



China's Strategic Petroleum Reserve: A Drop in the Bucket

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China's very strong economic growth over the past 25 years has fueled a thirst for oil. Although China was a net oil exporter as recently as 1992, by 2002 it was importing 33 percent of the oil it was consuming. In 2005, China imported about 40 percent of its total oil needs, which was more than 7 million barrels per day (bpd); this level of consumption is second only to that of the United States, which consumed 20.7 million bpd in the same year.¹

China's rapidly rising dependence on foreign oil supplies has created anxiety among its leaders about the security of those imports, more than half of which come from the Middle East or West Africa. China's apparently very modest commercial storage capacity probably has contributed to this concern.

In view of these facts, China has followed other nations in establishing strategic oil reserves. China's long-run goal is to store 90 days of net imports, about 400 million barrels at projected future import rates. This would bring them into compliance with the International Energy Agency's (IEA) recommendation for strategic reserves. China's decision to build a strategic reserve has some concerned that these purchases will affect the price of oil, which I discuss here.

Three years ago, China began to build the first of four large aboveground storage facilities, which together will hold 102 million barrels or about a 33-day supply, at current import rates. The first of these, the Zhenhai oil reserve, was finished in September 2006. Analysts believe that one tenth of this first facility was filled with about 3 million barrels of Russian crude oil at the time of its completion. The rest of the aboveground facilities are scheduled to be completed in 2008. These initial facilities will later be supplemented by underground tanks scattered around the country.

As a point of comparison, the U.S. strategic petroleum reserve had 688 million barrels in underground salt caverns as of November 10, 2006. That stockpile provides about a 55-day supply of oil imports at 2005 U.S. rates of consumption.

At least two factors will influence the rate at which China purchases oil for storage. The first is the Chinese government's sensitivity to the price impact of such purchases. The second factor is the price of oil. Other things equal, higher oil prices will probably mean a slower accumulation of reserves.

Analysts estimate that China will purchase oil at a rate of 100,000 bpd.² This means that the first stage of the storage process (102 million barrels in the aboveground facilities) would be finished by the third quarter of 2009.

A back-of-the-envelope supply/demand calculation can estimate the effect of this strategic petroleum reserve on oil prices. Given that China's strategic oil reserve is a long-term project, publicized and anticipated, it seems likely that the increase in oil prices will be determined by long-run elasticities. Studies have estimated the long-run elasticity of demand as -0.05 and the long-run elasticity of supply as 0.08 .³ On November 13, 2006, the price of West Texas intermediate crude was approximately \$58.60. Global oil consumption and production is in the range of 80 million bpd. Shifting the demand curve out by 100,000 bpd would increase total demand by 0.125 percent and the price of a barrel of oil by almost 1 percent, to \$59.16. This increase is modest compared with the 1.6 percent daily standard deviation in recent crude oil prices. Thus, filling China's petroleum reserve will probably have a very modest impact on prices. ■

¹ This calculation uses net imports to China and Hong Kong over total oil consumption.

² This estimate is consistent with estimates of how fast China has chosen to fill the first completed facility. See www.uofaweb.ualberta.ca/chinainstitute/nav03.cfm?nav03=51660&nav02=43610&nav01=43092.

³ See Nouredine Krichene's paper, "World Crude Oil Markets: Monetary Policy and the Recent Oil Shock," International Monetary Fund Working Paper 2006-62, March 2006.