



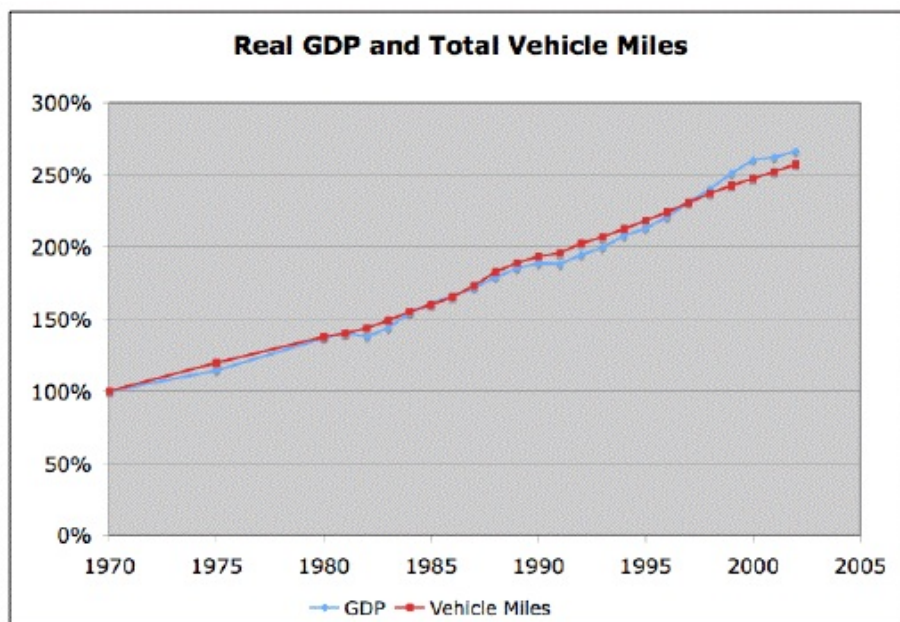
Minimal Behavioral Adaptations to Oil Shocks

Posted by [Stuart Staniford](#) on October 21, 2005 - 7:23am

Topic: [Economics/Finance](#)

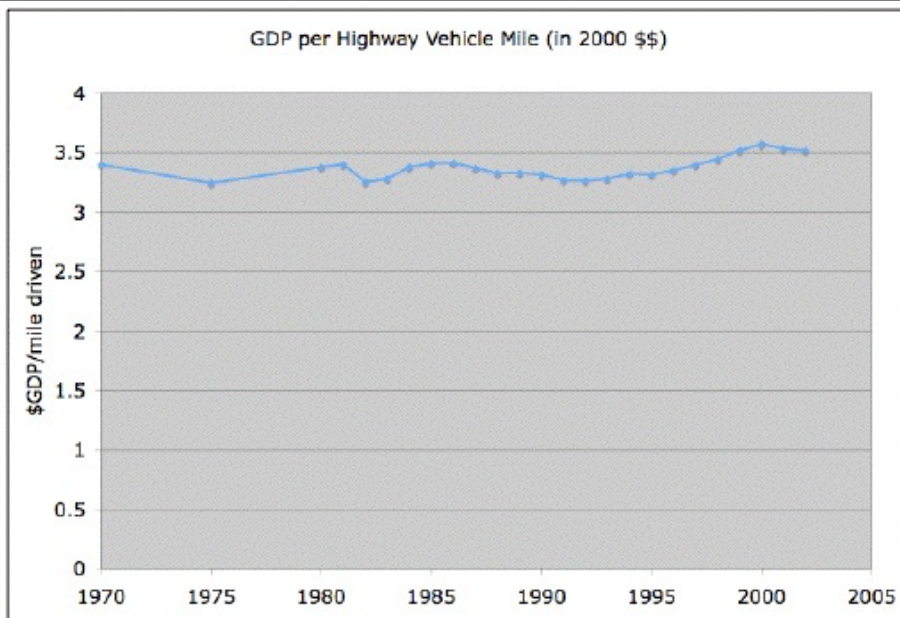
Tags: [gas prices](#), [hubbert peak](#), [oil prices](#), [peak oil](#) [[list all tags](#)]

I wanted to gain some insight into why the productivity of vehicles (to annoy [Halfin](#) again) is so constant. However, a first attack seemed to be to look at the reasons why it isn't **perfectly** flat. That turns out to offer us a little more insight on this idea that Americans, in the face of an oil shock, might adopt behavioral responses such as carpooling, moving closer to work, biking instead of driving, etc, in order to reduce their oil use. Not a hell of a lot, it turns out.

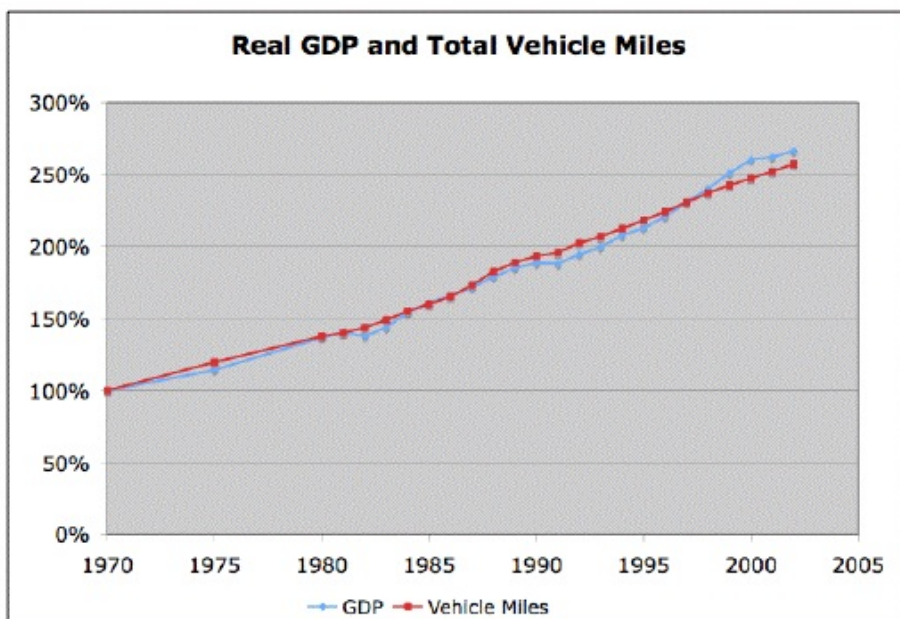


This post is part of a series on the economic response to oil shocks, which I'm doing to gain a deeper insight into likely post-oil-peak economic occurrences. It began with a [discussion of the stability of the mix of consumer spending](#), moved on to [consider the productivity and efficiency of transportation](#), and then dived more deeply into what the [US economy did to become less oil intensive](#). Readers with long memories will also realize the significance of these issues to my [decline-rate based model](#) of what might happen to the US economy post peak.

Recall this flattish ratio from [yesterday's post](#).

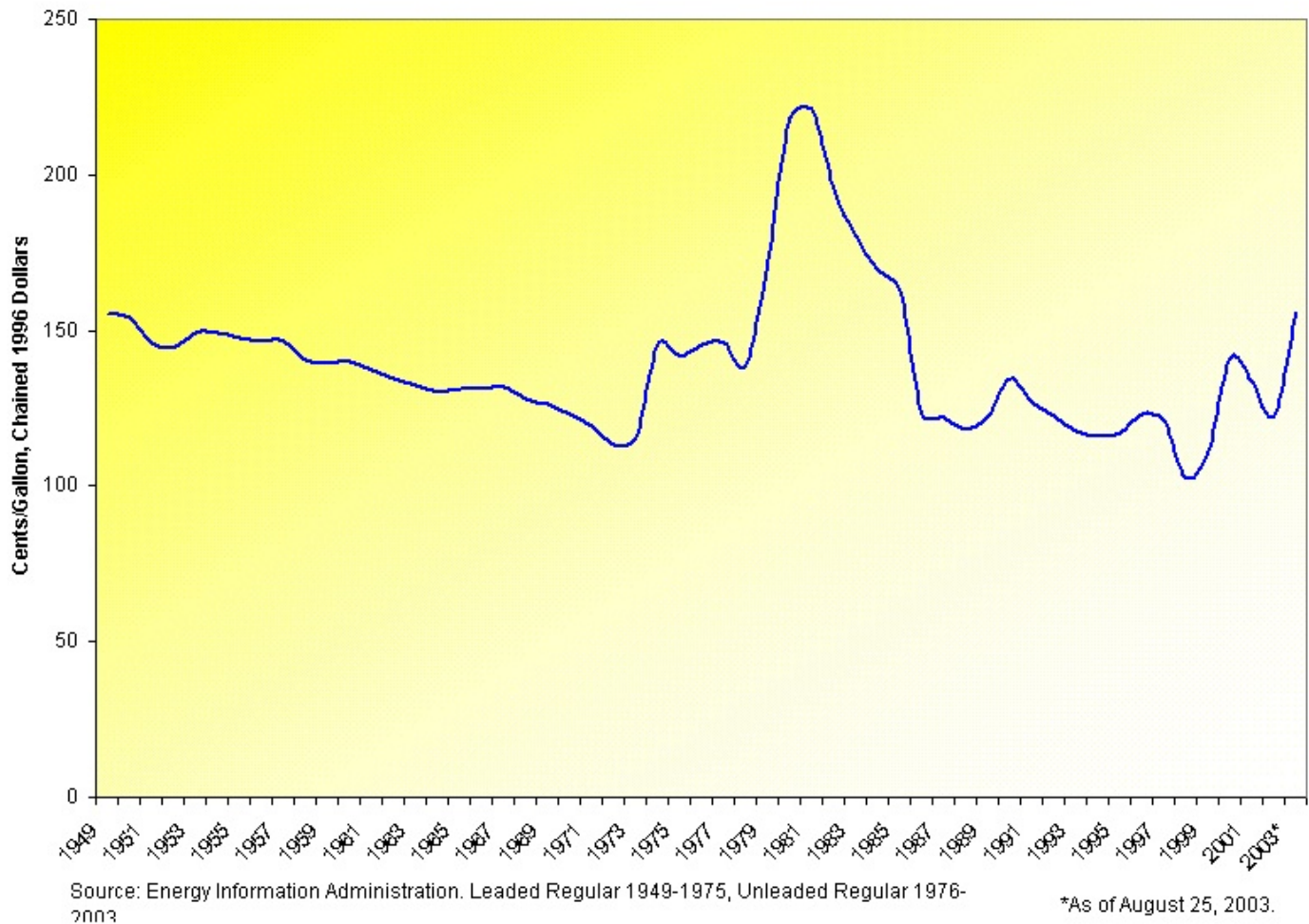


To gain a better understanding, I plotted the real GDP against miles with both rescaled to be 100% in 1970. You can see that the long term growth rates match up very well, but the GDP is a bit more volatile than the miles.



Note the strong correlation of driving behavior with gas prices:

Real Gasoline Prices Far From Record Highs



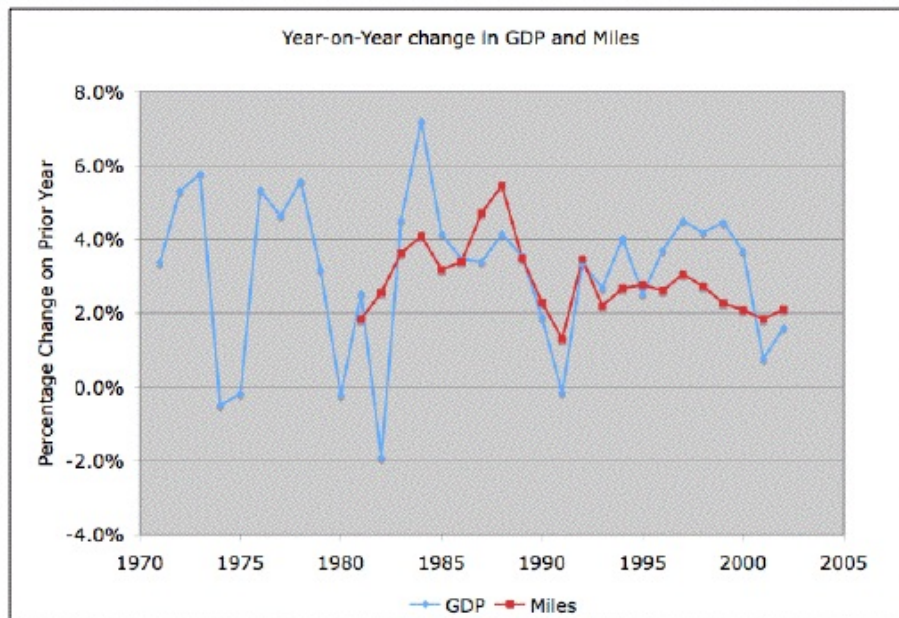
Source: NRO Financial

For any neoclassical economics fans that haven't run screaming from the room yet: what do you say: is the amount of driving people do more likely to be influenced by

- Hypothesis 1: the marginal price of driving? or
- Hypothesis 2: the size of the economy?

Forget Hypothesis 1 guys. Cut that chapter about demand curves out of your old college economics textbooks (or at least take a big yellow highlighter and footnote that the theory is pretty much inapplicable to goods in highly inelastic demand). The data say that people drive more every year regardless of what is happening economically, regardless of whether there are oil shocks, and regardless of the price of gas. I mean, I could take those last two graphs, compute the year-on-year changes, divide those and get an elasticity time series, right? But it would just be cruel I think. Torturing even neoclassical economists is not nice.

Finally, I looked at the growth rates from year to year of both real GDP and total miles traveled. Alas, the [original data for the total vehicle miles](#) doesn't have annual data for the 1970s, just 1970, 1975, and 1980. So it's misleading to plot growth rates for the miles in the 1970s unfortunately.



But we can still get the general idea. The condition of the economy does have some influence on the growth rate in driving - there is visibly some correlation there. But the miles growth rate is less volatile than the GDP growth rate. You might think it would be otherwise. As the ever quotable [Professor Hamilton](#) has noted:

Nine out of the ten recessions in the United States since World War II were preceded by a spike in oil prices.

Recessions show up in the big dips in the blue curve. Since recessions are usually caused by oil supply constraints, you might think a leading response would be to drive less. Some of the oil shocks that caused those dips were really big losses in global oil supply, as shown in the table to right ([stolen from Professor Hamilton](#)). Surely we would respond to this by driving less? But no, we are so absolutely dang-blasted goddamn determined to drive, that we would rather see the **rest** of the economy go in the tank than suffer ourselves to drive any less. Miles are **less** responsive to oil prices than economic activity in general. Go figure.

Date	Event	Drop in world production	Drop in U.S. real GDP
Nov. 1956	Suez Crisis	10.1%	-2.5%
Nov. 1973	Arab-Israeli War	7.8%	-3.2%
Nov. 1978	Iranian Revolution	8.9%	-0.6%
Oct. 1980	Iran-Iraq War	7.2%	-0.5%
Aug. 1990	Persian Gulf War	8.8%	-0.1%

There may be, no, there **undoubtedly are**, conditions that would change this trend and cause us to drive less. But what this tells us is that they would have to be a **lot worse** than anything that has happened in the last forty years.



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