural forecasting models. For energy commodities such as electricity, natural gas, and home heating oil, econometric forecasters know that they cannot accurately forecast energy demand (and hence energy prices) without including in demand equations weather forecasts of average temperatures in upcoming months. Of course, the accuracy of econometric forecasts improves only when the weather forecasts turn out to be correct. Unfortunately, weather forecasting remains an inexact science. While short-term weather forecasts are pretty accurate, forecasts

beyond the next two weeks are still considered to be quite risky. As you know from our discussion of econometric forecasting, the accuracy of future price and quantity forecasts crucially depends on accurately determining the future values of the exogenous variables—weather is an exogenous variable, of course—which are substituted into estimated demand and supply equations to compute future prices and quantities.

Despite the criticism and jokes, meteorologists' forecasts are good enough to generate a high demand for weather forecasters by commodity trading firms and electric utilities. A recent article in *The Wall Street Journal* reported that "deep-pocketed trading companies are offering many meteorologists with graduate degrees salaries ranging from \$60,000 to \$90,000 (and) performance and trading bonuses can double or even triple the figure."^a In 1985, Salomon Smith Barney hired its first meteorologist to begin providing its agricultural traders with weather forecasts. Energy trading firms and electric utilities have also discovered the value of weathermen and -women. Before it collapsed, the giant energy-trading firm Enron Corp. employed nine weather forecasters. Other trading firms and utilities, such as Duke Energy Corp. and Aquila, Inc. (a trading subsidiary of a big midwestern utility), are continuing to add meteorologists to their forecasting teams.

Apparently then, if you want to know whether a hard freeze is going to occur in Florida next week, you do not need to wait for the Weather Channel to televise its forecast; just watch what happens to the prices of orange juice concentrate or electricity in the commodity futures markets! With some of the best and brightest meteorologists working for them, commodity forecasting firms will act immediately on their own forecasts of a freeze and begin buying orange juice and electricity contracts at prices lower than will exist once other commodity and energy traders discover a hard freeze is about to hit Florida.

^aChip Cummins, "Meteorologists Find Job Offers Coming from Unlikely Places," *The Wall Street Journal*, March 8, 2001, p. 1.