

# Former Soviet Union Oil Production and GDP Decline: Granger Causality and the Multi-Cycle Hubbert Curve

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This paper discusses the transition of the Former Soviet Union (FSU) from a communist country to a set of capitalist and mostly democratic countries. The prevalent explanation of the break-up is that economic inefficiencies and Reagan Administration policies caused a fall in Soviet GDP that subsequently created political discontent and a move toward individual sovereignty. The model shown here looks at the fall of Soviet and former Soviet GDP in relation to oil and energy. The analysis shows that the fall in Soviet and former Soviet GDP in the 1980s and 1990s did not Granger cause the decline in oil production, but that a decline in oil production did Granger cause the fall in GDP. However, the coal to GDP relationship shows the opposite and the natural gas to GDP relationship shows no Granger causality at all. This puts into question the normal inefficiency argument and suggests that oil had something to do with the break-up.

If indeed we are to believe in the pure Soviet inefficiency argument as the main cause of the Soviet decline, then a theory must be shown as to why only one year before the

Soviet economy began to unfold, its oil production started declining. Yet coal production declined after the fall of the Soviet GDP as we would expect. Natural gas production on the other hand stayed relatively steady during the turmoil due to high fixed costs of production that were already sunk costs and due to low marginal costs of continued production. Both the coal and natural gas production histories would make sense for oil, yet oil shows neither of these characteristics. Instead oil decline happens before the fall of GDP.

Over and over again the emphasis in the fall of the Soviet Union, and even the decline in oil production, is on communist inefficiency and a lack of technology. Yet communist inefficiency was in play when the Soviet economy and Soviet oil production were all increasing in the 1950s, 1960s and 1970s. Therefore, communist inefficiency in and of itself could not have caused the decline of the Soviet Union or of Soviet oil production. There has to have been another factor.

Resource scarcity is that factor. Within a consistently communist system oil production managed to go up as long as oil reserves were relatively abundant. However,

once scarcity increased substantially, the communist system saw declining oil production which in turn caused their inefficient economic system to finally decline. It required scarcity and inefficiency together to create the fall, not inefficiency by itself. Nevertheless, it is still not clear in the West whether an efficient, high-tech economy can withstand an oil shortage. Evidence shows that oil scarcity has been more powerful than technology in adversely affecting economic growth in North America, Japan, and Western Europe. As for the Soviet Union, the overwhelming evidence is that there was an oil scarcity problem within its economic system before the fall of Soviet GDP, and because the USSR was a virtually closed system, that oil shortage caused its fall and decline.

Interestingly, U.S. oil production peaked in 1970, but since the dollar was the global reserve currency in the post-Bretton Woods world, the United States could “import its way out of the problem.” The USSR did not have the “seignorage” option of just sending its own money abroad in exchange for commodities, so once its oil production peaked, the economic system had to decline to accommodate an oil shortage.

A Hubbert forecast of oil production shows that Soviet and former Soviet oil production is following a multi-cycle Hubbert trend and that the region’s oil production is forecast to peak in 2009.