Using Other Products to Hedge

In the above example, the product for the spot and the futures market were the same. However, the two products do not have to be the same to use one to hedge the other, only their prices need be correlated. To see why, lets use a rather contrived example. Suppose that you are long crude on an agricultural based planet called Agricentauri (AC). There is no forward market in crude, but there is a forward market in turnips. The turnip is the most important crop on this planet. It is the favorite food and its leaves can be eaten or used for clothing or building materials. Through bioengineering AC turnips are huge. Crude oil is an important input into turnip production, conversion, and transportation and it turns out that turnip spot prices (T_t) are perfectly correlated with crude oil spot prices (S_t), where $C_t = 3T_t$. Currently, crude oil is selling at $S_t = \$30$ and turnips are selling at $T_t = \$10$ per turnip. The futures price of turnips is $T_t^T = \$10$. You are long a barrel of crude and you short 3 turnip contracts. Now lets do the same analysis as above for three different spot prices for turnips at $T_T = 9, 10, 11$.

Table 15.5 Gains and Losses in the Spot and Forward Market for Product and Price Correlated Different Product

T_T	S_T	$S_T - S_t$ Spot Crude Market	$3(T_t^T - T_T)$ Turnip Forward market	Combined Market
$9	$27	-$3	$3	$0
$10	$30	$0	$0	$0
$11	$33	$3	-$3	$0

Again what you made or lost in the spot market is just offset by what you lost or made in the futures market. Your mean net gain in the combined markets is 0 and your mean net variance is zero. Here you can see that you do not need an identical product on the futures market to still be able to hedge. Thus, if you are a Rotterdam refiner that uses Saudi Intermediate instead of W. Texas Intermediate (WTI), you may still be able to use WTI to hedge if Saudi Intermediate and WTI prices are highly correlated.