

Oil Prices and the Economic Downturn
James D. Hamilton
Professor of Economics
University of California, San Diego
Testimony Prepared for the Joint Economic Committee of the U.S. Congress
May 20, 2009

Big increases in the price of oil that were associated with events such as the 1973-74 embargo by the Organization of Arab Petroleum Exporting Countries, the Iranian Revolution in 1978, the Iran-Iraq War in 1980, and the First Persian Gulf War in 1990 were each followed by global economic recessions.

The price of oil doubled between June 2007 and June 2008, a bigger price increase than in any of those four earlier episodes. In my mind, there is no question that this latest surge in oil prices was an important factor that contributed to the economic recession that began in the U.S. in 2007:Q4.

Unlike those earlier episodes, in which there had been a single dramatic development behind the oil price spike, the price rise over 2007-08 resulted from a number of separate factors. World oil production decreased slightly between 2005 and 2007. Declining production from mature oil fields in the North Sea and Mexico played a role, as did political instability in Nigeria. Saudi Arabian production, which many analysts had expected would have increased to meet rising demand, fell by 850,000 barrels/day between 2005 and 2007. These declines were enough to offset production gains in places such as Angola and central Asia, with the result that total global oil production dropped slightly over this two-year period.

Although production stagnated, the demand for petroleum continued to boom. World petroleum consumption had increased by 5 million barrels per day during 2004 and 2005, driven largely by a 9.4% increase in global GDP over the two years. Over the next two years-- 2006 and 2007-- world GDP grew an additional 10.1%, which in the absence of an increase in the price of oil would have produced further big increases in the quantity of oil consumed. Even with the price increases, Chinese oil consumption increased by 870,000 barrels per day between 2005 and 2007. With no more oil being produced, that meant that residents of the U.S., Europe, and Japan had to reduce our consumption a comparable amount. The price of oil needed to rise by whatever it took to persuade us to do so.

How much the price needed to rise in order to balance global demand with supply depends on how quickly consumers change their habits in response to a change in the price of oil. The historical experience has been that even very large oil price increases cause relatively little immediate change in the quantity of oil consumed. The response of consumers to energy price increases over 2004-2006 was if anything even smaller than those historical estimates. One reason for that smaller response may be that energy expenditures as a fraction of total spending by U.S. consumers had fallen from 8%

in 1979 to 5% in 2004. The reason that we were purchasing about the same quantity of gasoline despite the increase in the price was that many of us could afford to do just that.

By June of 2008, the price of gasoline had reached \$4/gallon, driving the energy budget share back up to 7%. While some people had been ignoring \$3 gasoline, \$4 definitely got their attention. The resulting abrupt changes in spending patterns can be quite disruptive for certain key economic sectors and seem to be part of the mechanism by which the earlier oil price shocks had contributed to previous economic recessions. The kinds of economic responses we saw between 2007:Q4 and 2008:Q3 were in fact quite similar to those observed to have followed previous dramatic oil price increases.

One notable example was the plunge in auto sales. The number of light trucks sold (which includes the once-dominant SUV category) fell by 23% between 2007:Q2 and 2008:Q2. One indication that this sales decline was caused by oil prices and not other economic developments is the observation that sales of imported cars were up by 9% over this same period. Since the domestic manufacturers were more heavily reliant on sales of the less fuel-efficient vehicles, these changes represented a significant hit to the domestic auto sector. Declining production of motor vehicles and parts alone subtracted half a percent from total U.S. real GDP between 2007:Q3 and 2008:Q3. In the absence of those declines, real GDP would have clearly grown over this period and it is unlikely that we would have characterized 2007:Q4 - 2008:Q3 as a true economic recession. One hundred and twenty-five thousand jobs were lost in U.S. auto manufacturing between July 2007 and August 2008. If not for those losses, year-over-year total job gains for the U.S. economy would have been positive through the first year of what we now characterize as an economic recession.

More broadly, another pattern we observed in earlier oil price shocks was a deterioration in consumer sentiment and slowdown in overall consumer spending. Americans buy about 140 billion gallons of gasoline each year, meaning that a dollar per gallon increase in the price takes away \$140 billion from their annual purchasing power. The declines in consumer sentiment and slowdown in consumer spending that we observed between 2007:Q4 and 2008:Q3 are very much in line with what we saw happen in response to historical energy price shocks of similar magnitude.

In 2003, I published a description of the response of U.S. real GDP to a change in oil prices that implies that the biggest economic effects of an oil price increase are not seen until 3 or 4 quarters after the oil prices go up, as the downturn multiplies and propagates across sectors. When you feed in the values of GDP through 2007:Q3 and oil prices through 2008:Q2, that model would have predicted the value of 2008:Q3 real GDP-- one year in advance-- with an error of less than 0.2%.

I was quite surprised by that last result, because of course there were other serious problems for the U.S. economy over this period besides the price of oil. Foremost among these would be the depression in new home construction. But residential fixed investment had subtracted 0.94% from GDP between 2006:Q4 and 2007:Q3, despite which the economy overall continued to grow and we were not at that point in an

economic recession. On the other hand, residential fixed investment subtracted only 0.89% from GDP over 2007:Q4 to 2008:Q3, during which period the U.S. economy did enter recession. Something else, in addition to the pre-existing problems in the housing sector, contributed to tipping the scales from an economic slowdown into a self-feeding dynamic of falling output and employment. I see little basis for doubting that a key aspect of that new drag on the economy resulted from the effects of the oil price shock.

There is also an interactive effect between the oil price shock and the problems in housing. Lost jobs and income were an important factor contributing to declines in home sales and prices, and we saw the biggest initial declines in house prices and increase in delinquencies in areas farthest from the urban core, suggesting an interaction between housing demand and commuting costs. Once house price declines and concomitant delinquencies reached a sufficient level, the solvency of key financial institutions came to be doubted. The resulting financial problems turned the mild recession we had been experiencing up until 2007:Q3 into a much more severe downturn in 2008:Q4 and 2009:Q1. Whether those financial problems were sufficiently insurmountable that we would have eventually arrived at the same crisis point even without the extra burden of the recession of 2007:Q4-2008:Q3 is a matter of conjecture. But that oil prices made an important contribution both to the initial downturn as well to the magnitude of the problems we're currently facing seems to me to be indisputable.

Could anything have been done to prevent this? The decision by the Federal Reserve to drop interest rates so quickly in the first few months of 2008 likely contributed to some of the commodity price speculation. In the spring of 2008 I had further recommended some temporary sales of oil out of the Strategic Petroleum Reserve as another measure that might have proven beneficial. There is also a tradeoff between our goals of environmental protection and reducing U.S. energy use, and certainly there are policy options we could have explored for reducing our demand for low-sulfur oil in particular. I would recommend that the U.S. have an emergency plan in place for various regulatory adjustments that could be made on very short notice to help reduce petroleum demand in response to any future crisis in global oil supplies. For example, in my opinion the decision to accelerate the shift to winter fuel requirements was helpful in containing the economic damage from Hurricane Katrina in the fall of 2005.

But although there are some concrete steps that might have helped, it would be a mistake to focus exclusively on short-term gimmicks. The fundamental problem that I have highlighted above-- booming world petroleum demand in the face of stagnant world oil production-- is very much a long-run challenge. The reality is that no policy could have prevented a substantial increase in the price of oil between 2005 and the first part of 2008. The main lesson that I hope we draw from this experience is that this long-run challenge is something with very real and present short-run consequences.

Will the recent uptick in oil prices undermine prospects for recovery from the recession? Retail gasoline prices have risen about 50 cents a gallon from their low in December. That takes away about \$70 billion from consumers' annual spending power, which is hardly helpful for the broader challenge of restoring household balance sheets to

a level where spending could be expected to pick back up. But let me emphasize that although I believe that the initial spike in oil prices was an important element of the process that produced our current difficulties, we are currently at a point at which the multipliers and spillovers associated with the recession dynamic itself have become far more important factors than the price of oil. The problems faced by U.S. automakers at the moment-- and those problems are very, very daunting-- are not caused by the price of gasoline. What is needed to restore U.S. vehicle sales now is not lower gas prices but instead more income, jobs, and confidence on the part of consumers.

Notwithstanding, the recent rise in oil prices again underscores the present reality of the long-run challenges. Even if we see significant short-run gains in global oil production capabilities, if demand from China and elsewhere returns to its previous rate of growth, it will not be too long before the same calculus that produced the oil price spike of 2007-08 will be back to haunt us again.